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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

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CONSOLIDATED LISTING OF RECENT OFFICIAL GAZETTE NOTICES RE PATENT AND TRADEMARK OFFICE PRACTICES AND PROCEDURES

PATENT NOTICES

The following is a compilation of the more important notices and rule changes which have been published in the OFFICIAL GAZETTE *from July 1, 1967, through December 31, 1977. These notices and rule changes are currently in effect unless otherwise noted.*

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INFORMATION AND CORRESPONDENCE

(1) OFFICIAL PATENT OFFICE MAILING ADDRESS REMAINS WASHINGTON, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

(Office name change per Public Law 93–596, Jan. 2, 1975)

[860 O.G. 662]

(2) GROUP NUMBER SHOULD APPEAR ON COMMUNICATIONS RELATING TO PENDING APPLICATIONS

It is again requested that the Group number be typed on amendments and other communications relating to pending applications in order to expedite the handling of mail and to conserve manpower. The number of the Group should be placed on the right-hand side, opposite the Serial Number or name of applicant. In view of the vast amount of mail, continued careful attention to these details will do much toward avoiding delay in handling of mail.

C. A. KALK,
Nov. 6, 1969. *Director of Administration.*

[869 O.G. 345]

(3) IDENTIFICATION FOR APPLICATION CORRESPONDENCE

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action.
5. Title of the invention.

To further reduce the burden on the Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL–85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

(4) IDENTIFYING APPLICATION CORRESPONDENCE WITH ISSUE BATCH NUMBER

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example; "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed after receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch Number. At this time in the processing, the Issue Batch Number is no longer useful since the application has been removed from the batch at the time the patent number was assigned.

RICHARD J. SHAKMAN,
Jan. 16, 1976. *Assistant Commissioner for Administration.*

[943 O.G. 519]

(5) HAND DELIVERY OF PAPERS

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery

of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

[919 O.G. 1070]

(6) POST CARD RECEIPT REMINDER

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

(7) STATUS INQUIRIES

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL-327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL-327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL-85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL-327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the OFFICIAL GAZETTE are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

[893 O.G. 810]

(8) CHANGE OF ADDRESS

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be filed in *each application* for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is *additional* to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which must be done in a letter separate from any notice of change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the change of address was filed in the concerned application, in a manner reasonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing *plural* applications as being affected will not be considered a proper notification.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.
May 28, 1975.

[935 O.G. 1352]

(9) CHANGE OF ADDRESS OR PRACTITIONER IN A PLURALITY OF PATENT APPLICATIONS

Change of Address

This notice is supplemental to the Notice of May 28, 1975, 935 O.G. 1352.

In those instances where a change in the correspondence address of a registered attorney or agent is necessary in a plurality of applications, and the number of applications is such as to cause undue hardship, the notification filed in each application may be a reproduction of a properly executed, original notification. The original notice may be sent to the Office of the Solicitor as notification to the Attorney's Roster of the change of address, or may be filed in one of the applications affected, provided that the notice includes an authorization for the public to inspect and copy the original notice in the event one of the applications containing a copy matures into a patent and the application containing the original paper is either pending or has become abandoned. The copies submitted in each affected application must identify where the original paper is located. Otherwise, the practice governing the filing of notifications of change of address remains the same.

Powers of Attorney

In the event of a need to file a change in the power of attorney in a plurality of applications of a common assignee or inventive entity, and the number of applications is such as to cause undue hardship, a single, original paper may be used provided that a reproduction of this original paper is supplied in each of the affected applications. The copy of the original paper must identify in which application the original paper is located and authorize the public to inspect and copy the original paper in the event one of the applications containing a copy matures into a patent and the application containing the original paper is pending or has become abandoned. The procedures and usual prerequisites for the filing of grants and/or revocations of power of attorney otherwise remain the same.

WILLIAM FELDMAN,
Sept. 9, 1976. *Deputy Assistant Commissioner for Patents.*

[951 O.G. 454]

(10) ACCESS TO PATENT APPLICATION AND INTERFERENCE FILES

In order to insure that access to patent application and interference files is given only to persons who are entitled thereto or who are specially authorized to have access under Rule 14 of the Rules of Practice in Patent Cases, and to insure also that the file record identifies any such specially authorized person who has been given access to a file, the following practice will be observed by all personnel of the Patent Office:

1. Access, as provided for in the Rules of Practice, will be given on *oral request* to any applicant, patentee, assignee, or attorney or agent of record in an application or patent only upon *proof of identity* or upon *recognition* based on personal acquaintance.
2. Where a power of attorney or authorization of agent was given to a registered firm prior to July 2, 1971, access will be given upon oral request as in paragraph 1 above to any registered member or employee of the firm who has signatory power for the firm.
3. Unregistered employees of attorneys or agents, public stenographers, and all other persons not within the provisions of paragraphs 1 and 2 above will be given access only upon presentation of a *written authorization for access* signed by a person specified in paragraph 1 above, which authorization will be entered as a part of the official file.

ROBERT GOTTSCHALK,
Nov. 24, 1971. *Acting Commissioner of Patents.*

[893 O.G. 810]

(11) EXPRESS MAIL

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the OFFICIAL GAZETTE of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231"

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.
May 15, 1975.

[936 O.G. 1554]

(12) CERTIFICATE OF MAILING PROCEDURES

On November 1, 1976, the Patent and Trademark Office instituted the Certificate of Mailing Procedure by promulgating 37 CFR 1.8 in an attempt to reduce the number of problems resulting from late receipt of responses due to mail delays. This notice was published in the OFFICIAL GAZETTE on October 26, 1976 (951 O.G. 1342 and TM 210). Guidelines relative to this procedure were published in the OFFICIAL GAZETTE on November 16, 1976 (952 O.G. 918 and TM 174).

Although the new procedure has gained wide acceptance, it has not been entirely without problems. One major problem involves the correlation of the certification with the appropriate papers when presented on a separate sheet. In order to curtail this problem and other minor ones, the guidelines published on November 16, 1976, are superseded by the following guidelines. They are applicable to responses in both patent and trademark matters, as permitted by 37 CFR 1.8.

Guidelines

A) The certification requires a signature. Specifically, if the certification appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification. Although not specifically required by 37 CFR 1.8, it is preferred that the certificate be signed by the applicant, assignee, or registered practitioner.

B) When possible, the certification should appear on a portion of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO–85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, that sheet must (1) be signed and (2) fully identify and be securely attached to the paper it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., responses to rejection or refusal, Notice of Appeal, etc. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

If the sheet should become detached from the paper and thereafter not associated with the appropriate file, evidence that this sheet was received in the Office can be supported by submitting a copy of a post card receipt specifically identifying this sheet and the paper and by submitting a copy of the sheet as originally mailed. Attention is directed to the notice of November 21, 1968 published in the OFFICIAL GAZETTE (857 O.G. 667) relative to the use of post cards as receipts.

D) In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO–85 and an assignment), each paper must have its own certification as a part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a Notice of Appeal), each paper should have its own certification as a part thereof or attached thereto.

Use of Stamped Certification

Some practitioners are placing the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

> I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on ----------.
>
> (Date of Deposit)
>
> ----------
>
> Name of applicant, assignee, or Registered Representative
>
> ----------
>
> Signature
>
> ----------
>
> Date of Signature

Interpretations

The phrase "prior to expiration of the set period" in 37 CFR 1.8(a) includes the last day of the set period, which last day may be the "next succeeding secular or business day" as set out in 35 U.S.C. 21. Also, the filing of a 37 CFR 3.54 form to effect a filing under 37 CFR 1.60 is considered the filing of an application and is, therefore, excluded from the Certification of Mailing Procedure.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patent and Trademarks.*

[962 O.G. 20]

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(13) SUBSTITUTE POWERS OF ATTORNEY

The Patent and Trademark Office has recently received correspondence in certain applications under the title "Substitute Power of Attorney" wherein the principal attorney of record attempted to name other attorneys as his substitute in those applications.

Since the power of the principal attorney may be revoked, or terminated as by his death, revocation or termination of said power of the principal attorney will also terminate the power of those appointed by him. Thus, a principal attorney may appoint an associate attorney whose power terminates with that of the principal, but he may not appoint a "substitute" and any attempt by the principal to appoint a "substitute" attorney whose power survives his own shall not be recognized by the Office.

WILLIAM FELDMAN,
Dec. 17, 1975. *Deputy Assistant Commissioner for Patents.*

[942 O.G. 1074]

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(14) CHANGE IN LEGAL HOLIDAYS

Those doing business before the Patent Office are hereby reminded that by Public Law 90—363, 82 Stat. 250, effective January 1, 1971, Section 6103(a) of Title 5, United States Code, was amended to read as follows:

§ 6103. *Holidays*

(a) The following are legal public holidays:
New Year's Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, the fourth Monday in October.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

WILLIAM E. SCHUYLER, Jr.,
Dec. 2, 1970. *Commissioner of Patents.*

[881 O.G. 1707]

EDITORIAL NOTE: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

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(15) RELOCATION OF CUSTOMER RELATIONS CENTER

In order to expand facilities in the Public Search Room of the Patent and Trademark Office, it has become necessary to relocate the Customer Relations Center.

As of January 19, 1976, the Center was moved to Building No. 2, Room 4C08. The telephone number of the Center will continue to be (703) 557–2003.

WILLIAM I. MERKIN,
January 1976. *Acting Assistant Commissioner for Administration.*

[943 O.G. 519]

(16) AVAILABILITY OF PATENT APPLICATION DRAWINGS FOR REPRODUCTION

Clients of private commercial reproduction services requesting patent application drawings to make drawing reproductions for U.S. and foreign filings have caused printing problems and delays in allowed applications in which the Base Issue Fee has been paid.

In order to prevent any delay in the printing and issuance of applications in which the Base Issue Fee has been paid, access to the drawings of patent applications which have been scheduled for printing will not be normally available. Delays in obtaining patent application drawings by commercial reproduction services, after the application has been scheduled for printing, can be avoided if requests for reproductions are made either before or promptly after receipt of the Notice of Allowance and prior to the payment of the Base Issue Fee.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.
May 6, 1975.

[934 O.G. 1324]

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(17) ACCEPTABLE DRAWINGS FOR PATENTS

Approximately ten years ago, the Office's standards for acceptable drawings with respect to certain matters including the blackness and minimum thickness of inked lines, and shading of drawings, were relaxed in order to reduce the backlog of informal drawings at that time.

Apparently, because of the increased use of pens with a round, open-end capillary tip in place of the conventional draftsman's drawing pen, the Office now has a problem of obtaining acceptable reproduction copies of thin, light and gray lines which appear on many drawings. As a result, approximately 10,000 drawings sheets filed each year are *not* acceptable for normal reproduction and microfilming from the printed copy. Special printing steps must be taken to try to print very thin or light lines. Inked lines should be at least 0.012 inch in width and no closer together than 0.05 inch. Shading lines should be constructed to meet these criteria for acceptable drawings. The inked lines must not rub off the standard bristol board sheet, and their reflectance should not exceed 12%.

Applicants and draftsmen are requested not to use thin or light lines on their drawings. In the future, drawing requirements will be more stringent regarding the blackness and minimum thickness of lines to be acceptable. The Chief Draftsman has been instructed to adhere strictly to the above standards and criteria after January 1, 1978 so that special printing requirements can be held to a minimum.

Persons interested in examples of acceptable and unacceptable lines for drawings may obtain one set of "Printed Examples from Unacceptably Inked Drawings" by writing to:

The Chief Draftsman
U.S. Patent and Trademark Office
Washington, D.C. 20231

RICHARD J. SHAKMAN,
Oct. 20, 1977. *Assistant Commissioner for Administration.*

[964 O.G. 21]

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(18) PUBLIC SEARCH ROOM FOR PATENTS

Establishment of New Procedures and Revisions of Regulations

One of the major obligations of the Patent and Trademark Office is to make patent information available for public inspection. The quality of this service depends upon promoting an environment conducive to research and maintaining the integrity of the files in the Public Search Room for Patents.

To emphasize our commitment to providing this environment with complete and orderly files for public use, the Patent and Trademark Office is establishing new procedures and revising the Regulations for using the facilities of the Public Search Room for Patents. The new procedures and revised Regulations will become effective August 23, 1976. The new procedures for the Search Room include the requirement that users obtain and show, prior to entering the Search Room facilities, a User Pass. This pass can be obtained at a special desk near the guard station. User Passes will be issued to persons not under prohibition from using the search facilities who agree to abide by the Regulations of the Public Search Room for Patents by signing a statement to that effect. User Passes are non-transferable and are valid until reissue or revocation for cause.

The new procedures also include the requirement that persons entering and exiting the Search Room use designated lanes. Persons exiting the Search Room will automatically pass electronic sensing equipment designed to detect any marked documents or materials being removed from the Search Room. The sensing equipment is capable of detecting marked documents and materials in briefcases and parcels and under clothing. The equipment does not use X-ray or other high energy radiation and is, therefore, completely safe and harmless to persons, photographic film, magnetic tape and electronic or mechanical devices such as wristwatches. The Patent and Trademark Office is now preparing older documents in the Classified and Application files for use under this system. All new patents are marked for sensing before being placed in the Classified files.

Whenever a marked document is transported past the sensing equipment, Patent and Trademark Office officials and the security guards will be alerted to the removal of the document, and a gate on the exit lane will lock. Persons triggering the alarm will be asked to cooperate in identifying the source for the alarm. Failure to cooperate when the alarm is triggered could result in detention of the person, seizure of any briefcase or the like, or other legal mensures deemed necessary and appropriate in the specific case.

In order to assure that the changes in the Search Room fully apply to the Record Room, the entrance to the Record Room will be relocated within the Search Room. This change is currently under way.

The revised Regulations for the Search Room appear below, and a reprinting of the Regulations brochure incorporating the revisions will soon be available in the Search Room. The substance of the changes in the procedures and the revised Regulations for the Search Room, as well as any pertinent information that will assist users in the changeover, will be prominently posted in the Search Room. In order to maintain an environment conducive to research, the revised Regulations will be strictly enforced.

Although these new procedures and revised Regulations may cause some inconvenience, it is hoped that with your understanding and cooperation they will result in improvement in search facilities which will benefit all participants in our patent system.

REGULATIONS FOR THE PUBLIC USE OF RECORDS IN THE PUBLIC SEARCH ROOM FOR PATENTS OF THE PATENT AND TRADEMARK OFFICE

The Public Search Room for Patents is defined as that area comprising the foyers off the lobbies of Buildings 3 and 4 of Crystal Plaza; the offices, Microfilm Center, restrooms and telephone areas off these foyers; the stacks, Record Room, study and copier areas between the foyers; and the Mezzanine.

Under applicable statutes and regulations, including 49 U.S.C. 486(c); 41 CFR Subpart 101–20.3 and appropriate Sections of Department Organization Orders 30–3A and 30–3B of the Department of Commerce, the regulations appearing below are established for those using the facilities of the Public Search Room for Patents.

1. All persons using these facilities are subject to the regulations governing conduct on Federal Property, as specified in 41 CFR Subpart 101–20.3.
2. All posted Official Notices are to be complied with.
3. Smoking is not permitted except in designated areas.
4. Food and beverages in any form are not to be consumed except in designated areas.
5. Loud talking, use of radios, or any other form of activity which may disturb other members of the public is forbidden.
6. Children brought into the Public Search Room for Patents must not be allowed to disturb others.

7. Users of the facilities may not give the Patent and Trademark Office as a mailing address or otherwise suggest that mail may be received at the Patent and Trademark Office; nor may correspondence be conducted on official Patent and Trademark Office stationery.
8. Messages shall not be affixed to walls, desks, phone booths, or other public property, except designated message boards.
9. Patents and records shall not be removed from the facilities without proper authorization; nor shall they be mutilated. The unlawful removal or mutilation of records is forbidden by law and is punishable by fine or imprisonment or both (18 U.S.C. 2071).
10. The presence or use of equipment such as reproducing machines, typewriters and photographic equipment is prohibited without prior permission. The use of dictating equipment is prohibited, except in designated areas.
11. Library trucks or carts are to be used for transporting bundles only. They are not to be used for storage while making searches.
12. Patents temporarily removed from bundles for copying must be replaced promptly.
13. All bundles of patents must be promptly replaced in the stacks by the user.
14. The reserving of seats and/or working areas is prohibited.
15. Users of the Public Search Room for Patents are not permitted to use Patent and Trademark Office facilities beyond the Search Room after 5:00 p.m.
16. The front portion of the Public Search Room for Patents, i.e., that portion facing Crystal Plaza Drive and having a high ceiling, shall not be occupied by users after 6:00 p.m.
17. A valid User Pass must be shown upon request to authorized Patent and Trademark Office personnel.
18. User Passes are nontransferable and must be surrendered to authorized Patent and Trademark Office personnel upon request.
19. Packages, briefcases or other personal effects are subject to search by authorized Patent and Trademark Office personnel upon request.
20. All verbal requests for compliance with these regulations or other posted Patent and Trademark Office Notices pertaining to activity in the Public Search Room for Patents, when made by authorized Patent and Trademark Office personnel, must be promptly complied with.

Persons violating these regulations may be denied the use of the facilities in the Public Search Room for Patents, and may further be subjected to prosecution under the Criminal Code. Additionally, the name of any person violating these regulations who is registered to practice before the Patent and Trademark Office may be forwarded to the Solicitor for appropriate action under 37 CFR 1.348.

C. MARSHALL DANN,
July 9, 1976. *Commissioner of Patents and Trademarks.*

[949 O.G. 2]

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(19) USE OF PATENT EXAMINING GROUP FACILITIES

This notice is supplemental to the Notice of July 9, 1976, entitled "Public Search Room for Patents" that was published in the OFFICIAL GAZETTE on August 3, 1976 (949 O.G 2).

The primary function of the Patent and Trademark Office is the examination of applications for patents and the issuance of valid patents based upon a search and consideration of the best available prior art. This can be accomplished only through maintaining strict search file integrity within the Patent Examining Group Facilities.

Therefore, under the provision of Rule 2 of the "Regulations for the Public Use of Records in the Public Search Room for Patents of the Patent and Trademark Office," 949 O.G. 2, the regulations appearing below are established for those authorized members of the Public using the facilities of the Patent Examining Groups. The regulations become effective April 4, 1977.

Although these supplemental regulations may cause some inconvenience, it is believed that with the cooperation and understanding of the public, a more efficient and reliable examination system within the Patent Examining Groups Will result.

A copy of the following "Regulations for Users of the Patent Examining Group Facilities," will be posted in each of the Patent Examining Groups and the Public Search Room for Patents:

Regulations for Users of the Patent Examining Group Search Facilities

1. Group facilities are defined as those areas in Buildings 3, 34 and 4 of Crystal Plaza designated Examining Groups.
2. The use of the Group facilities for search purposes by members of the public is strictly limited to the search of materials not available in the Public Search Room for Patents or the Scientific Library and when it does not conflict with the regular business of Patent and Trademark personnel and only between the hours of 8:45 a.m. and 4:45 p.m. on regular business days.
3. Authorized Officials, under these Regulations, include Supervisory Patent Examiners and Examining Group Directors.
4. Under applicable statutes and regulations, including 40 U.S.C. 486(c): 41 CFR Subpart 101–20.3; and appropriate Sections of Department Organization Orders 30–3A and 30–3B of the Department of Commerce, the Regulations appearing below are established for those members of the public using the Group Facilities.
   - A. All persons using these facilities are subject to the Regulations Governing Conduct on Federal Property, as specified in 41 CFR Subpart 101–20.3.
   - B. All posted Official Notices are to be complied with.
   - C. A valid User Pass must be prominently displayed when searching in the Group Facilities. User Passes are nontransferable and must be surrendered upon request to authorized officials.
   - D. All persons holding User Passes must register with the Group Receptionist, unless otherwise directed, in each Examining Group where they search and must sign a log (e.g., indicating time-in, time-out, name, User Pass number, class(es) and subclass(es) searched).
   - E. No patents, records or other documents of the Patent and Trademark Office shall be removed from the Group Facilities except by express written authorization by an authorized official in the Examining Group where the material resides. Such authorization will not be given for U.S. patents and other material readily available through the Scientific Library.
   - F. Smoking is not permitted except in designated areas.
   - G. No food or beverage in any form are to be consumed except in designated areas.
   - H. Loud talking, use of radios, and any other form of activity which may disturb other members of the public or Patent and Trademark Office personnel are forbidden.
   - I. Children brought into the Group Facilities must not be allowed to disturb others.
   - J. The presence or use of equipment such as dictation equipment, reproducing machines, typewriters and photographic equipment is prohibited without prior permission from an authorized official in the Examining Group where the use is intended and then is permitted where its use does not conflict with Regulation H.
   - K. Patents and other documents must not be removed from their shoes for any reason other than for cursory study thereof while kept in close proximate association with the shoe and must not be moved out of their normal sequence.
   - L. All patent shoes must be promptly replaced in their proper location in the shoe case.
   - M. All textbooks, journals and the like must be returned to their proper location.
   - N. The reserving of seats and/or working areas is prohibited.
   - O. All packages, briefcases or other personal effects brought into the Group Facilities are subject to search by authorized officials upon request and must be removed when leaving the Group Facilities.
   - P. All verbal requests for compliance with these regulations or other posted Patent and Trademark Office Notices pertaining to activity in the Group Facilities, when made by authorized officials, must be promptly complied with.
5. Persons violating these regulations may be denied the use of the facilities in the Examining Groups and Public Search Room for Patents, and may further be subject to prosecution under the Criminal Code. Additionally, the name of any person violating these regulations who is registered to practice before the Patent and Trademark Office may be forwarded to the Solicitor for appropriate action under 37 CFR 1.348.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[956 O.G. 1118]

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(20) USE OF CERTIFICATE OF CORRECTION FORMS

The purpose of this notice is, to once again, remind patentees and their attorneys and agents to submit the text of any correction under 37 CFR 1.322 and 1.323 on the Certificate of Correction form, PTO–1050, which is available free of charge from the Patent and Trademark Office. The presentation of all corrections on this form permits its use as camera copy for prompt, direct offset printing of the Certificate of Correction.

Instructions for use of form PTO–1050 are printed on the top portion thereof, and are also set forth, in further detail, in Section 1402.02 of the Manual of Patent Examining Procedures. It is especially important that the typing be clean and clear. Both thin, light type and heavy, smudged type should be avoided. Changes and corrections are preferably made by use of white opaque correction fluid.

The typing should be within the borders printed on the form and a two-inch blank space should be left at the bottom of the last page of the form for the placement of the signature of the Attesting Officer.

Both sheets of the printed form should be forwarded to the Office. The copies should be stapled together only at the upper left-hand margin at the indicated location.

Copies of form PTO–1050 may be obtained, as needed, from either the Correspondence and Mail Division in Building 2, or from the receptionist in the lobby of Building 3, Crystal Plaza, Arlington, Va.

RICHARD J. SHAKMAN,
May 10, 1977. *Assistant Commissioner for Administration.*

[959 O.G. 3]

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(21) GOVERNMENT PUBLICATION SUBSCRIPTION SERVICE

The purpose of this notice is to inform subscribers of Federal Government publications serviced by the Government Printing Office, Superintendent of Documents, of the requirement to standardize subscriber change of address procedures.

It is imperative that the Government Printing Office be advised by each subscriber of an address change and that such advisement be accompanied by the latest subscription address label.

The Government Printing Office has the largest number of subscriptions of any activity in the United States. The Superintendent of Documents maintains about 835 mailing lists containing nearly 3 million addresses. Many of these subscribers frequently change their addresses and inform the Superintendent of Documents in a wide variety of methods. Some large organizations have as many as 20 identical subscriptions to the same street address but with different internal deliveries. Altogether the Government Printing Office is mailing nearly 5 million subscription copies each month. The Government Printing Office requests your cooperation to more effectively maintain the many mailing lists.

For your convenience, a change of address form is reproduced on the last page of the OFFICIAL GAZETTE.

BRADFORD R. HUTHER,
Acting Assistant Commissioner for Administration.

Aug. 9, 1977.

[962 O.G. 2]

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(22) NOTICE TO OFFICIAL GAZETTE SUBSCRIBERS

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the patent and/or trademark sections of the OFFICIAL GAZETTE.

The Superintendent of Documents advises that expiration notices are sent out approximately three months in advance of the expiration date. However, subscribers should not be dependent upon such notices. In the event that a notice is not received within two months of the expiration date, the subscriber should renew his subscription with the Superintendent of Documents and *attach a label* from the envelope in which he receives the gazette, together with a check covering the amount of the subscription.

In case of complete stoppage, please send a copy of your order or expiration notice, together with proof of payment (copy of cancelled check or processed order), to Mr. S. J. Bania, Director, Office of Publications (Room 2–5C26), Patent and Trademark Office, Washington, D.C. 20231, Attention: Shirley A. Hammel (Telephone 703/557–3794), or Lillie M. Harrison (Telephone 703/557–1985).

This notice is effective with the publication date and supersedes the notice published on this subject in 934 O.G. 886, dated April 25, 1975.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.

Sept. 12, 1975.

[939 O.G. 3]

RECORDS AND FILES

(23) ACCESSIBILITY OF ASSIGNMENT RECORDS

In view of a number of inquiries as to the manner in which Rule 1.12 of the Patent Office Rules of Practice, as amended August 23, 1965 (819 O.G. 443) is to be applied, the procedure which it is planned to follow in certain types of cases is set forth below.

1. Assignments relating to applications for registration of trademarks will be open to public inspection as heretofore.

2. The Office will not open certain parts only of an assignment document to public inspection. If such a document contains two or more items, any one of which, if alone, would be open to such inspection, then the entire document will be open. Thus, if an assignment covers either a trademark or a patent in addition to one or more patent applications, it will be available to the public ab initio; and if it covers a number of patent applications, it will be so available as soon as any one of them is patented. Assignments relating only to one or more pending applications for patent will not be open to public inspection.

3. If the application on which a patent was granted is a division or continuation of an earlier case, the assignment records of that case will be open to public inspection; similar situations involving continuation in part applications will be considered on their individual merits.

4. Assignment records relating to reissue applications will be open to public inspection.

EDWARD J. BRENNER,
Dec. 15, 1965. *Commissioner.*

[822 O.G. 769]

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(24) NOTIFICATION RE: CONFLICT IN ASSIGNMENT IN CERTAIN APPLICATIONS

Effective September 12, 1966, Assignment Branch will discontinue mailing notification in cases where there is a conflict

in assignment between an original application and its divisional, continuation, substitute, or continuation-in-part application.

Assignments from original applications are applied without charge ONLY to divisional, continuation, or substitute applications where the date of the assignment is prior to the filing date of the later-filed application. (Continuation-in-part applications require separate assignments if they are to be issued to the assignee.)

Practitioners are reminded of the provisions of Rule 334. Unless an assignment is filed at or prior to the date of payment of the issue fee, the patent will normally be issued in the name of the inventor.

Section 306 of the Manual of Patent Examining Procedures will be amended appropriately.

W. R. ARMSTRONG,
Director, Office of Patent Services.

Concurred:
(signed) R. A. WAHL,
Assistant Commissioner.

[830 O.G. 442 (Sept. 12, 1966)]

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(25) RECORDING OF INSTRUMENTS

Effective April 1, 1967, the Patent Office will accept and record legible certified copies of original assignments or other instruments.

The certified copy, if not in the English language, will not be recorded unless accompanied by a translation signed by the translator.

Certification shall be to the fact that the instrument submitted is a true copy of the original and shall be made by a notary public or, if in a foreign country, by a consular officer of the United States or an officer authorized to administer oaths and authenticated by a consular officer of the United States.

RICHARD A. WAHL,
Mar. 3, 1967. *Assistant Commissioner.*

[836 O.G. 1111]

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(26) REMINDER

Furnishing Assignment Data at Time of Payment of Issue Fee

Practitioners are once again reminded of Rule 334, revised November 1969, which requires that . . . "At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent Office. In the event an assignment has been filed, such statement must include the name of the assignee and indicate whether or not an acknowledgment of a recorded assignment has been received from the Patent Office."

The Issue Fee Transmittal Form POL 85*b*, revised December 1969 and May 1973, provides space (Item 2) for Assignment Data which should be completed to comply with the Rule. Unless an assignee's name and address are identified in Item 2 of the Issue Fee Transmittal Form POL 85*b*, the patent will issue to the applicant. *Assignment Data printed on the patent will be based solely on information so supplied.*

A request for correction of error arising from incomplete or erroneous information furnished in Item 2 of POL 85*b* will not be granted as a matter of course and will be subject to adherence to all the requirements of Rule 323.

The recording of instruments in the Assignment Division is not affected by this Notice.

WILLIAM I. MERKIN,
Dec. 19, 1974. *Assistant Commissioner for Administration.*

[930 O.G. 984]

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(27) CERTIFIED COPIES OF APPLICATION AS ORIGINALLY FILED

The Patent Office has discontinued placing the assignments of record on the file wrapper of patent applications, except when a title report is requested or upon allowance of the case. Accordingly, the copies of applications prepared in response to requests for a certified copy of a patent application as filed, will no longer include an indication of assignments. Applicants desiring an indication of assignments of record should request separately certified copies of assignment documents.

ROBERT J. RISH,
Acting Assistant Commissioner for Administration.

[887 O.G. 1042 (6-22-71)]

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(28) ASSIGNEE NAMES

Effective April 1, 1976, only the first appearing name of an assignee will be printed on the patent where multiple names for the *same* party are identified on the Base Issue Fee Transmittal form, POL–85b. Such multiple names may occur when both a legal name and an "also known as" or "doing business as" name is also included. This printing practice will not, however, affect the existing practice of recording assignments with the Office in the Assignment Division. The assignee entry on form POL–85b should still be completed to indicate the assignment data as recorded in the Office. For example, the assignment filed in the Office and therefore the POL-85b assignee entry might read "Smith Company doing business as (d.b.a.) Jones Company." The assignee entry on the printed patent will read "Smith Company."

For purposes of compiling and publishing the 1976 Annual Index of Patentees, this change will be retroactive to patents issuing on January 6, 1976.

Dec. 17, 1975. RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

[942 O.G. 186]

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(29) TITLE OF INVENTION CARRIED ON OFFICE RECORDS

The Patent and Trademark Office is experiencing an increased incidence in the number of newly filed applications in which the title of the invention is inconsistent within the papers. This has resulted in applicants requesting correction of the official filing receipt in many instances to indicate the title preferred by applicants.

Hereafter, whenever the title of the invention appears inconsistent within the papers of a newly filed application for patent, the records of the Office will carry the title as indicated on the first page of the specification and no corrected filing receipt will be issued to indicate another title. Note that 37 CFR 1.72(a) indicates that the title of the invention should appear as a heading on the first page of the specification.

It should also be noted that applicant may amend the title under 37 CFR 1.115 if any changes are subsequently desired before issuance of a patent.

BRADFORD R. HUTHER,
Acting Assistant Commissioner for Administration.

Aug. 31, 1977.

[962 O.G. 23]

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(30) MANUAL SUBSCRIPTIONS AND RULE AND STATUTE BOOKLETS

All subscriptions to various manuals and rules and the sale of various individual booklets which emanate from the Patent and Trademark Office, are handled by the Government Printing Office. Orders for new subscriptions or for the purchase of individual booklets should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Inquiries concerning subscriptions previously placed or concerning revision material issued under a subscription should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Customer Service Section SSOS, Washington, D.C. 20402.

However, as a service to patent and trademark practitioners and other interested parties, the following information is being published regarding revision schedules and rates for manual subscriptions, and rule and statute booklets. This information should be helpful in determining the currency of manuals and rules.

The Manual of Patent Examining Procedure (M.P.E.P.) is revised quarterly, the revisions being numbered consecutively and dated January, April, July and October of each year. The current subscription price for the M.P.E.P. is $19.65 (plus $4.95 for foreign mailing).

Revisions of the Manual of Classification for patents are presently published irregularly. However, beginning in 1978 it will be revised on a regular basis. These revisions will be published quarterly, dated January, April, July and October. The current subscription price for this manual is $44.00 (plus $11.00 for foreign mailing).

The Trademark Manual of Examining Procedure is normally revised annually, the revisions being numbered consecutively and dated January of each year. The current subscription price for the T.M.E.P. is $8.10 (plus $2.05 for foreign mailing).

The Trademark Rules of Practice (including the trademark statute) is revised from time to time whenever changes are made in the rules or the statute. The current Trademark Rules of Practice is the Ninth Edition, dated December 1976, and the current subscription price is $5.00 (plus $1.25 for foreign mailing).

The foregoing publications are available only by subscription. When revisions are issued, they are a part of the subscription and are mailed to subscribers automatically by the Superintendent of Documents of the Government Printing Office without additional charge. The original subscription price covers revisions until the Government Printing Office mails a notice of expiration of the subscription with a statement of the renewal fee necessary for continuing the subscription to the subscriber.

Both the patent rules and trademark rules are contained in an annual publication entitled 37 Code of Federal Regulations which is revised July 1 of each year. The price for the 1977 edition is $3.00 per copy.

The Patent Laws booklet is revised on an as-needed basis. The current edition is dated August 1976 and the current price is $2.10.

Due to the requirements of the printing process, these publications and revisions are generally not available until several months after the date which is printed on the revision or the booklet.

Date Oct. 12, 1977. LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

FEES AND PAYMENT OF MONEY

(31) FEES IN CONNECTION WITH AMENDMENTS TO PATENT APPLICATIONS

This notice supplements the Notice of September 10, 1965, 818 O.G. 1207, September 28, 1965, relating to the administration of the act of July 24, 1965, Public Law 89–83, increasing certain fees payable to the United States Patent Office.

That act provides for the payment of additional fees on presentation of certain claims during the prosecution of applications. This provision applies in the case of applications filed on or after October 25, 1965, the effective date of the act. In such cases, when any amendment is filed which presents additional claims over the total number covered by fees previously paid, it should be accompanied by any additional fees due.

As in the case of claims presented after an application is filed and before first action, described in the Notice of September 10, 1965, when independent claims are subsequently presented so that the number of uncanceled independent claims in the application as amended exceeds the number of such claims paid for, an additional fee of $10 is due for each such additional claim. Similarly, an additional fee of $2 is due for each claim added in excess of the number of uncanceled claims, independent or dependent, already paid for.

Treatment of Amendments Unaccompanied by Fees Due

Amendments filed during and after the prosecution of an application and not accompanied by the entire fee due upon such filing will be treated as follows:

If such an amendment is filed in reply to an Office action it will be regarded as not being fully responsive thereto and the practice set forth in section 714.03 of the Manual of Patent Examining Procedure will be followed, care being taken to avoid any abuse of this practice by attorneys as, for example, by habitual submission of such amendments without fees or with insufficient fees.

If an amendment which is not filed in response to an Office action is of such a nature as to require a fee and is not accompanied by the full fee required, it will not be entered and the applicant will be so advised.

Amendment During Interference

An amendment filed in connection with a motion to add counts to an interference (Rule 233) must be accompanied by the claim or claims to be added and with the appropriate fees, if any, which would be due if the amendments were to be entered. It may be that the amendments will never be entered. Only upon the granting of the motion is it necessary for the other party or parties to present the claims, but the fees must be paid whenever presented.

Claims which have been submitted in response to a suggestion by the Office for inclusion in an application must be accompanied by the fee due, if any.

Amendment After Requirement for Restriction

After a requirement for restriction or election of species, nonelected claims will be included in determining the fees due in connection with a subsequent amendment unless such claims are canceled.

Refunds

Money paid in excess or by mistake in connection with an amendment will be refunded in the usual manner.

Amendments affecting the claims cannot serve as the basis for granting any refund.

Money paid in connection with the filing of a proposed amendment will not be refunded by reason of the nonentry of the amendment.

EDWARD J. BRENNER,
Jan. 13, 1966. *Commissioner of Patents.*

[823 O.G. 814]

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(32) DEPOSIT ACCOUNTS—STATUTORY FEE CHARGES

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

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(33) PRACTICE IN THE USE OF ACCOUNTS FOR PAYMENT OF STATUTORY FEES

In the OFFICIAL GAZETTES of March 15, 22, and 29, there appeared copies of an announcement by the Commissioner providing for a trial use of accounts established under Rule 25 for the payment of statutory fees. A number of questions have come up in connection with the use of accounts in the payment of these fees prescribed by Public Law 89–83 and, in the interest of uniform practice, publication of a statement is warranted.

A general direction by an applicant or attorney to charge to an account these fees as they arise in any application prosecuted by the applicant, the attorney, or the firm will not be effective for such a purpose. Authority to make charges will be limited to a particular application.

A separate direction to charge shall be filed for each fee. Each such direction to charge a fee shall be transmitted on a separate sheet of paper and, in the case of fees based on modification of claims shall include the best estimate of the fee due. Failure to include such an estimate provides the basis for a refusal to enter any amendment transmitted therewith, as an incomplete response. Where variable fees are involved inclusion of a direction to charge or credit a deficiency or overpayment would appear appropriate.

An issue fee will not be charged to an account until a notice of allowance has been forwarded and a reply to that notice received.

For the purposes of determining the fee due the Patent Office, a claim will be treated as dependent if it contains reference to one other claim in the application. A claim determined to be dependent by this test will be entered if the fee paid reflects this determination. This does not, however, prevent the rejection of such a claim as improper, if, in fact, it is not a dependent claim.

EDWARD J. BRENNER,
Apr. 12, 1966. *Commissioner of Patents.*

[825 O.G. 1183]

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(34) DEPENDENT CLAIMS

Although the notice published on October 5, 1965, in 819 O.G. 3, explained that for the purposes of the present fee bill, Public Law 89–83, approved July 24, 1965, the Patent Office will consider a proper dependent claim as being one which incorporates by reference a single preceding claim, whether independent or dependent, and includes all the limitations of the claim so incorporated, there appears to be still some uncertainty on this matter and it is therefore thought to be desirable to elaborate it.

Since the initial determination, for fee purposes, as to whether a claim is dependent must be made by persons other than examiners, it is necessary, at that time, to accept as dependent virtually every claim which refers to another claim, without determining whether there is actually a true dependent relationship. Such acceptance does not, however, preclude a subsequent holding by the examiner that a claim is not a proper dependent claim.

An essential characteristic of a proper dependent claim is that it shall include every limitation of the claim from which it depends (35 U.S.C. 112) or in other words that it shall not conceivably be infringed by anything which would not also infringe the basic claim. Thus, for example, if claim 1 recites the combination of elements *a*, *b*, *c* and *d*, a claim reciting the structure of claim 1 in which *d* was omitted or replaced by *e* would not be a proper dependent claim, even though it placed further limitations on the remaining elements or added still other elements.

The fact that a dependent claim which is otherwise proper might require a separate search or be separately classified from the claim on which it depends would not render it an improper dependent claim, although it might result in a requirement for restriction.

The fact that the independent and dependent claims are in different statutory classes does not, in itself, render the latter improper. Thus, if claim 1 recites a specific product a claim for the method of making the product of claim 1 in a particular manner would be a proper dependent claim since it could not be infringed without infringing claim 1. Similarly, if claim 1 recites a method of making a product, a claim for a product made by the method of claim 1 could be a proper dependent claim. On the other hand, if claim 1 recites a method of making a specified product, a claim to the product set forth in claim 1 would not be a proper dependent claim if the product might be made in other ways.

Any claim which is in dependent form but which is so worded that it does not, in fact, include every limitation of the claim on which it depends, will be required to be cancelled as not being a proper dependent claim; and cancellation of any further claim depending on such a dependent claim will be similarly required. The applicant may thereupon amend the claims to place them in proper dependent form, or may redraft them as independent claims upon payment of any necessary additional fee.

The basis for the difference in fees between independent and dependent claims is the fact that the examination of a dependent claim is normally a comparatively simple matter after the claim on which it depends has been examined. This relationship, however, obtains only when the independent claim represents a bona fide attempt to define the invention and to distinguish it from the known prior art. Accordingly, the presentation of a claim which on its face is obviously unpatentable or indefinite, as basis on which other claims are dependent, is not considered to be proper practice. One example of such a practice involves the use of a claim drawn to "all the features of novelty herein disclosed," with other claims, which actually recite the features thought to be novel, being dependent on the first. A similarly objectionable arrangement would involve the use, as a basic independent claim, of a claim merely reciting "a wheeled vehicle," "an amino acid" or "an internal combustion engine."

Such a practice as that just described involves not only an attempt to evade the fee provisions of Public Law 89–83, but also the presentation of a claim known by the attorney or agent presenting it to be unpatentable. Any registered patent attorney or agent who makes a practice of presenting claims of this character may be called on to explain his actions.

(signed) EDWARD J. BRENNER,
June 8, 1966. *Commissioner.*

[828 O.G. 1]

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(35) DEPOSIT ACCOUNTS

The practice instituted on May 1, 1966, pursuant to the notice of February 23, 1966 (824 O.G. 1200), whereby statutory fees may be charged against deposit accounts, and such accounts are closed if overdrawn, has resulted in certain difficulties for the Patent Office and deposit account holders. It has been decided therefore to modify that practice as indicated below.

As was pointed out in that notice, the charging of a fee against an overdrawn account cannot be considered as payment of the fee until a proper balance is restored or payment is made in some other way. Accordingly, deposit account holders who charge such fees must assume the risk of losing vital dates if they do not maintain a proper balance in their accounts at all times.

Apart from this, however, the overdrawing of an account places a burden on the Patent Office, particularly where a number of items are charged after the overdraft occurs, and it is appropriate that those who are responsible for causing such a condition should bear the cost of correcting it. In view of this fact, and of the hardship frequently caused if an account is permanently closed, the practice of closing deposit accounts merely because they are overdrawn will be discontinued, effective August 1, 1966. In lieu thereof an overdrawn account will be immediately suspended and no charges will be accepted against it until a proper balance is restored, together with a payment of ten dollars to cover the work done by the Patent Office incident to suspending and reinstating the account and dealing with charges which may have been made in the meantime. It is expected, however, that reasonable precautions will be taken in all cases to avoid overdrafts, and if an account is suspended repeatedly it will be necessary to close it.

Similarly, because of the burden placed on the Patent Office incident to the operation of deposit accounts, a charge of ten dollars will be made for opening each new account.

EDWARD J. BRENNER,
June 23, 1966. *Commissioner.*

[828 O.G. 377]

APPLICATION CONTENT

(36) GUIDELINES FOR DRAFTING A MODEL PATENT APPLICATION UNDER THE REVISED RULES

The following guidelines illustrate the preferred layout and content for patent applications. They have been prepared to supplement the amendments to the rules which are effective January 1, 1967. These guidelines are suggested for the applicant's use.

Arrangement and Contents of the Specification

The following order of arrangement is preferable in framing the specification and, except for the title of the invention, each of the lettered items should be preceded by the headings indicated.

(a) Title of the Invention.
(b) Abstract of the Disclosure.
(c) Cross-References to Related Applications (if any).
(d) Background of the Invention.
  1. Field of the Invention.
  2. Description of the Prior Art.
(e) Summary of the Invention.
(f) Brief Description of the Drawing.
(g) Description of the Preferred Embodiment(s).
(h) Claim(s).

(a) *Title of the Invention:* (See Rule 72(a).) The title of the invention should be placed at the top of the first page of the specification. It should be brief but technically accurate and descriptive.

(b) *Abstract of the Disclosure:* (See Rule 72(b), MPEP 608.01(a), and 831 O.G. 1328, October 25, 1966.)

(c) *Cross-References to Related Applications:* (See Rule 78 and MPEP 201.11.)

(d) *Background of the Invention:* The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions. The statement should be directed to the subject matter of the claimed invention.
(2) Description of the Prior Art: A paragraph(s) describing to the extent practical the state of the prior art known to the applicant, including references to specific prior art where appropriate. Where applicable, the problems involved in the prior art, which are solved by the applicant's invention, should be indicated.

(e) *Summary:* A brief summary or general statement of the invention as set forth in Rule 73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(f) *Brief Description of the Drawing:* A reference to and brief description of the drawing(s) as set forth in Rule 74.

(g) *Description of the Preferred Embodiment(s):* A description of the preferred embodiment(s) of the invention as required in Rule 71. The description should be as short and specific as is necessary to adequately and accurately describe the invention.

Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field to which the invention pertains, form a part of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(h) *Claim(s):* (See Rule 75.) A claim may be typed with the various elements subdivided in paragraph form. There may be plural indentations to further segregate subcombinations or related steps.

Reference characters corresponding to elements recited in the detailed description and the drawings may be used in conjunction with the recitation of the same element or group of elements in the claims. The reference characters, however, should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. The use of reference characters is to be considered as having no effect on the scope of the claims.

Claims should preferably be arranged in order of scope so that the first claim presented is the broadest. Where separate species are claimed, the claims of like species should be grouped together where possible and physically separated by drawing a line between claims or groups of claims. (Both of these provisions may not be practical or possible where several species claims depend from the same generic claim.) Similarly, product and process claims should be separately grouped. Such arrangements are for the purpose of facilitating classification and examination.

The form of claim required in Rule 75(e) is particularly adapted for the description of improvement type inventions. It is to be considered a combination claim and should be drafted with this thought in mind.

In drafting claims in accordance with Rule 75(e), the preamble is to be considered to positively and clearly include all the elements or steps recited therein as a part of the claimed combination.

Oath

(See Rule 65.) Where one or more previously filed foreign applications are cited or mentioned in the oath, complete identifying data, including the application or serial number as well as the country and date of filing, should be provided.

EDWARD J. BRENNER,
Date: Oct. 12, 1966. *Commissioner of Patents.*

[832 O.G. 5]

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(37) USE OF METRIC SYSTEM OF MEASUREMENTS IN PATENT APPLICATIONS

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

[924 O.G. 1104]

(38) FILING OF NON-ENGLISH LANGUAGE APPLICATIONS

This notice is in response to inquiries regarding the filing of applications in a language other than English. The Office has received a few such applications in the past in emergency situations where the filing of a non-English language specification was the only possibility of saving a foreign priority date or preventing the running of a statutory bar. In such situations the Office practice has been to accord the application a filing date if it includes all of the component parts required by 35 U.S.C. 111, and to require applicant to submit a verified translation of the previously filed application within two months.

In view of the inquiries received, it is considered appropriate that the Office clarify and publicize its practice in this area to avoid misunderstandings.

Accordingly, beginning February 1, 1976, the Office will accord a filing date to an application meeting the requirements of 35 U.S.C. 111 even though some or all of the application papers, including the written description and the claims, is in a language other than English and hence does not comply with 37 CFR 1.52, *provided:*

(1) the oath or declaration is signed and physically attached to the specification and claims to which it refers; and

(2) the application papers are accompanied by a statement, in English, from the applicant, his attorney or agent, certifying that is has been considered necessary to file the non-English language application in order to save a foreign priority date or prevent the running of a statutory bar.

A verified English translation of the non-English language papers should either accompany the application papers or be filed in the Office no later than two months after a notice requesting the translation has been mailed by the Office.

A subsequently filed verified English translation must contain the complete identifying data for the application in order to permit prompt association with the papers initially filed. Accordingly, it is strongly recommended that the original application papers be accompanied by a cover letter and a self-addressed return post card, each containing the following identifying data in English: (*a*) applicant's name(s); (*b*) title of invention; (*c*) number of pages of specifications, claims, and sheets of drawings; (*d*) whether oath or declaration was filed and (*e*) amount and manner of paying the filing fee.

The translation must be a literal translation verified as such by the translator, and must be accompanied by a signed request from the applicant, his attorney or agent, asking that the verified English translation be used as the copy for examination purposes in the Office. If the verified English translation does not conform to idiomatic English and United States practice it should be accompanied by a preliminary amendment making the necessary changes without the introduction of new matter prohibited by 35 U.S.C. 132. In the event the verified literal translation is not timely filed in the Office the application will be regarded as abandoned.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be routinely used for filing applications. There are at least two reasons why this should not be used on a routine basis. First, there are obvious dangers to applicant and the public if he fails to obtain a correct literal translation. Second, the filing of a large number of applications under the procedure will create significant administrative burdens on the Office.

The practice will be closely monitored to determine whether or not it should be continued.

C. MARSHALL DANN,
Dec. 31, 1975. *Commissioner of Patents and Trademarks.*

[942 O.G. 1552]

EXAMINATION OF APPLICATIONS

(39) INFORMAL APPLICATIONS OF FOREIGN APPLICANTS

This Notice is of special interest to attorneys and agents prosecuting applications on inventions originating abroad.

Many applications filed in this Office correspond in form and substance to the requirements (regulations) of countries foreign to the United States. Since they were not originally drafted to comply with our Rules of Practice, especially those based on 35 U.S.C. 112, the first examination cannot be the full and complete one contemplated under current examining procedures. This first examination is necessarily limited, under MPEP 702.01, to pointing out the informalities and citing the results of a search, the search being based upon the invention so far as it can be understood from the foreign type of claims, often coupled with a somewhat generalized disclosure. Since U.S. Patent Office policy is to accord equal treatment to *all* cases regardless of origin, current examining procedures as explained in the address reprinted in 803 O.G. 893, subject these applications to final determination on the second action. It is obviously to applicant's advantage to *file* the application with an adequate disclosure and with claims which conform to the U.S. Patent Office usages and requirements. This should be done whenever possible. If, however, due to the pressure of a Convention deadline or other reasons, this is not possible, applicants are urged to submit *promptly, preferably within three months after filing,* a preliminary amendment which corrects the obvious informalities. The informalities should be corrected to the extent that the disclosure is readily understood and the claims to be initially examined are in proper form, particularly as to dependency, and otherwise clearly define the invention. "New matter" must be excluded from these amendments since preliminary amendments do not enjoy original disclosure status, section 608.04(b), MPEP.

EDWARD J. BRENNER,
Mar. 4, 1965. *Commissioner of Patents.*

[812 O.G. 1295]

(40) EXAMINATION OF CLAIMS FOR PATENTABILITY UNDER 35 U.S.C. 103

The purpose of this notice is to inform the public of the current Patent and Trademark Office policy concerning determinations of obviousness under 35 U.S.C. 103 in view of the recent Supreme Court decision in *Sakraida* v. *Ag Pro,* 189 USPQ 449 (1976).

The following text is a copy of a memorandum issued to all patent examining personnel relative to this topic.

"A clarification of the policy of the Patent and Trademark Office in the examination of claims for patentability under 35 U.S.C. 103 seems in order at this time in view of the Supreme Court's decision in *Sakraida* v. *Ag Pro,* 189 USPQ 449 (decided April 20, 1976) which is similar to the Court's earlier decision in *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co.,* 163 USPQ 673 (decided December 8, 1969).

"Office policy has consistently been to follow *Graham* v. *John Deere Co.,* 148 USPQ 459 (decided February 21, 1966) in the consideration and determination of obviousness under 35 U.S.C. 103. The three factual inquiries enunciated therein as a background for determining obviousness are as follows:

1. Determination of the scope and content of the prior art;
2. Ascertaining the differences between the prior art and the claims in issue; and
3. Resolving the level of ordinary skill in the pertinent art.

"Attention is directed to MPEP Section 706 for a more complete discussion of the application of the Graham test.

"The Supreme Court reaffirmed and relied upon the Graham three-pronged test in its consideration and determination of obviousness in the fact situations presented in both the Ag Pro and Black Rock decisions. In each case, the Court went on to discuss whether the claimed combinations produced a 'new or different function' and a 'synergistic result,' but clearly decided whether the claimed inventions were unobvious on the basis of the three-way test in Graham. Nowhere in its decisions in those cases does the Court state that the 'new or different function' and 'synergistic result' tests supersede a finding of unobviousness or obviousness under the Graham test.

"Accordingly, examiners should continue to apply the test for patentability under 35 U.S.C. 103 set forth in Graham. It should be noted that the Supreme Court's application of the Graham test to the fact circumstances in Ag Pro is somewhat stringent, as it was in Black Rock."

July 8, 1976.

C. MARSHALL DANN,
Commissioner of Patents & Trademarks.

[949 O.G. 3]

(41) CLAIMS COPIED FROM PATENTS

Applicants and their attorneys or agents are reminded of the requirement of Rule 205(b) (37 CFR 1.205(b)) of the Rules of Practice that "Where an applicant presents a claim copied or substantially copied from a patent, he must, at the time he presents the claim, identify the patent, give the number of the patented claim, and specifically apply the terms of the copied claim to his own disclosure, unless the claim is copied in response to a suggestion by the Office."

The requirement of Rule 205(b) (37 CFR 1.205(b)) applies to claims copied in an application at the time of filing as well as to claims copied in an amendment to a pending application. If an applicant, attorney, or agent presents a claim copied or substantially copied from a patent without complying with Rule 205(b) (37 CFR 1.205(b)) the examiner may be led into making an action different from what he would have made had he been in possession of all the facts. Therefore, failure to comply with Rule 205(b) (37 CFR 1.205(b)), when submitting a claim copied from a patent, may result in the issuance of an Order To Show Cause why the application should not be stricken from the files of the Patent Office. If a satisfactory answer is not filed within the period set in the Order it may be necessary to strike the application under Rule 56 (37 CFR 1.56).

This reminder is being published to emphasize to applicants and their attorneys or agents the importance of complying with the requirement of Rule 205(b) (37 CFR 1.205(b)) at the time the claim is copied.

WILLIAM FELDMAN,
Apr. 10, 1974. *Acting Assistant Commissioner for Patents.*

[922 O.G. 442]

(42) EXAMINATION OF PATENT APPLICATIONS HAVING AN ISSUE OF FRAUD

This notice deals with the general procedures established within the Patent Office for the handling, during ex parte examination, of applications in which, or in relation to which, some facts appear or representations are made raising an issue of fraud.

Such applications should be forwarded by the examiner to the Office of the Assistant Commissioner for Patents as soon as the facts or representations are discovered. The application will then be reviewed and a determination made as to whether immediate action on the issue of fraud is necessary or whether the consideration of such an issue should be delayed until after the normal ex parte examination by the examiner (if such examination has not previously taken place).

Where compelling reasons dictate immediate action, the application will not be returned to the examining group for normal ex parte examination until such action is complete. Otherwise, the application will be returned to the examining group. The examiner will complete the examination as to all matters except that any issues relating to possible fraud will not be considered or commented upon. When this examination is completed the application will be returned to the Office of the Assistant Commissioner for Patents. An investigation will then be undertaken to resolve the issues relating to the possible fraud. Such an investigation may include a requirement for additional information from applicant, or from the examiner, should it be necessary for the proper conduct of the investigation.

If the investigation reveals a prima facie case of fraud an Order to Show Cause why the application should not be stricken under Rule 56 of the Rules of Practice [37 CFR 1.56] will be issued.

If a prima facie case of fraud does not exist, or is adequately rebutted, a decision will be entered in the application file stating that the Patent Office has found no evidence necessitating striking the application. The application will then be returned to the examining group or other appropriate Patent Office section for further action.

WILLIAM FELDMAN,
Jan. 2, 1975. *Acting Assistant Commissioner for Patents.*

[930 O.G. 1455]

(43) PRACTICE RE MARKUSH-TYPE CLAIMS

This notice deals with Markush-type claims which include a plurality of alternatively usable substances or members. In most cases this recitation by enumeration is used because there is no appropriate or true generic language.

Where an application claims two or more independent and distinct inventions, the Commissioner, under the provisions of 35 U.S.C. 121, may require the application to be restricted to one of the inventions.

A Markush-type claim is directed to "independent and distinct inventions," if two or more of its members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

If the claim is of that nature, the examiner is authorized to reject it as an improper Markush claim and for misjoinder under 35 U.S.C. 121 and to require the applicant to restrict the application to a single invention. In making such a requirement, the examiner will (1) clearly delineate the members or groups of members believed to constitute improperly joined inventions, and (2) state reasons fully explaining why they are independent and distinct. Applicant's response to such a requirement should be an election of a single adequately disclosed and supported invention, with or without restriction of the claim(s) to that invention. Of course, the response must not introduce new matter into the application. See 35 U.S.C. 132 and *In re Weisstead,* 59 CCPA 1105, 463 F. 2d 1110, 174 USPQ 449 (1972). A refusal to elect a single invention will be treated as a non-responsive reply.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it is directed to independent and distinct inventions. In such a case, the examiner will not follow the procedure outlined in the preceding paragraph and will not require restriction.

Where the examiner has rejected the claim and required restriction and the applicant has responded without restricting the claim(s) to a single invention, the examiner shall, if the position is adhered to, again reject the claim and any other Markush claims not restricted to the elected invention. No further examination of these claims is required unless and until such rejection has been overcome. However, if the search of the single elected invention develops prior art which would render both the elected invention and the improper Markush claim(s) unpatentable, such prior art may be applied in rejections of both without a complete search of the subject matter of the improper Markush claim(s). Otherwise, only true generic claims and those restricted to the elected invention will be examined in the usual manner.

Review of the rejection will be by appeal to the Board of Appeals under 35 U.S.C. 134.

C. MARSHALL DANN,
May 1, 1974. *Commissioner of Patents.*

[922 O.G. 1016]

(44) RESTRICTION BETWEEN INVENTIONS

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed re-

lationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions *as claimed* are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

WILLIAM FELDMAN,
Apr. 9, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 450]

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(45) CITATION OF PRIOR ART BY APPLICANTS

The purpose of this notice is to set forth positive guidelines for applicants, their attorneys and agents who desire to submit prior art for consideration by the Patent Office. Such citations of relevant art are welcomed and are encouraged. In order that they may be most effectively considered by the examiner, however, with as little disruption of the regular examination process as possible, it is requested that they be submitted in accordance with the following guidelines.

(1) Citations should be submitted within three months after the application filing date if possible. Any citation made after the first action on the merits (if this occurs more than three months after filing) should be accompanied by an explanation of why it was not earlier presented. This may take the form of a statement that it was made as soon as the art or other material was discovered, or as soon as its pertinency was appreciated, indicating the date of discovery of the cited material or its pertinency.

(2) Full text copies of the pertinent portions of all such prior art citations or other material relevant to patentability of the claimed invention should be supplied, whether the citation is made in a separate paper or in the specification of the application. This will be unnecessary in the case of pending or abandoned United States applications (e.g. Defensive Publications). In the case of publications, a copy of the title page, its copyright notice or other indication of a publication date, and copies of the entire pages which contain the text of the relevant material will be sufficient.

While patent copies are, of course, available in the Patent Office, failure of the applicant to include copies of the cited art means that the examiner must interrupt his examination until copies can be ordered and received. Since the person making the citation will have copies in hand, an overall saving in time and more expeditious examination will result if copies are supplied with the citation.

(3) If the reference is not in English, a translation of its pertinent portions should be included.

(4) Accompanying each citation should be an indication of its pertinency to the claimed subject matter, together with any reasons applicant may wish to point out why the claims are considered to be patentable over the cited material.

All citations of prior art or other material submitted in accordance with the above guidelines and submitted before all claims have been indicated as allowable will be fully considered by the examiner.

While the Patent Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other material not submitted in accordance with these guidelines will be considered by the examiner. Consequently, any patent issuing on the application in question would not be expected to be accorded the usual presumption of validity with respect to such cited art or material.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an *Ex parte* Quayle action, a notice of allowability (POL–327), an examiner's amendment (POL–37), or a Notice of Allowance, any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;

(*b*) A timely affidavit under Rule 131 with respect to the material cited; or

(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other material cited raises a serious question as to the patentability of the claimed subject matter.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under Rule 183 (37 CFR 1.183) requesting a waiver of Rule 312 (37 CFR 1.312). Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

Submitted citations will not in any way diminish the obligation of examiners to conduct independent prior art searches, or relieve examiners of citing pertinent prior art of which they may be aware, whether or not such art is cited by the applicant. Nothing in this notice is intended to relieve applicants of any responsibility they may have to cite known prior art to the Patent Office.

If the specification or a separate paper filed in the application contains citations relating to background material, applicant has the responsibility of determining whether or not such material is sufficiently relevant to the claimed invention that full compliance with these guidelines is necessary.

Prior art submitted by applicant in the manner provided herein will not be supplied with an Office action, but will be listed on the Form PO–892, "Notice of References Cited," along with other prior art relied upon by the examiner during the examination. Only that prior art listed by the examiner on Form PO–892, will be printed on the patent. However, the complete listing of applicant's citations will be in the application file and will be available for inspection by the public after issuance of the patent.

Citations of prior art may be placed of record in the patented file after the grant of the patent at the request of the patentee (see Section 100(d) of Title 35, United States Code, for definition of patentee). Any such submissions by the patentee will be placed in the patented file without comment by the Patent Office. Citations submitted to the Patent Office by third parties will not be placed in the record of a patented file unless the party submitting the art certifies that he has sent the owner of record copies of the cited art and of his letter transmitting it to the Patent Office.

Prior Notices

This notice supersedes the notices of:
December 10, 1963 (797 O.G. 733)
April 24, 1964 (802 O.G. 601)
June 22, 1964 (804 O.G. 1)
July 24, 1964 (805 O.G. 294)
April 13, 1967 (837 O.G. 1032)

WILLIAM FELDMAN,
Aug. 12, 1974. *Deputy Assistant Commissioner for Patents.*

[926 O.G. 2]

(46) CITATION OF PRIOR ART BY APPLICANTS

This notice supplements the notice of August 12, 1974, published in the OFFICIAL GAZETTE of September 3, 1974 (926 O.G. 1), and is in response to some of the concerns expressed by members of the patent bar. That notice set forth guidelines the following of which would result in assurance by the Office that the examiner will fully consider the prior art or other material submitted by applicants, their attorneys and agents.

One of the guidelines stated, "If the reference is not in English, a translation of its pertinent portions should be included." In recognition of the high costs of translations, that guideline is hereby modified to accept an alternative to a translation. Accordingly, in lieu of a translation, it shall be sufficient, for purposes of the notice of August 12, 1974, if an equivalent English language patent or publication is provided and identified as an equivalent.

Also, where the applicant has submitted prior art in accordance with the guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application. Of course, any change in applicant's position regarding the cited art and its relevancy to the claimed subject matter should be indicated.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

May 19, 1975.

[935 O.G. 902]

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(47) REVISED PROCEDURES FOR RECORDING SEARCHES AND CONSIDERATIONS OF CERTAIN PRIOR ART

In order to provide a more complete, accurate and uniform record of what has been searched and considered by the examiner for each application the Patent and Trademark Office has established revised procedures for recording search data in the application file. Such a record is of importance to anyone evaluating the strength and validity of a patent, particularly if the patent is involved in litigation. These new procedures will also facilitate the printing of certain search data on patents.

Under the revised procedures, searches are separated into two categories and listed, as appropriate, in either the "SEARCHED" box or a newly added "SEARCH NOTES" box on the file jacket.

Until file jackets can be reprinted to include a second search data box, all file jackets for new applications will have the "SEARCH NOTES" box stamped therein by the Mail Room. If additional space is required, entries will be continued on the outside right flap of the file jacket.

The revised procedures will apply to all new applications in which the first search is made after April 1, 1977 and do not affect the manner in which references are listed on the form PTO–892, "Notice of References Cited." Appropriate changes in the Manual of Patent Examining Procedure will be made.

A. "SEARCHED" Box Entries

Search entries made here, except those for search updates (see item A. 3 below), will be printed under "Field of Search" on the patent front page. Therefore, the following searches will be recorded in the "SEARCHED" box by the examiner along with the date and the examiner's initials, according to the following guidelines:

1. *A complete search of a subclass*, including all United States and foreign patent documents and other publications placed therein.
   The complete classification (class and subclass) will be recorded.
2. *A limited search of a subclass*, for example, a search that is restricted to an identifiable portion of the patent documents placed therein. If, however, only the publications in a subclass are searched, such an entry is to be made under "SEARCH NOTES" rather than under "SEARCHED." (See item B. 4 below.)
   The class and subclass, followed by the information defining the portion of the subclass searched in parenthesis, will be recorded.
3. *An update of a search previously made.*
   This search entry will be recorded in a manner to indicate clearly which of the previously recorded searches have been updated, followed by the expression "(updated)." Search update, entries, although recorded in the "SEARCHED" box, will not be printed.
   When a search made in a parent application is updated during the examination of a continuing application, those searches updated, followed by "(updated from parent S.N. ————————)" will be recorded. If the parent has been patented, the patent number "Pat. N. ————————" instead of serial number in the above phrase will be recorded.
4. *A mechanized search* of a file of documents in a specific art, conducted by using key terms to retrieve documents. The name of the mechanized search system as it appears in the following list will be recorded along with the expression "MS File" to indicate mechanized search file.

Mechanized Search Systems

Termatrex Systems:

Automatic Fuel Controls
Boots & Shoes
Chemical Testing
Combined Fasteners
Electrical Contact Materials
Surface Bonding Using Critical Metal

Edge-Notched Card System:

Fluid Devices

Punch Card Systems:

Electrolysis
Organometallics
Steriods

Computer Controlled Microfiche Search Systems (CCMSS):

A-D Convertors
Digital Data Processing Systems
Special Purpose Digital Processing Systems

When a search with a Termatrex or Edge-Notched card system is conducted, the examiner will complete form PTO–1041 in two copies, recording all queries searched, even those which yield only non-relevant documents. All documents returned by the system in response to a query which are not actually reviewed will have an "X" drawn through their associated access and patent numbers. The examiner will place one copy of the form PTO–1041 in the application file on the right flap of the file jacket, the other copy of the form PTO–1041 will be forwarded to the Office of Search Systems.

When conducting a search with a Punched Card system, the examiner will place in the application file the Code Sheet on which the terms searched have been marked along with the machine tape listing the documents retrieved. Any document not actually reviewed will have an "X" drawn through that document's number on the listing.

When conducting a search with the CCMSS search systems, the machine-produced search report, which lists the terms and tagged documents, will be placed in the application file on the right flap of the file jacket. Any tagged document not actually reviewed will have an "X" drawn through that document number on the search report.

B. "SEARCH NOTES" Box Entries

Entries made in the "SEARCH NOTES" box are of equal importance to those placed in the "SEARCHED" box; however, these entries will not be printed on any resulting patent. They are intended to complete the application file record of areas and/or documents considered by the examiner in the search. The examiner will record the following searches in the "SEARCH NOTES" box and in the manner indicated, with each search dated and initialled:

1. *A cursory search*, or scanning, of a subclass, i.e., a search usually made to determine if the documents classified there are relevant.
   The classification will be recorded, followed by "(Cursory)."

2. *A consultation* with other examiners to determine if relevant search fields exist in their areas of expertise. The class and subclass discussed, if not actually searched, will be recorded, followed by "(consulted)." This entry may also include the name of the examiner consulted and the art unit.

3. *A search of a publication* not located within the classified patent file, e.g., a library search, a text book search, a Chemical Abstracts search, etc. The following data will be recorded for each type of literature search:

   a. *Abstracting publications*, such as Chemical Abstracts or the Engineering Index—the name of the publication, the list of terms consulted in the index and the period covered will be recorded.

   b. *Periodicals*—The title and period or volumes covered, as appropriate will be recorded.

   c. *Books*—The title and author, edition or date, as appropriate, will be recorded.

   d. *Other types of literature* not specifically mentioned above (i.e., catalogs, manufacturer's literature, private collections, etc.).

   Unless the search is a cursory or browsing one, data as necessary to provide unique identification of material searched will be recorded. Specific materials cited by the examiner will not be recorded again here.

   e. *Computer search in Scientific Library*—An on-line computerized literature searching service which uses key terms and index terms to locate relevant publications in many large bibliographic data bases is available to examiners in the Scientific Library of the Patent and Trademark Office. A member of the library staff is assigned to assist examiners in selecting key terms and to program the search.

   There are two on-line search systems: The Lockheed Information Systems and the SDC Search Service. These search systems include many data bases.

   A copy of the search printout will be made and placed in the application file, attached to the right flap of the file jacket.

   The examiner will also indicate which publications were reviewed by initialling and dating the copy of the printout in the left margin adjacent to each reviewed publication. If only an abstract of a document was reviewed, the note of "ck'ed abst." will be made next to the initials and date. If the complete document was reviewed, the note "ck'ed doc." will be placed with the initials and date.

4. A search of only the *publications in a subclass*. The class and subclass followed by "(publications only)" will be recorded.

5. *A review of art cited in a parent application* or in an original patent, as required for all continuing and reissue applications, or a review of art cited in related applications or patents mentioned within the specification, such as those included to provide background of the invention.

   The serial number of a parent application that is still pending or abandoned, followed by "refs. checked" or "refs. ck'ed" will be recorded. If for any reason not all of the references are checked because they are not available or clearly not relevant, such exceptions will be noted.

   The patent number of a parent or related application that was patented or of an original patent now being reissued will be recorded along with the expressions "refs. checked" or "refs. ck'ed."

C. *Not Recorded*

The following data will not be recorded in either of the search boxes, but will be noted in the application file as indicated below.

1. *Citations of prior art by applicants conforming to Rule 98 and the practice thereunder.*
   In each instance where all prior art referred to in a paper placed in the application file is considered, the examiner will place the notation "all ck'ed" and his or her initials adjacent to the citation.

2. *Citations of prior art by applicants not conforming to Rule 98 and the practice thereunder.*
   In each instance where an examiner considers, but does not cite on form PTO-892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference. If all the references referred to in such a paper are reviewed, the examiner will place the notation "all ck'ed" and his or her initials adjacent the citation. If included in the specification, the examiner will write his or her initials adjacent to any reference(s) checked and enter "checked" or "ck'ed" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" or "ck'ed" will be entered adjacent to the citation(s) or wherever possible to indicate clearly those checked.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Date: 2-22-77.

[956 O.G. 1546]

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(48) "MERE FUNCTION OF MACHINE"—REJECTION

In view of the decision of the Court of Customs and Patent Appeals in *In re Tarczy-Hornoch* appearing at 158 USPQ 141, process or method claims will no longer be subject to a rejection by Patent Office examiners solely on the ground that they define the inherent function of a disclosed machine or apparatus. Accordingly, the subject matter of MPEP 706.03(r) is inapplicable and hereby cancelled.

RICHARD A. WAHL,
Feb. 10, 1969. *Assistant Commissioner.*

[861 O.G. 343]

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(49) EXPRESS ABANDONMENTS

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138.

Since 1966, when Rule 138 was revised, it is no longer required that the applicant and the assignee of record, if any, sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attorney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date accorded the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP). Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(1) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application. The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Apr. 7, 1975.

[934 O.G. 2]

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(50) NOTICE OF ABANDONMENT FOR FAILURE TO PROSECUTE APPLICATION

Effective immeditely the Patent Examining Corps will mail a communication, concerning all applications becoming abandoned in the Corps for failure to prosecute, to the correspondence address of record.

The communication to be mailed will merely comprise a copy of the first page of the Office action, to which applicant failed to properly respond, the copy including stamped language thereon indicating that the application has become abandoned and the date that the copy was mailed. The language stamped on the copy will be as follows: APPLICATION HAS BECOME ABANDONED. THIS NOTICE MAILED: ————————. In no case will the mere failure to receive a notice of abandonment affect the status of an abandoned application.

This new procedure should enable applicants to take appropriate and diligent action to reinstate an application inadvertently abandoned for failure to timely respond to an official communication. In most cases, a petition to revive under 37 CFR 1.137 will be the appropriate remedy. It may be that a response to the Office action was mailed to the Office with a certificate of mailing declaration as a part thereof (notice of October 26, 1976: 951 O.G. 1342) but was not received in the Office. In this instance, adequate relief may be available by means of a petition to withdraw the holding of abandoned.

In any instance, if action is not taken promptly after receiving the notice of abandonment, appropriate relief may not be granted.

If a lack of diligent action is predicted on the contention that neither the Office action nor the notice of abandonment was received, one may presume that there is a problem with the correspondence address of record. Accordingly, your attention is directed to recent notices of May 28, 1975, and September 9, 1976, dealing with changes of address (935 O.G. 1352 and 951 O.G. 454). In essence, it is imperative that a paper notifying the Office of a change of address be filed promptly in *each* application in which the correspondence address is to be changed.

If an application is abandoned or a patent lapsed for an excessive time a terminal disclaimer may be required. A terminal disclaimer may also be required where the holding of abandonment or lapse is withdrawn but a determination is made that action attempting to correct the problem should have been taken in a more diligent manner.

WILLIAM FELDMAN,
May 9, 1977. *Deputy Assistant Commissioner for Patents.*

[959 O.G. 24]

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(51) ENVIRONMENTAL QUALITY

In signing the National Environmental Policy Act on the first day of this decade, President Nixon declared, "The 1970's absolutely must be the years when America pays its debt to the past by reclaiming the purity of its air, its waters and our living environment." This landmark legislation declares that it is the continuing policy of the Federal Government to use all practicable means and measures to foster and promote the general welfare, create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans. The Act further directs that, to the fullest extent possible, the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act.

In accordance with the desires of the President and this mandate of the Congress, the Patent Office will accord "special" status to all patent applications for inventions which materially enhance the quality of the environment of mankind by contributing to the restoration or maintenance of the basic life-sustaining natural elements—air, water, and soil. In order that the Patent Office may implement this procedure, we request that all applicants desiring to participate in this program request that their applications be accorded "special" status. Such requests should be written, should identify the applications by serial number and filing date, and should be accompanied by affidavits or declarations under Rule 102 explaining how their inventions contribute to the restoration or maintenance of one of these life-sustaining elements.

WILLIAM E. SCHUYLER, JR.,
Jan. 29, 1970. *Commissioner of Patents.*

[871 O.G. 673]

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(52) APPLICATIONS RELATED TO ENERGY

In his Message of April 18, 1973, to The Congress "Concerning Energy Resources," the President stated that "with 6 percent of the world's population, we consume almost a third of all the energy used in the world." The President noted that our energy demands "now outstrip our available supplies, and at our present rate of growth, our energy needs a dozen years from now will be nearly double what they were in 1970." The President's Message of April 18 called for the development of a more comprehensive, integrated national energy policy and announced specific steps to carry out the policy. On June 29, 1973, the President announced a series of additional actions to deal with the Nation's energy problem. Among those actions were major efforts in energy research and development and in energy conservation.

In order to enhance and further the goals and actions announced by the President, the Patent Office will, on request, accord "special" status to all patent applications for inventions which materially contribute to (1) the discovery or development of energy resources, and (2) the more efficient utilization and conservation of energy resources. Examples of inventions in category (1) would be those relating to further developments in fossil fuels (natural gas, coal, and petroleum), nuclear energy, solar energy, etc. Category (2) would include inventions relating to the reduction of energy consumption in combustion systems, industrial equipment, household appliances, etc. In order that the Patent Office may implement this procedure, we request that all applicants desiring to participate in this program request that their applications be accorded "special" status. Such requests should be written, should identify the application by serial number and filing date, and should be accompanied by affidavits or declarations under rule 102 by the applicant or his attorney or agent explaining how the invention materially contributes to category (1) or (2) set forth above.

Requests should be addressed to the Commissioner of Patents, Washington, D.C. 20231.

RENE D. TEGTMEYER,
Date: Oct. 26, 1973. *Acting Commissioner of Patents.*

Approved:
BETSY ANCKER-JOHNSON, Ph.D.,
Assistant Secretary for Science and Technology.

[916 O.G. 2]

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(53) RECOMBINANT DNA

Accelerated Processing of Patent Applications for Inventions

In recent years revolutionary genetic research has been conducted involving recombinant deoxyribonucleic acid ("re-

combinant DNA"). Recombinant DNA research appears to have extraordinary potential benefit for mankind. It has been suggested, for example, that research in this field might lead to ways of controlling or treating cancer and hereditary defects. The technology also has possible applications in agriculture and industry. It has been likened in importance to the discovery of nuclear fission and fusion. At the same time concern has been expressed over the safety of this type of research. The National Institutes of Health (NIH) has released guidelines for the conduct of research concerning recombinant DNA. "Guidelines for Research Involving Recombinant DNA Molecules," published in the Federal Register of July 7, 1976, 41 F.R. 27902–27943. NIH is sponsoring experimental work to identify possible hazards and safety practices and procedures.

In view of the exceptional importance of recombinant DNA and the desirability of prompt disclosure of developments in the field, the Assistant Secretary of Commerce for Science and Technology has requested that the Patent and Trademark Office accord "special" status to patent applications involving recombinant DNA. Upon appropriate request, the Office will make special patent applications for inventions relating to recombinant DNA, including those that comtribute to safety of research in the field. Requests for special status should be written, should identify the application by serial number and filing date, and should be accompanied by affidavits or declarations under 37 CFR 1.102 by the applicant, attorney or agent explaining the relationship of the invention to recombinant DNA research. Requests also must include a statement that the NIH guidelines cited above or as amended in the future are being followed in any experimentation in this field, except that the statement may include an explanation of any deviations considered essential to avoid disclosure of proprietary information or loss of patent rights. The requests will be handled in the same manner as requests to make applications special that relate to energy or environmental quality. See Manual of Patent Examining Procedure 708.02.

Dated: Jan. 7, 1977.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved: January 10, 1977.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc.77-1155; Filed 1-12-77; 8:45 am]

[955 O.G. 350]

(54) RECOMBINANT DNA

Suspension of Accelerated Processing of Patent Applications for Recombinant DNA Research Inventions

On January 10, 1977, the Patent and Trademark Office issued a notice, published in the Federal Register of January 13, 1977, 42 FR 2712–2713, which provided for the accelerated processing of patent applications for inventions relating to Recombinant DNA, including those that contribute to safety of research in the field.

In order that the Federal Interagency Committee for Recombinant DNA Research may consider recommendations concerning research conducted by the private sector in this field, that part of the referenced notice dealing with accelerated processing of patent applications for Recombinant DNA research inventions is suspended until further notice.

That part of the referenced notice dealing with accelerated processing of patent applications relating to safety of research in this field will remain in force.

Dated: March 3, 1977.

RENE D. TEGTMEYER,
Acting Commissioner of Patents and Trademarks.

Approved: March 3, 1977.
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 77-6908; Filed 3-8-77; 8:45 am]

[957 O.G. 8]

(55) NEW PROCEDURES FOR RECORDATION OF INTERVIEWS

This notice establishes within the Patent and Trademark Office additional general procedures for the recordation of interviews. Proposed procedures were published in the OFFICIAL GAZETTE of June 28, 1977 (959 O.G. 36) for comment from interested members of the public by August 10, 1977. Fifteen written comments were received the majority of which were favorable to the proposed procedures. Careful consideration has been given to the comments and the procedures are being adopted with a few changes.

Under present practice it is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability as set forth in Section 713.04 of the Manual of Patent Examining Procedure (MPEP). This practice is continued and further amplified as set forth below.

Recent surveys have indicated that the substance of many interviews has not been made of record or the text thereof is incomplete as to substantive matters. In some cases, the substance of an interview may be presented as arguments in a subsequent response filed by the applicant but without any indication that they had been presented at the interview. In order to help insure a better record of examiner-applicant interviews in application files, the following new procedures are adopted to become effective for interviews conducted on and after January 1, 1978. Appropriate changes will be made in the Manual of Patent Examining Procedure (MPEP).

Examiners will complete a two-sheet carbon interleaf Interview Summary Form for each interview held where a matter of substance has been discussed by checking the appropriate boxes and filling in the blanks in neat handwritten form. Discussions regarding only procedural matters, directed solely to restriction requirements (for which interview recordation is otherwise provided for in Section 812.01 of the MPEP), or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below.

The Interview Summary Form shall be given an appropriate paper number, placed in the file and listed on the "Contents" list on the file wrapper. The docket and serial register cards will not be updated to reflect this interview. In a personal interview, the duplicate copy of the Form will be removed and given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephonic interview, the copy will be mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner before an allowance is not likely or if other circumstances dictate, the Form will be mailed promptly after the telephonic interview rather than with the next official communication. The original of the completed Form will be made of record and placed in the right hand flap of the file.

The Form provides for recordation of the following information:

- Serial Number of the application
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (personal or telephone)
- Name of participant(s) (applicant, attorney or agent, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the claims discussed
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). (Agreements as to allowability are tentative and do not restrict further action by the examiner to the contrary.)
- The signature of the examiner who conducted the interview
- Names of other Patent and Trademark Office personnel present.

The Form also contains a statement reminding the applicant of his responsibility to record the substance of the interview.

It is desirable that the examiner orally remind the applicant of his obligation to record the substance of the interview in each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner will check a box at the bottom of the Form informing the applicant that he need not supplement the Form by submitting a separate record of the substance of the interview.

It should be noted, however, that the Interview Summary Form will not be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview:

The complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted.
2) an identification of the claims discussed.
3) an identification of specific prior art discussed.
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the examiner.
5) a brief identification of the general thrust of the principal arguments presented to the examiner. The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he feels were or might be persuasive to the examiner.
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete or accurate, the examiner will take appropriate action as set forth in MPEP Section 713.04. If the record is complete and accurate, the examiner should place the indication "Interview record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 21]

(56) STATEMENTS FILED UNDER ATOMIC ENERGY ACT AND NASA ACT

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (a) the full facts in regard to the making or conception of the invention, and (b) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given to the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an application which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have first-hand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.
Aug. 13, 1973.

[914 O.G. 2]

(57) EXTENSIONS OF TIME TO SUBMIT AFFIDAVITS AFTER FINAL REJECTION

Not infrequently, applicants request an extension of time, stating as a reason therefor that more time is needed in which to submit an affidavit. When such a request is filed after final rejection, the granting of the request for extension of time is without prejudice to the right of the examiner to question why the affidavit is now necessary and why it was not earlier presented. If applicant's showing is insufficient, the examiner may deny entry of the affidavit, notwithstanding the previous grant of an extension of time to submit it. The grant of an extension of time in these circumstances serves merely to keep the case from becoming abondoned while allowing the applicant the opportunity to present the affidavit or to take other appropriate action. Moreover, prosecution of the application to save it from abandonment must include such timely, complete and proper action as required by 37 CFR 1.113. The admission of the affidavit for purposes other than allowance of the application, or the refusal to admit the affidavit, and any proceedings relative thereto, shall not operate to save the application from abondonment.

Implicit in the above practice is the fact that affidavits submitted after final rejection are subject to the same treat-

ment as amendments submitted after final rejection. *In re Affidavit Filed After Final Rejection*, 152 USPQ 292, 1966 C.D. 53.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

July 25, 1977.

[961 O.G. 16]

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(58) TRANSLATIONS OF FOREIGN LANGUAGE REFERENCES

Frequently, Office actions cite references that are in a foreign language. In the event a translation of the entire text or portion of the text of the reference is readily available in the examiners' search files, a copy of the translation will normally be included with the Office action. However, applicants are cautioned that the inclusion of a translation with a foreign language reference should not be construed to mean that the examiner used or relied on the translation, or that it is accurate or an official translation made by the Patent and Trademark Office.

While this service may be infrequent, it could be increased by the submission of translations by the applicant to the Office. Accordingly, it is requested that translations of foreign language references be transmitted to the Office, and in particular be transmitted with the response to the Office action or in a separate envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. In addition, it would be of great assistance to the Office in filing the translation, if the translation carried the following: 1. an identification of the foreign language reference and, where possible, 2. its location in the examiners' search files (e.g. location should be known if reference was cited in Office action). If identifying information is not available, the incoming translation should carry the name "Scientific Library" thereon so that it can be processed by the Library.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Date: Oct. 26, 1977.

[964 O.G. 24]

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(59) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER 1—PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

Patent Examining and Appeal Procedures

On October 4, 1976 notice was given in the Federal Register (41 FR 43729) of a proposal to amend sixteen sections of Title 37 of the Code of Federal Regulations relating to patent examining and appeal procedures. Interested persons were invited to comment on the proposal by December 7, 1976. One hundred seventy-five written letters and statements were submitted. A hearing was held in Arlington, Virginia on December 7, 1976 at which 21 persons testified orally. Careful consideration has been given to all comments received, and the proposal is being adopted with certain changes.

The regulations adopted involve all sections that were proposed to be revised, amended or added—namely, §§ 1.11, 1.14, 1.52, 1.56, 1.65, 1.69, 1.97, 1.98, 1.99, 1.109, 1.175, 1.194, 1.196, 1.291, 1.292, and 1.346. Amendments also are being made in two sections which were not included in the published proposal—§§ 1.51 and 1.176. Since amendments to these sections are closely related to the substance of matters which were contained in the published proposal, separate notice and public comment on these amendments are deemed unnecessary.

In addition, amendments are being adopted which were published for comment in two earlier, much less extensive proposals that concerned availability of certain files for public inspection. A notice of a proposed amendment to § 1.14(b) was published on June 4, 1974 (39 FR 19786). A notice of a proposed amendment to § 1.11(a) was published on September 17, 1974 (39 FR 33376). No negative comments were submitted with respect to either of these proposals and both are being adopted without change.

The text of the rules will be reproduced in the Patent and Trademark Office OFFICIAL GAZETTE in about a month with additions indicated by arrows and deletions indicated by brackets to help readers identify the changes. A transcript of the hearing, the letters and written statements received, and a summary and analysis of the comments are available for public inspection in Room 11E10 of Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia.

PURPOSE OF RULES

The purpose of the rules that are being adopted is to improve the quality and reliability of issued patents by strengthening patent examining and appeal procedures. It is desirable that patents be as dependable as possible, so as to enhance the incentives provided by the patent system to make inventions, to invest in research and development, to put new or improved products on the market, and to disclose inventions that otherwise would be kept as trade secrets. It is believed that the rules being adopted will help to maintain strong patent incentives.

The rules afford patent owners an opportunity, through the filing of a reissue application, to obtain a ruling from an examiner on the pertinence of additional prior art after a patent has been issued. The rules also broaden the public's opportunity for participation in the patent examining process, consistent with the limitations of statute, the protection of trade secrets, and the need to avoid making it unduly expensive to obtain a patent.

The rules set forth the duty of candor and good faith which applicants have to the Patent and Trademark Office and encourage them to provide information about the prior art in a way that will make it more useful to examiners. A provision for foreign language oaths by individuals who do not understand English is intended to make them more aware of their representations and of their obligations.

Under the rules more Patent and Trademark Office decisions that could have important precedent value will be available to the public, and some additional files will be available for inspection. Proceedings before the Board of Appeals are modified to help avoid the issuance of invalid patents. The rules encourage examiners to see that persons inspecting the file history of issued patents will be able to tell why the case was allowed.

REISSUE APPLICATIONS

Amended § 1.175 permits a patent owner to have new prior art considered by the Office by way of a reissue application without making any changes in the claims or specification. It is adopted with no change from the proposal. The requirement for an oath or declaration alleging that the reissue applicant believes "the original patent to be wholly or partly inoperative or invalid. . . ." is dispensed with in § 1.175(a)(1) unless the applicant believes that to be the case. Section 1.175(a)(4) recognizes that reissues may be filed to have the patentability of the original patent considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

Thus, a patentee may file a reissue if he believes his patent is valid over prior art not previously considered by the Office but would like to have a reexamination. The procedure may be used at any time during the life of a patent. During litigation, a federal court may, if it chooses, stay proceedings to permit new art to be considered by the Office.

If a reissue application is filed as a result of new prior art with no changes in the claims or specification and the examiner finds the claims patentable over the new art, the application will be rejected as lacking statutory basis for a reissue, since 35 USC 251 does not authorize reissue of a patent unless it is deemed wholly or partly inoperative or invalid. However, the record of prosecution of the reissue will indicate that the prior art has been considered by the examiner.

A substantial majority of the comments received favored amended § 1.175 as a means for improving the reliability of patents and avoiding unnecessary litigation costs. The negative comments generally questioned the statutory authority of the Commissioner to adopt this section. Authority for § 1.175 is believed to exist in 35 U.S.C. 6, which is the Commissioner's rulemaking authority, and in 35 U.S.C. 251. The latter section of the statute requires that the patent be deemed wholly or partly inoperative or invalid before a reissue may be granted, but does not require such a belief by

the patentee before a reissue application may be filed. The case law does not suggest that the approach of new § 1.175(a)(4) is inconsistent with 35 U.S.C. 251.[1] Inasmuch as 35 U.S.C. 251 is a remedial provision,[2] it is believed that a liberal interpretation is justified and that adequate authority exists for the amended section.

Amended § 1.11(b) opens all reissue applications to inspection by the general public. Section 1.11(b) also provides for announcement of the filings of reissue applications in the OFFICIAL GAZETTE. This announcement will give interested members of the public an opportunity to submit to the examiner information pertinent to patentability of the reissue application. The announcement will include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned. Section 1.11(b) is amended from the proposal to so indicate. Reissue applications already on file on the effective date of the section will not be automatically open to inspection and will not be announced in the OFFICIAL GAZETTE. However, a liberal policy will be followed in granting petitions for access to individual applications already on file.

In order that members of the public may have time to review the reissue application and submit pertinent information to the Office before the examiner's action, § 1.176 is amended to provide that reissue applications will not be acted on sooner than two months after the OFFICIAL GAZETTE announcement of filing.

A substantial majority of the comments received favored adoption of § 1.11(b). The only opposition was based upon a suggestion that no statutory authority exists. However, since reissue applications contain no new disclosure, and therefore no trade secrets or confidential information, they are considered to present a "special circumstance" within the meaning of 35 U.S.C. 122.

The insertion of "all" as the fifth word of the first sentence of § 1.11(b) is for clarity. The word "furnished" is changed to "obtained" in § 1.11 for clarity.

PROTESTS AND PUBLIC USE PROCEEDINGS

Amended §§ 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions in avoiding the issuance of invalid patents.

A substantial majority of the comments favored these sections and viewed them as improving the quality of issued patents. Entry of protests has been upheld in court.[3]

Section 1.291(a) provides that public protests against pending applications will be entered in the application file and will, if they meet stated requirements, be considered by the examiner. To guarantee consideration by the examiner, protests must be accompanied by copies of prior art documents relied upon, although protests without copies will not necessarily be ignored. This is similar to the requirement of new § 1.98 that copies of patents and publications accompany prior art statements. Section 1.291 does not contemplate permitting a protester to participate as a party in further proceedings. In the case of applications available to the public, such as reissue applications, the protester may file papers rebutting statements made by the applicant. The examiner at his discretion may request a protester to sumit additional written information or may provide extra time for comments by a protester to be filed.

To ensure consideration by the examiner, all protests must be timely submitted. Protests will generally be considered timely submitted, if they are filed before final rejection or allowance of the application by the examiner. The consideration given to protests filed after final rejection or allowance of the application by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Obviously, if the prior art documents anticipate or clearly render obvious one or more claims they will not knowingly be ignored. It must be recognized, however, that the likelihood of consideration by the examiner decreases as the patent date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

The first sentence of § 1.291(a) is deleted as unnecessary. Section 1.291(a) also is changed from the proposal to make clear that it applies to pending applications and that all protests will be referred to the examiner having charge of the subject matter involved.

Section 1.291(b) incorporates the existing Office policy of permitting persons to submit prior art citations or copies of prior art after a patent has been granted. The section is changed from the proposal by the addition of the words "any papers related thereto" to recognize that statements as to the pertinence of prior art may be submitted. Both the citations and the related papers are to be entered without comments. The material submitted is not examined by the Office but is available to members of the public inspecting Office records.

Some suggestions were received for major modifications of § 1.291. It was suggested that an advisory opinion of the examiner be placed in the patent file when protests were received after issuance of the patent. Several persons supported a suggestion for examiners to state whether a "new issue" was raised by prior art cited by a protester. Another suggestion was that a procedure similar to that used in the recent Trial Voluntary Protest Programs[4] be adopted on a continuing basis. These suggestions were carefully considered, but are not adopted. The suggestions extend substantially beyond § 1.291 as proposed, and their benefits do not appear sufficient to justify the added cost at this time.

Materials submitted to the Office under §§ 1.291 and 1.292 are to be served upon the applicant, patentee, attorney or agent when possible. The term "patentee" is used in its ordinary sense as defined in 35 USC 100(d). If service is not possible, materials are to be submitted in duplicate so that the Office can attempt to send the duplicate copy. The proposal is changed by adding the words "with the Office" after "filed" in §§ 1.291(c) and 1.292(b) for clarity.

In § 1.292, the requirement that petitioner bear the Office's expenses in conducting the public use proceeding is deleted. Section 1.292 is also amended to ensure that the existence of public use proceedings is recorded in the application file wrapper. Notice of a petition for a public use proceeding will be entered in the file in lieu of the petition itself when the petition and the accompanying papers are too bulky to accompany the file. Any public use papers not physically entered in the file will be publicly available whenever the application file wrapper is available.

DUTY OF DISCLOSURE

Amended § 1.56 defines the duty to disclose information to the Office and the criteria for striking an application when that duty is violated. The wording of the section is changed in several respects from the proposal, but the purpose and general scope are the same as in the proposal. The section codifies the existing Office policy on fraud and inequitable conduct, which is believed consistent with the prevailing case law in the federal courts. The expanded wording of the section is intended to be helpful to individuals who are not expert in the judicially developed doctrines concerning fraud. The section should have a stabilizing effect on future decisions in the Office and may afford guidance to courts as well.

A majority of comments received favored § 1.56 as proposed or with modifications. Persons opposed expressed concern over the imprecise definition of the duty of disclosure and the possibility that the proposal would substantially increase the burden on patent applicants. Some stated that there would be increased litigation as a result of the proposal. Several suggestions were received on better ways to define the individuals who should disclose information and the kinds of information that should be disclosed.

The first sentence of § 1.56(a) is changed from the proposal by adding the word "substantively," so that individuals having a duty of disclosure are limited to those who are "substantively involved in the preparation or prosecution of the application." This change is intended to make clear that the duty does not extend to typists, clerks, and similar personnel who assist with an application. This phrase, when taken with the last sentence of § 1.56(a), is believed to

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[1] See *In re Clark*, 522 F.2d 623, 187 USPQ 209 (CCPA 1975), at footnote 4 where the court declined to decide whether it is proper to seek reissue merely to disclose uncited prior art. See also *In re Altenpohl*, 500 F.2d 1151, 183 USPQ 38 (CCPA 1974).

[2] See *In re Oda*, 443 F. 2d 1200, 170 USPQ 268 (CCPA 1971).

[3] *International Paper Co. v. Fibreboard Corp.*, 63 F.R.D. 88, 181 USPQ 740 (D. Del. 1974).

[4] 923 O.G. 2; 930 O.G. 1454; 938 O.G. 945.

provide an adequate indication of the individuals who are covered by the duty of disclosure. The word "with" is inserted in the first sentence of § 1.56(a) before "the assignee" and before "anyone to whom there is an obligation to assign" to make clearer that the duty applies only to individuals, not to organizations.

Numerous comments concerned the term "relevance" that was used in the proposal. In response to the comments, language is substituted in § 1.56 and related sections which is believed to establish a clearer standard for determining whether information need be disclosed to the Office. "Relevant" is replaced by "material" because the latter term connotes something more than a trivial relationship. It appears to be more commonly used in court opinions. In addition, the third sentence of § 1.56, which defines materiality, is rewritten. The sentence now states that information is material "where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." The sentence paraphrases the definition of materiality used by the Supreme Court in its recent decision in *TSC Industries* v. *Northway*.[5] Although in that case the court was concerned with rules promulgated by the Securities and Exchange Commission, the Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in recent patent cases.

The definition of materiality in § 1.56 will have to be interpreted in the context of patent law rather than securities law. Principles followed by courts in securities cases should not be translated to patent cases automatically. It is noteworthy, however, that in formulating the definition of materiality in *TSC Industries* the Supreme Court considered some of the same matters over which concern was expressed in the public comments on proposed § 1.56. The Court noted that the standard of materiality should not be so low that persons would be "subjected to liability for insignificant omissions or misstatements," or so low that the fear of liability would cause management "simply to bury the shareholder in an avalanche of trivial information—a result that is hardly conducive to informed decision making." [6]

Although the third sentence of § 1.56(a) refers to decisions of an examiner, it is intended that the duty of disclosure would apply in the same manner in the less common instances where the official making a decision on a patent application is someone other than an examiner—e.g., a member of the Board of Patent Interferences or the Board of Appeals. This is implicit in the duty "of candor and good faith" toward the Office that is specified in the first sentence of § 1.56(a).

Comments and questions were received concerning the term "information" used in the second and third sentences of § 1.56(a) and elsewhere. It means all of the kinds of information required to be disclosed under current case law. In addition to prior art patents and publications, it includes information on prior public uses, sales, and the like. It is not believed practicable to define information in the text of the rule at this time. However, the rule is not intended to require disclosure of information favorable to patentability—e.g., evidence of commercial success of the invention. Neither is it meant to require disclosure of information concerning the level of skill in the art for purposes of determining obviousness.

Several comments were received concerning the duty to disclose information the patent applicant regards as confidential, including information the applicant has received from another party under an injunction of secrecy. This problem has existed prior to amendment of § 1.56. The Patent and Trademark Office, of course, keeps information disclosed by applicants confidential until a patent is issued. It has been suggested that the Office should develop a mechanism for continuing to hold information in confidence after issuance of a patent if in the judgment of the examiner the information is not material to the examination of the application. The feasibility of offering a rule for public comment on this topic at a later date will be considered.

New § 1.56(b) is added to make clear that information may be disclosed to the Office through an attorney or agent of record or through a pro se inventor, and that other individuals may satisfy their duty of disclosure to the Office by disclosing information to such an attorney, agent or inventor. Information that is not material need not be passed along to the Office.

Proposed sections 1.56 (b) and (c) have been revised and shortened and appear at §§ 1.56 (c) and (d). The proposal was criticized for leaving it open to the Office to apply a different standard of materiality from the one set forth in § 1.56.[7] Section 1.56(d) as adopted states that an application "shall" be stricken when the criteria set forth are met. Thus § 1.56(d) as adopted establishes a single standard for striking applications.

The term "inequitable conduct" is dropped from § 1.56(d) as covering too great a spectrum of conduct to be subject to mandatory striking. Inequitable conduct that is equivalent to fraud is intended to come within the definition of fraud. The Court of Customs and Patent Appeals already has interpreted "fraud" in existing § 1.56 to encompass conduct of this sort.[8] Moreover, § 1.56(d) as adopted calls for striking an application either for fraud or for a violation of the duty of disclosure.

In § 1.56(d) "bad faith" is substituted for the term "deliberate" that was used in the proposal. This change is to make clear than an intent to deceive (or gross negligence equivalent to such an intent) must be shown before an application will be stricken. Bad faith is not present if information is withheld as a result of an error in judgment or inadvertence.

Several comments concerned whether attorneys and agents could represent their clients' interests and at the same time comply with § 1.56. Similar comments were directed to §§ 1.97 to 1.99. It is of course in the interest of the client to have a valid patent and this cannot be obtained without disclosure of known material facts. It is not inconsistent for an attorney or agent to fulfill his duty of candor and good faith to the Office and to act as an advocate for his client. The submission of information under § 1.56 does not preclude the submission of arguments that such information does not render the subject matter of the application unpatentable.

In § 1.65 a new third sentence is added to require the patent applicant to acknowledge the duty of disclosure. The language is changed from the proposal to be consistent with changes made in § 1.56. To allow time for the Office and applicants to revise printed oath and declaration forms now in use, the mandatory acknowledgement of the duty of disclosure in amended § 1.65 does not become effective until January 1, 1978. Applicants at their option may include the new language in oaths and declarations filed prior to the effective date. The Office will publish a separate notice in the Federal Register adding a sentence acknowledging the duty of disclosure to appropriate forms in 37 CFR Part 3, "Forms for Patent Cases."

The word "statement" is deleted from the title of § 1.65 to avoid confusion with the prior art statement of §§ 1.97 through 1.99.

Amended § 1.346 emphasizes that there must be a reasonable basis to support every allegation of improper conduct made by a registered practitioner in any Office proceeding. The language that was proposed is clarified in the section as adopted. Although § 1.346 is limited to papers filed in Office proceedings, the amendment to § 1.346 is not intended to imply that disciplinary action never will be taken against a registered practitioner under § 1.348 for a groundless allegation of improper conduct in a court proceeding.

PRIOR ART STATEMENT

New §§ 1.97, 1.98 and 1.99 deal with prior art statements and provide a mechanism by which patent applicants may comply with the duty of disclosure provided in § 1.56. The sections have been substantially changed from the proposal, in response to comments received.

Unlike the corresponding part of the proposal, the sections as adopted are not mandatory, though applicants are strongly encouraged to follow the procedures described in them. Applications will be examined whether or not a prior art statement is filed and whether it complies with the rules or is defective. It is nevertheless believed that applicants will find that the use of prior art statements complying fully with the requirements of §§ 1.97 through 1.99 will be the best way to satisfy the duty of disclosure. The Patent and Trademark Office cannot assure that prior art disclosed in other ways will be considered by the examiner.

Sections 1.97 through 1.99 do not prescribe the content of what materials should be submitted in the prior art statement; this is for the applicant and the attorney or agent to decide in the light of the duty of disclosure expressed in § 1.56. The only criterion contained in §§ 1.97 through 1.99 as to content of the art cited is in § 1.97(b). This subsection indicates that the statement will be construed as a representation that the prior art listed includes what the submitter considers to be the closest art of which he is aware. The submitter need not decide which particular items of prior art are the closest or identify any items as such; the representation is simply that he is not withholding known prior art which he considers closer than that which is submitted. Section 1.97(b) makes clear that the prior art statement is not a representation that a search has been made or that no better art exists.

In § 1.97(a) the time for filing the prior art statement is extended from the two months of the original proposal to three months. In most cases prior art submitted within three months will be available to the examiner before he takes up the case for action, though it will be helpful if citations are made as promptly as possible.

Section 1.98 lists the elements of the prior art statement: a listing of the art, a concise explanation of the relevance of each listed item, and copies of the art or the pertinent portions thereof.

The prior art statement resembles somewhat the "patentability statement" of the proposal and the "patentability brief" proposed elsewhere.[9] The name has been changed to reflect a change in the requirements of § 1.98(a). Unlike the proposed version of this paragraph, which called for an explanation of why the claimed invention is believed patentable over the cited art, the paragraph as adopted calls only for a concise explanation of the relevance of each listed item. This may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention. It might be a simple statement pointing to similarities between the item of prior art and the claimed invention. It is permissible but not necessary to discuss differences between the prior art and the claims. It is thought that the explanation of relevance will be essentially as useful to the examiner as the formerly proposed explanation of patentability, and should be significantly less burdensome for the applicant to prepare.

Section 1.98 requires a copy of each patent or publication cited, including U.S. patents, to accompany the prior art statement. Several comments questioned the need for burdening the applicant to supply copies of materials that are present in the Office's files. However, substantial time and effort often is needed to locate a document in the Office's files. Since the person submitting the prior art statement generally has available a copy of the item being cited, it is believed that expense and effort can be minimized by having that person supply the copy in all cases. Consideration has been given to proposals to allow the applicant to submit an order for copies of the patents along with his statement instead of actually submitting copies. This will be further studied, but to date no way has been found to assure that the copies will be available to the examiner by the first action unless the applicant submits them with the prior art statement.

Other changes to §§ 1.97 through 1.99 from the proposal eliminate unnecessary language and clarify the requirements.

A notice published in 1974 [10] contained guidelines for the citation of prior art by applicants. Many of those guidelines are repeated or superseded by §§ 1.97 through 1.99. In order to allow applicants, attorneys and agents time to adjust their procedures to comply with the requirements for prior art statements, the effective date of §§ 1.97 through 1.99 will be July 1, 1977. Until these new sections become effective, applicants should continue to follow the 1974 guidelines. Issuance of a revised notice, to take effect July 1, 1977, is under study.

A survey conducted by the Office in 1976 concludes that many applicants have not been citing prior art to the Office.[11] It is hoped that with the duty of disclosure expressly set forth in § 1.56, applicants will perceive that it is to their advantage to use the procedures of §§ 1.97 through 1.99.

Section 1.51 is amended by designating the existing rule as § 1.51(a) and adding new § 1.51(b) which contains a reference to §§ 1.97 through 1.99.

FOREIGN LANGUAGE OATHS

Amended § 1.52 and new § 1.69 are adopted as proposed.

Section 1.69 requires that oaths and declarations be in a language which is understood by the individual making the oath or declaration, i.e., a language which the individual comprehends. If the individual comprehends the English language, he must use it. If the individual cannot comprehend the English language, any oath or declaration must be in a language which the individual can comprehend. If an individual uses a language other than English for an oath or declaration, the oath or declaration must include a statement that the individual understands the content of any documents to which the oath or declaration relates. If the documents are in a language the individual cannot comprehend, the documents may be explained to him so that he is able to understand them.

The Office will provide approved translations for as many of the oath or declaration forms which appear in Part 3 of Title 37 of the Code of Federal Regulations as practicable, and in as many languages as practicable, probably using a side-by-side English/foreign language format. The availability of the foreign language forms will be announced in the OFFICIAL GAZETTE at a later date.

The change in § 1.52, providing for an exception to the requirement that oaths and declarations be in the English language, is necessitated by the adoption of § 1.69.

Although very few persons opposed §§ 1.52 and 1.69, several suggested that the philosophy behind the change be extended to the specification, requiring the specification to be in a language which the applicant understands accompanied by an English translation. This suggestion is not considered feasible because of the obvious burdens on the applicant and the danger to the applicant and the public if the translation is not literally correct. Also, if a large number of applications were filed in a foreign language, there would be significant administrative burdens on the Office. Attention is directed to the Manual of Patent Examining Procedure, § 608.1, which permits non-English language applications to be filed in certain limited circumstances.

Other suggested modifications of the proposed rule included: (1) using an English language oath or declaration with one additional clause in a language understood by the person making the oath or declaration, the clause stating that the person understands all the documents to which the oath or declaration relates; and (2) extending the two month grace period for filing an English translation of an oath or declaration filed under § 1.65.

After due consideration, suggestion (1) was believed not to accomplish the objectives of the rule as well as the adopted rule. Suggestion (2) would cause unsatisfactory delays in the initial processing of applications.

DECISIONS AND FILES MADE PUBLIC

Section 1.14(d) makes more explicit the conditions under which significant decisions of the Patent and Trademark Office will be made available to the public, and includes reference to decisions of the Board of Patent Interferences, in addition to decisions of the Board of Appeals and the Commissioner.

A large majority of the comments received were favorable. Several commentators felt that more decisions would be made available as a result of the proposed section and that it would assist in publicizing aspects of Office procedure which may not have been available previously.

Some negative comments were based on the view that the Freedom of Information Act [12] required all decisions of the

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[5] 426 U.S. ——, 48 L. Ed. 2d 757, 96 S. Ct. 2126, 44 U.S.L.W. 4852, decided June 14, 1976.

[6] 426 U.S. at——, 48 L. Ed. 2d at 765, 96 S. Ct. at 2132, 44 U.S.L.W. at 4855.

[7] See discussion accompanying proposed rules in Federal Register of October 4, 1976, page 43731, first sentence.

[8] *Norton* v. *Curtiss*, 433 F. 2d 779, 792, 167 USPQ 532, 543 (CCPA 1970).

[9] E.g., Federal Register of September 9, 1968, 34 FR 14176, 866 O.G. 1402: S. 2255, 94th Congress, § 131(b).

[10] Notice of August 12, 1974, 926 O.G. 2.

[11] BNA's Patent, Trademark and Copyright Journal, No. 301, October 28, 1976, page D–1.

[12] 5 USC 552.

Office to be made publicly available. A greater number of those oposing the proposed section, however, felt that applicants should have an absolute right to have their applications maintained in confidence and that no information should be made public without specific authorization from them. One commentator felt that rulemaking on this subject should be deferred until currently pending litigation [13] under the Freedom of Information Act was finally resolved.

The section as adopted is applicable to decisions deemed by the Commissioner to involve an interpretation of patent laws or regulations that would be of significant precedent value, where such decisions are contained in either pending or abandoned applications or in interference files not otherwise open to the public. It is applicable whether or not the decision is a final decision of the Patent and Trademark Office.

The parenthetical phrase in the first sentence of the proposed section, which cited other provisions of the rules under which decisions are open to public inspection, is deleted as unnecessary and possibly confusing. Also, in view of several comments received, the period of time during which an applicant or party in interest may object to having a decision made public is extended from one month to two months. At least twenty days is given to request reconsideration and seek court review before a decision is made public over an objection.

Section 1.14(d) is considered to place a duty on the Patent and Trademark Office to identify significant decisions and to take the steps necessary to inform the public of such decisions, by publication of such decisions, in whole or in part. It is anticipated, however, that no more than a few dozen decisions per year will be deemed of sufficient importance to warrant publication under the authority of this section.

Amended § 1.14(b) allows public inspection of abandoned applications referred to in defensive publications. The comments received on the proposed amendment on this topic in 1974 expressed no opposition and the proposal is adopted without change.

The amendment is intended to encourage use of the defensive publication program provided under § 1.139. The objective of that program is to make available to the public the technical disclosure of applications in which the owner prefers to publish an abstract in lieu of obtaining an examination. Existing §§ 1.11(b) and 1.139 open the complete defensive publication application to inspection by the general public upon publication of the abstract. With the amendment, an abandoned application referred to in a defensive publication application will likewise be open to public inspection, avoiding any need to repeat its contents in the defensive publication application. Thus, public availability of the applications involved should be of benefit both to the applicant and the public.

A suggestion was made that the section be extended still further to include abandoned applications referred to in foreign patents. This suggestion, however, goes too far beyond the proposal that was published and has too uncertain an impact to be adopted at this time.

Amended § 1.11(a) provides earlier access to the file of an interference which involved a patent or an application on which a patent has issued. All comments that were submitted on the 1974 proposal on this topic were favorable and two commentators felt the proposal should be extended further. The proposal is being adopted without change.

Under present practice, access to the file of an interference is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The amended section allows access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. It is believed that such earlier access will be of benefit to members of the public by making available information relevant to the issuance of the patent whether or not the interference decision is still being adjudicated.

PATENT APPEALS

Section 1.194 clarifies the circumstances in which oral hearings should be requested, provides for oral arguments by or on behalf of examiners in certain appeals and reduces the time permitted for oral arguments.

Comments relating to this section were favorable by a very substantial majority, although there were several reservations to the effect that § 1.194(a) tended to discourage or downgrade oral arguments. Participation by examiners was considered to be desirable not only from the standpoint of improving the overall presentation of the argument, particularly in complex cases, but also for the educational and experience benefits to the examiners themselves.

The only opposition to the section was based on the feeling that oral hearings would be discouraged. The rule is intended to discourage oral hearings only to the same extent as the Office's 1975 Official Gazette notice on the subject.[14] Section 1.194(a) indicates that oral hearings should not be requested as a matter of course in every appeal, but only in those circumstances where the appellant feels that such a hearing will be of material assistance to the proper presentation of the appeal. The section expressly provides that equal consideration will be accorded in deciding all appeals, whether or not an oral hearng is held.

In appeals where the appellant has requested an oral hearing, § 1.194(b) provides for oral argument by, or on behalf of, the primary examiner, if such argument is considered to be helpful by either the primary examiner or the Board. This provision incorporates the present practice of permitting examiners to present an oral argument before the Board.[15] It gives the Board additional discretionary authority to request presentation of an oral argument by, or on behalf of the examiner to ensure that all issues are fully and accurately presented.

Section 1.194(c) provides, as does existing § 1.194, that appeals will be assigned for consideration and decision without an oral hearing where none has been requested by the appellant. Where an oral hearing has been requested, a day of hearing will be set, and both appellant and the primary examiner will be notified. A provision for notice to the examiner is added to the proposed version. Additionally, § 1.194(c) reflects the present practice of limiting oral argument on behalf of the appellant to twenty minues.[16] The time permitted for argument by the examiner has been shortened from twenty minutes, as proposed, to fifteen minutes. The examiner, unlike the appellant, will not ordinarily need time to present the facts of the case or for rebuttal.

In any appeal where oral argument is to be presented by, or on behalf of, the primary examiner, the appellant will be given due notice of that fact.

Proposed § 1.196(b) would have authorized the Board of Appeals to reject allowed claims, in cases before it, whenever the Board had knowledge of grounds for so doing.

While a majority of those commenting on this section favored in principle the concept of allowing the Board to have this right, significant concern was voiced that there was no statutory authority for the Board to actually reject allowed claims. Further, the question of proper authority for judicial review of such action by the Board was a matter of concern. Other reasons advanced in opposition to the section were that applicants would be inhibited from appealing by the risk of having allowed claims rejected and that the proposal would create a higher presumption of validity in cases reviewed by the Board. A significant number commented that it would be more appropriate for the Board to remand the case to the primary examiner for consideration of the grounds raised by the Board. This would afford the applicant an opportunity to demonstrate the patentability of the claims and would remove any question as to statutory authority.

In view of the comments received, existing § 1.196(b) will not be modified, but a new § 1.196(d) is added providing express authority for the Board of Appeals to include, in its decision, a statement of any grounds for rejecting any allowed claim that it believes should be considered by the primary examiner. Section 1.196(d) provides that the Board may remand the case to the examiner for such consideration, and that the applicant shall have an opportunity to respond to the grounds set forth by the Board prior to consideration, by the examiner. If the previously allowed claims are rejected by the examiner, the rejection may be appealed to the Board.

The new section further provides that a decision of the Board which includes a remand will not be considered as a final decision in the case, but that the Board, following conclusion of the proceedings before the primary examiner, will either adopt its earlier decision as final or will render a new decision based on all appealed claims, as it considers appropriate. In either case, final action by the Board will give rise to the existing alternatives available to an appellant following a decision by the Board.

In situations where the primary examiner concludes after consideration of all the evidence and argument that the remanded claims should be allowed, the new rule dealing with reasons for allowance (§ 1.109) provides an appropriate mechanism for him to explain, on the record, his reasoning for coming to this conclusion, notwithstanding the grounds set forth by the Board in its statement.

Promulgation of new § 1.196(d) does not affect the Board's existing authority to remand a case to the primary examiner without rendering a decision in approprite circumstances. Section 1.196(d) is not intended as an instruction to the Board to reexamine every allowed claim in every appealed application. It is, rather, intended to give the Board express authority to act when it becomes apparent, during the consideration of rejected claims, that one or more allowed claims may be subject to rejection on either the same or on different grounds from those applied against the rejected claims.

REASONS FOR ALLOWANCE

New § 1.109 is intended to emphasize and formalize the examiner's authority to state his reasoning for allowing a claim or claims. The authority is discretionary with the examiner and is only to be used when the record does not otherwise reveal the reasons for allowance.

A majority of the comments received favored the rule as proposed because it would tend to provide courts and others who were reviewing the patent with a clearer record. Those who opposed the rule most often gave the reason that the examiner might fail to state all the reasons or the strongest reasons why a claim was allowed, which could place unnecessary limitations on the claims or create an estoppel in subsequent litigation or licensing.

To help insure that the examiner's statement of his reasoning in allowing a claim will not unnecessarily limit the claims or create an estoppel, a final sentence is added to the proposal which states that failure of the applicant to comment upon or rebut the examiner's reasoning "shall not give rise to any implication that the applicant agrees with or acquiesces in the reasoning of the examiner."

Several commenters suggested that stricter enforcement of §§ 1.111 and 1.133 would eliminate the need for a new rule concerning reasons for allowance. Situations exist, however, where a statement of reasons for allowance could be helpful, for example when an examiner withdraws a rejection for reasons not suggested by the applicant; when an applicant submits several arguments for allowing a claim and the examiner finds not all of them persuasive; when an examiner allows a claim on the first Office action after citing very close prior art; and when the examiner allows a claim after remand from the Board of Appeals (see new § 1.196(d)).

The first sentence of the proposed rule is changed to define more precisely the circumstances in which an examiner's statement is appropriate, as well as to define more precisely the content of the statement. The statement will include the examiner's "reasoning." The examiner may state his reasoning whenever he "believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims."

Several persons commented that the rule should provide a procedure for appeal from the examiner's statement of his reasoning. The rule does permit applicants to comment upon the examiner's reasoning. If the applicant does not wish to comment, he may reserve for a later proceeding, without prejudice, any rebuttal.

TEXT OF RULES ADOPTED

After consideration of the comments received and pursuant to the authority contained in § 6 of Title 35 of the United States Code, Part 1 of Title 37 of the Code of Federal Regulations is amended as set forth below.

1. Section 1.11 is revised to read as follows:

§ 1.11 *Files open to the public.*

(a) After a patent has been issued, the specification, drawings, and all papers relating to the case in the file of the patent are open to inspection by the general public, and copies may be ►obtained◄ [furnished] upon paying the fee therefor. ►After an award of priority by the Board of Patent Interferences as to all parties, the file of any interference which involved a patent, or an application on which a patent has issued,◄ [The file of any terminated interference involving a patent, or an application on which a patent has subsequently issued,] is similarly open to public inspection and procurement of copies. See § 2.27 for trademark files.

(b) ►All reissue applications and all applications◄ [Applications] in which the Office has accepted a request filed under § 1.139 ►,and related papers in the application file,◄ are open to inspection by the general public, and copies may be ►obtained◄ [furnished] upon paying the fee therefor. ►The filing of reissue applications will be announced in the OFFICIAL GAZETTE. The announcement shall include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned.◄

2. In § 1.14 paragraphs (b) and (d) are revised to read as follows:

§ 1.14 *Patent applications preserved in secrecy.*

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(b) Except as provided in § 1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent ►, or in an application which is open to inspection pursuant to § 1.139,◄ is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. Abandoned applications may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

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(d) ►Any decision of the Board of Appeals or the Board of Patent Interferences, or any decision of the Commissioner on petition,◄ [Selected decisions of the Board of Appeals, or of the Commissioner, in abandoned applications] not otherwise open to public inspection ►shall◄ [(paragraph (b) of this section) may] be published or made available for ►public inspection if: (1) The Commissioner believes the decision involves an interpretation of patent laws or regulations that would be of important precedent value; and (2) the applicant, or any party involved in the interference, does not, within two months after being notified of the intention to make the decision public, object in writing on the ground that the decision discloses a trade secret or other confidential information. If a decision discloses such information, the applicant or party shall identify the deletions in the text of the decision considered necessary to protect the information. If it is considered the entire decision must be withheld from the public to protect such information, the applicant or party must explain why. Applicants or parties will be given time, not less than twenty days, to request reconsideration and seek court review before any portions of decisions are made public over their objection.◄ [publication at the Commissioner's discretion, unless the applicant timely presents sufficient reasons for not doing so. The applicant will be notified, through the attorney of record in the application file, when it is proposed to release such a decision and a time not less than thirty days set for presenting any such reasons. The fact that the subject matter of the application has not been made public in any manner, or that the same subject matter is being prosecuted in a pending application, will be considered sufficient reason for not releasing the decision if the applicant so requests unless the text of the decision contains no description of such subject matter. Other reasons presented will be duly considered.] See § 2.27 for trademark applications.

3. Section 1.51 is revised to read as follows:

§ 1.51 *General requisites of an application.*

►(a)◄ Applications for patents must be made to the Commissioner of Patents and Trademarks. A complete application comprises:

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[13] *Irons* v. *Gottschalk*, Slip Opinion, No. 74-1365 (D.C. Cir., October 21, 1976).

[14] See notice of March 20, 1975, 933 O.G. 1010.

[15] MPEP, § 1209.

[16] See notice of March 20, 1975, 933 O.G. 1010.

►(1)◄ [(a)] A specification, including a claim or claims, see §§ 1.71 to 1.77.

►(2)◄ [(b)] An oath or declaration, see §§ 1.65 to 1.68.

►(3)◄ [(c)] Drawings, when necessary, see §§ 1.81 to 1.88.

►(4)◄ [(c)] The prescribed filing fee. (See 35 USC section 41 for filing fees.)

►(b) Applicants are encouraged to file a prior art statement at the time of filing the application or within three months thereafter. See §§ 1.97 through 1.99.◄

4. In § 1.52 paragraph (a) is revised to read as follows:

§ 1.52 *Language, paper, writing, margins.*

(a) The specification and oath or declaration must be in the English language ►except as provided in § 1.69◄. All papers which are to become a part of the permanent records of the Patent and Trademark Office must be legibly written or printed in permanent ink or its equivalent in quality. All of the application papers must be presented in a form having sufficient clarity and contrast between the paper and the writing or printing thereon to permit the production of readily legible copies in any number by use of photographic, electrostatic, photooffset, and microfilming processes. If the papers are not of the required quality, substitute typewritten or printed papers of suitable quality may be required.

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5. Section 1.56 is revised to read as follows:

§ 1.56 ►*Duty of disclosure; striking of*◄ [*Improper*] *applications.*

►(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the inventor, on each attorney or agent who prepares or prosecutes the application, and on every other individual who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application. All such individuals have a duty to disclose to the Office information they are aware of which is material to the examination of the application. Such information is material where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent. The duty is commensurate with the degree of involvement in the preparation or prosecution of the application.◄

►(b) Disclosures pursuant to this section may be made to the Office through an attorney or agent having responsibility for the preparation or prosecution of the application or through an inventor who is acting in his own behalf. Disclosure to such an attorney, agent or inventor shall satisfy the duty, with respect to the information disclosed, of any other individual. Such an attorney, agent or inventor has no duty to transmit information which is not material to the examination of the application.◄

►(c)◄ Any application [signed or sworn to in blank, or without actual inspection by the applicant, and any application altered or partly filled in after being signed or sworn to, and also any application fraudulently filed or in connection with which any fraud is practiced or attempted on the Patent and Trademark Office,] may be stricken from the files ►if:

(1) Signed or sworn to in blank, or without actual inspection by the applicant; or

(2) Altered or partly filled in after being signed or sworn to◄.

►(d) An application shall be stricken from the files if it is established by clear and convincing evidence that any fraud was practiced or attempted on the Office in connection with it or that there was any violation of the duty of disclosure through bad faith or gross negligence.◄

6. In the heading preceding § 1.65 "STATEMENT;" is deleted.

7. In § 1.65 the heading and paragraph (a) are revised to read as follows:

§ 1.65 ►*Oath or declaration.*◄ [*Statement of applicant.*]

(a)(1) The applicant, if the inventor, must state that he verily believes himself to be the original and first inventor or discoverer of the process, machine, manufacture, composition of matter, or improvement thereof, for which he solicits a patent; that he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, and shall state of what country he is a citizen and where he resides and whether he is a sole or joint inventor of the invention claimed in his application. In every original application the applicant must distinctly state that to the best of his knowledge and belief the invention has not been in public use or on sale in the United States more than one year prior to his application or patented or described in any printed publication in any country before his invention or more than one year prior to his application, or patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in this country. ►He must acknowledge a duty to disclose information he is aware of which is material to the examination of the application.◄ He shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself, or his legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the application in this country.

(2) This statement (i) must be subscribed to by the applicant, and (ii) must either (*a*) be sworn to (or affirmed) as provided in § 1.66, or (*b*) include the personal declaration of the applicant as prescribed in § 1.68. See § 1.153 for design cases and § 1.162 for plant cases.

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8. Section 1.69 is added to read as follows:

►§ 1.69 *Foreign language oaths and declarations.*◄

►(a) Whenever an individual making an oath or declaration cannot understand English, the oath or declaration must be in a language that such individual can understand and shall state that such individual understands the content of any documents to which the oath or declaration relates.◄

►(b) Unless the text of any oath or declaration in a language other than English is a form provided or approved by the Patent and Trademark Office, it must be accompanied by a verified English translation, except that in the case of an oath or declaration filed under § 1.65, the translation may be filed in the Office no later than two months after the filing date.◄

9. The heading "PRIOR ART STATEMENT" is added following § 1.95 and preceding § 1.97.

10. Section 1.97 is added to read as follows:

►§ 1.97 *Filing of prior art statement.*◄

►(a) As a means of complying with the duty of disclosure set forth in § 1.56, applicants are encouraged to file a prior art statement at the time of filing the application or within three months thereafter. The statement may either be separate from the specification or may be incorporated therein.◄

►(b) The statement shall serve as a representation that the prior art listed therein includes, in the opinion of the person filing it, the closest prior art of which that person is aware; the statement shall not be construed as a representation that a search has been made or that no better art exists.◄

11. Section 1.98 is added to read as follows:

►§ 1.98 *Content of prior art statement.*◄

►(a) Any statement filed under § 1.97 or § 1.99 shall include: (1) a listing of patents, publications or other information and (2) a concise explanation of the relevance of each listed item. The statement shall be accompanied by a copy of each listed patent or publication or other item of information in written form or of at least the portions thereof considered by the person filing the statement to be pertinent.◄

►(b) When two or more patents or publications considered material are substantially identical, a copy of a representative one may be included in the statement and others merely listed. A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant.◄

12. Section 1.99 is added to read as follows:

►§ 1.99 *Updating of prior art statement.*◄

►If prior to issuance of a patent an applicant, pursuant to his duty of disclosure under § 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental prior art statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements of § 1.98.◄

13. Section 1.109 is added to read as follows:

►§ 1.109 *Reasons for allowance.*◄

►If the examiner believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims, the examiner may set forth such reasoning. This shall be incorporated into an Office action rejecting other claims of the application or be the subject of a separate communication to the applicant. The applicant may file a statement commenting on the reasons for allowance within such time as may be specified by the examiner. Failure to file such a statement shall not give rise to any implication that the applicant agrees with or acquiesces in the reasoning of the examiner.◄

14. In § 1.175 paragraph (a) is revised to read as follows:

§ 1.175 *Reissue oath or declaration.*

(a) Applicants for reissue, in addition to complying with the requirements of the first sentence of § 1.65, must also file with their applications a statement under oath or declaration as follows:

(1) ►When the◄ [That] applicant verily believes the original patent to be wholly or partly inoperative or invalid, ►stating such belief◄ and the reasons why.

(2) When it is claimed that such patent is so inoperative or invalid "by reason of a defective specification or drawing," particularly specifying such defect.

(3) When it is claimed that such patent is inoperative or invalid "by reason of the patentee claiming more or less than he had a right to claim in the patent," distinctly specifying the excess or insufficiency in the claims.

►(4) When the applicant is aware of prior art or other information relevant to patentability, not previously considered by the Office, which might cause the examiner to deem the original patent wholly or partly inoperative or invalid, particularly specifying such prior art or other information and requesting that if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent.◄

►(5)◄ [(4)] Particularly specifying the errors ►or what might be deemed to be errors◄ relied upon, and how they arose or occurred.

►(6) Stating that ◄ [(5) That] said errors ►, if any,◄ arose "without any deceptive intention" on the part of the applicant.

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15. Section 1.176 is revised to read as follows:

§ 1.176 *Examination of reissue.*

An original claim, if re-presented in the reissue application, is subject to reexamination, and the entire application will be examined in the same manner as original applications, subject to the rules relating thereto, excepting that division will not be required. Applications for reissue will be acted on by the examiner in advance of other applications ►, but not sooner than two months after announcement of the filing of the reissue application has appeared in the OFFICIAL GAZETTE◄.

16. Section 1.194 is revised to read as follows:

§ 1.194 ►*Oral*◄ *Hearing.*

►(a) An oral hearing should be requested only in those circumstances in which the appellant considers such a hearing necessary or desirable for a proper presentation of his appeal. An appeal decided without an oral hearing will receive the same consideration by the Board of Appeals as appeals decided after oral hearing.◄

►(b) If appellant requests an oral hearing, an oral argument may be presented by, or on behalf of, the primary examiner if considered desirable by either the primary examiner or the Board.◄

►(c)◄ If no request for oral hearing has been made by the appellant, the appeal will be assigned for consideration and decision. If the appellant has requested an oral hearing, a day of hearing will be set, and due notice thereof given to the appellant ►and to the primary examiner◄. Hearing will be held as stated in the notice, and oral argument will be limited to [one-half hour] ►twenty minutes for the appellant and fifteen minutes for the primary examiner◄ unless otherwise ordered before the hearing begins.

17. Section 1.196 is amended by adding new paragraph (d) to read as follows:

§ 1.196 *Decision by the Board of Appeals.*

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►(d) Although the Board of Appeals normally will confine its decision to a review of rejections made by the primary examiner, should it have knowledge of any grounds for rejecting any allowed claim that it believes should be considered, it may include in its decision a statement to that effect and remand the case to the primary examiner for consideration thereof. In such event, the Board shall set a period, not less than one month, within which the applicant may submit to the primary examiner an appropriate amendment, or a showing of facts or reasons, or both, in order to avoid the grounds set forth in the statement of the Board of Appeals. If the primary examiner rejects the previously allowed claim or claims on the basis of such statement, the applicant may appeal to the Board of Appeals from the rejection. Whenever a decision of the Board of Appeals includes a remand, that decision shall not be considered as a final decision in the case, but the Board of Appeals shall, upon conclusion of the proceedings before the primary examiner on remand, either adopt its decision as final or render a new decision on all of the claims on appeal, as it may deem appropriate.◄

18. Section 1.291 is revised to read as follows:

§ 1.291 *Protests* ►*and prior art citations by public.*◄ [*to the grant of a patent.*]

►(a)◄ [The patent statutes do not provide for opposition to the grant of a patent on the part of the public. Protests to the grant of a patent are ordinarily merely acknowledged, and filed after being] ►Protests against pending applications will be acknowledged and◄ referred to the examiner having charge of the subject matter involved [for his information]. ►A protest specifically identifying the application to which the protest is directed will be entered in the application file and, if timely submitted and accompanied by a copy of each prior art document relied upon, will be considered by the examiner.◄

►(b) Citations of prior art and any papers related thereto may be entered in the patent file after a patent has been granted, at the request of a member of the public or the patentee. Such citations and papers will be entered without comment by the Patent and Trademark Office.◄

►(c) Protests and prior art citations by the public and any accompanying papers should either (1) reflect that a copy of the same has been served upon the applicant or patentee or upon his attorney or agent of record; or (2) be filed with the Office in duplicate in the event service is not possible.◄

19. In § 1.292 paragraph (b) is revised to read as follows:

§ 1.292 *Public use proceedings.*

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(b) The petition and accompanying papers should [be filed in duplicate, or served upon the applicant, his attorney or

agent of record, and petitioner should offer to bear any expense to which the Office may be put in connection with the proceeding] ►either (1) reflect that a copy of the same has been served upon the applicant, or upon his attorney or agent of record; or (2) be filed with the Office in duplicate in the event service is not possible. The petition and accompanying papers, or a notice that such a petition has been filed, shall be entered in the application file.◄

20. Section 1.346 is revised to read as follows:

§ 1.346 *Signature and certificate of attorney.*

Every paper filed by an attorney or agent representing an applicant or party to a proceeding in the Patent and Trademark Office must bear the signature of such attorney or agent, except papers which are required to be signed by the applicant or party in person (such as the application itself and affidavits or declarations required of applicants). The signature of an attorney or agent to a paper filed by him, or the filing or presentation of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief, there is good ground to support it ►, including any allegations of improper conduct contained therein◄; and that it is not interposed for delay.

Effective Date. These amendments become effective on March 1, 1977, except for §§ 1.51, 1.97, 1.98, and 1.99 which become effective on July 1, 1977, and §§ 1.65 and 1.69 which become effective on January 1, 1978.

Date: Jan. 18, 1977.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved:

BETSY ANCKER-JOHNSON, PH.D.
Assistant Secretary for Science and Technology.
Date: Jan. 19, 1977.

NOTE.—The above notice is identical to a notice that was published in the Federal Register of January 28, 1977 (42 F.R. 5588) except that the above notice shows the differences between the existing rules and the rules being adopted. Additions are indicated by arrows and deletions are indicated by brackets.

[955 O.G. 1054]

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(60) GUIDELINES FOR IMPLEMENTATION OF RECENTLY REVISED RULES

Recently a number of rules relating to Patent Examining and Appeal Procedures were revised. The new rules were published in the Federal Register at 42 F.R. 5588 on January 28, 1977, and in the OFFICIAL GAZETTE at 955 O.G. 1054 on February 22, 1977. The following guidelines are being published to describe the procedures which are being followed in implementing 37 CFR sections 1.11, 1.97–1.99, 1.109, 1.194, 1.291 and 1.292.

Files Open to the Public

Section 1.11(b) is applicable only to those reissue applications filed on or after March 1, 1977. Those reissue applications already on file will not be automatically open to inspection but a liberal policy will be followed by the Office of the Solicitor in granting petitions for access to such applications.

(NOTE.—These sections as changed will be incorporated into the Manual text in Rev. 3 of the Manual.)

For those reissue applications filed on or after March 1, 1977, the following procedure will be observed:

1) The filing of reissue applications will be announced in the OFFICIAL GAZETTE and will include certain identifying data as specified in section 1.11(b). Any member of the general public may request access to a particular reissue application filed after March 1, 1977. Since no record of such request is intended to be kept, an oral request will suffice.
2) The reissue application files will be maintained in the examining groups and inspection thereof will be supervised by group personnel. Although no general limit is placed on the amount of time spent reviewing the files, the Office may impose limitation, if necessary, e.g., where the application is actively being processed.
3) Where the reissue application has left the examining group for administrative processing, requests for access should be directed to the appropriate supervisory personnel in the Division or Branch where the application is currently located.
4) Requests for copies of papers in the reissue application file must be in writing addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and may be either mailed or delivered to the Office mailroom. The price for copies made by the Office is thirty cents per page.

Prior Art Statements

This notice supersedes the notices of August 12, 1974 (926 O.G. 2) and May 19, 1975 (935 O.G. 902) relating to citations of prior art. Although new sections 1.97 through 1.99 are not effective until July 1, 1977, and are not mandatory upon applicants, they provide an ideal mechanism for complying with the duty of disclosure under 37 CFR 1.56. The statements should be submitted in accordance with the following guidelines:

1) Prior art statements should be submitted at the time of filing the application or within three months thereafter and may be separate from the specification or incorporated therein. The statement shall serve as a representation that the person preparing it has included therein what he believes to be the closet prior art of which he is aware and shall not be construed as a representation that no better art exists or that a search has been made. If the first action in the application is received prior to three months after filing of the application and no prior art statement has been submitted, the prior art statement may be submitted with the response to the first action and be considered timely.
2) The statement shall include a listing of the patents, publications or other information which the preparer of the statement wishes to cite and a concise explanation of the relevance of each listed item. Copies of the pertinent portions of all listed documents shall be supplied along with the statement, both when incorporated into the specification and when filed separately. If two or more patents or publications considered material are substantially identical, a copy of a representative one shall be included with the statement and others may merely be listed with an indication of which are considered to be substantially identical.
3) A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant. It will be sufficient, however, to transmit an equivalent English language patent or publication so long as it is identified as an equivalent.

   Where the applicant has submitted copies of prior art in accordance with these guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application as far as the copies are concerned. As far as the statement per se is concerned, the relevance of the prior art to the claimed subject matter must be indicated if it differs from its relevance as explained in the prior application.
4) If prior to the issuance of a patent an applicant pursuant to his duty of disclosure under 37 CFR 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental prior art statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements aforementioned. The transmittal should include a statement explaining why the prior art was not earlier submitted.

While the Patent and Trademark Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other information not submitted in accordance with these guidelines will be considered by the examiner.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an Ex parte Quayle action, a notice of allowability (PTOL–327), an examiner's amendment (PTOL–37), or a Notice of Allowance (PTOL–85), any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(a) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;
(b) A timely affidavit under 37 CFR 1.131 with respect to the material cited; or
(c) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other information cited raises a serious question as to the patentability of the claimed subject matter, or is closer prior art than that of record.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under 37 CFR 1.183 requesting a waiver of 37 CFR 1.312. Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

In each instance where an examiner considers, but does not cite on form PTO–892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference according to the following:

> If included in the specification, the examiner will write his or her initials adjacent to any references checked and enter "checked" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" will be entered adjacent to the citations or wherever possible to indicate clearly those checked.

Reasons for Allowance

One of the primary purposes of the change in Section 1.109 is to improve the quality and reliability of issued patents by providing a complete file history which should clearly reflect, as much as is reasonably possible, the reasons why the application was allowed. Such information facilitates evaluation of the scope and strength of a patent by the patentee and the public and may help avoid or simplify litigation of a patent.

The practice of stating the reasons for allowance is not new and the rule merely formalizes the examiner's existing authority to do so and provides applicants an opportunity to comment upon any such statement of the examiner.

When the examiner determines that it is necessary or desirable, a "Statement of Reasons for Allowance" will be prepared. The "Statement" will usually be an attachment to either a notice of allowability (PTOL–327) or Examiner's Amendment (PTOL–37). Any comments considered necessary by applicant must be submitted no later than the issue fee and should preferably *accompany* the issue fee. Submission with the issue fee avoids any delay in the processing of the application and avoids the necessity to associate the comments with the application while it is in issue except at the time the file must be pulled to record the payment of the issue fee. Such comments will be entered in the application file by the Allowed Files Branch with an appropriate notation on the "contents" list of the file wrapper, but will not be reviewed by the examiner.

Oral Hearings Before Board of Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested and provides for oral arguments by, or on behalf of, primary examiners in certain appeals.

Under Section 1.194, the following procedures will be in effect:

1) In accordance with Section 1.192, appellants who desire an oral hearing must request the same at the time of filing the appeal brief.
2) If appellant has requested an oral hearing and the primary examiner intends to present an oral argument, the last paragraph of the examiner's answer will indicate this intention.
3) Notice of the oral hearing will be given to the appellant and, at the same time, to the primary examiner in those cases in which the primary examiner has indicated an intention to present an oral argument.
4) After an oral hearing has been confirmed and the date set as provided in Section 1.194(c), the application file will be delivered to the examiner via the appropriate Group Director at least one week prior to the date of the hearing for those cases in which the examiner is expected to be present at the hearing. In those cases where the Board requests the presentation of an oral argument by, or on behalf of, the primary examiner, the appellant will be so notified. The Board's request for an oral argument may, where appropriate, indicate specific points or questions to which the argument should be particularly directed. The application file will be returned to the Board before the hearing.
5) In those appeals in which an oral hearing has been confirmed and either the primary examiner or the Board has indicated a dessire for oral argument, such oral argument may be presented whether or not appellant appears.

Protests and Public Use Proceedings

Amended sections 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions and are intended as an aid in avoiding the issuance of invalid patents.

Under sections 1.291 (b) and (c) and 1.292(b), the following procedures will be observed:

1) Only in those instances where it has not been possible to serve protest papers upon the applicant, attorney or agent, should duplicates of the papers submitted be provided. In this case the appropriate examining group will attempt to get the duplicate copy to the applicant, attorney or agent. However, every effort should be made by the protester to effect service.
2) Citations of prior art and any papers related thereto may be entered in the file after a patent has been granted by submitting them to the attention of the Record Room, where they will be entered without comment by the Office. If after diligent effort it has not been possible to serve the prior art citations and related papers on the patentee, his attorney or agent, duplicate copies should be submitted in which case the Record Room will attempt to get the duplicate copy to the owner of record.
3) When public use petitions and accompanying papers are submitted they, or a notice in lieu thereof, will be entered in the application file. Duplicate copies should be submitted only when, after diligent effort, it has not been possible for petitioner to serve a copy of the petition on the applicant, his attorney or agent in which case the Office of the Solicitor will attempt to get the duplicate copy to the applicant, his attorney or agent.
4) To ensure consideration by the examiner, protests should be timely submitted, i.e., before final rejection or allowance. Consideration of protests filed after final rejection or allowance will depend upon the relevance of the prior art documents and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not knowingly be ignored. If protests are not timely submitted or if they fail to comply with section 1.291(a) as to the submission of a copy of each prior art document relied upon, they will be acknowledged and referred to the examiner having charge of the subject matter involved for entry in the application file and such consideration as seems warranted.

In each instance where an examiner considers but does not cite on form PTO–892 specific prior art referred to in a protest, the examiner will place a notation in the protest paper adjacent to the reference which will include his or her initials and the term "checked."

Additional future guidelines as to protest procedures may be developed after gaining experience with the new practice.

C. MARSHALL DANN,
Mar. 18, 1977. *Commissioner of Patents and Trademarks.*

[957 O.G. 11]

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(61) DEPOSIT OF COMPUTER PROGRAM LISTINGS

[37 CFR Part 1]

Notice of Proposed Rulemaking

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed Rule.

SUMMARY: This proposed rule would amend the rules of practice to provide special procedures for presentation of computer program listings in patent applications. This proposal would reduce the present burden of presenting such listings on paper and would also reduce expenses for both the patent applicant and the Patent and Trademark Office.

DATES: Comments must be received on or before: September 13, 1977. Hearing: September 13, 1977, beginning at 9:30 a.m.

ADDRESSES: Send comments to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza, at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza, at 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952, as amended (68 Stat. 793; 85 Stat. 304; 88 Stat. 1949; 35 U.S.C. 6 as amended) the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending Sections 1.21 and 1.77 and by adding a new Section 1.96. This proposal has been reviewed pursuant to E.O. 11821 and OMB Circular A-107 and determined to have no major inflationary impact.

The purpose of the proposed rule change is to provide suitable procedures for presenting computer program listings where such listings are submitted with applications for patent to fulfill the disclosure requirements under 35 U.S.C. 112.

This proposal does not in any way imply that the Patent and Trademark Office considers computer programs per se to be patentable subject matter.

The provisions of 37 CFR Sections 1.52 and 1.84 were developed for and are suitable for the specification and drawings of most patent applications. However, when lengthy computer program listings must be included in order to provide a complete disclosure, their presentation in the conventional manner can become burdensome.

The cost of printing long computer programs or routines in patent documents is very expensive to the Office. The issue fees for the applicant, which are based on the number of pages or sheets, are correspondingly high.

Proposed new Section 1.96 sets forth alternative methods for presentation of such listings. Under paragraph (a), relatively short computer program listings (10 printout pages or less) will be printed as part of the patent. Paragraph (b) provides for submitting computer program listings which are 51 or more paper pages in length in the form of microfiche as an appendix. Computer program listings 11–50 pages in length may be submitted under the provisions of either paragraphs (a) or (b). Appendices on microfiche will not be printed in the patent but will become publicly available on the date the patent is issued. After patenting, the appendix will be prior art under 35 U.S.C. 102(e) as of the filing date of the application with which it was filed. Various incorporations by reference have been approved by the courts in *General Electric Company* v. *Brenner*, 159 USPQ 335; In re Hawkins, 179 USPQ 157, and In re Argoudelis et al., 168 USPQ 99.

Copies of publicly available computer program listing appendices may be purchased either as microfiche (148 mm x 105 mm card) at $1.00 per microfiche or as printed out on paper copy 30¢ per page.

The micrographic standards referred to in proposed Section 1.96(b)(2) may be obtained from either the National Micrographic Association, 8728 Colesville Road, Silver Spring, Maryland 20910 or the American National Standards Institute, 1430 Broadway, New York, New York, 10018.

1. Section 1.21 is proposed to be amended by adding a new paragraph (1) to read as follows:

Section 1.21. *Patent and miscellaneous fees and charges.*

* * * * *

(1) The fee for obtaining a microfiche copy, per microfiche ---------- $1.00

* * * * *

2. Section 1.77 is proposed to be amended by revising paragraph (c) to read as follows:

Section 1.77. *Arrangement of application.*

* * * * *

(c) (1) Cross-reference to related applications, if any.
(2) Reference to material incorporated by reference, if any. (See Sections 1.96(b) and (c)).

* * * * *

3. A new Section 1.96 is proposed to be added which reads as follows:

Section 1.96. *Submission of computer program listings.*

Computer program listings may be submitted in the following forms:

(a) *As part of application which is to appear in the patent.* If the computer program listing is contained on 10 printout pages or less, it may be submitted either as drawings or as part of the specification.

(1) *Drawings.* The listing may be submitted in the manner and complying with the requirements for drawings as provided in Section 1.84. At least one figure numeral is required on each sheet of drawing.

(2) *Specification.*

(i) The listing may be submitted as part of the specification in accordance with the provisions of Section 1.52, at the end of the description but before the claims.

(ii) The listing may be submitted as part of the specification in the form of computer printout sheets commonly (11 by 14 inches in size) for use as "camera ready copy" when a patent is subsequently printed. Such computer printout sheets must be original copies from the computer with dark solid black letters, on white, unshaded and unlined paper, the printing on each sheet must be limited to an area 9 inches high by 11 inches wide, and the sheets should be submitted in a protective cover. When printed in patents, such computer printout sheets will appear at the end of the description but before the claims and will be reduced about ½ in size with two printout sheets being printed as one patent specification page. Any corrections must be made by way of substitute sheets.

(b) *As an appendix which will not be printed.* If a computer program listing printout is more than 51 pages long, applicants must submit such listing in the form of microfiche, referred to in the specifications. The microfiche filed with a patent application is referred to as an appendix. The microfiche appendix will not be part of the printed patent. Reference in the application to the appendix should be made at the location indicated in Section 1.77(c).

(1) *Availability of appendix.* Such computer program listings on microfiche will be available to the public, and paper or microfiche copies will be available for purchase, after a patent is granted based on such an application. Any corrections must be made by way of revised microfiche.

(2) *Submission requirements.* Computer-generated information submitted as an appendix to an application for patent shall be in the form of microfiche in accordance with the standards set forth in National Micrographics Association (NMA) Standards—

MS1—Quality Standards for Computer Output Microfilm
MS2 (ANSI PH 5.18–1976)—Format and Coding Standards for Computer Output Microfilm
MS5 (ANSI PH 5.9–1975)—Microfiche of Documents
ANSI PH 2.19–1959—"Diffuse Transmission Density"—

except as modified or clarified below:

(i) Film submitted shall be first generation (camera film) negative appearing microfiche (with emulsion on the back side of the film when viewed with the images right reading).

(ii) Either Computer-Output-Microfilm (COM output or copies of photographed paper copy may be submitted. In the former case, NMA standards MS1 and MS2 apply; in the latter case, standard MS5 applies.

(iii) Reduction ratio of microfiche submitted should be 24:1 or a similar ratio where variation from said ratio is required in order to fit the documents into the image area of the microfiche format used.

(iv) Film submitted shall have a thickness of at least .005 inches (0.13 mm) and not more than .009 inches (0.23 mm) for either cellulose acetate base or polyester base type.

(v) Both microfiche formats A1 (98 frames, 14 columns x 7 rows) and A3 (63 frames, 9 columns x 7 rows) which are described in NMA standard MS2 (A1 is also described in MS5) are acceptable for use in preparation of microfiche submitted.

(vi) At least the left-most ⅛ (50 mm x 12 mm) of the header of each microfiche submitted shall be clear or positive appearing so that the Patent and Trademark Office can apply serial number and filing date thereto in an eye-readable form. The middle portion of the header shall be used by applicant to apply an eye-readable application title together with inventor's name and any other bibliographic information the applicant sees fit to include. The final right-hand portion of the microfiche shall contain sequence information for the microfiche such as 1 of 4, 2 of 4, etc.

(vii) Additional requirements which supply specifically to microfiche of filmed paper copy or COM microfiche:

(a) Microfiche of filmed paper copy.

(1) The first frame of each microfiche submitted shall contain a standard NBS Microcopy Resolution Test Chart (No. 1010A).

(2) The second frame of each microfiche submitted must contain a fully descriptive title.

(3) The pages appearing on the microfiche frames should be consecutively numbered.

(4) Pagination of the microfiche frames shall be left to right and from top to bottom.

(5) At a reduction of 24:1 resolution of the original microfilm shall be at least 120 lines per mm (5.0 target) so that reproduction copies may be expected to comply with provisions of paragraph 7.1.4 of NMA Standard MS5.

(6) Background density of negative-appearing camera master microfiche of filmed paper documents shall be within the range 0.9 to 1.2 and line density should be no greater than 0.08. The density shall be visual diffuse density as measured using the method described in ANSI Standard PH 2.19–1959.

(7) A suitable index should be included on each microfiche.

(b) Microfiche generated by COM.

(1) Background density of negative-appearing COM-generated camera master microfiche shall be within the range of 1.7 to 2.0 and line density should be no greater than 0.2. The density shall be visual diffuse density as described in ANSI PH 2.19–1959.

(2) The first frame of each microfiche submitted shall contain a resolution test frame in conformance with NMA Standard MS1 (3.1.1).

(3) The second frame of each microfiche submitted must contain a fully descriptive title together with any other suitable index or other appropriate information.

(4) The pages appearing on the microfiche frames should be consecutively numbered.

(5) It is preferred that pagination of the microfiche frames be from left to right and top to bottom but the alternative, i.e., from top to bottom and from left to right, is also acceptable.

(c) *Optional use of either paragraph (a) or (b).* If the computer program listing is 11–50 pages long, applicants may utilize either the procedures of paragraph (a) or (b) of this section.

June 1, 1977. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved June 7, 1977.

JORDAN J. BARUCH,
Assistant Secretary for Science and Technology.

[FR Doc. 77-17030; Filed 6-14-77; 8:45 a.m.]
42 FR 30522, June 15, 1977

[960 O.G. 2]

(Pending—No Final Action Taken)

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(62) PRACTICE RE: APPLICATIONS INVOLVING COMPUTER PROGRAMS

On November 18, 1976, the Court of Customs and Patent Appeals decided the cases of *In re Noll* and *In re Chatfield*. In both cases the Board of Appeals had taken the position that the claims were drawn to non-statutory subject matter under the Supreme Court's decision in *Gottschalk* v. *Benson*, 409 U.S. 63, 175 USPQ 673 (1972). The Noll application claims were drawn to an apparatus and the Chatfield application claims were drawn to a method.

The CCPA reversed the Board of Appeals in both cases. Until these decisions become final and since further review or clarification may be forthcoming, the patent examining corps will continue to examine computer programming applications in accordance with its current interpretation of the Supreme Court decision in the Benson case.

Prosecution will be resumed on all applications previously suspended under 37 CFR 1.103(b). No further programming applications will be suspended at the instance of the Office.

C. MARSHALL DANN,
Dec. 14, 1976. *Commissioner of Patents and Trademarks.*

[954 O.G. 550]

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(63) PRIORITY CLAIMS BASED ON INVENTORS' CERTIFICATES

Pursuant to the provisions of 35 U.S.C. 119, last paragraph (as amended July 28, 1972), 37 CFR 1.55(c) requires that when an applicant wishes to claim a right of priority on the basis of an application for an inventor's certificate, ". . . the applicant or his attorney or agent, when submitting a claim for such right . . . shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or for an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority."

As such, it has been and remains the position of the Patent and Trademark Office that, in accordance with 35 U.S.C. 119, applications for inventors' certificates shall give rise to a right of priority only when the country in which they are filed gives to applicants, at their discretion, the right to apply, on the same invention, either for a patent or for an inventor's certificate. The affidavit or declaration specified under 37 CFR 1.55(c) is only required for the purpose of ascertaining whether, in the country where the application for an inventor's certificate originated, this option generally existed for applicants with respect to the

particular subject matter of the invention involved. The requirements of 35 U.S.C. 119 and 37 CFR 1.55(c) are not intended, however, to probe into the eligibility of the particular applicant to exercise the option in the particular priority application involved.

It is recognized that certain countries that grant inventors' certificates also provide by law that their own nationals who are employed in state enterprises may only receive inventors' certificates and not patents on inventions made in connection with their employment. This will not impair their right to be granted priority in the United States based on the filing of the inventor's certificate.

Accordingly, affidavits or declarations filed pursuant to 37 CFR 1.55(c) need only show that in the country in which the original inventor's certificate was filed, applicants generally have the right to apply at their own option either for a patent or an inventor's certificate as to the particular subject matter of the invention.

C. MARSHALL DANN,
Aug. 17. 1977. *Commissioner of Patents and Trademarks.*

[962 OG 14]

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(64) REQUIREMENTS FOR PRIORITY DOCUMENTS, PRIORITY BASED ON APPLICATION FOR INDUSTRIAL DESIGN

In the Federal Republic of Germany, an application for protection of an industrial design may be accompanied by either a model or a drawing. It is understood that German residents file such applications with their local judicial authority ("Amtsgericht") rather than with the German Patent Office in Munich.

Questions have been raised in this connection as to:

(1) What sort of priority document under 35 U.S.C. 119 is required when the original filing has comprised a model rather than a drawing, and

(2) Whether it is necessary where the original filing was with a local judicial authority to obtain also a certificate from the national patent office.

As to the first question, the Patent and Trademark Office will receive under 35 U.S.C. 119, as evidence of an earlier filed design application which included the deposit of a model, drawings or acceptable photographs of the deposited model faithfully reproducing the design embodied therein together with other required information, certified by an official of the court or office with which the application was originally filed.

No additional certification by the national patent office wil be required. Article 4D(3) of the Paris Convention refers to certification ". . . by the authority which received such application . . ." so the reference in 35 U.S.C. 119 to "patent office" will be construed to extend also to the authority in charge of the design register.

Aug. 15, 1977. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[962 OG 14]

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(65) RIGHT OF PRIORITY (35 U.S.C. 119) BASED ON A FOREIGN APPLICATION FILED UNDER A BILATERAL OR MULTILATERAL TREATY

Under Article 4A of the Paris Convention for the Protection of Industrial Property (21 UST 1583; 24 UST 2140; TIAS 6923, 7727; 852 O.G. 511) a right of priority may be based either on an application filed under the national law of a foreign country adhering to the Convention or on a foreign application filed under a bilateral or multilateral treaty concluded between two or more such countries. Examples of such treaties are the Hague Agreement Concerning the International Deposit of Industrial Designs, the Benelux Designs Convention, and the Libreville Agreement of September 13, 1962, relating to the creation of an African and Malagasy Industrial Property Office. The Convention on the Grant of European Patents and the Patent Cooperation Treaty will be further examples of such treaties once they enter into force.

The Priority Claim

In claiming priority of a foreign application previously filed under such a treaty, certain information must be supplied to the Patent and Trademark Office. In addition to the application number and the date of the filing of the application, the following information is required: (1) the name of the treaty under which the application was filed, (2) the name of at least one country other than the United States in which the application has the effect of, or is equivalent to, a regular national application, and (3) the name and location of the national or intergovernmental authority which received such application.

Certification of the Priority Papers

Section 119 of Title 35 of the United States Code requires the applicant to furnish a certified copy of priority papers. Certification by the authority empowered under a bilateral or multilateral treaty to receive applications which give rise to a right of priority under Article 4A(2) of the Paris Convention will be deemed to satisfy the certification requirement.

Aug. 9, 1977. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[962 OG 2]

APPEALS

(66) HEARINGS BEFORE THE BOARD OF APPEALS

In recent years the backlog of cases awaiting decision by the Board of Appeals has grown substantially. The average time elapsing between filing of the examiner's answer and final disposition is now roughly 17 months. Intensive effort by the Board and greater use of acting examiners-in-chief have been sucessful in raising the number of dispositions, but at the same time the number of appeals continues to grow. Thus in the first six months of 1974, the Board disposed of 1,193 appeals but received 1,915; in the last half of the year the Board disposed of 1,993 appeals but received 2,179.

In this connection it will be helpful if applicants and attorneys will dispense with oral hearings except where unusual circumstances are present which make a hearing important to the decision. Appeals submitted on brief receive just as careful consideration as those in which oral argument is presented, nor are any implications drawn as to the merits of the appeal from failure to request a hearing. It has been the Board's experience that in the ordinary case the hearing is not of great value in arriving at the ultimate decision.

Appellants are also encouraged to review cases where a hearing has already been requested, with a view to withdrawing the request if it is not necessary. It is particularly important that the Board be given timely notice whenever circumstances prevent the applicant or his representative from appearing at a scheduled hearing.

Rule 194 (37 CFR 1.194) limits oral argument to thirty minutes unless otherwise ordered by the Board. It has been the Board's experience, however, that effective arguments can be presented in less than thirty minutes in most cases. Effective immediately the Board will be informing appellants in the notices of hearing mailed to them that oral argument will be limited to *twenty minutes* unless otherwise ordered before the hearing begins.

The assistance of the public will be appreciated.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Date: Mar. 20, 1975.

[933 O.G. 1010]

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(67) REPLY BRIEFS

Applicants should clearly and specifically indicate in their reply briefs the new points of argument "raised in the examiner's answer" to which said reply briefs are directed. Rule 193(b) does not permit general rebuttal of each statement made in the examiner's answer; Consequently a reply brief which is not restricted to answering "new points" may be refused consideration in toto.

EDWIN L. REYNOLDS,
Apr. 15, 1969. *First Assistant Commissioner.*

[862 O.G. 343]

(68) APPEALS—CONFIDENTIAL MEMORANDA

The practice of presenting confidential memoranda to the Board of Appeals is hereby terminated. All correspondence with the Board of Appeals, whether by the Examiner or the applicant will be on the record. No unpublished decisions which are unavailable to the general public by reason of 35 U.S.C. 122 will be cited by the Examiner or the applicant except that either the Examiner or the applicant has the right to cite an unpublished decision in an application having common ownership with the application on appeal.

WILLIAM E. SCHUYLER, JR.,
July 28, 1970. *Commissioner of Patents.*

[877 O.G. 733]

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(69) EXAMINER TESTIMONY

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Mayewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works* v. *Joy Manufacturing Co.*, 167 USPQ 170, 171: " . . . the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the procedure set forth in Section 7.02, Department of Commerce Administrative Order 205–12, June 29, 1967 as amended April 10, 1970. That section states:

> In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (a) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (b) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. 762]

INTERFERENCES

(70) INTERFERENCE PRACTICE

Listing of Attorneys or Agents in Final Decisions

A recent inquiry was made at the Board of Patent Interferences relating to the listing of attorneys' names in the heading of the final decisions of the Board of Patent Interferences.

Since this is a matter that may be of interest to those who prosecute interferences in the United States Patent and Trademark Office, the present practice of the Board of Patent Interferences is set forth below.

The heading of final decisions of the Board of Patent Interferences separately lists the names of all attorneys, agents or firms recognized as representing a party in the interference. Since firms have not been recognized by the Office since July 2, 1971, the listing of firm names is limited to firms of record in applications filed prior to July 2, 1971, and in unexecuted continuations or divisions thereof (Rule 60).

The names of the attorneys, agents or firms are taken from the interference file wrapper. The noted file wrapper lists the attorney or agent or firm of record in the applications or patent involved in the interference. Additionally, the name of any attorney presenting a party's oral argument at the final hearing is separately listed.

If a party desires to correct a firm name or exclude an attorney or agent previously of record from the above-noted decision, steps should be taken *promptly* to correct the files involved in the interference. This should be done by proceeding pursuant to the provisions of Rule 36, or by taking such other action as the party deems appropriate.

WALTER A. MODANCE,
May 6, 1975. *Chairman, Board of Patent Interferences.*

[935 O.G. 3]

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(71) INTERFERENCE PRACTICE

Settlement Agreements

Inquiries by attorneys have been made from time to time at the Board of Patent Interferences as to why the Commissioner does not give notice to the parties or their attorneys of record, a reasonable time prior to termination of an interference, of the requirement relative to the filing of settlement agreements, citing 35 USC 135(c), second paragraph.

Attention is called to the fact that notice is given in the second full paragraph of Form POL–76, the letter to the parties advising them of the declaration of the interference.

WALTER A. MODANCE,
Oct. 15, 1975. *Chairman, Board of Patent Interferences.*

[940 O.G. 570]

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(72) ACCESSIBILITY OF NON-FINAL DISCOVERY OPINIONS AND ORDERS ISSUED BY THE BOARD OF PATENT INTERFERENCES

A number of inquiries have been received from the patent bar and other interested persons relating to discovery practice under 37 C.F.R. § 1.287 before the Board of Patent Interferences. The inquiries indicate a need for making available to the public non-final Board opinions, including concurring and dissenting opinions, as well as orders, made in the ad-

judication of discovery matters before the Board. While non-final opinions need not be made available to the public [5 U.S.C. § 552(a)(2)], in order to satisfy the need, copies of non-final opinions issued by the Board will be kept in a file in the Service Branch of the Board in the U.S. Patent and Trademark Office (Crystal Plaza, Building 6, Eleventh Floor, Room 1116, Arlington, Virginia). Opinions in the file may be reviewed by the public during normal business hours (8:30 A.M. to 5:00 P.M.). Copies of opinions may be made by the public on reproducing equipment in the Service Branch with tokens at a cost of $0.15 per page or copies may be ordered at a cost of $0.30 per page [37 C.F.R. 1.21(b)].

In view of the provisions of 35 U.S.C. § 122 and 37 C.F.R. § 1.11(a), a consent will be obtained by the Office from all parties in an interference before an opinion issued in connection with the interference is placed in the file if the interference file is not otherwise available to the public. Preliminary indications are that the parties and their counsel generally consent.

In order to obtain optimum dissemination of the information contained in the file, opinions placed therein will be indexed according to specific topics. Copies of the index will be updated from time to time as the need occurs. Specific questions relating to the index and file may be directed to the Patent Interference Examiners.

The initial index is as follows:

Index

1.00 Discovery in general [37 C.F.R. § 1.287]
- 1.10 Requests and service under § 1.287(a)
- 1.20 Requests under § 1.287(b)
- 1.30 Motions for additional discovery under § 1.287(c)
  - 1.31 Related to derivation
  - 1.32 Related to abandonment, suppression, and concealment
  - 1.33 Related to inequitable conduct
  - 1.34 Other
- 1.40 Motions under § 1.287(d)(1)
- 1.50 Action under § 1.287(d)(2)
- 1.60 Agreements under § 1.287(e)

C. MARSHALL DANN,
Mar. 5, 1976. *Commissioner of Patents and Trademarks.*

[944 O.G. 2098]

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(73) INTERFERENCE PRACTICE

[37 CFR Part 1]

Notice of Proposed Rulemaking

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) as amended on October 5, 1971 (Pub. L. 92-132, 85 Stat. 364), the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending §§ 1.205, 1.207, 1.215, 1.216, 1.217, 1.222, 1.223, 1.225, 1.245, 1.247, 3.44, 3.45 and 5.3 and by adding § 1.246.

All persons are invited to present their views, objections, recommendations or suggestions relating to the proposed rule changes to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on or before January 21, 1977. All comments received will be available for public inspection in Room 11E10 of Building 3, at 2021 Jefferson Davis Highway, Arlington, Virginia. No oral hearing will be held.

This proposal has been reviewed and determined to have no major inflationary impact.

These rule changes are intended to improve the practice before the Board of Patent Interferences and to correct some inconsistencies in the rules. The rule changes (1) provide a patentee with notice as soon as a claim is copied from the patent so that the patentee can preserve the invention records from the moment he receives said notice until the time, in some instances many years later, when an interference is ultimately declared between the patentee and the copier, (2) bring § 1.207(b) in confirmity with § 1.207(a), (3) simplify the rules relating to preliminary statements in view of the decisions, *Reddy* v. *Davis*, 187 USPQ 386 (Comm. Dec. 1975) and *Reddy* v. *Dann*, 188 USPQ 644 (CCPA 1976), (4) fill a void now existing in § 1.225, (5) make minor changes in §§ 1.245 and 1.247 and create new § 1.246 and (6) make § 1.217 consistent with § 1.215.

ATTENTION

The texts of the following proposed amendments are using ► ◄ arrows to indicate additions and [ ] brackets to indicate deletions.

It is proposed to amend 37 CFR, Parts 1, 3 and 5 as follows:

1. Revising § 1.205 by adding paragraph (c) thereto as follows:

§ 1.205 *Interference with a patent; copying claims from patent.*

* * * * *

►(c) A notice that one or more claims of a patent have been copied, or substantially copied by an applicant(s), will be placed in the file wrapper of the patent and a copy of said notice will be sent to the patentee. However, the identity of the applicant(s) will not be disclosed to the patentee unless an interference is declared.◄

2. By revising § 1.207(b) to read as follows:

§ 1.207. *Preparation of interference papers and declaration of interference.*

* * * * *

(b) A patent interference examiner will institute and declare the interference by forwarding notices to the several parties to the proceeding. Each notice shall include the name and residence of each of the other parties and those of his attorney or agent, and of any assignee, and will identify the application of each opposing party by serial number and filing date, or in the case of a patentee by the number and date of the patent. The notices shall also specify the issue of the interference, which shall be clearly and concisely defined in only as many counts as may be necessary to define the interfering subject matter (but in the case of an interference with a patent all the claims of the patent which can be made by the applicant should constitute the counts), and shall indicate the claim or claims of the respective cases corresponding to the count or counts. [If the application or patent of a party included in the interference is a division, continuation or continuation-in-part of a prior application and the examiner has determined that it is entitled to the filing date of such prior application, the notices shall so state.] ►If the primary examiner has indicated that the patent or application of any party included in the interference is entitled to the benefit of the filing date of any prior applications as to the subject matter in issue, the notices shall so state and shall specify such prior applications.◄ Except as noted in paragraph (e) of this section, the notices shall also set a schedule of times for taking various actions as follows:

(1) For filing the preliminary statements required by § 1.215 and serving notice of such filing, not less than 2 months from the date of declaration.

(2) For each party who files a preliminary statement to serve a copy thereof on each opposing party who also files a preliminary statement as required by § 1.215(b), not less than 15 days after the expiration of the time for filing preliminary statements.

(3) For filing motions under § 1.231, not less than 4 months from declaration.

* * * * *

3. By revising § 1.215(b) to read as follows:

§ 1.215 *Preliminary statement required.*

* * * * *

(b) A party who files a preliminary statement shall at the same time notify all opposing parties of that fact and by the time set for that purpose he shall serve a copy of his preliminary statement [and all attached documents on every opposing party from whom he has received notification of the filing of a statement.] ►on every opposing party from whom he has received notification of the filing of a statement.◄

* * * * *

4. By revising § 1.216 to read as follows:

§ 1.216 *Contents of the preliminary statement.*

(a) The preliminary statement must state that the party made the invention set forth by each count of the interference, and whether the invention was made in the United States or abroad. When the invention was made in the United States the preliminary statement must set forth as to the invention defined by each count the following facts:

(1) The date upon which the [first drawing of the invention was made; if a drawing of the invention has not been made prior to the filing date of the application, it must be so stated.] ►invention of each count was conceived.◄

(2) The date [upon which the first written description of the invention was made; if a written description of the invention has not been made prior to the filing date of the application, it must be so stated.] ►after conception of said invention when active exercise of reasonable diligence toward reducing the invention to practice began.◄

(3) The date [upon which the invention was first disclosed to another person; if the invention was not disclosed to another person prior to the filing date of the application, it must be so stated.] ►of the actual reduction to practice of the invention; if the invention has not actually been reduced to practice before the filing date of the involved application, it must be so stated.◄

[(4) The date of the first act or acts susceptible of proof (other than making a drawing or written description or disclosing the invention to another person) which, if proven, would establish conception of the invention, and a brief description of such act or acts; if there have been no such acts, it must be so stated.

(5) The date of the actual reduction to practice of the invention; if the invention has not been actually reduced to practice before the filing date of the application, it must be so stated.

(6) The date after conception of the invention when active exercise of reasonable diligence toward reducing the invention to practice began.]

Paragraph (b) is deleted and present paragraph (c) is substituted as new paragraph (b) as follows:

[(b) When an allegation as to the first drawing (paragraph (a)(1) of this section) and/or as to the first written description (paragraph (a)(2) of this section) is made, a copy of such drawing and/or written description must be attached to the statement. (See § 1.223(c).)]

[(c)] ►(b)◄ If a party intends to rely solely on a prior application, domestic or foreign, and on no other evidence, the preliminary statement may so state and need not be signed or sworn to or declaration made by the inventor.

5. By revising § 1.217 to read as follows:

§ 1.217 *Contents of the preliminary statement; invention made abroad.*

[(a)] When the invention was made abroad the facts specified by § 1.216(a)(1) to [(6)] ►(3)◄ are not required, and in lieu thereof there should be stated:

(1) When the invention was introduced into this country by or on behalf of the party, giving the circumstances with the dates connected therewith which are relied upon to establish the fact and, when appropriate, including allegations of activity in this country of the nature of that represented by § 1.216(a)(1) to [(6)] ►(3).◄ [and documentary attachments if the allegations relate to a drawing or written description.] ►Such statement may be signed and sworn to, or made in the form of a declaration, either by the inventor or by one authorized to make the statement and having knowledge of the facts alleged therein.◄

(2) If a party is entitled to the benefit of the second sentence of 35 U.S.C. 104, he must so state and his preliminary statement must include allegations of activity abroad corresponding to those required by § 1.215(a) (1) to [(6)] (3).

6. By revising § 1.222 to read as follows:

§ 1.222 *Correction of statement on motion.*

In case of material error arising through inadvertence or mistake, the statement [or attachments] may be corrected [or omitted attachments may be supplied on motion] (see § 1.243), upon a satisfactory showing that such action is essential to the ends of justice. The motion must be made, if possible, before the taking of any testimony, and as soon as practicable after the discovery of the error.

7. By revising § 1.223(c) to read as follows:

§ 1.223 *Effect of statement.*

* * * * *

(c) If a party to an interference fails to file a statement, testimony will not be received subsequently from him to prove that he made the invention at a date prior to his effective filing date. [If a party alleges in his statement a date of first drawing or first written description but does not attach a copy of such drawing or written description as required by § 1.216(b), he will be restricted to his effective filing date as to that allegation unless such copy is admitted by motion under § 1.222.]

* * * * *

8. By revising § 1.225 to read as follows:

§ 1.225. *Failure of junior party to file statements or to overcome filing date of senior party.*

If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of the application of another party, judgment on the record will be entered against such junior party unless he has filed a proper motion under § 1.231, within the time set for such motions, seeking some action in the interference. If such motion has been timely filed but does not result in action in the interference which removes the basis for a judgment on the record, such judgment will be entered unless the motion related to a matter which may be reviewed at final hearing under § 1.258, and within 30 days of the decision denying his motion, or a later time set by the patent interference examiner, the junior party concerned requests that final hearing be set to review such matter. ►If, as a result of a decision on motion, the original senior party is deprived of the benefit of an earlier filed application and is thereby made a junior party and if in addition he relies solely on said earlier filed application in his preliminary statement, he stands in the same position as a junior party whose statement fails to overcome the effective filing date of the senior party as in the first sentence of § 1.225.◄ Also, such a junior party may within such 30 day period, or time set, request a final hearing to review such a matter raised by his opposition to a motion under § 1.231(a), (2), (3), (4), or (5) which was granted over his opposition. Such a junior party will not be permitted to take testimony except on granting of a motion accompanied by a showing of good cause, which should normally include names of proposed witnesses and affidavits or declarations by them giving their expected testimony.

9. Revising § 1.245 by deleting the second sentence thereof so as to read as follows:

§ 1.245 *Extension of time.*

Extensions of time in any case not otherwise provided for may be had by stipulation of the parties, subject to approval, or on motion duly brought, sufficient cause being shown for such extention. [A motion not timely made may be considered upon a showing of sufficient cause as to why such motion was not timely presented.]

10. By adding new rule § 1.246 as follows:

►§ 1.246. *Late papers.*

A motion or other paper belatedly filed will not normally be considered except upon a showing, under oath or in the form of a declaration (§ 1.68), of sufficient cause as to why such motion or paper was not timely presented.◄

11. Revising the format of § 1.247 so as to read as follows:

§ 1.247 *Service of papers.*

►(a)◄ Every paper filed in the Patent and Trademark Office in interference proceeding must be served upon the other parties in the manner provided in § 1.248, except the following:

[(a)] ►(1)◄ Preliminary statements at the time of filing but see § 1.215(b) and (c).

[(b)] ►(2)◄ Documentary exhibits introduced at the taking of a deposition.

[(c)] ►(3)◄ Certified transcripts of testimony under § 1.276 (but copies of the record must be served (§ 1.253(a)).

[(d)] ►(4)◄ Statutory disclaimers under 35 U.S.C. 253.

►(b)◄ The specification in certain sections that a designated paper must be served does not imply that other papers, not expected above need not be served. However, the requirement for service of designated papers may be waived under particular circumstances and service may be required of other designated papers which need not ordinarily be served. Proof of service must be made before the paper will be considered in the interference by the Office. A statement of the attorney, attached to or appearing in the original paper when filed, clearly stating the time and manner in which service was made will be accepted as prima facie proof of service.

12. By revising § 3.44 to read as follows:

§ 3.44 *Interference; preliminary statement of domestic inventor.*

Preliminary statement _____
_____
v. } Interference No. _____
_____
_____ } ss
_____, being duly sworn (or affirmed), deposes and says that he is a party to the above identified interference, that he made the invention set forth by [the counts] ►each count◄ of the interference in the United States; that

(1) [The first drawing of the invention was made] ►The invention of each count was conceived◄ on _____, 19____. [A copy is attached.[1]]

(2) [The first written description of the invention was made] ► Active exercise of reasonable diligence toward reducing the invention to practice began◄ on _____, 19____. [A copy is attached.[1]]

(3) The invention was [first disclosed to others] ►actually reduced to practice◄ on _____, 19____.[1]

[(4) The date of the first act or acts susceptible of proof, other than acts of the character specified in (1), (2), and (3) which, if proven, would establish conception of the invention, and a brief description of such act or acts are (e.g. the making of a non-operating model on _____, 19____).

(5) The invention was actually reduced to practice on _____, 19____.

(6) Active exercise of reasonable diligence toward reducing the invention to practice began on _____, 19____.[1]]

_____
(Signature of inventor)

Subscribed and sworn to (or affirmed) before me this ____date of _____, 19____.

[SEAL]

_____
(Signature of notary public officer)

_____
(Official character)

13. Revising § 3.45 by changing line 3 of the last paragraph of the section.

§ 3.45 *Interference; preliminary statement of foreign inventor.*

• • • • • •

• • • When acts were performed in the United States corresponding to the allegations (1) through [(6)] ►(3)◄ in the preliminary statement of a domestic inventor (§ 3.44) these acts should be included by appropriate allegations in the preliminary statement of a foreign inventor.

14. Revising § 5.3(b) by adding a third sentence as follows:

§ 5.3 *Prosecution of application under secrecy order; withholding patent.*

(b) • • • An interference will not be declared involving applications under secrecy order. However, if an application under secrecy order copies claims from an issued patent, a notice of that fact will be placed in the file wrapper of the patent. ►See § 1.205(c).◄

• • • • • •

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Dated: November 19, 1976.

Approved:

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc.76-35049; Filed 11-29-76; 8:45 am]

(Pending—No Final Action Taken)

[1] If there were no act corresponding to this allegation prior to the filing date of the application, it must be so stated. [Note, however, date of completion of application drawing and specification, date of disclosure to person preparing the application, and diligence in preparing the application.]

MISCELLANEOUS

(74) DISCLOSURE DOCUMENT PROGRAM

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program.

Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

THE PROGRAM

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

CONTENT OF DISCLOSURE DOCUMENT

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8½ by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

RETENTION

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

WARNING AS TO LIMITATIONS

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Jan. 4, 1971. *Assistant Commissioner of Patents.*

[883 O.G. 3]

(75) POSTAL SERVICE EMERGENCY CONTINGENCY PLAN

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557-3158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

Upon determination that an emergency exists, the following procedures may be followed: All papers and fees should be enclosed in a sealed envelope addressed to the Patent and Trademark Office and deposited in one of the District Offices. Such papers will be considered as received in the U.S. Patent and Trademark Office on the day of deposit. The District Office will date stamp each envelope and the accompanying receipt card which completely identifies the deposited papers. The receipt card will be returned to the depositor. Applicants or their representatives should assure the legibility of the date stamp.

District Office deposits should be limited to checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

Where papers originate from overseas, it is suggested that the papers be mailed to a registered agent in Canada, with a request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices, subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766-2386.

ANCHORAGE, 99501, 632 Sixth Ave., 1011 Bldg., Suite 412 (907) 265-4597.

ATLANTA, 30309, Suite 523, 1401 Peachtree St., NE. (404) 526-6000.

BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962-3560.

BIRMINGHAM, ALA., 35205, Suite 200-201, 908 S. 20th St. (205) 325-3327.

BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 223-2312.

BUFFALO, N.Y., 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842-3208.

CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343-6181, Ext. 375.

CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 778-2151.

CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353-4450.

CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (513) 684-2944.

CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522-4750.

COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765-5345.

DALLAS, 75202, Room 3E7, 1100 Commerce St. (214) 749-1515.

DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837-3246.

DES MOINES, IOWA, 50309, 609 Federal Bldg., 210 Walnut St. (515) 284-4222.

DETROIT, 48226, 445 Federal Bldg. (313) 226-3650.

GREENSBORO, N.C., 27402, 203 Federal Bldg., W. Market St., P.O. Box 1950, (919) 275-9111, Ext. 345.

HARTFORD, CONN. 06103, Room 610-B, Federal Office Bldg., 450 Main St. (203) 244-3530.

HONOLULU, 96813, 286 Alexander Young Bldg., 1015 Bishop St. (808) 546-8694.

HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226-4231.

INDIANAPOLIS, 46204, 355 Federal Office Bldg., 46 E. Ohio St. (317) 269-6214.

KANSAS CITY, MO., 64106, Room 1840, 601 E. 12th St. (816) 374-3142.

LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824-7591.

MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 534-3213.

MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350-5267.

MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224-3473.

MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725-2133.

NEW ORLEANS, 70130, Room 432, International Trade Mart, 2 Canal St. (504) 589-6546.

NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264-0634.

NEWARK, N.J., 07102, Gateway Bldg., (4th floor) (201) 645-6214.

PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597-2850.

PHOENIX, ARIZ., 85004, 508 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261-3285.

PITTSBURGH, 15222, 431 Federal Bldg., 1000 Liberty Ave. (412) 644-2850.

PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittock Block. (503) 221-3001.

RENO, NEV., 89502, 2028 Federal Bldg., 300 Booth St. (702) 784-5203.

RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782-2246.

ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622-4243.

SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524-5116.

SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave., (415) 556-5860.

SAN JUAN, P.R., 00902, Room 100, Post Office Bldg. (809) 723-4640.

SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125-29 Bull St. (912) 232-4204.

SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442-5615.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

July 18, 1975.

[937 O.G. 386]

(76) PATENT COOPERATION TREATY: IMPLEMENTING LEGISLATION AND RATIFICATION

Public Law 94-131, as reprinted below, implements the Patent Cooperation Treaty (see Official Gazette, Volume 876, page 341; July 14, 1970) which was signed by the United States and 34 other countries in 1970. After enactment of the implementing legislation on November 14, 1975, the United States ratified the Treaty on November 26, 1975, thereby becoming the first country with major patent activity to do so. In accordance with the provisions of Article 63 of the Treaty, it enters into force three months after eight countries have adhered to it, four of which must have certain defined major patent activity.

Up to the time of United States ratification eight countries with only minor patent activity had adhered to the Treaty. Ratification by the United States, therefore, represents a significant step in the direction of bringing the Treaty into force. Other countries with major patent activity, and especially European countries, have been awaiting United States ratification before adhering themselves. Consequently, it is hoped that United States commitment to the Treaty has been demonstrated and will encourage adherence by other countries with major patent activity, thereby bringing into force a Treaty which would offer many advantages and benefits to patent applicants and patent offices alike. Because of the necessary action of other countries in bringing the Treaty into force, no exact date can be given at this time. It is presently estimated, however, that at least the necessary number of countries would be reached in Fiscal Year 1977.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Date: Dec. 11, 1975.

Public Law 94-131
94th Congress, S. 24
November 14, 1975

An Act

To carry into effect certain provisions of the Patent Cooperation Treaty, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title 35, United States Code, entitled "Patents", be amended by adding at the end thereof a new part IV to read as follows:

Patent Cooperation Treaty.

"PART IV.—PATENT COOPERATION TREATY

"Chapter 35.—DEFINITIONS

"Sec.
"351. Definitions.

35 USC 351.

"§ 351. Definitions

"When used in this part unless the context otherwise indicates—

"(a) The term 'treaty' means the Patent Cooperation Treaty done at Washington, on June 19, 1970, excluding chapter II thereof.

"(b) The term 'Regulations', when capitalized, means the Regulations under the treaty excluding part C thereof, done at Washington on the same date as the treaty. The term 'regulations', when not capitalized, means the regulations established by the Commissioner under this title.

"(c) The term 'international application' means an application filed under the treaty.

"(d) The term 'international application originating in the United States' means an international application filed in the Patent Office when it is acting as a Receiving Office under the treaty, irrespective of whether or not the United States has been designated in that international application.

"(e) The term 'international application designating the United States' means an international application specifying the United States as a country in which a patent is sought, regardless where such international application is filed.

"(f) The term 'Receiving Office' means a national patent office or intergovernmental organization which receives and processes international applications as prescribed by the treaty and the Regulations.

"(g) The term 'International Searching Authority' means a national patent office or intergovernmental organization as appointed under the treaty which processes international applications as prescribed by the treaty and the Regulations.

"(h) The term 'International Bureau' means the international intergovernmental organization which is recognized as the coordinating body under the treaty and the Regulations.

"(i) Terms and expressions not defined in this part are to be taken in the sense indicated by the treaty and the Regulations.

"Chapter 36.—INTERNATIONAL STAGE

"Sec.
"361. Receiving Office.
"362. International Searching Authority.
"363. International application designating the United States: Effect.
"364. International stage: Procedure.
"365. Right of priority; benefit of the filing date of a prior application.
"366. Withdrawn international application.
"367. Actions of other authorities: Review.
"368. Secrecy of certain inventions; filing international applications in foreign countries.

35 USC 361.

"§ 361. Receiving Office

"(a) The Patent Office shall act as a Receiving Office for international applications filed by nationals or residents of the United States. In accordance with any agreement made between the United States and another country, the Patent Office may also act as a Receiving Office for international applications filed by residents or nationals of such country who are entitled to file international applications.

"(b) The Patent Office shall perform all acts connected with the discharge of duties required of a Receiving Office, including the collection of international fees and their transmittal to the International Bureau.

"(c) International applications filed in the Patent Office shall be in the English language.

"(d) The basic fee portion of the international fee, and the transmittal and search fees prescribed under section 376(a) of this part, shall be paid on filing of an international application. Payment of designation fees may be made on filing and shall be made not later than one year from the priority date of the international application.

Post, p. 690.

35 USC 362.

"§ 362. International Searching Authority

"The Patent Office may act as an International Searching Authority with respect to international applications in accordance with the terms and conditions of an agreement which may be concluded with the International Bureau.

35 USC 363.

"§ 363. International application designating the United States: Effect

"An international application designating the United States shall have the effect, from its international filing date under article 11 of the treaty, of a national application for patent regularly filed in the Patent Office except as otherwise provided in section 102(e) of this title.

Post, p. 691.

35 USC 364.

"§ 364. International stage: Procedure

"(a) International applications shall be processed by the Patent Office when acting as a Receiving Office or International Searching Authority, or both, in accordance with the applicable provisions of the treaty, the Regulations, and this title.

"(b) An applicant's failure to act within prescribed time limits in connection with requirements pertaining to a pending international application may be excused upon a showing satisfactory to the Commissioner of unavoidable delay, to the extent not precluded by the treaty and the Regulations, and provided the conditions imposed by the treaty and the Regulations regarding the excuse of such failure to act are complied with.

35 USC 365.

"§ 365. Right of priority; benefit of the filing date of a prior application

35 USC 119.

"(a) In accordance with the conditions and requirements of section 119 of this title, a national application shall be entitled to the right of

priority based on a prior filed international application which designated at least one country other than the United States.

"(b) In accordance with the conditions and requirement of the first paragraph of section 119 of this title and the treaty and the Regulations, an international application designating the United States shall be entitled to the right of priority based on a prior foreign application, or a prior international application designating at least one country other than the United States. 35 USC 119.

"(c) In accordance with the conditions and requirements of section 120 of this title, an international application designating the United States shall be entitled to the benefit of the filing date of a prior national application or a prior international application designating the United States, and a national application shall be entitled to the benefit of the filing date of a prior international application designating the United States. If any claim for the benefit of an earlier filing date is based on a prior international application which designated but did not originate in the United States, the Commissioner may require the filing in the Patent Office of a certified copy of such application together with a translation thereof into the English language, if it was filed in another language. Post, p. 692.

"§ 366. Withdrawn international application 35 USC 366.

"Subject to section 367 of this part, if an international application designating the United States is withdrawn or considered withdrawn, either generally or as to the United States, under the conditions of the treaty and the Regulations, before the applicant has complied with the applicable requirements prescribed by section 371(c) of this part, the designation of the United States shall have no effect and shall be considered as not having been made. However, such international application may serve as the basis for a claim of priority under section 365 (a) and (b) of this part, if it designated a country other than the United States. Infra.

"§ 367. Actions of other authorities: Review 35 USC 367.

"(a) Where a Receiving Office other than the Patent Office has refused to accord an international filing date to an international application designating the United States or where it has held such application to be withdrawn either generally or as to the United States, the applicant may request review of the matter by the Commissioner, on compliance with the requirements of and within the time limits specified by the treaty and the Regulations. Such review may result in a determination that such application be considered as pending in the national stage.

"(b) The review under subsection (a) of this section, subject to the same requirements and conditions, may also be requested in those instances where an international application designating the United States is considered withdrawn due to a finding by the International Bureau under article 12(3) of the treaty.

"§ 368. Secrecy of certain inventions; filing international applications in foreign countries 35 USC 368.

"(a) International applications filed in the Patent Office shall be subject to the provisions of chapter 17 of this title. 35 USC 181 et seq.

"(b) In accordance with article 27(8) of the treaty, the filing of an international application in a country other than the United States on the invention made in this country shall be considered to constitute the filing of an application in a foreign country within the meaning of chapter 17 of this title, whether or not the United States is designated in that international application.

"(c) If a license to file in a foreign country is refused or if an international application is ordered to be kept secret and a permit refused, the Patent Office when acting as a Receiving Office or International Searching Authority, or both, may not disclose the contents of such application to anyone not authorized to receive such disclosure.

"Chapter 37.—NATIONAL STAGE

"Sec.
"371. National stage: Commencement.
"372. National stage: Requirements and procedure.
"373. Improper applicant.
"374. Publication of international application: Effect.
"375. Patent issued on international application: Effect.
"376. Fees.

35 USC 371. **"§ 371. National stage: Commencement**

"(a) Receipt from the International Bureau of copies of international applications with amendments to the claims, if any, and international search reports is required in the case of all international applications designating the United States, except those filed in the Patent Office.

"(b) Subject to subsection (f) of this section, the national stage shall commence with the expiration of the applicable time limit under article 22 (1) or (2) of the treaty, at which time the applicant shall have complied with the applicable requirements specified in subsection (c) of this section.

"(c) The applicant shall file in the Patent Office—

"(1) the national fee prescribed under section 376(a)(4) of this part;

"(2) a copy of the international application, unless not required under subsection (a) of this section or already received from the International Bureau, and a verified translation into the English language of the international application, if it was filed in another language;

"(3) amendments, if any, to the claims in the international application, made under article 19 of the treaty, unless such amendments have been communicated to the Patent Office by the International Bureau, and a translation into the English language if such amendments were made in another language;

"(4) an oath or declaration of the inventor (or other person authorized under chapter 11 of this title) complying with the requirements of section 115 of this title and with regulations prescribed for oaths or declarations of applicants. 35 USC 111 et seq. 35 USC 115.

"(d) Failure to comply with any of the requirements of subsection (c) of this section, within the time limit provided by article 22 (1) or (2) of the treaty shall result in abandonment of the international application.

"(e) After an international application has entered the national stage, no patent may be granted or refused thereon before the expiration of the applicable time limit under article 28 of the treaty, except with the express consent of the applicant. The applicant may present amendments to the specification, claims, and drawings of the application after the national stage has commenced.

"(f) At the express request of the applicant, the national stage of processing may be commenced at any time at which the application is in order for such purpose and the applicable requirements of subsection (c) of this section have been complied with.

"§ 372. National stage: Requirements and procedure 35 USC 372.

"(a) All questions of substance and, within the scope of the requirements of the treaty and Regulations, procedure in an international application designating the United States shall be determined as in the case of national applications regularly filed in the Patent Office.

"(b) In case of international applications designating but not originating in, the United States—

"(1) the Commissioner may cause to be reexamined questions relating to form and contents of the application in accordance with the requirements of the treaty and the Regulations;

"(2) the Commissioner may cause the question of unity of invention to be reexamined under section 121 of this title, within the scope of the requirements of the treaty and the Regulations. 35 USC 121.

"(c) Any claim not searched in the international stage in view of a holding, found to be justified by the Commissioner upon review, that the international application did not comply with the requirement for unity of invention under the treaty and the Regulations, shall be considered canceled, unless payment of a special fee is made by the applicant. Such special fee shall be paid with respect to each claim not searched in the international stage and shall be submitted not later than one month after a notice was sent to the applicant informing him that the said holding was deemed to be justified. The payment of the special fee shall not prevent the Commissioner from requiring that the international application be restricted to one of the inventions claimed therein under section 121 of this title, and within the scope of the requirements of the treaty and the Regulations.

"§ 373. Improper applicant 35 USC 373.

"An international application designating the United States, shall not be accepted by the Patent Office for the national stage if it was filed by anyone not qualified under chapter 11 of this title to be an applicant for the purpose of filing a national application in the United States. Such international applications shall not serve as the basis for the benefit of an earlier filing date under section 120 of this title in a subsequently filed application, but may serve as the basis for a claim of the right of priority under section 119 of this title, if the United States was not the sole country designated in such international application. 35 USC 111 et seq. Post, p. 692. 35 USC 119.

"§ 374. Publication of international application: Effect 35 USC 374.

"The publication under the treaty of an international application shall confer no rights and shall have no effect under this title other than that of a printed publication.

"§ 375. Patent issued on international application: Effect 35 USC 375.

"(a) A patent may be issued by the Commissioner based on an international application designating the United States, in accordance with the provisions of this title. Subject to section 102(e) of this title, such patent shall have the force and effect of a patent issued on a national application filed under the provisions of chapter 11 of this title. Post, p. 691.

"(b) Where due to an incorrect translation the scope of a patent granted on an international application designating the United States, which was not originally filed in the English language, exceeds the scope of the international application in its original language, a court of competent jurisdiction may retroactively limit the scope of the patent, by declaring it unenforceable to the extent that it exceeds the scope of the international application in its original language.

35 USC 376. **"§ 376. Fees**

"(a) The required payment of the international fee, which amount is specified in the Regulations, shall be paid in United States currency. The Patent Office may also charge the following fees:

"(1) A transmittal fee (see section 361(d));

"(2) A search fee (see section 361(d));

"(3) A supplemental search fee (to be paid when required);

"(4) A national fee (see section 371(c));

"(5) A special fee (to be paid when required; see section 372(c));

"(6) Such other fees as established by the Commissioner.

"(b) The amounts of fees specified in subsection (a) of this section, except the international fee, shall be prescribed by the Commissioner. He may refund any sum paid by mistake or in excess of the fees so specified, or if required under the treaty and the Regulations. The Commissioner may also refund any part of the search fee, where he determines such refund to be warranted.".

SEC. 2. Section 6 of title 35, United States Code, is amended by adding a paragraph (d) to read as follows:

35 USC 6. **"§ 6. Duties of Commissioner**

* * * * * * *

"(d) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, allocate funds appropriated to the Patent Office, to the Department of State for the purpose of payment of the share on the part of the United States to the working capital fund established under the Patent Cooperation Treaty. Contributions to cover the share on the part of the United States of any operating deficits of the International Bureau under the Patent Cooperation Treaty shall be included in the annual budget of the Patent Office and may be transferred by the Commissioner, under the direction of the Secretary of Commerce, to the Department of State for the purpose of making payments thereof to the International Bureau.".

SEC. 3. Item 1 of section 41(a) of title 35, United States Code, is amended to read as follows:

35 USC 41. **"§ 41. Patent fees**

"(a) The Commissioner shall charge the following fees:

"1. On filing each application for an original patent, except in design cases, $65; in addition on filing or on presentation at any other time, $10 for each claim in independent form which is in excess of one, and $2, for each claim (whether independent or dependent) which is in excess of ten. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.". Post, p. 691.

SEC. 4. Section 42 of title 35, United States Code, is amended to read as follows:

35 USC 42. **"§ 42. Payment of patent fees; return of excess amounts**

"All patent fees shall be paid to the Commissioner who, except as provided in sections 361(b) and 376(b) of this title, shall deposit the same in the Treasury of the United States in such manner as the Secretary of the Treasury directs, and the Commissioner may refund any sum paid by mistake or in excess of the fee required by law.". Ante, p. 686, Supra.

SEC. 5. Paragraph (e) of section 102 of title 35, United States Code, is amended to read as follows:

"§ 102. Conditions for patentability; novelty and loss of right to patent 35 USC 102.

* * * * * * *

"(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or".

SEC. 6. The first sentence of section 104 of title 35, United State Code, is amended to read as follows:

"§ 104. Invention made abroad 35 USC 104.

"In proceedings in the Patent Office and in the courts, an applicant for a patent, or a patentee, may not establish a date of invention by reference to knowledge or use thereof, or other activity with respect thereto, in a foreign country, except as provided in sections 119 and 365 of this title.". 35 USC 119, 365.

SEC. 7. The second sentence of the second paragraph of section 112 of title 35, United States Code, is amended to read as follows: Ante, p. 686.

"§ 112. Specification 35 USC 112.

* * * * * * *

"A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

"Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

"A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.".

SEC. 8. Section 113 of title 35, United States Code, is amended to read as follows:

"§ 113. Drawings 35 USC 113.

"The applicant shall furnish a drawing where necessary for the understanding of the subject matter sought to be patented. When the nature of such subject matter admits of illustration by a drawing and the applicant has not furnished such a drawing, the Commissioner may require its submission within a time period of not less than two months from the sending of a notice thereof. Drawings submitted after the filing date of the application may not be used (i) to overcome any insufficiency of the specification due to lack of an enabling disclosure or otherwise inadequate disclosure therein, or (ii) to supplement the original disclosure thereof for the purpose of interpretation of the scope of any claim.".

SEC. 9. Section 120 of title 35, United States Code, is amended to read as follows:

35 USC 120. **"§ 120. Benefit of earlier filing date in the United States**

35 USC 112. "An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section Ante, p. 686. 363 of this title, by the same inventor shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.".

SEC. 10. The first paragraph of section 282 of title 35, United States Code, is amended to read as follows:

35 USC 282. **"§ 282. Presumption of validity; defenses**

"A patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.".

Effective dates. 35 USC 351 note. SEC. 11. (a) Section 1 of this Act shall come into force on the same day as the entry into force of the Patent Cooperation Treaty with respect to the United States. It shall apply to international and national applications filed on and after this effective date, even though entitled to the benefit of an earlier filing date, and to patents issued on such applications.

(b) Sections 2 to 10 of this Act shall take effect on the same day as section 1 of this Act and shall apply to all applications for patent actually filed in the United States on and after this effective date, as well as to international applications where applicable.

(c) Applications for patent on file in the Patent Office on the effective date of this Act, and patents issued on such applications, shall be governed by the provisions of title 35, United States Code, in effect immediately prior to the effective date of this Act.

Approved November 14, 1975.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 94-592 (Comm. on the Judiciary).
SENATE REPORT No. 94-215 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 121 (1975):
June 21, considered and passed Senate.
Nov. 3, considered and passed House.

(77) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER 1—PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE

[37 CFR Parts 1, 3 and 5]

IMPLEMENTATION OF PATENT COOPERATION TREATY

Notice of Proposed Rulemaking

Notice is hereby given that, pursuant to the authority contained in Section 6, Title 35 of the United States Code, and Pub. L. 94–131, 89 Stat. 685, of November 14, 1975 which will come into force on the same day as the entry into force of the Patent Cooperation Treaty, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by either amending or revising sections 1.1, 1.4, 1.5, 1.8, 1.12, 1.14, 1.21, 1.23, 1.25, 1.26, 1.52, 1.55, 1.57, 1.58, 1.72, 1.75, 1.77, 1.78, 1.81, 1.83, 1.84, 1.104, 1.141, 1.146, 1.331, 5.1, 5.3, 5.11, 5.14, 5.15 and 5.17; and by adding new sections 1.9, 1.61, 1.70, 1.318, 1.401, 1.412, 1.413, 1.414, 1.415, 1.421, 1.422, 1.423, 1.424, 1.425, 1.431, 1.432, 1.433, 1.434, 1.435, 1.436, 1.437, 1.438, 1.445, 1.446, 1.451, 1.455, 1.461, 1.465, 1.468, 1.471, 1.475, 1.481, 1.482, 3.56 and 3.57.

In view of the approaching entry into force of the Patent Cooperation Treaty, the Patent and Trademark Office is proposing certain amendments to the rules of practice in patent cases, forms for patent cases and the rules relating to secrecy of certain inventions and licenses to file applications in foreign countries. These proposed rules provide for the formal acceptance of international applications filed under the Patent Cooperation Treaty in the Patent and Trademark Office as a Designated Office, establish processing fees for international applications, clarify procedures before the Receiving Office and International Search Authority, and provide for other matters relating to the filing and processing of international applications.

All persons are invited to present their views, objections, recommendations or suggestions relating to the proposed rule changes to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on or before May 26, 1977 on which date a hearing will be held at 9:30 a.m. in Room 11C24, Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents and Trademarks of their intended appearance. All comments received will be available for public inspection in Room 11E10 of Building 3, at 2021 Jefferson Davis Highway, Arlington, Virginia. If the Patent Cooperation Treaty implementation schedule permits the period for comments may be extended. It is also possible that a further draft will be published for comment.

The proposed rules will not be promulgated until the Patent Cooperation Treaty and Public Law 94–131, 89 Stat. 685 come into force. This will occur three months after the necessary eight ratifications or accessions to the Treaty have occurred, four of which must be countries with major patent activity, PCT Article 63. The United States of America and the Federal Republic of Germany are two of the four major countries which have ratified the Treaty. Two additional major countries must yet ratify or accede to the Treaty before it can enter into force.

This proposal has been reviewed pursuant to E.O. 11821 and OMB Circular A–107 and determined to have no major inflationary impact.

The Patent Cooperation Treaty was published in the OFFICIAL GAZETTE on July 14, 1970 at 876 O.G. 341–388. The implementing legislation, Public Law 94–131, was published in the OFFICIAL GAZETTE on January 6, 1976 at 942 O.G. 177–185. The latest draft of the Administrative Instructions to be promulgated under Rule 89 of the Treaty by the World Intellectual Property Organization is being published in an OFFICIAL GAZETTE in January of 1977.

The following comments are directed to the proposed changes and additions in the Patent Rules of Practice.

In order to distinguish which rules apply to national applications, which to international applications, and which to both, it is being proposed that Part I of 37 CFR be divided into 3 subparts. Subpart A would relate to "General Provisions" directed to both national applications and international applications and would include §§ 1.1 through 1.26. Subpart B would relate to "National Processing Provisions" directed to national applications only, and would include §§ 1.31 through 1.352. Subpart C would relate to "International Processing Provisions" under the Patent Cooperation Treaty and would include proposed new §§ 1.401 through 1.482. Within each subpart, where an exception as to the applicability of a rule to national and/or international applications occurs, a specific clarifying reference has been added. In all cases, the present numbering of rules has been maintained.

Section 1.1 provides a special "Box PCT" address to permit an early separation and routing of PCT related mail from other types of mail.

Section 1.4(a) is amended to refer to the added rules relating to international processing.

Section 1.5(a) is amended to indicate that international applications are to be identified by their international application numbers.

Section 1.8(a) is amended to exclude international applications and papers relating thereto from the certificate of mailing procedure.

New section 1.9 is added to distinguish between the terms "national application" and "international application" as used in these rules.

Section 1.12 is amended to refer specifically to the international application number.

Section 1.14(a) indicates the current practice as to application secrecy and also refers specifically to applications identified in international applications. Section 1.14(c) changes the reference from Atomic Energy Commission to the Energy Research and Development Administration.

An international-type search will be made in all national applications as indicated in § 1.104(c). New paragraph (w) to § 1.21 adds a fee to cover the cost of preparing an international-type search report where desired (PCT Art. 15(5)), although it is not required by the United States Patent and Trademark Office.

Section 1.23 includes a reference to international application processing fees to clearly indicate that such fees must be paid in United States currency.

Section 1.25(b) is amended to indicate that international application fees may be charged against deposit accounts.

Section 1.26 is amended to provide for refunding some portion of the international search fee during subsequent national examination where the prior art search is wholly or partly based on the earlier international search. The amount of the refund will be determined by the examiner in a manner similar to that indicated in the remarks directed to § 1.446 below. Such a refund will tend to make applicants' cost of using the PCT about the same regardless of whether the national or international application is filed initially.

In section 1.52, paragraphs (a) and (b) are amended to permit an application complying with the formal requirements of PCT Rule 11 to be formally acceptable as a national application. International applications arriving in the Patent and Trademark Office as a Designated Office under 35 U.S.C. 371 will be in PCT format and with the changed wording of this rule, will also be formally acceptable for national patentability examination.

Section 1.55 is amended to contain an additional paragraph (d) which states the position set forth in PCT Art. 11(3) and 35 U.S.C. 363 that the international filing date is in effect the national filing date except for the reservation under PCT Art. 64(4). This reservation was taken by the United States of America at the time it deposited its instrument of ratification.

Section 1.57 is amended to indicate that the signature on the Request of an international application will be accepted as the signature on the application.

Section 1.58 is amended slightly to remove any conflict with the formal requirements of the Patent Cooperation Treaty.

Section 1.61 is a new section which relates to the filing of an international application with the Patent and Trademark Office as a Designated Office for national patentability examination (35 U.S.C. 371). These requirements differ somewhat from those applying to the regular filing of national applications.

Section 1.70 is a new section which sets forth the requirements of an oath or declaration under 35 U.S.C. 371(c)(4).

Section 1.72 is amended to indicate that the abstract must be located on a separate sheet of paper. This change has been introduced in order to assure uniformity in information placement in international and regular applications that will aid

in patent printing. Except for this change, national applications may continue to be filed in the present format.

Section 1.75, paragraph (c), is amended to provide for multiple dependent claims (PCT Rule 6.4). Paragraphs (f) and (g) have been added to incorporate current practice not previously stated in the rules.

Sections 1.77 and 1.78 have been amended to indicate the preferred order of arrangement of application elements including placement of the abstract after the claims as in PCT Art. 3(2) and Section 208 of the Administrative Instructions.

Section 1.81 is amended to reflect the changes made in 35 U.S.C. 113 by Public Law 94–131 and to comply with PCT Rule 7.2.

Section 1.83 has been amended to remove the mandatory requirement that the drawing show every feature claimed. Such illustrations, however, continue to be strongly preferred and are absolutely essential where necessary for the understanding of the invention.

Section 1.84, which relates to the formal requirements for drawings, has been amended to provide for two alternative drawing sizes. One size is that currently in use and the other is the A4 size required by PCT Rule 11. However, all drawings in a particular application must be of the same size. Other changes have been incorporated to take into consideration the requirements of PCT Rule 11.

Section 1.104 is amended to include a new paragraph (c) relating to the international-type search. Note PCT Art. 15(5) and PCT Rule 41.

Section 1.141 has been amended to provide for including in a single application, inventions so linked as to form a single general inventive concept as in PCT Rule 13.1–13.3.

The rules for determining which inventions can be grouped together in a single application are more liberal in certain respects under the Patent Cooperation Treaty than they are currently in 37 CFR 1.141–1.146. The proposed amendment to Section 1.141 extends the more liberal practice, which a Designated Office is required to apply to national applications that have been initially filed as international applications, to all national applications. Paragraph (a) removes the limit of five species of an invention. Paragraphs 1.141(c)(i) and (ii) generally include the wording of PCT Rule 13.2. Paragraphs 1.141(c)(i) and (d), taken together, state that an application may include, in addition to an allowable independent claim to a product, *one* independent claim to *one* process specially adapted for the manufacture of the product as well as *one* independent claim for *one* use of the product. Paragraphs 1.141(c)(ii) and (d), taken together state that an application may include, in addition to an allowable independent claim for a given process, one independent claim for one apparatus or means for carrying out the process. Such claims drawn to product, process of manufacture, process of use, or apparatus, are considered to be claims to different categories. Paragraph 1.141(e) includes generally the wording of PCT Rule 13.3 and is limited to applications where all of the claims are drawn to only one category.

Section 1.146 follows the revised wording of section 1.141 by removing the limit of five species and also removes the reference to a search of the generic claims.

Section 1.318 is a new section relating to the Office's notifying the International Bureau of the publication of a United States patent based on an unpublished international application in accordance with PCT Rule 48.5.

Paragraphs (a) and (c) of section 1.331 are amended to provide for recording of assignments of international applications which designate the United States of America.

Sections 1.401–1.482 relate to processing of international applications during the international processing stage when the United States Patent and Trademark Office acts as a Receiving Office, International Searching Authority or a Designated Office prior to the acceptance of the international application as a national application for regular patentability examination.

Section 1.401 defines various expressions used in later rules.

Section 1.412 defines those applicants for which the United States Patent and Trademark Office will act as a Receiving Office and also sets forth the major functions of a Receiving Office.

Section 1.413 states that the United States Patent and Trademark Office will act as an International Searching Authority, subject to special agreement and appointment by the Assembly, and indicates some of the major functions thereof.

Section 1.414 states the conditions under which the United States Patent and Trademark Office will act as a Designated Office and defines the functions of the Office as a Designated Office.

Section 1.415 is included to clearly define the authority acting as the International Bureau.

Section 1.421 indicates who may file an international application with the United States Receiving Office.

Sections 1.422, 1.423 and 1.425 are similar to present §§ 1.42, 1.43 and 1.47 and have been added to indicate situations where a person other than the inventor may file an international application designating the United States. These situations include those where the inventor is dead, insane or legally incapacitated, cannot be found or reached, or refuses to sign.

Section 1.431 defines the requirements of an international application filed in the United States Receiving Office.

Section 1.432 relates to the designation of States and the payment of designation fees.

Section 1.433 indicates that only one copy of an international application need be filed and refers to those provisions of the Treaty and Administrative Instructions relating to the physical requirements for international applications.

Section 1.434 relates to the Request portion of an international application.

Section 1.435 calls attention to the PCT Rules relating to the description and also provides that international applications designating the United States must contain an indication of the "best mode" (PCT Rule 5.1(a)(v)).

Section 1.436 refers to the portions of the Treaty and its Regulations which relate to claims.

Section 1.437 relates to the drawings and includes reference to the procedure for receipt of late drawings.

Section 1.438 refers to the abstract requirements of an international application.

Section 1.445 sets forth the fees charged by the Patent and Trademark Office for processing international applications. The amounts of the fees are tentative. More complete and updated studies will be made before these rule changes are finally promulgated and the amounts of the fees will be adjusted accordingly. The fees will be set to reflect 100% recovery of actual cost.

Section 1.446 relates to refund of international application processing fees. It should be noted that since an international-type search will be made in prior filed U.S. national applications or, if an international search made in an international application by the International Searching Authority of Washington is followed by a national examination on such an application, a substantial portion of the international search fee (37 CFR 1.445(a)(2)) could be refunded in many instances. This refund will reduce PCT filing costs.

The examples use the maximum refund and should therefore not be considered to be typical for all applications.

	(A) National application filed first	(B) International application filed first
National filing fee for national application (35 U.S.C. 41)	$65	----
Transmittal fee (§ 1.445(a)(1))	35	$35
International fees:		
Basic fee (PCT Rule 15.2(a))	45	45
Designation fees, 3 countries (PCT Rule 15.2(b)(i))	36	36
Search fee (§ 1.445(a)(2))	300	300
(Search fee refund based on international type search § 1.446.)	(−270)	----
National filing fee (§ 1.445(a)(4))	----	65
(Refund of search fee based on savings at national stage (§ 1.26))	----	(−$270)
Net international processing fees	146	146

The first fee column, labeled (A), relates to a situation where an applicant first files his national application in the Patent and Trademark Office and later, within the priority year, decides to file an international application with the same claims and designates 3 foreign countries. The total fees for the international application in the example would be $416. However, since the claims are the same as those in the national application in which the Office previously made an international-type search, a refund of $270 would be made

as indicated in the table below. This would result in the PCT route fees actually costing the applicant $146.

The second fee column, labeled (B), relates to a situation in which the applicant files his international application initially and designates the United States of America as one of the Designated States. Here again the international application fees would be $416. Subsequently, not later than at the expiration of 20 months from the priority date (in this example the international filing date, PCT Art. 2(xi)(c)), the applicant must pay his national fees in the Designated Offices (PCT Art. 22.1). The Patent and Trademark Office, as a Designated Office, may refund during patentability examination a portion of the international search fee under § 1.26. This practice will result in the total cost to the applicant being about the same regardless of whether the national or international application is filed first.

The following table is a draft of the criteria which the examiners may use to determine the amount of the international search fee which may be refunded as a result of an earlier international-type search. Similar criteria will be used for refunds under § 1.26. Current plans are to have the examiner making the international search merely indicate which category most nearly describes the situation in the application under consideration.

CRITERIA FOR REFUND

	Refund percentage of search fee	Refund based on $300 search fee
A. The prior international-type search was so complete that only an updating search was required	90	$270
B. The prior international-type search was directed to substantially the same invention. However, the claims in the international vary from the national application so that a search in at least one additional subclass but less than three additional subclasses is required	70	210
C. The prior international-type search was such that about a half of the search time of the international search was saved	40	120
D. The prior international-type search was of only small value. The claims of the international application were so different from the claims in the prior national application that the search of only a few subclasses was saved	25	75
E. The prior international-type search was of no value	0	(1)

[1] No refund.

Section 1.451 indicates the procedures to be used to file certified copies of priority documents. Paragraph (b) includes a procedure by which the Office will automatically forward a copy of the priority document to the International Bureau if a fee for copy preparation and a request for such service is filed with the international application.

Section 1.455 relates to who may act as applicant's representative in an international application, and indicates the International Authority to which powers of attorney and revocations thereof should be sent.

Section 1.461 covers the procedures for transmittal of the record copy to the International Bureau. It should be noted that the alternative procedure in paragraph (b) requires that applicants electing transmittal of the international application by themselves rather than by the Receiving Office must file such applications before the expiration of 11 months from the priority date to permit sufficient time for the Receiving Office to process the applications before transmittal by the applicant takes place.

Section 1.465 relates to the time limits for processing based on the priority date that are set by the Treaty and its Regulations. This rule indicates which date is to be used if the original claimed priority date is either canceled or changed.

Section 1.468 refers to excusing failures to meet time limits during international processing.

Section 1.471 covers procedures for correcting or amending international applications.

Section 1.475 indicates to which International Authority changes in person, name or address of the applicant or inventor should be sent during various processing stages.

Section 1.481 relates to the International Searching Authority's finding a lack of unity of invention (multiple inventions) under PCT Rule 13 and the resulting invitation to pay additional fees. This section also relates to the filing of a protest on a holding of lack of unity of invention and the payment of additional fees.

Section 1.482 indicates that the International Searching Authority may determine the novelty and obviousness of generic or linking claims to decide if such claims properly link claims to different inventions.

PART 3

Sections 3.56 and 3.57 are proposed as oath and declaration forms which may be used when filing an international application with the United States Designated Office under 35 U.S.C. 371(c)(4).

PART 5

Section 5.1 relates to inspection of applications by defense agencies. Paragraph (a) indicates that the provisions of Part 5 apply to both national and international applications except as otherwise specifically indicated and that the filing of an international application designating a foreign country is considered to be a "foreign filing." In paragraph (b) Atomic Energy Commission is changed to the Energy Research and Development Administration.

Paragraph (d) of § 5.3 is added to indicate that the record and search copies will not be forwarded to the Authorities or delivered to the applicant if the international application is under secrecy order.

Sections 5.11, 5.14, 5.15 and 5.17 indicate that a license for filing an international application which designates a foreign country is required in the same manner as a license to file a foreign application directly in a foreign country.

The following table of contents indicates the contents of the proposed Subparts and the location of added sections and section headings.

PART I—RULES OF PRACTICE IN PATENT CASES

SUBPART A—GENERAL PROVISIONS

(§§ 1.1–1.26)

General Information and Correspondence

• • •

§ 1.9 *Definitions.*

• • • • • •

SUBPART B—NATIONAL PROCESSING PROVISIONS

(§§ 1.31–1.352)

• • • • • •

The Application

• • •

§ 1.61 Filing of applications in the United States of America as a Designated Office.

Statement; Oath or Declaration

• • •

§ 1.70 Content of oath or declaration relating to content of and amendments to an application under 35 U.S.C. 371(c)(4).

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Allowance and Issue of Patent

• • •

§ 1.318 Notification of national publication of a patent based on an international application.

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SUBPART C—INTERNATIONAL PROCESSING PROVISIONS

General Information

§ 1.401 Definitions of Terms under the Patent Cooperation Treaty.
§ 1.412 The United States Receiving Office.
§ 1.413 The International Searching Authority of Washington.
§ 1.414 The United States Designated Office.
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Who May File an International Application

§ 1.421 Applicant for international application.
§ 1.422 When the inventor is dead.
§ 1.423 When the inventor is insane or legally incapacitated.
§ 1.424 Joint Inventors.
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The International Application

§ 1.431 International application requirements.
§ 1.432 Designation of States and payment of designation fees.
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§ 1.434 The Request.
§ 1.435 The Description.
§ 1.436 The Claims.
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§ 1.438 The Abstract.

Fees

§ 1.445 International application filing and processing fees.
§ 1.446 Refund of international application filing and processing fees.

Priority

§ 1.451 The priority claim and priority document in an international application.

Representation

§ 1.455 Representation in international applications.

Transmittal of Record Copy

§ 1.461 Procedures for transmittal of Record Copy to the International Bureau.

Timing

§ 1.465 Timing of application processing based on the priority date.
§ 1.468 Delays in meeting time limits.

Amendments

§ 1.471 Corrections and amendments during international processing.
§ 1.475 Changes in person, name, or address of applicants and inventors.

Unity of Invention

§ 1.481 Unity of invention.
§ 1.482 Holding of lack of unity of invention.

PART 3—FORMS FOR PATENT CASES

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§ 3.56 Oath to be filed with United States Designated Office under 35 U.S.C. 371(c)(4).
§ 3.57 Declaration to be filed with United States Designated Office under 35 U.S.C. 371(c)(4).

The texts of the proposed amendments are as follows (additions are indicated by arrows; deletions are bracketed):

PART 1—RULES OF PRACTICE IN PATENT CASES

1. By revising §1.1 to read as follows:

§ 1.1 *All communications to be addressed to Commissioner of Patents and Trademarks.*

All letters and other communications intended for the Patent and Trademark Office must be addressed to "Commissioner of Patents and Trademarks," Washington, D.C. 20231. When appropriate, a letter [may] ►should also◄ be marked for the attention of a particular officer or individual.

►Letters and other communications relating to international applications during the international stage and prior to the assignment of a national serial number should be additionally marked "Box PCT."◄

NOTE: §§ 1.1 to 1.26 are applicable to trademark cases as well as to ►national and international◄ patent cases except for provisions specifically directed to patent[s] ►cases◄. ►See § 1.9 for definitions of "national application" and "international application."◄

2. By revising paragraph (a) of § 1.4 to read as follows:

§ 1.4 *Nature of correspondence.*

(a) Correspondence with the Patent and Trademark Office comprises (1) correspondence relating to services and facilities of the Office, such as general inquiries, requests for publications supplied by the Office, orders for printed copies of patents or trademark registrations, orders for copies of records, transmission of assignments for recording, and the like, and (2) correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing ►, processing,◄ [and prosecution of applications] or other proceedings [(] ►of national applications in Subpart B,◄ §§ 1.31 to 1.352 ►; of international applications in Subpart C, §§ 1.401–1.482;◄ and ►of trademark applications,◄ §§ 2.11 to 2.189[)].

• • • • • •

3. By revising paragraph (a) of § 1.5 to read as follows:

§ 1.5 *Identification of application, patent or registration.*

(a) When a letter concerns an application for patent, it should state the name of the applicant, the title of the invention, the serial number ►or international application number◄ of the application, the date of filing the same, and, if known, the group art unit and name of the examiner to which it has been assigned (see § 1.55).

• • • • • •

4. By revising paragraphs (a)(1) and (xi) of § 1.8 to read as follows:

§ 1.8 *Certificate of mailing.*

(a) Except in the cases enumerated below, papers and fees required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if (1) they are addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and deposited with the United States Postal Service with sufficient postage as first class mail prior to expiration of the set period, and (2) they are accompanied by a certificate stating the date of deposit (see forms, §§ 3.55 and 4.23). The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed on or before the date indicated. The actual date of receipt of the paper or fee will be used for all other purposes. This procedure does not apply to the following:

(1) The filing of ►national◄ applications ►for patent◄;

• • •

►(xi) The filing of international applications for patent and papers relating thereto.◄

• • • • • •

5. A new section 1.9 is added to read as follows:

►§ 1.9 *Definitions.*◄

►(a) A national application as used in this Chapter means a United States national application for patent which was either filed in the Office under 35 U.S.C. 111 or which resulted from an international application after compliance with 35 U.S.C. 371.◄

►(b) An international application as used in this Chapter means an international application for patent filed under the Patent Cooperation Treaty prior to entering national processing at the Designated Office stage.◄

6. By revising § 1.12 to read as follows:

§ 1.12 *Assignment records open to public inspection.*

The assignment records, relating to original or reissue patents, including digests and indexes, are open to public inspection and copies of any instrument recorded may be obtained upon payment of the fee therefor. Assignment records, digests and indexes, relating to any pending or abandoned application are not available to the public. Copies of any such assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or his assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee or licensee of such application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules. An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number of the registration, or by name of the applicant and serial number ►or international application number◄ of the

application, an extra charge will be made for the time consumed in making a search for such assignment.

7. By revising paragraphs (a) and (c) of § 1.14 to read as follows:

§ 1.14 *Patent applications preserved in secrecy.*

(a) Except as provided in § 1.11(b) pending patent applications are preserved in secrecy. No information will be given by the Office respecting the filing by any particular person of an application for a patent, the pendency of any particular case before it, or the subject matter of any particular application, nor will access be given to or copies furnished of any pending application or papers relating thereto, without written authority in that particular application from the applicant or his assignee or attorney or agent of record, ►unless the application has been identified by serial number in a published patent document or the United States of America has been indicated as a designated state in a published international application, in which case status information such as whether it is pending, abandoned or patented may be supplied, or◄ unless it shall be necessary to the proper conduct of business before the Office or as provided by this part. ►Where an application has been patented, the patent number and issue date may also be supplied.◄

• • • • •

(c) Applications for patents which disclose, or which appear to disclose, or which purport to disclose, inventions or discoveries relating to atomic energy are reported to the ►Energy Research and Development Administration◄ [Atomic Energy Commission] and the [Commission] ►Administration◄ will be given access to such applications, but such reporting does not constitute a determination that the subject matter of each application so reported is in fact useful or an invention or discovery or that such application in fact discloses subject matter in categories specified by secs. 151(c) and 151(d) of the Atomic Energy Act of 1954, 68 Stat. 919; 42 U.S.C. 2181.

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8. By adding a new paragraph (w) to § 1.21 to read as follows:

§ 1.21 *Patent and miscellaneous fees and charges.*

• • • • •

►(w) For preparing an international-type search report in a national patent application ---------- $25.00.

NOTE: For fees relating to processing of international applications, see § 1.445.◄

9. By revising § 1.23 to read as follows:

§ 1.23 *Method of payment.*

All payments of money required for Patent and Trademark Office fees►, including fees for the processing of international applications (§ 1.445),◄ should be made in United States specie, Treasury notes, national bank notes, post office money orders, or by certified check. If sent in any other form, the Office may delay or cancel the credit until collection is made. Money orders and checks must be made payable to the Commissioner of Patents and Trademarks. Remittances from foreign countries must be payable and immediately negotiable in the United States for the full amount of the fee required. Money sent by mail to the Patent and Trademark Office will be at the risk of the sender; letters containing money should be registered.

10. By revising paragraph (b) of § 1.25 to read as follows:

§ 1.25 *Deposit accounts.*

• • • • •

(b) Filing, issue, appeal, ►international-type search report, international application processing,◄ and petition fees may be charged against these accounts.

11. By revising § 1.26 to read as follows:

§ 1.26 *Refund.*

Money paid by actual mistake or in excess, such as a payment not required by law, will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw his application or to withdraw an appeal, will not entitle a party to demand such a return. ►Refund of a portion of any international search fee paid to the Patent and Trademark Office may be made where the prior art search made during the subsequent national examination of that application is wholly or partly based on the earlier international search made in the international application for which the search fee was paid. The amount of the refund will be as determined by the examiner according to the value of the prior international search made by the Patent and Trademark Office as an International Searching Authority, as 90%, 70%, 40%, 25% or 0% of the international search fee. If the amount of the refund is not a multiple of $10, it will be rounded off to the next higher multiple of $10. (Note § 1.446 for refund of the search fee in an international application.)◄ Amounts of ten cents or less will not be returned unless specifically demanded, within a reasonable time, nor will the payer be notified of such amount; amounts over ten cents but less than one dollar may be returned in postage stamps, and other amounts by check.

12. By revising paragraphs (a) and (b) of § 1.52 to read as follows:

§ 1.52 *Language, paper, writing, margins.*

(a) The ►application, any papers pertaining thereto, any amendments and the◄ [specification and] oath or declaration must be in the English language ►or be accompanied by a verified translation of the application and a translation of any other papers into the English language◄. All papers which are to become a part of the permanent records of the Patent and Trademark Office must be legibly written ►, typed,◄ or printed in permanent ink or its equivalent in quality. All of the application papers must be presented in a form having sufficient clarity and contrast between the paper and the writing►, typing,◄ or printing thereon to permit the ►direct◄ production of readily legible copies in any number by use of photographic, electrostatic, photooffset, and microfilming processes. If the papers are not of the required quality, substitute typewritten or printed papers of suitable quality may be required.

(b) The application papers (specification, including claims, ►abstract,◄ oath[,] or declaration, ►and◄ papers as provided for in §§ 1.42, 1.43, 1.47, etc.) and also papers subsequently filed, must be plainly written on but one side of the paper. The size of all sheets of paper should be 8 to 8½ by 10½ to 13 inches (20.3 to 21.6 cm. by 26.6 to 33.0 cm.). A margin of ►at least approximately one inch (2.5 cm.)◄ [1½ inches (3.8 cm.)] must be reserved on the left-hand side ►of each page. The◄ [and on the] top of each page of the ►application◄ [specification], including claims ►must have a margin of at least approximately ¾ inch (2 cm.)◄. The lines ►of text◄ must not be crowded too closely together; typewritten lines should be ►1½ or◄ double spaced. The pages of the ►application◄ [specification], including claims ►and abstract◄, should be numbered consecutively, starting with 1, the numbers being ►centrally located above or preferably, below, the text◄ [placed in the center of the bottom margins].

• • • • •

13. By adding paragraph (d) to § 1.55 to read as follows:

§ 1.55 *Serial number and filing date of application.*

• • • • •

►(d) The filing date of an international application designating the United States of America shall be treated as the filing date in the United States of America under PCT Article 11(3), except provided in 35 U.S.C. 102(e).◄

14. By revising § 1.57 to read as follows:

§ 1.57 *Signature.*

►(a)◄ The application must be signed by the applicant in person. The signature to the oath or declaration ►under § 1.65◄ will be accepted as the signature to the application provided the oath or declaration ►under § 1.65◄ is attached to and refers to the specification and claims to which it applies. Otherwise the signature must appear at the end of the specification after the claims.

►(b) The signature to the oath or declaration under § 1.70 will be accepted as the signature to the application provided the oath or declaration under § 1.70 specifically refers to the specification and claims to which it applies.◄

►(c)◄ Full names must be given, including at least one given name without abbreviation together with any other given name or initial.

15. By revising § 1.58 to read as follows:

§ 1.58 *Chemical and mathematical formulas and tables.*

(a) The specification, including the claims, may contain chemical and mathematical formulas, but shall not contain drawings or flow diagrams. The description portion of the specification may contain tables; claims may contain tables ►either◄ [only] if necessary to conform to 35 U.S.C. 112 ►or if otherwise found to be desirable◄.

(b) All tables and chemical and mathematical formulas in the specification, including claims, and amendments thereto, must be on ►paper which is flexible, strong, white, smooth, non-shiny and durable◄ [pure white durable paper, the surface of which is calendered and smooth], in order to permit use as camera copy when printing any patent which may issue. A good grade of bond paper is acceptable; watermarks should not be prominent. India ink or its equivalent, or solid black typewriter ribbon ►should◄ [must] be used to secure perfectly ►dark◄ [black] solid lines.

(c) To facilitate camera copying when printing, the width of formulas and tables as presented should be limited normally to 5 inches (12.7 cm.) so that it may appear as a single column in the printed patent. If it is not possible to limit the width of a formula or table to 5 inches (12.7 cm.), it is permissible to present the formula or table with a maximum width of 10¾ inches (27.3 cm.) and to place it sideways on the sheet [, in which case the formula or table will appear printed across both columns of the page in the printed patent]. Typewritten characters used in such formulas and tables must be from a block (nonscript) type font or lettering style having capital letters which are at least ►0.08◄ [0.085] inch ►(2.1 mm.)◄ [(2.2 mm.)] high (e.g. elite type). Hand lettering must be neat, clean, and have a minimum character height of ►0.08◄ [0.085] inch ►(2.1 mm.)◄ [(2.2 mm.)]. A space at least ¼ inch (6.4 mm.) high should be provided between the formulas and tables and the text. Tables should have the lines and columns of data closely spaced to conserve space, consistent with high degree of legibility.

16. By adding a new § 1.61 to read as follows:

►§ 1.61 *Filing of application in the United States of America as a Designated Office.*◄

►(a) To maintain the benefit of the international filing date, the applicant shall furnish to the United States Patent and Trademark Office a copy of the international application with any amendments, unless it has been previously furnished by the International Bureau or unless it was originally filed in the United States Patent and Trademark Office, a verified translation of the international application and a translation of any amendments into the English language if originally filed elsewhere in another language, the national fee (see § 1.445(a)(4)) and an oath or declaration of the inventor (see § 1.70) not later than the expiration of 20 months from the priority date.◄

►(b) Where an International Searching Authority has made a declaration that no international search report will be established because the international application relates to subject matter which it is not required to search, or because the application fails to comply with the prescribed requirements to such an extent that a meaningful search could not be carried out, the time for performing the acts referred to in paragraph (a) of this section is two months from the mailing date of the declaration to the applicant.◄

17. By adding a new § 1.70 to read as follows:

►§ 1.70 *Content of oath or declaration relating to content of and amendments to an application under 35 U.S.C. 371(c)(4).*◄

►(a)(1) When an applicant of an international application, if the inventor, desires to enter the national stage under 35 U.S.C. 371, he must specifically identify the international application and any amendments thereto and state that he verily believes himself to be the original and first inventor or discoverer of the process, machine, manufacture, composition of matter, or improvement thereof, for which he solicits a patent; that he does not know and does not believe that the same was ever known or used in the United States of America before his invention or discovery thereof, and shall state of what country he is a citizen and where he resides and whether he is a sole or joint inventor of the invention claimed in his international application as filed or as amended. In every application the applicant must distinctly state that to the best of his knowledge and belief the invention has not been in public use or on sale in the United States of America more than one year prior to his international application, or patented or described in any printed publication in any country before his invention or more than one year prior to his international application, or patented or made the subject of an inventor's certificate in any foreign country prior to the date of his international application on an application filed by himself or his legal representatives or assigns more than twelve months prior to his international application. He shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself, or by his legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the international application.◄

►(2) This statement (i) must be subscribed to by the applicant, and (ii) must either (a) be sworn to (or affirmed) as provided in § 1.66, or (b) include the personal declaration of the applicant as prescribed in § 1.68.◄

►(b) If the international application was made as provided in §§ 1.422, 1.423 or 1.425, the applicant shall state his relationship to the inventor and, upon information and belief, the facts which the inventor is required by this section to state.◄

18. By revising paragraph (b) of § 1.72 to read as follows:

§ 1.72 *Title and abstract.*

• • • • •

(b) A brief abstract of the technical disclosure in the specification must be set forth ►on a separate sheet, preferably following the claims◄ [immediately following the title and preceding the disclosure in a separate paragraph] under the heading "Abstract of the Disclosure." The purpose of the abstract is to enable the Patent and Trademark Office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical disclosure, and the abstract shall not be used for interpreting the scope of the claims.

19. By revising paragraph (c) of § 1.75 and adding paragraphs (f) and (g) as follows:

§ 1.75 *Claim(s).*

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(c) ►One or more claims may be presented in dependent form, referring back to another claim or claims in the same application. Any dependent claim which refers to more than one other claim ("multiple dependent claim") shall refer to such other claims in the alternative only. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim.◄ [When more than one claim is presented, they may be placed in dependent form in which a claim may refer back to and further restrict a single preceding claim]. Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. ►A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.◄

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►(f) If there are several claims, they shall be numbered consecutively in Arabic numerals.◄

►(g) All dependent claims referring back to a single previous claim, and all dependent claims referring back to several previous claims, should be grouped together to the extent possible.◄

20. By revising § 1.77 to read as follows:

§ 1.77 *Arrangement of application ►elements◄.*

The ►elements of the application should appear in the following order◄ [following order of arrangement should be observed in framing the application]:

(a) Title of the invention; or an introductory portion

stating the name, citizenship, and residence of the applicant, and the title of the invention may be used.

(b) [Abstract of the disclosure.] ►(reserved)◄

(c) Cross-references to related application, if any.

(d) Brief summary of the invention.

(e) Brief description of the several views of the drawing, if there are drawings.

(f) Detailed description.

(g) Claim or claims.

(h) Signature. (See § 1.57.)

►(i) Abstract of the disclosure.◄

►(j) Drawings.◄

21. By revising paragraph (a) of § 1.78 to read as follows:

§ 1.78 *Cross-references to other applications.*

(a) When an applicant files an application claiming an invention disclosed in a prior filed copending ►national◄ application ►or international application designating the United States of America◄ of the same applicant, the second application must contain or be amended to contain in the first sentence of the specification following the title [and abstract] a reference to [the] ►such◄ prior application, identifying it by serial number and filing date ►or international application number and international filing date◄ and indicating the relationship of the applications, if the benefit of the filing date of [the] ►such◄ prior application is to be claimed. Cross-references to other related applications may be made when appropriate. (See §1.14(b).)

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22. By revising §1.81 to read as follows:

§ 1.81 *Drawings required.*

►(a)◄ The applicant for patent is required by statute to furnish a drawing of his invention ►where necessary for the understanding of the subject matter sought to be patented;◄ [whenever the nature of the case admits of it;] this drawing must be filed with the application.

►(b)◄ Illustrations facilitating an understanding of the invention (for example, flow sheets in cases of processes, and diagrammatic views) may also be furnished in the same manner as drawings [and may be required by the Office when considered necessary or desirable].

►(c) When a drawing or illustration is not necessary for, but would facilitate, the understanding of the subject matter sought to be patented and the applicant has not furnished such a drawing or illustration, the Office may require its submission within a time period of not less than two months from the sending of a notice thereof.◄

23. By revising § 1.83 to read as follows:

§ 1.83 *Content of drawing.*

(a) The drawing ►should preferably◄ [must] show every feature of the invention specified in the claims. [However,] Conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box).

(b) When the invention consists of an improvement on an old machine the drawing ►should◄ [must] when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

24. By revising paragraphs (a), (b), (c), (d), (e), (f), (i), (j) and (l) of § 1.84 to read as follows:

§ 1.84 *Standards for drawings.*

(a) *Paper and ink.* Drawings must be made upon ►paper which is flexible, strong, white, smooth, non-shiny and durable.◄ [pure white paper of a thickness corresponding to] Two-ply or three-ply bristol-board ►is preferred◄. The surface of the paper ►should◄ [must] be calendered [and smooth] and of a quality which will permit erasure and correction with India ink. India ink, or its equivalent in quality, ►is preferred◄ [must be used] for pen drawings to secure perfectly black solid lines. The use of white pigment to cover lines is not ►normally◄ acceptable.

(b) *Size of sheet and margins.* The size of ►the sheets on which drawings are made may either be◄ [a sheet, on which a drawing is made must be] exactly 8½ by 14 inches (21.6 by 35.6 cm.) ►or exactly 21.0 by 29.7 cm. (DIN size A4). All drawing sheets in a particular application must be the same size.◄ One of the shorter sides of the sheet is regarded as its top.

►(1) On 8½ by 14 inch drawing sheets,◄ the drawing must include a top margin of 2 inches (5.1 cm.) and bottom and side margins of one-quarter inch (6.4 mm.) from the edges, thereby leaving a "sight" precisely 8 by 11¾ inches (20.3 by 29.8 cm.). Margin border lines are not permitted. All work must be included within the "sight." The sheets may be provided with two one-quarter inch (6.4 mm.) diameter holes having their centerlines spaced eleven-sixteenths inch (17.5 mm.) below the top edge and 2¾ inches (7.0 cm.) apart, said holes being equally spaced from the respective side edges.

►(2) On 21.0 by 29.7 cm. drawing sheets, the drawing must include a top margin of at least 2.5 cm., a left side margin of 2.5 cm., a right side margin of 1.5 cm., and a bottom margin of 1.0 cm. Margin border lines are not permitted. All work must be contained within a sight size not to exceed 17 by 26.2 cm.◄

(c) *Character of lines.* All drawings must be made with drafting instruments or by a process which will give them satisfactory reproduction characteristics. Every line and letter must be ►durable, black or blue, sufficiently dense and dark, uniformly thick and well defined;◄ [absolutely black and permanent;] the weight of all lines and letters must be heavy enough to permit adequate reproduction. This direction applies to all lines however fine, to shading, and to lines representing cut surfaces in sectional views. All lines must be clean, sharp, and solid [, and fine] ►. Fine◄ or crowded lines should be avoided. Solid black ►or blue◄ should not be used for sectional or surface shading. Freehand work should be avoided wherever it is possible to do so.

(d) *Hatching and shading.* (1) Hatching should be made by oblique parallel lines ►spaced sufficiently apart to enable the lines to be distinguished without difficulty◄ [, which may be not less than about one-twentieth inch (1.3 mm.) apart].

(2) Heavy lines on the shade side of objects should ►preferably◄ be used except where they tend to thicken the work and obscure reference characters. The light should come from the upper left hand corner at an angle of 45°. Surface delineations should ►preferably◄ be shown by proper shading, which should be open.

(e) *Scale.* The scale to which a drawing is made ought to be large enough to show the mechanism without crowding when the drawing is reduced ►in size to two-thirds◄ in reproduction, and views of portions of the mechanism on a larger scale should be used when necessary to show details clearly; two or more sheets should be used if one does not give sufficient room to accomplish this end, but the number of sheets should not be more than is necessary.

(f) *Reference characters.* The different views should be consecutively numbered figures. Reference numerals (and letters, but numerals are preferred) must be plain, legible and carefully formed, and not be encircled. They should, if possible, measure at least one-eighth of an inch (3.2 mm.) in height so that they may bear reduction to one twenty-fourth of an inch (1.1 mm.); and they may be slightly larger when there is sufficient room. They ►should◄ [must] not be so placed in the close and complex parts of the drawing as to interfere with a thorough comprehension of the same, and therefore should rarely cross or mingle with the lines. When necessarily grouped around a certain part, they should be placed at a little distance, at the closest point where there is available space, and connected by lines which the parts to which they refer. They should not be placed upon hatched or shaded surfaces but when necessary, a blank space may be left in the hatching or shading where the character occurs so that it shall appear perfectly distinct and separate from the work. The same part of an invention appearing in more than one view of the drawing must always be designated by the same character, and the same character must never be used to designate different parts. ►Reference signs not mentioned in the description shall not appear in the drawing, and vice versa.◄

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(l) *Views.* The drawing must contain as many figures as may be necessary to show the invention; the figures should

be consecutively numbered if possible in the order in which they appear. The figures may be plain, elevation, section, or perspective views, and detail views of portions or elements, on a larger scale if necessary, may also be used. Exploded views, with the separated parts of the same figure embraced by a bracket, to show the relationship or order of assembly of various parts are permissible. When necessary, a view of a large machine or device in its entirety may be broken and extended over several sheets if there is no loss in facility of understanding the view. ►Where figures on two or more sheets form in effect a single complete figure, the figures on the several sheets should be so arranged that the complete figure can be assembled without concealing any part of any of the figures appearing in the various sheets◄ [(the different parts should be identified by the same figure number but followed by the letters, a, b, c, etc., for each part)]. The plane upon which a sectional view is taken should be indicated on the general view by a broken line, the ends of which should be designated by numerals corresponding to the figure number of the sectional view and have arrows applied to indicate the direction in which the view is taken. A moved position may be shown by a broken line superimposed upon a suitable figure if this can be done without crowding, otherwise a separate figure must be used for this purpose. Modified forms of construction can only be shown in separate figures. Views should not be connected by projection lines nor should center lines be used.

(j) *Arrangement of views.* All views on the same sheet ►should◄ [must] stand in the same direction and [should], if possible, stand so that they can be read with the sheet held in an upright position. If views longer than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the ►top of the sheet with the appropriate top margin◄ [two-inch (5.1 cm.) margin] is on the right hand side. One figure must not be placed upon another or within the outline of another.

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(1) *Extraneous matter.* [An inventor's, agent's, or attorney's name, signature, stamp, or address, or other extraneous matter, will not be permitted upon the face of a drawing, within or without the margin, except that] Identifying indicia (►such as the◄ attorney's docket number, inventor's name, number of sheets, etc.) [should] ►not to exceed 2¾ inches (7.0 cm.) in width may◄ be placed ►in a centered location between the side edges◄ within three-fourths inch (19.1 mm.) of the top edge [and between the hole locations defined in paragraph (b) of this section]. Authorized security markings may be placed on the drawings provided they [be] ►are◄ outside the illustrations and are removed when the material is declassified. ►Other extraneous matter will not be permitted upon the face of a drawing.◄

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25. By adding new paragraphs (c) and (d) to § 1.104 to read as follows:

§ 1.104 *Nature of examination; examiner's action.*

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►(c) An international-type search will be made in all national applications filed on and after the date the United States Patent and Trademark Office is appointed as an International Searching Authority.◄

►(d) Any national application may also have an international-type search report prepared thereon at the time of the national examination upon specific written request therefor and payment of the international-type search report fee. See § 1.21(w) for amount of fee for preparation of international-type search report.◄

26. By revising § 1.141 to read as follows:

§ 1.141 *Different inventions in one application.*

►(a)◄ Two or more independent and distinct inventions may not be claimed in one application ►. However, a group of inventions which are so linked as to form a single general inventive concept such as those set forth in paragraphs (b), (c) or (d) of this section, are considered to be one invention under §§ 1.141–1.146◄ [except that more than one species of an invention, not to exceed five].

►(b) Different species of an invention◄ may be specifically claimed in different claims in one application, provided the application also includes an allowable claim generic to all the claimed species and all the claims to [each] species in excess of one are written in dependent form (§ 1.75) or otherwise include all the limitations of the generic claim.

►(c) Paragraph (a) of this section shall be construed as permitting the examination of claims of different categories in an application, in particular either of the following two groupings of claims of different categories:◄

►(i) in addition to an independent claim for a given product, the inclusion in the same application of one independent claim for one process specially adapted for the manufacture of the said product, or the inclusion in the same application of one independent claim for one use of the said product, or both; or◄

►(ii) in addition to an independent claim for a given process, the inclusion in the same application of one independent claim for one apparatus or means specifically designed for carrying out the said process.◄

►(d) If the product claim of subparagraph (i) of paragraph (c) of this section or the process claim of subparagraph (ii) of paragraph (c) of this section is not allowable, the examiner may withdraw from consideration the claims to the other categories. If subsequently such a product or process claim is found allowable, the examiner must also consider the merits of the claims to the other categories as indicated in subparagraphs (i) and (ii) of paragraph (c) of this section.◄

►(e) Subject to paragraph (a) of this section, and except where paragraph (c) of this section applies, there may be included in the same application two or more independent claims of one and the same category (i.e., product, process, apparatus, or use) which cannot readily be covered by a single generic claim.◄

27. By revising § 1.146 to read as follows:

§ 1.146 *Election of species.*

In the first action on an application containing a generic claim and claims restricted separately to each of more than one species embraced thereby, the examiner[, if of the opinion after a complete search on the generic claims that no generic claim presented is allowable,] shall require the applicant in his response to that action to elect that species of his invention to which his claims shall be restricted if no generic claim is finally held allowable. [However, if such application contains claims directed to more than five species, the examiner may require restriction of the claims to not more than five species before taking any further action in the case.]

28. By adding a new § 1.318 to read as follows:

►§ 1.318 *Notification of national publication of a patent based on an international application.*◄

►The Office will notify the International Bureau when a patent is issued on an application filed under 35 U.S.C. 371, and there has been no previous international publication.◄

29. By revising paragraphs (a) and (c) of § 1.331 to read as follows:

§ 1.331 *Recording of assignments.*

(a) Assignments, including grants and conveyances, of patents ►, national applications, or international applications which designate the United States of America◄ [or applications for patents] under 35 U.S.C. 261, will be recorded in the Patent and Trademark Office. Other instruments affecting title to a patent [or application for patent,] ►, a national application, or an international application which designates the United States of America◄, and licenses, even though the recording thereof may not serve as constructive notice under 35 U.S.C. 261, will be recorded as provided in this section or in the discretion of the Commissioner.

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(c) An instrument relating to a patent should identify the patent by number and date (the name of the inventor and title of the invention as stated in the patent should also be given); an instrument relating to [an] ►a national application, or an international◄ application ►which designates the United States of America◄ should identify the application by serial ►number or international application◄ number and date of filing (the name of the inventor and title of the in-

vention as stated in the application should also be given) but if an assignment is executed concurrently with or subsequent to the execution of the application but before the application is filed or before its serial ►number or international application◄ number and filing date are ascertained, it should adequately identify the application, as by its date of execution and name of the inventor and title of the invention; so that there can be no mistake as to the patent or application intended.

Proposed Subpart C

30. By adding a new § 1.401 to read as follows:

►§ 1.401 *Definitions of Terms under the Patent Cooperation Treaty.*◄

►(a) The abbreviation "PCT" or the term "Treaty" means the Patent Cooperation Treaty.◄

►(b) "International Bureau" means the World Intellectual Property Organization located at 32 chemin des Colombettes, Geneva, Switzerland.◄

►(c) "Administrative Instructions" means that body of instructions for operating under the Patent Cooperation Treaty referred to in PCT Rule 89.◄

►(d) "Request," when capitalized, means that element of the international application described in PCT Rules 3 and 4.◄

►(e) "International application," as used in this Subchapter is defined in § 1.9.◄

►(f) "Priority date" for the purposes of computing time limits under the Patent Cooperation Treaty is defined in PCT Art. 2 (xi). Note also § 1.465.◄

►(g) Other terms and expressions in this subpart C not defined in this section are to be taken in the sense indicated in PCT Art. 2 and 35 U.S.C. 351.◄

31. By adding a new § 1.412 to reads as follows:

◄§ 1.412 *The United States Receiving Office.*◄

►(a) The United States Patent and Trademark Office is a Receiving Office only for applicants who are residents or nationals of the United States of America.◄

►(b) The Patent and Trademark Office, when acting as a Receiving Office, will be identified by the full title "United States Receiving Office" or by the abbreviation "RO/US."◄

►(c) The major functions of the Receiving Office include:

(1) according of international filing dates to international applications meeting the requirements of PCT Art. 11(1), and PCT Rule 20;

(2) assuring that international applications meet the standards for format and content of PCT Art. 14(1), PCT Rules 9, 26, 29.1, 37, 38, 91, and portions of PCT Rules 3 through 11;

(3) collecting and, when required, transmitting fees due for processing international applications (PCT Rules 14, 15, 16); and

(4) transmitting the record and search copies to the International Bureau and International Searching Authority, respectively (PCT Rules 22 and 23).◄

32. By adding a new § 1.413 to read as follows:

►§ 1.413 *The International Searching Authority of Washington.*◄

►(a) Pursuant to appointment by the Assembly, the United States Patent and Trademark Office will act as an International Searching Authority for international applications filed with the United States Receiving Office, in accordance with agreement between the Patent and Trademark Office and the International Bureau (PCT Art. 16(3)(b)).◄

►(b) The Patent and Trademark Office, when acting as an International Searching Authority, will be identified by the full title "International Searching Authority of Washington," or by the abbreviation "ISA/US."◄

►(c) The major functions of the International Searching Authority include:

(1) approving or establishing the title and abstract;

(2) considering the matter of unity of invention;

(3) conducting international and international-type searches and preparing international and international-type search reports (PCT Art. 15, 17 and 18, and PCT Rules 25, 33–45 and 47); and

(4) transmitting the international search report to the applicant and the International Bureau.◄

33. By adding a new § 1.414 to read as follows:

►§ 1.414 *The United States Designated Office.*◄

►(a) The United States Patent and Trademark Office will act as a Designated Office for international applications in which the United States of America has been designated as a State in which patent protection is desired.◄

►(b) The Patent and Trademark Office, when acting as a Designated Office during international processing will be identified by the full title "United States Designated Office" or by the abbreviation "DO/US."◄

►(c) The major functions of the United States Designated Office in respect to international applications in which the United States of America has been designated, include:

(1) receiving various notifications throughout the international stage,

(2) accepting for regular national patentability examination international applications which satisfy the requirements of 35 U.S.C. 371, and

(3) conducting reviews under PCT Article 25 for those international applications declared withdrawn.◄

34. By adding a new § 1.415 to read as follows:

►§ 1.415 *The International Bureau.*◄

►(a) The International Bureau is the World Intellectual Property Organization located at Geneva, Switzerland. It is the international intergovernmental organization which acts as the coordinating body under the Treaty and the Regulations. (PCT Art. 2 (xix) and 35 U.S.C. 351(h).)◄

►(b) The major functions of the International Bureau include:

(1) publishing of international applications and the International Gazette;

(2) transmitting copies of international applications to Designated Offices;

(3) storing and maintaining record copies; and transmitting information to authorities pertinent to the processing of specific international applications.◄

35. By adding a new § 1.421 to read as follows:

►§ 1.421 *Applicant for international application.*◄

►(a) Only residents or nationals of the United States of America may file international applications in the United States Receiving Office.◄

►(b) Although the United States Receiving Office will accept international applications filed by any resident or national of the United States of America for international processing, an international application designating the United States of America will be accepted by the Patent and Trademark Office for the national stage only if filed by the inventor or as provided in §§ 1.422, 1.423 or 1.425.◄

►(c) International applications which do not designate the United States of America may be filed by the assignee or owner.◄

►(d) Any indication of different applicants for the purpose of different designated offices must be shown on the Request portion of the international application.◄

►(e) Changes in the person, name, or address of the applicant shall be made in accordance with PCT Rule 18.5.◄

36. By adding a new § 1.422 to read as follows:

►§ 1.422 *When the inventor is dead.*◄

►In case of the death of the inventor, the legal representative (executor, administrator, etc.) of the deceased inventor may sign the Request and other papers in an international application which designates the United States of America.◄

37. By adding a new § 1.423 to read as follows.

►§ 1.423 *When the inventor is insane or legally incapacitated.*◄

►In case an inventor is insane or otherwise legally incapacitated, the legal representative (guardian, conservator, etc.) of such inventor may sign the Request and other papers in an international application which designates the United States of America.◄

38. By adding a new § 1.424 to read as follows:

►§ 1.424 *Joint inventors.*◄

►Joint inventors must each sign the Request in an international application which designates the United States of America; the signature of either of them alone, or less than the entire number will be insufficient for an invention invented by them jointly, except as provided in § 1.425.◄

39. By adding a new § 1.425 to read as follows:

►§ 1.425 *Filing by other than inventor.*◄

►(a) If a joint inventor refuses to join in an international application which designates the United States of America or cannot be found or reached after diligent effort, the international application which designates the United States of America may be filed by the other inventor on behalf of himself and the omitted inventor. Such an international application which designates the United States of America must be accompanied by proof of the pertinent facts and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the international application to the omitted inventor at said address.◄

►(b) Whenever an inventor refuses to execute an international application which designates the United States of America, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may file the international application on behalf of and as agent for the inventor. Such an international application which designates the United States of America, must be accompanied by proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application.◄

40. By adding a new §1.431 to read as follows:

►§ 1.431 *International application requirements.*◄

►(a) An international application shall contain, as specified in the Treaty and the Regulations, a Request, a description, one or more claims, one or more drawings (where required), and an abstract (PCT Art. 3(2)).◄

►(b) An international filing date will be accorded by the United States Receiving Office, at the time of receipt of the international application, provided that:

(1) The applicant is a United States resident or national (35 U.S.C. 361(a), PCT Art. 11(1)(i)).

(2) The international application is in the English language (35 U.S.C. 361(c), PCT Art. 11(1)(ii)).

(3) The international application contains at least the following elements (PCT Art. 11(1)(iii)):

(i) an indication that it is intended as an international application (PCT Rule 4.2),

(ii) the designation of at least one contracting State of the International Patent Cooperation Union,

(iii) the name of the applicant, as prescribed (note § 1.422),

(iv) a part which on the face of it appears to be a description, and

(v) a part which on the face of it appears to be a claim (PCT Art. 11(1)).◄

►(c) Payment of the basic portion of the international fee (PCT Rule 15.2) and the transmittal and search fee (§ 1.441) shall be made in full at the time the international application papers required by paragraph (b) of this section are deposited. Failure to make full payment on the same date as the deposit of the international application papers required by subparagraph (b) of this section will result in the international application being considered withdrawn (PCT Art. 14(3)(a)).◄

41. By adding a new § 1.432 to read as follows:

►§ 1.432 *Designation of States and payment of designation fees.*◄

►(a) The names of Designated States shall appear in the Request upon filing and must be indicated as set forth in Section 202 of the Administrative Instructions.◄

►(b) The designation fees may be paid upon filing of the international application, but must be paid at the latest before the expiration of one year from the priority date (PCT Rule 15.4(b)). Failure to timely pay the designation fee for a particular Designated State will result in the withdrawal of that designation (PCT Art. 14(3)(b)). Failure to timely pay at least one designation fee will result in the withdrawal of the international application (PCT Art. 14(3)(a)).◄

42. By adding a new § 1.433 to read as follows:

►§ 1.433 *Physical requirements of international application.*◄

►(a) The international application and each of the documents that may be referred to in the check list of the Request (PCT Rule 3.3(a)(ii)) shall be filed in one copy only.◄

►(b) The physical requirements for international applications are set forth in PCT Rule 11 and Sections 201–208 of the Administrative Instructions.◄

43. By adding a new § 1.434 to read as follows:

►§ 1.434 *The Request.*◄

►(a) The Request shall be made on a standardized printed form (PCT Rules 3 and 4). Copies of such printed Request forms are available from the Patent and Trademark Office.◄ Letters requesting such forms should be marked "Box PCT."

►(b) The Check List portion of the Request form should indicate each document accompanying the international application on filing.◄

►(c) All information, for example, addresses, names of States and dates, shall be indicated in the Request as required by PCT Rule 4 and Administrative Instructions 201 and 202.◄

►(d) International applications which designate the United States of America shall include:

(1) the name, address, and signature of the inventor, except as provided by §§ 1.422, 1.423 and 1.425;

(2) a reference to any copending national application or international application designating the United States of America, if the benefit of the filing date of the prior copending application is to be claimed.◄

44. By adding a new § 1.435 to read as follows:

►§ 1.435. *The Description.*◄

►(a) Requirements as to the content and form of the description are set forth in PCT Rules 5, 9, 10, and 11 and Administrative Instruction 205, and shall be adhered to.◄

►(b) In International applications designating the United States of America the description must contain upon filing an indication of the best mode contemplated by the inventor for carrying out the claimed invention.◄

45. By adding a new § 1.436 to read as follows:

►§ 1.436 *The Claims.*◄

►The requirements as to the content and format of claims are set forth in PCT Art. 6 and PCT Rules 6, 9, 10, and 11 and shall be adhered to.◄

46. By adding a new § 1.437 to read as follows:

►§ 1.437 *The Drawings.*◄

►(a) Subject to paragraph (b) of this section, when drawings are necessary for the understanding of the invention, or are mentioned in the description, they must be part of an international application as originally filed in the United States Receiving Office in order to maintain the international filing date during the national stage (PCT Art. 7).◄

►(b) Drawings missing from the application upon filing will be accepted if such drawings are received within 30 days of the date of first receipt of the incomplete papers. If the missing drawings are received within the 30 day period, the international filing date shall be the date on which such drawings are received. If such drawings are not timely received all references to drawings in the international application shall be considered non-existent (PCT Art. 14(2), Administrative Instruction 310).◄

►(c) The physical requirements for drawings are set forth in PCT Rule 11 and shall be adhered to.◄

47. By adding a new § 1.438 to read as follows:

►§ 1.438 *The Abstract.*◄

►(a) Requirements as to the content and form of the abstract are set forth in PCT Rule 8, and shall be adhered to.◄

►(b) Lack of an abstract upon filing of an international application will not affect the granting of a filing date. However, failure to furnish an abstract within one month from the date of the notification by the Receiving Office will result in the international application being declared withdrawn.◄

48. By adding a new § 1.445 to read as follows:

►§ 1.445 *International application filing and processing fees.*◄

►(a) The following fees and charges are established by the Patent and Trademark Office under the authority of 35 U.S.C. 376:

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14)—$35.00.

(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16)—$300.00.

(3) A supplemental search fee when required (see PCT Art. 17(3)(a) and PCT Rule 40.2)—$200.00 per additional invention.

(4) The national fee, that is, the amount set forth as the filing fee under 35 U.S.C. 41(a)1.

(5) A special fee when required, see 35 U.S.C. 372(c)—$10.00 per claim.◄

►(b) The basic fee and designation fee portions of the international fee shall be as prescribed in PCT Rule 15.◄

49. By adding a new § 1.446 to read as follows:

►§ 1.446 *Refund of international application filing and processing fees.*◄

►(a) Money paid for international application fees, where paid by actual mistake or in excess, such as a payment not required by law or Treaty and its Regulations, will be refunded.◄

►(b) Refunds of a portion of the search fee may be made if the international search report is wholly or partly based on an earlier international or international-type search. (PCT Rules 16 and 41.) The amount of the refund will be as determined by the examiner according to the value of the prior international-type search or international search as 90%, 70%, 40%, 25% or 0% of the international search fee. See § 1.26 for refund of a portion of the international search fee during subsequent national examination of the application.◄

►(c) Refund of the supplemental search fees will be made if such refund is determined to be warranted by the Commissioner or his designee acting under PCT Rule 40.2(c).◄

►(d) The international and search fees will be refunded if no international filing date is granted (PCT Rules 15.6 and 16.2).◄

50. By adding a new § 1.451 to read as follows:

►§ 1.451 *The priority claim and priority document in an international application.*◄

►(a) The claim for priority must be made on the Request (PCT Rule 4.10) in a manner complying with Section 201 and 202 of the Administrative Instructions.◄

►(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal with the record copy to the International Bureau (PCT Art. 8 and PCT Rule 17). The fee for preparing a certified copy is stated in § 1.21(b) and (d).◄

►(c) If a certified copy of the priority document is not submitted together with the international application on filing or a request and appropriate payment as in paragraph (b) of this section do not accompany the international application on filing, the certified copy of the priority document must be transmitted directly by the applicant to the International Bureau within the time limit specified in PCT Rule 17.1(a).◄

51. By adding a new § 1.455 to read as follows:

►§ 1.455 *Representation in international applications.*◄

►(a) Applicants of international applications may be represented by attorneys or agents licensed to practice before the Patent and Trademark Office or by a common representative (PCT Art. 49, Rules 4.8 and 90 and § 1.341).◄

►(b) Appointment of an agent, attorney or common representative must be effected either in the Request form, signed by all applicants, or in a separate power of attorney submitted either to the United States Receiving Office or to the International Bureau.◄

►(c) Powers of attorney and revocations thereof should be submitted to the United States Receiving Office until the issuance of the international search report in order to facilitate communications.◄

►(d) The addressee for correspondence will be as indicated in Section 108 of the Administrative Instructions.◄

52. By adding a new § 1.461 to read as follows:

►§ 1.461 *Procedures for transmittal of Record Copy to the national Bureau.*◄

►(a) Transmittal of the record copy of the international application to the International Bureau shall be made, at the option of the applicant, either by the United States Receiving Office or by the applicant. Subject to paragraph (b) of this section, any applicant who chooses to make such transmittal himself shall notify the United States Receiving Office to that effect in writing, by way of a notice filed together with the international application. Such notice shall also state whether the applicant wishes to collect the record copy at the United States Receiving Office or to have the record copy mailed directly to him. The record copy of an international application which was filed without being accompanied by such notice will be transmitted to the International Bureau by the United States Receiving Office. (PCT Rule 22).◄

►(b) An applicant may transmit the record copy to the International Bureau as provided in PCT Rule 22.2 only if the international application is filed with the United States Receiving Office before the expiration of 11 months from the priority date.◄

53. By adding a new § 1.465 to read as follows:

►§ 1.465 *Timing of application processing based on the priority date.*◄

►(a) For the purpose of computing time limits under the Treaty, the priority date shall be defined as in PCT Art. 2(xi).◄

►(b) When a claimed priority date is cancelled under PCT Rule 4.10(d) or considered not to have been made under PCT Rule 4.10(a), the priority date for the purposes of computing time limits will be the date of the earliest valid remaining priority claim of the international application, or if none, the international filing date.◄

►(c) When corrections under PCT Art. 11(2), Art. 14(2) or Rule 20.2(a)(i) or (iii) are timely submitted, and the date of receipt of such corrections falls later than one year from the claimed priority date or dates, the Receiving Office shall proceed under Rule 4.10(d).◄

54. By adding a new § 1.468 to read as follows:

►§ 1.468 *Delays in meeting time limits.*◄

►(a) Delays in meeting time limits during international processing of international applications may only be excused as provided in PCT Rule 82. For delays in meeting time limits in a national application see § 1.137.◄

►(b) In cases of unavoidable delay or loss in the mail during international processing of international applications, evidence may be offered only if the mail that was delayed or lost was registered by the postal authorities.◄

55. By adding a new § 1.471 to read as follows:

►§ 1.471 *Corrections and amendments during international processing.*◄

►(a) All corrections submitted to the United States Receiving Office must be in the form of replacement sheets and be accompanied by a letter that draws attention to the differences between the replaced sheets and the replacement sheets, except that the deletion of lines of text, the correction of simple typographical errors, and one addition or change of not more than five words per sheet may be stated in a letter and the United States Receiving Office will make the deletion or transfer the correction to the international application, provided that such corrections do not adversely affect the clarity and direct reproducibility of the application. (PCT Rule 26.4).◄

►(b) Amendments of claims submitted to the International Bureau shall be as prescribed by PCT Rule 46.◄

56. By adding a new § 1.475 to read as follows.

►§ 1.475 *Changes in person, name, or address of applicants and inventors.*◄

►All requests for a change in person, name or address of applicants and inventors should be sent to the United States Receiving Office until the time of issuance of the international search report. Thereafter requests for such changes should be submitted to the International Bureau.◄

57. By adding § 1.481 to read as follows:

►§ 1.481 *Determination of Unity of Invention before the International Searching Authority.*◄

►(a) Before establishing the international search report, the International Searching Authority shall determine whether the international application complies with the requirement of unity of invention as set forth in PCT Rule 13. If the International Searching Authority considers that the international application does not so comply, it shall inform the applicant accordingly and request the payment of additional fees. (Note § 1.441 and PCT Art. 17(3)(a) and PCT Rule 40.)◄

►(b) The applicant will be given a time period in accordance with PCT Rule 40.3 to pay the additional fees due.◄

►(c) If the applicant disagrees with the holding of lack of unity of invention by the International Searching Authority, he may pay the additional fee under protest, that is accompanied by a request for refund and a statement setting forth his reasons for disagreement or why he considers the required additional fees excessive, or both (PCT Rule 40.2(c).◄

►(d) Protests under paragraph (c) of this section will be examined by the Commissioner or his designee. In the event that the applicant's protest is determined to be justified, the additional fees or a portion thereof will be refunded.◄

►(e) An applicant who desires that a copy of the protest and the decision thereon accompany the international search report when forwarded to the designated offices, may notify the International Searching Authority to that effect any time prior to the issuance of the international search report. Thereafter, such notifications should be directed to the International Bureau. (PCT Rule 40.2(c).)◄

►(f) The international search report will be established only on those parts of the international application which relate to the invention first mentioned in the claims ("main invention") and those other parts of the international applications which relates to inventions for which additional fees have been timely paid (PCT Art. 17(3)(a) and PCT Rule 40.3).◄

58. By adding § 1.482 to read as follows:

►§ 1.482 *Holding of lack of unity of invention.*◄

►(a) The International Search Authority may not raise the objection of lack of unity of invention merely because an application contains several claims of the same category or several claims of different categories related as under PCT Rules 13.2 and 13.3.◄

►(b) Lack of unity of invention may exist in a single claim where the claim contains alternatives which are not linked by a single general inventive concept (PCT Rule 13.1).◄

►(c) Lack of unity of invention may be directly evident before considering the claims in relation to any prior art, or after taking the prior art into consideration, as where a document discovered during the search shows the invention claimed in a generic or linking claim lacks novelty or is clearly obvious, leaving two or more claims joined thereby without a common inventive concept. In such a case the International Searching Authority may raise the objection of lack of unity of invention (and limit the search to the invention first mentioned if no additional fees are paid).◄

►(d) Occasionally in cases which lack unity of invention, the examiner will be able to make a complete search for all inventions with negligible additional work, in particular when the inventions are conceptually very close and none of them requires a search in separate classification units. In those cases, the search for the additional inventions should be completed together with that for the invention first mentioned. All results should then be included in a single search report, and no objection of lack of unity should ordinarily be raised.◄

►(e) For unity of invention practice at the national stage see §§ 1.141–1.146.◄

59. By adding a new § 3.56 to read as follows:

►§ 3.56 *Oath to be filed with United States Designated Office under 35 U.S.C. 371(c)(4).*◄

►As a below-named inventor, being duly sworn (or affirmed), I depose and say that:

My residence, post office address and citizenship are as stated below next to my name;

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the invention entitled: _____ described and claimed in international application number _____ filed _____, and as amended on _____ (if any), for which I solicit a patent;

I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to my international application, that the same was not in public use or on sale in the United States of America more than one year prior to my international application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of my international application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to my international application, and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns except as follows: _____

_____

_____

(Full name of sole or first inventor)

_____ Date _____

(Inventor's signature)

_____

(Residence)

_____

(Citizenship)

_____

(Post Office Address)

_____

_____

(Full name of second joint inventor, if any)

_____ Date _____

(Inventor's signature)

_____

(Residence)

_____

(Citizenship)

_____

(Post Office Address)

_____

(Supply similar information and signature for third and subsequent joint inventors)

_____ } ss:
_____ }

Sworn to and subscribed before me this _____ day of _____, 19__.

_____

(Signature of notary or officer)

[SEAL]

_____

(Official character) ◄

60. By adding a new § 3.57 to read as follows:

►§ 3.57 *Declaration to be filed with United States Designated Office under 35 U.S.C. 371(c)(4).*◄

►As a below named inventor, I hereby declare that: My residence, post office address and citizenship are as stated below next to my name;

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the invention entitled: _____ described and claimed in international application number _____ filed _____ and as amended on _____ (if any), for which I solicit a patent;

I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to my international application, that the same was not in public use or on sale in the United States of America more than one year prior to my international application, that the invention has not been patented or made the subject of any inventor's certificate issued before the date of my international application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to my international application, and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows:

_____

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

_____
(Full name of sole or first inventor)

_____ Date _____
(Inventor's signature)

_____
(Residence)

_____
(Citizenship)

_____
(Post Office Address)

_____
(Full name of second joint Inventor, if any)

_____ Date _____
(Inventor's signature)

_____
(Residence)

_____
(Citizenship)

_____
(Post Office Address)

◄

61. By revising § 5.1 to read as follows:

§ 5.1 *Defense inspection of certain applications.*

►(a) The provisions of this part shall apply to both national and international applications filed in the Patent and Trademark Office except as otherwise specifically indicated. The filing of an international application designating a foreign country is considered to be a filing in a foreign country within the meaning of Chapter 17 of Title 35, United States Code.◄

►(b)◄ In accordance with the provisions of 35 U.S.C. 181, patent applications containing subject matter the disclosure of which might be detrimental to the national security are made available for inspection by defense agencies as specified in said section. Only applications obviously relating to national security, and applications within fields indicated to the Patent and Trademark Office by the defense agencies as so related, are made available. The inspection will be made only by responsible representatives authorized by the agency to review applications. Such representatives are required to sign a dated acknowledgement of access accepting the condition that information obtained from the inspection will be used for no purpose other than the administration of 35 U.S.C. 181–188. Copies of applications may be made available to such representatives for inspection outside the Patent and Trademark Office under conditions assuring that the confidentiality of the applications will be maintained, including the conditions that: (a) All copies will be returned to the Patent and Trademark Office promptly if no secrecy order is imposed, or upon rescission of such order if one is imposed, and (b) no additional copies will be made by the defense agencies. A record of the removal and return of copies made available for defense inspection will be maintained by the Patent and Trademark Office. Applications relating to atomic energy are made available to the [Atomic Energy Commission] ►Energy Research and Development Administration◄ as specified in § 1.14 of this chapter.

62. By revising § 5.3 to read as follows:

§ 5.3 *Prosecution of application under secrecy order; withholding patent.*

Unless specifically ordered otherwise, action on the application by the Office and prosecution by the applicant will proceed during the time an application is under secrecy order to the point indicated in this section:

(a) ►National◄ applications under secrecy order which come to a final rejection must be appealed or otherwise prosecuted to avoid abandonment. Appeals in such cases must be completed by the applicant but unless otherwise specifically ordered by the Commissioner will not be set for hearing until the secrecy order is removed.

(b) An interference will not be declared involving ►national◄ applications under secrecy order. However, if an application under secrecy order copies claims from an issued patent, a notice of that fact will be placed in the file wrapper of the patent.

(c) When the ►national◄ application is found to be in condition for allowance except for the secrecy order the applicant and the agency which caused the secrecy order to be issued will be notified. This notice (which is not a notice of allowance under § 1.311 of this chapter) does not require response by the applicant and places the ►national◄ application in a condition of suspension until the secrecy order is removed. When the secrecy order is removed the Patent and Trademark Office will issue a notice of allowance under § 1.311 of this chapter, or take such other action as may then be warranted.

►(d) International applications under secrecy order will be processed up to the point where the record and search copies are ready to be forwarded. However, the copies will not be forwarded to the Authorities or delivered to the applicant.◄

63. Section 5.11 is revised to read as follows:

§ 5.11 *License for filing application in foreign country ►or for filing international application.◄*

(a) When no secrecy order has been issued under § 5.2, a license from the Commissioner of Patents and Trademarks under 35 U.S.C. 184 is required before filing any application for patent or for the registration of a utility model, industrial design, or model, in a foreign country, ►or filing an international application,◄ or causing or authorizing such filing, with respect to an invention made in the United States, if:

(1) The foreign application ►or international application◄ is to be filed ►,◄ or its filing caused or authorized ►,◄ before [an] ►a national◄ application for patent is filed in the United States, or

(2) The foreign application ►or international application◄ is to be filed, or its filing caused or authorized, prior to the expiration of six months from the filing of the ►national◄ application in the United States.

(b) When there is no secrecy order in effect, a license under 35 U.S.C. 184 is not required if;

(1) The invention was not made in the United States, or

(2) The foreign application ►or international application◄ is to be filed, or its filing caused or authorized, after the expiration of six months from the filing of the ►national◄ application in the United States.

(c) When a secrecy order has been issued under § 5.2, an application cannot be filed in a foreign country ►, nor can an international application be filed,◄ in any case except in accordance with § 5.5.

64. By revising paragraphs (b) and (c) of § 5.14 to read as follows:

§ 5.14 *Petition for license; corresponding U.S. application.*

• • • • •

(b) Two or more United States applications should not be referred to in the same petition for license unless they are to be combined in the foreign ►or international◄ application, in which event the petition should so state and the identification of each United States application should be in separate paragraphs.

(c) Where the application to be filed abroad ►or the international application◄ contains matter not discussed in the United States application or applications, including the case where the combining of two or more United States applications introduces subject matter not disclosed in any of them, a copy of the application as it is to be filed in the foreign country ►or international application as it is to be filed in the Receiving Office◄ must be furnished with the petition. If, however, all new matter in the ►foreign or international◄ application to be filed is readily identifiable, the new matter may be submitted in detail and the remainder by reference to the pertinent United States application or applications.

65. By revising § 5.15 to read as follows:

§ 5.15 *Scope of license.*

(a) A license to file an application in a foreign country ►or to file an international application◄, when granted, includes authority to forward all duplicate and formal papers to the foreign country ►or international authorities◄ and to make amendments and take any action in the prosecution of the ►foreign or international◄ application, provided subject matter additional to that covered by the license is not involved. In those cases in which no license is required to file the foreign ►or international◄ application, no license is required to file papers in connection with the prosecution of the foreign ►or international◄ application not involving disclosure of additional subject matter. Any paper filed abroad ►or before an international authority◄ following the filing of a foreign ►or international◄ application which involves the disclosure of additional subject matter must be separately licensed in the same manner as ►a foreign or international◄ [an] application.

• • • • •

66. By revising § 5.17 to read as follows:

§ 5.17 *Who may use license.*

Licenses may be used by anyone interested in the foreign ►or international◄ filing for or on behalf of the inventor or his assigns.

Date: December 23, 1976.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved:

BETSY ANCKER-JOHNSON, PH.D.
Assistant Secretary for Science and Technology.

Date. Jan. 6, 1977.

[FR Doc. 77-1024; Filed 1-11-77; 8.45 am]

Published 42 FR No. 8, 2632-2644, Jan. 12, 1977.

[955 O.G. 350]

(Pending—No Final Action Taken)

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(78) ENTRY INTO FORCE OF THE PATENT COOPERATION TREATY

The Patent and Trademark Office has received notification that the United Kingdom deposited its instrument of ratification for the Patent Cooperation Treaty (PCT) with the World Intellectual Property Organization (WIPO) in Geneva, Switzerland on October 24, 1977. This ratification fulfilled the requirements for entry into force of the PCT under Article 63 of the Treaty. Article 63 provides that the Treaty shall enter into force three months after eight States have deposited their instruments of ratification or accession, provided that at least four of the States have major patent activity as defined therein. The four countries with major patent activity which have ratified the Treaty are:

Federal Republic of Germany
Switzerland
United Kingdom
United States of America.

Ratifications or accessions to the PCT have also been deposited by:

Cameroon	Madagascar
Central African Empire	Malawi
Chad	Senegal
Congo	Togo.
Gabon	

Since the last required ratification was deposited on October 24, 1977, the Treaty will enter into force three months later, on January 24, 1978. It should be noted that the national PCT implementing legislation, Public Law 94–131 of November 14, 1975 (89 Stat. 685; 942 O.G. 177; and page 108 of the August 1976 issue of "Patent Laws") comes into force on the same day as the entry into force of the PCT. Therefore, Public Law 94–131 will also enter into force on January 24, 1978.

The date from which international applications under the PCT may be filed is currently expected to be in July of 1978; the exact date will be fixed by the Assembly of the PCT. The first meeting of the Assembly is currently expected to take place during April 1978. A copy of the PCT was published in the OFFICIAL GAZETTE on July 14, 1970 at 876 O.G. 341–388.

In view of the entry into force of the Patent Cooperation Treaty (PCT) on January 24, 1978 and the European Patent Convention (EPC) on October 7, 1977, applicants may now wish to prepare their national patent application papers for filing in the United States in the format required by the PCT and the EPC so that the application need not be later retyped and reformatted for PCT or EPC filing. The format requirements for applications under these two Treaties are identical. In the PCT most of these requirements appear in PCT Rule 11 while in the EPC the major requirements are found in EPC Rules 32 and 35.

Shortly after the PCT and Public Law 94–131 come into force, rule changes along the lines of those proposed in the OFFICIAL GAZETTE of February 8, 1977 (955 O.G. 350–363) will be promulgated which will make patent applications prepared in the PCT-EPC format completely acceptable as United States national patent applications.

Since applications may be filed and given a filing date under the EPC beginning June 1, 1978 and the PCT will be operational for the filing of international applications soon thereafter, applications which are currently being filed as U.S. national applications may serve as the basis for priority claims under these Treaties.

Preparation of United States national patent applications in PCT-EPC format is substantially possible today and may eliminate the need for reformatting and retyping the case if it is later filed as a PCT International application or an EPC European application.

There are only a few areas where present U.S. national format requirements conflict with PCT-EPC format requirements. The major differences are the sheet margins; page numbering, which, under PCT-EPC, is at the top; typing, which must be 1½ spaced under PCT-EPC; the location of the title and the abstract; and the drawing sheet size, which must be A4 (21 cm x 29.7 cm) under PCT-EPC. The Office will presently accept applications prepared on A4 size paper, with 1½ spacing between typed lines, page numbering at the top, and the title at the beginning of the abstract and description. In addition, if application papers are filed with the PCT-EPC margins, the margin requirements of 37 CFR 1.52(b) will not be enforced.

The only remaining format problems are the location of the abstract and the drawing sheet size. Under the PCT-EPC, the abstract must be on a separate sheet which follows the claims. For current filing the title and abstract can be placed on a separate sheet without a number, with the first page of the description also containing the title and being numbered as page 1. For a later PCT-EPC application the abstract can be placed last and numbered in sequence. Drawings may be prepared to comply with the present U.S. national drawing size requirements (8½ x 14 inch sheets) but with a

PCT-EPC sight size so that the sheets can later be cut down to A4 size.

Nov. 1, 1977. LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

[964 O.G. 24]

(79) SUBMISSION OF UNIFORM ASSIGNEE NAMES ON THE ISSUE FEE PAYMENT FORM PTOL-85b

The Patent and Trademark Office is experiencing problems when computer-sorting assignee names for the Patentee Index because of the non-uniform use of the names of certain companies and corporations on the issue fee payment form PTOL-85b. The use of different spellings or nomenclature for the same company requires the Office to expend time and effort to determine whether the various name forms are in fact for the same company. If such inconsistencies are not corrected, patents to the same company will appear in different locations in the Patentee Index. An example of inconsistent use is "ABC Company, Ltd." and "ABC Co., Limited."

Therefore, persons who list assignee names on issue fee payment form PTOL-85b should ensure that the same company name form is used for all patents issuing to a particular company.

RICHARD J. SHAKMAN,
Nov. 17, 1977. *Assistant Commissioner for Administration.*

[965 O.G. 8]

(80) EXTENSION OF TIME LIMIT

This notice is intended to clarify certain misunderstandings and indicates the treatment given to requests for an extension of time in a situation where applicant has been given a time limit to complete an otherwise incomplete but bona fide attempt to respond to the previous Office action and advance the case to final action.

According to 37 CFR 1.135(c) when the applicant has filed a response to an examiner's action but consideration of some matter or compliance with some requirement has been inadvertently omitted, an opportunity to explain and supply the omission may be given before the question of abandonment is considered. According to the M.P.E.P., Section 710.02(c), the examiner may give applicant one month or the remainder of the period for response, whichever is longer, to complete the response. Neither the regulation nor the M.P.E.P. indicate that this time can be extended.

Under the regulation, the missing matter or lack of compliance must be considered by the examiner as being "inadvertently omitted." Once an inadvertent omission is brought to the attention of the applicant, the question of inadvertence no longer exists. Therefore, any further time to complete the response would not be appropriate under 37 CFR 1.135(c). Accordingly, no extension of time will henceforth be granted in these situations.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.
Nov. 28, 1977.

[965 O.G. 14]

TRADEMARK NOTICES

(81) INTERVIEWS INVOLVING TRADEMARK APPLICATION

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, JR.,
July 6, 1964. *Assistant Commissioner.*

This supersedes the notice of February 10, 1958, 728 O.G. (TM 1).

[804 O.G. TM 147 (July 28, 1964)]

(82) POWERS OF ATTORNEY IN REGISTERED TRADEMARK FILES

On and after February 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

C. M. WENDT,
Jan. 30, 1967. *Director.*

[835 O.G. TM 95 (Feb. 21, 1967)]

(83) PREFACE TO THE TRADEMARK O.G. NOTICES

In September 1970, a Public Advisory Committee for Trademark Affairs was established by the Secretary of Commerce. The Purpose of this Committee was to advise the Patent Office on ways to increase the efficiency and effectiveness of the administration of the Trademark Act. A report of this Advisory Committee has been received by the Commissioner of Patents. After reviewing the recommendations, although the review is not complete, it has been decided to make certain changes in trademark practice and procedure, and to propose changes in the rules of practice. Beginning with this issue of the OFFICIAL GAZETTE and in subsequent issues as needed, announcements will be published concerning changes in procedures and proposed amendments to the Trademark Rules of Practice.

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WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 2 (Aug. 3, 1971)]

(84) REQUEST FOR EXTENSION OF TIME IN WHICH TO OPPOSE

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further, this procedure will provide the applicant with additional information concerning the potential opposition.

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 3 (Aug. 3, 1971)]

(85) INITIAL PROCESSING OF APPLICATIONS

On February 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under § 2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective February 1, 1972.

RICHARD A. WAHL,
Jan. 11, 1972. *Acting Commissioner of Patents.*

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

Published in 37 FR 942; Jan. 21, 1972

[895 O.G. TM 193 (Feb. 22, 1972)]

(86) PETITION TO MAKE TRADEMARK APPLICATIONS SPECIAL

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer v. Lowry*, 89 O.G. 1861, 1899 C.D. 230, and *Wilputte v. Van Ackeren*, 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Date: Mar. 13, 1972.

[897 O.G. TM 2 (Apr. 4, 1972)]

(87) TRADEMARK REGISTRATION TREATY

At the conclusion of the Vienna Diplomatic Conference on Industrial property, the Trademark Registration Treaty was signed on June 12, 1973 for the United States. This Treaty is designed to simplify the procedures for obtaining international registration of trademarks for United States companies doing business abroad.

The Treaty was unanimously adopted at the final plenary session. In addition to the United States, the United Kingdom, the Federal Republic of Germany, Italy, Portugal, Hungary, San Marino and Monaco also signed. Some forty-six countries were represented at the Conference. In their closing statements most of the other delegations present indicated their hope to sign before the end of the year. The Treaty remains open for signature through December 31, 1973. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession.

The negotiations at Vienna represent the climax of the work of several committees of experts and working groups which have met at Geneva since 1970 with the assistance of the World Intellectual Property Organization (WIPO). The U.S. delegation to the Vienna Conference was com-

posed of officials from the Department of State, the U.S. Patent Office and advisors from the private sector. Previous versions of the proposed Treaty were published on February 22, 1972; September 19, 1972; and February 20, 1973; in the OFFICIAL GAZETTE of the U.S. Patent Office. Published in this issue is the complete text of the Trademark Registration Treaty and its Regulations, as adopted by the Conference. For convenience, in addition to the text of the Articles and Regulations as adopted there is included a table of contents at the end of each section.

Additional copies of this material are available upon request to the Commissioner of Patents.

ROBERT GOTTSCHALK,
June 22, 1973 *Commissioner of Patents.*

[912 O.G. TM 205 (July 24, 1973)]

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(88) WORDING IN VERIFICATION OR DECLARATION OF TRADEMARK APPLICATION

Applicants and attorneys are requested to use the following wording in the part of the verification or declaration of the trademark application which indicates the signer's belief that the mark applied for does not resemble another person's mark:

> —that no other person, firm, corporation, or association, to the best of his knowledge and belief, has the right to use such mark in commerce either in the identical form thereof or in such near resemblance thereto *as to be likely, when applied to the goods of such other person, to cause confusion, or cause mistake, or to deceive:*—

The wording emphasized conforms to the present language of both Sections 1(n)(1) and 2(d) of the Trademark Act of 1946.

Some applicants and attorneys, instead of using the wording emphasized above, are still using the now obsolete wording "as might be calculated to deceive" which was promulgated in the forms under the Trademark Act of 1905 and inadvertently continued by the Act of 1946 up to October 1962 in Section 1(a)(1) and in the forms connected with the Act. Section 1(a)(1) of the 1946 Act was amended by Act of October 9, 1962 (Public Law 772, 87th Congress, 76 Stat. 769) to conform it to the language of Section 2(d) of the 1946 Act, since the language of Section 2(d) reflects the thinking at the time the 1946 Act was written. The wording of the trademark forms for the 1946 Act has also been amended appropriately.

It is desirable that proper wording be used. However, since the differences in wording referred to above are considered to be differences of form rather than of substance, Examiners will not require new verifications or declarations. When the obsolete wording is observed and a letter is to be written for other reasons, Examiners will at that time call attention to the fact that the wording is obsolete and should be modified in applications in the future.

RENE D. TEGTMEYER,
Mar. 25, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 186 (Apr. 23, 1974)]

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(89) TRADEMARK APPLICATION UNDER SECTION 44 WITHOUT SPECIMENS AND USE

A significant number of applications are being filed under Section 44 of the Trademark Act of 1946 without specimens and without a statement of use, on the basis of the decision in *John Lecroy & Son, Inc.* v. *Langis Foods Limited,* 177 USPQ 717 (TT&A Bd. 1973), so that it appears desirable to provide the public with information as to the manner in which the Patent Office is handling such applications. This procedure has been incorporated into the Trademark Manual of Examining Procedure. However, since the Manual is not yet ready for distribution, this notice is being published at this time.

The memorandum which is being sent with the filing receipt to each applicant who falls within the above circumstances explains the procedure and reads as follows:

U.S. Department of Commerce

PATENT OFFICE

Trademark Application Filed Under Section 44 of the Act of 1946;

(No Allegation of Use and No Specimens)

MEMORANDUM TO ACCOMPANY FILING RECEIPT

The decision in *John Lecroy & Son, Inc.* v. *Langis Foods Limited,* 177 USPQ 717, rendered by the Trademark Trial and Appeal Board on May 7, 1973, appears to indicate that use and specimens should no longer be requisites for applications under Sections 44(d) and 44(e) of the Trademark Act. That decision has, however, been appealed to the United States District Court for the District of Columbia.

In view of the civil action filed in this case, use and specimens as requirements for such applications are not being eliminated. The Office is therefore assigning to the above-identified application a filing date which is conditional upon the ultimate decision in the above case of *Lecroy* v. *Langis,* and is mailing a filing receipt. However, this application will not be forwarded for examination until the decision in the case becomes final. A copy of the drawing will be placed in the search room with the following stamped thereon: "Withheld from Examination—Sec. 44."

The applicant has the following alternatives:

> If applicant files specimens and a statement that the mark is in use (such statement being verified or in the form of a declaration under Rule 2.20), the application will be forwarded for examination with a filing date of the date of receipt of the specimens.
>
> If a statement of use and specimens are not filed, the application will be withheld from examination until termination of the appeal of the above decision. If the decision is affirmed, the application will be forwarded for examination. If the decision is reversed, the application will become an informal application and the papers will be returned.

C. M. WENDT,
Mar. 22, 1974. *Director, Trademark Examining Operation.*

RENE D. TEGTMEYER,
Apr. 4, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 250 (Apr. 30, 1974)]

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(90) REALIGNMENT OF PATENT OFFICE HANDLING OF OPPOSITION PAPERS

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Nov. 14, 1974. *Assistant Commissioner for Trademarks.*

[929 O.G. TM 62 (Dec. 10, 1974)]

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(91) CONFERENCE OF PARTIES IN TRADEMARK INTER PARTES PROCEEDINGS

Under the inter partes rules of procedure in trademark cases effective July 1, 1972 (898 O.G. TM 170, May 16, 1972), the interlocutory phases of trademark inter partes proceedings are becoming increasingly involved, and the experience of the Trademark Trial and Appeal Board has been that the difficulties in such proceedings can frequently be resolved more satisfactorily and quickly by conference in person than by correspondence or telephone. Therefore, effective immediately, the following practice is being adopted:

> Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of a trademark inter partes proceeding have become so complex that their resolution by correspondence or telephone is not practical and would be likely to be facilitated by conference in person of the parties and/or their attorneys with a member or members of the Trademark Trial and Appeal Board, the Board may at its discretion suggest that the parties and/or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices in Crystal Plaza, Arlington, Virginia, to discuss the resolution of difficulties.

C. MARSHALL DANN,
Feb. 3, 1975. *Commissioner of Patents and Trademarks.*

[932 O.G. TM 2 (Mar. 4, 1975)]

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(92) INTERNATIONAL TRADEMARK CLASSIFICATION

At its November 3-6, 1975 meeting, the Committee of Experts of the Nice Agreement decided to conduct a systematic overall review of the Classification. A working Group will consider all proposals for changes in the Classification submitted by the member countries and certain international and intergovernmental organizations. The entire review is expected to require 2 to 3 years. The Group's recommendations will then be submitted to the Committee of Experts which will determine the actual changes to be made. Concurrently, an Ad Hoc Committee will prepare a revision of the Nice Agreement, particularly with respect to Article 3(3), the unanimity rule.

Suggestions for changes were submitted to the Patent and Trademark Office last year when a general review of the Classification was first contemplated. Additional suggestions will be welcomed by the Office for consideration in the preparation of proposed changes to be submitted to the Committee of Experts. The Committee has requested that proposals be accompanied by an explanation of why the change is warranted. Suggestions should be sent, by March 5, 1976, to:

> Commissioner of Patents and Trademarks
> Washington, D.C. 20231
>
> Attention: Office of Legislation and International Affairs, Room 1108, CP-6

BERNARD A. MEANY,
Jan. 16, 1976. *Assistant Commissioner for Trademarks.*

[943 O.G. TM 135 (Feb. 17, 1976)]

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(93) INTERNATIONAL PROTECTION OF GOVERNMENT EMBLEMS AND SEALS

Change of Intent

The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one departmental seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of December 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary. However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by September 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1½ inches in diameter.

These seals will then be forwarded to WIPO for protection under Article 6*ter* of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Dated: August 18, 1976.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Published in 41 F.R. 35741

[950 O.G. TM 114 (Sept. 21, 1976)]

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(94) PROPOSAL FOR DISTRIBUTION OF TRADEMARK SECTION 8 AND 15 INDEX CARDS TO PRIVATE FIRM

The Patent and Trademark Office received a request from TCR Service, Inc. for index cards which indicate the acceptance of an affidavit under Section 8 and the acknowledgment of an affidavit under Section 15. These cards are currently used by the Patent and Trademark Office to update the Search Room records and then the cards are destroyed.

TCR Service, Inc. has agreed that if the Patent and Trademark Office will provide them with the cards, they will maintain the cards for a six month period after receipt and make them available without charge to any person desiring to use them. After six months, the cards will be destroyed.

Any person having an objection to this proposed procedure should notify the Commissioner of Patents and Trademarks within 60 days from the date of this notice. After that time, the Patent and Trademark Office will announce their decision.

BERNARD A. MEANY,
Mar. 15, 1977. *Assistant Commissioner for Trademarks.*

[957 TMOG 8 (Apr. 12, 1977)]

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(95) LATE FILED FEES FOR SECTION 8 AFFIDAVITS/DECLARATIONS AND NOTICES OF OPPOSITION IN TRADEMARK CAUSES

The Commissioner has been receiving a large number of Trademark petitions requesting the acceptance of late-filed fees for Section 8 affidavits or declarations and oppositions. Prior practice has permitted the petitioner merely to assert oversight on his, or a subordinate's, part and the petition has been granted. However, to accept a late-filed fee requires a waiver of a trademark Rule of Practice and Rule 2.148 must be followed in making such a waiver. Rule 2.148 does permit the waiver of a rule that is not a statutory requirement (and these fee rules are not) but three conditions must be met:

1. An extraordinary situation exists;
2. Justice requires the waiver; and
3. No other party will be injured.

Cases and authorities consistently have held that an oversight or omission that could have been prevented by the exercise of ordinary care is not an extraordinary situation—see, for example, *Black's Law Dictionary* (Revised 4th ed. 1951) and *Brady* v. *Baltimore and Ohio R. Co. et al.,* 56 F.2d 231 (N.D. W. Va. 1932), cert. denied, 287 U.S. 610 (1932). Such an oversight is thus one that is not within the purview of Rule 2.148 and one that should not allow relief in these petitions. Several factors, however, are recognized:

1. The standard of Rule 2.148 is arduous and may be too rigid for certain situations like fees; and
2. For some time now, pursuant to *In re Kleiner,* 185 USPQ 362 (Comr. Pat. 1975) in Section 8 fee cases and pursuant to a desire to be consistent with prior unpublished decisions in connection with late opposition fees, the Office has been accepting this naked assertion of oversight as sufficient.

With reference to item 1, we are considering amending the rules to accept late filed opposition fees and Section 8 affi-

davit fees without the necessity of petitioning the Commissioner nor complying with Rule 2.148. Such a provision might be extended to those few ex parte appeal cases where the papers themselves were timely filed, but the required fee was inadvertently omitted.

We are considering a system where the notice of deficiency now being sent to the party would set a time period in which the required fees could be submitted without petitioning the Commissioner. We are also considering the possibility of an additional fee for this service.

The thinking behind this approach is that fees are ministerial and substantive rights generally should not be denied due to failure to comply with a ministerial function. Thus, it is felt that this proposal will work toward the ends of justice while still supporting the orderly administration of the Office.

With reference to item 2, it is hereby noted that until the rules are amended, or the proposal rejected, the Office will treat petitions concerning late filed fees as they have been to date. Some petitioners have already been informed of this in individual decisions. In other words, *In re Kleiner* is still a viable and citable authority.

Since this approach would directly affect practice before the Office, the Commissioner solicits any views the public may have on any aspect of this proposal. Interested parties are requested to submit their written evaluation to the Assistant Commissioner for Trademarks within sixty days from the date of this notice. Those views will be considered in structuring any proposed rule changes. Naturally, the established procedure (i.e. publication in the Federal Register, etc.) will be followed in processing any such proposed rule change.

It is appropriate to note here that the rules are designed to provide an orderly procedure and parties practicing before this Office, as well as the personnel of this Office, are entitled to rely on their being followed. In situations other than those noted above, deviations from the rules must be justified by circumstances meeting the requirements of Rule 2.148 *in toto*. The Bar is reminded that requests for waivers of the rules must be supported accordingly.

BERNARD A. MEANY,
Assistant Commissioner for Trademarks.

[958 TMOG 6 (May 10, 1977)]

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(96) TRADEMARK APPLICATIONS UNDER SECTION 44 OF THE TRADEMARK ACT OF 1946

[37 CFR Parts 2 and 4]

Proposed Rulemaking

AGENCY: Patent and Trademark Office, Commerce:
ACTION: Proposed rulemaking.
SUMMARY: This notice invites written comment on a Patent and Trademark Office proposal to amend the rules of practice and forms for trademark cases filed under section 44 of the Trademark Act of 1946. The proposed changes are being made because of the decision by the Court of Appeals for the District of Columbia Circuit in *SMC Corporation* v. *Langis Foods Ltd.*, 539 F. 2d 196, 190 USPQ 288 (1976). The effect of the proposed amendments is to eliminate the requirement for an allegation of use of the mark and the submission of specimens showing use of the mark in the case of applications for trademark registration which are based on a foreign application or registration. The proposed changes would require the applicant to submit a certified copy of his foreign application if he is claiming a right of priority based on that foreign application. Furthermore, the identification of goods and services may only include goods or services on which the applicant is using the mark, or has a bona fide intention to use the mark.
DATES: Comment must be received on or before November 1, 1977. Requests to speak at the hearing by October 17, 1977. Hearing date October 26, 1977, 9:30 am., e.d.t.
ADDRESSES: Comments may be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. All comments received will be available for public inspection in Room 11E10, Crystal Plaza, Building 3, 2021 Jefferson Davis Highway, Arlington, Va.
HEARING LOCATION: Room 11C24, Crystal Plaza, Building 3, 2021 Jefferson Davis Highway, Arlington, Va. 22202.

FOR FURTHER INFORMATION CONTACT: C. Morten Wendt, Patent and Trademark Office (703-557-3268).

SUPPLEMENTARY INFORMATION: On April 30, 1974, at 921 O.G. TM 250, notice was published that trademark applications filed under section 44 of the Act of 1946 without specimens and without a statement of use would receive a filing date conditional upon the ultimate decision in the civil action which was brought to review the decision of the Trademark Trial and Appeal Board in *John Lecroy & Son, Inc.* v. *Langis Foods Limited*, 177 USPQ 717 (1973).

The civil action was finally determined by the Court of Appeals for the District of Columbia Circuit sub nom. *SCM Corporation* v. *Langis Foods Ltd.*, 539 F. 2d 196, 190 USPQ 288 (1976). The court stated that the issue of whether an applicant filing an application under the provisions of section 44(d) of the Trademark Act need allege use of the mark was not presented to the District Court or to the Court of Appeals in the case it decided. Therefore, the issue of whether an applicant filing an application under the provisions of section 44 of the Trademark Act need allege use of the mark somewhere and submit specimens to show such use remains for determination.

The last ruling by the Patent and Trademark Office was *John Lecroy & Son, Inc.* v. *Langis Foods Ltd.*, 117 USPQ 717 (TTAB 1973) in which the Board stated "There is nothing in the Act authorizing the Patent Office to require of a foreign applicant under section 44(d) use of his mark prior to the filing of his application in his home country * * *," page 719. The Board expressly overruled *In re Certain Incomplete Trademark Applications* 137 USPQ 69 (Comr. Pats. 1963), which held that an allegation of use of the mark somewhere and specimens were required. This reversed the ruling of *Ex parte Society Fromagerics Bel*, 105 USPQ 392 (Comr. Pats. 1955), which had reversed the ruling of *Ex parte British Insulated Callender's Cables Ltd.*, 83 USPQ 319 (Comr. Pats. 1949).

The Court of Appeals in *SCM Corporation* v. *Langis Foods Ltd., supra*, held that under section 44(d) of the Trademark Act a foreign applicant obtained a constructive use date in the United States as of the filing date of the first application in a convention country.

In light of that decision, it is proposed that the Commissioner rescind the policy set forth in *In re Certain Incomplete Trademark Applications, supra*, to reflect the concept that a filing in a foreign country creates a constructive use of the trademark in the United States sufficient for filing an application under section 44(d) of the Trademark Act. Likewise a foreign registration would be construed to be constructive use for the purpose of filing an application under section 44(d) of the Act. Accordingly, an application filed under section 44 need not allege use of the mark or be accompanied by specimens. However, the applicant filing under section 44(d) would be required to submit a certified copy of the application which is the basis of a priority claim and the applicant filing under section 44(e) must still submit a certification or certified copy of the registration in the country of origin of applicant.

The Lisbon revision of Article 4A of the Paris Convention, ratified by the United States on January 4, 1962, provides that a regular national filing in any Convention country shall give rise to a right of priority, whatever may be the subsequent fate of that application. Thus a foreign applicant may file in the United States, claiming priority under section 44(d) but relying on use in commerce rather than a registration under section 44(e).

Notice is hereby given that pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440, 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952, as amended (85 Stat. 364, 88 Stat. 1949, 35 U.S.C. 6 as amended), the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending §§ 221.21, 2.39, 2.56, 4.1 and 4.7.

It is proposed to revise and amend the sections as follows (additions are indicated by arrows; deletions are bracketed):

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

1. By amending § 2.21(a) to read as follows:

§ 2.21 *Requirements for receiving a filing date.*

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

• • • • •

(5) At least one specimen or facsimile of the mark as actually used ►, except that a specimen or facsimile is not required when § 2.39 is applicable◄;

• • • • •

2. By revising paragraphs (a) and (b) and by the addition of new paragraphs (c) and (d) to § 2.39 to read as follows:

§ 2.39 *Omission of* ►*allegations*◄ [*allegation*] *of use* [*in commerce*] *by foreign applicants.*

(a) The ►allegations◄ [allegation] that the mark is in use in commerce ►and that the specimens or facsimiles show the mark as actually used in connection with the goods◄, required by § 2.33(b), and the statements of the dates of applicant's first use ►and that the applicant has adopted and is using the mark shown in the accompanying drawing◄, required by § 2.33(a) (1) ►(iv)◄, (vii), and (viii), may be omitted in the case of an application filed pursuant to section 44(e) of the act for registration of a mark duly registered in the country of origin of a foreign applicant, provided the application when filed is accompanied by a ►certification or certified copy issued by◄ [certificate of] the trademark office of the [foreign] country ►of origin of applicant◄ showing that the mark has been registered in [the] ►that◄ country [of origin of the applicant] and also showing the mark, the goods for which registered and that said registration is then in full force and effect. If the ►certification or certified copy◄ [certificate] is not in the English language, a translation is required.

(b) Such allegations and statements may also be omitted in the case of an application claiming the benefit of a prior foreign application in accordance with section 44(d) of the act. The application in such case shall state the date and country of the first foreign application [and,] ►. A certification or certified copy issued by the trademark office of the country where the first foreign application was filed shall accompany the application or be submitted within such time as is specified by the office. The certification or certified copy shall show the mark, the goods for which the first foreign application was filed, and the date of filing thereof. If the certification or certified copy is not in the English language, a translation is required. Before◄ [before] the application can be considered as allowable ►in the absence of an allegation of use in commerce◄, there must be filed a ►certification or certified copy issued by◄ [certificate of] the trademark office of the [foreign] country ►of origin of applicant◄ showing that the mark has been registered in [the] ►that◄ country [of origin of the applicant] and also showing the mark the goods for which registered and the date of ►issue of the registration. If the certification or certified copy is not in the English language, a translation is required.◄ [filing of the application. In such cases the specification of goods shall not exceed the scope of that covered by the foreign registration or application.] In the event the application is based upon a subsequent regularly filed application in the same foreign country the application must so state and must show that any prior filed application has been withdrawn, abandoned or otherwise disposed of, without having been laid open to public inspection and without having any rights outstanding, and has not served as a basis for claiming a right of priority.

►(c) The foreign application or the foreign registration, which is the basis of a claim to registration under section 44(d) or 44(e) of the act, shall be deemed to be constructive use of the mark for the purpose of filing an application under the act.◄

►(d) The specification of goods identified in an application filed under section 44(d) or 44(e) of the act shall not exceed the scope of that covered by the foreign application or registration, and, furthermore, such identification of goods in the application under the act shall include only those goods on or in association with which the applicant is actually using the mark or has a bona fide intention to use the mark on the filing date of the application under the act.◄

3. By revising § 2.56 to read as follows:

§ 2.56 *Specimens.*

The application must include five specimens of the trademark as actually used on or in connection with the goods in commerce. The specimens shall be duplicates of the actually used labels, tags, or containers, or the displays associated therewith or portions thereof, when made of suitable flat material and of a size not to exceed 8½ inches (21.6 cm.) wide and 13 inches (33.0 cm.) long. ►Specimens are not required when § 2.39 is applicable, but if commercial specimens are available, the applicant is encouraged to submit such specimens.◄

PART 4—FORMS FOR TRADEMARK CASES

4. By amending the "Notes" following § 4.1 by renumbering paragraph (2) as (2)(b), paragraph (3) as (3)(b), and paragraph (5) as (5)(b) and adding subparagraphs (2)(a), 3(a), and 5(a) to read as follows:

NOTES.—[Amended]

►(2)(a) A foreign applicant relying upon section 44(d) or 44(e) of the act shall specify only those goods which are comprehended within the identification of goods of the foreign application or registration upon which he relies and on which, on the filing date of the application, he is actually using the mark or has a bona fide intention to use the mark.◄

• • • • • •

►(3)(a) A foreign applicant relying upon section 44(d) or 44(e) of the act may omit the allegations of the date of first use of the mark, the date of first use of the mark in commerce and that the mark is now in use in such commerce.◄

• • • • • •

►(5)(a) A foreign applicant relying upon section 44(d) or 44(e) of the act who does not allege use of the mark may omit specimens and an allegation that specimens showing the mark as actually used are presented with the application, but if commercial specimens are available, the applicant is encouraged to submit such specimens.◄

• • • • • •

5. By amending the "Notes" following § 4.7 by renumbering paragraph (12) as (12)(a) and adding subparagraph (b) to read as follows:

NOTES [Amended]

• • • • • •

►(12)(b) A foreign applicant relying upon section 44(d) or 44(e) of the act who does not allege use of the mark may omit specimens and an allegation that specimens showing the mark as actually used as presented with the application, but if commercial specimens are available, the applicant is encouraged to submit such specimens.◄

Dated: July 22, 1977.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved: August 3, 1977.
HOWARD I. FORMAN,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 77-23095; Filed 8-9-77; 8:45 am]

[962 TMOG 2 (Sept. 6, 1977)]

(Pending—No final action taken)

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(97) TRADEMARK RULES OF PRACTICE

The ninth edition of the Trademark Rules of Practice, dated December 1976, is now available. It replaces the previous edition in its entirety.

The Rules are in looseleaf form so as to accommodate revisions. New subscriptions may be ordered from:
Superintendent of Documents
United States Government Printing Office
Washington, D.C. 20402.

The charge is $5.00 for domestic mailing and $6.25 for foreign mailing. Prior subscribers were sent a notice of expiration by the Government Printing Office in January, 1977.

The Rules booklet is available only by subscription. When revisions are issued, they are a part of the subscription and are mailed automatically. Revisions are announced in the OFFICIAL GAZETTE of the Patent and Trademark Office.

BERNARD A. MEANY,
Sept. 16, 1977. *Assistant Commissioner for Trademarks.*

[963 TMOG 12 (Oct. 18, 1977)]

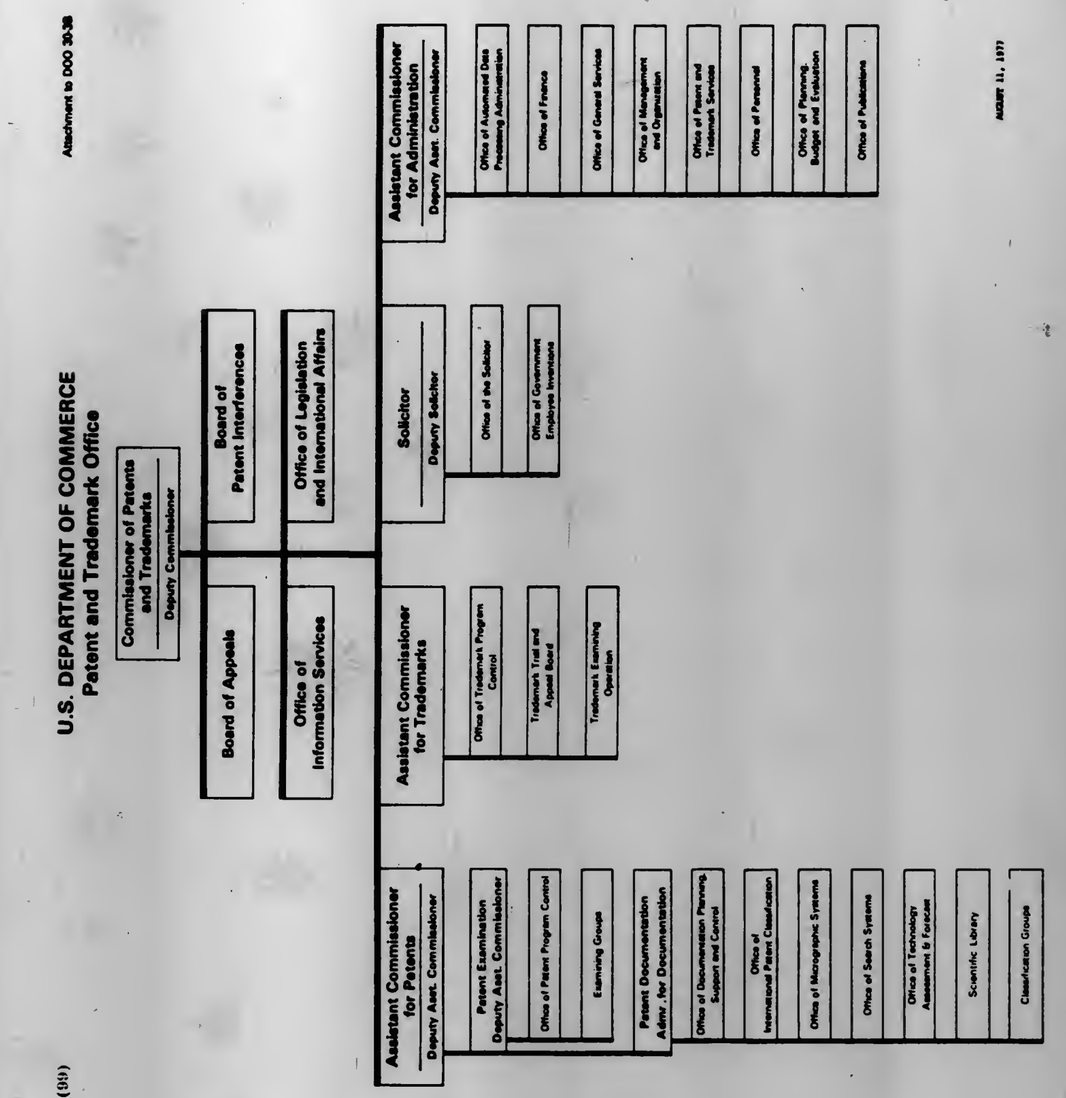
(98) RECORDING OF "TERRITORIAL ASSIGNMENTS" IN THE ASSIGNMENT DIVISION OF THE PATENT AND TRADEMARK OFFICE

It has been the practice of the Assignment Division for many years to refuse to record "territorial assignments," that is, assignments purporting to transfer rights in a trademark registration (not a concurrent use registration) for less than the entire United States. Hereinafter, such documents will be recorded as long as the requirements of the Rules of Practice are met by the documents submitted.

The Office is not addressing the validity or effect of such documents by recording same, but is merely recognizing that such transfers may affect title to a registered mark and therefore ought to be recorded. At the time a Section 8 affidavit or declaration or an application for renewal is filed, the Examiner of Trademarks will consider the effect of such a document.

Oct. 7, 1977. BERNARD A. MEANY, *Assistant Commissioner for Trademarks.*

[964 TMOG 8 (Nov. 8, 1977)]



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PATENT AND TRADEMARK OFFICE NOTICES

National Inventors Day

The Sixth Annual Inventors Day Exposition will be held on Saturday and Sunday, February 11 and 12, 1978 at the Patent and Trademark Office in Arlington, Virginia.

Limited space is available for appropriate display and demonstration of patented materials, devices or methods. Such limited space dictates early consideration by perspective participants. No application can be considered after January 20, 1978.

Other than electricity and allotted space—floor, wall or table top, all expenses must be borne by the exhibitor. Arrangements for delivery, return, set up and take down, as well as individual exhibits and personnel are the exhibitor's responsibility. Neither the Patent and Trademark Office nor individual employees can accept a collect shipment or provide storage.

The Patent and Trademark Office National Inventors Day Committee will select the items to be exhibited and allot available space. Suitability for dynamic demonstration and current public interest are prime consideration in selecting exhibits.

Inventors or firms interested in participating are encouraged to contact the National Inventors Day Committee (phone: 557-3428). Communications should be directed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attn: Oscar Mastin, Office of Information Services.

JOSEPH PETERS,
Dec. 7, 1977 *Chairman.*

National Inventors Day

The Patent and Trademark Office will be sponsoring National Inventors Day in the Public Search Room on Saturday, February 11, from 1:00 p.m. to 5:00 p.m. and Sunday February 12, 1978 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend a formal program at 2:00 p.m. on Sunday.

In order to accommodate the exhibits, it will be necessary to close the Public Search Room at 5:00 p.m. on Friday, February 10, 1978.

We would appreciate the cooperation of all users of the Search Room facilities in removing all personal items and belongings in order to permit the early closing time.

LUTRELLE F. PARKER,
Dec. 7, 1977 *Acting Commissioner of Patents and Trademarks.*

Registration to Practice

The following are names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before February 3, 1978:

Bicks, Mark S., 1900 S. Eads St., Arlington, Va. 22202
Burke, Allan R., 633 S. 22nd St., Arlington, Va. 22202
Deeth, Douglas N., 83 Orsett St., Oakville, Ont., Canada
Meitner, Pamela C., 2223A Prior Rd., Wilmington, Del. 19809
Miller, John R., Rte. 1, Owensville, Mo. 65066
Rader, Ralph T., 1898 Fairford Dr., Bloomfield Hills, Mich. 48013

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks and Chairman, Committee on Enrollment.
December 9, 1977.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,065,759, F. Lewis, HAIR STRAIGHTENING METHOD AND APPARATUS, **filed** July 27, 1977, D.C., S.D.N.Y., Doc. 77-C-3620, *Frederick Lewis v. Clairol, Incorporated, Bristol-Myers Company and Bettie E. Parham.*

3,091,912, Stoddard and Seem, METHOD OF PROCESSING STRETCH YARNS AND YARNS PRODUCED THEREBY, **filed** June 15, 1977, D.C., M.D.N.C. (Greensboro), Doc. C-77-284-G, *Lex Tex Ltd. Inc. v. Dow Badische Company.* **Same, filed** June 15, 1977, D.C., M.D.N.C. (Greensboro), Doc. C-77-285-G, *Lex Tex Ltd. Inc. v. Glen Raven Mills, Inc.* **Same, filed** June 15, 1977, D.C., M.D.N.C. (Greensboro), Doc. C-77-286-G, *Lex Tex Ltd. Inc. v. J. P. Stevens Company, Inc.* **Same, filed** June 15, 1977, D.C. M.D.N.C. (Greensboro), Doc. C-77-287-G, *Lex Tex Ltd. Inc. v. Burlington Industries, Inc.* **same, filed** June 15, 1977. D.C. M.D.N.C. (Greensboro), Doc. C-77-288-G. *Lex Tex Ltd. Inc. v. The Duplan Corporation.* **Same, filed** June 27, 1977, D.C., M.D.N.C. (Greensboro), Doc. C-77-310-G, *Lex Tex Ltd. Inc. v. Unifi, Inc.*

3,218,099, R. S. Bratko, INFRA-RED INDUSTRIAL OVEN; **3,785,763,** same, INFRA-RED BURNER; **3,824,064,** same, INFRA-RED PROCESS BURNER, **filed** July 14, 1977, D.C.N.J. (Camden), Doc. C-77-1417, *Hunt Associates, Incorporated v. Slyman Mfg. Corp., Thomas L. Esper, Rudolph S. Bratko and Bratko Corp.*

3,313,477, G. Brown, TRANSPARENT BANK CONSTRUCTION HAVING COIN SORTING MEANS, **filed** Jan. 16, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c128, *Superior Toy & Mfg. Co., Inc. v. M. Pressner & Co. et al.* Enter order granting final judgment on consent, Apr. 16, 1973.

3,322,296, N. S. Khoury, EASY OPENING CONTAINER, **filed** Dec. 23, 1976, D.C., E.D. Wis. (Milwaukee), Doc. 76-836, *Continental Group, Inc. v. Reynolds Metals Company.* Action transferred to the Northern District of Illinois, June 7, 1977.

3,426,960, P. Shore, PHONOGRAPH RECORD RECEIVING JACKET, **filed** Jan. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c46, *Shorewood Packaging Corp. v. Album Graphics.* Pursuant to settlement agreement, order cause dismissed, Dec. 6, 1976.

3,474,779, W. H. Wall, Jr., DENTAL ARCH BAR FOR TREATING FRACTURES, **filed** July 28, 1977, D.C., N.D. Ga. (Atlanta), Doc. C77-1234A, *William H. Wall, D.D.S. v. Zimmer-USA, Inc.*

3,486,495, H. W. Allen, ARCHERY BOW WITH DRAW FORCE MULTIPLYING ATTACHMENT, **filed** Aug. 15, 1977, D.C., E.D. Ill. (St. Louis), Doc. CV77-0152-D, *Precision Shooting Equipment Co. and Paul E. Shepley, Jr. v. Holless W. Allen.*

3,491,590, B. K. Watkins, POWER STOPPER WEIGHT TRANSFER APPARATUS, **filed** Jan. 21, 1976, D.C., E.D. Wis. (Milwaukee), Doc. 76-38, *Billy K. Watkins v. Lloyd Luedtke and Luedtke Manufacturing, Inc.* Consent judgment enjoining defendants from infringement of said patents, Jan. 5, 1977. **Same, filed** Aug. 2, 1977, D.C. S.D. Ill. (Springfield), Doc. 77-3114, *Billy K. Watkins v. Oliver Schaffer.*

3,597,771, C. H. Riekmeier, Jr., BEDPANS; **D. 216,059,** same, **filed** Oct. 5, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2498, *The Vollrath Co. v. Premium Plastics Inc.* Order complaint dismisse; defendant's counterclaims sustained, Sept. 3, 1974. Filed certified copy of order of U.S. Court of Appeals, order judgment of U.S. District Court affirmed, July 2, 1975.

3,611,035, E. S. Douglas, GROUND FAULT PROTECTIVE SYSTEM HAVING GROUNDED NEUTRAL PROTECTIVE; **3,813,579,** Doyle, Wahlgren and Douglas, ELECTRIC RECEPTACLE ASSEMBLY WITH GROUND FAULT PROTECTION; **3,836,821,** Wahlgren and Douglas, GROUND FAULT PROTECTIVE SYSTEM, **filed** Mar. 23, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c972, *Minnesota Mining & Manufacturing v. Fresen Associates Co. and Slater Electric, Inc.*

3,625,628, E. H. Byrns, CAPACITY CONTROL OPERATING MECHANISM FOR CENTRIFUGAL COMPRESSOR, **filed** Aug. 4, 1977, D.C., E.D. Mich. (Bay City), Doc. 77-10145, *Logging Development Corporation v. Morbark Industries, Inc.*

3,631,812, C. L. Winslow, Jr., FLEXIBLE HOPPER CLOSURE ACTUATING MECHANISM, **filed** July 11, 1977, D.C. E.D.N.C. (New Bern), Doc. 77-48-C-4, *Mary D. Winslow v. Winsloe-Atkins Equipment Company.*

3,662,373, R. W. Schumann, INFORMATION DISPLAY SYSTEM; **3,787,666,** Schumann and Smith, same; **3,859,556,** R. W. Schumann, DIGITAL MEASUREMENT APPARATUS WITH IMPROVED EXPANDED DISPLAY, filed July 13, 1977, D.C., W.D. Wis. (Madison), Doc. 77-C-264, *Nicolet Instrument Corporation v. Norland Corporation.*

3,679,512, F. W. Macone, LAMINATED CARD ENVELOPE, filed Aug. 3, 1977, United States Court of Appeals for the First Circuit, Mass. (Boston), Doc. 77-1349, *Avant Incorporated v. Polaroid Corporation.*

3,679,840, A. R. Maxey, HELICAL SCANNING ASSEMBLY WITH TAPE TO SCANNER REFERENCING APPARATUS, filed Feb. 14, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c516, *Echo Science Corporation v. Robert Bosch GmbH, et al.* Complaint dismissed with prejudice, pursuant to Rule 41(a)(1), Mar. 28, 1977.

3,688,344, H. C. Carlson, IMPACT CLAM EXTRACTOR, filed July 29, 1977, D.C. Md. (Baltimore), Doc. K77-1239, *The American Original Corporation v. Carlson Extractors, Inc. and Harold C. Carlson.*

3,720,872, Russell and Gracie, POWER TRANSMISSION FAULT INDICATOR WITH AUTOMATIC RESET MEANS, filed Mar. 29, 1974, D.C.N.J. (Trenton), Doc. C-74-447, *Burndy Corporation et al. v. Edison Control Corp. et al.* Counsel reported settled, order of dismissal, Aug. 10, 1977.

3,729,084, Stuart and Brown, Jr., BRICK STOPPING AND GROUPING APPARATUS, filed Apr. 15, 1975, D.C., W.D.N.C. (Asheville), Doc. A-75-48, *Forrest Paschal Machinery Co. v. EA Industries, Inc.* Judgment defendant's apparatus charged to infringe said patent does not infringe said patent; that plaintiff's claim of infringement against defendant be dismissed with prejudice; that all other claims and counterclaims be dismissed without prejudice, Apr. 15, 1977.

3,738,005, Cohen and Silverman, METHOD AND APPARATUS FOR APPLYING ORTHODONTIC BRACKETS AND THE LIKE, filed July 25, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-2786-AAH. *Ormco Corporation v. Indirecto Corp.*

3,739,780, R. W. Ogle, SAF-T-JET, filed Aug. 12, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-3045-MML, *IMS Limited v. Abbott Laboratories, Inc.*

3,743,432, B. R. Lee, AUTOMATED PAVING MACHINE, filed Aug. 17, 1977, D.C., N.D. Ga. (Atlanta), Doc. C77-1366A, *Lee-Boy Manufacturing Co., Inc. v. R. Otis Pucket, J. Richard Pucket and Pucket Brothers Manufacturing Co.*

3,753,364, J. E. Runyan and G. M. Grover, HEAT PIPE AND METHOD AND APPARATUS FOR FABRICATING SAME, filed July 29, 1977, D.C.S.C. (Columbia), Doc. 77-1474, *Q-Dot Corporation v. Clemson University and Freeman Mechanical, Inc.*

3,785,763. (See 3,248,099.)

3,787,666. (See 3,662,373.)

3,789,210, Weber, Shroyer and Baker, RECESSED LIGHTED ASSIST BAR, filed Feb. 23, 1977, D.C., N.D. Ind. (South Bend), Doc. S-77-0030, *Progressive Dynamics, Inc. v. Conroth Company.* Cause of action is dismissed without prejudice pursuant to the order of this court, entered June 17, 1977.

3,813,579. (See 3,611,035.)

3,824,064. (See 3,248,099.)

3,835,343, Polydoris and Wollar, MEASURING INSTRUMENT, filed Sept. 8, 1976, D.C., N.D. Ill. (Chicago), Doc. 76c3348, *ENM Company v. Transformer Manufacturers Inc. et al.* Enter stipulation and consent decree, enter writ of permanent injunction, Aug. 1, 1977.

3,836,821. (See 3,611,035.)

3,858,577, Bass, Dwyer and Haverback, FIBER OPTIC LASER LIGHT DELIVERY SYSTEM, filed Aug. 9, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-2972-R, *University of Southern California v. Optics Technology, Inc., Syntel, Inc. and Caritron Corp.*

3,859,556. (See 3,662,373.)

3,867,769, Schow and Abrams, ARC WELDING SIMULATOR TRAINER, filed Aug. 16, 1977, D.C., E.D. Mo. (St. Louis), Doc. 77-886C(1), *Lenco, Inc. v. Harvey B. Schow, Macy L. Abrams and Sim-U-Welder, Inc.*

D. 216,059. (See 3,591,771.)

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,459,315, Re. S.N. 842,697, Filed Oct. 17, 1977, Cl. 222/541, CLOSURE SPOUT HAVING TEAR-OUT PORTION, Maurice Labarre, Owner of Record: *Breskin Industries Corporation, White Plains, N.Y.,* Attorney or Agent: Lawrence Rosen, et al., Ex. Gp.: 311

3,467,754, Re. S.N. 846,873, Filed Oct. 31, 1977, Cl. 424/253, BRONCHODILATOR EXPECTORANT ELIXIR, Neil H. Mercer, et al., Owner of Record: *Mead Johnson & Company, Evansville, Ind.,* Attorney or Agent: Robert E. Carnahan, et al., Ex. Gp.: 125

3,478,397, Re. S.N. 844,454, Filed Nov. 2, 1977, Cl. 425/162, BRICK CUTTER AND HACKER, Florentin J. Pearne, et al., Owner of Record: *Pearne and Lacy Machine Company, Inc., Los Angeles, Calif.,* Attorney or Agent: Harold F. McNenny, et al., Ex. Gp.: 322

3,501,307, Re. S.N. 849,374, Filed Nov. 7, 1977, Cl. 96/101, PHOTOGRAPHIC REVERSAL MATERIALS CONTAINING ORGANIC DESENSITIZING COMPOUNDS, Bernard D. Illingsworth, Owner of Record: *Eastman Kodak Company, Rochester, N.Y.,* Attorney or Agent: Carl O. Thomas, et al., Ex. Gp.: 166

3,662,432, Re. S.N. 843,126, Filed Oct. 14, 1977, Cl. 17/53, APPARATUS FOR EVISCERATING SCALLOPS, Richard T. Wenstrom, et al., Owner of Record: *Slade Gorton & Co., Inc., South Boston, Mass.,* Attorney or Agent: Robert A. Cesari, et al., Ex. Gp.: 333

3,913,097, Re. S.N. 841,970, Filed Oct. 13, 1977, Cl. 340/384 E, SOUND SIMULATOR FOR MODEL STEAM ENGINE, Walter J. Schedler, Owner of Record: *Inventor,* Attorney or Agent: Rupert J. Brady, et al., Ex. Gp.: 234

3,916,832, Re. S.N. 847,322, Filed Oct. 31, 1977, Cl. 119/2, AQUACULTURE SYSTEM, Maxwell Patrick Sweeney, Owner of Record: *Inventor,* Attorney or Agent: Albert L. Gabriel, Ex. Gp.: 333

3,917,033, Re. S.N. 848,774, Filed Nov. 4, 1977, Cl. 188/73.3, SLIDING CALIPER DISC BRAKES, Heinrich Bernard Rath, et al., Owner of Record: *Girling Limited, Birmingham, England,* Attorney or Agent: Samuel Scrivener, Jr., et al., Ex. Gp.: 315

3,919,509, Re. S.N. 848,346, Filed Nov. 3, 1977, Cl. 200/61.62, ELECTRICALLY CONDUCTIVE PNEUMATIC SPRING WITH DOOR ACTUATED SWITCH MEANS, Klaus Schnitzius, Owner of Record: *Stabilus G.m.b.H., Koblenz-Neuendorf, Germany,* Attorney or Agent: Hans Berman, et al., Ex. Gp.: 217

3,955,657, Re. S.N. 847,616, Filed Nov. 1, 1977, Cl. 192/2, ELECTRIC TRACTION TRANSPORTATION SYSTEM WITH STORAGE BATTERY POWERED VEHICLES AND FAST RECHARGE AT THE VEHICLE STOPS, Oscar Bossi, Owner of Record: *Inventor,* Attorney or Agent: Milton M. Field, Ex. Gp.: 315

3,961,983, Re. S.N. 790,494, Filed Apr. 25, 1977, Cl. 134/8, APPARATUS AND METHOD FOR WASHING INTERIORS OF TRUCK AND TRAILER BODIES, Clyde O. Crandall, et al., Owner of Record: *Safeway Stores, Incorporated, Oakland, Calif.,* Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 173

3,968,141, Re. S.N. 848,618, Filed Nov. 4, 1977, Cl. 260/468 K, PROCESSES FOR STEREOSPECIFICALLY PREPARING CHIRAL 2-SUBSTITUTED-4-HYDROXY-2-CYCLOPENTEN-1-ONE, Charles J. Sih, et al., Owner of Record: *Wisconsin Alumni Research Foundation, Madison, Wis.,* Attorney or Agent: Howard W. Bremer, Ex. Gp.: 126

3,972,399, Re. S.N. 849,193, Filed Nov. 7, 1977, Cl. 192/58 B, TEMPERATURE RESPONSIVE COUPLING, Warren G. Bopp, Owner of Record: *Eaton Corporation, Cleveland, Ohio,* Attorney or Agent: Paul S. Rulon, et al., Ex. Gp.: 345

4,027,504, Re. S.N. 832,495, Filed Sept. 12, 1977, Cl. 66/64, STITCH PRESSER FOR KNITTING MACHINE, Robert Dietschy, et al., Owner of Record: *Edouard Dubied et Cie. S.A., Neuchatel, Switzerland,* Attorney or Agent: Henry L. Brinks, et al., Ex. Gp.: 352

PATENT NOTICES

Certificates of Correction for the Week of Jan. 3, 1978

3,869,596	4,032,676	4,042,474	4,048,616
3,883,575	4,033,407	4,042,749	4,048,670
3,935,572	4,033,678	4,042,812	4,048,736
3,982,886	4,034,715	4,043,100	4,048,751
3,984,579	4,034,805	4,043,170	4,048,779
3,985,888	4,035,578	4,043,595	4,049,058
3,990,324	4,035,874	4,044,313	4,049,103
3,990,999	4,036,083	4,044,392	4,049,391
3,991,592	4,036,156	4,044,622	4,049,980
3,992,392	4,036,297	4,045,162	4,050,153
3,996,646	4,036,834	4,045,406	4,050,180
4,005,647	4,037,436	4,045,460	4,050,496
4,008,788	4,037,485	4,045,694	4,050,627
4,011,315	4,037,598	4,045,819	4,050,674
4,019,381	4,037,954	4,046,175	4,050,835
4,020,071	4,038,019	4,046,188	4,050,924
4,021,575	4,038,152	4,046,332	4,050,925
4,022,038	4,038,176	4,046,394	4,050,944
4,024,095	4,038,184	4,046,900	4,050,947
4,025,486	4,038,273	4,047,560	4,050,984
4,025,985	4,038,508	4,047,721	4,051,052
4,026,025	4,038,765	4,047,777	4,051,063
4,028,131	4,039,022	4,048,103	4,051,205
4,028,278	4,039,097	4,048,124	4,051,323
4,029,590	4,039,486	4,048,132	4,051,533
4,029,673	4,039,488	4,048,164	4,051,961
4,030,892	4,039,667	4,048,226	4,052,297
4,030,903	4,040,046	4,048,230	4,052,486
4,030,932	4,040,820	4,048,307	4,052,548
4,031,015	4,041,322	4,048,413	4,052,689
4,031,075	4,041,408	4,048,424	4,053,508
4,032,124	4,041,810	4,048,455	

Disclaimers

3,202,777.—*John D. Desmond*, Philadelphia, Pa. DISPLAY CARTON. Patent dated Dec. 20, 1966. Disclaimer filed July 25, 1977, by the assignee, *Container Corporation of America*.

Hereby enters this disclaimer to claim 7 of said patent.

3,485,227.—*George M. Meyerle*, South Ozone Park, N.Y. SWITCHING CIRCUIT. Patent dated Dec. 23, 1969. Disclaimer filed Nov. 2, 1977, by the assignee, *BSR (USA) Ltd.*

Hereby enters this disclaimer to the remaining term of said patent.

3,659,266.—*George M. Meyerle*, South Ozone Park, N.Y. BURGLAR ALARM SYSTEM. Patent dated Apr. 25, 1972. Disclaimer filed Nov. 2, 1977, by the assignee, *BSR (USA) Ltd.*

Hereby enters this disclaimer to the remaining term of said patent.

3,716,992.—*Jere F. Stahl*, Philadelphia, Pa. ADAPTOR FOR EXHAUST MANIFOLD. Patent dated Feb. 20, 1973. Disclaimer filed Nov. 11, 1977 by the inventor.

Hereby enters this disclaimer to claims 1, 2, 3, 4, and 5 of said patent.

3,850,835.—*Laurence B. Marantz*, Sherman Oaks and *Clifford M. Moran*, San Gabriel, Calif. METHOD OF MAKING GRANULAR ZIRCONIUM HYDROUS OXIDE ION EXCHANGERS, SUCH AS ZIRCONIUM PHOSPHATE AND HYDROUS ZIRCONIUM OXIDE, PARTICULARLY FOR COLUMN USE. Patent dated Nov. 26, 1974. Disclaimer filed Nov. 7, 1977, by the assignee, *CCI LIFE SYSTEMS, INC.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 10, 11, 12 and 13.

3,958,478.—*William John Camper*, Troy, Ohio. SHARPENER FOR COMMODITY SLICING MACHINE. Patent dated May 25, 1976. Disclaimer filed Nov. 3, 1977, by the assignee, *Hobart Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3 and 9 of said patent.

3,965,955.—*Edward John Price*, Dunsley, England. GOLF CLUB HEAD COVERS. Patent dated June 29, 1976. Disclaimer filed Nov. 7, 1977, by the assignee, *Colgate-Palmolive Company.*

Hereby enters this disclaimer to the remaining term of said patent.

4,036,302.—*Dudley W. C. Spencer*, Wilmington, Del. HORSESHOE MANUFACTURE. Patent dated July 19, 1977. Disclaimer filed Nov. 8, 1977, by the inventor.

Hereby enters this disclaimer to Claim 10 of said patent.

Disclaimer and Dedication

3,965,157.—*Roger Garrick Harrison*, Hampshire, England. PREPARATION OF ALPHA-ACETOXY ALDEHYDES AND KETONES. Patent dated June 22, 1976. Disclaimer and Dedication filed, Nov. 7, 1977, by the assignee, *Lilly Industries, Limited.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

Service by Publication

Erich O. Kettner

In accordance with 37 CFR 1.47(a) (Rules of Practice in Patent Cases), notice is hereby given of the filing on August 31, 1976, of an application for patent entitled "Method and Apparatus For Reclaiming Tobacco From Cigarettes", on behalf of Erich O. Kettner, whose last known address is 655–H Westover Hills Boulevard, Richmond, Virginia, 23225. The application was made in compliance with 37 CFR 1.47(a) and 35 U.S.C. 116, second paragraph by Thomas A. Newman without execution by the said Erich O. Kettner. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Erich O. Kettner in connection with the said application must be taken within thirty (30) days of the publication of this notice.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents and Trademarks.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $3.50 ($7.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF COMMERCE

National Technical Information Service, Office of Government Inventions & Patents
Springfield, Va. 22161

Patent application 801,272. Apparatus and Method for Determination of Wavelength. Filed May 27, 1977.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Mgmt. Branch, General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent 3,375,252. Conversion of Naringin to Neohesperidin and Neohesperidin Dinhydrochalcone. Mar. 26, 1968. Not available NTIS.

Patent 3,429,873. Preparation of Hesperetin Dihydrochalcone Glucoside. Filed Oct. 14, 1966. Patented Feb. 25, 1969. Not available NTIS.

Patent 3,583,894. Enzyme Preparation of Hesperetin Dihydrochalcone Glucoside. Filed Mar. 29, 1968. Patented June 8, 1971. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, & WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

Patent application 742,450. Improved Synthesis of Methotrexate. Filed Nov. 17, 1976.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., NW.,
Washington, D.C. 20240

Patent application 796,639. Massive Catalyst. Filed May 13, 1977.

Patent 4,005,012. Semipermeable Membranes and the Method for the Preparation Thereof. Filed Sept. 22, 1975. Patented Jan. 25, 1977. Not available NTIS.

Patent 4,009,527. Coordinated Color Chart System, and Method for Producing Same. Filed Nov. 6, 1975. Patented Mar. 1, 1977. Not available NTIS.

Patent 4,010,647. Sampling Method and Apparatus. Filed Dec. 24, 1975. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,022,626. Structural Material. Filed Aug. 22, 1975. Patented May 10, 1977. Not available NTIS.

Patent 4,025,121. High-Pressure Injection Hydraulic Transport System With a Peristaltic Pump Conveyor. Filed Feb. 26, 1976. Patented May 24, 1977. Not available NTIS.

Patent 4,026,786. Preparation of FbO_2 Anode. Filed July 31, 1975. Patented May 31, 1977. Not available NTIS.

Patent 4,026,917. Method of Removing Polynuclear Aromatic Compounds by Adsorption With Coconut Charcal. Filed Feb. 11, 1975. Patented May 31, 1977. Not available NTIS.

Patent 4,026,978. Method of Making Asymmetric Cellulose Triacetate Membranes. Filed July 17, 1975. Patented May 31, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research—Code 302, Arlington, Va. 22217

Patent application 804,036. A Missile System. Filed June 3, 1977.

Patent application 804,041. Correction and Transmission System for Directional Target Information. Filed June 6, 1977.

Patent 4,016,456. Multielectrode Grid for Aligning Polarized Particles Such as Asbestos. Filed Sept. 5, 1975. Patented Apr. 5, 1977. Not available NTIS.

Patent 4,016,796. Weapon Retention Device. Filed Mar. 29, 1976. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,018,636. Soluble Binder for Plastic Bonded Explosives and Propellants. Filed Apr. 20, 1976. Patented Apr. 19, 1977. Not available NTIS.

Patent 4,022,057. Expanding Tool for Nondestructive Inspection of Flexible Wire Rope. Filed July 12, 1976. Patented May 10, 1977. Not available NTIS.

Patent 4,022,130. Ejectable Fuze. Filed Feb. 6, 1976. Patented May 10, 1977. Not available NTIS.

Patent 4,022,405. Fan Lift-Cruise V/STOL Aircraft. Filed Mar. 25, 1976. Patented May 10, 1977. Not available NTIS.

Patent 4,022,422. Stemless Bantam Valve. Filed Feb. 19, 1976. Patented May 10, 1977. Not available NTIS.

Patent 4,023,493. Fireline Detonator. Filed Sept. 24, 1975. Patented May 17, 1977. Not available NTIS.

Patent 4,027,540. Inertial Optical Stabilizer. Filed Mar. 21, 1975. Patented June 7, 1977. Not available NTIS.

Patent 4,027,549. Plug-Type Counterweight and Lock. Filed Oct. 16, 1975. Patented June 7, 1977. Not available NTIS.

Patent 4,028,739. Ventilated Helmet With Selected Weight Distribution. Filed July 2, 1976. Patented June 14, 1977. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Mgmt. Branch, Agricultural Research Service
Hyattsville, Md. 20782

Patent application 807,273. Wood Cleaning Process and Apparatus. Filed June 16, 1977.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research—Code 302, Arlington, Va. 22217

Patent application 801,446. Remotely Operated X-Y Translation Table. Filed May 27, 1977.

Patent application 801,664. Voltage Level Shifting Device. Filed May 31, 1977.

Patent application 802,707. Chemical Removal of Polymeric Residue With One or More Metals, Salts, and Oxides Mixed Therein. Filed June 2, 1977.

Patent application 806,382. Tokamak Plasma Heating With Intense, Pulsed, Ion Beams. Filed June 14, 1977.

Patent application 808,839. Current-Reducing Device. Filed June 22, 1977.

Patent 4,010,360. Carrier-Compatible Chirp-Z Transform Device. Filed Mar. 31, 1976. Patented Mar. 1, 1977. Not available NTIS.

Patent 4,010,474. Two Dimensional Array Antenna. Filed May 5, 1975. Patented Mar. 1, 1977. Not available NTIS.

Patent 4,012,089. Electronic Equipment Enclosure. Filed Apr. 8, 1974. Patented Mar. 15, 1977. Not available NTIS.

Patent 4,015,252. High Speed Serial Data Synchronization Scheme. Filed June 25, 1975. Patented Mar. 29, 1977. Not available NTIS.

Patent 4,016,547. MOS Shift Register Compensation System for Defective Tracks of Drum Storage System. Filed Jan. 22, 1976. Patented Apr. 5, 1977. Not available NTIS.

Patent 4,017,010. Steerable Extraction Rocket. Filed Jan. 12, 1976. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,017,043. Deployable Rotor. Filed Mar. 8, 1976. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,020,677. Apparatus for Determining Salinity of Fluids. Filed June 17, 1976. Patented May 3, 1977. Not available NTIS.

Patent 4,022,406. Automatically Variable Multistage Parachute. Filed June 23, 1975. Patented May 10, 1977. Not available NTIS.

Patent 4,023,019. Automatic Sealed Digital Integrator. Filed Sept. 23, 1974. Patented May 10, 1977. Not available NTIS.

Patent 4,023,024. Electronic Urn Decision Device. Filed May 19, 1975. Patented May 10, 1977. Not available NTIS.

Patent 4,023,028. Method and Apparatus for Computing the Discrete Fourier Transform Recursively. Filed Aug. 20, 1974. Patented May 10, 1977. Not available NTIS.

Patent 4,023,117. Stimulated Raman Scattering Resonator. Filed Feb. 3, 1976. Patented May 10, 1977. Not available NTIS.

Patent 4,023,123. Microstrip Reverse-Phased Hybrid Ring Coupler. Filed Feb. 3, 1975. Patented May 10, 1977. Not available NTIS.

Patent 4,023,906. Compact Three-Beam Interferometer. Filed June 11, 1976. Patented May 17, 1977. Not available NTIS.

Patent 4,023,909. Null Balance Alphameter. Filed Jan. 15, 1976. Patented May 17, 1977. Not available NTIS.

Patent 4,025,145. Repairable Shielded Cable Connector. Filed May 17, 1975. Patented May 24, 1977. Not available NTIS.

Patent 4,025,873. Broadband, Microwave, Two-Stage, Stagger-Tuned, Field Effect Transistor Amplifier. Filed Aug. 17, 1976. Patented May 24, 1977. Not available NTIS.

Patent 4,027,946. Acousto-Optic Guided-Light Beam Device. Filed Sept. 24, 1975. Patented June 7, 1977. Not available NTIS.

Patent 4,028,565. Semiconductor Visible Image Storage Device. Filed June 27, 1975. Patented June 7, 1977. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent 4,026,527. Vortex Generator for Controlling the Dispersion of Effluents in a Flowing Liquid. Patented May 31, 1977. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Mgmt. Branch, General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent application 766,771. N-(3-Alkylamidopropyl)-N,N-Dimethyl-N (p-Sulfobenzyl) Ammonium Inner Salts. Filed May 13, 1977.

Patent 4,031,019. Alcohol Esters of Fatty Acids as Useful Metalworking Lubricants. Filed Oct. 3, 1975. Patented June 21, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research—Code 302, Arlington, Va. 22217

Patent application 751,638. Ignition Device for Missile Motors. Filed Dec. 17, 1976.

Patent application 785,974. A Frequency-Agile Fire-Control Radar System. Filed Apr. 8, 1977.

Patent application 788,371. Analog Sound Velocity Calculator. Filed Apr. 18, 1977.

Patent application 791,458. Parametric Energy Coupled Uninterruptible Power Supply. Filed Apr. 27, 1977.

Patent application 797,207. Compensation for Simultaneous Platform Motion and Antenna Scanning in MTI Radars. Filed May 16, 1977.

Patent application 797,209. Motion-Compensation Arrangements for MTI Radars. Filed May 16, 1977.

Patent application 797,726. Flip Chip Fiber Film Coupler. Filed May 17, 1977.

Patent application 798,289. Programmable Charge Coupled Device Timing System. Filed May 19, 1977.

Patent application 799,103. Fabrication of Atmospheric-Tarnish-Free Cooper Metal Mirrors for High-Power Laser Applications. Filed May 24, 1977.

Patent application 801,180. A Mass Transport Heat Exchanger Method and Apparatus for Use in Ocean Thermal Energy Exchange Power Plants. Filed May 27, 1977.

Patent 4,009,380. Electro-Optical System for Performing Matrix-Vector Multiplication. Filed Jan. 20, 1975. Patented Feb. 22, 1977. Not available NTIS.

Patent 4,017,043. Deployable Rotor. Filed Mar. 8, 1976. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,017,809. Multi-Frequency Oscillator Circuit. Filed July 25, 1975. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,017,836. Event Stacker and Display Device. Filed Apr. 5, 1976. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,025,913. Electrical Field Sensing and Transmitting Apparatus. Filed Dec. 22, 1975. Patented May 24, 1977. Not available NTIS.

Patent 4,026,213. Selectively Aimable Warhead. Filed June 17, 1971. Patented May 31, 1977. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—Code GP-2, Washington, D.C. 20546

Patent application 680,015. Determination of Antimicrobial Susceptibilities of Infected Urines Without Isolation. Filed Apr. 23, 1976.

Patent application 796,258. A Cervix-to-Rectum Measuring Device in a Radiation Applicator for Use in the Treatment of Cervical Cancer. Filed May 12, 1977.

Patent application 799,024. Composite Sandwich Lattice Structure. Filed May 20, 1977.

Patent application 807,762. Boron Trifluoride Coatings for Thermoplastic Materials. Filed June 17, 1977.

Patent 3,849,720. Electro-Mechanical Sine/Cosine Generator. Patented Nov. 19, 1974. Not available NTIS.

Patent 4,023,266. Process for Preparing Liquid Metal Electrical Contact Device. Patented May 17, 1977. Not available NTIS.

Patent 4,025,783. Gregorian All-Reflective Optical System. Patented May 24, 1977. Not available NTIS.

Patent 4,025,876. Distributed Feedback Acoustic Surface Wave Oscillator. Patented May 24, 1977. Not available NTIS.

Patent 4,026,527. Vortex Generator for Controlling the Dispersion of Effluents in a Flowing Liquid. Patented May 31, 1977. Not available NTIS.

Patent 4,027,212. Three Phase Full Wave DC Motor Decoder. Patented May 31, 1977. Not available NTIS.

Patent 4,031,389. Isotope Separation Using Metallic Vapor Lasers. Patented June 21, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY
Office of Judge Advocate General, Patent Division, Room 2C–455, Pentagon, Washington, D.C. 20314

Patent 4,004,175. High Voltage Particle Accelerator Utilizing Polycrystalline Ferroelectric Ceramic Material. Filed Dec. 9, 1975. Patented Jan. 18, 1977. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Mgmt. Branch, General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent application 785,615. Shrinkproofing of Fabrics. Filed Apr. 7, 1977.

U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 646,782. Regenerable Sorbent and Method for Removing Hydrogen Sulfide From Hot Gaseous Mixtures. Filed Mar. 1, 1976.

Patent application 652,695. Method for Preparing Single Crystal Lab Sub 6 Cathodes. Filed Jan. 27, 1976.

Patent application 652,696. Method of Preparing Porous, Active Material for Use in Electrodes of Secondary Electrochemical Cells. Filed Jan. 27, 1976.

Patent application 657,525. Compartmented Electrodes Structure. Filed Feb. 12, 1976.

Patent application 675,086. Nuclear Waste Solidification. Filed Apr. 8, 1976.

Patent application 683,156. Method for Isotope Enrichment by Photoinduced Chemilonization. Filed May 4, 1976.

Patent application 690,498. Variable Displacement Internal Combustion Engine. Filed May 27, 1976.

Patent application 696,997. Isotope Separation by Photoselective Dissociative Electron Capture. Filed June 17, 1976.

Patent 3,959,094. Electrolytic Synthesis of Methanol From CO Sub. 2. Filed Mar. 13, 1975. Patented May 25, 1976. Not available NTIS.

Patent 3,960,138. Differential Temperature Integrating Diagnostic Method and Apparatus. Filed Jan. 6, 1975. Patented June 1, 1976. Not available NTIS.

Patent 3,969,123. Refractory Ceramic Compositions and Method for Preparing Same. Filed Feb. 11, 1975. Patented July 13, 1976. Not available NTIS.

Patent 3,969,160. High-Strength Ductile Uranium Alloy. Filed June 3, 1975. Patented July 13, 1976. Not available NTIS.

Patent 3,969,495. Thermochemical Production of Hydrogen. Filed June 26, 1975. Patented July 13, 1976. Not available NTIS.

Patent 3,969,631. Gas Production Apparatus. Filed Mar. 20, 1975. Patented July 13, 1976. Not available NTIS.

Patent 3,970,450. Modified Iridium-Tungsten Alloy. Filed July 16, 1975. Patented July 20, 1976. Not available NTIS.

Patent 3,976,898. Prestressed Glass, Aezoelectric Electrical Power Source. Filed Mar. 20, 1975. Patented Aug. 24, 1976. Not available NTIS.

Patent 3,979,209. Ductile Tungsten-Nickel Alloy and Method for Making Same. Filed Feb. 18, 1975. Patented Sept. 7, 1976. Not available NTIS.

Patent 3,979,234. Process for Fabricating Articles of Tungsten-Nickel-Iron Alloy. Filed Sept. 18, 1975. Patented Sept. 7, 1976. Not available NTIS.

Patent 3,980,495. Calcium Alloy as Active Material in Secondary Electrochemical Cell. Patented Dec. 14, 1976. Not available NTIS.

Patent 3,980,916. Beam Limiter for Thermonuclear Fusion Devices. Filed July 22, 1975. Patented Sept. 14, 1976. Not available NTIS.

Patent 3,983,392. Method and Apparatus for Measuring Incombustible Content of Coal Mine Dust Using Gamma Ray Backscatter. Filed Feb. 14, 1975. Patented Sept. 28, 1976. Not available NTIS.

Patent 3,985,078. Power Supply. Filed Sept. 11, 1975. Patented Oct. 12, 1976. Not available NTIS.

Patent 3,985,551. Process for Removing Carbon From Uranium. Filed Feb. 24, 1976. Patented Oct. 12, 1976. Not available NTIS.

Patent 3,985,595. Insensitive Explosive Composition of Halogenated Copolymer and Triaminotrinitrobenzene. Filed Nov. 29, 1974. Patented Oct. 12, 1976. Not available NTIS.

Patent 3,987,145. Ferric Ion as a Scavenging Agent in a Solvent Extraction Process. Filed May 15, 1975. Patented Oct. 19, 1976. Not available NTIS.

Patent 3,987,302. Resonance Ionization for Analytical Spectroscopy. Filed Aug. 27, 1975. Patented Oct. 19, 1976. Not available NTIS.

Patent 3,988,123. Gasification of Carbonaceous Solids. Filed Aug. 15, 1975. Patented Oct. 26, 1976. Not available NTIS.

Patent 3,988,919. Use of Graphitized Carbon Beads for Gas Liquid Chromatography. Filed Oct. 7, 1975. Patented Nov. 2, 1976. Not available NTIS.

Patent 3,989,608. Flotation Process for Removal of Precipitates From Electrochemical Chromate Reduction Unit. Filed Dec. 30, 1975. Patented Nov. 2, 1976. Not available NTIS.

Patent 3,989,808. Method of Preparing Pure Fluorine Gas. Filed July 28, 1975. Patented Nov. 2, 1976. Not available NTIS.

Patent 3,991,680. Tagging Explosives With Sulfur Hexafluoride. Filed May 15, 1975. Patented Nov. 16, 1976. Not available NTIS.

Patent 3,993,538. Production of High Purity Radiothallium. Filed Jan. 27, 1976. Patented Nov. 23, 1976. Not available NTIS.

Patent 3,993,579. Method of Encapsulating Solid Radioactive Waste Material for Storage. Filed Oct. 22, 1975. Patented Nov. 23, 1976. Not available NTIS.

Patent 3,993,728. Bidentate Organophosphorus Solvent Extration Process for Actinide Recovery and Partition. Filed Aug. 27, 1975. Patented Nov. 23, 1976. Not available NTIS.

Patent 3,995,009. Process for Loading Weak-Acid Ion Exchange Resin With Uranium. Filed Sept. 15, 1975. Patented Nov. 30, 1976. Not available NTIS.

Patent 3,996,331. Plutonium and Americium Separation From Salts. Filed June 24, 1975. Patented Dec. 7, 1976. Not available NTIS.

Patent 3,997,005. Method for Control of Subsurface Coal Gasification. Filed Oct. 23, 1975. Patented Dec. 14, 1976. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research—Code 302, Arlington, Va. 22217

Patent 4,010,689. Apparatus for Sensing Target Distance. Filed Dec. 23, 1970. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,012,738. Combined Layers in a Microwave Radiation Absorber. Filed Jan. 31, 1961. Patented Mar. 15, 1977. Not available NTIS.

Patent 4,015,530. Two Channel Optical Fuzing System. Filed Mar. 30, 1966. Patented Apr. 5, 1977. Not available NTIS.

Patent 4,017,043. Deployable Rotor. Filed Mar. 8, 1976. Patented Apr. 12, 1977. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters NASA—Code GP-2, Washington, D.C. 20546

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Patent 4,005,376. Electronically Variable Surface Acoustic Wave Phase Shifter. Filed Apr. 15, 1976. Patented Jan. 25, 1977. Not available NTIS.

Patent 4,006,412. Digital Display System Circuit. Filed Oct. 29, 1974. Patented Feb. 1, 1977. Not available NTIS.

Patent 4,008,470. Passive Ranging System. Filed Feb. 27, 1968. Patented Feb. 15, 1977. Not available NTIS.

Patent 4,009,392. Radiation Focus Meter. Filed Jan. 26, 1976. Patented Feb. 22, 1977. Not available NTIS.

Patent 4,012,244. High Density Impulse Solid Propellant. Filed Mar. 31, 1961. Patented Mar. 15, 1977. Not available NTIS.

Patent 4,013,245. Homing Projectile. Filed Dec. 5, 1975. Patented Mar. 22, 1977. Not available NTIS.

Patent 4,015,621. Pressure Control and Fluid Venting System for a Pressurized Container. Filed Mar. 18, 1976. Patented Apr. 5, 1977. Not available NTIS.

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Patent 4,016,764. Temperature Compensated, High Resolution Pressure Transducer Based on Capacitance Change Principles. Filed July 19, 1976. Patented Apr. 12, 1977. Not available NTIS.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent application 740,156. Differential Sound Level Meter. Filed Nov. 8, 1976.

Patent application 796,257. Flame-Resistant Liquid Oxygen Compatible Neoprene Rubber Composition. Filed May 12, 1977.

Patent 4,017,959. Method of Forming Shrink-Fit Compression Seal. Patented Apr. 19, 1977. Not available NTIS.

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U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

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Patent application 771,858. Method for the Preparation of Bis (Perfluoro-T-Butyl) Peroxide. Filed Feb. 23, 1977.

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Patent application 776,390. Pre-TR High Power/Intermediate Power Stage Apparatus. Filed Mar. 10, 1977.

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Patent 4,011,255. Fluoroalkyleneether Difunctional Compounds. Filed Sept. 4, 1975. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,011,267. Perfluoroalkylether Substituted Aryl Phosphines and Their Synthesis. Filed Nov. 6, 1975. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,011,306. Oxygen Generation Method. Filed Feb. 26, 1976. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,011,471. Surface Potential Stabilizing Circuit for Charge-Coupled Devices Radiation Hardening. Filed Nov. 18, 1975. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,011,532. Fast Acting Waveguide Coupler. Filed Jan. 14, 1976. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,011,560. Programmable Light Display System. Filed Oct. 2, 1975. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,011,566. In-Line Coax-to Waveguide Transition Using Dipole. Filed July 25, 1975. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,015,658. Apparatus for Electric Enhancement of Heat Transfer. Filed Nov. 12, 1975. Patented Apr. 5, 1977. Not available NTIS.

Patent 4,015,710. Reusable Shipping Container Assembly. Filed Oct. 17, 1975. Patented Apr. 5, 1977. Not available NTIS.

Patent 4,015,880. Multiple Level Fluid Bearing Track Assembly. Filed May 21, 1975. Patented Apr. 5, 1977. Not available NTIS.

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U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
Assistant General Counsel for Patents
Washington, D.C. 20545

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

Patent application 750,339. Polyols From Epoxidized Tallow, Trimethylolpropane and Propylene Oxide. Filed Dec. 13, 1976.

Patent application 790,988. Activity Monitor for Ambulatory Subjects. Filed Apr. 26, 1977.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research—
Code 302, Arlington, Va. 22217

Patent application 642,878. Sealing of Glass Ampoules. Filed Dec. 22, 1975.

Patent application 706,656. Method and Apparatus for Remotely Transducing and Transmitting Pressure and Temperature Changes. Filed July 19, 1976.

Patent application 711,944. Headgear Suspension System. Filed Aug. 5, 1976.

Patent application 720,851. Lead-In-Paint Indicator Gel. Filed Sept. 7, 1976.

Patent application 727,504. Container Lift Coupling. Filed Sept. 28, 1976.

Patent application 763,271. Ocean Adapted Airship. Filed Jan. 27, 1977.

Patent application 767,606. A Non-Explosive Lithium Battery. Filed Feb. 10, 1977.

Patent application 770,872. Aircraft to Weapon Fuze Communication Link. Filed Feb. 22, 1977.

Patent application 772,704. Anisotropic Sheet Metal. Filed Feb. 28, 1977.

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Patent application 786,755. A Dynamic Acoustic Measurement System. Filed Apr. 7, 1977.

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Patent 3,946,322. Pulse Duty Cycle Transition Moderating Device. Filed June 17, 1974. Patented Mar. 23, 1976. Not available NTIS.

Patent 3,958,597. Throttle Control for Remote Air Driven Devices. Filed Oct. 21, 1974. Patented May 25, 1976. Not available NTIS.

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Patent 4,002,061. Capacitance Transducer for the Measurement of Bending Strains at Elevated Temperatures. Filed Apr. 30, 1976. Patented Jan. 11, 1977. Not available NTIS.

Patent 4,007,633. Method of Determining the Physical Characteristics of a Sea Floor. Filed Oct. 14, 1975. Patented Feb. 15, 1977. Not available NTIS.

Patent 4,008,427. Variable Input Power Supply. Filed Sept. 29, 1975. Patented Feb. 15, 1977. Not available NTIS.

Patent 4,008,606. Ship's Bottom Inspection Apparatus. Filed Oct. 20, 1975. Patented Feb. 22, 1977. Not available NTIS.

Patent 4,009,452. Submersible Power Package. Filed Jan. 12, 1976. Patented Feb. 22, 1977. Not available NTIS.

Patent 4,009,828. Organic Nucleating Agent for Both Warm and Cold Clouds. Filed Nov. 19 1975. Patented Mar. 1, 1977. Not available NTIS.

Patent 4,010,619. Remote Unmanned Work System (RUWS) Electromechanical Cable Systems. Filed May 24, 1976. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,012,384. 7-(N-Methyl-N-Alkylamino)-1,3,5-Triazaadamantanes. Filed July 28, 1975. Patented Mar. 15, 1977. Not available NTIS.

Patent 4,015,987. Process for Making Chip Carriers Using Anodized Aluminum. Filed Aug. 13, 1975. Patented Apr. 5, 1977. Not available NTIS.

Patent 4,016,761. Optical Temperature Probe. Filed Apr. 18, 1974. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,016,775. Finger Actuated Controller. Filed July 11, 1974. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,017,208. Two-Way Fluid Meter Pumps. Filed June 13, 1975. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,017,587. Boron Carbide. Filed Apr. 26, 1971. Patented Apr. 12, 1977. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent application 727,503. Thrust Augmented Spin Recovery Device. Filed Sept. 28, 1976.

Patent application 733,814. Vortex Attenuation Method. Filed Oct. 19, 1976.

Patent application 760,057. Safety Flywheel. Filed Jan. 17, 1977.

Patent application 790,637. Method for Producing Solar Energy Panels by Automation. Filed Apr. 25, 1977.

Patent application 796,256. Induction Powered Biological Radiosonde. Filed May 12, 1977.

Patent 3,478,514. Hydraulic Drain Means for Servo-Systems. Patented Nov. 18, 1969. Not available NTIS.

Patent 3,736,453. Arc Control in Compact Arc Lamps. Patented May 29, 1973. Not available NTIS.

Patent 3,896,955. Automated Multi-Level Vehicle Parking System. Patented July 29, 1975. Not available NTIS.

Patent 4,014,745. Application of Luciferase Assay for ATP to Antimicrobial Drug Susceptibility. Patented Mar. 29, 1977. Not available NTIS.

Patent 4,018,532. Sun Direction Detection System. Patented Apr. 19, 1977. Not available NTIS.

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Patent 4,019,868. Solar Hydrogen Generator. Patented Apr. 26, 1977. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 3, 1977

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-3-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-21-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-7-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-6-76
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-3-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-18-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-8-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-24-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-5-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-3-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-6-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-15-76
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	4-1-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-8-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	12-2-76
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-1-77

Expiration of patents: The patents within the range of numbers indicated below expire during December 1977, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,962,719 to 2,966,680, inclusive
Plant Patents... ..... Numbers 1,991 to 2,008, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JANUARY 3, 1978

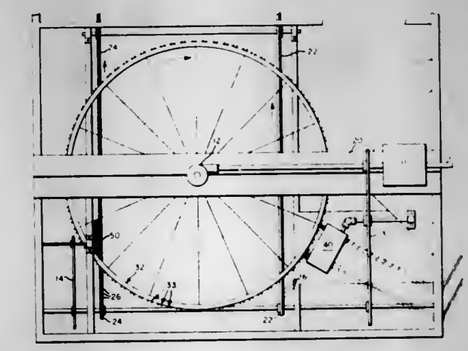
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T966,001
APPARATUS AND METHOD FOR MULTIPLE STRAND WEB FORMATION

George Daniel Forsythe, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 696,749, June 16, 1976, abandoned.
This application May 25, 1977, Ser. No. 800,431
Int. Cl.² D04H *3/04*
U.S. Cl. 28—100
7 Sheets Drawing. 14 Pages Specification

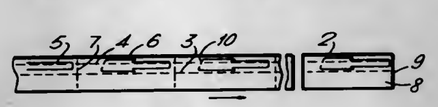


A method for traversing a plurality of strands between two spaced rows of strand-restraining elements moving together in the same direction in substantially the same plane to form a web is implemented by a plurality of strand transfer members moving in a single closed path spanning the rows of strand-restraining elements so that the members pass between strand-restraining elements on one of the rows and above them on the other row. There is a means provided for moving each strand back and forth across the path into engagement with the strand transfer members and a means for disengaging each strand from each strand transfer member beyond the other row and depositing it as a loop around at least one of the strand-restraining elements.

T966,002
PLASTICS BAGS PRODUCTION

John Grover Barnes, Brampton, and Charles Robertson Murray, Toronto, both of Canada, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 18, 1977, Ser. No. 778,926
Claims priority, application United Kingdom, Mar. 23, 1976, 11632/76
Int. Cl.² B31B *1/84*
U.S. Cl. 93—8 VB
3 Sheets Drawing. 11 Pages Specification



In the production of plastics bags, especially valved bags, from a web of plastics material by folding in the side margins of the web to form overlapping panels which are then longitudinally heat-sealed together for a major portion of one bag length, and then heat-sealing the web transversely and severing the web at intervals to produce individual bags, the two overlapping panels are heat-sealed together by forming two longitudinal seals which partially overlap to provide a forward longitudinal seal and a rear longitudinal seal with respect to the direction of travel of the web, the rear longitudinal seal of each bag being formed simultaneously with the forward longitudinal seal of the adjacent following bag. The apparatus comprises a pair of heat-sealing elements equipped for simultaneous operation and arranged for forming the rear seal in one bag and the forward seal in the following adjacent bag. The two elements may be a fixed distance apart, and at least one has suitably a hairpin shape.

T966,003
PHOTOGRAPHIC ELEMENTS CONTAINING VAPOR DEPOSITED SILVER HALIDE LAYERS

Joe E. Maskasky, c/o Kodak Park Division, Rochester, N.Y. 14650

Filed Feb. 7, 1977, Ser. No. 766,290
Int. Cl.² G03C *1/02*
U.S. Cl. 96—94 BF
No Drawing. 15 Pages Specification

A photographic element is disclosed comprised of a support and at least two contiguous vacuum vapor deposited silver halide layers. One of the layers is a vacuum vapor deposited silver iodide layer. A second, contiguous layer is a vacuum vapor deposited silver chloride layer.

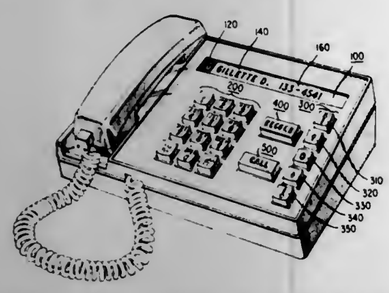
T966,004
METHOD OF COOLING A FAST-BREEDER REACTOR

Mario D. Carelli, Greensburg, and Christopher W. Bach, North Huntingdon Township, Westmoreland County, both of Pa., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation of Ser. No. 699,392, June 24, 1976, abandoned.
This application Apr. 20, 1977, Ser. No. 789,315
Int. Cl.² G21C *1/02*
U.S. Cl. 176—40
1 Sheets Drawing. 14 Pages Specification

Operation of a liquid-metal-cooled fast-breeder reactor is enhanced by distributing coolant among the fuel assemblies at such a rate that the strain equivalent limiting temperature of each fuel assembly is closely approached but not exceeded. Further improvement is attained by proportionally allocating less coolant of a total prescribed coolant flow to the outer fuel assemblies of the reactor (yet satisfying the condition that the strain equivalent limiting temperature is not exceeded) whereby additional coolant flow is available for the inner fuel assemblies, thereby further reducing the radial thermal gradient in the coolant immediately above the fuel assemblies, a particular advantage being that the temperature of the upper internal structure of the reactor immediately above the inner zone of the reactor is reduced.

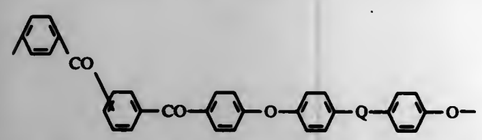
T966,005
REPERTORY DIALER
Dean Gillette, Rumson, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed July 5, 1977, Ser. No. 812,770
Int. Cl.² H04M *1/51*
U.S. Cl. 179—90 B
1 Sheets Drawing. 6 Pages Specification



A repertory dialer is disclosed that includes a solid state display and a telephone keyboard coupled to a solid state memory. The solid state display comprises a plurality of alphanumeric characters, the first of which is used to provide an alphabetical index. The rest of the characters are divided into a name display and a telephone number display. The telephone keyboard is used to generate alphabetic and numeric inputs to the memory. A five-button scanning control causes the alphanumeric information stored in the memory to be sequentially displayed. Scanning is achieved by the operation of either a fast forward button, a slow forward button, a stop button, a slow backward button, or a fast backward button. Record and call function select buttons are used to select either the record or call modes of operation.

T966,006
AROMATIC POLYMERS
John Leslie Freeman, St. Neots, and John Brewster Rose, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Feb. 10, 1977, Ser. No. 767,332
Claims priority, application United Kingdom, Feb. 10, 1975, 5173/75
Int. Cl.² C08G *65/40*
U.S. Cl. 260—49
No Drawing. 26 Pages Specification

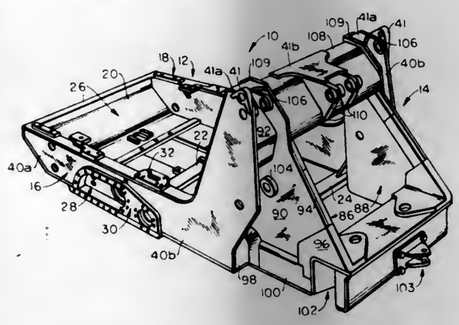
Aromatic polymers having phenylene groups linked by oxygen atoms, ketone groups and sulphone groups, that is etherketone/sulphone copolymers, containing 40 to 90 and preferably 50 to 80, mole % of the repeat units



and correspondingly 10 to 60, particularly 20 to 50, mole % of repeat units

where Q and Q' are $-SO_2-$ or —CO—, the number of $-SO_2-$ groups being 3 to 25% of the total number of $-SO_2-$ and —CO— groups are disclosed. Such copolymers are made more cheaply than the similar copolymers of U.K. Pat. No. 1,414,422 yet exhibit improved properties of a somewhat reduced melting point, owning to the incorporation of sulphone linkages in the polymer chain, thus providing greater latitude over processing temperatures. Preferably from 10 to 20% of the total sulphone and ketone linkages in the copolymers are sulphone linkages. The disclosed copolymers are particularly suitable for wire insulation where the polymer has to retain its properties at high service temperatures.
In practice the copolymers have a reduced viscosity of at least 0.8, preferably 1.0, and a low absorbence, such as below 0.35, indicating relative freedom from structural irregularities such as chain branching, both parameters measured according to the procedures disclosed.

T966,007
MAIN FRAME FOR A LOADER VEHICLE
Douglas P. Liehr, Bettendorf, and Robert A. Sutton, Davenport, both of Iowa, assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed July 7, 1977, Ser. No. 813,726
Int. Cl.² B62D *27/00*
U.S. Cl. 296—28 R
3 Sheets Drawing. 10 Pages Specification

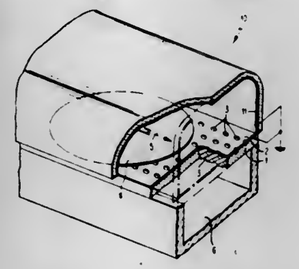


An integral welded main frame for a loader vehicle having a hydrostatic drive system, including a front frame section for supporting a load forwardly thereof, a pair of rails extending rearwardly from the front frame section, each of the rails including an upper plate and a lower plate joined by an outer plate and an inner plate to form a box section, the inner plate having an opening for receiving a hydraulic motor of the system, a first casing for a final drive of the system, including a first curved plate surrounding the final drive and the opening and extending from the inner plate to outside the outer plate, whereby each rail is reinforced in the area of the opening, a second casing for a pivot bar extendable through one of the rails, including a second curved plate welded to the outer plate and extending outside thereof, whereby each of the rails is reinforced in the area of the pivot bar, and a plurality of crossmembers connecting the pair of side rails.

T966,008
OXIDATION OF p-XYLENE TO TEREPHTHALALDEHYDE
James E. Williams, 139 Deadrick St., Kingsport, Tenn. 37663
Continuation of Ser. No. 611,380, Sept. 8, 1975. This application Dec. 20, 1976, Ser. No. 752,230
Int. Cl.² C07C *45/02*
U.S. Cl. 260—599
No Drawing. 11 Pages Specification

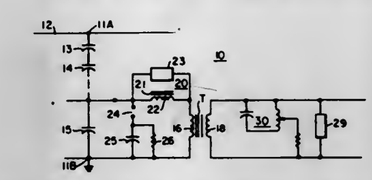
Terephthalaldehyde is produced by the vapor phase oxidation of p-xylene in the presence of a catalyst mixture of tungsten in the form of an oxide or silicotungstic acid, molybdenum in the form of an oxide and bismuth in the form of an oxide, wherein the activity of the catalyst is prolonged by contacting the catalyst mixture intermittently or continuously with molybdenum oxide vapor or a compound which forms molybdenum oxide under the reaction conditions.

T966,009
STATIC FREE FLUID BEARING TRACK SYSTEM
Bayard G. Gardineer, Jr., Patterson; Stanley A. Manning, Yorktown Heights; Arthur E. Meeks, Woodstock, and Bela Musits, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 676,600, April 13, 1976, abandoned. This application May 24, 1977, Ser. No. 800,151
Int. Cl.² B65G *51/02*
U.S. Cl. 302—2 R
1 Sheets Drawing. 8 Pages Specification



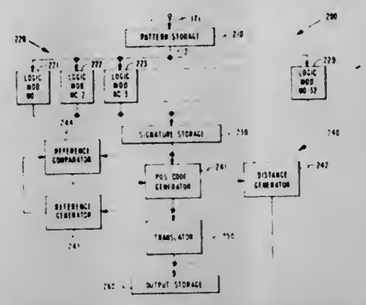
An improved fluid bearing track structure in which the metal surface of the track is enclosed by a transparent envelope having the inner surface coated with a transparent metal film which is grounded with the metal track surface to prevent static buildup.

T966,010
CAPACITIVE VOLTAGE TRANSFORMER WITH IMPROVED COMPENSATING REACTOR ARRANGEMENT
Andrew S. Sweetana, Jr.; Gerald B. Boyette, both of Bloomington, and Frederick J. Brown, Ellettsville, all of Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 631,296, Nov. 12, 1975, abandoned. This application Apr. 7, 1977, Ser. No. 785,381
Int. Cl.² G05F *3/06*
U.S. Cl. 323—61
1 Sheets Drawing. 12 Pages Specification



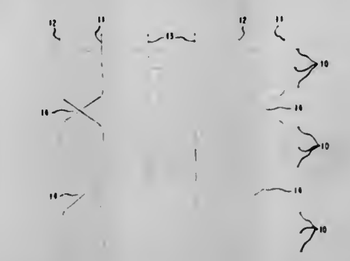
A compensating reactor in a coupling capacitor potential device including a magnetic core with an inductive winding, the reactor providing inductive reactance cancelling capacitive reactance of the device, and a voltage limiting device connected across the compensating reactor which is a ceramic oxide non linear resistor. The reactor core can be a magnetic steel whose normal saturation level substantially exceeds the voltage at which the voltage limiter changes resistance.

T966,011
PATTERN-RECOGNITION SYSTEM AND METHOD
Philip H. Howard, Rochester, Mich., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 95,676, Dec. 7, 1970, abandoned. This application June 20, 1977, Ser. No. 808,211
Int. Cl.² G06K *9/00*
U.S. Cl. 340—146.3 AC
6 Sheets Drawing. 63 Pages Specification



A plurality of binary logic trees converts a pattern to a signature word. Each logic has addressable test-node words with branch, status and pattern-bit address fields. The status field has flags for indicating a desired value of a pattern bit and for identifying leaf-node logic words for setting the signature bits. The logics are interrelated to each other by a set of reference words having a substantially constant intrapair Hamming distance. The signature is converted to one or more identifying codes by generating one of the reference words from the signature and comparing it with the signature. If one code is used, the comparison gives the correct code for the pattern. For plural codes, the codes are checked for consistency with each other and are used to complete a correct identifying code. Computer-program implementations are described for accomplishing all the above functions.

T966,012
WOVEN ELASTIC FABRIC AND PROCESS FOR MAKING
Alexis Reicher, 12, Rue Albert Gros, 1206 Geneva, Switzerland
Filed Feb. 14, 1977, Ser. No. 768,614
Int. Cl.² D03D *15/00*
U.S. Cl. 428—259
1 Sheets Drawing. 10 Pages Specification



A slip-resistant woven elastic fabric is made of hard weft yarns and paired fusible elastomer leno warp yarns, the individual warp yarns of each pair crossing and recrossing each other at intervals throughout the fabric and being fused to each other at the crossover points.

T966,013
TRANSITION METAL COMPOUND

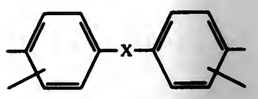
Alan Branford Newton, Welwyn Garden City, and John Edward Priddle, Welwyn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 3, 1976, Ser. No. 747,383
Claims priority, application United Kingdom, Jan. 2, 1976, 68/76
Int. Cl.[2] C08F *4/66, 10/06*
U.S. Cl. 526—140
No Drawing. 41 Pages Specification

A process is provided in which a solid compound of a transition metal of Groups IVA to VIA is ground with at least one polymeric material containing sulphone groups and containing at least two repeat units of the formula:

$$-Ar-SO_2-$$

in which Ar is a bivalent aromatic radical and may vary from unit to unit in the polymer chain. The Ar radical preferably contains two aromatic rings linked together, as in:



where X is an O or S atom, a direct link or the residue obtained by removing H from each —OH group present in an aromatic diol. If Ar varies the material is a copolymer. The polymeric material can be a polyethersulphone.

The transition metal can be zirconium, vanadium or titanium. Preferably the transition metal compound is a halide such as titanium trichloride.

REISSUES

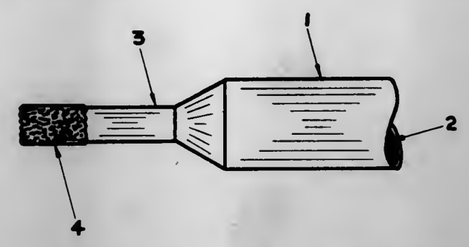
JANUARY 3, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,506
METHOD OF SEALING THE END OF A FILLED WELDING ROD

Richard W. Young, LaHabra, and Sidney A. Siebert, Fullerton, both of Calif., assignors to Cabot Corporation, Kokomo, Ind.

Original No. 3,894,211, dated July 8, 1975, Ser. No. 468,806, May 10, 1974. Application for reissue Dec. 4, 1975, Ser. No. 637,567
Int. Cl.[2] B22D *11/126*
U.S. Cl. 29—527.4 9 Claims



9. The method of closing an end of a filled tube welding rod comprising the steps of:

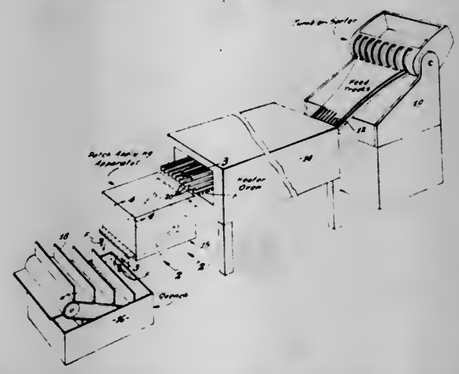
a. reducing the transverse cross-sectional area of the end of the filled tube welding rod, and

b. subsequently, applying to said reduced end to seal the said reduced end a solid organic film volatilizable at welding temperature to provide a contaminant-free weldment, said organic film comprising pyroxylin and alcohol.

Re. 29,507
APPARATUS FOR FORMING SELF LOCKING FASTENERS

Otto Kurt Schwenzfeier, Chula Vista, Calif., assignor to Long-Lok Fasteners Corporation, Cincinnati, Ohio

Original No. 3,726,740, dated Apr. 10, 1973, Ser. No. 141,654, May 10, 1971. Application for reissue Aug. 29, 1973, Ser. No. 392,611
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—498 35 Claims



1. [In an apparatus for forming a plastic patch on a workpiece having a curved cross-section configuration, for example, on the screw thread of a fastener, the combination of:

means to place a workpiece in preselected position at a processing station;

means to advance an increment of plastic strip to a position above the workpiece;

means to shear off a fragment from the increment and to carry the fragment to the workpiece, and

means having a curved working face shaped to a curvature that is substantially complementary to the curvature of the workpiece to press the sheared fragment of plastic strip against the curved surface of the workpiece for adherence thereto.] *An apparatus for forming a plastic patch on a workpiece which is an externally threaded fastener to provide the fastener with self-locking characteristics by reason of a patch of plastic adhered to a plurality of unmodified threads of the fastener comprising:*

means for heating the threaded fastener to an elevated temperature sufficient to convert the plastic patch to a completely molten state when the patch is brought into contact with the heated fastener;

means to place the heated fastener in a preselected position at a processing station;

means to advance an increment of plastic strip to a position adjacent the heated fastener;

means for cutting a fragment from the increment and to carry the fragment to the heated fastener;

means having a smooth working face which is shaped to a curvature that is substantially complementary to the curvature of the threaded fastener to press the fragment of plastic strip about the fastener and into engagement with the crests of the threads of the heated fastener, and

means to yieldingly move said means having a smooth working face against said heated fastener with a force which applied a work shaping pressure to the fragment that is sufficient to hold the fragment engaged with the crests of the threads of the heated fastener without pressurally forcing material of the fragment into the valleys of the threads for a time sufficient for the heated crests of the fastener to sever the fragment into discrete segments which in a completely molten state flow downwardly of the crests and into the valleys between adjacent crests of the threads to adhere to adjacent flanks of the threads in forming a unitary plastic patch on the threads in which accurately predetermined quantities of the plastic are present in each of the discrete severed segments of the plastic patch.

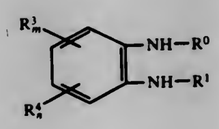
Re. 29,508
RING-SUBSTITUTED N-(2,2-DIFLUOROALKANOYL)-o-PHENYLENEDIAMINE COMPOUNDS

George O. P. O'Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

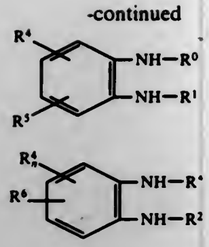
Original No. 3,907,892, dated Sept. 23, 1975, Ser. No. 479,073, June 13, 1974. Continuation-in-part of Ser. No. 277,452, Aug. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 47,857, June 19, 1970, abandoned, and Ser. No. 17,865, March 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 803,998, March 3, 1969, abandoned. Application for reissue Dec. 13, 1976, Ser. No. 750,306
Int. Cl.[2] C07C *103/20*
U.S. Cl. 260—562 B 10 Claims

1. A compound selected from the group consisting of the compounds of the formulae:

I.

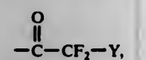


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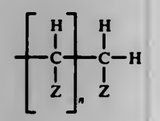


wherein

R^0 represents a 2,2-difluoroalkanoyl radical of the formula

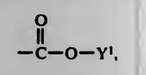


wherein Y represents hydrogen, chlorine, fluorine, difluoromethyl, perfluoroalkyl of C_1-C_6, or radical of the formula

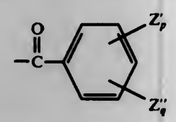


wherein each Z independently represents hydrogen or halogen and n represents 0 or 1;

R^1 represents hydrogen radical of the formula



wherein Y represents loweralkyl of C_1-C_4 or phenyl, benzoyl furoyl, naphthoyl, or substituted benzoyl of the formula



wherein each Z' independently represents halo or nitro, Z'' represents loweralkyl of C_1-C_4 or loweralkoxy of C_1-C_4, p represents 0, 1, or 2, q represents 0 or 1, and the sum of p and q is 1-3;

R^2 represents R^0, R^1, alkanoyl of C_1-C_8, loweralkenoyl of C_3-C_4, loweralkynoyl of C_3-C_4, halogenated loweralkanoyl of C_2-C_4 bearing on any position or positions one or more halogen atoms, each independently selected, subject to the limitation that the alpha position bear at least one substituent moiety selected from the group consisting of hydrogen and halogen of atomic weight from 35 to 127, both inclusive;

each R^3 independently represents halogen;

R^4 represents nitro;

R^5 represents trifluoromethyl, difluoromethyl, or difluorochloromethyl, and in compounds of Formula II, R^4 and R^5 are meta to one another;

R^6 represents loweralkylsulfonyl of C_1-C_4 and is located at the 4 or 5 position, and any R^4 group is meta to R^6;

m represents 0-4;

n represents 0-1; and in compounds of Formula I, the sum of m and n is an integer of from 1 to 4;

subject to the further limitation that where R^1 or R^2 represents hydrogen, the ring position ortho to the —NH—R^1 or —NH—R^2 group bears one of the designated R^3, R^4, *or* R^5[, or R^6] moieties.

Re. 29,509

II. **WHEEL SPEED SENSOR FOR AN ADAPTIVE BRAKING SYSTEM**

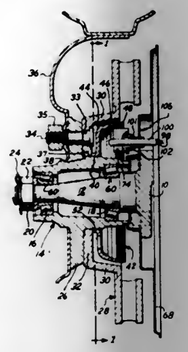
Edward M. Pauwels; David D. Jordan, both of South Bend, Ind., and Ward C. Suttle, Tucson, Ariz., assignors to The Bendix Corporation, South Bend, Ind.

Original No. 3,626,226, dated Dec. 7, 1971, Ser. No. 42,168,

III. **June 1, 1978. Application for reissue Dec. 3, 1973, Ser. No. 421,385**

Int. Cl.² H02K *19/24*

U.S. Cl. 310—168 **3 Claims**



2. A wheel speed sensor comprising:

a spindle;

a wheel hub rotatably mounted on said spindle;

[disc] brake means connected to said wheel hub and being rotatable therewith;

pickup means nonrotatably mounted on said spindle; and

a tone wheel connected to said hub and rotatable therewith, said tone wheel [having notches on an accessible surface;] *having a portion extending radially with respect to said hub and terminating in an axially extending flange, said flange having axially extending notches;*

said pickup means being located in close proximity with said notches [movable relative thereto], *said notches being movable relative to said pickup means* to generate a signal representative of the rotational velocity of said tone wheel, *said pickup means being movable radially with respect to said hub toward and away from the notches on the flange* and further comprising [projections on] *means projecting from* said pickup means to locate said pickup means a predetermined distance from said tone wheel and to protect said pickup means from damage due to normal vibrations.

Re. 29,510

HIGH EFFICIENCY SWITCHING DRIVE FOR A RESONATE POWER TRANSFORMER

George Robert Hull, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Original No. 3,987,355, dated Oct. 19, 1976, Ser. No. 561,740, Mar. 24, 1975. Application for reissue Dec. 10, 1976, Ser. No. 749,582

Int. Cl.² H02M *7/537*

U.S. Cl. 363—21 **6 Claims**

1. A circuit for improving the efficiency of an energy conversion apparatus, comprising:

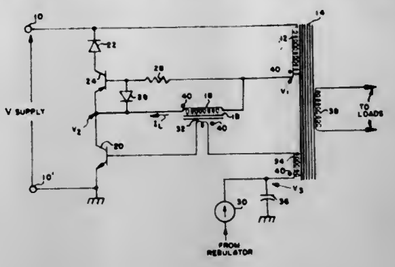
a resonate transformer having primary windings and secondary windings electromagnetically coupled thereto for converting the energy;

means, coupled to said primary windings, for storing energy [developed by said primary windings];

first switch means coupled to said means for storing energy, said first switch means having a first condition and a second condition;

means for impressing a potential of an external energy source across said primary windings and said means for storing energy in said first condition of said first switch means; and

second switch means coupled to said primary windings and operatively disposed across said means for storing energy in said second condition of said first switch means for impressing energy stored in said first condition to said primary windings thereby improving efficiency of the apparatus.



PLANT PATENTS

GRANTED JANUARY 3, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,174

LILY PLANT: LILIUM 'HEADLIGHT'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Jan. 21, 1977, Ser. No. 761,224
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its single stem of dark green color, its abundant lanceolate deep green foliage, the deep reddish orange color of its buds upon first division, and their deep golden orange color upon unfurling, the excellence of its flower form, the exceptional breadth and fine substance of the tepals, the rich golden orange color of the tepals when the flower is in bloom, the resistance of the plant and flower to disease and its tolerance to infection by virus, and the versatility of the plant both as a garden plant and a plant rapidly produced from precooled bulbs forced for cut flowers or pot plants.

4,175

LILY PLANT: LILIUM 'FIRECRACKER'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Jan. 21, 1977, Ser. No. 761,225
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its stately habit, relatively short foliage, high bud count, deep bud color, its great resistance to disease; its high tolerance of viral infection; the vigorous growth and propagative characteristics of its clone; its rapid growth and suitability for forcing; its excellent bud color prior to the flowers opening; and the deep scarlet color of its flowers.

4,176

LILY PLANT: LILIUM 'FIREBRAND'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Jan. 21, 1977, Ser. No. 761,227
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its tall, stately and erect growth, the great vigor of its growth, its strong dark-colored stem, its abundant deep green foliage, its numerous buds colored deep red when the tepals first divide and unfurl, the fine form and texture of the flowers, the exceptionally broad tepals, the distinctive vibrant deep red color of the flowers, its rapid propagation characteristics, its superb disease resistance, its high tolerance to virus, and its suitability for use both as a garden flower and as a cut flower produced by forcing precooled bulbs.

4,177

LILY PLANT: LILIUM 'SHOWBOAT'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Jan. 21, 1977, Ser. No. 761,228
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease, its tolerance to virus, the vigorous growth and propagation characteristics of its clone; its versatility both as a garden plant and a plant produced from precooled bulbs forced for cut flower and pot plant; its erect and stately form; the excellence of its flower form; and particularly by the intense blood red color of its flowers.

4,178

LILY PLANT: LILIUM 'LOVESONG'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Jan. 21, 1977, Ser. No. 761,229
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its short to medium height, its bushiness, its abundant foliage comprising lanceolate deep green leaves, the vigor of its growth, the rapidity of its propagation, its resistance to disease and tolerance to virus, its longevity, its suitability for pot culture, and in particular the vibrant clear deep scarlet color of its buds upon dividing and unfurling and of its flowers when the plant is in full bloom.

4,179

LILLY PLANT: LILIUM 'TWILIGHT'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Jan. 21, 1977, Ser. No. 761,231
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its high tolerance to virus; the vigorous growth and propagation characteristics of its clone; the excellence of its flower form; its versatility both as a garden plant and a plant produced from precooled bulbs forced for cut flower; and in particular by its rose-orchid color tone, which is unique in the hybrid Asiatic division of lilies suited to forcing and mass commercial cultivation.

4,180

LILY PLANT: LILIUM 'CHARISMA'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Jan. 21, 1977, Ser. No. 761,232
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by the distinctive genetically short habit of the plant, the exceptional length of the plant leaves, the resistance of the plant to disease; its high tolerance of viral infection; the vigorous growth and propagation characteristics of its clone; the excellence of its flower form; the versatility of the plant both as a garden plant and as a pot plant uniformly and rapidly forced out of season from precooled bulbs; and in particular by the pure, unspotted, vibrant golden-orange color of its flowers.

4,181

LILY PLANT LILIUM 'DAYSPRING'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Jan. 21, 1977, Ser. No. 761,233
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its erect and stately form, its vigorous growth, its full foliage of

lanceolate dark green leaves, its excellent inflorescence, its high count of buds which turn lemon yellow as the tepals first divide and begin to unfurl, its flowers comprising tepals soft lemon yellow at the tips and gold with light spotting in the centers, its high resistance to disease, its high tolerance to virus, its vigorous growth and propagation characteristics, and its suitability for propagation by forcing precooled bulbs in the production of potted plants and cut flowers.

PATENTS

GRANTED JANUARY 3, 1978

ERRATA

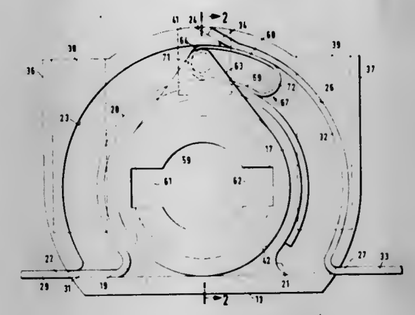
For CLASS	See PATENT NO.
200-011 R	4,065,812
308-003.5	4,065,852
364-200	4,065,862
051-166 FB	4,065,886
051-358	4,065,887
116-034 R	4,066,033
124-086	4,066,051
366-139	4,066,245
366-293	4,066,246
366-024	4,066,247
029-623.5	4,066,418
209-082	4,066,534
544-017	4,066,641
023-259	4,066,646
560-260	4,066,685
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426-282	4,066,813
235-054 F	4,066,871
353-026 A	4,066,872
235-487	4,066,873
364-426	4,066,877
364-724	4,066,878
364-498	4,066,879
235-302.3	4,066,880
364-726	4,066,881
235-302	4,066,882
235-304	4,066,883
362-016	4,066,884
362-018	4,066,885
362-068	4,066,886
362-341	4,066,887
362-223	4,066,888
362-102	4,066,889
363-037	4,066,954
363-068	4,066,955
363-131	4,066,956
352-012	4,066,963
365-043	4,067,002

PATENTS

GRANTED JANUARY 3, 1978

GENERAL AND MECHANICAL

4,065,812
SWITCH FOR CONTROLLING DOOR LOCKS
Dieter Reichert, Bismarckstrasse 49, 7031 Gartringen - BRD, Germany
Filed Sept. 14, 1976, Ser. No. 723,082
Claims priority, application Germany, Aug. 5, 1976, 2635255
Int. Cl.² H01H *19/36, 27/00*
U.S. Cl. 200—11 R **17 Claims**



1. A switch for controlling door locks, which door locks comprise a non-rotatable locking cylinder case, a locking cylinder which can be rotated from outside by an inserted door key, a resetting spring for returning the locking cylinder to a neutral position from an "open" position and to the neutral position from a "closed" position, which switch comprises:

a stator which is rigidly and non-rotatably connected to the locking cylinder case and is coaxial with the geometric longitudinal axis of the door lock,

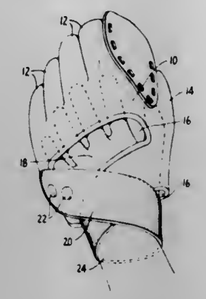
a rotor which is rigidly and non-rotatably connected to the locking cylinder of the door lock, is coaxial to the geometric longitudinal axis of the door lock and rotatably mounted by the stator and has a driver thereon,

said stator being provided with two electric conductors of circular arc form which extend coaxially and concentrically with one another and overlap in a first angular section, but not in the second angular section, a non-conductive slide surface in the second angular section, and an electrically conductive slip ring between the conductors which contacts both the conductors and comprises an aperture in which said driver of said rotor engages,

the frictional connection between said slip ring and said conductors and said slide surface being such that said slip ring can only be moved out of a position of rest by said driver,

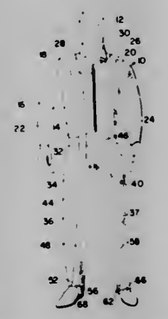
said slip ring and said aperture for engaging said driver having an angular length such that said slip ring is drawn between said conductors when the locking cylinder is turned into the "closed" position, but not fully drawn out of this position of contacting the conductors when the locking cylinder is returned to the neutral position, and such that the slip ring is drawn into the area of said slide surface when said locking cylinder is rotated into the "open" position, but not fully drawn out of this position, which does not make contact with at least one of said conductors, when the locking cylinder is returned to the neutral position.

4,065,813
BALL PLAYER'S GLOVE
Kirk R. Hudson, 2031 Asilomar Drive, Oakland, Calif. 94611
Filed June 24, 1976, Ser. No. 699,288
Int. Cl.² A41D *13/10*
U.S. Cl. 2—19 **3 Claims**



1. In a ball player's glove having an opening for the insertion of the player's hand to manipulate the glove, improved means for holding the glove on the player's hand comprising a strap means having one end attached to one side of the opening and a second opposite end, and means for detachably attaching the second end of the strap means to the other side of said opening, said strap means having sufficient length to loop completely around the wrist of the player intermediate its ends to secure the glove to the player so that the glove will not accidentally come off the player's hand and the glove can be manipulated more easily.

4,065,814
ONE PIECE ELASTIC BODY SUIT
Edgar N. Fox, 2301 H St., NE., #132, Washington, D.C. 20002
Filed Aug. 24, 1976, Ser. No. 717,214
Int. Cl.² A41D *13/02*
U.S. Cl. 2—79 **4 Claims**



1. A one piece elastic body toning suit adapted to be worn by a person for toning the body of said person, which comprises:

a. an outer cloth-like layer having a shirt section and a trouser section, and shirt section having a waist band portion, a front, a back, a pair of shoulder portions, and a pair of arm portions, said trouser section having an upper front portion, a rear seat portion, and a pair of leg portions;

b. said shirt section and said trouser section having an inner cloth-like layer, said inner cloth-like layer secured to said outer cloth-like layer;

c. a plurality of elastic band members disposed between said outer and said inner layers, including:

an elastic waist band member extending around said waist portion of said suit;

a first elongated elastic band member, disposed between said inner and outer layers and attached to said waist band member, said first band member having a first end adapted for engagement by one foot of the wearer, having a central portion passing over a first shoulder portion of the shirt section, and having a second end adapted for engagement by the foot of the wearer so that, when the suit is worn by the wearer, said first band member is disposed adjacent the front and rear of one leg of the wearer; and,

a second elongated elastic band member, disposed between said inner and outer layers and attached to said waist band members, said second band member having a first end adapted for engagement by the other foot of the wearer, having a central portion passing over a second shoulder portion of the shirt section, and having a second end adapted for engagement by the other foot of the wearer so that, when the suit is worn by the wearer, said second band member is disposed adjacent the front and rear of the other leg of the wearer,

whereby when a leg of the wearer is bent, a front portion of the elastic member adjacent the leg is stretched.

4. An elastic body toning garment including:

an outer fabric trouser section;

an inner fabric trouser section secured to said outer section to form a one-piece garment;

an elastic waist band member disposed between the inner and outer trouser section extending around a waist portion of the trouser sections and secured thereto;

a front elastic band member disposed between the inner and outer trouser sections which front band member is attached to the waist band member and extends downwardly along the front of a leg of the trouser sections;

a rear elastic band member which rear band member is attached to the waist band member and extends downwardly along the rear of the leg of the trouser sections; and

a stirrup member, for engaging the foot of the wearer, attached to lower ends of the front and rear elastic band members.

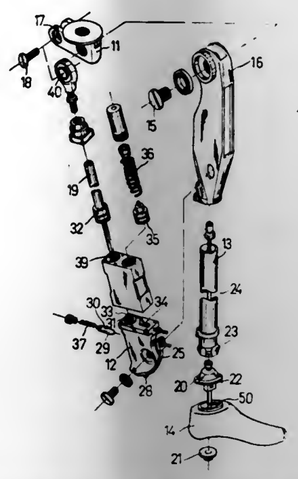
4,065,815

HYDRAULICALLY CONTROLLED ARTIFICIAL LEG

Chen Sen-Jung, 1st Floor No. 236-238, Section 3, Ho-Ping West Road, Taipei, China /Taiwan

Filed Sept. 28, 1976, Ser. No. 727,700
Int. Cl.² A61F *1/04, 1/08*
U.S. Cl. 3—1.2 **6 Claims**

1. An artificial leg comprising a hydraulic system which is connected to a pushing rod of an ankle cap through a transfer rod; a foot bearing a recess receiving one end of the pushing rod; and a knee with its two ends separately connected to an outer shell and a pole means of the hydraulic system, wherein the hydraulic system comprises a transfer arm with a protuberance formed thereon and pivoted upon a pin; a plug for stoppling oil flow and having a first hole formed thereon; a link means connecting the transfer arm and the plug; a set of oil inlet, outlet, passageways and adjuster for oil flow, said pole means having one end connected to the knee through a pivot and the other end shaped into a needle part which is inserted into a second hole in the hydraulic system at least partially in alignment with the first hole on the plug; and a piston part on the pole means for compressing the hydraulic oil through said oil passageways into a chamber in the hydraulic system, so that the knee joint of the artificial leg can straighten or bend automatically and synchronously to the ankle motion through the hydraulic system.

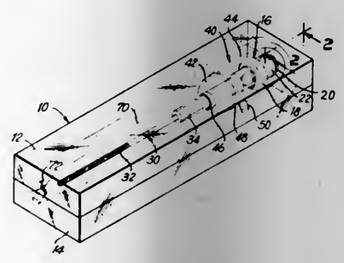


4,065,816

SURGICAL METHOD OF USING A STERILE PACKAGED PROSTHESIS

Philip Nicholas Sawyer, 7600 Ridge Blvd., Brooklyn, N.Y. 11209

Division of Ser. No. 579,791, May 22, 1975, Pat. No. 4,011,947. This application Nov. 12, 1976, Ser. No. 741,476
Int. Cl.² A61F *1/22*
U.S. Cl. 3—1.5 **5 Claims**



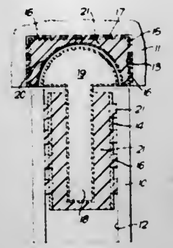
1. A method comprising mounting a prosthetic device on a support and removing at least substantially all foreign substance from the device and support, encapsulating the prosthetic device in a capsule, encasing said device and support in a removable shield, boxing the thusly encased device and support, irradiating the thusly boxed and encased device and support to sterilize the same, sequentially removing the box and shield, injecting a fluid into the capsule to treat the prosthetic device, opening the capsule to expose the device, and maneuvering the device by the use of the support to locate the device proximate a site of installation.

4,065,817

BONE PROSTHESIS AND METHOD OF FORMING A BONE JOINT

Per Ingvar Branemark, Andergatan 3, and Bo Thuresson Af Ekenstam, Akergatan 5,, both of S-431 39 Molndal, Sweden

Filed Apr. 23, 1976, Ser. No. 679,709
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.91 **12 Claims**



1. A bone prosthesis comprising, in combination:

a. a tubular support member;

b. a plurality of lateral openings disposed at spaced locations along the length and around the periphery of said support member and through the wall thereof;

c. a prosthesis body having at least a part locatable in part in said tubular support member, said part having an outer surface dimensioned to be spaced from the inner surface of said tubular support member, whereby bone cement can be introduced into said tube support member when the prosthesis body is in place and flows through said lateral openings: and

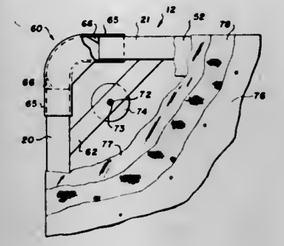
e. means for securing said body in place in said support member.

4,065,818

BOX SPRING CONSTRUCTION

Frederick P. Farina, 1985 Peterson Ave., Coquitlam, B.C., Canada (V3K 1M2)

Filed May 11, 1976, Ser. No. 685,423
Int. Cl.² A47C *19/00;* F16M *11/16*
U.S. Cl. 5—288 **2 Claims**



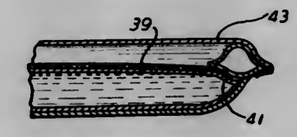
1. Box spring frame construction comprising a rectangular frame having parallel side rails and parallel end rails, said side and end rails being wooden boards of the same rectangular cross sectional stock, a plastic corner connector for each corner of the rectangular frame, each corner connector having a pair of sockets disposed at right angles to one another for receiving and interconnecting adjacent ends of side and end rails; said pair of sockets of each corner connector being defined by a common vertical web alongside outer surfaces of the side and end rails, top and bottom horizontal flanges alongside upper and lower edges of said side and end rails, and vertically opposed inner flanges alongside inner surfaces of said and end rails; stop means within the pair of sockets of each corner connector for limiting penetration of the side and end rails into said pair of sockets, a diagonal brace secured to the side and end rails near each corner connector, and a plurality of transverse slats interconnecting the side rails including end slats extending over the end rails and portions of the corner connectors.

4,065,819

FLOTATION SUPPORT SYSTEM

Jody A. Gorran, Highland Park, N.J., assignor to Medpro, Inc., East Brunswick, N.J.

Continuation-in-part of Ser. No. 616,045, Sept. 23, 1975, Pat. No. 3,983,587. This application June 16, 1976, Ser. No. 696,590
The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.
Int. Cl.² A47C *27/08*
U.S. Cl. 5—371 **11 Claims**



1. A flotation support system, comprising in combination:

a generally rectangular air frame, defined by a tubular air-filled member surrounding an open region;

a base sheet extending beneath said open region and under said tubular frame, and being secured to said tubular member toward the outer peripheral edge of said frame, to thereby define with said member a nesting receptacle bounded by a receiving slot defined between the upper side of said sheet and the adjacent wall of said member;

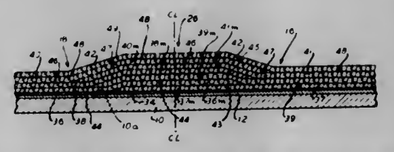
a fluid-containing envelope being positioned in said nesting receptacle; said envelope having dimensions exceeding those of said open region, and the peripheral border portions of said envelope being received into said receiving slot.

4,065,820

MOLDED BOAT HULLS

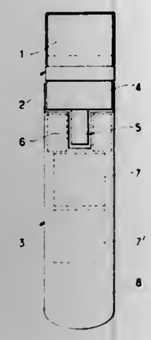
Medford L. Starratt, Jr., 2015 Beach Drive, SE., St. Petersburg, Fla. 33701

Filed Dec. 3, 1976, Ser. No. 747,399
Int. Cl.² B63B *5/24*
U.S. Cl. 9—6 P **1 Claim**



1. A molded boat hull comprising a wall having a plurality of longitudinally extending greater area portions, and longitudinal reinforcing stringers extending between said greater area portions; said greater area portions comprising plural, interbonded, woven fiber glass laminations, and said stringers being solid, and primarily comprising interleaved, interbonded, opposed marginal areas of pluralities of said fiber glass laminations of each of adjacent ones of said greater area portions.

4,065,821
ACOUSTIC BUOY
Guy Lepreux, Chevilly Larue, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
Filed Apr. 29, 1977, Ser. No. 792,369
Claims priority, application France, May 7, 1976, 76.13748
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 R **4 Claims**



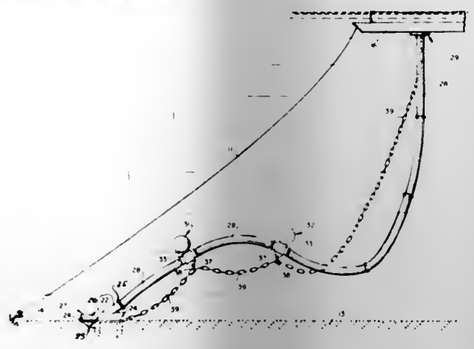
1. An acoustic buoy which can be dropped from a plane, said buoy comprising a float, a plunger and an air brake connected to the float, said plunger being provided at its top with a casing which extends the wall of the float and in which the bottom part of the float moves piston-like, said bottom part of the float being provided with a bottom bearing a plurality of studs and normally being in the locked position and pushed down inside said casing, said bottom comprising bent spring blades, each spring blade being fixed at a first end to a stud of the bottom of the float and having its second end projecting within an opening provided in the cylindrical casing at a higher level than that occupied by the first ends of the blades in a latched position; a spacer integral with the studs at points situated just below the fixing points of the first ends of the spring blades, said spacer acting as a stop for the spring blades when the float rises above its locked position in the casing; a blocking device which when it is active prevents any pushing of the float into the casing, said spring blades in the locked position being extended and tending to push the float down into the casing, means for rendering said blocking device passive as soon as the float rises above the locked position in the casing subsequent to the opening of the air brake device of the buoy with the length of the spring blades being such that when the spacer is pushed down into the casing until it touches a stop integral with the plunger, the second ends of the spring blades escape from the openings of the casing to thereby release the float from the plunger.

4,065,822
SINGLE POINT MOORING WITH STRAIN RELIEF ANCHORING
James P. Wilbourn, New Orleans, La., assignor to Texaco Inc., New York, N.Y.
Filed Feb. 27, 1976, Ser. No. 661,915
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 P **2 Claims**

1. In a single point mooring system for an offshore body of water wherein a buoy having a detachable coupling means floats at the water's surface, a resilient, elongated fluid carrying conduit extends dowwardly from said buoy and communicates with a subsea terminal fixedly disposed at the ocean floor, said elongated conduit being communicated with a remote source of fluid, a plurality of hold down cables spaced about said buoy having one end thereof connected to the buoy, and having the other end spaced from said subsea terminal and anchored at the ocean floor,

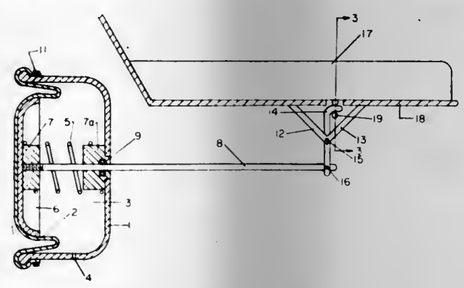
a nonrigid restraining member extending between, and having opposed ends thereof connected to said buoy and to said subsea terminal, respectively and being shorter in length than said elongated fluid carrying conduit, and

at least one buoyant member positioned on said elongated conduit having means thereon to support said conduit above the ocean floor,



said buoyant member being fixedly connected to said at least one elongated conduit, and being slidably connected to said restraining member whereby to permit limited relative movement between said buoyant member and said restraining member.

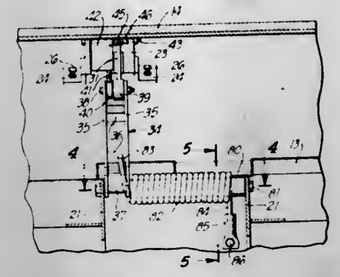
4,065,823
HYDROSTATICALLY ACTIVATED RELEASE MECHANISM
James Walter Lorenzen, 6956 Colonial Drive, and Bruce John Schaefer, 2707 Russell Road, both of Tecumseh, Mich. 49286
Filed Nov. 12, 1976, Ser. No. 741,342
Int. Cl.² B63B *21/52*; B63C *9/28*
U.S. Cl. 9—9 **7 Claims**



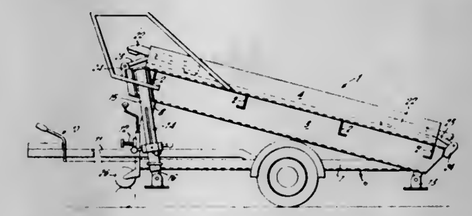
1. A hydrostatically operated mechanism for releasing a floatation seat cushion comprising an activating device consisting of a hollow body, a flexible wall capable of movement in response to a pressure differential which is secured across said hollow body to form a single chamber which is vented to the atmosphere, and a means for transmitting movement of the flexible wall to a means which releases the floatation cushion.

4,065,824
LIP EXTENDER FOR LOADING DOCK LEVELERS
Lawrence D. Ellis, Monrovia, and Robert E. Evans, Pasadena, both of Calif., assignors to Ellis Industries, Inc., South El Monte, Calif.
Continuation-in-part of Ser. No. 577,754, May 15, 1975, Pat. No. 3,974,537. This application Aug. 4, 1976, Ser. No. 711,477
Int. Cl.² B65G *11/00*
U.S. Cl. 14—71.3 **9 Claims**

1. A lip extender for use with a loading dock leveler of the type having a vertically directed base plate, a bridge plate pivotally connected to said base plate and a lip pivotally mounted along its inner edge to the outer edge of the bridge plate, said lip extender comprising a lower link pivotally connected at its lower end to said base plate, a toggle arm pivotally connected at its upper end beneath said lip, the opposite ends of said lower link and toggle arm being constructed and arranged so that upon lifting of said bridge plate, the pivotally connected ends of said lower link and toggle arm move into an over-center locking engagement with each other to hold said bridge plate and lip in an elevated position, and a cam mounted beneath said bridge plate, said cam having a cam surface, a cam follower carried by the pivotal connection between said toggle arm and said lower link, and an elongated heavy duty coil spring disposed adjacent to the lower end of said lower link, one end of said coil spring bearing against said base plate and the other end of said coil spring bearing against the lower end of said lower link to counter-balance the weight of said bridge plate and lip through said lower link and toggle arm.



4,065,825
LOADING RAMP
Antony Cohen, 1 Bowden Lane, Southampton, Hampshire, England
Filed Mar. 19, 1976, Ser. No. 668,633
Claims priority, application United Kingdom, Mar. 25, 1975, 12482/75
Int. Cl.² E01D *15/00*
U.S. Cl. 14—72.5 **23 Claims**



20. A loading ramp for positioning adjacent the bed of a lorry for loading vehicles thereonto and comprising

a framework of girders,

decking on the girders,

legs of variable length inclined at an angle of less than 90° with respect to the framework and rigidly joined to the framework at or adjacent one end thereof, which legs comprise two telescopic members, a first of the telescopicc members being rigidly secured at its upper end to said one end of the framework and a second of the telescopic members being provided at its lower end with at least one foot to bear on the ground,

on which legs the framework can be supported at an inclination to the ground with the other end of the framework in contact with the ground, so that vehicles can be winched up or down said decking, and said inclination being variable in accordance with the extent to which said legs are lengthened,

the legs including internal gearing incorporating a worm and coupled by a cross shaft rotatable manually by means of a crank handle whereby the said telescopic members can be moved together each with respect to its first telescopic member to lengthen or shorten the leg as desired,

wheels on which the ramp is mounted,

coupling means whereby the ramp can be trailed behind a motor driven vehicle, and

a rigid sub-framework mounting the wheels and engaged with and longitudinally moveable with respect to the framework of girders, which rigid sub-framework is so formed and so engaged with the framework that when trailed behind a towing vehicle the decking is at an inclination to the ground but at a lesser inclination than that required for loading vehicles on to the bed of a lorry.

4,065,826
GLOVES
Edmund Alan Hough, Wavre, Belgium, assignor to Imperial Chemical Industries Limited, London, England
Filed Nov. 24, 1975, Ser. No. 634,749
Claims priority, application United Kingdom, Dec. 6, 1974, 52836/74
Int. Cl.² A46B *5/04*; A47K *7/02*
U.S. Cl. 15—227 **8 Claims**

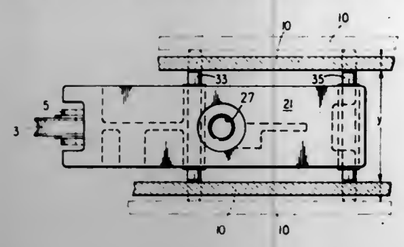


1. A disposable waterproof glove comprising an outside layer which is a laminar pile surfaced material with the pile surface outermost, first and second inside water impervious layers of thermoplastic film, said three layers being superimposed and joined together completely around only three edges to form a glove having an open end, said laminar pile surfaced material having been formed by feeding a thermoplastic material and a porous backing to a heated surface with the thermoplastic material between the backing and the heated surface so that the thermoplastic softens and bonds to the backing as well as adhering to the heated surface so that the combination of the thermoplastic and peeling the backing away from the heated surface draws the thermoplastic into fibrils or tufts to provide a pile surface on the porous backing, whereby in use a hand inserted into the glove between said first and second inside layers is protected from the material on the pile.

4,065,827
MOUNTING OF ROLLERS FOR PATIO DOORS
Martin John Aardal, Ewell, England, assignor to Schlegel (UK) Limited, Leeds, England
Filed Apr. 23, 1976, Ser. No. 679,707
Int. Cl.² E05D *13/02*
U.S. Cl. 16—106 **8 Claims**

1. A roller support for a patio door having a bottom frame member which has a channel section having spaced apart wall surfaces, comprising a roller and a support body mounted

between said wall surfaces of said channel section, said roller being supported on said support body, said support body having at least two side faces, each of said side faces having at least two spaced mounting means, and locating means mounted in



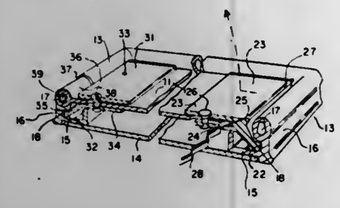
said mounting means of said support body and having end portions engaging said spaced apart wall surfaces of said channel section for rigidly locating said support body with a close fit within said channel section.

4,065,828

HINGEING ATTACHMENT

Alfred John Lancaster, 65 Bingara Rd., Beecroft, New South Wales 2119, Australia

Filed May 5, 1976, Ser. No. 683,580
Int. Cl.² E05D *3/00, 7/00*
U.S. Cl. 16—128 R **5 Claims**



1. A hinge mechanism comprising first and second members, said first member being in the form of a bracket defined by a lateral limb and an upstanding limb integral therewith and defining a recess at the intersection between said limbs, the upstanding limb presenting a curved surface above said recess, said second member being movable with respect to said first member and having a projecting flange with a rounded extremity dimensioned complimentarily to seat within the recess and a web located rearwardly of said extremity and dimensioned to cooperate with the curved surface of said first member, said first and second members cooperating with one another in such manner that upon relative opening movement of said hinge members the second member has part of its movement guided by engagement of the flange extremity in the recess and a further part of its movement guided by engagement of the flange web on the curved surface of the upstanding limb of the first member.

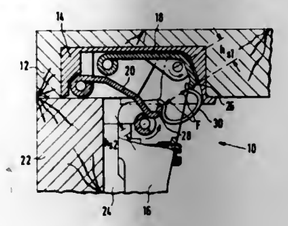
4,065,829

OVER-CENTER HINGE

Karl Lautenschlager, Reinheim, Odenwald, Germany, assignor to Karl Lautenschlager KG., Mobelbeschlagfabrik, Reinheim, Odenwald, Germany

Filed Sept. 13, 1976, Ser. No. 722,433
Claims priority, application Germany, Sept. 16, 1975, 2541144; Feb. 14, 1976, 2606001
Int. Cl.² E05D *11/06, 3/06*
U.S. Cl. 16—145 **13 Claims**

1. An over-center hinge for use in furniture having a door part and a wall part, having a mounting arm comprising: two hinge links articulated pivotingly in the manner of a quadruple pivot on the door part and on the wall part, each hinge link having a pivot point with a pivot pin or a journal hole, said hinge upon swinging from the closed position to the open position being movable through a dead center position, a spring for biasing said hinge on one side in the closing direction and on the other side in the opening direction, said spring being provided in the space between the hinge link pivot points on the mounting arm side, said spring being a bending spring of springy material, curved into a C-shape and having short,



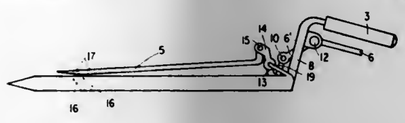
re-curved end sections, said spring being permanently biased by elastically bending said recurved end sections together and being snapped in this biased state between the hinge links on the mounting arm side and engaging with at least one of said end sections a prolongation of one of said links, said prolongation forming with the mounting arm pivot axis of this link a lever arm which is directed from the pivot axis such that, in the hinge-closed position, it is biased by the spring in the sense of a pivoting in the closing direction, and in the open position it is biased in the sense of a pivoting in the opening direction.

4,065,830

LARDING UTENSIL

Ludwig Pfatischer, Ludwig-Thoma-Strasse 63, 8183 Rottach-Egern, Germany

Filed May 19, 1976, Ser. No. 687,983
Int. Cl.² A22C *5/00, 17/00;* A23B *4/02*
U.S. Cl. 17—42.1 **9 Claims**



1. A larding needle comprising a needle shank which is pointed at the front and which has a longitudinal cavity extending the length thereof; a handle at the back; a ramp in the longitudinal cavity which ramp has the lowest elevation thereof at the rear of the cavity and the highest elevation thereof at the front of the cavity; a first front lever arm pivotally mounted in the longitudinal cavity of the shank a second rear lever arm pivotally mounted in proximity to the handle; intermediate linkage means for connecting the first front lever arm and the second rear lever arm and for initially moving the front lever arm forwardly and upwardly from the ramp in the front portion of the cavity so as to be flush with the upper edge of the cavity, and for subsequently moving the rear portion of the front lever arm to an elevation above the upper edge of the cavity in the shaft and the leading edge of the first front lever arm.

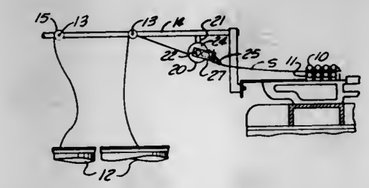
4,065,831

STOP MOTION FOR DRAWING FRAMES

Arnold G. Huntsinger, 604 E. Georgia Ave., Bessemer City, N.C. 28016

Filed June 15, 1976, Ser. No. 696,179
Int. Cl.² D01G *31/00*
U.S. Cl. 19—.25 **1 Claim**

1. In a drawing frame having upper and lower drafting rolls and a creel for guiding a plurality of strands of sliver from supply cans to the drafting rolls, said creel including a longitudinal frame, a plurality of creel arms extending transversely above the supply cans, and a strand guiding passageway above each supply can and carried by one of said creel arms, the combination of a stop motion supported by said creel frame between the proximate supply cans and the upper and lower drafting rolls, said stop motion including a freely rotatable tubular guide beneath which a plurality of strands are directed in their passage from the supply cans to the drafing rolls, said tubular guide being positioned in the path of said strands and functioning as a leveler bar to displace the strands downwardly from their direct path between the proximate transverse creel arm and the drafting rolls, said tubular guide being freely rotatable in response to movement of the sliver therebeneath as it moves from the supply cans to the drafting rolls, a plurality of disc guides carried by said tubular guide in spaced relation to each other and said disc guides being alternately spaced with said strands along the longitudinal axis of the tubular guide so that the disc guides space the strands from each other and prevent abrasion, means responsive to breakage of one of said strands to stop the drafting rolls, said tubular guide being



journaled on a support rod depending from the creel frame and extending in perpendicular relation to the path of the strands from the supply cans to the drafting rolls, a pair of arms extending in parallel relation to each other downwardly from the ends of the support rod toward the drafting rolls, said means for stopping the drawing frame in the event of strand breakage being carried by said arms, said means for stopping the drawing frame including a pivot shaft extending between said arms, a plurality of detectors pivotally mounted on said shaft and arranged in spaced relation to each other along said shaft, there being one detector for each strand and arranged in overlying relation to its respective strand extending from between adjacent disc guides, each detector including a spoon overlying and normally resting on its respective strand during normal operation, a contact tail extending from the spoon and projecting beyond the pivot shaft in the opposite direction from the spoon and serving as a counterweight, and a control bar extending between said arms in spaced parallel relation to said pivot shaft and positioned above the pivot shaft whereby downward movement of a spoon in response to breakage of a strand causes corresponding upward movement of the contact tail to engage the control bar and complete a circuit to stop the drawing frame.

4,065,832

APPARATUS FOR FORMING A FIBROUS STRUCTURE

Rudolf Neuenschwander, Swarthmore, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Feb. 28, 1977, Ser. No. 772,990
Int. Cl.² D04H *1/00*
U.S. Cl. 19—156.3 **13 Claims**

1. An apparatus for use in the formation of a fibrous structure by entraining fibers in a fluid at an upstream end of a conveying duct, said conveying duct having laterally spaced-apart sidewalls, directing the fluid-entrained fibers in a downstream direction through the conveying duct to an open downstream end thereof and intercepting the open downstream end of the duct with a movable foraminous surface to collect the fibers on said surface in the form of a fibrous structure; the improvement wherein the foraminous surface is obliquely oriented to the direction of fiber flow through said duct so that the downstream distance of fiber flow from the upstream end of the duct to the point at which the flow is intercepted by the foraminous surface is greater adjacent one duct sidewall than adjacent the other duct sidewall whereby the lateral dimension



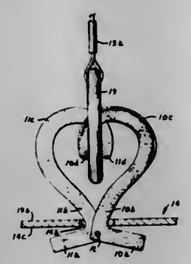
of the foraminous surface between the laterally spaced-apart duct sidewalls is greater than the width of the duct at its open downstream end, as measured between said duct sidewalls in a direction generally normal to the direction of fiber flow through said duct.

4,065,833

REMOVABLE TOGGLE LINK

Lawrence C. Bender, 2125 N. 88th St., Kansas City, Kans. 66109

Filed July 6, 1976, Ser. No. 702,700
Int. Cl.² A44G *13/00*
U.S. Cl. 24—201 A **4 Claims**



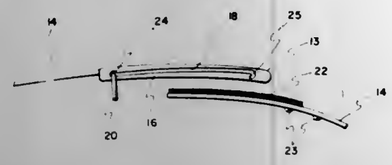
1. A removable link for installation in a blind aperture of a plate, said link comprising:

a pair of like parts each being coplanar and generally in the shape of the numeral "2", each said part having an aperture penetrating base leg and a hook member integrally joined at one end of said base leg, said hook member comprising a shank portion joined to said base leg and an arcuate portion integral with said shank portion curvingly extended through at least 180° and less than 360° to terminate in a hook end directed toward said base leg, thereby defining an opening to the bight of said arcuate portion;

pin means pivotally joining said like parts in reverse confronting engagement at the junctures of said base legs with said hook members thereof such that said base legs extend in opposite directions when said hook members are pivoted to overlie each other;

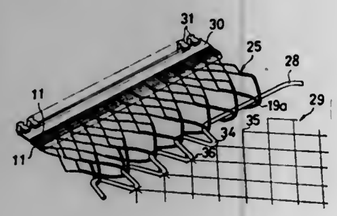
whereby said like parts may be pivotally rotated to an open position wherein said base legs align for insertion in said aperture and whereby said like parts may be pivotally rotated substantially 90° from the open position to a closed position wherein said base legs extend in opposite directions from said pin means and said hook members overlie each other to form a continuous loop.

4,065,834
WATCHBAND
Archer A. Montague, Jr., Rte. 2, Box 589, Cary, N.C. 27511
Filed May 13, 1976, Ser. No. 686,037
Int. Cl.² A44B *17/00*
U.S. Cl. 24—204 2 Claims



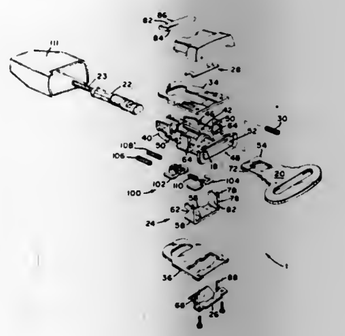
1. A clasp means for releasably joining at least two elongated members comprising: a buckle portion on one of said members; a tongue portion on said second member; at least a portion of at least one surface on each of said buckle and tongue portions being covered with a contact adhering material; and a retaining means in the form of a generally C-shaped bail slidably mounted in an elongated, generally J-shaped slot on said buckle portion whereby said bail will at least partially encircle said tongue portion to prevent unintentional peeling separation of the adhered portions and said J-shaped slot will prevent accidental sliding of said bail when in the retaining position.

4,065,835
NET JOINTING STRUCTURE
Kiyoo Yoneya, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan
Filed Nov. 8, 1976, Ser. No. 739,439
Claims priority, application Japan, Nov. 13, 1975, 50-154411[U]
Int. Cl.² A44B *19/34*
U.S. Cl. 24—205.16 R 3 Claims



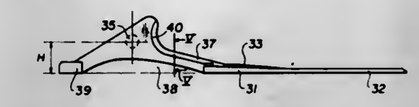
1. A net jointing structure for jointing opposite net ends together comprising:
a. a pair of adapter nets each including a net region and a tape-carrying region extending outwardly from said net region;
b. a slide fastener for coupling and uncoupling said adapter nets, said slide fastener including a pair of stringer tapes carrying on and along their confronting inner edges a pair of series of interengageable fastener elements, said stringer tapes being secured to said tape-carrying regions, respectively, and said stringer tapes being taken into and out of mutual engagement by a slider movable along said fastener elements; and
c. a pair of connecting cords for connecting said adapter nets to the opposite net ends, each of said connecting cords being disposed in engagement with the outer edge of said net region;
d. each of said adapter nets being formed of a warp-knitted structure having a pair of opposite web portions and a net portion lying between said web portions, said warp-knitted structure being arranged symmetrically with respect to its central axis along which said warp-knitted structure is folded upon itself in exactly overlapped relationship to provide said adapter net so that the registered web portions and the folded net portion constitute said tape-carrying region and said net region, respectively, each of said connecting cords being interposed between said folded net portion and extending along the outer edge of said folded net portion, and said connecting cord being adapted to be pulled out of said folded edge through the meshes thereof at spaced points along the length thereof to provide a plurality of connecting turns connectable to the net end.

4,065,836
SAFETY BELT BUCKLE
Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, Morris Township, N.J.
Filed Jan. 24, 1977, Ser. No. 761,574
Int. Cl.² A44B *11/26*
U.S. Cl. 24—230 A 11 Claims



1. A vehicle safety belt buckle comprising:
a. a housing having an opening therein and provided with a cavity extending from said opening to a wall of said housing opposite said opening;
b. inlet means communicating with said cavity for receiving a tongue of a seat belt;
c. connecting means for connecting the housing to an anchorage point on the vehicle;
d. latching means for engaging said tongue;
e. first biasing means connected to said housing for biasing said latching means into engagement with said tongue;
f. locking means slidably mounted on said housing for locking engagement with said latching means;
g. second biasing means connected to said housing for biasing said locking means into said locking engagement;
h. release means slidably mounted on said housing for rotating said latching means to move said locking means out of locking engagement therewith; and
i. ejecting means for ejecting said tongue from said housing comprising a plurality of ejecting slides and a plurality of spring means, a first of said spring means being connected between said housing and a first of said ejecting slides for biasing said ejecting slides toward said inlet means and a second of said spring means being connected between said first and a second of said ejecting slides for biasing said second of said ejecting slides toward said inlet means.

4,065,837
APPARATUS FOR CUTTING PILE FABRIC
Franz-Josef Gierse, Monchen-Gladbach; Carl-Christian Bastert, Korschenbroich, and Wilhelm Busch, Monchen-Gladbach, all of Germany, assignors to Franz Muller, Monchen-Gladbach, Germany
Filed Aug. 2, 1976, Ser. No. 710,365
Claims priority, application Germany, Aug. 2, 1975, 2534674
Int. Cl.² D06C *13/08*
U.S. Cl. 26—9 5 Claims

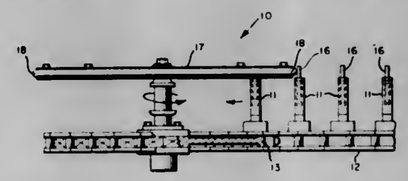


1. A cutting arm device for a cutting machine for cutting the individual loops of a weft pile fabric such as velvet, corduroy, or the like comprising a frame, a cutting arm having an end thereof pivotally mounted on said frame for pivotal movement about a first axis, a cutting head pivotally mounted on the other end of said cutting arm for pivotal movement about a second axis, said cutting head carrying a cutting knife for cutting the pile loops of a web of material passing underneath said cutting head, said first and second pivotal axes being disposed generally parallel to one another, and actuating means operatively connected between said first and second pivot axes providing for pivotal movement of said cutting head relative to said cutting arm about said second axis as said cutting arm is pivoted on the frame about said first axis, said cutting arm being pivotable in a plane substantially parallel to the plane of said web of material passing underneath said cutting arm, said cutting knife having a knife holder, a knife blade and a velvet point, said velvet point extending at one end of the cutting knife in the form of a needle connected successively to said knife blade and said knife holder, a knife-retaining arm, a shaft connecting said knife holder to said knife-retaining arm, another shaft, subjectible to a spring-biasing force in peripheral direction thereof, coupling said knife-retaining arm to said cutting head, said velvetpoint needle extending along a straight line at a side thereof facing toward a fabric web during travel of the latter in normal operation, said cutting knife being formed with a recess extending over a region thereof located below said shaft connected to said knife holder on said side of said needle and terminating at a projection located at the opposite end of said cutting knife from that at which said needle is located, said projection having a side thereof facing toward the traveling fabric web, said side of said projection being disposed on an extension of said straight line along which said side of said needle extends.

4,065,838
TENTER FRAME CLIP-OPENING WHEEL WITH RESILIENT RIM
Raymond R. Jungpeter, Arlon, Belgium, and Jean L. Buchholz, Luxembourg, Luxembourg, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 593,018, July 3, 1975, abandoned. This application Dec. 30, 1976, Ser. No. 755,724
Int. Cl.² D06C *3/04*
U.S. Cl. 26—94 6 Claims

1. Means for opening a tenter frame web clamping device including:
a tenter clip having an opening arm;
an opening wheel having a pre-glazed by use, oil-resistant, elastomer rim mounted on its periphery; and
means to move the opening arm into contact with the elastomeric rim to open the web clamping device and,
wherein the elastomeric rim is of polyurethane rubber having a hardness of at least about 90 Shore A and is fixedly mounted on the periphery of the opening wheel whereby inpact force as the opening arm is moved into contact with the rim is reduced and rate of wear of such rim is stabilized.

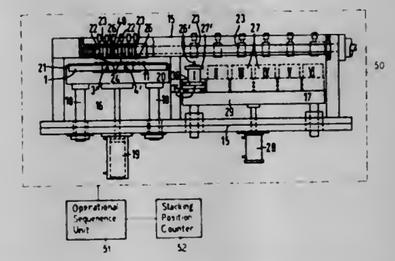
2. A device for opening tenter frame clips, such clips being mounted on an endless chain carried by a sprocket wheel and having means including a clamping surface and a pivotable clamping arm for clamping a web of material therebetween, such clamping arm being connected to a clip opening arm for pivoting the clamping arm into its open position, the improvement comprising:
a clip opening wheel rotatable on a common axis with the sprocket wheel and having a pre-glazed by use, oil-resistant, elastomeric peripheral rim of polyurethane rubber having a hardness of at least about 90 Short A adapted to rotate independently of the sprocket wheel, and such clip opening arm being adapted to contact the elastomeric peripheral rim of the clip opening wheel as the tenter frame clips are moved by the chain to open the tenter frame clips whereby impact force as the opening arm is



moved into contact with the rim is reduced and rate of wear of such rim is stabilized.

3. A web handling apparatus including:
a plurality of web clamping devices in a tenter frame mounted on a movable chain carried by a sprocket mounted for rotation about an axis, each clamping device including a clamping surface and a pivotable clamping part, such pivotable clamping part being connected to a clamping device opening arm;
an opening wheel having a glazed by use, oil-resistant, elastomeric rim of polyurethane rubber having a hardness of at least about 90 Shore A mounted on the periphery thereof; and
means for moving the chain such that the opening arm contacts the elastomeric rim thereby moving the pivotable clamping part into its open position whereby impact force as the opening arm is moved into contact with the rim is reduced and rate of wear of such rim is stabilized.

4,065,839
METHOD AND APPARATUS FOR THE PRODUCTION OF STACKED, ETCHED PATTERNED METAL FOILS FOR COMPONENT ELEMENTS
Martin Pointner, Kirchseeon, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed July 15, 1976, Ser. No. 705,692
Claims priority, application Germany, July 25, 1975, 2533369
Int. Cl.² B21D *33/00*; B65G *57/04*
U.S. Cl. 29—17 R 9 Claims



1. A method for the production of stacks of pre-etched,

patterned foils, each stack being provided to form a component comprising the steps of:

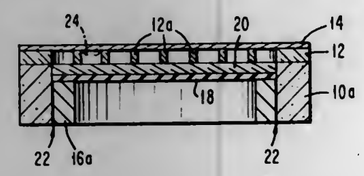
a. cutting individual patterned foils free from a mat comprising pre-etched patterned foils and also edge foils;
b. examining said patterned foils and discarding unwanted patterned foils and the edge foils;
c. stacking approved foils for a component by use of a stacking apparatus, said stacking comprising the step of
   i. placing the individual patterned foils by individually movable transfer elements on individually arranged foil stacks, the number of foil stacks corresponding to the number of individual patterned foils in the mat, the patterned foils being placed on the arranged foil stacks in correspondence with their arrangement in said mat; and
d. stacking additional patterned foils from additional mats onto the corresponding stacks and counting the foils placed on each of the stacks during each stacking operation until a predetermined number of foils occurs in a stack, removing that stack, beginning a new stack and continuing until a predetermined number of patterned foils occurs in another stack.

4,065,840

METHOD FOR FABRICATING A DSDT TARGET

Kyu C. Park, and Arnold Reisman, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1976, Ser. No. 751,920
Int. Cl.² H01J 9/02
U.S. Cl. 29—25.14 **22 Claims**



1. Method of fabricating a DSDT target structure, comprising:

a. depositing a first dielectric layer on an etchable first wafer;
b. depositing a reflection layer on said first dielectric layer;
c. etching off the central portion of said first wafer from the back side to expose the dielectric layer and leave a supporting wafer frame around the layer edge; and
d. etching off said first dielectric layer from the wafer side to produce a plurality of pillars of said dielectric, said dielectric pillars being spaced apart across the area of said reflection layer;
e. depositing a secondary electron emission layer on an etchable second wafer;
f. depositing on said secondary electron emission layer a second dielectric layer;
g. etching off the central portion of said second wafer to expose said secondary electron emission layer and leave a supporting wafer frame around the layer edge, the outer diameter of said supporting wafer frame of said second wafer being about the same size as the inner diameter of said supporting wafer frame of said first wafer so that said second wafer fits into said first wafer; and
h. bonding the two supporting wafer frames of said respective first and second wafers to one another with the ends of said dielectric pillars adjacent said second dielectric layer; whereby said dielectric pillars provide a deformation action in the region between the pillars.

4,065,841

PRINTING ROLLER

Max Gysin, 279 Marlin St., Dix Hills, N.Y. 11746

Filed Aug. 23, 1976, Ser. No. 716,683
Int. Cl.² B41F 31/00
U.S. Cl. 29—121.1 **6 Claims**



1. A roller for the application of liquid substances having a mandrel extending longitudinally along a central axis comprising:

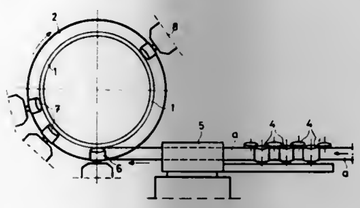
a. a sleeve of thermoplastic material coaxially surrounding said mandrel and affixed thereto; and
b. a plurality of discrete isolated elongated compressible strands of said thermoplastic material integral with said sleeve along longitudinal narrowed connecting portions of said strands to space portions of said strands from said sleeve for forming liquid collection pockets therebetween, whereby the liquid in the liquid collection pockets is forced outward therefrom when said elongated strands are compressed toward said sleeve.

4,065,842

ROLLS AND ROLL-MANUFACTURING METHODS

Eino Aatinen, Jyvaskyla, Finland, assignor to Valmet Oy, Finland

Continuation-in-part of Ser. No. 620,229, Oct. 6, 1975. This application Mar. 31, 1977, Ser. No. 783,449
Claims priority, application Finland, Apr. 2, 1976, 760904
Int. Cl.² A47J 43/28; F16G 11/00
U.S. Cl. 29—148.4 D **10 Claims**



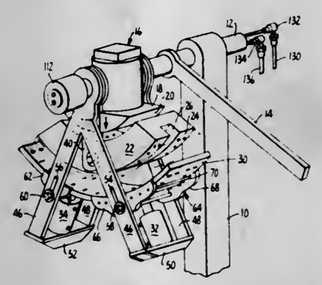
1. In a method for manufacturing a roll, particularly of the type used in paper machines, the steps of rotating an inner roll body around its axis, simultaneously winding onto an outer surface of the inner roll body an elongated metal strip in a manner forming from said strip on said outer surface of said inner roll body a plurality of successive convolutions pressing against each other and covering said outer surface of said inner roll body at the area of said other surface where said strip is wound thereon, with said strip having an inner edge surface engaging said outer surface of said inner roll body, an outer edge surface distant from said inner roll body, and opposed side surfaces which extend between said inner and outer edge surfaces and which at each convolution engage over their entire areas the side surfaces of adjoining convolutions over the entire areas of the latter side surfaces, said strip having at any instant during the winding thereof onto said inner drum body an end convolution which has an inner side surface engaging an adjoining side surface of the immediately preceding convolution and an outer side surface which is exposed at one end of the series of convolutions which have already been wound, and applying to said exposed outer side surface of said strip, during the winding thereof onto said inner drum body, at a location extending from said outer edge surface of said end convolution inwardly toward but terminating short of said outer surface of said inner drum body, a compressive force acting in the direction of the axis of said drum body and pressing said end convolution against the immediately preceding convolution with said compressive force having a magnitude sufficiently great to deform and elongate said end convolution at a region thereof spaced from said inner drum body where said force is applied to said end convolution.

4,065,843

BRAKE SHOE RIVET REMOVAL PRESS

Alfonso M. Elola, 1758 Highland Blvd., Hayward, Calif. 94542

Filed Oct. 4, 1976, Ser. No. 728,980
Int. Cl.² B23P 19/04
U.S. Cl. 29—252 **9 Claims**



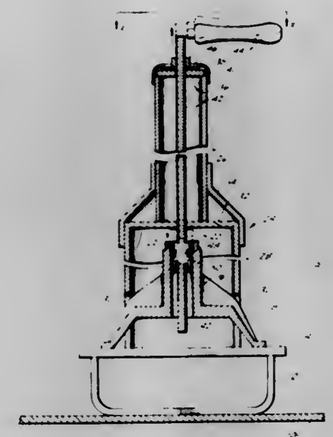
1. A press for the simultaneous removal of the lining attaching rivet of a brake shoe, said press comprising: an anvil for receipt of said brake shoe, said anvil having an arcuate surface shaped for conforming engagement with one side of a brake shoe received therein and a plurality of holes disposed for alignment with the lining attaching rivets of said brake shoe; a punch retaining member disposed in opposition to the anvil and having an arcuate surface shaped for conforming engagement with the side of a brake shoe received on said anvil opposite the side of said shoe engaged with the anvil; a plurality of rivet punches positioned for movement within holes in said punch retaining member, each of said punches having a punch end adjacent the arcuate surface of said member for movement therethrough, said punch ends being positioned so as to be simultaneously alignable with the lining attaching rivets of a brake shoe engaged between the anvil and member; clamping means for imparting relative movement to the anvil and retaining member to clamp said brake shoe therebetween with the openings of the anvil in alignment with the punch ends of the punches and the lining attaching rivets of the shoe in aligned interposed relationship between said aligned openings and punch ends; pressing means for applying a force against the punches to simultaneously drive said plurality of punches through the holes in said anvil and into engagement with the lining attaching rivets of a brake shoe aligned with said holes to drive the rivets into the holes of the anvil aligned therewith.

4,065,844

BEARING PULLER FOR WASHING MACHINES

Martin J. Lieser, and Donna Jean Lieser, both of 2540 Kirkland Ave., Escondido, Calif. 92025

Filed Aug. 9, 1976, Ser. No. 712,688
Int. Cl.² B23P 19/04
U.S. Cl. 29—258 **3 Claims**



1. A tool for removing the annular upper spin tube bearing from an automatic washing machine having a generally cylindrical main bearing housing supported by a pair of angulated legs above a mounting plate having an access opening therein through which the bottom of said main bearing housing is accessible, said tool comprising;

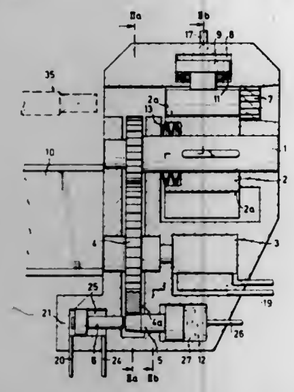
a. an elongated rigid sheath having: (i) an upper cylinder; and, (ii) a lower cylinder coaxial with and of larger diameter larger than said upper cylinder and dimensioned to fit over said main bearing housing;
b. said lower cylinder having two opposed cut away portions to receive said legs and a lower plane-defining edge to rest on said mounting plate such that the interior of said cylinder is accessible through the opening in said plate;
c. said upper cylinder having an upper end plate thereover with a bore therethrough;
d. a second plate having a central bore therein and disposed atop said lower cylinder such that said upper cylinder is supported on said second plate and including means to retain said second plate on said lower cylinder and center said upper cylinder on said second plate;
e. a threaded shaft extending through the bores in said plates and passing through said cylinders;
f. a removable pressure disc retained on the lower end of said shaft, said pressure disc being of a diameter greater than the interior diameter of said upper spin tube bearing;
g. a threaded nut disposed on said shaft above said end plate, whereby said cylinder can be disposed over a main bearing housing of a washer with the cut-away portions oriented over the angulated legs thereof, and said shaft can be lowered through said cylinder and through the upper spin tube bearing of said machine, said disc can be retained on the lower end of said shaft, and by rotating said threaded nut to elevate said shaft, said upper spin tube bearing will be removed from the bearing housing.

4,065,845

DEVICE FOR CHANGING BORE CROWNS

Rolf Strom; Veikko Heikkila, and Leo Hakkinen, all of Tampere, Finland, assignors to Oy Tampella AB, Finland

Filed Apr. 21, 1975, Ser. No. 569,985
Claims priority, application Finland, Apr. 23, 1974, 741219
Int. Cl.[2] B23Q 3/157; E21C 19/04
U.S. Cl. 29—283 2 Claims



2. A device for changing bore crowns on a drill rod having means for coaxial attachment with said bore crown upon rotation of a drill rod relative to said bore crown in one rotational direction and for detachment from said bore crown upon rotation in the other direction, said device comprising

a rotatably mounted bore crown magazine, said magazine having a plurality of circumferentially spaced axial bores formed therethrough wherein each of said axial bores is adapted to carry one of said bore crowns therein, and

means for rotationally positioning said magazine so that one of said axial bores in said magazine is coaxial with the axis of a drill rod

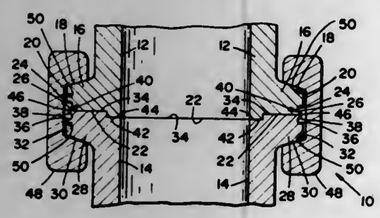
said means for rotationally positioning said magazine comprising gear transmission means including at least one gear means for rotating said magazine member, and a plurality of notches provided on said at least one gear and said rotational positioning means further comprising a first pin and second pin, said pins being axially aligned and having different diameters and means selectively moving said pins into and out of said notches to thereby rotationally position said magazine in rotational increments equal to one-half the difference in diameter between said pins.

4,065,846

PROCESS FOR CONSTRUCTING CLAMP-WELDED PIPE JOINT

Byron Herbert Leonard, Jr., Atherton, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed June 14, 1976, Ser. No. 695,605
Int. Cl.[2] B23Q 17/18; B23P 7/00
U.S. Cl. 29—407 18 Claims



1. A process for assembling a pipe joint across pipe sections comprising the steps of: providing first and second male skirts each having mutually opposed machined and mated surfaces and each having an annular ridge juxtaposed to the outer portion of said machined surfaces extending around the periphery of confronting pipe segments; juxtaposing said skirts to define a combined ridge from each said annular ridge; bringing said skirts into intimate, substantially uniform pressure contact through opposing forces applied to each said pipe section across said pipe sections at said opposed machined surfaces to bring said machined sections and said combined ridge into intimate pressure contact, laying a weld bead along said combined ridge only to form a seal weld between said pipe sections; attaching to said juxtaposed skirts a circumscribing and circumferentially clamped segmented collet having a female channel mating said juxtaposed skirts while maintaining the substantially uniform pressure contact, and releasing said substantially uniform pressure contact only after said attaching step.

4,065,847

METHOD OF FABRICATION OF A CHARGE-COUPLED DEVICE

Joseph Borel, Echirolles; Jacques Lacour, Grenoble, and Gerard Merckel, Sassenage, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 538,168, Jan. 2, 1975, Pat. No. 4,019,247.
This application Aug. 30, 1976, Ser. No. 718,461
Claims priority, application France, Jan. 4, 1974, 74.00294
Int. Cl.[2] B01J 17/00
U.S. Cl. 29—578 1 Claim

1. A method of fabrication of a charge-coupled device having one control line, comprising the steps of forming an insulating layer of a periodic series of insulating steps successively of substantial thickness and of small thickness on a doped semiconductor substrate, implanting doped regions of a doping type opposite to that of the doped substrate into the surface of the semiconductor by directing an ion beam upon said steps, said steps being employed as a mask in such a manner that the insulating steps of substantial thickness are opaque to the ion beam and that the insulating steps of small thickness are transparent to said ion beam, then depositing a metallic layer on alternate steps of substantial thickness and on the adjacent step of small thickness forming a series of electrodes separated by a space of two consecutive steps not covered with a metallic layer one of said consecutive steps being of substantial thickness and the other of said consecutive steps being of small thickness, and connecting each electrode to a control line.

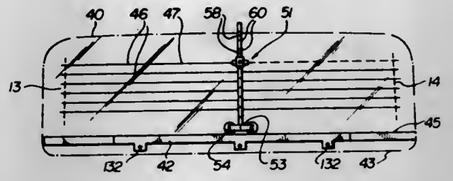
4,065,848

METHOD OF APPLYING AND REPAIRING REAR WINDOW DEFROSTER

Normand Dery, 25, Grande Fourche Nord, Sherbrooke, Quebec, Canada

Filed Mar. 19, 1976, Ser. No. 668,743
Claims priority, application Canada, Mar. 15, 1976, 247966
Int. Cl.[2] H05B 3/34
U.S. Cl. 29—611 13 Claims

1. A method for the installation of a resistive defroster on the inside surface of the rear window in a motor vehicle comprising the steps of cleaning said inside surface, applying a predetermined number of elongated parallel and equidistant heating conductors extending in a first direction, applying two connecting conductors generally transversely of said first direction and extending over the end portions of said heating conductors, said heating conductors and said connecting conductors consisting of a thin pre-glued strip of solid copper or copper alloy of uniform cross-section whose width greatly exceeds its thickness and having a layer of suitable thermo-setting adhesive over one of its wide surfaces for contacting said inside surface, said method comprising the additional steps of applying heat and pressure to said heating conductors and to



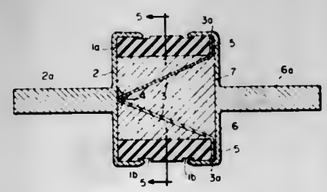
said connecting conductors in order to soften said adhesive and make a good bond between said conductors and said inside surface, soldering every crossing point of said heating conductors and said connecting conductors thereby to define a pattern of resistive lines of a predetermined resistance, and connecting said pattern across a switched supply of electrical energy.

4,065,849

PROCESS OF MANUFACTURING ELECTRIC FUSE

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Division of Ser. No. 673,375, April 5, 1976, Pat. No. 4,041,525.
This application Feb. 14, 1977, Ser. No. 768,107
Int. Cl.[2] H01H 69/02
U.S. Cl. 29—623 2 Claims



1. A process of manufacturing electric fuses including the steps of

a. mounting a first ferrule having an inner end surface on a first rim of a casing of electric insulating material;

b. inserting a fusible element in the form of a ribbon into said casing in such a way that said fusible element in the form of a ribbon slants from the center region of said inner surface of said first ferrule to a point on the second rim of said casing;

c. establishing a solder joint between said fusible element in the form of a ribbon and said first ferrule at said center region of said inner end surface thereof;

d. filling said casing with a granular arc-quenching filler;

e. applying solder to said fusible element in the form of a ribbon at a point thereof engaging said second rim of said casing;

f. mounting a second ferrule having an inner end surface on said second rim on said casing; and thereafter

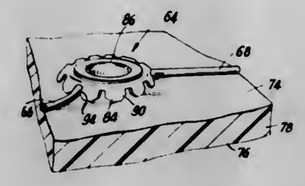
g. heating said second ferrule from the outside thereof to cause fusion of said solder and formation of an internal solder joint between said second ferrule and said fusible element in the form of a ribbon.

4,065,850

METHOD OF MAKING MULTI-WIRE ELECTRICAL INTERCONNECTING MEMBER HAVING A MULTI-WIRE MATRIX OF INSULATED WIRES MECHANICALLY TERMINATED THEREON

Robert Page Burr, Huntington; Ronald Morino, Sea Cliff, and Raymond J. Keogh, Huntington, all of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Aug. 13, 1975, Ser. No. 604,204
Int. Cl.[2] H05K 3/10; H01R 43/00
U.S. Cl. 29—625 5 Claims



1. A method of mechanically terminating the insulated wires of a multi-wire electrical interconnection circuit member, comprising the steps of:

scribing wires on the circuit member to form a multi-wire matrix;

selecting positions in the multi-wire matrix where an electrical connection is desired;

gripping the insulated wires of the multi-wire matrix and said circuit member at each successive selected position with a gripping member to lock said gripped insulated wires to said circuit member and to prevent movement thereof;

applying sufficient gripping force to the multi-wire matrix and said circuit member at each successive selected position to provide individual gas-tight electrical connections between said gripping member and said insulated wires; and

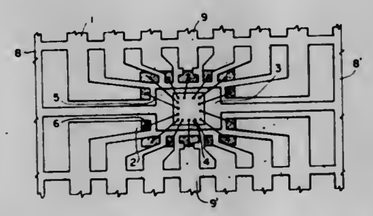
permanently maintaining the applicaton of sufficient gripping force to said gripping member for providing permanent gas-tight electrical connections at the selected positions of the multi-wire matrix.

4,065,851

METHOD OF MAKING METALLIC SUPPORT CARRIER FOR SEMICONDUCTOR ELEMENTS

Franz Kummer, Rodenbach; Gerhard Mai, Bruchkobel; Rolf Ruthardt, Hanau, and Horst Thiede, Rossdorf, all of Germany, assignors to W. C. Heraeus GmbH, Hanau, Germany

Division of Ser. No. 560,532, March 20, 1975, Pat. No. 4,027,326. This application Nov. 3, 1976, Ser. No. 738,615
Claims priority, application Germany, Apr. 20, 1974, 2419157
Int. Cl.[2] H01R 9/00
U.S. Cl. 29—630 R 7 Claims



1. Method to make a metallic carrier for semiconductor elements and to form attachment terminals for lead wires for connection to the semiconductor structure comprising

forming a metal substrate with contact fingers;

screen printing on at least one contact finger of the metal

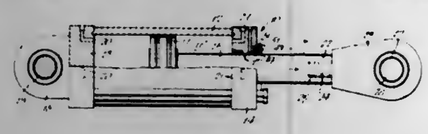
substrate at discrete bonding positions thereon, a paste comprising a bonding metal in finely distributed form in an organic evaporative carrier;
heat treating said substrate with said printed paste thereon to eliminate said carrier;
and further heat treating the remainder of said paste from which the carrier was eliminated, and the substrate, at a temperature sufficiently high to effect diffusion of said bonding metal with the contact finger of said substrate to form an electrical and mechanical bond in form of a diffusion zone and to convert the bonding layer material of said discrete positions to a spongy, microporous structure.

4,065,852

NUCLEAR CYLINDER SEAL CONSTRUCTION

John F. Bowbin, Elmhurst, Ill., assignor to Miller Fluid Power Corporation, Bensenville, Ill.

Filed July 16, 1976, Ser. No. 705,946
Int. Cl.² F16C *33/72*
U.S. Cl. 308—3.5 **15 Claims**



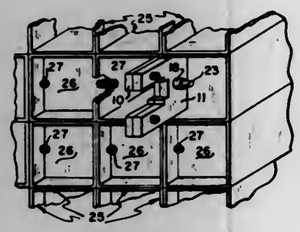
1. In a device having a cylinder tube, a piston longitudinally movable in said tube, a head extending across one end of said tube and having a through bore, a piston rod extending from said piston outwardly through said bore, and primary seal means movably sealing said piston rod to said head, improved readily removable back-up seal means for further movably sealing the piston rod to said head, comprising:
a bushing having a through bore;
means for separably securing the bushing to said head with said piston rod extending coaxially outwardly from said head through said bushing bore; and
a split annular back-up seal disposed between said bushing and said head, said bushing being constructed to be selectively spaced from said head on said piston rod to expose said back-up seal for selective removal and installation thereof transaxially of said piston rod, said back-up seal being radially constricted to define an effectively closed ring slidably sealingly engaging said piston rod.

4,065,853

PORTABLE PUNCH AND DIE JIG

Edward F. Lewandowski, Westmont, and Petrus A. Anderson, Palos Heights, both of Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 27, 1977, Ser. No. 763,169
Int. Cl.² B26F *1/00*
U.S. Cl. 30—361 **1 Claim**



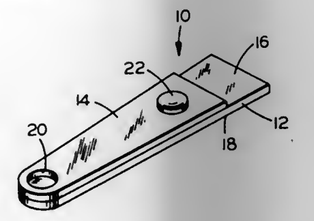
1. A punch and die jig for use in punching holes in the walls of rectangular tubes at precisely determined locations comprising two flat, congruent, U-shaped jig members of width just sufficient to fit in the tube without forcing, one of said jig members being thicker than the other, the thicker member having a cut-out portion on the inner face thereof extending across the member and extending deep into the member, means for holding the two jig members together, thereby creating a deep slot in the base of the jig, a punch and die assembly disposed in a hole in the base of the jig, which hole communicates with the slot, the hole being of slightly greater diameter in the narrower jig than in the wider, case hardened inserts lining the hole and having a cavity therein, the insert in the narrower jig member serving as the die of the punch and die assembly, the insert in the wider jig member including an enlarged portion outside of the jig member, a punch having a head movable within the cavity and a stem protruding above the top of the insert in the wider jig member, said punch and die when actuated cooperating to punch a hole in the wall of a tube interposed between the punch and the die.

4,065,854

DIMENSIONAL GAUGING APPARATUS

Donald M. Reed, 49 Mountain Road, Tariffville, Conn. 06081

Filed Sept. 29, 1976, Ser. No. 727,766
Int. Cl.² G01B *3/30*
U.S. Cl. 35—168 R **5 Claims**



1. A dimensional gauging apparatus for setting a gap between two opposed objects adjustably positionable relative to one another comprising: a blade having an elongated shape between two opposite blade ends and in at least one section thereof adjacent one of the blade ends two generally parallel surfaces defining a predetermined gauge thickness corresponding to the desired dimension of a gap between the adjustably positionable objects, at least one of the parallel surfaces being situated in a recess of the blade, the recess having a size and shape selected to loosely receive one of the objects whereby the blade is captured in the gap between the objects by the recess within a limited range of gap adjustment of the objects from the predetermined gauge thickness and the blade in the captured position can topple due to the weight of the blade distributed between the opposite blade ends as the gap adjustment is made greater than the predetermined gauge thickness.

4,065,855

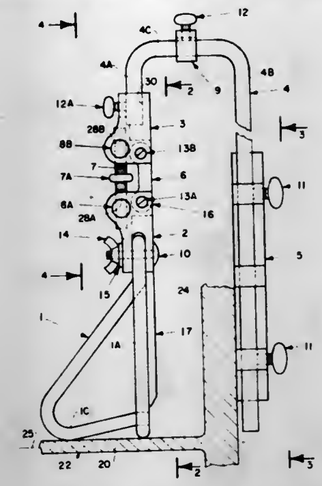
STRUCTURAL COMBINATION FLANGE GAUGE

Norman O. Coe, 1535 Marburg Way, No. D-11, San Jose, Calif. 95133

Filed Nov. 27, 1974, Ser. No. 472,110
Int. Cl.² B23Q *17/00*
U.S. Cl. 33—174 R **9 Claims**

1. A layout gauge for laying out a flange of structural steel beams and the like comprising,
a tripod-type base member for three point support thereof upon the web of a structural beam,
an inverted generally U-shaped stem bar having inner and outer leg portions connected by an intermediate portion adapted to extend over a flange of a structural beam upon which the base member is supported,

means for securing the inner leg portion of the stem bar to the base member,
a gauge member for use in marking off the beam flange, and



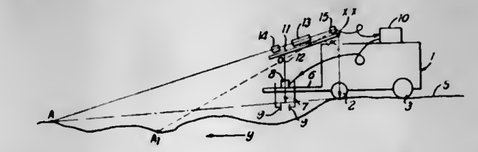
means for securing the gauge member to the outer leg portion of the stem bar for use in marking off the beam flange.

4,065,856

MAINTENANCE MACHINES FOR RAILWAY TRACK

John M. Waters, Derby, England, assignor to British Railways Board, London, England

Continuation of Ser. No. 469,719, May 14, 1974, abandoned.
This application May 4, 1976, Ser. No. 683,139
Claims priority, application United Kingdom, May 23, 1973, 24637/73
Int. Cl.² E01B *29/04*
U.S. Cl. 33—287 **10 Claims**



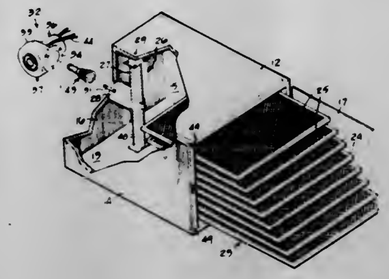
1. a movable optical system for establishing a reference datum in relation to the surface of a roadway, comprising:
a. a vehicle movable along a roadway,
b. a support mounted on the vehicle and pivotable about a substantially horizontal axis extending transversely of the vehicle at a predetermined height,
c. light emitting means mounted on said support and oriented to emit a beam of light along a first optical axis extending away from the pivotal axis of the support,
d. light receiving means mounted on said support and spaced from said light emitting means and oriented to detect light along a predetermined second optical axis which converges with said first optical axis in a direction extending away from said pivotal axis of the support,
e. an actuator mounted on the vehicle for adjusting the support about its pivotal axis whereby the said first and second optical axes can be caused to intersect at the surface of the roadway such that said receiving means receives along said second optical axis light from said beam reflected from the roadway, whereby an optical triangle is established, one corner of which is at the intersection if said first and second optical axes, and
f. a device mounted on the vehicle spaced a constant horizontal distance from said horizontal axis and adapted to be adjusted vertically to maintain a predetermined vertical relationship with the plane of said optical triangle.

4,065,857

DEHYDRATOR AND METHOD FOR DEHYDRATING FOODSTUFFS

Lawrence B. Nelson; Stuart A. Mott, both of Napa, and Ray T. Flugger, Petaluma, all of Calif., assignors to Sunfresh Products, Napa, Calif.

Filed Oct. 22, 1975, Ser. No. 624,967
Int. Cl.² F26B *3/04*
U.S. Cl. 34—30 **22 Claims**



1. A dehydrator comprising
an enclosure having horizontally disposed top and bottom walls and vertically disposed side walls defining a substantially closed drying chamber therein,
door means movably mounted on a front side of said enclosure for normally closing said chamber and openable for exposing said chamber for depositing foodstuffs therein,
separate tubular manifold means disposed entirely in said chamber and having walls, separate from the walls defining said enclosure, defining an air inlet passage therein, said manifold means comprising a vertically disposed outlet conduit secured within said enclosure and extending between said top and bottom walls and an inlet conduit secured to said outlet conduit,
means formed through the walls of said manifold means for communicating air from said inlet passage to said chamber,
fan means connected to said inlet conduit for pumping ambient air to said inlet passage, and
heating means for heating the ambient air pumped to said inlet passage to a predetermined temperature level.

4,065,858

INSTRUCTIONAL APPARATUS WITH ELASTIC SHEET

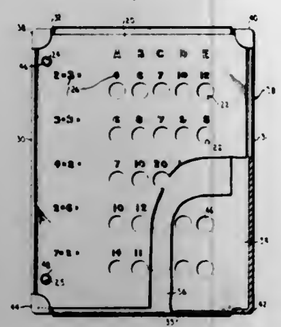
James Richard Harte, 10 W. Concord, Kansas City, Mo. 64112

Filed Aug. 16, 1976, Ser. No. 714,315
Int. Cl.² G09B *3/08*
U.S. Cl. 35—9 R **9 Claims**

1. An instructional apparatus comprising: a holding mechanism provided with an upper surface having
a plurality of holes therein of substantial depth; a printed format having openings therethrough indicating answer choices,
said mechanism having means engageable with said format for holding the same on said upper surface in overlying relationship thereto with at least certain of said openings in alignment with corresponding holes in said upper surface, said openings and said holes being adapted to receive a stylus, finger or the like used by a student to make answer selections;
a sheet of rubber-like material sandwiched between said format and said upper surface and having a normal, planar disposition, said sheet being capable of substantial deflec-

tion into an individual hole when said stylus, finger or the like is inserted thereinto through the corresponding aligned opening; and

means maintaining said sheet in a taut, resilient condition over said holes in the surface whereby, upon removal of



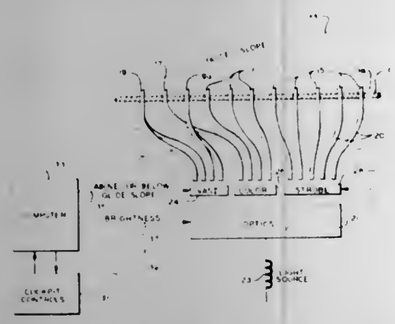
pressure applied to the sheet by the stylus, finger or the like, the rubber-like material at the opening springs back to return said sheet to its normal disposition with no permanent deformation, the quality of resistance thus presented providing an instantaneous response feedback.

4,065,859

VISUAL DISPLAY APPARATUS

Richard A. Mecklenborg, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Sept. 13, 1973, Ser. No. 397,147
Int. Cl.² G09B 9/08; B64G 7/00
U.S. Cl. 35—12 N **19 Claims**



9. A lighted model for use with a simulator comprising, in combination:

a base member having a first surface and a plurality of holes extending from said first surface through said base member;

a plurality of optical fibers each having a longitudinal axis, an input end and an output end, the output end of each of said fibers extending through a respective one of said holes in said base member, each output end comprising a polished flat surface ground at an angle relative to the axis of said fiber at said output end to provide substantially total internal reflection of light and projection of light from the output end of said fiber in a predetermined direction; and

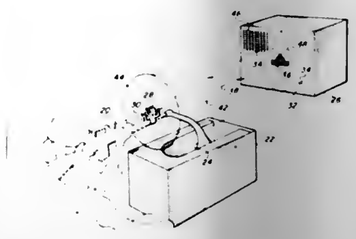
illumination means for supplying light to the input end of each of said fibers.

4,065,860

WEAPON TRAINING SIMULATOR

John D. Linton, Palatine; Samuel P. Willits, and William L. Mohan, both of Barrington, all of Ill., assignors to Spartanics, Ltd., Rolling Meadows, Ill.

Filed Sept. 22, 1975, Ser. No. 615,414
Int. Cl.² F41J 5/02; G09F 11/04
U.S. Cl. 35—25 **37 Claims**



25. A simulator which automatically determines the intersection point of a line with a target plane comprising

at least one target plane having at least one identifiable target scene associated therewith,

radiation source means,

sensor array means adapted to provide output signals indicative of the position of said radiation source means thereon,

optical means adapted to image said radiation source means on said sensor array means, said optical means comprising partially reflecting focusing reflector means and having an optical axis movable with respect to said target plane and which defines said line, said line intersecting said target plane at a point, and

circuit means connected and responsive to said sensor array means output signals and comprising position detection means to provide position data for the point of intersection of said optical axis and said target plane.

29. A scanning radiation source comprising

radiation source means,

stationary plate means having one or more rectilinear apertures therein,

slotted scanning disc means,

means for rotating said slotted scanning disc means, said slotted scanning disc means being disposed between said radiation source means and said stationary plate means to provide repetive linear moving strips of radiant energy, said slots being arcuate and being generated about points lying substantially on the two axes of said rectilinear apertures and their intersection with radial lines perpendicular thereto and extending from the center of disc rotation.

4,065,861

FOOTBALL PUNTING SHOE

Raymond H. Pelfrey, 1595 Howard Drive, Sparks, Nev. 89431

Filed July 30, 1976, Ser. No. 709,966
Int. Cl.² A43B 5/00
U.S. Cl. 36—133 **7 Claims**

1. A football punting shoe comprising a shoe having an instep portion characterized by the presence therealong of a longitudinal foot instep highline when a foot disposed therein is arched to a ball-impacting punting position, a pair of ball-impacting elements attached to said instep portion, one at each side of said highline, said elements having aligned planar upper ball-impacting surfaces extending laterally from said instep



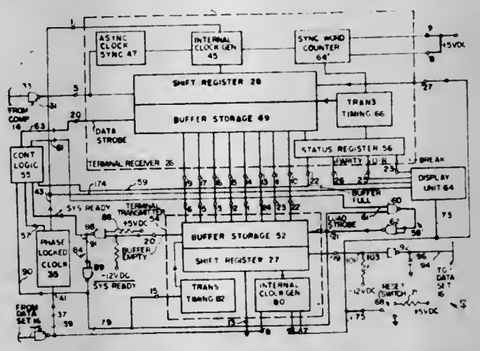
portion and disposed at the level of said highline in tangential, non-overlying relation to said highline.

4,065,862

METHOD AND APPARATUS FOR SYNCHRONIZING DATA AND CLOCK SIGNALS

Russell L. Meyer, Phoenix, Ariz., assignor to American Express Company, New York, N.Y.

Filed Sept. 15, 1975, Ser. No. 613,249
Int. Cl.² G06F 13/02
U.S. Cl. 364—200 **20 Claims**



1. In a data transmission computer system having a computer for generating data signals and a local data set having means for transmitting the data signals to a remotely located data set over a transmission line which interconnects said local data set and said remotely located data set, said local data set having means for providing recurring clock pulses at a clock output thereof, an arrangement for synchronizing the data signals with the clock pulses, comprising:

a receiving register coupled to an output of said computer for receiving and storing the data signals generated by the computer, said receiving register including status means for providing a status signal whenever said receiving register is storing a given number of said data signals;

synchronizing means for providing clock signals for application to a clock input of said receiving register to enable said receiving register to store the data signals, said synchronizing means having first means coupled to said clock output of said local data set, and being responsive to the clock pulses provided by said local data set to provide first and second timing pulses related in frequency to the frequency of said clock pulses, and second means having an input connected to an output of said first means to receive said first timing pulses, and a further input coupled to said output of said computer for receiving said data signals, said second means being responsive to said first timing pulses and to said data signals to provide said clock signals whereby the data signals are synchronized with the clock pulses as the data signals are stored in said receiving register;

a transmitting register coupled to the output of said receiving register for receiving the data signals from said receiving register and for storing the data signals;

means coupling the output of said transmitting register and a data input of said local data set;

control logic means having an input connected to an output of said status means to receive said status signal and further input connected to a further output of said first means to receive said second timing pulses, said control logic means being responsive to said status signal and said second timing pulses to provide transfer signals for effecting the transfer of the data signals from the receiving register to the transmitting register; and

means for extending the clock pulses provided by said local data set to a clock input of said transmitting register to cause the data signals, which are transferred to said transmitting register under the control of said control logic means, to be transferred from said transmitting register to the local data set at a rate determined by the clock pulses provided by said local data set.

4,065,863

MENU PLANNER

Roy Burgess, 25 Grey Oaks Road, Carmel, N.Y. 10512

Filed Oct. 13, 1976, Ser. No. 731,548
Int. Cl.² G09F 11/00
U.S. Cl. 40—490 **11 Claims**



1. A menu-planner, comprising a jacket element in form of an elongated sleeve bounding an interior space and having axially spaced open ends and an exposed outer surface provided with a first window and with two elongated substantially parallel second windows; first indicia means on said surface, including a list of consecutively numbered recipes and two pair or ingredient lists, the lists of each of said pairs flanking a respective one of said second windows along opposite lateral sides thereof with the ingredients of each list being arranged seriatim along the length of the respective window; means comprising at least two slide members each movable in said space relative to said windows longitudinally of said sleeve to a plurality of positions in each of which a portion of the respective slide member is exposed outside said space; and second indicia means on said movable means and indicative of recipe numbers, proportions of said ingredients and instructions for preparation of the respective recipe so that, upon movement of the respective slide members to a position in which a selected recipe number appears in said first window, indicia indicative of the proportions in which respective ones of said ingredients are required for the selected recipe will appear in said second windows opposite the required ingredients and preparation instructions will become exposed on said portion of said movable means outside said space and adjacent said surface.

4,065,864

STAMP STOCK SHEET

William Joseph Stanley, Brantford, Canada, assignor to 234966 Wholesale Ltd., Paris, Canada

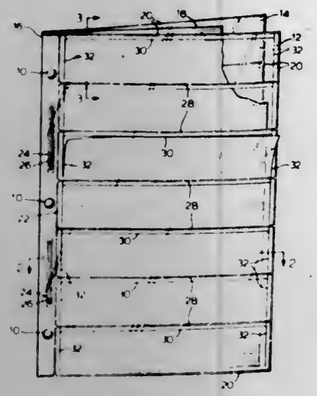
Filed Oct. 4, 1976, Ser. No. 729,026
Int. Cl.² G09F 7/00
U.S. Cl. 40—405 **6 Claims**

1. A stock sheet for stamp albums and the like comprising:

a. a sheet of opaque material for written records having two

opposite record-receiving surfaces and having at least one opening therein adjacent to one edge thereof;

b. two sets each of a pair of parallel juxtaposed transparent sheets of flexible material heat-seal-joined to one another along joint lines at their edges and also along other joint lines to form a plurality of corresponding enclosures bounded on all sides by joint lines, the two sets having the record sheet sandwiched between them, so that each said record receiving surface is visible through the respective set;



c. the outer one of each said pair of sheets of a set having cut lines therein extending therethrough to constitute entries for stamps and the like into the respective enclosure to be retained therein;

d. the said two sets being fastened to one another and to the record sheet by being heat sealed to one another through the said aperture in the record sheet, whereby the sets are hingedly connected to the record sheet to permit movement of the sets away from the record sheet and thereby viewing of the stamps and the like through both the outer sheet and the inner sheet.

4,065,865

DEVICE FOR VISUALLY DISPLAYING LUMINOUS PATTERNS

Stephan Chovan, Caluire, France, assignor to Societe Cyberson, Lyon, France

Filed Aug. 2, 1976, Ser. No. 710,634
Claims priority, application France, Aug. 1, 1975, 75.24753
Int. Cl.² G09F *13/00*; F21P *1/02*
U.S. Cl. 40—444 9 Claims



1. A device for visually displaying luminous patterns, comprising:

a multiplicity of *n* light sources radiating in a direction away from a predetermined observation point, said sources being spaced apart in said direction and located on a common axis; and

screen means forming a plurality of light-receiving zones viewable from said observation point, said zones being spaced apart in said direction and staggered transversely thereto for illumination by light from different combinations of said sources,

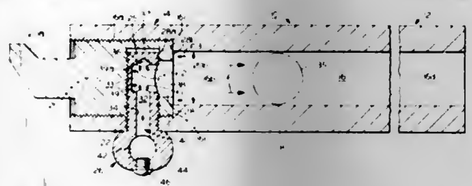
said screen means forming (*n*-1) opaque shields interposed between successive light sources, and centered on said common axis, said shields having widths transverse to said direction increasing with distance from said observation point, said zones being transversely offset from said shields and positioned for illumination by light from a number of said sources increasing with distance from said observation point, said zones including rings centered on said axis having inner and outer diameters increasing with distance from said observation point.

4,065,866

MUZZLE LOADING FIREARM

Julian Eguizabal, Eibar, Spain, assignor to Pioneer Products, Inc., Old Saybrook, Conn.

Filed Dec. 23, 1976, Ser. No. 753,649
Int. Cl.² F41C *21/00*
U.S. Cl. 42—51 12 Claims



1. In a muzzle loading firearm adapted to fire a powder charge contained therein, the combination comprising:

a. a barrel having a breech end and a muzzle end and a bore extending longitudinally therethrough to define therein an annular barrel wall, said bore being closed at said breech end, said barrel wall having an aperture extending therethrough radially of said barrel and opening into said bore at said breech end;

b. a bolster having a body portion and being mounted in said aperture with said body portion extending transversely into said bore interiorly of the closed breech end of said barrel;

c. a flash chamber formed in said body portion, said flash chamber being disposed within and opening into said bore and being adapted to receive a powder charge therein, said flash chamber being defined in part by an end wall of said body portion, which end wall is spaced from said aperture transversely of said bore whereby said flash chamber is disposed in alignment with and between said aperture and said end wall; and

d. a flash transfer orifice in said bolster which orifice communicates said flash chamber exteriorly of said barrel to provide a path for transmission of a flash from exteriorly of said barrel to said flash chamber.

4,065,867

LOCK FOR RIFLE

Dale A. Storey, 1764 S. Wilson, Casper, Wyo. 82601

Filed Dec. 6, 1976, Ser. No. 747,776
Int. Cl.² F41C *19/00*
U.S. Cl. 42—69 R 6 Claims

1. A lock for mounting on a muzzle-loading caplock weapon comprising in combination:

a lock plate having an opening extending therethrough,

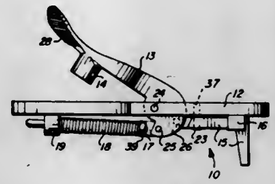
a hammer pivotally mounted on said plate and arranged to move laterally to and from one plane surface thereof,

one end of said hammer comprising a projection extending through said opening in said plate for engaging with a sear mounted on the other plane surface of said plate,

the other end of said hammer being provided with a nose selectively engagable with a percussion cap mounted on a nipple on the weapon,

spring means mounted on said other plane surface of said plate and arranged to extend between a fixed point on said plate and said one end of said hammer whereby a given pivotal movement of said hammer compresses said spring means,

a sear pivotally mounted on said other plane surface of said plate and biased into engagement with said projection of said hammer, and



lock means mounted on said sear for detachably engaging said projection of said hammer when said hammer is moved laterally away from said one plate surface of said plate,

said lock means comprising a bolt threadably mounted to extend through said sear and engageable with an indentation in said protrusion of said hammer to detachably engage therewith,

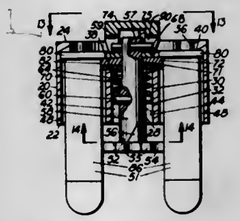
whereby a trigger of the weapon when actuated engages said sear, dislodging said lock means of said sear from said protrusion causing said spring means to rotate said one end of said hammer toward said plate causing said nose to engage the percussion cap on the nipple of the weapon.

4,065,868

REVOLVER SPEED LOADER

David A. Johnson, 5245 Sturdivant, Klamath Falls, Oreg. 97601

Filed Nov. 5, 1976, Ser. No. 739,087
Int. Cl.² F42B *39/04*
U.S. Cl. 42—89 8 Claims



1. A device for the rapid simultaneous loading of a plurality of cartridges, each having a circular flanged peripheral edge at the base thereof, into a revolver having a cylinder with plural loading chambers, comprising:

a. a body member having front and rear opposing surfaces, and means defining a center bore extending generally perpendicularly to said front and rear opposing surfaces and a plurality of cartridge-receiving bores radially distributed around said center bore, each of said plurality of bores extending parallel to said center bore and having a diameter greater than that of said flanged peripheral edges of said cartridges and suitable for receiving and supporting one of said cartridges;

b. cartridge locking means mounted in said center bore adjacent said rear surface of said body member for releasably securing said cartridges in said plurality of bores and urging said cartridges radially inward toward said center bore; and

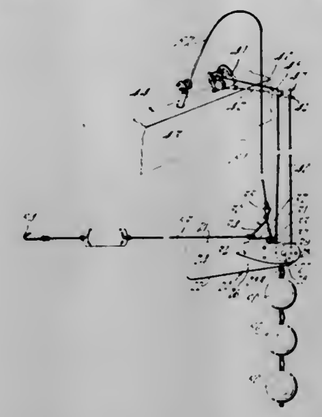
c. cartridge lateral support means mounted in said center bore forwardly of said cartridge locking means for releasably urging said cartridges radially outward against said inward urging of said locking means and thereby centrally positioning each said cartridge within its respective bore in parallelism with said center bore.

4,065,869

FISHING DOWN-RIGGER VANE AND RELEASE

Arthur E. Berry, Lathrup Village, Mich., assignor to Madeline E. Berry, Lathrup Village, Mich.

Filed Nov. 8, 1973, Ser. No. 413,875
Int. Cl.² A01K *91/00*
U.S. Cl. 43—43.12 16 Claims



1. A combination trolling vane and fish-line release for down-rigging a fish-line for deep water trolling comprising,

a vane having a nose, tail, top, and bottom;

attaching means adjacent said nose for securing a cable to lower the vane in the water,

attaching means on said bottom adjacent said nose for attaching a weight to sink said vane in the water,

said tail thereby trailing said cable and weight attaching means to steer said vane nose-first through the water;

a release device for integration with a down-rigger for releasably sinking a fish-line with heavy weight and trailing a bait, comprising,

a leg having opposite ends equipped with attaching means for positioning said leg axially in tension between opposite forces in a hook-up,

a prong on said leg lying substantially normal to said leg so as to lie substantially axially transverse to the tension axially exerted on said leg;

said prong having a cantilevered outer end;

a spring arm on said leg;

said spring arm having a looped outer end transversely engaging said cantilevered outer end of said prong;

said leg, prong, and spring arm thereby forming an enclosure for retaining a ring on said prong;

a ring interconnecting said vane and said prong;

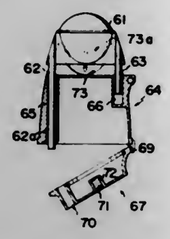
said spring arm on said leg triangulating from a point on said leg remote to said prong to its said looped outer end engaging said prong at its said outer end;

tension transferred to said spring arm from said leg being resisted by the transverse engagement between said looped end of said spring arm and said cantilevered end of said prong with the tension pulling them together in a direction transverse to the axis of said prong thereby urging them into interconnected relationship preventing escape of a ring from said enclosure;

said spring arm being torsionally elastic to flex to locate its said looped outer end outwardly of said cantilevered end

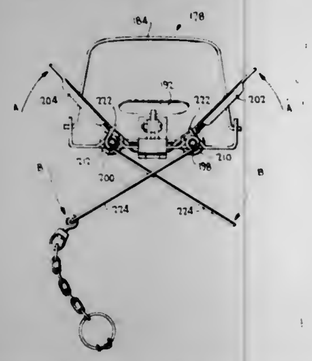
of said prong to provide an open space therebetween to permit the exit of a ring from said enclosure.

4,065,870
FISH-FEEDER
Sakae Muko, 515, Kamitsutsui, Oonojo, Fukuok, Japan
Continuation-in-part of Ser. No. 595,245, July 11, 1975, Pat. No. 4,017,999. This application Dec. 15, 1976, Ser. No. 750,781
Int. Cl.² A01K *97/02*
U.S. Cl. 43—44.99 **10 Claims**



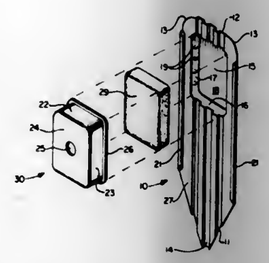
1. A fish feeder comprising a container having an open bottom, a bottom lid element pivotally mounted on said container such that bait is adapted to be contained in said container when the lid element is in a closed position and to be released from the container when the lid is in an open condition, a float element movably mounted on said container, and operable means operable to maintain the lid element closed and to provide for opening of said lid element, said operable means comprising a shaft means on one of said elements and a recess means on the other of said elements, said shaft means being mated with said recess means to maintain said lid element in said closed condition, said float element being connected to one of said means and being operable to unmate said shaft means and recess means to thereby open said lid element.

4,065,871
LOW IMPACT ANIMAL TRAP
Herbert H. Loeffler, Cambridge, Mass., assignor to Woodstream Corporation, Lititz, Pa.
Filed Feb. 23, 1976, Ser. No. 660,387
Int. Cl.² A01M *23/24*
U.S. Cl. 43—88 **2 Claims**



1. In an animal trap of the leghold type having a base, a pair U-shaped coacting jaws swingably mounted on said base, spring means biasing said jaws to a closed position, and trigger means for locking said jaws in an open position until released, the improvement comprising means for reducing the impact of said jaws when they close without significantly reducing the closing speed or holding power, said base being elongated and having upstanding first and second ears at the ends thereof; said jaws each comprising a pair of substantially parallel spaced legs and a cross member, said legs terminating in laterally outwardly directed pintles journalled through said bores in said ears; setting lever means pivoted on said base and having an eye which is engaged with opposed legs of said jaws; said spring means being a coil spring tensioned between said setting lever means and said base to urge said jaws to a closed position; said impact reducing means comprising an inertial snubber having a crank portion and an arm portion, said crank portion being arranged to be in contact with the upper surface of said lever and to rotate about an axis coaxial with that of said lever and said coil spring, said arm of said snubber being arranged to rest between said base and the ground when the trap is in the set position, whereby when said trap is sprung, said snubber absorbs excess energy from said lever which is driven by said spring and rotates to a depending position from said axis of rotation and transmitting excess energy to the trap itself, thereby utilizing the mass of the trap to dampen the spring, said lever then lagging behind said jaws in their travel.

4,065,872
RECEPTACLE FOR INSECTICIDE OR REPELLENT
Phillips E. Patton, Baton Rouge, La., and Norman A. Freeman, Fullerton, Calif., assignors to VCA Corporation, Baton Rouge, La.
Filed June 14, 1976, Ser. No. 695,419
Int. Cl.² A01M *1/20*
U.S. Cl. 43—131 **2 Claims**

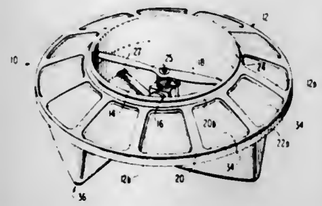


1. An insecticide or repellent holding device comprising: an elongated support means having a generally planar surface adjacent its upper end; a recessed area being provided on one side of said planar surface; an insecticide container received in said recessed area; said recess and said container both being generally rectangularly shaped and said container having a rear wall connected to sidewalls which have a depth greater than said recess, a portion of which sidewalls are received in said recess; and said recess being defined by opposed pairs of interconnected sidewalls connected to a planar bottom wall, at least one pair of sidewalls being provided with inwardly extending protrusions, the corresponding sidewalls of said container being provided with outwardly turned edges adapted to be engaged by said protrusions to secure said container within said recess.

4,065,873
FLYING SAUCER TOY
Robert Alexander Jones, 23405 Caminito Telmo, Laguna Hills, Calif. 92653
Filed Aug. 30, 1976, Ser. No. 718,998
Int. Cl.² A63H *27/12*
U.S. Cl. 46—75 **10 Claims**

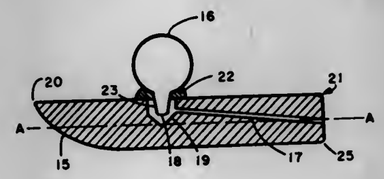
1. A toy flying saucer comprising:
an annular body, said annular body being generally frustoconical in cross section including upper and lower radial walls converging in a radially outward direction and joined at their radially inner ends by a sidewall which

extends generally vertically therebetween and which defines an axial opening therein,
motor support means spanning said opening and fixed to said body at circumferentially spaced positions,
a motor mounted on said support means and having a drive shaft disposed along the vertical axis of the body,



propeller means fixed to said shaft for rotation at right angles to the shaft axis to create air flow downwardly through said opening to lift the body vertically upward, and
a plurality of circumferentially spaced tetrahedron shaped fins extending outwardly from the lower wall of said body, radially outside of said body opening and pitched opposite to said propeller means.

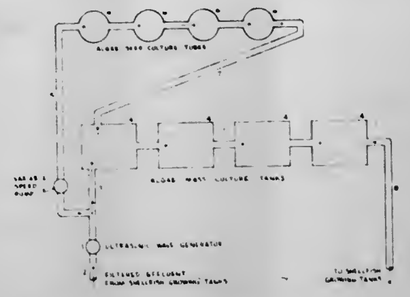
4,065,874
CARTESIAN TOY SUBMARINE
Hubertus R. Ross, 7601 Salem Church Road, Richmond, Va. 23234
Filed June 2, 1977, Ser. No. 802,850
Int. Cl.² A63H *23/06*
U.S. Cl. 46—94 **5 Claims**



1. A toy submarine comprising an elongated cylindrical hull having a bow configuration streamlined to minimize resistance to forward motion through a liquid medium and a stern portion which tapers to a vertically disposed terminus as a result of the convergence of two essentially vertically disposed opposing surfaces, a rigid air-holding chamber substantially centrally positioned on the upper portion of said hull, said chamber having an aperture in a lower portion thereof located within said hull, and a straight cylindrical channel within said hull communicating with said chamber and emerging from one of said opposing surfaces, said channel having a downwardly angled orientation in going from said chamber to said surface.

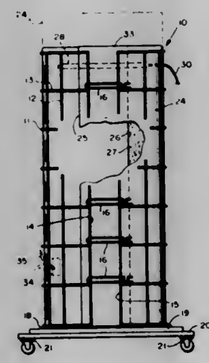
4,065,875
SELECTIVE DESTRUCTION OF CERTAIN ALGAE
Richard Frank Srna, Milton, Del., assignor to University of Delaware, Newark, Del.
Filed Sept. 17, 1976, Ser. No. 724,411
Int. Cl.² A01G *9/00*
U.S. Cl. 47—1.4 **1 Claim**

1. In a process for the culture of Thallasiosira algae cells for use as a nutrient for feeding of shellfish, the improvement which comprises passing the culture liquid containing the Thallasiosira through a zone in which ultrasonic waves of the



order of 20,000 cycles per second are generated in order to destroy any Phaeodactylum algae cells that may be present.

4,065,876
PORTABLE GARDEN AND METHOD OF PRODUCING SAME
F. Wesley Moffett, Jr., 944 Allens Creek Road, Rochester, N.Y. 14618
Filed Aug. 2, 1976, Ser. No. 710,447
Int. Cl.² A01G *9/02*
U.S. Cl. 47—83 **12 Claims**

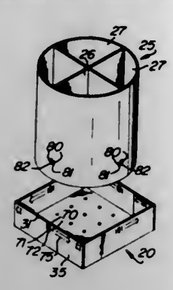


7. The garden device of claim 6 and further comprising a perforated tubular member embedded within the soil adjacent the upper open end of said sleeve, and having an open end of said tubular member extending through said upper end of said sleeve for connection to a water supply for watering the soil.

4,065,877
CONTAINER SYSTEM FOR PLANT HUSBANDRY
Albert W. Kelley, R.D. 1, Box 28, Creamridge, N.J. 08514
Filed Nov. 12, 1976, Ser. No. 741,470
Int. Cl.² A01G *9/02*
U.S. Cl. 47—85 **9 Claims**

1. A system of containers for plant husbandry comprising a plurality of generally rectangular trays each having a perforated bottom wall and side walls about said bottom wall, and a plurality of intersecting dividers removably located in certain of said trays for subdividing each of said certain trays into a plurality of relatively small growing compartments for relatively small plants, a plurality of open ended tubes each upstanding from the bottom wall of one of the remaining trays and having spaced portions proximate to the tray side walls, and additional intersecting dividers removably located in certain of said upstanding tubes for subdividing each of said cer-

tain tubes into a plurality of intermediate growing compartments for intermediate size plants, the remainder of said up-



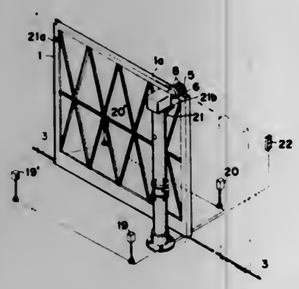
standing tubes and associated trays each defining a relatively large container for a relatively large plant.

4,065,878

AUTOMATIC DOOR OPENING AND SHUTTING DEVICE

Sachio Tsugane, 1627-28, Kamisoyagi, Yamato, Kanagawa, Japan

Filed Apr. 21, 1976, Ser. No. 678,940
Int. Cl.² E05F *15/14*
U.S. Cl. 49—360 **7 Claims**



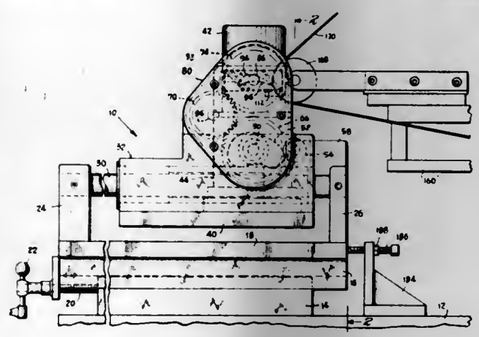
1. A device for opening and shutting a door, comprising a support having a lower tube and an upper tube vertically movable relative to the lower tube; a driving source mounted on the upper tube of the support; friction drive means for carrying out a friction drive of the door by transmitting power of the drive source and adapted to move clockwise or anti-clockwise or to stop, the friction drive means having a friction wheel movable between a first position in which the friction wheel frictionally engages a friction surface of the door so that load is applied to the latter and a second position in which the friction wheel is disengaged from the friction surface of the door so that no load is applied to the latter, a pair of guide wheels for securing the friction wheel against shaking of the door caused during its opening and shutting and for thereby maintaining appropriate power transmission of the friction wheel to the friction surface, the friction wheel being disengageable from the friction surface of the door to a distance corresponding to the difference between the radii of the guide wheels and the radius of the friction wheel, and a power transmission means installed between a drive source and an output shaft for rotating the friction wheel with a given torque; means for moving the friction wheel at least from the first position to the second position in which the friction wheel is disengaged from the friction surface of the door so that no load is applied to the latter whereby to permit opening or shutting of the door by hand; guide rails for guiding a side of the door which is spaced from the friction surface thereof, during opening or shutting of the door; and stop means for stopping the opening or shutting movement of the door when a resistance force applied to the door surpasses the friction drive force transmitted by said friction wheel to the friction surface.

4,065,879

TURBINE VANE AIR-FOIL SURFACE GRINDER

Salvatore J. Cretella, 180 Fitch St., North Haven, Conn. 06473; Matthew Bernardo, 62 Lee St., West Haven, Conn. 06516, and Ralph T. DeMusis, 547 Foxon Road, North Branford, Conn. 06471

Filed May 17, 1976, Ser. No. 687,396
Int. Cl.² B24B *21/02, 19/14*
U.S. Cl. 51—145 R **17 Claims**



1. A machine for resurfacing in one operation both the convex and concave air-foil surfaces of turbine vanes and the like, comprising in combination:

a. a base part,

b. a carriage part movable over the base part toward and away from a work-performing station thereon,

c. an abrasive belt carried by the base part and a shaft and pully on said base part, around which the belt passes so as to present a convex cutting surface at said work-performing station, the radius of said pulley being less than the smallest radius of curvature of the concave air-foil surface of the vanes so as to admit the belt fully into the concave surface,

d. powered means for driving the belt,

e. means comprising a pair of axially aligned and axially spaced apart, independent shafts on the carriage part for rotatably mounting the opposite ends of the vane to be resurfaced and enabling the entire air-foil periphery thereof to be continuously presented for engagement with the cutting surface of the belt as the carriage part moves relative to the work-performing station,

f. a cam carried by one of said parts and turnable about an axis thereon, said axis being parallel to and non-coaxial with said axially-aligned shafts and said cam being located opposite the space therebetween,

g. a cam follower carried by the other of said parts and engaging said cam, said

h. drive means connecting the cam and the vane mounting means to effect simultaneous synchronous rotation of the cam and the vane, whereby the resurfacing of the latter is governed by the particular contour of the cam,

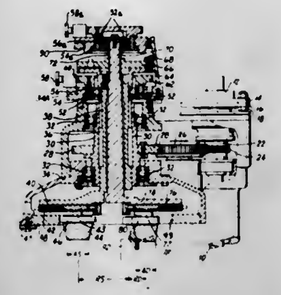
i. said drive means including means connected with the aligned shafts, for gearing the same together for simultaneous turning movement.

4,065,880

SHARPENER FOR CUT-OFF HAVING A HELICAL KNIFE

Philip Arthur Maw, London, England, assignor to Molins Limited, England

Filed June 9, 1976, Ser. No. 694,320
Claims priority, application United Kingdom, June 14, 1975, 25472/75
Int. Cl.² B24B *9/00*
U.S. Cl. 51—247 **12 Claims**



1. A cut-off mechanism for a cigarette or other similar continuous rod making machine, comprising a rotating helical knife and a sharpening device for sharpening the knife, characterised in that the sharpening device comprises two rotary sharpening members arranged to act on opposite sides of the knife, the sharpening members both being carried by a rotary member which rotates about an axis substantially parallel to the axes of rotation of the sharpening members, and each sharpening member being adjustable in regard to its distance from the axis of rotary member, at least one of the sharpening members being driven by engagement of a rim on the sharpening member with a movable drive transmitting idler wheel which is mounted for rotation about an axis spaced from that of the said sharpening member and which also engages a stationary ring coaxial with the rotary member.

4,065,881

GUIDED HONING TOOL

Robert H. Gillette, Box 313, Angola, Ind. 46703

Filed Dec. 6, 1976, Ser. No. 747,820
Int. Cl.² B24B *33/08*
U.S. Cl. 51—346 **13 Claims**



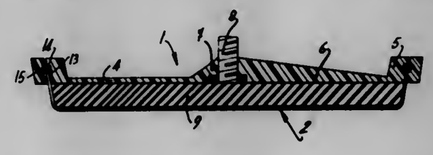
1. A honing tool having a generally cylindrical body portion with a plurality of longitudinally extending outwardly opening radial slots, an abrasive element disposed in each of a first subplurality of said slots, a like first subplurality of expander plates each carried by the body and projecting radially outwardly with the outer end portions thereof being disposed in the slots and engaging respective abrasive elements, means for selectively urging all of the expander plates and therefore also the abrasive elements simultaneously radially outwardly and into engagement with a workpiece, guide means disposed in each of a second subplurality of said slots for engaging the workpiece and aligning the tool relative to the workpiece, means operable independently of the means for selectively urging for forcing the guide means into engagement with the workpiece, an axially movable control rod, a lost motion coupling between the control rod and the means for selectively urging, and means for selectively frictionally coupling the control rod and the means for forcing, the control rod being movable in a first direction to engage and actuate the means for selectively urging, and movable in a second direction to deactuate the means for selectively urging and to frictionally engage and override the means for forcing.

4,065,882

GRINDING TOOL FITTED WITH AN ABRASIVE SHEET HAVING ACTIVE FACE AND EDGE SURFACES

Giuseppe D'Urso, Viale Strasburgo, 253, 90100 Palermo, Italy

Filed Aug. 2, 1976, Ser. No. 710,729
Claims priority, application Italy, Sept. 4, 1975, 26926/75
Int. Cl.² B24D *9/08*
U.S. Cl. 51—381 **8 Claims**



1. A rotary abrasive tool comprising:

a rotary support having a substantially flat circular lower face and a peripheral edge;

a resilient circular pad overlying said flat face and having a flat working face on the bottom thereof and a peripheral edge of substantial width;

a sheet of abrasive coated material overlying said working face and having a multiplicity of edge tabs extending upwardly over said peripheral edges, said edge tabs being configured and arranged to lie against said peripheral edge in mutual edge-abutting relation to thereby define a smooth and continuous abrasive edge surface for said tool; and

means releasably securing only the upper ends of said tabs to the peripheral edge of said support.

4,065,883

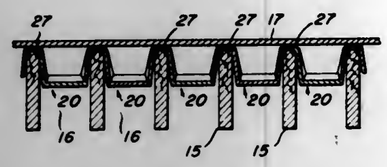
WATER CONDUCTING MEMBERS SPACED BETWEEN SPACED EXPOSED BUILDING SUPPORT BEAMS

Leo Thomas Thibodeau, 2638 Kirklyn St., Falls Church, Va. 22043

Filed Jan. 7, 1976, Ser. No. 647,089
Int. Cl.² E04D *13/00*
U.S. Cl. 52—11 **7 Claims**

1. A horizontal support surface comprising a plurality of spaced apart elongated beams, an elongated unitary channel member disposed in each of the spaces and being of substantially the same length as said beams and of a width substantially filling the space for conducting fluid therethrough, each of said channel members being comprised of a base, side walls extending upwardly from opposite sides of the base, said side walls tapering from a narrow portion at one end to a wider portion at the other end causing said base to slope downwardly from said one end to said other end, means securing said side walls of each channel member to the beams adjacent thereto, and

spaced apart horizontally disposed floor boards positioned transversely over and substantially covering the alternating



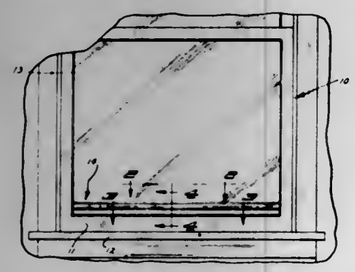
beams and channel members, and means securing the floor boards to the beams.

4,065,884

WINDOW DRIP COLLECTOR

David A. Tenquist, Edina, Minn., assignor to Novus Inc., Minneapolis, Minn.

Filed Oct. 4, 1976, Ser. No. 729,835
Int. Cl.² E06B 7/12
U.S. Cl. 52—37 8 Claims



1. A device for collecting moisture on a vertical pane such as a window pane having an interior surface exposed to the interior atmosphere of a heated room including a housing, means to apply said housing to the window pane on the interior surface of the window pane adjacent the lower edges thereof and substantially horizontal, said housing spanning substantially the entire width of said window, a water absorbent air premeable insert in said housing, said housing having an upper wall having apertures provided therethrough opening to said insert and being exposed to ambient air in said room along the length of said housing, and said housing defining a lower opening to permit ambient air from the interior of the room to enter the housing.

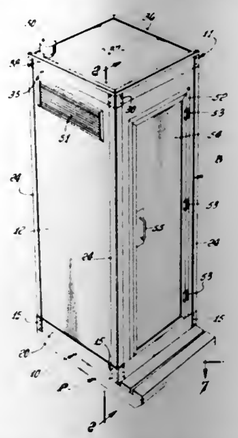
4,065,885

PORTABLE BUILDING STRUCTURE

John S. Blick, III, and Ralph N. Fuller, both of Laguna Beach, Calif., assignors to Monogram Industries, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 279,098, Aug. 9, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,877
Int. Cl.² E04B 1/348
U.S. Cl. 52—143 4 Claims

1. In a portable building comprising a base structure, a roof structure, side walls, a rear wall and a front wall having a door opening into the interior thereof, said base structure and said roof structure comprising frame members and a floor panel and a ceiling panel, respectively, each of said structures having means at the corners of said structures interconnecting said frame members, elongated corner posts of a unitary rigid non-resilient material, extending between the corners of said structures, means at the corners of said structures and on said corner posts removably connectable for interconnecting said corner posts and said structures said corner posts and said frame members having means for removably receiving wall panels in a close-fit relationship, and wall panels removably disposed between said corner posts, said means for removably receiving wall panels including elongated flanges on said corner posts and on said frame members forming panel receiving channels therebetween, said means at the corners of said structure and on said corner posts for interconnecting said corner posts and said structures comprising corner members having sockets at said corners and ends on said corner posts engaged in said



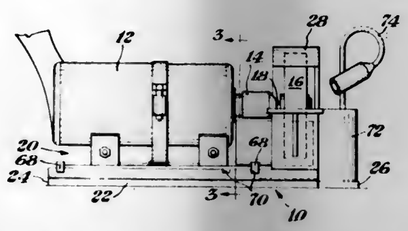
sockets in said corner members, and means adjustably interlocking said corner members and said ends for forcing said flanges on said corner posts towards said flanges on said frame members for thereby gripping said panels firmly between said flanges to form a rigid self-supporting portable building, said means for adjustably interlocking also being adapted to selectively release said panels from said flanges to thereby quickly and easily dismantle said portable building.

4,065,886

PORTABLE ABRASION TOOL

William James Harwood, Saginaw, and Robert P. Snyder, Bay City, both of Mich., assignors to William James Harwood, Saginaw, Mich.

Filed Aug. 16, 1976, Ser. No. 714,364
Int. Cl.² B24B 41/00
U.S. Cl. 51—166 FB 20 Claims



1. A portable apparatus for reducing the dimensions of a workpiece by abrading means comprising in combination:

a. a portable electric drill motor having a tool shaft-receiving chuck;

b. a rotatable workpiece abrading means operatively connected with a shaft adapted to be engaged by said chuck;

c. a guide member having supported thereon said drill motor;

d. a base member having a first end and a second end and adapted to receive and support (1) adjacent the first end thereof said guide member and (2) adjacent the second end thereof a housing adapted to generally surround at least a portion of said abrading means;

e. means for assuredly fixing each of said guide member and housing a predetermined distance along said base member;

said base member having retentive substantially parallel positioning rails extending longitudinally along each lateral edge of a face of said base member;

said guide member being slidable longitudinally of said base member between said retentive parallel positioning rails whereby the drill motor supported thereon is adjustably positionable with respect to the second end of said base member;

said housing being slidable longitudinally of said base member between said retentive parallel positioning rails; and

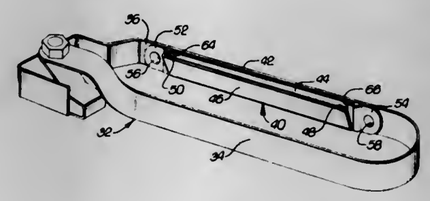
said base member being substantially coextensive with the combination of the guide member and the housing.

4,065,887

SOAPSTONE SHARPENER

Thomas E. Shrader, Rte. 3, Box 658B, Bakersfield, Calif. 93307

Filed Mar. 10, 1976, Ser. No. 665,660
Int. Cl.² B24D 15/00
U.S. Cl. 51—358 6 Claims



1. In a soapstone sharpener for providing a fine marking edge on the stone, said sharpener comprising:

an elongated member having facing legs forming a V-shaped cross section,

abrasive material secured on inner faces of the legs forming the V to form inner abrading surfaces of V-shaped cross section,

said elongated member having extensions on said legs at one end thereof in the elongated direction,

said extensions being in proximate relationship,

means associated with said member for attachment to carrying means, and

clip means being positioned within said extensions and extending over one end of said abrasive material to secure it in place,

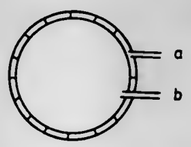
whereby a soapstone may be rubbed on said abrasive material within the V to form the soapstone to be complementary to the V and to have a fine marking edge.

4,065,888

FLUID INFLATABLE SPATIALLY EXPANDABLE HOLLOW BODY CONSTRUCTION

Reinhard Hans Napierski, Hamburger Str. 1-3, Eschborn, Germany (6236)

Filed Mar. 19, 1976, Ser. No. 668,741
Int. Cl.² E04G 11/04
U.S. Cl. 52—2 7 Claims



1. A spatially expandable hollow body construction adapted to be filled by a fluid to provide expansion thereof, said construction comprising a first fluid inflatable, main hollow body including an outer skin and means for enabling automatic filling of said first body by the sucking in of fluid when said skin of said first body is expanded and for preventing escape of said fluid from said main body through said filling means when the main body is expanded to the desired extent; and a second fluid inflatable hollow body connected to said first hollow body and arranged such that inflation of said second hollow body causes expansion of the skin of said first hollow body and consequent filling of said first hollow body by the sucking in of said fluid.

4,065,889

DOUBLE WALL FABRIC PANEL UNIT

Donato M. Fraioli, Mamaroneck, N.Y., assignor to Air Tech Industries Inc., Clifton, N.J.

Filed June 16, 1976, Ser. No. 696,635
Int. Cl.² E04B 1/345
U.S. Cl. 52—2 6 Claims



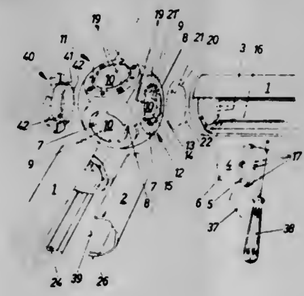
1. A double-wall fabric panel unit having interior and exterior sides for use as wall sections in the construction of inflatable buildings, comprising, in combination, a first elongated panel of fabric having a plastic coating on the interior side thereof, and an elongated thermal liner panel having an edge strip extending along each side edge thereof attached to the plastic coating of said first panel, said thermal liner panel having a reflective metallic surface facing said first panel, each of said side edge strips beind discontinuous at intervals along the length of said liner panel to provide a plurality of spaced unobstructed air passageways to the atmosphere to vent air from between said panels when said unit is rolled.

4,065,890

FRAMEWORK JOINT

Wolfgang Fenner, Feldbergstrasse 56, 6204 Taunustein 2, Germany

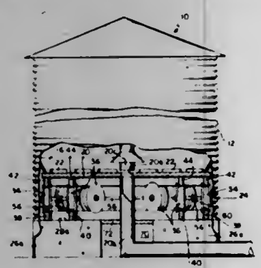
Filed Dec. 8, 1976, Ser. No. 748,708
Claims priority, application Germany, Dec. 17, 1975, 2556813
Int. Cl.² E04F 19/00; E04B 2/62
U.S. Cl. 52—27 13 Claims



1. A frame comprising

a plurality of hollow rods (1,2) each of which has an inwardly directed annular flange (3) at each end;
axially displaceable and rotatable guided sleeves (4) coaxial within said hollow rods at each end, said sleeves having an outwardly extending annular flange (5) at one end for engagement behind the flanges of said tubes, said sleeves having one or more circumferentially spaced dogs radially extending at the end opposite the annular flange;
a plurality of hollow connecting members having two or more openings (10) for receiving said guided sleeves (4) associated with said tubes, said connecting members having associated with each opening a cylindrical flange (9) with circumferentially spaced guide ways (7,8) therein for receiving said dogs on said guided sleeves, such that the guided sleeve after being inserted in said opening, with dogs and guideway aligned, may be rotated placing the dogs behind the cylindrical flange thus forming a bayonet connection.

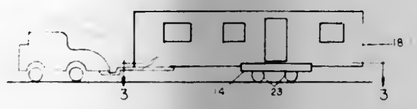
4,065,891
ROTARY FLOOR GRAIN BIN
Kermit H. Burgin, P.O. Box 334, Whitestown, Ind. 46075
**Continuation of Ser. No. 663,093, March 2, 1976, abandoned.
This application Aug. 26, 1976, Ser. No. 717,603
Int. Cl.[2] E04H *5/08*; B61J *1/00*; E04B *1/346***
U.S. Cl. 52—65 **18 Claims**



1. A rotary floor comprising a base having an upwardly facing surface and defining a vertically extending center axis, a platform disposed above and in vertical registry with said base, said platform having a bottom side, in which the improvement comprises circular outer and inner lower tracks concentrically mounted on said base, circular outer and inner upper tracks concentrically mounted on said bottom side to be in vertical registry, respectively, with said lower tracks, a plurality of first wheels running on said outer lower track and under and supporting said outer upper track, a plurality of second wheels running on said inner lower track and under and supporting said inner upper track, means for driving said platform about said axis, each said first wheel being mated with one of said second wheels and spaced radially outwardly therefrom, and an axle for each mated first and second wheel, said mated wheels being rotatably mounted on said axle.

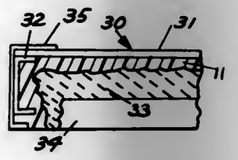
4,065,892
REMOVABLE LOW LEVEL BUILDING CARRIER
Robert Raymond Lawrence, 205 W. Fifth St., Alturas, Calif. 96101
**Filed Sept. 13, 1976, Ser. No. 722,883
Int. Cl.[2] E04B *1/343***
U.S. Cl. 52—143 **1 Claim**

1. In combination, a prefabricated building and a low level building carrier comprising
a. a prefabricated building having an elongated body and which is structurally suitable for being transported upon said low level building carrier along a line parallel to the longitudinal axis of said building,
b. a low level building carrier lying beneath said prefabricated building, having ground engaging wheeled running gear for moving said building along a line parallel to the longitudinal axis of said building and comprising,
1. two longitudinally elongated flat dolly connection plates of equal length, parallel to one another and separated by a distance substantially equal to the width of said prefabricated building,
2. braced steel dolly frame including ground support wheels and comprising
a. two identical longitudinal elongated side members horizontally disposed lying transverse to the longitudinal axis of said prefabricated building,
b. two identical longitudinal elongated end nenbers horizontally disposed lying parallel to the longitudinal axis of said prefabricated building, of length substantially less than said side members,
c. two identical longitudinally elongated cross members horizontally disposed, extending between said side members, of length substantially equal to said end members and lying parallel said end members,



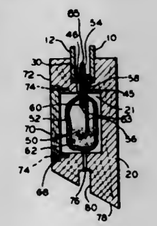
d. means of bracing said side members in their parallel relationship with one another, said means including one or more horizontally disposed braces lying at substantially right angles to said side members and also including one or more horizontally disposed diagonal braces, all of latter said braces being longitudinally elongated members connecting to said side members by welding, bolts, rivets or the equivalent,
e. means of connecting said cross members to ground engaging wheeled running gear spring hangers, such means being by welding or the equivalent,
f. means of connecting said dolly connection plates to said end members said means being by bolts engaging both said end plates and said dolly connection plate in a relationship placing said end members and said dolly connection plates flat against one another,
g. means of connecting said dolly connection plate to said prefabricated building such means being by lag screws or bolts engaging both said dolly connection plate and said prefabricated building when flat against one another.

4,065,893
COMPOSITE FOUNDATION FRAMING ASSEMBLY
Archie C. Epes, P.O. Box 3574, Shreveport, La. 71103
**Filed Jan. 16, 1976, Ser. No. 649,667
Int. Cl.[2] E04C *2/26***
U.S. Cl. 52—169.11 **1 Claim**



1. A composite foundation framing assembly for installation on a fill support comprising:
a. a foundation subfloor forming the top of said assembly;
b. a foundation U-shaped channel having one leg beneath and adjacent said foundation subfloor and the web member co-extensive with the peripheral edge of said foundation subfloor and disposed downwardly at essentially a 90° angle with respect to said foundation subfloor to form a portion of the sides of said foundation framing assembly;
c. a layer of expanded foam material having a density of from about two to about five pounds per cubic foot on the underside of said foundation subfloor and disposed between and beneath the legs of said foundation channel to form the lowermost member of said assembly and adapted to be in contact with said fill support; and
d. a waterproof coating extending from the top of and in continuous contact with said foundation subfloor around said peripheral edge of said foundation subfloor, across said foundation channel, and terminating under said layer of expanded foam material.

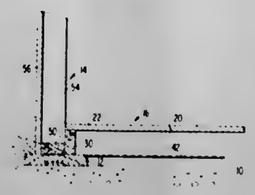
4,065,894
REPLACEABLE DOUBLE GLAZED WINDOW DEFOGGING APPLIANCE AND WINDOW STRUCTURE THEREFOR
Ralph K. Day, 307 W. Harrison Ave., Maumee, Ohio 43537
**Continuation-in-part of Ser. No. 361,989, May 21, 1973, Pat. No. 3,932,971. This application Dec. 9, 1975, Ser. No. 639,055
Int. Cl.[2] E06B *7/12***
U.S. Cl. 52—171 **6 Claims**



1. In combination a pair of substantially parallel spaced apart panes of transparent sheet material; resilient gasket means disposed between the marginal edges of the facing surfaces of said panes; said gasket means having compressible faces engaging the adjacent faces to said spaced apart panes and defining an enclosed volume between the facing surfaces of said panes; a frame circumscribing the periphery of said panes said frame including elements having grooves for receiving the marginal edge of said panes to urge said panes toward one another to compress said gasket an amount sufficient to produce an airtight sealing contact between the marginal edges of the facing surfaces of said panes and said gasket means; at least one of said frame elements having a receptacle, and a passage between said receptacle and the groove of said element; said gasket means having an aperture in registry with said passage and extending to said enclosed volume; a sealed detachable container having flexible walls fitted within said receptacle and carrying a quantity of dehydrating material a rigid tube extending outwardly from said flexible walls of said container and sealingly secured to said container walls; and a means for supporting said tube with respect to said container to facilitate its manipulation through said gasket aperture; said tube extending from said container through said passage and said gasket aperture to provide gas flow communication between the interior of said container and said enclosed volume; and passage means providing communication between ambient atmosphere and said receptacle within said frame for pumping gas between said container and said enclosed volume.

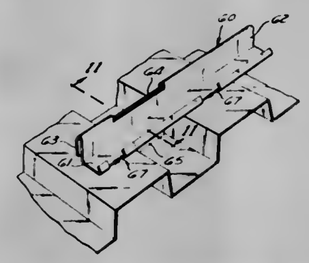
4,065,895
WOOD BUILDING CONSTRUCTION
Richard S. Shank, P.O. Drawer 5603, Charlottesville, Va. 22903, and Fred H. Hermanson, Box 38, Charlottesville, Va. 22902
**Filed June 23, 1976, Ser. No. 699,133
Int. Cl.[2] E04B *1/40***
U.S. Cl. 52—210 **8 Claims**

1. A wood building construction comprising a plurality of wood support plates adapted to be placed directly on a gravel support bed, a plurality of prefabricated rectilinear floor panels, each of said floor panels comprising a plurality of parallel spaced apart joists and a plurality of rectilinear deck boards disposed transversely of said joints and secured thereto with one end of each board only partially overlapping an outer one of said joists and the other end of each deck board extending beyond the other outer joist of said joists a distance equal to the spacing between said joists and secured to said outer one of the joists of an adjacent panel, the ends of said joists terminating



inwardly from the side edges of said deck boards a distance equal to the width of said joists, a plurality of prefabricated vertically extending rectilinear wall panels mounted on said support plates in abutting relation to said floor panels, each of said wall panels having a plurality of parallel spaced apart studs secured to top and bottom plates, an end plate secured to the bottom plate of each wall panel in abutting relation to the ends of said joists and means securing said side edges of said deck board to said end plates to connect said wall panels and said floor panels together.

4,065,896
BOTTOMLESS TRENCH DUCT
John P. Penczak, Euclid, Ohio, assignor to Bargar Metal Fabricating Co., Cleveland, Ohio
**Filed Mar. 21, 1977, Ser. No. 779,729
Int. Cl.[2] E04B *5/48***
U.S. Cl. 52—220 **15 Claims**

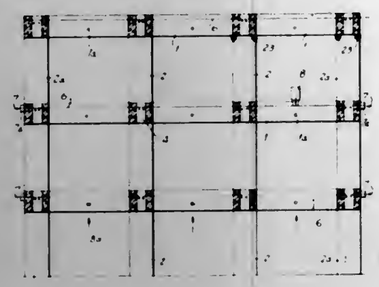


1. In an underfloor electrical distribution system, including a cellular subfloor duct assembly having crests and troughs defining raceway cells, a bottomless trench duct comprising a cover and spaced supporting side rail means fixed to said crests and running generally perpendicular thereto said cover being attached to said supporting side rail means, and individually replaceable void closure means depending from said supporting side rails into said troughs, whereby a closure means may be chosen to conform to the configuration of a particular trough and a series of closure means may conform to the spacing between troughs.

4,065,897
PRECAST SKELETON SPATIAL MONOLITHIC STRUCTURE

Branko Zezelj, Vojvode Misica 43, Belgrade, Yugoslavia

Filed July 9, 1974, Ser. No. 486,906
Int. Cl.² E04C *3/26*
U.S. Cl. 52—227 **1 Claim**

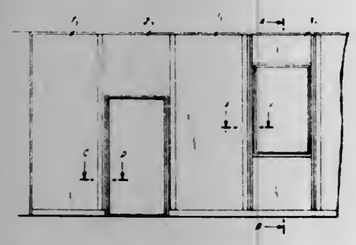


1. A skeleton precast space monolithic structure including a system of reciprocal orthogonal beams connected to a plurality of vertical columns by frontal contact between the ends of the beams and sides of the columns, comprising: said beams being formed so as to provide longitudinal interspaces, at least one transverse opening extending through each of said beams, through-holes extending through said columns in axial alignment with said beam interspaces, horizontally prestressed linear steel cables being anchored to the outermost columns of said structure and extending through the through-holes in said columns and said interspaces in said beams, means for deflecting said steel cables vertically downwardly in said interspaces to below the levels of said transverse openings in said beams so as to impart vertical forces thereto, said means including cable retaining means extending through said transverse openings; a sheet metal frame being supported proximate the upper end of each column, said frame having two bars extending vertically therefrom at opposite angles thereto, column reinforcements being connected to said bars, said bars entering apertures in said columns, and connecting agent being injected into said apertures to form a rigid fastening bond therebetween.

4,065,898
KNOCK-DOWN PARTITION WALL SYSTEM

Edmund Munk, Oberstenfeld, Germany, assignor to Furnier-und Sperrholzwerk J. F. Werz Jr. KG Werzalit Pressholzwerk, Oberstenfeld, Germany

Filed May 20, 1975, Ser. No. 579,143
Claims priority, application Germany, June 10, 1974, 2427997
Int. Cl.² E04H *1/00*
U.S. Cl. 52—241 **20 Claims**

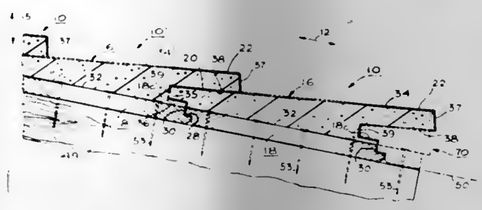


1. A knock-down partition wall system, comprising a plurality of wall elements, each having two transversely spaced profiled particle board panels, a sliver of acoustically and thermally damping material confined between said panels, sheet-material connecting members mounted on each panel adjacent respective edge portions thereof and extending towards the other panel, the connecting members of the respective panels having portions overlapping one another intermediate the panels and being fixedly connected to one another, spacing elements extending between said connecting members and having at each end bent portions engaging respective ones of said connecting members so as to provide a predetermined space between adjacent wall elements, means for bridging said space and including holding members having engaging portions hooked onto said edge portions of said panels; and securing means for releasably securing said panels to the boundary walls bounding a space which is to be partitioned.

4,065,899
INTERLOCKING COMBINATION SHINGLE AND SHEETING ARRANGEMENT

William J. Kirkhuff, 18414 S. Wilton Place, Torrance, Calif. 90504

Continuation-in-part of Ser. No. 323,278, Jan. 10, 1973, Pat. No. 3,852,934. This application Mar. 28, 1974, Ser. No. 455,618
Int. Cl.² E04D *1/28*
U.S. Cl. 52—309.8 **4 Claims**



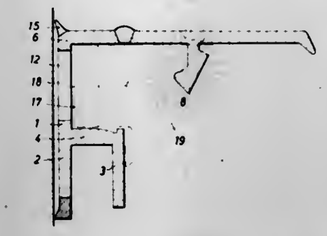
1. A composite integrated building construction member for installation on roofs, walls and other elements and comprising in combination:

an elongated construction member having top and bottom surfaces and sides and comprising a first part formed from foamed plastic material simulating a shingle and a second part comprised of a wooden sheeting member, said first part and second part being integrally bonded together throughout the elongated length thereof whereby to form a single integrated construction element adapted for securement on roofs, walls or otherwise of construction, and having lateral end sealing means along lateral edges for sealing engagement with adjacent construction members in the same course, and said lateral end sealing means comprising at least one angular shoulder one upstanding ridge and at least one extending overhang so configured that said lateral edges of adjacent composite members are adapted to be brought into juxtaposed sealing interfitting relationship; and end sealing means for sealing engagement with construction members in adjacent courses; said lateral end sealing means comprising a first end sealing means spaced a first preselected distance from a first end of said wooden sheeting member and a second end sealing means spaced a second preselected distance from the second end of said sheeting member, and said sheeting member free of said foam plastic material in said first and said second preselected distances to provide a securing area thereof in which securing members may be driven therethrough for said securement thereof.

4,065,900
PROFILE STRIP FOR FRAMING AND FASTENING SECONDARY GLAZING PANES

Frank Eggert, Hamburg, Germany, assignor to Schlegel GmbH, Hamburg, Germany

Filed Dec. 11, 1975, Ser. No. 639,798
Claims priority, application Germany, Dec. 13, 1974, 2459017
Int. Cl.² E04B *5/52*; E04C *2/00*
U.S. Cl. 52—476 **11 Claims**



1. A profile strip for framing glazing panes and fastening the panes to screw heads on a main support frame comprising:

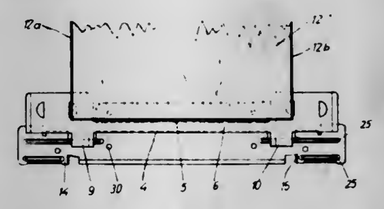
a first profile part having (1) means for framing the edge of a pane, and (2) a flange defining orifices of one diameter; and

a second profile part connected by a hinge to said first profile part, said second profile part having a cover part and a catch member and being pivotal about said hinge in a substantially circular arc between an open position in which each of said orifices are exposed for the passage therethrough of a supporting screw head of a diameter smaller than said one diameter when the profile strip is mounted thereon, and a closed position in which each of said orifices and the directly opposed surface of said cover part in alignment therewith define a space therebetween into which the screw head extends with its rear surface spaced a short distance away from said orifice and said catch member is moved without substantial deformation between the rear surface of the screw head and said orifice for releasably securing the profile strip to the main frame.

4,065,901
CONNECTING ELEMENT FOR WALL OR CEILING PANELS WHEN CONSTRUCTED BY A DRY METHOD

Friedrich Früh, In der Boindte 12, 7441 Neckartenzlingen, Germany

Filed Jan. 13, 1977, Ser. No. 759,177
Claims priority, application Germany, Jan. 16, 1976, 2601498
Int. Cl.² E04C *1/28*
U.S. Cl. 52—582 **11 Claims**

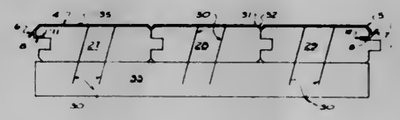


1. A connecting element useful in the assembly of abutting end faces of wall- or ceiling-cladding panels when assembled by the so-called dry construction method wherein the assembly is by abutting the end faces of cladding panels which have the same width and which are assembled by connecting the region of their longitudinal edges through a tongue-and-groove system, wherein the connecting element consists of a sectioned member whose longitudinal median plane, when in use, extends across that of the assembled panels, the sectioned member including two locating strips positioned, at least approximately, in the same plane and which function as supports for the undersides of end face sections of two adjacent panels which are to be assembled end to end, and which strips include stiffening flanges and holes for fixing screws or the like; said sectioned member also including a gap-forming flange having a locating wall between said locating strips for locating the end faces of assembled panels, said gap-forming flange separating said locating strips and having an essentially rectangular cross-section which determines the width of the joint gap, said locating wall projecting approximately at right angles from the plane of the locating strips; wherein at least one longitudinal end of each locating strip is connected with a clamping plate capable of establishing a clamped connection between the sectioned member and one of the panels when assembled, the spacing between said clamping plate and the corresponding locating strip being approximately equal to the distance between the locating strip and a longitudinal groove in the panel, and wherein at least two lateral stops are provided for each locating strip in the direction across the longitudinal axis of the connecting element, the spacing between the stops corresponding either to the distance between two longitudinal side edges of a corresponding panel when assembled therebetween or to the distance between the ground-surfaces of the longitudinal grooves of a panel to be assembled which take part in the connection between a given panel and adjacent panels at either of its longitudinal sides.

4,065,902
SHEETMETAL COVERED ROOF PLANKS HAVING WATERPROOF JOINTS

Sir Walter Lindal, 1120 8th Ave., No. 1702, Seattle, Wash. 98101

Filed Oct. 26, 1976, Ser. No. 735,170
Int. Cl.² E04C *2/26, 2/20*
U.S. Cl. 52—622 **8 Claims**



1. A composite sheetmetal covered roofing plank made up as a section of at least two but not more than five, tongue and groove wood planks nailed to the top of at least two cross cleats having a length slightly less than the width of the section an dimensions each equal to the plank thickness with the individual planks having all corners finished in a vee-joint pattern and the sections's edge plank with a groove exposed having the groove slightly widened on its top side to accommodate the thickness of the sheetmetal and the other edge plank with a tongue exposed having a special small groove machined into it, inward the depth of the plank's groove into the plank from the surface of the tongue and on the plane of the tongue to accommodate the thickness of the sheetmetal; said sheetmetal covering is formed so it will clamp into the groove of the section's edge plank, set into the vees between the planks on the section's top surface and snap into the special groove of the plank on the section's other edge; the said sheetmetal is further formed so that two flat folds protrude out of its surface near its edges one being at the section's groove edge at the bottom of the vee and the other being just above the small groove on the section's tongue edge with the flattened folds having a length slightly less than the width of the plank's edge surface between the vee and the groove; said folds being set at an angle close enough to the edge plank's edges to be out of the way during handling and shipping and far enough away to permit the insertion of a pencil-like tool to open out the angle of the folds

at the construction site, along the full length of the section so that when one section is nailed into place a second similar section can be driven by hammering the cleat ends so that the groove of the second section engages the tongue of the first section and its metal fold misses the edge of the first section's metal fold, but each fold strikes the opposing section's edge so that they are driven together and squeezed tightly together between the section edges forming a water-proof joint; said section cleats are placed so that they will occur at planned cross bearers at the construction job so that the sections can be nailed to the cross bearers from the section's underside by nailing the cleats to the cross bearers.

4,065,903

FIXATION AND/OR SUPPORT MEANS

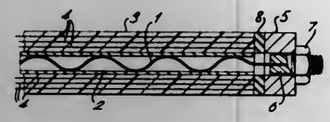
John Godfrey Morley, Little Eaton, England, assignor to National Research Development Corporation, London, England

Filed Nov. 28, 1975, Ser. No. 635,783

Claims priority, application United Kingdom, Dec. 3, 1974, 52249/74

Int. Cl.² E04B *1/38*; E04C *3/10*

U.S. Cl. 52—704 **1 Claim**



1. A support means for an artefact which is at least at times to be subjected to longitudinal shear stresses, comprising a support block; a tubular member fixed in a hole within said artefact, and an elongated sinuous or helical core member arranged within said tubular member to engage the inner wall surface of said tubular member and thereby being bonded interfacially to said wall surface, said tubular member extending at least to a point near the edge of said artefact, one end of said core member extending out of said hole and said core member being fixed to said support block, said tubular member contacting said support block so that shear stresses are transferred to said support block through said tubular member and said core member.

4,065,904

SUPPORT SYSTEMS

Peter Taylor, 79 Norman Ave., Bradford, and Brian Considine, The Spinney, Hall Drive, Brambope, Leeds, both of England

Filed Nov. 25, 1975, Ser. No. 635,079

Claims priority, application United Kingdom, Nov. 29, 1974, 51809/74

Int. Cl.² E04H *17/16*, *17/18*

U.S. Cl. 52—731 **7 Claims**



1. A support system, comprising an elongated post having a core, a face structure comprising a first pair of spaced webs each extending longitudinally of the post and delineating a first longitudinally extending slot, sections joining said webs to said core, second webs extending from said sections and delineating a second longitudinally extending slot aligned with said first slot, said second webs dividing the space between said first webs and said core into a first area between said first and second webs and a second area between said second webs and said core, the second area opening into a groove in, and extending the full length of, said core; and an elongated strip which is a press fit into the second area from one end of the post, said strip being formed with a part through which a series of longitudinally spaced locating holes are formed, and said strip being shaped so that when press fitted within said second area said part is aligned with said slots and said groove remains unoccupied, the strip having surfaces in frictional engagement with the associated webs and joining sections which define said second area.

4,065,905

PREFABRICATED BUILDING SECTIONS OR ROOM UNITS AND METHODS FOR THE MANUFACTURE OF SUCH SECTIONS OR UNITS

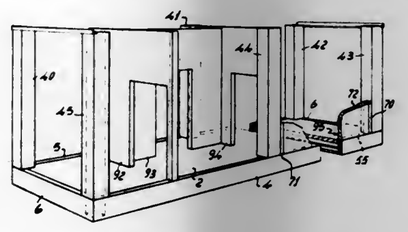
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Continuation of Ser. No. 389,739, Aug. 20, 1973, abandoned. This application Sept. 29, 1975, Ser. No. 617,507

Claims priority, application Switzerland, Aug. 21, 1972, 389739/72

Int. Cl.² E04H *1/04*

U.S. Cl. 52—741 **35 Claims**



1. A method for the manufacture of prefabricated building sections at a factory prior to transporting same to the site which comprises making a panel and subsequently connecting at least one vertically disposed metal frame beam having a hollow core to that panel, wherein making the panel comprises the steps of forming a frame of metal beam members, arranging a first plate on said frame, arranging a second plate which is spaced vertically from said first plate on said frame and providing the panel with at least one tubular service conduit, providing an opening completely through said panel which is at least in part extending through and defined by both said frame and said plates, the completed panel thereafter being rigidly connected to said frame beam by welding said beam members to said frame beams whereby the lower part of said frame beam is received through said opening for the entire vertical height of said panel.

4,065,906

METHOD AND APPARATUS FOR CONSTRUCTING BUILDINGS

Stowell Whitney Mears, 777 N. Ocean Blvd., Delray Beach, Fla. 33444

Filed June 9, 1976, Ser. No. 694,408

Int. Cl.² E04B *1/347*; A45F *1/16*

U.S. Cl. 52—745 **26 Claims**

1. A method of constructing a self-supporting, mountable and demountable prefabricated building structure which includes a flexible integral sheet and a plurality of elongated flexible support members attached thereto the steps comprising:

a. attaching brace members to at least some of said flexible support members at one end of said brace members thereby defining an attached end and an unanchored end of said brace members,

b. positioning the sheet and support members over the area to be covered by the building,

c. securing one of the ends of the support members against lateral movement, thereby to define a secured end and a free end of each of the support members,

d. elevating a portion of the support members to a height less than the peak of the completed building,

e. drawing substantially simultaneously each of the free ends



of said members against the secured ends until a building of the desired size is obtained,

f. stabilizing the building structure during construction by forming supports for said structure with the brace members while drawing the free ends of the support members against their secured ends,

g. anchoring the free ends of said support members, and

h. thereafter anchoring the unanchored ends of the brace members to thereby form said building structure.

4,065,907

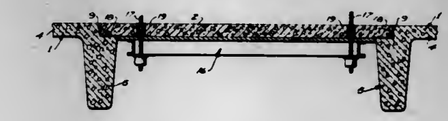
DEMOUNTABLE MULTIPLE LEVEL BUILDING STRUCTURES

Edward K. Rice, Los Angeles, Calif., assignor to Unicon Parking Structures, Inc., Van Nuys, Calif.

Division of Ser. No. 93,097, Nov. 27, 1970, abandoned. This application Mar. 13, 1973, Ser. No. 340,689

Int. Cl.² E04B *1/348*

U.S. Cl. 52—747 **2 Claims**



1. A method of constructing a building structure, characterized by:

a. precasting supporting modules, each having transverse guideways;

b. positioning the supporting modules in predetermined spaced and coplanar relation;

c. stacking similarly positioned supporting modules thereon to form a multiple level structure;

d. extending tendons through the guideways and between the supporting modules of an upper level;

e. placing a casting form to extend between spaced supporting modules at said upper level;

f. casting a supported slab in the form and around the portions of tendons extending between the supporting modules;

g. lowering the casting form to a lower position at the level of a lower pair of spaced supporting modules while having said cast slab supported at said upper level;

h. extending tendons through the guideways and between the supporting modules at the lower level;

i. casting a further supported slab, in said casting form and repeating said step of lowering said casting form and repeating said step of lowering said casting form;

j. and after completion of each level tensioning, the tendons exert transverse compression loads in the supporting and supported modules.

4,065,908

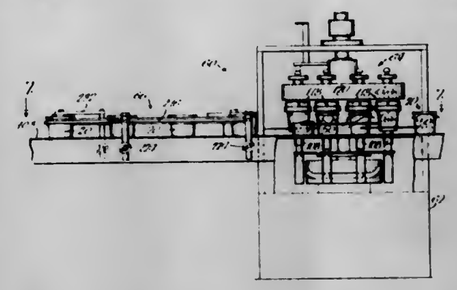
METHOD AND APPARATUS FOR SEALING TAMPER-INDICATING TABS TO A CONTAINER SIDEWALL

Martin Mueller, Wonderlake, Ill., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 26, 1976, Ser. No. 680,467

Int. Cl.² B65B *7/28*, *51/14*, *51/18*, *51/32*

U.S. Cl. 53—15 **27 Claims**



1. The method of completing a double-seal tamper-indicating container having an inner sheet closure and an outer lid closure means, said method comprising: disposing a heat-securable tamper-indicating sheet over the top edge of a container sidewall, positioning said sheet so that tabs thereon project from the periphery of said container sidewall, applying an outer lid closure means over the top edge of the container sidewall and the marginal portion of said sheet, moving said container upright along a process path, deflecting said projecting tabs downwardly during movement of said container along said path to position the tabs alongside said sidewall while subjecting said tabs to a first application of heat whereby said tabs take on a heat-set orientation in a downwardly deflected position, moving said container between a pair of opposed first and second tab sealing members located adjacent said path, subjecting said tabs to a second application of heat with at least one of said sealing members, and pressing each of said heated tabs against said sidewall with both of said sealing members to secure said tabs against said sidewall.

4,065,909

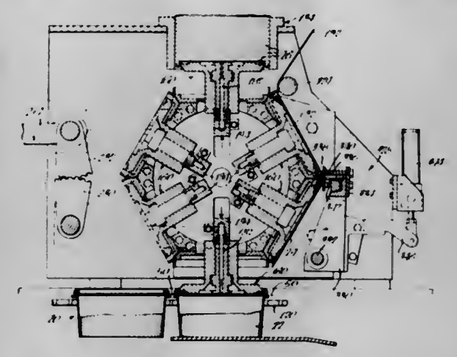
METHOD AND APPARATUS FOR APPLYING A LID AND TAMPER-INDICATING SHEET TO A CONTAINER

Martin Mueller, Wonderlake, Ill., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 26, 1976, Ser. No. 680,466

Int. Cl.² B65B *7/28*

U.S. Cl. 53—15 **36 Claims**



1. The method of applying a closure to a receptacle comprising:

moving an open top receptacle along a processing path;
providing a supply of flexible closure sheet and a quantity of stacked lids adjacent the said path; temporarily attaching a lid to a transfer member adjacent to said processing path;
subsequently superposing a length of closure sheet in surface contact on said lid to form a two-ply assembly and attaching portions of said sheet extending beyond said lid to said transfer member;
severing said length of sheet from said supply; moving said transfer member to position said assembly of said lid and associated severed length of closure sheet into vertical alignment with an open top receptacle; effecting relative movement between said receptacle and said assembly of said lid and associated severed length of closure sheet, whereby said lid and associated severed length of closure sheet are simultaneously seated within the open top of said receptacle; and releasing the temporary attachment between said transfer member, lid and length of closure sheet.

4,065,910

METHOD OF AND DEVICE FOR PACKAGING BLOCKS OF FOAMED SYNTHETIC MATERIAL

Günter Eiselt, Unkel, Germany, assignor to Recticel Deutschland Kunststoffe GmbH, Rheinbreitbach, Germany

Filed Aug. 24, 1976, Ser. No. 717,167
Claims priority, application Germany, Sept. 4, 1975, 2539289
Int. Cl.² B65B *63/02*
U.S. Cl. 53—24 **10 Claims**



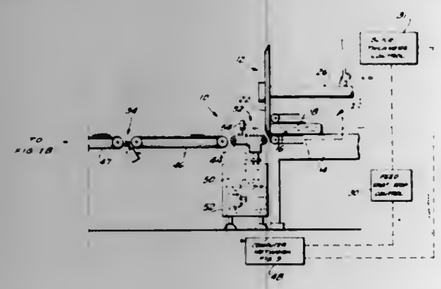
1. The method of packaging block like articles of foamed elastic material to reduce transporting costs thereof which comprises in combination the steps of: arranging the articles in face to face engagement and in alignment, compressing the articles individually in the direction of alignment thereof to assure stable characteristics thereof, stacking the individually compressed articles in compressed condition, and finally enclosing the individually compressed articles in a package.

4,065,911

BACONWEIGHER

John C. Fagan, Oak Lawn, Ill., assignor to Amtron, Division of the Sippican Corporation, Midlothian, Ill.

Filed July 12, 1976, Ser. No. 704,331
Int. Cl.² B26D *4/56*
U.S. Cl. 53—53 **10 Claims**



1. A combination slicing and weighing machine comprising: a slicing machine having a slicing blade and a feed mechanism for feeding products to be sliced with the slicing blade;
receiving and conveying means for receiving the sliced product coming from the slicing machine;
scale means coupled with the receiving and conveying means for weighing the weight of the sliced product, the scale means being so constructed and arranged to weigh the sliced product at an initial lighter group weight below a heavier draft target weight;
first control means for interrupting the operation of the feeding mechanism when the scale registers the initial group weight and when a draft has been completed;
means for counting the number of slices in the group of sliced product and particularly the number of slices in the lighter group and to be added to reach the heavier draft target weight;
second control means for determining the rate of advance of said feeding mechanism towards such slicing blade and, consequently, the sliced thickness, said second control means feeding the product at a first feed rate and a second feed rate;
calculating means for subtracting the weight of the initial lighter group from the heavier target weight, and multiplying the weight difference by the ratio of the slices in the initial lighter group to the weight of this group to determine the number of slices to be added to produce the heavier draft target weight without changing the slice thickness;
means for calculating the number of slices required to be added for the heavier draft target weight rounded off to the nearest whole integer; and
means for correcting the weight error produced by rounding off to the nearest whole integer by multiplying the first feed rate by the ratio of the number of slices calculated to produce the target weight by the number of slices rounded off to the nearest integer to provide a new second feed rate which will produce a whole number of slices at the thickness to produce the draft target weight.

4,065,912

CANE CUTTING APPARATUS

Donald J. Quick, Bundaberg, Australia, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands

Filed June 28, 1976, Ser. No. 700,691
Claims priority, application United Kingdom, July 12, 1975, 29356/75
Int. Cl.² A01D *45/10*; B26D *7/06*
U.S. Cl. 56—13.9 **4 Claims**



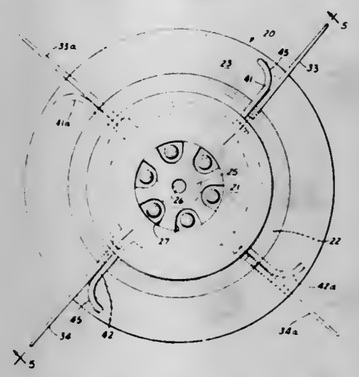
1. A sugar cane harvester with base cutting means operable to sever cane sticks from their roots; cane stick feeding means operable to feed severed cane sticks into the harvester; cane cutting apparatus mounted in the harvester to receive whole cane sticks from the cane stick feeding means and operable to cut each cane stick into at least two pieces; conveyor means to convey cut cane sticks away from the cane cutting apparatus; and drive means to drive the base cutting means, the cane stick feeding means, the cane cutting apparatus and the conveyor means; wherein the cane cutting apparatus includes a pair of cutting elements each of which is rotatably journaled on the harvester for rotation about parallel axes, at least one blade on each cutting element positioned to overlap and cooperate with a blade on the other cutting element to cut sticks passing between the cutting elements as the cutting elements rotate, each of said blades is formed from a rectangular flat steel plate with a first side surface, a second side surface, substantially parallel to the first side surface, a cutting edge running the length of the flat steel plate and spaced to one side of a plane substantially parallel to and half way between the first and second side surfaces, a first beveled surface extending the length of the flat steel plate and from the first side surface through said plane half way between the first and second side surfaces and to the cutting edge, a second beveled surface extending the length of the flat steel plate and from the second side surface to the cutting edge and having a width from the second side surface to the cutting edge that is not greater than one fourth the width of the first beveled surface extending from the first side surface to the cutting edge, clamping means for clamping each blade to a cutting element so that the cutting edge of a blade on one cutting element is parallel to the axis of rotation of the cutting element on which it is clamped and is positioned from the axis of rotation of the cutting element on which it is clamped a distance greater than one half the distance from the axis of rotation of one cutting element to the axis of rotation of the other cutting element and so that said second side of a blade on one cutter element moves into a position adjacent the said second side of a blade on the other cutter element during each rotation of the cutter elements, and a cane cutting apparatus timing and drive means for counter rotating the cutting elements and holding the blades so that when the second side of a blade on one cutting element is adjacent and parallel to the second side of a blade on the other cutter element, the distance between said second sides of the two adjacent blades is at least four millimeters.

4,065,913

SAFE CUTTER DISC ASSEMBLY FOR ROTARY LAWN MOWER

Gerald C. Fisher, Shelby, Ohio, and Joseph E. Scanland, Savannah, Ga., assignors to Roper Corporation, Kankakee, Ill.

Continuation-in-part of Ser. No. 611,347, Sept. 8, 1975, abandoned. This application Feb. 7, 1977, Ser. No. 766,377
Int. Cl.² A01D *55/18*
U.S. Cl. 56—295 **39 Claims**



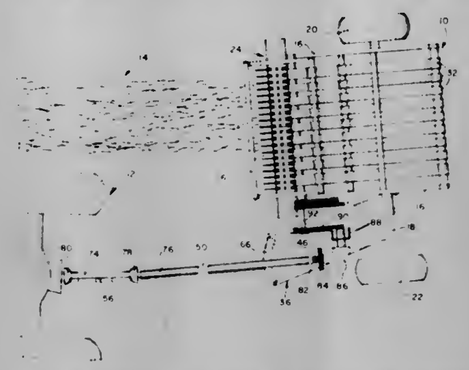
1. A safe cutter disc assembly for a rotary lawn mower of the type having a shallow inverted enclosure comprising, in combination, a disc having a circular central portion and an annular outer portion, the annular outer portion being downwardly offset and connected to the central portion by means of a shallow vertically extending wall, at least the annular portion being formed of resiliently deformable plastic, a plurality of spaced radially extending openings being provided in the wall, cutter pins registered in the respective openings, said cutter pins being formed of durable plastic, each pin having a head with a relatively stiff shank, the shank adjacent the head being dimensioned to fit in the associated opening and each pin having a long tapering flexible tip portion, the wall of the disc having substantial radial thickness for rigid support of the pins cantilever fashion, the wall of the disc having a relatively shallow vertical dimension so that the annular outer portion of the disc closely underlies and protects the relatively stiff shank portions of the pins while the tip portions of the pins project beyond the periphery of the disc into cutting engagement with the grass and are free to bend back into the protection of the annular outer portion of the disc upon striking of an obstruction, and backstop means on the annular portion of the disc adjacent the openings for engaging and supporting the pins during this backward bend, the pin being of sufficiently thick dimension over the shank portion that the pin is supported beam-like adjacent its head end, in radial position by the wall of the disc as the disc revolves during mowing free from reliance upon centrifugal force to hold the pin outwardly in cutting engagement with the grass and thus capable of performing a typical mowing operation at conventional rotative speeds on the order of 3000 rpm.

4,065,914

OFFSET BALER WITH STEERABLE CONTROL

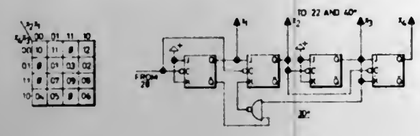
Carmen S. Phillips; Ralph E. Beyer, and Gerald E. Sepich, all of Memphis, Tenn., assignors to International Harvester Company, Chicago, Ill.

Filed Mar. 15, 1976, Ser. No. 666,805
Int. Cl.² A01D *39/00*
U.S. Cl. 56—341 **8 Claims**



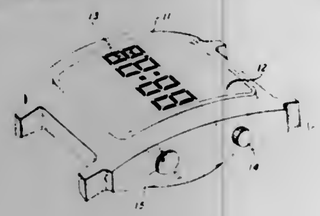
1. In a baler adapted for towing by a tractor, the combination comprising:
a pickup for picking up hay from a windrow;
means defining a transversely extending bale forming zone for receiving hay from the pickup;
means for forming the hay into a cylindrical bale;
and means for selectively steering said baler transversely relative to said tractor during bale formation to control the feed of hay along the transverse extent of said zone to form bales of uniform diameter.

4,065,915
BINARY COUNTING SYSTEM
John S. Farnbach, 756 Jefferson Ave., Loveland, Colo. 80537
Continuation of Ser. No. 368,643, June 11, 1973, abandoned. This application July 2, 1975, Ser. No. 592,455
Int. Cl.² G04C *3/00*
U.S. Cl. 58—23 R **16 Claims**



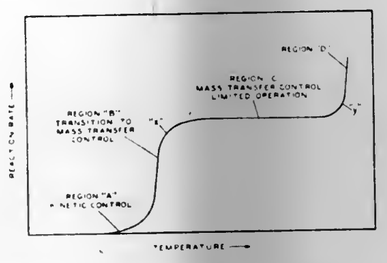
1. An electrically operating clock comprising:
a. constant frequency signal source;
b. means for converting the output cycles from said signal source to a signal of desired frequency;
c. means for displaying units of time in ordinary decimal notation;
d. display actuating means for driving said displaying means comprising counting means for converting said signal of desired frequency to binary signals representing at least the hours digits of the units of time, the number of said binary signals being such that one less binary signal would provide an unsufficient number of possible distinct binary logic states to represent all of said represented hours counts; and
wherein said counting means includes means for organizing the logic states of said binary signals so that, with respect to each particular units digit, there is at least one common binary signal which assumes the same binary value in the representation of all of said hours counts possessing said particular units digit, and the common group containing all of said common binary signals is exclusive to said particular units digit in that, in the representation of every one of said hours counts not possessing said particular units digit, at least one of said binary signals belonging to said common group assumes the binary value which is distinct from said binary value which results in the representation of hours counts possessing said particular units digit; and
wherein said binary signals representing the hours digits of the units of time are four in number and represent exactly twelve distinct hours counts.

4,065,916
ELECTRONIC TIMEPIECE
Horst Leuschner, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 17, 1977, Ser. No. 759,696
Int. Cl.² G04C *3/00*; G04B *19/00*
U.S. Cl. 58—23 BA **24 Claims**



1. An electronic timepiece comprising:
a. electronic timekeeping circuitry responsive to a reference frequency signal for generating electrical signals indicative of timekeeping functions;
b. display means coupled to said timekeeping circuitry and responsive to said electrical signals for displaying said timekeeping functions;
c. switch means coupled to said electronic timekeeping circuitry for controlling a function thereof;
d. battery receiving means for receiving battery means to power said electronic timekeeping circuitry; and
e. shutdown latch circuit means coupled to said battery receiving means and to said switch means, said latch circuit means being responsive to a voltage applied from said battery receiving means for toggling to a first state in which power consumption by preselected circuits of said electronic timekeeping circuitry is inhibited and responsive to said switch means for toggling to a second state in which power consumption by said preselected circuits is enabled upon the first activation of said switch means after said latch circuit means is set in said first state, said latch circuit means remaining in said second state so long as a voltage is present from said battery receiving means, wherein
f. battery power during the "shelf-life" of the electronic timepiece is conservable with said latch circuit in said first state.

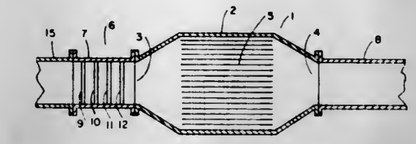
4,065,917
METHOD OF STARTING A COMBUSTION SYSTEM UTILIZING A CATALYST
William C. Pfefferle, Middletown, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.
Division of Ser. No. 644,873, Dec. 29, 1975, which is a continuation-in-part of Ser. No. 142,939, May 13, 1971, abandoned, Ser. No. 164,718, July 21, 1971, abandoned, and Ser. No. 358,411, May 8, 1973, Pat. No. 3,928,961. This application Dec. 20, 1976, Ser. No. 752,272
Int. Cl.² F02C *3/04*
U.S. Cl. 60—39.82 C **2 Claims**



1. A turbine system, comprising:
a gas turbine;
means for forming a mixture of compressed air and fuel;
a combustor having a catalyst disposed therein for receiving and combusting said mixture to form a combustion effluent;
means for preheating said catalyst in the substantial absence of unburned fuel prior to the introduction of said mixture into said combustor; and
means for supplying said combustion effluent to drive said turbine.

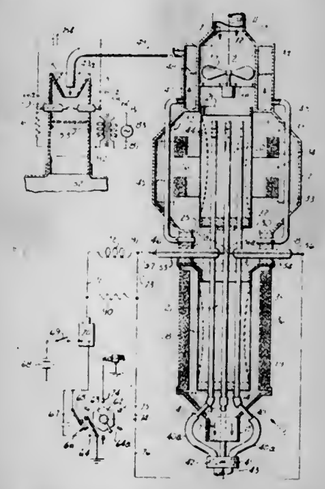
4,065,918
EXHAUST SYSTEMS
Ellis B. Rifkin, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.
Filed Feb. 12, 1973, Ser. No. 331,680
Int. Cl.² F01N *3/15*
U.S. Cl. 60—274 **16 Claims**

1. A catalytic reactor resistant to plugging when used in the exhaust system of an internal combustion engine operating on gasoline containing a cyclopentadienyl manganese antiknock compound, said catalytic reactor comprising a reactor housing having an inlet and an outlet and containing a catalyst bed between said inlet and said outlet such that said exhaust gas passes through said catalyst bed in passing from said inlet to said outlet, said inlet having a cross-sectional area substantially less than the area of the entry face of said catalyst, said housing having an expansion zone between said inlet and said entry face, said reactor including a conduit section connected to said inlet extending away from said expansion zone, said conduit



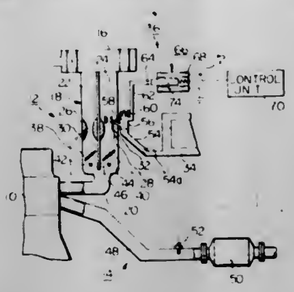
section containing a plurality of transverse baffles, each of said baffles having at least one large opening through which exhaust gas can pass, said openings being arranged such that the openings in one baffle are not substantially in axial alignment with the openings in an adjacent baffle, the space between each baffle being empty, said baffles forming an unimpeded tortuous flow path through said conduit section, said baffles functioning to inhibit the plugging of said catalyst bed by manganese compounds in said exhaust gas.

4,065,919
POLLUTION MINIMIZING DEVICE AND METHOD FOR INTERNAL COMBUSTION ENGINES
Hrant Eknayan, 7528 Columbia, Rosemead, Calif. 91770
Continuation-in-part of Ser. No. 382,373, July 25, 1973, Pat. No. 3,882,677. This application Jan. 17, 1975, Ser. No. 541,894
Int. Cl.² F01N *3/15*; F02M *25/06*
U.S. Cl. 60—274 **7 Claims**



3. Method of reducing the quantity of pollutant mixed with the gaseous products of combustion of hydrocarbon fuel in an internal combustion engine which comprises:
mixing the combustion products with atmospheric air, straining the mixture through an expandable basket comprising lengths of small cross-section copper wires placed closely together, offering variable porosity with respect to the passage of gas between the wires, and subjecting the strained mixture to intermittent sparks.

4,065,920
TWO BARREL CARBURETOR
Hidehiro Minami, No. 1403, Matano-cho, Totsuka, Yokohama, and Makio Waku, No. 1-22-6, Motomachi, Urawa, both of Japan
Filed Mar. 2, 1976, Ser. No. 663,140
Claims priority, application Japan, Mar. 7, 1975, 50-31752[U]
Int. Cl.² F02B *75/10*
U.S. Cl. 60—276 **6 Claims**

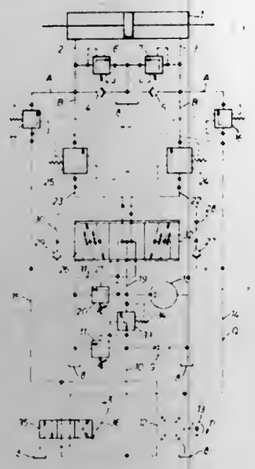


1. A combination for an internal combustion engine having intake and exhaust conduit systems, comprising:
a carburetor disposed in said intake conduit system and having a float chamber and first and second barrels which are united at their downstream portions;
first and second throttle valves rotatably disposed in said first and second barrels respectively at positions upstream of the united portion of said first and second barrels, means for rotating said first and second throttle valves synchronously;
first and second fuel nozzles projecting into said first and second barrels of said carburetor at positions upstream of said first and second throttle valves;
first and second fuel lines independently providing communication for said first and second fuel nozzles with said float chamber, said float chamber being common to both fuel nozzles;
an exhaust gas sensor disposed in said exhaust conduit system for developing a signal representing and corresponding to the condition of gases exhausted from said engine; and
control means communicating with said exhaust gas sensor and only said second fuel line for controlling the amount of fuel passed through said second fuel line in response to said signal applied from said exhaust gas sensor.

4,065,921
HYDRAULIC CONTROL MEANS, PARTICULARLY FOR VEHICLE STEERING MEANS
Johannes Vagn Baatrup, Sonderborg, and Thorkild Christensen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Nov. 24, 1976, Ser. No. 744,624
Claims priority, application Germany, Nov. 29, 1975, 2553748
Int. Cl.² F15B *15/18*
U.S. Cl. 60—385 **8 Claims**

1. A hydraulic control unit for a servomotor comprising a control circuit having a pump and a hand operated metering motor, and operating circuit having a pump, said control and operating circuits intersecting upstream of said servomotor, a pressure comparison throttling and proportioning valve having first and second ports, connected respectively to said control and operating pumps and a third port connected to said metering motor, said proportioning valve being controlled by a differential pressure applied to said first and second ports and

having a normal operating mode in which there is a major fractional flow of fluid from said first port to said third port



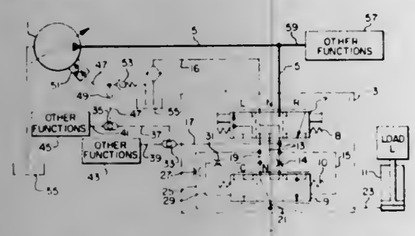
and a minor fractional flow of fluid from said first port to said second port.

4,065,922

LOAD LIFTING AND LOWERING CONTROL SYSTEM

James I. Ott, Portland, and Delmar G. Schwab, Milwaukie, both of Oreg., assignors to Hyster Company, Portland, Oreg.

Filed Aug. 23, 1976, Ser. No. 716,476
Int. Cl.² F16H *39/46*
U.S. Cl. 60—445 **21 Claims**



1. A hydraulic control system for controlling the lifting and lowering of a load comprising:
- a source of hydraulic pressure fluid;
- a hydraulic lifting and lowering motor;
- a main control valve having a first, selectively positionable, control spool, the valve operatively connected to the fluid source and to the motor;
- and a variable pressure compensated lowering speed control, the control including a second control spool sensitive to system flow associated with the main control valve, the second spool operable to vary fluid flow within the system in response to selective positioning of the first spool.

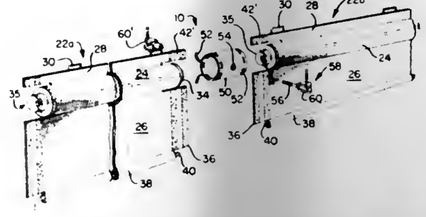
4,065,923

BARRIER CONSTRUCTION FOR WATER CARRIED POLLUTANTS

Paul Preus, 21 Smith Road, Toms River, N.J. 08753

Continuation-in-part of Ser. No. 676,794, April 14, 1976. This application Oct. 5, 1976, Ser. No. 729,713
Int. Cl.² E02B *15/04*
U.S. Cl. 61—1 F **4 Claims**

1. A barrier for water carried pollutants comprising a series of end to end connected boom sections, each of said boom sections comprising a hollow tubular sleeve containing a floatable material therein, said barrier characterized by a cable extending through each said sleeve and having an eye at each end externally of the ends of the sleeve, a separable connector passing transversely through and connecting the eyes of adjacent boom sections, said barrier further characterized by end covers for each end of the tubular sleeve of each section, each of the end covers including means securing the covers to the



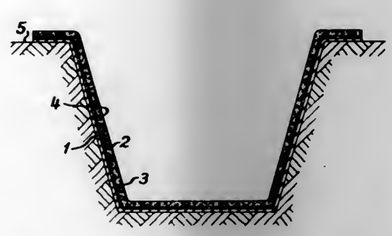
ends of the tubular sleeve and each said end covers including a longitudinally extending sleeve portion having a diameter large enough to freely pass the eyes of the cable extending through the hollow tubular flotable material receiving sleeve, and draw strings carried at each end of each sleeve portion whereby the end covers may be secured about the cable extending through the boom sections.

4,065,924

METHOD OF LINING A WATERWAY OR RESERVOIR

Daniel Arthur Young, Blackgrove Farm, Tandridge Lane, Lingfield, Surrey, England

Filed June 17, 1975, Ser. No. 587,626
Claims priority, application United Kingdom, June 20, 1974, 27387/74
Int. Cl.² E02B *5/02*
U.S. Cl. 61—7 **7 Claims**



1. A method of lining a waterway or reservoir, which method comprises the steps of laminating a layer of flexible and liquid impervious material with a layer of fibrous material to form a flexible base lamination, applying the lamination to cover at least part of the surface of the waterway or reservoir with the flexible and liquid impervious material adjacent the surface and the fibrous material situated on the side of the flexible and liquid impervious material opposite the surface, and applying to the fibrous material a thin exterior layer of high density concrete to form a key with the fibrous material underneath.

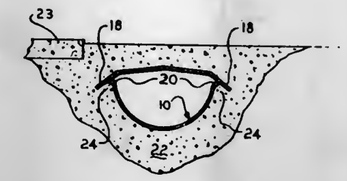
4,065,925

UNDERGROUND DRAINAGE PIPE

Robert Sinbad Auriemma, R.D. No. 1, Bethel, Pa. 19507

Continuation-in-part of Ser. No. 529,236, Dec. 3, 1974. This application May 3, 1976, Ser. No. 682,492
Int. Cl.² F16L *21/00*; E02B *11/00*
U.S. Cl. 61—11 **10 Claims**

1. An underground drainage pipe formed of an extruded stiffly flexible plastic material having a rounded water carrying trough with normally diverging column lips at the edges of the trough; a roof overlying the trough and including a central high point forming a ridge extending along the pipe and wings on the edges of the roof integrally joining, overlying and extending downwardly beyond the column lips of the trough; the circumferential length of the roof being shorter than a circumferential length of the trough, the upper surfaces of the wings being essentially planar, the column lips extending away



from the wings at angles essentially 90° to the upper surfaces of the wings so that upon stress loading of the pipe the height of the pipe is reduced, the trough and roof buckle and the wing surfaces are rotated normal to the loading force to rotate the column lips parallel to the force and into column loading positions.

4,065,926

SUBTERRANEAN IRRIGATION SYSTEM

Edison R. Brandt, 951 DeSoto Road, Apt. 525, Boca Raton, Fla. 33432

Filed July 18, 1975, Ser. No. 597,194
Int. Cl.² E02B *13/00*; N01G *25/06*
U.S. Cl. 61—13 **6 Claims**



1. An irrigation system for selectively conveying and applying a liquid from a source of such liquid to an area of ground to which such liquid is to be applied while avoiding interference with the above-ground use of such area, said irrigation system comprising:
- a plurality of flow passages connected relative to one another so far as to form an array of said flow passages having an entrance thereto, the array having an area substantially equal to such area of ground, said plurality of flow passages being formed from two sandwiched sheets of plastic periodically sealed together at various common non-overlapping areas to form a resultant grid pattern of non-sealed interconnected passages which form said array of said interconnected flow passages, said plurality of flow passages having means defining apertures therein of a size and quantity as to effect the substantially even distribution of such liquid to such ground area, said plurality of flow passages being entirely interred within such ground area; and
- means for connecting such array of said plurality of flow passages to such source of such liquid.

4,065,927

METHOD FOR BLOCKING GAS FLOW IN A COAL SEAM

J. Gilbert Davis, II, Morgantown, W. Va., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jan. 20, 1975, Ser. No. 542,149
Int. Cl.² E02D *3/14*; E21F *15/00*
U.S. Cl. 61—36 R **14 Claims**



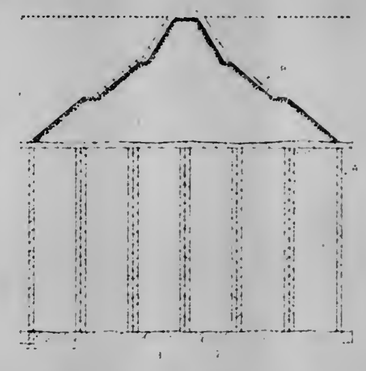
1. In the mining of coal from a seam in which methane gas flow to a mining or rib face is blocked by positioning of a barrier fluid in the seam in the path of gas flow, the improvement comprising:
- drilling a plurality of substantially parallel holes into the seam from said face in a direction substantially parallel to the direction of the flow of gas from the interior of said seam;
- forming a notch in the coal seam at the interior end of each of the holes;
- introducing a hydraulic fracturing fluid under pressure into said notches via said holes;
- hydraulically fracturing the coal seam along one or more planes of fracture propagated from each of said notches and extending substantially normal to the direction of gas flow through the coal seam to said face; and
- stationarily positioning a barrier fluid in said fracture to effectively block the gas flow to said face.

4,065,928

METHOD FOR CONSTRUCTING A RELIABLE FOUNDATION IN SOFT SOIL FORMATIONS

Atsushi Takagi, Yokohamashi; Hiroyuki Kuroiwa, Chofushi; Masao Miyaguchi, Tokyo, and Tateo Kawamura, Tokyo, all of Japan, assignors to Takenaka Komuten Company, Ltd., Osaka, Japan

Filed Sept. 2, 1976, Ser. No. 719,698
Claims priority, application Japan, Sept. 11, 1975, 50-110570
Int. Cl.² E02D *3/12*
U.S. Cl. 61—36 R **6 Claims**



1. A method of constructing a tubular pile foundation in soft soil formations comprising
- agitating the soft soil to form an agitated region like a tube with single annular section to the depth reaching a bed-

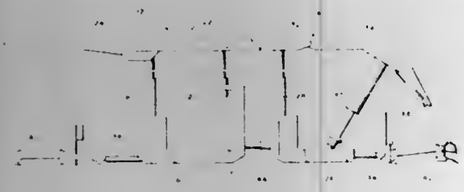
rock or to the substantial depth enough to provide required bearing capacity with the soft soil formations,
injecting chemical hardener slurry into the soft soil during said agitating,
simultaneously mixing the chemical hardener slurry with the soft soil to give soil mixture to be solidified,
repeating foregoing steps before the last agitated tubular region is completely solidified so that a new agitated tubular region is adjacent to or partly overlapped said last agitated tubular region, and
solidifying in situ a wall of linked tubular piles formed through said repeating,
wherein the soft soil formation is provided with bearing capacity by constructing a structural wall foundation of the linked piles therein.

4,065,929

MINE ROOF SUPPORT AND METHOD IN LONGWALL MINING OF THICK MINERAL SEAMS

Terry Lee Simpson, Westminster, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 8, 1976, Ser. No. 664,437
Int. Cl.² E21D *15/44*
U.S. Cl. 61—45 D **8 Claims**



1. In a longwall mining system, a roof support adapted to extend transversely between a face and a gob side conveyor comprising:
a. a forward and an aft chock-type roof supporting unit disposed in line, one behind the other, said forward and aft roof units each being supported by at least two pairs of side-by-side props, the rear end of the forward roof supporting unit being interconnected with the front end of the aft roof supporting unit so as to permit relative movement of said forward and aft roof supporting units in the direction of advance;
b. means for separately anchoring and depressurizing each of said units; and
c. means for independently advancing either of said units in a depressurized state toward the longwall face.

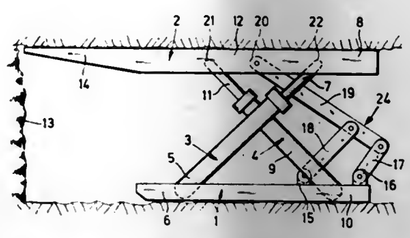
4,065,930

MINE ROOF SUPPORT

Klaus Spies, Dortmund-Persebeck, Germany, assignor to Bochumer Eisenhutte Heintzmann GmbH & Co., Bochum, Germany

Filed Mar. 31, 1977, Ser. No. 783,469
Claims priority, application Germany, May 19, 1976, 2622208
Int. Cl.² E21D *15/44*
U.S. Cl. 61—45 D **11 Claims**

1. A mine roof support for an underground mine gallery comprising sole plate means adapted to rest on the floor of a mine gallery and having a front end directed toward the mine face and an opposite end; roof sheild means upwardly spaced from said sole plate means and having a front end directed towards the mine face and an opposite rear end; at least one extensible and collapsible prop pivotally connected at opposite ends to said roof shield means and said sole plate means and extending from the latter forwardly and upwardly inclined toward said roof shield means; at least one additional extensible and collapsible prop pivotally connected at opposite ends to said roof shield means and said sole plate means and extending from the latter upwardly and rearwardly inclined towards said roof shield means; and means for maintaining the position of said props relative to said sole plate means and said roof shield means and comprising a laminescate guide arrangement including two shorter links and one longer link connecting said



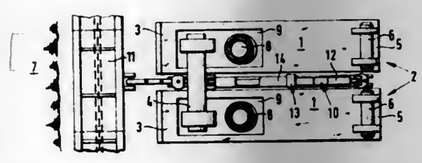
shorter links and projecting with an end portion beyond the latter, said shorter links being pivotally attached at the ends thereof spaced from said longer link to one of said two first-mentioned means and said end portion of said longer link being pivotally attached to the other of said two first-mentioned means.

4,065,931

GUIDING ARRANGEMENT FOR UNDERGROUND EXCAVATING SYSTEMS

Gustav Neu, Bochum, and Hans-Ferdinand Bemmerl, Herne, both of Germany, assignors to Bochumer Eisenhutte Heintzmann GmbH & Co., Bochum, Germany

Filed May 9, 1977, Ser. No. 794,933
Claims priority, application Germany, May 21, 1976, 2622886
Int. Cl.² E21D *15/44*
U.S. Cl. 61—45 D **22 Claims**



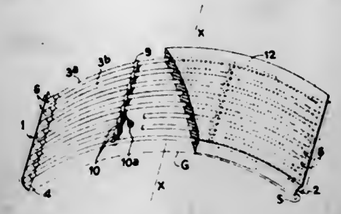
1. In an underground excavating system, a combination comprising a conveyor device for conveying material away from a mine face; an excavation roof support device for supporting the roof of the excavation; advancing means operatively connected to both of said devices for advancing one of said devices towards the mine face while the other of said devices remains stationary, and vice versa; and means for guiding said one device during its advance towards the mine face, including a pair of spaced apart elongated support members having one end region located closer to the mine face and another opposite end region located further from the mine face, a pair of guide sleeve members one at each of said end regions, each sleeve member having wall portions bounding a passage through which end portions of said support members pass at a spacing relative to each other, a pair of insert members one being connectable with said conveyor device and another being connectable with said advancing means, each insert member being located in a respective passage of said sleeve members and being received between said end portions of said support members for maintaining said end portions at said spacing, and means for detachably connecting said insert members and said support members to said sleeve members, whereby rapid interchange of any of said members which are defective with a replacement member is obtained.

4,065,932

CASING VOUSSOIR AND METHOD FOR PRODUCING THE VOUSSOIR

Jacques Francois Oger, Pont a Mousson, France, assignor to Sogelerg, Chevilly-Larue and Setec Travaux Publics, Paris Cedex, both of, France

Continuation of Ser. No. 577,790, May 14, 1975, abandoned.
This application Dec. 10, 1976, Ser. No. 749,259
Claims priority, application France, May 27, 1974, 74.18257
Int. Cl.² E21D *5/11*: E01G *5/02*
U.S. Cl. 61—45 R **6 Claims**



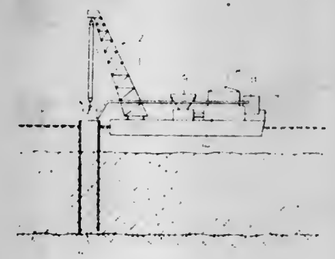
1. A casing voussoir comprising a metal frame and a mass of concrete anchored to the frame, said frame and mass of concrete having the shape of a sector of a cylindrical ring with radial end faces, said frame comprising two end plates disposed along said radial faces and circumferential bars embedded in the concrete and interconnecting said plates, said bars being separate from the plates and fixed on the plates by a fixing filler material distinct from the concrete, said plates having inner surfaces which receive the ends of the bars with interpostion of said filler material to insure a precise circumferential size of the voussoir, said plates and the ends of the bars forming a gap occupied by the filler material, said plates having inwardly protruding cup-shaped members, said bars having ends of a diameter substantially smaller than the internal diameter of the cup-shaped member to permit movement between the ends of the bars and the cup-shaped members prior to placement of the filler material and the concrete to obtain the precise circumferential size of the voussoir.

4,065,933

METHOD OF REFORMING THE GROUND

Ichiro Katayama, Nishinomiyashi, Japan, assignor to Takenaka Komuten Company, Ltd., Osaka, Japan

Filed Sept. 30, 1976, Ser. No. 728,138
Claims priority, application Japan, Feb. 2, 1976, 51-10108
Int. Cl.² E02D *3/12, 27/02*
U.S. Cl. 61—50 **2 Claims**



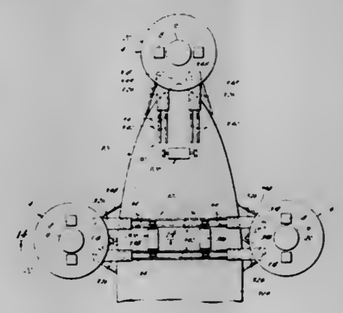
1. A method of reforming soft ground or stratum under water with a chemical hardener, said method comprising the steps of:
driving at least one casing into the soft soil layer under the water to enclose and isolate a definite volume of the soft soil from the surrounding soft soil layer;
removing the definite volume of the soft soil from the casing using a removing device mounted on a working barge above the casing, and placing the removed soil in a hopper on the barge;
feeding the soft soil from the hopper and the chemical hardener from a feeder mounted on the barge into a mixer mounted on the barge;
kneading the soft soil together with the chemical hardener in the mixer;
returning the treated soil into the casing with a pump mounted on the barge; and
removing the casing, leaving a submerged pile of hardened soil.

4,065,934

RIG TRANSPORT METHOD

Edward David Dysarz, Houston, Tex., assignor to James G. Brown & Associates, Inc., Houston, Tex.

Filed Dec. 10, 1975, Ser. No. 639,431
Int. Cl.² E02B *17/04*
U.S. Cl. 61—87 **6 Claims**



1. Method of transporting a structure for erection offshore having a truss work portion and three elongated members extending therefrom each connected thereto at only one end, comprising
placing said structure in a position on one end of a ship with two of said members extending vertically down on opposite sides of the ship and the third member extending vertically down at the end of the ship, and
causing said ship to move to location while maintaining said structure in said position.

4,065,935

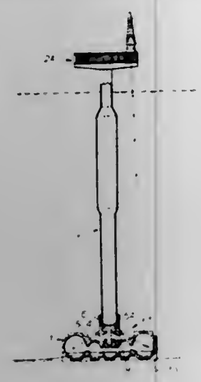
ARTICULATED JOINTS FOR DEEP WATER INSTALLATIONS

Reginald Edward Dowton Burrow, Hatch End, and David Edmund Plaskitt, High Wycombe, both of England, assignors to Taylor Woodrow Construction Limited, England

Filed July 16, 1976, Ser. No. 705,933
Claims priority, application United Kingdom, July 18, 1975, 30310/75
Int. Cl.² E02D *21/00*
U.S. Cl. 61—95 **13 Claims**

1. An articulated joint for a deep water installation in which two structural members are connected so as to afford limited pivotal movement between the members, the joint comprising replaceable flexible tendons connecting the structural members with a clearance between the members, each said tendon terminating at each end in a cylindrical member that is entered, at a mounting station associated with the relevant structural member, in a tubular portion of a tendon anchorage, there being access from the interior of each of the structural members to that end of each of said tendons that is connected to this structural member; each said tendon being releasably engaged at one end in its anchorage in one structural member, disposed in fluid-tight manner with respect to this structural member, the mounting station for each tendon is this structural member

being adapted to have fitted at it a pressure bottle for containing the tendon whilst maintaining the fluid-tight sealing relationship of the tendon with the structural member, and each said tendon being held releasably fast with respect to said other structural member by a screw-threaded member mounted on said cylindrical member at the other end of the tendon; removal of the tendon from the joint being effected, with the pressure bottle fitted and the tendon released at its other end from the other structural member by removing said screw



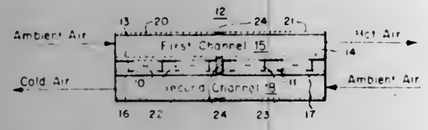
threaded member, by pressurizing the bottle, releasing said one end of the tendon, and depressurizing the bottle to permit the tendon to enter the bottle; there being a tendon extension at the other end of the tendon which is arranged to enter into fluid-tight sealing relationship with the last-mentioned structural member, when entry of the tendon into the pressure bottle is completed, thereby permitting removal of the tendon and the bottle from the tendon extension and fitting of a replacement tendon to the tendon extension.

4,065,936

COUNTER-FLOW THERMOELECTRIC HEAT PUMP WITH DISCRETE SECTIONS

John William Fenton, Wilmette; Jerry Stevenson Lee, Buffalo Grove, and Richard James Buist, Palatine, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed June 16, 1976, Ser. No. 696,605
Int. Cl.² F25B *21/02*
U.S. Cl. 62—3 **8 Claims**



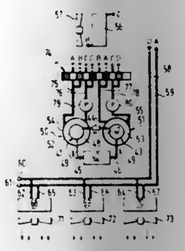
1. A counter-flow thermoelectric heat pump comprising:
a first thermoelectric module and a second thermoelectric module, both disposed in substantially the same plane, and electrically intercoupled so as to transfer heat from one side of the modules to the other side when the modules are energized;
means, including cover plates, disposed around the thermoelectric modules, to define a first channel for air flow in a first direction over one surface of the thermoelectric modules, and a second channel for air flow in a second direction opposite the first direction, over the other surface of the thermoelectric modules; and
a thermal barrier, interposed between the first and second thermoelectric modules and between the cover plates, to minimize longitudinal heat conduction across the barrier in the heat pump modules.

4,065,937

METHOD TO TRANSFER HEAT OR REFRIGERANT AND HEAT PUMP FOR PRACTICAL APPLICATION OF THIS METHOD

Manfred R. Burger, Wolfratshauser Str. 45, 8023 Pullach; Ernst Gagel, Karwendelstrasse 49, 8000 Munich 70; Rudolf Kalmovicz, Stadtweg 25, 8059 Altenerding, and Alfred Prechtl, Lindenweg 6, 8082 Grafrath, all of Germany

Filed Jan. 21, 1976, Ser. No. 651,103
Claims priority, application Germany, Dec. 11, 1975, 2555887; Sept. 25, 1975, 2542728
Int. Cl.² F25D *17/06*; F25B *13/00*
U.S. Cl. 62—89 **3 Claims**



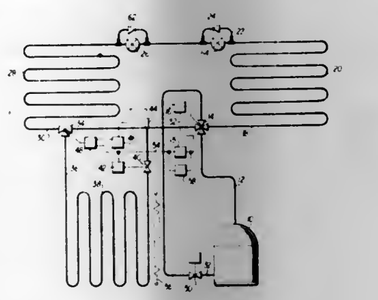
1. Method for the transfer of heat or refrigerant between two separate flows of fluid by means of a heat pump comprising a refrigeration cycle having an evaporator, a compressor, a condenser, and a regulating valve, including the steps of
a. providing heat exchange between the separate flows of fluid and said evaporator and condenser;
b. bringing one of said fluid flows during heating operation and prior to entering the evaporator into heat exchange in a first heat exchanger with the refrigeration cycle; and
c. making said heat exchange in an area between the condenser and the regulating valve.

4,065,938

AIR-CONDITIONING APPARATUS WITH BOOSTER HEAT EXCHANGER

Kjartan A. Jonsson, Ballston Lake, N.Y., assignor to Sun-Econ, Inc., Ballston Lake, N.Y.

Filed Jan. 5, 1976, Ser. No. 646,711
Int. Cl.² F25B *13/00*
U.S. Cl. 62—160 **6 Claims**



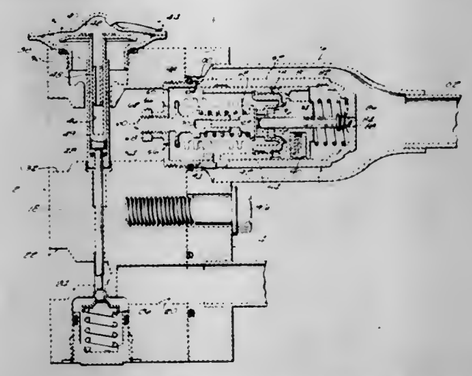
1. Air-conditioning apparatus, comprising:
a first heat exchanger exposed to an environment to be air-conditioned;
a second heat exchanger exposed to an environment from or to which heat is to be absorbed or rejected;
refrigerant compressor means for pumping refrigerant through said apparatus, said compressor means having a suction port;
tubing means interconnecting said heat exchangers and said compressor means for permitting refrigerant flow through said apparatus;
first valve means mounted in said tubing means for directing refrigerant flow through said apparatus;
a booster heat exchanger exposed to an environment from which heat is to be absorbed during the heating mode of the apparatus and connected to said tubing means to receive refrigerant flow at a location in said tubing means upstream of said suction port and to deliver said flow to a portion of said tubing means leading to said suction port; and
second valve means mounted in said tubing means for controlling flow through said booster heat exchanger as a function of temperature of said refrigerant at said suction port for connecting said booster heat exchanger to receive flow from said tubing means when said first valve means is in position to cause said apparatus to withdraw heat from said environment and for disconnecting said booster heat exchanger to prevent flow therethrough when said first valve means is in position to cause said apparatus to reject heat to said environment.

4,065,939

COMBINATION VALVE

James M. Thornbery, Milwaukee, and Charles D. Orth, Cedarburg, both of Wis., assignors to The Singer Company, New York, N.Y.

Filed Jan. 30, 1976, Ser. No. 653,897
Int. Cl.² F25B *41/04*
U.S. Cl. 62—217 **5 Claims**



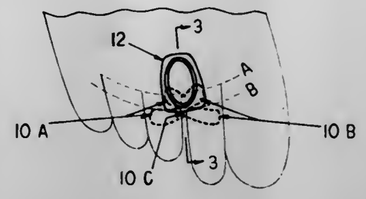
1. A combination valve assembly for regulating refrigerant flow comprising,
a thermostatic expansion valve (TXV) having a body provided with an inlet and an outlet and a valve regulating flow from the inlet to the outlet, a return flow conduit through said body,
an evaporator pressure regulating valve (EPR) having a body provided with an inlet at one end and a pressure sensitive valve arrangement in the body controlling flow from the inlet to the exterior of the body,
the inlet end of said EPR being threaded into the TXV body in communication with the outlet of the return flow conduit with the EPR projecting from the TXV body,
a flat mounting plate fixed on the TXV body and having an aperture through which the EPR projects,
a drawn dome-like housing enclosing the portion of the EPR projecting through said plate aperture and sealingly fixed to said plate to form a chamber receiving the flow from the EPR, and
an outlet from the dome-like housing.

4,065,940

TOE RING BASE AND ORNAMENTAL TOE RING

Murray A. Gordon, 7357 Denny Ave., Sun Valley, Calif. 91352

Filed June 14, 1976, Ser. No. 695,739
Int. Cl.² A44C *15/00*
U.S. Cl. 63—2 **9 Claims**



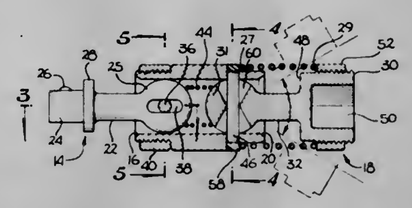
1. A toe ring base to be worn between two adjacent toes of the wearer, said toe ring base comprising: a pair of arcuate-shaped open crescent-like members formed in back-to-back relationship and having an inclined common central portion adapted to fit between two adjacent toes of the wearer and over the upper surface of the interconnecting inclined web of flesh therebetween, and further having respective upper and lower end portions shaped to extend across the upper surface and lower surface only of the same two adjacent toes of the wearer, and with the upper portion also partially resting on the foot immediately behind the toes, the central portion having substantial width in a parallel direction with respect to the extension of the toes to prevent twisting of the toe ring base between the toes, and the upper end portions of the arcuate-shaped members being positioned to the rear of the lower end portions.

4,065,941

UNIVERSAL JOINT

Sadashiro Aoki, Tokyo, Japan, assignor to Koto Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1975, Ser. No. 578,173
Int. Cl. F16d *3/16*
U.S. Cl. 64—7 **7 Claims**



1. A universal joint adapted for use in in impact wrenches comprising:
a. Tubular housing having first and second ends;
b. A first ball joint having an imput shaft with the ball member disposed at one end thereof and an attaching head disposed at the other end thereof, said ball member of said first ball joint coupled to said tubular housing adjacent said first end thereof;
c. A second ball joint having an output shaft with a ball member disposed at one end thereof and a socket head disposed at the other end thereof, siad ball member of said second ball joint coupled to said tubular housing adjacent said second end thereof;
d. An external spring means disposed about said output shaft and journaled between said socket head and said second end of said housing, said external spring means for increasing the flexibility of said second ball joint;
e. On internal spring means within said tubular housing and journaled between said first and second ball members

thereby increasing the longitudinal flexibility of said universal joint.

4,065,942

PANTIES OR THE LIKE AND METHOD OF MANUFACTURING SAME

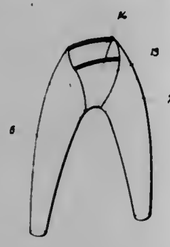
Bohumil Kejnovský, and Miroslav Kopečný, both of Trebic, Czechoslovakia, assignors to ELITEX, Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed Dec. 17, 1975, Ser. No. 641,642

Claims priority, application Czechoslovakia, Dec. 22, 1974, 8872/74

Int. Cl.² A41B 9/02. 9/04

U.S. Cl. 66—177 **11 Claims**



1. In an all-knitted construction for panty hose or similar garments, a first single-knit substantially tubular portion terminating upwardly in a first arcuate selvedge forming one edge of the garment waistband, a second single-knit substantially tubular portion terminating upwardly in a second arcuate selvedge forming an opposite edge of the garment waistband, first and second courses extending in parallel relation between and joined at respective first and second opposite ends thereof to the first and second selvedges to complete the waistband of the garment, and a continuous, arcuate, multi-knit body portion separate from the waistband and extending successively in a downward convex arc between, and joined at its respective opposite ends to, the first and second courses, a lower part of the continuous body portion defining the crotch area of the garment, the transversely opposite surfaces of the body portion being joined to the first and second selvedges.

4,065,943

ROTARY IRONING MACHINE

Jiri Dokoupil, Guckingen; Horst Zäpfel, Karlsruhe; Erich Gabelmann, Karlsruhe, and Helmut Breitwieser, Karlsruhe, all of Germany, assignors to Badische Maschinenfabrik GmbH, Germany

Filed May 27, 1976, Ser. No. 690,502

Claims priority, application Germany, May 30, 1975, 2524018

Int. Cl.² C14B 1/08

U.S. Cl. 69—41 **23 Claims**

1. A machine for applying treatments such as ironing, embossing and the like to sheet materials, comprising:

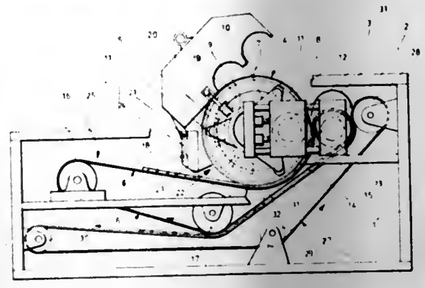
a rotatable, thin-walled hollow cylinder with a treating surface;

a pressure roller adjacent to the treating surface of the hollow cylinder;

a conveyor means passing between the treating surface and the pressure roller for guiding the sheet material therebetween;

radiant heating means associated with the hollow cylinder for heating the treating surface; and

a counter-pressure roller arranged within the hollow cylinder so as to roll on the internal wall surface of the hollow cylinder and, together with the pressure roller, serving to



guide the hollow cylinder, the conveyor means and the sheet material in a gap between the roller.

4,065,944

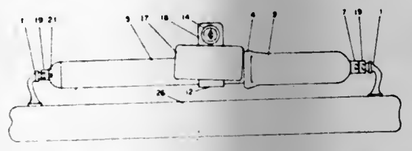
CYCLE PUMP SECURITY SYSTEM

James A. Webster, 100 W. 94th St., New York, N.Y. 10025

Filed Mar. 15, 1976, Ser. No. 667,085

Int. Cl.² E05B 73/00

U.S. Cl. 70—58 **10 Claims**



1. In an improved method for securing a cycle pump where the pump is held between two pump pegs and a flexible tube, having a threaded male member, which is stored in the pump head and where the pump barrel contains a threaded female receptacle for receiving the threaded male member, the improvement which comprises an improved security system comprising

a. placing the pump in a C-shaped holding means containing lips having holes which means is adaptably fitted around the pump;

b. covering the C-shaped holding means with a cover means adaptably fitted to receive the holding means and contact the shoulder of the pump head via forward end lip means;

c. forcing the cover means against the shoulder of the pump;

d. causing the threaded male member of the flexible base to become wedged against one pump peg;

e. causing the threaded female receptacle of the pump barrel to become wedged against the other pump peg;

f. locking the C-shaped holding means by placing a lock through holes contained in the lips.

4,065,945

ANTI-THEFT DEVICE FOR HELMET AND HELMET FOR USE WITH THE DEVICE

Eric Jaulmes, Paris, France, assignor to Ateliers de la Motobecane, Pantin, France

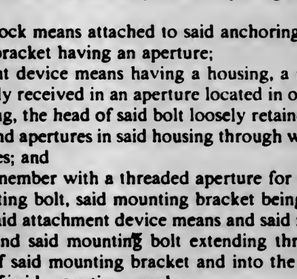
Filed Aug. 2, 1976, Ser. No. 710,477

Claims priority, application France, Aug. 5, 1975, 75.24532; June 29, 1976, 76.19716

Int. Cl.² E05B 73/00

U.S. Cl. 70—58 **9 Claims**

1. An anti-theft device for a helmet for use on a vehicle having a front fork, a frame and locking means for the front fork, the front fork being locked by the locking means whenever the front fork is positioned at a given angle with respect to the frame of the vehicle in order to prevent the vehicle from being stolen, the device comprising, in combination: helmet-securing means for removably holding a helmet to the vehicle; and additional locking means coupled to said fork and con-



trolled by the position of said fork and cooperating with said helmet securing means for preventing removal of a helmet from said securing means whenever the fork is positioned at said given angle in its locked position.

4,065,946

TAMPER PROOF ATTACHMENT SYSTEM

Leslie M. Loynes; Darrel H. Walters, both of Angola, and Clarence A. Penick, Jr., Hudson, all of Ind., assignors to Brammall, Inc., Angola, Ind.

Filed Feb. 18, 1976, Ser. No. 658,907

Int. Cl.² E05B 73/00

U.S. Cl. 70—58 **15 Claims**

1. A tamper proof attachment system comprising an anchoring means;

a cable and lock means attached to said anchoring means;

a mounting bracket having an aperture;

an attachment device means having a housing, a mounting bolt slidably received in an aperture located in one end of said housing, the head of said bolt loosely retained in said housing, and apertures in said housing through which said cable passes; and

a mounting member with a threaded aperture for receiving said mounting bolt, said mounting bracket being secured between said attachment device means and said mounting member, and said mounting bolt extending through the aperture of said mounting bracket and into the threaded aperture of said mounting member.

4,065,947

COMPENSATORY EXPANSION BELLOWS AND ITS PRODUCTION

Paul Mazier, 64, route de Geneve, Rillieux La Pape, France (69140)

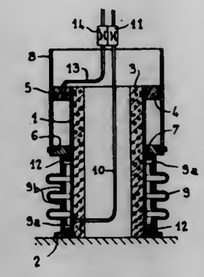
Filed Dec. 3, 1976, Ser. No. 747,103

Claims priority, application France, Dec. 5, 1975, 75.37883

Int. Cl.² B21D 15/06

U.S. Cl. 72—59 **2 Claims**

1. A device for manufacture, by the hydroforming process, of expanding bellows for pipe systems from metal collars, characterised in that it comprises, in combination, a rigid sleeve for placement inside said metal collar and forming an inner annular space therebetween, a fixed ring connected to the outer surface of one end of said sleeve, a displaceable ring mounted concentric to said sleeve and located between said fixed ring and the other end of said sleeve and arranged to slide with a sealing action thereon and contacting an edge of said metal collar, a cylindrical skirt concentric to said sleeve and connected to said displaceable ring and having a length so as to slidably contact said fixed ring with a sealing effect thereby



defining a closed variable volume annular chamber, means for admitting under pressure a fluid into the variable volume annular chamber formed between said sleeve and said skirt and bounded by said rings, and means to regulate the inflow and outflow of liquid into and out of the inner annular space between the collar to be shaped and the sleeve, whereby when said fluid is admitted under pressure to said variable volume annular chamber, said displacable ring and said skirt are displaced relative to said fixed ring thereby deforming the collar into a bellows.

4,065,948

ROLL-FORMING DIES IN A CROSS-ROLLING MACHINE

Hidehiko Tsukamoto, and Nobutaka Maeda, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

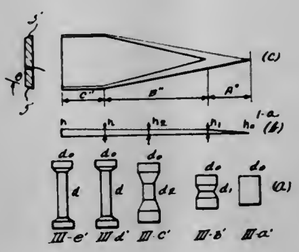
Filed Nov. 3, 1975, Ser. No. 628,558

Claims priority, application Japan, Nov. 25, 1974, 49-134211

The portion of the term of this patent subsequent to May 4, 1993, has been disclaimed.

Int. Cl.² B21H 1/18

U.S. Cl. 72—108 **1 Claim**

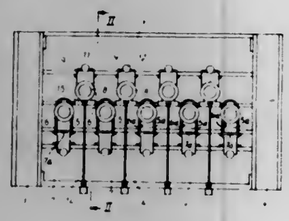


1. Roll-forming dies in a cross-rolling machine, which can stretch by forging a shaft portion of a stepped cylindrical article having a large diameter reduction factor as a roll-forming operation by top portions of said dies proceeds, characterized in that:

each said die comprises: a die top portion contacting with a raw material rod during roll-forming and finishing operations thereof, whose height with respect to a reference surface of said die is successivelyand continuously increased in the direction of advance of the die from a start

point of a depression-spreading portion of the die up to a start point of a finishing portion thereof; and also in that the width of a shaping inclined surface of the roll-forming die is gradually reduced in the direction of the advance of said die from the start point of the depression-spreading portion of said die up to the start point of the finishing portion, whereby a shaped surface having any arbitrary inclination angle can be self-generated.

4,065,949
STRAIGHTENING APPARATUS
Günther Morath, St. Ingbert, Germany, assignor to Moeller & Neumann GmbH, St. Ingbert, Saar, Germany
Filed Dec. 16, 1976, Ser. No. 751,358
Claims priority, application Germany, Dec. 18, 1975, 2557061
Int. Cl.² B21D *1/02*
U.S. Cl. 72—164 **4 Claims**



1. Straightening apparatus comprising: a frame defined by two uprights and upper and lower horizontal supports extending between said uprights, a plurality of vertically fixed upper straightening roll units slidably mounted on said upper horizontal support and including vertically non-adjustable upper straightening spindle housings, a cooperative plurality of lower straightening roll units slidably mounted on said lower horizontal support and including vertically adjustable lower straightening spindle housings, a plurality of tension members interconnecting the upper straightening roll units with said lower horizontal support, the upper end of each tension member being connected with its associated upper roll unit and being slidable therewith, and the lower end thereof being slidably connected with said lower horizontal support, and a tensioning device provided for each tension member arranged so that when loosened said tension members can be slid longitudinally of said upper and lower horizontal supports, and so that when tightened said upper and said lower horizontal supports are substantially rigidly interconnected thereby.

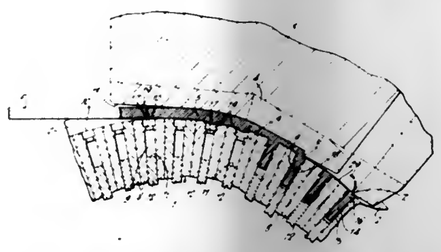
4,065,950
FORMATION OF ARTICLES
Derek Green, deceased, late of Aspatria, England, and Muriel Irene Green, executrix, Carlisle, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Aug. 18, 1976, Ser. No. 715,498
Claims priority, application United Kingdom, Sept. 12, 1975, 37673/75
Int. Cl.² B21C *33/00*
U.S. Cl. 72—191 **15 Claims**

1. A process for the continuous and repetitive production of discrete articles of a desired cross-section from a deformable material, comprising the steps of

introducing the material into a moving and confined passageway,

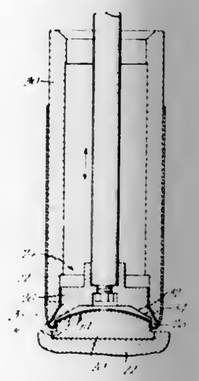
causing the material to be drawn along the passageway by frictional drag of the moving passageway, and

by blocking said passageway at a position spaced from the position of introduction of the material, compressing said material and causing it to enter into successively presented



chambers shaped to produce articles of the desired configuration.

4,065,951
SPLIT PUNCH FOR DRAWING AND IRONING CONTAINERS
Seung W. Lyu, Homewood, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed Nov. 3, 1976, Ser. No. 738,479
Int. Cl.² B21D *22/00*
U.S. Cl. 72—349 **7 Claims**



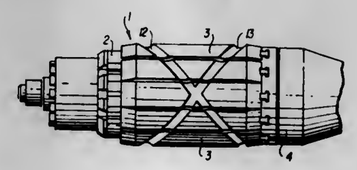
1. Apparatus for forming a wall of a circular container including a bottom wall and a sidewall comprising a die block adapted to engage an outer surface of said bottom wall and a cooperating die adapted to engage an inner surface of said bottom wall and sidewall, said cooperating die including a female portion cooperating with said die block and having a peripheral lip adapted to be placed in overhanging relation to the periphery of said die block, said female portion having a peripheral inwardly directed surface extending perpendicular to an axis for said female portion to define a peripheral ledge above said peripheral lip, said female portion having an inclined surface extending from an inner edge of said inwardly directed surface, said cooperating die including a cylindrical member having an end surface corresponding to and engaging said inwardly directed surface and said inclined surface so that said ledge defines a support extending perpendicular to the path of relative movement of said die block and said cooperating die.

4,065,952
PULL THROUGH BLIND RIVETING TOOL
David John Holloway, Aldridge, England, assignor to USM Corporation, Boston, Mass.
Filed Feb. 14, 1977, Ser. No. 768,178
Int. Cl.² B21J *15/34*
U.S. Cl. 72—391 **8 Claims**



1. A blind riveting tool of the type including a reusable mandrel carrying a plurality of rivets to be successively set thereby, the tool comprising an elongated barrel, abutment members movably mounted on the barrel and closeable to engage a rivet head during rivet setting, means engageable with the stem of the mandrel to pull it in the setting operation, means for advancing the rivets along a stem of the mandrel to position the leading rivet beyond the abutment members, and means for urging the next to leading rivet and those behind it rearwardly so that the abutment members can close to embrace the mandrel behind the leading rivet without interference from the next one.

4,065,953
MECHANICAL TUBE EXPANDER
Hermann Josef Frentzen, Monchengladbach; Richard Gerretz, Viersen, and Ewald Henn, Monchengladbach, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Nov. 15, 1976, Ser. No. 742,040
Claims priority, application Germany, June 15, 1976, 2627172; July 16, 1976, 2632672
Int. Cl.² B21D *31/04*
U.S. Cl. 72—393 **18 Claims**



1. A mechanical expander for an elongated metallic pipe formed with an inside welded spiral seam and with an inside welded cross seam, comprising:

an expandable head constructed to allow a pipe to assume a circumjacent relationship therewith,

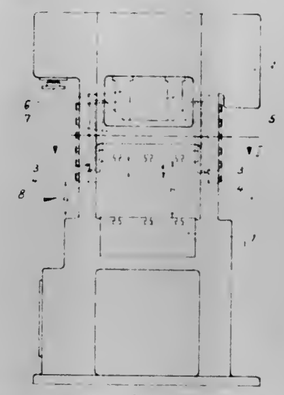
said head including an outer working surface,

means for displacing said working surface relative to the circumjacent pipe to impose an expanding force on the inside of the pipe,

a first spiral slot in said working surface formed and arranged to coincide with the welded spiral seam of the pipe, and

a second spiral slot in said working surface formed and arranged to coincide with the welded cross seam of the pipe.

4,065,954
RAM-GUIDING FRAME
Martin Gotz, Sersheim, Germany, assignor to Erich Grau Stanzwerk fur Elektrobleche, Sersheim, Germany
Filed Nov. 12, 1975, Ser. No. 631,064
Claims priority, application Germany, Nov. 20, 1974, 2454960
Int. Cl.² B21J *13/04*
U.S. Cl. 72—456 **7 Claims**



1. In a machine for processing stock comprising the combination of a frame construction having a base lower platen and crosshead members, tool holding means adapted to have a first tool detachably fixed thereto, and a ram having a tool holding portion adapted to have a second tool detachably fixed thereto, said ram adapted to move said tool holding portion towards said tool holding means, the improvement which resides in a ram guiding frame being symmetrical in cross-section and closely embracing said ram, said guiding frame having smaller dimensions than the frame construction and being centrally disposed relative thereto, within the depth thereof, said guiding frame comprising forward and rear members which leave free a first space through which said tool-holding means and said tool-holding portion are accessible, said forward and rear members having end side portions which leave free a second space through which said stock to be processed can be fed into position between said first and second tools, and ram guiding means terminating short of said second space, said guiding means detachably connected to said end side portions, to peripherally close said guiding frame above first and second spaces, and form an integral part thereof.

4,065,955
METHOD AND APPARATUS FOR FORMING A UNIFORM FELTING NEEDLE BARB
Edson Perkins Foster, Cato, Wis., assignor to Foster Needle Company, Inc., Manitowoc, Wis.
Filed June 15, 1976, Ser. No. 689,393
Int. Cl.² B21G *1/06*
U.S. Cl. 72—476 **4 Claims**

1. A tool for forming a barb in the blade of a felting needle, said tool including a swaging member having a throat-defining portion, a spur-defining portion, a face-forming portion, and a kickup controlling portion, said portions providing a cavity in the tool with the face-forming portion disposed between the throat-defining portion and the spur-defining portion and against which cavity the needle-blade material flows when in use whereby to create, in the fiber-engaging surfaces of a felting needle, a throat and a barb defined precisely by the outline of the cavity, said portions have smoothly contoured meeting edges between adjacent surfaces and having precisely

determined angles therebetween so that the blade material of the needle completely fills and substantially fully conforms to



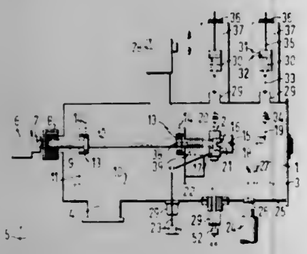
the shape and outline of the cavity adjacent the throat-, spur-, and face-defining portions, but flows freely in and only partially fills the kickup-controlling portion.

4,065,956

VARIABLE LOAD, HIGH VACUUM SHAFT BEARING TEST APPARATUS

Hermann Trattner, Munich; Kuno Saatze, Emmering, and Adolf Bauereiss, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 29, 1976, Ser. No. 681,725
Claims priority, application Germany, May 9, 1975, 2520719
Int. Cl.² G01M *13/04*
U.S. Cl. 73—9 **3 Claims**



1. An apparatus for testing a shaft bearing under high vacuum and variable loads, comprising:

a high vacuum chamber having peripheral walls;

a rotatable shaft carried on fixed, spaced-apart shaft support bearings within said chamber and having a magnetic clutch on one end thereof coupled through said wall of said chamber to a drive means, said shaft having a test end opposite said clutch end upon which is mounted said test bearing;

a test bearing mounting block carried circumjacent said test end of said shaft upon said test bearing;

a bearing friction torque measuring means in said chamber engaging said mounting block and restraining said block from rotational mvoement;

a tractive means for applying a load to said mounting block axially of said shaft, said tractive means extending through said vacuum chamber wall at a vacuum seal and to a load control means outside said chamber for varying said axial load on said test bearing;

the test end of the shaft extending in a stub axially beyond said test bearing opposite said fixed bearings; and

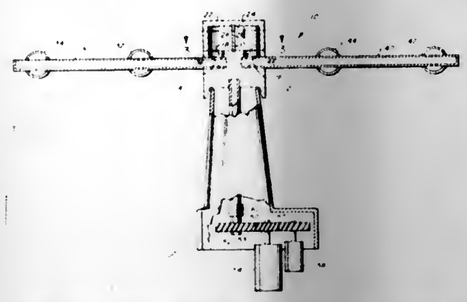
an induction coil spaced radially about the shaft stub, whereby the stub and test bearing may be heated.

4,065,957

FLUID SPEED INDICATING APPARATUS AND DENSITOMETER

John L. Beilman, Lancaster, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Nov. 15, 1976, Ser. No. 742,142
Int. Cl.² G01F *1/50*; G01N *9/34*
U.S. Cl. 73—30 **5 Claims**



1. A fluid speed indicating apparatus and densitometer, comprising:

A pair of spaced generally coaxially aligned, tubular hollow arms mounted for rotation about an axis intermediate said arms;

means for rotating said pair of arms at a substantially constant angular speed about said axis;

two fluid pressure sensing means radially asymetrically located with respect to said axis and attached to respective arms of said pair of arms; and

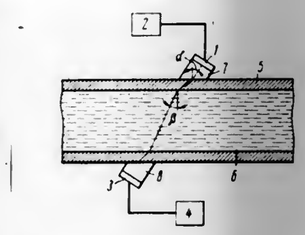
fluid pressure responsive means operatively connected to said two fluid pressure sensing means for sensing the steady state pressure differential between said two fluid pressure sensing means wherein said pressure differential is a function of rotational velocity and fluid density.

4,065,958

METHOD OF CONTROLLING PHYSICAL CHARACTERISTICS OF FLUID MEDIUM

Eleonora Dmitrievna Krylova, Beskudnikovsky pereulok, 32, korpus 2, kv. 32, and Nikolai Ivanovich Brazhnikov, ulitsa Bebelya, 3, korpus 11, kv. 48, both of Moscow, U.S.S.R.

Filed Oct. 18, 1976, Ser. No. 733,384
Int. Cl.² G01N *29/02*
U.S. Cl. 73—53 **2 Claims**



1. A method of controlling physical characteristics of a fluid medium by ultrasonic vibrations comprising the following steps: transmitting said ultrasonic vibrations into said fluid medium under control through a sound conducting medium within a pipe and through a wall of said pipe at an angle α, other than 90°, to said pipe exterior, said angle α being determined from the relationship:

$$\alpha = \arcsin C_o/(\sqrt{2}\cdot C)$$

C_o is the velocity of propagation of said ultrasonic vibrations in said sound conducting medium, and

C is the velocity of propagation of transverse ultrasonic vibrations within the material of said wall of said pipe, the frequency f of said vibrations being determined from the relationship:

$$f = (n\cdot C)/(\sqrt{2}\cdot d)$$

where

n is an integer, and

d is the thickness of said wall of said pipe; and

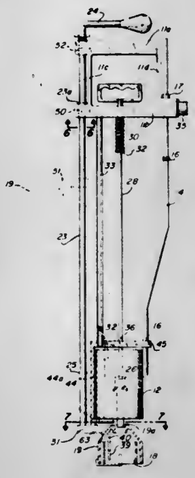
measuring parameters of said ultrasonic vibrations which have passed through said fluid medium under control and through another sound conducting medium, with the purpose of using the value thereof to determine the value of said characteristic being controlled.

4,065,959

PORTABLE VISCOMETER APPARATUS

Harold W. Richardson, Denver, Colo., assignor to Richmore Company, Denver, Colo.

Filed Dec. 8, 1976, Ser. No. 748,632
Int. Cl.² G01N *11/06*
U.S. Cl. 73—56 **6 Claims**



1. A field or portable viscometer, comprising:

a. portable elongated frame means;

b. support means at one end of said frame means for releasably supporting an open top disposable cup for receiving a fluid for sampling, the disposable cup having a single small opening the bottom thereof;

c. releasable support means on said frame means for holding a sample cup and for positioning the sample cup beneath the disposable cup for receiving fluid draining from the disposable cup;

d. drain means, including a predetermined sized openings, for draining the fluid from the disposable cup to the sample cup;

e. valve means for opening and closing said drain means; and

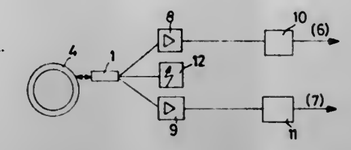
f. means for measuring the temperature of the fluid and for timing the flow of a known amount of the fluid through the sized opening.

4,065,960

METHOD AND APPARATUS FOR MONITORING THE OPERATION OF ULTRASONIC TESTING OF TUBES AND BARS

Werner Grabendorfer, Bensberg-Refrath; Herbert Vogt, Burgwedel; Harri Haacke, Dusseldorf; Harry Kuhn, Langenfeld; Reinhard Pawelletz, Erkrath-Unterbach, and Karl Ries, Mulheim, all of Germany, assignors to Krautkramer GmbH, Cologne and Mannesmann Aktiengesellschaft, Dusseldorf, both of, Germany

Filed Dec. 13, 1976, Ser. No. 749,603
Int. Cl.² G01N *29/04*
U.S. Cl. 73—627 **22 Claims**



1. The method for monitoring one or more transmit transducer probes and amplifiers in an ultrasonic pulse-echo immersion test apparatus when testing tubes or round bars comprising:

transmitting cyclically a search pulse of ultrasonic energy through a liquid coupling path into a workpiece having a curved surface, the angle of incidence of said ultrasonic energy upon the workpiece surface deviating from normal to cause the search pulse to propagate in a circumferential direction in the workpiece;

sensing the occurrence of scattering acoustic energy arising from the scattering of said search pulse energy at the curved workpiece surface;

converting said scattered energy to an electrical signal and amplifying said electrical signal, and

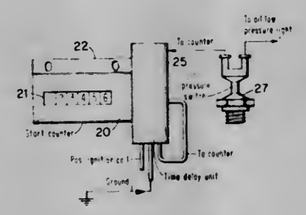
providing a signal when said scattered energy responsive electrical signal amplitude falls below a predetermined threshold value.

4,065,961

ENGINE ACTUATED INSTRUMENTATION AND A FUEL SAVING AND DIAGNOSTIC SYSTEM BASED THEREON

Robert T. Crew, Jacksonville, Fla., assignor to C & E Enterprises, Inc., Jacksonville, Fla.

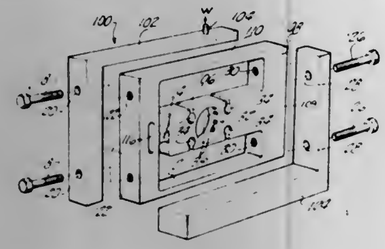
Filed Jan. 11, 1977, Ser. No. 758,489
Int. Cl.² G01M *15/00*
U.S. Cl. 73—117.3 **10 Claims**



1. In a system for automotive fuel cost tracking and engine diagnostic determination, a visual indicating means and a first recording register having means to connect with an engine and other means to mount the same within the view of the driver, said indicating means being movable from a position showing imminent, and then actual departure of the engine from a lean part throttle mixture to a rich full throttle mixture as the throttle is opened and the load on the engine is increased to a degree wasting fuel, and, for counting each occurrence of such throttle operation, and a second recording register with means

connecting with the engine to record each engine start, said system including the step of determining accountability for poor miles per gallon by comparing the count on the first said register with the count on said second register.

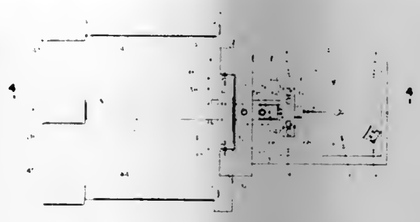
4,065,962
LOAD CELL
Ralph S. Shoberg, Farmington Hills, Mich., assignor to GSE, Inc., Farmington Hills, Mich.
Continuation of Ser. No. 518,382, Oct. 29, 1974, abandoned. This application Mar. 19, 1976, Ser. No. 668,538
Int. Cl.² G01L 5/00
U.S. Cl. 73—141 A **12 Claims**



1. A load cell comprising: a solid body of high modulus of elasticity material having end portions and laterally opposite exterior faces; means for securing said end portions to a load receiving and reference structure respectively to tend to laterally displace said end portions by said load; a first major aperture bored through the faces of the body to define a first interior cylindrical surface fully bounded by said body and mediate said end portions; a plurality of second minor apertures bored through the faces of the body including opposed pairs of apertures disposed on either side of the longitudinal axis of said body and about said major aperture to define second interior surfaces adjacent but spaced from the first aperture; means allowing bending of the portions of the body mediate said minor and major apertures by said lateral displacement of said end portions, said means including means relieving said second interior surfaces to an edge of the body; said portions of said body mediate said first aperture and each of said oppositely disposed minor apertures defining first and second paths transmitting an applied load through the body on opposite sides of the longitudinal axis, each path having therein first and second stress concentrating flexure areas comprised of said portions of said body mediate said major and minor apertures; strain sensitive gage means mounted on said first interior surface at each of said flexure areas for producing resistance changes in response to the bending strain in said load transmitting paths as the body is subjected to said load; bridge circuit means connecting each of said gages into a bridge circuit having two legs each to be connected across a source of potential, each leg being made up of the series combination of a gage in one load path and a gage in the other load path which is directly opposite on the body whereby axial loading strains and bending moment strains of said flexure areas are additive in effect, the bridge circuit means having output terminals in the legs and between the gages thereof from which an electrical signal may be derived as an indication of the loading of said body.

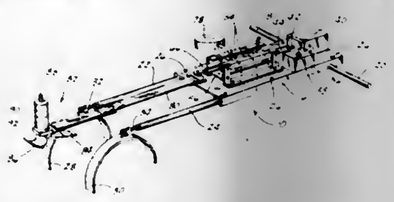
4,065,963
TENSION METER
Erwin J. Saxl, Pin Hill, Harvard, Mass. 01451
Filed July 8, 1976, Ser. No. 703,591
Int. Cl.² G01L 5/04
U.S. Cl. 73—144 **6 Claims**

1. A tension meter comprising
a base
a central feeler arm mounted on said base for movement of at least a portion thereof relatively thereto
sensing means mounted on said base for sensing movement of said central feeler arm movable portion
a pair of parallel side feeler arms positioned on opposite sides of said central feeler arm and generally parallel thereto and defining a side feeler arm plane
mounting means for said side feeler arms including a side feeler arm supporting plate mounted on said base for pivotal movement about an axis parallel to said side feeler arm plane, said plate being pivotally movable between an operative position in contact with said base and an inoperative position away from said base and supporting said side feeler arms for simultaneous pivotal movement on



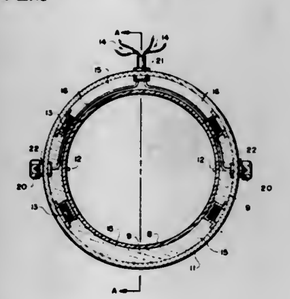
said base away from said central feeler arm into inoperative position for receiving a sheet or strand to be measured and toward said central feeler arm in operative position to measure the tension of said sheet or strand by moving the movable portion of said central feeler arm, and
releasable locking means for locking said plate in contact with said base with said side feeler arms in said operative position, said releasable locking means including a transverse pin member mounted on said plate and an operating lever pivotally mounted on said base, said operating lever being pivotally movable toward said base into operative position and having a hook portion engaging said pin member to move said plate into its operative position in contact with said base.

4,065,964
PORTABLE MACHINE FOR TESTING PROTECTIVE COATINGS
Richard D. Cunningham, Omaha, Nebr., assignor to Northern Natural Gas Company, Omaha, Nebr.
Filed Jan. 24, 1977, Ser. No. 754,027
Int. Cl.² G01N 3/56
U.S. Cl. 73—150 A **10 Claims**



1. A portable machine for testing protective coatings, comprising,
a portable support means,
positioning means connected to said support means for positioning said support means relative to the object having the protective coating thereon,
a blade means for severing the protective coating from said object,
an elongated member connected at one end to said blade means,
power means on said support means operatively connected to the other end of said elongated member for moving said elongated member and said blade means towards said support means to sever the protective coating from said object,
and force readout means operatively connected to said power means for indicating the amount of force required to sever the protective coating from the object.

4,065,965
ELECTROMAGNETIC FLOWMETER HAVING REMOVABLE ELECTRODE LEADS
Thomas Liddon Ackerman, Farmington; Mathew Martin Barbato, and Eugene Vidmantas, both of Greece, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed July 1, 1976, Ser. No. 699,670
Int. Cl.² G01F 1/58
U.S. Cl. 73—194 EM **17 Claims**



1. An electromagnetic flowmeter having a flow tube, spaced electrodes, and electrode lead means in said flow tube:
said flowmeter also having bore means in said flow tube for having liquid flow therethrough, magnetic field coil means, and measuring circuitry external to said flow tube, said measuring circuitry being connected by said lead means to said electrodes for measuring voltages arising at said electrodes in response to a flow of conductive liquid through said bore means and between said electrodes while said magnetic field coil means creates a magnetic field in said flow, transverse thereto, and between said electrodes;
said flowmeter also having the improvement including conduit means in said flow tube, said conduit means having said electrode lead means removably contained therein; and said conduit means exiting from the flow tube to the exterior thereof for providing access to said electrode lead means from the exterior of said flow tube for removing said electrode lead means from said flow tube;
there being potting material encapsulating said magnetic field coil means and said conduit means, said electrode lead means being kept by said conduit means from being contacted by said potting material, and there being electrode housings in said flow tube, said electrode housings housing and providing external access to said electrodes, and keeping said electrodes from contacting said potting material; said electrode housings also having connections to said conduit means and having said electrode lead means extending through such connections and thereinto.

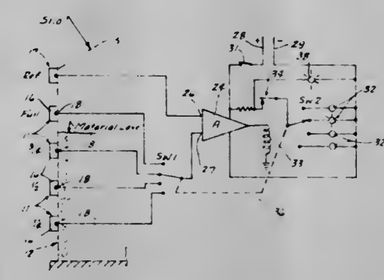
4,065,966
COMPRESSIBLE FLUID VELOCITY MEASURING INSTRUMENT
Crawford R. Meeks, Jr., 7883 Flight Place, Westchester, Calif. 90045
Continuation-in-part of Ser. No. 577,235, May 13, 1975, abandoned. This application Mar. 5, 1976, Ser. No. 664,276
Int. Cl.² G01F 1/28
U.S. Cl. 73—228 **4 Claims**

1. A velocity measuring instrument comprising:
a case for immersion in a flowing fluid and having an entrance aperture for the entrance of said fluid, a variable flow area outlet aperture for the exit of said fluid, and a window;
a lightweight, counterweighted vane assembly pivotally mounted for rotation within said case and having a vane disposed adjacent said entrance aperture and responsive to said fluid entering therethrough, and having a pointer adjacent said window; and
a spring coupled to said vane assembly for controlling the movement thereof;



said variable flow area outlet aperture being contoured to vary the flow area of said outlet aperture substantially exponentially as a function of the position of said vane assembly for linearizing the movement of said vane assembly in response to the pressure of said fluid on said vane;
the inside of said case being contoured on both sides of said outlet aperture along the arc described by said vane as said vane assembly rotates to provide a variable clearance between said vane and the inside of said case to permit a larger area aperture at the high flow rate end.

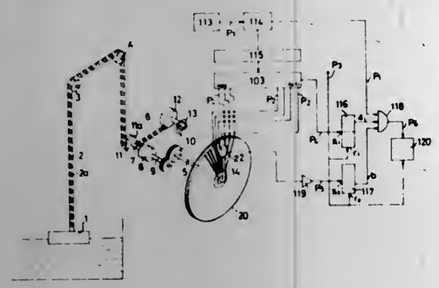
4,065,967
SILO LEVEL INDICATING SYSTEM
John T. Beeston, Des Moines, Iowa, assignor to Robert E. Kirkpatrick, Humboldt, Iowa and Curtis C. Weaver, Polo, Ill.
Filed July 29, 1976, Ser. No. 709,765
Int. Cl.² G01F 23/22
U.S. Cl. 73—295 **9 Claims**



1. A method for indicating the level of material in a silo or the like having an upstanding sidewall, comprising:
a. mounting a plurality of temperature sensors externally of the silo and in a heat transfer relation with the outside surface of the sidewall at vertically spaced portions thereon including mounting a first one of said sensors above the top level of material in the silo,
b. a thermal insulation enclosure for thermally insulating each of the sensors and the respective portions of the outside surface of the sidewall from the ambient temperature, whereby the temperature at a sensor outside the silo and the temperature inside the silo opposite the respective wall portion are substantially the same,
c. producing a reference signal indicative of the temperature at said first sensor and communicating said reference signal to a level indicator means,

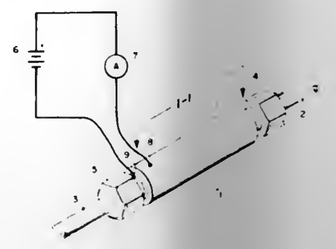
d. producing a signal indicative of the temperature at a selected one of the other sensors and communicating said signal to the level indicator means,
e. comparing said signal with said reference signal in the level indicator means, and
f. visually indicating the existence of a temperature difference between the temperatures at said first sensor and said selected sensor.

4,065,968
LIQUID LEVEL MEASURING APPARATUS
Yoshihiko Sunagawa, Kanagawa, Japan, assignor to Tokyo Keiso Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 29, 1976, Ser. No. 755,395
Claims priority, application Japan, Dec. 30, 1975, 50-159543
Int. Cl.² G01F *23/12*
U.S. Cl. 73—313 **3 Claims**



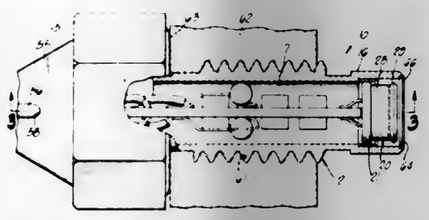
3. A liquid level measuring apparatus comprising:
a. a mechanism to convert the change in the liquid level into the rotational movement;
b. an insulating stationary disc, through the center of which a rotary output shaft of said mechanism extends, a large number of electric conductors designed to provide a magnetic field on being energized being provided radially on one side of said disc;
c. a magneto-sensitive head, provided on an arm which forms a part of said rotary output shaft and adapted to rotate together with said rotary output shaft in parallel with said electric conductors provided on said disc in order to detect the magnetic field provided by said electric conductors and to generate a stop pulse;
d. a clock pulse generator (113) and a counter circuit (114) to which a signal from said clock pulse is appled;
e. a decoder (115) to be operated by a signal from said counter circuit;
f. a pulse current output circuit (103) adapted to consecutively energize the electric conductors one by one provided on said disc on receipt of a signal from said decoder;
g. a flip-flop circuit (116) to which a reset pulse (P3) and a start pulse (P4) which is in synchronized relation with the energization of said basic electric conductor are applied;
h. a flip-flop circuit (117) to which a reset pulse (P3) and a stop pulse (P5) from said magneto-sensitive head are applied;
i. an "and" gate circuit to which outputs *a,b* each from said flip-flop circuits (116), (117) are applied; and
j. a digital indicator to be operated on receipt of an output from said "and" gate circuit.

4,065,969
LOW IMPEDANCE, HIGH CURRENT PRESSURE TRANSDUCER
Kendall L. Dinwiddie, 543 Jackson Drive, Palo Alto, Calif. 94303
Filed May 4, 1976, Ser. No. 682,999
Int. Cl.² G01L *9/06*
U.S. Cl. 73—727 **9 Claims**



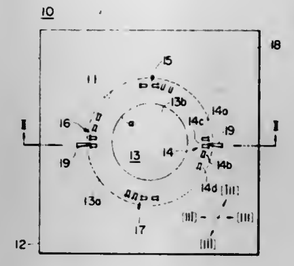
1. A device for producing a response proportional to pressure within a fluid-transporting conduit comprising:
a conductive inner tubular member having an inlet and an outlet adapted at the inlet and outlet to connect to the fluid transporting conduit;
a coating of piezo-conductive material applied to the exterior surface of the inner tubular member; and
a conductive outer tubular member closely fitting and contacting the coating of piezo-conductive material.

4,065,970
DIFFUSED SEMICONDUCTOR PRESSURE GAUGE
Leslie B. Wilner, Palo Alto, Calif., assignor to Becton, Dickinson Electronics Company, San Juan Capistrano, Calif.
Filed May 17, 1976, Ser. No. 687,204
Int. Cl.² G01L *9/06*
U.S. Cl. 73—727 R **29 Claims**



1. In a pressure transducer,
an edge restrained diaphragm of insulating material having portions of one surface thereof partially etched away to provide a thin portion having a pair of islands or thickened portions projecting therefrom to thereby define a longitudinal groove between the islands, whereby a flexure is formed between the islands, and
electrical strain gauge means formed by a dopant in solution at the flexure, whereby the electrical resistance of said gauge means varies as a function of the pressure across said diaphragm.

4,065,971
SEMICONDUCTOR PRESSURE TRANSDUCER
Michitaka Shimazoe; Kousuke Nakamura; Yasuo Matsushita; Satoshi Shimada; Kazuji Yamada, all of Hitachi, and Yukio Takahashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan
Filed July 1, 1976, Ser. No. 701,531
Claims priority, application Japan, July 4, 1975, 50-81778
Int. Cl.² G01L *9/06*
U.S. Cl. 73—727 **6 Claims**



1. A semiconductor pressure transducer comprising:
a monocrystalline semiconductor diaphragm, only the perimeter of which is fixed to a base so that a central portion of the diaphragm produces in a radial direction thereof a first strain with a polarity opposite to that of a second strain produced in a portion defined between the central portion and the perimeter, in response to a mechanical pressure applied to the diaphragm; and
at least one set of semiconductor resistances of one conductivity type and comprising a first pair of resistances making up one pair of opposing arms of a resistance bridge and a second pair of resistances making up the other pair of opposing arms of said bridge;
wherein the first and second pairs of resistances extend along the same crystal axis system of the diaphragm, the extending direction of the first pair of resistances forming an angle other than 90° with that of the second pair of resistances; and
wherein each semiconductor resistance formed in said diaphragm is formed only in said surface portion of said diaphragm defined between its central portion and its perimeter.

4,065,972
METHOD AND APPARATUS FOR UNDERGROUND DEPOSIT DETECTION
Fred F. Holub, Schenectady, N.Y., and H. Ward Alter, Danville, Calif., assignors to Terradex Corporation, Walnut Creek, Calif.
Continuation of Ser. No. 545,073, Jan. 29, 1975, abandoned. This application May 24, 1976, Ser. No. 689,710
Int. Cl.² G01N *1/26*; G01V *9/00*
U.S. Cl. 73—421.5 R **13 Claims**



1. A method of geophysical prospecting for underground minerals having specific gases associated thereto, said gases normally migrating to the surface of the earth, said method comprising the steps of:
a. Forming a plurality of shallow holes in the surface of the earth arranged in a predetermined pattern;
b. Planting a plurality of gas sample containers in said holes, each container having an inlet adjacent the bottom portion thereof and each container including a gas collection chamber having a second inlet in communication with the interior of said container and means for admitting said gases into said chamber at a predetermined flow rate;
c. Retaining said containers in said holes for a predetermined time period to enable said chamber to collect a time integrated sample of said gases migrating into said container through said inlet over said time period; and
d. Removing said containers from said holes after said predetermined time period has elapsed for subsequent analysis of said time integrated sample.

4,065,973
LIQUID SAMPLER
Abraham Gordon, Teaneck, N.J., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Dec. 10, 1976, Ser. No. 749,556
Int. Cl.² G01N *1/12*
U.S. Cl. 73—423 A **4 Claims**



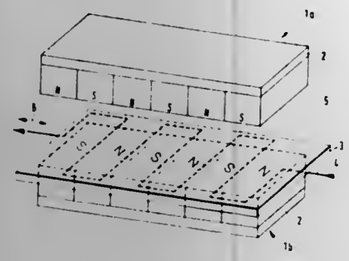
1. A sampler, comprising a liquid sampling probe, a first element, a second element having a vertical axis for movement therealong and threadedly cooperating with said first element, said second element supporting the probe for movement therewith, one of said elements comprising a nut, reversible means for rotating said first element in a first direction and a second direction to move said second element upwardly and downwardly, respectively, along said vertical axis and to rotate said second element to first and second angular positions, respectively, keying means for limiting the rotational movement of said second element during at least part of the upward and downward movement of said second element along said axis while in said first and second angular positions, first means and second means for limiting rotational movement of said second element to said first and second angular positions, respectively, and during rotation of said first element in said second direction, and means for positioning said second means upon rotation of said second element to said second angular position and operation of said reversible means to rotate said first element in said second direction.

4,065,974

SPRING SYSTEM COMPRISING AN ADJUSTABLE SPRING

Hartmut Euer, Gauting, and Gerhard Bartek, Munich, both of Germany, assignors to Apparatebau Gauting GmbH, Gauting, Germany

Filed Nov. 20, 1975, Ser. No. 633,846
Claims priority, application Germany, Nov. 22, 1974, 2455355; May 13, 1975, 2521175
Int. Cl.² G01D *11/10*
U.S. Cl. 73—430 **4 Claims**



1. A spring system having an adjustable spring force comprising at least one magnet, said magnet having a magnetic field, at least one conductor passing direct current being disposed in said magnetic field, said conductor being displaceable relative to said magnet, said magnet being formed by a number of pole pairs disposed along the path of displacement of said conductor, each of said pole pairs enclosing an air gap, having a predetermined cross-section and a predetermined spacing from another of said pole pairs, said direct current carrying conductor displaceable in said air gaps being a wire bent substantially in undulative form in the direction of displacement, and coiled so as to form a number of windings disposed one behind the other in the direction of the displacement, said number of windings being equal to said number of pole pairs, each of said windings having at least one turn and having substantially the same cross-section and spacing from another of said windings as the cross-section and spacing of each of said pole pairs, first and second magnetic fluxes being generated by the direct current in said wire and by the magnetic pole pair having said wire disposed therebetween, respectively, said first and second magnetic fluxes being of equal directions, said second fluxes between poles of adjacent pole pairs being opposite to one another, the undulating wire having a half-wave spacing substantially equal to the spacing between adjacent pole pairs.

4,065,975

APPARATUS FOR MEASURING THE SLIP OF LOCOMOTIVE WHEELS AND PREVENTING SLIDING THEREOF

Jean Giessner, Villneuve le Comte, France, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed June 14, 1976, Ser. No. 695,539
Claims priority, application Switzerland, June 13, 1975, 7669/75
Int. Cl.² G01P *3/56*
U.S. Cl. 73—510 **6 Claims**

1. Apparatus for measuring wheel slip and to prevent excessive sliding of the wheels of a locomotive and which produces a control signal in accordance with the variation in velocity between translatory speed of the locomotive and the circumferential velocity of sliding sheels, said control signal being used for governing the speed of the locomotive, said apparatus comprising:

a system including a coupling loop for determining the effective acceleration of the locomotive, said system comprising a comparator into one input of which is fed a signal corresponding to the acceleration of a wheel and wherein the output signal from said system is fed back to the other input of said comparator and wherein the following seriately connected circuit components are included between said comparator and the output of said system.

1. a switch which opens only in the event of wheel slip,
2. an integrator with output storage,
3. a multiplier having one input thereof connected to the output store of said integrator and to the other input of which is connected a signal derived from the locomotive motor current and which is proportional to its



pulling force, said system being in balance when said switch is in its closed state and which is indicative of an effective acceleration of the locomotive equal to that of the wheel acceleration, means for integrating the difference between a signal

representing the output from said system by which the effective acceleration of the locomotive is obtained and a signal representative of wheel acceleration to produce said control signal for governing the speed of the locomotive,

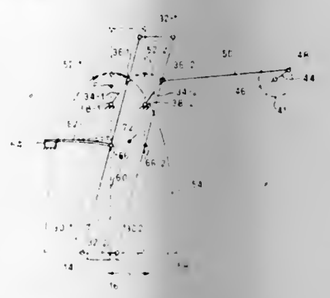
and means for blocking transmission of said difference signal to said integrating means in the absence of wheel slip.

4,065,976

MECHANICAL SCANNING METHOD AND APPARATUS FOR ULTRASONIC IMAGING, OR THE LIKE

Jon C. Taenzer, and Steven H. Johnson, both of Palo Alto, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Sept. 20, 1976, Ser. No. 724,330
Int. Cl.² G01N *29/00*; F16H *21/16*
U.S. Cl. 73—633 **21 Claims**



1. A scanning mechanism for mechanically scanning ultrasonic transducer means, or the like, comprising,

a parallelogram linkage comprising a pair of parallel arms interconnected by a pair of parallel connecting links pivotally connected thereto,

means for rigidly attaching transducer means to one of the connecting links, and

means for driving the parallelogram linkage with relative pivotal movement of the parallel arms and connecting links in the plane of the linkage for scanning movement of the one connecting link and attached transducer means.

5. A mechanism for converting arcuate motion to straight line motion comprising,

an arm,

means for supporting the arm adjacent one end thereof for arcuate motion along a portion of a generally elliptical path adjacent a focus of the ellipse,

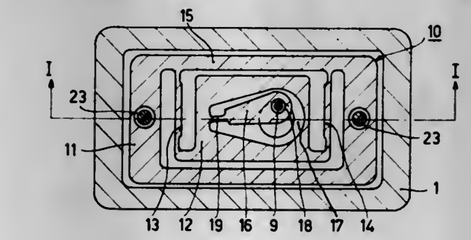
means for constraining the arm intermediate the opposite ends thereof to movement along a substantially straight line path along the major axis of the ellipse whereby the arm opposite said one end is movable along a substantially straight line path along the minor axis of the ellipse.

4,065,977

RECIPROCATING VIBRATING DRIVE

Leo Buzzi, and Peter Malobabic, both of Klagenfurt, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 8, 1976, Ser. No. 703,448
Claims priority, application Austria, July 28, 1975, 5835/75
Int. Cl.² F16H *21/18*
U.S. Cl. 74—49 **7 Claims**



1. A vibratory bridge assembly for use in producing reciprocating vibratory movement of a load in response to rotation of an input eccentric, which comprises a plate, means for mounting said plate to allow reciprocating movement thereof in a given direction, means for connecting a load to said plate for movement the same as the plate movement, and means for moving said plate in reciprocating motion in response to rotation of an eccentric pin having a longitudinal axis, said mounting means comprising a frame having two attachment portions and two elongated hinge strips each having a first end and a second end, said hinge strips being elongated in a direction transverse to the longitudinal axis of said eccentric pin and transverse to said given direction of reciprocating movement, the first end of each hinge strip being integrally connected to the plate and the second end of each hinge strip being integrally connected to its respective frame attachment portion.

4,065,978

SYNCHRONIZED DRIVE AND CABLE HANDLING SYSTEM FOR A ROTATIONAL MACHINE ELEMENT

Henry Meresz, Wheeling, and Michael N. Tranquilla, Elmhurst, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Sept. 7, 1976, Ser. No. 720,564
Int. Cl.² F16C *1/02*
U.S. Cl. 74—82 **12 Claims**

1. In a machine of the type incorporating a driven rotational element, upon which element are carried devices to which a medium is required to be supplied through cables attached at one end thereto, the other end of said cables terminating externally of the rotational element, an improved synchronized drive and cable handling system for the rotational element by which the cables are smoothly and reliably fed and wound thereon at a substantially constant tension during rotation of the element, said improvement comprising: a plurality of pulleys grouped into first and second spaced-apart idler pulley sets, the number of pulleys in each said set differing by one, and about which pulley sets a cable is wound to form an elongated loop intermediate the cable ends with one end of the cable extending from said loop and being attached to a device carried by the rotational element, and with the other end of the cable extending from said loop and terminating externally of the rotational element; all pulleys of said first pulley set being disposed about a first axis; all pulleys of said second pulley set being disposed about a second axis; translating means for varying the distance between said first and second axes and thus



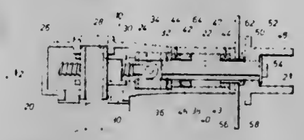
varying the length of said elongated loop, whereby the cable can be played-out and taken-in with respect to the rotational element; a drive means for causing rotation of the rotational element; and means for controlling the operation of said translating means such that said translating means respectively plays-out and takes-in measured lengths of cable in synchronism with the speed and direction of rotation of the rotational element.

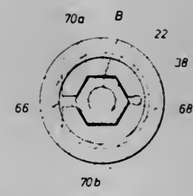
4,065,979

TRAVELING NUT STOP ASSEMBLY

Henry R. Killian, Sugarland, Tex., assignor to Keystone International, Inc., Houston, Tex.

Filed Mar. 22, 1976, Ser. No. 669,141
Int. Cl.² F16H *27/02*
U.S. Cl. 74—89.15 **12 Claims**





1. A stop assembly for limiting relative rotation comprising:

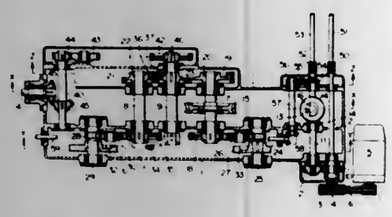
an inner member;
an outer member coaxial with and at least partially surrounding said inner member, said outer member being at least partially radially spaced from said inner member to form an elongate annular space between said members;
means defining a first stop surface facing axially inwardly at one end of said annular space;
means permitting relative rotation but preventing relative longitudinal movement between said members;
and a stop sleeve disposed in said annular space coaxial therewith and having a radial split therethrough, said sleeve being rotatable and longitudinally movable with respect to one of said members and longitudinally movable but not rotatable with respect to the other of said members and having a second stop surface at one end generally opposed to said first stop surface, one of said stop surfaces including a stop area engageable with the other of said stop surfaces adjacent the trailing side of said split as said sleeve is advanced toward said first stop surface, with the remainder of said one stop surface being spaced from said other stop surface.

4,065,980

DRIVING METHOD AND APPARATUS

Shiro Ichinose, 11-8, 4-chome, Shinohara Kita, Nada, Kobe, Hyogo, Japan

Filed June 14, 1976, Ser. No. 695,391
Int. Cl.² F16H *57/00, 55/04*
U.S. Cl. 74—404 **10 Claims**



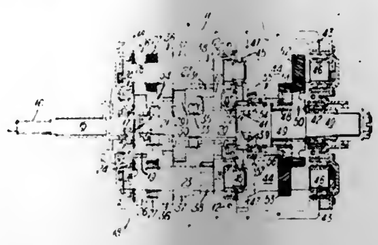
5. An apparatus for driving an output shaft in the normal direction and the reverse direction alternately, which comprises a partially toothed wheel C connected to the output shaft, a normal direction-driven, partially toothed wheel A which is engaged with said partially toothed wheel C and driven and rotated in one direction and a reverse direction-driven, partially toothed wheel B which is engaged with said partially toothed wheel C and driven and rotated in a direction reverse to the rotation direction of said partially toothed wheel A, said partially toothed wheels A, B and C being disposed in such a relationship that said partially toothed wheel C is engaged alternately with said partially toothed wheel A and with said partially toothed wheel B, wherein a cam follower is fixed to the output shaft and first and second cams (*b*) and (*a*) are mounted, each of which is driven and rotated at a certain speed and is capable of being engaged with said cam follower, said cam follower and said first and second cams 8*b*) and (*a*) being disposed in such a relationship that the time of termination of the normal rotation of the output shaft by said normal direction-driven, partially toothed wheel A, the cam follower is engaged with a cam groove of said first can (*b*) to reduce the speed of the normal rotation of the output shaft, stop the output shaft and accelerate the output shaft to turn in the reverse direction, and at the time of termination of the reverse rotation of the output shaft by said reverse direction-driven, partially toothed wheel B, the cam follower is engaged with a cam groove of said second cam (*a*) to reduce the speed of the reverse rotation of the output shaft, stop the output shaft and accelerate the output shaft to turn in the normal direction.

4,065,981

GEARING

Eric Albert Whateley, Huddersfield, and Eric Alexander Pengilly, Newbury, both of England, assignors to David Brown Gear Industries Limited, Huddersfield, England

Continuation of Ser. No. 148,328, June 1, 1971, abandoned. This application Aug. 7, 1974, Ser. No. 495,415
Claims priority, application United Kingdom, June 5, 1970, 27423/70
Int. Cl.² F16H *3/08, 57/00*
U.S. Cl. 74—410 **3 Claims**



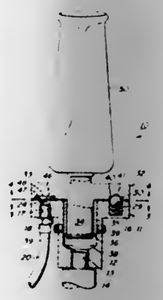
1. Change-speed gearing comprising an input shaft, an output shaft co-axial with the input shaft, said shafts being mounted for rotation about a fixed common axis only, two countershafts parallel to said shafts, a double-helical gear assembly rotatably mounted on said output shaft by means providing limited axial float of said assembly along said output shaft so as to share in fixed proportions the transmission of torque between the countershafts, a single-helical gear on one countershaft meshing constantly with that zone of the double-helical gear assembly having helical teeth of one hand, a single-helical gear on the other countershaft meshing constantly with that zone of the double-helical gear assembly having helical teeth of the other hand, gearing constantly drivably connecting said input shaft to both of the countershafts and comprising a gear fixed on said input shaft meshed constantly with a gear fixed on each of said countershafts, and clutch means for selectively drivably connecting said output shaft either directly to said input shaft or to the double-helical gear assembly without impeding the axially floating action of said assembly.

4,065,982

TRANSMISSION GEAR SHIFT CONTROL

Gerald W. Wenger, 1420 Church Ave., Wisconsin Rapids, Wis. 54494

Filed Apr. 5, 1976, Ser. No. 673,907
Int. Cl.² B60K *20/00;* F16K *11/02*
U.S. Cl. 74—473 R **5 Claims**



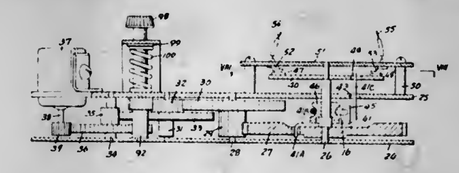
1. A transmission shift control assembly, comprising
a gear shift lever including an upstanding elongated rod,
a first body member mounted to the upper end of said rod,
a second body member rotatably mounted to said first body member for rotation about an axis aligned with the axis of said rod,
means for connecting a plurality of transmission control fluid lines to said first body member,
valve means disposed in said body members and responsive to the relative angular positions of said body members for interconnecting selective ones of said fluid lines,
an elongated hand grip member fixedly secured to said second body member and extending upwardly therefrom with the axis of said hand grip member being aligned with the axis of rotation of said second body member,
whereby said hand grip member may be grasped by the user with the fingers encircling said axis and with the inside of the wrist facing in a horizontal direction to facilitate the simultaneous rotation of said second body member and movement of said rod.

4,065,983

DEVICE FOR CHANGING THE GEAR RATIO OF A VARIABLE SPEED GEAR MOUNTED TO A BICYCLE

Yasuo Mimura, Kawaguchi, Japan, assignor to Maruishi Cycle Industries, Ltd., Tokyo, Japan

Filed Mar. 22, 1976, Ser. No. 669,073
Int. Cl.² B60K *20/16;* B62M *9/04;* F16H *1/00*
U.S. Cl. 74—625 **3 Claims**



1. An electromechanical device for changing the gear ratio of a variable speed gear mounted to the hub of the rear wheel of a pedal cycle, comprising an essential section to be mounted to the frame adjacent the rear wheel of the cycle, a manual switch to be mounted to the steering handle, and a flexible wire for connecting the essential section and the variable speed gear, said essential section comprising an electric power source, a reversible motor, a main shaft of a spur gear to be rotated through gear mechanisms by said motor, a switch disc mounted on said main shaft, means for connecting said spur gear and said switch disc, means for securing one end of said flexible wire to said connecting means, two arcuate conductors provided on the face of said switch disc, an intermediate conductor interposed between said arcuate conductors, a conductor for connecting the positive side of said power source through a first contact to one of said arcuate conductors, a second conductor for connecting the negative side of said power source through a second contact to other of said arcuate conductors, and a plurality of conductors for connecting said arcuate and intermediate conductors to said manual switch.

4,065,984

INTERNALLY ACCOMMODATED SPEED CHANGE MECHANISM APPLICABLE TO A BICYCLE

Kazuo Nakajima, Kodaira, Japan, assignor to Xenoah, Co., Yamato, Japan

Filed Apr. 17, 1975, Ser. No. 569,015
Claims priority, application Japan, Jan. 25, 1975, 50-10725
Int. Cl.² F16H *3/44, 5/12*
U.S. Cl. 74—750 B **9 Claims**

1. An internally accommodated speed change mechanism applicable to a bicycle, comprising in combination:
a hub axle;
a hub body mounted for free rotation on said hub axle;
a first planetary gear mechanism mounted on said hub axle within said hub body;
a second planetary gear mechanism mounted on said hub axle within said hub body;
said first planetary gear mechanism having a first sun gear freely rotatable on said hub axle, a first planetary gear in engagement with said first sun gear, and a first ring gear in engagement with said first planetary gear;
said second planetary gear mechanism having a second sun gear freely rotatable on said hub axle, a second planetary gear in engagement with said second sun gear, and a second ring gear in engagement with said second planetary gear;
a first carrier connected to said second ring gear and retaining said first planetary gear for rotation about said first sun gear;
ratchet means associated with said second ring gear and meshing with said hub body;



a sleeve operatively associated with a drive sprocket and freely rotatable on said hub axle, said sleeve being axially slidable on said hub axle;
first means on said sleeve to selectably engage said first carrier when said sleeve is at a certain axial position on said hub axle, so that said first carrier and said first planetary gear are rotated by rotation of said drive sprocket;
a first speed change rod disposed in said hub axle for selective axial movement and operatively associated with said sleeve to axially move said sleeve to place said first means in said selectable engagement;
a second speed change rod disposed in said hub axle for selective axial movement independently of said first speed change rod; and
means associated with said second speed change rod to selectably connect either said first sun gear or said second sun gear to said hub axle in response to a certain axial position of said second speed change rod.

4,065,985

OIL PRESSURE CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION SYSTEM

Yutaka Taga, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

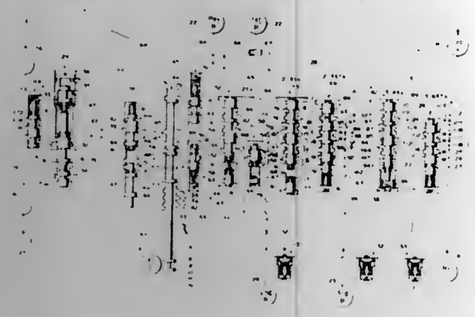
Filed Oct. 7, 1975, Ser. No. 620,345
Claims priority, application Japan, Dec. 23, 1974, 49-147899
Int. Cl.² B60K *41/18*
U.S. Cl. 74—869 **15 Claims**

1. An oil pressure control system for an automatic transmission system which includes a fluid torque converter, a transmission gear and friction engaging means for establishing a selected transmission engagement in said transmission gear, comprising:
a source of oil pressure;
a line pressure regulating valve which generates a line pressure from the oil pressure of said source, said line pressure being regulated to be suitable for operating said friction engaging means;
a throttle pressure regulating valve which generates a throt-

tle pressure from said line pressure, said throttle pressure increasing as the engine torque increases;

a governor pressure regulating valve which generates a governor pressure from said line pressure, said governor pressure increasing as the vehicle speed increases;

a plurality of speed shift valves which are shifted according to a balance of said governor pressure and said throttle pressure so as to change over the supply of oil pressure to said friction engaging means for shifting the transmission between lower and higher speed stages, at least one of said speed shift valves having a detent port adapted to be supplied with a detent pressure which counteracts said governor pressure to bias a balancing point of said gover-



nor pressure and said throttle pressure toward a higher speed range;

a manual shift valve which is shifted by hand among forward, reverse, neutral and low speed ranges for effecting a selected transmission, said manual shift valve having a low speed port or ports adapted to be opened when it has been shifted to a low speed range so as to provide said detent pressure to said detent port or ports of said speed shift valve or valves; and

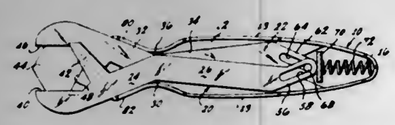
a detent pressure regulating valve which generates a specific reduced pressure from said line pressure, said reduced pressure serving as said detent pressure supplied to said detent port or ports of said speed shift valve or valves.

4,065,986

SELF-ADJUSTING WRENCH

Daniel H. Meggs, 4313 Vista Largo, Torrance, Calif. 90505, and Janos Beny, 202 Calle de Sirenas, Redondo Beach, Calif. 90277

Filed Mar. 19, 1976, Ser. No. 668,472
Int. Cl.² B25B *13/18*
U.S. Cl. 81—128 **7 Claims**



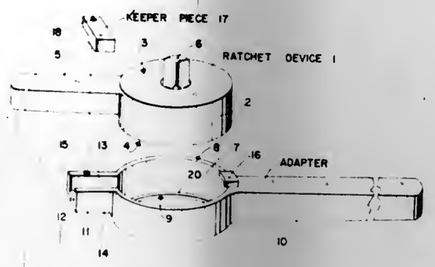
1. An automatic self-adjusting wrench comprising a body member, a pair of jaw members having portions fitting within the body member for longitudinal movement within the body member, the jaw members having confronting jaw faces movable toward and away from each other in response to inward longitudinal movement of the jaw members within the body, the body having camming surfaces positioned to engage the jaw members, the said jaw members having portions in juxtaposed relationship to said camming surfaces whereby inward movement of said jaw members with respect to the body causes the jaw members to be cammed toward each other for gripping, and resilient means normally resisting inward movement of the jaw members in the said body the said jaw members including flat faces adapted to engage against flat surfaces of a fastener element, said flat faces each lying at an acute angle to their respective jaw faces such that force exerted against the fastener element causes the jaw members to move towards each other.

4,065,987

T LEVER ADAPTER

Charles L. Rager, Philadelphia, Pa., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 9, 1977, Ser. No. 775,710
Int. Cl.² B25G *1/00*
U.S. Cl. 81—177 A **2 Claims**



1. A T lever adapter for a ratchet device having a cylindrical head with a pair of spaced substantially planar parallel bases, a handle member extending radially from the head and a projection extending axially from one of the bases of the head for accommodation in a socket, said adapter comprising

a hollow cylindrical ring having a pair of spaced circular opposite edges;

a handle member extending radially from the ring;

a trough-like member extending radially from the ring diametrically opposite the handle member, said trough-like member having a substantially square U cross-section extending from and opening into the ring;

a retainer piece affixed to the handle member and extending beyond an edge of the ring for retaining the head of a ratchet device coaxially positioned in the ring with the handle member of said ratchet device accommodated for part of its length in the trough-like member; and

a keeper piece removably affixed to the trough-like member for keeping the handle member of the ratchet device in said trough-like member.

4,065,988

UNITARY WORK CHANGER FOR A MACHINING CENTER

Earl R. Lohneis, Milwaukee, Wis., and John J. Schachte, West Hartford, Conn., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Division of Ser. No. 311,851, Dec. 4, 1972, Pat. No. 4,013,176, which is a continuation of Ser. No. 12,057, Feb. 17, 1970, abandoned. This application Oct. 7, 1976, Ser. No. 730,530
Int. Cl.² B23B *15/00*
U.S. Cl. 82—2.7 **2 Claims**

1. In a machine tool having a frame;

a tool operator and a work station carried by said frame for relative movement to perform a machining operation;

a loading station positioned in a predetermined spaced relationship to said work station for supporting workpieces to be worked upon by said work station and to receive completed workpieces;

a rotary transfer arm rotatably carried by said frame and connected to be rotated by power for transferring the workpieces between said work station and said loading station;

a cam connected to move with said rotary transfer arm; and

a rate change means actuated by said cam to regulate the rate of acceleration and deceleration of said transfer arm during the transfer movement so that the transfer operation



will be completed in minimum time without excessively straining the associated structure.

4,065,989

ARRANGEMENT FOR FEEDING ROD SHAPED WORKPIECES TO A MACHINE TOOL

Holger Scheler, Klausdorf, Schwentine, Germany, assignor to Hagenuk Vormals Neufeldt & Kuhnke GmbH, Kiel, Germany

Continuation of Ser. No. 594,285, July 9, 1975, Pat. No. 4,006,654. This application July 20, 1976, Ser. No. 706,944
The portion of the term of this patent subsequent to Feb. 8. 1994, has been disclaimed.
Int. Cl.² B23B *25/00*
U.S. Cl. 82—38 A **17 Claims**



1. In an arrangement for feeding rod-shaped workpieces to a machine tool, a combination comprising an elongated guide member for accommodating a respective workpiece therein; support means arranged along said guide member; means for mounting said guide member on said support means with a spacing therefrom, including a plurality of elastically yieldable members in said spacing along said guide member, each having an enlarged space for accommodating a pressurized fluid the pressure of which determines the oscillation-damping properties of the respective elastically yieldable member; and means for so controlling the pressures in said enclosed spaces that said elastically yieldable members efficiently damp the oscillations to which said guide member is subjected during the operation of the arrangement for optimally preventing the transmission of such oscillations between said guide member and said support means at each particular oscillation frequency.

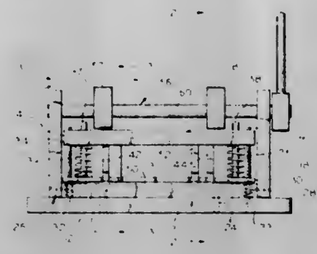
17. In an arrangement for feeding rod-shaped workpieces to a machine tool, a combination comprising an elongated hollow guide member for accommodating a respective workpiece therein; support means arranged along said guide member and surrounding the same with spacing; and a plurality of elastically yieldable hollow members filled with pressurized fluid and arranged along said guide member in said spacing, said hollow members being operative for supporting said guide member on said support means and for damping oscillations to which said guide member is subjected during the operation of the arrangement so as to prevent transmission of the oscillations to said support means.

4,065,990

METHOD AND APPARATUS FOR PREPARING FILM FOR EXPOSURE WITH A FILM FONT

Ronald D. Edhlund, Mount Prospect, Ill., assignor to American Photo-Graphics Corporation, Arlington Heights, Ill.

Filed July 19, 1976, Ser. No. 706,786
Int. Cl.² B26D *7/18*; B26F *1/12*
U.S. Cl. 83—133 **2 Claims**



1. Apparatus for perforating pieces of film in preparation for exposure with a film font, which comprises: a base; a first platen mounted on said base for supporting said film, said first platen defining a plurality of apertures; a cover plate defining a plurality of apertures and adjustably mounted above said first platen; spring means extending between said base and said cover plate through said first platen; a second platen adjustably mounted above said cover plate; spring means extending between said cover plate and said second platen; a plurality of punch means fixedly mounted to the bottom of said second platen; a pair of walls attached to opposite sides of said first platen; shaft means rotatably fixed between said walls above said second platen; at least one eccentric mounted on said shaft means and positioned to bear against said second platen; and means for rotating said shaft to force said second platen toward said first platen and drive said punch means through the apertures of said cover plate, film and the apertures of said first platen.

4,065,991

APPARATUS FOR FEEDING STRIPS OF PANELS

Gino Benuzzi, Bologna, Italy, assignor to Giben Impianti S.p.A., Pianoro (Bologna), Italy

Filed Dec. 17, 1976, Ser. No. 751,574
Claims priority, application Italy, Dec. 23, 1975, 12947/75
Int. Cl.² B27B *5/06*; B26D *7/06*
U.S. Cl. 83—272 **4 Claims**



1. An apparatus for feeding strips of panels to a panel cutting and sizing machine, in which the strips of panels are arranged the one adjacent to the other side by side, and the adjacent sides are parallel to the feeding direction, the said strips being fed to a cutting device which cuts the strips along a cutting line

which is arranged transversally with respect to the said feeding direction, said apparatus comprising:

a. a support table onto which the strips are positioned side by side;

b. at least two pusher members arranged so as to push the strips towards the cutting line, each one of said pusher members being movable independently from the other in a direction towards and away from the said cutting line;

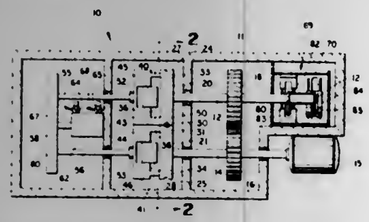
c. means for moving the said pusher members in a direction which is transversal with respect to the feeding direction and parallel to the cutting line, in such a manner to cause the selective engagement of the strips to be pushed by each one of the said pusher members.

4,065,992

SINGLE CUT SHEAR

James W. Peters, Cannelton, Ind., and Charles Hardesty, Hardinsburg, Ky., assignors to Southwire Company, Carrollton, Ga.

Filed Jan. 13, 1977, Ser. No. 758,924
Int. Cl.² B23D *25/12*
U.S. Cl. 83—285 **10 Claims**



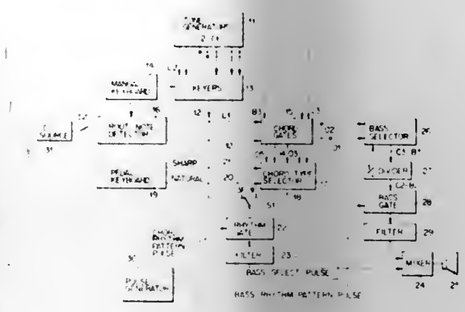
1. In a rotary shear for cutting elongate material passing through a passageway formed between two guide wheels rotating in opposite directions by selectively positioning a cutting means rotating with said guide wheels for cutting said material in said passageway and having a positioning means for moving said cutting means into a cutting position in said passageway while a first switching means is operative and for moving said cutting means from said cutting position in said passageway while a second switching means is operative, including: operating means for causing said first switching means to become operative at a first particular rotational position of said guide wheels and for selectively causing said second switching means to become operative at a second particular rotational position of said guide wheels; and conditioning means responsive to said first switching means being operative for a first predetermined rotation of said guide wheels for rendering said second switching means operative in response to said operating means at said second particular rotational position of said guide wheels, said operation of said second switching means at said second particular rotational position occurring within a second predetermined rotation of said guide wheels following the response of the conditioning means to the first switching means being operative for a first predetermined rotation of said guide wheels, wherein said first and second switching means comprise magnetically actuated vane switches, said operating means comprises a pair of vanes extending from a shaft member rotating in synchronization with said guide wheels and positioned on said shaft member so that the first of said pair of vanes passes through said first switching means and the second of said pair of vanes passes through said second switching means, and said conditioning means comprises a third magnetically actuated vane switch through which passes the first of said pair of vanes.

4,065,993

ELECTRONIC ORGAN WITH A THREE-FINGER CHORD AND ONE-FINGER AUTOMATIC CHORD PLAYING MODE SELECTOR

Yasunori Hirose, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Dec. 19, 1975, Ser. No. 642,670
Claims priority, application Japan, Dec. 26, 1974, 49-148363; Feb. 6, 1975, 50-17169; Apr. 3, 1975, 50-45185
Int. Cl.² G10F *1/00*
U.S. Cl. 84—1.03 **23 Claims**



1. An electronic organ comprising:

a manual keyboard having keys;

tone generators;

keyer means coupled to said tone generators and responsive to key actuation on said keyboard so as to selectively derive at least one tone signal from said tone generators;

automatic chord constituting means coupled to said tone generators and responsive to actuation of a key on said keyboard so as to selectively derive from said tone generators tone signals of notes constituting a chord whose root note is the note of the key being actuated, said automatic chord constituting means including:

root note detector means for detecting the root note of a chord which is played on said keyboard;

chord producing means coupled to said tone generators and to said root note detector means and responsive to said root note detector means for selectively deriving from said tone generators tone signals of notes constituting a plurality of chords having the root note; and

chord type selecting means coupled to said chord producing means for selecting tone signals from said chord producing means for constituting one type of the chords; sound producing means; and

selector switch means for selectively coupling one of said keyer means and said automatic chord constituting means to said sound producing means.

4,065,994

MUSICAL INSTRUMENT SUPPORT STAND

James L. Streit, Rte. 3, Box 364, Vernon, Tex. 76384

Continuation of Ser. No. 482,352, June 24, 1974, abandoned. This application Mar. 22, 1976, Ser. No. 669,408
Int. Cl.² G10G *5/00*; A47G *29/00*; A47C *7/62*
U.S. Cl. 84—453 **9 Claims**

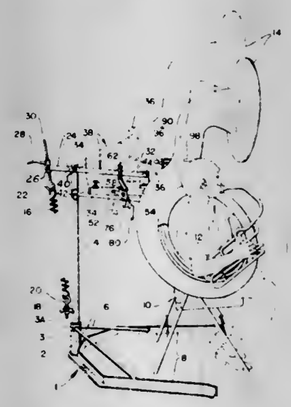
1. A stand comprising:

a bifurcated base having a pair of spaced-apart legs and a bight portion;

an upstanding tubular member having a lower end affixed to said bight portion, said tubular member also having an upper end and a major axis, said major axis extending from said lower end to said upper end;

an upright standard having a lower end rotatably coupled to said tubular member, said upright standard also having an upper end and a major axis, said major axis of said upright standard lying in a substantially vertical plane coinciding with the plane in which said major axis of said tubular member lies;

a parallelogram mechanism including an upper bar and a lower bar, each of said bars having a first end, a second end and a major axis, the major axis of each of said bars extending from its first end to its second end, said parallelogram mechanism also including first means pivotally connecting said first end of said upper bar to said upright standard adjacent its upper end for rotation about a substantially horizontal axis, second means pivotally connecting said first end of said lower bar to said upright standard in the same vertical plane as, and a first predetermined distance below, said first end of said upper bar for rotation about a substantially horizontal axis and an upright bar having an upper end pivotally connected to said second end of said upper bar and a lower end pivotally connected to said second end of said lower bar, said upright bar having a major axis extending from its upper end to its lower end and being of a second predetermined length



substantially equaling said first predetermined length, whereby said upright bar will remain substantially parallel to said upright standard during pivoting movements of said first ends of said upper and lower bars;

a shaft having a major axis;

means rotatably coupling said shaft to said upright bar in a manner such that said major axis lies in a horizontal plane, said shaft being rotatable about said major axis;

means coacting with said shaft for limiting rotation thereof to a small, predetermined arc;

means affixed to said shaft for supporting a predetermined load;

means connected to said parallelogram mechanism for at least partially counterbalancing said predetermined load; and

means coacting with said upright standard for limiting the rotation thereof in a manner such that the position of said load with respect to the position of each of said legs on said base remains such that said load will not upset said base regardless of the rotated position of said standard.

4,065,995

POCKET FINGER EXERCISE BOARD

Michael M. Greer, Box 22, McGrath, Alaska 99627

Filed Oct. 8, 1976, Ser. No. 730,921
Int. Cl.² G09B *15/06*
U.S. Cl. 84—465 **6 Claims**

1. A pocket finger exercise board comprising:

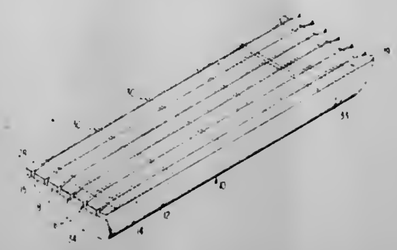
an open top elongated hollow body member having a bottom wall, end and side walls and forming coplanar edges,

a planar cover member having width and length dimensions corresponding to those of said body member and forming opposed ends and top and bottom faces,

a plurality of transversely extending, longitudinally spaced ribs on said cover member top face,

laterally spaced notches on both ends of said cover member,

at least one string, strung longitudinally about said cover member from end to end and being positioned within said notches and forming a plurality of spaced parallel string



portions extending longitudinally across the top face of said cover member and in contact with said transversely extending ribs,

means for fixing the ends of said at least one string to the bottom face of said cover member under tension, and

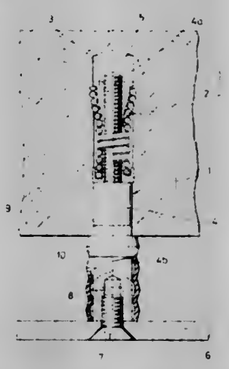
means for fixing said cover member to the open top of said body member with said string end fixing means located interiorly of said hollow body member.

4,065,996

ANCHORING DEVICE FOR USE IN MASONRY AND LIKE STRUCTURES

Artur Fischer, Altheimer Strasse 219, D-7241 Tumlingen, Germany

Continuation of Ser. No. 476,289, June 4, 1974, abandoned. This application Dec. 18, 1975, Ser. No. 641,917
Claims priority, application Germany, June 9, 1973, 2329677
Int. Cl.² F16B *13/06*
U.S. Cl. 85—64 **9 Claims**



1. An anchoring device for use in mounting an object at a distance from masonry and like supporting structures, comprising a supporting structure having a mounting hole and a mounting surface; a first element adapted to be received and anchored in said hole of said structure, said first element including an expansion sleeve member, and an expander member adapted to be drawn into said expansion sleeve member; an object having a surface facing said mounting surface and defining therewith a gap communicating with the ambient atmosphere; a second element having a first portion located in said hole and secured in said first element, said first portion of said second element being adapted to draw said expander member of said first element into said expansion sleeve member of the

latter, and a second portion having a part extending outwardly from said hole across said gap and adapted to carry said object at a predetermined distance from said structure; and means for preventing the access of corrosion-producing media in said gap to said elements, said preventing means including an axially resiliently yieldable circumferentially-complete protective tubular sleeve having axially spaced end faces and surrounding said part of said second portion of said second element in said gap intermediate said structure and said object, said sleeve having an uncompressed length and a partially compressed length slightly smaller than said uncompressed length, and means for exerting axial compressive pressure on said tubular sleeve until said compressed length equals said predetermined distance for thereby effecting direct sealing contact of said end faces thereof with said surfaces, so as to prevent access of corrosion-producing media from said gap to said elements.

4,065,997

SHOT SHELL RELOADING

Johnnie D. Allen, 105 Bayou Vista Drive, Hitchcock, Tex. 77563

Continuation-in-part of Ser. No. 411,091, Oct. 30, 1973, abandoned. This application June 16, 1975, Ser. No. 577,565
Int. Cl.² F42B *33/12*
U.S. Cl. 86—39 **9 Claims**

1. A single step crimping device comprised of a tubular crimping sleeve whose interior of said sleeve is comprised to guide a shot shell casing along sidewalls of said interior of said sleeve for which lips of said casing receive a series of operations of which initiate crimp to said lips of said casing,

a said sleeve whose upper interior comprises a section of which reduces the diameter of finalized crimp of said casing,

a said sleeve comprising a plurality of evenly spaced primary crimping deflectors of said upper interior of said sleeve for the purpose of initiating creases to said lips of said casing,

a said sleeve comprising of the upper interior of said sleeve a 30° angle from horizontal plane of which deflects said initiated crimp to axis,

a said sleeve comprised of a short smaller bore of which may encase the head portion of elongated compression plunger,

a said sleeve comprised of the upper exterior of said sleeve, a smaller section of which may aid to retain a heavy compression spring of which induces precise resistence to said plunger and said casing upon actuation of reloading press,

a said sleeve comprised of design to be self contained of dimensions and formations of which initiate said crimp to said lips of said casing,

a said sleeve of which receive for utilization thereof essential parts of which aid to finalize the crimp to said casing whose characteristics of material include, new plastic, new paper, used plastic, and used paper upon actuation of reloading press.

4,065,998

GUN LOCK AND FIRING MECHANISM FOR 30MM CANNON

John G. Rocha, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 30, 1976, Ser. No. 701,490
Int. Cl.² F41D *7/02*
U.S. Cl. 89—11 **15 Claims**

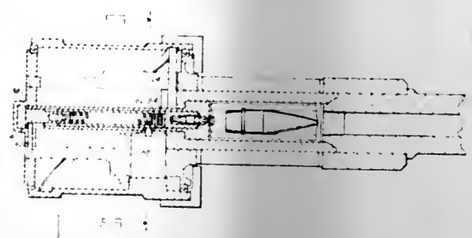
1. In a weapons system including a stationary receiver, a reciprocable firing chamber, a reciprocable bolt and a reciprocable firing mechanism having in and out of battery positions, the improvement comprising:

means for reciprocating said firing chamber between said positions,

means carried by the receiver for locking the firing chamber in the in-battery position,

means carried by the firing chamber to move the bolt between said positions and to secure the bolt in the in-battery position,

means carried by the bolt to move the firing mechanism between said positions and to secure the firing mechanism, when cocked, in the in-battery position.



means carried by the firing chamber locking mechanism for automatically initiating release of said cocked firing mechanism to fire a round when said firing chamber is in said in-battery position and,

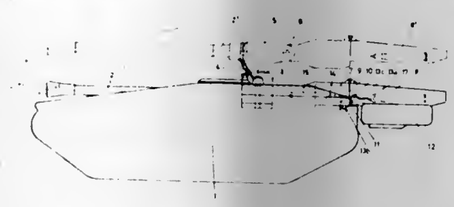
means for latching and unlatching said locking means in response to the relative position of said firing chamber.

4,065,999

MAGAZINE FOR TANK

Karl Sten Rudolf Hultgren, and Sven-Håkan Svensson, both of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden

Filed Sept. 25, 1975, Ser. No. 616,706
Claims priority, application Sweden, Oct. 18, 1974, 7413125
Int. Cl.² F41H *7/06*
U.S. Cl. 89—36 H **9 Claims**



1. In a tank, the combination comprising:

a large-caliber pivotable firearm and means for raising and lowering the pivot of the firearm relative to the tank chassis,

a first magazine connected to the firearm at the rear end of the firearm and movable with movement of the firearm,

a second magazine connected to the tank chassis and lying exteriorly of said chassis,

and means for interconnecting said first and second magazines only when the firearm and first magazine are moved to a preselected position relative to the chassis and second magazine which brings said first and second magazines in close juxtaposition so as to permit the transfer of rounds of ammunition from said second magazine to said first magazine.

4,066,000

MACHINE GUN

Charles Edward Rostocil, Sugar Grove, Va., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 25, 1974, Ser. No. 464,109
Int. Cl.² F41D *9/02, 11/06, 11/12*; F41F *17/10, 17/12*
U.S. Cl. 89—198 **82 Claims**

1. An automatic weapon for automatically firing live cartridges comprising:

a. a receiver housing;

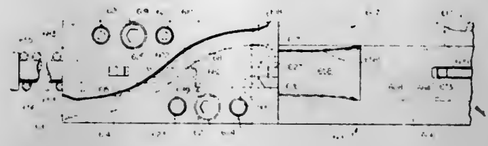
b. a bolt assembly slidably mounted for fore and aft movement within the housing;

c. trigger means for releasing the bolt assembly;

d. a barrel assembly including chamber means mounted in the housing;

e. a feed system;

f. the bolt assembly being adapted to advance the feed system while ejecting spent cartridges during its aft move-



ment and to chamber live cartridges and reset the feed system, the bolt assembly comprising:

1. a body having top and bottom surfaces; and

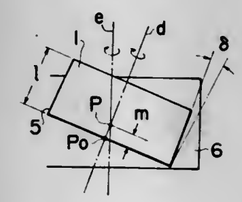
2. a buffer assembly biasably movably mounted on the bolt assembly adapted to seat on top of the barrel of the barrel assembly when the bolt assembly is moving forward to chamber a cartridge, the buffer assembly also acting to absorb excess energy to reduce peak recoil forces.

4,066,001

SKIVING CUTTER FOR USE IN CUTTING INTERNAL SPUR GEAR

Komio Nishijima, Komatsu, and Masakazu Kojima, Kanazawa, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 523,137, Nov. 12, 1974, abandoned. This application July 21, 1976, Ser. No. 707,269
Int. Cl.² B26D *1/12*; B23F *1/00*
U.S. Cl. 90—3 **1 Claim**



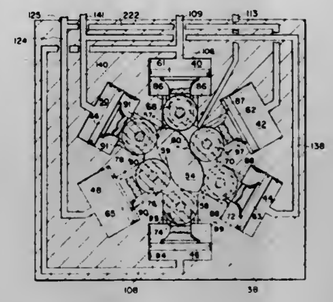
1. A skiving cutter device for use in cutting an internal spur gear, which comprises a cutter head with a main spindle, a cutter body mounted on said main spindle with cutter blades, each cutter blade formed in a gear tooth on said body such that the distal end of each of said cutting blades is located at a position offset from the pitch point between the cutter and a workpiece to be cut located on a support means proximate to said spindle, wherein the contacting point between the respective cutter blades and each gear tooth formed on said workpiece is located within a contacting or acting region defined by the encompassed among interference lines respectively described by the root and the bottom of said each gear tooth formed on the workpiece and an interference line described by the addendum of said each gear tooth-shaped cutter blade of the cutter so that a predetermined design value of the tooth profile of the cutter may be selected to be near the lower limit of said region.

4,066,002

FLUID PRESSURE OPERATED ROTARY STEPPER ACTUATOR

James M. Eastman, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed June 14, 1976, Ser. No. 695,663
Int. Cl.² F15B *21/02*; F01B *1/06*
U.S. Cl. 91—36 **11 Claims**



1. A rotary stepper actuator comprising:

a casing:

a shaft mounted in said casing for rotation about its axis;

cam means coaxial with and fixedly secured to said shaft for rotating the same, said cam means being generally elliptical in shape having major and minor axes perpendicular to said axis of rotation, said major axis defining radially opposite elongated portions, said cam having opposite recessed portions radially inwardly from the ends of said minor axis, said elongated portions joining said recessed portions to define a continuous surface, said surface being symmetrical about said major and minor axis;

a first source of pressurized fluid;

a second source of pressurized fluid at a relatively lower pressure compared to said first source;

force producing means contained by said casing including at least three pairs of fluid pressure responsive pistons in a radially spaced relationship about said shaft's axis of rotation, each said piston pair being axially aligned in the same radial plane through said shaft's axis of rotation in a radial force opposing relationship, with each said piston in a radially measured equal angular spaced relationship from each said adjacent piston, each said piston pair operatively engaging said cam's surface for imposing an oppositely directed force couple thereon in response to said first source of pressurized fluid;

valve means including conduit means for fluidly connecting said first and second sources of pressurized fluid with said piston pairs;

said first source of pressurized fluid initially communicated to one said piston pair which is engaged with said opposite recessed portions of said cam's surface thereby providing a positive piston lock on said cam; and

control means operatively connected to said valve means for actuating the same to selectively communicate said first source of pressurized fluid to one of said piston pairs adjacent said piston pair that is providing said positive position lock and said second source of pressurized fluid to the remaining piston pairs thereby rotating said cam a predetermined angular increment until said selected piston pair receiving said first source of pressurized fluid engages said recessed portion of said cam's surface to create another said positive position lock.

4,066,003
HYDRAULIC ENGINE
Murray William Alde, Sr., Box 38, Saltery Bay, R.R. No. 3, Powell River, B.C., Canada (V8A 5C1)
Filed Dec. 27, 1976, Ser. No. 754,489
Int. Cl.[2] F01B 1/00
U.S. Cl. 91—170 R 4 Claims



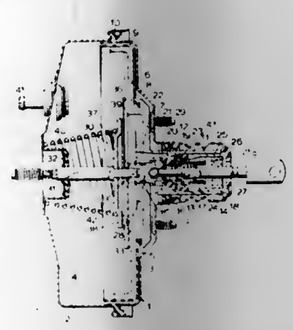
1. A hydraulic engine comprising a frame, a crankshaft journalled on the frame, hydraulic cylinders arranged on the frame as horizontally opposed and side-by-side pairs, a piston rod for each cylinder operatively connected to the crankshaft, trunnion means individually securing each cylinder to the frame whereby adjacent cylinders of each pair of cylinders are rockable about a common axis extending parallel to the crankshaft, a power take-off shaft journalled on the frame, a drive train operatively connecting the crankshaft to the power take-off shaft, a fluid circuit connecting the hydraulic cylinders to a source of pressurized fluid and including a distribution valve for each of said cylinders, and motion transmitting means connecting the crankshaft to the distribution valves whereby opposite ends of the hydraulic cylinders are pressurized sequentially to extend and retract the piston rods and rotate said crankshaft.

4,066,004
OSCILLATORY ELECTRO-HYDRAULIC SYSTEM
Joseph Alcalay, Kenosha, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed July 6, 1976, Ser. No. 702,479
Int. Cl.[2] F01B 15/00; F01L 25/08; F15B 13/06
U.S. Cl. 91—183 13 Claims



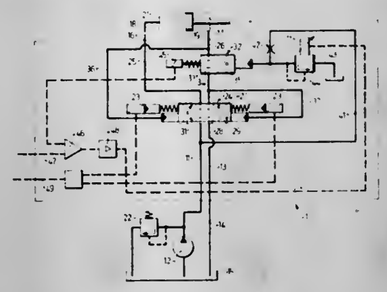
1 An oscillatory electro-hydraulic system for a material handling bucket, comprising two hydraulic cylinder assemblies connected with said bucket to be mechanically connected relative to each other for pivoting said bucket, said cylinder assemblies being the double acting type and each including a cylinder portion and a rod extendable from the cylinder portion of each of said assemblies, a hydraulic pump hydraulically connected in separate respective connections to the head and rod ends of a first one of said cylinder assemblies, a hydraulic line hydraulically connected between said cylinder assemblies, a hydraulic control valve connected with said hydraulic line and having two pairs of hydraulic passageways with each pair thereof having one of said passageways separately selectively hydraulically connectable to one of the head and rod ends of the second one of said cylinder assemblies, for controlling hydraulic flow to the respective head and rod ends of said second one of said cylinder assemblies, and the other of said passageways in each of said pairs being a hydraulic return passageway, all for permitting hydraulic pressurizing and actuation of said first one of said cylinder assemblies while said second one of said cylinder assemblies is free to actuate without hydraulic pressure, an electric system operatively associated with both said control valve and one of said cylinder assemblies for operating said control valve, electric switch means included in said electric system and being arranged to be actuated in response to extension and contraction of said one of said cylinder assemblies to thereby actuate said control valve to direct hydraulic flow to and from the head and rod ends of said second cylinder assembly, and a second switch included in said electric system and being arranged to be actuated in response to extension and contraction of said one of said cylinder assemblies for electrically opening said electric system and leaving said control valve in an operative position where only one of said head and rod ends of said second cylinder assembly is hydraulically pressurized.

4,066,005
SERVO-MOTORS FOR VEHICLE BRAKING SYSTEMS
Glyn Phillip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, England
Filed July 21, 1975, Ser. No. 597,909
Int. Cl.[2] F15B 9/10; F01B 19/00; F16J 3/02
U.S. Cl. 91—369 B 1 Claim



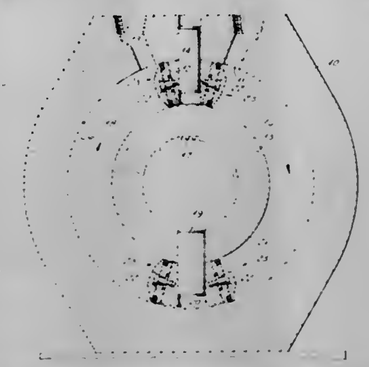
1. A fluid-pressure operated servo-motor comprising a housing an input member, an output member, a movable wall dividing said housing into separate chambers and through which said input member acts on said output member, valve means responsive to an input force applied to said input member for controlling the generation of differential pressure to opposite sides of said movable wall to produce an output force which is adapted to be transmitted to said output member through said wall, and reaction means for transmitting back to said input member a reactive proportion of said output force to provide a reaction whereby operation of the servo-motor can be more readily controlled, wherein said reaction means comprises a single component in the form of a one-piece annular reaction plate of corrugated outline which, in use, is adapted to flex to transmit a load from said movable wall to said output member and to transmit a reactive proportion of said output force back to said input member, wherein said annular reaction plate comprises angularly spaced fingers of segmental outline having inner and outer ends of which alternate fingers are located in a corresponding one of two spaced parallel planes, and radial webs substantially normal to said fingers and extending between said planes integrally interconnect adjacent fingers and said movable wall includes an axially movable piston of substantial diameter, and a face of said piston adjacent to said output member is provided with abutment means which defines a fulcrum for said outer end of said fingers and said output member is provided with abutment means defining a fulcrum with said plate at an intermediate point in the radial length of said plate, and wherein said piston comprises a hub member guided in said housing for sliding movement and having an inner end, a radial flange at said inner end of said hub member provided with a recess, and a first metal pressing retained in said recess accommodates said annular reaction plate, and a second metal pressing clamped against said hub member by said first metal pressing to retain in a groove in said hub member, a tickening or bead at the peripherally innermost end of a flexible diaphragm which is supported by said second pressing and which is sealingly connected to said housing at its outermost peripheral edge, and projection means provided in said first pressing defining said abutment means.

4,066,006
FLOW REGULATING SYSTEM
Joachim Heiser, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Dec. 17, 1975, Ser. No. 641,701
Claims priority, application Germany, Dec. 21, 1974, 2461021
Int. Cl.[2] F15B 13/043
U.S. Cl. 91—433 15 Claims



1. In combination with a pressure-responsive actuator having a pair of connections pressurizable for operating said actuator, a hydraulic system comprising:
- first and second load supply lines each connectable to a respective one of said connections;
- a source of fluid under pressure having a high-pressure side and a low-pressure side;
- a main control valve connected between said load supply lines and said source and having a movable control member displaceable between a first end position connecting said first line to said high-pressure side and said second line to said low-pressure side, a second end position connecting said second line to said high-pressure side and said first line to said low-pressure side, and an intermediate central position blocking fluid flow between said high-pressure and low-pressure sides and said supply lines, said control valve having means including a pair of oppositely effective springs bearing on said member for urging said member into said central position;
- means responsive to a direction signal and including a pilot valve connected to said member of said main control valve for displacing same into one of said end positions in dependence upon said direction signal;
- a restriction in one of said load supply lines and forming a variable flow passage displaceable between a relatively wide position and a relatively narrow position, whereby the pressure differential across said restriction is greater in said narrow position than in said wide position;
- pressure-responsive means connected to said one load supply line to both sides of said restriction and connected to said main control valve for applying the pressure differential across said restriction to said main control valve in said first position thereof in a direction urging said main control valve into said second position and in said second position thereof in an opposite direction urging said main control valve into said first position, said pressure-responsive means including a pair of pistons bearing each in a respective direction through a respective spring on said member and each having an inner face turned toward said member and engaging the respective spring and an outer face turned away from said member, a pair of inner chambers each between a respective inner face and said member, and a pressure line between each of said inner chambers and a respective side of said restriction; and
- electrical actuating means connected to said restriction for generating an input signal and displacing said restriction between said wide and narrow positions therewith, said direction signal responsive means including a pair of outer chambers each at a respective outer piston face and a pressure line between each of said outer chambers and a respective portion of said pilot valve.

4,066,007
ACTUATOR SEAL ASSEMBLY
Roland J. Barlow, Madison Heights, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed July 8, 1976, Ser. No. 703,480
Int. Cl.[2] F01C 9/00; F16J 1/00
U.S. Cl. 92—125 6 Claims



1. In a rotary actuator device consisting of a housing with internal arcuate surfaces, cover plates affixed to said housing, an actuator stop means and an actuator shaft and vane means having a seal means comprising a seal carrier means shaped to closely fit between said cover plates and between said actuator shaft and arcuate surface of said housing;
- a first O-ring and glide ring located in a channel on said seal carrier means with a seal retainer fixedly held on one side of said carrier means
- a second O-ring captively retained in a counterbore in said seal carrier means on a remaining opposite side of said carrier means; and
- a holding means affixing said seal means to one side of said actuator vane said actuator stop means also including a seal means.

4,066,008
CARTON FORMING MACHINE
George B. Arvanigian, 6846 Hickory Point Drive, Portage, Mich. 49002
Filed Sept. 13, 1976, Ser. No. 722,612
Int. Cl.[2] B31B 3/26
U.S. Cl. 93—49 R 12 Claims

1. In an apparatus for forming a knock-down preglued box from a preformed blank having a center panel, a pair of opposed foldable side flaps, a pair of opposed foldable end flaps,

and opposed pairs of front and rear foldable corner tabs which are connected to and project sidewardly from the opposite edges of the end flaps, the improvement comprising:

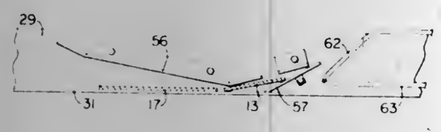
frame means;

elongated guide means mounted on said frame means and defining an elongated path along which said blank is moved, said guide means including a pair of substantially parallel guide members which are transversely spaced apart for slidably guiding the opposite edges of the blank therebetween;

drive means extending longitudinally of said path for moving said blank therealong;

first folding means disposed adjacent the inlet end of said path for automatically folding the front corner tabs upwardly so as to partially overlap the center panel as the blank is moved along said path by said drive means, said first folding means being nonpowered and comprising a pair of identical folding devices which are positioned adjacent the opposite sides of said path in the vicinity of said guide members;

each said folding device including a tab lifting lever supported for pivotal movement about a substantially horizontal axis, said tab lifting lever being normally urged by gravity into a lower position wherein the lever extends upwardly at an acute angle relative to the direction of movement of the blank so that the upstream end of the lever projects into the path of movement of the front



corner tab as the blank advances along the path from the inlet end thereof, said lever being hinged about an axis positioned above said path so that said front corner tab engages said lever when in said lower position and swingably displaces the upstream end thereof into an upper position which results in said front corner tab being lifted upwardly above the remainder of the blank while permitting the trailing side flap to freely pass beneath the lever;

each said folding device also including a stationary reaction member positioned directly above and slightly spaced from said lifting lever for confining the front corner tab therebetween;

each said folding device further including a stationarily positioned folding element disposed directly downstream of said lever for engaging the front corner tab after it has been lifted by said lever and folding same over so as to at least partially overlap said central panel;

hold-down means disposed directly downstream of said folding element for engaging and holding the front corner tab in its folded-over position;

adhesive applying means positioned downstream of said first folding means for applying adhesive to one of said side flaps or said folded corner tabs; and

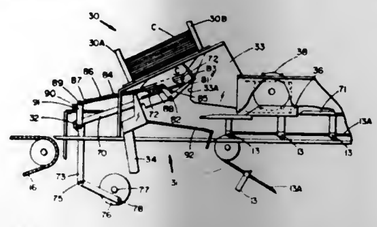
second folding means positioned downstream of said first folding means and coacting with the opposed side flaps for folding the side flaps upwardly and inwardly so as to overlap said central panel and the previously folded corner tabs.

4,066,009

METHOD FOR OPENING AND ERECTING CARTONS

Rodney K. Calvert, Dunwoody, and Charles Rabun Landrum, Doraville, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 568,243, April 15, 1975, Pat. No. 3,991,660.
This application Sept. 20, 1976, Ser. No. 724,704
Int. Cl.² B31B *5/26*
U.S. Cl. 93—53 M **3 Claims**



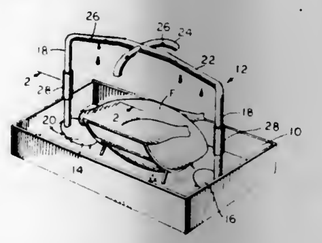
1. A method of withdrawing from a hopper and setting up a collapsed open ended carton having a glue joint formed in one wall and having at least one hand gripping aperture formed in said one wall adjacent said glue joint and generally midway between the ends thereof, the method comprising the steps of applying a force to another wall of the carton which is in the general direction in which the carton is to be withdrawn from the hopper, substantially simultaneously projecting finger means through said hand gripping aperture to engage and apply a force to a third wall of the carton which is in face contacting relation to said one wall, the force being in a direction generally perpendicular to said third wall and opposite to the force applied to said another wall so as to rupture any glue bond between said glue joint and said third wall and to prevent downward bowing of the carton, and applying a force to the carton which is generally transverse to the direction of withdrawal movement of the carton only after predetermined withdrawal movement of the carton is effected so as to facilitate continuation of a setting-up operation.

4,066,010

AUTOMATIC BASTER

Kim Larsson, 825 W. 71st Ave., Apt. No. 204, Vancouver, British Columbia, Canada

Filed Jan. 27, 1977, Ser. No. 762,886
Int. Cl.² A47J *27/52, 37/10*
U.S. Cl. 99—346 **5 Claims**



1. An automatic baster comprising:

an inverted substantially U-shaped standard adapted to be placed in a roasting pan partially filled with water, said standard including

a pair of tubular legs connected by a tubular bight portion, said bight portion including a plurality of holes to allow the passage of liquid therethrough, and

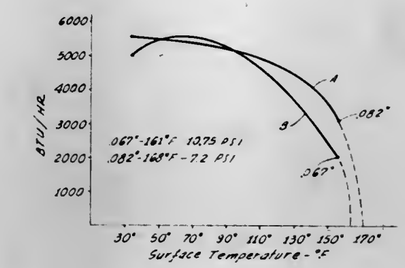
means connected to said legs for raising and lowering said legs relative to said pan.

4,066,011

APPARATUS FOR THAWING FROZEN FOOD

Earle W. Ballentine, 3641 Via Palomino, Palos Verdes Estates, Calif. 90275

Continuation-in-part of Ser. No. 179,721, Sept. 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 553,065, May 26, 1966, Pat. No. 3,604,334. This application Sept. 18, 1972, Ser. No. 290,122
Int. Cl.² A01J *11/04*
U.S. Cl. 99—467 **10 Claims**



1. Apparatus for reconstituting frozen food comprising:

a convective source of hot burner gases;

chamber means for supporting frozen foods;

guidance means positioned in the walls of the chamber means for directing the flow of the hot burner gases over the frozen food supported in the chamber means;

boiler means for adiabatically transforming a large portion of the sensible heat in the hot burner gases into the latent heat of steam;

means for homogeneously intermixing external to the chamber means, the steam with air and the hot burner gases which have lost a portion of their sensible heat; and

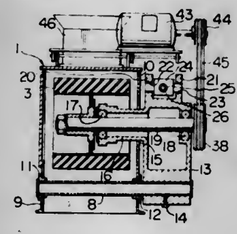
means for forcing the homogeneous mixture to flow turbulently with said guidance means towards the top and bottom surfaces of the frozen food supported in the chamber means.

4,066,012

ROLL TYPE HULLER

Toshihiko Satake; Akira Kono, and Hiromichi Yanagihara, all of Higashihiroshima, Japan, assignors to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1976, Ser. No. 667,166
Claims priority, application Japan, June 2, 1975, 50-66877
Int. Cl.² B02B *3/04*
U.S. Cl. 99—618 **5 Claims**



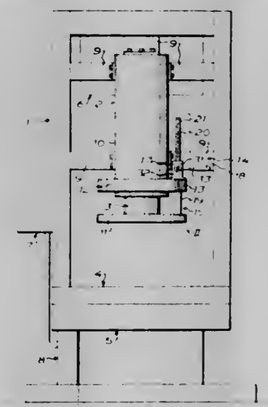
1. A roll type huller for removing grain hulls comprising a housing; a pair of rolls spaced apart in parallel within the housing; a main shaft carrying one of the rolls at one end portion thereof and supported by the housing rotatably about a fixed axis; a counter shaft carrying the other roll at one end portion thereof; pivot means spaced from and parallel to the fixed axis, the pivot means having an arm extending therefrom for supporting the counter shaft, the pivot means being supported by the housing in a relative location directly confronting the roll-carrying portion of the counter shaft whereby the counter shaft can move toward and away from the main shaft while in parallel therewith.

4,066,013

MECHANICAL SAFETY DEVICE FOR THE PLUNGER IN PRESSES OF THE DOWN-STROKE OR ECCENTRIC TYPE

Klas Axel Lennart Skoglund, and Stig Gunnar Bengt Backgard, both of Lagan, Sweden, assignors to Lagan Press AB, Lagan, Sweden

Filed July 29, 1976, Ser. No. 709,789
Int. Cl.² B30B *15/00*
U.S. Cl. 100—53 **10 Claims**



1. In a mechanical safety device for the reciprocating plunger in downwardly acting presses, the improvement comprising a stopping rod immovably fixed on the plunger and extending vertically upwardly from the plunger, a stopping sleeve rotatably mounted on a fixed portion of the press and positioned such that the rod passes therethrough, the rod and sleeve having cooperating members which, in a first rotary position of the sleeve, engage with each other for stopping the plunger, and, in a second rotary position of the sleeve, are moved out of engagement with each other to permit movement of the rod through the sleeve and thereby movement of the plunger, and means for rotating the sleeve.

4,066,014

PRESSURIZED INK APPLICATOR FOR INTAGLIO PRINTING PRESS

Peter van Haaften, Ottawa, Canada, assignor to American Bank Note Company, New York, N.Y.

Continuation-in-part of Ser. No. 479,898, June 17, 1974, abandoned. This application Jan. 5, 1976, Ser. No. 646,493
Int. Cl.² B41F *9/10, 31/08*
U.S. Cl. 101—157 **21 Claims**



1. A stiff bodied ink applicator for an intaglio security print-

ing press having a printing surface having a plurality of engraved recesses defining an image, comprising: a nozzle for applying ink to the engraved recesses of the printing surface and for doctoring applied ink from the non-engraved areas of the printing surface, means for removably mounting the nozzle in contact with the printing surface, conduit means connecting the nozzle to a source of ink under pressure, said nozzle including at least two transversely extending blades and means biasing an edge of each said blade towards the printing surface whereby the nozzle sealingly contacts the printing surface, one of said blades defining the trailing edge of said nozzle for doctoring applied ink from the nonengraved areas of the printing surface, energy transfer means associated with said conduit means for imparting energy to the ink whereby the flow characteristics of the ink are improved before application of the ink to the printing surface, a cam moving with the printing surface, follower means cooperating with the cam, and a sliding valve slidably mounted within the applicator transverse to the ink flow path through said conduit means and controlled by the follower means and effective to impede the flow of ink through the conduit means in at least one position of the follower means.

4,066,015

STATIONERY PRINTING APPARATUS FOR CONTINUOUS BUSINESS FORMS STATIONERY ASSEMBLIES

Peter R. Polko, Barrington, Ill., assignor to Uarco Incorporated, Barrington, Ill.

Filed July 11, 1975, Ser. No. 595,074
Int. Cl.² B41F *13/02*
U.S. Cl. 101—228 **9 Claims**



4. Stationery printing apparatus for printing indicia at a predetermined position on each form length of continuous business forms stationery assemblies formed of an elongated series of interconnected individual business forms, each of equal length, said apparatus comprising:

a rotary printing roll having at least one printing surface thereon;

impression means associated with said roll to define a printing nip so that a continuous business forms assembly passing through said nip will be imprinted upon by said printing surface at said nip,

means for moving a continuous business forms assembly along a path of stationery travel extending through said nip including a drive mechanism forwardly of said nip,

means for rotating said print roll in timed relation with said moving means,

at least one first lineup indicia located along said path and forwardly of said nip,

a second lineup indicia associated with said roll whereby said roll may be initially located at specific predetermined location about its axis of rotation,

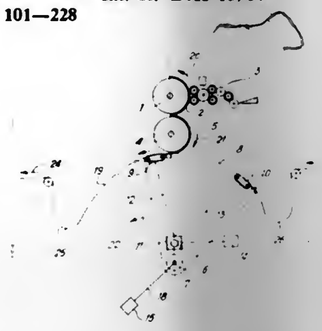
said first and second indicia being located along said path and on said roll, respectively, such that when said roll is in said predetermined location, and a predetermined point on a continuous business forms assembly in said path is aligned with said first indicia, upon operation of said moving means, the form lengths will be imprinted upon at said predetermined position thereon.

4,066,016

PRINTER WITH INTERMITTANT VARIABLE WEB FEED

Eric Tison, Ponthierry, France, assignor to Ateliers de Constructions Mecaniques Seailles & Tison, Paris, France

Continuation of Ser. No. 542,547, Jan. 20, 1975, abandoned. This application Sept. 2, 1976, Ser. No. 719,709
Claims priority, application France, Jan. 22, 1974, 74.02027
Int. Cl.² B41F *13/04*
U.S. Cl. 101—228 **8 Claims**



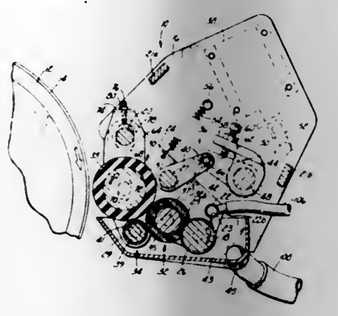
1. A printing device for printing spaced indicia on a moving band of material including means for defining printing and non-printing phases of machine operation comprising at least one rotatable printing element for printing indicia on the band, at least one counter pressure printing platen pivotally mounted about an axis for cooperating with said at least one printing element during the printing phase and having a curved surface for supporting the band, motor means for reciprocatingly pivoting said pivotally mounted platen, traction means mounted on said platen for engaging the band to move said band intermittently over the surface of said platen during the non-printing phase, a pulse generator for generating varying numbers of pulses in accordance with a program, a step by step motor operable by the pulses of said generator for actuating said traction means for moving varying lengths of the band over the surface of the platen during the non-printing phase in accordance with the number of pulses generated by the generator in accordance with the program.

4,066,017

BLANKET CLEANER FOR DUPLICATING MACHINES

Ronald J. Garcowski, Parma Heights, and William A. Davis, Wickliffe, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 594,208, July 9, 1975, abandoned. This application Sept. 27, 1976, Ser. No. 726,941
Int. Cl.² B41F *35/06*
U.S. Cl. 101—425 **16 Claims**



1. A printing machine, comprising:

a rotary blanket cylinder driven at a predetermined surface speed;

a frame movably mounted on the printing machine adjacent the cylinder;

a cleaning roller rotatably supported by the frame in a position for forming a first nip with the cylinder to perform a cleaning operation;

a wiper roller having an open-cell sponge cover rotatably supported by the frame in contact with the cleaning roller and forming a second nip therewith;

means for continuously rotating both of said cleaning and wiper rollers at speeds such that the difference in surface speeds of the rollers at each nip is at least about 200 cm/sec;

cleaning means comprising a continuously rotating roller having a substantially non-compressible surface in rubbing surface contact with the wiper roller for preventing accumulation of deposits on the surface thereof; and

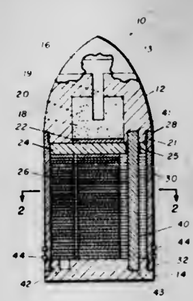
means for supplying cleaning fluid to the surface of the cleaning roller.

4,066,018

PROPELLER DISK PROJECTILE

Vladimir Ignatjev, 39 Ledgewood Drive, Norwalk, Conn. 06850

Filed Jan. 13, 1977, Ser. No. 759,230
Int. Cl.² F42B *13/48*
U.S. Cl. 102—67 **3 Claims**



1. A spin-fired projectile for use against enemy aircraft which comprises:

an ogival shaped member having a pointed forward end, a threaded rear end boss, an axially positioned propellant charge counterbore located in said threaded rear end boss, and a plurality of rod holes disposed in said threaded rear end boss;

a propellant charge operatively positioned in said propellant charge counterbore;

a time fuze disposed in said forward end of said ogivally shaped member, said time fuze communicating with said propellant charge;

a propellant charge sealing disk member located in said propellant charge counterbore for retaining said propellant charge in said propellant charge counterbore during assembly of said projectile;

a cylindrically shaped tubular body member having an internally upper end threaedly connected to said threaded rear end boss of said ogival member and an internally threaded lower end;

a piston member having a plurality of piston rod holes therein slidably positioned in said tubular body member adjacent said ogival member rear end boss, said piston member being movably responsive to gases generated by said propellant charge;

propeller disk fragment means, transversely slidably disposed and stacked within said tubular body member for presenting a momentarily standing, ascending or descending fragment cloud effective against said enemy aircraft when being ejected from said tubular body member;

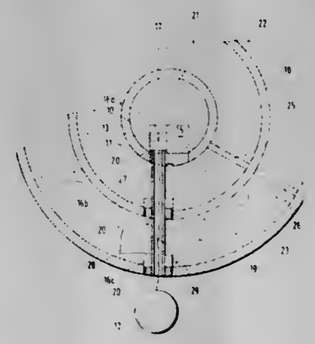
a threaded rear end member threadedly affixed to said lower end of said tubular body member having an annular groove therein, said threaded rear end member retaining said propeller disk fragment means within said spin-fired projectile during transportation to a target, said threaded rear end member separating by shear from said lower end of said tubular body member when said time fuze initiates said propellant charge, forcing said piston member in a rearward direction and said propeller disk fragment means against said rear end member.

4,066,019

ELECTRONIC HAND GRENADE

Walter Mehnert, Ottobrunn, Germany, assignor to TECHNICO Development and Financing S.A., Fribourg, Switzerland

Filed Aug. 2, 1976, Ser. No. 710,678
Claims priority, application Germany, Aug. 13, 1975, 2536123
Int. Cl.² F42C *11/06*; F42B *27/00*
U.S. Cl. 102—70.2 R **21 Claims**



1. An electronic hand grenade with a plurality of explosive elements connected with each other, comprising

a plurality of explosive elements containing individual explosive charges, respectively,

at least one signal transmitter means for providing signals of statistically occurring criteria,

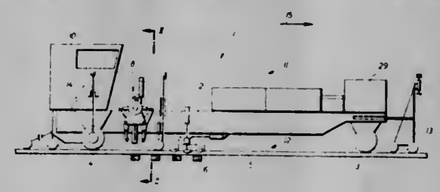
a control-processing- and storage-electronic means operatively connecting said explosive elements for feeding and transforming, respectively, and processing predetermined of said signals of statistically occurring criteria for triggering an ignition impulse for each of said individual explosive charges, respectively.

4,066,020

MOBILE TRACK TAMPING AND TRACK POSITION CORRECTION MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed June 14, 1976, Ser. No. 695,734
Claims priority, application Austria, Feb. 20, 1976, 1237/76
Int. Cl.² E01B *27/17*
U.S. Cl. 104—7 B **20 Claims**



1. A mobile track tamping and track position correction

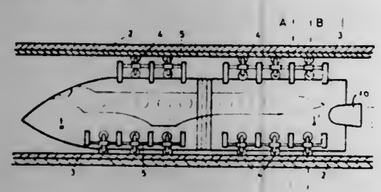
machine which comprises a machine frame, undercarriages mounting the machine frame for mobility on a track consisting of a multiplicity of ties fastened to two rails, a tamping head mounted on the machine frame, the tamping head including a tamping tool carrier vertically movably mounted on the machine frame and supporting tamping tools capable of tamping ballast under respective ones of the ties upon downward movement of the tamping tool carrier and immersion of the tamping tools in the ballast adjacent the respective ties, and drive means for vibrating and reciprocating the tamping tools in the direction of track elongation, and track position correction means mounted on the machine frame, wherein the machine frame consists of an elongated carrier beam centered between the two rails and the tamping head is mounted on the carrier beam laterally thereof and astride a respective one of the rails.

4,066,021

HIGH SPEED TRANSPORTATION SYSTEM

Axel-Günther Helm, Heubergstrasse 3, D-8201 Neubeuern, Germany

Continuation-in-part of Ser. No. 326,407, Aug. 20, 1973, abandoned. This application July 20, 1976, Ser. No. 707,007
Int. Cl.² B61B *13/10*
U.S. Cl. 104—138 R **7 Claims**



1. A transportation system comprising:
a vehicle body;
a plurality of shafts disposed around said vehicle body and supported thereby axially parallel to the direction of travel of said vehicle body;
a plurality of tracks disposed around said vehicle body, a concave surface of each track being coaxial with an adjacent said shaft and including a plurality of helically curved ribs forming the running surface thereof;
carriage means axially mounted on each of said shafts for rotation thereon; and
a plurality of wheels rotatably mounted on each said carriage means having their axes of rotation in a single plane perpendicular to the axes of said shafts for successive engagement with and disengagement from said running surface of an adjacent said track.

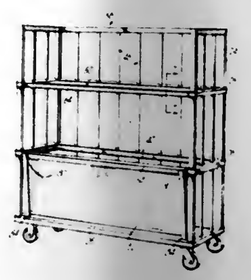
4,066,022

SHELF STRUCTURE AND METHOD OF MAKING SAME

Arthur H. Graves, R.R. #1, Kingston, Ontario, Canada

Filed Apr. 29, 1976, Ser. No. 681,409
Claims priority, application Canada, July 17, 1975, 231673
Int. Cl.² A47B *85/00*
U.S. Cl. 108—14 **3 Claims**

1. A shelf structure including a frame and a pluraiity of shelves therein, said frame comprising four vertical tubular corner posts of rectangular cross section with a plurality of horizontally disposed, vertically spaced rail members defining the perimeter of said structure and being welded to said posts to interconnect them together to form a rigid frame; said frame being elongated and rectangular in form having at least an open front portion and end portions; said rail members each being of inverted U-shape in cross section with a cap portion and integrally formed outer and inner depending flanges, portions of said cap being cut away to allow positioning therein of the corner posts and whereby the outer flange of the rail is wrapped around the exterior of said post; tubular end closure members, parallel with the corner posts, in the ends of the structure and extending upwardly through the cap of each rail and being secured to at least one thereof, the inner flange of



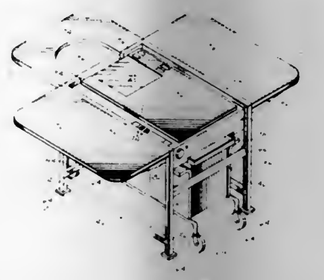
each rail having inwardly extending lower and upper ribs; and a shelf positioned within the confines of each rail member with edges of the shelf being held against vertical movement relative to each rail member by said upper and lower ribs.

4,066,023

COPY MACHINE TABLE

Kingdon R. Hughes, P.O. Box 2424, Midland, Tex. 79701

Filed Jan. 24, 1977, Ser. No. 761,805
Int. Cl.² A47B *37/00*
U.S. Cl. 108—50 **13 Claims**



1. A table adapted for use with a copy machine, said copy machine having
a. a rectangular top surface,
b. a transparent platen on said top surface,
c. an ejection slot for ejecting copies in a side below said top surface,
d. a paper input slot for injecting paper in a side below said top surface,
e. an access door in a side below said top surface, and
f. a base supporting said copy machine on the floor;
the improved table comprising in combination with the above:
g. a framework on said floor,
h. at least two planar leaves,
j. said copy machine within said framework,
k. leaf hinges attached to each planar leaf,
m. said leaf hinges securing each of said planar leaves to the framework in a horizontal position with at least one side of each of said planar leaves adjacent to at least one side of the copy machine within said framework, and
n. said leaf hinges also securing each of said planar leaves to the framework in a horizontal position with the upper surfaces of said planar leaves coplanar with the transparent platen of said copy machine as defined above,
o. said leaf hinges further forming means for securing said planar leaves to the framework so that leaves may be folded to a vertical position proximate
said framework,
p. Said framework having four legs,
q. said legs rigidly connect together on three sides of said copy machine,
r. said framework having at least two top braces connected to the top of said legs,
s. said leaves being connected to said top braces by said hinges,
t. said framework having a middle brace connecting two legs below the tops thereof,
u. said middle brace being below said rejection slot.

4,066,024

ROTATING FLUIDIZED BED COMBUSTOR

Chadwell O'Connor, 2024 Galaxy Drive, Newport Beach, Calif. 92660

Filed Dec. 24, 1975, Ser. No. 644,127
Int. Cl.² F23G *5/06*; F23D *19/02*
U.S. Cl. 110—8 F **7 Claims**



1. A rotary fluidized bed combustor comprising, in combination, a cylindrical drum mounted for rotation about its axis with said axis being substantially horizontal, said drum having annular end plates defining inlet and outlet openings, a charge of sand in said drum defining a bed extending between said openings, said bed separating the interior of said drum into a combustion region above the bed and a pyrolysis region defined by the bed, means for slowly rotating said drum so as to tumble and thus fluidize said sand, means for igniting waste material and the gas generated by pyrolysis of said waste material fed through said inlet opening and into said fluidized sand bed, and means for receiving ash and stack gas from said outlet opening.

4,066,025

HEM FOLDING MACHINE

Billy Logan Speer, P.O. Box 416, Campbellsville, Ky. 42718

Filed Aug. 4, 1975, Ser. No. 601,251
Int. Cl.² D05B *33/02, 35/02*
U.S. Cl. 112—121.29 **22 Claims**



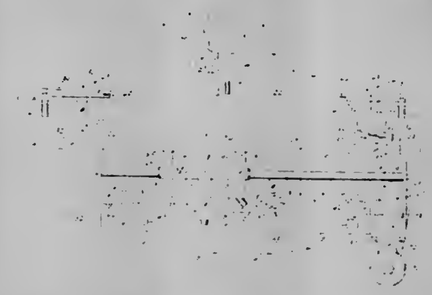
1. A hemming machine comprising conveyor means to continuously convey successive pieces of cloth, progressive folding, tucking and sewing means adjacent said conveyor means adapted to fold and tuck within the fold an edge of each cloth piece preparatory to sewing, said folding and tucking means including spaced guide rails for maintaining a spaced relation between adjacent layers of the hem material and supplemental tapered guide means extending between said spaced guide means for engaging, folding back and tucking the cloth edge between said adjacent layers, and hem engaging conveying means supplemental to and synchronized for movement with the first mentioned conveyor for continuously drivingly engaging opposite outside surfaces of the hem portion of said cloth pieces during passage through said progressive folding, tucking and sewing means, said hem engaging conveying means including means adjacent the outside surface of each of said guide rails and cooperating with said surface to feed each of said outside hem portion surfaces therebetween.

4,066,026

WORK TRANSPORT APPARATUS FOR USE WITH A BUTTON ATTACHMENT MACHINE

Morris Dean Hunt, P.O. Box 315, Dickey Woods, Adamsville, Tenn. 38310

Filed Feb. 20, 1976, Ser. No. 659,891
Int. Cl.² D05C *9/04*
U.S. Cl. 112—121.15 **17 Claims**



7. A work transport apparatus for use with a fastener applicator unit for attaching fastener elements to a garment workpiece, said transport apparatus comprising:
a. support means,
b. carriage means mounted to the support means for linear movement relative to the applicator unit,
c. workpiece holding means mounted for movement with the carriage means including:
1. a first workpiece holder having means for gripping a portion of the workpiece,
2. a second workpiece holder disposed in spaced relation from the first workpiece holder and having means for gripping another portion of the workpiece;
3. means for moving one of said holders linearly relative to the other of said holders to apply tension to the workpiece,
d. each of said holders includes pneumatically actuated jaw members, and
e. one of said holders includes pneumatically actuated relatively movable portions providing the means for moving said holders relative to each other.

4,066,027

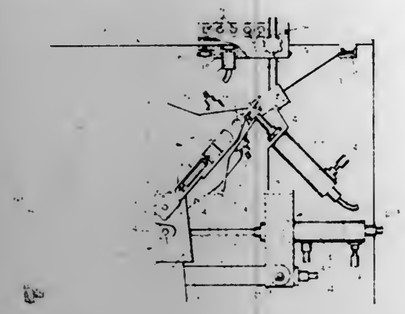
WORKPIECE FEEDER DEVICE FOR THE TRAVELING GRIPPER OF A SEWING UNIT

Nerino Marforio, Milan, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Apr. 30, 1976, Ser. No. 681,914
Claims priority, application Italy, May 14, 1975, 23309/75
Int. Cl.² D05B *21/00*
U.S. Cl. 112—121.15 **10 Claims**

1. A workpiece feeder device for a traveling gripper movable while holding and tensioning a workpiece being advanced along the work surface of a sewing unit by the feeding elements of a sewing machine mounted adjacent one end thereof, said workpiece feeder device comprising:
a. a support member mounted on the sewing unit adjacent that end opposite the end supporting the sewing machine;
b. means defining a positioning element carried by said support member for receiving and locating the traveling gripper at the completion of each sewing cycle;

c. a workpiece positioning means carried by said support member in a position immediately adjacent to said positioning element for locating the trailing end of a workpiece in readiness for the next sewing cycle;
d. means operatively associated with said workpiece positioning means for clamping the workpiece located thereby;
e. means connected to said support member and operatively connected to said workpiece positioning means for moving the latter to a position spaced from said workpiece being held by said clamping means;
f. displacing means carried on said support member and operatively connected to said positioning element for pivoting the traveling gripper located therein to a position for engaging the workpiece; and
g. closing means mounted on said support member for engaging the traveling gripper and closing the same to effect gripping of the workpiece held by said clamping means prior to the start of the sewing cycle.

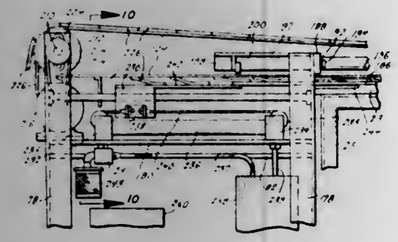


4,066,028

GUIDING, STITCHING AND DELIVERING SYSTEM

Owen T. Hornkohl, Webster Groves, Mo., assignor to Angelica Corporation, St. Louis, Mo.

Division of Ser. No. 458,570, April 8, 1974, Pat. No. 3,986,467.
This application May 10, 1976, Ser. No. 684,660
Int. Cl.² D05B *33/00*
U.S. Cl. 112—121.29 **7 Claims**



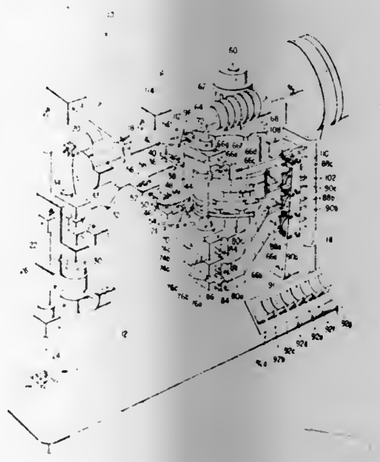
1. A material-handling system wherein objects are moved toward a stacking area by pulling forces which are applied to said objects by a delivering means, wherein a movable platform overlies said stacking area and can receive at least a part of the leading edge of an object being pulled toward said stacking area by said pulling forces applied by said delivering means, wherein a moving means can move said movable platform out of register with said stacking area and thereby permit said object, which is being pulled toward said movable platform by said pulling forces applied by said delivering means, to fall downwardly into said stacking area, wherein sensing means senses the movement of a selected edge of said object being pulled toward said stacking area by said pulling forces applied by said delivering means and actuates said moving means means to cause said movable platform to move out of register with said stacking means and thereby permit said object to fall downwardly into said stacking area, wherein said delivering means overlies at least a part of the upper surface of said movable platform so said delivering means can pull said part of said leading edge of said object onto said upper surface of said platform, and wherein said pulling forces applied by said delivering means continue to pull said object toward said stacking area after said sensing means has sensed movement of said selected edge of said object toward said stacking area and has actuated said moving means to cause said movable platform to start moving out of register with said stacking means, whereby said object continues to receive said pulling forces from said delivering means and thereby continues to move toward said stacking area until it falls away from and out of engagement with said delivering means.

4,066,029

ELECTROMECHANICAL REMOTE CAM SELECTOR FOR SEWING MACHINES

Alfred R. Suchsland, Morris Plains, and Terry L. Wilson, Parsippany, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Jan. 12, 1976, Ser. No. 648,077
Int. Cl.² D05B *3/02*
U.S. Cl. 112—158 E **16 Claims**



1. In a sewing machine having stitch forming instrumentalities, mechanism in said sewing machine responsive to pattern information for regulating at least one of said stitch forming instrumentalities including, a plurality of aligned pattern cams each carrying pattern information, pattern cam follower means including a single cam follower for selectively sensing the pattern information from said pattern cams and for regulating the stitch forming instrumentalities, adder means operably connected to said cam follower means for selectively associating said pattern cam follower means with a pattern cam, and electric switch means for selecting individual patterns of stitches, said switch means being connected to said adder means for initiating association of said pattern cam follower means with a pattern cam carrying pattern information corresponding to the selection of said switch means.

4,066,030

MECHANICAL COUPLING FOR MARINE VEHICLES

Louis Milone, 531 Jefferson St., New Orleans, La. 70121

Filed Mar. 1, 1976, Ser. No. 662,973
Int. Cl.² B63B *21/00, 21/56*
U.S. Cl. 114—230 **13 Claims**



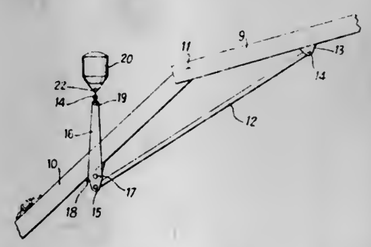
12. A mechanical coupling for marine vehicles including:
a. a first member having a vertically disposed track member,
b. a second member having an elongated shaft including a locking portion at one end thereof for engagement with said vertically disposed track member,
c. means for rotating said elongated shaft for selectively engaging said locking portion thereof with, and disengaging the same from, the vertically disposed track member,
d. said second member including a housing through which said elongated shaft extends,
e. means on said housing engageable with the periphery of said elongated shaft for selectively locking said elongated shaft to prevent rotational movement thereof,
f. a retaining member within said housing in sleeved engagement with said elongated shaft, and
g. locking means extending through said retaining member into securing engagement with said shaft for preventing longitudinal movement of said elongated shaft with respect to said housing.

4,066,031

DEVICE FOR REGULATION OF ANCHORAGE FORCES

Jean Louis Corgnet, Boulogne, France, assignor to Compagnie Francaise des Petroles, Paris Cedex, France

Filed Sept. 9, 1976, Ser. No. 721,929
Claims priority, application France, Sept. 26, 1975, 75.29523
Int. Cl.² E02B *17/00*
U.S. Cl. 114—294 **5 Claims**



1. An anchor arm for anchoring a floating body to a submerged anchor point comprising anchor means adapted to be secured at the bottom of a body of water for pivotal movement about a vertical axis, upper and lower anchor arm parts articulated to each other and to said floating body and said anchor means respectively and force regulating means for regulating the forces transmitted to the anchor arm by said floating body including articulated coupling means connected to said upper and lower arm parts on opposite sides of their articulation and float means connected to said articulated coupling means to impart a force to said anchor arm parts opposite to the forces transmitted by said floating body to said upper and lower arm parts.

4,066,032

ELECTRICALLY POWERED OUTBOARD MOTOR MEANS

Calvin C. Travis, 1735 Coleen Road, Memphis, Tenn. 38111

Filed Dec. 13, 1976, Ser. No. 750,258
Int. Cl.² B63H *21/26*
U.S. Cl. 115—18 E **10 Claims**



1. An improved electrically powered outboard motor means of the type for causing a boat to move upon a body of water and having drive means including a water submersible electric motor and a propeller member rotatably driven by said electric motor, having shaft means fixedly attached to said electric motor of said drive means, having attached means for movably attaching said shaft means to the boat with said drive means positioned beneath the surface of the body of water, and having circuit means including a first conductor member movably mounted about said shaft means for selectively receiving electrical power from a source of electrical power and including a second conductor substantially nonrotatably mounted about said shaft means when said motor means is being used in a normal manner to cause a boat to move upon a body of water for selectively transferring electrical power from said first conductor member to said electric motor when said first and second conductor members are contacting one another, wherein the improvement comprises: movably attaching said second conductor member to said shaft means for allowing said second conductor member to remain in contact with said first conductor member when said shaft means is raised or lowered relative to said first conductor member.

4,066,033

OVER INFLATION AND UNDER INFLATION INDICATOR FOR TIRES

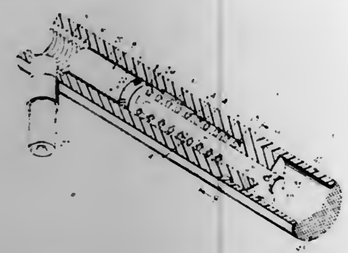
Robert A. Perry, 777 Grape St., Riverside, Calif. 92507, and Placido Martos, 12021 Holston Ave., La Mirada, Calif. 90638

Filed May 21, 1976, Ser. No. 688,711
Int. Cl.² B60C *23/04*
U.S. Cl. 116—34 R **5 Claims**

1. A device for indicating an abnormal air pressure within a tire comprising,
a housing having a bore therein,
means for mounting said housing with one end of said bore in communication with the interior of said tire,
the opposite end of said bore being in communication with the atmosphere,
said bore in the housing having a sealing section and a relieved section,
a piston in said bore, said piston having a portion extending beyond said opposite end of said bore,
sealing means on said piston,
said piston being acted on by air from said tire to urge said piston toward said opposite end of said bore,
biasing means for urging said piston toward said one end of said bore,

said air overcoming said biasing means to cause said piston to locate said sealing means in engagement with said sealing section when said air is at an optimum pressure whereby to prevent movement of said air along said bore and between said piston and said bore,

said biasing means overcoming said air to locate said sealing means over said relieved section when said air is at any of different abnormal pressures whereby to permit move-



ment of said air along said bore and between said piston and said bore, and

means responsive to movement of said air along said bore for producing an indicating signal comprising whistle means on the extending portion of said piston,

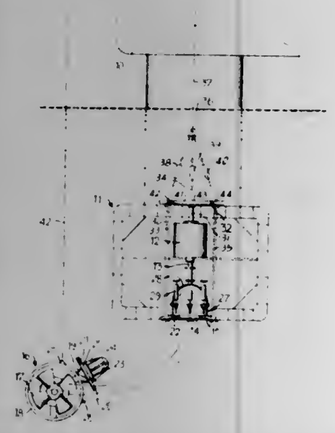
said device having a channel formed by a flat portion of the piston coacting with a portion of the housing at the top to convey air to said whistle means to impinge upon the whistle means and thereby produce said indicating signal.

4,066,034

APPARATUS FOR MOUNTING AND DISMOUNTING A SUBMERGED PROPELLER UNIT FOR A FLOATING BODY

Kjell Haglund, Karlstad, Sweden, assignor to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed June 1, 1976, Ser. No. 691,778
Claims priority, application Sweden, June 6, 1975, 7506472
Int. Cl.² B63H *1/14*
U.S. Cl. 115—34 R **3 Claims**



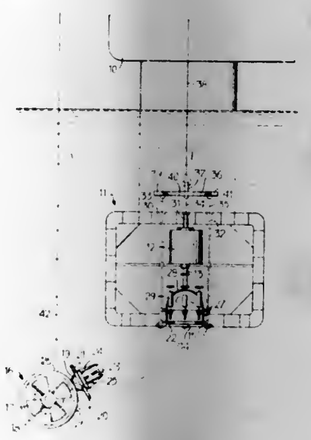
1. Apparatus for lifting a propeller unit having a mounting flange and a plurality of lifting elements spaced about said mounting flange from a position away from and beneath a floating body to an assembly position where the mounting flange is adjacent and in proper relation for assembly to a flange defining an opening in the bottom of the body, or for lowering it away from said assembly position, wherein the improvement comprises means forming a plurality of passageways extending downwardly through the body from inlet ports in the top of the body to outlet ports in the bottom of the body and spaced about said opening therein, a plurality of cables threaded through said respective passageways and extending below said outlet ports, means connecting the upper ends of said cables to a common hoisting cable, means at the lower end of each cable for coupling the cable to one of said propeller unit lifting elements, respectively, means enabling adjustment of the length of at least one of said cables, and cable spreader means disposed between the inlet ports of said passageways and the upper ends of said cables and having cable receiving portions for maintaining said cables in predetermined lateral spatial arrangement where they enter said inlet ports, the lateral spatial arrangement of said inlet ports, passageways, outlet ports and the cable receiving portions of said spreader means being disposed in substantial conformity with the lateral spatial arrangement of said propeller unit lifting elements, whereby said propeller unit can be brought into proper position for assembly to the bottom of said floating body by raising said common hoisting cable.

4,066,035

APPARATUS FOR MOUNTING AND DISMOUNTING A SUBMERGED PROPELLER UNIT FOR A FLOATING BODY

Kjell Haglund, Karlstad, and Hakan Hasse Carlsson, Kristinehamn, both of Sweden, assignors to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed June 1, 1976, Ser. No. 691,840
Claims priority, application Sweden, June 6, 1975, 7506471
Int. Cl.² B63H *5/06*
U.S. Cl. 115—34 R **2 Claims**



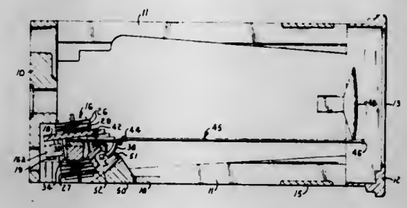
1. Apparatus for lifting a propeller unit having a mounting flange and a plurality of lifting elements spaced about said mounting flange from a position away from and beneath a floating body to an assembly position where the mounting flange is adjacent and in proper relation for assembly to a flange defining an opening in the bottom of the body, or for lowering it away from said assembly position, wherein the improvement comprises-means forming a plurality of passageways extending downwardly through the body from inlet ports in the top of the body to outlet ports in the bottom of the body and spaced about said opening therein, a plurality of cables threaded through said respective passageways and extending below said outlet ports, a yoke supporting above the body, means connecting the upper ends of said cables to said yoke, and means at the lower end of each cable for coupling the cable to one of said propeller unit lifting elements, respectively, said passageways and said means connecting the cables to said yoke being disposed in correspondence with the spatial arrangement of said propeller unit lifting elements, whereby said propeller unit can be brought into proper position for assembly to the bottom of said floating body by raising said yoke.

4,066,036

COMMAND BAR SYSTEM

James Nelson Harrington, Olathe, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Nov. 18, 1976, Ser. No. 742,751
Int. Cl.² G01D *13/00*
U.S. Cl. 116—114 R **10 Claims**



1. A command bar device for providing pitch and roll information, said device comprising:

a frame;

a magnet assembly including a permanent magnet;

means mounting said magnet assembly to said frame for pivotal movement about a pair of mutually perpendicular axes corresponding to pitch and roll axes;

a command bar coupled with said magnet assembly for movement therewith about said axes;

a pair of coils supported on said frame in proximity to said magnet, said coils being operable to receive current to produce fields for selectively deflecting said magnet in a manner to pivot said magnet assembly about each of said axes, thereby displacing said command bar with respect to said axes in movement corresponding to pitch and roll movement; and

means providing an indication of the direction and extent to which said command bar is displaced with respect to said axes.

4,066,037

APPARATUS FOR DEPOSITING DIELECTRIC FILMS USING A GLOW DISCHARGE

Adir Jacob, Framingham, Mass., assignor to LFE Corportion, Waltham, Mass.

Filed Dec. 17, 1975, Ser. No. 641,441
Int. Cl.² C23C *13/04*
U.S. Cl. 118—49.1 **4 Claims**

1. Apparatus for depositing a film on a substrate comprising:

a reaction chamber,

means for closing said chamber,

means for continuously evacuating said chamber,

means for dispersing a first gas within said chamber,

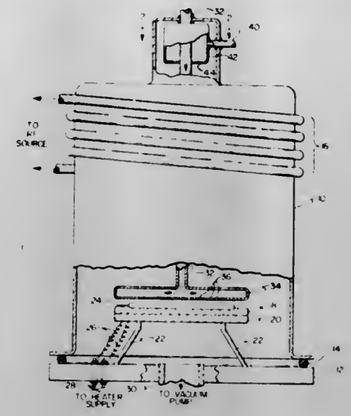
gas excitation means external of said chamber for activating said first gas and forming an RF glow discharge zone within a portion of said chamber,

substrate support means positioned within said chamber beyond said glow discharge zone,

said substrate support means comprising a metallic plate having a recess therein for accepting a substrate and having heater means associated therewith for maintaining said plate at a temperature in excess of 200° C,

and means for dispersing a second gas within said chamber beyond said glow discharge zone and adjacent said substrate support means,

whereby said activated first gas and said second gas react in the vicinity of said substrate support means to deposit a



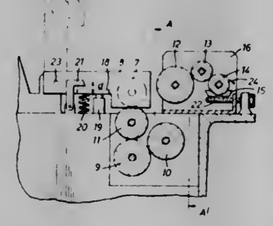
film on a substrate positioned on said substrate support means.

4,066,038

PRINTING AND COATING APPARATUS

Orin S. Shutie, Greenford, and Leonard A. Jenkins, Newbury, both of England, assignors to Metal Box Limited, England

Filed July 13, 1976, Ser. No. 704,789
Claims priority, application United Kingdom, July 23, 1975, 30728/75
Int. Cl.² B05C *1/02*
U.S. Cl. 118—218 **8 Claims**



1. Apparatus for coating a hollow article, said apparatus comprising a mandrel adapted to support an article and rotatably mounted on an arm pivotable from an article feeding position to first and second coating positions, a first holding means to hold the arm in a first coating position, a first coating means adjacent said first coating position, a second holding means to hold the arm in a second coating position intermediate said first coating position and said article feeding position, and a second coating means at said second coating position.

4,066,039

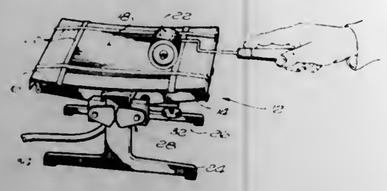
ADJUSTABLE SECURING BASE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Paul P. Zebus, Lakewood, and Poley N. Packer, Long Beach, both of Calif.

Filed Sept. 7, 1976, Ser. No. 721,150
Int. Cl.² B05C *13/00*
U.S. Cl. 118—500 **5 Claims**

1. An adjustable securing base having a surface contour of curvature which can be adjusted to support an adjacent part on said surface of curvature comprising:

a flexible thin plate forming said securing base, said plate being of elongate configuration and having a pair of ends;
a fulcrum secured to the underside of said plate and extending along the central width of said plate in support thereof;
an opening formed in said plate;
vacuum means connectable in communication with said opening for applying vacuum pressure to one surface of



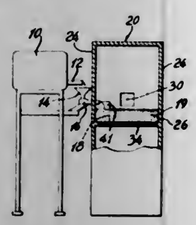
said adjacent part when disposed on said plate for securing said part to said plate; and
adjusting means connected to opposite ends of said plate which are remote from said fulcrum for simultaneously applying similarly directed leverage forces substantially perpendicular to said plate and at the ends thereof which are remote from said fulcrum for flexing said plate and thereby adjusting its surface of curvature in a selected convex or concave configuration.

4,066,040

CONTINUOUS POWDER FEED SYSTEM FOR MAINTAINING A UNIFORM POWDER COATING THICKNESS ON OBJECTS BEING COATED BY ELECTROSTATIC FLUIDIZED BEDS

Michael A. Dudley, Toronto; Mellapalayam R. Parthasarathy, Verdun, and Douglas C. Nerthersole, Laval, all of Canada, assignors to Canada Wire and Cable Limited, Toronto, Canada

Filed May 6, 1976, Ser. No. 683,775
Claims priority, application Canada, Feb. 26, 1976, 246616
Int. Cl.² B05C *19/02*
U.S. Cl. 118—629 **10 Claims**



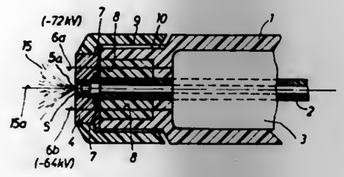
1. A continuous powder feed system for feeding powder to and removing it from the coating bed of an electrostatic fluidized bed coating unit of the type wherein an object to be coated is passed through a cloud of electrically charged particles located above the fluidized powder bed, such as to maintain an essentially uniform powder cloud above the bed comprising:
a. a powder container and discharger means for continuously feeding powder into said coating bed in an essentially non-agglomerated form;
b. means for channelling the powder entering the coating bed away from the coating area initially to facilitate optimum electrostatic charging of the powder prior to deposition;
c. powder retaining wall means for containing the bed of said coating unit during fluidization comprising a plurality of powder retaining walls, at least one of said powder retaining walls having a height such as to determine the powder level in the coating bed and permitting a uniform overflow of excess powder from the coating bed across the length of said at least one of said powder retaining walls; and
d. a powder collection system for retrieving the overflowing powder from the coating bed.

4,066,041

APPARATUS FOR ELECTROSTATICALLY APPLYING COATING MATERIAL TO ARTICLES AND THE LIKE

Karl Buschor, and Peter Ribnitz, both of St. Gallen, Switzerland, assignors to Gema AG Apparatebau

Filed Apr. 2, 1976, Ser. No. 672,955
Claims priority, application Switzerland, Apr. 11, 1975, 4661/75
Int. Cl.² B05B *5/02*
U.S. Cl. 118—629 **4 Claims**



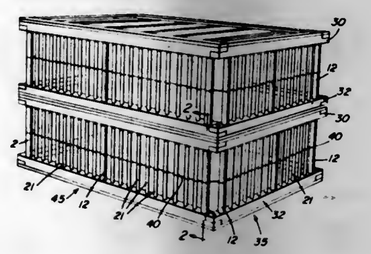
1. An apparatus for electrostatically applying coating materials to articles, comprising infeed means for delivering the coating material, means for the airless atomization of the coating material including a nozzle cooperating with said infeed means, an electrode arrangement to which there is applied high-voltage for electrically charging the coating material and for maintaining an electrical field for the transport of the charged material particles of the coating material to the article to be coated, said electrode arrangement comprising at least two electrodes arranged at the region of said nozzle having means connected thereto for applying a high-voltage of the same polarity but different magnitudes to said electrodes, said nozzle having a nozzle opening, and the electrical field between said electrodes covering said nozzle opening in the form of a transverse field, said electrodes comprising wires extending substantially parallel to the axis of the spraying jet of the coating material applied to the article, said wires possessing essentially the same spacing from said nozzle opening.

4,066,042

HOLLOW PLASTIC COOP DOWELS WITH WOOD CORE

Charles R. Bright, 805 Spring Valley Drive, Nacogdoches, Tex. 75961

Filed Jan. 27, 1976, Ser. No. 652,814
Int. Cl.² A01K *31/07*
U.S. Cl. 119—19 **7 Claims**



1. A coop for poultry and the like having top and bottom panels of wood or like material, opening means for access to the interior of said coop, two side panel frame members and two end panel frame members appropriately formed by spaced

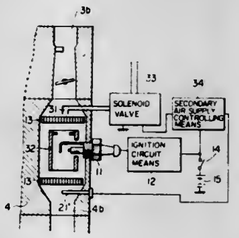
dowel construction between the top and bottom panels, the end and side panels each including a number of dowels spaced along the periphery of the frame members, the improvement comprising; means to substantially increase the strength of the over-all coop and reduce repair and maintenance required on same, including reinforcing structure to cover selected ones of the dowels, said reinforcing structure including double layer compartmentalized tubing structure of sufficient length to extend between and in positive contact with the top and bottom panels, the tubing structure further including an inner tube spaced from an outer tube by means of longitudinal spacers extending radially between the outer side of the inner tube and the inner side of the outer tube with said entire structure being formed of plastic material, and additional means between at least some of the dowels and the reinforcing structure for substantially reinforcing the over-all coop construction.

4,066,043

FUEL REFORMING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Masaharu Sumiyoshi, Toyota; Yukiyasu Tanaka, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 487,785, July 11, 1974. This application Feb. 27, 1976, Ser. No. 662,254
Claims priority, application Japan, July 26, 1973, 48-84345; July 26, 1973, 48-84348; Nov. 15, 1973, 48-128617; Nov. 19, 1973, 48-129988; Nov. 20, 1973, 48-130905; Mar. 12, 1974, 49-28876
Int. Cl.² F02B *43/08*
U.S. Cl. 123—3 **9 Claims**



1. A fuel reforming system for an internal combustion engine operable with a hydrocarbon fuel comprising:
a passage for a rich mixture of air and the fuel,
at least a single spark plug disposed in said passage for imperfectly burning a part of said rich mixture in said passage to reform and vaporize the fuel contained in said rich mixture,
a secondary air intake pipe having an open end disposed in said passage upstream of said spark plug for supplying a secondary air to said passage, and
means for controlling said imperfect burning of said rich mixture.

4,066,044

ROTARY ENGINE WITH TONGUE AND GROOVE INSERTS IN ROTOR FACES

Charles Jones, Hillsdale, and Robert William Loyd, Jr., Wyckoff, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Sept. 9, 1976, Ser. No. 721,675
Int. Cl.² F04B *55/02*
U.S. Cl. 123—8.09 **6 Claims**

1. A rotor for a rotary combustion engine, said rotor comprising:
a. a main portion having a generally polygonal profile such that said rotor has a plurality of circumferentially spaced apex portions and a plurality of working surfaces with each working surface of said rotor extending between adjacent apex portions, said rotor main portion having a plurality of internal compartments for the circulation of a cooling medium therethrough with each of the rotor apex portions having one of said compartments disposed adjacent thereto;
b. an insert member for each working surface of said rotor with each insert member being elongate to extend circumferentially substantially from one apex portion to the other of its working surface but terminating short of the apex seals of said apex portions to overlie the major portion of



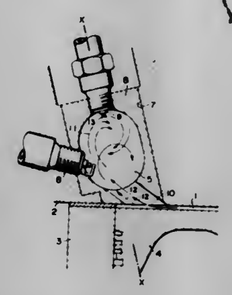
said working surface and having an outwardly facing recess; and
c. means including a tongue and groove fit for securing each insert member to the rotor so as to leave a gap between the major portion of the facing surfaces of said insert and rotor, each tongue and groove fit for an insert member running in a generally circumferential direction between associated apex portions of the rotor to permit circumferential thermal expansion and contraction of the periphery of said insert member relative to the rotor.

4,066,045

INTERNAL COMBUSTION ENGINE PROVIDED WITH PRECOMBUSTION CHAMBER

Takao Suzuki, Shizuoka, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 19, 1975, Ser. No. 551,023
Claims priority, application Japan, Aug. 8, 1974, 49-90996
Int. Cl.² F02B *19/00*
U.S. Cl. 123—30 D **1 Claim**



1. An internal combustion engine comprising:
a cylinder;
a cylinder head;
a piston reciprocably disposed in said cylinder;
a main combustion chamber defined by said piston, said cylinder, and said cylinder head;
a precombustion chamber in said cylinder head, said precombustion chamber having a longitudinal axis;
an ignition plug in said precombustion chamber;

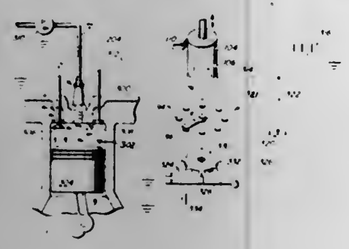
a fuel injection nozzle in said precombustion chamber;
means defining a passage communicating said main combustion chamber and said precombustion chamber, one end of said passage opening into said main combustion chamber and the other end thereof opening directly into one end of said precombustion chamber in a direction directly toward said ignition plug, said passage having a cross-sectional area of 1 to 10% of that of said cylinder;
said fuel injection nozzle is positioned adjacent the other end of said precombustion chamber;
said ignition plug is positioned between said passage and said fuel injection nozzle; and
means for producing a plurality of substantially circular swirl flows of air, the centers of which are spaced from each other along the longitudinal axis, in the precombustion chamber and for reducing the velocity of the flows in the precombustion chamber, said means comprising:
said precombustion chamber having its longitudinal axis inclined relative to the axis of the cylinder and being oval in longitudinal cross-section; and
said passage being substantially tangentially disposed relative to the inner surface of the precombustion chamber and being inclined relative to the axis of said cylinder whereby the swirl flows produced in the precombustion chamber interfere with each other as a result of their spaced centers to decrease the velocity of the swirl flows so that flame propagation of a fuel mixture charge is lowered and the amount of NO_x in exhaust gas is reduced.

4,066,046

METHOD AND APPARATUS FOR FUEL INJECTION-SPARK IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Roy E. McAlister, 5285 E. Red Rock Drive, Phoenix, Ariz. 85018

Continuation of Ser. No. 492,548, July 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 232,575, March 7, 1972, Pat. No. 3,830,204. This application Sept. 8, 1976, Ser. No. 721,505
Int. Cl.² F02B *17/00*
U.S. Cl. 123—32 ST **18 Claims**



1. A method of operating an internal combustion engine having a chamber defined by positive displacement elements which are relatively movable through successive cycles of operation wherein the volume of said chamber increases and decreases between maximum and minimum values having a ratio within the range of a conventional spark ignition engine and a pair of spaced electrodes defining an electrical discharge path within said chamber when at a minimum value thereof, said method comprising the steps of:
introducing during each cycle of operation into said chamber a charge of oxidizing gas substantially free of combustible fuel,
compressing during each cycle of operation said oxidizing gas substantially to a volume near said minimum value by the decreasing relative movement of said positive displacement elements,
injecting during each cycle of power operation a combustible fuel as a high pressure jet directly into the oxidizing gas within said chamber at a predetermined time during the compression thereof prior to said positive displacement elements decreasing said chamber to said minimum value in a direction toward one of said electrodes and away from the other electrode so that there is established before the completion of said fuel injection within the chamber space containing said discharge path an interface between the oxidizing gas contacting said other electrode and the injected fuel moving away from said other electrode which presents a range of fuel-oxidizing gas mixture ratios which inherently includes ignitable mixture ratios and mixture ratios both too-fuel-rich and too-fuel-lean to ignite,
causing during each cycle of power operation an electrical current to discharge between said electrodes within said chamber space along said path while said injection is taking place so as to ignite the mixture of oxidizing gas and fuel therein having an ignitable mixture ratio and to establish a flame front which continues by virtue of the continued injection of fuel and the mixture thereof with oxidizing gas within the chamber under the dynamic fluid conditions occasioned by the injected fuel momentum and the relative movement of the positive displacement elements defining the chamber so that substantially the entire charge of injected fuel is burned within an envelope of oxidizing gas in contact with the surfaces of said positive displacement elements defining said chamber,
continuously sensing the speed of rotation of said engine and the position of a speed control mechanism for said engine, and
utilizing the sensed engine speed and speed control mechanism position to determine the time said injection is initiated and the timer period of its continuation so as to optimize the BMEP characteristics of the engine.

4,066,047

TOROIDAL HEAT EXCHANGER HAVING A HYDRAULIC FAN DRIVE MOTOR

Aleksandar Vidakovic, Libertyville; Stanley Urman, Waukegan, and Donald F. Rudny, Mundelein, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Apr. 19, 1976, Ser. No. 678,266
Int. Cl.² F01P *7/02, 11/08*
U.S. Cl. 123—41.12 **6 Claims**



1. In a vehicle having an engine means generating a plurality of heated fluids an apparatus for affecting the heat content of said fluids, said apparatus comprising:
a toroidal heat exchanger having a plurality of annular ring sections, each section having an inlet header tank and an outlet header tank equipped with respective inlet and outlet ports and a plurality of core elements connecting respective inlet and outlet header tanks allowing fluid passage from the inlet header tanks to the outlet header tanks;
conduit means connecting said inlet and outlet header tanks to fluid sources of said engine for allowing fluid communication between said engine and said toroidal heat exchanger;

one of said fluid sources being an engine cooling fluid and at least one of hydraulic operating fluid and lubricating fluid;
a support cone being truncated above the base thereof to form a conical frustrum located in the interior portion of the toroidal heat exchanger surrounded by said core elements thereof, the truncated portion of the support cone covered with a plate having a plurality of apertures therein;
a hydraulic motor having an output shaft, said motor affixed to said plate of said support cone, said output shaft projecting through an aperture in said plate, the hydraulic motor located completely inside said support cone;
a fan having multiple blades carried on said hydraulic motor shaft, said fan blades being positioned outboard of said annular ring sections of said toroidal heat exchanger;
a source of pressurized hydraulic fluid for driving said hydraulic motor;
hydraulic fluid conduit allowing fluid communication between said source of pressurized hydraulic fluid and said hydraulic motor;
a normally closed temperature responsive spool valve for controlling hydraulic fluid flow to said hydraulic motor from said source of hydraulic fluid interposed between said hydraulic fluid source and said hydraulic motor;
conduit means allowing communication of heat fluid from said engine to said temperature responsive spool valve whereby said temperature responsive spool valve is caused to open such that said hydraulic motor receives hydraulic fluid from said source of hydraulic fluid in response to the displacement of said spool valve.

4,066,049

INTERNAL COMBUSTION ENGINE HAVING A VARIABLE ENGINE DISPLACEMENT

Gheorghe Marcel Teodorescu, Bucharest, and Aurel Popa, Breaza, both of Romania, assignors to Institutul National Pentru Creatie Stintifica si Tehnica - Increst, Bucharest, Romania

Filed Aug. 29, 1975, Ser. No. 609,095
Claims priority, application Romania, Sept. 2, 1974, 79892
Int. Cl.² F02B *75/04*
U.S. Cl. 123—48 R **8 Claims**

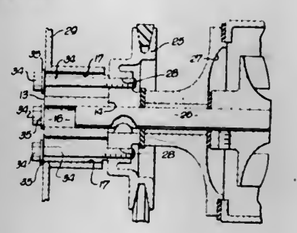


4,066,048

UNIVERSAL AXIAL SPACER FOR MOUNTING FAN ON PUMP SHAFT AND DRIVE PULLEY

Donald D. Premus, 555 E. Ramsey St., Banning, Calif. 92220

Continuation of Ser. No. 621,011, Oct. 9, 1975, abandoned. This application Mar. 29, 1977, Ser. No. 782,357
Int. Cl.² F01D *7/10, 7/04;* F16H *7/22*
U.S. Cl. 123—41.49 **6 Claims**



1. In a fan spacer adapted to unite existing fans with existing pump drive shafts and pulleys on an engine, the combination of
a spacer body having a bore adapted either without reaming, or with reaming, where required, to fit any of said shafts;
an axial fan centralizing boss on one end of said body, said boss fitting a bore already provided in one group of said fans;
four primary radial slots in said body for accommodating four parallel bolts disposable freely at varying radii from the axis of said body and screwing into tapped holes already provided in said pulleys to secure said body axially to one of said pulleys; and
four secondary radial slots in said body equally interspersed circumferentially between said primary radial slots and accommodating another four bolts for securing said fan to said body by extending said bolts through said secondary slots and through bolt holes already provided in said fan.

4,066,050

TWO-STROKE I.C. ENGINES

Martin Douglas Ford-Dunn, Steyning, England, assignor to Ricardo & Co., Engineers (1927) Limited, Shoreham-by-Sea, England

Filed Dec. 18, 1975, Ser. No. 642,307
Claims priority, application United Kingdom, Dec. 18, 1974, 54633/74
Int. Cl.² F02B *33/04*
U.S. Cl. 123—73 SP **7 Claims**

1. An internal-combustion engine having a variable engine displacement comprising:
a housing having a generally centrally located axis;
an odd number of cylinders formed at a first end of said housing parallel to said axis and arranged in a circular array centered on said axis, said cylinders being equally spaced in said circular array and each of said cylinders being provided with a piston;
a movable ball in said housing centered on said axis and articulated to said pistons along an equator of said ball for producing a nutational movement thereof;
a drive shaft journaled in said ball having a shaft axis passing through the center thereof and perpendicular to the plane of said equator;
a first output shaft journaled at a second end of said housing along said axis of said housing;
slide means on said first output shaft engaging one end of said drive shaft for translating the nutational motion thereof to rotary motion, said plane being tiltable variably in response to the torque on said first output shaft;
a support on said housing mounted outwardly of said ball and shiftable toward and away from said cylinders journalling said ball and provided with means for biasing said ball along the axis of said housing and positioning said ball in an equilibrium position responsive to the load on said first output shaft.

engine with crankcase compression and scavenging, comprising:

a cylinder having a wall,

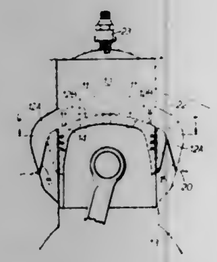
a piston slidable inside the cylinder wall upwardly by a compression stroke to a top dead center position and downwardly by a working stroke to bottom dead center position,

a crankcase below said cylinder and having an inlet port for receiving a throttle controlled combustible air-fuel gaseous mixture which is subject to compression within the crankcase by said piston during its downward working stroke to effect a relatively low mixture pressure at low load operation with partial throttle and a relatively high mixture pressure at full load operation with full throttle,

a plurality of transfer ports formed in said cylinder wall with their upper limits all at the same predetermined distance below the top dead-center piston position and being controlled by movement of said piston so that all the transfer ports will start to be uncovered simultaneously by the descending piston,

exhaust port means in said cylinder wall and means to ensure operation thereof before said transfer ports are uncovered by said piston,

a plurality of transfer port passages extending through the cylinder wall and communicating at their lower ends with the interior of said crankcase and at their upper ends with said transfer ports, and hence with the upper working



space in the cylinder above the piston when the piston reaches a predetermined level on its downward working stroke and uncovers the transfer ports,

at least one but not all of said transfer port passages having an unrestricted gas flow path from end to end for scavenging the said upper working space in the cylinder by the said mixture compressed during each downward working stroke, and

means for improving the scavenging effectiveness of said mixture and combustion conditions during said low load operation by increasing then the velocity of said mixture via at least said one passage and respective transfer port into said upper working spaces,

said velocity increasing means being characterized by gas pressure responsive check valve means disposed in at least one other of said transfer passages and responsive solely to the pressure of said mixture in said crankcase and being normally biased towards its closed position for restricting passage of said low pressure mixture through said other transfer passage during said low load operation and thereby increasing the said velocity at said one port to cause said improved scavenging and combustion conditions,

said valve means being automatically opened up by the relatively high pressure of said crankcase mixture at said full load operation and by intermediate crankcase pressures which exceed the pressure in said upper working space in said cylinder.

4,066,051

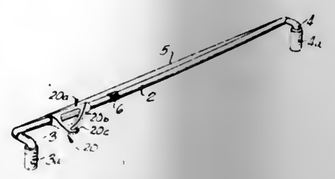
TRAINING AID FOR ARCHERY

John M. Alban, 173 Fr. Zeiser Place (W. 188th St.), Bronx, N.Y. 10468

Continuation-in-part of Ser. No. 156,796, June 25, 1971, abandoned. This application May 2, 1974, Ser. No. 466,200

Int. Cl.² F41B *5/00*

U.S. Cl. 124—86 **10 Claims**



1. An archery training aid for use with a longbow having a central bow handle disposed between two limb members and a bow string attached at opposite ends to and tautly spanning the free ends of said limb members, said aid comprising:

a. means for spanning a central bow handle and a bow string of a drawn longbow, said spanning means having a thickness adapted to permit it to pass between two fingers of an archer so that prior to drawing a longbow the forward end of said spanning means may be held by one hand of an archer along with a central bow handle, while the other hand of the archer grasps a bow string and the opposite end of said spanning means;

b. a first handle at said opposite end of said spanning means, said first handle having a thickness adapted to permit it to be gripped by a drawing hand of an archer along with a bow string and an end of an arrow;

c. a second handle at the forward end of said spanning means, said second handle being oriented transversely to the axis of said spanning means and having a thickness adapted to permit it to be gripped by a bow-gripping hand of an archer in conjunction with a central bow handle for securing said second handle to a central bow handle when a longbow is drawn; and

d. a knocking member mounted on said spanning means adjacent said second handle and having a notch therein for accommodating a bow string.

6. An archery training aid for use with a longbow having a central bow handle disposed between two limb members and a bow string attached at opposite ends to and tautly spanning the free ends of said limb members, said aid comprising:

a. means for spanning a central bow handle and a bow string of a drawn longbow, said spanning means having a thickness adapted to permit it to pass between two fingers of an archer so that prior to drawing a longbow the forward end of said spanning means may be held by one hand of an archer along with a central bow handle, while the other hand of the archer grasps a bow string and the opposite end of said spanning means;

b. a first handle at said opposite end of said spanning means, said first handle having a thickness adapted to permit it to be gripped by a drawing hand of an archer along with a bow string and an end of an arrow;

c. a second handle at the forward end of said spanning means, said second handle being oriented transversely to the axis of said spanning means and having a thickness adapted to permit it to be gripped by a bow-gripping hand of an archer in conjunction with a central bow handle for securing said second handle to a central bow handle when a longbow is drawn; and

d. attaching means on said spanning means for attaching said spanning means to a drawing arm of an archer.

4,066,052

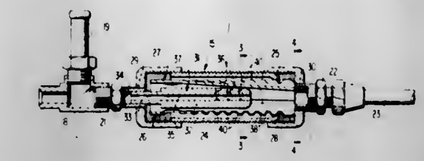
EXHAUST RECYCLING AND CARBON MONOXIDE ELIMINATOR FOR COMBUSTION ENGINES

Leota J. Moore, 910 Lake Shore Drive, Chicago, Ill. 60611, and Robert G. Landwer, 1454 W. Argyle, Chicago, Ill. 60640

Filed Oct. 21, 1976, Ser. No. 734,438

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **9 Claims**



1. A device for recycling combustion products in an internal combustion engine to remove carbon monoxide therefrom and to more completely burn the combustion products comprising a sleeve member forming a housing, conduit means coupling opposite ends of said sleeve member to an engine exhaust and engine fuel induction means, a male jet element supported centrally within said sleeve member in spaced relation thereto and being coaxial therewith and extending through a major portion of the length of the sleeve member and having a downstream end terminating within the sleeve member, said male jet element having a central axial bore formed therethrough from end-to-end and having plural circumferentially spaced longitudinal rows of radial ports leading from the central axial bore and opening through the peripheral surface of the male jet element approximately at the longitudinal center zone of the sleeve member, and a coacting female sleeve element inside of said sleeve member and being supported thereby in coaxial surrounding relationship to the male jet element, said female sleeve element having a plurality of elongated circumferentially spaced fingers of channel form extending for the major portion of its length and said fingers having free separated ends at the downstream end of the device, and said fingers havihg toothed longitudinal edges.

4,066,053

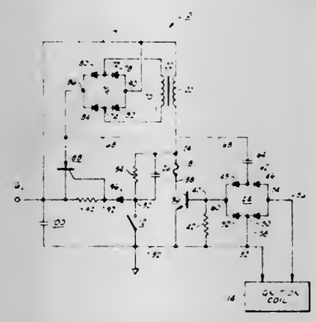
ELECTRONIC IGNITION SYSTEM

John B. Noe, Norman, Okla., assignor to Plasmatronics Company, Norman, Okla.

Continuation-in-part of Ser. No. 605,533, Aug. 18, 1975, Pat. No. 4,005,694. This application Nov. 15, 1976, Ser. No. 741,542

Int. Cl.² F02P *1/00*

U.S. Cl. 123—148 CA **11 Claims**



1. An electronic ignition circuit for use in combination with an internal combustion engine having an electrical power source and ignition means for energization of at least one spark discharge device, comprising:

a capacitor;

switch means actuatable between open and closed positions;

means including a transformer connected to said power source and energized by said switch in the closed position to charge said capacitor to an increased voltage value;

controlled rectifier means having the cathode connected to said power source and the anode connected to said capacitor, which controlled rectifier means is energized by opening said switch means to effect discharge of said capacitor; and

bridge rectifier means connected to conduct current from discharge of said capacitor to said ignition means while clamping the instantaneous voltage value relative to ground.

4,066,054

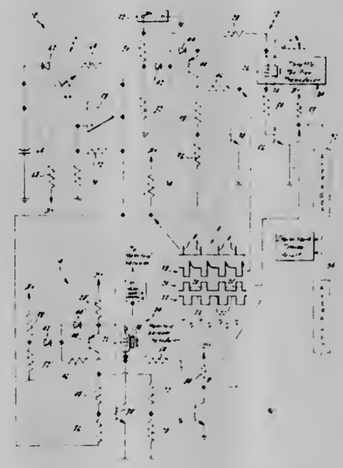
TRANSDUCER CIRCUITS

LaVerne Andrew Caron; Lawrence William Tomczak, both of Sterling Heights, and Frederick William Crall, Farmington, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 559,203, March 17, 1975, Pat. No. 3,997,801. This application Dec. 22, 1975, Ser. No. 642,924

Int. Cl.² F02P *5/04*; F02B *3/00*

U.S. Cl. 123—117 R **8 Claims**



1. In combination:

an internal combustion engine whose operation is controlled in accordance with a pair of mechanical input signals, each of which is representative of a corresponding engine operating parameter;

an oscillator circuit comprising means for generating trigger pulses at a substantially constant triggering frequency which is independent of engine speed;

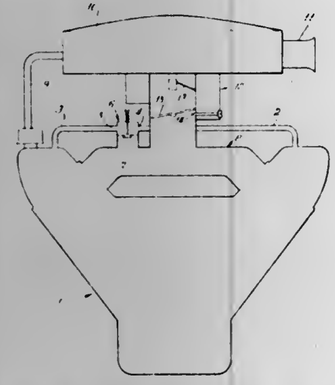
a first monostable circuit which is operatively coupled with said oscillator circuit to receive each said trigger pulse and is immediately tripped upon receipt thereof into its unstable state to develop a first rectangular signal waveform having a frequency exactly equal to that of said trigger pulses and an average value representative of one of said mechanical input signals;

a second monostable circuit which is operatively coupled with said oscillator circuit to receive each said trigger pulse and is immediately tripped upon receipt thereof into its unstable state to develop a second rectangular signal waveform having a frequency exactly equal to that of said trigger pulses and an average value representative of the other of said mechanical input signals;

first averaging circuit means coupled with said first monostable circuit for averaging said first waveform;

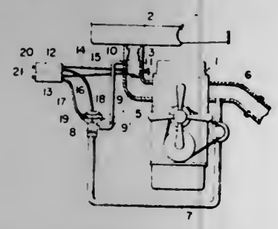
second averaging circuit means coupled with said second monostable circuit for averaging said second waveform;
and means responsive to the two averaged signals of said first and second averaging circuit means for controlling operation of the engine.

4,066,055
POSITIVE CRANKCASE VENTILATION SYSTEM
Lowell T. Hager, West Chicago, Ill., assignor to Clean Power Systems, Inc., West Chicago, Ill.
Division of Ser. No. 434,669, Jan. 18, 1974, Pat. No. 3,924,588.
This application Dec. 8, 1975, Ser. No. 638,979
Int. Cl.² F02M 7/00
U.S. Cl. 123—119 B **3 Claims**



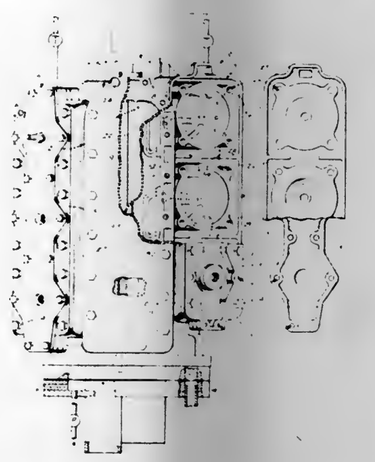
1. The method of continuously withdrawing gases from the crankcase of a carburetor engine of a vehicle to minimize atmospheric pollution and improve the operation of the engine which method comprises conveying crankcase gases from the crankcase to the intake manifold and/or the carburetor air intake as follows: conveying substantially all of the gases withdrawn from the crankcase to the carburetor air intake and substantially none of said gas to the intake manifold during acceleration, conveying substantially all of said gases to the intake manifold during deceleration, and continuously withdrawing gases from the crankcase for passage through the engine during other modes of operation of the engine.

4,066,056
EXHAUST GAS RECIRCULATOR
Hidetaka Nohira; Kiyoshi Kobashi, and Masaaki Tanaka, all of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Nov. 7, 1975, Ser. No. 629,982
Claims priority, application Japan, July 15, 1975, 50-85762
Int. Cl.² F02M 25/06
U.S. Cl. 123—119 A **30 Claims**



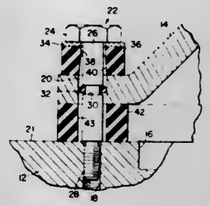
1. An exhaust gas recirculator comprising:
a double diaphragm control valve positioned in a recirculation passage coupling an exhaust system and an intake system of an internal combustion engine, said valve comprising:
a valve shaft,
a valve seat,
a valve body on one end of said shaft for seating on said valve seat,
a first diaphragm and a second diaphragm, the center of each of which is fixed to the valve shaft, said second diaphragm having a larger cross-sectional area than that of said first diaphragm,
means, including said first diaphragm, defining a first pressure control chamber,
a spring in said first pressure control chamber, said spring biassing said valve shaft and valve body thereon toward a position in which said valve body is seated on said valve seat,
means, including said first diaphragm and said second diaphragm, defining a second pressure control chamber, and
the surface of said second diaphragm which is exterior to the second pressure control chamber being in fluid communication with atmospheric air whereby when vacuum is selectively introduced into said chambers, the movement of the valve shaft is controlled in two stages and the spacing of the valve body from the valve seat is changed in two stages so that the flow rate of recirculated exhaust gas can be regulated in two stages.

4,066,057
CYLINDER HEAD MOUNTING APPARATUS FOR INTERNAL COMBUSTION ENGINES
David Jerry Hale, Pickett, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Sept. 4, 1975, Ser. No. 610,320
Int. Cl.² F02F 1/36
U.S. Cl. 123—193 CH **8 Claims**



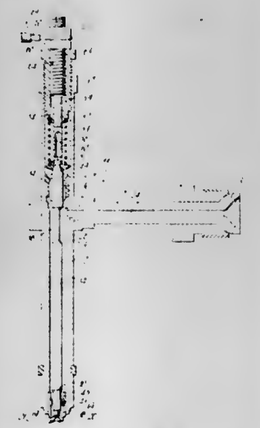
1. In an internal combustion engine having a V-block defining a pair of cylinder banks with a plurality of cylinders arranged as in-line cylinders in each bank, each of said cylinders having an outer sidewall and being closed by a separate cylinder head, each of said cylinder banks having an outer cooling jacket wall encircling said cylinders in the bank and spaced from the cylinder sidewalls for defining a separate cooling chamber about said cylinders in each bank, said separate cylinder head overlying each bank and closing the cylinders and the cooling chamber, said separate head providing the only closure of said cylinder and said cooling chamber, head attachment means secured to said sidewalls for securing of the head to the cylinder bank within the corresponding cooling chamber in inwardly spaced relation to the corresponding jacket wall whereby each of the cooling chambers extends around said head attachment means and provides coolant flow around the head attachment means, said heads having the outer side edges beveled to reduce the width of the engine.

4,066,058
VIBRATION ISOLATION SYSTEM
Glenn Allan Anderkay, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.
Filed May 12, 1976, Ser. No. 685,455
Int. Cl.² E04B 1/99; F02B 77/00
U.S. Cl. 123—198 E **54 Claims**



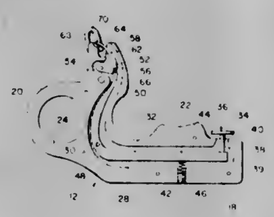
1. A vibration isolation system comprising: base means; cover means having an outer perimeter for mounting on the base means to cover the base means; securing means having head means for securing the cover means on the base means; a plurality of resilient isolating means disposed around the securing means and between the head means and the cover means having predetermined spring rates therebetween; and resilient isolating sealing material means substantially paralleling the outer perimeter of the cover means disposed between the cover means and the base means having a predetermined spring rate therebetween which is equal to or less than twice the sum of the predetermined spring rates of the plurality of resilient isolating means.

4,066,059
FUEL INJECTION NOZZLE VALVE AND IGNITION SYSTEM
Edward A. Mayer, Newburgh, and Jerry L. Nolting, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Jan. 2, 1976, Ser. No. 645,963
Int. Cl.² F02B 3/00; F02P 5/04
U.S. Cl. 123—32 SA **4 Claims**



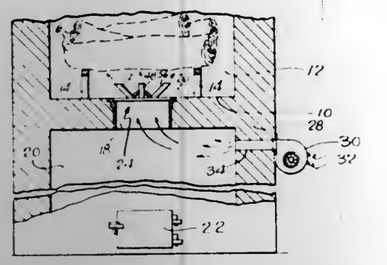
1. In combination with an ignition system for an internal combustion engine that employs fuel injection,
an ignition coil having a high tension secondary winding for generating spark signals and a low tension primary winding for inducing said generation of spark signals, and
circuit means connected to said primary winding for controlling cutoff of a DC current therein, the improvement comprising
a fuel injection valve including a needle and having a closed position and an open position,
a valve seat adjacent to one end of said needle,
means for biasing said needle against said valve seat,
means for lifting said needle off said seat when said fuel injection pressure exceeds a predetermined amplitude,
said valve needle being electrically conductive,
electric circuit means integral with said valve for controlling said DC current cutoff when said valve goes from said closed to said open position,
said valve having means for electrically insulating said needle,
said electric circuit integral with said valve comprises said valve seat and means for making an electric circuit connection to said needle, and
said circuit means connected to said primary winding, also comprises
a transistor in series with said primary winding, and
additional circuit means including said electric circuit means for controlling said transistor and comprising a plurality of said fuel injection valves connected in parallel.

4,066,060
BOW STRING RELEASE DEVICE
Loyd S. Napier, Rte. 1, Box 417A, Sapulpa, Okla. 74066
Filed May 7, 1976, Ser. No. 684,114
Int. Cl.² F41C 17/00
U.S. Cl. 124—35 A **7 Claims**



1. A draw and release device for a bow string and comprising generally L-shaped body means contoured for gripping by a hand and having a substantially coextensive L-shaped internal passageway means with an open end for receiving a bow string and provided therein with a substantially coextensive L-shaped pivotal bell crank means disposed within said passageway means for movement between latch means engaging and releasing positions, independent trigger means carried by said body means and operably connected with said bell crank means for selective pivoting said crank means to pivot bell crank so as to release a latch means from bow string engaging position, latch means pivotally secured within said body means and in communication with said passageway means for selective engagement by said bell crank means, flexible loop means secured to said body means for selective engagement with the bow string, loop receiving recess means provided on the outer periphery of said body means for removably receiving said loop means therein, said latch means extending transversely across said loop receiving recess means and being selectively engageable therewith for alternate opening and closing thereof to alternately retain and release said loop means with respect to said loop receiving recess means.

4,066,061
ASH COLLECTOR COVER AND COMBUSTION ENHANCER FOR A FIREPLACE
William E. Wolford, Rte. 3, Box 184 A, Batesville, Ark. 72501
Filed Oct. 29, 1976, Ser. No. 737,166
Int. Cl.² F23L 5/02
U.S. Cl. 126—135 **14 Claims**



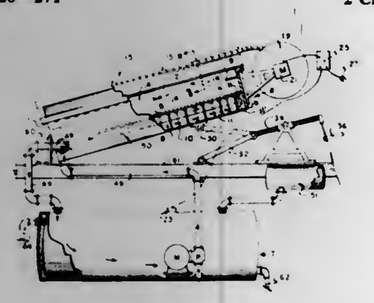
1. In combination with a fireplace having a hearth, a combustion chamber position above said hearth, an ash collector positioned below said hearth, and an opening formed in said hearth leading to said ash collector, the improvement which comprises a combination ash collector cover and combustion enhancer, which comprises:

cover means comprising a substantially planar plate removably positioned over said ash collector opening of said fireplace;

pipe means comprising at least one air pipe extending outwardly from said plate for placing said combustion chamber of said fireplace in fluid communication with said ash collector, said at least one air pipe forming an air channel one end of which in use terminates below said combustion chamber but substantially above the plane of said plate for permitting ashes to accumulate on said plate without clogging said pipe; and

means for pressurizing said ash collector for causing air to flow therefrom through said pipe means into said combustion chamber so as to enhance combustion therein.

4,066,062
SOLAR HEATING SYSTEM
Elmer Houston, 2437 NW. 11th St., Oklahoma City, Okla. 73107
Filed Oct. 28, 1975, Ser. No. 626,455
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **2 Claims**



1. In an improved apparatus for heating a liquid supply by collecting heat from the sun's rays, in combination:

a. an angle mounted flat heat exchange unit having an upper end and a lower end, and a liquid intake at its upper end and a liquid outlet at its lower end, said heat exchange unit having a liquid-tight compartment associated therewith, said liquid-tight compartment comprising a fixed upper plate and a fixed bottom plate, said bottom plate being spaced outwardly from the upper plate, lateral baffles within the area between the top and bottom plates forming channels to guide a liquid laterally from side to side of the heat exchange liquid-tight compartment throughout the area of the liquid-tight compartment from its intake end to its outlet end;

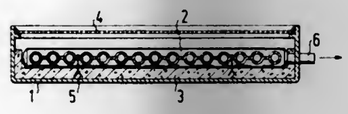
b. a tank for storing the said liquid supply and means for connecting the liquid supply tank with the liquid-tight compartment through fixed conduits connected to said tank including means for pivotally connecting said conduits to the liquid-tight compartment of the heat exchange unit;

c. means for circulating the liquid in the liquid supply tank and the liquid-tight compartment of the heat exchange unit for heating said liquid;

d. said heating apparatus comprising a plurality of individual universally adjustable lenses mounted upon a lens-supporting plate, said plate being mounted above the upper plate of the heat exchanger unit at a distance to focus the sun's rays through the said lenses on the upper plate of the heat exchange unit, said lenses being formed in groups, wherein each group of lenses is adjusted to concentrate the sun'rays at different time periods as the angle of the sun's rays change relative to the upper surface of the upper plate of heat exchange unit;

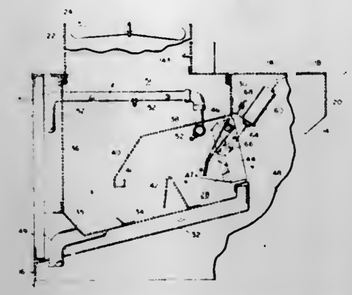
e. supporting means for each of said lenses comprising, a first supporting means fixed to said lenses and diametrically attached thereto, a second lens-supporting member diametrically attached to the lens-supporting plate at 90° from the attachment of the first lens-supporting member to the second lens-support and means for securing each of the first and second lens-supporting members in adjusted position.

4,066,063
DEVICE FOR THE TRANSMISSION OF SOLAR ENERGY TO A LIQUID MEDIUM
Erwin Gross, Burgsolms, and Hans Vowinkel, Florsheim (Main), both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed June 23, 1976, Ser. No. 698,841
Claims priority, application Germany, June 25, 1975, 2528267
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **6 Claims**



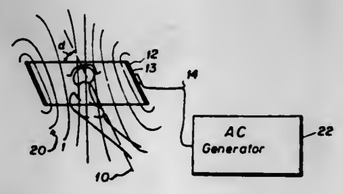
1. A device for the transmission of solar energy to a liquid medium including a flat-bottomed box having an open top, a light-permeable cover closing said top and a heat exchanger positioned within said box below said cover, said heat exchanger comprising a relatively flat platelike blow molded element having a pair of generally parallely extending spaced collecting channels formed therein and a plurality of liquid flow connecting channels integrally formed and in communication with said collecting channels, said platelike element being blow molded from an extruded tubular preform made of black pigmented polypropylene and said connecting channels having a diameter of from 5 to 25 mm, a wall thickness of from 1 to 3 mm and being spaced from each other a distance of from 2 to 30 mm.

4,066,064
KITCHEN VENTILATOR DAMPER ACTUATOR AND CONTROL
Edward B. Vandas, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Apr. 8, 1976, Ser. No. 674,816
Int. Cl.² F23L 13/00
U.S. Cl. 126—299 E **14 Claims**



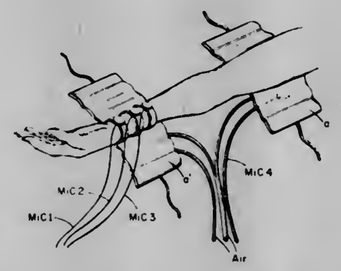
1. In a kitchen venting system having an exhaust duct and power fan means therein, and structure defining a passage between the kitchen and the exhaust duct whereby kitchen fumes are vented through the passage upon operation of the fan means, the improvement comprising the combination of a damper, means supporting the damper to shift between a closed position blocking the passage and an opened position allowing flow through the passage, a fluid power actuator having first and second members that move relative to one another upon the extension and retraction of the power actuator, means securing the first and second members of the power actuator between said structure and damper to provide that extension and retraction of the power acutuator respectively shifts the damper between and to said positions, a source of fluid under pressure, a control valve between said source and the power actuator operable to pressurize and exhaust the latter to control the extension and retraction thereof, said control valve being four-way having two operative positions that respectively interconnect two pairs of ports each consisting of an infeed port and an outfeed port, and one pair of infeed and outfeed ports being connected to opposite operative sides of the power actuator and the opposite pair of infeed and outfeed ports being connected to the source of fluid and to a drain, operable to have powered operation for both the extension and retraction of the power actuator and the resulting shifting of the damper.

4,066,065
COIL STRUCTURE FOR ELECTROMAGNETIC THERAPY
Werner Kraus, Kaulbachstrasse 71, 8000 Munich 22, Germany
Filed May 24, 1976, Ser. No. 689,376
Int. Cl.² A61N 1/42
U.S. Cl. 128—1.5 **8 Claims**



1. Coil structure for electromagnetic therapy comprising at least one layer of electrically conductive windings (12) and terminal means (14) connected to the windings to connect the windings to a source (22) of alternating current, said windings enclosing an open space for treatment of a portion of the body of a patient by generating a low-frequency electromagnetic field upon connection of the windings to said source (22), wherein said windings are shaped to form an elliptical cylinder the end faces of said cylinder being inclined with respect to the central axis of said cylinder, such that the space enclosed thereby is oval, or essentially elliptical in cross section.

4,066,066
ELECTRONIC PULSE FEELING DEVICE FOR PRACTICE OF DIAGNOSIS IN ORIENTAL MEDICINE
Hee Soo Paek, 8-29 2ga, Myunyoondong, Chongrogu, Seoul, South Korea
Filed Oct. 30, 1975, Ser. No. 627,356
Claims priority, application South Korea, July 1, 1975, 1453
Int. Cl.² A61B 5/02
U.S. Cl. 128—2.05 P **1 Claim**



1. Pulse feeling apparatus for use in aiding a medical practitioner in making a diagnosis in the practice of oriental medicine, comprising in combination:

four microphone means each producing electrical signals corresponding to human vascular pulses;

means for restricting blood flow and for positioning a first of said microphone means inside the arm at the elbow whereby said first of said microphone means produces a first electrical signal representing the frequency of the vascular pulse at the location of said restricted blood flow,

means for positioning a second, third, and fourth of said microphone means on the arm at three preselected locations,

amplifier means connected to receive said electrical signals from said microphone means for producing amplified signals therefrom,

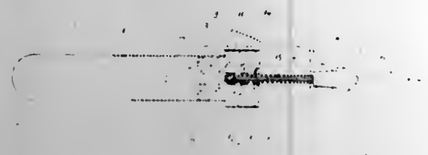
graphical representation means connected to be driven by said amplified signals from said amplifier means corresponding to said second, third, and fourth microphone means electrical signals, and

count display means connected to be driven by said amplified signal from said amplifier means corresponding to the signal produced by said first microphone means representing the pulse rate whereby the pulse rate is communicated to said medical practitioner.

4,066,067
VIAL STOPPER FOR BLOOD SAMPLING DEVICE
Antoine Micheli, Landecy, Switzerland, assignor to DEMATEX Development & Investment Establishment, Liechtenstein
Filed Mar. 19, 1976, Ser. No. 668,795
Claims priority, application Switzerland, Mar. 21, 1975, 3634/75
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 F **20 Claims**

1. A generally cylindrical stopper for a vial comprising, a hollow body of deformable material having a peripheral wall and insertable into the neck of a vial, a closed inner end wall defining a thin sealing diaphragm to obturate the vial, and a

flexible outer end wall defining at least one flexible lip delimiting at least one slot, said at least one lip extending radially inwardly from said peripheral wall and defining a central



opening of relatively small cross-sectional area leading into a chamber of larger cross-sectional area and defined by said end and peripheral walls.

4,066,068

METHOD AND APPARATUS FOR DETERMINING THE AMOUNT OF A SUBSTANCE EMITTED BY DIFFUSION FROM A SURFACE SUCH AS A DERM SURFACE

Gert Erik Nilsson, and Åke Per Öberg, both of Linkoping, Sweden, assignors to Servo Med AB, Stockholm, Sweden

Filed Nov. 26, 1975, Ser. No. 635,348
Claims priority, application Sweden, Nov. 28, 1974, 7414916
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 R **10 Claims**



1. A method at the determination of the amount of a substance emitted by diffusion from a surface, comprising the steps of creating a substantially stable diffusion zone with a measuring area by protecting at least the immediate surroundings of the entire surface or a part thereof against outer passing gas streams, sensing the temperature and the relation between the absolute partial vapor pressure and the saturation pressure at the temperature in question substantially simultaneously each in at least two points within the measuring area at different distances from the surface, determining the absolute partial vapor pressure in at least two points within the measuring area at different distances from the surface with the help of the results of said sensing, and estimating the partial pressure gradient in the diffusion zone with the help of said partial pressure.

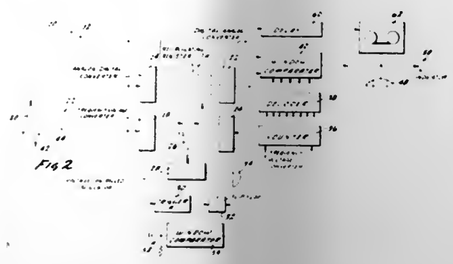
4,066,069

HEART RATE CHANGE SENSOR

Volker Dolch, Salzburger Str. 53, Offenbach, Germany (6050)

Filed May 18, 1976, Ser. No. 687,534
Int. Cl.² A61B 5/04
U.S. Cl. 128—2.06 F **24 Claims**

1. In combination for detecting changes in the heart beat of a patient,
first means for prerecording and recirculating a heart beat of the patient,
second means for detecting each heart beat of the patient and producing signals representing such heart beat,
third means responsive to the signals from the first and second means for producing signals having characteristics representing any differences between the rates of the heart beats from the first and second means,
fourth means responsive to the signals from the third means for adjusting the rate of recirculation of the heart beat in the first means in accordance with the characteristics of the signals from the third means,



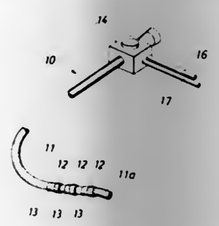
fifth means for comparing the characteristics of the recirculated and detected heart beats, and
sixth means responsive to the signals from the fifth means for providing an indication when the detected heart beat has characteristics different from those of the recirculated heart beat.

4,066,070

TUBULAR MEDICAL INSTRUMENT HAVING A FLEXIBLE SHEATH WITH CUFFS

Mikio Utsugi, Machida, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed June 30, 1976, Ser. No. 701,075
Claims priority, application Japan, June 30, 1975, 50-91455[U]
Int. Cl.² A61B 1/00
U.S. Cl. 128—4 **5 Claims**



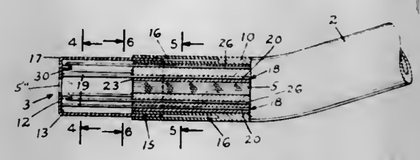
1. A tubular medical instrument comprising:
an elongated flexible sheath for insertion into a body cavity of a human body;
a radially expansible main cuff having a doubled back section on an outer peripheral surface of one end of the flexible sheath and also having outer surfaces which, when said sheath is inserted in the body cavity, are normally in contact with a wall surface of the body cavity when the main cuff is expanded, means for supplying air to said main cuff to expand same, said outer surfaces, when said main cuff is expanded in said body cavity, being continuously deformed in a first direction upon movement of said sheath in said body cavity in a second opposite direction corresponding to that in which the flexible sheath is inserted into the body cavity, without involving substantial slippage;
a radially expansible auxiliary cuff mounted on a portion of the outer peripheral surface of the flexible sheath which is close to the main cuff and is opposite to said one end of the flexible sheath with respect to the main cuff;
said doubled back section riding on the auxiliary cuff as the main cuff is being deformed in the first direction during the insertion of the flexible sheath; and
means for supplying air to said auxiliary cuff to expand same to separate the outer surfaces of the main cuff from the wall surface of the body cavity and to push the doubled back section away from the auxiliary cuff into an original position of the doubled back section with respect to the main cuff.

4,066,071

EXTENSION PULL THROUGH DEVICE TO ALLOW FOR EASIER PASSAGE OF FLEXIBLE FIBER ENDOSCOPE

John G. Nagel, 200 Closter Dock Road, Closter, N.J. 07624

Filed Aug. 15, 1975, Ser. No. 604,999
Int. Cl.² A61B 1/06
U.S. Cl. 128—7 **33 Claims**



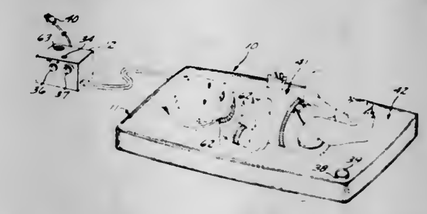
1. An endoscope having a distal end and a proximal end for viewing remote areas by transferring an image from the distal end where the object for viewing is located to the proximal end where the image transferred can be viewed by an operator comprising:
1. a flexible fiber optical bundle comprised of light conducting fibers,
2. at least a portion of the fiber optical bundle being arranged at the distal end to define an optical face for receiving an image and transferring that image to the proximal end of the endoscope,
3. means at the proximal end of the endoscope for viewing the image transferred from the face of the distal end, and moving means at said distal end operable from the proximal end for tractively advancing the endoscope progressively into a passage, said moving means including a small rigid portion fixedly attached at the distal end, a movable pilot section which is slidably engaged with the rigid portion of the distal end, and said moving means further includes means for moving the pilot section relative to the rigid portion and alternately moving the rigid portion relative to the pilot section such that the distal end of the endoscope can be tractively advanced into a passage.

4,066,072

COMFORT CUSHION FOR INFANTS

Betty L. Cummins, Ocean Vista No. 202, 1803 E. Ocean Blvd., Long Beach, Calif. 90802

Filed Feb. 12, 1976, Ser. No. 657,580
Int. Cl.² A61H 1/00
U.S. Cl. 128—40 **24 Claims**



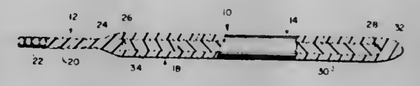
1. A comfort cushion for infants comprising in combination:
a fluid filled flexible elastic hermetically sealed infant supporting, elongated mattress filled with a substantially non-compressible fluid, said mattress having a fluid inlet conduit and a fluid outlet conduit sealably attached to and opening into the mattress, said inlet conduit having a pressure actuated valve means within a fluid containing chamber of the mattress for permitting said fluid to flow into the chamber only at a pre-selected fluid pressure, said mattress having a removable fill plug therein for filling and emptying said mattress with said non-compressible fluid; and
a fluid pulsating pump means having a fluid exhaust conduit sealably connected to the said inlet conduit and a fluid intake conduit sealably connected to said outlet conduit, said pump and valve means for pulsatingly circulating said fluid into and out of said mattress in a manner simulating the sounds and movements a pre-born infant is subjected to.

4,066,073

COMPOSITE ROD PENILE IMPLANT

Roy P. Finney, Tampa, Fla., and Henry Wilfred Lynch, Racine, Wis., assignors to Medical Engineering Corporation, Racine, Wis.

Filed Oct. 4, 1976, Ser. No. 729,251
Int. Cl.² A61F 5/00
U.S. Cl. 128—79 **23 Claims**



1. An elongated, rod-like, penile implant comprising, in a generally axial orientation:
a relatively stiff proximal portion receivable in the crus of the corpus cavernosum for supporting the implant;
a relatively stiff distal portion suitable for positioning, in the corpus cavernosum of the pendulus penis; and
a relatively flexible hinge portion intermediate said proximal and distal portions.

4,066,074

PROTECTIVE GUARD AND METHOD FOR FORMING AND APPLYING

Martin Keller, 13880 Wide Acre Road, Golden, Colo. 80401

Filed Sept. 27, 1976, Ser. No. 726,609
Int. Cl.² A61F 5/04
U.S. Cl. 128—89 R **8 Claims**



4. As an article of manufacture, a guard particularly suited for protecting the shinbone area of the leg comprising a thin flat rigid plate of thermoplastic material having the property of becoming moldable when heated and on cooling becoming rigid again and retaining the shape in which it cools, an elongated strip of strong highly flexible material securely attached to said plate in face engagement with one side thereof, said strip having a width about the same as that of said plate transverse to the strip and having a length sufficient to extend beyond both ends of said plate a distance sufficient for substantial overlapping the ends thereof when the strip is wrapped about a leg with said plate conforming to the shinbone area, and means for utilizing said strip to attach said plate in position over the selected area.

4,066,075

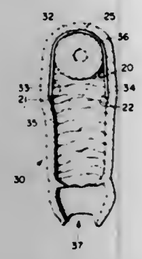
U-SHAPE INTRAVAGINAL DEVICE

Amy Gray Hughes, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 578,297, May 16, 1975, abandoned. This application June 30, 1976, Ser. No. 701,056

Int. Cl.² A61F 5/46

U.S. Cl. 128—127 **8 Claims**



1. A U-shape intravaginal device for use in female mammals in which an arcuate-shape vault is defined intermediate the posterior wall of the vagina and the adjacent portion of the cervix uteri of the female, said device comprising two arms and an arcuate-shape heel, said arms and said heel being secured together in end-to-end relation with said heel portion disposed intermediate said arms, said heel of said device being configured to be accommodated in said arcuate-shape vault so that said arms of said device extend generally towards the introitus of said vagina and are disposed adjacent the lateral walls of said vagina, said heel further comprising an upwardly extending arcuate-shape rim, and a radially inwardly extending arcuate-shape support portion, said rim being sized and configured to fit a user's posterior formix, and said support portion being configured and adapted to mechanically support a posterior portion of the user's cervix uteri.

4,066,076

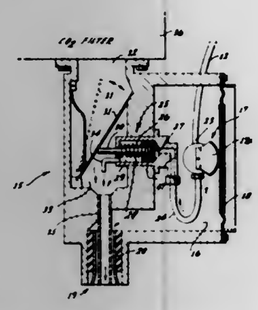
REBREATHABLE GAS MIXING AND CONTROL DEVICE

Larry H. Williamson, 18232 Santa Sophia, Fountain Valley, Calif. 92708

Filed Sept. 10, 1976, Ser. No. 721,966

Int. Cl.² A62B 7/00

U.S. Cl. 128—142.2 **9 Claims**



1. In a breathable gas life support system of the type having a supply of breathable gas stored at high pressure with apparatus for treating exhaled gas capable of being rebreathed including breathing circuit means for recirculating a portion of exhaled gas from a breathing connection means, through a reservior for storage of the exhaled gas through a CO_2 filter, and return to the user, an improved device for regulating, mixing and provision of stored and treated rebreathable gas comprising:

housing means having a mixing chamber connected to said breathing circuit means between said CO_2 filter and said breathing connection means for treating exhaled gas whereby the breathable portion of the exhaled gas freely flows into said mixing chamber;

first valve means disposed between said mixing chamber and said breathing circuit means for treating exhaled gas with said first valve means maintained in a normally closed condition thereby preventing the breathable portion of the exhaled gas from entering the mixing chamber;

a second chamber in said housing means closed to the outside environment with diaphram means for accomplishing such closure;

second valve means connected to said high pressure breathable gas supply, normally maintained in a closed condition with the operative portion of said second valve means operatively connected to said diaphram means whereby, upon the gas pressure in said second chamber being less than the pressure of the outside environment, said diaphram means will move inwardly, into said second chamber, thereby opening said second valve means;

third valve means interconnecting said second valve means and said mixing chamber with said third valve means normally maintained in a closed position and opened by means of pressure resulting from the opening of said second valve means;

said third valve means operatively connected to said first valve means, whereby upon the opening of said second valve means, said third valve means is opened, thereby providing a free flow condition between the apparatus for treating exhaled gas and said mixing chamber;

breathing conduit means directly communicating with said mixing chamber with one end thereof terminating in said breathing connection means adapted to be maintained in connection with the respiratory system of the user;

high velocity jet means connected to said third valve means and directed into said mixing chamber and breathing conduit means, whereby, upon the opening of said third valve means, gas from said high pressure supply will exit said jet means and flow into and through said mixing chamber and said conduit means, thereby creating a reduced pressure condition in said mixing chamber resulting in the drawing of previously exhaled gas from the storage reservoir through said CO_2 filter and said breathing circuit means for treating exhaled gas and into said mixing chamber wherein it is mixed with gas exiting said jet means and drawn through said breathing conduit means;

and intake means for coupling said second chamber with the respiratory system of the user's inhaling through said intake means, pressure in said second chamber is reduced whereby said diaphram means moves inwardly opening said second valve means.

4,066,077

MOUTHPIECE RETAINER TABS

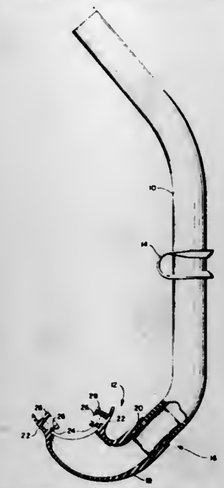
Ralph Barr Shamlian, 3549 Haven Ave. No. E, Menlo Park, Calif. 94025

Filed Nov. 1, 1976, Ser. No. 737,788

Int. Cl.² A62B 7/00

U.S. Cl. 128—145 A **6 Claims**

1. For use with a breathing apparatus, a mouthpiece comprising means defining a breathing tube having an end, flange means about said breathing tube end for insertion between the lips and the outer surfaces of the teeth of a user and a pair of teeth engageable collapsible tab means for insertion between essentially the molars of the user, said tab means being mounted on said flange means on either side of said breathing tube end, each of said tab means including means defining a central bore therein whereby upon engagement of said tab means by the teeth of a user, said tab means readily collapses and flattens to an approximate dental impression of the user, said each tab means being constructed of material having sufficient elastic memory to return to a substantially undeformed configuration after use.



4,066,078

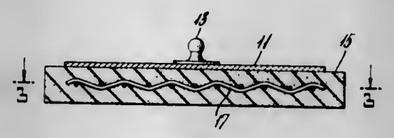
DISPOSABLE ELECTRODE

Jeffrey Berg, Edison, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Feb. 5, 1976, Ser. No. 655,600

Int. Cl.² A61B 5/04

U.S. Cl. 128—2.06 E **15 Claims**



1. An electrode providing electrical contact with a patient's skin comprising:

a conductive member including means for connection to an external electrical apparatus; and

means for electrically interfacing to said patient's skin being electrically and mechanically connected to said conductive member, said interfacing means being a non-liquid film which is easily separable from the skin upon removal without any noticeable residue and which consists essentially of an electrically conductive organic polymer plasticized with a polyhydric alcohol with said organic polymer being derived from an ester of an α,β-olefinically unsaturated carboxylic acid and a monohydric or polyhydric alcohol having a terminal quaternary ammonium group.

4,066,079

FILTER NEEDLE

Victor D. Chiarolla, 112 Evergreen St., Mill Valley, Calif. 94941

Filed Nov. 3, 1976, Ser. No. 738,616

Int. Cl.² A61M 5/32

U.S. Cl. 128—218 N **5 Claims**

1. An improved filter device for an injection syringe which has a plunger disposed in a barrel for drawing a fluid into the barrel through a front opening and ejecting such fluid therefrom by plunger movement comprising:

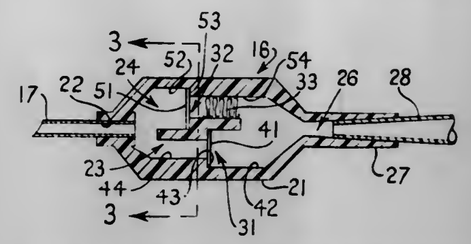
a housing having a syringe receiving rear opening at the rear thereof for engagement with a syringe about the front opening thereof and a needle receiving aperture at the front thereof for engaging a hypodermic needle in extension therefrom,

said housing defining first and second separate passages extending between said rear opening and front aperture thereof,

a first one-way valve disposed in said first passage for admitting the flow of fluid therethrough only from said aperture to said opening,

a second one-way valve disposed in said second passage for admitting the flow of fluid therethrough only from said opening to said aperture, and

filter material disposed in one of said passages on the inlet side of the valve therein.



4,066,080

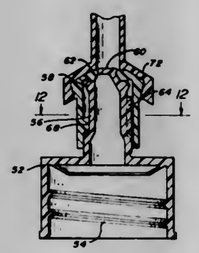
DISPOSABLE SYRINGES

Vincent R. Sneider, 3422 Hallcrest Drive, Hampton Hall, Atlanta, Ga. 30319

Division of Ser. No. 592,037, June 30, 1975, Pat. No. 4,014,332, which is a continuation-in-part of Ser. No. 389,506, Aug. 20, 1973, abandoned. This application Sept. 20, 1976, Ser. No. 724,724

Int. Cl.² A61M 7/02

U.S. Cl. 128—251 **2 Claims**



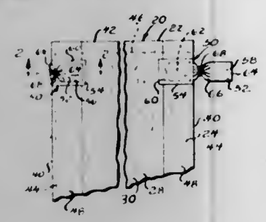
1. A syringe for vaginal douche and enemas and the like, said syringe including: (a) a flexible container; (b) a discharge tube connected to the container in a fluid-tight manner; (c) at least one of the component portions of a fluid mix to be used with said syringe contained in this flexible container; (d) a manipulative cutoff valve associated with said discharge tube, said valve when open permitting the flow of fluid from the container, said valve including a longitudinally movable outer sleeve member carried by and on an inner tubular member having means for attaching to the container, said inner tubular member having outwardly extending inner and outer limiting shoulders formed thereon, the inner tubular member also having its distal end closed except for a small aperture therethrough, the movable outer sleeve having an inwardly extending collar which is slidable along the inner tubular member and between the inner and outer limiting shoulders of the inner member, said outer sleeve member having a sealing surface formed thereon and adapted to close the discharge aperture at one limit of movement and open the aperture at the other limit of movement, and (e) a discharge nozzle attachable to the outlet end of the discharge tube.

4,066,081

DIAPER WITH EXTENSIBLE FASTENER

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 18, 1976, Ser. No. 742,973
Int. Cl.² A41B *13/02*; A61F *13/16*
U.S. Cl. 128—287 **4 Claims**



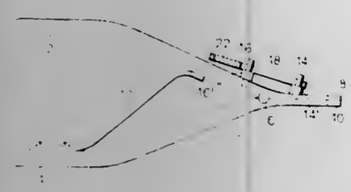
1. A disposable diaper, comprising:
an absorbent pad assembly having opposed surfaces and a side edge; and
a tape fastener, comprising a pressure-sensitive tape strip having a first end portion secured to one of said surfaces of the pad assembly adjacent the side edge, a second securement end portion for securing the diaper about an infant, a means for providing a stress extensible diaper fastening means comprising an elastic band extending around and laterally constraining a central portion of the strip intermediate said first and second portions, with said band being of a size to constrict and reduce the lateral dimensions of said central portion and thus the effective normal length of said strip, and with said second strip portion being longitudinally extensible relative the first portion by increasing the size of said central portion from reduced to enlarged lateral dimensions while expanding said band responsive to forces applied in a longitudinal direction against said strip.

4,066,082

FORCE APPLICATOR INCLUDING INDICATOR

Mircea Arcan, Ramat Hasharon; Gordon Robin, and Ariel Simkin, both of Jerusalem, all of Israel, assignors to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel Aviv, Israel

Filed Apr. 20, 1976, Ser. No. 678,609
Claims priority, application Israel, Apr. 24, 1975, 47164
Int. Cl.² A61B *17/00*; G01B *5/30, 11/18*
U.S. Cl. 128—303 R **6 Claims**



1. A device for indicating the force applied by a tool to an object, comprising: a bar constituting a part of said tool so as to be deflected in accordance with the force applied thereby to the object; a pair of spaced stops carried by the bar; a frame enclosing both stops with one end of the frame engaging one side of one stop and the opposite end of the frame extending past the other stop to define a space between said other stop and said opposite end of the frame; and a load-sensing member disposed in said latter space, whereby the deflection of said bar is converted by the two stops and the frame to a compressive force on the load-sensing member.

4,066,083

STERILE SURGICAL COLLAGEN PRODUCT

Peter E. Ries, Reinach, Basel-Land, Switzerland, assignor to Pentapharm A.G., Basel, Switzerland

Filed June 3, 1976, Ser. No. 692,542
Int. Cl.² A61F *13/00*; A61L *15/04*
U.S. Cl. 128—325 **2 Claims**

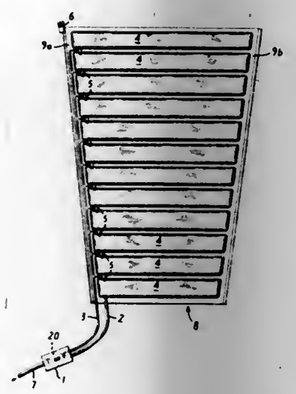
1. A method for preparing a surgical collagen product which has a felt- or fleece-like structure with open, communicating voids between the collagen fibers, comprising comminuting collagen-containing tissues of pigs at a temperature not exceeding 40° C, degreasing the resulting tissue pulp and simultaneously removing therefrom undesirable water-soluble non-collagen ballast substances by repeatedly treating the said tissue pulp with about a five-fold volume, based on the pulp volume, of a 5 to 15% aqueous sodium chloride solution containing about 0.2 to 1 part by weight of sodium azide as a preserving agent per 1000 parts by weight of the said solution and 0.5 to 2% by weight of a non-ionic fat-dispersing wetting agent, washing the resulting fiber pulp with water or 0.1 to 0.5% aqueous formic, acetic or citric acid, digesting the fiber pulp for 8 to 48 hours at a pH of about 2.5 to 3.5 in the five-fold volume, based on the volume of the pulp, of 0.1 to 5% aqueous acetic acid containing about 1 part by weight of pepsin per 1000 parts by weight of the tissue used as the starting material in order to remove non-collagen type proteinaceous substances and telopeptides, precipitating collagen from the resulting collagen suspension by the addition thereto of aqueous sodium chloride in such a quantity that the sodium chloride concentration of the suspension is about 3 to 5%, separating the precipitated collagen and desalting it by ultrafiltration, dialysis or washing with 60 to 75% aqueous ethyl alcohol until the salt content of the collagen is reduced to 0 to about 0.9% by weight, calculated on the weight of the dry collagen, dissolving the desalted collagen in demineralized or distilled water containing up to 3% by weight of a strong organic acid in such a proportion that the concentration of collagen in the resulting solution corresponds to a dry residue of about 0.5 to 2% by weight, freeze-drying the collagen solution, and sterilizing the freeze-dried collagen product.

4,066,084

BLOOD EMPTYING DEVICE

Hans Tillander, Humlegardsgatan 3, S-412 74 Goteborg, Sweden

Continuation-in-part of Ser. No. 540,431, Jan. 13, 1975, abandoned. This application May 24, 1976, Ser. No. 689,347
Claims priority, application Sweden, Jan. 14, 1974, 7400412
Int. Cl.² A61B *17/12*
U.S. Cl. 128—327 **6 Claims**



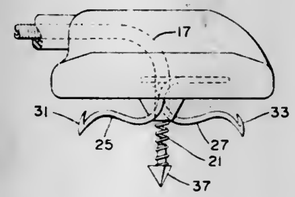
1. Blood collecting device intended to be used in the emptying of extremities of blood before a surgical incision and comprising a number of sections (4) connected in series to receive and retain a gaseous medium, a number of valves (5) connecting said sections in said series comprising pressure-responsive means for allowing a gaseous medium to pass from one section to another only when a predetermined gas pressure has been obtained in a next preceding section and retaining the predetermined pressure in each filled section as the other sections are filled, a filling tube (2) connecting a first section of the device to an operating device (1), and the operating device which in one position is arranged to allow the gaseous medium to pass to the valves (5) and into the sections (4) and in a second position is arranged to open the valves (5) for emptying the sections.

4,066,085

CONTACT DEVICE FOR MUSCLE STIMULATION

Stanley R. Hess, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Continuation of Ser. No. 540,805, Jan. 14, 1975, abandoned. This application May 20, 1976, Ser. No. 688,238
Int. Cl.² A61N *1/04*
U.S. Cl. 128—418 **2 Claims**



1. A pacemaker lead for application to cardiac muscle from outside the heart to effect stimulation, comprising
a generally flat disk of electrical insulating material,
a plurality of arcuate barbed hooks embedded in said disk and protruding therefrom at one surface of said disk,
a relatively flexible coil of conductive wire extending perpendicularly from said disk from the same surface thereof and disposed substantially concentrically with respect to said hooks,
said coil being electrically insulated from said hooks by the material of said disk,
and a flexible insulated electrical lead-in wire connected to said coil and secured to said disk,
the wire and the coil being connected within said disk,
said lead-in wire extending outwardly from said disk to allow its connection to a source of current,
whereby said coil may be inserted in cardiac muscle to establish an electrical connection to a pacemaker unit and said hooks serve to anchor said coil and disk to the cardiac muscle, said coil riding in non-binding relationship to said muscle.

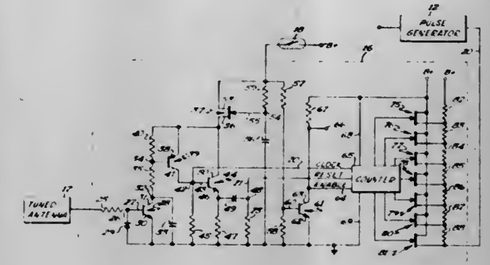
4,066,086

PROGRAMMABLE BODY STIMULATOR

Clifton A. Alferness, Woodinville, Wash., and John M. Adams, Anoka, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 584,131, June 5, 1975, abandoned. This application Sept. 13, 1976, Ser. No. 722,626
Int. Cl.² A61N *1/36*
U.S. Cl. 128—421 **29 Claims**

1. In a body-implantable device for providing electrical stimulation to living animal tissue of the type having pulse generator means with at least one alterable output parameter, output means adapted for connection to said tissue and means responsive to externally generated signals for programming said alterable output parameter in predetermined correspondence with said signals, the improvement wherein said programming means comprises:
means for detecting first externally generated signals of predetermined characteristics;
means responsive to detected first signals for altering said alterable output parameter in predetermined correspondence with said first signals;



means for detecting second externally generated signals of predetermined characteristics discriminable from the characteristics of said first signals; and
means responsive to detected second signals for enabling said output parameter altering means only during the occurrence of said second signals.

4,066,087

PEA SHELLING APPARATUS

Rolza J. Rodgers, Centerville, Ga., assignor to Ross Agricultural Company, Inc., Tuscaloosa, Ala.

Filed Dec. 22, 1975, Ser. No. 642,745
Int. Cl.² B02B *3/08*
U.S. Cl. 130—30 H **14 Claims**



1. An apparatus for shelling peas, beans, leguminous vegetables and the like and delivering same in a substantially undamaged condition comprising:
a frame;
a drum rotatably mounted on said frame for receiving peas, beans, leguminous vegetables and the like to be shelled, said drum being cylindrical with a smooth, continuous inner surface which contacts the product being shelled, said drum being mounted to have the longitudinal centerline thereof essentially horizontal;
a shaft mounted on said frame and extending axially through said cylindrical drum along said longitudinal centerline for supporting same;
a plurality of elongate paddles with a substantially equal width throughout, said paddles each being mounted on said shaft for rotation therewith and located in said cylinder to extend radially outward of said shaft from a central mounting portion of said paddles to outer tips on each end of each paddle, said paddle outer tips being located a sufficient distance from said drum inner surface to permit shelled product to pass freely therebetween, each paddle having a flat surface oriented parallel to said longitudinal centerline for substantially the entire length of said paddle from said shaft to the outer tips of said paddle to present

a flat striking surface for substantially the entire length thereof from outer tip to outer tip for impacting the peas, beans and the like, said flat striking surfaces of all of said paddles thereby being oriented generally perpendicularly with respect to a tangent to said drum inner surface so that as said drum and paddles are rotated, product is moved from said inner surface toward said paddle flat surfaces in a direction essentially perpendicular to said flat surface so that impact between the product and said flat surface effects a quick gentle removal of the kernels from the hulls with essentially all of the product in said drum being shelled by said impacting;

drum rotating means on said frame for rotating said drum at a first prescribed rotational velocity which is substantially constant;

shaft rotating means on said frame for rotating said shaft and paddles at a second prescribed rotational velocity which is substantially constant and in the same direction as said first prescribed rotational velocity; and

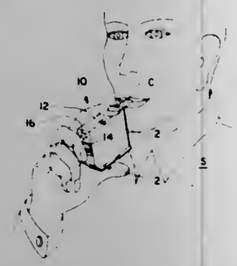
means for maintaining said first and second rotational velocities within a predetermined range of said prescribed rotational velocities with said predetermined range being small enough to prevent said kernels from being pulverized, bruised or mutilated on impacting said flat striking surfaces.

4,066,088

SMOKE REDUCER FOR CIGARETTE SMOKERS

John E. Ensor, 1409 Mount Carmel Road, Parkton, Md. 21120

Filed Aug. 26, 1976, Ser. No. 717,919
Int. Cl.² A24F *3/00, 47/00*
U.S. Cl. 131—185 **11 Claims**



1. A smoke reducer for smokers of cigarettes and the like, comprising: means on the smoke reducer for holding said a cigarette, including a housing with an opening for receiving said a cigarette with a first end of said a cigarette extended for permitting drawing smoke therefrom, the housing having an air vent therein for cigarette ignition and otherwise being substantially air tight; means on said smoke reducer, including a control having a switch portion, positionable to a first location for concurrently admitting air to and turning on heat for igniting a second end of said a cigarette, and positionable to a second location for extinguishing said a cigarette by turning off said igniting heat and closing said air vent.

4,066,089

COLLAPSIBLE SHELTER STRUCTURE

Orman M. Rainwater, 947½ N. Wilcox Ave., Hollywood, Calif. 90038

Filed May 17, 1976, Ser. No. 686,887
Int. Cl.² A45F *1/16*
U.S. Cl. 135—3 E **4 Claims**

1. In a collapsible shelter structure:

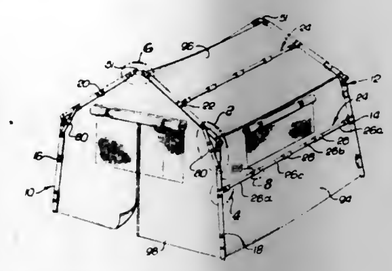
a. a front frame section;

b. a rear frame section;

c. each of said sections comprising a series of four frame elements pivotally and non-detachably connected together to be folded one along the other and to be extended into frame configuration with the end elements forming standards at the corners of the shelter structure and the intermediate elements forming rafters;

d. a series of substantially horizontal braces, one for each of two corresponding frame elements of the front and rear frame sections respectively, each brace being connected at opposite ends respectively substantially centrally of the respective frame elements;

e. said rafters of each frame section being pivotally connected together at a floating ridge point free of a ridge pole;



f. means supporting said floating ridge points in elevated position, comprising braces between the rafters and the corresponding standards; and

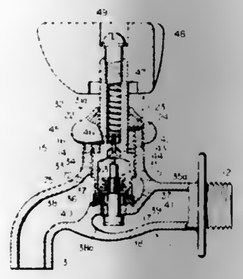
g. flexible panel means attached to the frame sections inside the braces whereby the braces are accessible for manipulation for movement of the shelter from an intermediate collapsed position with the ridge points lowered to an extended position with the ridge points raised.

4,066,090

WATER COCK WITH NON-FREEZING VALVE

Kiminori Nakajima, Fujisawa, and Ikuo Shigenobu, Machida, both of Japan, assignors to Echo Co., Ltd., Machida, Japan

Filed Mar. 26, 1976, Ser. No. 670,694
Int. Cl.² F16K *17/00*
U.S. Cl. 137—62 **8 Claims**



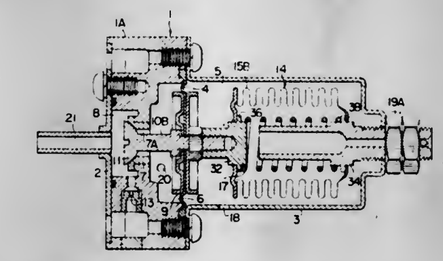
1. In a water cock having a cock body provided with a cylindrical portion, a water outlet and a water inlet, a tubular member provided with a handle and engaged with a threaded portion formed in said cylindrical portion, a partition wall separating the inner space of the cock body into two compartments, one in communication with the inlet and the other in communication with the outlet, a primary valve opening formed in the partition wall so as to be placed under the lower end of the tubular member in order to allow communication between the chambers, a cap through which said tubular member is passed and which seals the cylindrical portion by a packing system contained within the cap contacting firmly with the tubular member; the improvement comprising a cavity portion formed at the lower end of the tubular member, a ring-shaped main packing positioned on a circular lower edge of the cavity portion so as to be concentric with the circular lower edge in order to close said primary valve opening as a result of a turning of said handle, said cavity portion having at least one through-hole formed in its depending wall for the flow of cold water therethrough to the outlet, a thermo-element containing heat-sensitive material the volume of which changes in response to change in water temperature, a shaft partially contained in said thermo-element and adapted to be slid in and out of said thermo-element in response to said volume change, and a valve mechanism for opening and closing a central opening of said main packing in response to the action of said thermo-element, whereby water is permitted to flow through said central opening and subsequently through said through-hole to said outlet in response to a temperature change of said heat-sensitive material, said thermo-element and said valve mechanism being at least partially contained within the cavity portion.

4,066,091

PRESSURE SWITCHING VALVE DEVICE

Tomo Itoh, Katsuta, and Syozo Yanagisawa, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sept. 3, 1975, Ser. No. 609,937
Claims priority, application Japan, Sept. 11, 1974, 49-103879
Int. Cl.² F02M *7/20;* **F16K** *31/365*
U.S. Cl. 137—79 **12 Claims**



1. A pressure switching valve device comprising:

a valve seat having defined therein an orifice;

a valve member for normally opening and closing said orifice;

a diaphragm integrally connected to said valve member, said diaphragm being operative in response to pressure thereon to move said valve member for opening said orifice; and

an atmospheric density compensating mechanism cooperatively connected to said valve member and operative in response to variation in atmospheric density for compensating for the opening and closing movements of said valve member, said atmospheric density compensating mechanism normally exerting a force on said valve member so that the valve member closes said orifice, said force decreasing with the lowering of the atmospheric density.

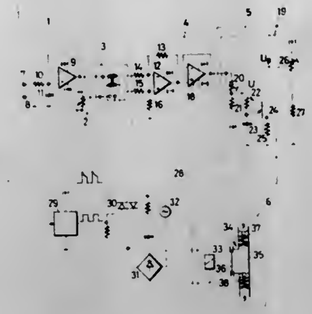
4,066,092

APPARATUS TO REGULATE THE pH VALUE OR OTHER SIMILAR VALUES OF A SOLUTION

Viktor Dulger, Ludolf-Krehl-Strasse 8, and Franz Ernst, Langgarten 24a, both of Heidelberg, Germany (6900)

Filed Dec. 27, 1976, Ser. No. 754,178
Claims priority, application Germany, Sept. 13, 1976, 2641101
Int. Cl.² G05D *11/08*
U.S. Cl. 137—93 **7 Claims**

1. Apparatus to regulate the pH value or other similar values of a solution comprising, an actual value transmitter, a desired value transmitter, a regulator controlled by said two transmitters for generating an error signal, pulse generator driven by said regulator for generating a control signal, a servo unit for adding controlled quantities of additive to said solution, said servo unit containing a metering pump for adding an additive, said pump being driven by pulses from said pulse generator, and the pulse frequency of said pulse generator bearing a logarithmic relationship with the amplitude of said error signal generated by the regulator to produce said control signal.

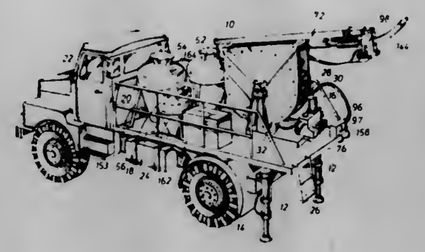


4,066,093

HOSE FEEDING WINCH

Bengt Gunnar Wilhelm Egerstrom, Danderyd, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

Filed Sept. 24, 1976, Ser. No. 726,173
Claims priority, application Sweden, Oct. 1, 1975, 7511025
Int. Cl.² B65H *75/34*
U.S. Cl. 137—355.2 **17 Claims**



1. A hose feeding winch especially intended for use in connection with charging of drill holes to take up and advance a charging hose for powder explosives or pumpable explosives, comprising

a central shaft,

a cradle rotatably supporting said central shaft,

a drum rotatable on said central shaft,

means defining a spiral groove on the outer peripheral surface of said drum for guiding a charging hose to be wound up in a single layer on the periphery of said drum, when the latter is rotated in one direction,

a drum cage surrounding said drum and mounted for rotation on said central shaft independently of said drum, and

a plurality of cage elements disposed around the drum in cooperative relation with the groove defining means on said drum in order to limit movement of the wound hose in the radial direction of the drum.

4,066,094

COMBINATION DRAIN SUMP AND AIR PRESSURE CHAMBER FOR AUTOMATIC CLOTHES WASHING MACHINE

Richard C. Stitch, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 17, 1976, Ser. No. 667,642
Int. Cl.² D06F *23/04, 33/02*
U.S. Cl. 137—387 **6 Claims**



1. In a washing machine having an air pressure responsive switch, a tub for holding washing liquid, and a pump for removing the liquid from the machine, the combination of a drain sump and air pressure chamber member comprising:

a sump member having an upper portion, a lower portion, a side wall, and a bottom wall, said sump side wall having an outlet opening above the lower portion in liquid flow communication with the pump,

an open-ended dip tube in liquid flow communication with the tub and extending downwardly within the sump side wall below the outlet opening and into the lower portion and spaced from the sump side and bottom walls,

an air pressure chamber member located laterally of and above the sump, said air chamber having an open base, a side wall and a top end wall with an air port, and

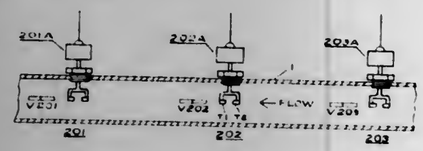
a connecting chamber member in communication at one end with the base of the air chamber and at the opposite end with the top of the sump member in close proximity to the outlet opening, said connecting chamber member having a major portion thereof located above the sump outlet opening sufficient to remove liquid from the connecting chamber prior to removing liquid from the lower portion of the sump member when viewed in vertical cross-section and having a width in its entirety at least substantially equal to the width of said air chamber base and a height sufficient to provide a substantial cross-sectional flow area.

4,066,095

AUTOMATIC LEAKAGE DETECTION SYSTEM FOR PIPELINES CARRYING FLUIDS

Frank Massa, Cohasset, Mass., assignor to Fred M. Dellorfano, Jr. and Donald P. Massa, both of Cohasset, Mass., trustees of The Stoneleigh Trust

Filed Feb. 17, 1976, Ser. No. 658,471
Int. Cl.² F16K *17/20*; G01M *3/08*
U.S. Cl. 137—486 **4 Claims**



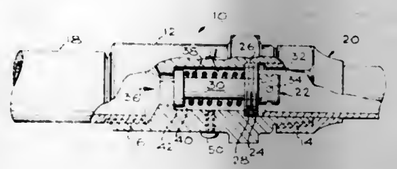
1. In combination in a system for monitoring the rate of flow of a fluid being transported through a conduit, a plurality of valve means located at various points along the conduit for controlling the rate of flow of said transported fluid, a plurality of flow measurement probes located at different points along the conduit, the locations of said plurality of flow measurement probes characterized in that neighboring pairs of probes are located one upstream and one downstream from a particular valve means, each probe characterized in that it produces an output signal which is precisely indicative of the rate of flow in the conduit at the position in the conduit occupied by the probe, means for comparing the output signal from one probe with the output signal from another probe, remote control means for selectively operating said valve means, said remote control means characterized in that it is selectively responsive to any specified difference in said output signals being produced by a neighboring pair of probes, said remote control means further characterized in that a particular valve means is operated by a particular remote control signal initiated in response to said specified difference in output signals produced by a particular pair of probes, said remote control means further characterized in that it selectively initiates the closing of a pair of valve means located one upstream and one downstream from the probe which has indicated an abrupt decrease in flow from its nearest upstream neighbor, whereby the section of the conduit containing said probe is isolated and sealed off by the closing of the said pair of valve means.

4,066,096

FLOW-CONTROL VALVE

Charles F. Lind, Jr., Los Angeles, Calif., assignor to Aqueduct, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 598,949, July 25, 1975, abandoned. This application Sept. 15, 1976, Ser. No. 723,570
Int. Cl.² G05D *7/01*
U.S. Cl. 137—504 **6 Claims**



1. A flow-control valve for operation with differential pressures below 160 p.s.i.g., including, in combination:

a cylindrical casing having a first inside diameter;

a cylindrical regulator including side exit ports, an end wall and a flow-controlling end-exit port axially disposed in said end wall and extending axially completely through said end wall for undiverted flow of fluid along the axis of said regulator through said end-exit port, said regulator having a second outside diameter and a third inside diameter;

a piston having a fourth outside diameter which is less than said third inside diameter, said piston being in slidable engagement with said regulator and having side fluid inlet ports at the unstream end thereof and a skirt portion at the downstream end thereof, said skirt portion being adapted to engage said side ports in said regulator when said piston slides into said regulator in response to fluid pressure on side piston, said piston having a fifth inside diameter;

a spring carried within said piston and regulator and positioned to urge said piston and regulator in opposite directions, said spring having a sixth outside and a seventh inside diameter and a first free length and a second solid length;

said fifth inside diameter being approximately 0.67 times said first inside diameter;

said sixth outside diameter being approximately 0.59 times said first inside diameter;

said seventh inside diameter being approximately 0.51 times said first inside diameter;

said first free length of said spring being approximately 1.4 times said first inside diameter; and,

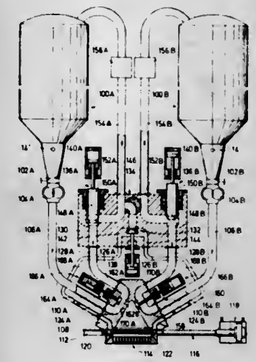
said second solid length of said spring being approximately 0.46 times said first inside diameter.

4,066,097

APPARATUS FOR PROCESSING MOLTEN LIQUID PLASTICS, PARTICULARLY FOR EXTRUSION OF PLASTICS

Rudolf Paul Fritsch, Stuttgart, Germany, assignor to C. F. Scheer & Cie, Stuttgart, Germany

Filed Sept. 11, 1975, Ser. No. 612,467
Claims priority, application Germany, Sept. 14, 1974, 2444012
Int. Cl.² F16K *19/00*
U.S. Cl. 137—563 **6 Claims**



1. Apparatus for processing plastic melts, comprising

a. means to deliver plastic melt from a container to said apparatus;

b. distributing means comprising an inlet to receive a plastic melt feed stream from said container, a first outlet for the plastic melt to be processed, said outlet being closable with a closing member, and a second outlet communicating with said container via a back-flow line;

c. valving means for controlling the backflow of the plastic melt to the container; and

d. flushing means comprising a port terminating at a point upstream of said closing member, and in the immediate vicinity thereof, said port being connected with said second outlet via said valving means;

said distributing means including a plurality of inlets to receive feed streams from a plurality of containers, and a plurality of second outlets communicating with said containers via back-flow lines, whereby a multiple-way valve selectively connects the flushing port with one of the back-flow lines, and a diversion valve having a first and a second position is associated with each inlet, whereby in the first position of said diversion valve the respective inlet is in communication with the associated second outlet, whereas in the second position of said diversion valve the respective inlet is in communication with the first and with the associated second outlet.

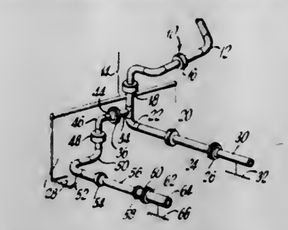
4,066,098

MARINE LOADING AND BUNKERING ARRANGEMENT

Donald J. Gallo, Whippany, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Oct. 8, 1976, Ser. No. 731,085
Int. Cl.² B67D *5/04*
U.S. Cl. 137—615 **10 Claims**

8. A system for the transfer of cargo and bunker fuel to a vessel comprising, in combination: a cargo loading arm including an outboard arm and a triple swivel assembly at the end thereof coupled to a cargo manifold supported on the deck of said vessel, a bunkering assembly coupled at a first flanged end to said triple swivel assembly of said outboard arm and at an opposite flanged end to a bunker manifold supported on said vessel, said bunkering assembly containing flexible components for accommodating various locations of said bunker



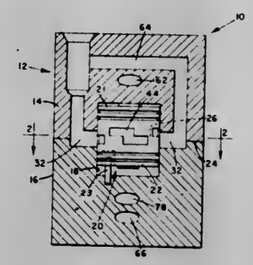
manifold and movement of said vessel during cargo transfer and bunkering operations.

4,066,099

ZERO LAP VALVE

Richard Arthur Wittren, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 16, 1976, Ser. No. 714,567
Int. Cl.² F16K *11/07*
U.S. Cl. 137—625.66 **18 Claims**



1. A zero lap valve comprising: a valve body including two valve body portions, each of said valve body portions having a bond surface bonded to the bond surface of the other valve body portion and having a cavity provided therein intersecting the bond surface, and one of said valve body portions having inlet and outlet ports provided therein intersecting the bond surface and the cavity; and a valve member slidably disposed within said cavity in the valve body and including two valve member portions, each of said valve member portions having a bond surface parallel to the bond surfaces of the valve body portions and bonded to the bond surface of the other valve member portion, and one of said valve member portions having a passageway provided therein intersecting the bond surface and the surface of the valve member proximate said ports, said one of said valve member portions being on the opposite side of the bond surfaces from said one of said valve body portions when the bond surfaces are in a coplanar position so that the inlet and outlet ports are connected by the passageway on one side of the coplanar position and unconnected on the other side of the coplanar position.

4,066,100

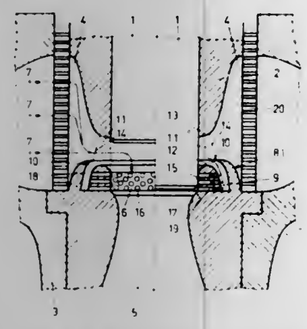
CONTROL VALVE

Martin Schwarz, Moriken, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed July 27, 1976, Ser. No. 709,076
Claims priority, application Switzerland, Aug. 14, 1975, 10568/75
Int. Cl.² F16K *47/14*; F15D *1/00*
U.S. Cl. 137—625.3 **4 Claims**

1. A control valve including a valve housing, a piston guide cylinder located within said housing, a piston slidable within said guide cylinder between a valve-closed position wherein

the end of said piston engages a valve seat leading to an outlet chamber in said housing and a valve-open position wherein said piston is dis-engeged from said valve seat thereby to place said outlet chamber in communication with an inlet chamber in said housing by way of a cylindrical opening through an inlet collar surrounding said valve seat, said inlet collar being provided with a plurality of by-pass ducts having inlets terminating in a by-pass admission duct from said inlet chamber and outlets to said valve seat distributed around said cylindrical opening within said collar and which are progressively en-



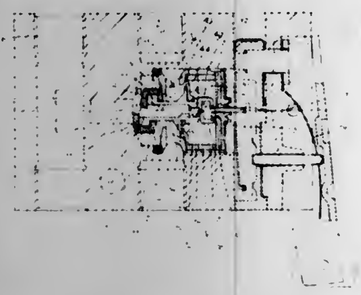
gaged by said piston, said inlet collar further including a convexly curved boundary surface which together with a convexly curved boundary surface of said piston guide cylinder forms in said inlet chamber a throat section in the shape of a conical surface of revolution having as generatrix a straight line which is substantially normal to both of said convexly curved boundary surfaces and represents the shortest distance between them, and said by-pass admission duct having an entrance section located on the downflow side of said throat section.

4,066,101

MULTIPLE WAY VALVE

Jan Richard de Fries, Hirschwiesenstr. 9, Zurich, Switzerland

Filed June 30, 1975, Ser. No. 591,392
Claims priority, application Germany, June 28, 1974, 2431135
Int. Cl.² F15B *13/042*
U.S. Cl. 137—625.6 **9 Claims**



1. A multiple way valve comprising means forming a main valve chamber containing an axially movable main valve body (9) controlled by pressure medium and having first and second axial end faces and having first and second end regions, a control valve chamber (12) having a cover and containing a mechanically operable control valve body, there being at least one pressure line opening from a pressure medium source into the main valve chamber and one working line which is closed with respect to the pressure line in the first extreme position of the main valve body and connected to the pressure line in the second extreme position of the main valve body, a partition separating the said control valve chamber (12) having a cover, which valve chamber is arranged adjacently to the main valve chamber (11) in an axial direction from the main valve chamber (11), said partition being movable in an axial direction, the first axial end face (13) of the main valve body (9) constituting a first sealing surface and facing away from the movable partition being in a space connected to the pressure line (2) in each position of the main valve body and the second axial main valve body end region containing the second end face opposite to the first end face (13) being firmly attached to the movable partition (10), and a connecting line (15), which is at all times open with respect to the first end face (13) of the main valve body (9), opening into the control valve chamber (12), a control exhaust line (17) connected to the control valve chamber (12) the control valve body (16) closing the control exhaust line (17) in its first extreme position with the connecting line (15) open and closing the connecting line (15) in its second position with the control exhaust line (17) open, the surface of the movable partition (10) which can be acted on by the pressure medium from the control valve chamber (12) being larger than the surface of the main valve body (9) which can be acted on in the reverse direction, whereby when the control valve body (16) is transferred from its first extreme position into its second extreme position, the main valve body (9) shifts over in a snap-action manner from its first extreme position into its second extreme position and vice versa, in which the housing of the multiple way valve has an axially cylindrical recess (1) having a frontal boundary surface and the partition is a diaphragm (10) made of elastic material firmly held by its external periphery, and in which the pressure line (2) opens centrally into the axial recess (1) at its frontal boundary surface, the annular surface (20) of the frontal boundary surface, bounded by the pressure line (2) and by the cylindrical surface of axial recess (1), constituting a valve seat for the first end face (13) of main valve body (9), the said main valve body (9) having an axial through-hole constituting said connecting line (15), the internal periphery of the diaphragm (10) being attached to the external periphery of the second axial end region of the main valve body (9), and the control valve body (16) being arranged centrally in the control valve chamber (12) and having a third sealing surface associated with a port of the connecting line (15) and a fourth sealing surface which is associated with the control exhaust line (17) which is arranged centrally in the cover (41) of the control valve chamber (12), said cover (41) being arranged centrally with respect to the diaphragm (10) on the opposite side thereof from the valve seat in an axial direction; said diaphragm comprising, in a radial direction from inside to outside successively, a first reinforced annular zone attached to the main valve body (9), a first articulated thinner annular zone (45), a second reinforced annular zone, a second articulated thinner annular zone (44) and a third reinforced annular zone, said diaphragm (10) being firmly held, the reinforced annular zones each projecting towards the auxiliary valve chamber with respect to the adjacent thinner annular zones, and said main valve body has a radially projecting flange (22) positioned adjacent to the annular surface (20), wherein a jacket (25) is positioned over said radially projecting flange, one side of which forms said first end face (13) of said main valve body (9), and wherein radially extending elastic centering arms (30) are connected between said jacket (25) and a gripping ring (31) positioned against said means forming said main valve chamber.

4,066,102

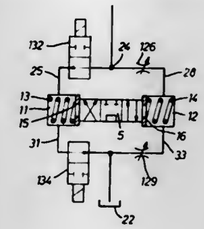
HYDRAULIC REGULATOR

Niels Tandrup, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Apr. 14, 1976, Ser. No. 676,736
Claims priority, application Germany, Apr. 18, 1975, 2517205
Int. Cl.² F16K *31/363, 31/40*
U.S. Cl. 137—625.64 **1 Claim**

1. A hydraulic regulator system comprising a slide valve member having end faces, first and second pressure chambers

at opposite ends of said valve member bounded in part by said end faces, centering springs in said chambers biasing said valve member towards a neutral position, supply and exhaust lines, first and second parallel lines between said supply and exhaust lines in which said first and second chambers are respectively disposed, a pair of switching valves in said parallel lines for



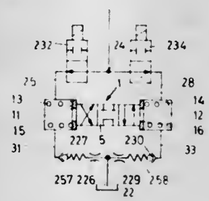
selectively moving said slide valve member in either desired direction, a pair of throttle means in said parallel lines, said switching valves being upstream and downstream from the said chamber in said first parallel line, and said throttle means being in said second parallel line upstream and downstream from the said chamber in said second parallel line.

4,066,103

HYDRAULIC REGULATOR

Niels Tandrup, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 676,736, April 14, 1976. This application Mar. 24, 1977, Ser. No. 780,808
Claims priority, application Germany, Apr. 18, 1975, 2517205
Int. Cl.² F16K *31/42*
U.S. Cl. 137—625.64 **1 Claim**



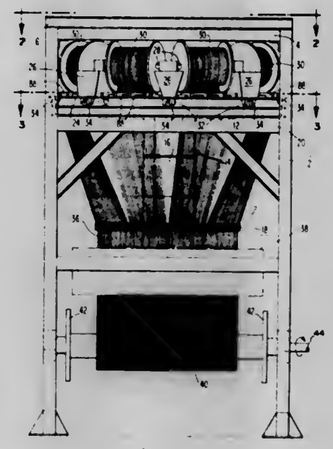
1. A hydraulic regulator system comprising, a casing having a bore and counterbored chambers at opposite ends of said bore, a slide valve member having the same length as said bore slidably disposed in said bore, spring means in each of said chambers, movable abutment means in said chambers between said spring means and said slide valve member, said valve member being in biasing engagement with only one of said spring means when said valve member is displaced from a centered position in said bore, supply and exhaust lines, first and second parallel lines between said supply and exhaust lines in which said chambers are respectively disposed, an above atmosphere pressure pressurized tank connected to said exhaust line, a pair of independetly operable switching valves in said parallel lines upstream from said chambers for selectively moving said slide valve member in either desired direction, a pair of throttle means in said parallel lines downstream from said chambers, and spring loaded check valve means in said first and second lines between said chambers and said throttle means.

4,066,104

TRIAXIAL FABRIC FORMING MACHINE AND COMPONENTS THEREOF

Murray Halton, Bryn Mawr; Norris F. Dow, Radnor; Richard M. Dow, and Michael J. Hillebrand, both of Philadelphia, all of Pa., assignors to N. F. Doweave, Inc., King of Prussia, Pa.

Division of Ser. No. 522,751, Nov. 11, 1974, Pat. No. 4,015,637. This application Sept. 7, 1976, Ser. No. 720,627
Int. Cl.² D03D *41/00*
U.S. Cl. 139—11 **2 Claims**



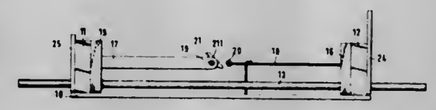
1. In a method of making triaxial fabrics in which a plurality of warp yarns are guided into an array of two converging sheets of generally parallel warp yarns and move transversely, with the direction of transverse movement of warp yarns in one sheet being opposite the direction of transverse movement in the other sheet, the improvement which comprises supplying warp yarns from a circular creel mounted for rotation about a generally vertical axis while rotating the creel intermittently in timed relation with the transverse movement of warp yarns.

4,066,105

METHOD OF AND APPARATUS FOR FORMING A LENO SELVAGE ON WOVEN GOODS

Felix Heinrich, Balingen; Adolf Linka, Hechingen-Sickingen, and Reinhold Jocham, Strassberg, all of Germany, assignors to Mayer & Cie, Tailfingen, Germany

Filed Sept. 29, 1976, Ser. No. 728,011
Claims priority, application Germany, Oct. 3, 1975, 2544199
Int. Cl.² D03D *47/40*
U.S. Cl. 139—54 **12 Claims**



1. In combination with a loom having harnesses carrying an array of warp yarns defining a warp direction and displaceable in a shed direction transverse to said warp direction to form a main shed adapted to receive a weft passed through said shed in a weft direction transverse to said warp and shed directions, a leno selvage device comprising:

a ground heddle at an edge of said array and carrying a ground warp yarn, said ground heddle having a support defining a rocking axis nondisplaceable in said weft direc-

tion and jointly displaceable with said ground heddle in said shed direction;

a doup heddle at said edge carrying a doup warp yarn;

means for displacing said heddles synchronously with said harnesses in said shed direction oppositely toward and past each other to form an edge shed in line with said main shed;

a rocker pivotal on said support about said axis between a pair of end position, said doup heddle being operatively engageable with said rocker and deflectable thereby in said weft direction in one of said end positions to one side of said heddle and in the other end position to the other side of said ground heddle; and

means carried on and jointly displaceable in said shed direction with said doup heddle and engageable with said rocker for displacing said rocker from said one end position into said other end position after deflection of said doup heddle to said one side and from said other end position into said one end position after deflection of said doup heddle to said other side of said ground heddle.

4,066,106

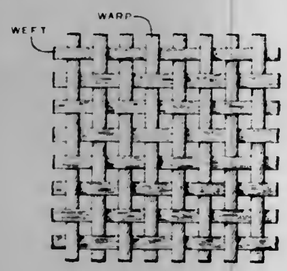
SIZED WOVEN GLASS FABRIC

Roy R. Graham, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 609,252, Sept. 2, 1975, which is a division of Ser. No. 464,861, April 29, 1974, Pat. No. 3,932,193. This application Mar. 22, 1976, Ser. No. 668,751

Int. Cl.² D03D *15/00*

U.S. Cl. 139—420 C **2 Claims**



1. A sized woven glass fabric having weft and warp portions characterized by the weft portion being composed of fiber glass yarns having thereon the dried residue of an aqueous sizing composition comprising a starch, a lubricant, a textile softener and 100 to 150 percent by weight of a nonionic wetting agent based on the weight of said lubricant, said glass fiber fabric being further characterized by having the fiber glass yarns in the weft portion untwisted.

4,066,107

PACKAGING MACHINE AND METHOD FOR CHITTERLINGS

Alexander Karp, and Alfred Boron, both of 1445 E. Kirby, Detroit, Mich. 48211

Filed Aug. 26, 1976, Ser. No. 718,089

Int. Cl.² B65B *3/04*

U.S. Cl. 141—11 **5 Claims**

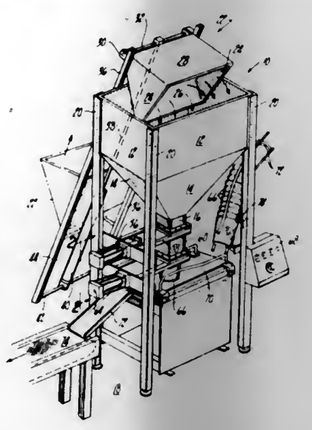
3. The method of dispensing a quantity of chitterlings comprising the steps of:

disposing a dispenser chamber having an upper and lower opening beneath a container having a quantity of chitterlings loaded therein, the container having a lower opening allowing the chitterlings to move under the influence of gravity through the lower opening,

disposing the dispenser chamber beneath said lower opening to receive a quantity of chitterlings sufficient to fill the dispenser chamber;

closing the lower opening of the dispenser chamber before the quantity of chitterlings is moved into said dispenser chamber;

closing the upper end of the dispenser chamber by moving a cut-off blade across the opening and scissoring off the chitterling lengths extending through the dispenser chamber opening;



opening the lower opening while the upper dispenser chamber opening is closed to allow the volume of chitterlings disposed in the dispenser chamber to be moved by gravity from the dispenser chamber.

4,066,108

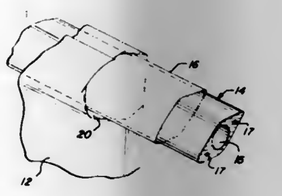
VALVE BAG FILLER, HANDLING AND SEALING SYSTEM

Erwin M. Lau, Dolton, Ill., assignor to Black Products Company, Chicago, Ill.

Division of Ser. No. 634,731, Nov. 24, 1975, Pat. No. 4,003,188. This application Aug. 4, 1976, Ser. No. 711,526

Int. Cl.² B65B *1/18*

U.S. Cl. 141—68 **5 Claims**



1. In combination with a valve bag of the type having a hollow, collapsable tubular filling sleeve at the upper end portion extending laterally outward of a body portion of said bag having an open outer end and adapted to support said bag during a filling operation with said sleeve in an open generally horizontal position;

a valve bag packer including an elongated, generally horizontal, filling tube supported in cantilevered relation at an inner end and having a free outer end portion adapted to be received in said filling sleeve of said valve bag for supporting said bag during said filling operation,

said filling tube including a hollow flow passage receiving a measured amount of material at said inner end and extending through said tube to an outlet adjacent said free outer end portion for discharge of said material downwardly into said valve bag supported thereon,

said filling tube having a generaly elliptical, transverse cross-section and arranged with a major axis of said elliptical cross-section generally horizontally and a minor axis of said elliptical cross-section generally vertically,

said filling tube having an enlarged upper surface engaging the filling sleeve of said bag to form a maximum supportive area during the filling of said bag on said tube whereby said filling sleeve of said bag is maintained with a horizontal transverse dimension greater than a vertical transverse dimension so that said sleeve tends to return to a flattened closed condition after filling said bag and removal from said filling tube of said packer.

4,066,109

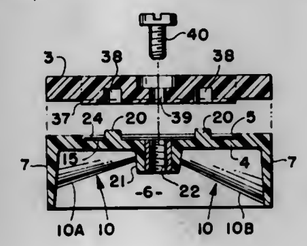
PENCIL SHARPENER WITH REPLACEABLE BLADES

Rajendra K. Narang; Manish Narang, and Ashish Narang, all of 1525 Bonnie Road, Macedonia, Ohio, 44056

Filed Aug. 12, 1976, Ser. No. 713,694

Int. Cl.² B43L *23/08*

U.S. Cl. 144—28.11 **8 Claims**



1. A hand-held pencil sharpener comprising a housing having both a top recess therein to define an enclosed slightly lowered seating surface and a tapered bore therein selectively to receive a pencil for sharpening, said bore tangentially intersecting the seating surface of the housing at its inner end relative to the housing to form an elongated narrow slot therein, a double-edged razor blade received on said seating surface, with one edge of said blade being positioned in said slot to form a pencil shaving edge and with the ends of said blade being contained in said recess, a cover positioned on top of said housing and coextensive therewith having a projection telescopically received in said recess with the bottom wall of such projection engaging and enclosing said blade, said cover having an elongated slot therein positioned to be in alignment with the elongated slot in the seating surface upon assembly, and means releasably to secure the cover, razor blade and housing together and to prevent relative movement therebetween, whereby the tapered bore guides a pencil inserted therein against the tangentially disposed shaving edge to permit said pencil upon rotation to be sharpened thereby, with the pencil shavings passing through said aligned slots in said housing and cover for removal therefrom.

4,066,110

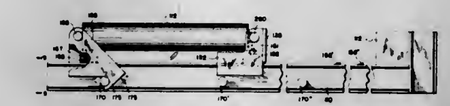
APPARATUS FOR SPLITTING LOGS

Richard L. Sarno, 5204 Guerin Pass, New Berlin, Wis. 53151

Filed Sept. 20, 1976, Ser. No. 724,671

Int. Cl.² B27L *7/00*

U.S. Cl. 144—193 A **7 Claims**



1. A log splitter comprising an elongated beam, a wedge anchored to a first end of said beam, fluid pressure operated ram means having reaction means at one end and having an extensible impact member at its opposite end for engagement with one end of a log which is positioned on said beam between said impact end and said wedge, said reaction means including at least one wing pivoted to said cylinder having a hooked reaction portion for coaction with said abutment means, and longitudinally spaced alternate abutment means on said beam for coaction with said reaction means in either of at least two positions, one of which is closer to the wedge than the other.

4,066,111

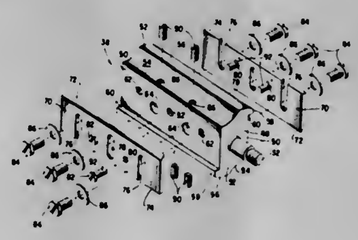
CUTTER HEAD ASSEMBLY FOR POWER PLANERS

Elmer C. Klebe, Jr., Easley, S.C., assignor to The Singer Company, New York, N.Y.

Filed Oct. 12, 1976, Ser. No. 731,286

Int. Cl.² B27C *1/10*

U.S. Cl. 145—4 **6 Claims**



1. A cutter blade assembly for a planer powered by an electric motor mounted in a housing comprising:

a. a block journaled in the housing and rotatably connected to the motor,

b. a flat side formed on the block,

c. a plurality of tapped holes extending inwardly from the flat side of the block,

d. a plurality of apertures extending inwardly from the flat side of the block in spaced relation to the tapped holes therein,

e. a plurality of tapped holes extending from one of the other sides of the block, one to intersect each of the block apertures,

f. a blade disposed on the flat side of the block,

g. a plurality of mounting slots formed in the blade, one aligned with each of the block tapped holes of the flat side,

h. a plurality of screw connectors, one extending through each of the blade slots to be threadedly received within the block tapped holes and to affix the blade to the block,

i. a plurality of tapped holes formed in the blade, one aligned with each of the block apertures,

j. the block apertures having a substantially larger cross-sectional area than that of the blade tapped holes,

k. a plurality of screw connectors, one to threadedly extend through each of the blade tapped holes and to be disposed within the block apertures a predetermined distance whereby limited adjustment at the blade slots is permitted in connecting the blade to the block, and

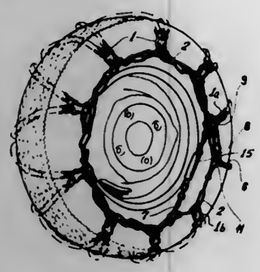
l. a plurality of set screws, one threadedly connected in each of the tapped holes of said other side of the block and to jam against the threads of the screw connectors disposed within the block apertures to prevent blade removal from the block.

4,066,112

AUTOMOBILE-TIRE SNOW CHAINS

Peter Goldstein, Lausanne, Switzerland, assignor to Vianette Goldstein, Switzerland

Filed June 11, 1976, Ser. No. 694,947
Claims priority, application Switzerland, June 13, 1975, 7681/75; Dec. 16, 1975, 16270/75
Int. Cl.² B60C 27/02, 27/10
U.S. Cl. 152—213 A 5 Claims



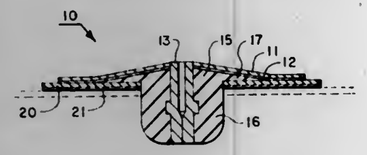
1. An automobile tire snow chain, comprising;
an open side chain for one side of a tire, the chain having two ends;
a closed side chain for the other side of the tire;
a series of several tread chains connected to the side chains and uniformly angularly spaced apart along the open side chain, in use; and
a combined special tread chain and chain-securing device, comprising an additional chain having a first end connected to one of the ends of the open side chain and having a hooking device at a second and free end of the additional chain, the additional chain passing through the other end of the open side chain and also through said one end thereof to provide a loop connecting the ends of the open side chain which loop can be tightened by pulling the free end of the additional chain to close the open side chain, and the additional chain having, adjacent and extending from said one end thereof, a chain portion which in use passes over the tread of the tire providing a special tread chain circumferentially spaced from adjacent ones of the several tread chains, the free end of the additional chain being held, by securement of the hooking device, to the closed side chain;
whereby the several tread chains and the special tread chain portion of the additional chain are uniform tractive elements on the tire.

4,066,113

REPLACEMENT VALVE ASSEMBLY

James Y. Oldshue, 141 Tyringham Road, Rochester, N.Y. 14617

Filed Oct. 28, 1976, Ser. No. 736,446
Int. Cl.² B60C 29/00
U.S. Cl. 152—430 8 Claims



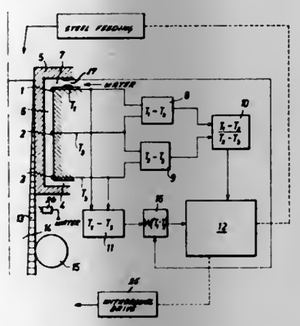
1. An assembly including a vulcanized elastomeric valve having a body with a flange for replacing a metal-bodied valve in a vulcanized elastomeric article, said assembly comprising:
a. a vulcanized elastomeric cover having a diameter larger than the diameter of said flange;
b. means forming a vulcanized bond between a radially inner portion of said cover and the outward facing surface of said flange;
c. an annular disk of unvulcanized and vulcanizable material having a central opening encircling said body with said disk underlying the inward facing surface of said flange;
d. a nonvulcanizing adhesive temporarily adhering said disk to said flange;
e. means providing unvulcanized and vulcanizable material adjacent the inward facing surface of said cover radially outward from said flange;
f. release material overlying the inward facing surface of said unvulcanized and vulcanizable material under said flange and said cover; and
g. after removal of said release material, said assembly being bondable to said article by vulcanizing said vulcanizable material to bond said flange, disk, cover, and article all together in a secure, vulcanized bond.

4,066,114

SUPERVISION AND CONTROL OF CONTINUOUS CASTING

Wolfgang Dorr, Essen, and Hartwig Matzner, Duisburg, both of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany

Filed Aug. 14, 1975, Ser. No. 604,796
Claims priority, application Germany, Aug. 20, 1974, 2440273
Int. Cl.² B22D 11/12
U.S. Cl. 164—4 11 Claims



5. Apparatus for supervising continuous casting of steel by means of a mold having walls which have a path through which flows a coolant, comprising:
first means for detecting the amount of heat flowing into at least a partial circumferential section of the casting mold and providing a measuring value representative thereof;
second means for detecting separately the heat flows into the mold in upper and lower portions of that section and providing, respectively, measuring values representative thereof;
third means for computing the ratio of the measuring values as detected by the second means;
means for forming a manifestation of an operating point from the measuring value as provided by first means and the ratio as computed by the third means; and
means for referencing the operating point or its manifestation to a predetermined range.

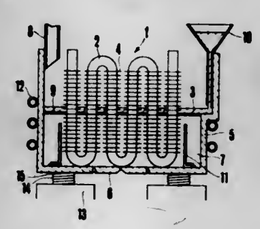
9. Method for controlling the continuous casting of steel, comprising the steps of:
detecting the amount of heat flowing into at least a circumferentially partial section of the casting mold and providing a measuring value representative thereof;
detecting as separate quantities the heat flows, respectively, into the mold in upper and lower portions of that section and providing measuring values representative thereof;
computing the ratio of the measuring values representing the heat flows into the upper and lower portions;
forming an operating point from the measuring value in accordance with the first detecting step and said ratio; and
controlling the casting process in dependence upon the operating point.

4,066,115

METHOD FOR PRODUCING HEAT PIPE UNITS

Iwao Ohtani, Tokyo, and Hashime Takahashi, Yokohama, both of Japan, assignors to Tokico Ltd., Japan

Filed Nov. 1, 1976, Ser. No. 737,668
Claims priority, application Japan, Oct. 31, 1975, 50-131915
Int. Cl.² B22D 19/00; B22C 9/02
U.S. Cl. 164—9 17 Claims



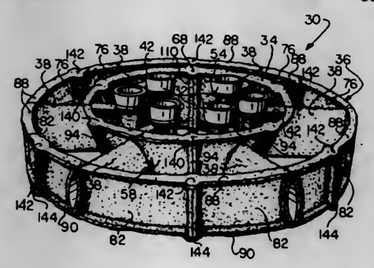
1. A method for producing a heat pipe unit having at least one heat pipe carried in a plate-like cross-structure, comprising:
placing a heat pipe in a molding box;
holding said heat pipe in an upright position in said molding box;
feeding sand into said molding box to bury said heat pipe up to a level where said plate-like cross-structure is to be provided, while vibrating said molding box to compact the sand and level the surface thereof;
pouring a molding material on the levelled surface of said sand to a predetermined thickness;
solidifying said molding material to form a platelike cross-structure on said heat pipe integrally therewith;
discharging said sand out of said molding box; and
removing the thus-formed heat pipe unit from said molding box.

4,066,116

MOLD ASSEMBLY AND METHOD OF MAKING THE SAME

William S. Blazek, Valley City; Thomas S. Piwonka, Solon; James D. Jackson, and Philip N. Atanmo, both of Cleveland Heights, all of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Jan. 29, 1976, Ser. No. 653,383
Int. Cl.² B22C 9/04, 9/22
U.S. Cl. 164—17 33 Claims



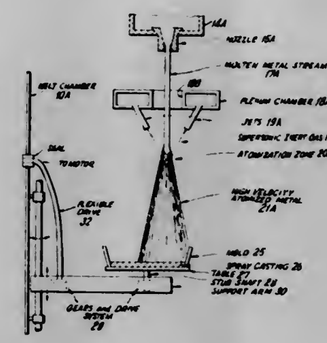
1. A method of making a mold assembly for use in forming a cast product, said method comprising the steps of providing at least one pattern having a plurality of surface areas including a first surface area having a configuration similar to a surface area of the cast product and a second surface area which does not correspond to any surface area of the cast product, making a plurality of mold sections, and interconnecting said plurality of mold sections to form the mold assembly, said step of making a plurality of mold sections including the steps of applying a wet coating of a liquid ceramic mold material over the first and second surface areas of the pattern, removing at least a major portion of the wet coating of ceramic mold material overlying the second surface area of the pattern, at least partially drying the wet coating of ceramic mold material after performing said step of removing the wet coating of ceramic mold material overlying the second surface area of the pattern, and separating the pattern from the dried coating of ceramic mold material to provide a mold section formed of ceramic material and having a surface area with a configuration corresponding to the configuration of the first surface area of the pattern.

4,066,117

SPRAY CASTING OF GAS ATOMIZED MOLTEN METAL TO PRODUCE HIGH DENSITY INGOTS

Ian Sidney Rex Clark, Forest Park Greenwood Lake; John Kenneth Pargeter, Warwick, both of N.Y., and John Oliver Ward, Bodenham, England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 28, 1975, Ser. No. 626,304
Int. Cl.² B22D 23/00; B05B 7/14
U.S. Cl. 164—46 52 Claims



1. A process for producing a spray cast metal ingot characterized by high density in the as-spray cast condition of substantially over 90% of the actual density of the metal which comprises,
providing a highly energetic conically configurated outwardly expanding atomized metal stream having an included angle of substantially less than 25°,
directing said atomized stream of metal to the interior of an ingot mold with the longitudinal axis of said stream disposed at an acute angle to the interior wall of said mold, while effecting relative transverse movement between said atomized metal stream and said mold, such that said stream is caused to scan the interior of said mold,
and filling said mold while scanning the interior thereof.

4,066,118

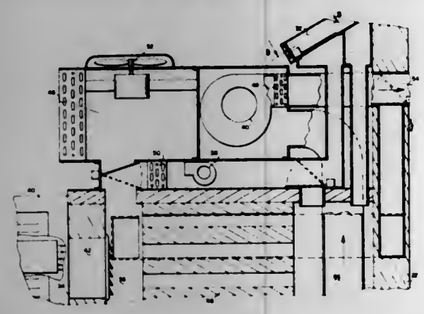
AIR CONDITIONING SYSTEM

William H. Goettl, 2005 E. Indian School, Phoenix, Ariz. 85018

Filed Apr. 16, 1976, Ser. No. 677,730
Int. Cl.² F24D 11/00; F25B 27/00
U.S. Cl. 165—18 11 Claims

1. An air conditioning system comprising: a heat pump adapted alternately to reject heat to the ambient atmosphere and to collect heat therefrom as desired; duct means communicating with said heat pump and adapted alternately to deliver either cool air or heated air into a building room; thermal

storage means communicating with said heat pump and disposed and adapted either to collect BTU's directly from said heat pump when it is delivering heat, or to be cooled by said heat pump when it is delivering cool air; and duct means for delivering either heat or cooling from said thermal storage means to said system when the respective demand in said room may exceed the thermal capacity of said heat pump; and means controlling said heat pump to either store heat in said thermal storage means or to cool it when the respective demand of said room is less than the thermal capacity of said heat pump; said heat pump having a first heat exchanger communicating with atmosphere outside said room; said heat pump having a second heat exchanger communicating with atmosphere inside said room; said heat pump having a third heat exchanger; said first and third heat exchangers having refrigerant passages which are coupled in series; and means for transferring heat from said



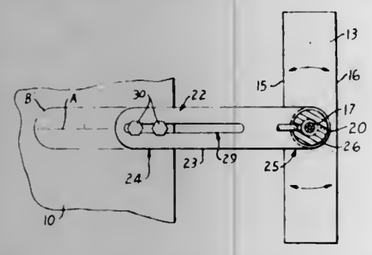
thermal storage means to said third heat exchanger together with first air moving means disposed for forcing ambient air into contact with said first heat exchanger and back to atmosphere outside said room; second air moving means disposed for forcing air to flow into contact with said second heat exchanger and into said room; first duct and damper means communicating with said second air moving means and disposed to deliver air alternately from said room and said thermal storage means; third air moving means disposed for forcing air from said thermal storage means and into contact with said third heat exchanger; a roof disposed over said room; a solar energy collector in said roof; said solar energy collector having passages extending upwardly and downwardly in said roof; and duct and damper means adapted to provide the flow of air through said solar energy collector and through said thermal storage means and back to said solar energy collector.

4,066,119

ROTATABLE RADIATOR ASSEMBLY FOR A VEHICLE

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 30, 1976, Ser. No. 718,733
Int. Cl.² F28F *13/06*; F01P *3/100*; B60K *11/02*; F28F *9/00*
U.S. Cl. 165—41 **6 Claims**



1. In a vehicle engine radiator assembly having a radiator having first and second opposed cooling surfaces, an inlet conduit, an outlet conduit, and means for passing fluid from the inlet conduit to the outlet conduit while passing air from one of the cooling surfaces through the radiator and to the other cooling surface, the improvement comprising:

a first fluid coupling pivotally connected to the inlet and being of a construction sufficient for passing fluid into the inlet at a first position of the radiator at which the first cooling surface is directed outwardly from the vehicle and a second position at which the second cooling surface is directed outwardly from the vehicle;

a second fluid coupling pivotally connected to the outlet and being of a construction sufficient for passing fluid from the outlet at said first and second radiator positions; and

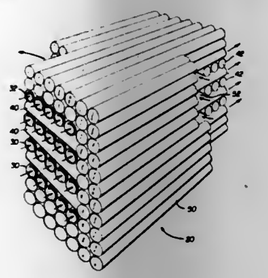
first means for maintaining at least one of the fluid couplings fixed to the vehicle for movement of fluid couplings toward and from the vehicle for movement of the radiator between the first and second positions while passing fluid through the radiator from the inlet conduit to the outlet conduit.

4,066,120

RECUPERATOR STRUCTURES AND METHOD OF MAKING SAME

Donald F. Mold, and Ronald G. Rice, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 554,791, March 3, 1975. This application May 6, 1976, Ser. No. 684,050
Int. Cl.² C03C *27/00*; C03B *32/00*; F28D *7/00*; F28F *1/00*
U.S. Cl. 165—165 **6 Claims**



1. A recuperator heat exchanger assembly, comprising

a. a plurality of stacked layers of tubes, each tube having open ends and a portion intermediate the open ends which is essentially parallel to corresponding intermediate portions of the other tubes in the same layer and to corresponding intermediate tube portions in the other layers to form a first series of longitudinally extending parallel passageways for receiving a first fluid;

b. header connecting means for receiving the open tube ends of each layer and supporting the opposing open ends in each layer to maintain the intermediate tube portions of each layer in a spaced relationship with respect to the intermediate tube portions of the tubes in at least one of the adjacent stacked layers in said assembly to define a second series of passageways between layers of intermediate tube portions for receiving a second fluid, said header connecting means closing the spaces between and around the open ends of said tubes to prevent crossflow between the first and second fluid streams; and

c. means extending longitudinally along each of said second passageways for confining said second fluid in and out directing the flow of the second fluid through said second series of passageways in a direction parallel to and in heat exchange relationship with the intermediate tube portions adjacent the second series passageways, said second fluid directing means having entry and exit port means formed therein for receiving and discharging the second fluid and said second fluid confining and directing means including a second series of layers of tubes, each tube in each of said second series layers having open ends which terminate along lines extending obliquely with respect to the longitudinally extending parallel passageways, and a portion intermediate the open ends which is essentially parallel to corresponding intermediate portions of the other tubes in the same layer and to corresponding intermediate tube portions in the other second series layers, the intermediate tube portions of said second series layers also being essentially parallel to the intermediate tube portions of said first-mentioned plurality of stacked layers, the intermediatetube portions of each of said second series layers being disposed adjacent to and in heat exchange relationship with the intermediate tube portions of at least one of said first-mentioned plurality of layers, and a third series of tubes having open ends which mate with the open tube ends of each second series layer along the oblique lines defined thereby and extending transversely to each second series passageway to direct said second fluid into and receive said second fluid from the tubes of each second series layer;

d. said stacked layers of tubes, said header connecting means, and said second fluid directing means being constructed of material having essentially zero porosity, consisting essentially of an inorganic crystalline oxide ceramic material, and having an average coefficient of lineal therman expansion of about -18 to $+50 \times 10^{-7}$ C over the range of 0°–300° C;

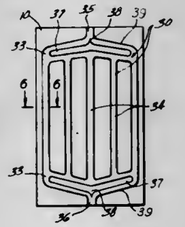
e. said stacked layers of tubes, said header connecting means, and second fluid directing means being fused together to form an integral assembly.

4,066,121

HEAT EXCHANGER WITH HEADER HAVING IMPROVED FLUID DISTRIBUTION

Charles A. Kleine, Florissant, Mo., and Verne L. Middleton, East Alton, Ill., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 573,953, May 2, 1975, and Ser. No. 632,502, Nov. 17, 1975, which is a continuation-in-part of said Ser. No. 573,953. This application Nov. 17, 1975, Ser. No. 632,644
Int. Cl.² F28F *3/14, 9/02*; F24J *3/02*
U.S. Cl. 165—170 **7 Claims**



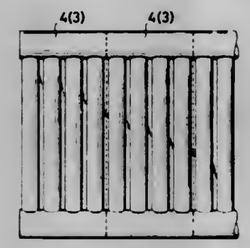
1. A metal panel for use in a solar energy collector system having a desired system of internal tubular passageways for a heat exchange medium disposed between spaced apart portions of the thickness of said panel and defining opposed headers connected by a plurality of spaced, parallel individual connecting portions of said passageways extending therebetween, with at least one first bonded portion of said metal defining said connecting portions, said passageways having entry and exit portions extending from said headers to opposed edges of said panel to provide ingress and egress openings for said heat exchange medium, wherein said headers each include a fluid distributing pattern comprising at least one second bonded portion, of said metal in said headers spaced from said first bonded portion, each of said second bonded portions defining at least one wedge-shaped projection adjacent and in juxtaposition to said entry and exit portions, respectively, said projections provided to assist in the distribution of flow of said heat exchange medium and to subdivide said flow into discrete channels.

4,066,122

MULTI-LAYER RADIATOR OF PLASTIC MATERIAL AND PROCESS FOR ITS MANUFACTURE

Erwin Gross, Burgsolms, and Hans Vowinkel, Florsheim am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 18, 1975, Ser. No. 587,863
Claims priority, application Germany, June 20, 1974, 2429611
Int. Cl.² F28F *9/02*
U.S. Cl. 165—175 **8 Claims**



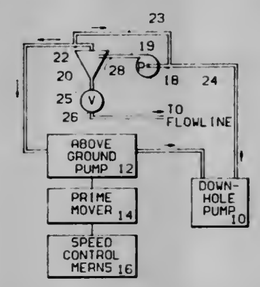
1. A multi-layer radiator of plastic material consisting essentially of planar elements formed of vertical substantially parallel water pipes and a pair of spaced horizontal headers to which the ends of said pipes are connected, said elements being connected to one another by straps at points spaced from said headers to form multi-layer units, the units being firmly joined to one another endwise.

4,066,123

HYDRAULIC PUMPING UNIT WITH A VARIABLE SPEED TRIPLEX PUMP

David R. Skinner, Odessa; Marvin W. Jutus, and Miles L. Sowell, both of Levelland, all of Tex., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 23, 1976, Ser. No. 753,745
Int. Cl.² E21B *43/00*
U.S. Cl. 166—68.5 **10 Claims**

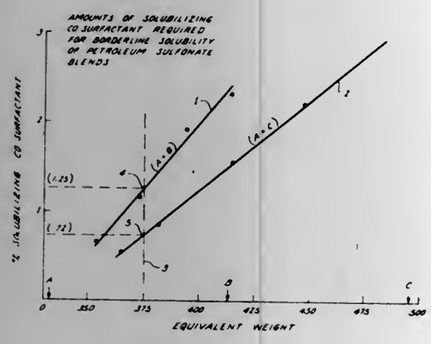


1. In combination with a well-fluid hydraulic pumping unit of the type wherein a prime mover drives an above-ground pump to supply a flow of pressurized fluid, wherein at least some of said pressurized fluid is used as power fluid for a downhole hydraulically actuated pump, which downhole pump returns fluid to the surface wherein at least some of said return fluid is introduced as cyclone flow into the input of a cyclone separator, and wherein a portion of said cyclone flow exits the cyclone overflow as cleaned fluid and is available for use as power fluid, and the remainder of said cyclone flow exits the cyclone underflow and is sent to a flowline, the improvement which comprises:

a. speed control means connected to said prime mover for controllably varying the speed at which said prime mover drives said above-ground pump;
b. a cyclone feed pump having an inlet and an outlet, wherein said outlet is connected to said cyclone inlet and wherein said feed pump inlet is connected to receive said return fluid, and
c. a flowback line connected from said cyclone overflow to said cyclone feed pump inlet, whereby the speed of the above-ground pump can be changed without adversely affecting the cleaning by the cyclone.

4,066,124
SALINITY TOLERANT SURFACTANT OIL RECOVERY PROCESS

Joseph T. Carlin, Houston, Tex.; James W. Ware, Tulsa, Okla.; Melvin E. Mills, Jr., Salem, Ill., and John A. Wells, Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 1, 1976, Ser. No. 746,554
Int. Cl.² E21B *43/22*
U.S. Cl. 166—252 **23 Claims**



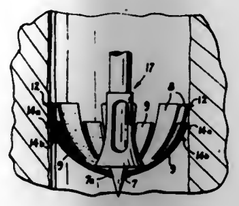
13. A method of recovering petroleum from a subterranean, petroleum-containing permeable formation penetrated by at least two wells in fluid communication therewith, said formation containing water having a known or determinable salinity of at least 5000 parts per million total dissolved solids, comprising:

introducing into the formation via one of said wells, an aqueous saline fluid having a salinity about equal to the salinity of the formation water, said surfactant fluid comprising a solubilizing co-surfactant and a blend of at least two organic sulfonates one of which is predominantly water soluble and one of which is at least partially oil soluble, the blend of two or more organic sulfonates being chosen from a group of at least two blends of at least three organic sulfonates having different average equivalent weights, the selected blend requiring less of the solubilizing co-surfactant than the other blends to achieve a condition of borderline solubility in the saline fluid.

4,066,125
SEISMIC DRILL HOLE SURFACE PLUG

Peppino Bassani, Box 4091, Edmonton, Alberta, Canada
Filed Feb. 8, 1977, Ser. No. 766,812
Claims priority, application Canada, Dec. 23, 1976, 268639
Int. Cl.² F21B *33/12*
U.S. Cl. 166—202 **5 Claims**

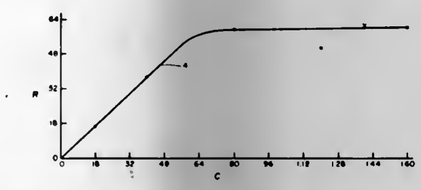
1. A plug for use in plugging seismic drill holes or wells, the said plug being formed of flexible material and being circular in shape, having a diameter larger than the diameter of the well to be plugged, characterized in that the plug has a central aperture surrounded by a solid portion, and a series of fingers project radially outwards from the said solid portion, each of



said fingers on one surface thereof having well surface gripping protrusions projecting therefrom.

4,066,126
SURFACTANT WATERFLOODING WITH HYDROCARBON SLUG

Jerry M. Waite, and Ralph F. Burdyn, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 20, 1976, Ser. No. 752,590
Int. Cl.² E21B *43/22*
U.S. Cl. 166—273 **12 Claims**



1. In the recovery of oil from a subterranean oil-containing reservoir penetrated by spaced injection and production system, the method comprising:

a. injecting into said reservoir via said injection system a slug of hydrocarbon having a viscosity less than the viscosity of the reservoir oil in an amount within the range of 0.01–0.04 pore volume,
b. thereafter injecting into said reservoir via said injection system an aqueous surfactant slug in an amount within the range of 0.05–0.3 pore volume, said surfactant slug containing a surfactant within a range of 0.5–4.0 weight percent,
c. thereafter injecting into said reservoir via said injection system an aqueous mobility control slug, at least a portion of said mobility control slug having a viscosity at least as great as the viscosity of said hydrocarbon slug,
d. thereafter injecting into said reservoir via said injection system an aqueous flooding medium to displace oil to said production system, and
e. recovering oil from said production system.

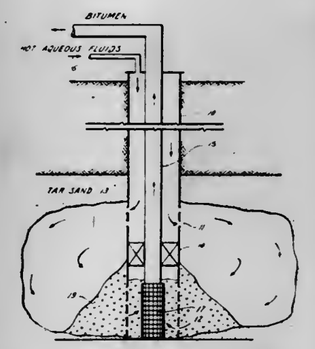
4,066,127
PROCESSES FOR PRODUCING BITUMEN FROM TAR SANDS AND METHODS FOR FORMING A GRAVEL PACK IN TAR SANDS

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Aug. 23, 1976, Ser. No. 716,503
Int. Cl.² E21B *43/24, 43/08, 43/10*
U.S. Cl. 166—278 **16 Claims**

1. A process for producing bitumen from a subterranean reservoir of tar sands from a well having tubing centered in a casing forming an annulus with perforations at the top and bottom of the reservoir comprising the steps of,

a. running a packer in the annulus between the upper and lower perforations in the casing,

b. heating the casing for melting the bitumen from the tar sands immediately adjacent the external surface of the casing to form a passage in the reservoir from the upper perforations to the lower perforations,
c. setting the packer to prevent internal fluid communication between the upper and lower perforations,
d. ejecting hot fluids from the upper perforations for melting more bitumen from the tar sands for flowing through the lower perforations for forming a cavity of a predetermined size around the casing from the upper perforations to the lower perforations and through the tubing for recovery at the surface,
e. mounting a screen on the bottom of the tubing adjacent the lower perforations and setting the packer,
f. ejecting a gravel pack material slurry into the cavity from the upper perforations for forming a gravel pack around the screen,
g. ejecting more hot fluids into the cavity from the upper perforations for melting more bitumen from the tar sands, and
h. flowing the melted bitumen through the gravel pack, lower perforations, and screen for filtering out sand and gravel from the melted bitumen for recovering the melted bitumen at the surface.

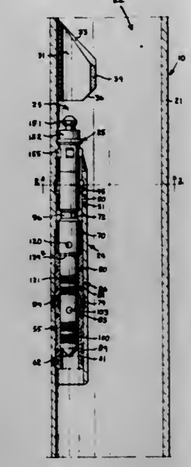


8. A method for forming a gravel pack for producing bitumen from a subterranean reservoir of tar sands from a well therein having tubing centered in a casing forming an annulus with sets of perforations therein at the top and bottom of the reservoir comprising the steps of,

a. running a packer in the annulus between the upper and lower perforations,
b. heating the casing for melting the bitumen from the tar sands immediately adjacent the external surface of the casing to form a passage in the reservoir from the upper perforations to the lower perforations,
c. setting the packer to prevent internal fluid communication between the upper and lower perforations,
d. ejecting hot fluids from the upper perforations for melting more bitumen from the tar sands for flowing through the lower perforations for forming a cavity of a predetermined size around the casing from the upper perforations to the lower perforations and through the tubing for recovery at the surface,
e. pulling out the tubing and packer,
f. running the tubing with a screen on the bottom thereof adjacent the lower perforations and setting the packer, and
g. ejecting a gravel pack material slurry into the cavity from the upper perforations for forming a gravel pack around the screen that is a long lasting gravel pack in tar sands.

4,066,128
WELL FLOW CONTROL APPARATUS AND METHOD

Jerry B. Davis, Dallas, and Guy W. Gant, Richardson, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Filed July 14, 1975, Ser. No. 595,548
Int. Cl.² E21B *23/02, 43/12*
U.S. Cl. 166—315 **19 Claims**



1. A well device for controlling fluid communication between the interior and exterior of a well tubing comprising: a side-pocket mandrel body having means at each end for connection into said tubing and a longitudinal open bore for alignment with the bore of said tubing when said mandrel body is connected into said tubing; said mandrel body having a side-pocket chamber longitudinally aligned with and laterally offset from said open bore and communicating with said open bore; a side-pocket landing nipple formed in said side-pocket chamber for supporting a well tool in said mandrel body; said mandrel body having port means in a side wall thereof opening into said side-pocket landing nipple; and valve means secured in said landing nipple for opening and closing said port means into said nipple responsive to insertion and removal of a well tool in said nipple.

16. A method of controlling communication in a well between the interior and exterior of a well tubing including a side-pocket mandrel having a side-pocket landing nipple provided with a sliding sleeve valve for controlling flow through side port means in said mandrel leading from said exterior of said tubing into said landing nipple comprising the steps of: inserting a well tool into said side-pocket landing nipple through said well tubing; engaging said sliding sleeve valve with said well tool releasing said sleeve valve from a closed locked relationship in said landing nipple; latching said sleeve valve with said well tool upon release of said valve for movement in said landing nipple; and moving said sleeve valve by means of said well tool to an open position at which fluid communication is established through said side ports in said body mandrel into said landing nipple through said sleeve valve.

4,066,129
SPRINKLER HEAD ASSEMBLY

James R. Anderson, Berwyn, Pa., assignor to Central Sprinkler Corporation, Lansdale, Pa.
Filed Sept. 17, 1976, Ser. No. 724,736
Int. Cl.² A62C *37/10*; F16L *37/24*
U.S. Cl. 169—37 **15 Claims**

1. A sprinkler head for a fire extinguishing system comprising:

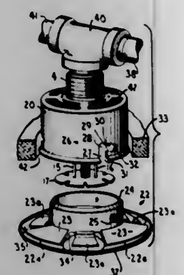
a. a sprinkler body having a nozzle therein, said nozzle being

closed by a thermally responsive seal member adapted to open said nozzle to permit fluid discharge therefrom,

b. a bracket attached to said sprinkler body,

c. a flange located forwardly of said nozzle that is disposed substantially transversely and extends radially outward with respect to the discharge axis of said nozzle, and

d. a cover extending across the path of said discharge axis and attached to said flange by means of a thermally responsive bonding material which will soften prior to the opening of said nozzle by said seal member,



e. said flange being attached to said bracket by means of at least one relatively engageable projection and shoulder joint, said joint having at least one resiliently operative transitional arrangement tending to lock the engaged projection and shoulder of said joint against relative rotational disengagement,

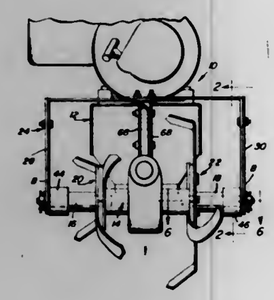
f. said resiliently operative transitional arrangement including resilient means urging said cover away from said flange.

4,066,130

DIRT SHIELD FOR ROTO TILLER

Dedriuck Heppner, 211 Main St., Zumbro Falls, Minn. 59991

Filed June 22, 1976, Ser. No. 698,702
Int. Cl.² A01B *33/16*
U.S. Cl. 172—81 **5 Claims**



1. In combination with a rotary digger including a ground traversing movable frame, a longitudinal shaft mounted on the frame and disposed extending perpendicularly to a normal direction of movement of the frame, and a rotary earthworking member mounted on the shaft for rotation therewith, a dirt shield, comprising, in combination:

a. a U-shaped framework having a pair of spaced, substantially parallel legs and a connecting portion, and supported on the shaft and frame; and

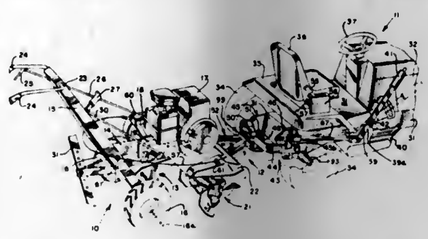
b. a shield member mounted on the framework outwardly of the digger and oriented perpendicularly to the shaft of the digger for keeping dirt away from plants adjacent the digger, the shaft of the digger including a pair of longitudinally spaced ends and a pair of rotary earthworking members mounted on the shaft and associated with the spaced ends of the shaft so as to be spaced longitudinally from one another, with the legs of the framework of the dirt shield being connected directly to the ends of the shaft of the digger and the connecting portion of the framework being rigidly attached to the frame for preventing movement of the framework relative to the frame, and the shield member being mounted on the framework outwardly of the rotary earthworking members and associated with one of the ends of the shaft.

4,066,131

HITCH ASSEMBLY FOR GARDEN TRACTOR AND INDEPENDENTLY OPERABLE GROUND TILLER

Herman P. Zandbergen, Wheaton, Ill., assignor to White Farm Equipment Company, Cleveland, Ohio

Filed Oct. 1, 1975, Ser. No. 618,389
Int. Cl.² A01B *59/042*
U.S. Cl. 172—680 **4 Claims**



1. A universal hitch for connecting an independently operable ground tiller to the rear of a garden tractor for towed operation therebehind, said hitch comprising:

tongue means adapted to rigidly mount on and extend forwardly of said ground tiller, and

universal joint means including first and second pivotal member mountings oriented perpendicularly to each other, said first pivotal mounting being attachable to said riding vehicle, and said second pivotal mounting being attachable to said tongue means for providing dual planer pivotal movement between said vehicle and said ground tiller,

said second pivotal member mounting is positioned offset relative the center of said first pivotal member mounting, and

said first and second pivotal member mountings are inversely attachable to said vehicle and said tongue means respectively for varying the mounted height above ground of said universal hitch.

4,066,132

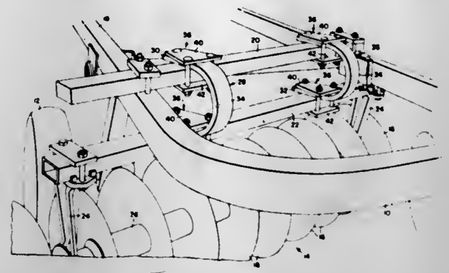
DISK HARROW WITH BEAM MEMBER SUSPENDED BY U-SHAPED SPRINGS

Gary Allen Rehn, Andover, Ill., assignor to Deere & Company, Moline, Ill.

Filed Feb. 20, 1976, Ser. No. 659,596
Int. Cl.² A01B *5/06*
U.S. Cl. 172—572 **2 Claims**

1. In a disk harrow comprising: a mobile frame having laterally spaced apart frame members; a first beam member transversely fixed to the frame in overlying relationship thereto and having a rectangular cross section with horizontally extending upper and lower flat surfaces; a second beam member beneath and generally parallel to the first beam member, said second beam member also having a rectangular cross section with horizontally extending upper and lower flat surfaces; a pair of spaced apart support arms attached to the second beam member and depending therefrom; a plurality of blades mounted on a common shaft carried by the support arms; spaced apart U-shaped spring members disposed between the laterally spaced apart frame members, the base section of each spring member extending forwardly from the beam members and

generally vertically therebetween, with the leg section of each spring member extending rearwardly from the base section and having flat upper and lower portions, each flat portion dis-



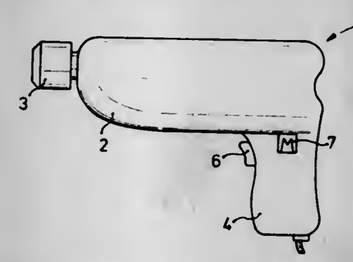
posed adjacent a horizontal surface of a respective beam member; and clamp means bearing against the opposite horizontal surfaces of each beam member for securing the respective flat section of the spring member thereto.

4,066,133

POWER HAND TOOL

Klaus Voss, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 2, 1975, Ser. No. 609,309
Claims priority, application Germany, Sept. 4, 1974, 2442226
Int. Cl.² B25B *23/14*
U.S. Cl. 173—12 **16 Claims**



1. Power hand tool having a tool body (2), a drive motor (8, 38, 48) secured in the body, and a holding handle (4, 24) for manually holding the tool, the holding handle being joined to the tool body, said tool comprising

a torque sensing element (7, 27, 37, 57) located at the junction of the tool body and the handle and comprising a strain measuring transducer (7, 27, 37, 57) providing an electrical output signal, said strain measuring transducer being positioned on the tool adjacent the junction of the tool body and the holding handle to be responsive to deformation of the handle (4, 24) with respect to the tool body (2, 22);

and means connecting said strain measuring transducer and the motor to control the motor operation as a function of the output signal and thus of the torque between the tool body and the holding handle.

4,066,134

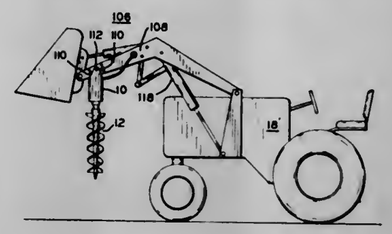
HYDRAULIC POST HOLE AUGER APPARATUS

Ed Karns, III, 400 N. River Road, Apt. 1137, West Lafayette, Ind. 47906

Filed Mar. 25, 1976, Ser. No. 670,393
Int. Cl.² A01B *49/04*
U.S. Cl. 173—27 **2 Claims**

1. A hydraulically driven post hole auger apparatus for attachment to the power-actuated arm of the front end loading apparatus of a tractor, said arm having opposite ends with one end pivotally connected to the tractor, comprising: first and second plates respectively engaging opposite sides of said arm and fastener means for connecting said plates and removably clamping the same on said arm; a pair of spaced support elements secured to one of said plates; a cylindrical housing having a side wall and one end wall and being open at its opposite end,

said side wall having a pair of opposite cut-out portions formed therein and respectively extending from said open end towards said end wall for accommodating hydraulic hoses for said motor, said cut-out portions forming a pair of upstanding leg portions; a speed-reducing gear box in



said housing having an output shaft extending through an opening in one end wall and adapted to have an auger attached thereto; a hydraulic motor in said housing operatively coupled to said gear box; a first pin having opposite ends connected respectively to said leg portions across said housing; a first sleeve rotatably mounted over said first pin between said leg portions; a second sleeve fixedly secured to said first sleeve and extending at right angles thereto; and a second pin rotatably received in said second sleeve and having opposite ends connected respectively to said elements.

4,066,135

TELESCOPIC ROCK DRILL MOUNTING

Trevor Evelyn Wallace, Sandton, Transvaal, South Africa, assignor to The Steel Engineering Company, Roodepoort, Transvaal, South Africa

Filed Jan. 30, 1976, Ser. No. 653,894
Int. Cl.² E21C *5/00*
U.S. Cl. 173—44 **13 Claims**



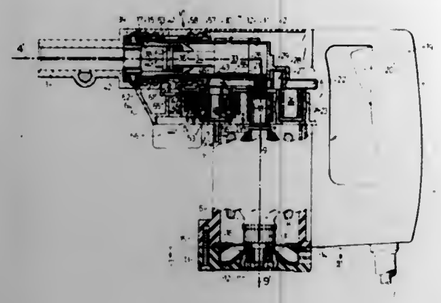
1. An extendable and retractable rock drill mounting comprising an extendable drill feed leg having a first element, and a second element with one end movable along the length of the first element and adapted to carry a rock drill at its free end, a vertical support to which the first element is pivoted at its free end, and a counterbalancing arm forming a triangle with the vertical support and the first element, the counterbalancing arm being adjustable in length, means for providing a thrust to maintain the counterbalancing arm in any adjusted position, means for altering the thrust to adjust the length of the counterbalancing arm and feed-back means so to alter the thrust as to maintain the length of the arm substantially constant in any adjusted configuration.

4,066,136

TORQUE AND IMPULSE TRANSMITTING MACHINE

Karl Wanner, Echterdingen; Reinhard Hahner, Kemnat; Wolfgang Schmid, Plattenhardt; Gernot Hansel, Stuttgart-Plieningen, and Manfred Bleicher, Leinfelden, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Apr. 7, 1976, Ser. No. 674,743
Claims priority, application Germany, Apr. 15, 1975, 2516406
Int. Cl.² H02G *3/04*
U.S. Cl. 173—48 **32 Claims**



1. A torque and impulse transmitting machine, comprising a housing; a tool holder mounted on the housing for holding a material-penetrating tool; a drive motor in the housing and having a rotary shaft mounted therein for rotation about an axis of rotation; an impeller assembly for transmitting impulses to the tool in said holder, said assembly having an impeller mounted for reciprocating movement along an axis of reciprocation, said axis of reciprocation and said axis of rotation both lying in and defining a common plane; first motion-transmitting means in motion-transmitting engagement with said motor and said impeller assembly and operative for reciprocating said impeller in response to rotation of said shaft, said first means comprising a crank gear mounted for rotation about an axis which extends in direction substantially parallel to said axis of rotation of said rotary shaft and which is offset from said common plane; and second motion-transmitting means arranged in the housing and operative for transmitting torque to the tool in said holder, said second means comprising an intermediate gear laterally adjacent said crank gear and being in motion-transmitting engagement with the latter.

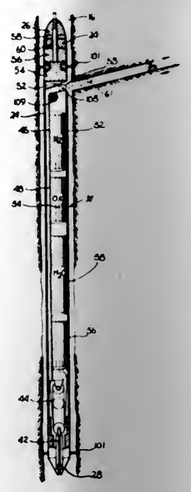
4,066,137

FLAME JET TOOL FOR DRILLING CROSS-HOLES

Helmut Frankle, and Werner Baum, both of Canoga Park, Calif., assignors to PEI, Inc., Malibu, Calif.

Filed June 10, 1976, Ser. No. 694,902
Int. Cl.² E21B *7/14*
U.S. Cl. 175—14 **25 Claims**

1. A flame jet tool forming cross holes in the ground comprising an elongated tube-like member, a fuel system disposed within said tube-like member, and an extension member comprised of a series of interconnected link members and having a first and second end with said first end being coupled to a drill bit, and said second end being coupled to said fuel system, said extension member being movable from a position within said



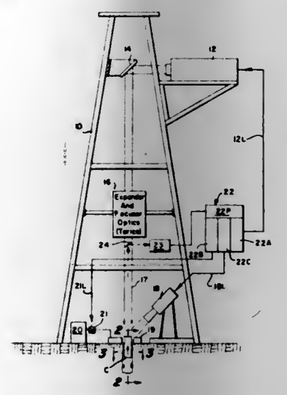
tube-like member to an extended position lateral to said tube-like member.

4,066,138

EARTH BORING APPARATUS EMPLOYING HIGH POWERED LASER

Winfield W. Salisbury, 11 Glenn Road, Belmont, Mass. 02178, and Walter J. Stiles, 4032 W. Krall Ave., Phoenix, Ariz. 85019

Continuation-in-part of Ser. No. 525,442, Nov. 10, 1974, Pat. No. 3,998,281. This application Dec. 15, 1976, Ser. No. 750,875
Int. Cl.² E21B *7/14*
U.S. Cl. 175—16 **7 Claims**



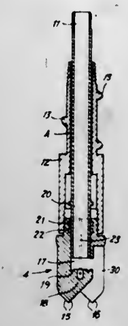
1. Apparatus for boring a cylindrical hole in the earth and comprising laser means for providing a beam of high powered coherent light, focusing means above the hole for forming the beam into an annular beam traversing a downwardly directed path, fluid blast deflecting means for directing a blast that intercepts the path above the hole, and control means connected to actuate the laser means and deflecting means in sequence to provide annular beam pulses that form the hole by fusing successive annular regions of the stratum to be penetrated at a power level that shatters and self-ejects successive cores from the hole and to provide fluid blasts that deflect ejected cores.

4,066,139

SAMPLING DRILL

Jamie Malcolm Wallis, 54 Beaconsfield Avenue, Midvale, Western Australia, 6056, Australia

Filed May 22, 1975, Ser. No. 579,802
Claims priority, application Australia, May 28, 1974, 7685/74; Dec. 19, 1974, 76654/74
Int. Cl.² E21C *13/02*; E21B *41/00, 49/02*
U.S. Cl. 175—232 **1 Claim**



1. A sampling drill comprising a plurality of drill rods coupled together to form a drill stem suspended from a drill head; said rods including each a pair of substantially concentric tubular members defining an inner central passage and an annular passage; the lower end of said stem being fitted with a drill bit including a neck, cutting edges and means defining an inner chamber means in said bit, said chamber means being connectable to said central passage, and means defining at least one passage in said bit, connected in fluid communication at one end of said annular passage and at the other end to discharge into said chamber means; said chamber means being provided with openings located adjacent said edges so that material cut by said bit can pass into said chamber means; wherein the lower end of an inner member of said drill stem is connected to a tubular member, the lower end of which latter slidably passes through said neck in sealing engagement therewith to seat on a central boss within said chamber means, to constitute means for shutting off said central passage to prevent the material from entering said chamber means and entering said central passage.

4,066,140

HEAVY DUTY INDUSTRIAL SCALE

Fred Miller Conley, Highland, Calif., assignor to Gardner-Denver Company

Filed Mar. 15, 1976, Ser. No. 666,884
Int. Cl.² G01G *19/02*
U.S. Cl. 177—134 **33 Claims**



1. In a weight determining apparatus having a means for supporting an object to be weighed, a plurality of mounts carrying the support means above ground, transducer means of the mounts responsive to measure the weight of the object by elastic deformation of the transducer means, and means responsive to the transducer means to indicate the weight of an object, an improvement in each of the mounts which comprises:

a. a shear loaded transducer;

b. means for mounting the transducer in the horizontal with the ends thereof rigidly affixed to ground; and

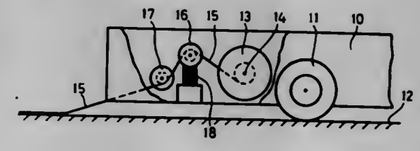
c. means for vertically loading the transducer with the support means and the object intermediate the ends of the transducer, the entire weight of the support means and the object being supported by the transducers of all the mounts, the loading means yielding freely to all horizontal forces by moving pendulously with respect to the transducer in a first vertical plane containing the horizontal axis of the transducer and in a second vertical plane normal to the first vertical plane, the yielding of the loading means isolating the transducer from the horizontal forces.

4,066,141

MEANS FOR CONTROLLING THE SPEED OF A CABLE

Sten Elvin, Vasteras, Sweden, assignor to ASEA Aktiebolaget, Vasteras, Sweden

Filed Aug. 26, 1976, Ser. No. 718,087
Claims priority, application Sweden, Aug. 28, 1975, 7509540
Int. Cl.² H02G *1/06*
U.S. Cl. 180—2 R **7 Claims**



1. Apparatus for controlling the speed of a cable when being unwound and wound on a cable drum which is disposed on a movable vehicle said cable drum having associated therewith drive means comprising

a. means for measuring the speed of the vehicle and providing a first output signal proportional thereto;

b. means for measuring the speed of rotation of the cable drum and providing a second output signal proportional thereto; and

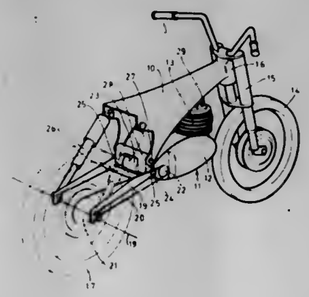
c. control and regulating means having as inputs said first and second signals and providing as an output a third signal which is related to the difference therebetween, said output coupled to control the drive means for said cable drum.

4,066,142

LOOP DRIVEN VEHICLES

Bernard Hooper, Maybank House, Hope Street, Wardsley, Stourbridge, West Midlands, England

Filed Aug. 6, 1976, Ser. No. 712,199
Claims priority, application United Kingdom, Aug. 11, 1975, 33330/75
Int. Cl.² B62M *7/04*
U.S. Cl. 180—33 A **4 Claims**



1. A loop driven vehicle comprising a frame, a power unit

which produces out of balance forces when in operation, mounting means movably mounting the power unit on the frame, a fork pivotally mounted on the power unit and a rear wheel mounted in the fork for rotation about a first axis, and a driving loop interconnecting the rear wheel and power unit, the mounting means comprising:

i. first mounting means at the rear of the power unit for permitting angular movement of the power unit in response to said out of balance forces about a second axis parallel to the first axis and for permitting translatory movement of the power unit relative to the frame, such permitted movement having a horizontal component in a plane perpendicular to said first axis at least a number of times greater than vertical and lateral components of such movement, said first mounting means comprising:

a. a generally U-shaped support member with a base portion and two parallel limbs;

b. means for pivotally mounting the limbs to the power unit to define said second axis; and

c. means for pivotally mounting the support member to the frame to define a pivotal axis which is fixed relative to the frame and is parallel to and substantially in vertical alignment with said second axis, and

ii. resilient second mounting means for accommodating movement of a further part of the power unit resulting from said movement of the power unit permitted by the first mounting means.

4,066,143

VEHICLE WITH ROTATING CAB

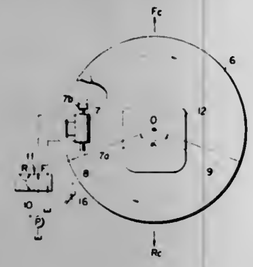
Haruhiko Umeda; Hiroshi Ito, both of Yokohama, and Toshitaka Suketomo, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed June 2, 1976, Ser. No. 692,110

Claims priority, application Japan, June 2, 1975, 50-65275

Int. Cl.² B60K *23/00*

U.S. Cl. 180—77 S **4 Claims**



1. In a vehicle which is provided therein with a driver's compartment mounted to enable it to be turned at an angle of 180° from its forwardly facing position to its rearwardly facing position and vice versa and a multispeed transmission having a plurality of forward speeds and at least one rearward speed said transmission including a plurality of solenoid operated directional control valves for speed change of the vehicle, the improvement comprising:

a. a change lever provided in said driver's compartment for operating said transmission;

b. an operation lever means provided in said driver's compartment for turning said driver's compartment; and

c. transmission control means by which said transmission becomes automatically changed from a forward control condition to a rearward control condition when said driver's compartment is turned from the forwardly facing position to the rearward facing position by the operation of said driver's compartment operation lever wherein said transmission has a plurality of rearward speeds and at least one forward speed, and vice versa; whereby said vehicle has a multispeed transmission controlled by the operation of said change lever in the direction said driver's compartment is facing even when the driver's compartment is either in the forwardly facing position or in the rearwardly facing position.

4,066,144

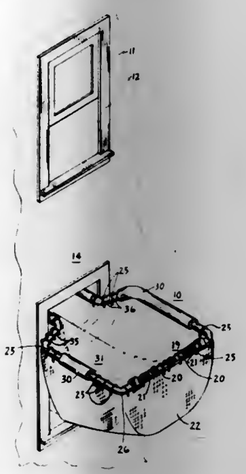
RESCUE APPARATUS

Joseph F. Valerio, Jr., 118 W. Sixth St., Bridgeport, Pa. 19405

Filed Jan. 4, 1977, Ser. No. 756,636

Int. Cl.² A62B *1/22*

U.S. Cl. 182—140 **8 Claims**



1. Rescue apparatus for use in a window of a building for rescuing falling persons which comprises

a pair of arms pivotally secured together,

a net carried by said arms,

a first pair of extensible posts detachably engaged with said arms and having members engageable with the floor and ceiling of a room, and

a second pair of extensible posts secured to said arms between said net and said first pair of posts engageable with the floor of the room.

4,066,145

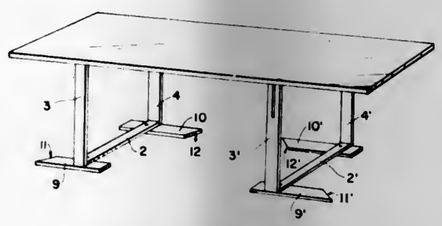
COMPACT SAW HORSE

Bud M. Pavese, Hobart, Ind., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Dec. 1, 1976, Ser. No. 746,502

Int. Cl.² F16M *11/00*

U.S. Cl. 182—153 **2 Claims**



1. A compact saw horse, comprising

a top panel type member;

a bottom panel type member;

a pair of panel type side members;

a plurality of fastening means affixing the top, bottom and side members to each other at their ends to form a rectangular configuration; and

a pair of foot members pivotally affixed to the bottom member in juxtaposition therewith in spaced relation with each other in a manner whereby the foot members are positioned in alignment with the bottom member in inoperable position and extend at substantially right angles with the bottom member, although in a plane parallel to that of the bottom member, in operable position whereby they support the saw horse in an upright position, each of the foot members having spaced opposite first and second ends and being pivotally affixed to the bottom member considerably closer to the first end than to the second whereby in their operable position one of said foot members extends for most of its length from one side of the bottom member and the other of said foot members extends for most of its length from the other side of said bottom member to maintain the side members substantially vertical, said foot members having the configuration of the bottom member in their inoperable position, the edges of said foot members abutting each other in inoperable position and being at 45° relative to the sides thereof.

4,066,146

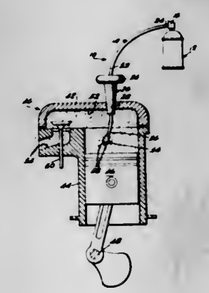
RUST RETARDER APPLICATOR

Peter P. Gresh, 389 Linwood Drive, Miami Springs, Fla. 33166

Filed July 28, 1976, Ser. No. 709,252

Int. Cl.² F16N *3/02*

U.S. Cl. 184—1 R **6 Claims**



1. For use in applying oil in the cylinder head of an engine above a piston and through a spark plug opening, a dispensing device for use with a pressurized source of oil having a dispensing opening, said device comprising:

A. a tubular length having a through passageway and having a first end zone and a second end zone, said length being of a cross sectional area which is uniform between the end zones,

said second end zone having a plurality of circumferentially facing equal size openings in open communication with the passageway through the tubular length, and

said second end zone being sized for receipt through said spark plug opening,

B. a generally conical plug having an axial through bore sized for sliding receipt of said tubular length and adapted for sliding movement along said tubular length,

said plug having an enlarged first end and a smaller second end,

said smaller end facing said second end of said tubular length and said second end being of a cross sectional area less than the cross sectional area of the spark plug opening for receipt therein, said plug being of yieldable rubber material for inserting it into the spark plug opening,

C. an adapter having a first opening and a second opening, said adapter including means to secure to the first end of the tubular length and the first opening being in fluid communication with the passageway through the tube and said second opening being sized for engagement with said pressurized source.

4,066,147

AUTOMATIC LUBRICATING DEVICE FOR REMOTELY OPERABLE BOWDEN CABLE

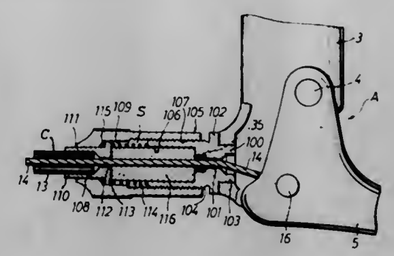
Hiromitsu Toyomoto, 1-17-24, Hanaten-higashi, Tsurumi, Osaka, Japan

Filed May 28, 1976, Ser. No. 690,934

Claims priority, application Japan, June 4, 1975, 50-75971

Int. Cl.² F16N *1/00*

U.S. Cl. 184—15 R **9 Claims**



1. In a remotely operating device including operating means having a fixed housing and an operating lever grippably pivotally mounted on said housing; actuating means disposed remotely from said operating means; and a bowden cable including an outer wire and an inner wire for interconnecting said operating means and said actuating means, the improvement comprising an automatic lubricating means for the bowden cable, said lubricating means comprising a bracket projecting from the housing and having an inner-wire receiving hole; an outer-wire holding means threadedly coupled to said bracket, for adjusting the outer wire said outer-wire holding means having a recess for receiving the outer wire and an inner-wire receiving hole; wherein when the outer-wire holding means is coupled to the bracket, an adjustable volume lubricating oil storage chamber is defined by the bracket and the outer-wire holding means; wherein one end of the inner wire is connected to the actuating means while the other end is passed through said receiving holes and said lubricating oil storage chamber and is connected to the operating lever and one end of the outer wire is connected to the actuating means and the other end is fitted in said recess of the outer-wire holding means; and wherein the interior of the bowden cable, between the outer and inner wires, communicates with said lubricating oil storage chamber through the inner-wire receiving hole formed in the outer-wire holding means whereby lubricating oil flows between said inner and outer wires thereby reducing friction therebetween.

4,066,148

HYDRAULICALLY-ACTUATABLE ELEVATOR SYSTEM

Richard L. Brown, Bellevue, Nebr., assignor to Lo-Rise Elevator Company, Plattsmouth, Nebr.

Filed Mar. 17, 1976, Ser. No. 667,697

Int. Cl.² B66B *11/04*

U.S. Cl. 187—17 **9 Claims**

1. A hydraulically-actuatable elevator system for use in combination with a multi-stories building structure and including a lofty vertical shaft-like wellway, said elevator system comprising:

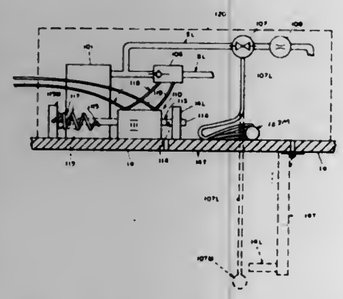
A. A weighty carrier member having a horizontal lower platform and uprightly therefrom structured to define an internal passenger compartment therefor, said carrier member being disposed within said wellway and vertically reciprocatable along a track means guide attached to the building structure;

B. At least one elongate hydraulically-actuatable piston of

the dual-segments plunger/casing type suspending the carrier member from a stationary superstructure within said wellway, the upright elongate casing segment being co-movably rigidly attached to the carrier;

C. Pump means for hydraulic fluid and including a fluid reservoir means, said pump means communicating through a primary-line into the piston casing whereby controlled introduction of hydraulic fluid into the piston casing with respect to its stationary suspended associated plunger causes the carrier member to ascend;

D. A secondary-line extending from the piston's casing interior to the reservoir and bypassing the pump means and having electrically governable checkvalve therealong and with the result that controlled withdrawal of hydraulic fluid from the piston's casing to a reservoir through the



secondary-line allows the weighty carrier member to descend; and

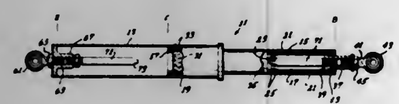
E. An emergency-line extending from the piston casing interior to a reservoir and bypassing the pump means and the electrically governable checkvalve, said emergency-line being co-movably attached to the carrier member and having therealong a normally-closed valve barrier of the on-off type, there also being co-movably associated with the carrier member and accessible within the internal passenger compartment a non-electrical manual opening means for the normally-closed barrier to permit hydraulic fluid to flow along the emergency-line into a fluid reservoir to allow the weighty carrier to descend and initiated by the passenger in the contingency that electrical power for ultimately governing the secondary-line checkvalve suddenly becomes unavailable.

4,066,149

VARIABLE ENERGY ABSORBING SYSTEM

Bernard Mazelsky, West Covina, Calif., assignor to ARA, Incorporated, West Covina, Calif.

Filed Sept. 13, 1976, Ser. No. 722,471
Int. Cl.² F16D *63/00*
U.S. Cl. 188—1 C **10 Claims**



5. A variable energy absorbing system comprising:

an outer member;

an inner member positioned within said outer member for movement in one direction therein;

first energy absorbing means, mounted between said inner member and said outer member, for absorbing energy by cyclic plastic deformation, in response to relative movement between said inner member and said outer member;

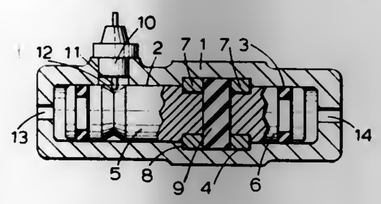
second energy absorbing means connected between said inner and outer members and resisting relative movement therebetween in said one direction, said second energy absorbing means being plastically deformable to absorb energy at levels of force within a preselected range of forces in only a first range of relative movement between said inner member and said outer member, said first energy absorbing means being continuously deformable to absorb energy within said preselected range of levels of force and in a second range of relative movement between said inner member and said outer member, said second range of relative movement being larger than said first range of relative movement, said second energy absorbing means including actuating means for rendering the same inactive upon application of a force exceeding said preselected range of force.

4,066,150

DUAL HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Glyn Phillip Reginald Farr, Leek Wootton, England, assignor to Girling Limited, Birmingham, England

Filed June 14, 1976, Ser. No. 695,366
Claims priority, application United Kingdom, June 12, 1975, 25169/75
Int. Cl.² F16D *66/00*
U.S. Cl. 188—1 A **6 Claims**



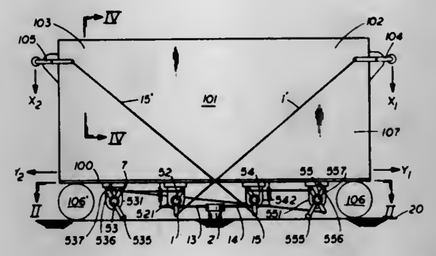
1. A pressure differential warning actuator comprising detector means for detecting when a differential between the pressures of separate brake circuits of an hydraulic braking system exceeds a predetermined value, a housing provided with a bore, said detector means positioned in said bore, said housing also provided with ports connected to said separate brake circuits, and indicator means actuated by said detector means when said predetermined value is exceeded said detector means comprising at least a first and second piston, said pistons working in separate bore portions of said bore, pressure from said separate brake circuits being connected through said ports to in said pistons, means for moving said pistons between a neutral position in which said indicator means is rendered inoperative when said differential pressure is less than said predetermined value, and an operative position in which said indicator means is rendered operative when said differential pressure exceeds said predetermined value, and a deformable assembly located between adjacent inner ends of said pistons and through which said pistons interact and which is adapted to restore said pistons from said operative position to said neutral position when said differential pressure decreases to a value less than said predetermined value, at least one of said pistons including ratio change means engaging with said deformable assembly such that when said pistons are in said operative position in which one of said pistons is connected to a brake circuit of higher pressure than said other piston, said one piston acts on said deformable assembly over a greater area than said other piston.

4,066,151

BRAKING AND LOCKING APPARATUS FOR A MOVABLE OR ROLLING CONTAINER

Gunther Liebscher, Wiesbaden-Kohlheck, and Gunther Christ, Geisenheim Rhg., both of Germany, assignors to Lermer Apparatebau GmbH, Wiesbaden, Germany

Filed Dec. 1, 1976, Ser. No. 746,433
Claims priority, application Germany, Sept. 17, 1976, 2641803
Int. Cl.² B60P *7/10*; B60T *1/14*; B64C *1/20*
U.S. Cl. 188—5 **9 Claims**



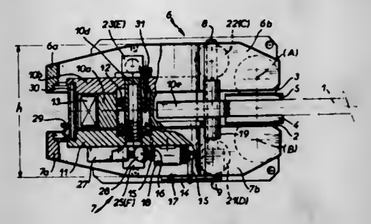
1. In a movable container assembly having a pair of locking levers positioned to cooperate with a fixed anchor, and a pair of pivoted braking spike means for inhibiting movement of said container assembly; the improvement comprising control means operatively connected to each end of said assembly, means coupling said control means to directly operate a respective one of said locking levers for releasing the respective locking lever, lost motion means coupling each control means to control a separate one of said braking spike means, said container assembly having a chassis with a bottom plate, and further comprising first and second pairs of parallel shafts, means mounting said shafts symmetrically under said bottom plate, and means connecting one of said spike means to a separate shaft of each pair of shafts, whereby said spike means extend downwardly and toward the center of said assembly from each end thereof, a separate one of said locking levers being connected to each of the other shafts of said pairs of shafts, said lost motion means comprising lost motion lever means coupling the shafts of each pair of shafts.

4,066,152

GRIPPER FOR A DISC BRAKE

Jean-Pierre Pascal, Paris, France, assignor to Fradisc, Gagny, France

Filed Oct. 14, 1976, Ser. No. 732,587
Claims priority, application France, Oct. 16, 1975, 75.31623
Int. Cl.² B60T *13/04*
U.S. Cl. 188—171 **4 Claims**



1. A gripper for a disc brake having a disc keyed on a shaft, notably for use in handling equipment, comprising

two gripping pads located for gripping the disc,

two levers with one of each of said levers connected to one of said gripping pads,

spring means to produce the gripping of said two pads on the disc,

electromagnetic means having a fixed yoke and a movable armature to produce the releasing of said pads from the disc by opposing said spring means,

each of said levers having a pivot assembly, each of said assemblies including

one end of each of said levers connected to act on one of said pads,

an opposite end of each of said levers being an actuated end,

said electromagnetic means arranged between said actuated ends and said levers having the form of a hollow body enveloping said electromagnetic means,

adjusting means having a substantial portion thereof received within the confines of said hollow body form of said levers.

the gripper having a total lateral bulk in the direction parallel to the shaft carrying the disc of less than the sum of the thicknesses of said two levers and of said electromagnetic means,

said adjusting means including

a torque arm,

a rachet wrench connected for angular movmement actuated by said torque arm,

a bearing connected fast to said movable armature,

a fixed part forming a stop,

a counter-lever having a portion mounted for turning in said bearing and another portion for engagement with said torque arm and for abutting against said fixed part,

a nut fixed to one of said pivot assemblies,

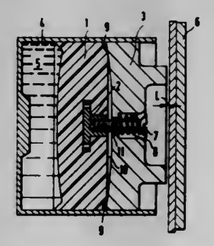
a spindle having a threaded end portion engaged with said nut and a head end at the other of said pivot assemblies fixedly connected to said rachet wrench, rotation of said spindle to tighten said threaded end portion of said spindle in said nut causing tightening of the gripper about the disc.

4,066,153

BRAKE CYLINDER FOR A HYDRAULIC BRAKE

Rudolf Plentz, Talstrasse 18, 6534 Stromberg, Germany

Filed Aug. 26, 1976, Ser. No. 717,762
Claims priority, application Germany, Aug. 29, 1975, 7527323[U]
Int. Cl.² F16D *65/46*
U.S. Cl. 188—196 M **7 Claims**

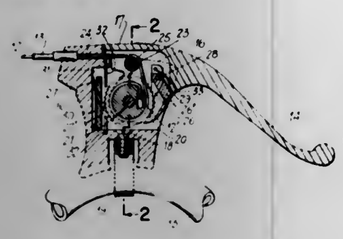


1. In a brake cylinder of a hydraulic brake comprising a piston moving within said cylinder, the improvement comprising a solid resilient body between said piston and brake fluid in the cylinder, said resilient body having a face abutting the brake fluid, edges that abut the walls of the cylinder, and yet another face adjacent the face of the piston, there being a free space between the piston and the adjacent face of the resilient body, which space is free of brake fluid and into which the resilient body penetrates upon a pressure rise in the brake cylinder, said brake piston and resilient body being adjustably connected by a connecting member biased toward the brake piston by a spring, said member passing through the piston and being fixed to the resilient body.

4,066,154
SELF-ADJUSTING BIKE BRAKE OPERATING MECHANISM

Haldon Ross, Olney, Ill., assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 22, 1976, Ser. No. 743,726
Int. Cl.[2] B62L *1/00*
U.S. Cl. 188—196 BA **4 Claims**

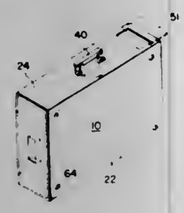


1. A self-adjusting manual bike brake cable operating mechanism, comprising a housing for said brake cable operating mechanism mounted to a handlebar portion of a bike, said housing comprising a generally flat and rectangular shaped enclosure open at its top and one of its ends, means at the bottom of said enclosure for clamping the same to said handlebar portion, another generally falt enclosure having a handle member affixed thereto, said another enclosure being positioned within said first mentioned enclosure to close its open top and end, a ratchet wheel rotatably mounted inside said another enclosure, said another enclosure being rotatably mounted inside said first enclosure on the same axis as said wheel, a brake operating cable wound on said wheel, a spring biased pawl mounted in said another enclosure for engagement with said wheel whereby said another enclosure and wheel are rotated in unison in one direction to wind said cable on said wheel when said handle is operated, and another spring biased pawl mounted in said first enclosure for engagement with said wheel to limit unwinding of said cable upon release of said handle.

4,066,155
DRAWER TYPE LUGGAGE

Francis Z. Buchek, Watertown, Conn., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed July 26, 1976, Ser. No. 708,321
Int. Cl.[2] A47B *61/06*
U.S. Cl. 190—3 **2 Claims**

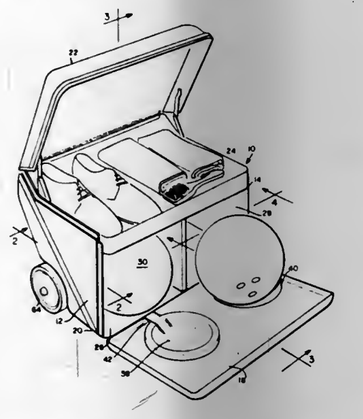


1. A portable carrying case which can be alternately employed as a file cabinet, comprising
- a drawer slidably mounted in a rectangular-shaped case body, with said case body formed with an interior recess extending from one open side of the case body, said drawer formed with a front wall that blocks the open side of the case body, in the closed position of the drawer in the case body, said drawer mounted to be slidable out of the open drawer of the case body,
- said drawer formed as an open box, the top of which drawer is open along a plane generally perpendicular to the said front wall of the drawer, with a through opening formed in a side wall of the drawer which side wall is generally mutually perpendicular to the plane of the said front wall and to the plane of the opening of the top of the drawer,
- said case body fitted with a retractable carrying handle mounted in an exterior recess in a wall of the case body, said handle fitting flush with, or below the external surface of the said case body wall in the retracted position of the handle, in which
- a through opening is formed in an exterior case body wall, which opening is oriented to be in alignment in the closed position of the drawer in the case body with the through opening in the side wall of the drawer, together with means to selectively close or open the said opening of the exterior case body wall.

4,066,156
EQUIPMENT CARRIER

John Basile, 7701 Densmore Ave., Van Nuys, Calif. 91406

Filed July 1, 1976, Ser. No. 701,865
Int. Cl.[2] A45C *5/14*
U.S. Cl. 190—18 A **11 Claims**



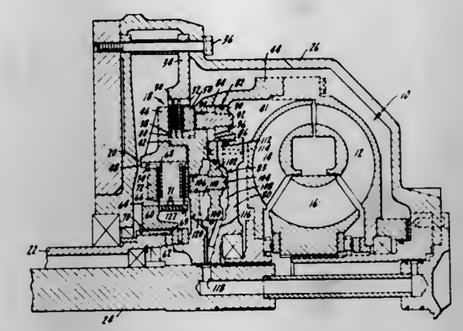
1. A bowling ball carrier including:
- at least one lower compartment for confining a bowling ball therein and having an open front;
- at least one upper compartment for confining articles therein;
- a downward swingable door mounted on the front of said lower compartment; and
- means mounted to said carrier for moving said bowling ball from within said lower compartment onto said door, said door having a concave portion therein for said bowling ball to rest therein when moved from said compartment onto said door.

4,066,157
IMPELLER DISCONNECT AND BRAKE MECHANISM

James Kiel Gibbs, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 6, 1976, Ser. No. 712,403
Int. Cl.[2] F16H *45/00*
U.S. Cl. 192—3.24 **6 Claims**

1. A hydrodynamic device between input and output shafts including a driving element connectable to said input shaft and a driven element connected to said output shaft, an engageable brake device for holding said driving element stationary, an engageable clutch device for connecting said input shaft to said driving element, a fluid pressure operated servomotor for said brake device, a fluid pressure operated servomotor for operating said clutch device, a source of fluid pressure connectable to said clutch servomotor to engage said clutch, a fluid passage between said clutch servomotor and said brake servomotor, fluid pressure from said source when supplied to said clutch servomotor device engaging said clutch and acting on said brake servomotor to release said brake, a supply of fluid charge pressure in said hydrodynamic device and connected to said brake servomotor, a fluid passage connecting said charge pressure to the clutch servomotor whereby initially when fluid

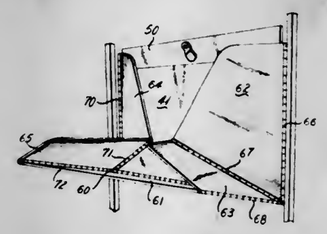


pressure is supplied from said source to said clutch servomotor, said pressure will engage said clutch and release said brake to provide drive to said driving element of the hydrodynamic device, and when said pressure from said source is exhausted, the charge pressure will act to engage said brake and release said clutch and thereby stop rotation of said driving element.

4,066,158
CHUTE CONSTRUCTION

William C. Hare, Chattanooga, Tenn., and Milton F. Collier, Orlando, Fla., assignors to Cumberland Corporation, Chattanooga, Tenn.

Filed Sept. 3, 1976, Ser. No. 720,386
Int. Cl.[2] B65G *11/12*
U.S. Cl. 193—34 **14 Claims**

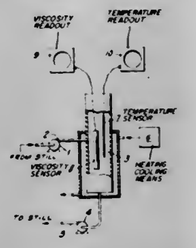


1. A storage chamber having walls and a door means to provide access thereto, and a chute structure for also providing access to said chamber comprising an aperture in one of said walls, a chute having a floor and side walls, said chute being hinged at the aperture in a manner to close the aperture when the chute is not in use and said chute receiving a package for delivery into said chamber when hinged to an open position, said chute gently dumping said package into said chamber when the chute is turned toward the closed position, said floor and walls of said chute precluding access into the storage chamber to retrieve a package once it has been dumped into the chamber, and said floor and walls of said chute being constructed and arranged to be folded and collapsed into a flat planar shape to be locked in place to close said aperture when said chamber is being loaded through said door means.

4,066,159
METHOD AND APPARATUS FOR THE CONTROL OF PITCH STILL OPERATION

George R. Romovacek, Monroeville, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 383,152, July 27, 1973, abandoned.
This application July 30, 1975, Ser. No. 600,463
The portion of the term of this patent subsequent to Sept. 13, 1994, has been disclaimed.
Int. Cl.[2] B01D *3/42*
U.S. Cl. 196—132 **4 Claims**

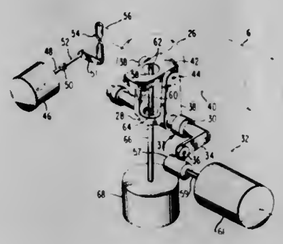


1. An apparatus for controlling the operation of a pitch still reactor comprising a means for removing a sample of pitch from the pitch still reactor, a sample chamber for holding a sample of the pitch, a means for heating the sample, a temperature sensing means and viscosity sensing means located within the chamber that cooperate to measure the temperature when the viscosity it at a preselected value and means for comparing the measured temperature with a predetermined value and controlling the parameters of the reaction in response to the comparison.

4,066,160
SINGLE ELEMENT IMPRINTING ASSEMBLY WITH INERTIALLY AND KINEMATICALLY INDEPENDENT MOTION CONTROLS

Kuo-Liang Lee, Northgate Apts., 109H, Cranbury, N.J. 08512

Filed Mar. 17, 1976, Ser. No. 667,781
Int. Cl.[2] B41J *1/60*
U.S. Cl. 197—18 **11 Claims**



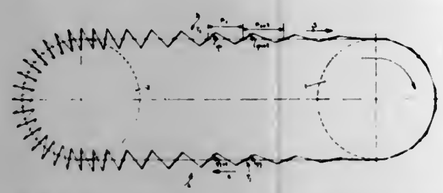
1. A single element imprinting assembly with inertial and kinematic independent motion control means for use with a printing surface, which is movable with respect thereto, comprising:
- a. a vertical selecting means comprising:
  1. a vertical selecting prime mover;
  2. a vertical selecting input shaft fixedly secured to said vertical selecting prime mover;
  3. a first coupling secured to said vertical selecting input shaft;
  4. a vertical selecting output shaft connected to said first coupling;

5. a bell crank fixedly secured to said vertical selecting output shaft; and
6. a connecting link connecting said bell crank to a single imprinting element tilt platform;

b. a rotational selecting means comprising:
1. a rotational selecting prime mover;
2. a rotational selecting input shaft fixedly secured to said rotational selecting prime mover;
3. a second coupling secured to said rotational selecting input shaft;
4. a rotational selecting output shaft connecting said second coupling to the single element imprinting rotation assembly; and

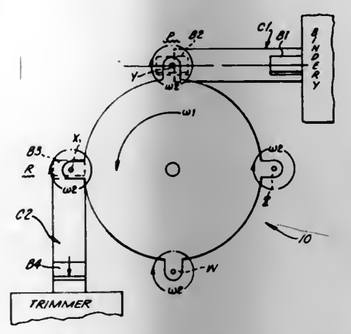
c. imprinting means further comprising:
1. an imprinting prime mover;
2. an imprinting drive shaft fixedly secured to the output of said imprinting prime mover;
3. an imprinting cam means mounted slidably keyed to said imprinting drive shaft so as to be rotatable therewith;
4. a rocker frame rotatably mounted with the axis of rotation positioned perpendicular to the axes of rotation of said vertical selecting output shaft, said vertical selecting input shaft, said rotational selecting output shaft and said rotational selecting input shaft; said rocker frame adapted to effect printing and including:
i. a crank arm and a cam follower secured to said crank arm to follow said imprinting cam means and be driven therefrom for imprinting; and
ii. a yoke means for holding a single element imprinting assembly.

4,066,161
CHAIN WITH LINKS OF VARIABLE LENGTH
Daniel Michalon, Saint-Etienne, and Pierre Rolin, Andreziux-Boutheon, both of France, assignors to Centre Stephanois de Recherches, Andrezieux-Boutheon, France
Filed July 2, 1974, Ser. No. 485,215
Claims priority, application France, July 2, 1973, 73.25015
Int. Cl.² B65G *65/06*
U.S. Cl. 198—334 **25 Claims**



1. A variable-pitch chain-like conveyor, comprising, in combination:
a series of first transverse elements which move in a plane substantially parallel to a main path of travel and each of which is disposed substantially perpendicular to said main path of travel;
a series of second longitudinal elements each of which is movably connected through its central portion to one end of at least one of said first elements;
a series of third longitudinal elements, each of which interconnects directly one of said second elements to its adjacent second element in said series of second elements; and
means operably and mechanically connected to said series of second elements for varying the orientation of said second elements during movement of said conveyor.

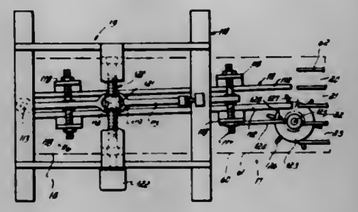
4,066,162
ORBITAL TURN
Leonard Miaskoff, Easton, Pa., assignor to Harris Corporation, Cleveland, Ohio
Filed Nov. 28, 1975, Ser. No. 635,942
Int. Cl.² B65G *47/24*
U.S. Cl. 198—377 **1 Claim**



1. Apparatus for transferring a book having edges formed by the edges of the pages of the book and extending between first and second spaced substantially parallel side surfaces and at least one of the edges being bound, said apparatus being effective to transfer a book from a first conveyor on which the book is moved at a first speed with a first edge leading and the first side surface facing up and the second side surface facing down and in contact with the first conveyor to a second conveyor on which the book is moved at a speed substantially equal to said first speed of said first conveyor with another edge leading and the first side surface facing up and the second side surface facing down and in contact with the second conveyor, said apparatus comprising
first and second clamps for respectively engaging the first upwardly facing side surface and the second downwardly facing side surface of the book,
means for moving said first and second clamps into a position in alignment with said respective first and second side surfaces of the book while the book is moving and while the first edge thereof is leading,
means for guiding books between said clamps,
means for actuating said clamps to clamp the book while the book is moving and while the first leading edge of the book is spaced from engagement with any structure by moving at least one of said first and second clamps into clamping engagement with one of said parallel side surfaces while the other clamp engages the other of said parallel side surfaces,
said first and second clamps having substantially flat surfaces parallel to said first and second conveyors and being positioned by said means for moving said clamps into alignment with said side surfaces of the book to engage said second side surface facing down which contacted said first conveyor and said first side surface facing up,
means for continuously moving said first and second clamps and book clamped therebetween at a speed substantially equal to the speed of said first and second conveyors from a position adjacent to said first conveyor to a position adjacent to said second conveyor in a continuous fashion at a constant speed without accelerating or decelerating the book,
said means for continuously moving said first and second clamps and book while clamped therebetween to a position adjacent said second conveyor comprising means for rotating said clamps together about a second common axis parallel to a first common axis which extends transverse to said first and second parallel side surfaces and wherein said means comprises a pair of vertically spaced parallel supports associated together for a joint rotation about said second common axis and wherein said one clamp is carried by one of said supports and said other clamp is carried by the other of said supports, said other clamp being supported by said other support by a bearing means enabling said clamp to be rotated freely relative to said other support about an axis centrally located relative to said other clamp and which axis comprises said first common axis,
said guide being interposed between said first and second supports and extending parallel thereto for guiding a book between said clamps,
means for releasing the book for deposit on said second conveyor when the book is positioned adjacent thereto and while the book and said clamps are moving,
said means for releasing adapted to oppositely move the flat parallel surfaces of said clamps to release and align the book on said second conveyor with another edge leading and the second side surface facing down and in contact with the second conveyor,
means for supporting said first and second clamps for rotation about said first common axis, and
means for continuously rotating said first and second clamps about said first common axis while said book is clamped therebetween to effect a continuous rotation of said book continuously and simultaneously while being moved between said first and second conveyors to orient the book with the second edge thereof leading when conveyed on said second conveyor,
said means for rotating said first and second clamps about said first common axis comprises means for rotating said first clamp about said second common axis while rotating about said first common axis with a book between said clamps whereby said second clamp is likewise rotated about said second common axis,
said means for continuously rotating said first clamp about said first common axis upon rotation of said clamps around said second common axis comprises a series of gear members one of which is mounted on said first common axis and has its axis coaxial with said first common axis and another of which is mounted on said second common axis and which is driven from said first gear member upon rotation of said second gear member about said second common axis,
said series of gear members comprises first, second and third gear members meshing in succession, the first gear member meshing with said second gear member and said second gear member meshing with said third gear member, said first gear member being fixedly mounted against rotation and located coaxially with said second common axis, said second gear member being mounted for rotation on said first support such that as said first support is rotated about said second common axis said second gear member is driven around the first gear member, said third gear member being mounted coaxially with said first common axis, and means connecting said one clamp member to said third gear member for rotation therewith about said first common axis.

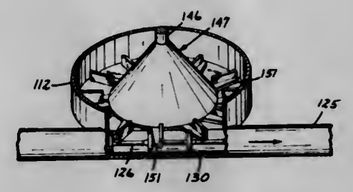
4,066,163
ROW FORMER FOR ARTICLES
Edward F. Rowekamp, Cincinnati, Ohio, assignor to The Lodge & Shipley Company, Cincinnati, Ohio
Division of Ser. No. 502,039, Aug. 30, 1974, abandoned. This application Oct. 23, 1975, Ser. No. 624,866
Int. Cl.² B65G *47/26*
U.S. Cl. 198—442 **5 Claims**

1. Apparatus for forming a single file of articles into multiple files comprising,
a single file conveyor,
a multiple file conveyor having multiple lanes downstream of said single file conveyor,
an elongated guide overlying said single file conveyor and pivoted at its upstream end for swinging in a horizontal plane,
the downstream end of said guide swinging adjacent the upstream end of said multiple file conveyor,
means for positioning the downstream end of said guide adjacent any of said multiple lanes,
a wheel mounted on said guide for rotation about a vertical axis, said wheel being normally freely rotatable,
a plurality of lugs circumferentially spaced about the periphery of said wheel and projecting into the path of articles passing through said guide,



means for braking said wheel to block the flow of articles as said guide shifts from one lane to another,
said means for positioning the downstream end of said guide comprising,
a screw mounted over said guide and extending transversely to said single file conveyor,
a block threaded on said screw,
a roller depending from said block,
a longitudinal slot in said guide receiving said roller,
and a stepping motor for rotating said screw in either direction.

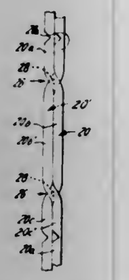
4,066,164
FEEDING MECHANISM FOR GRANULAR MATERIAL
Harlan J. Easton, R.F.D. No. 3, Blooming Prairie, Minn. 55917
Filed Dec. 19, 1975, Ser. No. 642,578
Int. Cl.² B65G *47/18*
U.S. Cl. 198—616 **2 Claims**



1. In combination:
A conveyor comprising a cable, a plurality of circular flights secured to said cable at spaced intervals therealong, a tube, having an inside diameter substantially the same as the diameter of said flights, through which said cable passes, and driving and idler wheels for said cable spaced beyond the ends of said tube;
a bulk container for granular material having an upwardly concave, generally conical bottom and a central discharge chamber of reduced size located below and opening into said bottom and including a peripheral discharge orifice of limited area opening downwardly into said tube;
a feed mechanism including a vertical central shaft passing upward to terminate within said chamber, an impeller carried by said shaft and including a plurality of peripherally located spaced radial blades for displacing material in said chamber to said peripheral opening for discharge therethrough, an upwardly convex conical center for guiding loose material in said chamber outwardly to the blades of said impeller, and means actuated by said drive

shaft for preventing bridging and agglomeration of said material in said chamber;
a source of driving power;
and means connecting said source to actuate said conveyor, the linear spacing of said flights on said cable being an integral multiple of the peripheral spacing of said blades around said impeller, and said blades projecting partially through said discharge orifice to engage said flights and drive said impeller from the conveyor.

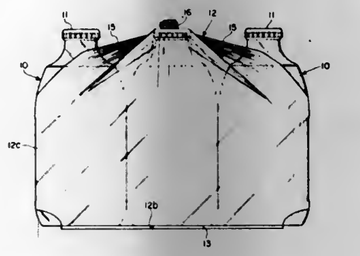
4,066,165
STAPLES AND PRODUCTION METHODS
Henry Ruskin, 21 Nomahegen Court, Cranford, N.J. 07016
Filed June 10, 1976, Ser. No. 694,897
Int. Cl.² B65D *85/24*
U.S. Cl. 206—340 19 Claims



1. The method of making staples, including the steps of modifying sheet metal to define the outlines of a succession of staples, the modification including the step of forming parallel grooves defining at least part of the lateral margins of the staples, shifting successive first, second and third portions of each defined staple in opposite directions out of the plane of the sheet metal while shifting the first, second and third portions of each staple in opposite directions in relation to the first, second and third portions, respectively, of its neighboring staples sufficiently to part the relatively shifted portions and leaving neighboring staples connected to each other at only two grooved locations situated respectively between said first and second portions and between said second and third portions of each neighboring pair of staples, the first, second and third portions of each staple being so close to one another that relatively shifting the neighboring staples as aforesaid leaves each staple and its neighbor connected only by grooved and twisted metal at said two locations, restoring lateral alignment of the respective portions of successive staples, and making two bends in each said second portion to define a crown and a pair of at least partially erect legs extending from the crown with the connections between successive staples located along the legs thereof.

11. A row of metal staples, each staple and the next in the row having elongated lateral surfaces substantially in abutment with each other but disconnected from each other, each staple and the next in the row having a crown and a pair of legs extending from the ends of the crown at least partially erect therefrom; and having one localized integral connection interrupting said lateral surfaces of each leg of each staple and corresponding legs of the neighboring staples, said row of staples being formed by the method including the steps of modifying sheet metal to define the outlines of a succession of staples, the modification including the step of forming parallel grooves defining at least part of the lateral margins of the staples, shifting successive first, second and third portions of each defined staple in opposite directions out of the plane of the sheet metal while shifting the first, second and third portions of each staple in opposite directions in relation to the first, second and third portions, respectively, of its neighboring staples sufficiently to part the relatively shifted portions and leaving neighboring staples connected to each other at only two grooved locations situated respectively between said first and second portions and between said second and third portions of each neighboring pair of staples, the first, second and third portions of each staple being so close to one another that relatively shifting the neighboring staples as aforesaid leaves each staple and its neighbor connected only by grooves and twisted metal at said two locations, restoring lateral alignment of the respective portions of successive staples, and making two bends in each said second portion to define a crown and a pair of at least partially erect legs extending from the crown with the connections between successive staples located along the legs thereof.

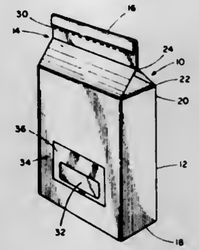
4,066,166
BOTTLE MULTIPACKAGE
Mindaugas Julius Klygis, Barrington, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Sept. 16, 1976, Ser. No. 723,827
Int. Cl.² B65D *75/56, 65/38, 85/62*
U.S. Cl. 206—427 17 Claims



1. A multipackage of a group of containers and a bag-like device, said group of containers arranged in two adjacent rows and in transverse ranks perpendicular to said rows, each of said containers having a capped upper end of a smaller diameter than the lower body portion thereof, said bag-like device having integral bottom and side walls formed of a thin flexible material substantially enveloping and in stretched engagement with the bottom and the outer side peripheral surface of said group of containers, the upper end of said bag-like device on the upper end of two opposed sidewalls thereof being gathered and stretched about the upper portions of said containers and secured in the area of the tops of said containers forming secured tensioned truss elements, said truss elements extending diagonally from opposite corners of said group of containers and being sufficiently tensioned between said opposite corners to substantially prevent skewing of said group of containers out of said transverse ranks perpendicular to said rows, and two opposed sides of said truss elements in the area of their securement being of reduced cross section and circumferentially open to form a handle element capable of being encircled by a person's finger.

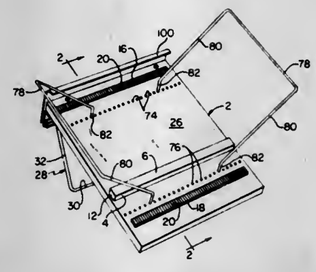
4,066,167
RECLOSEABLE PACKAGE
Ward T. Hanna, Palatine, Ill.; John J. Drennan, Cincinnati, Ohio, and John T. Staroska, La Grange, Ill., assignors to Keebler Company, Elmhurst, Ill.
Filed July 8, 1976, Ser. No. 703,614
Int. Cl.² B65D *33/18*
U.S. Cl. 206—627 5 Claims

1. A recloseable package having a sealed state, an open state and a closed state, said reclosable package comprising, in said sealed state:
a bag portion having a closed end and an open end;
a closing portion joined to said bag portion at said open end, said closing portion including a tapered section adjacent said bag portion and a flap section, said flap section being tackily sealed in said sealed state to define a sealed flap area;
a seal portion joined to said flap section;
a perforation between said seal portion and said closing portion to facilitate separation and removal of said seal portion, said sealed flap area being between said tapered section and said perforation;
an adhesive strip attached to said reclosable package in an inoperative position;



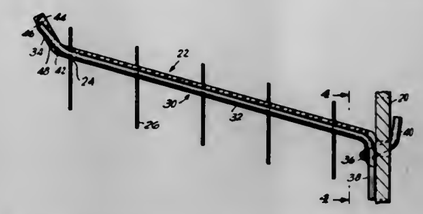
said reclosable package being operable in said open state whenever said seal portion is separated from said flap section and discarded and said sealed flap area is opened;
said flap section being foldable upon said tapered section in said open state to define a folded position;
said reclosable package being operable in said closed state whenever said flap section is placed in said folded position, said adhesive strip is removed from said inoperative position, and said adhesive strip is attached to said reclosable package in an operative position to maintain said flap section in said folded position.

4,066,168
REFERENCE MANUAL STAND
Jerome O'Toole; David M. Wright, both of Shrewsbury, and Norman A. Hedstrom, Worcester, all of Mass., assignors to Wright Line Inc., Worcester, Mass.
Filed Mar. 29, 1976, Ser. No. 671,390
Int. Cl.² A47B *19/00*
U.S. Cl. 211—4 13 Claims



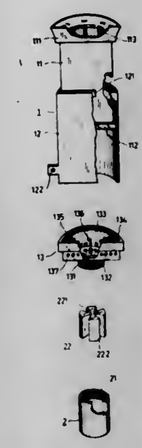
1. A book support for supporting a plurality of books in reading position, each of said books having a spine section with a hook, said support comprising a book support plate, means on said plate for interlocking with the hooks of said books, said means comprising a rib extending laterally of and attached to said plate, a flange carried by said rib and spaced from said plate, and a fin on said flange extending toward but spaced from said plate for making a snap fit with said hooks, rib, flange and fin forming an open channel extending for substantially the width of the plate so that books supported thereby may be placed at various positions along the channel, and additional means on said plate for interacting with the spine of said books so as to restrain said books against movement in a lateral direction.

4,066,169
BODIES TO BE ATTACHED TO SINGLE-PRONG HOOKS
Arthur Hochman, Union City, N.J., assignor to Art Phyl Creations, Newark, N.J.
Filed Aug. 24, 1976, Ser. No. 717,304
Int. Cl.² A47F *7/00*
U.S. Cl. 211—57.1 10 Claims



1. For use with a single-prong support hook having a front end, an elongated substantially rigid body adapted to rest at a lower surface thereof, which extends longitudinally along said body, on a single-prong support hook which is adapted to be connected at its rear end to and project forwardly from a carrying structure, with said body having a length sufficiently great to extend along the hook, in engagement therewith at said lower surface of said body and without clearance between said hook and body, forwardly from the carrying structure at least slightly beyond the front end of the hook, said body being of substantially rectangular transverse cross section and projecting laterally through a substantial distance on opposite sides of the single-prong hook while resting thereon, and said body having a fastening means for releasably fastening the body to a single-prong hook, carried by and projecting forwardly from a carrying structure, and for maintaining said body assembled with a single-prong hook while being supported thereby in a manner enabling the body together with the hook engaged thereby to be received in slots formed in packages which are to be displayed.

4,066,170
ON-WALL UMBRELLA HOLDER
Yueh Huang, Taipei Hsien, China /Taiwan, assignor to Lee Hon Corporation, Taipei Hsien, China /Taiwan
Continuation-in-part of Ser. No. 690,002, May 26, 1976, abandoned. This application Mar. 4, 1977, Ser. No. 774,488
Int. Cl.² A47G *25/12*
U.S. Cl. 211—63 3 Claims



1. A wall-mountable umbrella holder comprising:
a hollow, essentially tubular casing having an opening at an

upper end and a perforated pan-like member connected at the lower end for receiving and supporting a collapsed umbrella, said pan-like member including a perforated bottom, a side wall having a double-walled portion defining a gap between the two walls for engaging the lower end of the tubular casing and a perforated lower portion connected between said double-walled portion and said perforated bottom, and a hollow stud portion connected to the outer face of said perforated bottom, all said perforations in said perforated bottom communicating with the inside of the stud portion;

means, provided on said casing, for mounting said casing against a wall; and

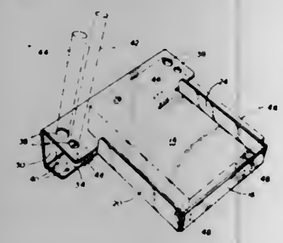
a cup-shaped member detachably connected to said stud portion of said perforated pan-like member, said cup-shaped member containing therein a bladed element for splash prevention, whereby the water from a moistened umbrella disposed in the casing can drain through said perforations in said pan-like member into said cup-shaped member for ready removal, and whereby air can flow through the perforations in the perforated lower portion of said side wall of said pan-like member to dry the inside of the casing and the umbrella.

4,066,171

DESK STAND FOR HOLDING IN OPERATIVE POSITION POCKET CALCULATORS AND OTHER DESK-TOP ARTICLES

William J. C. Fowlie, 2129 SE. Ladd Ave., Portland, Oreg. 97214

Filed Feb. 17, 1976, Ser. No. 658,708
Int. Cl.² A47F *7/00*
U.S. Cl. 211—69.1 **1 Claim**



1. A desk stand for holding in operative position pocket calculators and other desk top articles, the desk stand comprising a single sheet of stiff, structural material shaped and bent along predetermined lines to provide:

a. a bed dimensioned to receive the articles,

b. upright peripheral flanges along the opposite sides and front end of the bed to retain the article thereon, and

c. a support foot comprising a substantially vertical connecting section extending downwardly from the rear end of the bed and a substantially horizontal reversely bent bottom section extending forwardly from the bottom end of the vertical connecting section, the front edge of the bed and the bottom section of the support foot serving to engage a desk top for support of the desk stand thereon, said support foot thereby inclining the bed upwardly and rearwardly at a predetermined angle of inclination,

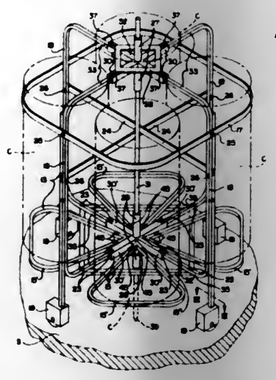
d. the vertical and horizontal sections of the support foot and the overlying rearward portion of the bed being extended laterally beyond the plane of at least one of the side flanges, the lateral extension of the rearward portion of the bed and the horizontal bottom section of the support foot having at least one pair of aligned guide-and-socket openings positioned for receiving and retaining a pencil, pen, or like pointed object, the opening in the lateral extension of the bed being sufficiently large to receive the body of the pointed object and the opening in the horizontal section of the support foot forming a retaining socket for the pointed end of the object.

4,066,172

MOBILE RACK FOR REFUSE CONTAINERS

Eddie Howard, 885 Shadowline Drive, Memphis, Tenn. 75126

Filed Feb. 17, 1976, Ser. No. 658,725
Int. Cl.² A47G *29/00*
U.S. Cl. 211—78 **12 Claims**



1. A mobile rack for supporting four refuse containers in upright positions said rack comprising:

a. a frame means including a platform member for restingly supporting the four refuse containers;

b. a substantially ring-like restraining means disposed in a substantially horizontal plane above said platform member for circumscribing and confining the four upright refuse containers;

c. a substantially cross-like brace means disposed in a substantially horizontal plane above said platform member for dividing the interior of said ring-like restraining means into four parts and for cooperating with said ring-like restraining means in confining the four upright refuse containers, each of said parts of said ring-like restraining means receiving one of the four upright refuse containers.

d. means for mounting said ring-like restraining means and said cross-like brace means to said platform member at a height above said platform member that is at or above the center of gravity of the upright refuse container and is at or below the top of the refuse container so as to confine the refuse containers to said platform member; and

e. means for movably supporting said platform member on a supporting surface so that said mobile rack may selectively be manually moved along a straight line and about a central point in carousel fashion.

4,066,173

APPARATUS FOR HIGH-SPEED ACCURATE COUNTING AND HANDLING OF DISCRETE OBJECTS SUCH AS TABLETS

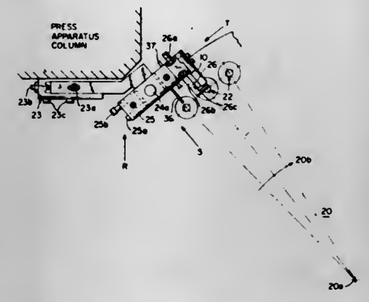
Jim Mills Adams, West Caldwell, and Edward Francis deZabala, Pequannock, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 453,238, March 21, 1974, Pat. No. 3,997,063. This application Nov. 17, 1975, Ser. No. 632,438
Int. Cl.² G07F *11/00*
U.S. Cl. 214—1 C **15 Claims**

1. An ultra-accurate counting and handling system for use with high-speed press apparatus having a horizontally rotatable die table for making discrete, solid particular objects, comprising:

a. sensing means including a directional sensor arrangement predeterminably arranged relative to each station of the apparatus at which the formation of the objects is virtually completed, each said sensor arrangement including a retro-reflective sensor arranged to have an operative face thereof proximate the said respective station of the apparatus at a pre-established optimum sensing angle α of between 18° and 30° relative to the horizontal and which is aimed at a point of the said respective station whereat the objects are substantially fully ejected from their dies;

b. control counter means responsive to said sensing means for providing a continuous count of the objects sensed by each said sensor arrangement, said counter means including first means enabling a presetting of the maximum desired count of sensed objects for each said station of the apparatus;



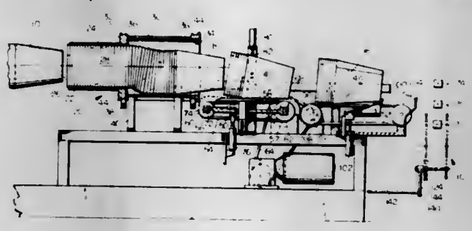
c. gating and handling means including a gated dispensing arrangement associated with each said station of the apparatus and having a first portion thereof situate proximate the said respective station, each said gated dispensing arrangement being adapted to predeterminably control the procession of the objects from said respective station of the apparatus to a pre-established destination under the supervision of said first means.

4,066,174

TRANSFER DEVICE FOR NESTABLE CONTAINER BODIES

Johnny Will Collins, Strafford, Mo.; Gunars Kochmanis, Uniondale, N.Y., and Bobby Ross Lynch, Ozark, Mo., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 21, 1977, Ser. No. 761,151
Int. Cl.² B65G *57/32*
U.S. Cl. 214—7 **7 Claims**



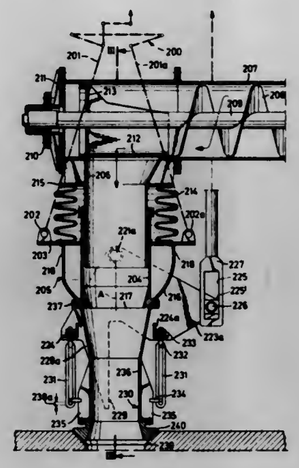
1. A bucket body transfer device comprising: a horizontally disposed rotatable drum having an open-ended accumulator section for receiving frustoconical bucket bodies and nestably accumulating them in a column, said accumulator section having a cylindrical inner surface, a separator section integrally connected to said accumulator section, said separator section having an enlarged openended cylindrical inner surface coaxially aligned with said accumulator surface, means for rotating said drum, and an offloading conveyor at the exit end of said separator section.

4,066,175

COKE-OVEN FILLING SYSTEM

Fritz Schulte, Meerbusch, Germany, assignor to Hartung, Kuhn & Co Maschinenfabrik GmbH, Duesseldorf, Germany

Filed Mar. 4, 1976, Ser. No. 663,985
Claims priority, application Germany, Mar. 7, 1975, 2510097
Int. Cl.² F27D *3/08*
U.S. Cl. 214—35 R **9 Claims**



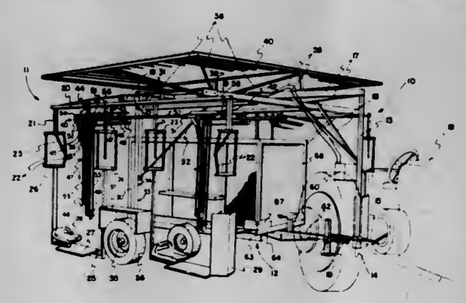
1. In combination with apparatus for loading coal into the charging hole of a coke oven, a filling system comprising an upper feed tube connected to said apparatus and adapted to receive coal therefrom; an intermediate upright tube vertically telescopable on said feed tube and having a lower end and pivots defining a horizontal axis; a seal connected between said intermediate tube and said feed tube and permitting relative telescoping therebetween; a lower tube suspended from said pivots of said intermediate tube and alignable with said intermediate tube and having a lower end sealingly engageable over said charging hole and an upper end sealingly engageable with said lower end of said intermediate tube; and means for displacing said lower tube out of alignment with said intermediate tube.

4,066,176

TOBACCO HARVESTER

Bass Honeycutt, Rte. 5, Clinton, N.C. 28328

Filed Feb. 25, 1976, Ser. No. 661,129
Int. Cl.² B65G *67/22*
U.S. Cl. 214—43 **8 Claims**



1. A crop harvesting system comprising: a self-supporting harvester unit for harvesting said crop; a self-supporting harvested crop transport unit for receiving said crop following

harvesting of the same, said harvester unit being separate and independent from and straddledly disposed about said transport unit whereby said transport unit can be removed and replaced without moving or affecting said harvester unit; and means for coordinatingly propelling said units across the field to be harvested whereby such harvesting can be readily accomplished.

4,066,177

LOCATION OF OBJECTS

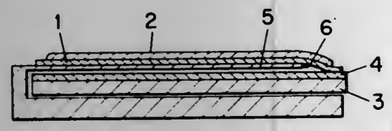
John Arthur Frederick Gidley, Sutton Coldfield; Barry Frederick Irving, Aldridge, and Barry Keith Johnson, Alum Rock, all of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Aug. 23, 1976, Ser. No. 716,456

Claims priority, application United Kingdom, Aug. 26, 1975, 35203/75

Int. Cl.² B65G *61/00*

U.S. Cl. 214—152 **7 Claims**



1. A method of locating a flexible sheet of magnetisable metal having a tacky upper layer thereon onto a planar magnetic support which includes the steps of:
   a. locating the planar magnetic support under a separating member, a portion of the planar magnetic support being exposed at the forward end thereof
   b. advancing the magnetisable metal member forward over the edge of the separating member to come into contact with the forward edge of the planar magnetic support, and
   c. advancing the planar magnetic support from beneath the separating member to draw the magnetisable metal member forward into further contact with the magnetic support.

4,066,178

CONTAINER-DUMPING APPARATUS

William S. Carson, 218 Escambia Drive, Winter Haven, Fla. 33880

Filed July 21, 1976, Ser. No. 707,376

Int. Cl.² B65G *65/04*

U.S. Cl. 214—313 **12 Claims**



1. A pick-up assembly for a container dumping apparatus having a lift device for use in lifting and dumping round containers, the pick-up assembly including:
   a. connecting means for connecting the pick-up assembly to the lift device,
   b. three arms supported by the connecting means and extending therefrom,
   c. container-engaging means on an end portion of each of the three arms, at least one of the container-engagin g means being movably mounted one the associated arm, the container-engaging means of the three arms being positioned in a circle having substantially the same diameter as the top of the round container and the spacing between each pair of container-engaging means being less than the diameter of the top of the round container, the arms extending from the connecting means in a manner which positions each of the container-engaging means relative to the connecting means so that the included angle between lines drawn from the connecting means to any pair of adjacent container-engaging means is less than 180°,
   d. means for moving said one container-engaging means relative to the container whereby each of the container-engaging means is maintained in a container-engaging position when the pick-up assembly is raised by the lift device,
   e. first pivot means for pivoting the three arms about a pitch axis which extends generally horizontally, and
   f. second pivot means for pivoting the arms about a roll axis which is generally perpendicular to the pitch axis and which is generally horizontal when the plane defined by the container-engaging means of the three arms is generally horizontal, the roll axis being generally aligned with one of the container-engaging means whereby the other two container-engaging means are pivotable above and below said horizontal plane said pick-up assembly further including third pivot means for pivoting the three arms about a yaw axis which is generally perpendicular to both the pitch axis and the roll axis and which extends generally vertically when the plane defined by the container-engaging means of the three arms is generally horizontal whereby the arms can rotate relative to the lift device when the lift device is advanced toward a container and the container-engaging means on only one of the arms engages the container to bring the container-engaging means on the other of the arms into position to engage the container.

4,066,179

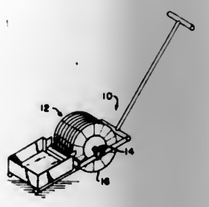
APPARATUS FOR COLLECTING OBJECTS FROM A SURFACE

Almer K. Livingston, Church St., Smithville, Ga. 31787

Continuation-in-part of Ser. No. 680,869, April 27, 1976. This application Aug. 26, 1976, Ser. No. 717,912

Int. Cl.² B60P *1/00*

U.S. Cl. 214—356 **12 Claims**



1. Apparatus for collecting objects from a surface comprising:
   a frame;
   means for grasping the objects on the surface including a plurality of elongated elastically deformable members carried by said frame for rotation about an axis substantially parallel to the surface, said members being circumferentially and axially spaced one from the other about said axis, each of said members carrying an enlarged element at the end thereof remote from said axis of rotation, said members being elastically deformable in axial and circumferential directions relative to their axis of rotation to grasp the objects and locate such objects substantially radially inwardly of said enlarged elements, said elements precluding displacement of the objects in a radially outward direction upon further rotation of said members, said elastically deformable members having inner and outer portions, both of said portions being elastically deformable, said outer portion being capable of being deflected in response to a lesser force than necessary to deflect said inner portion to the same degree;
   means carried by said frame for extracting objects from between said members upon rotation of said members about said axis, and
   means carried by said frame for collecting the extracted objects.

4,066,180

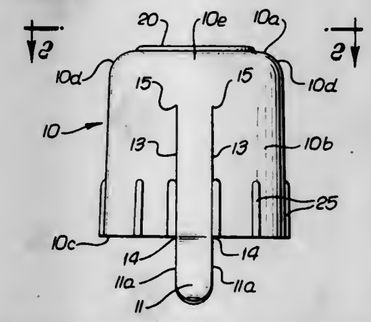
FRANGIBLE CAP FOR BOTTLES

Alejandro C. Sanchez, 1531 N. Fuller, Hollywood, Calif. 90046

Filed Dec. 9, 1976, Ser. No. 748,747

Int. Cl.² B65D *41/52*

U.S. Cl. 215—254 **9 Claims**



1. A frangible sealing cap for a bottle neck, comprising:
   a. a plastic cup having a top cover and a depending annular skirt, the cover and skirt having thin walls, the skirt being free of annularly outward bulge structure, said skirt and cover each having wall thickness between about 0.010 and 0.030 inches,
   b. a plastic pull tab integral with the skirt and depending to a level below the lowermost level of the skirt, and
   C. there being two weakening score lines extending into, but incompletely through the skirt from the outer surface thereof, said lines extending upwardly toward the top cover from points proximate the junctures of the skirt with opposite edges of the tab,
   d. the skirt being thickened at circularly spaced locations to define narrow reinforcing protrusions which are elongated in directions toward the top cover and which stand outwardly from the outerside of the skirt, the protrusions confined to the lower half of the skirt, said score lines located adjacent two of said protrusions but at the inner sides thereof closest the main extent of the tab, whereby the skirt material between the score lines is uninterrupted by any of said protrusions.

4,066,181

CONTAINER AND CLOSURE ASSEMBLY

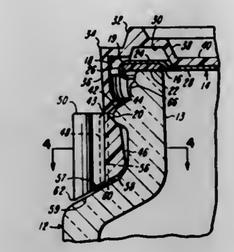
William H. Robinson; David O. Allen, and Harry A. E. Wombold, all of Wilmington, Ohio, assignors to Buckeye Molding Company, New Vienna, Ohio

Filed Mar. 16, 1976, Ser. No. 667,290

Int. Cl.² B65D *41/32*

U.S. Cl. 215—256 **13 Claims**

1. In a closure for a container having a neck surrounding an opening initially sealed by a sealing means engaged to said neck, said neck having outwardly projecting annular bead means for retaining said closure: panel means for covering said opening and initially covering also said sealing means, and skirt means depending from said panel means for surrounding said neck, said skirt means having first attaching means engaging said bead means for attaching said closure to said container, said first attaching means including a tear strip severable from a remaining portion of said skirt means to disable said first attaching means and thereby permit removal of said remaining portion of said skirt means from said container and said sealing means and removal of said sealing means from said neck, said remaining portion of said skirt means having second attaching means engaging a lower margin of said bead means for attaching said closure to said container after said tear strip has been removed from said skirt means and said sealing means has been removed from said neck.



4,066,182

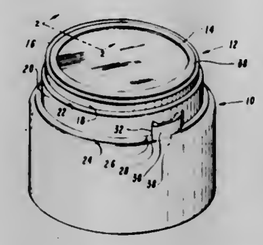
CONTAINER AND CLOSURE ASSEMBLY

David O. Allen, and Harry A. E. Wombold, both of Wilmington, Ohio, assignors to Buckeye Molding Company, New Vienna, Ohio

Filed Aug. 23, 1976, Ser. No. 716,975

Int. Cl.² B65D *41/46*

U.S. Cl. 215—256 **11 Claims**



1. In a closure for a container of the type having a neck surrounding an opening to the container, having a shoulder surrounding said neck and spaced from said opening, and having closure retaining means supported by said neck between said shoulder and said opening; said closure comprising means for covering said opening to said container and a skirt for surrounding said neck, said skirt having means for engaging said retaining means and a first score line spaced from the distal end of said skirt to define one side of a tear-away portion, said tear-away portion having a pull tab affixed thereto, the improvement wherein the distal end of said tear-away portion has a circular flange projecting radially outwardly therefrom and extending peripherally therearound, wherein said pull tab is located between said flange and said means for covering said opening, and wherein the outward extension of said pull tab does not exceed the outward projection of said flange.

4,066,183

CHROMATOGRAPHIC SEPTUM HAVING POLYIMIDE COATING

Nelson W. Armstrong, Hoffman Estates, Ill., assignor to L. C. Company, Inc., Schaumburg, Ill.

Filed Feb. 24, 1977, Ser. No. 771,689

Int. Cl.² B32B *3/02, 27/06, 27/28;* B65D *59/02*

U.S. Cl. 215—247 **4 Claims**

1. In a chromatographic septum comprising a body of hypo-

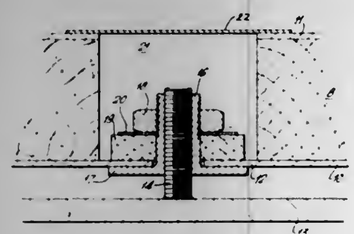
dermic needle penetrable self-healing rubber adapted to serve as a closure for a container or chromatographic system, the improvement which comprises covering the surface of the septum that is to be exposed to the interior of the container or system with a coating of polyimide polymer.

4,066,184

THERMAL INSULATION SYSTEMS

William Livingstone Cuthbert, and Thomas Brown, both of Mount Laurel, N.J., assignors to Conch L.N.G., Moorestown, N.J.

Filed July 13, 1976, Ser. No. 704,987
Int. Cl.[2] B65D *87/24*; B63B *25/16*
U.S. Cl. 220—9 LG 8 Claims



1. (A). In a container for the bulk storage and transport of liquids at temperatures greatly differing from ambient temperature, comprising a storage tank adapted to hold a quantity of liquid, said tank surrounded and supported at least from below by thermal insulation which is (i) built up from a multiplicity of panels, (ii) sealed together and (iii) supported by a rigid outer shell, and means for providing a substantially level supporting surface for said panels spaced from said rigid outer shell, the improvement wherein said means for providing essentially comprises, (in place of wooden ground strips normally employed for such purpose):

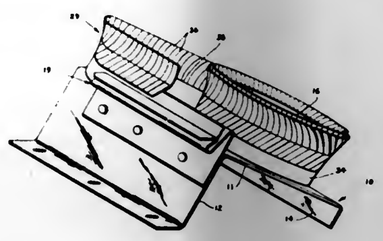
a. upstanding studs rigidly fixed to the inner surface of said outer shell in a predetermined spaced relationship determined by the shape and size of said panels;
b. a fitting defining a seat mounted on each said stud, each fitting being capable of axial movement on its respective stud, said fitting comprising a sleeve defining a threaded bore for mating with a screw thread provided on said stud, and an external flange constituting said seat, axial adjustment of each sleeve being effected by appropriate rotation on its respective stud;
c. locking means for locking each said fitting in an adjusted position on its respective stud;
d. each edge of each panel defining an extended lip portion adjacent the outer face thereof;
e. said panels being supported in edge to edge relationship with said lip portion thereof located on said seats defined by said fittings, the latter being individually adjusted to provide a level supporting surface for said panels spaced from said outer shell;
f. first elongated sealing means located within the spaces defined between the edges of adjacent panels and bridging said lip portions of said respective edges to seal said outer faces of said panels;
g. filling means filling said spaces; and
h. second elongated sealing means bridging the inner faces of adjacent panels to seal said spaces.

4,066,185

SPLICING TAPE ASSEMBLY AND DISPENSER THEREFOR

Wilmer B. Thompson, Rte. 1, Social Circle, Ga. 30279

Filed Mar. 22, 1976, Ser. No. 668,854
Int. Cl.[2] B65H *3/58*
U.S. Cl. 221—26 9 Claims



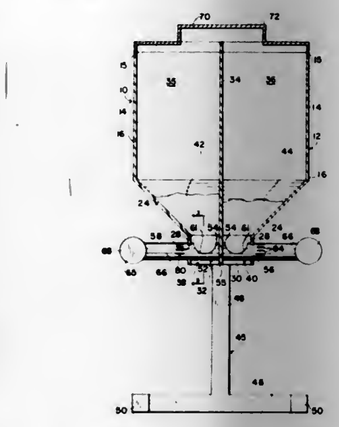
1. A dispenser for a splicing tape carrier assembly, said assembly including a continuous base member, a plurality of splicing tape strips extending from one edge of said base member, and a plurality of tabs, each of said tabs extending from one of said strips, said dispenser including a plate, a core extending from said plate for supporting a roll containing a continuous length of said assembly, a clamp assembly supported adjacent to said plate, and guide means carried by said plate for guiding said length of carrier assembly from said core to said clamp assembly, said guide means extending outwardly of said plate such that the edge of said base member opposite said one edge will engage said plate and said one edge extends outwardly of said plate, said clamp assembly having a throat located to receive said base member and including a clamp plate, a clamp jaw selectively movable towards and away from said clamp plate for selectively engaging said base member.

4,066,186

INSTANT COFFEE DISPENSER

Michael J. Agey, 6917 Security Squadron APO, NY, N.Y. 09240

Filed Oct. 13, 1976, Ser. No. 732,040
Int. Cl.[2] B67D *5/22*
U.S. Cl. 222—48 3 Claims



1. A dispenser for use in the home, office, or the like, comprising:

a. housing means including a pair of storage chambers for containing coffee or the like in one chamber, and sugar, powdered milk or the like in the other chamber, each chamber provided with a discharge funnel terminating in an opening,

b. said housing means includes:
1. a vertical partition wall forming said chambers,
2. said discharge funnel includes a pair of bottom walls in substantially parallel spaced relationship to said partition wall, each having a transversely extending aperture therein,
3. a pair of spaced apart side walls,
4. a pair of spaced apart end walls,
5. a pair of inwardly disposed spaced apart inclined side walls connected to said side walls at one end thereof forming part of said discharge funnel,
6. a pair of inwardly disposed spaced apart inclined end walls connected to said end walls at one end thereof forming part of said discharge funnel,
7. a pair of bottom side walls connected at one end thereof to said inclined side walls, and
8. a pair of bottom end walls connected at one end thereof to said inclined end walls, said bottom end walls and said bottom side walls forming the funnel bottom with said partition wall extending vertically therethrough for forming the funnel openings,

c. a stand coupled to said housing means for retaining said dispenser on a support surface and maintaining each said opening elevated above the support surface so that a cup may be placed beneath the openings,
d. valve means operatively associated with each of said openings for communicating with and dispensing a selected amount from each of said chambers, said valve means including a valve member individually and rotatably mounted with respect to each said opening, said valve member including a front end and a spherically curved depression for receiving therein a measured amount of material which is dispensed from said opening upon rotation of said valve member,
e. each said valve member has a circular cross-section extending through one of said apertures with said front end mounted in abutting relationship to said partition wall, an annular recess in each said valve member with said funnel wall extending in said recess to maintain said valve member in lateral fixed relationship to the funnel opening, and a valve seat provided adjacent each said funnel opening for receiving one said valve member therein for angular rotation thereof,
f. gripping means coupled to one end of each of said valve members and adapted to be gripped by the user of the dispenser for individual rotation of each valve member for dispensing material from each said chamber,
g. said gripping means being in axial alignment with each said valve member and including an enlarged head to facilitate gripping by a user of the dispenser, said valve members being in axial alignment with each other,
h. cover means removably secured to said housing means to permit access to said storage chambers.
i. viewing means operatively associated with said housing means to permit a viewing therein to determine the amount of material remaining in each of said chambers, and
j. calibration means associated with said valve means and said housing means to permit the user to gauge the degree of rotation of each valve member in order to dispense a selected quantity of material from each said chamber.

4,066,187

VALVE UNIT FOR LIQUID DISPENSERS

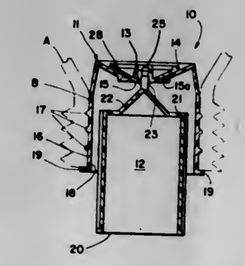
Charles Wayne Nieman, Burlingame; Robert Peter Turkovich, Foster City, and Robert Frank Castronovo, Belmont, all of Calif., assignors to Trident Products Inc., South San Francisco, Calif.

Filed Nov. 15, 1976, Ser. No. 742,008
Int. Cl.[2] E03D *9/03*
U.S. Cl. 222—57 2 Claims

1. A liquid dispenser unit for bottles containing liquids that has a positive seal for shipping comprising:

a cylindrical hollow bell means having an inwardly-directed conical surface closing one end with a central aperture therein and having an outwardly-directed radial flange around its mouth so it can be inserted into the cylindrical opening in the neck of a bottle in a manner allowing its radial flange to engage the distal end surface of the cylindrical opening, said bell means having raised encircling beads about its outer periphery operable to sealingly engage the neck of the bottle in which said bell means is inserted, and said inwardly-directed conical surface having a tapered wall allowing it to be deflected for improving sealing action about such central aperture;

a buoyancy cylinder means of a smaller diameter than said bell means having a conical crown means at one end terminating in a projecting shaft, said buoyancy cylinder assembled in said bell means so its shaft can reciprocate axially in said aperture of said bell allowing its conical surface to sealingly engage said aperture when said cylinder moves into said bell means, said buoyancy cylinder having an axial length greater than that of said bell means; and



a sealing cap means having a diameter greater than said aperture fixedly connected to the distal end of said shaft projecting through said aperture and also having a surface operable to engage the outer surface of said inwardly-directed surface of said cylinder whereby said cylinder due to its buoyancy will cause said conical surface to sealingly engage said aperture and loss of buoyancy thereon will cause said cap means to sealingly close off flow when the unit is in an environment of rising and falling water levels and liquid will be dispersed during the transit times between the two resulting sealing positions, said sealing cap having notches in its rim to effect turbulent flow therearound when it closes to improve its sealing action when it engages such central aperture in said hollow bell means.

4,066,188

THERMOPLASTIC ADHESIVE DISPENSER HAVING AN INTERNAL HEAT EXCHANGER

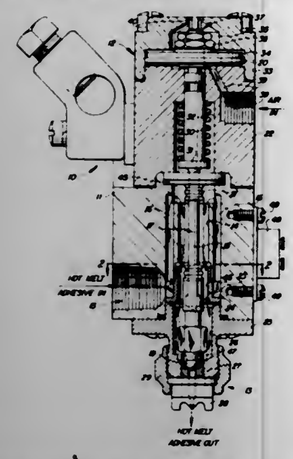
Charles H. Scholl, and Larry D. Akers, both of Vermilion, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Aug. 10, 1976, Ser. No. 713,319
Int. Cl.[2] B67D *5/62*
U.S. Cl. 222—146 HE 6 Claims

1. An adhesive dispensing apparatus for extruding hot viscous liquid from a pressurized source onto a substrate surface, comprising:

a body having a central bore formed therethrough;
a passage means in said body connected to said central bore for conducting viscous liquid to said central bore;
a valve seat attached to one end of said central bore;
a movable valve assembly disposed in said central bore for operative engagement with said valve seat;
a passageway formed in said valve seat;
said valve assembly operatively controlling the flow of said viscous liquid through said passageway in said valve seat;

heater bores formed in said body adjacent to said central bore with heating means disposed therein; and
a plurality of parallel bores formed in said body between said



heating means and said central bore, which plurality of parallel bores are concentrically disposed around said valve assembly, and wherein the parallel bores function as heat exchanger means

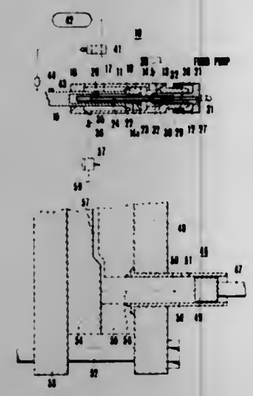
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4,066,189

APPARATUS FOR CONTROLLED INJECTION OF A MOLTEN MATERIAL UNDER PRESSURE

Ueno Toyoaki, Yoshiki; Takayama Seizo, Ube; Hashimoto Kiyoshi, Ube, and Uchida Masashi, Ube, all of Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Jan. 28, 1976, Ser. No. 653,028
Claims priority, application Japan, Jan. 31, 1975, 50-13045; Jan. 31, 1975, 50-13046; Feb. 5, 1975, 50-14383; Feb. 5, 1975, 50-14384; Mar. 4, 1975, 50-25585; Mar. 4, 1975, 50-25586
Int. Cl.² B22D *39/00*
U.S. Cl. 222—334 **18 Claims**



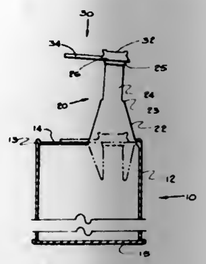
5. An injection apparatus for use in an injection molding system comprising an injection cylinder having an inlet port and an outlet port adapted to selectively permit the flow of a liquid into and out of said cylinder, said injection cylinder further having first and second ends with a piston slidably disposed therein and extending out of said first end thereof, and a hollow tube coupled to said piston and extending out of said second end of said injection cylinder, said hollow tube having at least one port and said piston having blocking means for blocking off each said port on said hollow tube as said piston slides in said cylinder whereby as liquid is caused to flow into said injection cylinder through said inlet port, said piston is caused to slide in said cylinder said liquid being initially permitted to flow through each said port on said hollow tube and is then prevented therefrom as each said port engages said blocking means.

4,066,190

CONTAINER WITH COLLAPSIBLE POURING SPOUT AND IMPROVED RECLOSING MEANS

Walter K. Chlystun, 327 St. James Drive, Spartanburg, S.C. 29301

Continuation of Ser. No. 630,509, Nov. 10, 1975, which is a continuation of Ser. No. 420,964, Dec. 3, 1973, abandoned. This application Sept. 20, 1976, Ser. No. 725,099
Int. Cl.² B67D *3/00*
U.S. Cl. 222—529 **10 Claims**



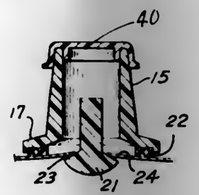
1. A resealable dispensing container comprising:
a. a container body;
b. a dispensing spout secured to said body;
c. a cover integral with said dispensing spout and removable therefrom, said spout having a weakened tear line thereabout, severance of which separates said cover from said spout to permit dispensing from said spout;
d. said spout further having an enlarged area adjacent said tear line; and
e. said cover having an inner annular section adjacent the upper end thereof that is mateable with said enlarged area in a snap fit relationship whereby said cover can be replaced over said spout to reseal said container, said annular section being defined by concentric walls, an outside of said concentric walls having an inwardly projecting shoulder thereon defining a bottom of said section.

4,066,191

DRINKING AND POURING SPOUT FOR USE WITH EASY-OPENING CONTAINERS

Kenneth L. Coleman, 715 W. Gordon Terrace, Chicago, Ill. 60613

Filed Oct. 18, 1976, Ser. No. 733,448
Int. Cl.² B65D *5/74, 25/00*; A47G *19/22*
U.S. Cl. 222—569 **5 Claims**



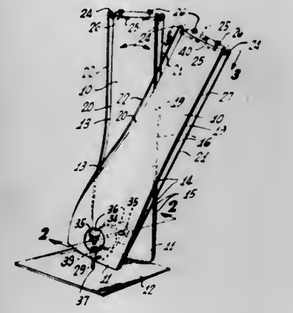
1. A pouring and drinking spout adapted for sealed engagement with the mouth of an easy-opening container comprising, in combination,
a substantially cylindrical, hollow barrel defining a ring-shaped bearing surface at one end thereof,
a resilient sealing washer attached to said bearing surface, and
a flared camming member supported at the axis of said barrel outwardly of said bearing surface for engaging with the interior edges of the mouth of said container as said barrel is turned with respect thereto to hold said sealing washer in sealed engagement with the surface of said container.

4,066,192

DISPLAY FORM FOR PANTS

Morris A. Wolf, 7048 Macapo Drive, Los Angeles, Calif. 90068

Filed Dec. 10, 1976, Ser. No. 749,528
Int. Cl.² D06C *15/00*
U.S. Cl. 223—72 **12 Claims**



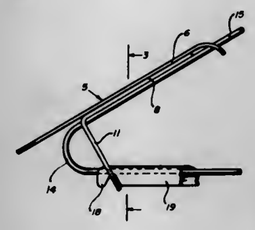
1. A pants display form comprising a pair of three-dimensionally contoured leg-and-hip simulating members for insertion in a pair of pants and each having front and back edges, elongated, flexible expansion elements extending along the edges of said simulating members and spaced from said simulating members throughout at least a substantial portion of their lengths, and means for holding said expansion elements away from said simulating members to pull pants taut across the contours of said leg members, comprising an extension at one end of each of said expansion elements, and means for securing each of said extensions to one of said simulating members to hold said expansion elements at adjustable distances from said simulating members.

4,066,193

COAT HANGER SHOULDER SUPPORT ATTACHMENT

George B. Davis, Jr., 7512 Marburry Road, Bethesda, Md. 20034

Filed Jan. 4, 1977, Ser. No. 756,684
Int. Cl.² A47J *51/086*
U.S. Cl. 223—88 **9 Claims**



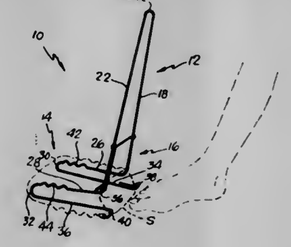
1. A shoulder supporting attachment for attaching to a conventional bent wire coat hanger having sloping garment shoulder supporting surfaces connected by curved end portions to a horizontal cross-member said supporting attachment comprising, a shoulder supporting first plate having first and second ends with said first end for mounting over and extending beyond the curved end portion of the hanger, means forming a second plate secured to and forming an integral part of said first plate and including a free portion having therein a transverse crease line inwardly of said first end and a portion manually ingagable to facilitate the bending of said free portion from said first plate at said crease-line, means forming an elongated slit extending through said free portion for receiving therein the curved end of said hanger with the sides of said slit being operative to frictionally grip the sides of said hanger as the curved end portion of the hanger is forcefully inserted to seated position within said slit to form by said slitted free portion a first securing means for fastening said attachment to said hanger, means forming a second securing means extending from the integral portion of said plates at the second end thereof and manually movable into locking engagement with the sloping garment supporting surface of said hanger and cooperative with said first securing means to maintain said shoulder supporting attachment mounted over the curved outer end portion of said hanger, said first and second securing means, when free of said hanger, being movable to a position substantially coplanar with the integral portion of said plates whereby the attachment may be compacted into a substantially flat assembly for stacking one upon the other for advantageous packaging shipping and handling.

4,066,194

SOCK DONNING ASSIST DEVICE

Ragnvald G. Leland, P.O. Box 4174, Palm Springs, Calif. 92262

Filed Apr. 29, 1977, Ser. No. 792,415
Int. Cl.² A47J *51/06*
U.S. Cl. 223—111 **15 Claims**



1. A device for assisting in the donning of a foot covering, which comprises:
handle means including a pair of laterally spaced, elongated frame members;
insert means extending integrally from said handle means and adapted to be placed within a foot covering for spreading same; and
means connected to said handle means for releasing said foot covering which comprises means releasably connected between said pair of laterally spaced, elongated frame members for releasably maintaining same in a fixed, spaced position.

4,066,195

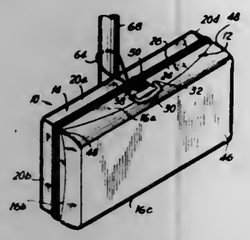
LOCKING MECHANISM FOR TAMPER-PROOF BACKPACK OR PIECE OF LUGGAGE

Paul J. Dickler, 37 W. 8th St., New York, N.Y. 10011

Continuation-in-part of Ser. No. 436,491, Jan. 25, 1974, Pat. No. 3,960,300. This application Oct. 14, 1975, Ser. No. 621,870
The portion of the term of this patent subsequent to July 1, 1993, has been disclaimed.
Int. Cl.² A45F *3/04*
U.S. Cl. 224—8 R **9 Claims**

1. A piece of luggage comprising a body having side walls

and a rear wall defining a space for storing material, a cover connected to one of said side walls and adapted to swing from a closed position to an open position providing access to said storage space, locking means for securing said cover to said body in its closed position, and means for securing said piece of luggage to a stationary object, said stationary object securing means including a well defined in one of said side walls, said well including an aperture opening to said storage space, a securing member having a first end permanently maintained within said storage space exterior of said well and having a second end inserted in said well through said aperture, a cover for said well permanently connected to said piece of luggage and adapted to move from a closed position to an open position, said well cover and said well defining a notch for enabling said securing member to extend from said well when said well cover is closed, wherein said second end of said securing member is adapted to be withdrawn from said well when said well cover is opened with said securing member sliding through said aperture, said securing member being wrapped around said stationary object and said second end of said securing member being reinserted back into said well and said well cover being closed to maintain said securing member looped around said stationary object, and an abutment disposed at said second end of the securing member for preventing withdrawal of said second end through said notch when said well cover is closed and further for preventing withdrawal of said second end through said aperture and back into the storage space.



4,066,196

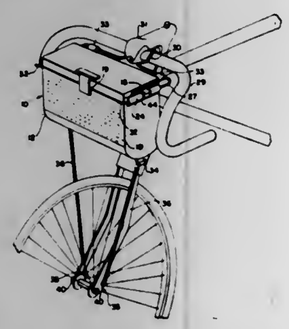
HANDLEBAR BAG

W. Shaun Jackson, 809 Sycamore, Ann Arbor, Mich. 48104, and Leslie Eric Bohm, 29560 Rutherland, Southfield, Mich. 48076

Continuation-in-part of Ser. No. 473,342, May 28, 1974, Pat. No. 3,955,728. This application Dec. 12, 1975, Ser. No. 640,070

Int. Cl.² B62J 7/06

U.S. Cl. 224—30 A **19 Claims**



1. An article carrier that is supported forward of the handlebars of a cycle comprising:

a frame comprised of a single elongated section having a apir of rigid parallel spaced end sections and having a central section adapted to extend under and bear against the upper stem of said handlebars and also extending over the upper surface of said handlebars to be supported on said upper surface, said frame further including a pair of laterally diverging segments, one each connecting each of said end sections with a respective portion of said central section extending over said handlebar, said end sections extending forwardly from the handlebars, on opposed sides of the steering post, in a generally horizontal attitude when said frame is positioned on said cycle; and,

a closed bag dimensioned to fit between said end sections formed of a flexible sheet material and having openings formed on the sides of said bag adapted to slidably receive said end sections to enable mounting of said bag onto said frame;

fastening means securing said bag against longitudinal displacement on said end sections;

an access opening formed in said bag intermediate said end sections when said bag is mounted on said frame; and

closure means associated with the opening,

whereby said bag may be slid onto said frame between said end sections and secured thereto by said fastener means to support said bag on said frame on at least two sides of the upper perimeter of said bag to prevent buckling of the edges of said bag.

4,066,197

VEHICLE ROOF RACK

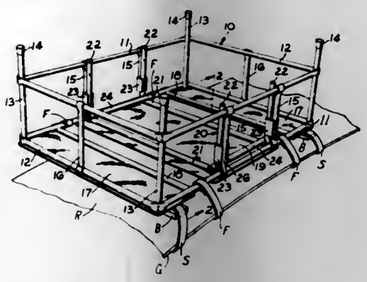
William Harry Nobbs, Bury; Harold Bowker, and Peter Frank Tyburski, both of Radcliffe, all of England, assignors to William Harry Nobbs, Bury; Harold Bowker; Peter Frank Tyburski, both of Radcliffe and Geoffrey Hesketh, Bury, all of, England, part interest to each

Filed June 17, 1976, Ser. No. 696,943

Claims priority, application United Kingdom, Aug. 9, 1975, 33293/75; Dec. 10, 1975, 50553/75

Int. Cl.² B60M 9/04

U.S. Cl. 224—42.01 **9 Claims**



1. A vehicle roof rack structure comprising:

a framework of opposed side frames interconnected by opposed end frames unisonly forming a rectangular box-like configuration of side and end walls,

a base formed by a pair of panel members extending between the opposed side frames,

means for adjusting the height of one of the panel members relative to the side frames and the other panel member,

means for selectively securing the adjustable one of the panel members in a first position substantially coplanar with the other of the panel members for constituting therewith the base of the roof rack and upon inversion of the framework in a second position raised relative to the other of the panel members for constituting therewith a combination table and seating unit, and means for attaching the framework to the vehicle roof when the adjustable one of the panel members is in its first position.

4,066,198

FASTENING ELEMENT SETTING GUN WITH AN EJECTION MEMBER

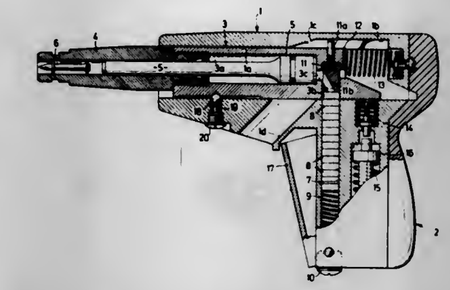
Peter Jochum, Meiningen, Austria, and Hans Dieter Seghezzi, Vaduz, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Mar. 29, 1976, Ser. No. 671,152

Claims priority, application Germany, Apr. 1, 1975, 2514238

Int. Cl.² B25C 1/14

U.S. Cl. 227—8 **12 Claims**



1. Explosive charge driven setting gun for driving fastening elements into hard receiving materials such as steel, concrete and the like, comprising a gun housing, magazine means for feeding caseless propellant charges within said housing, means movably displaceable within said housing including at least one firing chamber with said firing chamber being movable between spaced positions including a loading position for receiving a caseless charge from said magazine means, a firing position for igniting the charge within said firing chamber and an ejecting position for clearing said firing chamber, wherein the improvement comprises that said movably displaceable means includes an ejecting member positioned adjacent the location of said firing chamber in the ejecting position and arranged to be moved through said firing chamber for clearing the chamber, and said ejecting member having a cross sectional shape transverse to its direction of movement through said firing chamber which is substantially the same as the cross sectional shape of said firing chamber in the same transverse direction.

4,066,199

EXPLOSIVE CHARGE FEED ARRANGEMENT FOR A SETTING GUN

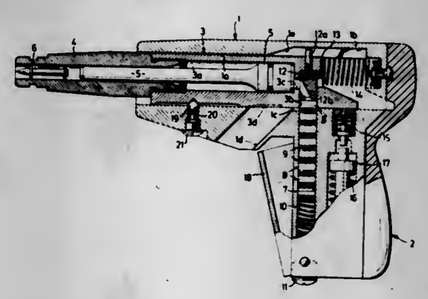
Peter Jochum, Meiningen, Austria, and Hans Dieter Seghezzi, Vaduz, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Mar. 23, 1976, Ser. No. 669,491

Claims priority, application Germany, Apr. 1, 1975, 2514239

Int. Cl.² B25C 1/14

U.S. Cl. 227—10 **17 Claims**



1. Explosive charge driven setting gun for driving fastening elements into a hard target material, comprising a gun housing including a handle, a firing mechanism within said housing, a magazine duct within said housing arranged to receive a plurality of alternating caseless charges and spacers and having an outlet opening spaced from said firing mechanism through which caseless charges can be removed from said magazine duct, means movably displaceable within said gun housing and including a receiving recess displaceable between a first position in alignment with the outlet opening from said magazine duct and a second position juxtaposed to said firing mechanism so that a caseless charge can be received from said magazine duct in the first position of said receiving recess and then moved to the second position for ignition by said firing mechanism, wherein the improvement comprises that said means include ejector means for displacing a spacer from the outlet opening from said magazine duct after the caseless charge immediately preceding the spacer has been displaced into said receiving recess from said first position, into a position for displacing said spacer out of said gun housing as said means moves from the second position to the first position.

4,066,200

DIE PLACEMENT TOOL OR THE LIKE

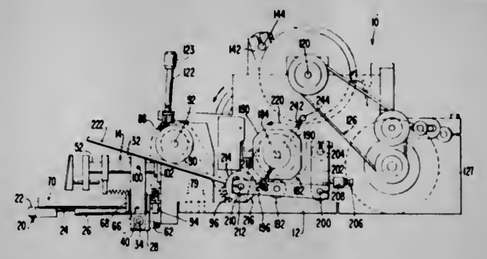
John C. Diepeveen, 1737 Kimberly Drive, Sunnyvale, Calif. 94086

Continuation of Ser. No. 537,523, Dec. 30, 1974, Pat. No. 4,019,668. This application Mar. 22, 1976, Ser. No. 669,056

The portion of the term of this patent subsequent to Apr. 26, 1994, has been disclaimed.

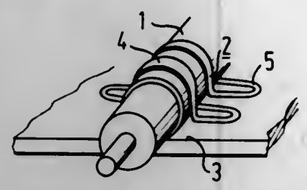
Int. Cl.² H01L 21/60

U.S. Cl. 228—3.1 **2 Claims**



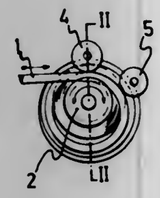
1. A transfer mechanism comprising: a support; a holder for a device to be moved from a first location to a second location spaced from said first location; means on the support and coupled with the holder for mounting the latter for substantially rectilinear up and down movement relative to the support, whereby the holder can move toward and away from either of said locations when the same is vertically aligned therewith, said holder being carried on said mounting means for substantially rectiliner fore and aft movement relative to said support, whereby the holder can move between respective positions vertically aligned with and spaced from said locations; means coupled with the mounting means for moving the holder toward and away from a location vertically aligned therewith; means coupled with the holder for shifting the same relative to said mounting means and between said positions; means biasing the holder in one direction extending longitudinally of its path fore and aft movement; a pivotal shaft carried by the support; a pusher arm secured to and extending laterally from the shaft, the outer end of the arm engaging the holder when the latter is in one of said positions; a lever coupled to said shaft, there being an inclined surface on said support adjacent to the lever; means on said lever for engaging said inclined surface; and means coupled with the lever for moving the latter and thereby said surface-engaging means thereof relative to said inclined surface to thereby pivot said shaft to cause said holder to be reciprocated relative to the support.

4,066,201
METHOD OF JOINING METAL PARTS
Richard Bleckmann, Imbergstrasse 24, Salzburg, Austria
Filed Nov. 10, 1976, Ser. No. 740,737
Int. Cl.² B23K 21/00
U.S. Cl. 228—115 16 Claims



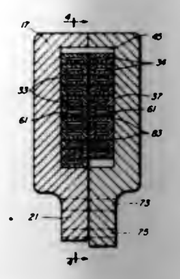
1. A method of cold-joining metal parts together comprising the steps of providing at least one metal part having a substantially tubular shape, providing a metal part which is substantially flat, providing a structure formed of wire wherein wire portions of said structure are disposed substantially parallel one to another, positioning said wire structure into contact with said tubular part such that said wire portions are substantially perpendicular to the length of said tubular part, compressing said tubular part and said wire structure together to form a bonded relationship, positioning the bonded together parts in contact with said flat part, and fastening said structure formed of wire onto said flat part.

4,066,202
METHOD FOR MAKING TUBULAR WELDED WIRE SCREENS
Edouard Binard, Brussels, Belgium, assignor to N. V. Bekaert S. A., Zwevegem, Belgium
Filed Oct. 14, 1976, Ser. No. 732,546
Claims priority, application Belgium, Feb. 10, 1976, 838396
Int. Cl.² B23K 31/02; B21F 15/08
U.S. Cl. 228—173 E 5 Claims



1. A method for making cylindrical welded wire screens comprising:
a. continuously bending a wire into a helical wrap so as to form juxtaposed equal wraps substantially free of residual bending stresses, each of said wraps having a diameter substantially equal to the desired finish diameter of the cylindrical screen and whereby the radius of curvature imparted to the wire during the bending step is smaller than the radius of the formed wraps, said continuous bending being performed inside the outer circumference of the wraps,
b. supporting said formed wraps and progressively guiding said formed wraps and bringing successive points of said formed wraps into contact with a plurality of supporting wires extending in the contact area substantially parallel to the generatrix of the cylindrical screen thereby substantially equally spacing successive connecting points of the wraps with the same supporting wire, and
c. connecting successive contact points of said wraps with said supporting wires by welding.

4,066,203
METHOD FOR ELECTRICALLY AND HYDRAULICALLY CONNECTING A WATER-COOLED CONDUCTOR
David Peter Davies, Columbus, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.
Filed Jan. 21, 1977, Ser. No. 761,446
Int. Cl.² B23K 31/02
U.S. Cl. 228—180 R 8 Claims

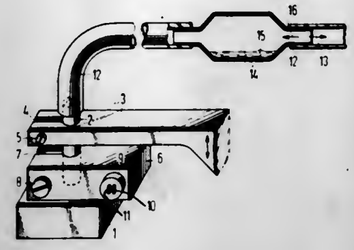


1. A method of forming an electrical and hydraulic connection for a conductor bar having a plurality of hollow water-cooled conductors comprising the steps:
producing mating connector clip members that form a conductor bar receiving chamber and a larger water cavity therebetween when placed together;
inserting strips of brazing material between adjacent hollow conductors in the conductor bar;
adjusting the cross-sectional length of the conductor bar to fit snuggly in conductor bar receiving chamber portions of said clip members;
placing a band of brazing material in said conductor bar receiving chamber portions of each of said clip members, said bands of brazing material being sufficiently thick to insure that the cross-sectional width of the conductor bar added to the thickness of said bands is greater than the width of said conductor bar receiving chamber;
locating the conductor bar between said clip members in said conductor bar receiving chamber portions thereof;
heating said clip members and the conductor bar to the melting temperature of said strips and bands of brazing material;
forcing said clip members together with the conductor bar therebetween until said clip members are brought into contact with one another; and
preventing brazing material from building up in the open ends of the hollow conductors of the conductor bar.

4,066,204
PROCESS AND DEVICE FOR UNSOLDERING SEMICONDUCTOR MODULES IN THE FLIP-CHIP TECHNIQUE
Oskar Wirbser, Unterpfaffenhofen, and Nikolaus Ernst, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed June 14, 1976, Ser. No. 695,821
Claims priority, application Germany, July 2, 1975, 2529554
Int. Cl.² H05L 21/70; B23K 3/00
U.S. Cl. 228—264 4 Claims

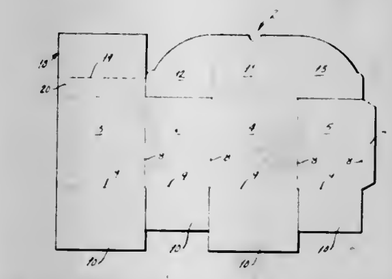
1. A method in the flip-chip technique for unsoldering semiconductor modules which are soldered onto terminal surfaces of a carrier by terminal pads composed of soft solder, comprising the steps of:
a. placing a suction cup with a base forming a filter onto the semiconductor module to be unsoldered such that the module is drawn against the filter when suction is applied;
b. melting the terminal pads with heat supplied through the suction cup and the semiconductor module;

c. raising the suction cup together with the semiconductor module;
d. removing the semiconductor module;



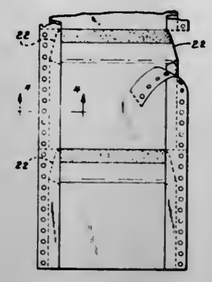
e. placing the suction cup onto the terminal surfaces; and
f. melting and sucking away remaining soft solder residues through the filter.

4,066,205
BIN BOX
Harold J. Griffith, Galesburg, Ill., assignor to Alton Box Board Company, Alton, Ill.
Filed Nov. 22, 1976, Ser. No. 743,683
Int. Cl.² B65D 5/72
U.S. Cl. 229—17 B 4 Claims



1. A bin box for supporting bulk material and formed having an upper, bottom, and a pair of side walls connected together and folded to create a tubular form, a series of flaps connecting to one end of the tubular form and folded to provide closure at said end of the box, a pivotal panel foldably connected to the bottom wall at the opposite end of the box, a pair of lateral flaps, one of each lateral flap foldably connected to a side of said pivotal panel, said lateral flaps normally arranged within the tubular form of the box and adjacent to the said side walls, said pivotal panel completely covering the opposite end of the box when said panel is pivoted into closure, at least one portion being provided upon the upper end of each lateral flap and provided for wedging against the interior of the upper wall as the pivotal flap is pulled to limit the extent of its opening, said pivotal panel completely covering the opposite end of the box when said panel is pivoted into closure, and another flap foldably connecting to the upper wall at the opposite end of said box, said flap providing coverage over the pivotal panel when the box is maintained in closure.

4,066,206
CONTINUOUS ENVELOPE ASSEMBLY
Charles L. Peterson, Crystal Lake, Ill., assignor to Uarco Incorporated, Barrington, Ill.
Filed Mar. 22, 1977, Ser. No. 780,005
Int. Cl.² B65D 27/10
U.S. Cl. 229—69 5 Claims



1. A continuous envelope assembly comprising:
an elongated ply of paper having control punch margins along longitudinal edges thereof;
individual envelopes in said assembly being delimited by transverse lines of weakening extending across said assembly;
die cuts in said ply adjacent both longitudinal edges thereof and adjoining said lines of weakening at one side thereof to define the corners of the envelope flap;
first glue lines on said ply adjacent said lines of weakening and on the sides thereof opposite said die cuts;
individual sheets having widths less than said ply and lengths less than the distance between lines of weakening secured to said ply by said first glue lines;
said ply longitudinal edges being folded over the longitudinal edges of said individual sheets;
second glue lines securing said ply longitudinal edges to said sheet longitudinal edges;
said control punch margins being reverse folded away from said sheets to extend to the sides of the respective sheet longitudinal edges.

4,066,207
DISPENSER CARTON BOXES
Frode Jorgensen-Beck, and Heinrich Wilhelm Lambach, both of Horsens, Denmark, assignors to Brdr. Schur International A/S, J. W. Schursevej, Denmark
Filed July 20, 1976, Ser. No. 707,082
Int. Cl.² B65D 5/72
U.S. Cl. 229—17 SC 57 Claims



1. A sales and dispenser carton box having a top panel with a dispenser opening normally closed by a closing plate portion arranged generally inside the box and being displaceable to open and close the dispenser opening, said closing plate portion having an outer edge located outside the box and connected with one edge of a box front end panel, the opposite

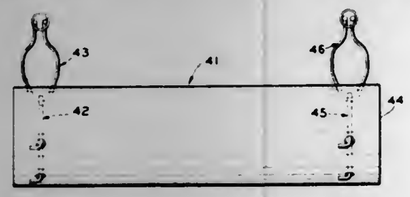
edge of which is hinged to a box bottom panel whereby the front end panel may be pivoted so as to displace the closing plate for opening and closing the dispenser opening, characterized in that at least one side edge portion of the closing plate is located near the adjacent side panel of the box and provided with a side flap which is folded down along said side panel and slidingly supported by an elongated carton portion so as to support the closing plate slidingly against or near to the inner or lower side of the top panel provided with said dispenser opening, while said side flap or another corresponding side flap located e.g. at the opposite edge of the closing plate has a front edge facing the front end of the box and cooperating with a rigid stop portion of the box so as to form a stop edge effectively limiting the forward opening movement of the closing plate.

4,066,208

THEFT RESISTANT RECEPTACLE

Norman A. Jones, 4591 W. Streetsboro Road, Richfield, Ohio 44286

Filed Feb. 24, 1977, Ser. No. 771,768
Int. Cl.² A47G *29/12*
U.S. Cl. 232—1 C **4 Claims**



1. A detachable holder for a newspaper, comprising:

an elongated newspaper holding receptacle having a peripheral wall, the interior of the receptacle being inaccessible through its peripheral wall, and said receptacle having at an end a restricted entry passage through which a rolled newspaper can be inserted readily and removed only with difficulty, said receptacle being and adapted to be disposed horizontally, on a floor, at or near the outer face of the lower margin of a door and to extend, endwise of the receptacle, alongside said face;

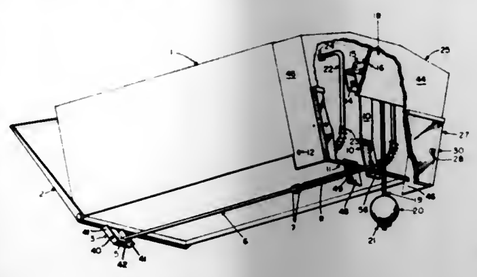
bracket means carried by the receptacle near the ends of the receptacle, and having a first portion swingably connected to the receptacle for swinging upwardly and downwardly about a horizontal axis, to and past a horizontal plane through said axis, when the receptacle is so disposed horizontally, and positioned to extend generally horizontally laterally of the peripheral wall of the receptacle from the outside of the door, beneath the lower edge of the door, with an inner end disposed at the inside of the door, and having at said inner end a retaining portion disposed at an angle to said first portion, and said portions being positioned so that, while said first portion is beneath the lower edge of the door and said receptacle is disposed with said side wall closely alongside said outer face of the door, said second portion can engage the inner face of the door with slight clearance for constraining the bracket from removal outwardly of the door from beneath said lower edge of the door and the receptacle from movement outwardly from the door, while the door is closed, said bracket means comprising two separate brackets, one near each end of the receptacle, and each bracket including an eyelet secured to the receptacle and exposed externally of the peripheral wall thereof; and said first portion of each bracket having a portion spaced from its said retaining portion and loosely swivelly engaged in said eyelet for swinging upwardly and downwardly relative to the eyelet and receptacle.

4,066,209

MAILBOX SIGNAL KIT

Robert D. Brake, 4051 S. Fairway, Springfield, Mo. 65804

Filed Jan. 15, 1976, Ser. No. 649,537
Int. Cl.² B65D *91/00*
U.S. Cl. 232—35 **1 Claim**



1. A mailbox comprising a receptacle provided with an open end, a vertically swinging hinge door to close said open end, said door having attached to the outer face thereof a bracket extending below the bottom of said receptacle, a signal indicator housing attached to the end of the receptacle opposite to the door, indicator means mounted for vertical movement within said indicator housing and movable from a non-viewable position to a viewable position, actuating means connecting the door-mounted bracket with the indicator means structure, said indicator means including an indicator plate movable vertically for viewing and non-viewing, said plate being mounted on two parallel support rods aligned in a vertical position, a buffer spring mounted on at least one support rod below the indicator plate for absorbing the shock of the indicator plate dropping by means of gravity force from the non-viewable position to the viewable position, a reset rod extending below the indicator housing and connected with the indicator plate for moving the indicator plate from the viewable position to the non-viewable position, a signal ball mounted on the lower end of said reset rod, a latch roller mounted on the indicator plate for retaining the indicator plate in the non-viewable position, a latch arm pivotally mounted within the indicator housing and spring-biased to a latching position with the upper end portion engaged under the latch roller to positively yet releasably retain the indicator plate in the non-viewable position, said actuating means including a push rod extending between the door bracket and the lower end of the latch arm for moving the latch arm against the spring bias to release the latch roller and permit the indicator plate to drop to a viewable position, the upper end portion of the latch arm being offset whereby the roller engages the offset upper end portion of the latch arm and moves it pivotally against the spring bias when the indicator plate is lifted to enable the latch roller to roll past the upper end of the latch arm so that the spring bias will move the upper end of the latch arm into latching position under the roller, said indicator plate being distinguishably colored for easy observation, said housing including an opaque wall portion overlying and concealing the indicator plate when in its lifted non-viewable position, said housing including a lower transparent wall portion overlying and revealing said indicator plate when in its lowered viewable position.

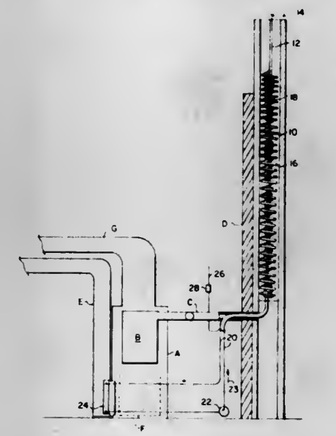
4,066,210

CHIMNEY HEAT RECLAIMER

Alonza R. Pemberton, R.R. 1, Box 17, and Daniel R. Pemberton, R.R. 1, Box 78, both of Fredericksburg, Va. 22401

Filed May 20, 1975, Ser. No. 579,201
Int. Cl.² F24D *5/04*
U.S. Cl. 237—53 **7 Claims**

1. In combination with a heating system which includes an enclosed air space, a fuel combustion chamber within said air space and cold and hot air ducts leading to and from said air space for cold return air and heated air, respectively, means for circulating air from said cold air duct through said air space and past said combustion chamber to said hot air duct, a chimney, and a smoke pipe connected to said combustion chamber and said chimney to carry off the hot gaseous products of combustion and provide draft for combustion of fuel in said chamber, means for utilizing heat from the flue gases in said chimney emitted from said combustion chamber comprising a tubular coil extending upwardly in said chimney, for liquid to absorb heat from the flue gases, a pipe connected to the top of



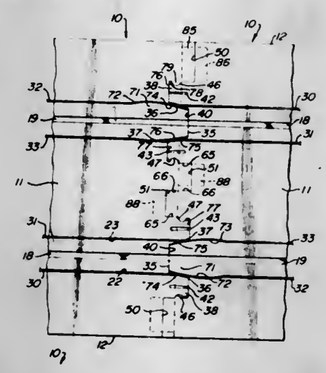
said coil to form an expansion chamber and a support connected to the upper end of said pipe and supported on the top of said chimney, a radiating unit having passages for circulation of liquid and constructed for passing air through said unit to be heated by liquid in said passages, said unit being positioned so that said means for circulating air passes air from said cold duct through said unit, connecting lines from said coil to said passages in said radiating unit, and a pump in said lines to circulate liquid through said coil and through the passages in said radiating unit, so that the liquid heated in said coil heats the air from said cold duct passing through said radiating unit.

4,066,211

MODEL TRACK SECTION

Sze Hong Mak, 57 Ma Tau Wai Road "H" Ground Floor, Kowloon, Hong Kong

Filed Feb. 24, 1976, Ser. No. 660,994
Int. Cl.² A63H *19/30*
U.S. Cl. 238—10 F **10 Claims**



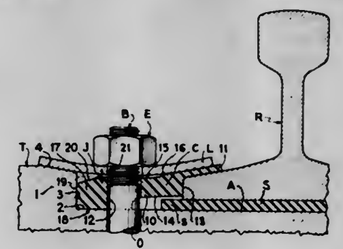
9. A track section comprising a generally flat bed having one end region and an other end region, a pair of conductive rails on said bed longitudinally coextensive therewith and having a pair of adjacent facing sides and a pair of nonfacing sides, said one end region of said bed having a longitudinally inwardly extending opening between the adjacent facing sides of said rails, the other end region of said bed having a pair of longitudinally inwardly extending cutouts along the nonfacing sides of said rails, the rail ends at said one bed end region being spaced apart a greater distance and the rail ends at the other bed end region being spaced apart a lesser distance for longitudinal insertion of the lesser spaced rail ends between a pair of greater spaced rail ends of a like track section when said track sections are moved in longitudinal end-to-end assembled relation, resilient means associated with at least one of said greater and lesser spaced rail ends for deflection thereof upon said insertion, and snap formations on opposite bed end regions for interfitting engagement with opposite bed end regions of like track sections upon said longitudinal end-to-end assembly, certain of said snap formations being in at least one of said cutouts spaced from said at least one of said greater and lesser spaced rail ends, said resilient means comprising a slit extending longitudinally inwardly from said one end region of said bed and spaced outwardly from each of said rails, the region of said bed between each of said slits and the rail adjacent to a respective slit defining a resilient backing portion.

4,066,212

SPRING RAIL CLIP WITH TIGHTENING LIMITING FEATURE

Roger Paul Sonneville, 5, rue Maurice Ravel, 92210 Saint-Cloud, France

Filed June 8, 1976, Ser. No. 694,036
Claims priority, application France, June 26, 1975, 75.20068
Int. Cl.² E01B *9/30*
U.S. Cl. 238—349 **12 Claims**



1. In a device for fixing and supporting a rail of a railway track which rail has a flange, comprising a support having a first portion defining a support table for the rail and second portions each having an upper surface higher than said table and defining a shoulder which extends upwardly from said support table at opposite ends of the support table, a pad interposed between the rail and the support table, an insulating clip having a body which is interposed between the shoulder and the flange and defines an aperture and a nose portion bearing against the flange of the rail, at least one elastically yieldable strip defining an aperture and placed on top of the clip to extend over the clip, the nose portion being interposed between the strip and the flange and the strip being located to be supported by said upper surface of one of said second portions, and fixing means extending through the apertures in the body of the clip and the strip for fixing the strip and clip to the support, the body of the clip comprising, on a side thereof opposed to the nose portion, a heel portion defining a first surface which faces toward said table and a second surface which is supported laterally against the shoulder, the body of the clip defining substantially in a center part thereof and upper face which is substantially parallel to the strip; the improvement wherein at least a part of said first surface is located so that it at least partly surrounds said aperture of the clip and

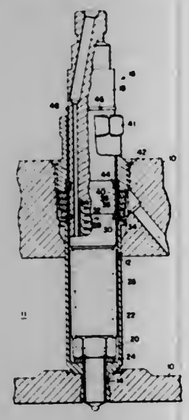
is in abutting relation to said table, the arrangement being such that, beyond a predetermined tightening force exerted by said fixing means on the strip, the additional force is transmitted to the support through the body and the heel portion of the clip and said first surface of the clip and said table of the support.

4,066,213

FUEL INJECTION NOZZLE ASSEMBLY

Richard Herbert Stampe, Dike, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 16, 1976, Ser. No. 677,779
Int. Cl.² B05B *1/30*
U.S. Cl. 239—533.3 **4 Claims**



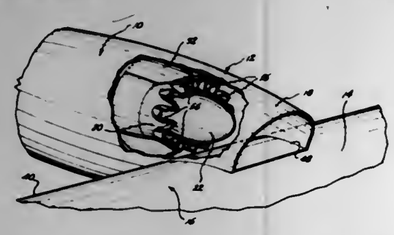
1. In a fuel injection nozzle assembly for fastening a fuel injection nozzle to a cylinder head of an internal combustion engine, said assembly having a nozzle holder for holding the nozzle and a hollow screw encircling and slidable on the nozzle holder for fastening the nozzle assembly to the cylinder head, the improvement comprising: the nozzle holder having an annular groove provided therein proximate the nozzle between the hollow screw and the nozzle; a snap ring device partially and radially engaging the annular groove; an annular retaining washer disposed between the hollow screw and the snap ring device partially abutting and radially encircling the snap ring device; and annular conical spring means encircling the nozzle holder disposed between the hollow screw and the retaining washer.

4,066,214

GAS TURBINE EXHAUST NOZZLE FOR CONTROLLED TEMPERATURE FLOW ACROSS ADJOINING AIRFOILS

Joseph M. Johnson, Bothell, Wash., assignor to The Boeing Company, Seattle, Wash. and Aeritalia S.p.A., Napoli, Italy

Filed Oct. 14, 1976, Ser. No. 732,520
Int. Cl.² B64C *15/00*
U.S. Cl. 239—265.19 **11 Claims**



1. An exhaust nozzle for use with a gas turbine engine having a rearwardly extending tail plug wherein said gas turbine engine is mountable near adjoining structure so as to discharge exhaust effluent in close proximity to said adjoining structure, said exhaust nozzle for selectively mixing the relatively high temperature, high velocity exhaust gases supplied by said gas turbine engine with a lower temperature secondary gaseous stream to prevent overheating of said adjoining structure, said exhaust nozzle comprising:

a generally tubular mixer section having an entrance opening at one end thereof for receiving said exhaust gases and a plurality of axially extending lobes spaced about the periphery of said tubular mixer section, each of said lobes of increasing radial dimension relative to the length of said mixer section to form an aft terminus of said mixer section having a relatively large periphery relative to the periphery of said entrance opening, the radial dimension of each of said lobes being established to asymmetrically pattern the cross-sectional geometry of said mixer section, said mixer section coaxially mounted about said tail plug for forming a first generally annular flow duct between said tail plug and said mixer section for the flow of said turbine exhaust gases; and

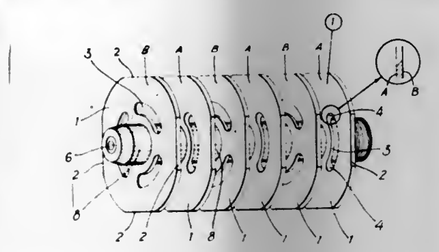
a nozzle housing mounted about said coaxially mounted mixer section and engine tail plug to form a second generally annular flow duct for the flow of said secondary gaseous stream, said second flow duct formed between said mixer section and said nozzle housing, said nozzle housing extending rearwardly from said aft terminus of said mixer section and terminating in an exit opening for discharging a fluid stream including said turbine exhaust gases and said secondary gases, said nozzle housing contoured and arranged relative to said mixer section for selectively mixing said turbine exhaust gases with said secondary gaseous stream to maintain at least selected regions of said discharged fluid stream adjacent said nozzle housing at a lower temperature than the temperature of the central region of said discharged fluid stream.

4,066,215

DISC FOR GRINDER

Carlos Oliver Pujol, Marina St. No. 51, Badalona (Barcelona), Spain

Filed Oct. 18, 1976, Ser. No. 733,359
Claims priority, application Spain, July 13, 1976, 222298
Int. Cl.² B02C *23/36*
U.S. Cl. 241—46.11 **2 Claims**



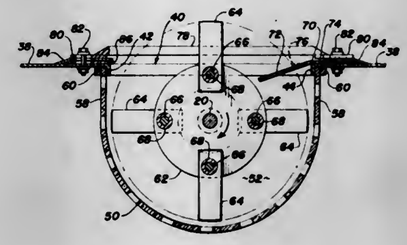
1. In a grinder, such as a ball mill, for the dispersion of solids in liquids, said grinder having a rotatable grinding structure formed by a rotable shaft and a plurality of grinding discs fixed to said shaft in perpendicular and axially spaced relationship thereto, said grinding structure being rotatable about the axis of said shaft, comprising the improvement wherein said plurality of discs are identical and each includes a plurality of elongated arcuate slots which are equally angularly spaced apart along a circular path generated about the rotational axis, said elongated arcuate slots also being generated about said rotational axis and extending axially through said disc, the elongated slots of each said disc having end walls defining the opposite ends of the slot, said end walls defining the leading and trailing edges of each slot when the disc is rotated, the pair of end walls as defining the opposite ends of each said slot being sloped in opposite directions relative to the rotational axis so that the slot terminates in an elongated opening formed in one face of the disc which is larger than the elongated opening formed by the slot in the other face of the disc, and said discs being mounted on said shaft in opposed axially spaced pairs with the discs of each said pair themselves being axially spaced apart, the discs of each said pair being disposed with said one faces thereof directed toward one another, and said plurality of axially spaced discs being positioned so that the slots in the axially adjacent discs are alternately angularly offset so that the slots as formed in any two adjacent discs are not axially aligned.

4,066,216

TOOTHED PLATE FOR FACILITATING DISINTEGRATION OF CROP MATERIAL CLUMPS BY THE HAMMERMILL MECHANISM OF A TUB GRINDER MACHINE

Thomas W. Waldrop, New Holland, Pa., and John R. Flanagan, Salt Lake City, Utah, assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 24, 1976, Ser. No. 726,711
Int. Cl.² B02C *13/04*
U.S. Cl. 241—190 **3 Claims**



1. In a tub grinder machine having a mobile frame, a crop material receiving tub mounted on said frame and a hammermill grinding mechanism mounted below said tub, said tub including a bottom wall stationarily mounted on said frame, with an opening formed therein, and a generally upright cylindrical side wall bounding the periphery of said bottom wall and being mounted for rotation about a generally vertical axis relative to said bottom wall, said hammermill mechanism being mounted below said bottom wall opening and including a rotatable shaft and a plurality of radially extending, axially spaced hammer elements operatively mounted thereon which move in generally circular paths projecting upwardly through said opening upon rotation of said shaft so as to engage and grind crop material being moved about said bottom wall and delivered to said opening therein as said side wall of said tub is rotated, said machine also having drive means operable to effect rotation of said side wall and of said hammermill shaft, the improvement which comprises:

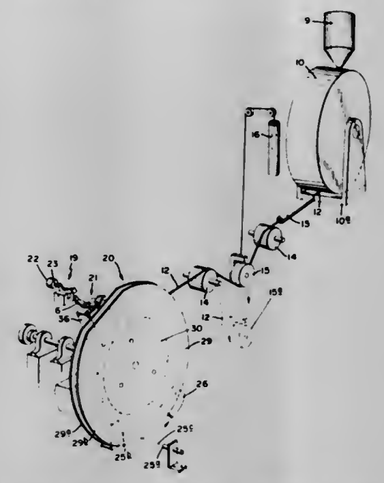
an elongated plate mounted to said bottom wall along a crop material receiving edge of said opening therein, a longitudinal marginal edge portion of said plate extending into said opening and having a series of spaced apart notches formed therealong so as to define a series of spaced apart and generally co-planar teeth which coact with said moving hammer elements to facilitate the ability of the latter to disintegrate crop material clumps passing through said opening over said teeth, said series of spaced apart notches formed along said marginal edge portion of said plate gradually widen toward the edge of said plate so as to define said teeth with configurations convergently tapering toward the outer ends thereof.

4,066,217

TAIL END GRIP MECHANISM

Robert E. Smith, Monte Sereno; Frank S. Chytil, Escondido, both of Calif.; George Feldstein, and Dorman J. Swartz, both of Madison, N.J., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed July 9, 1976, Ser. No. 704,009
Int. Cl.² B65H *75/28*
U.S. Cl. 242—25 R **5 Claims**



1. An apparatus for gripping and retaining the tail end of a moving filament contiguous to a rotating storage reel comprising in combination:

a. a rotable reel mounting assembly for receiving said reel;

b. a pivotal gripping means mounted on said reel mounting assembly adapted to be remotely actuated to grip the tail end of the filament which is stored on a reel carried on said reel mounting assembly;

c. sensing means adapted to detect passage of the tail end of the filament and to generate a signal responsive to such passage;

d. triggering means in circuit with said sensing means adapted to actuate said pivotal gripping means to grip the tail end of the filament responsive to the signal generated by said sensing means.

4,066,218

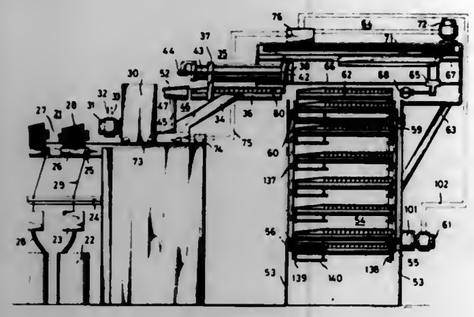
METHOD AND DEVICE FOR SUPPLYING EMPTY CONICAL COIL CORES TO THE INDIVIDUAL WINDING STATIONS OF A TEXTILE MACHINE

Heinz Kamp, Rickelrath, Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Germany

Filed Sept. 29, 1975, Ser. No. 617,436
Claims priority, application Germany, Sept. 27, 1974, 2446162
Int. Cl.² B65H *54/02*
U.S. Cl. 242—35.5 A **9 Claims**

5. Apparatus for carrying out a method of feeding unwound conical coil cores to individual winding stations of a textile machine comprising coil-exchanging means for replacing fully wound coils at a plurality of winding stations with unwound coinical coil cores, a core magazine at the textile machine having means for receiving therein sticks of telescoped coil cores, transfer means for transferring at least part of individual sticks of cores to the coil exchanging device from said core magazine, a take-up and storage device for sticks of cores and a delivery device for delivering individual coil cores, both located, at least in part, on the coil exchanging means, and means for maintaining relative movement between the winding

stations and the core magazine, on the one hand, and the coil exchanging means, on the other hand, at all times other than



respective times at which coil exchange and take-up of sticks of cores by the coil magazine occur.

4,066,219

TWINE WINDING ASSEMBLY

Austin S. Sharp, Stone Mountain, Ga., assignor to Wellington Puritan Mills, Inc., Madison, Ga.

Filed Aug. 30, 1976, Ser. No. 718,409
Int. Cl.[2] B65H *75/30, 79/00*
U.S. Cl. 242—46.2 **2 Claims**



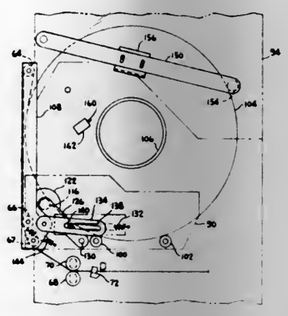
1. In a textile winding assembly, a cylindrical spool adapted to have a textile strand wound on its periphery, said spool being unitary and formed entirely of structural foam, said spool having a central axial through bore of predetermined constant diameter, and said spool provided in its opposite end faces with recesses of equal depths below the end faces and substantially equal diameters and forming on said spool a pair of opposite end flat spool locator faces below the spool end faces and annular flange portions surrounding the locator faces, and a spindle for supporting and driving the spool rotationally on the axis of said bore and adapted to be coupled to a rotational element of a winding machine, said spindle having an elongated shank portion insertable entirely through said bore and having bore-engaging projections which extend radially beyond the diameter of the bore, whereby entry of the shank portion through said bore will deform said bore permanently by crushing said structural foam adjacent to said projections and thereby allowing said spindle to create a positive interlocking driving engagement with said spool, and a pair of radiating lugs on said spindle projecting beyond opposite sides of said shank and having a pair of flat end faces in lateral alignment across the shank, said end faces adapted to abut one of said flat spool locator faces when said spool is assembled on the spindle.

4,066,220

COPY PAPER STORING AND FEEDING APPARATUS

Christian A. Beck, Ridgefield; William A. Ross, Darien, and James E. Burke, Norwalk, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 2, 1976, Ser. No. 738,043
Int. Cl.[2] B65H *17/20, 19/10*
U.S. Cl. 242—55 **5 Claims**



1. In a copying machine wherein copy paper is stored in roll form and utilized for making copies of original documents, apparatus for storing and feeding the copy paper, said apparatus comprising:

A. a frame,

B. means mounting said frame in the copying machine adjacent one end thereof for relative movement with respect to the copying machine between an operative copy paper feeding position wherein said frame is disposed within the copying machine and an inoperative copy paper loading position wherein said frame is disposed exteriorily of the copying machine,

C. support means carried by said frame for rotatably supporting a roll of copy paper on the peripheral surface of said roll of copy paper with said roll of copy paper being free to rotate on said support means when said frame is in said operative copy paper feeding position,

D. copy paper feeding means mounted within the copying machine for intermittently withdrawing a predetermined length of copy paper from said roll, said copy paper feeding means being disposed adjacent the end of the copying machine through which said frame is moved between said operative and inoperative positions, and,

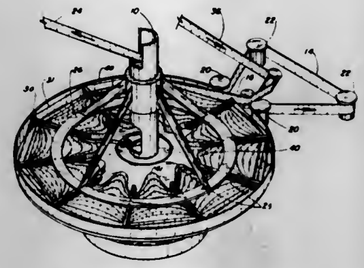
E. guide means carried by said frame and defining a copy paper path from said copy paper roll support means to said feeding means, said path extending generally upwardly from said roll support means and thence generally downwardly to said feeding means, said guide means comprising a subframe pivotally mounted on said frame adjacent the outer end thereof and movable therewith, said subframe being normally disposed in a vertically upright position and carrying guide rollers at the upper and lower ends thereof to define said copy paper path when said subframe is in said upright position.

4,066,221

METHOD OF AND APPARATUS FOR THE TAPE LOADING AND USE OF A SINGLE TURNTABLE IN THE RENDITION OF A TAPED PROGRAM

J. Ralph Johnson, 573 Wellham Loop, La Place, La. 70068

Filed Oct. 27, 1976, Ser. No. 736,277
Int. Cl.[2] B65H *17/48*
U.S. Cl. 242—55.19 A **10 Claims**



1. Method of tape loading and using a turntable in the rendition of a taped program comprising the steps of:

a. defining a peripheral flange and tape entrance therethrough around a rotating turntable:

b. winding tape on said rotating turntable through said tape entrance and against said peripheral flange, the winding being of equal length per revolution of said turntable, each said winding being displaced radially inwardly by each successive winding and following inwardly curving paths of progressively greater curvature as the number of said windings increase;

c. biasing radially said windings adjacent said flange at a plurality of spaced points therearound for inhibiting said windings from curving inwardly at said bias points and to maximize curving therebetween and equal distribution therearound;

d. connecting the inboard and outboard tape ends of the loaded tape to form a closed loop with an off-turntable bight adapted to engage in and with cooperating apparatus for rendition of taped program;

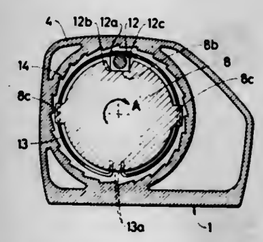
e. continuously rotating the loaded turntable and simutaneously energizing said cooperating apparatus to draw tape from the inner winding and load tape at the outer winding in equal amounts per revolution of said turntable in continuous renditions of the taped program and the elimination of friction and slippage between windings.

4,066,222

DEVICE IN CONNECTION WITH LOCKING REELING MEANS FOR SAFETY BELTS FOR VEHICLES

Sven Roland Hjelte, Vimmerby, Sweden, and Lennart Eksell, Valldoreix, Spain, assignors to Svensk Tryckgjuntning SH AB, Vimmerby, Sweden

Filed June 16, 1976, Ser. No. 696,625
Int. Cl.[2] A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 B **4 Claims**



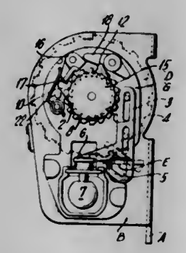
1. Device for locking reeling means of safety belts for vehicles including a frame adapted to be fixed to a vehicle, a stationary track on said frame, a rotatable core element for a safety belt which element is spring biased in the wind-up direction and at one of its ends supports at least one locking body rotatable with the core element, said locking body assuming a locked position upon sudden rapid unwinding of the safety belt by engaging said stationary track, the improvement comprising a longitudinal groove of trapezoidal cross-sectional area tapering radially and inwardly to form a bottom portion, said groove being axially disposed at one end of said rotatable core element, said locking body being of rectangular or square cross-sectional area disposed within said groove and having a bottom portion of a width which substantially corresponds to the width of the bottom portion of said groove, a circumferental groove in the outer portion of said locking body and spring means received by said circumferential groove and retained by said core element for resiliently urging said locking body in an inoperative position toward the base of the groove in said core element, and an inertial disk carried on the outer end of said core element adjacent to said locking body and carrying a projection for engaging and displacing said locking body from said groove, said disk being normally rotatable with said core element but rotating at a different speed therefrom upon sudden changes in the rotational speed of the core element, thereby permitting the projection on the inertial disk to engage the locking member and displace the same so that said member in turn engages the stationary track and acts as a brake to prevent further rotation of the core element.

4,066,223

AUTOMATIC LOCKING SAFETY BELT RETRACTOR DEVICE

Juichiro Takada, Tokyo, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1976, Ser. No. 710,988
Claims priority, application Japan, Sept. 29, 1975, 50-116433
Int. Cl.[2] A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **9 Claims**



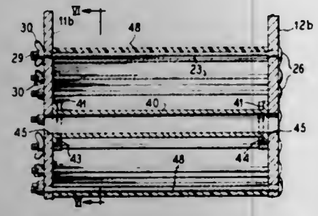
1. A safety belt retractor device comprising a reel rotatable in opposite belt retraction and extraction directions, spring means biasing said reel in a belt retraction rotation direction, a first braking means for braking said reel against rotation in a belt extraction direction and movable between a retracted release position and an advanced braking position, a second braking means for braking said reel against rotation in a belt retraction direction and movable between a retracted release position and an advanced braking position, and transfer means responsive to the actuation of said first braking means toward its advanced position for moving said second braking means toward its retracted position.

4,066,224

KNOCK-DOWN SHIPPING REEL FOR FLEXIBLE CABLE

William Hargreaves, and Olivia Nancy Hargreaves, both of 224 Old Short Hills Road, Short Hills, N.J. 07078

Filed Oct. 28, 1975, Ser. No. 626,132
Int. Cl.² B65H *75/22, 75/14*
U.S. Cl. 242—115 10 Claims



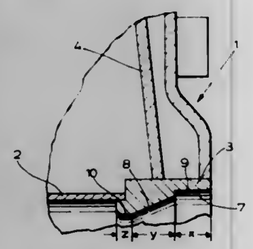
1. A knock-down reel for flexible cable and the like, comprising:
   - a pair of spaced flanges forming reel heads,
   - each of said reel heads having an opening concentric with the center thereof,
   - a spacer tube concentric with said openings and connected between said flanges to space said flanges apart and form a bearing for the reel,
   - spaced flexible members maintained under tension, and equally spaced radially outwardly of the center of said tube,
   - individual means for each flexible member and accessible from the outside of at least one of said reel heads for maintaining said flexible members under tension and said flanges in parallel spaced relation with respect to each other, and
   - segmental inserts mounted on said flexible members between said reel heads and carried by said flexible members and maintained to said flexible members by the compressive force of said flanges as tension is taken up on said flexible members.

4,066,225

REEL FOR CABLES, WIRES, AND THE LIKE

Ernst Bauer, Neustadt, Coburg, Germany, assignor to Industriewerk Nachf. Seifert & Co. KG, Neustadt near Coburg, Germany

Filed July 19, 1976, Ser. No. 706,416
Claims priority, application Germany, July 18, 1975, 2532156
Int. Cl.² B65H *75/14*
U.S. Cl. 242—118.8 1 Claim



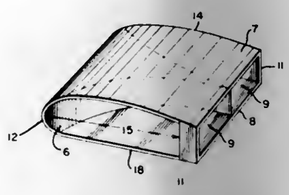
1. A reel for cables, wires or the like having a core and a central bore hole in the core for the mounting of both cylindrical and conical spindles of a processing machine, comprising hub means on the longitudinal ends of said central bore hole, means on said hub means defining an outer cylindrical bore hole axially juxtaposed to an inner conical bore hole, said outer cylindrical bore hole being of a larger diameter than the largest diameter of said conical bore hole, said outer cylindrical bore hole extending to the longitudinal end of said core, said conical bore hole having its large diameter disposed axially outwardly and terminating by a radial flange portion which also terminates the axially inner end of said outer cylindrical bore hole to thereby define a step between said outer cylindrical bore hole and said conical bore hole, said outer cylindrical bore hole having an axial length operable to receive and be supported by said cylindrical spindle, said conical bore hole being operable to receive and be supported by said conical spindle, an axially inner cylindrical bore hole juxtaposed to said conical bore hole, said inner cylindrical bore hole having a diameter substantially equal to the smallest diameter of said conical bore hole, said core being defined by a cylindrical sleeve member extending from said hub means, said cylindrical sleeve member being fitted on an axially inner cylindrical portion of said hub means, said axially inner cylindrical portion being radially opposite said inner cylindrical bore hole, and head flanges extending radially from said hub means.

4,066,226

AIRFOIL, REDUCED PROFILE, "Y" FLOW, HYBRID

Kenneth Edmund Fischer, 716 E. Main St., Berlin, Pa. 15530

Filed Apr. 9, 1976, Ser. No. 675,602
Int. Cl.² B64C *3/02*
U.S. Cl. 244—36 1 Claim



1. An airfoil having a conventional airfoil shape in longitudinal cross-section with a truncated trailing edge; upper and lower surfaces which provide the airfoil with a substantially rectangular planform and a closed continuous leading edge; each side of said arifoil has a side wall which extends from the leading edge adjacent the respective side of said airfoil to substantially the center of the trailing edge forming a substantially triangular shaped compartment in the center of the airfoil; the side and trailing edges of said airfoil are substantially completely open and form channels with said side walls which permit the air to flow from the sides of said airfoil between said upper and lower surfaces and exit through said open truncated trailing edge.

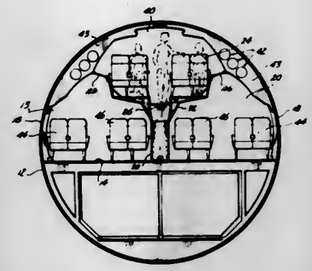
4,066,227

MEZZANINE STRUCTURE FOR WIDE-BODIED PASSENGER AIRCRAFT

Christian K. E. Buchsel, 5900 119th Ave. SE., Bellevue, Wash. 98006

Filed July 16, 1976, Ser. No. 705,790
Int. Cl.² B64D *11/06*
U.S. Cl. 244—118 P 18 Claims

1. An elevated deck structure movable into a fuselage compartment of an aircraft, said fuselage compartment including a main deck floor and sidewalls with windows, for providing a mezzanine within such fuselage compartment, said elevated deck structure comprising:
   - an elongated support wall having a bottom portion securable to the main deck floor of the fuselage compartment with said support wall substantially centered laterally within the fuselage compartment, and a top;
   - a mezzanine floor frame connected to the upper portion of said support wall and projecting laterally outwardly from said support wall in a centilevered fashion, on both sides thereof, for providing a longitudinally extending mezzanine floor area; and
   - said mezzanine floor frame being narrower than the inner dimension of the fuselage compartment at the level of said mezzanine floor area, so as to leave a spacing between



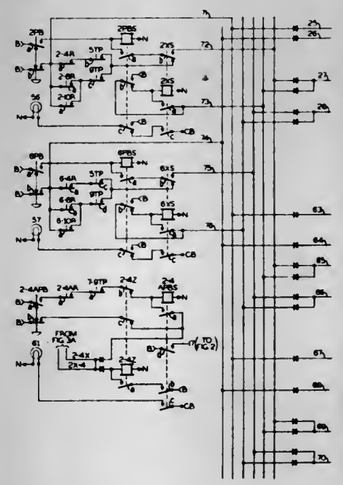
each sidewall and the mezzanine floor frame, said spacing being utilized to provide head room for main deck aisle space on each side of the mezzanine floor frame, said head room extending above the level of the mezzanine floor area.

4,066,228

ROUTE CONTROL SYSTEM FOR RAILROAD INTERLOCKINGS

J. Calvin Elder, Penn Hills, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Oct. 7, 1976, Ser. No. 730,342
Int. Cl.² B61L *27/00*
U.S. Cl. 246—5 11 Claims



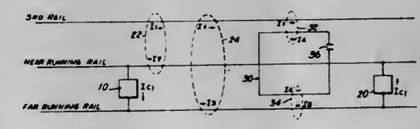
1. Remote control apparatus for routing trains through a railroad interlocking which includes a plurality of locations marking the boundary limits of the interlocking track layout at which trains enter or exit the interlocking, track circuits for detecting train occupancy of predetermined track sections within the boundary limits, and control and indication means at the track wayside for track switches which establish individual routes, comprising in combination,
   - a. a selection means associated with each limit location and operable in pairs for sequentially selecting the entrance and exit locations of a desired track route,
   - b. a registry means coupled to each selection means and responsive to operation of that selection means for registering the selection of that location as an entrance or exit for a desired route,
   - c. primary means responsive to the selection of an exit location subsequent to an entrance location for locking out conflicting routes and all other possible exit locations and connected for holding a registered exit location stored,
   - d. an exit storage means for each location coupled for checking the non-occupancy of the track sections between the selected entrance location and the corresponding location when it is a possible exit and controlled by said primary means for retaining the exit storage only when that location is selected,
   - e. a separate selection means for each alternate route between any two locations in said interlocking layout,
   - f. a separate registry means controlled by each alternate route selection means for registering the selection of the corresponding alternate route in lieu of the basic route,
   - g. an auxiliary storage means associated with each alternate route selection means and controlled by said primary means and the registry means associated with each limit location of the corresponding basic route for storing the final establishment of any route, alternate or basic, between the associated limit locations,
     - 1. each auxiliary storage means coupled for inhibiting the registration of the corresponding alternate route selection if the associated basic route is already established, and
   - h. secondary means for each location controlled by said primary means and by said track circuits in accordance with track occupancy conditions and coupled to the corresponding registry means for holding the entrance selection registered while the route is established,
     - 1. each secondary means responsive to occupancy of the last track section in an established route for cancelling the entrance registry storage to release the established route,
   - i. each registry means further coupled for cascading the cancellation of a route entrance storage to release the associated exit selection registry and the corresponding exit storage,
   - j. the pair of registry means for each limit location of each possible basic track route through said interlocking, any associated separate registry means for an alternate route, and the associated exit storage means coupled for jointly actuating said track switch control means to complete the corresponding track route when entrance and exit selections for that route or an associated alternate route are registered and stored.

4,066,229

DEVICE FOR PREVENTING TRACTION POWER HARMONIC INTERFERENCE ON HIGH FREQUENCY TRACK CIRCUITS

Garry E. Clark, Alberta, Canada, assignor to General Signal Corporation, Rochester, N.Y.

Filed Feb. 18, 1977, Ser. No. 770,174
Int. Cl.² B61L *21/00*
U.S. Cl. 246—34 CT 4 Claims



1. In a system for use along a railroad trackway, involving an AC track circuit including a plurality of tuned circuits connected to near and far running rails for indicating the presence of a vehicle, the improvement which comprises:
   - an arrangement including a cancellation coil for canceling the circulating current which flows in the loop defined by

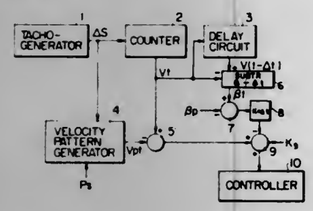
said near and far running rails and is normally accepted by said tuned circuits, said circulating current being due to the differential induction of noise currents from said third rail to said far running rail and to said near running rail, respectively, said cancellation coil including means for inducing corresponding noise current from said third rail into said cancellation coil and from said cancellation coil into said far running rail, and means for avoiding the inducing of the noise current from said coil into said near running rail, thereby to effectively cancel said circulating current.

4,066,230

AUTOMATIC BRAKING OR ACCELERATION CONTROL SYSTEM FOR A VEHICLE

Makoto Nohmi, Kokubunji; Nobuyuki Fujikura, Hamura; Chiaki Ueda, Mito, and Eiichi Toyota, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 31, 1976, Ser. No. 672,142
Claims priority, application Japan, Apr. 2, 1975, 50-39078
Int. Cl.² B01L *3/08*
U.S. Cl. 246—182 B **10 Claims**



1. An automatic braking and acceleration control system for a vehicle comprising

first means responsive to a first target velocity pattern and the measured vehicle velocity for generating a first vehicle control signal;

second means responsive to a second target velocity pattern and the measured vehicle velocity for generating a second vehicle control signal;

third means for controlling the velocity of said vehicle; and

fourth means responsive to the relative magnitudes of said first and second vehicle control signals for applying one of said first and second vehicle control signals to said third means in control thereof.

4,066,231

LOCKING STAND FOR SMALL, PORTABLE DEVICES

Randal E. Bahner, 220 "D". W. Carriage Drive, Santa Ana, Calif. 92707, and Jay B. Haws, 431 Madrona Ave., Brea, Calif. 92621

Continuation-in-part of Ser. No. 607,100, Aug. 25, 1975, Pat. No. 3,984,075. This application Aug. 16, 1976, Ser. No. 714,733
The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.
Int. Cl.² F16M *13/00*
U.S. Cl. 248—13 **10 Claims**

1. A stand for locking small portable equipment requiring visual observation from plural viewing angles on a support surface, comprising:

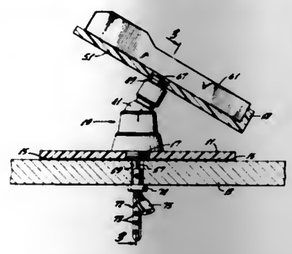
a ball and socket swivel joint having a pair of elements attached to swivel relative one another;

means for supporting one element of said swivel joint on said support surface;

means for supporting said small portable equipment on the other element of said swivel joint to permit said small portable equipment to swivel relative said support surface;

said swivel joint, said means for supporting one element of said swivel joint and said means for supporting said small portable equipment including apertures, said apertures aligned to provide a conduit through said stand; and

an elongate, flexible member attached at one end to said



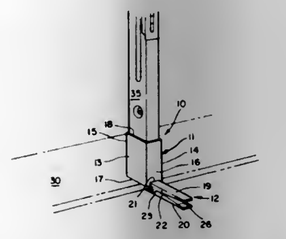
small, portable equipment, passing through said conduit provided by said aligned apertures, and attached at the other end to said support surface to prevent removal of said small, portable equipment from said support surface.

4,066,232

CLAMP-ON LEVEL HOLDER

Edward J. Hermeyer, P.O. Box 82, Gardnerville, Nev. 89410

Filed Sept. 23, 1976, Ser. No. 725,682
Int. Cl.² G01C *9/00*
U.S. Cl. 248—226.2 **4 Claims**



1. A clamp on level holder for maintaining a level in a safe and out of the way location when not in use or in a safe and convenient location when in use, the device comprising, in combination:

a rectangular shell consisting of opposed side walls, opposed end walls, and a bottom wall integrally conjoined with the bottom edges of said side walls and said end walls to form an interior compartment therebetween; and

a spring clamp consisting of a top member and a bottom member, said top member being securely affixed to a said end wall so as to be centrally located thereon adjacent to said bottom wall, said top member further being provided with opposed tapered flanges perpendicularly conjoining the long edges of said top member and extending downwardly therefrom and from said bottom wall, with said flanges having a semi-circular lip disposed a short distance from said end wall of said shell and provided with round through holes centrally located within said lips so as to be in axial alignment with each other, said bottom member being generally of the same configuration as said top member but longer in overall length with an extension being angularly disposed between said bottom wall of said shell, said bottom member having opposed tapered flanges perpendicularly conjoining the long edges of said bottom member so as to extend upwardly therefrom and toward said bottom wall of said shell and extending in length along said bottom member rearwardly of said end wall, said flanges being further provided with a semi-circular lip and with round through holes so as to axially line up

internally between said flanges and said lips on said top member; and

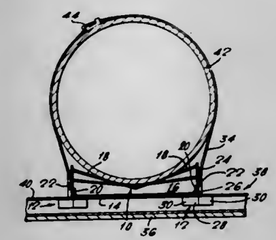
a coil spring affixed between said lips on said flanges and between said top member and said bottom member, with said spring affixed therein by means of a pin extending between said round holes in said lips, the ends of said spring being positioned against the inside surfaces of said top member and said bottom member and internally of said flanges so as to bias said top member upwardly from said bottom member wherein said bottom wall of said shell and said extension cooperate to form a clamp.

4,066,233

SECURING DEVICE

Robert Arthur Henderson Heard, Church Farm, 63 Church Lane, Backwell, Bristol, England

Filed June 14, 1976, Ser. No. 695,412
Int. Cl.² A47B *96/06*
U.S. Cl. 248—231 **4 Claims**



1. A device for use in securing an object to a post or the like body, said device comprising a saddle having a pair of opposite side members of similar form and spaced apart, the side members being shaped along one edge to seat against a post, and a pair of attachment members loosely carried at opposite ends of the saddle, each attachment member having a body portion located at the respective end of the saddle and a stem portion projecting beyond the saddle in the direction remote from said shaped edges of the side members thereof and provided with abutment means to engage an object to be secured, each body portion being constructed and arranged to receive at least one strap such that a strap may be passed around a post to secure the saddle to such a post and tightened to cause a gripping action on an object located between the abutment means of the attachment members and the saddle.

4,066,234

UNIVERSAL SHOCK AND VIBRATION MOUNTS

James M. Nycum, Holland, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

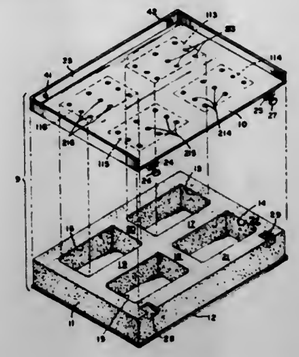
Filed Jan. 23, 1974, Ser. No. 435,786
Int. Cl.² F16F *15/04*
U.S. Cl. 248—358 R **9 Claims**

1. A universal shock and vibration mount comprising:

a lower plate;

an upper plate having a plurality of openings therethrough;

a resilient member disposed between the upper plate and the lower plate and having a cavity therein communicating with said plurality of openings; and



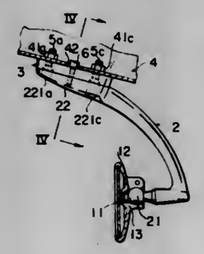
cover means superimposed upon a predetermined number of said plurality of openings for occluding the predetermined number of openings.

4,066,235

BREAKAWAY MIRROR MOUNTING

Setsuo Hashiguchi, Yamato, Japan, assignor to Ichikoh Industries Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 574,086, May 2, 1975, abandoned, which is a continuation of Ser. No. 407,489, Oct. 18, 1973, abandoned. This application Dec. 1, 1975, Ser. No. 636,744
Int. Cl.² B60R *1/02*
U.S. Cl. 248—482 **1 Claim**



1. A breakaway mounting for a mirror attached to one end of a supporting arm, said mounting comprising:

a base member;

continuous grooves formed in a matching relationship on opposite surfaces of said base member, said grooves defining a thinned region therebetween and having varying depths whereby the bottoms of the respective grooves lie in substantially parallel planes which are inclined with respect to the planes of said base member surfaces;

a plurality of spaced apertures in said thinned region extending between said grooves;

means for interconnecting a portion of the base member enclosed by said grooves to the end of said supporting arm opposite that to which the mirror is attached, said opposite end comprising an enlarged arm portion having a contour substantially corresponding to that of the base member; and

means for joining the remaining portion of the base member to an external support whereby when said mounting is exposed to a force in excess of a predetermined value, said base member fractures at its thinned region permitting the mirror, the supporting arm and the portion of the base member enclosed by the grooves to break away from the remaining portion of the base member, said means for joining the remaining portion of the base member to the

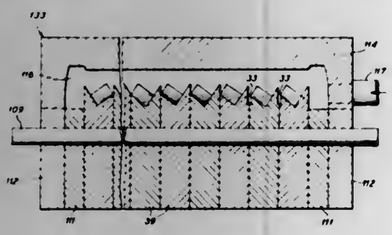
external support comprising: a plurality of coaxial apertures through said enlarged arm portion, the remaining portion of the base member and the external support; and bolting means located within said apertures, said apertures in the enlarged arm portion having dimensions greater than those of the bolting means therein.

4,066,236

CUBE CORNER TYPE RETROREFLECTOR BODIES AND MOLDS MADE THEREWITH

Henry Lindner, Elgin, Ill., assignor to Beatrice Foods Co., Elgin, Ill.

Filed June 25, 1976, Ser. No. 699,959
Int. Cl.² B41B *11/54*
U.S. Cl. 249—160 **19 Claims**



1. An element for incorporation into a mold adapted for molding cube corner type retroreflectors comprising -

A. an elongated slab-shaped body having spaced, generally parallel respective side walls with connecting edge walls and end walls;

B. one edge wall having defined therein a plurality of cube corner retroreflective units arranged in a row which extends lengthwise along said one edge wall,

C. each cube corner retroreflective unit being defined by three flat faces which are arranged circumferentially about an optical axis extending therethrough, all such faces being inclined at a similar angle relative to said optical axis, and all such faces meeting an apex point along said optical axis, the interrelationship between said faces and the associated said optical axis for each unit being such that a ray of incident light striking the predetermined surface of a body molded over said one edge wall and striking one of such faces in each unit molded in such molded body but within a predetermined range of angles relative to said optical axis as formed in said molded body is deflected successively against the other two said faces in such molded body and then is substantially retroreflected away from such cube corner retroreflective unit in such molded body,

D. each respective such optical axis of all said retroreflective units being disposed substantially parallel to the respective other such optical axes of such cube corner reflective unit plurality, and

E. each respective such apex point of each said cube corner retroreflective unit being substantially coplanar with the respective other such apex points of said cube corner reflective units comprising said plurality.

4,066,237

ADJUSTABLE FORM STAKE ASSEMBLY

Jack Bentz, 1904 N. 26th, Boise, Idaho 83702

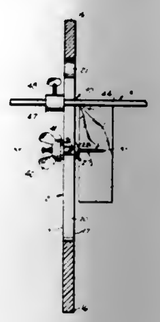
Filed Sept. 16, 1976, Ser. No. 723,942
Int. Cl.² E01C *19/50*
U.S. Cl. 249—213 **6 Claims**

1. An adjustable form support stake assembly, comprising:

an elongated stake having opposed sides and a point at a lower end and a striking surface at an upper end;

an elongated slot formed through the stake and extending longitudinally therein from an upper slot end adjacent the striking surface to a lower slot end upwardly spaced from the stake point;

a carriage bolt having a headed end of larger dimension than the width of the slot for abutment with one side of the stake and a threaded shank slidably received by and projecting through the slot to a free end outwardly adjacent to the stake;



open bore means extending through the carriage bolt from the free shank end to the headed end for receiving the shank of a nail; and

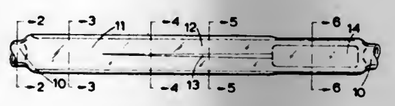
a nut threadably mounted to the free end of the threaded shank for abutment with the remaining side of the stake to selectively clamp the carriage bolt securely to the stake.

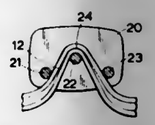
4,066,238

MEANS FOR CONTROLLING FLUID FLOW

Ellis Whiteside Clarke, 47 Deramore Drive, Belfast, BT9 5JS, Northern Ireland

Filed Jan. 19, 1976, Ser. No. 650,360
Claims priority, application United Kingdom, Jan. 17, 1975, 2069/75
Int. Cl.² F16K *7/04*
U.S. Cl. 251—6 **13 Claims**





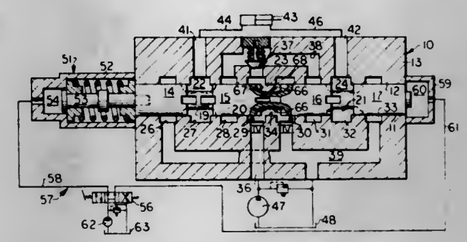
1. Means for controlling fluid flow comprising a body defining a passageway having opposed flexible walls which for at least a portion of the axial length of the body are capable of being held in mutual contact throughout their cross-section except for a limited region, this region being a cross-sectional flow area which varies along the general direction of flow through the passageway, and flexing means operative to retain the body in a predetermined flexed state such that the walls are held in contact, over a localised area of limited axial length, due at least in part to the internal stresses set up in the body arising from the flexure of the body rather than to external clamping forces applied to the opposite sides of the walls immediately adjacent to said area, said flexing means being arranged that said body can be moved lengthwise relative to the flexing means so as to alter the position of said localised area while the body is maintained in said flexed state.

4,066,239

METERING SLOT CONFIGURATION FOR A VALVE SPOOL

Lowell R. Hall, Elwood, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 664,443, March 8, 1976, abandoned. This application Mar. 16, 1977, Ser. No. 778,278
Int. Cl.² F15B *13/042*; F16K *47/04*
U.S. Cl. 251—31 **3 Claims**



1. A fluid control valve comprising:

a body having a pump inlet port and a drain outlet port formed therein and being of a construction sufficient for connecting the pump inlet port to a relatively high pressure pump and the drain outlet port to a substantially atmospheric pressure reservoir; and

a valve spool having a longitudinal axis, first and second lands, a reduced diameter portion positioned between the first and second lands and a metering slot leading from a peripheral surface of the first land movable a peripheral surface of the second land, said metering slot including a substantially cylindrical pocket recessed into the second land and generated about an axis disposed at an acute angle relative to the longitudinal axis, and a groove formed in the first land and the reduced diameter portion connecting the peripheral surface of the first land with the cylindrical pocket, said groove having an arcuate surface portion leading from the peripheral surface of the first land and an alongated bottom surface portion positioned substantially parallel to the longitudinal axis and tangent to the arcuate surface portion, said spool being movably along its longitudinal axis between a first position at which fluid flow from the pump inlet port to the drain outlet port is metered outwardly relative to the spool through the cylindrical pocket and a second position at which fluid flow from the pump inlet port to the drain outlet port is metered inwardly through the groove, said metering slot being of a construction sufficient for directing the fluid metered inwardly through the groove into the cylindrical pocket to generate a force acting on the spool tending to close the metering slot.

4,066,240

SELF COMPENSATING SEAT FOR A SPHERICAL PLUG VALVE

Eulas R. Atkinson, Conroe, and Willard E. Kemp, Houston, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

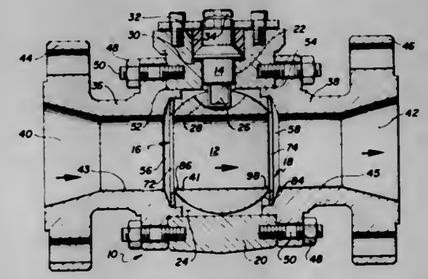
Filed June 1, 1976, Ser. No. 691,737
Int. Cl.² F16K *25/00*
U.S. Cl. 251—175 **10 Claims**

1. A ball valve, comprising:

a. a valve body having inlet and outlet flow passageways and a valve chamber therebetween, a ball member having a passageway therethrough mounted in said valve chamber for rotation between open and closed positions of said ball member passageway relative to said inlet and outlet flow passageways;

b. said valve chamber being located at the junctures of said flow passageways and having opposed end walls extending generally radially outwardly from said passageways;

c. a one piece deformable annular metallic seal ring of a uniform generally rectangular cross-section positioned in said valve chamber around each of said inlet and outlet passageways to form upstream and downstream seal rings, said generally rectangular seal rings each having a relatively sharp inner edge portion in a substantially line sealing contact area with said ball member and in a spaced relation to the adjacent chamber end wall in a preloaded position, said seal rings each having an inner relatively large ball contact surface immediately adjacent the line contact area and out of contact with said ball member in preloaded position, each seal ring has an outer peripheral edge portion in sliding contact with the associated end wall such that said outer peripheral edge portion will slide on said associated end wall upon displacement of said ball



member from one position to another as said ball member moves in general longitudinal alignment with said inlet and outlet flow passageways;

d. the downstream seal ring upon positioning of said ball member in said closed position and displacement of said ball member downstream by fluid pressure to a pressure loaded position being pivoted generally about said outer peripheral edge portion with said outer peripheral edge portion sliding radially inward relative to the associated flow passageway and with the inner edge portion thereof being moved into contact with the adjacent chamber end wall and with said inner ball contact surface being moved into contact with said ball member to provide a relatively large contact area between the surface of said ball member and said downstream seal ring, said valve chamber end wall being spaced from said ball valve member a predetermined distance in said preloaded position such that displacement of said ball valve member from said preloaded position to said pressure loaded position will not deform said annular seal ring beyond a point which will prevent it from returning to its original free shape.

4,066,241

SEAL MEANS FOR VALVE ASSEMBLY

Norman Weldon Read, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 548,065, Feb. 7, 1975, Pat. No. 4,022,427, which is a continuation-in-part of Ser. No. 494,424, Aug. 5, 1974, abandoned. This application Oct. 24, 1975, Ser. No. 625,786
Int. Cl.² F16K *11/02*
U.S. Cl. 251—361 **7 Claims**

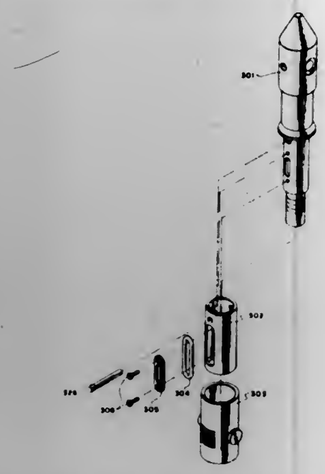
1. A seal assembly for providing a sealing valve action between two concentric, ported, tubular members, said seal assembly comprising:

a cylindrical seal carrier sleeve arranged for a snug slidable fit concentrically between two tubular members;

seal opening means passing through the wall of said carrier

sleeve and arranged to be placed in communication with ports in two tubular members;

elastomeric loop seal means adapted for snug fitting engagement inside said seal opening means and for sealingly engaging two tubular members; and,



retention island means comprising arcuate plate means having similar surface curvature to that of said carrier sleeve and adapted for equi-spaced placement in said seal opening means in retaining abutment with said loop seal means.

4,066,242

GARAGE DOOR SPRING STRETCHING DEVICE

Louis Allevato, 2928 Sisal Place, Hacienda Heights, Calif. 91745

Filed Mar. 18, 1977, Ser. No. 779,275
Int. Cl.² B25B *27/00*; E05F *1/12*
U.S. Cl. 254—10.5 11 Claims



1. A garage door spring stretching device for assisting in the installation of a garage door spring of the type useful on garage door support assemblies having a bracket affixed to the side frame of the garage opening, said device comprising:

hook means having a bracket engaging member, said bracket engaging member having means adapted to fit a chain means;

chain means affixed to said bracket engaging member;

lever means having an attachment end and a handle end, said lever means being connected to said chain means at said attachment end;

slot means located in said lever means near the attachment end thereof; and

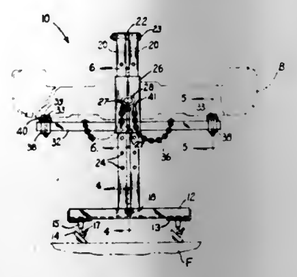
spring engaging means slidably held in said slot means.

4,066,243

VEHICLE BODY PART HOLDING AND POSITIONING DEVICE

Edmond L. Johnson, 21944 Elroy, Warren, Mich. 48089

Filed Apr. 19, 1977, Ser. No. 788,748
Int. Cl.² B66F *3/00*
U.S. Cl. 254—133 R 4 Claims



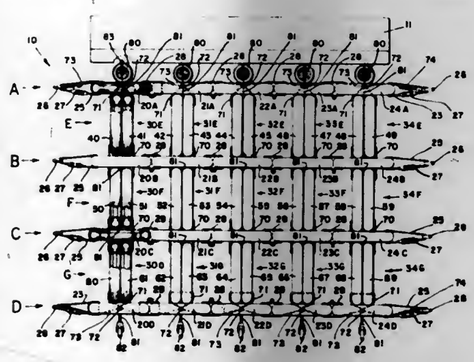
1. A vehicle body part holding and positioning device comprising a floor supported rollable frame, a pair of side by side pipes supported in an upright position on said frame, a second pair of pipes lengthwise joined together, said second pair of pipes encircling said first-mentioned pair of pipes and being vertically slideable thereon, a pair of widthwise spaced apart arms for holding and cradling thereon a vehicle body part, means holding said arms fast to said second pair of pipes for movement therewith, said holding means disposing said arms over said frame so that the center of weight of said vehicle body part coincides with the center of length of said frame, means on said frame for engaging the foot end of a friction jack, means on said second pipes for engaging the moveable head of said jack, whereby the jack can be operated to lift said vehicle body part above said frame, and means for holding said second pipes elevated on said first pipes without the use of said friction jack, whereby the device can be rolled to hold and position said vehicle body in respect to a vehicle body during assembly or disassembly thereof.

4,066,244

VEHICULAR ENERGY ABSORBER

Leland E. Yoho, Uniontown, Ohio, assignor to Glenn Fisher, Akron; Warren G. Yoho, Jacobsburg and Leland E. Yoho, Uniontown, all of, Ohio, part interest to each

Filed Sept. 20, 1976, Ser. No. 724,980
Int. Cl.² E04F *13/00*
U.S. Cl. 256—1 12 Claims



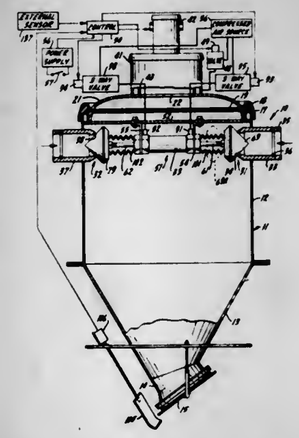
1. Apparatus for absorbing the impact of a collision of a moving vehicle with a hazard comprising, at least two rows of upright adjacent toroidal members extending in planes generally transverse to the expected direction of impact, the first of said rows being generally adjacent the hazard and the last of said rows being positioned to receive the contact of the vehicle, means to connect each said toroidal member in a said row to its adjacent toroidal member in said row, a line of toroidal members between each said row of toroidal members, the toroidal members of said line extending in a direction generally longitudinally of the expected direction of impact and in planes generally parallel thereto, and additional means to connect each said line of toroidal members to it adjacent rows of toroidal members to form an integral network of permanently connected toroidal members to absorb the impact of a collision with a moving vehicle and with the toroidal members in each line engaging the toroidal members in each row along a chordal plane thru the torus.

4,066,245

CONTROL FOR HOPPER LOADER FOR GRANULAR MATERIALS

Gilbert F. Shultz, Novi, Mich., assignor to Whitlock, Inc., Farmington, Mich.

Filed Apr. 30, 1976, Ser. No. 681,851
Int. Cl.² B01F *5/00*
U.S. Cl. 366—139 11 Claims



1. A control circuit for a vacuum hopper loader of the kind comprising a hopper having an air port at the top of the hopper, a filter extending across the air port, a plurality of material inlet ports located below the filter, individual electrically actuated material fill control valves for opening and closing the material inlet ports, and air supply means for supplying air under pressure to the air port, and evacuation means connected to the air port, comprising:

blowback timer means for developing a blowback enabling signal for a predetermined time interval T2;

blowback signal generator means for developing a blowback actuating signal comprising a series of pulses, including means for adjusting the period of such pulses;

blowback gate means, connected to the blowback timer means and blowback signal generator means and to the air supply means, for actuating the air supply means to apply a series of pulses of air through the filter into the hopper during the time interval T2;

fill timer means for developing a fill enabling signal for a predetermined time interval T3;

fill signal generator means for developing a repeating sequence of fill actuating signal pulses, one pulse for each fill control valve, including means for adjusting the relative durations of the fill actuating signal pulses;

fill vacuum coupling means for actuating the evacuation means to evacuate the hopper continuously during time interval T3;

fill logic means connected to the fill timer means, the fill signal generator means, and the fill control valves to open the control valves in repeating sequence during time interval T3;

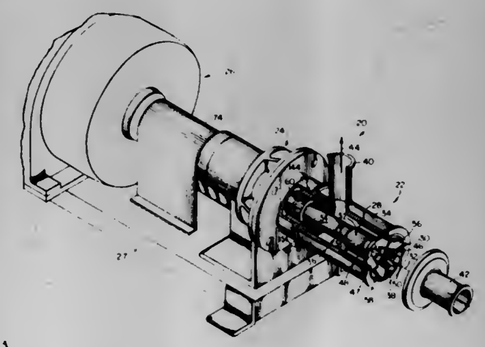
and control sequence coupling means interconnecting an input of one of the timer means to an output of the other timer means to set the one timer means in response to timing out of the other.

4,066,246

SANITARY PIPELINE MIXER

Harald Olaf Korstvedt, Brookline, Mass., assignor to J. W. Greer, Inc., Hudson, N.H.

Filed Dec. 18, 1975, Ser. No. 641,973
Int. Cl.² B01F *7/02*
U.S. Cl. 366—293 4 Claims



1. A sanitary pipeline mixer comprising:

a. a mixing head including a turbine housing having an inlet port, an internal mixing chamber and an outlet port, rotor means and stator means disposed within said turbine housing for directing a fluid through said inlet port, said mixing chamber and through said outlet port; and

b. a seal assembly including a seal housing, a double flushed mechanical seal disposed within said seal housing;

c. said turbine housing provided with a flange about said mixing chamber, said seal housing provided with a flange, said turbine housing flange configured to matingly engage said seal housing flange and to form a substnatially frusto-conical male head therewith.

d. clamp means having a frusto-conical female socket configured to engage said frusto-conical male head for clamping together said turbine housing and said seal housing, said double flushed mechanical seal constituting a positively biased seal for sealing said mixing chamber when said turbine housing and said seal housing are connected;

e. said stator means including first and second stators and said rotor means including first and second rotors, said first rotor and said first stator constituting a primary stage, said second rotor and said second stator constituting a secondary stage, said first rotor means and said second rotor means are rotatable about a common axis, said first stator having a cylindrical body formed with a conical socket and a plurality of arcuately disposed passages parallel to said axis of rotation, said first rotor having a plurality of blades, each of which constitutes a forwardly extending blade which is offset from the rotational axis of said first rotor and is disposed in a plane that intersects the rotational axis of said first rotor, said second stator having a cylindrical body formed with a conical socket and a plurality of arcuately disposed passages in concentric rows, said second stator passages parallel to said axis of rotation, the diameter of any one second stator passage in

any one row having like diameters, said second stator passages having a decreasing diameter from an outer forward end of said conical socket to an inner rearward end of said conical socket, said second rotor having a plurality of blades, each of which constitutes a forwardly extending blade which is offset from the rotational axis of said second rotor and is disposed in a plane that intersects the rotational axis of said second rotor.

4,066,247

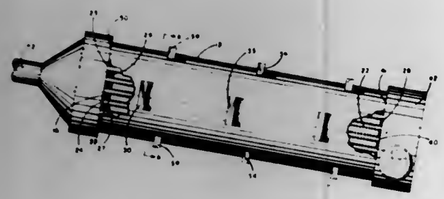
MIXING APPARATUS

Robert L. Mendenhall, 1770 Industrial Road, Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 487,927, July 12, 1974, abandoned, and Ser. No. 487,928, July 12, 1974, abandoned, and Ser. No. 488,518, July 15, 1974, Pat. No. 4,000,000. This application Aug. 1, 1975, Ser. No. 601,176

Int. Cl.² B28C *1/22*; F28F *7/00*; F28D *11/06, 7/00*

U.S. Cl. 366—24 **5 Claims**



1. In a heating and mixing apparatus comprising an elongated drum having a plurality of heating tubes extending along the interior length thereof and end walls at opposite ends of said drum and between which walls said tubes extend said drum being tilted with respect to horizontal with means for introducing composition adjacent one drum end and removing it adjacent the opposite end, and means for rotating said drum whereby said composition is drawn from one end to the other by gravity as said drum is rotated, the improvement comprising at least one support device disposed in said drum intermediate said end walls having at least one opening therein to allow composition to pass therethrough, each support device having a portion extending through an opening in said drum and exposed exteriorly of said drum, a plurality of orifices through which said tubes extend, and means for mechanically vibrating the exteriorly exposed support device portion.

4,066,248

CHARGING DEVICE

Bernhard Hoffmeister, and Wilhelm Schwarz, both of Wilhelmshaven, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

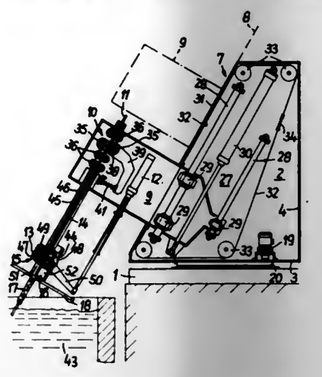
Filed Dec. 14, 1976, Ser. No. 750,528

Claims priority, application Germany, Feb. 27, 1976, 2607947

Int. Cl.² C22B *9/10*

U.S. Cl. 266—216 **9 Claims**

1. A device for supplying charge material in the form of wire to a metal melt which comprises; a frame, a feed pipe in the frame extending into the melt from above, feed means carried by the frame and operable for withdrawing the charge material from a supply thereof and for feeding the material into said feed tube at the upper end thereof, the supply of charge material including means in said frame for rotatably supporting a reel of the material, a rotary drive member engaging the surface of the material wound on said reel, and means for driving said drive member in rotation.



4,066,249

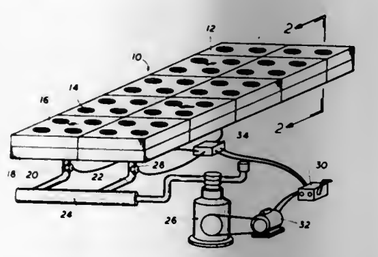
MODULAR VACUUM WORK AREA

John G. Huber, Sayville, and Ottavio Gianuzzi, Baldwin, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 11, 1977, Ser. No. 795,918

Int. Cl.² B25B *11/00*

U.S. Cl. 269—21 **3 Claims**



1. A work table to use a vacuum to hold an object to a surface for subsequent working, said table comprising:

a top plate forming the surface on which the object may rest, said top plate having a limited number of openings of a predetermined size therethrough;

a honeycomb having cores underlying said, top plate said honeycomb having the majority of its cores closed on one end by said top plate and a limited number of the cores under the openings therethrough;

a support plate for said honeycomb which closes the other end of said cores save for the limited number equal to the area of and underlying said openings of said top plate; and

an orifice plate under said support plate with a port connected to a vacuum source to provide a holding pressure in the limited number of honeycomb cores and at the top plate openings, said port having a restricted orifice in registry with the cores exposed by said support plate whereby the area of vacuum is enlarged from that of the restricted orifice to that of said limited number of cores and thus the top plate openings while air flow is controlled by the restricted orifice at the port to the vacuum source.

4,066,250

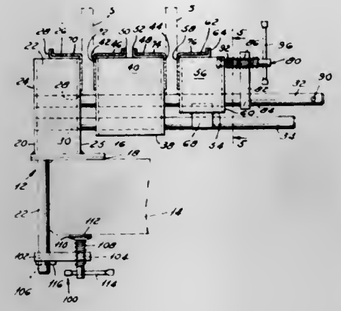
SKI CLAMPING APPARATUS

James B. Campbell, 5215 Arden, Warren, Mich. 48092

Filed Dec. 8, 1976, Ser. No. 748,493

Int. Cl.² B25B *1/20*

U.S. Cl. 269—43 **14 Claims**



1. A clamp adapted to be mounted on a support comprising a support flange, a stationary clamping member secured to said support flange, a first elongated mounting element secured to and extending to one direction from said stationary clamping member, a first movable clamping member provided with an opening through which said elongated mounting element extends, each of said stationary and first clamping members having a first abutment, the first abutment on said stationary clamping member cooperating with the first abutment on said first clamping member to form a first clamping section for supporting a workpiece, said first clamping member being movable on said first mounting element towards or away from said stationary clamping member to clamp the workpiece between said first abutments or to release the workpiece from between the first abutments, a second movable clamping member provided with an opening through which said first mounting element extends, said first clamping member being located between said stationary clamping member and said second movable clamping member, each of said first and second clamping members having a second abutment, the second abutment on said first clamping member cooperating with the second abutment on said second clamping member to form a second clamping section for supporting another workpiece, said second clamping member being movable on said mounting element towards or away from said first clamping member to clamp the workpiece between said second abutments or to release the workpiece from between said second abutments, and releasable fastening means carried by said mounting element engageable with said second clamping member for maintaining the workpieces between the cooperating abutments of said first and second clamping sections, said releasable fastening means including a locking bracket having a pair of openings, with one bracket opening being threaded and the other bracket opening being non-threaded, with the non-threaded opening of the locking bracket being sleeved over said first mounting element whereby said bracket is freely movable along said first mounting element during adjustment of said releasable fastening means, said releasable fastening means including aa threaded member which is threadedly received in said threaded opening in said bracket, said second clamping member including an opening which receives and carries one end portion of said threaded member and the other end portion thereof being provided with a handle for rotating said threaded member.

4,066,251

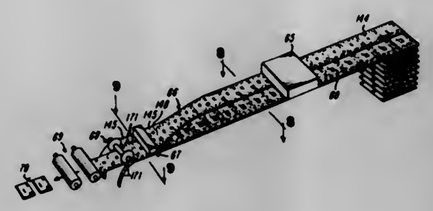
CONTINUOUS BUSINESS FORM OR THE LIKE ADAPTED FOR SUBSEQUENT PROCESSING INTO COMBINATION MAILING ENVELOPES AND RETURN ENVELOPES HAVING A COMMON BACK PLY PANEL

Edward L. Johnsen, 12 Fox Meadow Lane, Wayland, Mass. 01778

Continuation of Ser. No. 593,987, July 8, 1975, abandoned, which is a division of Ser. No. 433,462, Jan. 15, 1974, abandoned. This application Jan. 25, 1977, Ser. No. 762,380

Int. Cl.² B41L *43/12*

U.S. Cl. 270—37 **9 Claims**



1. A method of producing a series of interconnected blanks each suited for subsequent processing into a combination mailing envelope and return envelope having a common back ply panel, comprising the steps of:

a. continuously advancing a first endless web of material toward an accumulating station;

b. transversely subdividing said first web into a series of elongate interconnected subdivisions each having the longitudinal direction of said subdivisions corresponding to the transverse direction of said web;

c. forming foldlines on said web to longitudinally subdivide each of said interconnected transverse subdivisions into at least three panels, said panels extending transversely of said web to span the width thereof, with one panel defining a front ply panel of the mailing envelope, another panel defining a back ply panel common to both the mailing and return envelope, said front and back panels being non-abutting, and a third panel of which forms a discardable panel and connects said front and back panels together;

d. forming a further foldline on said web to be located on said discardable panel between the edges thereof, said foldline extending longitudinally of said web continuously for essentially the entire length of said web;

e. selectively applying adhesive to adjacent at least three outer marginal edges of an upper surface of said front and back ply panels;

f. continuously advancing a second endless web of material of a width approximating the width of said back ply panel toward an accumulating station;

g. transversely subdividing said second web into a series of interconnected subdivisions, each of which defines a front ply panel of the return envelope;

h. collating said advancing second web with said advancing first web for disposing three marginal edges of each front ply panel of the return envelope in registered overlying relationship with said three marginal edges of a corresponding back ply panel, generating the series of interconnected blanks;

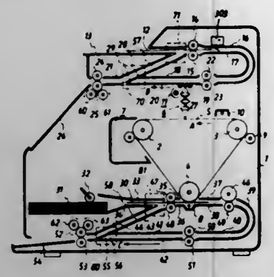
i. folding said front panel over into juxtaposed relationship with said discardable panel;

j. accumulating said series of interconnected blanks for subsequent processing;

k. moving said front ply panel from juxtaposed relationship with said discardable panel into over-lying relationship with said second web; and

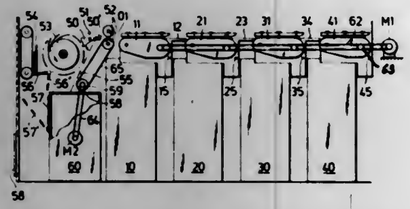
l. removing said discardable panel from said web.

4,066,252
COPYING APPARATUS
Richard Wick, Munich, Germany, assignor to AGFA-Gevaert, AG, Leverkusen, Germany
Filed May 11, 1976, Ser. No. 685,161
Claims priority, application Germany, May 16, 1975, 2521932
Int. Cl.² B65H 5/22
U.S. Cl. 271—3 **6 Claims**



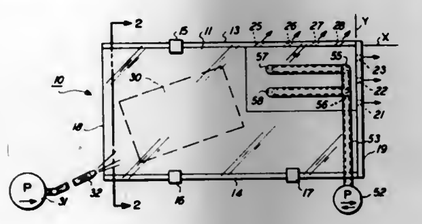
1. A copier, particularly for selectively copying one or both sides of a sheet-shaped original onto one or both sides of a copy sheet, comprising first means defining a first endless path for travel of said original and having a first inlet and a first outlet through which the original issues; second means defining a second endless path for travel of said copy sheet and having a second inlet and a second outlet through which the copy sheet issues; third means located at a copy station intermediate the respective inlets and outlets and operative for reproducing an image from either of said sides of said original onto either of said sides of said copy sheet; and fourth means for transporting said original and said copy sheet, respectively, in their associated paths, and for selectively turning the respective sheets side-for-side for renewed travel in their paths past said copy station, said fourth means including transporting elements mounted outwardly adjacent the respective outlets of said paths, and means for selectively reversing the transporting direction of said transporting elements when the respective sheets are to be reversed so as to return such sheets into the respective endless path.

4,066,253
APPARATUS FOR DISPENSING BANKNOTES, TICKETS OR THE LIKE
Leif Jorgen I. Lundbald, Huddinge, and Jan Olof Ek, Alvsjo, both of Sweden, assignors to Inter Innovation AB, Stockholm, Sweden
Filed Nov. 30, 1976, Ser. No. 746,029
Claims priority, application Sweden, Dec. 2, 1975, 7513557
Int. Cl.² B65H 5/22
U.S. Cl. 271—4 **8 Claims**



1. An apparatus for discharging banknotes or the like, said apparatus having a dispensing aperture accessible to customers from the apparatus exterior, a number of banknote magazines within said apparatus, feeding means for feeding banknotes from said magazines to the dispensing aperture, detector and counter means for detecting banknotes possibly fed out two-fold and for counting dispensed banknotes, the improvement comprising: said feeding means comprising separate feeders operatively associated with respective magazines, means for incorporating said separate feeders in a series banknote feeding path for banknotes from said magazine in common and along said series path toward a junction common to all said magazines and upstream of said dispensing aperture.

4,066,254
THREE-WAY PNEUMATIC REGISTRATION APPARATUS
Klaus K. Stange, Pittsford; Richard E. Smith, Webster; Thomas J. Hamlin, Macedon, and James R. Cassano, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 28, 1975, Ser. No. 636,336
Int. Cl.² B65H 9/00
U.S. Cl. 271—236 **13 Claims**



1. Apparatus for registering a sheet with respect to perpendicularly related axes, the sheet having a length and width within predetermined ranges, comprising:

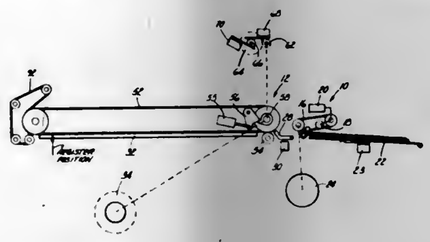
a. a sleeve for internally accommodating said sheet, at least one point on an inner narrow wall of the sleeve being coincident with one of the axes;

b. a stop located at one end of the sleeve, the stop having at least one point coincident with the other of the axes;

c. means for providing in the sleeve a fluid stream having velocity components normal to each of the axes, said means including at least one port in said stop and at least one port in said narrow wall, whereby when a sheet is placed in the sleeve, the stream moves the sheet into abutment with each of said points; and

d. fluidic means for driving a sheet in contact with said points into abutment with a wide wall of the sleeve, thereby additionally registering the sheet against said wide wall.

4,066,255
DOCUMENT TRANSPORT SYSTEM
Wilburn F. Bradbury, Northbrook, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed July 23, 1976, Ser. No. 708,052
Int. Cl.² B65H 5/02
U.S. Cl. 271—265 **2 Claims**



1. In a photocopier having a transparent document position-

ing table, first and second spaced belt guides positioned above said table, a belt reeved over said guides with the bottom run resting on said table and a return run extending between the tops of said guides, said belt forming an entrance nip as it loops over said first guide to the table surface,

the provision of a drive system for said belt to cause said belt to first move a sheet presented to the entrance nip to an exposure station on said table, to pause, and then resume moving to initiate exit of the sheet, comprising:

a rotatable power driven shaft connected to said belt to drive said belt;

means to sense presentation of the lead edge of a sheet to said nip and to initiate rotation of said power driven shaft and the resulting belt drive motion in response thereto;

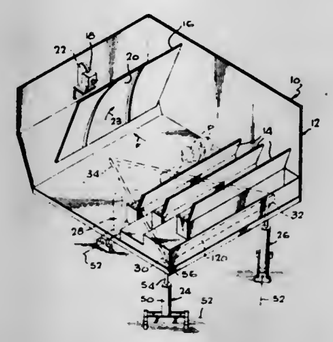
a circuit control means for:

1. assuming control of said belt drive motion from said means to initiate rotation in response to initial rotation of said power driven shaft;

2. continuing the drive motion of the belt for a predetermined belt advancement across the table sufficient to have transported the sensed lead edge of a sheet from said nip to a predetermined lead edge position for exposure, and then stopping the drive at that position; and

3. reinstating drive motion of the belt subsequent to an exposure sequence, for a further travel sufficient to have transported a sheet off of the exposure station.

4,066,256
AMUSEMENT RIDE
Douglas Trumbull, Santa Monica, Calif., assignor to Future General Corporation and Standard Alliance Industries Inc., both of Los Angeles, Calif.
Filed Nov. 17, 1975, Ser. No. 632,222
Int. Cl.² A63G 31/16; G09B 9/00
U.S. Cl. 272—18 **2 Claims**



1. An amusement ride apparatus, comprising:

a passenger-holding frame;

image means including screen means viewable by passengers in said frame, and means forming a predetermined motion picture image viewable by looking at said screen means and representing the veiw from a moving vehicle; and

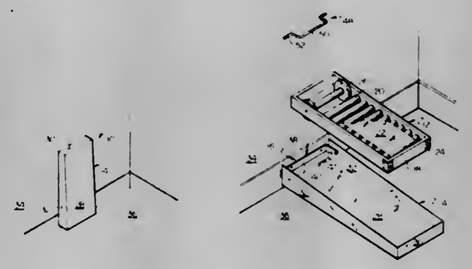
drive means for selectively moving each of a plurality of spaced locations on said frame vertically to change the position of said passenger-holding frame in synchronism with changes in said image, in a manner that generates resulting physical forces on occupants of said frame simulating at least some of the forces that would be applied to them in actual motion of the frame of the type depicted by said image, said image means being constructed to move with said passenger-holding frame;

said frame having a front portion nearest said screen means, a rear portion opposite said front portion, a pair of opposite sides, a centerline that lies halfway between said sides, and a vertical axis; and

said drive means incuding three primarily vertical hydraulic rams, a first of said rams located at said front portion of said frame near said centerline, and a second and third of said rams being located at said rear portion of said frame on opposite sides of said centerline;

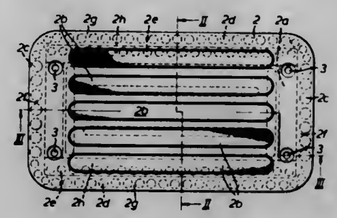
each of said rams being tilted away from the vertical in the same direction rlative to outwardly and inwardly of the frame so that the upper ends of the rams are each spaced a predetermined distance from the vertical axis of the frame which is different than the spacing of the lower ends of the rams, from said axis, whereby each ram provides a small horizontal force to the frame which is always in the same direction.

4,066,257
TREADMILL EXERCISING DEVICE
Bynum W. Moller, P.O. Box 688, Kerrville, Tex. 78028
Filed Nov. 7, 1975, Ser. No. 629,909
Int. Cl.² A63B 23/06
U.S. Cl. 272—69 **8 Claims**



2. An exercise device comprising; an endless belt treadmill; means mounting said treadmill for movement between a generally horizontal operative position and an upright storage position; a cabinet having a front wall positioned generally parallel to said endless belt for concealing said treadmill when in said storage position and an open back exposing said treadmill when in said operative position; and means for mounting said cabinet for movement between a first position exposing said treadmill in said operative position and a second position concealing said treadmill when in said upright position.

4,066,258
SEAT FOR A CHILD'S SWING
Victor Horace Yates, Shelley, near Huddersfield, England, assignor to The Sutcliffe Engineering Holdings Limited, Ossett, England
Filed Feb. 23, 1976, Ser. No. 660,433
Claims priority, application United Kingdom, Mar. 6, 1975, 9361/75
Int. Cl.² A63G 9/00
U.S. Cl. 272—85 **23 Claims**



1. A seat for a child's swing, the seat being of composite structure comprising a generally rectangular substantially laminar first member, which is sufficiently rigid to bear the weight of a child, and a second member made of a compressible polymeric material covering the entire peripheral edge of the first member, there being:

apertures all of the same diameter extending along both of a first pair of opposite sides of the second member,

apertures all of the same diameter, greater than the diameter of the apertures in said first pair of opposite sides, extending along a second pair of sides of the second member,

a respective row of further circular cross-section blind apertures all of the same diameter provided in each of the parts of the second member forming the first pair of sides, said further row of blind apertures being parallel to the corresponding first-mentioned row of apertures, the diameters of said further apertures being less than the diameters of the apertures in the corresponding first rows of apertures, and their centres being off-set with respect to the centres of the apertures in the corresponding first rows of apertures, wherein the force-deflection characteristic of the second member is such that, on impact with an object, the second member initially deforms to conform with the shape of the impacted object and then deforms further to absorb the main energy of the impact.

4,066,259

NECK EXERCISER

Jerry D. Brentham, 102 Elm Drive, Belton, Tex. 76513

Filed May 13, 1976, Ser. No. 686,164
Int. Cl.[2] A63B *21/00*
U.S. Cl. 272—94 15 Claims



13. A neck exercising device comprising: a general frame; a rigid head engaging pad support frame; means pivotally securing said rigid head engaging pad support frame to said general frame; head engaging pads; means securing said head engaging pads to said rigid head engaging pad support frame; actuated means pivotally secured between the general frame and the rigid head engaging pad support frame, such that pivotal movement of the head of the user moves said rigid head engaging pad support frame and movement of said rigid head engaging pad support frame is resisted by said actuated means; and restraint means projecting from said general frame, said restraint means including a rigid portion adapted to transmit a force to the body of the user to prevent movement of the head relative to the body of the user except where that movement in turn causes movement of the rigid head-engaging pad support frame relative to the general frame.

4,066,260

METAL-PLASTIC COMPOSITE RACQUET

Robert E. Rodgers, Jr., 5455 Loch Lomond, Houston, Tex. 77096

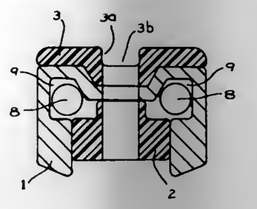
Filed Oct. 15, 1976, Ser. No. 732,656
Int. Cl.[2] A63B *49/10*
U.S. Cl. 273—73 C 7 Claims

1. In a game racquet;

a composite metal and plastic frame defining a stringing section and a handle;

the composite frame comprising a unitary substantially rectangular extruded metal channel member having in cross-section, an "M" configuration, the outer side walls of which are substantially parallel, said metal channel member having a closed top outer section and a partially closed bottom inner section, the lower edges of the side walls of the metal channel member having an integral continuous reinforcing and thickening rib along the inner surfaces thereof partially closing said bottom section of the metal channel member and imparting rigidity to the composite frame;

an extruded plastic core member mounted within and bonded to the lower inside surface and the inner surface of the side wall reinforcing ribs of the metal channel member



to form a unitary frame, the outer surface of the plastic core being substantially encased by the metal channel member and so dimensioned as to leave a space between the side walls of the metal channel member and the plastic core for the reception of a weighting material;

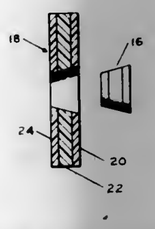
a reinforcing throat piece attached to and imparting rigidity to the frame; and a plastic bumper strip covering the outer surface of the metallic frame member, stringing holes passing through the bumper strip and the composite frame, the plastic bumper strip having a central groove to receive and protect the stringing from abrasion.

4,066,261

MULTI-LAYERED ARCHERY TARGET

Marvin L. Stewart, 113 Elbring Drive, St. Louis, Mo. 63135

Filed June 1, 1976, Ser. No. 691,547
Int. Cl.[2] F41J *3/00*
U.S. Cl. 273—102 B 2 Claims



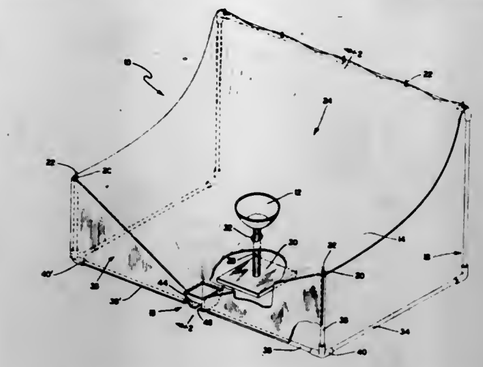
1. An archery target having relatively lightweight and self-closing of arrow hole characteristics, said target being comprised of three separate layers constituting a first front layer of expanded polyethylene, said first layer having a substantial thickness and mass to provide a major arrow stopping characteristic, a second intermediate layer of relatively lightweight expanded polystyrene and a third rear layer of expanded polyethylene of substantial thickness, said expanded polyethylene having the capacity to close arrow holes therethrough, the intermediate layer of expanded polystyrene being substantially thicker and lighter than either of the layers of expanded polyethylene, the layers of expanded polyethylene having a thickness of about one inch and a density of about 6 pound per cubic foot and the layer of expanded polystyrene having a thickness of about two inches and a density of about 2 pounds per cubic foot.

4,066,262

GAME TARGET FOR PROJECTILES

Arthur A. Stiefel, 5200 Gulf Drive, No. 207, Holmes Beach, Fla. 33510

Filed Mar. 4, 1976, Ser. No. 663,950
Int. Cl.[2] A63B *71/04*
U.S. Cl. 273—105 R 9 Claims



1. A game apparatus for receiving tossed playing cards, comprising:

a backdrop;

a quadrilateral collection receptacle having a mouth for collecting and stacking playing cards landing on said backdrop, said backdrop having a first aperture located at a lower, forward end portion thereof, said backdrop being downwardly sloped with the first aperture thereof being configured to and contiguous with said mouth of said receptacle;

said collection receptacle having an access opening at a front surface thereof, the access opening having a width corresponding to the width of a playing card;

a target for playing cards, said target being located above said receptacle and in proximity to said backdrop, an upper end of said backdrop extending above said target;

the slope of said backdrop being steep enough to overcome frictional resistance between said playing cards and said backdrop;

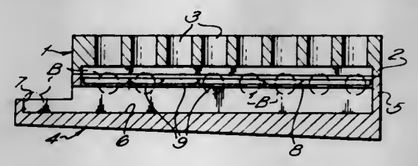
whereby playing cards passing above said target land on said backdrop and slide downwardly to be guided by said backdrop into said collection receptacle for removal as a stack through the access opening at the forward end portion of said backdrop.

4,066,263

APPARATUS FOR PLAYING A GAME

Salman Heskel Balas, Little Linden, Montecute Gardens, Tunbridge Wells, Kent TN4 8HG, and Clifton Quinton Keiller, Little Brook House, Ragged Dog Lane, Waldron, Sussex both of England

Filed May 17, 1976, Ser. No. 686,904
Claims priority, application United Kingdom, July 21, 1975, 30398/75
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—273 9 Claims



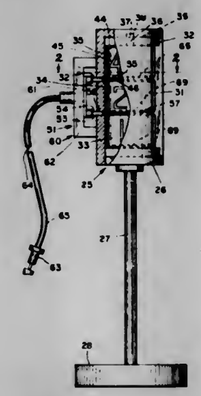
1. Apparatus for playing a game, comprising in combination a plurality of playing pieces and a playing device, said playing device having an upper board formed with a plurality of spaced openings, a lower board providing a playing piece collecting tray positioned below said upper board, and means arranged to support said playing pieces in a position between said upper and said lower boards and in positions corresponding to said openings in said upper board, wherein said playing piece supporting means comprises at least one sheet of resilient material having holes of a diameter which is slightly less than that of the diameter of said playing pieces, the relationship between said playing pieces and said playing piece supporting means being such that said playing pieces can be dislodged individually from their supported positions whereby they fall onto said lower board.

4,066,264

DRUM HALTING SYSTEM FOR GAME APPARATUS

Philip J. Rowman, Derry Road, Hudson, N.H. 03051

Filed Aug. 14, 1975, Ser. No. 604,593
Int. Cl.[2] A63F *5/04*
U.S. Cl. 273—143 R 1 Claim



1. In a game apparatus of the type having a housing with a window in the wall thereof and at least two numeral carrying drums rotatable in horizontal planes on a fixed vertical axis within said housing for displaying numerals in said window the combination of:

drum halting means for simultaneously halting all of said drums, without waiting for inertia to halt the same,

said means comprising juxtaposed, obtuse angled teeth on adjacent said drums and a plurality of halting detents each movable within said housing into engagement with the juxtaposed teeth of each two adjacent said drums to halt the same simultaneously,

and control mechanism extending from said halting detents to outside said housing, and operable from outside said housing to actuate said halting detents,

said control mechanism including a common yoke on the exterior of said housing from which said detents extend through the wall of said housing into the interior thereof,

and an elongated, push button, Bowden wire connection for actuating said common yoke,

whereby said control mechanism is visible and simple to present a tamper-proof appearance.

4,066,265

AMUSEMENT DEVICE

Kenneth A. Bredlau, 15675 LaBella Court, Morgan Hill, Calif. 95037

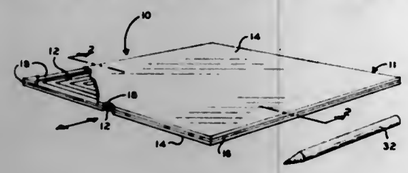
Filed Aug. 9, 1976, Ser. No. 712,782
Int. Cl.[2] A63F *9/06*
U.S. Cl. 273—153 R 2 Claims

1. An amusement device comprising in combination:

an envelope including a pair of mutually spaced walls defin-

ing therebetween a card-receiving space, each of said walls being formed of a substantially rigid transparent material and characterized by a pair of oppositely related planar surfaces;

a maze card having a pair of planar, oppositely related faces removably disposed between the walls of said envelope and characterized by indicia defining on the faces on integral maze comprising a labyrinth of contiguously related path segments visually apparent through each wall



of said pair of walls, first gate means joining contiguous path segments defined on faces of said card common thereto, and second gate means joining segments defined on opposite faces of the card for establishing a singular, obfuscated path extending from the periphery of the card to its center and passing at least once through the card; and

path tracing means including a marking device for applying removable tracing marks to the surfaces of said walls.

4,066,266

ATTITUDE CONTROL DEVICE

Frank C. Anley, 914 Valour Road, Winnipeg, Canada

Filed Jan. 21, 1977, Ser. No. 760,834
Int. Cl.² G11B *3/10*
U.S. Cl. 274—23 R **17 Claims**



1. An attitude control device a supporting surface means mounting said device on said supporting surface comprising in combination a main system and at least one subordinate system pivotally connected to said main system, said main and subordinate systems being free to move relative to each other and within limits, and means whereby the movement of said main system generates a complementary pre-determined movement of the subordinate system, said means including a magnetic element and a ferro magnetic programming strip element positioned to control the movement of said subordinate system, said magnetic element being secured to said subordinate system and the said ferro magnetic programming strip element being spaced from said one element and secured upon said supporting surface.

4,066,267

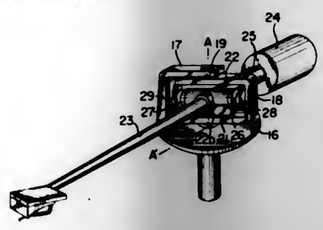
KNIFE-EDGE BEARING SYSTEM

Akira Kagata, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 11, 1976, Ser. No. 665,906
Claims priority, application Japan, Mar. 17, 1975, 50-36323[U]; Jan. 20, 1976, 51-5347[U]
Int. Cl.² G11B *3/10*
U.S. Cl. 274—23 R **5 Claims**

1. A knife-edge bearing system comprising a knife-edge member and a bearing member for receiving said knife-edge member, one of said members being stationary and the other member being movable,

first and second magnets attached to opposite ends of said movable member, and



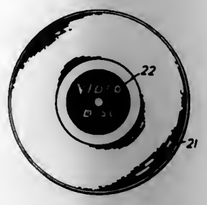
third and fourth stationary magnets arranged in opposed relation with said first and second magnets, respectively whereby the displacement in the longitudinal direction of said movable member may be prevented by the interacting repulsive forces between said first and third and said second and fourth magnets respectively.

4,066,268

DISC RECORDING PROVIDED WITH LEGIBLE MATTER

Heinz Borchard; Gunter Grottker, both of Nortorf, and Peter Thun, Felde, all of Germany, assignors to TED Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec, Zug, Switzerland

Division of Ser. No. 353,766, April 23, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,887
Claims priority, application Germany, Apr. 21, 1972, 2219520; Apr. 21, 1972, 151974[U]
Int. Cl.² G11B *3/00*
U.S. Cl. 274—42 R **4 Claims**



1. A record disc provided with a groove containing stored signals and with a nominally flat surface portion separate from the region containing stored signals and constituting a label portion carrying readable information, the improvement wherein the surface of said disc is provided, in said label portion, with a series of substantially circular, discontinuous grooves, with the discontinuities of all of the grooves forming a pattern constituting the readable information.

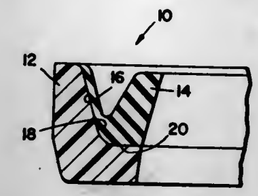
4,066,269

DUAL-MATERIAL SELF-BONDING LIP SEAL

Terry D. Linne, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 17, 1976, Ser. No. 667,769
Int. Cl.² F16J *15/32*; B32B *27/40, 27/12*
U.S. Cl. 277—228 **5 Claims**

1. A unitary seal in the form of a collar comprising an annular support section of a high modulus rigid plastic and an annular sealing section formed of an elastomeric material, said support and sealing section being directly bonded together with said sealing section extending radially inwardly from said support section without the use of adhesive therebetween, said sealing section having an annular elastomeric lip thereof extending inwardly radially for sealing engagement with a cylindrical shaft to form said unitary seal.

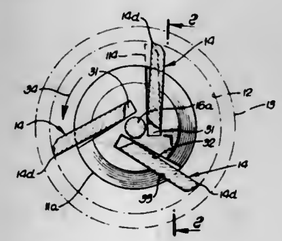


4,066,270

NIPPLE CHUCK

Robert D. Elkin, Claremont, Calif., assignor to Collins Machinery Corporation, Monterey Park, Calif.

Filed Apr. 12, 1976, Ser. No. 676,051
Int. Cl.² B23B *31/40*
U.S. Cl. 279—2 R **13 Claims**



1. In pipe chucking apparatus,

a. an axially elongated tubular mandrel receivable within a bore formed by the pipe,

b. a plurality of jaws spaced about said mandrel axis at the mandrel exterior,

c. an axially elongated actuator extending radially inwardly of the jaws and axially within the mandrel, the actuator being operatively connected with the jaws and axially movable relative to the mandrel bodily to displace the jaws axially, and

d. structure on the mandrel supporting the jaws for radially outward displacement to engage the pipe bore in response to said axial displacement, and for subsequent limited rocking movement of the jaws circumferentially about said axis in response to rotation of the mandrel and jaws relative to the pipe.

4,066,271

TOY VEHICLE

Raymond J. Lohr, 5043 Sterrettania Road, Erie, Pa. 16506

Continuation-in-part of Ser. No. 635,583, Nov. 28, 1975, Pat. No. 3,999,771. This application Nov. 16, 1976, Ser. No. 742,087
Int. Cl.² A63G *19/08*
U.S. Cl. 280—1.182 **9 Claims**

1. A toy comprising,

a body,

said body having a front end and a rear end,

said rear end having a hollow therein,

a U-shaped rear frame having two legs and a transverse member connecting said legs,

said legs each having bearing means on the distal ends thereof,

an axle extending transversely of said toy and rotatably received in said bearing means,

two rear wheels,

said rear wheels being supported on said axle on the ends thereof and pinned against rotation thereon,

a one-way clutch,

said one-way clutch having an outer member and an inner member,

said inner member being fixed to said axle,

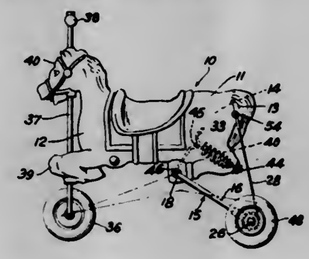
and means to allow said outer member to rotate in one direction relative to said inner member but restrained against rotation relative to said inner member in the other direction,

a drum surface on the outer periphery of said outer member,

a cable wrapped around said drum surface and extending upwardly and fixed to said body,

a return spring,

said return spring having one end attached to a said bearing and the other end fixed to said outer clutch member, urging said outer clutch member to rotate in a direction to wrap said cable on said drum surface,



a crank member in said hollow,

one end of said crank member being fixed to said transverse member of said frame, the other end of said crank member extending upwardly, generally perpendicular to said legs,

a tension spring,

said tension spring being disposed in said hollow in said body and having one end fixed to said body and the other end connected to the distal end of said crank, whereby a load on said body causes said U-shaped frame to tend to rotate, exerting a tensile force on said spring and allowing said cable to wrap on said outer drum surface, said outer member of said one-way clutch,

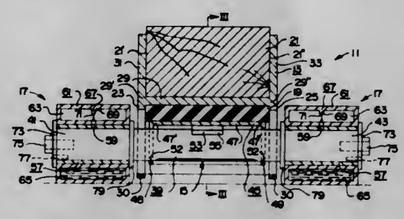
said tension spring urging said legs to move downwardly, lifting said body whereby said clutch and said inner member with it, rotate, said axle pinned thereto, whereby said wheels are rotated in a forward direction with each cycle of movement downward and upward of said body.

4,066,272

DOLLY MEANS

Thomas A. Cobb, 3094 Sunrise St., Memphis, Tenn. 38127

Filed Jan. 21, 1976, Ser. No. 651,214
Int. Cl.² B62B *3/00*
U.S. Cl. 280—79.1 R **3 Claims**



1. Dolly means for use in moving heavy loads over a supporting surface, said dolly means comprising:

a. frame means, said frame means including an elongated bolster member for engaging the heavy load being moved,

said frame means including a first leg portion depending from a first longitudinal side of said bolster member, said frame means including a second leg portion depending from a second longitudinal side of said bolster member, each of said first and second leg portions including a plurality of spaced vertical slots therein, said frame means including a plurality of divider members depending from said elongated bolster member and extending between said first and second leg portions intermediate said spaced vertical slots therein for coacting therewith to form a plurality of downwardly opening compartments, each of said divider members being in the shape of a plate, each of said compartments being in the shape of a box;

b. a plurality of axle means, each of said plurality of axle means extending through one of said slots in said first leg portion and one of said slots in said second leg portion; each of said plurality of axle means including an elongated cylindrical axle member for extending through one of said vertical slots in said first leg portion, each of said axle members including a pair of end portions for extending ourwardly of said first and second leg portion; each of said plurality of axle means including a saddle member for being positioned in one of said compartments of said frame means, said saddle member having a body portion and having a first leg portion depending from a first side of said body portion and a second leg portion depending from a second side of said body portion, each of said first and second leg portions including a circular aperture therethrough for allowing said axle member to extend therethrough, said body portion being in the shape of a plate; each of said plurality of axle means including a stop member for preventing complete rotation of said axle member, said stop member including a block portion fixedly attached to said axle member for coacting with said body portion of said saddle member to prevent full rotation of said axle member within said saddle member while allowing partial rotation thereof;

c. a plurality of wheel means, one of said plurality of wheel means being rotatably mounted on each end of each of said plurality of axle means; and

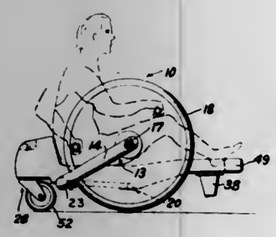
d. a plurality of resilient pad members, each of said resilient pad members being positioned in one of said compartments of said frame means between each of said plurality of axle means and said frame means for allowing each of said axle means a degree of movement relative to said frame means.

4,066,273

TOY CAR

Raymond J. Lohr, 5043 Sterrettania, Erie, Pa. 16506

Filed June 9, 1976, Ser. No. 694,249
Int. Cl.² B62M 1/14
U.S. Cl. 280—211 **15 Claims**



15. A toy vehicle comprising,

a body having a seat and a backrest thereon,

a generally U-shaped frame having two upwardly and forwardly extending legs and an intermediate member,

inwardly-extending axles attached to said legs at the ends thereof, remote from said intermediate member,

a wheel on each said axle,

a U-shaped wire having two spaced legs and an intermediate member received in a groove in said body,

a slot in said body receiving said intermediate member of said U-shaped frame,

the legs of said U-shaped wire extending through holes in said U-shaped frame and clips fixed to said body overlying said intermediate member of said frame and said intermediate part of said wire, holding said wire and said intermediate member of said frame in said groove and said slot respectively,

a caster wheel on said body rearward of said intermediate member,

a footrest on said body on the end thereof spaced from said caster wheel, and

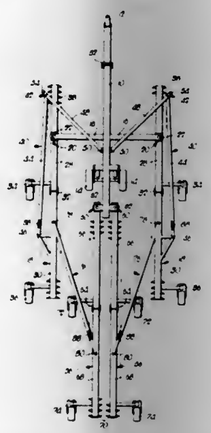
a bumper on said body adjacent said footrest for engaging the ground.

4,066,274

TANDEM FOLDING IMPLEMENT

Raymond A. Adee, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed July 29, 1976, Ser. No. 709,880
Int. Cl.² A01B 73/00, 5/06
U.S. Cl. 280—411 A **15 Claims**



1. A tandem folding implement comprising:

a central, fore-and-aft extending tongue;

a first pair of tool-supporting beams projecting laterally from opposite sides of the tongue;

a second pair of tool-supporting beams behind said first pair and projectng laterally from opposite sides of the tongue.

said tongue and said beams being supported for over-the-ground travel in the direction of the longitudinal axis of the tongue;

means mounting said beams for horizontal swinging movement between laterally widespread working positions and laterally compact, transport positions,

each of said beams having its own upright axis about which said swinging movement of the beam occurs with each said upright axis being spaced apart horizontally from each other said upright axis; and

control means coupled with said beams for maintaining the latter in preselected angular relationships with respect to one another and said tongue in said working and transport positions, respectively,

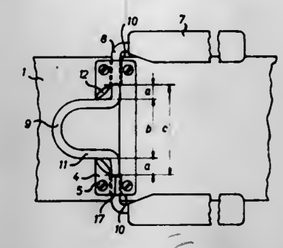
said control means being coupled with said beams in such a manner that the two beams on each side of the tongue are constrained to move in the same direction during said swinging movement thereof about their axes.

4,066,275

SKI BRAKE

Hans Martin, Chasernweg 7, Kloten, Switzerland

Filed Feb. 19, 1976, Ser. No. 659,255
Claims priority, application Switzerland, Feb. 21, 1975, 2191/75; Mar. 24, 1975, 3735/75; Apr. 24, 1975, 5250/75
Int. Cl.² A63C 7/10
U.S. Cl. 280—605 **14 Claims**



1. A ski brake for a ski of the type having a top surface and a longitudinal central axis, a bottom contact surface and a ski boot binding on the top surface, the brake comprising the combination of

a brake arm;

a pivot pin fixedly attached to said brake arm and extending transversely relative to said ski;

bracket means mounted on the top surface of the ski for rotatably supporting said pivot pin,

said pin being rotatable between a first position in which said brake arm is substantially parallel with and above the bottom contact surface of said ski and a second braking position in which said brake arm extends downwardly beyond said bottom surface;

resilient laterally deformable spring means connected to said pivot pin laterally relative to the central longitudinal axis of the ski, said spring means having a lever arm portion contactable by a ski boot in the binding, said lever arm portion being adjacent the top surface of the ski when said pivot pin is in said first position and which extends upwardly from said top surface when said pin is in said braking position; and

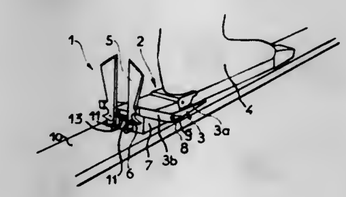
means on said bracket means defining a cam surface having a slope relative to the axis of rotation of said pin for contacting said spring means to laterally deform said spring means when said pin and said brake arm are rotated toward said first position when a ski boot depresses said lever arm and to permit the lateral urging of said spring means to rotate said pin and arm toward said braking position when said lever arm is released.

4,066,276

SKI BRAKE

Georges Pierre Joseph Salomon, Annecy, France, assignor to S.A. Etablissements Francois Salomon et Fils, Annecy, France

Filed Mar. 22, 1976, Ser. No. 669,460
Claims priority, application France, Mar. 25, 1975, 75.09280
Int. Cl.² A63C 7/10
U.S. Cl. 280—605 **10 Claims**



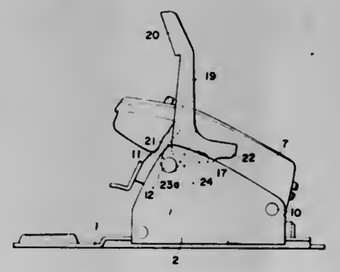
1. A ski brake mountable on the upper surface of a ski and comprising at least one arresting arm forming a blade, means pivotably mounting the arm on the upper surface of the ski for movement between an inactive position above the ski, and an active position in which said blade projects under the ski, actuator means including an elastic means for causing the blade to travel from its inactive position to its active position, a step-on-pedal, for engagement by a boot, means pivotably supporting the step-on pedal on the upper surface of the ski in a position projecting above the upper surface of the ski and means connecting the step-on pedal with the blade to displace the blade to inactive position when the boot is applied on the ski, said elastic means comprising first and second spring means, and means for transmitting the force of said first and second spring means to said blade, said first spring means including an auxiliary spring of low tension, said force transmitting means transmitting the force of the auxiliary spring on the blade until said blade attains a critical intermediate position between said active and inactive positions, said second spring means including a main spring of high tension, said force transmitting means transmitting the force of the main spring to said blade at a position in which the main spring will not produce rotation of the blade until said blade reaches said critical intermediate position whereafter the force of said main spring is transmitted to the blade at a position to produce rotation of said blade, said force transmitting means transmitting the force of the main spring conjointly with the first spring means at least during a portion of the remainder of the travel from the critical intermediate position to the active position.

4,066,277

SKI BOOT HEEL BINDING HAVING IMPROVED UNLOCKING DEVICE

Masahiro Murata, Matsudo, Japan, assignor to Hope Co., Ltd., Tokyo, Japan

Filed Sept. 30, 1976, Ser. No. 728,164
Claims priority, application Japan, July 19, 1976, 51-85059
Int. Cl.² A63C 9/08
U.S. Cl. 280—626 **7 Claims**



1. A ski boot heel binding comprising a base plate having front and rear end portions thereon and adapted to be mounted on a ski, supporting means mounted on said base plate, a pivotally mounted body member having a heel holding jaw at the front end thereof and pivotably connected to said supporting means, a retractable locking means for normally setting said body member to a heel holding position, said body member being displaced to a heel releasing position when said locking means is retracted, and an unlocking device for retracting said locking means, and unlocking device including an unlocking lever the front end portion of which is operatively connected to said locking means and the rear end of which projects outwardly beyond the rear end portion of said body member, and a pair of upper and lower fulcrum means provided rearwardly of the front end of said unlocking lever and arranged in such a manner that when the rear end of said lever is depressed downwardly, the lower front end portion of said lever engages with said lower fulcrum means to retract said locking means by operation of the leverage thereon, and when the same rear end

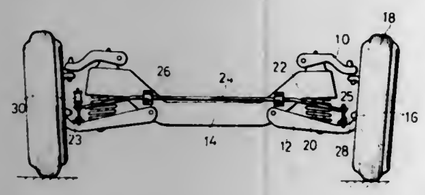
of said lever is moved upwardly, the upper front end portion of said lever engages with said upper fulcrum means to retract said locking means by operation of the leverage thereon.

4,066,278

STABILIZER ASSEMBLY FOR USE IN VEHICLES

Tatsuya Takagi, 6-10 Araebisumachi, Nishinomiya, Hyogo, Japan

Filed Jan. 16, 1976, Ser. No. 649,611
Claims priority, application Japan, Aug. 23, 1975, 50-102429
Int. Cl.² B60G *11/64*
U.S. Cl. 280—710 **9 Claims**



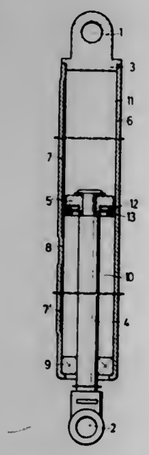
1. A stabilizer assembly comprising, in combination, a torsion bar having a central portion and end portions, said central portion being twistably mounted on the frame of a vehicle, and a slidable braking device disposed at least at one end of said torsion bar, said slidable braking device having a slidable cylinder member and a fixed piston member secured, respectively, to the end portion of the torsion bar and the moving portion of the swing arm of the suspension system of the vehicle, said cylinder member and piston members being reciprocal relative to each other under a certain braking force with the stroke thereof being limited to a length smaller than the maximum twistable amplitude of the ends of said torsion bar, the end portions of said torsion bar having such inertias to induce the sliding action of said slidable braking device.

4,066,279

PNEUMATIC SPRING OF ADJUSTABLE LENGTH

Panoyotis Kaptanis, Neuwied, Germany, assignor to Stabilus GmbH, Koblenz, Germany

Filed Mar. 23, 1976, Ser. No. 669,640
Claims priority, application Germany, Mar. 26, 1975, 2513302
Int. Cl.² F16F *5/00*
U.S. Cl. 280—711 **10 Claims**



1. A pneumatic spring comprising:

a. a cylinder having an axis and bounding a sealed cavity therein;

b. a piston assembly including

1. a piston portion movable in said cavity between two axially terminal positions and separating two compartments of said cavity, and

2. an axially elongated piston rod portion having one axially terminal part fastened to said piston portion in said cavity and another axially terminal part outside said cavity, said piston rod portion movably passing through said cylinder;

c. a body of fluid in said cavity under a pressure higher than atmospheric pressure and permanently biasing said piston rod portion outward of said cavity;

d. conduit means bounding a channel connecting said compartments for flow of said fluid between said compartments; and

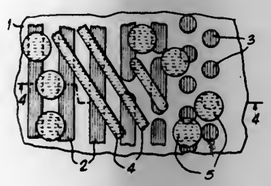
e. cooperating valve means on said cylinder and on said piston assembly responsive to movement of said piston portion into a position spacedly intermediate said terminal positions for closing said channel and for thereby sealing said compartments from each other, and responsive to movement of said piston portion from said intermediate position toward either terminal position thereof for opening said channel.

4,066,280

DOCUMENTS OF VALUE PRINTED TO PREVENT COUNTERFEITING

Anthony LaCapria, Brooklyn, N.Y., assignor to American Bank Note Company, New York, N.Y.

Filed June 8, 1976, Ser. No. 693,921
Int. Cl.² B42D *15/00*
U.S. Cl. 283—8 R **7 Claims**



1. A document of value incapable of reproduction in true color by a color-analyzing-and-synthesizing copier, comprising:

a. a printable substrate having two overlapping but non-registering imprints thereon;

b. one of said imprints being in a color reproducible by said copier; and

c. the other of said imprints being in an ink including a specularly reflective opaque coloring material, said other imprint being incapable of reproduction by said copier, said other imprint comprising:

1. a multiplicity of fine, closely spaced elements having a small dimension in at least one direction and thereby difficult to reproduce by hand; and

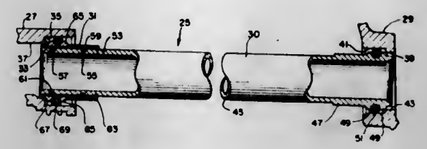
2. an area having dimensions in each of two mutually perpendicular directions which are substantially greater than said small dimension, said area being free of any overprint and thereby readily observable.

4,066,281

PORSCHE AUTOMOBILE OIL DRAIN REPLACEMENT TUBE

John C. De Bonis, 9591 Rocky Mountain Drive, Huntington Beach, Calif. 92646

Filed July 16, 1976, Ser. No. 705,978
Int. Cl.² F16L *21/00*
U.S. Cl. 285—31 **6 Claims**



1. A replacement oil drain tube for use in interconnecting the aperture on the cylinder head of a Porsche automobile engine with the aperture on the crankcase thereof, each of said apertures including a larger diameter external tubular section separated by a shoulder from a smaller diameter internal tubular section, said apertures being axially aligned but being subject to substantial misalignment during temperature fluctuations of said engine, comprising:

a main tube having sufficient length to span the distance between said larger diameter sections, a large end located within said larger diameter section of one of said apertures, and a small end centered within said larger diameter section of the other of said apertures;

a telescoping sleeve surrounding a portion of the length of said main tube adjacent said small end thereof, said telescoping sleeve located within said larger diameter section of the other of said apertures;

a sealing member positioned on said small end of said main tube, said member sealingly engaging said main tube and said telescoping sleeve;

means for locking said telescoping sleeve in place on said main tube to prohibit inward axial movement of said small end of said main tube relative said telescoping sleeve;

said large end and said telescoping sleeve having larger outside diameters than the inside diameter of said smaller diameter internal tubular sections, but smaller outside diameters than said larger diameter internal tubular sections to permit cocking of said large end of said sleeve within said larger diameter internal tubular sections; and

a pair of resilient O-rings, one positioned between said larger end and said larger diameter section of said one of said apertures, the other positioned between said telescoping sleeve and said larger diameter section of said other of said apertures, said locking means, abuttment of the end of said tube and said telescoping sleeve with said smaller diameter internal tubular sections and frictional engagement of said O-rings forming the sole means of attaching said replacement drain tube to said engine, said O-rings and said sealing member sealing said tube to said cylinder head and said crankcase during said substantial misalignment.

4,066,282

POSITIVE TUBING RELEASE COUPLING

Roy R. Vann, Box 38, Artesia, N. Mex. 88210

Continuation-in-part of Ser. No. 517,391, Oct. 23, 1974, Pat. No. 3,966,236. This application June 1, 1976, Ser. No. 691,384
Int. Cl.² F16L *37/08*
U.S. Cl. 285—39 **12 Claims**

1. A wireline actuated, releasable coupling apparatus which can be interposed within a tool string for subsequently parting one marginal length of the string from the other, comprising:

a female member having an end for attachment into an upper marginal length of a tool string;

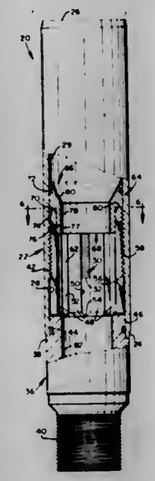
a male member having an end for attachment into a lower marginal length of a tool string;

a marginal lower end of said female member and a marginal upper end of said male member being of a diameter which permits them to be telescopingly joined together, one within the other;

a releasing member; said releasing member having a marginal upper end of a relative large O.D. for slidably engaging the interior wall surface of said female member, and a marginal lower end of a relative small O.D. for slidably engaging the interior surface of said male member, there being a shoulder formed between said large O.D. and small O.D. upper and lower ends;

said female member, said male member, and said releasing member being concentrically arranged respective to one another, means forming an axial passageway through said female member, said male member, and said releasing member; said large O.D. end and small O.D. end, respectfully, of said releasing member being slidably received within at least a portion of said marginal lower end and marginal upper end, respectively, of said female and male members, respectively;

a plurality of radially arranged fingers jointly formed by said



marginal upper end of said male member, said small O.D. marginal end of said releasing member being interposed between said fingers and said axial passageway to urge said fingers against said marginal lower end of said female member;

said releasing member having an upper conical entrance spaced from a lowermost circumferentially extending end portion, said shoulder of said releasing member abuttingly engages the upper terminal end of said male member, said lowermost circumferentially extending end of said releasing member forms a shoulder which a fishing tool can engage;

a marginal exterior wall of said fingers and a marginal interior wall of said female member having coacting threads formed thereon which mutually engage one another; whereby,

said releasing member can be moved axially to allow said fingers to resistingly move towards one another, whereupon said male and female members slide apart from one another, thereby releasing said male and female members from one another.

4,066,283

HIGH PRESSURE INSULATED COUPLING

Leslie G. Struck, Arlington Heights, Ill., assignor to Chicago Fittings Corporation, Broadview, Ill.

Filed Feb. 6, 1976, Ser. No. 655,896
Int. Cl.² F16L *11/12*
U.S. Cl. 285—53 **9 Claims**



1. An insulated coupling for mechanically joining two sections of pipe, while electrically isolating the sections of pipe, comprising:

a generally cylindrical coupling body into which and end of each of the sections of pipe to be joined may be inserted;

a first length of said coupling body extending from a first end of said coupling body through which a first one of the sections of pipe is inserted;

a second length of said coupling body extending from a second end of said coupling body through which the second of the sections of pipe is inserted;

a generally cylindrical sleeve of insulating material having a substantially uniform diameter extending within said second length of said coupling body;

an insulating, frusto-conical, annular stop member to separate the ends of the sections of pipe, the smaller diameter end of said annular member sliding easily within said sleeve for insertion into said coupling body and positioning along said sleeve, while the larger diameter end of said annular member fits tightly against said sleeve to oppose withdrawal therefrom;

limiting means at the inner end of said sleeve to prevent said stop member from entering said first length of said coupling body; and

gasket means at each end of said coupling body to connect said coupling body to the sections of pipe with a fluid tight seal.

4,066,284

LATCH FOR WINDOWS OR DOORS

Akio Ikemura, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1975, Ser. No. 624,891
Claims priority, application Japan, Oct. 22, 1974, 49-128270[U]
Int. Cl.² E05C *5/02*
U.S. Cl. 292—62 **6 Claims**



1. A latch for a closure member that is movable with respect to a frame member, said latch comprising:

a. a housing having mounting means by which it can be fixedly mounted on one of said members, said housing having a lateral opening, and said housing having an end wall with a hole disposed to face the other one of said members;

b. a latch bolt slidably supported in said housing and having one end extending through said hole for cooperation with said other one of said members;

c. a handle secured to said latch bolt and extending through said lateral opening with clearance to enable said latch bolt to be moved both along its axis and about its axis;

d. a plate member disposed within said housing and slidable in the direction of said latch bolt axis, there being engaging means on said plate member in registration with said lateral opening for engaging with said handle to hold said latch bolt in a selected locked position in which said one end of the latch bolt can cooperate with said other one of said members; and

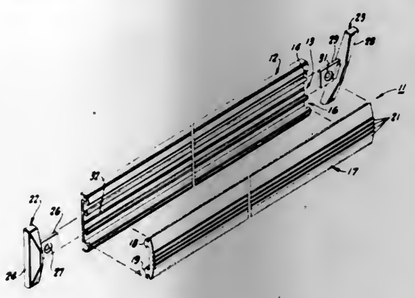
e. means selectably securing said plate member in a fixed position with respect to said housing.

4,066,285

ORNAMENTAL PROTECTIVE TRIM STRIP FOR MOTOR VEHICLES

Daniel L. Hall, Citrus Heights, and Neal Duane Dunivan, Roseville, both of Calif., assignors to Trim-Line, Inc., North Highlands, Calif.

Filed Dec. 9, 1976, Ser. No. 748,909
Int. Cl.² B60R *19/00*; E04F *19/02*
U.S. Cl. 293—62 **6 Claims**



1. A protective trim strip comprising:

a. an elongated channel extending between a first end and a second end, said channel being formed with a central longitudinal generally T-shaped in cross-section groove and first and second longitudinal outer generally T-shaped in cross-section grooves transversely spaced on opposite sides of said central groove, said grooves extending between said ends of said channel;

b. an elongated resilient bumper extending axially coextensively with said channel and being formed with first and second generally T-shaped in cross-section projections interlocking with the walls of said first and second outer grooves of said channel, respectively, for securing said resilient bumper to said channel, said bumper extending over said central groove; and,

c. first and second end caps formed with tangs providing an interference fit with the walls of said central groove of said channel to secure said first and second end caps to said first and said second ends of said channel, respectively.

4,066,286

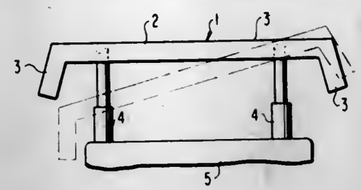
BUMPER FOR MOTOR VEHICLES

Fritz Haberle; Daniel Riechers, both of Sindelfingen, and Alfred Hochrathner, Boblingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Oct. 10, 1975, Ser. No. 621,580
Claims priority, application Germany, Oct. 16, 1974, 2449240
Int. Cl.² B60R *19/08*
U.S. Cl. 293—87 **17 Claims**

1. A bumper for motor vehicles, which comprises a U-shaped profile means having a web and legs, the web forming the front side of the bumper and constituting a support for

guide members operable to guide fastening means that are secured at a relatively fixed part of the vehicle, characterized in that the guide members are angularly bent spring steel bracket means serving as damping means which include leg portions and web portions, the leg portions being secured at



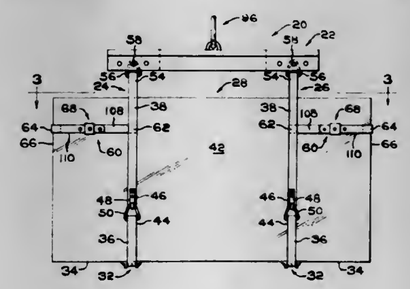
the bumper and the web portions at the fastening means and wherein two U-shaped spring steel bracket means each are provided which abut at one another with the outer sides of their web portions outside of the area of the fastening means and which surround the fastening means within the area of the latter.

4,066,287

SLING ASSEMBLY FOR LIFTING SHEET MATERIAL

James R. Rowley, Freeport, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 7, 1976, Ser. No. 703,167
Int. Cl.² B66C *1/16*
U.S. Cl. 294—74 **16 Claims**



1. In a sling assembly for lifting at least one sheet wherein the sling assembly is of the type having a pair of slings secured in spaced relationship on lifting means, the improvement comprising:

each of the slings comprising:

a first strap section having a first end and a second end, the first end secured to the lifting means;

a second strap section having a first end and a second end, the first end secured to the lifting means;

means for securing the second end of each of said strap sections together;

and

a half bridle having a first end and a rigid second end, the first end secured to the first strap section and the second end of said half bridle engageable with adjacent end of the at least one sheet terminating short of the second strap section.

4,066,288

LOAD ADJUSTABLE RELEASE DEVICE

Joseph Medrano, Jr., 8 Ipswich Court, Florissant, Mo. 63033

Filed June 22, 1976, Ser. No. 698,661
Int. Cl.² B66C *1/28*
U.S. Cl. 294—83 R **6 Claims**

1. A line coupler means which automatically decouples when a selected line tension is exceeded comprising:

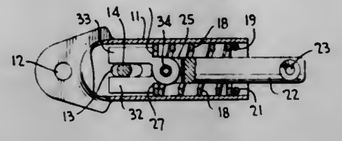
a tubular housing means having a first line attachment means at a first end thereof and open ended at the second end thereof and having a selected longitudinal axis;

a compression means disposed within said housing means, said compression means having an elongated hollow center configuration and disposed with said hollow center substantially in alignment with said axis of said housing such that said compression means is adapted for compression along said axis of said housing;

tubular plunger means disposed within said hollow center of said compression means and adapted for axial movement therein, said tubular plunger means having a second line attachment means at a first end thereof, said first end of said plunger means disposed in the vicinity of said second end of said housing means such that a tension force may be applied across said first end of said housing means and said first end of said plunger means of said line coupler means;

restraining means attached to said housing means substantially at said second end thereof and adapted to restrain said compression means within said housing means when a tension force is applied across said line coupler means;

at least one jaw hook means attached to the second end of said tubular plunger means within said housing; said jaw



hook means having an elongated shank portion with one end thereof attached to said plunger means and a transverse extension at the other end of said shank portion, said jaw hook means adapted for disposition in a first position and for disposition in a second position within said housing means, said transverse extension of said jaw hook means adapted to engage the end of said compression means opposite said restraining means in said jaw hook means first position, said transverse extension of said jaw hook means adapted to enable withdrawal of said plunger means and attached jaw hook means through said hollow of said compression means in said second position of said jaw hook means;

and compression release means adapted to maintain said jaw hook means in said first position until said compression means reaches a predetermined compression state representative of the tension force applied across said line coupler whereby release of said compression means actuates movement of said jaw hook means from said first position to said second position thereof and said tubular housing means and said tubular plunger means are pulled apart by the tension force applied and become separate elements of said line coupler means.

4,066,289

VEHICLE CARRIERS

Habib T. Gargour, c/o T. Gargour & Fils, Beirut, Lebanon

Filed Mar. 4, 1976, Ser. No. 663,772
Claims priority, application Lebanon, Mar. 6, 1975, 87; May 15, 1975, 161; May 17, 1975, 179; May 20, 1975, 180
Int. Cl.² B60P *1/00*
U.S. Cl. 296—1 A **8 Claims**

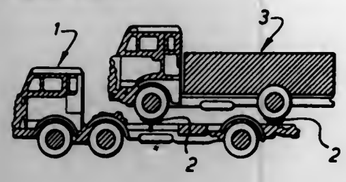
1. A multiple use chassis for transport vehicles, characterized by

a. a pair of spaced apart parallel longitudinal chassis members;

b. said chassis members having a load bearing length of at least 6 meters;

c. a plurality of substantially flat parallel spaced apart transverse support members extending between said chassis members;

d. said support members having a load bearing length of at least 2.5meters;
e. at least one said support member being displaceable along said chassis members;



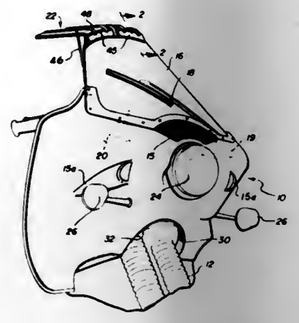
f. each said support member having a plurality of connecting apertures adjacent said chassis members; and
g. means extending through said apertures for connecting said support members to said chassis members.

4,066,290
BICYCLE FAIRING
Gerald A. Wiegert, Venice, and James R. Negele, Santa Monica, both of Calif., assignors to Gerald A. Wiegert, Venice and Richard S. Dyer, Palos Verdes Estates, both of, Calif.
Filed Apr. 30, 1976, Ser. No. 682,092
Int. Cl.² B62J *17/02*
U.S. Cl. 296—78.1 **5 Claims**



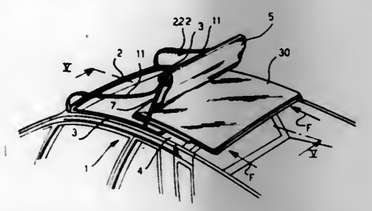
1. A bicycle fairing comprising:
a fairing shell shaped and sized to partially shield the front upper region of a bicycle and rider, including the handle bars and rider's hands, said fairing shell presenting a rounded streamlined surface toward the front of the bicycle and a concave enclosure toward the rear, said fairing shell including a lower portion having an integral front-wheel fender to provide improved streamlining and to maximize the size of said enclosure, said lower portion further having a pair of streamlined extensions partially surrounding the front-wheel fork of the bicycle, said fairing shell further including an upper portion having a trailing upper edge of arcuate configuration to facilitate positioning to the rider's head behind said fairing shell, said upper and lower portions further having trailing side edges which merge in an arcuate configuration to facilitate positioning of the rider's hands behind said fairing shell;
a pair of generally upright, parallel, horizontally spaced apart mounting rods attached at their upper ends to said upper portion of said fairing shell and attached at their lower ends to said lower portion of said fairing shell;
interconnection means operative to connect said rods to the handles of the handle bars, each interconnection means including adjustably extensible sections for adjusting the distance between said fairing shell and the front of the handles, each interconnection means further being vertically adjustably movable on said rods for adjusting the vertical location of said fairing shell relative to the handles; and
clamping means for clamping said streamlined extensions of said lower portion to the front-wheel fork.

4,066,291
WEATHERIZED SYSTEM FOR MOTORCYCLE
John S. Hickman, 4149 N. Stowell Ave., Milwaukee, Wis. 53211
Continuation-in-part of Ser. No. 548,357, Feb. 10, 1975, abandoned. This application Apr. 22, 1976, Ser. No. 679,184
Int. Cl.² B62J *17/00*
U.S. Cl. 296—78.1 **26 Claims**



13. A removable shield for use with a windscreen having an upper edge to protect a rider from the weather such as rain or sun; said shield including:
a first portion;
a mounting portion extending from said first portion;
said mounting portion including means for releasably securing said shield to the windscreen and for permitting said shield to be moved laterally along the upper edge of the windscreen to afford a rider protection from adverse weather conditions.

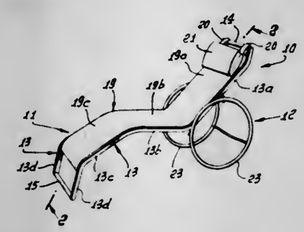
4,066,292
AUTOMOBILE WITH SUNSHINE ROOF
Renzo Carli, Turin, Italy, assignor to Carrozzeria Pininfarina S.p.A., Grugliasco (Turin), Italy
Filed Jan. 10, 1977, Ser. No. 758,273
Int. Cl.² B60J *7/00*
U.S. Cl. 296—137 C **8 Claims**



1. In an automobile provided with a sunshine roof having means defining a roof aperture including a front cross member of upwardly open channel section, a rear cross member of upwardly open trough shaped cross section having front and rear walls, and two longitudinal runners of upwardly open channel section having inner and outer walls, a flexible roof covering, a cross-piece to which the rear edge of said roof covering is attached, two levers supporting the said cross-piece and pivotally attached to said longitudinal runners, and a pair of flexible straps attached to opposite ends of said cross-piece, the leading ends of said straps being adapted to engage in the channel of the front cross member to tension the straps, which cover the longitudinal edges of the roof covering when the latter is fitted over said roof aperture,

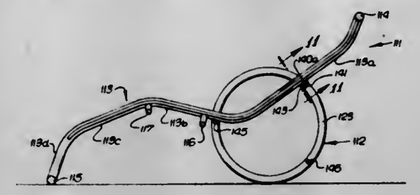
the improvement which comprises a removable roof panel for use as an alternative to the flexible roof covering, comprising a sheet of transparent rigid plastics material, provided with hook means at its front edge which engages in the channel section front cross member and further provided with a lip on its rear edge which fits over the front wall of the trough shaped rear cross member, the lateral edges of said sheet cooperating along their lower surfaces with the inner walls of the channel section side runners while the upper surfaces of said sheet are covered along said lateral edges by the flexible straps normally used to cover and exert pressure upon the longitudinal edges of the flexible roof covering in the closed position of the latter.

4,066,293
ADJUSTABLE CARRIER APPARATUS TO DEFINE FURNITURE OR THE LIKE
Heinz Meier, Pacific Palisades, Calif., assignor to Landes Manufacturing Company, Los Angeles, Calif.
Filed June 9, 1976, Ser. No. 694,179
Int. Cl.² A47C *3/00*
U.S. Cl. 297—325 **1 Claim**



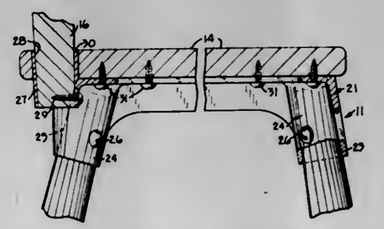
1. In adjustable carrier apparatus
a. a carrier frame, and
b. a rotary support including two integrally interconnected upright wheels supporting the frame in a first frame position relative to the support, the frame having a second and alternate position relative to the rotary support, in which the rotary support supports the frame,
c. the frame including a stabilizing portion having a seat and a ground engaging portion projecting in forwardly spaced relation from the rotary support in each of said positions, and
d. the frame having a backrest portion which is substantially entirely supported on the rotary support in each of said first and second positions, the support of the frame by the rotary support blocking rotation of the support in each of the two frame positions,
e. the rotary support including multiple members connected only to peripheral portions of the wheels and extending laterally therebetween, the wheels being centrally open, said members angularly and sequentially spaced about a common axis of rotation defined by said wheels,
f. said backrest portion directly overlying and supported by two of said members in each of said frame positions,
g. said frame including hooks to engage said members, said hooks including primary laterally spaced hooks and secondary laterally spaced hooks, said primary hooks longitudinally spaced along the frame from said secondary hooks.

4,066,294
ADJUSTABLE CARRIER APPARATUS TO DEFINE FURNITURE OR THE LIKE
Heinz Meier, Palisades, Calif., assignor to Landes Manufacturing Company, Los Angeles, Calif.
Continuation-in-part of Ser. No. 694,179, June 9, 1976. This application Nov. 10, 1976, Ser. No. 740,395
Int. Cl.² A47C *3/00*
U.S. Cl. 297—325 **2 Claims**



1. In adjustable carrier apparatus
a. a carrier frame, and
b. a rotary support including two integrally interconnected upright wheels supporting the frame in a first frame position relative to the support, the frame having a second and alternate position relative to the rotary support, in which the rotary support supports the frame
c. the frame including a stabilizing portion having a seat and a ground engaging portion projecting in forwardly spaced relation from the rotary support in each of said positions, and
d. the frame having a backrest portion which is substantially entirely supported on the rotary support in each of said first and second positions, the support of the frame by the rotary support blocking rotation of the support in each of the two frame positions,
e. the rotary support including multiple tie members connected only to peripheral portions of the wheels and extending laterally therebetween, the wheels being centrally open, said members angularly and sequentially spaced about a common axis of rotation defined by said wheels,
f. the frame and said rotary support having hinged interconnection, adjacent the backrest, by means of shaft elements and bearing elements one of which is on the peripheral portions of the wheels and the other of which is on the frame,
g. said backrest portion directly overlying and supported by said hinged interconnection and said one of said tie members in each of said frame positions,
h. the frame and said rotary support having hinged interconnection, adjacent the backrest.

4,066,295
CHAIR AND BASE FRAME THEREFOR
Harvey M. Severson, 8418 Dupont Ave. South, Minneapolis, Minn. 55420
Filed Nov. 29, 1976, Ser. No. 745,952
Int. Cl.² A47C *7/00*
U.S. Cl. 297—443 **2 Claims**



1. A chair comprising a generally rectangular rigid one-piece frame member including a horizontal flange having a flat

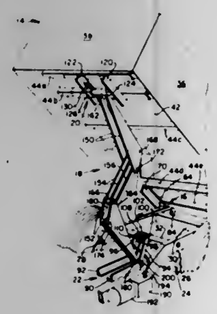
top defining an enlarged central opening, and a peripheral skirt depending from said flange to provide front and rear portions and laterally spaced opposite side portions, said frame member further including a plurality of downwardly extending bosses at the opposite ends of said front, rear and side portions and defining downwardly opening upwardly tapering recesses, and a pair of other bosses extending upwardly from the top surface of said rear frame portion each inwardly spaced from a different one of said downwardly extending bosses at the opposite ends of said rear portion, said upwardly extending bosses having upwardly opening downwardly tapering recesses therein; legs having upper ends received in said downwardly opening recesses; backrest supporting members having lower ends received in said upwardly opening recesses; and a horizontal seat element mounted on said flat top and having a pair of openings therethrough for reception of said upwardly extending bosses; said flange and bosses having transverse openings for reception of anchoring screws for said legs, backrest supporting members and seat element.

4,066,296

TRUCK BED TILTING MECHANISM

Louis M. Ray, Jr., 6305 Pine St., Rowlett, Tex. 75088; Leo L. Pease, 511 E. Main St., Richardson, Tex. 75081, and Henry C. Brown, 410 Crusader Drive, Dallas, Tex. 75217

Filed Dec. 28, 1976, Ser. No. 755,022
Int. Cl.² B60P *1/20*
U.S. Cl. 298—22 J **16 Claims**



7. A truck bed tilting apparatus for use between the hauling bed and frame of a truck having the bed pivotally connected adjacent the rear of the frame to permit relative rotation between the hauling bed and the frame, said apparatus comprising:

four rigid bars jointed in a parallelogram form having a first and second pair of parallel arms, said first pair of parallel arms having an extension beyond the parallelogram with the end of one of said extensions being pivotally connected to the hauling bed and the end of the extension of the second arm of said pair to be pivotally connected to the truck frame,

a variable length actuator arm interconnected between the extension bearing pair of parallel arms, said actuator arm being connected to the arms of said first pair intermediate of the ends thereof,

means for selectively extending said actuator arm to vary the geometry of the parallelogram form thereby tilting the truck bed.

4,066,297

PROCESS FOR THE RECOVERY OF URANIUM

Andrew P. Spence, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 1, 1976, Ser. No. 691,344
Int. Cl.² E21B *43/28*
U.S. Cl. 299—4 **7 Claims**

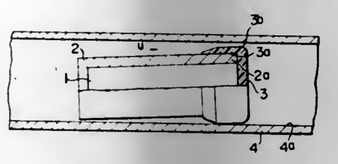
1. An improved process for the solution mining of uranium from a subterranean formation containing same in which an injection and production well are drilled and completed within said formation, alkaline leach solution and an oxidant are injected through said injection well into said formation to dissolve said uranium, and said dissolved uranium is recovered via said production well, wherein the improvement comprises introducing an alkaline leach solution undersaturated in carbonates into said formation.

4,066,298

HYDRAULICALLY TRANSPORTED CAPSULE

Masakatsu Sakamoto, Matsudo; Syosaku Watanabe, Ushikumachi; Takafumi Karino, Tomobemachi; Junichi Yazu, Shimoinayoshi; Kouichi Takashima, Ibaraki; Hiroshi Miyashiro, Tokyo; Takeo Takagi, Shimoinsayoshi, and Takao Konno, Shimoinayoshi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 13, 1976, Ser. No. 714,181
Claims priority, application Japan, Oct. 24, 1975, 50-144134[U]
Int. Cl.² B65G *51/06*
U.S. Cl. 302—2 R **4 Claims**



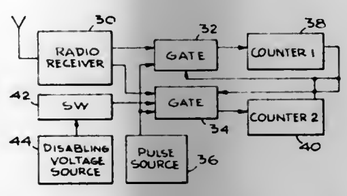
1. A hydraulically transported capsule comprising a cylindrical shell adapted to contain goods to be transported, and a cover member made from a flexible material and adapted to be fitted over one end portion of said shell, said shell being formed at its leading end portion with a fitting portion for said cover member, said cover member being fitted over said fitting portion of the shell to close said one end portion of the shell, and said cover member having an outer peripheral surface serving as a sliding surface of the capsule, wherein the sliding surface of said cover member has sliding means comprising a plurality of supporters arranged at least in a row circumferentially of the cover member, said supporters comprising elongated resilient members embedded in said sliding surface and extending radially outwardly of said sliding surface.

4,066,299

APPARATUS FOR LOCATING A MALFUNCTIONING BRAKE CONTROL VALVE ON TRAIN

Roy Milton Clements, Danville, Calif., assignor to Southern Pacific Transportation Company, San Francisco, Calif.

Continuation of Ser. No. 638,682, Dec. 8, 1975, abandoned. This application May 17, 1977, Ser. No. 797,764
Int. Cl.² B60T *17/22*
U.S. Cl. 303—20 **9 Claims**



1. In a railroad train which has an air brake pipe extending the length of the train, and wherein each car is equipped with a brake control valve for venting said brake pipe when required for an emergency operation,

means for locating a malfunctioning brake control valve which has vented said brake pipe, comprising:

a first and a second transducer means respectively at the head end of said train and at the rear end of said train coupled to said brake pipe for respectively transmitting a first radio frequency signal and a second radio frequency signal in response to being actuated by a change in air pressure in said brake pipe caused by a malfunctioning brake control valve, and

receiving means at a single location on said train for receiving said first and second signals,

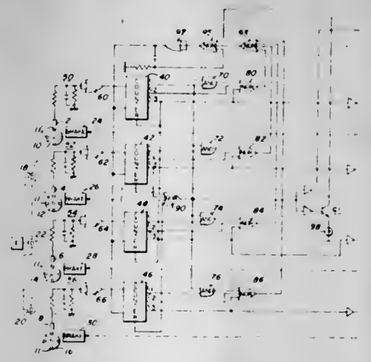
counter means at said single location to which said received first and second signals are applied to produce an indication of the difference, ($t1-t2$), in their times of receival caused by the difference in time required for the air pressure change caused by a malfunctioning brake control valve to move from said malfunctioning brake control valve through said brake pipe to said first transducer means and to said second transducer means, whereby the distance, X, of said operated valve means from one end of said train may be determined from the formula $X=L/2-465\ (t1-t2)$, where L is the length of the train.

4,066,300

DIGITAL TRACTION CONTROL SYSTEM

Thomas A. Devlin, Royal Oak, Mich., assignor to Aspro, Inc., Westport, Conn.

Filed Oct. 29, 1976, Ser. No. 737,058
Int. Cl.² B60T *8/10*
U.S. Cl. 303—96 **9 Claims**





1. A digital anti-spin brake control system for a motor vehicle having at least two driven wheels connected by a differential mechanism, comprising

a. a plurality of pulse generating means (11; 2, 4, 6, 8) for generating pulses in accordance with the rotational velocity of each of the driven wheels, respectively;

b. a plurality of normally de-energized solenoid-operated brake means (24, 26, 28 and 30) associated with said driven wheels, respectively;

c. a plurality of counters (40, 42, 44 and 46) for counting the pulses generated by the pulse generating means associated with each wheel, respectively, each of said counters including at least three output terminals (C1, C2, C3);

d. means (97) for resetting all of the counters when said counters contain count totals which fall within a predetermined ratio, said counter reset means including

1. a plurality of two-input AND gates (70, 72, 74, 76) associated with said counters, respectively, each of said AND gates having a first input connected with a first output terminal (C1) of the associated counter;
2. a plurality of first NOR gates (80, 82, 84, 86) associated with said counters, respectively, each of said NOR gates having a first input connected with the output of the associated AND gate, and second and third inputs connected with the second and third output terminals of the associated counter, respectively;
3. a second NOR gate (90) having a plurality of inputs connected with the third output terminals of said counters, respectively, the output of said second NOR gate being connected with the other inputs of each of said AND gates; and
4. a third NOR gate (93) the input terminals of which are connected with the output terminals of said first NOR gates, respectively, the output terminal of said third NOR gate being connected with said counter reset means; and

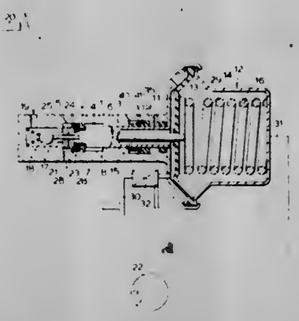
e. means operable when the count total of at least one of the counters exceeds the total of another counter by a value greater than said predetermined ratio for operating the brake means associated with the wheel which corresponds with the said one counter.

4,066,301

MODULATOR ASSEMBLIES FOR VEHICLE HYDRAULIC BRAKING SYSTEMS

David Anthony Harries, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed Apr. 5, 1976, Ser. No. 673,857
Claims priority, application United Kingdom, Apr. 25, 1975, 17211/75
Int. Cl.² B60T *8/04*
U.S. Cl. 303—115 **9 Claims**



1. A modulator assembly for a vehicle anti-skid braking system comprising a housing having an inlet port for connection to an hydraulic master cylinder, an outlet port for connection to the slave cylinder of a wheel brake, a chamber through which said inlet port communicates with said outlet port and having an effective volume which is variable and a bore communicating with said chamber, a control valve located be-

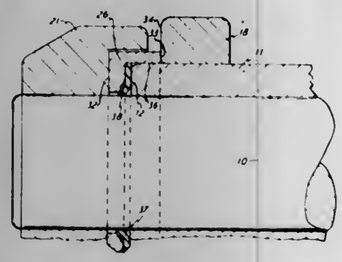
tween said inlet port and said outlet port, an imperforate expander piston working in said bore, said expander piston being movable between a first advanced position in which said effective volume is at a minimum and said control valve is open and a second retracted position in which said control valve is closed and said effective volume is larger, and modulator means responsive to a signal from means for sensing deceleration of a wheel braked by said brake for applying a bias force to said expander piston to determine the position thereof, said expander piston normally being disposed in said first position but movable into said second position by said modulator means when deceleration of said braked wheel exceeds a predetermined value, wherein said chamber comprises a first compartment, and a second compartment spaced axially from said first compartment and located at the end of said first compartment which is remote from said control valve, valve means directly operable by, and axially aligned, with said expander piston are provided for controlling communication between said first and second compartments, and said outlet port leads from said first compartment, said valve means being movable between a closed position when said expander piston is substantially in said advanced position and an open position when said expander piston is moved between said first and second position, a first area only of said expander piston which is smaller than a second total area thereof being exposed only to pressure in said first compartment when said valve means is in the said closed position, and said second total area of said expander piston being exposed to pressure in both said first and second compartments when said valve means is in said open position.

4,066,302

TRACK JOINT WITH COMBINED THRUST AND SEAL MEMBERS

John Merlin Baylor, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 4, 1976, Ser. No. 729,582
Int. Cl.² F16J *15/34*
U.S. Cl. 305—11 **8 Claims**



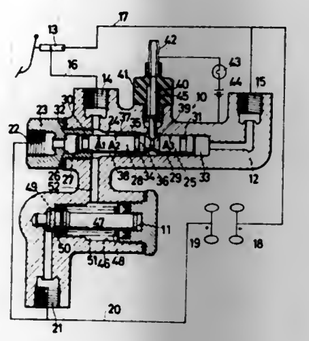
1. A track joint with combined thrust and seal members, comprising a track pin, a cylindrical bushing on said pin and having an annular end surface disposed on a plane transverse to the extent of and within the length of said pin, a first track link on said bushing, a second track link on said extending end of said pin and having a counterbore open toward said annular end surface and with a circular wall radially spaced from said pin and with an annularly-shaped bottom wall faced toward said annular end surface and with said bottom wall being of a total area larger than the total area of said annular end surface, a thrust ring disposed in said counterbore and between said annular end surface and said bottom wall and having an annular bearing surface disposed in contact with said bottom wall throughout the entire area of said annular bearing surface and with said entire area being larger than the entire area of said annular end surface, for dirt sealing between said annular bearing surface and said bottom wall and for presenting a larger axial thrust area compared to the axial thrust area presented by said annular end surface to said bottom wall, said track link on said bushing having an annular surface faced toward the end of said pin extending beyond said bushing, said thrust ring extending between and in contact with both said annular surfaces, and an elastic seal member disposed between said ring and said annular end surface for dirt sealing thereat.

4,066,303

BRAKE PRESSURE-DIFFERENCE WARNING SYSTEM FOR VEHICLES

Noriakira Ishigami, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Continuation of Ser. No. 587,057, June 16, 1975, abandoned.
This application Aug. 13, 1976, Ser. No. 714,125
Claims priority, application Japan, June 14, 1974, 49-68438
Int. Cl.² B60T *8/26*
U.S. Cl. 303—6 C **5 Claims**



1. A brake pressure-difference warning system operatively associated with a dual master brake cylinder having two independent brake lines, which comprises:

a housing provided with an axial bore defined therein;

a stepped piston slidably disposed within said bore and provided with a small diameter portion and a large diameter portion;

a proportioning valve assembly disposed within one of said brake lines;

a first fluid chamber defined within said housing at one end of said small diameter portion of said stepped piston;

a second fluid chamber defined within said housing and within said one brake line;

a third fluid chamber defined within said housing at one end of said large diameter portion of said stepped piston and disposed within the other brake line;

said first fluid chamber being in fluidic communication with said second fluid chamber through means of said proportioning valve assembly, said proportioning valve assembly thereby controlling pressurization of said first chamber and said piston at said one end thereof;

a seal member provided upon said small diameter portion of said stepped piston and interposed between said first and second fluid chambers;

switch means operatively connected to said stepped piston for indicating a fluidic failure within one of said brake lines;

said stepped piston having a predetermined configuration, and the stepped portions thereof having a predetermined area ratio with respect to each other, such that said stepped piston is axially movable within said bore when each of said first, second and third fluid chambers is subjected to a fluidic failure; and

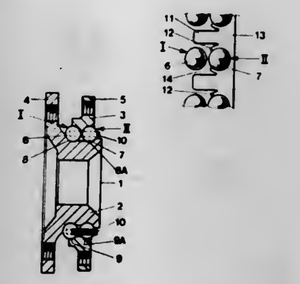
when said proportioning valve is inoperatively seated upon its valve seat and said second and said third fluid chambers are not subjected to a fluidic failure, whereby the hydraulic pressure within said first chamber is lower than the normal pressure supplied to said second chamber, said switch means is actuated and fluid communication between said first and said second fluid chambers is established without passing through said proportioning valve assembly.

4,066,304

BEARING CAGE

Gordon Boyd Johnston, Beesd, Netherlands; Reinhart Michael Hillmann; Helmuth Martin Kregler, both of Schweinfurt, Germany; Bertil Sven Janson, and Hasse Elvind Strandberg, both of Gothenburg, Sweden, assignors to SKF Industrial Trading and Development Company B.V., Nieuwegein, Netherlands

Continuation of Ser. No. 506,617, Sept. 16, 1974, abandoned.
This application June 7, 1976, Ser. No. 693,602
Claims priority, application Netherlands, Sept. 9, 1973, 7312876
Int. Cl.² F16C *33/46*
U.S. Cl. 308—201 **22 Claims**



1. In a bearing including inner and outer rings, two axially spaced first and second annular rows of balls between said rings, and a cage insertable between said rings for separating the balls, the improvement in combination therewith wherein said cage has a generally annular shape about a central axis, and is flexible and comprises a plurality of circumferentially spaced partitions and a connecting member between and connecting each two adjacent partitions forming a generally U-shaped section, each of said sections having walls which define a U-shaped recess open at one end and closed at the other end, each recess having dimensions of breadth in the circumferential direction and depth in the axial direction, and each recess containing a pair of first and second generally axially aligned balls, each of said pairs comprising one ball from each of said first and second rows of balls, and at least one pair of resilient holding means projecting from walls of each recess for holding said first ball in one of said ends of said recess in fixed position relative to said walls, said second ball situated generally at the opposite end of each recess and able to move relative to said walls in both of said breadth and depth directions.

4,066,305

MODULAR ELECTRONIC DESK

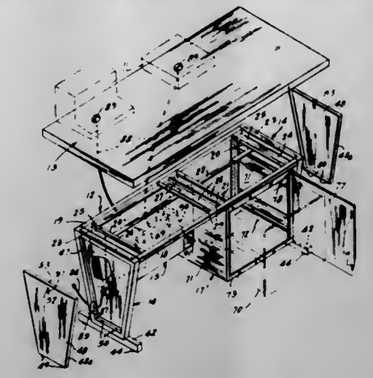
Kenneth F. Gazarek, Warrenville, Ill., assignor to Equipto Electronics Corporation, Aurora, Ill.

Filed Aug. 9, 1976, Ser. No. 712,753
Int. Cl.² A47B *17/00*
U.S. Cl. 312—195 **15 Claims**

1. A modular electronic desk assembly, comprising: a load supporting top structure comprising a frame unit of substantial length and width and having structural members for supporting a generally horizontal working area top panel firmly against sagging under load;

pylons each comprising an enclosed compartment and being for upright disposition in supporting relation under each end portion of the frame unit and with each of said pylons having a removable door which doors face in opposite directions away from one another;

an electrical equipment compartment supported on said frame unit beneath said top panel between said pylons, a cable compartment carried by said frame unit beneath and in abutment with said frame unit and having a cable compartment opening and said electrical equipment compartment having an opening interfacing with said cable compartment opening to allow the passage of electrical wiring, the cable compartment further having at least one opening in interfering communication with an opening in at least one of said pylons for extension of wiring from the cable compartment into the pylon, and a hole in said at least one pylon to extend the electrical wiring exteriorly of the same for connection with an electrical outlet.

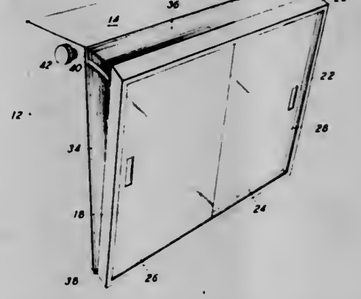


4,066,306

UTILITY CABINET WITH TILTING MIRRORED DOOR

Edward F. Klinder, 3621 S. Scoville Ave., Berwyn, Ill. 60402

Filed Sept. 27, 1976, Ser. No. 727,247
Int. Cl.² A47B *67/00*; A47G *1/00*; G02B *5/08*; A47B *49/00*
U.S. Cl. 312—224 **5 Claims**



1. Utility cabinet apparatus comprising a cabinet housing means having opening means therein, door frame means extending around said opening means and pivotally connected to said housing means for pivotally swinging a section of the edge of said frame means towards and away from said opening means, door means openably and closably mounted in said frame means for providing access to the inside of said housing means through said opening means, reflecting mirror surface means on said surface of said door means facing away from the interior of said housing means, retractable joint means extending from the periphery of said frame means to the periphery of said opening means so that when said frame means is pivoted away from said opening means the separation of the periphery of said frame means and the periphery of said opening means is closed off, said retractable joint means comprising wall means secured to the periphery of said frame means and is adapted to slidingly engage the periphery of said opening means and to

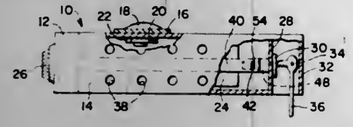
pivotally move into and away from said housing means with said frame means, clamp means clampingly engaging said wall means for positioning said frame means pivotally with respect to said opening means.

4,066,307

ANTI-THEFT HOUSING FOR VEHICULAR COMMUNICATION EQUIPMENT

Paul E. Barding, 249 Wilson Place, Crown Point, Ind. 46307

Filed Jan. 17, 1977, Ser. No. 759,885
Int. Cl.² E05B *13/02*
U.S. Cl. 312—242 **4 Claims**



1. An anti-theft housing for vehicular communication equipment comprising a housing, an escutcheon, said escutcheon having an opening therein, said opening being smaller in size than the front plate of a communication apparatus, a pair of arms extending outwardly from said opening and parallel to each other, said housing having an access port passing through a wall thereof, said communication apparatus being disposed partially passing through said port and partially residing within said housing when said escutcheon clampingly engages said front plate intermediate said escutcheon and said housing, said pair of arms being disposed within said housing when said escutcheon clampingly engages said front plate intermediate said escutcheon and said housing, a lock, said lock having a lock housing, said lock housing fixedly secured to a wall of said housing opposite to said wall having said port therein, a pair of rods extending outwardly from said lock, one end of each of said pair of rods operably positioned by locking and unlocking said lock into and out of engagement with openings located in the ends of said pair of arms when said pair of arms are disposed within said housing, a plate fixedly secured to said housing, said plate located parallel to the keyway opening of said lock and outwardly of said housing, a key, said key operably controlling said lock, said key having a bar fixedly secured thereto, said bar extending substantially at right angles to the length of said key, means to fixedly secure said housing to a motor vehicle.

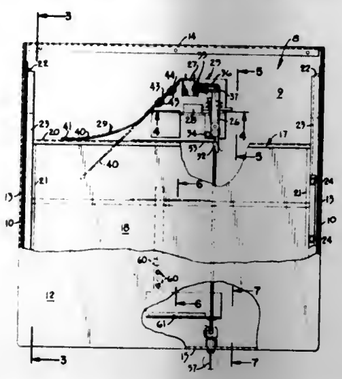
4,066,308

CASH DRAWER

Mark J. Wedel, Minneapolis, Minn., assignor to Atlas Manufacturing, Inc., Minneapolis, Minn.

Filed Jan. 21, 1977, Ser. No. 761,015
Int. Cl.² A47B *88/04, 88/16*
U.S. Cl. 312—333 **11 Claims**

1. A cash drawer assembly comprising:
a. a housing including a frame having a bottom wall and laterally spaced side walls;
b. a drawer having front and rear walls and side walls;
c. support means mounting said drawer in said housing for forward opening and rearward closing movements;
d. latch means releasably holding said drawer in a closed position;
e. operating means for said latch means;
f. elongated, normally straight flexible resilient rod means for urging said drawer toward its open position;
g. bracket means for supporting said rod means in said housing at an oblique angle to the direction of movement of said drawer for engagement of one end of the rod means by said drawer, whereby said rod means is rearwardly bent by said drawer during closing movements of the drawer;
h. and clamping means securing the other end of said rod means to said bracket means for adjustment of said rod means longitudinally thereof on said bracket means,



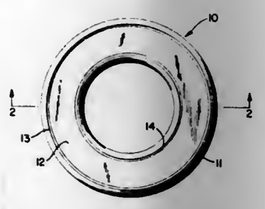
whereby to vary the effective bending length of said rod means.

4,066,309

WATER VAPOR RELEASING COMPOSITION OF MATTER AND DEVICE, AND PROCESS FOR THEIR USE

Stephen J. Hellier, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Mar. 10, 1975, Ser. No. 556,929
Claims priority, application Italy, Mar. 12, 1974, 86232/74
Int. Cl.² H01J *9/38*
U.S. Cl. 316—5 **8 Claims**



1. A method for introducing water vapor into an electron tube comprising the steps of:
1. introducing particulate hydrated alumina into the tube,
2. heating the hydrated alumina to release water vapor, in which the heating comprises two steps:
A. heating the hydrated alumina by baking-out said tube to a first temperature to release a first amount of water vapor, and then after completion of the bake out,
B. heating the hydrated alumina by induction heating to a higher temperature to release a second amount of water vapor.

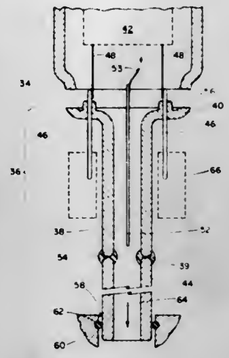
4,066,310

METHOD FOR INTRODUCING A HIGH VOLTAGE CONDUCTOR INTO A TELEVISION CATHODE RAY TUBE

Kazimir Palac, Carpentersville, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 3, 1977, Ser. No. 756,205
Int. Cl.² H01J *9/18*
U.S. Cl. 316—19 **4 Claims**

1. In the manufacture of a television cathode ray tube which includes an envelope with a narrow neck at one end, a method of introducing a high-voltage electrical conductor through the neck of the tube, comprising:
providing a gun-base assembly comprising a hollow glass stub tubulation on one end of which is an annular glass base carrying an electron gun assembly, and on the distal end of which is temporarily secured a hollow holder;
providing an electrical conductor which passes through said stub tubulation;
inserting said gun-base assembly into said neck of said tube and hermetically bonding said base to said neck;
evacuating said tube through said stub tubulation and said temporary holder;



applying heat circumferentially to said stub tubulation between said distal end of said stub tubulation and said base to soften and pinch off said tubulation, sealing the evacuated tube against re-entry of air; and
detaching said temporary holder from said stub tubulation to form a cup in said end of said tubulation for receiving an electrical connector.

4,066,311

MULTIPLE GUN CATHODE RAY TUBE TESTING, CLEANING, AND REJUVENATING APPARATUS

Daniel A. Poulson, Stevensville, Mich., assignor to Heath Company, Benton Harbor, Mich.

Filed Feb. 22, 1977, Ser. No. 770,429
Int. Cl.² H01J *9/50*
U.S. Cl. 316—28 **13 Claims**



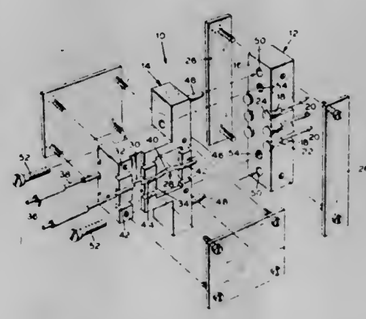
1. Apparatus for restoring electron emission of the cathodes of multiple electron gun cathode ray tubes, said tubes having a heater and each electron gun having a cathode and a control grid, said apparatus having means for connection to the cathode ray tube being restored and comprising:
a potential source of supplying power to said heater;
an alternating current power source;
a direct current power source;
current flow indicating means for connection in the cathode to control grid circuits of said electron guns; and
switching network means coupled to said alternating current power source and said direct current power source and having a first switch configuration for coupling said direct current power source across the control grid and cathode of one of said electron guns and rejuvenating the cathode of that one electron gun and a second switch configuration for coupling said alternating current power source across the control grid and cathode of said one of said electron guns and cleaning the cathode of that one electron gun and further comprising a plurality of switch elements for selecting said one of said electron guns.

4,066,312

HIGH DENSITY CABLE CONNECTOR

Louis H. Faure, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1976, Ser. No. 700,275
Int. Cl.² H01R *15/22*
U.S. Cl. 339—48 **8 Claims**



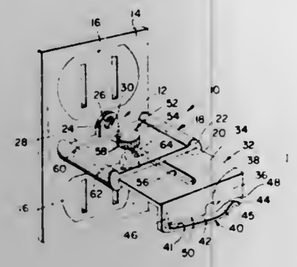
1. A connector for forming a plurality of electrical wiring connections comprising:
a first mateable coupling member having a flat surface, a plurality of openings in said first member arranged in a predetermined configuration,
a plurality of headed elements disposed in said plurality of openings, said headed elements adapted to be attached to a plurality of electrical wires,
a second mateable coupling member provided with a flat surface,
a set of elongated flexible metal buckling beam elements, said elements each comprised of a laterally flexible electrically conductive wire having a length that is many times its diameter, said wire having an anchoring portion adjacent one end, a long flexible central portion, and an end portion opposite said anchoring portion, on the other end,
support means on said second member for releasably supporting said set of buckling beam elements in aligned positions relative to said plurality of headed elements on said first member with said buckling beam elements protruding slightly beyond said flat surface, said support means including a means to engage said anchor portions of each of said buckling beams to thereby prevent axial movement, means to support said end portion of each of said buckling beams for longitudinally slideable movement, and an enclosure which allows flexing of the central portion of said buckling beam in a single plane, said enclosure including surfaces at opposite sides of said central portions which block said central portions from flexture in directions transverse to said single plane,
alignment means for aligning said first member and said second member in mateable relation with the respective flat surfaces in opposed relation and with the protruding ends of said set of beam elements in contact with a plurality of headed elements, and
securing means for maintaining said first member and second member in mateable relation and with said beam elements in flexed positions.

4,066,313

SAFETY GUARD FOR ELECTRICAL PLUGS

Tronje von dem Hagen, 64 Doherty Drive, Clifton, N.J. 07013

Filed Aug. 3, 1976, Ser. No. 711,240
Int. Cl.² H01R *13/54*
U.S. Cl. 339—75 P **7 Claims**



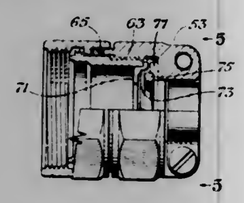
1. A safety guard for electrical plugs and multiple plug adaptors inserted in receptacles, comprising:
   a. a support element adapted to be affixed by affixing means to the face plate of a receptacle outlet, said support element being substantially transverse to said receptacle face plate and having a substantially longitudinal opening in an edge thereof further most from said face plate;
   b. a substantially "L" shaped support bracket adapted to slideably cooperate on a first portion thereof with said support element through said longitudinal opening, a second portion of said "L" shaped support bracket defining a slot therein and adapted to engage within the slot a cord affixed to a plug inserted in said receptacle outlet, said "L" shaped support bracked retaining said plug within said receptacle;
   c. means for removably securing said cord within said slot; said removable securing means comprising a spring urged member affixed to said second portion and adapted to close the open end of said slot and secure the cord, and
   d. means for adjustably securing said support bracket to said support element.

4,066,314

ELECTRICAL CONNECTOR BACKSHELL ACCESSORY INDEXING BODY

Robert A. Williams, 55 Bounty Road East, Fort Worth, Tex. 76116

Filed June 28, 1976, Ser. No. 700,392
Int. Cl.² H01R *13/54*
U.S. Cl. 339—89 R **5 Claims**



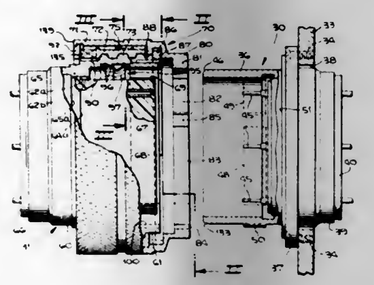
1. An electrical connector backshell accessory body adapted to be rotatably confined within a coupling nut of the type having threads formed on its inside at one end and an inward extending shoulder spaced from said threads and located between said threads and the other end of said nut, said accessory body comprising:
   a hollow cylindrical member having a first end with an outside diameter sufficient to allow it to freely pass through said coupling nut and an outward extending shoulder located at its other end and having an outside diameter greater than the inside diameter of said inward extending shoulder of said coupling nut,
   threads formed on the outside of said outward extending shoulder of said hollow cylindrical member to allow said outward extending shoulder to be threaded into and beyond said threads formed on the inside of said nut to locate said outward extending shoulder between said threads and said inward extending shoulder of said nut with said first end of said hollow cylindrical member extending beyond said other end of said nut,
   said threads and inward extending shoulder of said nut confining said outward extending shoulder of said hollow cylindrical member when located therebetween but allowing said nut and said hollow cylindrical member to move slightly axially with respect to each other,
   the outside diameter of said outward extending shoulder of said hollow cylindrical member being slightly less than the inside diameter of said nut between its threads and its inward extending shoulder whereby said nut and said hollow cylindrical member are free to rotate relative to each other when said outward extending shoulder of said hollow cylindrical member is located between said threads and said inward extending shoulder of said nut,
   threads formed on the outside of said first end of said hollow cylindrical member to allow said first end to be threaded into a backshell accessory member when said first end of said hollow cylindrical member extends beyond said other end of said nut,
   teeth formed on said other end of said hollow cylindrical member for engaging the teeth of an electrical connector when it is threaded into the threads of said nut and
   a self-locking O-ring located between the outside wall of said accessory body and the inside wall of said coupling nut when said accessory body is confined by said coupling nut,
   said self-locking O-ring being located between said inward extending shoulder and said other end of said coupling nut.

4,066,315

ELECTRICAL CONNECTOR WITH ARCUATE DETENT MEANS

Hal Arneson, Lawton, N. Dak., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed July 26, 1976, Ser. No. 708,475
Int. Cl.² H01R *3/00, 13/54*
U.S. Cl. 339—89 M **11 Claims**



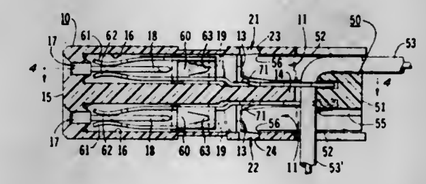
1. In an electrical connector having a receptacle means including a receptacle shell and a plug means including a plug shell, a coupling nut threaded on said plug shell, and a coupling ring housing keyed to said coupling nut, electrical contact elements carried within said receptacle and plug shells for electrically mating and unmating, and lock means on said coupling housing and said receptacle shell for releasably holding said contact elements in mating relation, the provision of:
   means for audibly indicating fully mated and locked relationship of said receptacle means and plug means, said indicating means including
   an internal annular groove in said coupling housing;
   a keyway on said plug shell:
   and an arcuate resilient detent member in said annular groove and having a key engaged in said keyway;
   said detent member having radially outwardly directed end portions;
   said annular groove having spaced sets of radially outwardly located recesses to selectively receive said end portions;
   whereby when said housing is rotated to full locked and mated position, said end portions are urged out of one set of recesses and forcibly audibly engaged in a second set of recesses.

4,066,316

ELECTRICAL CONNECTOR CONSTRUCTION

Robert William Rollings, Auburn, Ala., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 11, 1976, Ser. No. 740,843
Int. Cl.² H01R *9/08, 13/54*
U.S. Cl. 339—91 R **13 Claims**



1. An electrical connector construction comprising a receptacle housing having a first face and a second, opposite face and a slotted cavity opening on said first face, said housing further having a plurality of apertures extending from said cavity to said second face and a recess in a wall of said housing transverse to and within said cavity to present a detent lip; a plurality of electrical contact terminals fitted respectively in said apertures, each of said terminals presenting a terminal pin socket at said second face and a bifurcated conductor seizing blade at said first face; and a comb plug member dimensioned for insertion in said housing cavity, said plug member having a plurality of fingers extending therefrom for positioning conductors therebetween in registration with said conductor seizing blades, each of said fingers being terminated in a pawl, each of said contact terminal blades further having a tab spring extending therefrom for urging toward and locking into engagement, one of said finger pawls with said detent lip as said plug member is inserted in said housing cavity.

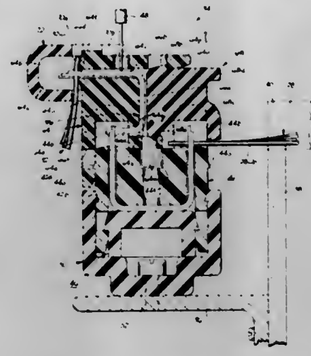
4,066,317

ELECTRICAL CONDUCTOR TERMINATING SYSTEM

Herbert H. Bierenfeld, Doraville; Charles McGonigal, Grayson, both of Ga.; Chauncey M. Horton, Jr., and John A. Kelsey, both of North Andover, Mass., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Sept. 30, 1976, Ser. No. 728,337
Int. Cl.² H01R *9/08*
U.S. Cl. 339—91 R **23 Claims**

1. An electrically insulating terminal support block for holding electrical terminals having a bight portion and spaced legs projecting from opposite ends of the bight portion, which comprises:
   a body portion;
   electrical conductor guide portions projecting from one side of said body portion in a first direction and spaced apart to define electrical conductor-receiving slots therebetween;
   first spaced insulating ribs in said guide portions defining slots for receiving respective ones of the legs of the terminals in insulated relationship;
   second spaced insulating ribs on said body portion defining slots for receiving the bight portions of the terminals in insulated relationship;
   a pair of resilient legs having outer free ends and each projecting outward with respect to said body portion in a different direction than the first direction in which said electrical conductor guide portions project from said body portion, said legs being spaced apart to permit the terminals to be inserted into and removed from said guide portions and said first and second ribs of the support block; and
   connecting means adjacent the outer free end of at least one of said resilient legs for assembling the support block to a member for retaining the terminals in the support block.

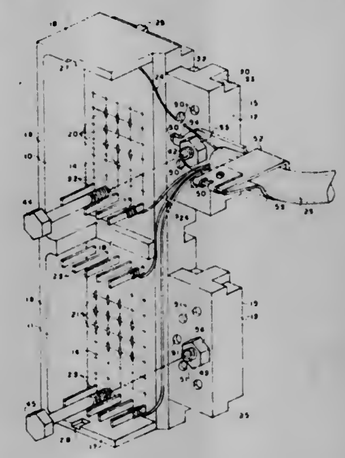


4,066,318

ELECTRICAL CONNECTOR ASSEMBLY

David L. Vonder, Addison, and Anthony J. Wilkis, Downers Grove, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 15, 1976, Ser. No. 705,659
Int. Cl.² H01R *13/54*
U.S. Cl. 339—92 M **5 Claims**



1. An electrical connector assembly of the type which affords cable wire interconnections comprising:
   a pin connector including,
   a partial enclosure having a floor comprising a front surface and a rear surface, a first end wall, a second end wall, and a side wall, said first end wall, said second end wall and said side wall extending forward from said floor front surface, said partial enclosure also including a divider wall

extending forward from said floor front surface and defining first and second aligned partial enclosure portions,

a first plurality of apertures extending through said floor within said first portion and arranged in a predetermined array,

a first plurality of wire receiving pins within said first plurality of apertures, said first plurality of pins extending forward of said floor front surface and terminating within said first plurality of apertures at a point intermediate said front and rear surfaces,

a second plurality of apertures extending through said floor within said second portion and arranged in said predetermined array,

a second plurality of wire receiving pins within said second plurality of apertures, said second plurality of pins extending forward of said floor front surface and terminating within said second plurality of apertures at a point intermediate said front and rear surfaces,

a first block portion adjacent said first partial enclosure portion on the side opposite said side wall, said first block including a first alignment key, and

a second block portion adjacent said second partial enclosure portion on the side opposite said side wall, said second block including a second alignment key; and

a terminal block means including,

a first terminal block having a first planar major surface, and a third plurality of wire receiving pins arranged in said predetermined array and extending forward of said first planar surface,

a second terminal block substantially identical to said first terminal block having a second planar major surface, and a fourth plurality of wire receiving pins arranged in said predetermined array and extending forward of said second planar surface, and

a bracket for aligning and securing said first and second terminal blocks together and having first and second key slots for receiving said first and second alignment keys, respectively;

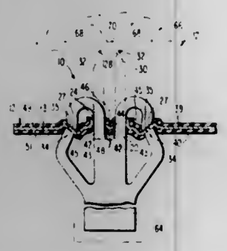
whereby, when said pin connector and said terminal block means are brought together, said first and second alignment keys and said first and second key slots respectively engage for aligning said first and second plurality of apertures with said third and fourth plurality of wire receiving pins respectively and for causing said first and second plurality of wire receiving pins to contact said third and fourth plurality of wire receiving pins respectively.

4,066,319

METHOD AND APPARATUS FOR FLAT CONDUCTOR CABLE TERMINATION

Charles E. Baker, Doylestown, and Abraham Silverzweig, Broomall, both of Pa., assignors to Elco Corporation, Willow Grove, Pa.

Filed Apr. 30, 1974, Ser. No. 465,594
Int. Cl.² H01R 9/06
U.S. Cl. 339—97 R **16 Claims**



1. A contact apparatus for flexible flat conductor means comprising:

penetrating means for penetrating completely through a conductor portion of said flat conductor means to provide at a first location electrical contact between said conductor portion and said contact apparatus; and

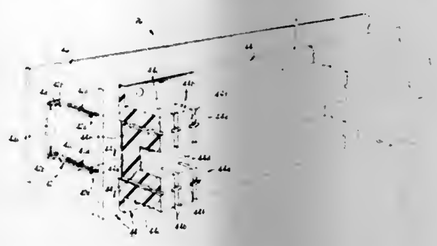
crimping means including spring means cooperable with said penetrating means for forming a biased electrical contact at a second location on said conductor portion.

4,066,320

ELECTRICAL CONDUCTOR TERMINATING SYSTEM

Allen R. Goodrich, Groveland; Chauncey M. Horton, Jr., North Andover, both of Mass.; Leigh M. Thaeler, Derry, N.H., and John O. Toivola, Haverhill, Mass., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Sept. 30, 1976, Ser. No. 728,340
Int. Cl.² H01R 9/08
U.S. Cl. 339—98 **10 Claims**



1. An electrically insulating terminal support block for electrical terminals each having interconnected legs disposed in spaced opposed relationship, which comprises:

a body portion;

sets of electrical conductor guide portions projecting outward with respect to one side of said body portion such that said guide portions and surface portions of the one side of said body portion between said guide portions define a channel between said guide portions;

said sets of electrical conductor guide portions being in spaced opposed relationship on opposite sides of the channel defined by said guide portions and the surface portions of the one side of said body portions;

each of said electrical conductor guide portions being spaced from adjacent guide portions to define electrical conductor-receiving slots therebetween of substantial depth in comparison to the spacings between the guide portions; and

electrical terminal leg-receiving slots formed in the support block for receiving the legs of the electrical terminals, the leg-receiving slots being formed in part in opposed walls of respective ones of the electrical conductor-receiving slots defined by the spaced electrical conductor guide portions, extending from the electrical conductor-receiving slots to an opposite side of said body portion, and being open-ended adjacent the opposite side of said body portion for the reception of the legs of the terminals with one leg of each terminal entering one of the leg-receiving slots on one side of said channel and the other leg entering one of the leg-receiving slots on the other side of said channel.

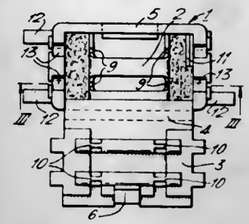
4,066,321

ELECTRICAL CONNECTOR

Francisco Villazon, Barcelona, Spain, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 30, 1976, Ser. No. 755,523
Claims priority, application United Kingdom, Jan. 17, 1976, 1846/76
Int. Cl.² H01R 7/04
U.S. Cl. 339—98 **3 Claims**

1. An improvement to an electrical connector of the type having a housing having notches on its end walls and containing first and second electrical contacts with each contact having spaced apart wire-receiving slotted plates, said plates being in alignment with said notches, and at least one wire severing edge associated with at least one of said notches and a closure



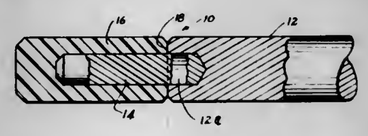
member adapted to force insulated wires into the slotted plates and to force at least one wire across the wire severing edge, the improvement comprising, an external boss on the housing adjacent each of said notches through which the wires may extend after being forced into the slotted plates.

4,066,322

MALE CONTACT ASSEMBLY FOR USE IN LOADBREAK

Robert R. Brown, Bernardsville, and David E. Bressler, Long Valley, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Aug. 6, 1976, Ser. No. 712,385
Int. Cl.² H01R 13/52
U.S. Cl. 339—111 **5 Claims**



1. A male contact assembly comprising:

a. an elongate male contact of electrically conductive material;

b. an electrically insulative member secured to said male contact and extending longitudinally therefrom, said insulative member defining a hollow interior extending at least partly therewith;

c. a solid electrically conductive element in said insulative member interior and connected to said male contact for electrically longitudinally extending said male contact; and

d. a longitudinally extending layer overlying said insulative member and comprised of material generating arc-extinguishing gases upon exposure to electrical arcing, the longitudinal extent of said layer being greater than the longitudinal extent of said element in said insulative member.

4,066,323

ELECTRICAL TERMINAL BLOCKS

Alexander R. Norden, 350 Central Park South, New York, N.Y. 10025

Division of Ser. No. 542,293, Jan. 20, 1975, Pat. No. 4,027,937. This application Nov. 8, 1976, Ser. No. 739,782
Int. Cl.² H01R 9/10, 13/60, 13/62
U.S. Cl. 339—126 R **10 Claims**

1. In combination, a terminal block and a companion plug-in unit having cooperable electric contacts, said plug-in unit being wholly separable from said terminal block, said plug-in unit having a separable hinge formation adapting the plug-in unit for pivotal operation about a fulcrum into plugged-in engagement with and removal from said terminal block, said plug-in unit having means for establishing unitary cooperation with an elongated tool which then becomes a lever extension of the plug-in unit providing leverage about said fulcrum to aid in insertion of the plug-in unit into plugged-in assembly with the terminal block and to aid in extraction of the plug-in unit from such assembly, said means for establishing unitary cooperation with such tool including a tool-engagement formation adapted to mate with a complementary formation of the tool in such a manner that the tool and the plug-in unit form an elongated member operable about the fulcrum.

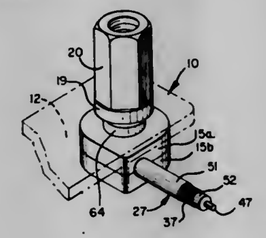


4,066,324

SOLDERLESS COAXIAL CABLE TERMINATOR

Gerald D. Stephens, Vandalia, Ohio, assignor to Valor Enterprises, Inc., West Milton, Ohio

Filed Feb. 11, 1977, Ser. No. 767,901
Int. Cl.² H01Q 1/50
U.S. Cl. 339—126 J **11 Claims**



1. A solderless coaxial cable terminator for supporting and electrically terminating a coaxial cable on a conductive frame, comprising:

a. a body divided into complementary first and second portions,

b. means defining a channel in said body portions for receiving a coaxial cable therein,

c. means for securing said body portions to one another and to the conductive frame with a predetermined portion of said first body portion held securely adjacent the frame,

d. means forming a path in said first body portion for leading the shield conductor of the coaxial cable from said channel to a position between said predetermined portion of said first body portion and the conductive frame, and for securing the shield conductor in electrical contact with the conductive frame, for completing the ground circuit thereto,

e. a signal conductor,

f. conductive securing means in electrical contact with said signal conductor and held securely adjacent a predetermined portion of said second body portion,

g. means insulating said signal conductor and said conductive securing means from the conductive frame, and

h. means forming a path in said second body portion insulated from the conductive frame for leading the center conductor of the coaxial cable from said channel to a position between said predetermined portion of said second body portion and said conductive securing means,

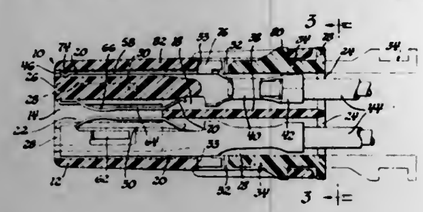
and for securing the center conductor in electrical contact with said conductive securing means, for completing the circuit thereto and thence to said signal conductor from the coaxial cable center conductor.

4,066,325

ELECTRICAL CONNECTOR FOR PRINTED CIRCUIT BOARD

Warren Pearce, Jr., Warren, and Andrew Russo, Jr., Fowler, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 15, 1976, Ser. No. 732,925
Int. Cl.² H01R 13/46, 13/42; H05K 1/07
U.S. Cl. 339—176 MP 8 Claims



1. An electrical connector for a printed circuit board or the like comprising:

a connector body having a lateral slot at a forward end and a plurality of longitudinal terminal receiving cavities,

each of said cavities having a forward longitudinal opening through which said cavities communicate with said lateral slot, a rear opening and a central side rib protruding laterally into a forward portion thereof, and

a terminal disposed in each of said cavities,

said terminal being configured for insertion into its associated cavity via the rear opening thereof and comprising a U-shaped forward end portion having first and second parallel legs in piloting engagement with said side rib,

a rearward U-shaped portion having third and fourth parallel legs,

said U-shaped portions being connected to each other by interconnecting wall means, and

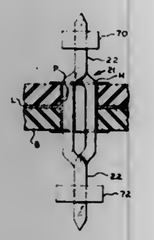
a resilient tongue portion connected to one of said first and second parallel legs of said U-shaped forward end portion and extending rearwardly in cantilever fashion with portions thereof disposed in said lateral slot.

4,066,326

CIRCUIT BOARD CONTACT

Charles Michael Lovendusky, Enola, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 513,593, Oct. 10, 1974, abandoned. This application Apr. 5, 1976, Ser. No. 673,698
Int. Cl.² H01R 9/16
U.S. Cl. 339—221 M 8 Claims



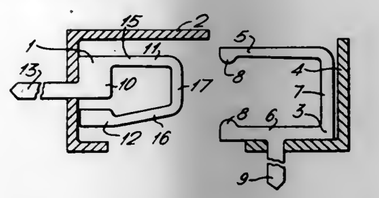
1. An elongated circuit board contact including a deformed mounting portion for insertion in a hole in a circuit board and a solid, uniform cross section segment at each end of the mounting portion, said segments having substantially the same cross section, said mounting portion consisting of a radial fin having an edge adjacent the longitudinal axis of the contact and a pair of fins laterally offset and extending in the opposite direction from the radial fin, each laterally offset fin having an edge adjacent said edge of the radial fin, each fin extending lengthwise of the mounting portion and being joined at its ends to said segments.

4,066,327

ELECTRICAL CONNECTOR ASSEMBLIES

Lucas Soes, Vught, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 28, 1977, Ser. No. 763,731
Claims priority, application United Kingdom, Feb. 21, 1976, 06913/76
Int. Cl.² H01R 13/06
U.S. Cl. 339—252 R 5 Claims



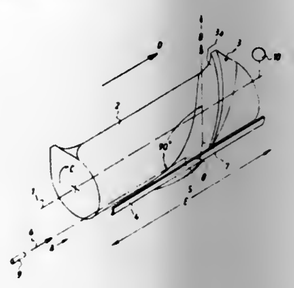
1. An electrical connector assembly comprising a forked female contact having first and second spaced cantilever contact arms extending from a yoke portion and receiving a mating male contact, the second contact arm being stiff relative to the first contact arm and having a member extending outwardly from it, the male contact having a base and a resilient contact arm having a first portion extending forwardly from the base to a first junction, a second portion extending from the first junction at substantially 90° to the first portion to a second junction and a third portion extending from the second junction generally rearwardly, the male contact entering the female contact by outward flexure of the first contact arm of the female contact and inward flexure of the third portion of the contact arm of the male contact.

4,066,328

IRRADIATING SYSTEM FOR LINE-BY-LINE COPIER

Rudolf Paulus, Munich; Walter Gutmann, Lochhofen, and Wilfried Hofmann, Taufkirchen, all of Germany, assignors to AGFA-Gevaert, AG, Leverkusen, Germany

Filed Apr. 28, 1976, Ser. No. 681,032
Claims priority, application Germany, Apr. 30, 1975, 2519283
Int. Cl.² G02B 27/17
U.S. Cl. 350—7 10 Claims



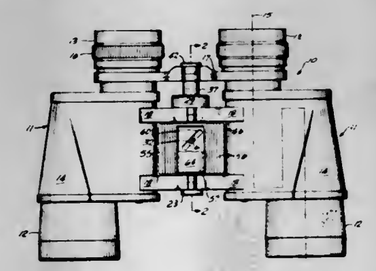
1. An irradiating apparatus for a copier, said apparatus comprising: a mirror having a substantially helical reflecting surface centered on a central axis and inclined to radii of said axis; means for rotating said mirror about said axis; means including a fixed light source for casting a beam of light in an incident direction generally parallel to said axis onto said mirror, whereby said beam is reflected from said surface in a first reflection direction outwardly of said axis; and means including a reflector extending the full axial length of said surface and fixed adjacent said mirror for reflecting the reflected beam back onto said surface in a second reflection direction so that said beam is again reflected by said mirror in a third reflection direction lying in a plane substantially orthogonal to said axis.

4,066,329

OPTICAL ADJUSTMENT KNOB WITH SPACED APART PLATFORMS

Gerrit A. Van Exel, Fullerton, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Oct. 9, 1975, Ser. No. 620,969
Int. Cl.² G02B 7/06, 7/04
U.S. Cl. 350—77 12 Claims



1. A binocular comprising:

a. first and second telescopes, each of the telescopes including a body portion and a movable optical element, the optical elements being movable with respect to the body portions to effect an optical adjustment;

b. connecting means secured to the body portions for connecting the telescopes together and to provide an interpupillary spacing adjustment for the telescopes, the means including a hinge pin having a longitudinal axis and a bracket hinged to rotate about the hinge pin;

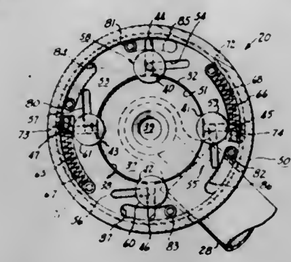
c. an assembly for moving the optical elements, the assembly including a rotatable knob and a coupling means for coupling the knob to the movable optical elements, the knob including a hub portion which is mounted between the body portions for rotation about the longitudinal axis of the hinge pin, the knob also including first and second spaced-apart finger-contacting portions spaced relative to the hub portion so that, when the binocular is held by a user with one of the user's hands gripping the first telescope and the other of the user's hands gripping the second telescope, the first finger-contacting portion is positioned relative to the first telescope so as to be easily contacted by at least one finger of the one hand and the second finger-contacting portion is positioned relative to the second telescope so as to be easily contacted by at least one finger of the other hand whereby the knob can be rotated bidirectionally in seesaw-like fashion by the fingers of the hands without any shift in grip positioning of the hands.

4,066,330

COUPLER FOR JOINING OPTICAL DEVICES

Eric Mynard Jones, Los Angeles, Calif., assignor to Karl Storz Endoscopy-America, Inc., Los Angeles, Calif.

Filed June 14, 1976, Ser. No. 697,431
Int. Cl.² G02B 9/04; F16D 1/00
U.S. Cl. 350—80 26 Claims



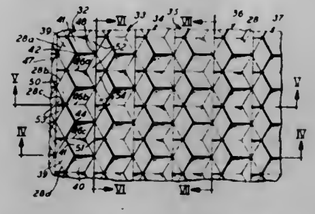
1. A coupler for joining optical devices, one of which carries a peripheral flange with a shoulder, said coupler comprising: a plurality of retainer studs, each retainer stud including a post and a shoulder on said post; a body having an axis, a socket at least in part defined by a base disposed normal to said axis, and a sidewall, a plurality of apertures through said sidewall, a plurality of substantially radially-extending guide slots, each aligned with a respective aperture, one of said posts being slidably fitted into each of said guide slots, and an observation port through the base; an actuating ring rotatably mounted to the body and including a plurality of ramp slots, one respective to each of said guide slots, each said ramp slot being disposed obliquely relative to its respective guide slot when viewed in plane and also obliquely to a plane normal to the guide slot, the ramp slots and guide slots overlaying one another in pairs with the respective posts passing through both of them at their projected intersection, rotation of the actuating ring moving the projected intersection of the slots radially inward or outward, depending on the direction in which the ring is turned, the posts moving correspondingly and, when the posts are at their innermost radial location, their shoulders project through respective apertures to overhang the shoulder carried by said one optical device to hold the optical devices together, and when the actuating ring is turned to move the posts radially outward, withdrawing the shoulders of the retainer studs so they clear the shoulder on the said one optical device.

4,066,331

CUBE CORNER TYPE RETROREFLECTORS WITH IMPROVED CUBE CORNER UNIT RELATIONSHIPS

Henry Lindner, Wood Dale, Ill., assignor to Beatrice Foods Co., Elgin, Ill.

Filed June 25, 1976, Ser. No. 699,886
Int. Cl.² G02B 5/124
U.S. Cl. 350—103 8 Claims



1. In a cube corner-type retroreflector of the type comprising a molded, substantially transparent body having a front face with a generally smooth, flattened portion which is in spaced, generally parallel relationship to a portion of a rear face thereof, the improvement which comprises

A. a rear face portion having defined therein a plurality of rows, each said row having defined therein a plurality of individually complete cube corner retroreflective units, each row being defined by a pair of spaced, parallel edges,

B. said complete retroreflective units comprising each row being substantially identical to each other, each complete cube corner retroreflective unit in an individual said row being defined by three flat faces which are arranged circumferentially about an optical axis extending therethrough, said three faces being inclined at a similar angle relative to said optical axis, and said three faces meeting an apex point along said optical axis, the interrelationship between said three faces and the associated said optical axis being such that a ray of incident light striking said front face portion, passing through said body and striking one of said three faces within a predetermined range of angles relative to said optical axis is deflected successively against the other two of said faces and then is substantially retroreflected away from said unit and out through said front face portion,

C. said complete retroreflective units comprising each row having substantially parallel respective said optical axes, all complete retroreflective units comprising each row having substantially coplanar respective said apex points, and all said optical axes being substantially perpendicular to such plane defined by said apex points,

D. adjacent pairs of said complete retroreflective units in each row having a common edge therebetween,

E. each said complete retroreflective unit of each said row having a pair of opposed face corners at the perimeter thereof, each one of said opposed face corners coinciding substantially with a different one of said row edges of the associated row thereof, and

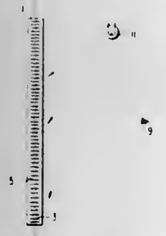
F. regions of each said row located laterally of each said retroreflective unit and adjacent both of said row edges being occupied by faces which are not associated with complete tube corner retroreflective units.

4,066,332

REAR PROJECTION SCREENS

Hisatoyo Kato, and Junji Miyahara, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 23, 1976, Ser. No. 651,872
Claims priority, application Japan, Jan. 24, 1975, 50-10240
Int. Cl.² G03B *21/60*
U.S. Cl. 350—126 **12 Claims**



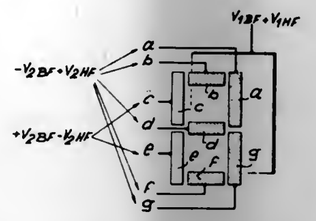
1. A rear projection screen comprising a light diffusion plate formed of a material selected from the group consisting of wax, a crystalline polymer and mixtures thereof, and light shielding layers contained in said light-diffusion plate, said light shielding layers being parallel to the direction of image projection.

4,066,333

METHOD OF CONTROL OF A LIQUID-CRYSTAL DISPLAY CELL

Bruno Dargent, Grenoble, and Jacques Robert, Saint Egreve, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 18, 1976, Ser. No. 687,742
Claims priority, application France, May 30, 1975, 75.17050
Int. Cl.² G02F *1/13*; G08B *23/00*
U.S. Cl. 350—160 LC **5 Claims**



1. A method of sequential control of a liquid-crystal display cell comprising a liquid-crystal film interposed between a first group of electrodes and a second group of electrodes, overlapping of one electrode of the first group by one electrode of the second group defining an excitable zone of the liquid-crystal film, said liquid crystal having dielectric anisotropy and a critical frequency at which said dielectric anisotropy undergoes a change of sign, the value of anisotropy being ϵ_1 below said critical frequency and ϵ_2 above said critical frequency, said liquid-crystal assuming a first optical state "0" corresponding to a first orientation of its molecules when subjected to an alternating electric field at a low frequency below said critical frequency and assuming a second optical state "1" corresponding to a second orientation of its molecules when subjected to an alternating electric field at a high frequency above said critical frequency, the steps of applying on the electrodes of the first group which controls the point at which it is desired to effect the display a voltage at said low frequency having an RMS values of V_{1BF} and a voltage at said high frequency having an RMS value of V_{1HF} and a zero voltage on the other electrodes of the first group, applying on the electrodes of the second group which controls the points at which it is desired to effect the display a voltage at said low frequency having an RMS value of V_{2BF} and a voltage at said high frequency having an RMS value of V_{2HF}, said RMS values being related by the inequality:

$$\epsilon_1(V_{1BF} - V_{2BF})^2 < \epsilon_2(V_{1HF} + V_{2HF})^2$$

in the zones in which the state "0" is to be displayed and related by the contrary inequality in the zones in which the state "1" is to be displayed.

4,066,334

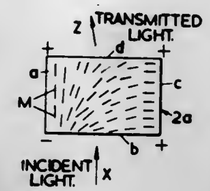
LIQUID CRYSTAL LIGHT DEFLECTOR

Adrian Forrest Fray, Malvern Link, and David Jones, Malvern, both of England, assignors to National Research Development Corporation, London, England

Filed Jan. 5, 1976, Ser. No. 646,834
Claims priority, application United Kingdom, Jan. 6, 1975, 496/75; June 26, 1975, 27180/75
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC **6 Claims**

1. An optical modulation device comprising:

two spaced transparent dielectric substrates, a layer of nematic liquid crystal material having a positive dielectric anisotropy sandwiched between the substrates, at least two electrodes spaced apart on the inner surface of one substrate and facing these electrodes at least two electrodes spaced apart on the inner surface of the other substrate, means for producing electrical bias fields across the layer of liquid crystal material to produce a first condition in which molecules of the liquid crystal material are aligned by the field in a generally uniform direction and to produce separately a second condition in which the molecules of the liquid crystal material are oriented by the bias



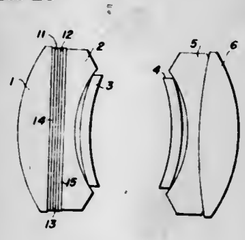
fields to provide a controlled refractive index gradient across the layer of liquid crystal material capable of refracting optical radiation having a plane of the gradient, the amount of the refraction being controlled by the bias fields, and means for changing the bias fields between the first and second conditions.

4,066,335

VARIABLE DENSITY LENS

John E. Courtney, Fairport; Charles J. Urso, Webster, and Gary A. Dir, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 19, 1976, Ser. No. 650,330
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC **3 Claims**



1. A variable density, split-Dagor lens, comprising a positive crown, a negative flint, a positive meniscus and an electro-optic cell laminated thereto; said electro-optic cell comprising in sandwich configuration a linear polarizer, a layer of conductive material, a liquid crystalline composition capable of altering the state of polarization of light when a voltage is applied thereacross, another layer of conductive material, and an analyzer.

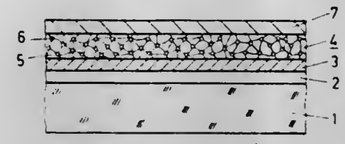
4,066,336

ELECTRODE FOR A CONTROLLABLE ELECTROCHROMIC INDICATOR DEVICE AND METHOD OF MANUFACTURE

Hans Rudolf Zeller, Birr, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 30, 1975, Ser. No. 645,430
Claims priority, application Switzerland, Jan. 6, 1975, 63/75
Int. Cl.² G02F *1/36*
U.S. Cl. 350—160 R **41 Claims**

1. Electrode for a controllable electrochromic indicator device with an electrochromic layer between a transparent first and a second electrode, the second electrode comprising a porous solid impregnated with a liquid electrolyte to form a



single layer second electrode, an electrical contact connected to the second electrode.

4,066,337

DISPLAY SYSTEM INCORPORATING A LIQUID CRYSTAL

Manfred Kobale, Faistenhaar; Hans Krlieger, Munich, and Hans-Peter Lorenz, Feldkirchen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 29, 1976, Ser. No. 736,957
Claims priority, application Germany, Oct. 31, 1975, 2548895
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC **23 Claims**



1. An improved display system comprising:

a. a pair of spaced generally parallel carrier plates at least one of which is light transmissive,

b. a pair of light transmissive electrode coatings, each one being associated with a different one respective inner adjacent opposed surface portion of one of said carrier plates,

c. a pair of light transmissive, electrically insulative coatings, each one being associated with a different one respective inner adjacent opposed surface portion of one of said carrier plates and located over its adjacent said electrode coating, each one of said insulative coatings having been vapor deposited at an oblique angle, one of said insulative coatings having been so deposited at an angle in excess of about 75°, the other of said insulative coatings having been so deposited at an angle less than about 65°,

d. mounting means sealing said carrier plates together in fixed relationship to one another and cooperating to define therebetween a chamber,

e. a liquid crystal layer in said chamber, said liquid crystal layer having positive dielectric anisotropy,

f. said insulative coating orientating the neighboring molecules substantially parallel to said plates, the direction of orientation at one of said plates being substantially vertical to the direction of orientation at the other of said plates,

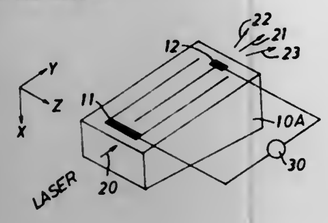
g. a pair of electrical leads, each one being electrically associated with a different one of said electrode coatings and extending into the environment from said chamber.

4,066,338

ELECTROOPTIC LIGHT MODULATOR

Shuzo Hattori; Tadao Hiramatsu, both of Nagoya; Sunao Katayama, Aichi; Hidenori Ozawa, and Yasuyuki Hiraiwa, both of Nagoya, all of Japan, assignors to Hagiwara Denki Kabusiki Kaisha, Nagoya, Japan

Filed Apr. 16, 1976, Ser. No. 677,718
Claims priority, application Japan, Apr. 22, 1975, 50-48940
Int. Cl.² G02F *1/16*
U.S. Cl. 350—161 W **13 Claims**



1. In combination with an electrooptic light modulator comprising:
an electrooptic substrate having a first pair of opposing upper and lower surfaces defined by first and second rectangular coordinate axes, a second pair of opposing side surfaces, and a third pair of front and rear opposing surfaces;
interdigital electrodes provided on said upper surface to cause in said substrate and subjacent said upper surface an electrostatic field which is spatially periodic in the direction of said first axis and uniform in the direction of said second axis;
means to apply to said electrodes a voltage variable in accordance with a modulating signal; and
the front portion of said substrate adapted to receive an incident beam of electromagnetic energy having a flat aligned plane toward the direction of said second axis such that said flat beam propagates in the electrostatic field to emerge from said rear surface as modulated output beams;
the improvement wherein at least one of said lower surface and said side surfaces is non-parallel with the opposing surface thereto to prevent resonances of acoustic waves produced in said substrate by the electrostatic field.

4,066,339

OPTOMETER EYEPIECE

Arthur H. Shoemaker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed July 16, 1976, Ser. No. 705,856
Int. Cl.² G02B *3/00, 9/34*
U.S. Cl. 350—175 E **2 Claims**



1. A four component optometer eyepiece being substantially free of chromatic aberration comprising a biconcave negative singlet I, a plano-convex positive singlet II, a biconvex positive singlet III and a biconvex positive doublet IV all aligned in sequence along an optical axis and having the values set forth below with axial thicknesses of the successive lens components being designated T_1 to T_5, successive axial spaces from the first component to an observer's eye being designated S_1 to S_4, successive lens radii being designated R_1 to R_9 where the minus sign (−) indicates surfaces whose center of curvature lies on an observer's side of their vertices, refractive indices and Abbe numbers are absolute values designated ND_1 to ND_5 and ν_1 to ν_5, respectively,

Lens	Radius(R)	Thickness (T)	Spacing(S)	Index of Refraction (ND)	Abbe No. ( )
	$R_1 = 0.90598x$				
		$T_1 = 0.034188x$		$1.58 < ND_1 < 1.60$	$\nu_1 = 61$
I	$R_2 = 0.90598x$		$S_1 = 0.28222x$		
	$R_3 = 100x$				
		$T_2 = 0.051282x$		$1.58 < ND_2 < 1.60$	$\nu_2 = 61$
II	$R_4 = 1.6036x$		$S_2 = 0.0008547x$		
	$R_5 = 1.5231x$				
		$T_3 = 0.068376x$		$1.58 < ND_3 < 1.60$	$\nu_3 = 61$
III	$R_6 = 0.89786x$		$S_3 = 0.17239x$		
	$R_7 = -1.8352x$				
		$T_4 = 0.08547x$		$1.58 < ND_4 < 1.60$	$\nu_4 = 61$
IV	$R_8 = 0.42966x$				
		$T_5 = 0.059829x$		$1.77 < ND_5 < 1.79$	$\nu_5 = 26$
	$R_9 = 1.1479x$		$S_4 = 0.9982x$		

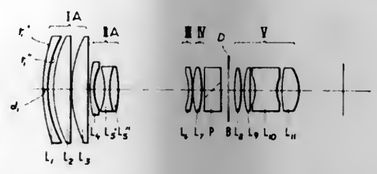
and x is 115 to 119mm.

4,066,340

BASIC LENS ASSEMBLY FOR SERIES OF ZOOM OBJECTIVES OF DIFFERENT VARIFOCAL RATIOS

Walter Besenmatter; Trude Muszumanski, both of Vienna, and Irmgard Wendisch, Trumau, all of Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Aug. 10, 1976, Ser. No. 713,224
Claims priority, application Austria, Aug. 11, 1975, 6230/75
Int. Cl.² G02B *15/16, 17/00*
U.S. Cl. 350—184 **8 Claims**



1. A lens assembly forming part of a varifocal optical system of the type wherein a front lens group constituted by two stationary positive components bracketing two axially shiftable negative components adjoins an axially fixed rear lens group of positive refractivity consisting of a plurality of air-spaced lens members, said lens assembly comprising:
an axially shiftable negative lens L_6 constituting one of said negative components;
an axially fixed positive lens L_7 constituting one of said stationary components; and
two positive lenses L_8, L_9, a negative lens L_{10} and another positive lens L_{11} constituting said air-spaced lens members;
said lenses $L_6 - L_{11}$ having radii of curvature $r_6' - r_{11}''$, axial thicknesses $d_6 - d_{11}$, refractive indices n_d and Abbe numbers ν_d substantially as given in the following table along with air spaces $s_9 - s_{11}$ separating said lens members $L_8 - L_{11}$:

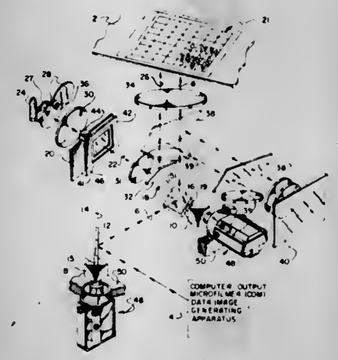
			n_d	ν_d
L_6	$r_6' = -0.87$, $r_6'' = -2.20$	$d_6 = 0.05$	1.78	44
L_7	$r_7' = +1.40$, $r_7'' = -1.75$	$d_7 = 0.12$	1.69	55
L_8	$r_8' = +2.19$, $r_8'' = -3.17$	$d_8 = 0.11$	1.74	45
		$s_9 = 0.03$		
L_9	$r_9'' = +0.74$, $r_9'' = \infty$	$d_9 = 0.12$	1.74	45
		$s_{10} = 0.04$		
L_{10}	$r_{10}' = -0.99$, $r_{10}'' = +0.57$	$d_{10} = 0.35$	1.85	24
		$s_{11} = 0.06$		
L_{11}	$r_{11}' = +1.69$, $r_{11}'' = -0.59$	$d_{11} = 0.23$	1.74	42

4,066,341

SCANNER ALIGNMENT MECHANISM

Alvin Louis Schubert, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1976, Ser. No. 690,480
Int. Cl.² G05D *25/00*
U.S. Cl. 350—285 **2 Claims**



1. A mechanism for effecting alignment of an axis of a mirror or other optical element in first and second perpendicular planes, the mechanism comprising:
A first mounting member adapted to be secured in a fixed position, the mounting member having at an end thereof a generally cylindrical end surface generated about a first axis;
a second mounting member having a first generally cylindrical end surface slidably engageable in a mating relationship with, and substantially conforming to, the end surface of the first mounting member, the second mounting member having a second generally cylindrical end surface generated about a second axis substantially perpendicular to the first axis, the first and second axes intersecting each other;
a third mounting member having a generally cylindrical end surface slidably engageable in a mating relationship with, and substantially conforming to, the second end surface of the second mounting member whereby each of said mounting members is slidably adjustable with respect to the adjacent mounting member along the engaged cylindrical surfaces; and
means for supporting the optical element on the third mounting member with its axis perpendicular to and intersecting said first and second axes so that the axis of the optical element can be aligned in a first plane by effecting relative movement between said first and second mounting members and the optical element can be aligned in a second plane perpendicular to said first plane by effecting relative movement between said second and third mounting members.

4,066,342

MIRROR MOUNT WITH BEVELED APERTURE FOR OPTICAL SYSTEMS

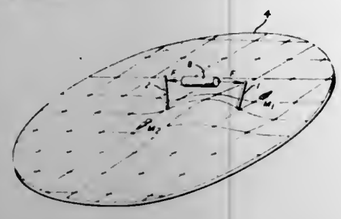
Thomas Clark Arends, and Warren Hastings Miller, Jr., both of Palm Bay, Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Apr. 26, 1976, Ser. No. 680,394
Int. Cl.² G02B *5/08*
U.S. Cl. 350—288 **1 Claim**



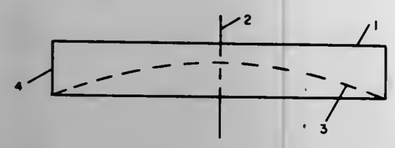
1. A mirror mounting arrangement comprising:
a base formed with a tubular shaped aperture extending therethrough, the base being formed with a circular shaped aperture having two sections of different diameter, the sections being substantially aligned along the axis of the aperture;
abutment means extending from the inner walls of said aperture toward the axis of the aperture to provide a passage of reduced size located along a portion of said aperture;
a mirror positioned in said aperture with its reflective side located transverse the axis of said aperture and facing said abutment means;
resilient means comprising a ring shaped wavy washer positioned between said mirror and said abutment means for providing a resilient force therebetween, said washer being formed with an opening extending therethrough to provide a path for radiation to and from said mirror through said aperture,
adjustment means for urging said mirror against said resilient means adapted to adjust the position of said mirror in a translational direction along the axis of the aperture and in a pivotal direction about the axis, said adjustment means including three screws arranged in a triangular configuration and having ends which directly contact the side of the mirror opposite said reflective side; and
the section of said aperture in the base opposite to the section into which said mirror is disposed being bevel shaped and having a greater diameter at one end than at the end defined by the abutment means so that the path of radiation for impinging the reflective side of the mirror may form a large angle with respect to the axis of the aperture.

4,066,343
CONFIGURATION CONTROL APPARATUS
Roderic M. Scott, Stamford, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Apr. 15, 1976, Ser. No. 677,219
Int. Cl.[2] G02B 5/10
U.S. Cl. 350—295 6 Claims



1. Apparatus for controlled multiple mode distortion of an electromagnetic radiation element, comprising:
at least three posts affixed to the electromagnetic radiation element and extending therefrom; and
actuators disposed between said posts for applying variable force therebetween, equal and opposite moments being developed from the force of each said actuator through said posts to distort the electromagnetic radiation element, said posts being located on the electromagnetic radiation element to provide at least two modes of distortion therein.

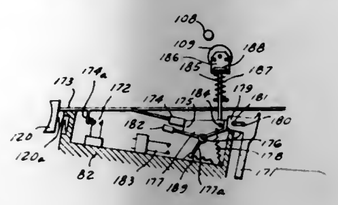
4,066,344
LIGHT-WEIGHT ARCH TYPE STRUCTURES FOR LARGE REFLECTIVE MIRRORS
Dipak Chandra Talapatra, 6611 Elk Park Court, Alexandria, Va. 22310
Filed Aug. 30, 1976, Ser. No. 718,547
Int. Cl.[2] G02B 5/08
U.S. Cl. 350—310 3 Claims



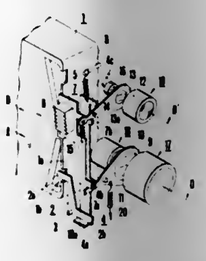
1. A light-weight mirror structure consisting of a single solid cylindrical block having a reflecting face and a support face opposite the reflecting face, said support face being in the form of a structural arch with its apex coincident with the axis of rotation of the cylindrical block.

4,066,345
SOUND-FILM CAMERA
Otto Freudenschuss; Otto Kantner, and Peter Revy von Belvard, all of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria
Continuation-in-part of Ser. No. 460,136, April 11, 1974, abandoned. This application Mar. 22, 1976, Ser. No. 669,110
Claims priority, application Austria, May 24, 1973, 4565/73; June 14, 1973, 5263/73
Int. Cl.[2] G03B 31/02
U.S. Cl. 352—27 13 Claims

1. In a cine camera, in combination:
a casing adapted to accommodate a motion-picture film having a sound track, said casing being provided with an exposure gate and sound-recording means;
drive means in said casing for transporting said film past said exposure gate and said sound-recording means, said drive means including a continuously rotatable capstan and a pinch roller adapted to clamp said film therebetween;
energizing means for said drive means including manually operable trigger means;
support means for displacing said pinch roller relatively to said capstan, said support means including a movable element connected with said pinch roller by a lost-motion coupling;
an external actuating member on an outer surface of said casing coupled with said support means and manually operable independently of said trigger means for relatively displacing said pinch roller and said capstan from a more widely separated normal position into a relatively closely spaced alternate position preparatorily to operation of said trigger means; and
spring means anchored to said element and to said pinch roller, said trigger means being provided with an extension engageable with said element in said alternate position of said support means for moving said pinch roller into an off-normal position closer to said capstan whereby said film is clamped between said pinch roller and said capstan under pressure of said spring means.

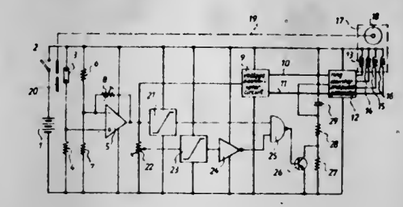


4,066,346
MOTION PICTURE CAMERA WITH A BUILT IN COLOR CONVERSION FILTER
Masamichi Toyama; Tomoshi Takigawa, both of Macida; Noritsugu Hirata, and Kazuo Ishikawa, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 20, 1976, Ser. No. 678,685
Claims priority, application Japan, Apr. 25, 1975, 50-50476
Int. Cl.[2] G03B 23/02
U.S. Cl. 352—72 10 Claims



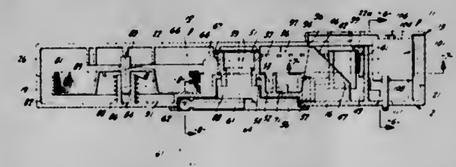
1. A motion picture camera capable of selectively using a first type film cartridge containing an artificial light type film and a second type film cartridge containing a daylight type film, comprising:
a cartridge loading chamber in which either of the first type and the second type cartridges can be loaded;
a filter means for adapting the artificial light type film to the photography in daylight, said filter means being shiftable between a first position inserted into the photographic optical path of the camera and a second position removed from the photographic optical path by changing over operation;
an exposure device for determining the exposure value of the film;
an adjusting means for adjusting the sensitivity of the exposure device, said adjusting means being changeable between a first state in which the adjusting means adjusts the sensitivity of the exposure device for daylight photography with the artificial light type film and a second state in which the adjusting means adjusts the sensitivity of the exposure device for the artificial light photography with the artificial light type film by changing over operation;
an operation means manually operable from outside of the camera for changing over the filter means and the adjusting means, said operation means being operatively associated with the filter means and the adjusting means;
a detecting means for detecting the kind of film contained in the film cartridge loaded into the film cartridge loading chamber, said detecting means being operatively engageable with the film cartridge loaded into the film cartridge loading chamber and setting the filter means to the second position only when the film cartridge loaded into the film cartridge loading chamber is of the second type; and
a holding means for holding the adjusting means in the first state, said holding means being operatively associated with the detecting means and setting the adjusting means compulsorily to the first state when the detecting means detects the second type film cartridge, whereby when the daylight type film is used, the operation means is made ineffective and the sensitivity setting of the exposure device is compulsorily adjusted to be suitable for daylight photography with the artificial light type film.

4,066,347
MOTION PICTURE CAMERA WITH VARIABLE APERTURE CONTROL RATE
Eduard Wagensonner, Aschheim, Germany, assignor to AGFA-Gevaert, AG, Leverkusen, Germany
Filed Dec. 10, 1975, Ser. No. 639,375
Claims priority, application Germany, Dec. 20, 1974, 2460675
Int. Cl.[2] G03B 7/08
U.S. Cl. 352—141 8 Claims



1. In a motion picture camera having film, a diaphragm having an adjustable aperture for controlling the quantity of light falling on said film, and aperture control means for changing the size of said aperture when the quantity of light falling on said film differs from a desired quantity, said aperture control means including a stepmotor and pulse generator means connected to said stepmotor for furnishing pulses energizing said stepmotor, whereby the rate of change of the size of said aperture with respect to time varies as a function of the repetition rate of the pulses supplied to said stepmotor means by said pulse generator means, the improvement comprising frequency varying means connected to said pulse generator means for varying said repetition rate of said pulses as a function of the difference between said actual quantity of light falling on said film and said desired quantity and in such a manner that said pulse repetition rate decreases in response to decreasing differences between said actual and desired quantities of light falling on said film, wherein said aperture control means comprise photosensitive receiver means positioned to receive light indicative of the quantity of light falling on said film, for furnishing an electrical light signal corresponding thereto, balanceable circuit means connected to said photosensitive receiver means for furnishing an aperture control signal having a reference amplitude when said quantity of light falling on said photosensitive receiver means corresponds to said desired light quantity and varying from said reference amplitude in a first or second direction when said electrical light signal is indicative of a quantity of light falling on said film greater than and less than said desired light quantity respectively; and wherein said frequency varying means comprises means for changing said pulse repetition rate of said pulse generator means from a first to a second pulse repetition rate when the amplitude of said aperture control signal varies from said reference amplitude by a predetermined amplitude difference in said first or said second direction, wherein said frequency varying means comprises first and second threshold circuit means connected to said balanceable circuit means for furnishing, respectively, a first and second threshold output signal when the amplitude of said aperture control signal differs from said reference amplitude by a difference exceeding said predetermined difference in said first and second direction respectively, gating circuit means connected to said first and second threshold circuit means for furnishing a gating output signal in response to said first or said second threshold output signal; wherein said pulse generator means includes timing circuit means including a plurality of timing circuit elements for determining said pulse repetition rate of said pulse generator means; and wherein said frequency varying means further comprises switching circuit means connected between said gating circuit means and said timing circuit means for changing the number of elements in said timing circuit means in response to said gating output signal.

4,066,348
CARTRIDGE VIEWER
Werner W. Ciupke, Burlingame, Calif., assignor to Montron Corporation, Mountain View, Calif.
Filed May 16, 1975, Ser. No. 578,107
Int. Cl.[2] G03B 21/00
U.S. Cl. 352—129 1 Claim



1. In a cartridge viewer, means forming a framework with indexing means carried thereby, the indexing means having an aperture therein and a pair of spaced apart index projections disposed on opposite sides of the aperture, an endless length of film having perforations along one edge of the same, guide means disposed within the framework for guiding the film over the indexing means and past the aperture, a sprocket carried by the framework and engaging the film, a drive member rotatably mounted upon the framework and connected to the sprocket for driving the sprocket and advancing the film past the aperture in forward and reverse directions, crank means carried by the drive member accessible from the exterior of the framework for rotating the drive member at the same speed in forward and reverse directions, a spool rotatably mounted in the framework, a portion of the length of film being formed as a roll and being disposed in the spool with the spool being formed so that the film can be payed out continuously either from the inside of the roll or the outside of the roll, optical means carried by the framework for viewing the portion of the film in the aperture, said framework being formed with an eyepiece which can be placed against the eye for viewing of the image provided by the optical means and means provided within the framework for receiving light exterior of the cartridge viewer and for directing light through the portion of the film in the aperture so that the portion of the film in the aperture is visible to the viewer through the optical means, said framework being in the form of a case having generally planar

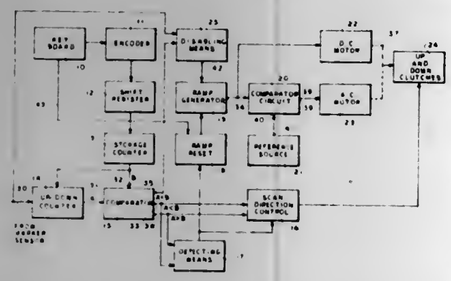
spaced parallel side walls and generally planar spaced parallel top and bottom walls, said crank means including a circular disc-like member recessed within one of said side walls so that its outer surface is generally flush with that of the side wall, said disc-like member being provided with a recess, a handle having spaced parallel planar sides, cooperative means carried by the handle and the disc-like drive member for connecting the handle to the drive member and permitting pivotal and rotational movement of the handle with respect to the drive member, said handle being movable to a position in said recess when it is not in use so that one of the spaced parallel planar sides of the handle is generally flush with the outer surface of the disc-like member.

4,066,349

INFORMATION RETRIEVAL SYSTEM HAVING RAMP MOTOR CONTROL

John R. Flint, Barrington, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 1, 1976, Ser. No. 728,674
Int. Cl.² G06F *13/04*; B65H *23/18*
U.S. Cl. 353—25 **9 Claims**



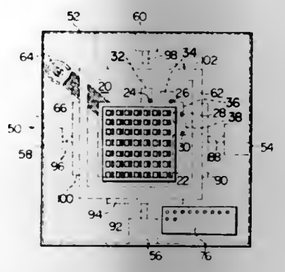
1. In an information retrieval system of the type which locates preselected information bearing elements for inspection, wherein the information bearing elements are consecutively numbered for identification and wherein the system includes a storage means for storing the identification number of the selected information bearing element to be inspected as a target number, a sensor for sensing the information bearing elements, and a counter for providing the identification number of the information bearing element currently being sensed as a current number, a new and improved scanning means for locating a preselected information bearing element comprising:
- a comparator coupled to the storage means and to the counter for comparing the current number to the target number and for providing responsive to said comparison a first signal when the target number is greater than the current number, and a second signal when the target number is less than the current number;
- drive means for driving said information bearing elements;
- drive direction control means coupled to said comparator and to said drive means for causing said drive means to drive the information bearing elements in the first direction responsive to said first signal and in the second direction responsive to said second signal;
- a ramp generator for providing a ramp voltage;
- said drive means being coupled to said ramp generator for driving said information bearing elements at a rate substantially proportional to said ramp voltage;
- detecting means coupled to said comparator and responsive to a change in the levels of said first and second signals for providing a control signal;
- ramp generator reset means coupled to said detecting means and to said ramp generator for resetting said ramp generator responsive to said control signal; and
- disabling means coupled to the sensor for detecting when the preselected information element is aligned with said sensor for a predetermined period of time to thereby detect when said preselected information bearing element has been located and for disabling said ramp generator responsive to such detection.

4,066,350

CHARACTER DISPLAY AND INPUT DEVICE

Hiroshi Koide; Katsuhiko Iida; Hisanori Ataka, and Taisaburo Homae, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sept. 8, 1975, Ser. No. 611,577
Claims priority, application Japan, Sept. 9, 1974, 49-103579
Int. Cl.² G03B *23/08, 21/14*
U.S. Cl. 353—27 R **17 Claims**



1. A character display system comprising:
- film means on which characters are formed, the characters being divided into a first predetermined number of classes, each class including a maximum of a second predetermined number of the characters;
- mask means formed with apertures in a number equal to said second predetermined number;
- drive means comprising first and second bi-directional drivers for producing relative movement in first and second mutually perpendicular directions between the film means and mask means to position the film means in a selected one of a third predetermined number of positions relative to the mask means in the first direction and in a selected one of a fourth predetermined number of positions relative to the mask means in the second direction, a product of said third predetermined number and said fourth predetermined number being equal to said first predetermined number, the characters being formed on the film means in an alternating manner in the first and second directions so that at each of the predetermined positions of the film means relative to the mask means the characters of a selected class formed on the film means are aligned with the respective apertures of the mask means for display therethrough;
- the film means being further formed with a plurality of stripes extending in the second direction in a number corresponding to said third predetermined number and with a plurality of second stripes extending in the first direction in a number corresponding to said fourth predetermined number:
- the drive means comprising:
  - first sensor means operatively disposed to sense alignment of any one of the first stripes therewith and produce a first electrical signal in response thereto;
  - second sensor means operatively disposed to sense alignment of any one of the second stripes therewith and produce a second electrical signal in response thereto;
  - the first bi-directional driver producing relative movement between the film means and mask means in and opposite to the first direction and the second bi-directional driver producing relative movement between the film means and mask means in and opposite to the second direction to an initial position;
  - class selection means for inputting a code designating the selected class of characters;

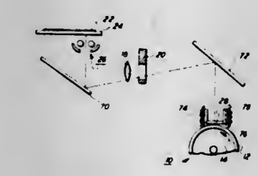
- computing means for counting the first and second electrical signals produces by the first and second sensors upon relative movement between the film means and mask means from the initial position in the first and second directions and stopping the relative movement when counts of the first and second electrical signals respectively correspond to the code; and
- third and fourth sensor means, the film means being formed with first and second portions which are spaced in such a manner as to be out of alignment with the third and fourth sensor means respectively only when the film means and mask means are in the initial position, the computing means being responsive to the third and fourth sensor means and operative to control the first and second bi-directional drivers to produce relative movement between the film means and mask means opposite to the first and second directions until the third and fourth sensors sense that the first and second portions are out of alignment therewith and subsequently control the first and second bi-directional drivers to produce relative movement between the film means and mask means in the first and second directions respectively.

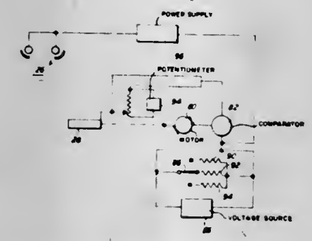
4,066,351

VARIABLE ILLUMINATION OPTICAL SYSTEM

Wayne L. Kidd, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 20, 1976, Ser. No. 659,620
Int. Cl.² G03G *15/01*; G03B *27/76*
U.S. Cl. 355—3 R **4 Claims**





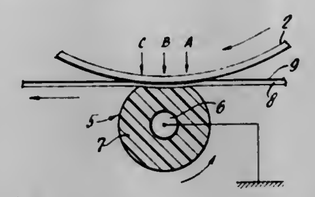
1. An electrophotographic printing machine for reproducing an original document, including:
- a photoconductive member;
- means for charging at least a portion of said photoconductive member to a substantially uniform level;
- a screen member;
- means for adjusting the spacing between said screen member and said photoconductive member;
- a light source for illuminating the original document;
- a power supply coupled to said light source and applying an excitation voltage thereto;
- means, responsive to the spacing between said scren member and said photoconductive member, for controlling said power supply to regulate the voltage applied to said light source by said power supply, thereby controlling the intensity of illuminating developed by said light source;
- a lens is a light receiving relationship with the light rays transmitted from the original document to form a light image thereof; and
- means for directing the light image onto the charged portion of said photoconductive member to record an electrostatic latent image thereon.

4,066,352

ELECTROCONDUCTIVE ELASTIC SPONE MEMBER AND ELECTROSTATIC IMAGE TRANSFER MECHANISM

Hiromi Kameda, Toyokawa, and Sanji Inagaki, Okazaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 515,758, Oct. 17, 1974, Pat. No. 3,978,268.
This application Apr. 19, 1976, Ser. No. 678,276
Claims priority, application Japan, Oct. 23, 1973, 48-119514; Aug. 13, 1974, 49-93129
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 TE **5 Claims**



5. An electroconductive elastic sponge member in the form of a roller for use in electrophotography as an electrostatic latent image transferring means comprising an electrically conducting substrate member formed thereover with an electroconductive elastic layer which comprises an elastic polymeric foam treated and coated with an electroconductive additive agent including a mixture of a water dispersable binding resin, a fine electroconductive powder and a fluid alcohol by which said polymeric foam is expandable, said member having an electrical resistivity of 10^2 to 10^6 ohm/cm with said resistivity varying inversely with the pressure applied to said member.

4,066,353

HALF TONE IMAGING SYSTEM

Richard M. Bobbe, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 13, 1976, Ser. No. 722,449
Int. Cl.² G03G *15/01*
U.S. Cl. 355—4 **23 Claims**



1. A half-tone screen, including:
- a substantially transparent member; and
- a plurality of grooves formed in said transparent member, said plurality of grooves comprising a first set of grooves and a second set of grooves with the width of each groove

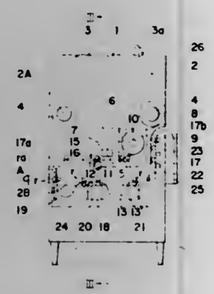
of the first set being greater than the width of each groove of the second set and said plurality of grooves being arranged in a repetitive pattern with each groove of the first set being interposed between adjacent grooves of the second set.

4,066,354

MICROFILM APPARATUS

Shunkichi Igarashi, Yokohama; Takeshi Okano, Amagasaki; Sho Takahama, Takarazuka, and Yoshio Hakamata, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed June 14, 1976, Ser. No. 695,720
Claims priority, application Japan, June 19, 1975, 50-75193
Int. Cl.[2] G03B *29/00*
U.S. Cl. 355—28 **2 Claims**



1. In a microfilm apparatus employing film which is in roll form and which includes at least one layer of a silver halide emulsion, and said apparatus includes means for exposing said film to image-wise reflected light from documents to be microfilmed and means for development processing of said exposed film, whereby microfilm copies of said documents may be obtained, the improvement wherein said apparatus comprises:

a main housing including outer walls;

partition wall means within said main housing, and acting in conjunction with the outer walls of said main housing to define an upper, exposure compartment and a lower, development processing compartment separate from said exposure compartment and to one side and below said exposure compartment;

means within said partition wall means for defining an entry opening which communicates between said exposure compartment and said development processing compartment;

means including an opening within said main housing outer wall at said development and processing compartment for defining an exit opening for said development processing compartment remote from said entry opening and communicating the interior of said development processing compartment to the exterior of said apparatus;

an exposure system within said exposure compartment including a horizontal, transparent document rest provided at the upper portion of said exposure compartment, a focussing lens system to one side of said exposure compartment overlying the upper portion of said development processing compartment, mirror means within said exposure compartment and acting in conjunction with said focussing lens system for focussing the image of a document placed on said document rest at an exposure station overlying said development processing compartment;

microfilm unit production means including drive roll means which may be alternately actuated to advance said film intermittently to bring successive film frames thereof to said exposure station whereby said successive frames are exposed to said image-wise light and cutter means located downstream of said exposure station in terms of film advance and actuable to cut said film subsequent to said continuous movement thereof, whereby the leading end portion of said film constituting an exposed microfilm unit is detached from the remainder of said film; and

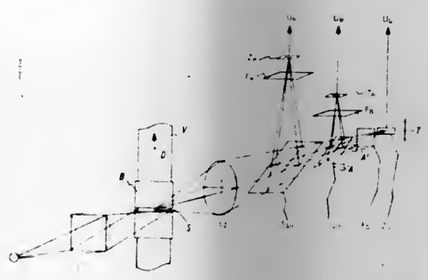
development processing means provided in said development processing compartment and including at least one bath containing developer solution, rinsing means and drying means, and film forwarding means for moving successively detached microfilm units through said entry opening and through said development processing compartment whereby said film units may be processed by said development processing means, and for moving said processed microfilm units through said exit opening to the exterior of said apparatus with said development processing compartment constituting a compact and easily accessible unit separate from and to one side of said exposure compartment.

4,066,355

SOLID-STATE COLOR-COPYING SCANNER

Josef Helmberger, Munich, and Klaus Stadler, Irschenhausen, both of Germany, assignors to AGFA-Gevaert, AG, Leverkusen, Germany

Filed Apr. 7, 1976, Ser. No. 674,632
Claims priority, application Germany, Apr. 9, 1975, 2515501
Int. Cl.[2] G03B *27/78*
U.S. Cl. 355—38 **10 Claims**



1. A copying method comprising the steps of:

displacing an original in a direction past a scanning location;

irradiating on said original at said location an entire strip extending transverse to said direction continuously for a predetermined time period;

optically deriving during said time period a plurality of different color-component strips each corresponding to a respective color component of the irradiated strip;

reflecting each of said color-component strips with a respective mirror during said time period to a respective transducer and simultaneously converting said color-component strips therewith into respective multiplicities of signals each corresponding to a respective section of the respective color-component strip;

pivoting at least some of said mirrors about axes parallel to said original at said irradiated strip for focussing said mirrors on said irradiated strip;

storing up during said time period each of said multiplicities of signals; and

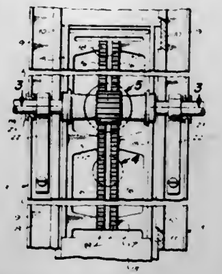
feeding after said time period each of the stored-up multiplicities of signals to respective scribers.

4,066,356

ANTI-BACKLASH MEANS FOR ADJUSTING ENLARGERS

John C. Parker, Los Angeles, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Oct. 7, 1976, Ser. No. 730,375
Int. Cl.[2] G03B *27/52*; F16B *55/18*
U.S. Cl. 355—63 **6 Claims**



1. A rack and gear drive, comprising:

a. an essentially planar carrier frame including opposed side margins, a pair of adjacent parallel disposed rack elements, and yieldable elements integrally connecting each rack element to a corresponding side margin to permit limited movement of each rack element in a direction essentially perpendicular to the carrier frame;

b. a supporting means receiving the side margins of the carrier frame for longitudinal movement of the rack elements;

c. a drive shaft carried by the supporting means;

d. and gear means carried by the shaft for engagement with the rack elements.

3. An anti-backlash means, comprising:

a. a supporting means having opposed guide flanges;

b. a carrier frame defining a plane and including side margins fitting the guide flanges for longitudinal movement relative to the supporting means;

c. a pair of rack elements disposed longitudinally in the central region of the carrier frame and a plurality of yieldable elements connecting each rack element to a corresponding side of the carrier frame to permit limited displacement with respect to the plane defined by the carrier frame;

d. a drive shaft disposed over the carrier frame in transverse relation thereto;

e. a gear having portions forming a pair of drive gear elements mounted on the shaft and engagable with the racks;

f. one pair of said elements having teeth offset a preselected amount and arranged, when yieldably pressed between the teeth of said other pair of elements, to compensate for backlash;

g. a pair of tracks disposed longitudinally at opposite sides of the carrier frame;

h. and a pair of wheels carried by the shaft, the wheels having a diameter corresponding to the pitch diameter of the gear elements to limit intermeshing of the gear and rack elements.

4,066,357

PROCESS CAMERA

Yutaka Mori, 1-15-5 Zoshigaya, Toshima, Tokyo 171, Japan

Filed June 23, 1976, Ser. No. 699,166
Claims priority, application Japan, June 24, 1975, 50-77711; June 24, 1975, 50-77712; June 24, 1975, 50-77713
Int. Cl.[2] G03B *27/70*
U.S. Cl. 355—66 **3 Claims**

1. A process camera comrising:

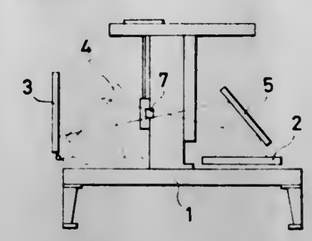
a base;

a film mounting plate attached to said base;

a manuscript mounting plate attached to said base and in a common plane with said film mounting plate;

means for rotating one of said plates with respect to said plane from a first position in said plane to a second position out of said plane;

lens means having an optical path parallel to, and spaced from, said plane;



first reflective means for bending the optical path from the other of said plates through said lens means; and

second reflective means for bending the optical path from said one plate in said first position through said lens, said second reflective means being movable out of the optical path of said lens;

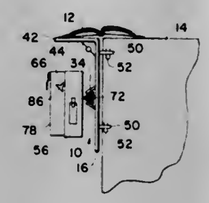
whereby said one plate in said second position is in said optical path of said lens.

4,066,358

PHOTOCOPY MACHINE

Arzella F. Stevenson, 50 Oswego Place, North Babylon, N.Y. 11703

Filed July 19, 1976, Ser. No. 706,159
Int. Cl.[2] A47B *27/04*; G03B *27/62*
U.S. Cl. 355—75 **5 Claims**



1. An attachment device for a book copier adapted to be removably received on said copier comprising:

a substantially rectangular support frame having a pair of opposed sides joined by a spaced top and base member,

a platform,

hinge means for pivotably joining said platform to the top member of said support frame, said hinge means including means for locking said platform in a substantially perpendicular position relative to said support frame to hold and support a book to be copied,

a slot formed in the opposed sides of said support frame,

an elongated bar member spanning the distance between said sides of said support frame and having an opposed end slidably mounted within each of said slots,

means on said bar member cooperating with said sides of said support frame for retaining said bar member in a vertically adjusted position in said slots,

mounting means extending rearwardly from one surface of each of said sides of said support frame for attaching said support frame to a book copier,

dove-tail slot means formed in said bar member opening in a forward direction opposed to the direction of extension of said mounting means,

a paper holder receptacle having an open top adapted to receive copy paper therein, and

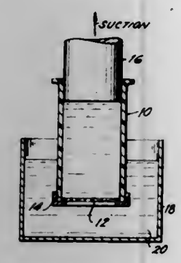
a dove-tailed shaped bar element secured to a rear wall of said receptacle removably received within the dove-tail slot means in said bar member.

4,066,359

METHOD AND STRUCTURE FOR TREATING BODY FLUIDS WITH CELLS THEREIN

Louis Bucalo, 155 Roberts St., Holbrook, N.Y. 11741

Filed May 21, 1976, Ser. No. 688,728
Int. Cl.² G01N *1/00, 33/16*
U.S. Cl. 356—36 **12 Claims**



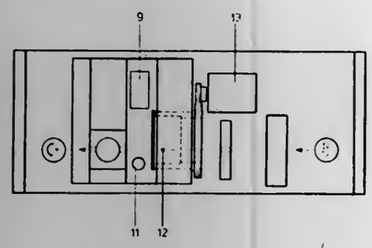
1. In a method for preparing for subsequent analysis cells of the type encountered in the body of a living being, such as tissue cells, blood cells, marrow cells and the like or cells of microorganisms such as bacteria, fungi, or the like, the steps of placing in a cylinder carrying a filter a sample in the form of a fluid which has therein cells which are to be analyzed, then carrying out supply and discharge cycles with respect to the interior of the cylinder and while carrying out a supply cycle directing into the interior of the cylinder a treating liquid which when entering the cylinder contacts the sample for at least partly contributing toward placing the cells which are to be subsequently analyzed in a given condition, and while carrying out a discharge cycle discharging the treating liquid through the filter out of the cylinder while also discharging with the treating liquid undesired components from the sample.

4,066,360

DEVICE FOR MEASURING AND RECORDING SPONTANEOUS BLOOD PLATELET AGGREGATION IN PLATELET-RICH CITRATED PLASMA

Klaus Breddin, Walldorf, and Wolfgang Schremmer, Obermelsungen, both of Germany, assignors to B. Braun Melsungen Aktiengesellschaft, Melsungen, Germany

Filed Feb. 19, 1975, Ser. No. 550,920
Claims priority, application Germany, Feb. 21, 1974, 2408214
Int. Cl.² G01N *33/16;* B01L *9/06*
U.S. Cl. 356—39 **12 Claims**



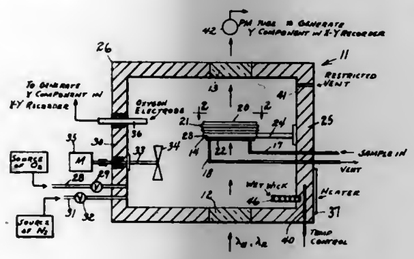
1. A device for the photometric measuring of the spontaneous aggregation of blood platelets in blood platelet rich citrated plasma, comprising a photometer including a light source and a photo cell aligned with the light source to receive light rays therefrom, a light filter positioned between the light source and photo cell, a diaphragm having an aperture formed therein in a predetermined position and located between said filter and photo cell whereby the aperture in the diaphragm passes a well defined column of light rays from the light source to the photo cell; a hollow disc cuvette rotatably mounted in the photometer between said diaphragm and photocell for rotation in a vertical plane with its central axis in a horizontal plane, said vertical plane being located in and transverse to the path of light rays passing through the diaphragm, said cuvette containing a supply of citrated plasma to be measured; means for heating said disc cuvette to a predetermined temperature; and means for rotating said disc cuvette at a speed of between 10 and 60 revolutions per minute; said disc cuvette being located in the photometer at a position with respect to said diaphragm wherein the light rays from the diaphragm pass through a lower quadrant of the disc cuvette with the disc viewed facing the diaphragm.

4,066,361

METHOD AND APPARATUS FOR DERIVING OXYGEN ASSOCIATION CURVES

Eugene K. Achter, Gaithersburg, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 504,112, Sept. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 446,089, May 1, 1974, abandoned. This application Mar. 19, 1976, Ser. No. 668,548
Int. Cl.² G01N *33/16, 21/16, 21/22*
U.S. Cl. 356—41 **19 Claims**



1. An assembly for use in a photometer for measuring oxygen association curves, comprising a chamber, means for transmitting a measuring light beam through the chamber, light-transmitting cell means in the chamber formed to support sample material in the chamber transverse to the optical path of the measuring light beam in the form of a thin flat layer, a source of deoxygenating gas, controlled conduit means connecting said deoxygenating gas source to said chamber, a source of oxygen, controlled conduit means connecting said oxygen source to said chamber, said cell means comprising a light-transmitting body and a gas-permeable light transmissive membrane placed on the body over the sample supported thereon, and oxygen-sensing means mounted in said chamber.

4,066,362

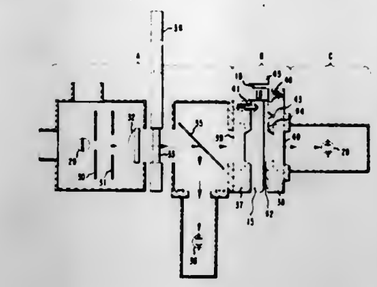
APPARATUS AND METHOD FOR PERFORMING PHOTOMETRIC ANALYSIS

Elbert P. Carter, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1968, Ser. No. 753,200
Int. Cl.² G01N *33/16, 21/24*
U.S. Cl. 356—180 **14 Claims**

1. An apparatus for performing photometric analysis on a sample fluid contained in a deformable container, comprising: an irradiating means, said deformable container being transparent to the radiation from said irradiating means; a cell-forming means adapted to form said deformable container into a sample cell with a predetermined cell length, said cell-forming means

comprising a sealing means adapted to squeeze the majority of said sample fluid into a region of said deformable container and



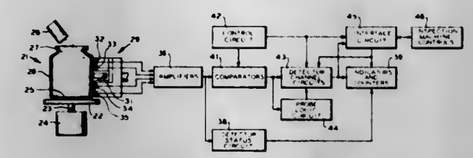
to seal off that region to form a closed test pouch; and a radiation detection means adapted to measure the radiation transmitted through said sample cell.

4,066,363

APPARATUS AND METHOD FOR INSPECTING GLASS CONTAINERS

John W. Juvinall, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 8, 1976, Ser. No. 721,412
Int. Cl.² G01N *21/32*
U.S. Cl. 356—198 **39 Claims**



1. In an inspection apparatus including an inspection station for rotating a glass container about its longitudinal axis, a light source for illuminating the interior of the glass container, a detector assembly mounted adjacent the side wall of the container and having light responsive means spaced apart along a line substantially parallel to the longitudinal axis of the container for generating at lease two input signals with a characteristic proportional to the amount of light transmitted through the side wall from the light source and a detection circuit for monitoring the input signals and for generating an output signal in response to a predetermined change in the light proportional characteristic of the input signals, the output signal representing the detection of a predetermined type of defect, the detection circuit comprising:

amplifier means responsive to the input signals for generating amplified signals having a first signal component representing the average light proportional characteristic of the input signal generated by the transmission of the light through an unobstructed side wall of the container and a second signal component representing the percentage deviation from the average characteristic generated by the transmission of light through an obstruction in the side wall of the container;

filter means responsive to said amplified signals for separating each of said first signal components from said associated second signal component;

comparison means for generating a reference signal, for comparing the light proportional characteristic of each of said separated second signal components with said reference signal and for generating a detection signal for each of said separated second signal components having a light proportional characteristic exceeding the magnitude of said reference signal; and

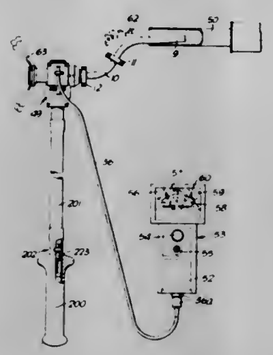
logic circuit means including timing means responsive to said detection signals for generating a signal having a duration representing a predetermined amount of rotation of the container after a first one of said detection signals is received, said logic circuit means being responsive to said detection signals and said timing means signal for generating the output signal in response to the receipt of a least one of said detection signals during the duration of said timing means signal.

4,066,364

APPARATUS FOR MEASURING SMOKE DENSITY

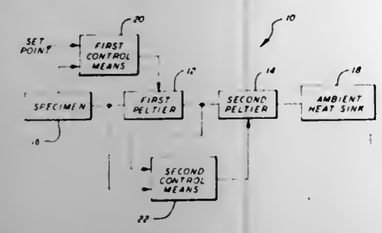
Reginald Stanley Emerson, Buckingham, England, assignor to Leslie Hartridge Limited, England

Filed Apr. 26, 1976, Ser. No. 680,084
Claims priority, application United Kingdom, Apr. 29, 1975, 17848/75
Int. Cl.² G01N *21/26*
U.S. Cl. 356—207 **14 Claims**



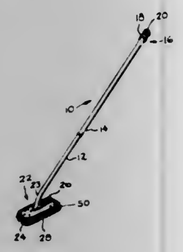
1. Apparatus for measuring smoke density comprising a probe for insertion into an exhaust gas pipe, a tube connected to the probe for the passage, through the tube, of smoke collected by the probe, a waisted portion of reduced diameter in the tube, plug means located concentrically within the tube to form therewith an annular venturi the throat of which lies at the said waisted portion of the tube, a plurality of holes in the waisted portion of the tube, a light source arranged outside the tube in the vicinity of the waisted portion thereof to pass a light beam along a first straight path into the tube through a first one of said holes in the waisted portion of the tube, transversely through the throat of the venturi, and then out of the tube through a second one of said holes in the waisted portion of the tube, at least one light-reflecting surface arranged outside the tube in the vicinity of the waisted portion thereof to receive the light beam after it has passed out of the tube and to reflect the light beam back into the tube along another straight path which does not coincide with any earlier path of the beam and through a corresponding one of the holes in the waisted portion of the tube, transversely through the throat of the venturi, and then out of the tube through yet another one of the holes in the waisted portion of the tube, a photo-electric cell positioned outside the tube in the vicinity of the waisted portion of the tube to receive the reflected light beam after it has passed out of the tube through a respective one of said holes, and visible display means connected to said photo-electric cell to receive an electrical signal therefrom whereby a visible display is given of the smoke density measured by the apparatus.

4,066,365
TEMPERATURE CONTROL APPARATUS
John J. J. Staunton, Oak Park, Ill., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed May 28, 1976, Ser. No. 690,891
Int. Cl.² G01N 21/16; F25B 21/02
U.S. Cl. 356—244 9 Claims



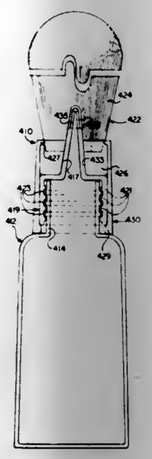
1. Apparatus for controlling the temperature of a specimen, comprising:
- a first Peltier unit having first and second thermal junctions, said first thermal junction thereof being interfaced with the specimen;
- a second Peltier unit having first and second thermal junctions, said first thermal junction thereof being interfaced with said second thermal junction of said first Peltier, said second thermal junction thereof being interfaced with an ambient heat sink;
- means for controlling the power to said first Peltier unit in proportion to the temperature differential between the specimen and a set point; and
- means for controlling the power to said second Peltier in proportion to the temperature differential across said first Peltier.

4,066,366
CAR WASH MOP
Donald F. Reynolds, 4415 E. Textile Road, Ypsilanti, Mich. 48197
Filed Sept. 7, 1976, Ser. No. 720,953
Int. Cl.² A46B 11/04; A47L 13/22
U.S. Cl. 401—285 10 Claims



1. A car wash mop comprising an elongated handle open at one end for connection to a source of liquid and having for its other end a transverse member open at laterally extending ends, said handle being hollow so as to define a passageway for liquid extending from said one end to said other end for discharge through said laterally extending ends, a tubular frame assembly having ends pivotally connected to said laterally extending ends for pivotal movement relative to the handle and so as to be in communication with said passageway, said tubular frame assembly having a plurality of apertures for discharge of liquid flowing from said passageway, and a flexible mop head fitted over said tubular frame assembly, said tubular frame assembly including a frame member having a generally eight-shaped configuration, and said ends of the frame assembly are at the midportion of the generally eight-shaped configuration in endwise facing relationship.

4,066,367
BRUSH SHAVE DEVICE
Frank Sherosky, 29101 Hayes, Warren, Mich. 48093
Filed Apr. 5, 1976, Ser. No. 673,466
Int. Cl.² A46B 11/04; A47L 13/22
U.S. Cl. 401—286 1 Claim

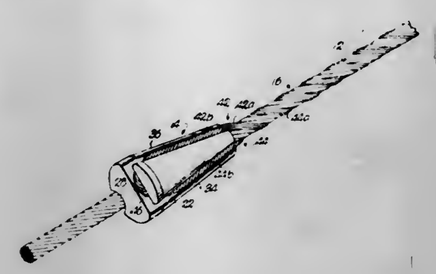


1. Improvement in a brush shave device for dispensing liquid shaving soap from a bottle having a shaving brush carried theron, the bottle having a neck, said shaving brush being of the type having a single tuft of bristles, said improvement comprising a tapered spout on the neck of the bottle, said spout having a flat platform portion formed thereon, has been added after "bottle," said bottle being a squeeze type bottle and filled with liquid shaving soap, so that the same sprays from said spout to saturate said bristles, means for attaching the spout to the bottle so that said spout is not removeable from said neck and so that the bottle is not re-fillable, the brush having an adhesive base in which said tuft of bristles is embedded, said adhesive base being a solid body and having some height thereto so as to have a tapered aperture therein for sealing against the taper on said spout, a joining member surrounding the adhesive base so that the tuft of bristles projects out of the upper end of said joining member, said joining member having a flange on its upper end which is smaller in diameter than that of said adhesive base and engages the upper end of said adhesive base, means on the lower end of said joining member for removeably connecting the same to the bottle, the upper end said spout projecting above said adhesive base and into the bristles less than half the height thereof, the bottom of said adhesive base bottoming directly upon the platform portion of said spout when the brush is inserted and held on said bottle, said attaching means for the spout constructed so that said spout remains affixed to the bottle when the joining member is removed for removing the brush, and a cap for said spout for sealing the bottle when the device is being transported.

4,066,368
HELICAL ROD DEADEND HAVING SEGMENTED ROD RECEIVING CONNECTOR
Henry N. Mastalski; James P. Lucas; Edward Dziedzic, and David P. Eppinger, all of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.
Filed Aug. 5, 1975, Ser. No. 602,064
Int. Cl.² F16G 11/04
U.S. Cl. 403—211 4 Claims

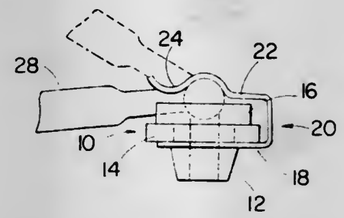
1. Deadending apparatus for an elongated line or the like, including:
- an elongated, unitary, uniformly tapered block having structure defining three circumferentially spaced, peripheral grooves extending along the length of the block,

one of said grooves being configured for receiving a segment of said line adjacent the end thereof with a portion of the line extending radially outwardly beyond the adjacent outermost surfaces of the block,
the remaining two of said grooves being configured for receiving respective portions of a line tie;
a line tie including a first section in gripping engagement with said line, and a second loop section free of said line, said loop section having respective elongated portions thereof received within corresponding line-tie receiving grooves of said block with a bight portion interconnecting said elongated portions and in engagement with the largest diameter end of said block,



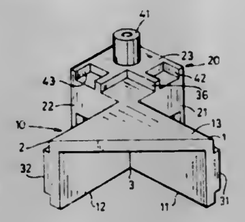
said line tie-receiving grooves being dimensioned such that said elongated portions are seated within the same without extending radially outwardly beyond the outer adjacent surfaces of said block; and
a socket having structure defining a tapered bore therein for complementally receiving said block, the loop segment of said line tie positioned therearound, and the segment of said line received by said one groove,
said socket and block cooperatively engaging said line, with the line tie portions seated within said remaining grooves being substantially free of pressing engagement between said socket and block.

4,066,369
OVERRIDE CLIP ASSEMBLY
Reginald D. Furtah, Livonia, Mich., assignor to Essex Group, Inc., Fort Wayne, Ind.
Filed Oct. 26, 1976, Ser. No. 735,309
Int. Cl.² F16C 11/06
U.S. Cl. 403—115 3 Claims



1. A yieldable connection between an elongated driving member and an elongated driven member in which movement of the driving member in the direction of its axis causes movement of the driven member substantially along the direction of its axis;
- a bushing removably seated in an aperture in said driven member, said bushing including a tapered portion situated in said aperture, a recess in the larger end of said tapered portion, the axis of said tapered portion being substantially perpendicular to the direction of movement of said driven and driving members;
- a ball member on the end of said driving member, said ball member being seated in said recess; and
- a yieldable resilient spring clip having a first leg removably attached to said bushing and a second leg biasing said ball toward said bushing.

4,066,370
ASSEMBLING PIECE
Paul Van Driessche, 88 Chemin de Thieusies, 7400 Soignies, Belgium
Filed May 17, 1976, Ser. No. 686,985
Claims priority, application Belgium, May 16, 1975, 156437
Int. Cl.² F16B 5/00
U.S. Cl. 403—217 8 Claims

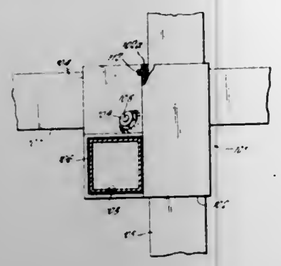


1. An assembling piece for forming a corner joint for a modular furntiure structure, said piece comprising:
- two right angle, intersecting vertical walls of cruciform configuration,
- a horizontal wall integral with said vertical walls and extending on both sides of said intersection and at right angles thereto,
- said vertical walls including first means for mechanically interfitting said piece with the ends of horizontal frame elements coupled to respective vertical walls and extending parallel thereto and at right angles to each other,
- said intersecting vertical walls and said horizontal wall defining a corner cavity on one side of said cruciform for receiving the upper end of a vertical frame element, and
- at least one of said walls at said cavity carrying a second means for mechanically interlocking the piece with the end of said vertical frame element for locking said frame element to said piece,
- and wherein said horizontal wall constitutes a rigid mechanical reinforcement for said piece,
- and wherein that portion of the wall which extends on the opposite side of said cruciform forms an integral support for horizontal shelving or the like.

4,066,371
BAR JOINTING MEMBERS
Arthur J. Chapman, May Lodge, Cane End, near Reading, England
Filed Aug. 30, 1976, Ser. No. 718,533
Int. Cl.² F16B 7/04
U.S. Cl. 403—218 3 Claims

1. A bar jointing member comprising a one piece housing formed to present a plurality of bores and an aperture each extending through said housing; a plurality of bars engaged in and passing through respective ones of said bores; and a tapered clamping bolt received in said aperture; said aperture communicating with each of said bore such that portions of said tapered clamping bolt engaged in said aperture extend into said bores and engage said bars to clamp said bars securely within said bores, the wall of one of said bores being formed to present a screwthreaded further aperture, which one of said borres will receive a vertical one of said bars in use, and a

screw engaged in said further aperture to be tightened onto said vertical one of said bars to retain the housing at a desired



height thereon while others of said bars are engaged in the others of said bores.

4,066,372

SLOTTED FLANGE CONNECTOR USEABLE IN A METHOD FOR REPLACING AN EXISTING UTILITY POLE WITHOUT DISTURBING HARDWARE MOUNTED THEREON

Harold V. Swanson, Morris Plains, and Jorge E. Forero, Parsippany, both of N.J., assignors to Interpace Corporation, Parsippany, N.J.

Filed Apr. 5, 1976, Ser. No. 673,408
Int. Cl.² F16B *2/02*
U.S. Cl. 403—302 **6 Claims**



1. A connector for splicing axially butting ends of a first and a second pole section, said connector comprising:

a first closure plate in the form of an arc of a cylinder adapted to embrace a first of said pole sections at its said end,

a second closure plate complementary to said first closure plate and movable with respect thereto for completing a generally cylindrical assembly adapted to engage said first pole section,

closure means for moving said second closure plate between an open position wherein it is spaced from said first closure plate and said first pole section, and a closed position wherein it is adapted to engage said first pole section between itself and said first closure plate,

said second closure plate having a first terminal flange projecting radially outwardly therefrom,

a second terminal flange adapted to be secured to said second pole section adjacent said end thereof and projecting radially outwardly therefrom,

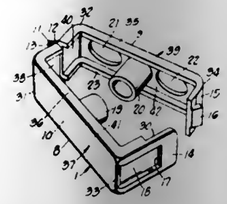
said first terminal flange being securable to said second terminal flange by means of bolts, parallel slot-shaped bolt holes in at least one of said first terminal flange and the portion of said second terminal flange adjacent thereto, having major axes disposed parallel with the direction of movement of said second closure plate from said open position to said closed position and arranged to receive said bolts, wherein said first closure plate and said second closure plate both terminate at their respective sides in vertical flanges, and further comprising closure bolts screwably engageable with said vertical flanges to serve as said closure means.

4,066,373

FASTENING DEVICE

David E. Workman, Orange, Calif., assignor to Samsonite Corporation, Denver, Colo.

Filed Aug. 4, 1976, Ser. No. 711,692
Int. Cl.² A44B *21/00*
U.S. Cl. 403—391 **5 Claims**



1. A device for releasably fastening objects together in spaced-apart relationship comprising:

a pair of complementary U-shaped gripping means hingedly connected to each other through an integral hinge, and having means for releasably interlocking said gripping means at the other end of said device include a hook on one gripping means which projects outwardly from its end portion, and a complementary opening in the opposing gripping means for releasably engaging said hook, the walls defining said opening being notched to overlap the hookbearing end portion;

each gripping means having an elongated, substantially flat outer portion and a pair of integral, relatively flat end portions formed at an angle in the range of about 15° to about 90° to said elongated substantially flat outer portion, said integral hinge being formed by outwardly protruding portions from each opposing end portion;

each said protruding portion projecting from the plane of its end portion toward the opposing protruding portion, and at an angle in the range of about 95° to about 125° with respect to the plane of its portion; and

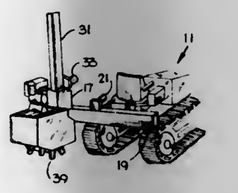
each said gripping means having at least one projection from its inner surface adapted to meet a complementary projection from the opposing inner surface.

4,066,374

TRENCH COMPACTOR

Arthur Elgin King, P.O. Box 495, Grass Valley, Calif. 95945

Filed Aug. 20, 1976, Ser. No. 716,255
Int. Cl.² E01C *19/38*
U.S. Cl. 404—117 **13 Claims**



1. A primemover mountable device for compacting dirt in an area located at the side of and parallel to the direction of movement of said prime mover or in line therewith comprising:

a. a tool bar mountable on one end of a primemover perpendicular to the direction of travel of said mover,

b. a guide rail coextensive in length to said tool bar, the length of said rail being rigidly secured thereto along the length thereof,

c. extending means, movably mounted on said guide rail and laterally extendable along said guide rail,

d. a coupling means movably mounted on said extending means and having a vertical bore therethrough for movement of a mast therein,

e. a mast disposed in said bore of said assembly, and vertically movable therein, and

f. a vibratory earth compacting device mounted on the lower end of said mast wherein vertical movement of the mast brings said device into operative position for compacting dirt in the area along side of said primemover.

4,066,375

REPLACEMENT CAP FOR COMPACTOR WHEEL

James O. Caron, Modesto; Fred J. Caron, Lodi, and Norman F. Cady, El Cajon, all of Calif., assignors to Caron Compactor Company, Stockton, Calif.

Filed Feb. 22, 1977, Ser. No. 770,709
Int. Cl.² E01C *19/26*
U.S. Cl. 404—121 **10 Claims**



1. A replacement cap for use on the tip of a compaction wheel foot, said cap including a pair of half-caps, each half-cap comprising a body of generally rectangular shape having an outer end portion integral with an inner end portion, said inner end portion of each half-cap including upper and lower generally flat facets lying in planes extending transverse of the cap and which converge outwardly to form a wedge having an apex, and weld means for securing the half-caps to the tip and to each other with said apexes of the half-caps abutting one another intermediate the tip whereby adjacent upper facets on the half-caps diverge apart to form a V-shaped pocket for placement of weld material.

4,066,376

TURNING TOOL WITH INTERCHANGEABLE POLYGONAL CUTTING INSERT

Otto Eckle, and Hermann Stahl, both of Loechgau, Germany, assignors to Komet Stahlhalter- und Werkzeugfabrik, Robert Breuning GmbH, Besigheim, Germany

Filed Feb. 3, 1976, Ser. No. 654,760
Claims priority, application Germany, Feb. 19, 1975, 7504960[U]
Int. Cl.² B26D *1/00*
U.S. Cl. 407—101 **3 Claims**



1. In a turning tool having an interchangeable polygonally shaped cutting insert, particularly for metal machining, the improvement comprising:

a holder having a first recess therein;

an insert carrier received in said first recess and secured thereto by means of a holding screw, said insert carrier having a second recess therein for receiving said cutting insert therein;

first holding means for holding said cutting insert in said second recess, said insert carrier having a planar base face and a generally semicylindrical supporting surface extending at right-angles to said base face, said semicylindrical supporting surface extending continuously between said base face and an opposite face on said insert carrier on its edge facing away from an effective cutting point on said cutting insert, said base face and said semicylindrical supporting surface on said insert carrier being supported on correspondingly shaped counter-surfaces of said first recess, one of said counter-surfaces being a semicylindrical support surface, said insert carrier having a first threaded central hole therein for receiving said first holding means therein, the axis (A) of said semicylindrical supporting surface on said insert carrier coinciding generally with the axis (A) of said central hole, said semi-cylindrical supporting surface having a radius (R) only slightly greater than a distance (a) between said effective cutting point and said axis (A) of said central hole, said supporting surface on said insert carrier having in its central region a smaller radius portion than said radius (R), the circumferentially spaced portions of said supporting surface on said insert carrier having the larger radiused surface engaging said semicylindrically shaped counter-surface on said holder;

second holding means for holding said insert carrier to said holder in said first recess;

a second threaded hole in said insert carrier extending parallel to said first threaded hole and perpendicular to said base face, said first holding means comprising a first screw received in said first threaded hole, said second holding means comprising a second screw received in said second threaded hole;

said insert carrier having a fixing bore extending perpendicular to said base face and a fixing pin received in said fixing bore and a corresponding bore in said first recess, said fixing bore being provided at a point remote from said axis (A) of said semicylindrical supporting surface and at the point of intersection of two bearing faces which include an angle of somewhat less than 90°, said two bearing faces being provided opposite said effective cutting point with a third bearing face being provided adjacent an effective cutting edge.

4,066,377

TOOL ELEMENT PLACEMENT MEANS

Curtiss Gilmore Howard, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 11, 1976, Ser. No. 666,110
Int. Cl.² B23B *35/00, 39/16;* C25D *17/00;* B23K *9/16*
U.S. Cl. 408—1 R **24 Claims**



1. A device useful in establishing a plurality of tool elements

in a desired configuration in relation to a workpiece surface comprising:

a. a base;
b. a support structure;
c. a guide member having a flexible section containing guide means adapted to receive the tool elements, said member being supported in relation to the base by the support structure;
d. means for deflecting the flexible section to position the guide means in the desired configuration; and
e. a fixturing structure to hold the workpiece, said fixturing structure and support structure establishing a cooperative relationship between the flexible section and workpiece surface.

4,066,378

MULTI-SPINDLE DRILLING MACHINE

Toshio Saito, Shizuoka, and Tadahiko Kobayashi, Gotenba, both of Japan, assignors to Fuji Seiki Machine Works, Ltd., Japan

Filed Nov. 1, 1976, Ser. No. 737,419
Int. Cl.² B23B *39/18*
U.S. Cl. 408—46 **9 Claims**



1. In a multi-spindle drilling machine, comprising

a frame;

base slide means linearly slidably supported on said frame for movement in a selected horizontal direction;

drive means connected to said base slide means for causing selective slidable displacement thereof in said horizontal direction;

a rotatable index plate supported on said slide means for rotation about a vertical axis, said index plate having an upwardly facing support surface adapted to have a workpiece mounted thereon;

head means spaced upwardly above said index plate and vertically slidably supported on said frame, said head means having support plate means defining a horizontal centerline which is parallel to said horizontal direction and intersects said vertical axis;

a pair of first tool spindles rotatably supported on said plate means and projecting toward said index plate, said first spindles defining a first reference line which extends horizontally between and intersects the rotational axes of said first spindles, said first reference line being perpendicular to said horizontal centerline;

first means movably supporting said first spindles on said plate means so that said first spindles are symmetrically supported on opposite sides of a vertical reference plane which passes through said horizontal centerline;

first means for selectively adjusting said first supporting means for causing said first spindles to be simultaneously and synchronously moved in opposite directions along said first reference line selectively toward or away from said vertical reference plane;

a pair of second tool spindles rotatably supported on said plate means and projecting toward said index plate, said second spindles defining a second reference line which extends horizontally between and intersects the rotational axes of said second spindles, said second reference line being parallel to and spaced from said first reference line;

second means movably supporting said second spindles on said plate means so that said second spindles are symmetrically disposed on opposite sides of said vertical reference plane;

second means for selectively adjusting said second supporting means for causing said second spindles to be simultaneously and synchronously moved on opposite sides of said vertical reference plane, said second adjusting means including (1) a first adjusting device for causing said second spindles to be simultaneously and synchronously moved in opposite directions along said second reference line selectively toward or away from said vertical reference plane and (2) a second adjusting device for causing both of said second spindles to be simultaneously and synchronously moved selectively toward or away from said first reference line, said first and second adjusting devices being independently controllable for selecting the desired movement and the resulting locations of said second spindles;

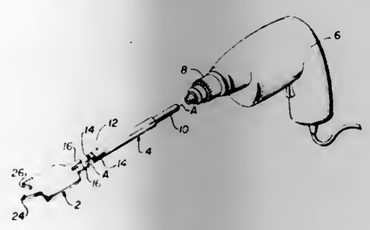
whereby said first adjusting means and said first and second adjusting devices can be individually selectively adjusted so as to selectively position the four spindles at uniformly spaced intervals on a pitch circle of selected diameter, with said base slide means being selectively slidably displaced along said horizontal direction until the vertical axis of rotation of said index plate is vertically aligned with the center of said pitch circle, thereby permitting simultaneous drilling or tapping of at least four holes in a workpiece with said holes being uniformly spaced apart and located on the pitch circle of selected diameter.

4,066,379

ROTARY TOOL ASSEMBLY HAVING REMOVABLE WORKING ELEMENTS

Peter J. H. Prohaska, Rte. 5, Box 683-A, Ocala, Fla. 32670

Filed Apr. 23, 1976, Ser. No. 679,599
Int. Cl.² B23B *51/00*
U.S. Cl. 408—125 **9 Claims**



1. A rotary tool assembly comprising

a shank having a driven end portion for connection to a drive means and a tool-receiving end portion for removably receiving a working element, said shank having a plurality of longitudinal slots in said tool-receiving end portion, each of said longitudinal slots having side walls and a bottom wall which is located radially outwardly from the central longitudinal axis of the shank, said bottom wall forming an angle with the central longitudinal axis of the shank,

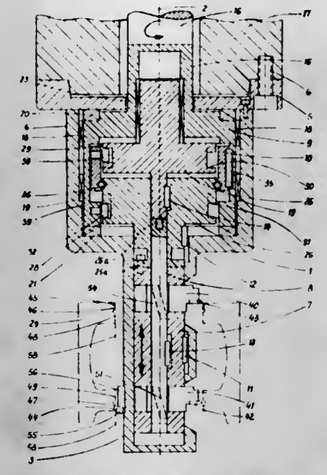
a working element which is removable from and unbonded to the shank, said working element having a shank-receiving end provided with driven end segments removably positioned in said slot of said shank, said driven end segments each contacting the bottom wall of a respective one of said slots to prevent radial movement between the working element and the shank, said driven end segments each contacting one of said side walls of a respective one of said slots to receive torque delivered to the working element by the shank.

4,066,380

COMBINED BORING AND THREADING TOOL

Hans Werner Beck, and Herbert Paul Jäger, both of Sinsheim, Germany, assignors to The Valeron Corporation, Oak Park, Mich.

Filed May 20, 1976, Ser. No. 688,417
Claims priority, application Germany, May 27, 1975, 2523460
Int. Cl.² B23B *5/46, 29/034*
U.S. Cl. 408—125 **12 Claims**



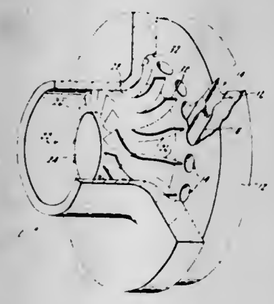
1. A threading tool comprising a rotatable body, a cutter holder carrier mounted with means for axially displaceable conjoint rotation with said rotatable body, a cutter holder mounted with means for radial displacement on said carrier, first cam actuated means for producing axial displacement of said carrier relative to said body, second cam actuated means for producing radial displacement of said cutter holder relative to said carrier, cam actuating means adapted to actuate said first and second cam actuated means, and interengaging cam means between said cam actuated and cam actuating means formed to provide sequential radial displacement of said cutter holder preparatory to a thread chasing operation followed by axial displacement of said carrier at a rate per revolution based on the required thread pitch during rotation of said body.

4,066,381

TURBINE STATOR NOZZLES

Ernest R. Earnest, Hobe Sound, Fla., assignor to Hydragon Corporation, Lake Park, Fla.

Filed July 19, 1976, Ser. No. 706,809
Int. Cl.² F01D *9/02*
U.S. Cl. 415—202 **4 Claims**



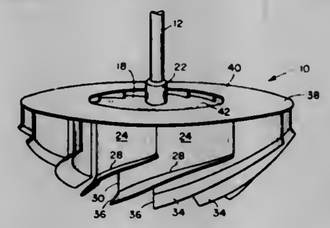
1. A turbine comprising a housing, a radially inflow rotor positioned in said housing, a stator having a plurality of passages therein, each of said passages having an inlet and an outlet and forming nozzles in an axial-tangential plane relative to the axis of the turbine, said outlets of said passages opening into an annular cavity surrounding said rotor.

4,066,382

SURFACE AERATION IMPELLER

Michael B. Lakin, Rochester, and James R. Lindsay, Hilton, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed June 18, 1976, Ser. No. 697,520
Int. Cl.² B01D *47/16*
U.S. Cl. 416—186 A **1 Claim**



1. An impeller for aerating a liquid and adapted to be affixed to a rotating shaft, comprising:

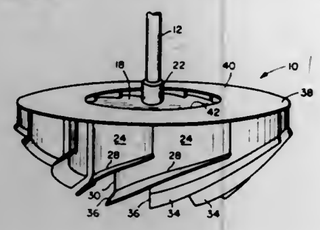
a. a support disk having a circular outer edge and upper and lower surfaces;
b. means for affixing said support disk to said rotating shaft so that said support disk is maintained in a substantially perpendicular relationship with said shaft;
c. a plurality of impeller blades;
d. cover means for creating an air intake opening above said upper disk surface and for reducing the amount of splashing caused by the rotation of said impeller near the surface of said liquid;
e. means for adjustably securing said impeller blades to said support disk so that said impeller blades extend outwardly from said circular outer edge, extend above said upper disk surface and below said lower disk surface, and so that the degree of radial extension is adjustable, wherein each of said impeller blades has an upper edge which lies in a plane substantially parallel to said support disk and each impeller blade being tapered causing said blades to be widest at the portion closest to said rotating shaft and progressively more narrow as said blade extends outwardly from said support disk, and wherein each of said impeller blades includes a flow inducing fin along the lower edge of the blade, said fins being tapered so as to be widest at the portion closest to said rotating shaft and progressively more narrow as said blade extends outwardly from said support disk; and
f. means for adjustably securing said cover means to the upper edges of said impeller blades so that said cover means is spaced from said upper disk surface and so that the degree of radial extension of said blades remains adjustable, wherein each of said impeller blades includes a flange portion along the upper edge thereof and wherein said means for adjustably securing said cover means to the upper edges of said impeller blades includes a plurality of radially aligned mounting holes in one of said cover means and said flange portions and fastener means adapted to be inserted into one of said mounting holes to thereby adjustably secure said cover means to the upper edges of said impeller blades.

4,066,383

SURFACE AERATION IMPELLER

Michael B. Lakin, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed June 18, 1976, Ser. No. 697,519
Int. Cl.² B01O *47/16*
U.S. Cl. 416—186 R **4 Claims**



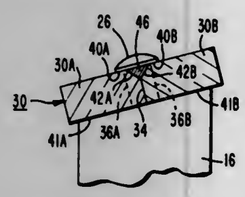
1. An impeller for aerating a liquid and adapted to be affixed to a rotating shaft, comprising:
   a. a support disk;
   b. means for affixing said support disk to said rotating shaft so that said support disk is maintained in a substantially perpendicular relationship with said shaft; and
   c. a plurality of impeller blades affixed to said support disk and extending outwardly therefrom, each of said impeller blades having an upper edge which lies in a plane substantially parallel to said support disk, and each of said impeller blades being tapered causing said blades to be widest at the portion closest to said rotating shaft and progressively more narrow as said blade extends outwardly from said support disk wherein each of said impeller blades is curved along its entire length in the outward direction, and wherein each of said impeller blades includes a flow inducing fin along the lower edge of the blade, said fins being tapered so as to be widest at the portion closest to said rotating shaft and progressively more narrow as said blade extends outwardly from said support disk.

4,066,384

TURBINE ROTOR BLADE HAVING INTEGRAL TENON THEREON AND SPLIT SHROUD RING ASSOCIATED THEREWITH

Frank L. DiFerdinando, West Chester, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 18, 1975, Ser. No. 596,937
Int. Cl.² F01D *5/22*
U.S. Cl. 416—189 **7 Claims**



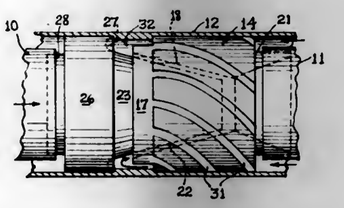
1. An axial flow turbine comprising:
   a casing
   a rotor shaft extending centrally and axially through said casing,
   a plurality of substantially radially extending rotating blades mounted on said rotor, each of said blades having an integral tenon member mounted thereon,
   said tenon comprising a stem portion and an integral bulbous cap portion, said stem portion having an upstream and a downstream surface thereon,
   a substantially annular shroud member subtending a predetermined number of said plurality of blades, said shroud member comprising a first and a second axial segment, said first axial segment having openings therein sized to accommodate said upstream surface of said stems of said tenons disposed on said blades subtended by said shroud, said second axial segment having openings therein sized to accommodate said downstream surface of said stems,
   said first and second segments disposed so that engagement of said first segment with said upstream surface of said tenon stem and engagement of said second segment with said downstream surface of said tenon stem causes said shroud segments to abut along a substantially circumferential interface and dispose the underside of said bulbous cap in simultaneously axially and circumferentially overlapping engagement with said abutted shroud,
   an inclined surface extending circumferentially about the axially downstream edge of said first shroud segment,
   an inclined surface extending circumferentially about the axially upstream edge of said second shroud segment,
   said inclined surfaces cooperating to define a groove extending circumferentially between the abutting shroud segments, and,
   a fastener disposed in said groove to firmly secure said first segment to said second segment.

4,066,385

A JET PUMP

Robert J. Diebold, 7113 36th Ave. N., St. Petersburg, Fla. 33710

Filed Mar. 11, 1976, Ser. No. 666,034
Int. Cl.² F04F *5/46*
U.S. Cl. 417—172 **1 Claim**



1. A jet pump for use in a piping system having a static liquid head comprising
   a. a one-piece elongated sleeve adapted to be connected into the piping system and providing intermediate its ends an internal shoulder,
   b. a discharge tube carried within said sleeve and having a diameter less than said sleeve to form a fluid passage therebetween,
   c. a venturi within said sleeve and connected at one end to said discharge tube and blocking said passage between said sleeve and said tube,
   d. said venturi providing adjacent its opposite end an annular shoulder bearing against one side of said internal shoulder within said sleeve,
   e. a restricted throat formed internally of said venturi by first converging and then diverging frustoconically shaped bores,
   f. a nozzle within said sleeve and providing a cone-shaped exhaust positioned within and in spaced relation to said converging frustoconically shaped bore of said venturi and terminating adjacent one side of said restricted throat,
   g. said nozzle providing an annular flange bearing against the opposite side of said internal shoulder within said sleeve so as to space said nozzle from said venturi,
   h. a fluid pressure chamber formed beneath said internal shoulder and between confronting portions of said venturi and said nozzle,
   i. a plurality of curved channels formed throughout the periphery of said venturi extending uniformly from said fluid passage to said fluid pressure chamber so as to provide restricted communication therebetween, and
   j. a radially extending deflector flange provided by said nozzle adjacent to its bearing contact with said internal shoulder of said sleeve and having an annular groove facing said fluid pressure chamber to reverse the direction of flow of the fluid from said channels over said cone-shaped exhaust of said nozzle and into said venturi and through said restricted throat with sufficient pressure to create a vacuum in said discharge tube.

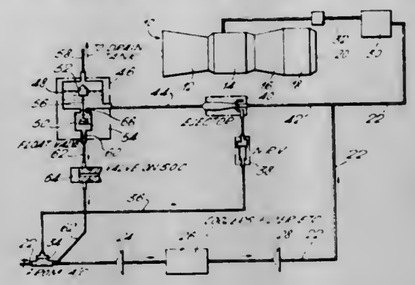
4,066,386

PRIMING SYSTEMS FOR PUMPS

Christopher Linley Johnson, Hartshorne, near Burton-on-Trent, and Colin Millns, Denby Village, both of England, assignors to Rolls-Royce Limited, London, England

Filed Aug. 23, 1976, Ser. No. 716,798
Claims priority, application United Kingdom, Sept. 6, 1975, 36784/75
Int. Cl.² F04B *23/14*
U.S. Cl. 417—199 A **11 Claims**

1. A priming system for a liquid pump having an inlet side and an outlet side, said system comprising:
   collecting means on the inlet side of the liquid pump having a contents of liquid and vapor, said collecting means accumulating the vapor from the liquid so that only liquid may be supplied to the liquid pump;
   priming pump means for extracting said contents from said collecting means;
   duct means extending from said collecting means to said priming pump means and through which said contents of said collecting means is extracted;
   separating means for receiving said contents from said priming pump and separating the liquid of the same from the vapor;
   further duct means extending from said separating means to said liquid pump for permitting liquid from said separating means to return to the liquid pump; and
   said separating means comprising a container having a first means for returning liquid to said further duct means and a second means for discharing vapor from said container,



said first means including a valve initially open to permit return of liquid to the liquid pump and said second means including a second valve initially open to permit discharge of vapor from said container, said second valve being closed when liquid in said container reaches a predetermined level and said first valve being simultaneously operable to restrict the rate of flow of liquid to said further duct means when said liquid in said container reaches the predetermined level.

4,066,387

METHOD OF IMPROVING THE SORPTION CAPACITY OF POLYMERS

Menachem Lewin, and Hilda Guttmann, both of Jerusalem, Israel, assignors to The State of Israel Ministry of Commerce and Industry, Jerusalem, Israel

Filed Feb. 27, 1976, Ser. No. 661,926
Claims priority, application Israel, Mar. 26, 1975, 46937
Int. Cl.² D06P 5/00; B05D 3/04
U.S. Cl. 8—4 15 Claims

1. A method of improving the sorption capacity of a substantially hydrophobic, thermoplastic polymer, which comprises:
   a. introducing into said polymer a halogen selected from the group consisting of Cl_2, Br_2, I_2, ClI, ClBr, and BrI by contacting the polymer with a solution containing said halogen under conditions which avoid chemical reaction of said halogen with said polymer;
   b. separating the free halogen containing polymer from said solution; and
   c. contacting said polymer with a reagent capable of pervading the polymer and reacting with the free halogen contained therein so as to produce a gas as one of the reaction products, thereby producing said gas.

12. A process for dyeing a substantially hydrophobic, thermoplastic polymer, which comprises treating said polymer prepared by the method of claim 1 and subsequently dyeing the polymer with a dye system selected from the group consisting of aqueous dispersed and basic dye systems.

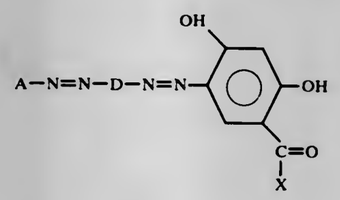
4,066,388

DISAZO DYES DERIVED FROM 1-ACYL-2,4-DIHYDROXYBENZENES AND METALLIZED POLYOLEFIN DYED THEREWITH

Raouf Botros, Beech Creek, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

Filed June 4, 1976, Ser. No. 692,932
Int. Cl.² C09B 31/20, 33/04; D06P 1/04, 3/79
U.S. Cl. 8—41 D 9 Claims

1. An acyldihydroxybenzene disazo dye of the formula:



wherein
A is phenyl, naphthyl, phenyl substituted by up to three substituents or naphthyl substituted by up to two substituents, said substituents being independently selected from alkyl of 1–4 carbons; alkoxy of 1–4 carbons; nitro; cyano; chloro; bromo; trifluoromethyl; hydroxy; RCOO—, where R is alkyl of 1–4 carbons; carboxy; and ROOC—, where R is alkyl of 1–4 carbons;
D is phenyl, naphthyl, or phenyl or naphthyl substituted by up to 2 substituents independently selected from alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, chlorine or bromine; and
X is alkyl of 1–4 carbon atoms, benzyl, phenyl or phenyl substituted by up to two substituents independently selected from alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, chloro and bromo.

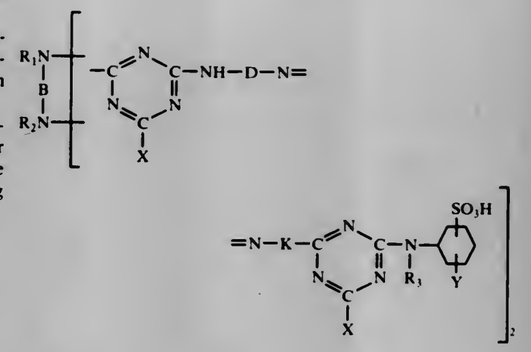
4,066,389

SULFOPHENYLAMINO CONTAINING TETRAREACTIVE TRIAZINE DISAZO DYESTUFFS AND DYESTUFF COMPOSITIONS THEREOF

Henri Riat, Arlesheim, and Gert Hegar, Schonenbuch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

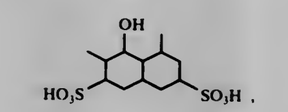
Filed Jan. 9, 1976, Ser. No. 647,846
Claims priority, application Switzerland, Jan. 15, 1975, 471/75
Int. Cl.² C09B 62/08; D06P 1/382, 3/10, 3/66
U.S. Cl. 8—41 R 5 Claims

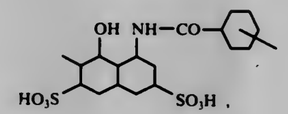
1. In a fiber-reactive dyestuff composition containing
   1. a fiber-reactive dyestuff, and
   2. a diluent, buffer or mixtures thereof; the improvement wherein the dyestuff is a tetrareactive dyestuff of the formula

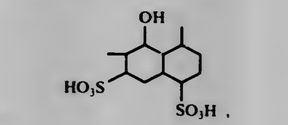


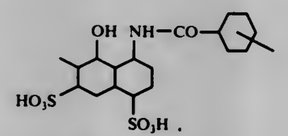
wherein
D is phenylene substituted by sulfo and is further unsubstituted or substituted by methyl, ethyl, isopropyl, butyl, methoxy, ethoxy, ethoxyethoxy, isopropoxyisopropoxy, acetyl, acetylamino, benzoylamino, ureido, carboxy, chloro or bromo;

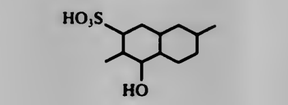
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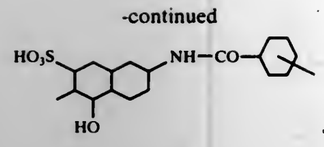


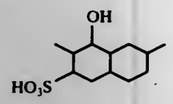


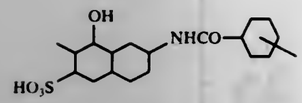


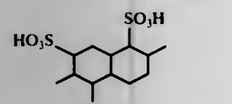
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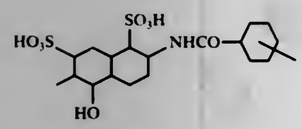
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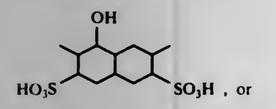








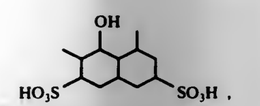


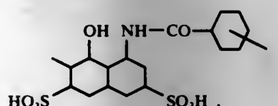


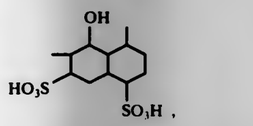
wherein

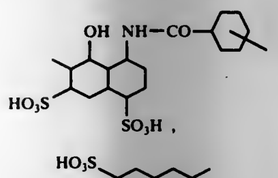
D is phenylene substituted by sulfo and is further unsubstituted or substituted by methyl, ethyl, isopropyl, butyl, methoxy, ethoxy, ethoxyethoxy, isopropoxyisopropoxy, acetyl, acetylamino, benzoylamino, ureido, carboxy, chloro or bromo;

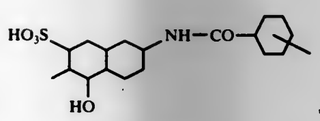
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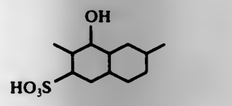


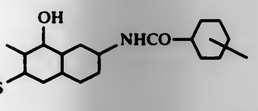


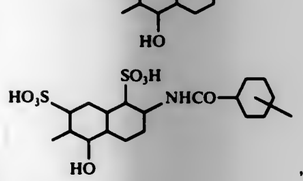












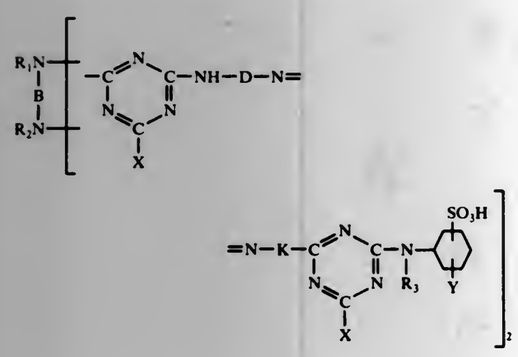
B is straight or branched chain alkylene of 1-6 carbon atoms or cyclohexylene, or is naphthylene, diphenylene, stilbenylene, or phenylene which are unsubstituted or substituted by halo, lower alkyl, lower alkoxy, amino, ureido, hydroxy, carboxy or sulfo;

R_1, R_2 and R_3 independently are hydrogen or alkyl of 1-6 carbon atoms;

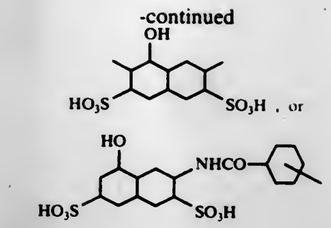
X is chloro, bromo or fluoro; and

Y is hydrogen, lower alkyl, lower alkoxy, acetylamino, halo, carboxy or sulfo.

2. A tetrareactive disazo dyestuff of the formula



-continued



B is straight or branched chain alkylene of 1-6 carbon atoms or cyclohexylene, or is naphthylene, diphenylene, stilbenylene, or phenylene which are unsubstituted or substituted by halo, lower alkyl, lower alkoxy, amino, ureido, hydroxy, carboxy or sulfo;

R_1, R_2 and R_3 independently are hydrogen or alkyl of 1-6 carbon atoms;

X is chloro, bromo or fluoro; and

Y is hydrogen, lower alkyl, lower alkoxy, acetylamino, halo, carboxy or sulfo.

4,066,390

STABLE HYDROSULFITE COMPOSITIONS

Nick J. Christie, 29 Dean Road, Mendham, N.J. 07945; Joseph P. Antisavage, 220 E. Washington Ave., Newtown, Pa. 18940, and Eugene E. Brupbacher, 270 E. Mountain Road, Sparta, N.J. 07871

Continuation-in-part of Ser. No. 388,354, Aug. 15, 1973, abandoned. This application Dec. 19, 1975, Ser. No. 642,366

Int. Cl.² D06L *3/00*

U.S. Cl. 8—110 **20 Claims**

1. A stable hydrosulfite composition which comprises a dry particulate admixture of:

A. 100 parts of a hydrosulfite selected from the group consisting of an alkali metal hydrosulfite, ammonium hydrosulfite, zinc hydrosulfite, and mixtures thereof (based on an assay value of 100% hydrosulfite);

B. 37.5-214 parts of a pH builder selected from the class consisting of sodium, potassium, or ammonium carbonate, sesquicarbonate, or bicarbonate, and mixtures thereof;

C. 37.5-286 parts of a pH buffer selected from the class consisting of trisodium phosphate, tripotassium phosphate, triammonium phosphate, disodium phosphate, dipotassium phosphate, diammonium phosphate, sodium tripolyphosphate, potassium tripolyphosphate, ammonium tripolyphosphate, tetrasodium pyrophosphate, tetrapotassium pyrophosphate, tetrammonium pyrophosphate, a sodium or potassium silicate having a molar ratio of silica to alkali metal oxide of about 0.5 to 3.3, borax, and mixtures thereof; and

D. 0.9-14.15 parts of a thermal stabilizer for the hydrosulfite, said thermal stabilizer being a sodium or potassium salt of an alkanoic acid of 1 to 12 carbon atoms or a benzoic acid.

4,066,391

FLAME RETARDANT FINISH FOR TEXTILES

Robert George Weyker, North Plainfield, and William Frederick Baltinger, Jr., Hillsborough Township, Somerset County, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

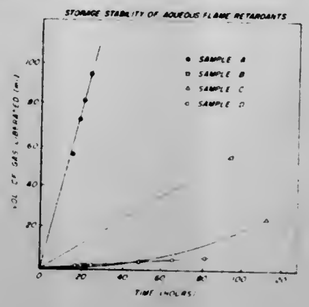
Division of Ser. No. 197,980, Nov. 11, 1971, Pat. No. 4,026,711, which is a continuation-in-part of Ser. No. 147,566, May 27, 1971, abandoned. This application Feb. 9, 1976, Ser. No. 656,451

Int. Cl.² C09D *5/18*

U.S. Cl. 8—116 P **5 Claims**

1. A process for preparing an aqueous flame retardant composition comprising tetrakis(hydroxymethyl)phosphonium phosphate, tetrakis(hydroxymethyl)phosphonium carboxylate, and a urea or a urea-formaldehyde condensate, or both comprising

reacting 1 mole of tris(hydroxymethyl)phosphine, at least 1 mole of formaldehyde and 1 mole of combined orthophosphoric acid and a carboxylic acid, the phosphoric acid representing between 10 and 75 mole percent and the carboxylic acid between 90 and 25 mole percent of the combined acids to obtain a concentrated solution and



diluting the concentrated solution with water and adding urea or a urea-formaldehyde condensate in sufficient amount to provide a flameproofing composition containing between 0.5 and 3.0 moles of urea and/or urea-formaldehyde condensate per mole of combined phosphonium salts.

4,066,392

PROCESS FOR MODIFYING KERATINOUS MATERIALS

Heinz Abel, Reinach, and Rosemarie Topfl, Dornach, both of Switzerland, assignors to I.W.S. Nominee Company Limited, London, England and Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 480,083, June 17, 1974, abandoned. This application Sept. 15, 1975, Ser. No. 613,649

Claims priority, application Switzerland, June 21, 1973, 9026/73

Int. Cl.² D06M *13/26, 13/38, 15/12, 15/52*

U.S. Cl. 8—127.5 **77 Claims**

1. A process for modifying keratinous material, which comprises treating said material with organic solutions or aqueous emulsions which contain

1. polythiols with at least two thiol groups in the molecule and having a molecular weight of 400 to 20,000 and obtained from

a. polyalcohols

b. alkylene oxides and/or dicarboxylic acids and

c_1. carboxylic acids containing thio groups, or from

c_2. epihalohydrins and alkali metal hydrogen sulphides, the polythiols containing ether and/or ester bonds, or from

a_1. polycarboxylic acids

b_1. alkylene oxides or dialcohols and

c_1. carboxylic acids containing thio groups,

2. nitrogen-containing condensation products of epoxides which contain at least two epoxide groups in the molecule, fatty amines with 12 to 24 carbon atoms, dicarboxylic acids with 1 to 14 carbon atoms, the equivalent ratios of epoxide groups to hydrogen bound to amino nitrogen to carboxylic acid groups being 1:(0.1-1):(1-0.55), and subsequently drying the treated material.

4,066,393

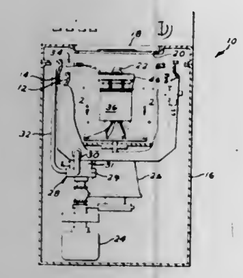
REUSABLE WATER SOFTENER SYSTEM FOR CLOTHES WASHER

Everett D. Morey, Louisville, Ky., and Eddie W. Dooley, Jeffersonville, Ind., assignors to General Electric Company, Louisville, Ky.

Division of Ser. No. 708,278, July 23, 1976. This application Mar. 11, 1977, Ser. No. 776,505

Int. Cl.² B08B *3/00*; D06F *39/00*

U.S. Cl. 8—137 **6 Claims**



1. The method of softening water for a vertical axis clothes washer having a tub and an agitator, comprising the following steps:

a. placing a water softening device around the agitator and attaching it to the agitator for movement therewith, said device having a housing with a reservoir at the top thereof for receiving water, a plurality of vertical channels radially disposed around the agitator and extending from the reservoir to the bottom of the housing, a cation exchange resin containing chamber within the housing, the top of said chamber having a water outlet and the bottom a water inlet, and a pump chamber located between the bottom of each channel and the resin containing chamber, said pump chamber having pumping means to provide water pumping force,

b. introducing water into the tub,

c. operating the agitator in an oscillatory back and forth motion thereby oscillating the water softener device,

d. recirculating water from the tub into the reservoir of the water softener device during oscillation of the device,

e. flowing water from the reservoir downwardly through the vertical channels to the bottom of the housing,

f. pumping water from the bottom of the housing upwardly through the cation exchange resin to thereby remove calcium and magnesium ions from the water to effect a reduction of hardness of the water, and

g. discharging the softened water from the water softening device into the tub.

4,066,394

REUSABLE ZEOLITE WATER SOFTENER FOR CLOTHES WASHING

Ralph Spencer Leonard, Berkeley Heights, N.J., assignor to Colgate-Palmolive, New York, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,223

Int. Cl.² B08B *3/00*; C02B *1/42*; C08J *9/00*; C11D *17/00*

U.S. Cl. 8—137 **10 Claims**

1. A method of washing soiled textiles comprising the step of agitating said soiled textiles in an aqueous washing solution at a temperature in the range of 80° F. to 200° F. in a washing machine in the presence of (A) a detersive proportion of a water-soluble nonionic or anionic surfactant and (B) a product comprising 20 to 300 parts by weight of particles of a water-insoluble, inorganic aluminosilicate having at least about one atom of aluminum for every three atoms of silicon, a cation selected from the group consisting of sodium, potassium, ammonium, lithium and hydrogen, and a particle size of less than ten microns incorporated in 100 parts by weight of a water-insoluble hydrophilic poly(urea/urethane) substrate having an open porous structure, said product being effective to remove calcium and magnesium ions from said washing solution.

4,066,395

PROCESS FOR DYEING OR PRINTING AROMATIC POLYAMIDE FIBRES

Charles Soiron, and Karlheinz Keller, both of Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 26, 1975, Ser. No. 635,527

Claims priority, application Switzerland, Dec. 2, 1974, 15958/74

Int. Cl.² D06P *5/04*

U.S. Cl. 8—169 **15 Claims**

1. In a process for dyeing or printing aromatic polyamide fibers with a dye liquor comprising a cationic dye, water, and a non-ketonic carrier in an amount of 5 to 30 grams per liter of dye liquor, the improvement which comprises further including in the dye liquor 0.1 to 5 g. per liter of an anionic assistant selected from the group consisting of a sulfonated fatty alcohol of 8 to 22 carbon atoms, a sulfonated alkylnaphthalene containing an alkyl group of 8 to 22 carbon atoms, a sulfosuccinic acid alkyl ester containing an alkyl group of 8 to 22 carbon atoms, a dodecyldiphenyl ether disulfonic acid, a sulfonated castor oil, and dinitrobenzenesulfonate, as the free acid or as the alkali metal, ammonium or amine salt.

4,066,396

DYEING DRY-SPUN AROMATIC POLYAMIDES

Gerhard Dieter Wolf; Ralf Miessen; Hans Egon Künzel, all of Dormagen, and Francis Bentz, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 7, 1975, Ser. No. 602,784

Claims priority, application Germany, Aug. 10, 1974, 2438546

Int. Cl.² D06P *3/24*

U.S. Cl. 8—178 A **11 Claims**

1. A process for the production of dyed filaments of aromatic polyamides which comprises continuously dyeing dry-spun gel filaments of an aromatic polyamide which has not been modified with acid or basic groups before or during stretching, in an aqueous dyebath containing a water-soluble, cationic dye in dissolved form.

4,066,397

TEXTILE MATERIALS HAVING IMPROVED ELASTICITY AND METHOD FOR PRODUCING SAME

Clifford Charles Carroll, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 26, 1976, Ser. No. 735,327

Int. Cl.² D06M *13/42*, *15/52*

U.S. Cl. 8—192 **22 Claims**

1. A method for improving the elasticity of a textile material which comprises impregnating a preshrunk textile material maintained in a relaxed state with a liquid admixture consisting essentially of a polyisocyanate, a polyether diol and a polyether polyol having at least three hydroxyl groups per molecule, said polyether diol and polyether polyol each having a molecular weight of from about 300 to about 12,000 and said polyisocyanate being present in said admixture in an amount sufficient to provide a ratio of isocyanate groups to hydroxyl groups in said admixture of at least about 1.1:1, reacting said polyisocyanate with said polyether diol and polyether polyol to provide a polymeric impregnated textile material and curing said polymeric impregnated textile material.

4,066,398

CORROSION INHIBITION

Chih Ming Hwa, Arlington Heights, Ill., assignor to Chemed Corporation, Cincinnati, Ohio

Continuation of Ser. No. 350,858, April 13, 1973, abandoned, which is a continuation of Ser. No. 136,592, April 22, 1971, abandoned. This application Nov. 12, 1974, Ser. No. 523,096

Int. Cl.² C23F *11/16*, *11/14*

U.S. Cl. 21—2.7 A **5 Claims**

1. A method for inhibiting corrosion of a metal surface consisting of a member of the group consisting of steel and aluminum, which consists of maintaining in an aqueous fluid in contact with said surface a corrosion inhibiting amount of a corrosion inhibiting composition consisting essentially of:

a. water-soluble hydroxyamine phosphate ester, said amine phosphate ester comprising the reaction product of polyphosphoric acid, phosphorus pentoxide or a mixture of polyphosphoric acid and phosphorus pentoxide with a water-soluble hydroxyamine;

b. sufficient water-soluble zinc compound to provide from 0.005 to 15 parts by weight of zinc ion for each part by weight of said phosphate ester; and

c. sufficient water-soluble 1,2,3-triazole to provide from 0.005 to 15 parts by weight of said azole or azole derivative for each part by weight of said phosphate ester.

4,066,399

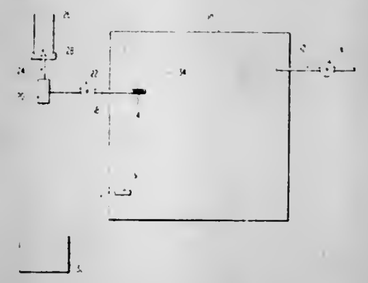
METHOD FOR HUMIDIFYING A GAS STERILIZER

Donald A. Gunther, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Division of Ser. No. 262,313, June 13, 1972, Pat. No. 3,936,270. This application Sept. 26, 1975, Ser. No. 617,244

Int. Cl.² A61L *1/00*, *3/00*, *13/00*; A23L *3/34*

U.S. Cl. 21—58 **4 Claims**



1. In a gas sterilization process carried out in a sterilizing chamber and involving humidification of materials within the chamber and subsequently involving introduction of sterilizing gas, the steps comprising

a. providing improved humidification by

i. providing a combination of water and water soluble organic solvent whose presence increases vapor pressure, decreases surface tension and lowers polarity, said solvent being selected from the group consisting of lower alcohols, ketones and ethers; and

ii. introducing such combination of water and organic solvent into the sterilizing chamber, the presence of the organic solvent improving the permeability of such combination through the pores of materials within such chamber; and

b. subsequent to step (a), introducing into the sterilization chamber sterilizing gas comprising ethylene oxide.

4,066,400

BUOYANT SOLID COVER FOR PONDS AND METHOD OF MAKING THE SAME

James P. Cox, 246 E. Bartlett Road, Lynden, Wash. 98264, and Robert W. Beach, 4262 NE. 125th, Seattle, Wash. 98125

Filed Nov. 12, 1975, Ser. No. 630,997

Int. Cl.² B01J *1/18*

U.S. Cl. 21—60.5 R **32 Claims**

1. A buoyant solid sheet pond cover comprising petroleum wax of a thickness of at least 3/16 in., and reinforcement integral with the petroleum wax.

4,066,401

LONG TERM STORAGE APPARATUS

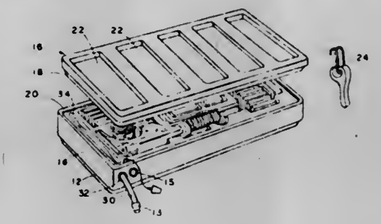
Arie Solomon, 5 Anderston St., Ramat-Aviv, Tel-Aviv, Israel

Filed Apr. 29, 1976, Ser. No. 681,477

Claims priority, application Israel, May 5, 1975, 47235

Int. Cl.² C23F *15/00*; A23L *3/00*

U.S. Cl. 21—61 **7 Claims**



1. A long-term storage system for connection to a continuous or intermittent supply of inert gas comprising:

a plurality of long-term, hermetically sealable individually transportable storage containers each storage container having first and second gas communication terminals communicating with the interior thereof;

selectably decouplable serial interconnection conduit means for serial coupling of respective first and second communication terminals of adjacent ones of said plurality of storage containers and for coupling said serially connected storage containers to a continuous or intermittent gas supply; and

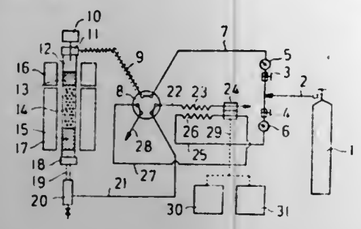
means for preventing egress of inert gas from individual ones of said containers when said individual ones of said containers are not coupled to a gas supply or to adjacent ones of said containers.

4,066,402

ANALYTICAL METHOD AND APPARATUS FOR DETERMINATION OF TOTAL NITROGEN AND/OR CARBON CONTENTS IN AQUEOUS SYSTEMS

Yoshiki Komiyama, Takatsuki; Seiya Yamamoto, Ashiya, and Yoshiaki Yasumasa, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 14, 1976, Ser. No. 686,635
Claims priority, application Japan, May 15, 1975, 50-58339
Int. Cl.² G01N *33/18, 1/10, 27/18*
U.S. Cl. 23—230 PC 25 Claims



1. An analytical method for determination of the total nitrogen and/or carbon contents in an aqueous solution containing nitrogenous and/or carbonaceous materials as a specimen, which comprises introducing the aqueous solution with an inert gas containing substantially no nitrogen and/or carbon dioxide as a carrier gas into a reactor tube packed with a destructive oxidation catalyst and/or a reducing agent and/or an oxidizing agent, maintaining the reaction tube at elevated temperatures so as to decompose the nitrogenous and/or carbonaceous materials to nitrogen and/or carbon dioxide and measuring the amounts of nitrogen and/or carbon dioxide in the resulting gaseous mixture from the reactor tube by the use of a thermal conductivity gas chromatograph.

4,066,403

MULTILAYER ANALYTICAL ELEMENT

Barbara J. Bruschi, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 588,755, June 20, 1975, abandoned. This application May 20, 1976, Ser. No. 688,446
Int. Cl.² G01N *31/22, 33/16*
U.S. Cl. 23—230 B 50 Claims



33. A process of analyzing a liquid for the presence of a predetermined analyte, comprising the steps of

a. depositing a sample of the liquid on an element comprising a first reagent capable of producing a radiant energy detectable species and having in association with it a binder, a second reagent capable of producing from the analyte a decomposition product which is interactive with said first reagent; and a barrier composition separating substantially all of said second reagent from said first reagent, said composition being substantially uniformly permeable to said decomposition product and substantially impermeable to interferants;

whereby the analyte and the second reagent react to produce a decomposition product that selectively permeates through the barrier composition where it reacts with the first reagent; and

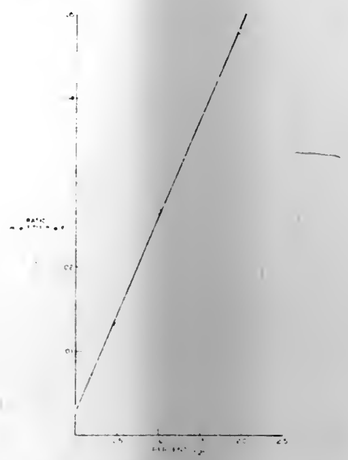
b. measuring said detectable change.

4,066,404

DETERMINATION OF DEUTERIUM CONCENTRATION IN WATER

Thomas D. Morgan, and Robert B. Regier, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 2, 1976, Ser. No. 711,032
Int. Cl.² B01J *25/02;* G01N *33/18, 33/24*
U.S. Cl. 23—230 EP 5 Claims



1. A method for determining a concentration of deuterium in water which comprises the steps of:

a. equilibrating consecutively at least two water samples having known and varied deuterium concentrations with the same amount of hydrocarbon reagent to allow exchange of hydrogen and deuterium between water and the hydrocarbon reagent until sufficient amount of deuterium migrated to permit the analysis of the mass ratio of isotopes of the equilibrated reagent containing deuterium to those containing hydrogen;

b. analyzing consecutively the hydrocarbon reagents equilibrated with water samples to determine for each sample the mass isotope ratio of molecules that contain deuterium to those that contain hydrogen;

c. correlating the isotope mass ratios determined in step (b) with respective known deuterium concentrations of each sample;

d. reacting water sample of unknown deuterium concentration with the same reagent and under the same conditions as samples in step (a);

e. establishing by analysis of the reagent equilibrated in step (d) the isotope mass ratio of molecules which contain deuterium to those that contain hydrogen; and

f. converting the isotope ratio determined in step (e) to deuterium concentration in water using the correlation obtained in step (c).

4,066,405

METHOD FOR TOTAL PROTEIN FRACTIONATION AND ANALYSIS OF HUMAN SALIVA

Robert I. Henkin, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

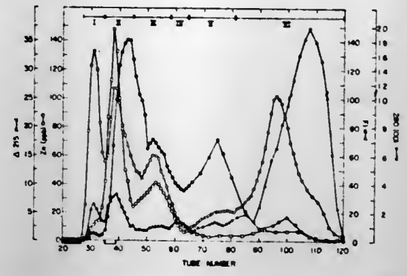
Continuation of Ser. No. 547,464, Feb. 6, 1975, abandoned. This application Oct. 4, 1976, Ser. No. 729,157
Int. Cl.² G01N *33/16, 21/00, 21/52, 31/08*
U.S. Cl. 23—230 B 37 Claims

1. A method for analyzing saliva to determine the total protein content thereof comprising the steps of:

fractionating the protein components of said saliva on a molecular sieve, said protein components separating as a function of their molecular weights and aromaticity;

collecting separate aliquots of said fractionated saliva;

measuring protein parameters dependent upon (1) the



amount of the peptide chromophore; (2) the amount of tyrosine and tryptophan; and (3) the quantum yield of tryptophan; and (4) the zinc concentration in each aliquot;

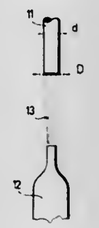
recording said measured parameters to provide a total protein fractionation record.

4,066,406

PROCESS AND APPARATUS FOR THE VOLTAMMETRIC MEASUREMENT OF THE QUANTITY OR MASS OF SEPARATED SAMPLE COMPONENTS

Erno Pungor, and Maria Varadi, both of Budapest, Hungary, assignors to Labor Muszeripari Muvek, Esztergom, Hungary

Filed Apr. 15, 1976, Ser. No. 677,389
Claims priority, application Hungary, Apr. 22, 1975, LA 863
Int. Cl.² G01N *27/26, 27/30, 31/08*
U.S. Cl. 23—230 R 3 Claims



1. A process for voltammetric measurement of sample component quantities in a liquid comprising the steps of:

pulsatingly conveying said liquid as a jet of liquid flow along a path substantially perpendicular to and into contact with a voltametric electrode surface whereby a voltametric current is produced;

adjusting the cross section of the jet of liquid flow so that said cross section is greater than the measurement surface of the electrode in the region of the electrode surface;

sampling the produced voltametric current only during that time period from when said jet of liquid flow has attained at least 50% of its maximum velocity, as it increases towards said maximum velocity, and, after attaining the maximum velocity until the velocity decreases to 50% of said maximum velocity;

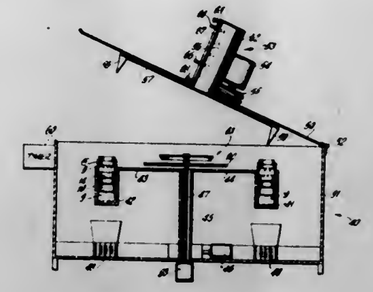
integrating the sampled current signal and determining said component quantities therefrom.

4,066,407

BODY FLUID TESTING SYSTEM AND PROCESS

Vincent Lupica, 2621 Palisade Ave., Riverdale, N.Y. 10463

Filed Dec. 16, 1976, Ser. No. 751,108
Int. Cl.² G01N *33/16, 1/18*
U.S. Cl. 23—230 B 4 Claims



4. A process for performing tests upon body fluids comprising the following steps in sequence:

collecting body fluid in an accurately prescored capillary micropipette having opposed open ends and a squeeze bulb fluid ejecting means at one of its ends; stopping an end of said pipette; centrifuging said pipette; breaking off said pipette at its score line to yield an accurate and predetermined volume of fluid retained in said pipette above said score line; transferring said predetermined volume of fluid to the uppermost cell of a multi-celled stacked container with each cell having therein a pre-measured test reagent, and said container having rupturable liquid-impermeable membranes between said cells; said transfer occurring by squeezing said squeeze bulb and thereby injecting said fluid into said uppermost cell; agitating the contents of said container; rupturing the membrane between the uppermost cell and the next cell, thus causing the fluid and reagent in the first cell to mix with the reagent in the next cell; agitating the resulting mixture, and performing a test on the resulting fluid.

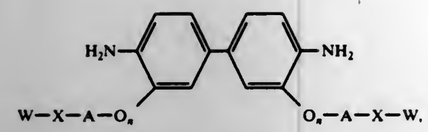
4,066,408

CHROMOGEN-REACTIVE-INDICATOR PREPARATIONS CONTAINING A 3,3'-DI(CARBONYLOXY- OR SULFONYLOXY-GROUP-CONTAINING) BENZIDINE DERIVATIVE CHROMOGEN

Nils Ake Jonsson, Solna; Ferenc Merenyi, and Lars-Erik Westlund, both of Taby, all of Sweden, assignors to AB Kabi, Stockholm, Sweden

Continuation-in-part of Ser. No. 515,195, Oct. 16, 1974, Pat. No. 4,008,267, which is a continuation-in-part of Ser. No. 118,531, Feb. 24, 1971, Pat. No. 3,859,341. This application Feb. 9, 1977, Ser. No. 766,961
Int. Cl.² G01N *21/06, 31/22*
U.S. Cl. 23—230 R 18 Claims

1. In an analytical test, color change reagent preparation comprising a chromogen-reactive-indicator, peroxidase, an oxygen-oxidoreductase specific to a particular substance to be tested and for which there exists a specific oxygen-oxidoreductase, the improvement which consists in using as the chromogen-reactive-indicator constituent of said preparation a 3,3'-disubstituted-benzidine derivative selected from (a) those having the general formula



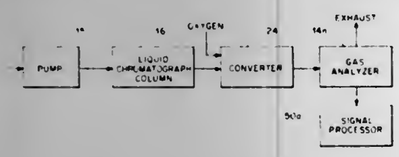
wherein X is the divalent carbonyloxy or sulfonyloxy group, W is hydrogen or another cation compatible with the aforesaid other ingredients of said reagent preparation, the subscript *n* is 0 or 1, and (i) when X is the carbonyloxy group, A is a divalent alkylene chain with from 2 to about 7 carbons, and (ii) when X is the sulfonyloxy group, *n* is 0 when A is the divalent alkylene chain of from 2 to about 7 carbons, and *n* is 1 when A is straight chain trimethylene or tetramethylene, and (b) the acid addition salts of said disubstituted benzidine derivative, compatible with the aforesaid ingredients of the chromogen-reactive-indicator, when X is the carbonyloxy group.

4,066,409

METHOD AND APPARATUS FOR CHROMATOGRAPHICALLY ANALYZING A LIQUID SAMPLE

David H. Fine, Framingham, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Jan. 19, 1977, Ser. No. 760,604
Int. Cl.² G01N *31/08*
U.S. Cl. 23—230 PC **11 Claims**



1. A chromatographic analysis method for the selective detection in a sample of organic nitrogen containing compounds, the method comprising the steps of:

in a liquid chromatograph, chromatographically separating organic nitrogen containing compounds from other compounds in a liquid sample and discharging such separated compounds from the chromatograph in timewise distribution;

injecting into a converter at least the portion of the sample having therein organic nitrogen containing compounds discharged from the chromatograph;

introducing into the converter oxygen in an amount sufficient to fully oxidize combined nitrogen in organic compounds within that portion of the sample injected into the converter;

in the converter, oxidizing the organic nitrogen containing compounds discharged from the chromatograph at a temperature not substantially less than 600° C or substantially greater than 1800° C for converting the nitrogen in such organic nitrogen containing compounds to nitric oxide;

transferring effluent from the converter to a nitric oxide detector; and

measuring in the nitric oxide detector the nitric oxide transferred from the converter.

4,066,410

THYROID HORMONE ASSAY

Anna M. Eisentraut, Dallas, Tex., assignor to Nuclear-Medical Laboratories, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 613,092, Sept. 15, 1975, abandoned. This application Feb. 2, 1976, Ser. No. 654,541
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230.6 **20 Claims**

1. A method of measuring the level of thyroid hormone in a sample of serum containing endogenous thyroid hormone and endogenous thyroid hormone binding protein comprising:

a. admixing said serum sample with an effective amount of an aqueous acid solution sufficient to separate said thyroid hormone from said thyroid hormone binding protein;

b. adjusting the pH of the resulting mixture to a value in the range of from about 7.0 to about 8.5 in the absence of blocking agents while adding thereto a known amount of radioactively labeled thyroid hormone and a known amount of thyroid hormone binding antibodies and allowing the resulting solution to equilibrate;

c. thoroughly admixing the resulting equilibrated mixture from step (b) with an aqueous solution of a water soluble sulfate which contains sufficient sulfate such that the resulting mixture has a sulfate concentration between about 20 and 30 weight percent to thereby result in precipitation of said thyroid hormone binding protein material containing thyroid hormone bound thereto and leave free thyroid hormone in the solution;

d. separating the precipitated material from said solution; and

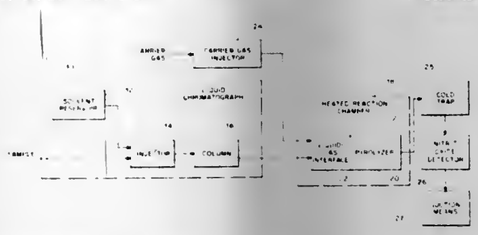
e. counting with a scintillation counter one of (1) the free radioactively labeled thyroid hormone in said resulting solution, and (2) the bound radioactively labeled thyroid hormone bound to said thyroid hormone binding antibodies in said precipitate.

4,066,411

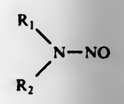
N-NITROSO COMPOUND ANALYZER WITH SAMPLE ATOMIZATION

David H. Fine, Framingham; John J. Fronduto, Waltham, and David P. Rounbehler, Harwichport, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Jan. 19, 1977, Ser. No. 760,603
Int. Cl.² G01N *31/08*
U.S. Cl. 23—253 PC **7 Claims**



1. Apparatus for measuring in a sample the amount of N-nitroso compounds having the general formula:



wherein R_1 and R_2 are the same or different organic radicals, including those radicals which together with the non-nitroso N of the depicted N—NO bond constitute a nitrogen heterocyclic radical, and wherein the N—NO bond is the weakest bond in the molecule, comprising:

A. high performance chromatograph including a column, having an input end for receiving said sample in liquid solution form with a solvent and an output end for ejecting column effluent, wherein the ejection of the N-nitroso portion having N-nitroso compounds therein is separate in time from the ejection of other portions of said sample having other compounds therein and further wherein ejections of portions having different N-nitroso compounds are separate in time from each other;

B. chamber means for pyrolyzing said column effluent at a temperature in the range 300° to 500° C to liberate from said N-nitroso compounds nitric oxide (NO) in the gaseous phase;

C. liquid-gas interface means having an effluent delivery means extending into said chamber means for conveying and discharging liquid chromatograph effluent thereinto and carrier gas delivery means for directing carrier gas into said chamber means, said effluent delivery means and said carrier gas delivery means cooperating to atomize liquid effluent into said chamber means, both said delivery means cooperating to promote transfer of heat from said chamber means to said liquid effluent and said carrier gas prior to said atomization, said interface means and said chamber means cooperating to vaporize column effluent as a continuous process for preserving the timewise separation of N-nitroso compounds therein;

D. means for establishing a sub-atmospheric pressure in said chamber means for promoting vaporization of said column effluent;

E. means for measuring in the gaseous phase the amount of nitric oxide (NO) liberated in said chamber means; and

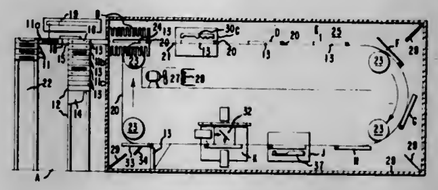
F. a cold trap interposed between said chamber means and said measuring means for removing chromatograph solvent from the input to said measuring means, said cold trap including an input port for receiving a cold trap input gas from said chamber means and an output port for injecting gaseous cold trap effluent into said measuring means.

4,066,412

AUTOMATIC CLINICAL ANALYZER

Donald R. Johnson, Wilmington; Richard G. Nadeau; Gerrit Nieuweboer, both of Claymont, all of Del., and William L. Truett, Blackwood, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 545,494, April 26, 1966, Pat. No. 3,476,515. This application Aug. 16, 1968, Ser. No. 753,197
Int. Cl.² G01N *33/16, 21/24*
U.S. Cl. 23—253 R **60 Claims**



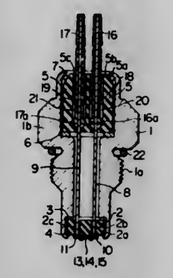
1. An automated analytical apparatus comprising means to carry a plurality of reagent-storing disposable chemical testing containers; means to transfer at least a portion of a sample from a sample storage site to a reaction compartment within one of the plurality of disposable containers; at least one means for the addition of at least one reagent stored within the disposable container to the reaction compartment forming a reaction mixture; means further along the path of travel of said carrying means to monitor at least one of the physical properties of the reaction mixture within the disposable container; said monitoring means including light source means and means responsive to the magnitude of light absorbed by the reaction mixture as light is transmitted therethrough from said light source means, said monitoring means further including means to compress said disposable container between said light source means and said responsive means during analysis to define a fixed optical path length through the reaction mixture; and means to advance said carrying means through said sample transfer and reagent addition means to said monitoring means.

4,066,413

GAS COMPONENT DETECTION APPARATUS

Yoshihiro Segawa; Susumu Sato; Eturo Yasuda; Tadashi Hattori, all of Okazaki, and Keiji Aoki, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 1, 1976, Ser. No. 662,956
Claims priority, application Japan, Mar. 3, 1975, 50-26374; Dec. 15, 1975, 50-149729
Int. Cl.² G01N *27/16*
U.S. Cl. 23—254 E **21 Claims**



1. A gas component detection apparatus for detecting the concentration of oxygen contained in an exhaust gas from an internal combustion engine and determining an air-fuel ratio of an air-fuel mixture supplied thereto comprising:

a gas component detecting element composed of a semiconductive metal oxide, said detecting element having a surface and being contacted by an exhaust gas and exhibiting variable electric resistances according to the concentration of oxygen contained therein,

two electrodes disposed in a spaced relation either on the surface of said detecting element exposed to the exhaust gas or within said detecting element adjacent that exposed surface,

a catalyst promoting at least an oxidation reaction of the exhaust gas, and

a porous coating layer having an exhaust gas permeability, said coating layer being formed of a metal oxide having electrically insulating properties,

said catalyst and said coating layer covering the surface of said detecting element exposed to the exhaust gas.

4,066,414

ONE PIECE TUBE AND MICROSCOPE SLIDE MANIPULATIVE LABORATORY DEVICE

Donald Selby, 107 Ray St., Freeport, N.Y. 11520

Filed Feb. 15, 1977, Ser. No. 768,802
Int. Cl.² G01N *3/00*
U.S. Cl. 23—259 **15 Claims**

1. A one piece tube and microscope slide manipulative laboratory device for use in clinical procedures employing a test specimen, comprising, in combination;

A. A normally upright tubular reservoir having an open end for receiving the specimen, and a lower end adapted for flow communication from said reservoir, and;

B. A microscope slide chamber comprising closely spaced opposed planar walls of optically transparent material, said chamber having an upper end adapted for flow communication with said chamber, and;

C. A transition member spaced between the lower end of said reservoir and the upper end of said slide chamber, said transition member having a bore for flow communi-

cation and a wall thickness defining a frangible section, between said reservoir and said slide chamber, whereby said device is operable to allow a specimen within said



reservoir to be centrifuged, so that heavier constituents are collected in said slide chamber, which then may be frangibly separated from said reservoir.

4,066,415

GAS GENERATOR FOR INFLATABLE LIFE RAFT

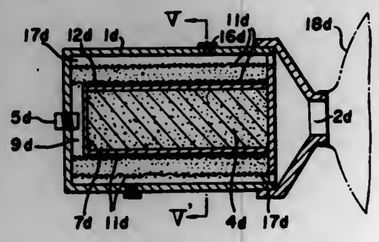
Tsuneo Kasama; Makoto Wada; Masakatu Sano, and Shinzo Tsuji, all of Kawagoe, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1976, Ser. No. 654,347

Claims priority, application Japan, Feb. 3, 1975, 50-14079; Feb. 28, 1975, 50-27377[U]

Int. Cl.² B01J *7/00;* **B63C** *9/16;* **C09K** *3/00;* **F23Q** *1/02*

U.S. Cl. 23—281 **17 Claims**



1. A gas generator for inflating inflatable objects, comprising: an elongated casing having a gas outlet at one longitudinal end thereof and adapted to be connected to an inflatable object, means in said casing defining an elongated central gas-generating chamber containing a gas-generating composition which generates gas by combustion or thermal decomposition and an igniter for igniting said gas-generating composition, means in said casing defining an elongated annular second chamber encircling said gas-generating chamber and connected in series gas flow relationship between said gas-generating chamber and said gas outlet, said second chamber being in radial gas flow communication with said gas-generating chamber and containing either a bed of an endothermically decomposable substance adapted to chemically cool the gas generated in said gas-generating chamber or a bed of a solid physically cooling and filtering substance for physically cooling and filtering said gas or serially arranged beds of both of said substances, said casing having means defining an elongated annular gas flow passage surrounding said second chamber and connected in series gas flow relationship between said second chamber and said gas outlet, and pressure relief valve means mounted on said casing and connected in said gas flow passage and adapted to be opened to place the gas flow passage in communication with the ambient atmosphere when the pressure of the cooled gas flowing through said gas flow passage into said gas outlet exceeds a predetermined value, said gas outlet being a converging nozzle mounted on said casing adjacent one axial end of said gas flow passage.

4,066,416

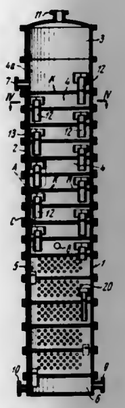
CARBONATING TOWER FOR PRODUCING SODIUM BICARBONATE MAGMA

Vadim Ivanovich Panov, ulitsa Dzerzhinskogo, 17, kv. 10; Grigory Anatollevich Tkach, ulitsa Frunze, 15, kv. 8; Viktor Mikhailovich Tomenko, ulitsa Kombainovskaya, 13/15, kv. 3, all of Kharkov; Boris Mikhailovich Zolotukhin, ulitsa Kalinina, 11, kv. 19, Krasnoperekopsk Krymskoi oblasti, and Erik Konstantinovich Belyaev, Saltovskoe shosse, 157, kv. 128, Kharkov, all of U.S.S.R.

Filed Mar. 30, 1976, Ser. No. 671,812

Int. Cl.² B01D *9/02;* **C01D** *7/10*

U.S. Cl. 23—283 **3 Claims**



1. A carbonating tower for the production of sodium bicarbonate magma containing solid crystalline phase, comprising: a casing having an inner space; pipes for feeding reactants into and for removing the resultant magma and gas from said casing; perforated plates arranged one above another in the inner space of said casing to divide said inner space of the casing into a separation compartment and reaction compartments arranged one above another below said separation compartment; means for cooling the suspension accommodated in at least one of the lower reaction compartments; overflow pipes mounted on said perforated plates and establishing communication of said separation and said reaction compartments, each of said perforated plates having solid portions adjacent to the overflow pipe; an annular baffle adapted to define a zone for accumulation of solid crystalline phase in the magma, said baffle being connected in each reaction compartment to the upper end of said overflow pipe coaxially therewith and in spaced relation thereto, said baffle encircling said overflow pipe and having a lower edge located above the level of the perforated plate and below the upper end of said pipe and forming an annular space with the overflow pipe and means for removing the magma containing solid crystalline phase accumulated therein which means is arranged in proximity with said overflow pipe and adjacent said baffle and substantially below the lower edge of said baffle.

4,066,417

SOLID-FLUID CONTACTING APPARATUS

Charles A. Drake, and Glyndal D. Cowan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1976, Ser. No. 682,933

Int. Cl.² B01J *8/00;* **B67D** *5/58*

U.S. Cl. 23—289 **1 Claim**

1. A system for contacting solid particles with at least two batches of liquid without removing solid particles contained therein comprising, in combination:

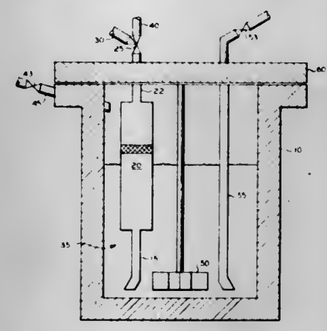
an enclosed vessel adapted for holding liquids and solid particles within said vessel;

a conduit extending through the top of said vessel and terminating near the bottom of said vessel below the level of the liquid in said vessel when a reaction is progressing within said vessel;

a first means connected externally of the vessel to said conduit for introducing a liquid into the vessel through said conduit;

a second means connected externally of the vessel to said conduit for withdrawing through said conduit the liquid that has been contacted with solid particles;

filtering means within said conduit for preventing solid particles carried by the liquid from being withdrawn from



the vessel, solid particles that are retained by, or embedded in, the filter means when liquid is withdrawn being dislodged therefrom and carried back into the contacting zone of the vessel by the subsequent batch of liquid introduced by the first means;

a second conduit having no filtering means and extending through the top of the vessel and terminating near the bottom of the vessel in order to charge or remove the solid particles therethrough;

a mechanical stirrer extending through the top of the vessel and to such a point near the bottom of the vessel that the liquid may be stirred in order to improve the contact between the liquid and the solid particles; and

a passageway extending through the sidewall and above the level of the liquid in said vessel with means to add pressurizing gas to the vessel.

4,066,418

METHOD OF SEALING AN INTERCELL CONNECTION IN A MULTI-CELL ELECTRIC STORAGE BATTERY

Edward Adderley, Hadfield, England, assignor to Sociedad Espanola Del Acumulador Tudor S.A., Madrid, Spain

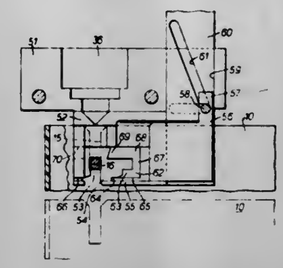
Filed Mar. 28, 1975, Ser. No. 562,943

Claims priority, application United Kingdom, Jan. 21, 1975, 2657/75

Int. Cl.² H01M *2/24, 6/02;* **B29C** *6/04*

U.S. Cl. 29—623.5 **8 Claims**

1. In a method of sealing an intercell connection in a multi-cell electric storage battery in which the plates of neighboring cells are connected by a connector bar passing through an opening in the upper part of an intercell partition, which comprises placing over the intercell connector bar a mould in the form of a single moulding head and having a marginal portion fitting against each face of the partition and defining a moulding cavity surrounding the bar on each side of the partition, the mould comprising two halves, lying on opposite sides of the partition and each half comprising a body which forms one side wall of the cavity positioned against one side of the bar and on the opposite side of the bar provides guides for a closure member which is capable of moving substantially horizontally to closed position to completely surround the remaining sides of the bar, introducing into the mould a plastics material which is compatible with the partition so as to seal the gap between the margins of the opening and the connector bar, moving the closure member to an open position, and moving



the sealed intercell connection downwardly relative to and out of the mould, the improvement comprising a cutter being provided on the end of the top portion of the closure member, moving the closure to a closed position and thereby gouging a groove in an upper surface of the bar so as to close the cavity throughout the whole width of the upper surface of the bar.

4,066,419

GASOLINE COMPOSITIONS

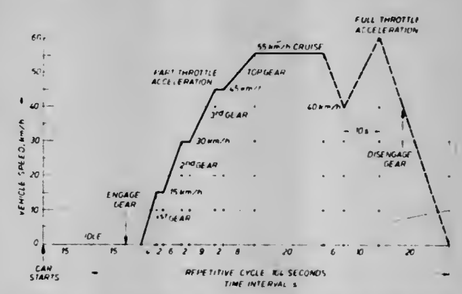
David G. Wharton, Upton-by-Chester, England, assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 8, 1976, Ser. No. 740,170

Claims priority, application United Kingdom, Dec. 19, 1975, 52100/75

Int. Cl.² C10L *1/26*

U.S. Cl. 44—72 **9 Claims**



1. A gasoline composition comprising a minor proportion of gasoline and from about 60 parts per million N/V of gasoline of compound having the formula:

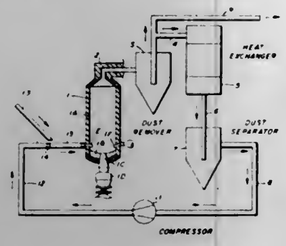
$$[R_f(CH_2)_qSO_2N(R)R_1O]_mPX_{3-m}$$

wherein R_f is a perfluorinated radical selected from the group consisting of aliphatic C_nF_{2n+1} and cycloaliphatic C_nF_{2n-1}, n is an integer from 1 - 18, q is 0 or an integer from 1 to 18, R is hydrogen or an alkyl radical having from 1 to 12 carbon atoms, R_1 is an alkylene bridging radical having from 2 to 12 carbon atoms, m is 1 or 2, and X is chlorine, hydroxyl, —OMe where Me is a metal, or a residual moiety of an active hydrogen-containing organic compound.

4,066,420
PROCESS FOR THE GASIFICATION OF SOLID FUELS

Wilhelm Danguillier, Bochum, and Wolfgang Grams, Wanne-Eickel, both of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Continuation-in-part of Ser. No. 684,112, May 7, 1976, abandoned. This application Mar. 4, 1977, Ser. No. 774,466
Int. Cl.² C10J *1/00*
U.S. Cl. 48—197 R 11 Claims



1. A process for the gasification of pulverized or fine-grain coal which is introduced as a mixture with a gaseous agent consisting essentially of CO, H_2 and CO_2 in a slag bath generator, said process including the steps of combining said gaseous agent with said coal to form a mixture, introducing said mixture into a slag bath generator, gasifying the coal in the presence of introduced gasifying medium and of included ash in the coal in said generator at a temperature of between 1500° C and 2200° C, withdrawing liquid slag from said slag bath generator, and using a portion of the combustible gas generated by said slag bath generator as said gaseous agent.

4,066,421
PROCESS FOR PRODUCING HIGH CALORIFIC VALUE FUEL GAS

Kaichiro Yamaguchi, Nishinomiya, and Susumu Iguchi, Sakai, both of Japan, assignors to Osaka Gas Co. Ltd., Osaka, Japan

Continuation of Ser. No. 605,429, Aug. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 254,647, May 18, 1972, abandoned. This application Apr. 14, 1977, Ser. No. 787,311
Claims priority, application Japan, May 28, 1971, 46-37238
Int. Cl.² C10G *13/04, 13/30*
U.S. Cl. 48—213 9 Claims

1. A process for producing fuel gas containing as a main component methane in combination with ethane and having a calorific value of more than 9,500 Kcal/Nm^3 which comprises contacting a hydrocarbon having at least 3 carbon atoms and a boiling point of not more than 150° C with hydrogen in gaseous phase in the presence of a catalyst at a temperature of 150° to 400° C, said catalyst comprising 10 to 70 weight percent molybdenum oxide and 3 to 15 weight percent nickel oxide respectively supported on γ-alumina carrier said percents being based on the weight of the carrier, and the proportion of said nickel oxide being in the range of 9 to 60 weight percent, based on the weight of the molybdenum oxide.

4,066,422
WEAR-RESISTANT COMPOSITE MATERIAL AND METHOD OF MAKING AN ARTICLE THEREOF

Lowell J. Moen, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

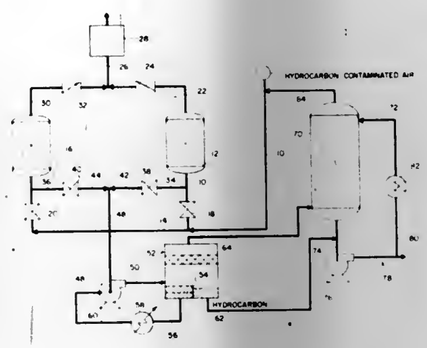
Filed Oct. 2, 1975, Ser. No. 618,854
Int. Cl.² B24D *3/08*
U.S. Cl. 51—309 R 10 Claims

1. A wear-resistant composite material comprising a plurality of abrasive-resistant particles embedded in a matrix consisting essentially of about 3 to 5 percent boron, and the balance being iron having residual impurities.

4,066,423
ADSORPTION-ABSORPTION VAPOR RECOVERY SYSTEM

James C. McGill, and William N. Scott, both of Tulsa, Okla., assignors to HT Management Company, Tulsa, Okla.

Filed Sept. 27, 1976, Ser. No. 726,822
Int. Cl.² B01D *53/04*
U.S. Cl. 55—48 5 Claims



2. A process for recovering hydrocarbon from an air-hydrocarbon mixture, comprising:

passing the air-hydrocarbon mixture through a solid adsorbent bed at slightly above atmospheric pressure, which bed is capable of selectively adsorbing the hydrocarbon components from the mixture to leave substantially hydrocarbon free air;

venting the substantially hydrocarbon free air to the atmosphere;

subjecting the hydrocarbon laden solid adsorbent bed to a near vacuum with a liquid ring vacuum pump to desorb the hydrocarbon components therefrom and produce a rich air-hydrocarbon vapor mixture containing a liquid from the liquid ring vacuum pump and a recovered liquid hydrocarbon;

separating the liquid from the liquid ring vacuum pump and the recovered liquid hydrocarbon from the rich air-hydrocarbon vapor mixture;

absorbing substantially all of the hydrocarbon components from the rich air-hydrocarbon vapor mixture with recovered liquid hydrocarbon absorbent in an absorber operating with a sufficiently high L/V ratio to produce a constant composition absorber overhead gas and a recovered liquid hydrocarbon mixed with said absorbent;

recycling the absorber overhead gas from the absorption step to a second solid adsorbent bed, capable of selectively absorbing the hydrocarbon therein to leave a substantially free hydrocarbon recycle air;

venting the substantially free hydrocarbon recycle air to the atmosphere;

separating the liquid ring vacuum pump liquid from the recovered liquid hydrocarbon produced in the separation step;

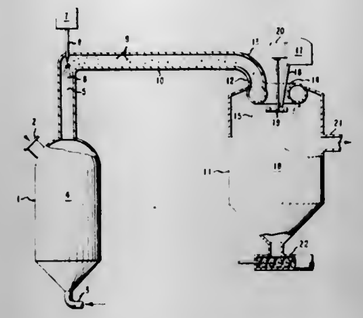
cooling the liquid ring vacuum pump liquid; and

recycling said liquid ring vacuum pump liquid for use in the liquid ring vacuum pump.

4,066,424
SELECTIVELY RECOVERING METAL CHLORIDES FROM GASEOUS EFFLUENT

Arnold William Kilgren; David Nicholson Low, and Robert Warwick Porter, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 13, 1976, Ser. No. 732,284
Int. Cl.² B01D *7/02;* C01G *9/02*
U.S. Cl. 55—71 7 Claims



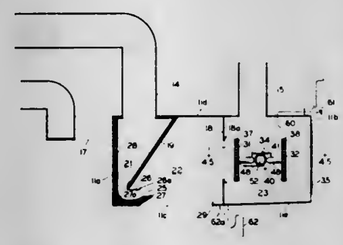
1. In a process for recovering metal chlorides from a gaseous mixture consisting essentially of at least two gaseous metal chlorides,

the improvement comprising contacting the gaseous mixture flowing through a transfer duct at a temperature above the condensation point of the gaseous mixture with at least one stream of liquid to rapidly cool substantially all of the gaseous mixture to a temperature below the freezing point of at least one of the metal chlorides in the gaseous mixture, the velocity of the gaseous mixture being at least the pneumatic conveyance velocity at the contact zone and the rate of cooling substantially all of the gaseous mixture being less than one second.

4,066,425
VENTILATING APPARATUS INCLUDING EXHAUST FILTER EXCHANGER

Louis A. Nett, P.O. Box 199N, R.R. No. 1, Cambridge, Wis. 53523

Filed Aug. 30, 1976, Ser. No. 718,842
Int. Cl.² B01D *35/02*
U.S. Cl. 55—242 4 Claims



1. Ventilating apparatus, comprising:

a. an exhaust hood having a fume collection chamber, an exhaust chamber, and an interior wall between said chambers having an opening therein to allow fumes to pass from said collection chamber to said exhaust chamber;

b. a filter exchange assembly having a pair of movable filter holders each for holding at least one filter selectively in operating position across said opening and in reserve position within said exhaust chamber; and

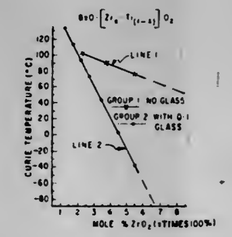
c. means for moving said filter holders for alternatively positioning one of said filter holders in operating position while the other is in reserve position, said means for moving said filter holders having:

1. a rotatable central shaft member mounted to said exhaust hood for rotation in said exhaust chamber;
2. means for movably mounting said filter holders to said central shaft member for retraction of said filter holders toward said central shaft member and extension away therefrom; and
3. means for selectively extending said filter holders outwardly from said central shaft member to an extended position wherein one of said filter holders may be in operating position in said interior wall opening and for retracting said filter holders inwardly toward said central shaft member to a retracted position, whereby a filter held by the one of said filter holders in the operating position may be exchanged with a filter held by the other if said filter holders in a reserve position by retraction of said filter holders to their retracted position, rotation of said central shaft member to interchange the positions of said filter holders, and extension of said filter holders to their extended position wherein the other of said filter holders is in the operating position.

4,066,426
METHOD OF FORMING A GLASS-REACTED-CERAMIC WITH CADMIUM

Galeb H. Maher, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 690,225, May 26, 1976, abandoned. This application Nov. 1, 1976, Ser. No. 737,869
Int. Cl.² C03C *21/00*
U.S. Cl. 65—18 12 Claims



1. A method for making a glass-reacted-ceramic body comprising mixing a major proportion of a finely ground ceramic comprised of barium titanate and an alkaline-earth-metal zirconate and a minor proportion of a pulverized low temperature glass; forming a cake of said mixture; placing a quantity of cadmium oxide powder adjacent to said cake; and firing said cake and said cadmium oxide powder at a temperature of between 1600° F to 2050° F so that said cadmium oxide powder provides during said firing a controlled and enriched cadmium atmosphere external of said cake to transform said cake during said firing into a sintered body and to cause cadmium ions from said cadmium of said atmosphere to react with said ceramic and to diffuse into the titanate lattice thereof, whereby grain growth in said body is enhanced and the Curie temperature of said body is shifted downwardly.

11. A method for making a glass-reacted-ceramic body comprising mixing a major proportion of a finely ground ceramic comprised of barium titanate and an alkaline-earth-metal zirconate and a minor proportion of a pulverized low temperature glass; forming layers of said glass-ceramic mixture; coating said layers with an electroding paste, stacking said electroded layers to form a cake; placing a quantity of cadmium oxide powder adjacent to said cake; and firing said cake and said cadmium oxide powder at a temperature of between 1600° and 2050° F so that said cadmium oxide powder provides during said firing a controlled and enriched cadmium atmo-

sphere external of said cake to transform said cake during said firing into a sintered body and to cause cadmium ions from said cadmium of said atmosphere to react with said ceramic and to diffuse into the titanate lattice thereof.

4,066,427

BONDING METHOD USING A SOLDERING GLASS

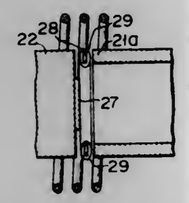
Eizo Goto, Chigasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 579,234, May 20, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 777,104

Claims priority, application Japan, May 20, 1974, 49-56416; July 11, 1974, 49-79427

Int. Cl.² C03B *23/20*

U.S. Cl. 65—40 **10 Claims**



1. A method for bonding two nonconductive members made of glass or ceramic material, one of which includes an element made of a heat-fragile substance, comprising interposing a metal member coated with soldering glass between the nonconductive members, said metal member being out of contact with at least the nonconductive member including the heat-fragile element, passing an electric current through the metal member to heat the same to a temperature which is higher than the temperature damaging to the heat-fragile element of the nonconductive member thereby to melt the soldering glass, pressing the metal and nonconductive members together with the molten soldering glass therebetween cooling these members before said heat-fragile element is heated by the heat resulting from the current passing through the metal member to such temperature that it is damaged or has its properties substantially deteriorated.

4,066,428

METHOD OF APPLYING VACUUM WHILE CONSTRICTING THE NECK PORTION

Franz Gunthner, Mainz-Lerchenberg, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

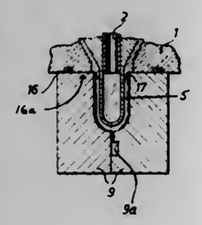
Division of Ser. No. 458,490, April 5, 1974, Pat. No. 3,967,947. This application June 29, 1976, Ser. No. 700,948

Claims priority, application Germany, Apr. 11, 1973, 2318116

The portion of the term of this patent subsequent to July 6, 1993, has been disclaimed.

Int. Cl.² C03B *9/00, 5/30*

U.S. Cl. 65—66 **10 Claims**



1. Method of making a hollow glass article, which comprises:

a. discharging molten glass from a feeder in the form of a tube closed at one end, into a finishing mold,

b. applying a pressure differential between the interior of the tube and the exterior thereof within the mold by aspiration of the mold to apply a vacuum between the tube and the mold for shaping of the molten glass into the hollow article in the mold,

c. lowering of the mold relative to the feeder while the glass between the feeder and mold is still molten so that a neck forms interconnecting the hollow article in the mold and glass in the feeder, and

d. with the mold in the lowered position, severing the glass in the feeder from the hollow article in the mold at said neck, said severing leaving the hollow article with a closed upwardly disposed neck portion and the glass from the feeder with a closed downwardly disposed neck portion.

4,066,429

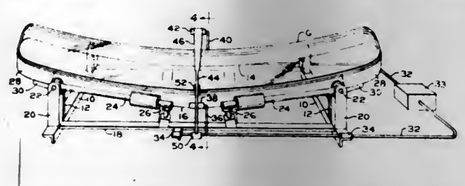
BENDING GLASS SHEETS TO A TAPERED LINE OF BEND

Thomas J. Reese, Sarver; Melvin W. Tobin, New Kensington, and James R. Mortimer, Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 20, 1977, Ser. No. 799,045

Int. Cl.² C03B *23/02*

U.S. Cl. 65—107 **13 Claims**



1. A method of bending a glass sheet along a line of bending that has a creased appearance at a first end and a gently bent, uncreased appearance at a second end, comprising:

supporting a flat glass sheet on an outline bending mold provided with an upper shaping surface conforming in elevation to the desired contour for the bent glass sheet; supporting a ribbon of electroconductive material above the upper surface of the glass sheet in vertical alignment with said line of bending; heating the glass sheet to near its softening point; passing electric current through said electroconductive ribbon so as to heat said line of bending to a temperature higher than that of the remainder of the sheet, whereby the glass sheet bends along said line of bending and sags into conformity with the contour of the bending mold; and as the glass sags, increasing the space between the electroconductive ribbon and the glass at said second end of the line of bending to a greater degree than any increase in the space between the electroconductive ribbon and the glass at said first end of the line of bending, so that at the conclusion of the bending the space at said first end is smaller than the space at said second end.

9. An apparatus for bending a glass sheet along a line of bending that has a creased appearance in one portion and a gently bent uncreased appearance in another portion comprising: a frame supporting an outline bending mold which includes a pair of shaping rails extending along opposite sides of the mold, one of said rails having an upper surface provided with a "V" shaped configuration, and the other shaping rail provided with an upper surface of gently curvature, the upper extremities of said shaping rails defining a substantially horizontal support plane for a sheet of flat glass to be bent; a pair of electrodes supported on said frame on opposite sides of the mold, spaced laterally outward from said shaping rails, said electrodes having means for supporting a ribbon of electroconductive material above said shaping rails in vertical alignment with the "V" in said one shaping rail, the first of said electrodes

being located adjacent said gently curved shaping rail and having its ribbon supporting means at an elevation above said glass support plane, the second of said electrodes being located adjacent the "V" shaped shaping rail and having its ribbon supporting means at an elevation below said glass support plane; and means for maintaining said ribbon in tension between said electrodes.

4,066,430

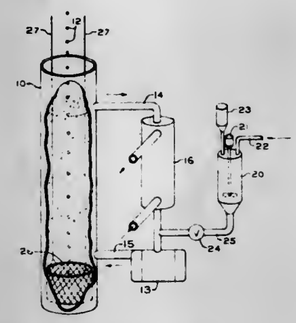
METHOD OF TEMPERING IN A FLUIDIZED QUENCHING MEDIUM

Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 26, 1976, Ser. No. 745,279

Int. Cl.² C03B *27/00*

U.S. Cl. 65—116 **21 Claims**



1. A method of quenching a heated article comprising contacting the article with a fluidized dispersion of water in hydrophobic colloidal silica having a temperature lower than that of said heated article and maintaining said contact for a sufficient period of time to reduce the temperature difference between said heated article and said fluidized dispersion.

4,066,431

SYNTHETIC N-RELEASING SOIL CONDITIONER

Daniel Martin Ennis, 3416 Tulane Drive, No. 12, Hyattsville, Md. 20783

Filed Sept. 19, 1975, Ser. No. 615,121

Int. Cl.² C05C *11/00*

U.S. Cl. 71—27 **11 Claims**

1. The method of improving soil structure which consists of applying an aqueous solution of hexamethylenediamine adipate to clay-containing soil in an amount which is the equivalent of at least about 0.005% of oven-dried clay-containing soil particles of a size less than 0.25 millimeters and which is effective to achieve said structure improvement.

4,066,432

PRODUCTION OF SUSPENSION FERTILIZERS FROM WET-PROCESS ORTHOPHOSPHORIC ACIDS

Thomas M. Jones, Sheffield, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 702,209, July 2, 1976, now Defensive Publication No. T959,001. This application Jan. 28, 1977, Ser. No. 763,423

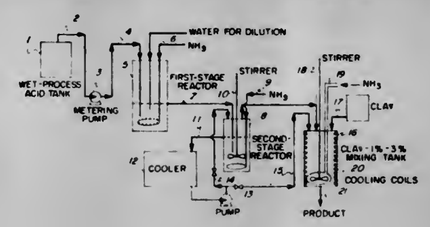
Int. Cl.² C05B *7/00*

U.S. Cl. 71—34 **6 Claims**

1. A process for the production of stable suspension-type fertilizers from wet-process orthophosphoric acid, which suspensions have unusually high plant food contents of upwards to about 14 percent nitrogen by weight and upwards to about 41 percent phosphorus by weight, said phosphorus expressed as P_2O_5 and said P_2O_5 being present therein as substantially 100 percent orthophosphate and containing the congeneric impurities originally present in said wet-process acid, excellent flow properties within the pourability expressed as percent of total volume is substantially 100 percent, and unusually low viscosities in the range of approximately 500–1000 cP at 80° F, said pourability and said viscosities effective both (a) after storage for up to about 90 days at about 100° F, and (b) after exposure to substantial vibration equivalent to that experienced in railroad tank cars and the like traveling distances in excess of 50 miles, which process comprises the steps of:

1. simultaneously adding a stream of ammonia, a stream of water, and a stream of merchant-grade orthophosphoric acid of the wet-process type to a first reactor; controlling the portion of ammonia added relative to said merchant-grade wet-process phosphoric acid in said first reactor to continuously produce an $N:P_2O_5$ mole ratio therein in the range from about 0.20 to about 0.25;

removing at least a portion of the resulting partially ammoniated mechant-grade wet-process phosphoric acid material from said first reactor and introducing said removed material as a stream into a second reactor; simultaneously introducing into said second reactor together with said



PRODUCTION OF AMMONIUM PHOSPHATE SUSPENSION FERTILIZERS BY A TWO-STAGE CONTINUOUS AMMONIATION PROCESS

stream of material from said first reactor a stream of ammonia; controlling the portion of ammonia added to said second reactor to produce an $N:P_2O_5$ mole ratio in the range from about 0.27 to about 0.34;

3. removing at least a portion of the resulting further partially ammoniated merchant-grade wet-process phosphoric acid material from said second reactor and introducing said removed material as a stream into a third reactor; simultaneously introducing into said third reactor, together with said stream of material from said second reactor, a stream of ammonia together with small amounts of gelling type clay; controlling the portion of ammonia added to said third reactor to reduce the $N:P_2O_5$ ratio therein in the range from about 0.34 to about 0.37; and

4. removing from said third reactor the resulting stable suspension characterized by the plant-food content, flow properties, and viscosities set forth supra, and further characterized by the fact that substantially 100 percent of the phosphate values therein are of the ortho type and are derived from wet-process acid.

4,066,433

METHOD OF CONTROLLING THE GROWTH OF BACTERIA, FUNGI AND ALGAE USING MEMBERS OF THE CLASS OF OXAZOLIDINES

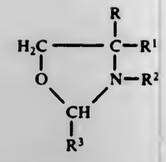
Jerry H. Hunsucker, Terre Haute, Ind., assignor to IMC Chemical Group, Inc., Terre Haute, Ind.

Division of Ser. No. 469,200, May 13, 1974. This application June 20, 1975, Ser. No. 588,744

Int. Cl.² A01N *9/00, 9/22, 9/28*

U.S. Cl. 71—67 **6 Claims**

1. A method of controlling the growth of bacteria, fungi, green and blue green algae and Newcastle's and Boney viruses by applying to these organisms or to the environment inhabited by them growth-inhibiting amounts of 10 μg/ml to 1000 μg/ml of an oxazolidine represented by the formula:



where R and R^1 are hydrogen or alkyl of 1 or 2 carbon atoms and can be the same or different; R^2 is alkyl of from 1 to 3 carbon atoms, and R^3 is hydroxyphenyl.

4,066,434

PLANT GROWTH RETARDANT COMPOSITIONS CONTAINING IMINOCARBONYLPHOSPHONATES AND IMINOCARBONYLPHOSPHONATES

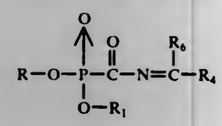
Colin Leslie McIntosh, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 621,731, Oct. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 527,351, Nov. 26, 1974, abandoned. This application Nov. 2, 1976, Ser. No. 738,167

Int. Cl.² A01N 9/36; C07F 9/40

U.S. Cl. 71—86 **31 Claims**

1. A plant growth retardant composition comprising: (a) at least one of the following: a surfactant, a solid or liquid diluent; and (b) an effective amount of a compound of the formula:



where

R is alkyl of 1 to 4 carbon atoms or benzyl;

R_1 is Na, K, NH_4, or R;

R_4 is NR_2R_3, or OR_5;

where

R_2 is hydrogen or alkyl of 1 to 12 carbon atoms;

R_3 is hydrogen or alkyl of 1 to 3 carbon atoms; and

R_5 is alkyl of 1 to 3 carbon atoms; and

R_6 is NR_2R_3, hydrogen, or alkyl of 1 to 3 carbon atoms.

4,066,435

PLANT GROWTH REGULATORS

Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 347,519, April 3, 1973. This application Dec. 23, 1976, Ser. No. 753,678

Int. Cl.² A01N 9/36

U.S. Cl. 71—86 **2 Claims**

1. A method of regulating the natural growth or development of dicotyledonous plants which comprises applying to said plant an effective plant growth regulating amount of m-methoxycarbonylbenzyltributylphosphonium bromide or o-methoxycarbonylbenzyltributylphosphonium chloride.

4,066,436

METHOD OF CONTROLLING SICKLEPOD IN SOYBEANS

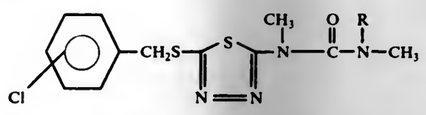
Joel L. Kirkpatrick, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed June 30, 1976, Ser. No. 701,264

Int. Cl.² A01N 9/12

U.S. Cl. 71—90 **3 Claims**

1. The method of selectively controlling broadleaf weeds in soybean fields comprising applying post-emergently to the plants in said fields an effective amount sufficient to kill weeds, including sicklepod but insufficient to cause substantial permanent injury to soybeans, of a compound having the general structural formula



in which R is hydrogen or methyl, with the additional provision that when the chloro substituent is in the para position on the benzyl structure, R is methyl.

4,066,437

TRIAZOLIDINE COMPOUNDS USEFUL AS HERBICIDES

Brigitta von Bredow, Binningen, Switzerland, and Georg Pissiotas, Lorrach, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

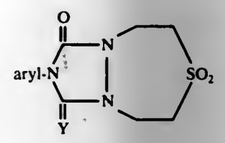
Filed Aug. 18, 1976, Ser. No. 715,354

Claims priority, application Switzerland, Aug. 29, 1975, 11247/75

Int. Cl.² A01N 9/22; C07D 513/04

U.S. Cl. 71—91 **10 Claims**

1. A 1,2,4-triazolidine compound of formula I



wherein

aryl is unsubstituted naphthyl, or naphthyl or phenyl mono- or di-substituted by halogen, (C_1-C_4) alkyl, (C_1-C_4)alkoxy, (C_1-C_4) alkylthio, (C_2-C_4) alkenyloxy, (C_2-C_4) alkynyloxy, phenoxy, benzyloxy, trifluoromethyl, sulphamoyl, di(C_1-C_4)alkylsulphamoyl, nitro, cyano, thiocyanato, amino, mono- or di(C_1-C_4)alkylamino, di(C_1-C_4)alkylcarbamoyl or (C_1-C_4)alkylsulphonyl, and

Y is oxygen or sulfur.

6. A composition for selectively controlling weeds in crops of cereals, maize, rice and rape-seed, which composition comprises as active substance an effective amount of a compound of formula I, according to claim 1, together with a suitable carrier therefor.

4,066,438

SUBSTITUTED AMINODI- OR TRIHALOPYRIDINES AND METHOD OF USE

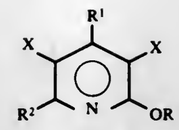
Howard Johnston, Walnut Creek, Calif., and Herman O. Senkbeil, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 571,151, April 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 177,429, Sept. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 124,571, March 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 40,389, May 25, 1970, abandoned. This application Apr. 12, 1976, Ser. No. 676,035

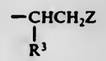
Int. Cl.² C07D 213/61; A01N 9/22

U.S. Cl. 71—94 **21 Claims**

1. A compound corresponding to the formula

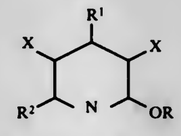


and the organic or inorganic acid addition salts thereof, wherein X represents chloro, bromo or fluoro; R^1 represents hydrogen, amino, loweralkylamino, arylamino from the group consisting of phenylamine, benzylamine, phenylethylamine, phenylpropylamine and phenylbutylamine, loweralkylamido or N-(loweralkyl)loweralkylamido; R^2 represents hydrogen, X, amino or loweralkylamino; with the proviso that one of R^1 or R^2 is always amino or loweralkylamino and the other of R^1 or R^2 is other than amino or loweralkylamino; R represents butyl, 2-hydroxypropyl, 4-hydroxybutyl, 6-hydroxyhexyl or the radical

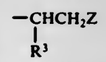


wherein Z represents amino, loweralkylamino, phenylamino, hydroxy, loweralkoxy, aryloxy from the group consisting of phenyloxy, benzyloxy, phenylethoxy, phenylpropoxy and phenylbutoxy, 2-propenyl, hydroxyloweralkoxy, mercapto, loweralkylthio, loweralkanoyloxy or 2-haloloweralkanoyloxy and R^3 represents hydrogen or methyl and with the proviso that R is other than butyl when R^2 is X.

12. A method for controlling the growth of undesirable plant species which comprises applying to plants, plant parts or their habitats a growth inhibiting amount of at least one pyridine compound corresponding to the formula



and the organic or inorganic acid addition salts thereof, wherein X represents chloro, bromo or fluoro; R^1 represents hydrogen, amino, loweralkylamino, arylamino from the group consisting of phenylamine, benzylamine, phenylethylamine, phenylpropylamine and phenylbutylamine, loweralkylamido or N-(loweralkyl)loweralkylamido; R^2 represents hydrogen, X, amino or loweralkylamino; with the proviso that one of R^1 or R^2 is always amino or loweralkylamino and the other of R^1 or R^2 is other than amino or loweralkylamino; R represents butyl, 2-hydroxypropyl, 4-hydroxybutyl, 6-hydroxyhexyl or the radical



wherein Z represents amino, loweralkylamino, phenylamino, hydroxy, loweralkoxy, aryloxy from the group consisting of phenyloxy, benzyloxy, phenylethoxy, phenylpropoxy and phenylbutoxy, 2-propenyl, hydroxyloweralkoxy, mercapto, loweralkylthio, loweralkanoyloxy or 2-haloloweralkanoyloxy and R^3 represents hydrogen or methyl and with the proviso that R is other than butyl when R^2 is X.

4,066,439

METHOD OF SELECTIVELY COMBATING WILD OATS

James L. Ahle, Shawnee Mission, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Oct. 23, 1975, Ser. No. 625,233

Int. Cl.² A01N 9/20

U.S. Cl. 71—111 **3 Claims**

1. The method of selectively killing wild oats plants in stages of growth varying from the two-leaf to four-leaf stage in the presence of wheat or barley comprising applying to said wild oats plants an effective amount of a combination of one part of barban, from two to five parts of CIPC and an inert diluent.

4,066,440

SYMMETRICAL ALKYNYL UREAS

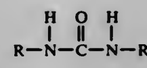
Jay K. Rinehart, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 620,984, Oct. 9, 1975, abandoned, which is a continuation of Ser. No. 383,843, July 30, 1973, abandoned. This application June 30, 1976, Ser. No. 701,398

Int. Cl.² A01N 9/20

U.S. Cl. 71—119 **7 Claims**

1. A method of controlling a weed of the genus Cyperus which comprises contacting the weed with a composition in an amount effective to control the weed, the composition having the general formula:



wherein: R is an alkynyl of from three to five carbon atoms.

4,066,441

PREEMERGENCE HERBICIDAL METHODS AND COMPOSITIONS USING 2,6-DINITROXYLIDINE COMPOUNDS

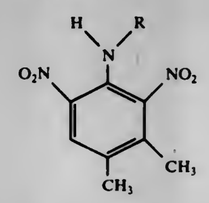
Albert William Lutz, Montgomery Township, Somerset County, and Robert Eugene Diehl, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 323,000, Jan. 12, 1973, Pat. No. 3,920,742, which is a continuation-in-part of Ser. No. 262,807, June 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 174,938, Aug. 25, 1971, abandoned. This application Jan. 6, 1975, Ser. No. 538,980

Int. Cl.² A01N 9/20

U.S. Cl. 71—121 **8 Claims**

1. A method for the preemergence control of undesirable plant species comprising applying to soil containing seeds of said undesirable plant species a herbicidally effective amount of a compound of the formula:



wherein R represents 1-ethylbutyl; 1-ethylpropyl; 1-methylpropyl or 1-methylbutyl.

4,066,442

METHOD OF MAKING CHROME STEEL IN AN ELECTRIC ARC FURNACE

Jean Saleil, 11, rue Lougmak, 42100, Saint-Etienne; Maurice Debras, and Jean-Yves Malefant, both of 41, rue Emile Zola, 42240, Unieux, all of France

Filed Jan. 27, 1977, Ser. No. 762,945
Claims priority, application France, Feb. 4, 1976, 76.03077
Int. Cl.² C21C 5/52, 5/32
U.S. Cl. 75—12 7 Claims

1. A method of making chromium steel by decarburizing a charge of chromium-bearing molten metal in an electric furnace, the method including the steps of:

a. introducing a double lance consisting of two concentric tubes into said furnace through an opening in the wall of said furnace or in the roof of said furnace,

b. submerging the tip of said lance in said molten charge,

c. blowing pure oxygen and water vapor through said lance in a jet into said molten charge, so that the peripheral part of said jet includes more than 80% of the water vapor which is blown in through the gap between said two tubes of said lance to protect the tip of said lance against high-temperature wear, the inner tube of said lance carrying a blown mixture of pure oxygen and water vapor,

d. decreasing the relative amount of the pure oxygen and increasing that of the water vapor as the carbon content of said molten metal decreases,

e. when the carbon level in said molten metal is below 1%, regulating continuously the proportion of water vapor in said blown mixture and the amount of cooling additives so that the temperature of said molten metal is maintained between 1650° C. and 1720° C.

4,066,443

PROCESS OF STABILIZING THE OPERATION OF BLAST FURNACES FOR PRODUCING MOLTEN IRON

James W. Currier, Palatine, Ill., assignor to International Minerals and Chemical Corporation, Libertyville, Ill.

Filed Sept. 30, 1975, Ser. No. 618,144
Int. Cl.² C21B 5/00
U.S. Cl. 75—41 8 Claims

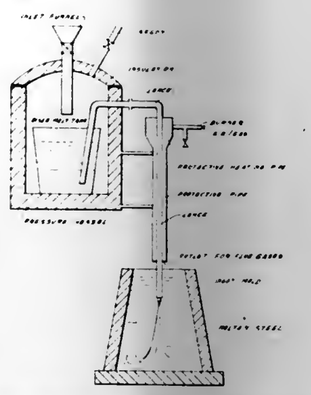
1. In a process of preparing molten iron in a blast furnace in which the alkali loading to the furnace is at least about 4 pounds of alkali oxides per ton of metal produced, the alkai metal content in the furnace slag fluctuates widely due to repetitive accumulation and purging of alkali metals in the furnace over extended operating periods with corresponding fluctuations in the sulfur content and temperature of the molten metal, and the MgO content in the furnace slag is in the range of from about 6% to about 18% by weight, the improvement comprising adding olivine to the furnace charge on a substantially continuous basis at an average rate of about 10 to about 100 pounds of olivine per ton of molten iron produced in the furnace to effect the continuous removal of the alkali metals from the furnace in the furnace slag and thereby stabilize the furnace operation.

4,066,444

PROCESS FOR DEOXIDIZING STEEL BY MEANS OF MOLTEN ALUMINUM

Hans Kosmider, St. Magnus, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

Filed Nov. 1, 1975, Ser. No. 630,664
Claims priority, application Germany, Nov. 9, 1974, 2453254
Int. Cl.² C21C 7/06
U.S. Cl. 75—58 15 Claims



4. The improvement of claim 3 wherein the inert gases are argon or nitrogen.

4,066,445

PROCESS FOR PRODUCING MAGNESIUM UTILIZING ALUMINUM METAL REDUCTANT

James D. Johnston; Robert N. Sanders, and James M. Wood, Jr., all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 610,430, Sept. 4, 1975, Pat. No. 4,033,759. This application Feb. 28, 1977, Ser. No. 772,652
Int. Cl.² C22B 45/00
U.S. Cl. 75—67 R 19 Claims

1. A process for production of magnesium in a reaction-condensation system having a reducing furnace zone and a condensation zone, comprising reacting in the reducing furnace zone aluminum metal containing at least 80 weight percent aluminum and a calcium magnesium aluminate slag or magnesium oxide in the presence of said slag containing not more than five weight percent silicon dioxide, the amount of aluminum metal fed into the reducing furnace zone being in excess of the stoichiometric amount of aluminum required to react with the magnesium oxide fed into the reaction zone, and slag removed therefrom contains about 6–16 weight percent magnesium oxide, carrying out the reaction at a temperature of about 1500°–1700° C at a pressure of about 0.5–2.0 atmospheres, maintaining the silicon dioxide content and the magnesium oxide content of the molten oxidic slag in the reaction zone at least as low as five weight percent and about 6–16 weight percent, respectively, evolving magnesium vapor from the reaction zone to the condensation zone, and condensing and recovering the magnesium as a product.

4,066,446

THERMALLY BLOATED FIRECLAY (SCR VERILITE) LADLE INSULATION

George L. Peck, Pittsburgh, Pa., assignor to General Refractories Company, Bala Cynwyd, Pa.

Filed July 8, 1976, Ser. No. 703,611
Int. Cl.² C22B 9/10; C04B 31/00
U.S. Cl. 75—96 15 Claims

1. The method of treating molten metal which comprises applying to the exposed surface of molten metal a thermally insulating and protective layer of finely divided particles of a thermally bloated fireclay.

4,066,447

LOW EXPANSION SUPERALLOY

Darrell Franklin Smith, Jr.; Edward Frederick Clatworthy, and Donald Edward Wenschhof, Jr., all of Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.

Filed July 8, 1976, Ser. No. 703,528
Int. Cl.² C22C 19/05, 30/00, 38/06, 38/48
U.S. Cl. 75—122 10 Claims

1. An alloy consisting essentially of 30% to 57% nickel, 1.7% to 8.3% chromium, 1 to 2% titanium, metal from the group columbium, tantalum and mixtures thereof in proportions providing the total percentage of columbium plus one-half the percentage of tantalum is 1.5 to 5%, up to 31% cobalt, up to 1.5% aluminum, up to 0.2% carbon, up to about 2% manganese, up to about 1% silicon, up to 0.03% boron and balance essentially iron in an amount of at least 34% of the alloy and having the composition proportioned in accordance with the following four relationships A, B, C′ and D′ whereby:

A. $\%Ni+0.88(\%Co)-1.70(\%Al)-2.01(\%Ti)+0.26(\%Mn+\%\ Cr)$ equal up to 51.8

B. $\%Ni+1.13(\%Co)-2.69(\%Al)-1.47(-\%Ti)-1.93(\%Mn)-2.51(\%Cr)+1.87(\sqrt{\%Cr})$ at least 40.8

C. $\%Al+1.3(\%Ti)+1.44(\%Cb+\frac{1}{2}\%Ta)-0.12(\%Cb+\frac{1}{2}\%Ta)^2-0.37(\%Cr)+0.03(\%Cr)^2$ at least 3.81

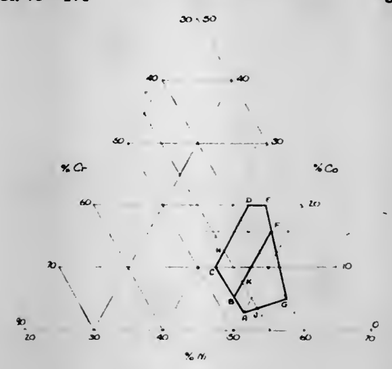
D. $\%Al+1.3(\%Ti)+0.25(\%Cb+\frac{1}{2}\%\ Ta)-0.125(\%Cr)$ up to 3.18

4,066,448

NICKEL-CHROMIUM-COBALT CONTAINING ALLOYS

Ronald Mason Haeberle, Jr., Huntington, W. Va., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Apr. 7, 1976, Ser. No. 674,568
Int. Cl.² C22C 19/05
U.S. Cl. 75—171 8 Claims



8. An alloy consisting essentially of 35 to 47.5% chromium, about 42.5% to 55% nickel, about 2.5 to 21% cobalt, titanium present to improve workability or tie up nitrogen up to 1.5%, up to 0.25% carbon, and up to 2% aluminum, the chromium, nickel and cobalt being correlated to represent a point within the area ACDEGA of the accompanying drawing.

4,066,449

METHOD FOR PROCESSING AND DENSIFYING METAL POWDER

Charles J. Havel, 162 Proctor, Utica, N.Y. 13501

Division of Ser. No. 509,723, Sept. 26, 1974, abandoned. This application Aug. 6, 1975, Ser. No. 602,221
Int. Cl.² B22F 1/00
U.S. Cl. 75—211 8 Claims

1. A method for producing a substantially fully dense compact from prealloyed powder metal comprising the steps of

a. providing a fully alloyed powder of predetermined composition,

b. cold working the particles of the prealloyed powder metal to introduce an amount of strain equivalent to at least about a forty percent reduction in size along a major axis of the particle to thereby lower the recrystallization temperature of the powder metal, said cold working being carried out at an energy level less than that which will cause extensive brittle fracture of the particles to maintain the integrity of the particles,

c. maintaining the powder metal at a temperature below the lowered recrystallization temperature until the powder is to be consolidated and thereafter

d. hot consolidating the powder metal by heating the powder metal to a temperature at least slightly above the lowered recrystallization temperature to recrystallize the powder metal, but below that at which excessive grain growth occurs to maintain a relatively small grain size in the compact and by applying pressure to the heated powder metal.

4,066,450

METAL BODY HAVING LARGE SURFACE AREA AND PROCESS FOR PRODUCING SAME

Masaharu Takeuchi; Isemi Igarashi, both of Nagoya, and Tsuchio Bunda, Okazaki, all of Japan, assignors to Kabushiki Kaisha Toyota Cho Kenkyusho, Japan

Filed Nov. 24, 1975, Ser. No. 634,646
Claims priority, application Japan, Nov. 26, 1974, 49-136461
Int. Cl.² C22C 1/09
U.S. Cl. 75—229 17 Claims



1. A coated bed or stratum of entangled metal fibers wherein the coated bed has a large surface area and high porosity, the coated bed comprising:

a. a coating of metal selected from the group consisting of aluminum and aluminum alloy and

b. fibers of metal which has a higher melting point than that of the coating,

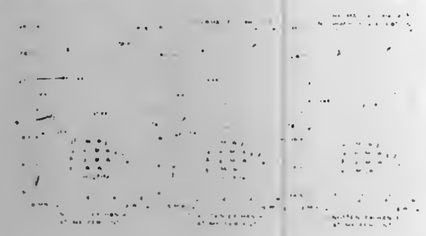
the coating having rough and complex surfaces with a plurality of spaces, cracks, irregularities and flake or plate-shaped portions, and the metal fibers being coated over their entire surfaces with said coating.

4,066,451

CARBIDE COMPOSITIONS FOR WEAR-RESISTANT FACINGS AND METHOD OF FABRICATION

Erwin Rudy, 15750 NW. Oak Hills Drive, Beaverton, Oreg. 97005

Filed Feb. 17, 1976, Ser. No. 658,346
Int. Cl.² B22F 3/00; C22C 29/00
U.S. Cl. 75—240 6 Claims



1. A metal carbide composition $(Mo_xW_{x'}Cr_{x''})C_z$, in which the relative mole fractions x, x', x" $(x + x' + x'' = 1)$ of the metal components assume values of at least 0.20 for x, between 0 and 0.80 for x', and between 0 and 0.18 for x", when x is less than about 0.80 and is 0 when x is greater than about 0.80, and the value of the stoichiometry parameter z, which stands for the number of gramatoms carbon present per gramatom of the metal component in the carbide alloy, lies between 0.60 and 0.73, said metal carbide composition being a two-phased mixture consisting of metal subcarbide, M_2C and hexagonal monocarbide, MC, solid solution, wherein M represents the metal component, the average spacing between the grains of said subcarbide and said monocarbide phases in the mixture being less than 4 microns, and said two-phased mixture being formed by solid state decomposition of the pseudocubic $\eta - M_3C_2$, or cubic $\alpha - MC_{1-x}$, high temperature carbide solid solutions.

4,066,452

VELOCITY COMPENSATION FOR BEAD BYPASS

Earl V. Jackson, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 476,187, June 4, 1974, Pat. No. 3,945,724.
This application Nov. 5, 1975, Ser. No. 629,196
Int. Cl.² G03G 15/00
U.S. Cl. 96—1 PE 8 Claims



1. A method for removing excess photoelectrophoretic ink developer accumulated as a bead at a nip formed by movably contacting an ink wetted injecting web with a blocking electrode in at least tangential contact in and about an imaging zone without substantially altering the speed of advance of the injecting web, comprising the steps of:

a. disengaging the moving injecting web from the blocking electrode within the imaging zone by moving the axis of at least one movable axially rotatable compensation roller, arranged in biased contact with an unwetted side of the injecting web, along a plane approximately parallel to the injecting web and along an arc approximating part of a fixed elliptical pathway, while simultaneously maintaining a taut condition in the injection web to permit passage of accumulated ink; and thereafter

b. re-engaging the moving injecting web with the blocking electrode by moving the rotatable compensation roller in the opposite direction along a fixed elliptical pathway to the original position for imaging purposes.

4,066,453

PROCESS FOR THE PREPARATION OF PRINTING FORMS

Erwin Lind, Auringen, and Franz Freimuth, Wiesbaden-Biebrich, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 466,069, May 1, 1974, abandoned. This application June 2, 1976, Ser. No. 692,154
Claims priority, application Germany, May 2, 1973, 2322047
Int. Cl.² G03G 13/26
U.S. Cl. 96—1 R 24 Claims

1. In the process for the preparation of printing forms or metallic etchings from electrophotographic or electrographic reproduction materials composed of a support with a photoconductive organic or high-ohmic organic layer thereon, by charging and imagewise exposure, or by imagewise charging, development of the electrostatic image with a finely divided toner, fixing, and removal of the layer in the image-free areas by means of a decoating solution,

the improvement which ccomprises developing the electrostatic image with a developer which chemically reacts at least superfically with the image areas of the photoconductive organic or high-ohmic organic layer at room temperature, thereby simultaneously effecting development and resistance to the decoating solution,

or developing the electrostatic image with a developer which chemically reacts with the decoating solution and thereby deactivates it in the image areas.

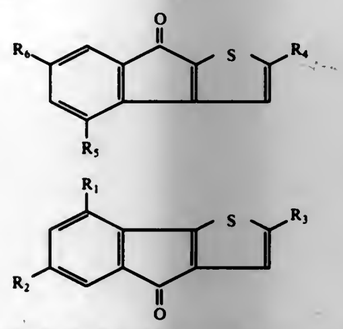
4,066,454

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING INDENOTHIOPHENONE OR ITS DERIVATIVE AND PROCESS OF PREPARING INDENOTHIOPHENONE AND ITS DERIVATIVE

Mitsuru Hashimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Division of Ser. No. 416,792, Nov. 19, 1973, abandoned. This application Oct. 3, 1975, Ser. No. 619,508
The portion of the term of this patent subsequent to Mar. 18, 1975, has been disclaimed.
Int. Cl.² G03G 5/06
U.S. Cl. 96—1.5 R 4 Claims

1. An electrophotographic light-sensitive material having a photoconductive layer formed on an electroconductive support, the photoconductive layer comprising a photoconductive material selected from the group consisting of organic photoconductive monomers and organic photoconductive polymers, and from 0.01 to 1.2 mole per mole of organic photoconductive monomer or per monomeric unit of the organic photoconductive polymer of indenothiophenone or a derivative thereof of the formulas:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are hydrogen or nitro groups.

4,066,455

SELENIUM CONTAINING MULTI-ACTIVE PHOTOCONDUCTIVE ELEMENT

William Mey, and David S. Bailey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 5, 1975, Ser. No. 628,879
Int. Cl.² G03G 5/04
U.S. Cl. 96—1.5 R 7 Claims

1. A photoconductive insulating element having at least three layers in electrical contact with one another, said layers comprising a charge transport layer coated over a photoconductive selenium-containing layer and a charge-generation layer,

said charge-generation layer comprising a continuous electrically insulating polymer phase and dispersed in said continuous phase a discontinuous phase comprising a finely-divided, particulate co-crystalline complex of (i) at least one polymer having an alkylidene diarylene group in a recurring unit and (ii) at least one pyryliumtype dye salt, said co-crystalline complex, upon exposure to activating radiation for said complex, capable of generating and injecting charge carriers into said charge-transport layer, and

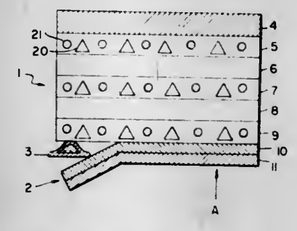
said charge-transport layer being an organic composition free from said co-crystalline complex and said pyryliumtype dye salt, and comprising as a charge-transport material a p-type organic photoconductive material capable of accepting and transporting injected charge carriers from said charge-generation layer.

4,066,456

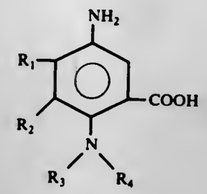
INCORPORATED CARBOXY SUBSTITUTED P-PHENYLENEDIAMINE COLOR DEVELOPER

Burton H. Waxman, Endwell; Michael C. Mourning, and Theodore Panasik, both of Vestal, all of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 10, 1974, Ser. No. 531,399
Int. Cl.² G03C 5/54, 7/00, 1/40, 5/30
U.S. Cl. 96—29 D 19 Claims



1. A photographic element, comprising a supported, light-sensitive silver halide emulsion having incorporated therein, or in a layer adjacent thereto, the compound of the general formula:



where

R_1 is hydrogen, halogen, an aliphatic group or an aromatic group;

R_2 is hydrogen; and

R_3 and R_4 are independently hydrogen, an aliphatic group or an aromatic group; or

R_2 and R_3 together represent the necessary ring members to form a heterocyclic ring with the nitrogen atom to which R_3 is attached being the sole heteroatom or there being a second heteroatom selected from nitrogen, oxygen and sulfur; or

R_3 and R_4 together represent the necessary ring members to form a heterocyclic ring with the nitrogen atom to which they are attached being the sole heteroatom or there being a second heteroatom selected from nitogren, oxygen and sulfur; provided that at least one of R_1, R_2, R_3 and R_4 by itself, or the net effect of R_1, R_2, R_3 and R_4 is of such molecular size and essentially non-diffusible during development in an alkaline processing composition as a developer, wherein said developer is dissolved or dispersed in a high boiling, photographically inert oil.

9. A multi-color diffusion transfer photographic element, comprising

a. a photographic support;

b. a plurality of silver halide emulsion layers on said support, each emulsion layer being sensitized to light of a different color;

c. a dispersion in a high boiling photographically inert oil of a compound of claim 1 as a color developer, said oil dispersion being incorporated into said emulsion layers or layers adjacent thereto;

d. a lipophilic coupler in said oil dispersion, said coupler being non-diffusible through the photographic element at pH below the development pH but diffusible at the development pH, said coupler being reactive to form a coupled product upon coupling with the oxidation product of said color developer that is non-diffusible at the development pH, and said coupler being a colored coupler of a hue complementary to the color to which its associated silver halide emulsion layer is sensitive or being a color former reactive to form a dye having said complementary color upon coupling with oxidized color developer; and

e. an image receiving means for immobilizing dye images transferred to or formed in said means.

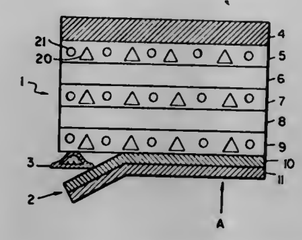
14. A process of producing a photographic image in the photographic element of claim 9, which comprises developing the photographic element of claim 9, after image-wise exposure thereof to actinic radiation, in an alkaline medium containing a black and white photographic developer exhibiting an activating effect with the developer incorporated into the photographic element and allowing coupler that has not reacted with said incorporated developer to diffuse to the image receiving means.

4,066,457

COLOR DEVELOPER FOR DIFFUSION TRANSFER

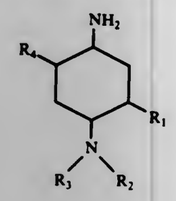
Theodore Panasik, Vestal; Felix Viro, Apalachin; Burton H. Waxman, Endwell, and Robert T. Shannahan, Endicott, all of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 10, 1974, Ser. No. 531,400
Int. Cl.² G03C 7/00, 5/54, 5/30, 1/40
U.S. Cl. 96—29 D 19 Claims



1. A process of producing a photographic image in a diffusion transfer photographic element, said photographic element comprising at least one supported light sensitive silver halide emulsion layer and a dispersion of a lipophilic color former in

a high boiling photographically inert oil incorporated into, or in a layer adjacent, each said silver halide emulsion layer, which comprises developing said photographic element, after image-wise exposure to actinic radiation, in an alkaline medium of a pH below 12.5 in the presence of a color developer capable of developing silver halide and having the general formula:



where

R_1 is COOM or SO_3M,

M is H or a cation,

R_2 and R_3 are H, lower alkyl or lower alkanoyl, unsubstituted or substituted by COOM or SO_3M, with at least one of R_2 and R_3 being other than H, or R_2 and R_3 taken together represent the atoms necessary to form a saturated heterocyclic ring with the nitrogen atom to which they are attached, and R_4 is hydrogen, lower alkyl or lower alkoxy, said lipophilic color former being fast to diffusion at said pH and being reactive with oxidized color developer formed during development to form a coupled product that is diffusible at said pH, and allowing the coupled product to diffuse to an image receiving means for immobilizing said coupled product.

4,066,458

MASK-EXPOSURE SCHEME

Paul E. Stuckert, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 474,627, May 30, 1974, abandoned. This application May 8, 1975, Ser. No. 575,859

Int. Cl.² G03C 5/04, 5/06

U.S. Cl. 96—41 **7 Claims**

1. A method of synthesizing a composite image on a radiation responsive surface consisting passing radiation through a plurality of spaced apart individual rectilinear mask apertures for a given period of time to expose a plurality of first similarly shaped areas on said surface, passing radiation through said apertures during a second period of time and effectively displacing said apertures to expose a second plurality of similarly shaped areas contiguous to said first areas respectively, passing radiation through said apertures during a third period of time and effectively displacing said apertures to expose a plurality of third similarly shaped areas contiguous to said first and second respective areas and passing radiation through said apertures during a fourth period of time and effectively displacing said aperture to expose a plurality of fourth similarly shaped areas contiguous to said first, second and third respective areas said displacing steps defining a rectilinear closed path to define a total exposed rectilinear image and said apertures being so spaced from each other that the synthesized image of each aperture formed by the four step exposure-displacement process described above is contiguous to the adjacent synthesized image to provide a large synthesized rectilinear exposure image on the surface.

4,066,459

FREE RADICAL PHOTOSENSITIVE COMPOSITIONS WITH IMPROVED SENSITIVITY AND SHELF LIFE STABILITY

Paul L. Bachman, Cleveland Heights, and John J. Moskal, Bedford, both of Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

Filed Jan. 26, 1976, Ser. No. 652,159

Int. Cl.² G03C 5/32, 1/52, 1/176

U.S. Cl. 96—45.2 **13 Claims**

1. In a photosensitive composition consisting essentially of:

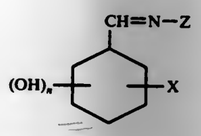
a. at least one leuco diaryl- or triaryl-methane dye forming compound;

b. at least one dye base selected from the group consisting of styryl dye bases, cyanine dye bases and merocyanine dye bases;

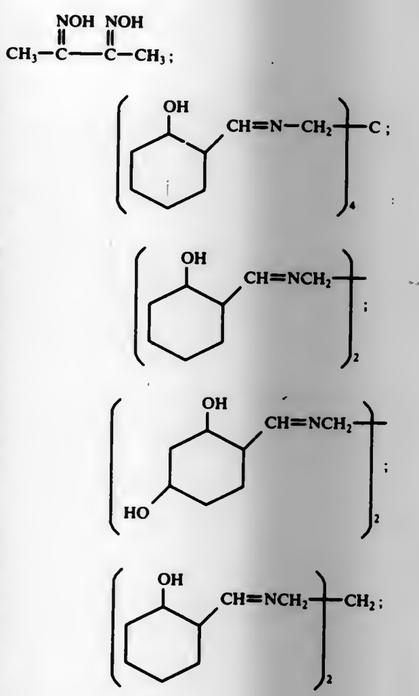
c. at least one organic halogen compound which produces free radicals when exposed to a suitable dose of electromagnetic radiation; and

d. a film forming polymer in which constituents (a), (b) and (c) are supported;

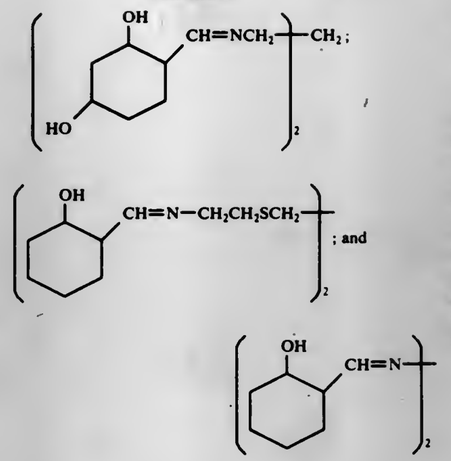
the improvement which comprises including in said composition an organic imino compound containing at least one hydroxyl group and selected from the group consisting of compounds represented by the following formulae:



in which *n* is an integer up to 3 and the OH groups occupy at least one ortho-site; X is an alkyl, aryl or halogen group and Z is selected from the group consisting of OH and alkyl with up to 4 carbon atoms;



-continued



4,066,460

IMAGING AND RECORDING OF INFORMATION UTILIZING TELLURIUM TETRAHALIDE

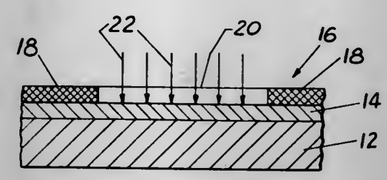
Yew C. Chang, Oakville, Canada; Stanford R. Ovshinsky, Bloomfield Hills, and Ronald W. Citkowski, Pleasant Ridge, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 400,849, Sept. 26, 1973, abandoned. This application July 17, 1975, Ser. No. 596,616

Claims priority, application United Kingdom, July 17, 1974, 31676/74

Int. Cl.² G03C 5/24, 1/00

U.S. Cl. 96—48 R **30 Claims**



1. A method for producing a record of retrievable information:

providing a layer which comprises an imaging material in the form of a tetrahalide of tellurium in which the halide is at least one member selected from the group consisting of chlorine and bromine, said imaging material having one detectable characteristic and which is capable of undergoing a chemical change in response to the application of energy to produce a material of different chemical character having another detectable characteristic, said imaging material being dissolved or dispersed in a polymeric matrix material,

the step of applying imaging particle or wave radiation to at least a certain portion of said layer to bring about the chemical change in said imaging material in said certain portion of said layer to produce said material of different chemical character and to record the desired information in said layer.

6. A method for producing an image comprising:

providing a layer which comprises an imaging material having the formula $TeCl_nBr_m$ where *n* is an integer from 2 to 4 and m is an integer from 0 to 2 with the proviso that the sum of n and m equals 4, said imaging material being dissolved or dispersed in a polymeric matrix material,

applying imaging particle or wave radiation to at least a certain portion of said layer to decompose said imaging material to form a latent image,

and then subjecting said latent image to heat or reducing sugars to convert said latent image into a developed image which is defined by crystals of tellurium.

26. An article for producing a record of retrievable information comprising a layer of an imaging material and a spectral sensitizer on a substrate, said imaging material comprising a tetrahalide of tellurium in which the halide is at least one member selected from the group consisting of chlorine and bromine, said imaging material having one detectable characteristic and which is capable of undergoing a chemical change in response to the application of particle or wave radiation to produce a material of different chemical character having another detectable characteristic, said imaging material and spectral sensitizer being dissolved or dispersed in a polymeric matrix material.

4,066,461

COLOR PHOTOGRAPHIC PROCESS

Isao Shimamura; Shoji Ishiguro, and Junkichi Ogawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

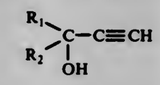
Filed Oct. 27, 1976, Ser. No. 735,936

Claims priority, application Japan, Oct. 27, 1975, 50-129100

Int. Cl.² G03C 5/30

U.S. Cl. 96—66.3 **5 Claims**

1. A color photographic process which comprises processing imagewise exposed silver halide color photographic materials by a p-phenylene-diamine color developer containing a 2-alkyne-1-ol represented by the general formula



wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group, a hydroxyalkyl group, an aminoalkyl group, a carboxyalkyl group, or a formylalkyl group.

4,066,462

ANTI-CORROSIVE ORGANIC PIGMENT

Shojiro Horiguchi, Tokyo; Michiei Nakamura, Soka, and Yoshifumi Sugito, Koshigaya, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1976, Ser. No. 717,401

Claims priority, application Japan, Sept. 1, 1975, 75-104954

Int. Cl.² C09D 5/08

U.S. Cl. 106—14 **15 Claims**

1. An anti-corrosive organic pigment prepared by a process, comprising:

mixing 1 part by wt of a lignin compound with from 0.5 to 5 parts by wt. of at least one nitrogen containing compound selected from the group consisting of urea, biuret, guanidine, biguanide, dicyandiamide, melamine, ammeline ammelide, melame, ammonium carbamate, cyanates, isocyanates, methylenediurea, ammonia, ammonium carbonate, and ammonium formate;

condensing said compounds by heating the mixture to the molten state, and

preparing said pigment by pulverizing, grinding or dispersing said condensed product.

4,066,463
SILICATE-CONTAINING FLAME-RESISTANT ADHESIVE COMPOSITION

Jacques Antoine Leon Francois Chollet, 16, Avenue Victor Hugo, 92 170 Vanves, France

Filed Sept. 16, 1975, Ser. No. 613,857
Claims priority, application France, Oct. 9, 1974, 74.33915
Int. Cl.² C09D 5/18
U.S. Cl. 106—15 FP 7 Claims

1. Silicate-containing flame-resistant composition, comprising (1) an inorganic component comprising, with respect to the weight of the total composition, (a) 20wt% to 50wt% of a concentrated aqueous alkali metal silicate solution having a concentration of 38° to 42° Be, (b) 7wt% to 20wt% of kaolin and (c) 2wt% to 7wt% of deflocculated asbestos fibres; (2) an organic component, present as a 30–70% aqueous solution, selected from the group consisting of carboxymethylcellulose, starch ether, dextrin and a mixture thereof, said organic component, calculated as dry weight, being present in an amount of about 0.2wt% to about 2wt%, by weight of the total composition; and (3) 30wt% to 60wt%, by weight of the total composition, of crude perlite.

4,066,464
OPTICAL GLASSES WITH IMPROVED VARYING PARTIAL DISPERSION IN THE OPTICAL POSITIONAL RANGE OF LANTHANUM CROWN GLASSES AND LANTHANUM FLINT GLASSES

Marga Faulstich, Mainz, and Walter Geffcken, Mainz-Gonsenheim, both of Germany, assignors to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Continuation of Ser. No. 402,805, Oct. 2, 1973, abandoned. This application Feb. 10, 1976, Ser. No. 656,900
Claims priority, application Germany, Oct. 2, 1972, 2248255
Int. Cl.² C03C 3/08, 3/04, 3/30
U.S. Cl. 106—47 Q 12 Claims

1. Optical glasses containing barium borosilicate having a varying partial dispersion $P_{g,F} = (n_g - n_i)/(n_F - n_C)$ in the optical positional range of lanthanum crown and lanthanum flint glasses having an index of refraction of about 1.642 to 1.742 and ν_d of about 44.0 to 58.0 and wherein the amount of SiO_2 present in the glass satisfies the following condition:

$$\frac{[Si_4O]}{[Si_4O] + [B_3O]}$$

is at least 0.62 and the content of fluorine in said glass is at least 7 grams per 100 cc. of said glass consisting essentially of:

	weight percent
SiO_2	20 to 26
B_2O_3	3 to 8
BaO	20 to 38
MgO	0 to 6
CaO	0 to 18
SrO	0 to 18
La_2O_3	20 to 32
Y_2O_3	0 to 25
ThO_2	0 to 18

and up to 12 equivalent percent of one or more of the following ingredients to adjust the required n_d and ν_d values: ZnO, PbO, CdO, TiO_2, ZrO_2, Nb_2O_5, Ta_2O_5, WO_3, MO_3 and mixtures thereof.

4,066,465
ALKALI-RESISTANT GLASS COMPOSITION

Yoshio Mohri, Lono; Takashi Hiroishi, Matsusaka; Kinzi Sano, Matsusaka; Koichi Huruya, Matsusaka; Tadashi Muramoto, Matsusaka, and Masato Tao, Matsusaka, all of Japan, assignors to Central Glass Company, Limited, Japan

Continuation of Ser. No. 630,044, Nov. 7, 1975, abandoned. This application Oct. 4, 1976, Ser. No. 728,894
Int. Cl.² C03C 13/00
U.S. Cl. 106—50 2 Claims

1. An alkali-resistant glass fiber composed of a glass composition consisting of, by weight,

SiO_2	53 to 63%
ZrO_2	21 to 23%
R_2O	10 to 21%
R'O	0 to 5%
Al_2O_3	0 to 5%
F_2	0 to 1%

wherein R_2O represents Na_2O or a mixture of Na_2O and at least one of up to 5% K_2O and up to 3% Li_2O; R'O represents an oxide of Group II metal selected from the group consisting of CaO, MgO, BaO and ZnO, the total amount of the SiO_2, ZrO_2 and R_2O components in said composition ranging from 92.5 weight percent to 98.5 weight percent.

4,066,466
LOW POLLUTION GLASS FIBER COMPOSITIONS

Homer E. Neely, Jr., Tarentum, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 22, 1976, Ser. No. 707,907
Int. Cl.² C03C 13/00, 3/08
U.S. Cl. 106—50 6 Claims

1. A glass composition consisting essentially of:

Component	Percent by Weight		
SiO_2	53.5	–	57
Al_2O_3	13	–	15
MgO	0	–	6
CaO	16	–	25
B_2O_3	7	–	9
Na_2O	0.4	–	1
Li_2O	0.1	–	0.5
F_2	0.1	–	0.4.

4,066,467
ALUMINOUS REFRACTORY COMPOSITION CONTAINING CARBON

Harold L. Rechter, Chicago, Ill., assignor to Chicago Fire Brick Company, Chicago, Ill.

Filed Feb. 18, 1977, Ser. No. 770,116
Int. Cl.² C04B 35/52
U.S. Cl. 106—56 6 Claims

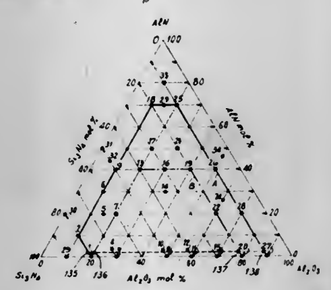
1. A plastic refractory composition comprising in percent by weight on the basis of the solids:

– inch aggregate of alumina or aluminum silicate	35–60
–60 mesh tabular or calcined alumina	20–40
Bentonite	4–8
–20 mesh carbon particles	10–18
Phosphate bonding agent	3–10
–325 mesh aluminum trihydrate	0–3
–20 mesh tetrasodium pyrophosphate	0.2–1.5
–20 mesh silicon metal	0–15
and water to bring to a plastic consistency.	

4,066,468
CERAMICS OF SILICON NITRIDE

Osami Kamigaito, and Yoichi Oyama, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Continuation-in-part of Ser. No. 602,046, Aug. 5, 1975, abandoned, which is a division of Ser. No. 316,940, Dec. 20, 1972, Pat. No. 3,903,230. This application Apr. 8, 1977, Ser. No. 785,893
Claims priority, application Japan, Dec. 21, 1971, 46-104454
Int. Cl.² C04B 33/32, 35/58
U.S. Cl. 106—73.4 9 Claims



1. A high heat resistant and high abrasion resistant ceramic comprising a silicon nitride solid solution, wherein said silicon nitride solid solution is formed by sintering a powdered mixture consisting of from 10 mol percent to 80 mol percent of silicon nitride, from 10 mol percent to 88 mol percent of alumina and from 2 mol percent to 70 mol percent of aluminum nitride at a temperature from about 1650° C to about 2000° C in a non-oxidizing atmosphere for a time between about 10 to 40 minutes.

7. A method of producing a high heat-resistant and high abrasion-resistant ceramic comprising a silicon nitride solid solution comprising the steps of forming a powdered mixture of from 10 mol percent to 80 mol percent of silicon nitride, from 10 mol percent to 88 mol percent of alumina and from 2 mol percent to 70 mol percent of aluminum nitride and sintering said mixture at a temperature from 1650° C to 2000° C in a non-oxidizing atmosphere for from 10 to 40 minutes.

4,066,469
RAPID HARDENING CEMENT

Leslie Edward Shiel, Gravesend, and Kenneth Wilson Jones, Meopham, both of England, assignors to The Associated Portland Cement Manufacturers Limited, London, England

Continuation of Ser. No. 583,796, June 4, 1975, abandoned. This application Oct. 15, 1976, Ser. No. 732,602
Int. Cl.² C04B 7/02, 7/35
U.S. Cl. 106—89 9 Claims

1. A gypsum-free cement composition exhibiting ultra-rapid attainment of high early strength as compared with ordinary Portland cement containing gypsum, and with setting properties which can be regulated, which composition consists essentially of a Portland cement clinker, which does not contain gypsum, ground to exhibit a specific surface of from 3000–7000 cm^2/g, and at least one acid salt of a base in amount sufficient to impart said ultra-rapid attainment of high early strength, said acid salt of a base being selected from the group consisting of alkali metals, ammonium and organic bases with a phosphorous-free acid and being present in amount of 0.1–10% by weight of said clinker.

4,066,470
METHOD FOR THE TREATMENT OF FINELY GRAINED MATERIAL, PARTICULARLY FOR THE PRECALCINING OF CEMENT

Kunibert Brachthauser, Bensberg; Hubert Ramesohl, Bensberg-Refrath; Klaus Beisner, Hoffnungsthal, and Horst Herchenbach, Troisdorf, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Mar. 9, 1976, Ser. No. 665,327
Claims priority, application Germany, Mar. 10, 1975, 2510312
Int. Cl.² C04B 7/36
U.S. Cl. 106—100 8 Claims

1. A method for thermally treating finely grained material, comprising the steps:
introducing the material to be calcined into a precalcining zone at an inlet;
directing the flow of gaseous combustible fuel and oxygen into a preoxidation zone at a location spaced sufficiently below the material inlet that all the material is suspended and propelled upwardly thereof by gases rising through the preoxidation zone;
partially oxidizing and thereby heating said gaseous combustible fuel in said preoxidation zone;
directing the partially oxidized, mixture of hot, oxygen-containing fuel and oxygen upwardly into the precalcining zone and admixing the fuel with said material in said zone; and
directing the precalcined material from the precalcining zone into a calcining furnace.

4,066,471
CONSTRUCTIONAL CEMENT

Edward Burke, Rochester, England, assignor to The Associated Portland Cement Manufacturers Limited, London, England

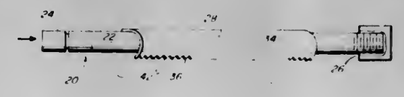
Filed Nov. 17, 1975, Ser. No. 632,796
Claims priority, application United Kingdom, Nov. 26, 1974, 51142/74; June 24, 1974, 26715/75
Int. Cl.² C04B 7/32
U.S. Cl. 106—104 9 Claims

1. A method of making a constructional cement which comprises (a) artificially preparing a particulate chemical combination of oxides selected from the group consisting of anorthite with excess silica in solid solution in the anorthite wherein the excess silica is present in amount of at least 5% by weight, and anorthite with albite in solid solution in the anorthite wherein the albite is present in amount not greater than 30% by weight, by sintering an intimate mixture of minerals which severally contribute the constitutent oxides of the combination or of compounds which form said oxides under sintering conditions, in stoichiometric proportions to form said combination, whereby said oxides combine, and grinding the sintered product; and (b) reacting said ground product with an amount sufficient to bring about hardening thereof, of an aqueous solution containing 35 to 60% by weight of orthophosphoric acid.

4,066,472
SCRAPER NOZZLE FOR WAREWASHING MACHINE

Kenneth E. Perry, Wellesley, Mass., assignor to Adamation, Inc., Newton, Mass.

Filed Nov. 22, 1976, Ser. No. 743,933
Int. Cl.² B05B 1/26; B08B 3/02
U.S. Cl. 134—34 14 Claims



1. A scraper nozzle for use in a warewasher to remove foreign matter from a surface, which comprises:

a. a water conduit having at least one aperture for the discharge of water therefrom;
b. a baffle plate in fluid flow communication with the conduit, the plate including a discharge edge spaced apart from the conduit, said discharge edge including a plurality of protuberances thereon, the protuberances being spaced and formed to provide a substantially sheet-like discharge of water therefrom;
the baffle plate diminishing in cross-sectional area from a downstream end to an upstream end to control the flow of water across at least one surface of the baffle plate and to provide a uniform flow rate at the discharge edge, the upstream end of the baffle plate being directly opposed to the aperture for the water discharged from conduit whereby because of the dimensioning of the baffle plate a back pressure is created which results in redistribution of the water to the downstream end and the uniform discharge of water across the discharge edge.

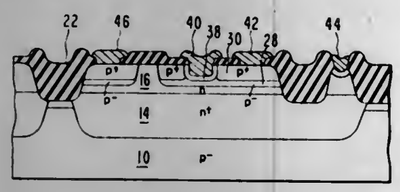
6. A method for the removal of foreign matter from surfaces, such as wares, with a scraper nozzle, the nozzle comprising a baffle plate having a planar surface and an arcuate surface, the arcuate surface terminating in a discharge edge, the baffle diminishing in cross-sectional area from a downstream end to an upstream end, which method includes:
a. discharging a stream of water onto the upstream end creating a back pressure and redistribution of the water toward the downstream end;
b. flowing the water across the entire arcuate surface;
c. discharging the water from the discharge edge in a plurality of streams of water of substantially uniform volume and velocity, the streams subsequently merging to form a uniform sheet of high velocity water; and
d. contacting the surfaces to be cleaned.

4,066,473

METHOD OF FABRICATING HIGH-GAIN TRANSISTORS

David O'Brien, Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed July 15, 1976, Ser. No. 705,382
Int. Cl.² H01L *21/26*
U.S. Cl. 148—1.5 **12 Claims**



1. The method of fabricating a bipolar transistor with improved gain in a semiconductor body comprising the steps of:
forming a first region of one conductivity type in said semiconductor body,
forming a second region of opposite conductivity type overlying said first region and extending to a surface of said semiconductor body;
removing part of said second region; and
diffusing a dopant of said one conductivity type into said second region where said part has been removed, thereby converting the net conductivity of a portion of said second region to said one conductivity type,
said first region of one conductivity type comprising the transistor collector, said second region of opposite conductivity type comprising the transistor base, and said portion of said second region having a net conductivity of said one conductivity type comprising the transistor emitter.

4,066,474

METHOD OF MAKING HIGH STRENGTH COLD REDUCED STEEL BY CONTINUOUS ANNEALING PROCESS

Kuniki Uchida; Kenzi Araki, both of Yokohama; Shiro Fukunaka, Fukuyama, and Takao Kurihara, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 545,027, June 30, 1976, abandoned. This application June 30, 1976, Ser. No. 701,183
Claims priority, application Japan, Jan. 31, 1974, 49-12187
Int. Cl.² B22D *25/00*; C21D *1/00*
U.S. Cl. 148—2 **4 Claims**

1. In a method of making a high strength cold reduced steel with a continuous annealing process, the improvement which comprises:
maintaining the chemical composition of the steel in the steel making stage within the following ranges:

C: 0.04 to 0.10%,
P: 0.04 to 0.20%,
S: not more than 0.02%,
Mn: [S]% × 10 to 0.70%,
balance: Fe and impurities;

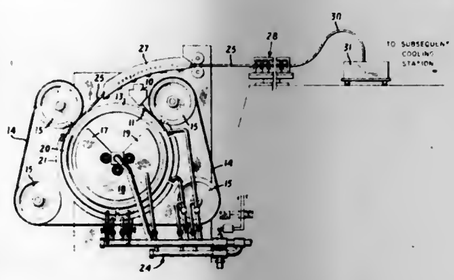
hot rolling and cold reducing the steel, and subjecting the resulting cold reduced steel to a continuous annealing process comprising the following heat cycle:
i. heating the resulting cold reduced steel to and maintaining the heated steel at a temperature of from Ac_1 to 900° C. for from 10 to 120 seconds,
ii. quenching the steel of (i) which is at a temperature of from Ac_1 to 900° C. with a jet stream of water,
iii. tempering the quenched steel at a temperature of from 200° C. to 500° C. for from 10 to 180 seconds, and
iv. cooling and coiling the tempered steel,
the steel so obtained having a Lankford value of at least 1.1, tensile strength of from 40 to 80 kg/mm², elongation of more than 20% and spot weldability of more than 900 kg/spot.

4,066,475

METHOD OF PRODUCING A CONTINUOUSLY PROCESSED COPPER ROD

E. Henry Chia, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 509,372, Sept. 26, 1974, abandoned. This application June 16, 1976, Ser. No. 696,801
Int. Cl.² B22D *11/12*
U.S. Cl. 148—3 **10 Claims**



1. A method of producing a continuously processed copper rod having a lower yield tensile strength, elongation and recrystallization temperature than conventionally processed copper rod comprising the steps of:
a. continuously casting molten copper containing normal impurities into a cast bar at a rate at which said impurities are trapped in solid solution;
b. substantially immediately hot-rolling the cast bar in the as-cast condition into continuous rod at a rate at which said impurities are retained in solid solution;
c. hot-coiling the continuous rod prior to any substantial cooling thereof from the hot-rolling temperature; and
d. gradually cooling the coiled rod to room temperature to permit precipitation of substantially all of said impurities thereby lowering the recrystallization temperature of the rod.

4,066,476

DUPLEX PROCESS FOR IMPROVING THE HOT WORKABILITY OF ALUMINUM-MAGNESIUM ALLOYS

Damian V. Gullotti, Cheshire, Conn.; William S. Fayard, Biloxi, and Wiley W. Wedgeworth, Gulfport, both of Miss., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 11, 1976, Ser. No. 713,523
Int. Cl.² C22F *1/04*
U.S. Cl. 148—11.5 A **11 Claims**

1. A method of heat treating aluminum alloys of the aluminum-magnesium type to improve hot workability which comprises:
a. homogenizing said alloys at a first temperature of from 950° to 1050° F for from 2 to 12 hours;
b. cooling the homogenized alloys to a second temperature at a rate of less than 100° F per hour;
c. further homogenizing said alloys at said second temperature where said second temperature is from 750° to 900° F for from 2 to 12 hours; and
d. finally cooling said alloys to room temperature.

4,066,477

METHOD OF MAINTAINING TEMPERATURE OF SALT BATH DURING QUENCHING OF STEEL WIRE

Hermann-Josef Bockenhoff, Blecher; Walter Schaeffer, Cologne, and Berthold Kranz, Duren, all of Germany, assignors to Arbed F & G Drahtwerke Cologne GmbH, Cologne, Germany

Filed July 24, 1975, Ser. No. 598,666
Claims priority, application Germany, July 25, 1974, 2435832
Int. Cl.² C21C *7/06*; G05D *23/13*
U.S. Cl. 148—15 **5 Claims**

1. A method for the continuous microstructure-developing treatment of steel wire in molten salt baths, comprising rapidly cooling hot steel wire by continuously introducing said hot steel into a relatively cool molten salt bath having a working temperature which is within a range of 450°–600° C; and maintaining the temperature of said relatively cool salt bath within the range of 450°–600° C despite the quantities of heat which are brought into said molten salt bath during the step of introducing and which would substantially increase the working temperature to a temperature beyond the range of 450°–600° C., said step of maintaining comprising mixing liquid water with a gas selected from the group consisting of air and nitrogen, and subsequently injecting the mixture of water and gas into said molten salt bath.

4,066,478

BASIC AGGLOMERATED FLUX WITH A HIGH CAO CONTENT FOR THE WELDING OF ORDINARY OR LOW ALLOY STEELS

Robert Jean De Haeck, St. Pieters-Kapelle, Belgium, assignor to La Soudure Electrique Autogene, Procedes Arcos, S.A., Brussels, Belgium

Filed Dec. 13, 1976, Ser. No. 749,837
Claims priority, application Belgium, Dec. 18, 1975, 162851
Int. Cl.² B23K *35/24*
U.S. Cl. 148—26 **8 Claims**

1. A prefused basic flux for submerged arc welding, under both alternating and direct current, of steels of high elastic limits, consisting essentially of, in weight %:

SiO_2	about	25	to about	35%
Al_2O_3	about	2	to about	6%
TiO_2	about	3	to about	7%
CaF_2	about	5	to about	11.25%
CaO	about	44	to about	52%
MgO	about	1	to about	10%
MnO	about	0.5	to about	5%
Na_2O	about	4.5	to about	8%
K_2O	about	0.5	to about	1.5%
FeO		0	to about	2%

wherein the weight ratio of CaO to CaF_2 is equal to or greater than about 4.

4,066,479

PROCESS FOR PRODUCING NON-DIRECTIONAL ELECTRIC STEEL SHEETS FREE FROM RIDGING

Yoshiaki Shimoyama, and Kunisuke Miyoshi, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed July 6, 1973, Ser. No. 377,012
Claims priority, application Japan, July 8, 1972, 47-67887
Int. Cl.² H01F *1/04*
U.S. Cl. 148—111 **3 Claims**

1. In a process for producing non-directional electric steel sheets free from ridging comprising preparing slabs by continuous casting from molten steel containing not more than 0.04% C, 1.5 to 4.0% Si the balance being Fe and unavoidable impurities, hot rolling, cold rolling and annealing the slabs, the improvement which comprises subjecting the slabs to breaking-down with a reduction rate between 10 and 70% in the sheet thickness direction at a temperature between 1000° – 1300° C prior to the hot rolling.

4,066,480

PROCESS FOR IMPROVING THE HOT WORKABILITY OF ALUMINUM-MAGNESIUM ALLOYS

Damian V. Gullotti, Cheshire, Conn.; William S. Fayard, Biloxi, and Wiley W. Wedgeworth, Gulfport, both of Miss., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 11, 1976, Ser. No. 713,524
Int. Cl.² C22F *1/04*
U.S. Cl. 148—11.5 A **10 Claims**

1. A method of heat treating aluminum alloys of the aluminum-magnesium type to improve hot workability which consists essentially of:
a. homogenizing said alloys at a temperature of from 950° to 1050° F for from 2 to 12 hours; and
b. cooling said alloys to at least 800° F at a rate of less than 100° F per hour.

4,066,481

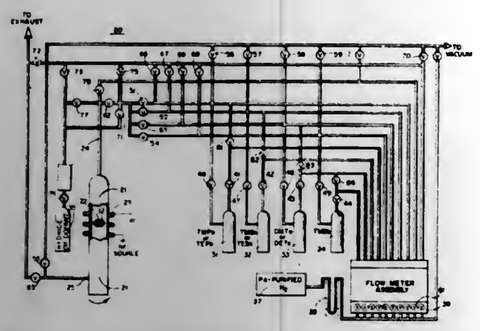
METALORGANIC CHEMICAL VAPOR DEPOSITION OF IVA-VIA COMPOUNDS AND COMPOSITE

Harold M. Manasevit, Anaheim, and William I. Simpson, Orange, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 523,599, Nov. 11, 1974, abandoned. This application Jan. 7, 1976, Ser. No. 647,222
Int. Cl.² H01L *21/205, 21/84*
U.S. Cl. 148—174 **15 Claims**

1. A method for forming a layer of Group IVA–VIA material on an amorphous substrate of glass or fused quartz or a monocrystalline or a polycrystalline substrate selected from the group consisting of Group IA - Group VIA compounds, Group II - Group VI compounds Group IIA- Fluorides, Group IIIA - Group VA compounds and Group IV - Group VI compounds, α- Al_2O_3 and $MgAl_2O_4$, comprising the steps of:
establising a heated deposition zone at a temperature within

the range 400°-700° C and encompassing a deposition surface of said substrate;



forming a gaseous mixture of metalorganic IVA-containing and VIA-containing components; and

pyrolyzing said mixture within said heated deposition zone.

4,066,482

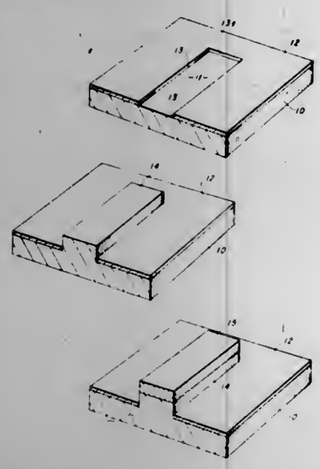
SELECTIVE EPITAXIAL GROWTH TECHNIQUE FOR FABRICATING WAVEGUIDES FOR INTEGRATED OPTICS

Don W. Shaw, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 458,628, April 8, 1974, Pat. No. 3,984,173. This application Apr. 2, 1976, Ser. No. 673,025

Int. Cl.² H01L *21/20, 29/06*

U.S. Cl. 148—175 **3 Claims**



1. A method of making an optical waveguide of semiconductor material comprising the steps of:

forming a first mask on a surface of a monocrystalline semiconductor substrate of one conductivity type, wherein said surface is parallel to a relatively fast growing crystallographic plane of semiconductor material to be epitaxially deposited on said monocrystalline semiconductor substrate,

patterning said first mask to remove a portion thereof providing an opening through the mask exposing an elongated area of said surface, wherein the opposite side walls of the opening formed in the first mask by the removal of the masked portion and bounding the exposed surface area of said substrate are arranged parallel to relatively slow growing crystallographic planes of semiconductor material to be epitaxially deposited on said semiconductor substrate as compared to relatively fast growing crystallographic planes of said semiconductor substrate,

epitaxially depositing a first semiconductor material of said one conductivity type on the exposed surface area of said semiconductor substrate in said relatively fast growing crystallographic plane to provide a first continuous raised elongated epitaxially semiconductor layer having smooth planar faceted growth side surfaces confined by the opposite sidewalls of the opening in the mask which are in relatively slow growing crystallographic planes and a smooth planar faceted growth top surface which is in a relatively fast growing crystallographic plane, said first semiconductive material having a free carrier concentration, resistivity, and refractive index substantially the same as said semiconductor substrate,

forming a second mask on said substrate surface in the same position as said first mask and to a thickness wherein said second mask covers the top surface of said first epitaxial semiconductor layer,

patterning said second mask to remove a portion thereof providing an opening through the mask exposing the top surface of said first continuous epitaxial semiconductor layer, wherein the opposite sidewalls of the opening formed in said second mask and bounding the exposed top surface of said first continuous epitaxial semiconductor layer are arranged parallel to said relatively slow growing crystallographic planes of semiconductor material to be epitaxially deposited on the top surface of said first continuous epitaxial semiconductor layer, and

epitaxially depositing a second semiconductor material of said one conductivity type on the exposed top surface of said first continuous epitaxial semiconductor layer in a said relatively fast growing crystallographic plane to provide a second continuous elongated epitaxial semiconductor layer which has each of its surface including top, bottom, and side surfaces formed as a smooth planar faceted growth surface, said second semiconductor material having a relatively low free carrier concentration and correspondingly high resistivity as compared to a relatively high free carrier concentration and correspondingly low resitivity of said first semiconductor material.

4,066,483

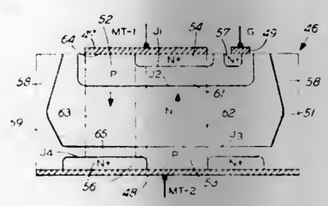
GATE-CONTROLLED BIDIRECTIONAL SWITCHING DEVICE

Frederick A. D'Altroy; Daniel J. Harrington, and Gerald W. Miller, all of Center Valley, Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed July 7, 1976, Ser. No. 703,162

Int. Cl.² H01L *21/225*

U.S. Cl. 148—187 **5 Claims**



1. A method of making a bidirectional semiconductor switching device comprising:

adjacent a body region of semiconductor material of one conductivity type, forming a first region of opposite conductivity type and of a first depth, and a second region of opposite conductivity type and of a second depth less than said first depth, said first and second regions interfacing with said body region in first and second rectifying junctions; and

forming in each of said regions of opposite conductivity type a third region of the one conductivity type, each of said third regions interfacing with their respective regions of opposite conductivity type in third rectifying junctions, said third junction adjacent said first region being separated from said first junction by a distance greater than that which separates said third junction adjacent said second region from said second junction, to form between said body region and said third region in said second region a zone having a greater resistance to a current flow parallel to said junctions interfacing said second region with its adjacent regions than the resistance to a corresponding current flow in a corresponding zone in said first region parallel to its adjacent junctions.

4,066,484

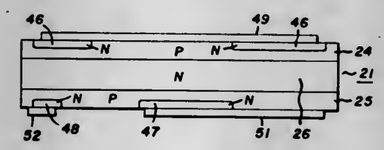
METHOD OF MANUFACTURE OF A GOLD DIFFUSED THYRISTOR

Joseph Moyson, Union Springs, N.Y., assignor to General Electric Company, Auburn, N.Y.

Division of Ser. No. 517,523, Oct. 24, 1974, abandoned. This application Sept. 24, 1975, Ser. No. 616,404

Int. Cl.² H01L *21/22*

U.S. Cl. 148—187 **8 Claims**



1. In a method of making a thyristor utilizing a diffusion mask in the formation, at a first temperature, of a cathode emitter characterized by an impurity type selected from the group consisting of arsenic and antimony, the improvement consisting of the step of diffusing, at a second temperature lower than the said first temperature, essentially only into said cathode emitter and the area therearound, using said diffusion mask, an auxiliary dopant to reduce the carrier lifetime in said cathode emitter while maintaining the carrier lifetime in the remainder of said device.

4,066,485

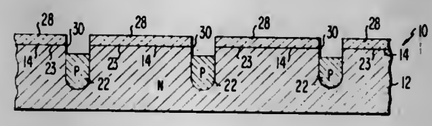
METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

Wojciech Rosnowski, Summit, and Richard Denning, Springfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1977, Ser. No. 761,426

Int. Cl.² H01L *21/225*

U.S. Cl. 148—188 **6 Claims**



1. A method of fabricating a semiconductor device comprising the steps of:

heating, in an ambient containing oxygen, a body of silicon having a layer of aluminum on a portion of a surface thereof to a temperature whereat said aluminum diffuses into said body and maintaining said body at said temperature for a preselected period of time, whereby said aluminum diffuses into said body and simultaneously forms an aluminum/silicon alloy on said portion of said surface, said aluminum/silicon alloy having a cap of aluminum oxide thereover, the remainder of said surface having a layer of silicon dioxide simultaneously formed thereon; and

treating said body with an etchant which attacks said cap, said alloy and said body at a comparatively faster rate than it attacks said layer of silicon dioxide, said treating step being carried out until recesses are formed in said body beneath said alloy, whereby a photomask can be visually aligned with said recesses.

4,066,486

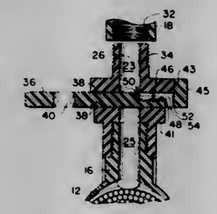
CABLE PRESSURE BLOCK FORMING KIT AND VALVE APPARATUS

Gene S. T. Tan, Westlake Village, Calif., assignor to Hexcel Corporation, Dublin, Calif.

Filed June 7, 1976, Ser. No. 693,618

Int. Cl.² H01B *17/38*; H02G *15/00*

U.S. Cl. 156—48 **21 Claims**



1. In apparatus for forming pressure blocks in a cable defined by a cable core in an interior space of a core-surrounding outer sheath, the apparatus having a pressure tap fitting defined by a base sheet for placement over an opening in the cable sheath and an injection port projecting from the sheet, injection means including a pressure applying member for flowing a fluid material under pressure through the port into the interior space to thereby form a pressure tight block in the cable, and valve means between the injection means and the injection port, the improvement to the valve means comprising: a housing including a passage therethrough for connection to the injection means and the port, and a closure member movably mountable in three positions to the housing and dividing the passage into an upstream portion communicating with the injection means and a downstream portion communicating with the port, the closure member including first, second and third sections respectively corresponding to the three positions, the first section of the closure member including means establishing a free fluid communication path between the passage portions, the second section including pressure tight means sealing the passage portions from each other, and the third section including means communicating the upstream portion with the exterior of the housing and means sealing the downstream portion from the upstream portion and the housing exterior; whereby fluid material under pressure can be retained in the interior space of the cable core while the upstream portion of the passage is vented to the exterior to facilitate the removal of the pressure applying member and the refilling of the injection means with fluid material without uncoupling the injection means and the injection port for the subsequent injection of additional fluid material under pressure into the interior space.

21. A method for forming a pressure block in an interior space of a cable having an outer cable sheath comprising the steps of mounting a pressure tap fitting to the cable, the fitting having a port communicating the cable interior with the exterior; providing a fluid material-injecting cartridge including a cartridge housing, a pressure-applying plunger disposed interiorly of the housing and a nozzle for the discharge of pressurized material from the housing interior; placing a curable fluid material into the housing interior; laterally displacing a barrier having a first interior passage and a second passage so as to

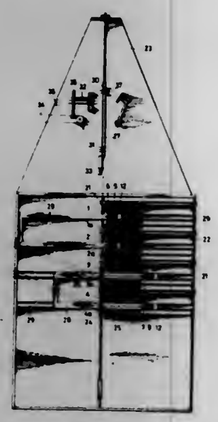
align said first interior passage with both said port and nozzle; thereafter advancing the plunger to thereby inject the material in the cartridge through the first passage into the cable interior; thereafter laterally displacing the barrier to seal the cable interior from the housing interior and to form vacuum-breaking fluid communication between the nozzle and the housing exterior through the second passage such that fluid pressure across the plunger remains substantially equalized; and withdrawing the plunger from the housing.

4,066,487

METHOD AND DEVICE FOR MAKING A NON-WOVEN PILE WEB

Cornelis W. Beelien, 1e Const. Huygensstraat 59, Amsterdam, Netherlands

Filed May 10, 1976, Ser. No. 685,131
Int. Cl.² D04H *11/00*
U.S. Cl. 156—72 **18 Claims**



1. Method for making a nonwoven pile web from differently coloured pile yarns lying side by side and being arranged so as to form a colour-figuration and being adhered perpendicularly in a sub-layer, characterized in that simultaneously two rows of differently coloured yarn end portions having a length equal to a multiple of the desired pile height are arranged in the sequence of the desired colour-figuration, between which in cross-direction and at a mutual spacing of two times the desired pile height a number of adhesive-impregnated threads extending parallel to each other and disposed in series of two are pressed and joined to said yarn end portions to form a continous, multicoloured web, cutting the yarn ends of said multicoloured web in a direction parallel to the impregnated threads before the first impregnated thread and between the threads of each pair of impregnated threads to form a number of strips, advancing said multicoloured web and repeating the above steps to form additional sections of each individual strip to provide a length equal to the desired width of the carpet web to be made and a width equal to twice the desired pile height of the web to be made and stacking and mutually connecting said strips along the adhered, impregnated threads.

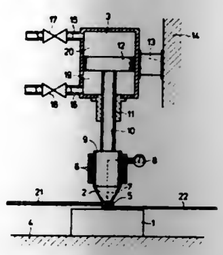
4,066,488

PROCESS FOR THE JOINING (BONDING) OF LINES (STRIPS)

Alfred von der Lehr, Eichenstrasse 21, Germany

Filed Apr. 7, 1977, Ser. No. 785,563
Claims priority, application Germany, Apr. 9, 1976, 2615460
Int. Cl.² B32B *31/02*
U.S. Cl. 156—83 **3 Claims**

1. Process for the joining of strips of acetalysed polyvinyl alcohol foam with each other or with textile fabrics, with the distinction that the parts of the strips to be joined together are brought in contact with each other and hot pressed, in the presence of moisture at temperatures of 100°–300° C., preferably 200°–250° C., and a pressure of 1–10 kp/cm², preferably 4–6 kp/cm².

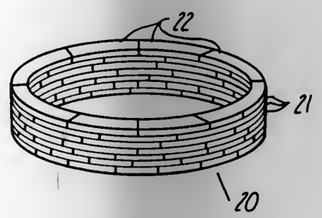


4,066,489

METHOD FOR MAKING ANNULAR ARTICLES

Joseph R. Hannum, Norristown, and Gerard R. Santos, Levittown, both of Pa., assignors to The Budd Company, Troy, Mich.

Filed May 5, 1976, Ser. No. 683,565
Int. Cl.² B32B *1/08, 27/42*
U.S. Cl. 156—258 **13 Claims**



1. The method of making annular articles comprising the steps of:
forming form a strip of material a first plurality of similarly shaped arcuate blank segments,
forming from said strip of material a second plurality of arcuate blank segments identical in shape to said first plurality of said arcuate blank segments and inverted with respect thereto,
assembling end to end sequentially one at a time segments from said first plurality of segments and the inverted segments from said second plurality of segments,
continuing said assembling step until a plurality of layers of said segments are formed to form said annular article,
the angles of the joining ends of said first and second plurality of segments being at different complementary angles with respect to each other whereby said first and second plurality of segments are formed from said strip material utilizing substantially all the material of said strip of material.

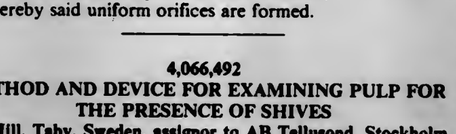
4,066,490

METHOD FOR PRODUCING A LAWN NURSERY STRIP

Mitsuru Yoshimi, Okazaki, Japan, assignor to Shin Nihon Ryokugaku Kabushiki Kaisha, Japan

Continuation of Ser. No. 520,985, Nov. 5, 1974, abandoned. This application June 14, 1976, Ser. No. 695,813
Int. Cl.² A01C *1/04*
U.S. Cl. 156—276 **1 Claim**

1. The method of making a nursery seeding strip which includes the sequential steps of,
feeding and carding regenerated cotton fibers at a constant rate to form a strip of processed cotton material which is napped and waffled on one side,
successively spreading first liquid fertilizer and then liquid binder in the form of a spray to coat the opposite side of the strip with fertilizer and liquid binder,
thereafter drying the coated strip to produce a dried nursery cotton strip,
simultaneously leaching localized bands of synthetic liquid resins continuously onto the coated side of the nursery cotton strip to form longitudinal streaks on the nursery



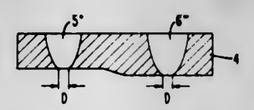
strip for increasing the tensile strength thereof in a longitudinal direction,
sowing seeds onto the opposite side of the nursery cotton strip,
vibrating the strip so that the sown seeds will settle stably into the napped surface of the strip,
successively spreading first liquid fertilizer and then liquid binder in the form of a spray over the napped, seeded surface,
and press bonding a non-woven, net-like material onto the surface to form the completed seeding strip.

4,066,491

METHOD OF SIMULTANEOUSLY ETCHING MULTIPLE TAPERED VIADUCTS IN SEMICONDUCTOR MATERIAL

Wolf-Dieter Rub, and Gerhard Trippel, both of Sindelfingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1977, Ser. No. 781,616
Claims priority, application Germany, June 12, 1976, 2626420
Int. Cl.² B23P *15/00, 25/06*
U.S. Cl. 156—644 **8 Claims**



2. A method of fabricating a semiconductor substrate having a plurality of core-shaped viaducts therein of substantially uniform orifice dimensions at the obverse of said substrate, comprising the steps of
etching depressions by a chemical etching method to a depth short of penetrating said substrate at said obverse thereof, and
etching said depressions further by a sputter etching method until said viaducts penetrate said obverse,
whereby said uniform orifices are formed.

4,066,492

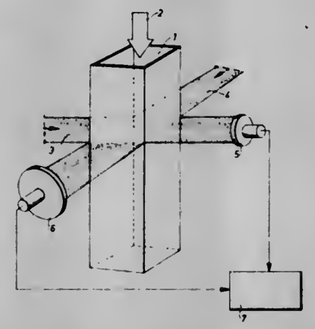
METHOD AND DEVICE FOR EXAMINING PULP FOR THE PRESENCE OF SHIVES

Jan Hill, Taby, Sweden, assignor to AB Tellusond, Stockholm, Sweden

Filed May 12, 1976, Ser. No. 685,491
Claims priority, application Sweden, May 14, 1975, 7505538
Int. Cl.² G01N *15/02, 21/34*
U.S. Cl. 162—49 **3 Claims**

1. A method for examining different types of pulp for shives therein, comprising the steps of flowing a suspension of the pulp through a measuring duct having transparent walls, directing at least one beam of light with a wavelength within the range from 750 to 950 nm through said measuring duct and the pulp suspension flow therein perpendicularly to the direction of the suspension flow, said light beam being comparatively thin in the direction of the suspension flow, measuring the intensity of said light beam after its passage through the measuring duct by means of a photo detector, and analyzing the output signal of said photo detector with respect to temporary reductions in its amplitude caused by the passage through said light beam of shives present in the pulp, said temporary reductions serving to indicate the presence of shives independent and insensitive to the type of pulp.

2. A device for examining different types of pulp for shives



therein, comprising a measuring duct for passing a flow of a suspension of the pulp to be examined, said measuring duct having transparent walls, at least one light source located at one side of said measuring duct wherein said light source directs a beam of light having a wavelength within the range from 750 to 950 nm through the measuring duct perpendicularly to the direction of the suspension flow therein, a photo detector disposed on the opposite side of said measuring duct for receiving said light beam after its passage through the measuring duct and for producing an output signal representative of the intensity of said light beam, and signal processing means for analysing said signal with respect to temporary reductions in its amplitude to detect the presence of shives independent and insensitive to the type of pulp.

4,066,493

TREATING CELLULOSIC MATERIALS

Keith John Pickard, Widnes, England, assignor to Laporte Industries Limited, Luton, England

Filed June 15, 1976, Ser. No. 696,183
Claims priority, application United Kingdom, June 20, 1975, 26292/75
Int. Cl.² D21D *3/00*
U.S. Cl. 162—158 **8 Claims**

1. In a composition for treating cellulosic materials comprising a dispersion of a cyclic imide substituted by an aliphatic hydrophobic group containing at least 12 carbon atoms and N-substituted by an acyl group as a reactive sizing or waterproofing agent the improvement comprising incorporating in said dispersion at least 10 to 125% by weight based on the cyclic imide of an aliphatic acid having an hydrophobic moiety comprising a straight chain having an effective length of at least 6 carbon atoms or a precursor of said aliphatic acid which generates said aliphatic acid in use.

7. In a method of treating cellulosic materials comprising the step of contacting the cellulosic material with a dispersion of a cyclic imide substituted by an aliphatic hydrophobic group containing at least 12 carbon atoms and N- substituted by an acyl group, at a temperature sufficiently high for reaction to occur between the cyclic imide and the cellulosic material the

improvement comprising the use of dispersion having incorporated therein at least 10 to 125% by weight based on the cyclic imide of an aliphatic acid having an hydrophobic moiety comprising a straight chain having an effective length of at least 6 carbon atoms or a precursor of said aliphatic acid which generates said aliphatic acid in use.

8. A method according to claim 7 wherein the cellulosic material is a bleached sulphate paper pulp.

4,066,494

NITROGENOUS CONDENSATION PRODUCTS USED AS RETENTION AIDS IN PAPERMAKING

Emil Scharf; Rolf Fikentscher, both of Ludwigshafen; Werner Auhorn, Frankenthal, and Werner Strelt, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Rhineland-Pfalz, Germany

Filed July 10, 1975, Ser. No. 594,648
Int. Cl.² D21H *3/48*
U.S. Cl. 162—164 EP **3 Claims**

1. A process for the production of paper which comprises adding as drainage and retention aids to an aqueous suspension of cellulosic fibers for making paper sheet, from about 0.01 to 0.3% by weight, based on the dry weight of cellulosic fiber in the pulp, of a water-soluble crosslinked reaction product obtained by reacting

a. one equivalent of NH groups of a polyalkylene polyamine having from 15 to 500 alkyleneimine units wherein said polyalkylene polyamine is an imine homopolymer with

b. from 0.001 to 0.08 mole of a product obtained by reacting a polyalkylene oxide having from 8 to 100 alkylene oxide units with epichlorohydrin such that from 1.0 to 1.5 moles of epichlorohydrin are present per equivalent of the hydroxyl groups in the polyalkylene oxide,

at a temperature of from 20° to 100° C in aqueous solution having a solids content of from 5 to 50% by weight, the reaction being carried to a point at which the viscosity of an aqueous solution containing 20% by weight of the auxiliary is from 300 to 1,500 centipoises (20° C).

4,066,495

METHOD OF MAKING PAPER CONTAINING CATIONIC STARCH AND AN ANIONIC RETENTION AID

John E. Voigt, St. Louis County, and Herbert Pender, Jr., Ferguson, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed June 26, 1974, Ser. No. 483,315
Int. Cl.² C08L *3/02;* D21D *3/00, 3/58;* D21H *3/00*
U.S. Cl. 162—168 NA **2 Claims**

1. A method of papermaking comprising the steps of adding from about 0.015% to about 4% by weight based on the weight of dry pulp of a cationic starch having a degree of substitution of about 0.0034 to about 0.07 and consisting essentially of the reaction product of starch and an amine alkene halide salt and from about 5 ppm to about 250 ppm based on dry pulp of an anionic polyacrylamide polymer to the pulp in a papermaking process prior to depositing the pulp on a screen, said polymer having an average molecular weight of about 4×10^6 to about 6×10^6.

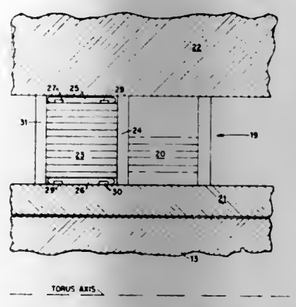
4,066,496

CRYOGENIC EXPANSION JOINT FOR LARGE SUPERCONDUCTING MAGNET STRUCTURES

Robert L. Brown, Kingston, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation-in-part of Ser. No. 504,932, Sept. 11, 1974, abandoned. This application June 24, 1976, Ser. No. 699,394
Int. Cl.² G21B *1/00;* H01J *7/24*
U.S. Cl. 176—3 **2 Claims**

1. In a device for producing a very hot plasma and consequent production of neutrons and x-rays, including a central magnetic core, a plurality of magnetic return legs for said core, a torus liner encompassing said core, a toroidal shield encompassing said torus liner, a plurality of spaced-apart, toroidal superconducting field coils encompassing said shield, each of said coils being wound on a respective coil bobbin, a respective massive outer ring encompassing each of said coils, and a pair of bucking rings mounted between the upper and lower portions of said coil outer rings and said magnetic core, the improvement comprising a first respective peripheral expansion joint mounted between each of said coils and each of said coils bobbins, and a second respective peripheral expansion joint mounted between each of said coils and each of said outer



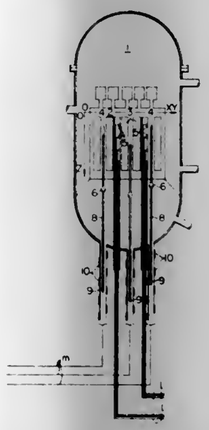
rings, each of said expansion joints comprising a flattened tube containing a refrigerant adapted to be circulated under high pressure therethrough, and each of said flattened tubes containing a pair of spacers mounted therewithin for preventing irremeable flattening thereof, whereby during cooldown of said coils and subsequent operation of said device to produce said hot plasma within said liner, said expansion joints functioning to accommodate differential thermal contraction and expansion between said coils and outer ring and between said coils and coil bobbins while at the same time aiding in said cooldown.

4,066,497

ABNORMAL STATE DETECTING APPARATUS UTILIZING CONTROL ROD FOR USE IN NUCLEAR REACTOR

Takao Sato, Ibaraki, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 8, 1975, Ser. No. 620,787
Claims priority, application Japan, Oct. 11, 1974, 49-116093
Int. Cl.² G21C *7/06, 7/00, 7/18*
U.S. Cl. 176—22 **21 Claims**



1. An abnormal state detecting apparatus utilizing control rods for a nuclear reactor having a nuclear reactor core incorporated therein with a plurality of the control rods and a control rod driving device for moving selected control rods in an indicated direction for receiving a signal for selecting control rods to be operated and another signal for indicating a direction in which the control rod is moved, comprising;

a magnet provided on a member movable together with the control rod;

reed switches stationary provided on fixed positions arranged in an equally spaced manner in the direction of movement of the control rod for producing an output when said magnet approaches to said reed switches;

a first memory for memorizing outputs of position detectors associated with the control rod to be operated when supplied with the selection signal and the moving direction signal for the control rod;

a timer producing an output at the termination of a waiting time interval corresponding to the moving direction signal;

estimating means for estimating an output of the position detector at the termination of said waiting time interval by receiving an output of the first memory and the moving direction signal;

a second memory for memorizing an output of the position detector when the timer produces the output; and

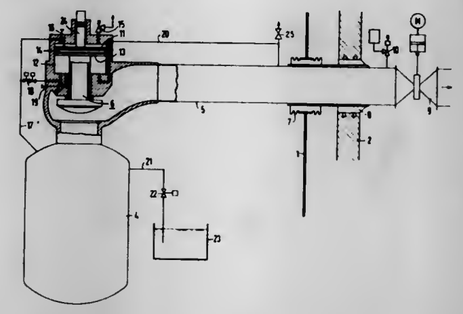
abnormal detecting means for determining an abnormal state when the output of the second memory does not coincide with the output of the estimating means.

4,066,498

SHUT-OFF AND SAFETY DEVICE FOR A LIVE STEAM LINE IN A PRESSURIZED WATER REACTOR

Jurgen Hoffmann; Albrecht Hofmockel, and Gunther Leple, all of Erlangen, Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Mar. 3, 1975, Ser. No. 554,450
Claims priority, application Germany, Mar. 1, 1974, 2409867
Int. Cl.² G21C *9/00*
U.S. Cl. 176—38 **3 Claims**



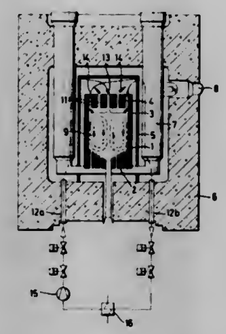
1. In a pressurized water nuclear reactor having a safety vessel containing a steam generator from which a live steam line extends, a shut-off and safety device comprising valve means including a displaceable valve member connected in the live steam line within the safety vessel, and control piston means connected to said valve member for controlling opening and closing of said valve means, said control piston means comprising a control cylinder, a control member displaceable in said control cylinder and a piston rod connecting said control member to said valve member, said control member having a pair of opposite sides having working surfaces respectively subjectible to different pressure applied thereto in respective portions of said control cylinder located adjacent thereto for displacing said control member and said piston rod in respective directions so as to displace said valve member in corresponding directions to open and close said valve means, said piston rod being connected to the one working surface of said control member that is subjectible to a relatively greater steam pressure for opening said valve means, the portions of said control cylinder located adjacent the sides of said control member having means for effecting a pressure difference between the respective cylinder portions, means for changing said pressure difference so as to close said valve means in response to occurrence of a leak in the live steam line, means for limiting the pressure difference to a value dependent upon the highest permissible pressure in the steam generator, said valve member being displaceable by said highest permissible pressure in the steam generator to open said valve means, means for connecting both said control cylinder portions to the steam generator, throttling means connected in said connecting means for throttling steam pressure therein, the other working surface of said control member subjectible to a relatively greater steam pressure for closing said valve means having an area smaller than the total area of the one working surface of said control member inclusive of the area of the piston rod connected thereto, said pressure-difference changing means comprising a control line connecting the live steam line to the one portion of said control cylinder wherein pressure is applicable on said one working surface of said control member for opening said valve means whereby a pressure drop in the live steam line resulting from the occurrence of a leak therein reduces the pressure in said one portion of said control cylinder and closes said valve means, said pressure-difference limiting means comprising a safety valve connected to the other portion of said control cylinder wherein pressure is applicable on said other working surface of said control member for closing said valve means, whereby a pressure exceeding the highest permissible pressure in the steam generator increases the pressure in said other portion of said control cylinder through the respective connecting means thereto and activates said safety valve to relieve the pressure, said valve member being directly subjectible to steam pressure in the steam generator for opening said valve means so as to relieve pressure exceeding the highest permissible pressure in the steam generator in addition to said pressure-difference limiting means.

4,066,499

METHOD OF COOLING THE CEILING REFLECTOR IN A NUCLEAR REACTOR

Hans-Peter Bathmann, Lippetal-Lippborg, Germany, assignor to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen, Uentrop, Unna, Germany

Filed Apr. 26, 1976, Ser. No. 680,140
Claims priority, application Germany, Apr. 30, 1975, 2519273
Int. Cl.² G21C *9/00*
U.S. Cl. 176—38 **7 Claims**



1. A method for cooling the ceiling reflector in a shutdown gas-cooled, solid-moderated, high-temperature reactor using spherical fuel elements which are fed into the reactor core chamber through feed pipes extending through the ceiling

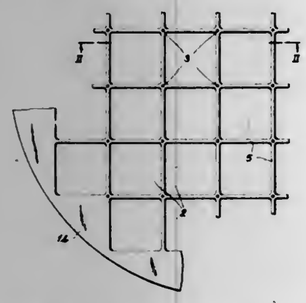
reflector of the core wherein during shutdown including terminating the feed of the fuel elements into the core and terminating the supply of gas coolant into and its removal from the core so that an amount of gas coolant remains in the core, comprising the steps of injecting a cooled gas through some of the feed pipes into the upper portion of the core chamber adjacent the ceiling reflector and removing the injected gas from the upper portion through the other feed pipes for establishing a flow of the cooled gas over the ceiling reflector within the upper region of the core chamber.

4,066,500

GRID LATTICE STRUCTURE

Klaus Woltron, Ternitz, and Peter Stuckler, Wiener Neustadt, both of Austria, assignors to Schoeller-Bleckmann Stahlwerke Aktiengesellschaft, Vienna, Austria

Filed Nov. 18, 1974, Ser. No. 524,891
Claims priority, application Austria, Nov. 16, 1973, 9641/73
Int. Cl.² G21C 3/34
U.S. Cl. 176—78 5 Claims



1. In a nuclear reactor, in combination:

a plurality of substantially nondeformable parallel metal plates each forming an integral orthogonal array of strips defining between them a multiplicity of apertures whose dimensions substantially exceed the width of said strips, the apertures of all said plates being aligned with one another to seat a bank of elongate fuel-element containers transverse to said plates; and

a set of rigid stays transverse to said plates aligned with said strips and secured thereto for holding said plates at a fixed distance from one another.

4,066,501

METHOD FOR PRODUCING L-LYSINE BY FERMENTATION

Osamu Tosaka, Tokyo; Hajimu Morioka, Kawasaki; Hayao Hirakawa, Yokohama; Kenji Ishii; Koji Kubota, both of Kawasaki, and Yoshio Hirose, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Feb. 22, 1977, Ser. No. 770,692
Claims priority, application Japan, Feb. 20, 1976, 51-17518
Int. Cl.² C12D 13/06
U.S. Cl. 195—29 4 Claims

1. A method for producing L-lysine by fermentation which comprises:

a. aerobically culturing in an aqueous culture medium an L-lysine producing mutant belonging to the genus Brevibacterium or Corynebacterium until L-lysine is accumulated in the culture medium, said mutant being resistant to α-amino-lauryllactam, α-methyl-lysine, or N^{α}-carbobenzoxy-lysine;

b. recovering the accumulated L-lysine from the culture medium.

4,066,502

METHOD OF PRODUCING CARBON SOURCE FOR FERMENTATION

Soichiro Asai, Tokyo; Tsutomu Matsuishi; Katsunobu Matsushita, both of Kawasaki; Shigeho Ikeda, Yokohama; Kaetsu Kobayashi, and Hiromasa Maruyama, both of Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 19, 1976, Ser. No. 678,116
Int. Cl.² C12D 13/06; C12B 3/04
U.S. Cl. 195—47 5 Claims

1. In the fermentation production of glutamic acid or lysine wherein fermentation is effected by the use of a microorganism of the genus Brevibacterium, Corynebacterium, Micrococcus or Microbacterium, the improvement which comprises:

admixing a substantially neutral hydrolyzate of molasses containing glucose and fructose cooled to below 10° C with calcium hydroxide to form a fructose addition product precipitate, and

neutralizing the remaining mother liquor, simultaneously eliminating calcium ions therefrom, and utilizing the remaining liquor as the carbon source for said fermentation.

4,066,503

ENZYME OF HYDROLYTIC ACTION, ENZYMATIC PREPARATION, METHOD FOR PREPARING BOTH AND THEIR USES

Alexandr Pavlovich Bashkovich, prospekt M. Toreza, 40, Korpus 7, kv. 21; Evgenia Semenovna Zimnukhova, ulitsa Pionerstroya, 18, kv. 206; Agnessa Vladimirovna Prokopovich, Bolsheokhtinsky prospekt, 79, kv. 9; Olga Grigorievna Polatovshaya, ulitsa Uchitelskaya, 19, korpus 1, kv. 29; Maria Ivanovna Pronina, ulitsa Sedova, 109, kv. 33; Valter Osvaldovich Kulbakh, Bukharestskaya ulitsa, 86, korpus 1, kv. 85; Khasya Ionovna Rivkina-Pevtsova, ulitsa Sadovaya, 92, kv. 5, and Grigory Efimovich Grinberg, prospekt Metallistov, 82, kv. 321, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 666,503, March 12, 1976, abandoned, which is a division of Ser. No. 593,536, July 7, 1975. This application Nov. 8, 1976, Ser. No. 739,742
Int. Cl.² C12D 13/10; A61K 37/54
U.S. Cl. 195—62 10 Claims

1. An enzyme of hydrolytic action which is produced by cultivation of Streptomyces hygroscopicus, Strain No. 1913 (All-Union Research Institute of Antibiotics, Moscow, Collection of Cultures, Deposit No. 997) or its variant No. 149 (USSR Research Technological Institute of Antibiotics and Enzymes for Medical Use, Leningrad, Collection of Cultures, Deposit No. 0879), said enzyme being a neutral protease having the molecular weight of about 37,000, the isoelectric point at pH 8.8, the optimum activity at a temperature of 40°–45° C, the stability range in aqueous solutions at pH from 6.8 to 8.0, and quickly inactivating in said solutions at a temperature above 50° C.

4,066,504

ALIPHATIC DIALDEHYDE-AROMATIC POLYAMINE CONDENSATION PRODUCTS BOUND TO PROTEINS AND ENZYMES

Victor Krasnobajew, Zollikerberg, and Regula Böeniger, Greifensee, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 593,605, July 7, 1975, abandoned. This application Aug. 13, 1976, Ser. No. 714,153
Claims priority, application Switzerland, July 9, 1974, 9415/74; June 11, 1975, 7543/75
Int. Cl.² C12K 1/00
U.S. Cl. 195—63 16 Claims

1. A process for the fixing or insolubilizing of proteins, which process comprises bonding a protein to a condensation product obtained according to the process which comprises reacting a carbocyclic, aromatic polyamine or 3-methylmercaptoaniline with an aliphatic dialdehyde having up to 6 carbon atoms or acrolein to give a condensation product suitable for the fixing or insolubilizing of proteins, excluding the manufacture of the 1,3-phenylenediamine-glutardialdehyde condensation product.

2. A process for the fixing or insolubilizing of enzymes, which process comprises bonding an enzyme to a condensation product obtained according to the process of claim 1.

4,066,505

PROCESS FOR EXTRACTING A POLYPEPTIDE FROM AN AQUEOUS SOLUTION

Michel Schneider, Grand-Lancy, Switzerland, assignor to Battelle Memorial Institute, Switzerland

Filed Mar. 16, 1976, Ser. No. 667,258
Claims priority, application Switzerland, Mar. 18, 1975, 3468/75
Int. Cl.² C07G 7/02, 7/00
U.S. Cl. 195—66 R 8 Claims

1. A process for extracting a polypeptide from an aqueous solution, in which a dissolved water-soluble macromolecular complex (I) of macromolecules covalently bonded to molecules of at least one compound capable of fixing the polypeptide in a selective, reversible and non-destructive manner, is selectively reacted with the polypeptide in the solution to fix the polypeptide by forming, in solution, a complex (II); and the complex (II) is separated from the solution, then dissociated into polypeptide molecules and complex (I) molecules, and the polypeptide is isolated.

4,066,506

METHOD OF SEPARATING AND PURIFYING TWO ACTIVE FORMS OF UROKINASE USING AFFINITY CHROMATOGRAPHY

Alan J. Johnson; Mercedes E. Soberano, both of New York; Eng Bee Ong, Elmhurst, and Milton Levy, Long Island City, all of N.Y., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.

Filed Oct. 8, 1976, Ser. No. 730,728
Int. Cl.² C07G 7/02; C12D 13/10
U.S. Cl. 195—66 B 14 Claims

1. An affinity chromatography method for the separation and purification of two active forms of urokinase from a crude urokinase preparation, comprising the steps of:

a. preparing a solution of the crude urokinase preparation in a first buffer of low ionic strength of about 0.01 molar sodium phosphate buffer, pH 6.0–9.0;

b. contacting said crude urokinase solution with an extracting agent comprising agmatine covalently coupled to the surface of a water-insoluble solid support material whereby urokinase becomes preferentially adsorbed on said extracting agent;

c. washing said extracting agent with an additional amount of said first buffer so as to remove extraneous material from said extracting agent;

d. eluting a first active form of urokinase from said extracting agent with a second buffer having a slightly higher ionic strength than said first buffer, said first active form of urokinase being characterized by a molecular weight of approximately 33,400 and a specific activity of approximately 22,600 CTA units/mg protein; and

e. eluting a second active form of urokinase from said extracting agent with a third buffer having a higher ionic strength than said second buffer and containing an additional salt, said second active form of urokinase being characterized by a molecular weight of at least about 47,000 and a specific activity of at most about 104,000 CTA units/mg protein.

4,066,507

PROCESS FOR PRODUCING L-LEUPEPTINS

Kenkichi Takagi, Ageo; Yukio Yamamoto, Tokyo; Tadao Yamazaki, Yono; Hiroshi Yamaguchi, Urawa, and Hamao Umezawa, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1976, Ser. No. 731,894
Int. Cl.² C12D 13/06
U.S. Cl. 195—80 R 7 Claims

1. A process for producing L-leupeptins, which comprises inoculating a leupeptins-producing strain of Streptomyces into one member selected from the group consising of (A) medium containing each 0.5 to 1.25% (wt/vol) of L-leucine, L-arginine (as hydrochloride), and glycine and (B) medium containing each 0.5 to 1.25% (wt/vol) of L-leucine, L-arginine (as hydrochloride), and glycine and 0.05 to 0.3% (wt/vol) of at least one member selected from the group consisting of yeast extract, casein hydrolyzate, and ribonucleic acids, cultivating aerobically said strain under the condition of pH 5.0 to 7.0 to produce and accumulate L-leupeptins in the medium, and extracting and purifying the L-leupeptins from the culture broth under the condition of pH 7.0 or less.

4,066,508

PROCESS AND REAGENT FOR DETERMINING TRIGLYCERIDES

Elli Rauscher; Erich Bernt, both of Munich; Wolfgang Gruber, Tutzing-Unterzeismering, and Helmut Determann, Starnberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed July 21, 1976, Ser. No. 707,455
Claims priority, application Germany, Aug. 12, 1975, 2535953
Int. Cl.² C12K 1/00
U.S. Cl. 195—99 16 Claims

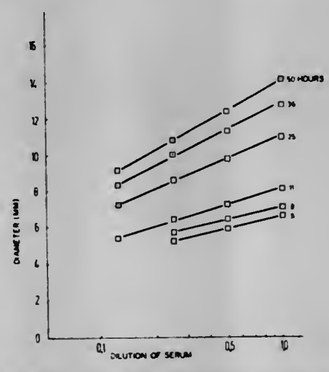
10. Reagent for the determination of triglycerides, comprising lipase, carboxylesterase, an alkali metal or alkaline earth metal alkyl sulfate of from 10 to 15 carbon atoms in the alkyl radical, a buffer, a system for the detection of glycerol, and a compound of the general formula $RO(CH_2CH_2O)_nH$ wherein R is alkyl or alkenyl of from 14 to 20 carbon atoms and n is an integer of from 7 to 20.

4,066,509

DETECTION OF HYDROLYZING ENZYMES

Miroslav Ceska, Uppsala, Sweden, assignor to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 178,671, Sept. 3, 1971, abandoned. This application Feb. 8, 1974, Ser. No. 440,944
Claims priority, application Sweden, Sept. 11, 1970, 12379/70
Int. Cl.² G01N 31/14
U.S. Cl. 195—103.5 R 3 Claims



1. Method for the detection of the activity, or concentration, of a hydrolyzing enzyme selected from the group consisting of alpha-amylase, dextranase, and papain, which method com-

prises applying a solution of said hydrolyzing enzyme onto a detection layer consisting essentially of a carrier matrix gel inert to the enzyme and permitting diffusion of substrate fragments therein and, dispersed throughout said matrix gel, a dyed intermolecularly cross-linked substrate selected from the group consisting of starch, dextran, cellulose and albumin, cross-linked with a diepoxide to render the substrate insoluble in the matrix gel, and measuring the size of an unmarked area formed in said gel due to fragmentation and diffusion of the dyed substrate by action of the enzyme thereon, as a measure of the amount of concentration of said enzyme.

4,066,510

ASSAY FOR MUTAGENESIS IN DIPLOID HUMAN LYMPHOBLASTS

William G. Thilly, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 24, 1976, Ser. No. 689,432
Int. Cl.² C12K *1/00*
U.S. Cl. 195—103.5 R **10 Claims**

1. An assay for determining mutagenesis, comprising:
   a. exposing a culture of human diploid or near-diploid cells capable of continuous division in suspension culture and having one active x-chromosome which carries the gene for HGPRT to an agent to be tested for its mutagenic effects on said cells;
   b. incubating exposed cells for a number of generations sufficient to allow full expression of phenotypically-developed resistance to a purine which acts as an HGPRT substrate; and then,
   c. detecting the amount of mutant cells to thereby determine the degree of mutagenesis.

4,066,511

ANALYTIC DEVICE AND METHOD

Paul A. F. Montagnon, La Balme-les-Grottes Isere, France

Filed Aug. 11, 1975, Ser. No. 603,383
Claims priority, application France, Aug. 12, 1974, 74.28639
Int. Cl.² C12K *1/04*
U.S. Cl. 195—103.5 M **3 Claims**



1. An analytical testing kit adapted to detect the presence of at least one of a plurality of different predetermined microorganisms in a test specimen comprising:
   a. a tubular receptacle having a portion therein containing a liquid medium having both nutrients for enabling the growth of microorganisms of the specimen when disposed therein and a first predetermined reagent which can react with a predetermined microorganism of the plurality to give an indication, the tubular receptacle additionally having means for sealing the liquid medium within the tube; and
   b. an elongated test strip adapted to be inserted into the tubular receptacle when the sealing means is removed, the test strip having
      1. at least one liquid-reactive region adjacent one end portion of the strip adapted to be immersed in the liquid medium, the liquid-reactive region containing other nutrients complementary to the nutrients of the liquid medium and a second predetermined reagent which can react to give an indication when another predetermined microorganism of the plurality is cultured in the liquid medium, the second predetermined reagent being incapable of inhibiting the growth of the plurality of different microorganism and being non-toxic to the plurality of microorganisms; and
      2. at least one vapor-reactive region, the vapor-reactive region being adapted to be disposed out of the liquid medium when the liquid-reactive region is immersed in the liquid medium, said vapor-reactive region containing a third predetermined reagent which can react to give an indication when contacted with a predetermined vapor emitted from the liquid medium in response to the presence of a predetermined microorganism of the plurality of microorganisms.

3. A process for detecting the presence of at least one of a plurality of different predetermined microorganisms in a test specimen by use of a tubular receptacle having a portion therein containing a liquid medium having both nutrients for enabling the growth of microorganisms of the specimen when disposed therein and a first predetermined reagent which can react with a predetermined microorganism of the plurality to give an indication, the tubular receptacle additionally having means for sealing the liquid medium within the tube, and an elongated test strip adapted to be inserted into the tubular receptacle when the sealing means is removed, the test strip having at least one liquid-reactive region adjacent one end portion of the strip adapted to be immersed in the liquid medium, the liquid-reactive region containing other nutrients complementary to the nutrients of the liquid medium and a second predetermined reagent which can react to give an indication when another predetermined microorganism of the plurality is cultured in the liquid medium, the second predetermined reagent being incapable of inhibiting the growth of the plurality of different microorganism and being non-toxic to the plurality of microorganisms, and at least one vapor-reactive region, the vapor-reactive region being adapted to be disposed out of the liquid medium when the liquid-reactive region is immersed in the liquid medium, said vapor-reactive region containing a third predetermined reagent which can react to give an indication when contacted with a predetermined vapor emitted from the liquid medium in response to the presence of a predetermined microorganism of the plurality of microorganisms, the process comprising the steps of:
   a. placing the test specimen into the liquid medium in the tubular receptacle, the nutrient in the liquid medium enabling the test specimen to be cultured,
   b. placing the elongated test strip into the tubular receptacle when the sealing means is removed with the liquid-reactive region of the test strip immersed in the liquid medium and the vapor-reactive region disposed out of the liquid medium,
   c. permitting the test specimen to be cultured, to react with any one of the first and second reagents, and any vapor from the liquid medium to react with the third reagent,
   d. sensing the liquid medium for a possible indication by the first reagent,
   e. further sensing the liquid-reactive portion of the test strip for possible indication by the second reagent,
   f. additionally sensing the vapor-reactive region of the test strip for possible indication by the third reagent, and
   g. compiling the results of the steps of (c), (d), and (e) for determining the presence of at least one of a plurality of different predetermined microorganisms.

4,066,512

BIOLOGICALLY ACTIVE MEMBRANE MATERIAL

Chung Jung Lai, Watertown, and Stanley M. Goldin, Norwood, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Continuation of Ser. No. 503,624, Sept. 6, 1974, abandoned. This application May 10, 1976, Ser. No. 684,746
Int. Cl.² C07G *7/00, 7/02*; G01N *31/14*
U.S. Cl. 195—127 **18 Claims**

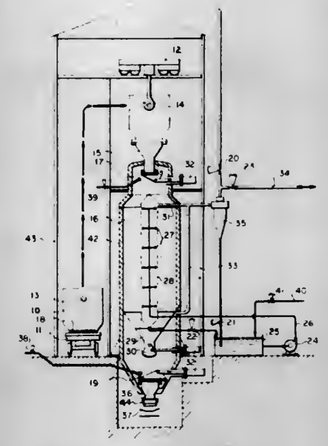
1. A composite membrane structure for immobilizing biologically active proteinaceous materials comprising a thin microporous membrane having capillary pore sizes in the range from about 25 nanometers to 14 micrometers, said membrane being formed from a biologically inert synthetic polymer, said membrane having a thin, water-insoluble coating of an inert proteinaceous material on its surfaces, said coating being formed by (a), soaking the membrane with a solution of the proteinaceous material in an organic solvent, and (b), drying to form a thin layer of said inert proteinaceous material such that the coated membrane retains its intercommunicating capillary pores that extend through its structure, to permit fluid flow therethrough, and that provide a high surface-to-volume ratio, said coated membrane being capable of stably immobilizing a biologically active proteinaceous material thereon with retention of its activity upon contacting the coated membrane with a solution in which the biologically active material is dissolved, and drying.

4,066,513

COKE QUENCHING STEAM GENERATOR

Richard Jablin, 1438 Manor Lane, Blue Bell, Pa. 19422

Filed Apr. 6, 1976, Ser. No. 674,299
Int. Cl.² C10B *39/04*
U.S. Cl. 201—39 **13 Claims**



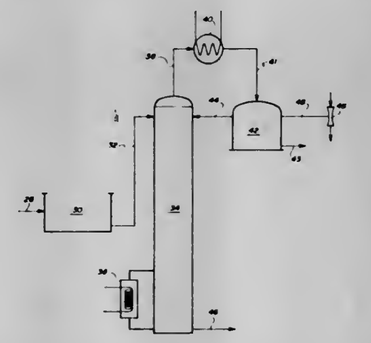
1. A batch process for quenching incandescent coke and producing steam at superatmospheric pressure, comprising:
   a. feeding the coke into the top of a vertically disposed pressure vessel to substantially fill said vessel with a stationary batch of coke;
   b. sealing said vessel sufficiently to contain steam at superatmospheric pressure;
   c. spraying water radially outwardly into said batch of coke through a plurality of nozzles disposed within and surrounded by said batch of coke to directly quench said coke and produce steam;
   d. when said steam has reached a predetermined level of superatmospheric pressure, opening a steam discharge valve and delivering steam from said vessel through said valve at superatmospheric pressure;
   e. when said quenched coke has fallen to a predetermined temperature, discontinuing said spraying, closing said steam discharge valve, and opening a steam vent valve to release the pressure in said vessel; and
   f. after the pressure in said vessel has fallen to approximately atmospheric pressure, discharging said batch of coke through the bottom of said vessel.

4,066,514

RECOVERY OF NITRATED COMPOUNDS FROM WATER BY DISTILLATION

Frank C. Fowler, Kansas City, Mo., assignor to Atlas Powder Company, Dallas, Tex.

Filed Sept. 9, 1976, Ser. No. 721,773
Int. Cl.² B01D *3/10*; C07C *77/02*
U.S. Cl. 203—11 **7 Claims**



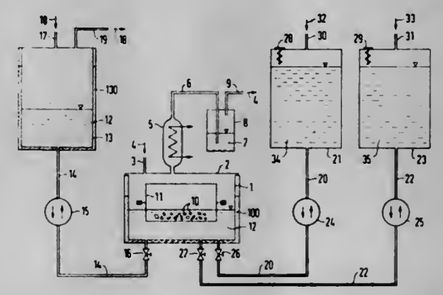
1. A method for separating nitrated esters from a water solution which contains less than about 1 weight percent of nitrated esters of polyalcohols having from about 2 to about 3 carbon atoms comprising:
   a. passing said water solution into a distillation zone and heating said water to a temperature of from about 50° to about 200° F at a lower than atmospheric pressure in the range of from about 10 to about 500 mm of mercury;
   b. withdrawing a vapor stream comprising said nitrated esters and water from the top of said distillation zone;
   c. cooling said vapor stream in a cooling zone to condense said water and said nitrated esters to form a water phase and a nitrated ester phase;
   d. separating said condensed water phase from said nitrated ester phase;
   e. withdrawing the bottom product of said distillation zone which comprises water which is substantially free of said nitrated esters.

4,066,515

APPARATUS AND METHOD FOR THE ELECTRODEPOSITING OF ALUMINUM

Klaus Stoger; Richard Dotzer, both of Nurnberg, and Johann Gehring, Spardorf near Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 12, 1976, Ser. No. 713,984
Claims priority, application Germany, Aug. 21, 1975, 2537285
Int. Cl.² C25D *5/00, 5/04*
U.S. Cl. 204—14 N **10 Claims**



1. Apparatus for electrodepositing aluminum from aprotic,

oxygen-free and water-free organo-aluminum electrolytes, comprising:

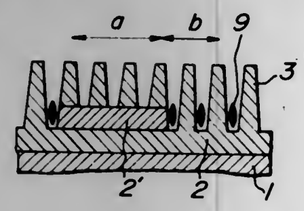
a. a heated treatment tank;
b. means to close said tank airtight;
c. means to admit an inert gas to said tank;
d. a rotatable electroplating drum arranged within said treatment tank;
e. a first tank for storing the electrolyte connected through a first valve and first pumping means to the treatment tank; and
f. a second tank for storing a rinsing liquid connected through a second valve and second pumping means to the treatment tank, whereby electrolyte and rinsing liquid may be transferred to and from said treatment tank by operation of said valves and pumping means.

4,066,516

METHOD FOR FORMING COLORLESS OR COLORED PATTERN HAVING SHADE DIFFERENCE ON AN ALUMINUM OR ALUMINUM ALLOY ARTICLE

Toshihiko Sato, Ichikawa, Japan, assignor to Nippon Light Metal Co., Ltd., Tokyo, Japan

Filed June 11, 1976, Ser. No. 695,143
Claims priority, application Japan, June 27, 1975, 50-79334; July 15, 1975, 50-86280; Nov. 14, 1975, 50-136285
Int. Cl.² C25D *11/04, 11/12, 11/14, 11/22*
U.S. Cl. 204—15 **14 Claims**



1. A method of forming a colored pattern on an aluminum or aluminum alloy article which comprises:

A. anodically oxidizing said article at a voltage of from 10–120 volts;
B. forming a barrier layer on those areas not to be colored by subjecting said areas to a second anodic oxidation at a voltage of from 15–200 V wherein said voltage is at least 5 volts greater than the voltage applied in Step A; and
C. electrolytically coloring said article utilizing an electrolytic metal salt bath at a voltage of from 5–75 volts wherein only those areas not subjected to said second anodic oxidation are colored.

4,066,517

ELECTRODEPOSITION OF PALLADIUM

Peter Stevens, Parsippany, and John M. Deuber, Nutley, both of N.J., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Mar. 11, 1976, Ser. No. 666,093
Int. Cl.² C25D *3/52, 3/56*
U.S. Cl. 204—43 N **12 Claims**

1. A stable aqueous electroplating bath useful for the electrodeposition of palladium or palladium base alloys comprising palladosammine chloride in an amount of 0.1 to 50 g/l palladium, sulfonic acid in an amount of about 1.0 to 100 g/l, and at least 5 g/l of a phosphonic compound of the formula:

$$[(MO)_2-\overset{O}{\overset{\|}{P}}-R']_2-N-R-N-[R'-\overset{O}{\overset{\|}{P}}-(OM)_2]_2$$

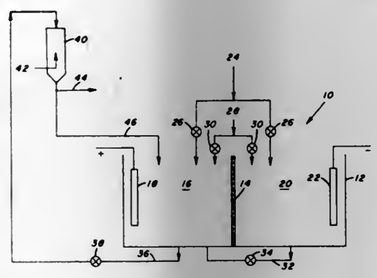
wherein R is an alkylene group of 2 - 6 carbon atoms, each R' is an alkylene group of 1 to 4 carbon atoms, and each M is a non-deleterious cationic moiety,
said bath exhibiting a pH value of from 7.0–10.0.

4,066,518

PRODUCTION OF POTASSIUM OR SODIUM STANNATE

Richard E. Horn, Pittsburgh, Pa., assignor to Pitt Metals and Chemicals, Inc., Pittsburgh, Pa.

Filed Aug. 20, 1976, Ser. No. 716,234
Int. Cl.² C25B *1/00*
U.S. Cl. 204—86 **13 Claims**



1. An electrochemical process for the manufacture of alkali metal stannates comprising,

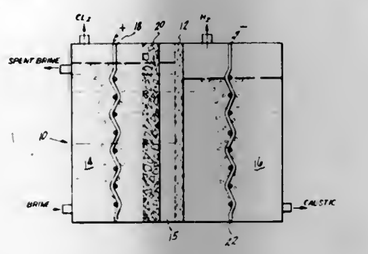
anodically dissolving stannous tin into an alkali metal electrolyte to form an alkali metal stannite,
simultaneously preventing the stannite from migrating from the anode to the cathode by interposing therebetween a permselective ion exchange membrane,
oxidizing said alkali metal stannite with an oxygen containing gas to an alkali metal stannate, and
recovering said alkali metal stannate from said electrolyte.

4,066,519

CELL AND PROCESS FOR ELECTROLYZING AQUEOUS SOLUTIONS USING A POROUS METAL SEPARATOR

Igor V. Kadija, and Byung K. Ahn, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 28, 1977, Ser. No. 782,118
Int. Cl.² C25B *1/16, 1/26, 9/00*
U.S. Cl. 204—98 **25 Claims**



1. A cell for electrolyzing alkali metal chloride solutions comprised of an anode compartment, a foraminous metal anode in said anode compartment, a cathode compartment, a cathode in said cathode compartment, a cation permeable divider separating said anode compartment from said cathode compartment, and a porous metal separator positioned in the anode compartment between said foraminous metal anode and said cation permeable divider.

4,066,520

SLURRY ELECTROWINNING PROCESS

Robert C. Emmett, Jr., Salt Lake City, Utah; James K. Dicksa, Antioch, Calif.; Bruce C. Wojcik, Salt Lake City, and Frank A. Baczek, Sandy, both of Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Sept. 1, 1976, Ser. No. 719,867
Int. Cl.² C25C *1/12, 7/00*; C01G *3/00*
U.S. Cl. 204—108 **30 Claims**

1. A method of leaching an aqueous slurry of copper-bearing solids to remove non-copper metal ions in order to produce a suitable feed of solids for an electrowinning cell which comprises the steps of:

a. leaching said copper-bearing solids with a moderately strong aqueous acid to solubilize metal ions into solution in the aqueous acid;
b. then adding calcium sulfite to the aqueous acid solution to reduce the copper ion concentration by forming copper-precipitate solids therein;
c. then separating the copper-precipitate solids and any remaining portions of said copper-bearing solids from the aqueous acid solution, thereby to form a first stream comprising clear liquid and a second stream comprising a slurry containing said copper-precipitate solids and remaining portion of said copper-bearing solids.

4,066,521

METALLIC DESCALING SYSTEM

Donald R. Zaremski, Cheswick, Pa., and Albert Krepler, Vienna, Austria, assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Feb. 9, 1977, Ser. No. 767,177
The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.
Int. Cl.² C25F *1/06, 1/02*
U.S. Cl. 204—141.5 **5 Claims**

1. A process for descaling a heated metallic body, which comprises the steps of: immersing said body in a bath of molten oxidizing salt; maintaining said bath at a temperature above its melting point during said immersion, said immersion being for a period of more than 2 and less than 30 seconds; removing said body from said bath after scale on said body has been conditioned for subsequent removal; subsequently immersing said body in an electrolyte of an aqueous solution of at least one neutral salt from the group consisting of the chloride, sulfate and nitrate of an alkali metal or ammonium; passing an electric current through said body and electrolyte for a period of at least 4 seconds; and removing said body from said electrolyte.

4,066,522

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT ACRYLAMIDE POLYMERS

Sueo Machi, Takasaki; Takeshi Wada, Ibaragi, and Hiroshi Sekiya, Takasaki, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Jan. 14, 1976, Ser. No. 649,021
Claims priority, application Japan, Jan. 16, 1975, 50-7222
Int. Cl.² C08F *2/46, 4/08*
U.S. Cl. 204—159.24 **12 Claims**

4. A process for the production of high molecular weight acrylamide polymers which comprises irradiating a solution comprising 5 - 60% by volume of water, 5 - 50% by volume of an acrylamide monomer and the balance volume of acetone with an ionizing radiation at a dose rate ranging from 10 through 10^6 roentgens/hour at a temperature in the range of −20° C through 50° C in the presence of an alkaline salt in an amount ranging from about 0.01 through about 10 mol % based on the total amount of monomer or monomers to be polymerized.

4,066,523

DUAL CURE CATHODIC ELECTROCOATING COMPOSITION

Vincent D. McGinniss, Valley City, Ohio, assignor to SCM Corporation, New York, N.Y.

Division of Ser. No. 658,269, Feb. 17, 1976, Pat. No. 4,025,409, which is a continuation-in-part of Ser. No. 708,106, July 23, 1976, Pat. No. 4,035,272, which is a continuation-in-part of Ser. No. 595,448, July 14, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 781,661
Int. Cl.² C08F *8/00*
U.S. Cl. 204—159.15 **8 Claims**

1. A cathodic electrocoating composition dispersed in an aqueous electrocoating bath for electrodeposition onto a cathode substrate disposed within said bath for forming a curable electrodeposited coating on said cathode substrate comprising:

a. a water-dispersed electrocoating polymer having at least about 1% by weight pendant mercaptan groups;
b. a water-dispersed electrocoating polymer having at least about 1% by weight pendant tertiary amine groups, each said amine group being attached to an alpha carbon of said polymer;
c. at least about 5% bis-maleimide cross-linking agent by weight of said polymers; and,
d. at least about 0.5% ultraviolet photosensitizer by weight of said polymers;

said pendant amine groups and said pendant mercaptan groups together comprising at least about 5% by weight of said polymers, said electrodeposited coating of said electrocoating composition adapted to cure by heating said electrodeposited coating on said cathode substrate to cross-link said mercaptan groups with said bis-maleimide to partially cure said coating followed by irradiating with ultraviolet radiation said partially cured coating to cross-link said alpha carbon of said polymer having said pendant amine groups with said bis-maleimide to fully cure said coating on said cathode substrate.

4,066,524

IMIDAZOLE POLYMERS AND PREPARATION THEREOF WITH RADIATION AND CHEMICAL INITIATOR

Charalambos J. Phalangas, Princeton Junction, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 357,357, May 4, 1973, abandoned. This application Aug. 18, 1975, Ser. No. 605,799
Int. Cl.² C08F *2/46, 4/04, 4/34*
U.S. Cl. 204—159.23 **11 Claims**

1. A process of preparing water-soluble, high molecular weight imidazole polymers which comprises

irradiating an aqueous solution comprising from 15% to about 90% by weight of monomer comprising from 5% to 100% by weight of at least one water-soluble imidazole monomer selected from the group consisting of 1-vinylimidazole, acid salt of 1-vinylimidazole, and quaternary salt of 1-vinylimidazole and from 95% to 0% by weight of at least one water-soluble monomer conforming to the formula

$$H_2C=\overset{O}{\overset{\|}{C}}-Y;$$
$$\quad\quad\quad

wherein M is a cation, R_1, R_2 and R_3 are 1 to 4 carbon alkyl groups, and X is an anion, and

from about 100 to about 12,000 ppm of a chemical, free-radical initiator for the polymerization of ethylenically unsaturated compounds,

said initiator having a dissociation rate constant above about 1×10^{-4} reciprocal seconds at 100° C., does not substantially catalyze the polymerization of ethylenically unsaturated monomers at temperatures below about 50° C., and does substantially catalyze the polymerization of ethylenically unsaturated monomers at temperatures below about 100° C.,

with high energy ionizing radiation at an intensity of from about 10,000 rads to about 1,000,000 rads per hour to a dose of from about 5,000 to about 500,000 rads,

to form a reaction mass in which from about 30% to about 95% by weight of the monomer initially present in aqueous solution has been converted to water-soluble polymer and in which chemically induced polymerization occurs,

terminating the high energy ionizing radiation of the reaction mass before formation of water-insoluble polymer in the reaction mass, and allowing the chemically induced polymerization of the reaction mass to continue.

4,066,525

CATHODIC ELECTROCOATING PROCESS

James T. K. Woo, Medina, and James M. Evans, Olmsted Falls, both of Ohio, assignors to SCM Corporation, Cleveland, Ohio

Filed Dec. 22, 1975, Ser. No. 642,694
Int. Cl.² C25D *13/06*
U.S. Cl. 204—181 **7 Claims**

1. A process for cathodically electrocoating a metallic substrate to form a cured resinous coating thereon, said process comprising

A. establishing simultaneous contact of said metallic substrate and a counter-electrode with a body of liquid aqueous dispersion having dispersed therein

a. a cathodically electrodepositable, at least partially cationized binder resin comprising a major proportion by weight of a reaction product of an epoxide-functional resin and a monoamino alcohol or phenol having at least one reactive hydrogen on the amino nitrogen, said reaction product being substantially devoid of reactive epoxide groups and having an average of at least about 2 reactive hydroxyl groups and at least about 0.2 directly or indirectly pendant 5 to 20 carbon atom hydrocarbon radical per molecule,

b. from about 0.05 to 1 weight parts, per weight part of said binder resin, of an acid-functional aminoplast resin (i) cathodically co-electrodepositable with said binder resin from said aqueous dispersion to form an intermediate product comprising an intimate mixture of the cathodically electrodeposited forms of said binder resin and said aminoplast resin, (ii) co-reactive in said intermediate product with the cathodically electrodeposited form of said binder resin upon heating, to transform said intermediate product into a cured resinous product, (iii) having at least about 0.0001 equivalent of titratable acid functionality of pK_a not greater than about 5 per gram of said aminoplast resin, and (iv) not soluble in the aqueous medium of said dispersion, and

c. from about 20 to 150 milliequivalents, per 100 grams of (a) and (b), of an anion of a water-soluble acid to induce and stabilize the cationization of said binder resin, said aqueous dispersion having a pH of from about 2 to about 7 and being substantially free of any water-soluble acid which will be retained in water-soluble form in said cured resinous product and of anions thereof;

B. maintaining an electrical potential difference between said metallic substrate and said counter-electrode, while both are in contact with said body of liquid aqueous dispersion, of such polarity that said metallic substrate is charged as a cathode relative to said counter-electrode as an anode and of such magnitude that an uncured coating comprising said intermediate product is cathodically electrodeposited upon said metallic substrate;

C. removing said metallic substrate bearing said uncured coating thereon from contact with said body of liquid aqueous dispersion; and

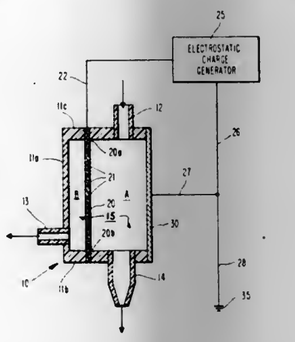
D. thereafter heating said uncured coating to transform it into a cured resinous coating comprising said cured resinous product.

4,066,526

METHOD AND APPARATUS FOR ELECTROSTATIC SEPARATING DISPERSED MATTER FROM A FLUID MEDIUM

George Chiayou Yeh, Smedley Drive, R.D. 1, Newtown Square, Pa. 19073

Filed Aug. 19, 1974, Ser. No. 498,423
Int. Cl.² B03C *5/00*
U.S. Cl. 204—186 **8 Claims**



1. Method for separating dispersed matter consisting essentially of electrostatically-charged finely-divided particles from a fluid medium containing same, said method comprising:

A. Continuously introducing said fluid medium containing the dispersed matter into a non-collecting separation chamber in the zone adjacent a first side of a separating electrode which divides said chamber into two zones and which is pervious to the passage of said fluid and dispersed matter;

B. Continuously subjecting said introduced fluid medium containing dispersed matter to the field of a dense and uniformly-distributed corona discharge occurring from said separating electrode, said separating electrode containing an electrostatic charge of the same polarity as that of the charge on said finely-divided particles and of a magnitude sufficient substantially to repel said finely-divided particles, whereby said finely-divided particles are selectively repelled from said separating electrode;

C. Continuously passing through said separating electrode and withdrawing from the zone adjacent the reverse side of said separating electrode fluid medium containing a reduced concentration of said finely-divided particles; and

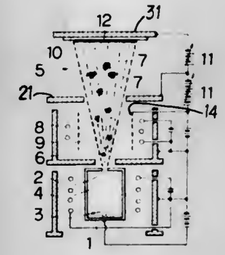
D. Continuously withdrawing from the zone adjacent said first side of said separating electrode a fluid medium containing an increased concentration of said finely-divided particles.

4,066,527

METHOD OF PRODUCING SEMICONDUCTOR DEVICE

Toshinori Takagi, Nagaokakyo; Kiyoshi Morimoto, and Yukihiko Utamura, both of Mobara, all of Japan, assignors to Futaba Denshi Kogyo K. K., Japan

Filed July 15, 1976, Ser. No. 705,713
Claims priority, application Japan, July 18, 1975, 50-87255; July 18, 1975, 50-87256
Int. Cl.² C23C *15/00*
U.S. Cl. 204—192 N **14 Claims**



1. A method of producing a semiconductor device comprising the sequential steps of:

providing a substrate made of a material easy to cleave and easy to dissolve in a preselected solvent so that film layers having excellent crystalline properties and oriented by the crystal axis of the substrate may be made to grow on a cleavage plane of said substrate;

vaporizing a first material-to-be-deposited to form a first vapor;

injecting said first vapor into a vacuum region which is at most 10^{-2} Torr and at about 1/100 or less of the pressure of said first vapor to form aggregates of atoms of said first vapor called first clusters;

bombarding said first clusters with electrons to ionize at least a part of said first clusters thereby forming ionized first clusters;

accelerating said ionized first clusters by an electric field to bring them into collision with said substrate thereby forming a first crystalline film layer thereon;

vaporizing a second material-to-be-deposited to form a second vapor;

injecting said second vapor into a vacuum region which is at most 10^{-2} Torr and at about 1/100 or less of the pressure of said second vapor to form aggregates of atoms of said second vapor called second clusters;

bombarding said second clusters with electrons to ionize at least a part of said second clusters thereby forming ionized second clutsters;

accelerating said ionized second clusters by an electric field to bring them into collision with said first crystalline film layer to form a second crystalline film layer thereon, thereby forming a laminated element film portion of said device;

separating said laminated element film portion from said substrate by dissolving the substrate material in said preselected solvent; and

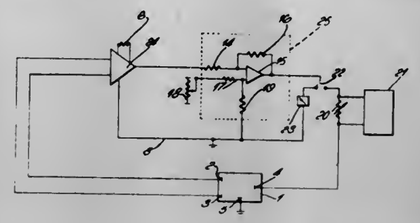
furnishing said laminated element film with suitable electrodes to form said semiconductor device.

4,066,528

ANALYTICAL APPARATUS

John Rickard Mansfield, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 19, 1976, Ser. No. 706,555
Claims priority, application United Kingdom, July 30, 1975, 31927/75
Int. Cl.² G01N *27/44*
U.S. Cl. 204—195 T **6 Claims**



1. Apparatus for carrying out coulometric analysis which comprises:

a. an instrumentation amplifier which acts as a differential to single ended potential convertor having a high input impedance,

b. a coulometric cell having a sensor electrode, a reference electrode, and a generator electrode and means for feeding (a) with the potential between the sensor and reference electrodes of said coulometric cell,

c. a differential potential input amplifier fed by (a) and by means for setting the output current of (c) to zero at a desired potential difference between the sensor and reference electrodes by feeding a suitable offset potential to (c), the whole apparatus excluding the coulometric cell having a phase shift of less than 90° and responding to direct or low frequency electromotive force input signals.

4,066,529

METHOD OF DESIGN FOR VERTICAL OIL SHALE RETORTING VESSELS AND RETORTING THEREWITH

Adam A. Reeves, Rifle, Colo., assignor to Paraho Corporation, Grand Junction, Colo.

Filed May 7, 1976, Ser. No. 684,001
Int. Cl.² C10G *1/02*
U.S. Cl. 208—11 R **7 Claims**

1. In a process of contacting a particulate oil shale with a gaseous treating agent is a vertical shaft vessel, wherein a gravity flow of particulate oil shale passes through said vessel maintaining a constant bed depth by feeding raw oil shale at the top and removing treated particulate oil shale at the bottom, and a first gas stream for treatment is introduced into the bottom of the particulate oil shale, at least a second gas stream is introduced through orificed distributors at a temperature of up to about 1,400° F at a position intermediate the top and bottom of the bed of oil shale to cause pyrolysis of the same and off-gas is withdrawn from the vessel above said at least second gas injection the improvement comprising:

a. establishing a total flow of gas through the vessel of from 8,000 to 25,000 standard cubic feet of gas per ton of particulate oil shale;

b. proportioning said gases between a first point of introduction adjacent the bottom of the bed and into at least a second point of introduction located between the top and bottom of the bed, wherein a plurality of orifices spread the gas across the lateral extent of the bed, said orifices being fed by a stream of gas in a distributor conduit at a velocity of Vi feet per second;

c. providing a sufficient quantity of the gas introduced at the bottom of the bed so that it flows upwardly through the bed a velocity of Vg in feet per second, calculated on the basis of an empty vessel;

d. providing a quantity of gas through each said orifice at a sufficient velocity Vh of gas issuing from said orifices so as to mix with the uprising flow of gas from the bottom of the bed at a velocity Vh in the range of 80–100 feet per second; and

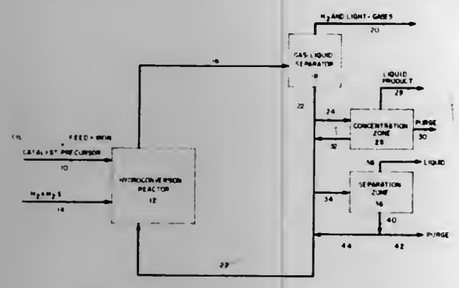
e. proportioning the velocities of the introduced gases so that the ratio Vh/Vi is at least 2 and the ratio of Vh/Vg is at least 15 to control contact velocity between the gases and the particulate oil shale.

4,066,530

HYDROCONVERSION OF HEAVY HYDROCARBONS

Clyde L. Aldridge, and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 702,227, July 2, 1976. This application Nov. 26, 1976, Ser. No. 745,394
Int. Cl.² C10G *13/06*; B01J *27/04*
U.S. Cl. 208—112 **33 Claims**



1. A process for hydroconverting a heavy hydrocarbon oil chargestock, which comprises: reacting a heavy hydrocarbon oil chargestock containing a catalyst with hydrogen at hydroconversion conditions in a hydroconversion zone, said catalyst comprising an effective amount of an iron component and a catalytically active metal component selected from the group consisting of Group VB, Group VIB, Group VIIB, Group VIII metals other than iron, of the Periodic Table of Elements, and mixtures thereof, said iron component being added to said oil chargestock as solid particles, and said catalytically active metal component having been prepared by the steps of:

a. adding to said heavy hydrocarbon oil chargestock an effective amount of an oil soluble metal compound, said metal being selected from the group consisting of Group VB, Group VIB, Group VIIB and Group VIII metals other than iron, of the Periodic Table of Elements, and mixtures thereof, and

d. converting said oil-soluble metal compound to a catalytically active metal component within said chargestock in the presence of a hydrogen-containing gas.

4,066,531

PROCESSING HEAVY REFORMATE FEEDSTOCK

Hartley Owen, Belle Mead; Paul B. Venuto, Cherry Hill, and Edward J. Rosinski, Pedricktown, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 26, 1975, Ser. No. 616,964
Int. Cl.² C10G *11/02*
U.S. Cl. 208—120 **8 Claims**

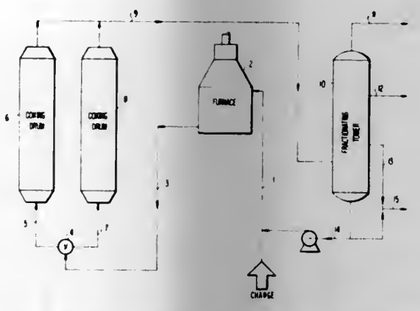
1. A process for converting a heavy reformate feedstock having an initial boiling point between about 230° F and about 250° F and an end point between about 350° F and about 430° F into (a) liquid product rich in benzene, toluene and xylene and having a substantially lower midboiling point than said heavy reformate feedstock and (b) gaseous product rich in light olefins and isoparaffins which comprises contacting said feedstock in the absence of added hydrogen with a porous acid-active zeolite catalyst having a fluid activity index of at least about 18 and being selected from the group consisting of ZSM-11, ZSM-12, ZSM-35, ZSM-38 and dealuminized mordenite, in a fluidized catalyst system reactor with a reactor inlet temperature of between about 800° F and about 1200° F, a reactor pressure of between about 2 psig and about 100 psig, a catalyst/oil weight ratio of between about 0.5 and about 40, a catalyst residence time of between about 0.1 second and about 20 seconds, a feedstock residence time of between about 0.1 second and about 20 seconds and a slip ratio of between about 1 and about 2.

4,066,532

PROCESS FOR PRODUCING PREMIUM COKE AND AROMATIC RESIDUES FOR THE MANUFACTURE OF CARBON BLACK

Roberto Garcia, Rio de Janeiro, Brazil, assignor to Petroleo Brasileiro S.A. Petrobras, Rio de Janeiro, Brazil

Filed Jan. 9, 1976, Ser. No. 647,673
Claims priority, application Brazil, June 30, 1975, 7504079
Int. Cl.² C10G *9/14*
U.S. Cl. 208—131 **3 Claims**



1. A process for producing premium coke and aromatic residue for the manufacture of carbon black which comprises using as a feed charge a mixture of 10% to 50% coal tar, said coal tar having the characteristic that the first 50% of its volume boils between 80° C and 500° C, and 90% to 50% decanted thermal or catalytic cracking oil, said mixture containing low Na, Fe, Cu, V and silicate values so that the ash value thereof is less than 0.15% by weight, the sulphur value is less than 3.5% and the asphaltene content is less than 8%; and submitting said charge to heating in a furnace and then leading it to coking drums where it undergoes delayed coking at a temperature between 450° C and 510° C., at a pressure of 1.7 to 4.0 manometric atmospheres, so as to produce premium coke and a top product, and then fractionating said top product to provide a heavy oil having high aromatic values, said heavy oil being useful as a raw material for producing carbon black.

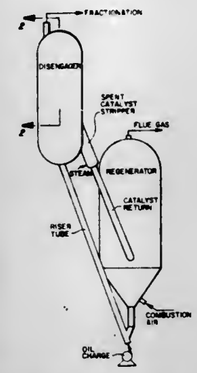
4,066,533

SEPARATION OF CATALYST FROM EFFLUENT OF A FLUIDIZED CATALYTIC HYDROCARBON CONVERSION PROCESS

George D. Myers; Paul W. Walters, both of Ashland, and Robert L. Cottage, Catlettsburg, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 561,625, March 24, 1975, abandoned. This application Nov. 26, 1976, Ser. No. 744,998
Int. Cl.² C10G *11/18*
U.S. Cl. 208—153 **5 Claims**

1. In a method for the fluid catalytic cracking of petroleum hydrocarbons wherein an ascending essentially cocurrent flow of the vaporous hydrocarbon feedstock and catalyst particulates is effected in an elongated tubular reaction zone; the improvement of separating the catalyst particulates from the cracked hydrocarbon stream which comprises discharging said particulates alone by virtue of the inertial momentum associated therewith directly into a catalyst disengaging zone in which there is essentially no net flow of gases under steady state conditions, via an unrestricted downstream extremity opening of said reaction zone while the cracked hydrocarbon



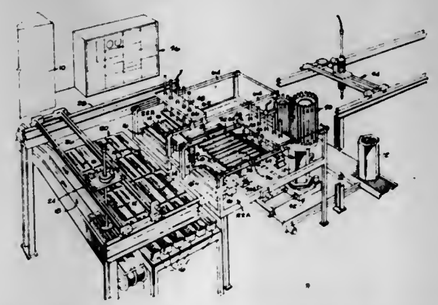
stream containing a residual amount of catalyst particulates is diverted laterally prior to said discharging into a cyclonic separation system communicating with the reaction zone near said downstream opening thereof through an opening upstream of and near said downstream extremity opening.

4,066,534

APPARATUS AND METHOD FOR ASSEMBLING FUEL ELEMENTS

Satya Prakash Arya, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Apr. 7, 1976, Ser. No. 674,680
Int. Cl.² B07C *5/04*
U.S. Cl. 209—82 **23 Claims**



14. A stacking apparatus for receiving arrays of cylindrical parts in side-to-side relation and arranging them in axially aligned stacks of selected lengths and/or numbers of parts, comprising:

a feed trough means for receiving the cylindrical parts in side-to-side arrangement,

the feed trough means including a pair of parallel screw members, the screw members having helical thread means with a thread pitch approximately equal to the diameter of the cylindrical parts, the screw members being rotatable in unison for shifting the cylindrical parts,

a stacking assembly including table means forming a plurality of stacking troughs each extending parallel to the axis of the cylinder parts,

gate means for regulating the passage of individual cylindrical parts from the feed trough means into end-to-end relation upon a selected stacking trough means,

monitoring means associated with the stacking assembly for inspecting the stacks of axially aligned cylindrical parts, and

means for receiving the inspected stacks of cylindrical parts from the respective troughs in the stacking assembly,

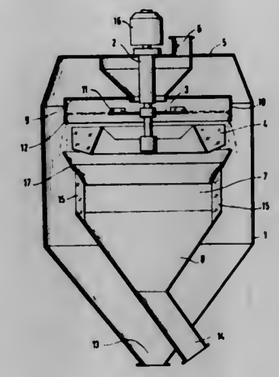
the table means of the stacking assembly being movable for selectively aligning the respective stacking troughs with the gate means and the receiving means.

4,066,535

METHOD AND APPARATUS FOR THE CLASSIFICATION OF FINE MATERIAL FROM A STREAM OF MATERIAL IN A CIRCULATING AIR CLASSIFIER

Werner Strauss, Bochum, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed June 10, 1976, Ser. No. 694,838
Claims priority, application Germany, June 19, 1975, 2527340
Int. Cl.² B07B *4/02*
U.S. Cl. 209—139 A **6 Claims**



1. A classifier for classifying particulate materials comprising:

means defining an outer housing,

means defining an inner housing spaced from said outer housing and concentric therewith,

inlet means for introducing a stream of particles through said outer housing,

a horizontally disposed rotating spreading means receiving said stream and arranged to centrifugally propel the particles outwardly,

baffle means substantially surrounding said spreading means and positioned to be impacted by the particles propelled by said spreading means to form a falling annular dispersion of particles, said baffle being substantially coextensive with the inlet to said housing,

an impeller located below said spreading means and arranged to direct air radially through said dispersion to thereby separate finer particles from coarser particles, and

means for separately collecting said finer particles and said coarser particles.

4,066,536

PARTICLE SIZE SEPARATION BY SUSPENSION FLOW IN AN UNOBSTRUCTED PASSAGEWAY

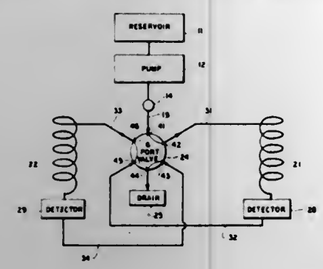
Dean M. Ball; Robert C. Fincher, both of Norcross, and Clyde Orr, Jr., Dunwoody, all of Ga., assignors to Micromeritics Instrument Corporation, Norcross, Ga.

Filed Aug. 9, 1976, Ser. No. 712,838
Int. Cl.² B03B *5/00*
U.S. Cl. 209—155 **18 Claims**

1. In a method of separating particles into isolated particle size fractions, the steps of

dispersing said particles in a liquid dispersing medium to obtain a particle suspension;

passing said particle suspension through an elongate unrestricted tube by a laminar flow of said particle suspension, said laminar flow being undisturbed by said passageway



and external forces and having a cross sectional area in a plane transverse to its direction and a duration sufficient for the majority of particles of a particular size in said particle suspension to become substantially advanced in the direction of said laminar flow beyond the majority of the next successively smaller particles in said suspension.

4,066,537

WET MAGNETIC SEPARATION OF MATERIALS

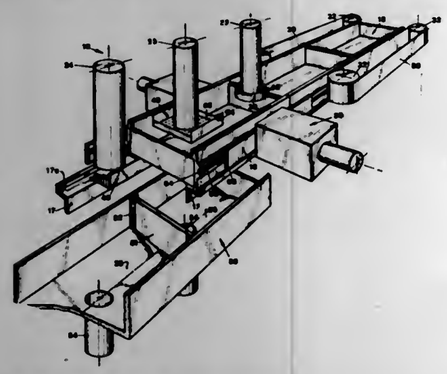
Georg Josef Bernfeld, 114 Stamford Hall, Paul Nel St., Hillbrow, Johannesburg 2001, South Africa

Filed Mar. 15, 1976, Ser. No. 666,936

Claims priority, application South Africa, Mar. 27, 1975, 75/1940

Int. Cl.² B03C *1/08*

U.S. Cl. 209—223 R **15 Claims**



1. In a separator of the type including:

magnetic means for establishing zones of high and low magnetic density;

matrix container units comprising a series of separate matrix container units which are movable in a path through said zones of high and low magnetic intensity;

matrix means within each matrix container unit;

feed means supplying slurry to said matrix container means;

washing means for washing out material entrapped in the matrix means;

launder means receiving respectively matter passing through said matrix container means at at least said high magnetic intensity zone and said low magnetic intensity zone; and

moving means operatively connected to said container means for moving said matrix container means through said high and low magnetic intensity zones;

the improvement wherein the moving means comprises a path through said zones established by said magnetic means, means for transferring said container units onto said path, and means for providing a moving force to said units to move the container units as a continuous matrix through the magnetic zones, and wherein the matrix container units are removable and replaceable when in the means for transferring without interrupting the continuous movement of the container units along said path.

4,066,538

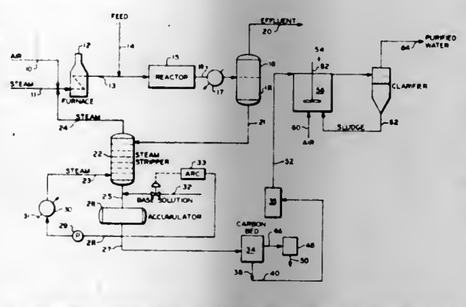
WATER PURIFICATION BY TREATING WITH ACTIVATED CARBON BEFORE BIOCHEMICAL TREATMENT

Martin R. Cines, and Ben B. Buchanan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1974, Ser. No. 434,006

Int. Cl.² C02C *1/06*

U.S. Cl. 210—15 **11 Claims**



1. A process comprising: contacting waste water having a COD of greater than 1000 milligrams/liter, over 50 percent of the material creating said COD being soluble in said water, with activated carbon; thereafter subjecting said thus treated water to a biochemical treatment to further reduce said COD.

4,066,539

OIL-RECOVERING MATERIAL AND PROCESS FOR PREPARING AND USING THE SAME

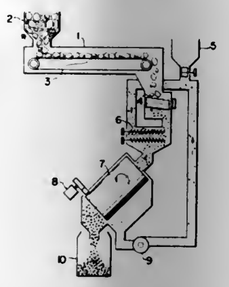
Takeshi Hachisu, and Akinari Uchida, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 23, 1976, Ser. No. 744,401

Claims priority, application Japan, Nov. 25, 1975, 50-140196; Nov. 25, 1975, 50-140197

Int. Cl.² C02B *9/02*

U.S. Cl. 210—36 **6 Claims**



1. An oil-recovering material which comprises atactic polypropylene granules and a cereal powder deposited onto the surface of the granules.

3. A method for the recovery of oil from water-containing oil or sand-containing oil comprising contacting the water-containing oil or sand-containing oil with the product of claim 1, whereby the oil is absorbed by the oil-recovering product.

4,066,540

APPARATUS AND METHOD FOR CONTINUOUS FROTH FLOTATION

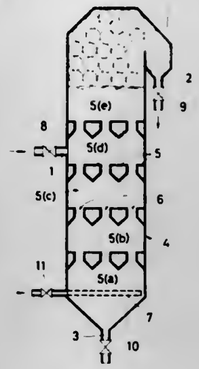
Shinji Wada; Yoshiaki Matsunaga, both of Tokyo, and Michihiro Noda, Zushi, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation of Ser. No. 612,494, Sept. 11, 1975, abandoned. This application Oct. 28, 1976, Ser. No. 736,341

Claims priority, application Japan, Sept. 12, 1974, 49-105156

Int. Cl.² B03D *1/02, 1/24*

U.S. Cl. 210—44 **6 Claims**



1. An apparatus for the continuous flotation and separation of froth by forcing gas bubbles into counter-current contact with a liquid, comprising

1. a vertically elongate column,

2. a plurality of shelves vertically spaced in said column and dividing the interior of said column into a plurality of vertically offset zones,

a. said shelves each defining a plurality of unobstructed passages, each passage consisting of an upper part of fixed width and a lower part contiguous with said upper part, flaring outwardly and defined by faces inclined by an angle of at least 3° with reference to the horizontal, the passages constituting the only interconnection between two of the offset zones adjacent each shelf,

b. respective ones of said unobstructed passages in the plurality of shelves being vertically aligned to define continuous vertical spaces extending from a head portion to the bottom of the interior of the column, and

c. the total area occupied by said unobstructed passages in each of said shelves being no less than 3 percent and no more than 30 percent of the total cross-sectional area of the column,

3. a froth separator disposed in the head portion of the column,

4. a raw water inlet pipe opening on an upper one of the zones,

5. a treated water outlet pipe disposed at the bottom of the column, and

6. a gas dispersing unit disposed below a lowermost one of said shelves,

which method comprises the steps of continuously introducing the raw water subjected to treatment into said vertically elongate column through the raw water inlet pipe and continuously feeding air under pressure into said column through the gas dispersing unit, whereby the raw water continuously descending through the unobstructed passages in the successively lower shelves and the air continuously ascending in the form of bubbles through the unobstructed passages in the successively higher shelves come into countercurrent contact with each other so that substances contained in the raw water are now deposited on or adsorbed on said bubbles, and the bubbles on which the substancees formerly contained in the raw water are now deposited or adsorbed are discharged to the froth separator and the water which has been stripped of said substances is discharged through the treated water outlet pipe.

4,066,541

PROCESS FOR TREATING WASTE WATER CONTAINING POLYVINYL ALCOHOL

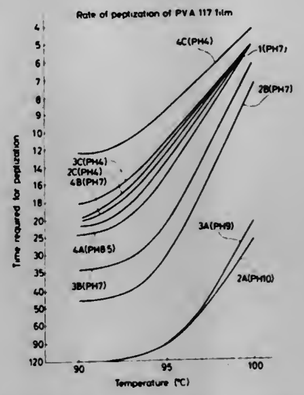
Yoshikazu Sando; Hiroshi Ishidoshiro, and Eiichi Nakano, all of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Japan

Filed May 19, 1976, Ser. No. 688,069

Claims priority, application Japan, May 28, 1975, 50-63837

Int. Cl.² B01D *5/00, 11/00, 17/00*

U.S. Cl. 210—51 **12 Claims**



1. A process for treating waste water containing polyvinyl alcohol comprising reacting the polyvinyl alcohol in the waste water at a pH from 8 to 10 with a boron compound selected from the group consisting of boric acid and borax in the presence of an inorganic salt to produce a complex of the boron compound and the polyvinyl alcohol, and separating the complex therefrom.

4,066,542

METHOD OF PURIFICATION OF WASTE WATER BY TREATMENT WITH ZIRCONIUM SALT

Buichiro Ayukawa, Musashino, Japan, assignor to Shikoku Paper Mfg. Co., Ltd., Japan

Division of Ser. No. 519,866, Nov. 1, 1974, Pat. No. 3,997,439.
This application Aug. 9, 1976, Ser. No. 712,926
Claims priority, application Japan, Nov. 7, 1973, 48-125118
The portion of the term of this patent subsequent to Dec. 14, 1993, has been disclaimed.
Int. Cl.² C02C *5/04;* C02B *1/20*
U.S. Cl. 210—51 2 Claims

1. A process for the purification of surface water which comprises adding an aqueous solution of $ZrOCl_2.8H_2O$ to said surface water and adjusting the pH to 4.5–6.8 to coagulate and precipitate suspended substances and colloidal dispersed particles and precipitate non-colloidal dissolved, low molecular weight organic substances therein in the form of insoluble precipitates and chelates, and removing said precipitates and chelates.

4,066,543

CONTINUOUS PROCESS FOR NON-CATALYTIC OXIDATION OF SULFITE-CONTAINING WATERS

Drew E. McCoy, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 12, 1975, Ser. No. 631,257
Int. Cl.² C02C *5/04*
U.S. Cl. 210—63 R 10 Claims

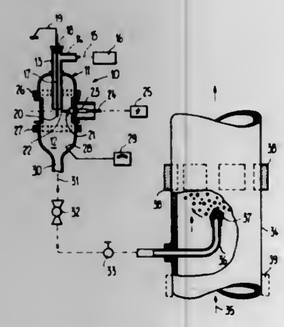
1. In a continuous process for the liquid phase oxidation of water containing substantially only sulfite and/or bisulfite ions, the steps of: heating said water to a temperature of about 150° to 250° F; oxidizing the heated water under a pressure of around 25 to 50 psig at a liquid hourly space velocity of between 0.5 and 12.0 volumes of feed per reactor void volume with a non-catalytic, oxidizing medium containing from 100 to 350 percent excess oxygen basis stoichiometric conversion of sulfite and bisulfite ions to sulfate ions and recovering an effluent containing substantially no other anions than sulfate.

4,066,544

METHOD AND APPARATUS FOR ELECTRO SHOCK DEGERMINATION OF WATER

Walter Stark, Magliaso, Switzerland, assignor to Multorgan S.A., Magliaso, Switzerland

Filed Sept. 3, 1976, Ser. No. 720,195
Claims priority, application Switzerland, Sept. 8, 1975, 11643/75
Int. Cl.² C02B *3/06;* B03C *1/30*
U.S. Cl. 210—64 14 Claims



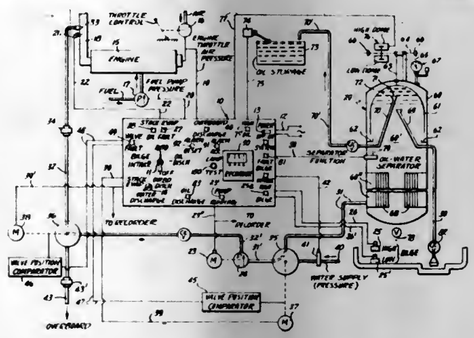
1. A method of degerminating water, comprising the steps of:
a. furnishing a supply of flowing water containing bacteria which are to be killed;
b. subjecting the flowing water to a magnetic field;
c. positioning the magnetic field contacting the flowing water for increasing the concentration of bacteria at a predetermined location in the flowing water;
d. introducing an air-air ion mixture having at least $5 \cdot 10^6$ air ions per cm^3 into the water at the location where the bacteria are concentrated,
whereby the bacteria kill rate is increased by electro-shock action.

4,066,545

BILGE WATER DISPOSAL SYSTEM INCLUDING OIL RECOVERY MEANS

Chester H. Walters, St. Louis; Harold J. Barmeier, Jr., Ballwin, both of Mo., and Greig E. Sullivan, Marshalltown, Iowa, assignors to National Marine Service, Incorporated, St. Louis, Mo.

Division of Ser. No. 530,539, Dec. 9, 1974, Pat. No. 4,018,683.
This application July 28, 1976, Ser. No. 709,456
The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.
Int. Cl.² B01D *1/14*
U.S. Cl. 210—71 7 Claims



1. The method of disposing of water by injecting and vaporization of same in the exhaust duct of an internal combustion engine comprising:
a. operating the internal combustion engine to cause flow of hot exhaust gases in the exhaust duct of the engine;
b. sensing sequentially via a control system whether the engine is operating or not; the power level setting of the engine; and the temperature of engine exhaust gas in the vicinity of the duct where the water is injected;
c. under regulation of the control system, injecting water into the duct only after sequentially sensing that the engine is operating; that the power level setting is at a predetermined setting; and the exhaust gases flowing through the duct in the vicinity of where the water is injected is at a desired minimum flash vaporization temperature; and preventing flow of water to the duct if the foregoing recited sequence of events and conditions is not sensed, and if any one or more of the events or conditions ceases to be sensed after flow of water to the duct has begun.

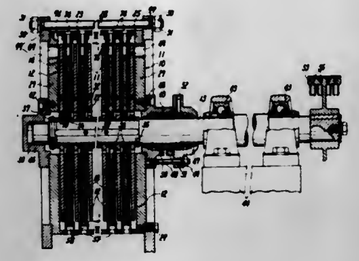
2. In a flash vaporization water disposal system wherein vaporization is carried out by directly injecting processed water into the exhaust gas duct of an internal combustion engine, and including a means for controllably supplying a flow of water to the exhaust gas duct, an improved water flow control system comprising means for sensing whether the engine is operation or not; means for sensing the power level setting of the engines; and means for sensing the exhaust gas temperature in the exhaust duct; and further including means for disabling flow of water to the exhaust duct unless and until at least engine operation and a predetermined exhaust gas temperature are sequentially sensed in the recited order by the respective sensing means, whereby a premature and false sensing of the predetermined exhaust gas temperature before a sensing of actual engine operation will be indicative of a malfunction in the sensing system, and such disablement will prevent inadvertent supply of water to the exhaust duct under improper operating conditions.

4,066,546

CONTINUOUS FILTERING PROCESS AND AN APPARATUS THEREFOR

Jiro Sasaki, Nara, Japan, assignor to Toshin Science Co., Ltd. and Sekisui Kagaku Kogyo Kabushiki Kaisha, both of Osaka, Japan, part interest to each

Filed Oct. 8, 1975, Ser. No. 620,648
Claims priority, application Japan, Oct. 25, 1974, 49-123840; May 28, 1975, 50-64712
Int. Cl.² B01D *37/02*
U.S. Cl. 210—75 3 Claims



1. A continuous filtering process comprising the steps of:
a. admixing fluid to be filtered with a predetermined amount of solid particles which can remove free impurities in the fluid by adsorption, absorption, promotion of a decomposition reaction or the like when the particles become in contact with such free impurities;
b. permitting said solid particles to remove free impurities in the fluid by adsorption, absorption, promotion of decomposition or the like,
c. continuously flowing the fluid to be filtered having been admixed with said solid particles through an inlet of a filter tank having therein
i. a plurality of hollow filter disks fixedly arranged with equal intervals therebetween,
ii. facing filter media supported on the filter disks, and
iii. a plurality of rotators, each rotator being positioned between two adjacent filter disks with small clearances between the surfaces of the rotator and the surfaces of the filter media on the filter disks,
d. rotating the rotators continuously with a predetermined speed of rotation to cause a violent turbulence of the fluid to be filtered and thereby causing motion of the solid particles on the surfaces of the filter media, removing a layer of concentrated fluid from the surfaces of the filter media by said violent turbulence of the fluid and by motion of the solid particles, and achieving filtration through the filter media without substantial impurities adhering on the surfaces of the filter media;
e. continuously withdrawing filtrate from within the hollow filter disks;
f. continuously withdrawing fluid to be filtered from an outlet of the filter tank to an inlet end of an agitation tank having agitation means therein and agitating the fluid within the agitation tank,
g. supplying fresh fluid to be filtered to said inlet end of the agitation tank at a rate substantially equal to the rate of withdrawing said filtrate from the filter disks;
h. agitating the fluid in the agitation tank;
i. continuously withdrawing fluid from an outlet end of the agitation tank, the outlet end of the agitation tank being spaced from the inlet end to provide the fluid within the agitation tank with a stay time and agitation by means of the agitation means whereby the concentration of free impurities in the said fluid is lowered to a concentration that is substantially equal to the concentration of free impurities in the fresh fluid to be filtered; and
j. continuously supplying the fluid withdrawn from the outlet end of the agitation tank to the inlet of the filter tank.

2. A continuous filtering apparatus comprising:
a. a filter tank including a plurality of hollow filter disks fixedly arranged in the tank with equal intervals therebetween and with facing filter media supported on the filter disks, a plurality of rotators positioned between two adjacent filter disks with small clearances between the surfaces of the rotators and the surfaces of the filter media, fluid inlet means and fluid outlet means on the filter tank, and filtrate withdrawing means communicating with the hollow filter disks, said rotators causing a violent turbulency of the fluid to be filtered on the surfaces of the filter media when the rotators are rotated with a predetermined speed of rotation;
b. an agitation tank including therein agitation means for agitating fluid, first inlet means at one end of the agitation tank for concentrated fluid to be filtered, second inlet means for fresh fluid to be filtered, and outlet means at another end of the agitation tank for fluid to be filtered;
c. a first circulation path means connecting said fluid outlet means of said filter tank to said first inlet means of said agitation tank;
d. a fluid supply path means connected to said second inlet means of said agitation tank and including therein pump means for continuously supplying fresh fluid to be filtered to said agitation tank at a predetermined rate;
e. a second circulation path means connecting said outlet means of said agitation tank to said fluid inlet means of said filter tank and including therein pump means for continuously pumping fluid to be filtered from said agitation tank to said filter tank;
f. solid particle supply means connected to the circulation line formed by said filter tank, said first circulation path means, said agitation tank, and second circulation path means for supplying to said circulation line a predetermined amount of solid particles which can remove free impurities in the fluid to be filtered by adsorption, absorption, promotion of a decomposition reaction or the like; and
g. driving means operatively connected to said rotators in the filter tank for continuously rotating the rotators with said predetermined speed of rotation.

4,066,547

METHOD OF FEEDING MATERIAL FOR CENTRIFUGATION TO A CONTINUOUSLY OPERATING CENTRIFUGE, AND A CENTRIFUGE FOR PERFORMING THE METHOD

Dirk Hoks, Hengelo, Netherlands, assignor to Stork-Werkspoor Sugar B.V., Hengelo, Netherlands

Filed July 22, 1976, Ser. No. 707,650
Claims priority, application Netherlands, Aug. 15, 1975, 7509783
Int. Cl.² B01D *33/02;* B04B *3/00*
U.S. Cl. 210—78 7 Claims

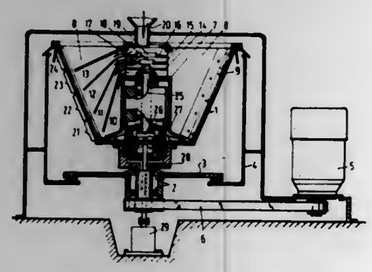
1. In a centrifuging method which comprises the steps of axially rotating a conical, perforate drum at a predetermined speed, and continuously feeding a stream of material to be centrifuged to the inner surface of said drum, the improvement which comprises:
distributing said feeding by plural distribution means which are vertically displaced one from the other; each of said distribution means comprising guide blade means and flow proportionating means; any one of said flow proportionating means functioning to provide a greater flow therethrough than any other of said flow proportionating means therebelow, such that consecutive annular sections

of said inner surface of the drum, successively from the smaller end to the larger end of the drum, receive increasingly greater quantities of said stream of material, said quantities being related such that any two quantities are in the same ratio as the squares of the average diameters of their respective annular sections.

3. A continuously operating centrifuge comprising, in combination:

a frusto-conical, perforate drum and means for rapidly rotating said drum about its logitudinal axis; and

plural means for distributing a stream of material to be centrifuged into the interior of said drum, each of said means being vertically displaced one from the other, and each of said means for distributing comprising guide blade means and flow proportionating means; any one of said flow proportionating means functioning to provide a greater flow therethrough than any other of said flow proportionating means therebelow, so as to divide said stream into a plurality of sub-flows and directing each sub-flow to a respective annular section of the drum, said sub-flows being related in quantities such that the quantities of any two sub-flows are in the same ratio as the squares of the average diameters of their respective annular sections.



7. A continuously operating centrifuge comprising, in combination:

a frusto-conical drum having a perforate wall;

drive means for rotating said drum about its longitudinal axis whereby material to be centrifuged which is discharged against any particular inner surface annular section of said wall is subjected to centrifugal force having a value unique to that annular section;

plural means for distributing a stream of material to be centrifuged into a plurality of sub-flows directed to successive inner surface annular sections of said wall such that progressively thicker layers of material build up on the inner surface of said wall from the smaller to the larger end of said drum, each of said means for distributing being vertically displaced one from the other and comprising guide blade means and flow proportionating means; and one of said flow proportionating means functioning to provide a greater flow therethrough than any other of said flow proportionating means therebelow, such that the material in all of said layers tends to be homogeneous; and

means for continuously removing said layers to recover the homogeneous material.

4,066,548

SLUDGE HYDROEXTRACTOR

Larry Lee Olson, and Richard Henry Jones, both of Gainesville, Fla., assignors to Richard Henry Jones and Pasquale A. Corrado, Gainesville, Fla.

Filed Aug. 11, 1976, Ser. No. 713,488
Int. Cl.² B01D *33/14*
U.S. Cl. 210—160 **10 Claims**

1. An apparatus for the continuous hydroextraction of water containing sludge material comprising:

a. a lower support frame;

b. a plurality of extraction rollers on said lower support frame having a feed end and an exit end;

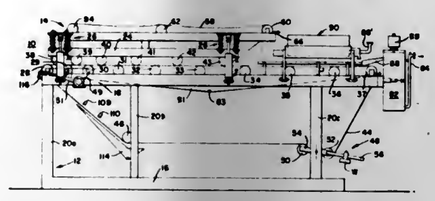
c. a pervious extraction belt driven over said extraction rollers;

d. an upper frame supported above said lower frame;

e. a plurality of pressure rollers on said upper frame having a feed end and an exit end corresponding to the feed end and exit end of said extraction rollers;

f. an impervious pressure belt driven over said pressure rollers, said pressure belt contacting said extraction belt to squeeze sludge material passing therebetween;

g. means adjustably supporting said upper frame above said lower frame;



h. selectively variable means driving said extraction rollers and selectively variable means driving said pressure belt at a speed different from the speed at which said extraction belt is driven; and

i. means to apply continuously increasing pressure contact to said extraction belt and said pressure belt from where the sludge material enters between said belts to where the sludge material extis;

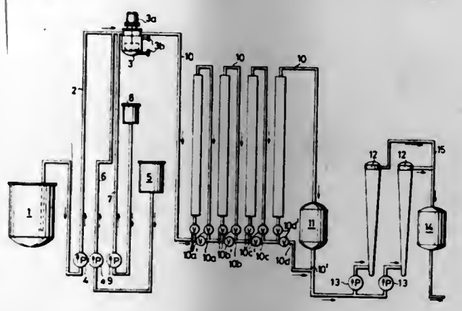
wherein said means to apply continuously increasing pressure contact includes a predetermined, diminishing, progressive spacing of said extraction rollers and said pressure rollers, and an offset alignment of said pressure rollers between said extraction rollers, said means g., h., and i., cooperatively functioning to provide a sludge cake of substantially uniform thickness.

4,066,549

APPARATUS FOR THE PRECIPITATION OF HUMAN BLOOD PLASMA COMPONENTS

Henning Oeser, Duisburg, and Ulrich Ahrens, Springe, both of Germany, assignors to Blutspendedienst der Landesverbande des Deutschen Roten Kreuzes Niedersachsen, Oldenburg und Bremen GmbH, Germany

Filed Sept. 18, 1975, Ser. No. 614,419
Claims priority, application Germany, Sept. 18, 1974, 2444524
Int. Cl.² C07G *7/00*; B03D *3/02*; A23J *1/06*
U.S. Cl. 210—177 **4 Claims**



1. An apparatus for the continuous precipitation of human blood plasma components comprising:

individual supply containers for blood plasma, a precipitation agent and a buffer solution,

a precipitation vessel,

means for conveying the blood plasma and the precipitation agent from the respective supply containers to said precipitation vessel and including means for combining the blood plasma and precipitating agent immediately upstream of said precipitation vessel,

means for conveying the buffer solution from its respective supply container to said precipitation vessel,

means for cooling said precipitation vessel and the contents thereof,

means for causing turbulence in said precipitation vessel,

a flow passageway connecting said precipitation vessel and centrifuge means, said flow passageway being so constructed as to permit substantially laminar flow of fluid therethrough,

means for selectively changing the residence time of fluid in said flow passageway by varying the length of said flow passageway through which fluid is caused to flow, and

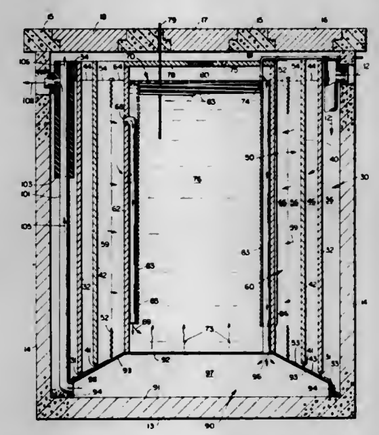
means for removing the centrifugate from said centrifuge means.

4,066,550

APPARATUS FOR SEWAGE TREATMENT WITH COUNTERCURRENT HEAT TRANSFER MEANS

Stanley Beaumont, 118 Macorna St., Watsonia, Australia (VIC 3087)

Continuation-in-part of Ser. No. 603,623, Aug. 11, 1975, abandoned, which is a continuation of Ser. No. 435,647, Jan. 23, 1974, abandoned. This application Mar. 15, 1976, Ser. No. 667,171
Int. Cl.² C02C *1/16*
U.S. Cl. 210—183 **20 Claims**



1. An anerobic apparatus for digesting sewage at elevated temperatures within fluid bodies by acid-producing bacteria and by methanobacteria, whereby sludge, supernatant and slime are isolated, comprising:

A. three narrow and deep circular flow chambers:

1. which are defined by an outer cylinder, two intermediate cylinders, and an inner cylinder,

2. through which said sewage flows circumannularly to deposit said sludge and and form said supernatant, and

3. which are interconnected by:

a. fluid transfer means for radially and inwardly displacing said supernatant by sewage entering said apparatus, each said fluid transfer means being disposed alternately approximately 180° apart in said intermediate cylinders and at mid-depth in said flow chambers, and

b. solids transfer means, for outwardly, radially, and counter-currently moving said sludge and said slime by gravity, each said solids tranfer means being disposed along the bottoms of said intermediate cylinders;

B. a filter means for entrapping suspended particles within said supernatant, for enabling thermophilic bacteria to digest the entrapped particles, and for permitting clear fluid to pass therethrough, said filter means being disposed in the flow chamber between said inner cylinder and one of said intermediate cylinders;

C. a sterlizing means for heating said clear fluid to temperatures above 75° C, to change said clear fluid to sterilized fluid, including a heating means for adding heat to said apparatus, which is disposed within said inner cylinder; and

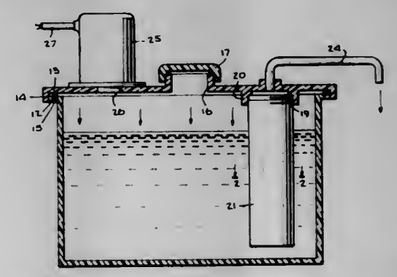
D. a heat exchange means for contercurrently transferring heat from said sterilized fluid to said clear fluid in said sterilizing means and to said sewage and said supernatant in said three flow chambers.

4,066,551

PORTABLE WATER FILTRATION DEVICE

Emanuel Stern, Mount Kisco, N.Y., assignor to Dynek Corporation, Port Chester, N.Y.

Filed Jan. 7, 1976, Ser. No. 647,319
Int. Cl.² B01D *27/02*
U.S. Cl. 210—282 **4 Claims**



1. A portable water filtration device comprising

a housing defining a reservoir chamber for water and having a capacity of one to five quarts;

a cover secured to said housing;

a seal between said cover and said housing;

an inlet in said cover for introduction of water into said chamber;

a cap for selectively sealing said inlet;

a filter threadably secured to said cover and depending into said chamber, said filter including at least one filter medium, and a submicron membrane encasing said filter medium, said membrane being impermeable to the passage of water under normal pressure but which is rendered permeable under pressurized conditions;

a spout extending through said cover into communication with said filter to deliver treated water therefrom; and

an air pump mounted on said cover to pump air into said chamber to force water in said reservoir chamber upwardly through said filter and into said spout for dispensing therefrom.

4,066,552

COMBINED PUMP AND SELF-CLEANING CENTRIFUGAL CONTAMINATION SEPARATOR

Gerard H. Caine, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 505,984, Sept. 13, 1974, abandoned, which is a continuation of Ser. No. 168,933, Aug. 4, 1971, abandoned. This application July 7, 1975, Ser. No. 593,529
Int. Cl.² B01D *21/02, 23/26, 33/38, 43/04*
U.S. Cl. 210—304 **7 Claims**

1. A combined pump and self-cleaning centrifugal contamination separator for a fluid subject to contamination by the

presence therein of undesirable suspended solid particles, comprising:

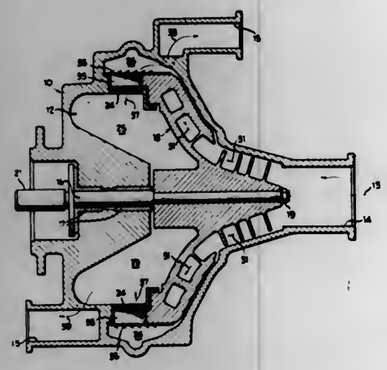
a housing having a longitudinal axis and enclosing a cavity which is generally symmetrical about said axis;

an inlet in said housing communicating with said cavity, said inlet receiving said fluid;

means, including a stationary cylindrical particle barrier screen fixed in said housing and coaxial with said cavity, dividing said cavity into an inner chamber radially inward of said barrier screen and an outer generally annular chamber radially outward of and encircling said screen, said barrier screen having apertures therethrough and a smooth external surface;

a first discharge outlet in said housing communicating with said inner chamber;

a second discharge outlet in said housing communicating with said outer chamber; and



means, including a rotating centrifugal impeller within said cavity, for pumping fluid from the inlet to the outlets, the impeller having thereon a plurality of vanes revolving in said outer chamber for spinning the contaminated fluid around the outer chamber, washing the external surface of the screen to prevent solid contaminants from collecting thereon and adhering thereto, the fluid spinning in the outer chamber turning 90° to pass inward through said barrier screen to said first discharge outlet, contaminant particles being prevented by inertia from turning to pass through the screen with the fluid, whereby contaminant particles substantially smaller than the screen apertures are separated from the fluid and the contaminants are centrifuged radially outward to facilitate separation and removal through said second discharge outlet.

4,066,553

APPARATUS WITH SUPPORTED TUBULAR MEMBRANES FOR THE TREATMENT OF FLUIDS

Claude Bardonnet, Lyon; Robert Brun, Bollene, and Michel Pages, D'Ardeche, all of France, assignors to Rhone-Poulenc Industries, Paris, France

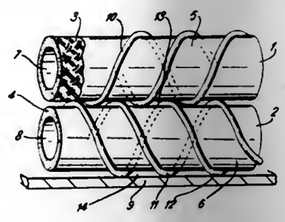
Filed Oct. 14, 1975, Ser. No. 622,443

Claims priority, application France, Oct. 15, 1974, 74.34611

Int. Cl.² B01D *13/00*; C02B *1/74, 1/82*

U.S. Cl. 210—321 R **8 Claims**

1. In an apparatus for the treatment of fluids which consists essentially of a plurality of flexible tubular porous supports on the outer surface of which is a semi-permeable membrane the improvement wherein membranes on adjacent supports are kept out of contact with each other solely by separation means



consisting essentially of one or more thread-like elements wound spirally around and on the membrane.

4,066,554

FILTRATION APPARATUS

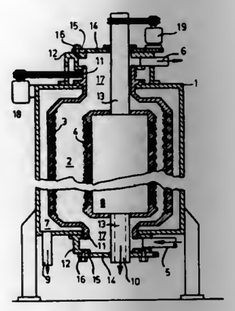
August Guyer, Zurich, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Nov. 30, 1976, Ser. No. 746,105

Claims priority, application Switzerland, Dec. 11, 1975, 016074/75

Int. Cl.² B01D *33/06*

U.S. Cl. 210—342 **6 Claims**



1. Apparatus for filtering a suspension under pressure comprising

a. a housing containing an elongated annular filtration chamber bounded by external and internal surfaces in the form of bodies of revolution,

b. at least one of said surfaces being mounted for rotation about its axis, and at least one of said surfaces being formed as a filtering member and being provided with a filtrate discharge collector,

c. said surfaces being arranged eccentrically relative to each other so that the cross section of said annular chamber varies and has a minimum width sufficient to allow passage of the material being filtered; and

d. an inlet for introducing suspension under pressure to one end of said annular chamber and an axially spaced outlet for discharging filtered material from the opposite end of that chamber,

e. whereby the material being filtered is subjected to cyclically varying shearing forces as it passes through the annular chamber and caking of the filtering member is avoided.

4,066,555

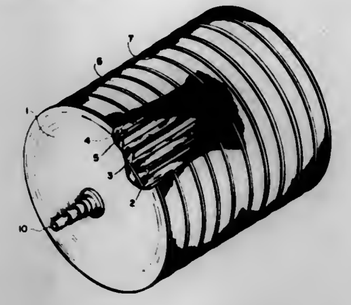
ROTARY FILTER

Joseph Andrew Pascale, 41 Longmeadow, Pine Bluff, Ark. 71603

Filed May 6, 1976, Ser. No. 684,068

Int. Cl.² B01D *33/06*

U.S. Cl. 210—402 **12 Claims**



1. In a rotary filter, the combination of:

a. An inner cylindrical surface;

b. A plurality of support structures selectively spaced apart and extending longitudinally along said surface;

c. Plastic coverings fitted over said support structures;

d. A filter medium extending around the outer circumference formed by said support structures and resting against said support structures; and,

e. Means for holding said filter medium firmly against said support structures.

4,066,556

FLUID FILTER AND METHOD OF MAKING SAME

Vincent Louis Vaillancourt, Livingston, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Oct. 28, 1976, Ser. No. 736,670

Int. Cl.² C02C *1/14*

U.S. Cl. 210—448 **10 Claims**



1. A filter assembly of a conventional size convenient for positioning on the arm of a patient, and for use in the filtering of intravenous fluids, comprising: a housing; a flexible filter pouch in said housing formed from porous membrane filter media having a pore size not greater than 0.22 microns, said pouch having a fluid opening in one end thereof; fluid inlet means extending into said housing in fluid communication with the interior of said filter pouch through said fluid opening; and fluid outlet means extending from said housing in fluid communication with the interior of said housing external of said filter pouch; whereby fluid may pass through said fluid inlet means into the interior of said filter pouch, pass through the membrane filter media of said filter pouch into the interior of said housing external of said filter pouch and then exit from said housing through said fluid outlet means, said filter pouch providing a sufficiently low pressure drop thereacross, so as to eliminate the requirement of a fluid pump to force said fluid through said assembly.

4,066,557

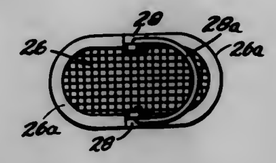
PAINT STRAINER

Joseph A. Banoczi, 82 West Ave., Darien, Conn. 06820

Filed Sept. 14, 1972, Ser. No. 288,894

Int. Cl.² B01D *35/28*

U.S. Cl. 210—470 **2 Claims**



1. A paint can fitment for separating lumps of coagulated paint from free flowing paint comprising a screen strainer, said screen having an arcuate circumference, a means for reinforcing the arcuate circumference of said screen and comprising an arcuate reinforcing section, said section being a separate member; and a pair of ears mounted in substantially opposite disposition upon said section, each of said ears having an opening in substantial alignment with the opening in the opposite ear, and a handle having a pair of bent extensions, with each said extension inserted in an opening in one of the aforesaid ears, whereby said strainer is adapted for sliding and substantially sealing engagement with the interior curved wall of a conventional paint can and for permitting said strainer to be pressed down through paint in said can to filter said paint by holding lumps of coagulated paint beneath said strainer, thereby permitting utilization of the filtered paint above said strainer.

4,066,558

LOW VISCOSITY SPIN FINISH SYSTEMS FOR NEAT FINISH APPLICATION

Barry M. Shay, and Remo Santacecilia, both of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Filed Feb. 11, 1974, Ser. No. 441,265

Int. Cl.² D06M *13/16, 13/18, 13/20*

U.S. Cl. 252—8.9 **5 Claims**

1. A clear, stable yarn lubricating composition having a viscosity in the range of 35–65 centipoises as determined on a Brookfield Viscometer Model LVT using Spindle 1 at 60 R.P.M. at 75° F. which consists essentially of:

a. 40–60 percent by weight of a hydrophobic lubricant having a viscosity in the range of 20–60 centipoises selected from stearates of monohydric alkyl alcohols having from 4–16 carbon atoms,

b. 20–55 percent by weight of a hydrophilic lubricant having a viscosity in the range of 35–110 l centipoises selected from the group consisting of polyoxyethylene(2–10-)monohydric fatty alcohols having 10–20 carbon atoms, polyoxyethylene(5–20) nonyl phenols, and polyoxyethylene(5–20)tridecyl alcohols,

c. 5–15 percent by weight of an antistat having a viscosity in the range of 25–110 centipoises selected from polyoxyethylene(8)lauric acid, polyoxyethylene(20)tallow amine, and polyoxyethylene(23)fatty acid esters of glycerine wherein said fatty acids have 8–18 carbon atoms, and

d. 0.1% to 5 percent by weight of a polar coupling agent selected from the group consisting of water, ethanol, or a low molecular weight glycol ether.

4,066,559

CONTAINER FOR OIL-ADDITIVE RELEASE

Raymond Rohde, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 73,789, Sept. 21, 1970, Pat. No. 3,749,247.
This application May 17, 1973, Ser. No. 361,372
Int. Cl.² C10M 1/48
U.S. Cl. 252—10 12 Claims

1. A method for protecting an oil by adding an additive thereto which comprises (1) enclosing the additive within a closed container said container made of a polymer that is permeable to said additive when said container is immersed in said oil at the operating temperature of the oil and (2) placing said container into said oil to be protected.

4,066,560

SILICONE COMPOSITIONS USEFUL AS GREEN TIRE LUBRICANTS

Gordon T. VanVleck, and Frank J. Traver, both of Troy, N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Sept. 20, 1976, Ser. No. 724,447
Int. Cl.² C10M 3/18, 5/14, 7/20, 7/24
U.S. Cl. 252—21 21 Claims

1. A process for producing a silicone composition useful as a green tire lubricant with improved lubricity properties comprising:

a. mixing 20 to 55 parts by weight of a mica filler with 2 to 20 parts by weight of a linear diorganopolysiloxane of a viscosity varying from 500 to 200,000 centipoise at 25° C where the organo group is selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals to form a homogeneous mixture;

b. adding to said mixture 2 to 20 parts by weight of an alkylene oxide polyol, 0.05 to 10 parts by weight of a mineral clay and 0.05 to 10 parts by weight of a first emulsifying agent selected from the class consisting of anionic, cationic and non-ionic emulsifying agents and forming a second mixture and

c. adding to said second mixture sufficient water to form an emulsion after the second mixture is thoroughly mixed with said added water.

11. A process for controlling the viscosity of a silicone composition useful as a green tire lubricant comprising,

a. mixing from 20 to 55 parts by weight of a mica filler with 2 to 20 parts by weight of linear diorganopolysiloxane having a viscosity varying from 500 to 200,000 centipoise at 25° C where the organo group is selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals and with 2 to 20 parts by weight of an alkylene oxide polyol, 0.05 to 10 parts by weight of a mineral clay, 0.05 to 10 parts by weight of an emulsifying agent selected from the class consisting of anionic, cationic and non-ionic emulsifying agents and 10 to 60 parts of water to form an emulsion, and

b. adding an effective amount of a buffering agent to the emulsion so as to reduce the viscosity to the desired level.

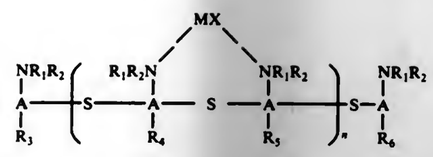
4,066,561

ORGANOMETALLIC COMPOUNDS AND COMPOSITIONS THEREOF WITH LUBRICANTS

John C. Nnadi, Glassboro, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 430,869, Jan. 4, 1974, abandoned. This application Mar. 13, 1975, Ser. No. 558,022
Int. Cl.² C10M 1/40
U.S. Cl. 252—33.4 11 Claims

1. A lubricant composition comprising a major portion of an oil of lubricating viscosity or grease thereof and an oxidation property improving amount of the compound having the following formula:



wherein

n is an integer of from 1 to about 10;

A is an aromatic hydrocarbon moiety;

M is a polyvalent metal selected from the group consisting of Be, Mg, Ca, Ba, Mn, Co, Ni, Pd, Cu, Zn and Cd;

X is oleate, phenyl phosphate, acetate, phosphate, sulfate, sulfonate, oxide, hydroxide or sulfite;

R_1 and R_2 are alkyl of from 1 to about 10 carbon atoms, aryl,



or combinations thereof;

R' is alkyl of from 1 to about 10 carbon atoms, aryl or hydrogen;

R_3, R_4, R_5 and R_6 are hydrogen, alkyl of from 1 to about 200 carbon atoms, aryl, alkyl-substituted aryl where the alkyl substituent is comprised of from 1 to about 200 carbon atoms or combinations thereof.

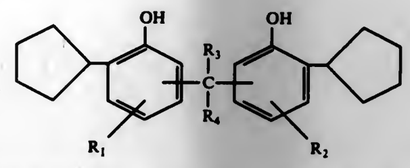
4,066,562

ANTIOXIDANT

John C. Wollensak, Bloomfield Hills; Kryn G. Ihrman, Farmington, both of Mich., and Paul G. Elsey, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Sept. 10, 1976, Ser. No. 722,324
Int. Cl.² C07C 39/16; C01M 1/54
U.S. Cl. 252—52 R 16 Claims

1. An antioxidant compound or mixture of compounds having the formula



wherein R_1 and R_2 are cyclopentyl groups and are bonded to their respective phenolic benzene rings at a location independently selected from the ortho and para positions, the methylene bridge being connected between the remaining ortho and para positions, and R_3 and R_4 are independently selected from the group consisting of hydrogen and C_{1-4} alkyl.

6. Organic material normally subject to gradual oxidative deterioration in the presence of air containing an antioxidant amount of a compound of claim 1.

4,066,563

COPPER-TETRA-4-(OCTADECYLSULFONOMIDO) PHTHALOCYANINE ELECTROPHOTOGRAPHIC CARRIER

Joseph Mammino, Penfield, and Franklin Jossel, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 29, 1975, Ser. No. 617,772
Int. Cl.² G03G 13/08
U.S. Cl. 252—62.1 P 5 Claims

1. A carrier for electrophotographic development comprising a core particle surrounded by an outer layer comprising

resin and copper tetra-4-(octadecylsulfonomido) phthalocyanine.

4,066,564

PROCESS FOR PRODUCING COBALT- AND IRON-CONTAINING FERROMAGNETIC POWDER BY HEAT-TREATMENT IN THE PRESENCE OF AN OXIDIZING AGENT

Koji Sasazawa; Shin-Ichiro Dezawa, and Tatsuji Kitamoto, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed July 2, 1976, Ser. No. 702,171
Claims priority, application Japan, July 2, 1975, 50-82077
Int. Cl.² C01G 49/06, 49/08
U.S. Cl. 252—62.56 21 Claims

1. A process for producing a Co- and Fe-containing ferromagnetic iron oxide powder which comprises adding to a suspension of an acicular ferromagnetic iron oxide an oxidizing agent, an aqueous alkali solution, an aqueous solution containing Co^{+2} ions and an aqueous solution of Fe ions and heat treating the resultant mixture, at a temperature of at least about 80° C

said CO^{+2} ions being present in said aqueous solution containing Co^{+2} ions in an amount of 0.5 to 10 atomic percent based on the amount of iron present in the acicular ferromagnetic iron oxide, said Fe ions being added to the suspension in an amount of at least 0.1 equivalent but not more than 1 equivalent based on the Co^{+2} ions, said aqueous alkali solution containing an amount of alkali such that after neutralizing the Co^{+2} ions and the Fe ions, the hydroxyl ion concentration is at least 0.5 mol/liter; and the amount of oxidizing agent, when it is a gas, is at least 0.1 liter/min per liter of the suspension and when it is a liquid or solid, the amount is at least 0.1 equivalent based on the Co^{+2} ions.

4,066,565

PROCESS FOR PRODUCING COBALT- AND IRON-CONTAINING FERROMAGNETIC POWDER

Koji Sasazawa; Shin-Ichiro Dezawa, and Tatsuji Kitamoto, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed July 2, 1976, Ser. No. 702,172
Claims priority, application Japan, July 2, 1975, 50-82076
Int. Cl.² C01G 49/06, 49/08
U.S. Cl. 252—62.56 15 Claims

1. A process for producing a Co- and Fe- containing ferromagnetic iron oxide powder which comprises adding an aqueous alkali solution, an aqueous solution containing Co^{+2} ions and an aqueous solution of Fe^{+3} ions to a suspension of an acicular ferromagnetic iron oxide and heat-treating the resulting suspension, at a temperature of at least about 80° C;

said Co^{+2} ions being present in said aqueous solution containing Co^{+2} ions in an amount of 0.5 to about 10 atomic percent based on the iron present in the ferromagnetic iron oxide, said Fe^{+3} ions being added to the suspension in an amount of at least 0.1 equivalent but not more than 1 equivalent based on the Co^{+2} ions, and said alkali solution contains alkali in such an amount that after neutralization of the Co^{+2} and Fe^{+3} ions the hydroxyl ion concentration of the suspension is at least about 0.5 mol/liter.

4,066,566

DENTURE CLEANER

Frederick L. Lauster, Massillon, Ohio, assignor to Lafant Research Company, Canton, Ohio

Filed Mar. 31, 1976, Ser. No. 672,390
Int. Cl.² C11D 7/36
U.S. Cl. 252—136 2 Claims

1. A method of removing tarter and stain from a denture with a cleaner, in parts by weight, consisting of from 20 to 24% of water, from 3.6 to 4.4% of dibasic sodium phosphate, from 22 to 26.80% of 85% strength phosphoric acid, from 0.9 to 1.1% of glycerin, from 0.45 to 0.55% of stannic oxide, from 0.03 to 0.07% of n-alkyl (50% C_{14}, 40% C_{12}, 10% C_{16}) dimethyl benzyl ammonium chloride, and from 42.3 to 51.7% of condensate of ethylene oxide with hydrophobic base formed by condensing propylene oxide with propylene glycol, and having an average molecular weight of 3400, comprising applying said composition to a dry denture, immersing said denture in warm water for about 15 minutes and rinsing the denture in water.

4,066,567

LIQUID CRYSTAL CUMULATIVE DOSIMETER

Mortimer M. Labes, Philadelphia, Pa., assignor to Temple University, Philadelphia, Pa.

Filed Feb. 4, 1976, Ser. No. 655,080
Int. Cl.² C09K 3/34; G01K 3/00, 11/16
U.S. Cl. 252—299 18 Claims

1. A cholesteric liquid crystal composition comprising a cholesteric liquid crystal solvent and reactive solutes adapted to enter into a chemical reaction, said liquid crystal solvent having a wavelength of maximum reflection the temperature dependence of which is negligible at the temperatures involved in the reaction, the rate of said reaction being temperature dependent, the products of said reaction being adapted to cause a characteristic change in the light reflecting properties of said composition, the degree of said change being cumulatively indicative of the exposure of said composition to temperature outside of a preselected limit.

4,066,568

METHOD OF PRODUCING MICROCAPSULES

Atushi Nakazawa, and Muneichi Ono, both of Yonago, Japan, assignors to Nippon Pulp Industry Company Limited, Tokyo, Japan

Filed July 30, 1976, Ser. No. 710,104
Claims priority, application Japan, Aug. 7, 1975, 50-95433; May 27, 1976, 51-060653
Int. Cl.² B01J 13/02
U.S. Cl. 252—316 9 Claims

1. In a method of producing microcapsules in which hydrophobic material, namely water insoluble powder or oil or oil with a material dissolved therein, is dissolved in gelatin aqueous solution, thereby causing a dispersion emulsion and forming minute particles, and gelatin and coacervate are formed on the surface of the minute cores of the hydrophobic material by adding coacervate forming agent to this system, thereby forming a capsule like film, the improvement wherein a phase is formed which is thick in gelatin by adding phytic acid and/or alkali metal salt or alkaline earth metal salt as said coacervate forming agent, thereby forming capsules around said hydrophobic material cores.

4,066,569

DOPANTS FOR DYNAMIC SCATTERING LIQUID CRYSTALS

Hong Sup Lim, Agoura, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 30, 1975, Ser. No. 645,155
Int. Cl.² C09K 3/34; G02F 1/13
U.S. Cl. 252—299 9 Claims

1. A doped liquid crystal combination suitable for dc DSM and storage scattering applications comprised of a metallocene formed from a metal selected from the group consisting of Fe, Ru, and Os and (2,4,7-trinitro-9-fluorenylidene)-malononitrile dissolved in a nematic liquid crystal, nematic liquid crystal mixture, or cholesteric-nematic liquid crystal mixture.

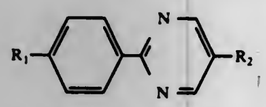
4,066,570

PHENYL-PYRIMIDINES

Arthur Boller, Binningen; Marco Cereghetti, Basel, and Hanspeter Scherrer, Therwil, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 624,354, Oct. 21, 1975, Pat. No. 3,997,536.
This application Sept. 8, 1976, Ser. No. 721,257
Claims priority, application Switzerland, Oct. 25, 1974, 14313/74
Int. Cl.² G02F 1/13; C09K 3/34
U.S. Cl. 252—299 25 Claims

2. A nematic mixture for electro-optical purposes which comprises one or more compounds of the formula



wherein one of R_1 and R_2 is cyano and the other is straight-chain alkyl of 3 to 9 carbon atoms, straight-chain alkoxy of 2 to 9 cabon atoms or straight-chain alkanoyloxy of 2 to 9 carbon atoms,
and one or more nematic substances.

4,066,571

OLEFIN-POLYMERIZATION CATALYSTS

Alfred Columberg, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge, Switzerland

Filed Feb. 13, 1976, Ser. No. 658,112
Claims priority, application Switzerland, Feb. 17, 1975, 1953/75
Int. Cl.² C08F 4/62
U.S. Cl. 252—431 C 4 Claims

1. A process for preparing an olefin polymerization catalyst, in which at least one compound selected from the group which consists of acetates, chlorides and acetyl acetonates of a transition element belonging to group Ib, IIb, IIIb, IVb, Vb or VIb of the Periodic Table of elements is brought into contact with at least one "acetyl" compound selected from the group consisting of acetic acid, acetic anhydride and the fluoracetic and chloroacetic acids and their anhydrides, the mixture thus obtained is heated to a temperature of 70° to 100° C for a time of 10 to 30 hours, the excess "acetyl" compound is eliminated to give a solid residue, this residue is dispersed in a first inert anhydrous non-polar solvent, part of the dispersion so formed is introduced into an inert anhydrous non-polar organic solvent identical with the first solvent or miscible with it, the quantity introduced being so small that the liquid medium thus obtained remains homogeneous, and at least one aluminum organometallic compound of the general formula $Al_nR_yX_{(3-y)}$ is introduced into this latter medium, where R is an alkyl group and X is a halogen, and n and 1 and y is 1, 2 or 3, or n is 2 and y is 3 or 5, the molar ratio of the aluminum organometallic compound to transition element being from 3.7:1 to 1060:1.

4,066,572

PHOSPHA-ALUMINA GEL AND METHOD OF PREPARATION

Monica E. Choca, Chicago, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Oct. 12, 1976, Ser. No. 731,128
Int. Cl.² B01J 27/14
U.S. Cl. 252—437 15 Claims

1. A catalyst or catalyst support composition consisting essentially of a phospha-alumina which, when dried, formed and calcined has the following properties, where pore volume distributions are determined by nitrogen adsorption and mercury intrusion (a) large average pore diameter greater than 100 A, and (b) minimal small pores, less than 30% of the total pore volume being in pores smaller than 100 A in diameter, said phospha-alumina being obtained by preparing an acidic aqueous solution of at least one water soluble inorganic aluminum salt and at least one water soluble inorganic salt of an acid of phosphorus, adding an alkaline aqueous solution of a water soluble inorganic aluminate in sufficient amount to produce an alkaline pH and to form a coagulated precipitate, separating said precipitate from the residual solution and drying said precipitate in the form of discrete particles.

4,066,573

EMERALD GREEN ALUMINA

William A. Blanton, Jr., San Anselmo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 24, 1976, Ser. No. 726,365
Int. Cl.² B01J 27/02, 21/00; C01B 17/04
U.S. Cl. 252—439 6 Claims

1. A method for preparing dark emerald green colored alumina, comprising contacting white alumina with a contact material consisting essentially of carbonyl sulfide at an elevated temperature in the range of from about 200°–900° C and for a period sufficient to produce said color.

4,066,574

HYDROCARBON HYDROTREATING CATALYST COMPOSITION

Paul W. Tamm, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 387,100, Aug. 9, 1973. This application Sept. 24, 1975, Ser. No. 616,334
Int. Cl.² B01J 27/02, 23/16, 23/76; C10G 23/02
U.S. Cl. 252—439 12 Claims

1. A catalyst composition having an improved catalyst life and suitable for use in hydrodesulfurizing a hydrocarbon feedstock containing organometallic compounds in an amount, calculated as metal in parts by weight, of at least 10 ppm, said composition comprising an alumina support, a Group VIb component and a Group VIII component, said components being selected from the group consisting of the metals, oxides and sulfides of the elements of Groups VIb and VIII, said support having a pore volume in the range from about 0.5 to about 1.1 cubic centimeters per gram and having at least 70 percent of said pore volume in pores having a diameter between 80 and 150 Angstroms and less than 3 percent of said pore volume in pores having a diameter above 1000 Angstroms, said pore size distribution for said support corresponding to values obtained by using mercury porosimetry.

4,066,575

PROCESS FOR THE PREPARATION OF A SUPPORTED SILVER CATALYST

Charles Nathan Winnick, Ridgewood, N.J., assignor to Halcon International, Inc., New York, N.Y.

Filed July 26, 1976, Ser. No. 708,460
Int. Cl.² B01J 23/02, 23/04, 23/50
U.S. Cl. 252—475 15 Claims

1. A process for the preparation of a supported silver catalyst suitable for the production of ethylene oxide by the controlled, vapor phase, partial oxidation of ethylene with molecular oxygen, said catalyst preparation process comprising the following steps:

a. impregnating a porous refractory support with a liquid containing a compound or complex of silver by immersing said support in said liquid and maintaining the support and the liquid in contact until the liquid has been absorbed into the pores of the support;
b. separating the thus-impregnated particles from any non-absorbed remainder of said liquid;
c. activating the thus-impregnated particles by converting the silver compounds or complex to at least one member of the group consisting of silver oxides and elemental silver, at least part of the silver being in elemental form, said conversion being accomplished by heating the impregnated particles in the presence of an essentially oxygen-free inert gas to a temperature at which the silver compound or complex decomposes to yield, at least in part, elemental silver;
d. heating the activated particles in the presence of an oxygen-containing gas at a temperature in the range of 160° – 300° C. for a period of from 0.5 to 24 hours prior to step (e) hereinafter described;
e. depositing upon the activated particles from 4×10^{-5} to 4×10^{-3} gram atoms per kilogram of catalyst of at least one alkali metal of the group consisting of potassium, rubidium, and cesium, said alkali metal being in the form of a salt in solution in a solvent;
f. removing the solvent employed in step (e).

4,066,576

POLYETHYLENE MIXTURE FOR THE MANUFACTURE OF SEMICONDUCTIVE FILMS FOR BAGS AND SACKS

Siegfried Bork, and Georg Sam, both of Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 16, 1976, Ser. No. 677,510
Claims priority, application Germany, Apr. 19, 1975, 2517358
Int. Cl.² H01B 1/04; C08K 3/04
U.S. Cl. 252—511 15 Claims

1. A polyethylene mixture for the manufacture of semi-conductive films for bags and sacks having a surface resistance of less than $10^6\Omega$ and good mechanical properties, which contains

a. from 60 to 84% by weight of polyethylene having a density of 0.915–0.930 g/cm³, or of a copolymer of ethylene containing up to 5% by weight of comonomers,
b. from 7.5 to 30% by weight of a saturated or weakly unsarated rubber, and
c. from 8.5 to 15% by weight of carbon black,

and optionally usual additives such as stabilizers, procesing auxiliaries or lubricants, wherein the carbon black has a BET surface of from 300 to 1500 m²/g, an oil absorption of from 2.5 to 6.5 ml/g, a content of volatile substances of from 0.1 to 6.0% by weight, a pH of from 7 to 10, and an ash content of from 0.5 to 5.0% by weight.

4,066,577

HIGH MOLECULAR WEIGHT POLYTRIAZINES OF SOLUBLE POLYMERIC N-CYANO-ISOUREA ETHERS

Rudolf Sundermann, New Martinsville, W. Va.; Gunther Rottloff, Cologne, and Ernst Grigat, Odenthal-Gloebusch, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed July 22, 1976, Ser. No. 707,543
Claims priority, application Germany, July 24, 1975, 2533119
Int. Cl.² C08G 73/08
U.S. Cl. 260—2 R 5 Claims

1. A mixture which can be converted into a high molecular weight polymer of polytriazine structure which is substantially insoluble in solvents, the mixture comprising:

A. a cyanamide corresponding to the general formula (I):

$$R(NH\text{-}CN)_n \quad (I)$$

in which R represents an aliphatic, cycloaliphatic, heterocyclic or aromatic radical optionally interrupted by at least one oxygen atom, and n is a number from 2 to 5, and

B. an aromatic cyanic acid ester corresponding to the general formula (II):

$$Ar(OCN)_p \quad (II)$$

in which Ar represents an aromatic radical or an aromatic radical interrupted by a bridge member and p is a number from 2 to 5.

4,066,578

HEAVILY LOADED FLAME RETARDANT URETHANE AND METHOD

Robert M. Murch, Ashton; Mary Lynn Wilson, Baltimore, and Louis Leonard Wood, Rockville, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 14, 1976, Ser. No. 649,127
Int. Cl.² C08G 18/10, 18/14; C08K 3/22
U.S. Cl. 260—2.5 AG 15 Claims

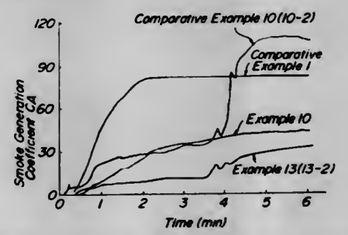
1. In a cross-linked hydrophilic polyurethane foam system having flame retardancy, and three-dimensional network which consists essentially of the reaction product of a first component comprising either an isocyanate capped hydrophilic polyoxyethylene polyol resin prepolymer having an ethylene oxide content ranging from about 40 mole % to 100 mole % of the oxyalkylene units in said prepolymer, said prepolymer having an isocyanate functionality equal to 2 and crosslinking agent having a reaction functionality greater than two, said crosslinking agent selected from the group consisting of polyol, polyamine, polythiol or polyisocyanate; or said isocyanate capped polyol with an isocyanate functionality greater than 2; and a second component comprising water, wherein the H_2O Index Value of said isocyanate capped polyol and water is about 1,300 to about 78,000 wherein the polyoxyethylene polyol moiety has a weight average molcular weight of about 200 to about 20,000, and a hydroxyl functionality of about 2 to about 8, and a surfactant, the improvement which consists essentially of a combination of alumina hydrate powder having an average particle size of about 0.5 to about 120 microns and wherein alumina hydrate is present in an amount from about 50 to about 400 parts by weight per 100 parts by weight of said prepolymer resin, and a nonionic suspending agent, said surfactant being a cationic or amphoteric surfactant.

4,066,579

FLAME- AND SMOKE-RESISTANT FLEXIBLE POLYURETHANE FOAM AND A METHOD FOR PRODUCING SAID FOAM

Toshio Yukuta, Tokyo; Takashi Ohashi, Iruma; Minoru Kojima; Akira Suzuki, both of Tokyo, and Yoshiko Taniguchi, Tokyo, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Mar. 28, 1975, Ser. No. 563,234
Claims priority, application Japan, Mar. 30, 1974, 49-35138; May 31, 1974, 47-61528
Int. Cl.² C08G 18/14, 18/32, 18/48
U.S. Cl. 260—2.5 AP 4 Claims



1. A method for producing flame- and smoke-resistant flexible polyurethane foam which comprises reacting a polyisocyanate, in the presence of a surfactant, catalysts, and blowing agents with a mixture of:

A. a polyoxypropylene triol containing secondary hydroxyl group of at least 50 mole % of total hydroxyl content and having a number average molecular weight ranging from 3,000 to 6,000; and
B. a low molecular weight polyhydroxyl compound selected from trimethylolpropane and glycerin,

wherein an equivalent weight ratio of said low molecular weight polyhydroxyl compound (B) to said polyoxypropylene triol (A) being from 0.7 to 1.5 and said surfactant being selected

from the group consisting of the surfactants for semi-rigid, rigid polyetherurethane foam, and polyesterurethane foam.

4,066,580

PROCESS FOR THE MANUFACTURE OF POLYISOCYANURATE FOAMS

Georg Falkenstein, Neustadt; Gerhard Fahrbach, Plankstadt, both of Germany, and Harald Wulff, Baton Rouge, La., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed June 7, 1976, Ser. No. 693,502
Int. Cl.[2] C08G *18/20*
U.S. Cl. 260—2.5 AW 7 Claims

1. In a process for the manufacture of polyisocyanurate foams containing urethane groups by reaction of organic polyisocyanates and polyols in the presence of a catalyst system with or without further components such as frothing agents, auxiliaries and additives, wherein the improvement consists of using catalytic amounts of a co-catalyst comprising 1,3,5-tris-(N,N-dialkylaminoalkyl)-s-hexahydrotriazine, and an organic mono- or polycarboxylic acid with 1 to 14 carbon atoms, or a monoester of the polycarboxylic acids; wherein the co-catalyst system is used at a mole ratio of 1,3,5-tris-(N,N-dialkylaminoalkyl)-s-hexahydrotriazine to organic mono- or polycarboxylic acids or monoesters of the polycarboxylic acids of 30:1 to 0.7:1.

4,066,581

PROCESS FOR PRODUCING A BOND BETWEEN POLYVINYLENE GLYCOL AND A SUBSTANCE CONTAINING PRIMARY AMINO GROUPS

Axel Sieber, Marburg an der Lahn, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany

Filed Feb. 24, 1977, Ser. No. 771,766
Claims priority, application Germany, Feb. 26, 1976, 2607766
Int. Cl.[2] C08F *18/24;* A61K *31/74;* C07G *7/02;* B01F *7/16*
U.S. Cl. 260—8 7 Claims

1. A process for producing a bond between polyvinylene glycol and a substance containing primary amino groups, which comprises treating said polyvinylene glycol with a medium to strong oxidant until a sufficient number of aldehyde groups is formed and then reacting the oxidation product with the substance containing primary amino groups.

4,066,582

IMPROVED ACRYLATE BASED RADIATION CURABLE COATING COMPOSITIONS CONTAINING NITROCELLULOSE

Gunther William Babian, Peekskill, and Edward Bruce Harris, Spring Valley, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 27, 1976, Ser. No. 726,733
Int. Cl.[2] C08L *1/18*
U.S. Cl. 260—17 A 9 Claims

1. In an acrylate or methacrylate-based radiation curable coating composition containing at least 10 weight percent of an oligomeric polyacrylate or polymethacrylate having a molecular weight from 800 to 5,000 and an average of 1 to 8 acrylyl groups per 1,000 molecular weight units, the improvement of having present in said radiation curable coating composition from 0.25 to 9 weight percent of nitrocellulose having a viscosity of ½ second to ¼ second, measured by the falling ball method described in ASTM D301-56(65) and ASTM D1343-56(65), and an average nitrogen content from 10.9 to 12.2 weight percent.

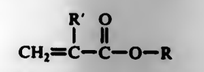
4,066,583

FLEXIBLE WATER ABSORBENT POLYMER COMPOSITIONS COMPRISING (A) UNSATURATED CARBOXYLIC ACID, ACRYLIC ESTER CONTAINING ALKYL GROUP 10-30 CARBON ATOMS, ADDITIONAL MONOMER PLUS (B) ALIPHATIC DIOL

David Chantrill Spaulding, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 16, 1977, Ser. No. 796,914
Int. Cl.[2] C08L *5/00;* C08F *218/02, 218/14*
U.S. Cl. 260—17.4 SG 20 Claims

1. A composition of (A) an interpolymer of monomers comprising from about 40 to 87 weight percent of an olefinically unsaturated carboxylic acid monomer, 2 to 20 weight percent of (1) an acrylic ester monomer of the formula



where R′ is hydrogen, methyl or ethyl and R contains 10 to 30 carbon atoms and 5 to 30 weight percent of (2) at least one other acrylic or methacrylic nitrile, amide or ester, and (B) greater than about 30 weight parts per 100 of interpolymer of an aliphatic dial.

4,066,584

ALLOY FIBERS OF RAYON AND COPOLYMERS OF ACRYLIC AND METHACRYLIC ACIDS

Thomas C. Allen, and David B. Denning, both of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Aug. 11, 1975, Ser. No. 603,483
Int. Cl.[2] A61F *13/20;* C08L *1/02*
U.S. Cl. 260—17.4 CL 9 Claims

1. A highly absorbent cellulosic fiber containing in a physical admixture with cellulose from 2% to about 40% of an alkali metal salt or ammonium salt of a copolymer of acrylic acid and methacrylic acid based on the weight of cellulose, the ratio of acrylic acid to methacrylic acid in the copolymer being from 90:10 to 10:90 by weight.

4,066,585

PRINTING INKS AND PRINTING METHODS EMPLOYING THE SAME

Horst Schepp, Unna, and Manfred Drawert, Froendenberg, both of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Aug. 3, 1976, Ser. No. 711,147
Claims priority, application Germany, Aug. 5, 1975, 2534845
Int. Cl.[2] C08G *69/26*
U.S. Cl. 260—18 N 15 Claims

2. A solvent-free printing ink, solid at room temperature but molten at printing temperatures, said ink having a viscosity of not more than 0.5 Pas at printing temperatures and comprising a pigment and a thermoplastic binder having a softening point between 90° C. and 160° C., said binder comprising a synthetic resin having an average molecular weight between about 1500 and 3000 and being selected from the group consisting of polyamide resins and polyesteramide resins, said polyamide resins being the condensation product of approximately equivalent amounts of (1) an acid component comprising a dimerized fatty acid and a monocarboxylic acid and (2) an amine component comprising a diamine, and said polyesteramide resins being the condensation product of approximately equivalent amounts of (1) an acid component comprising a dimerized fatty acid and a monocarboxylic acid and (2) an amine component comprising a diamine and at least one member selected from the group consisting of diols and alkanolamines, said acid component (1) of said polyamide and polyesteramide resins optionally comprising codicarboxylic acids and cyclic acid anhydrides, the equivalence ratio of the combined dimerized fatty acid and optional co-dicarboxylic acid to the total monocarboxylic acid and optional cyclic acid anhydride being from 0.5:0.5 to 0.3:0.7.

4,066,586

POLYESTER-MODIFIED VINYL POLYMER AND PRODUCTION METHOD THEREOF

Tuneo Tanuma, and Teruo Yoshida, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed July 21, 1976, Ser. No. 707,351
Claims priority, application Japan, July 24, 1975, 50-90551
Int. Cl.[2] C09D *3/52, 3/66*
U.S. Cl. 260—22 CB 20 Claims

1. A process for producing a polyester-modified vinyl polymer for use in a high-solids coating composition, which comprises graft-polymerizing 97 to 50% by weight of at least one vinyl monomer selected from the group consisting of an acrylic monomer, styrene, a styrene derivative, acrylonitrile, acrylamide, vinyl chloride and vinyl acetate, in the presence of 3 to 50% by weight of a polyester having an oil length of 5 to 20%, an average molecular weight of 1,000 to 6,000, and an α,β -unsaturated dicarboxylic acid component content of 1 to 5% by weight on the polyester, by use of 5% by weight or more (based on monomeric component) of an azobisnitrile catalyst.

4,066,587

THERMOPLASTIC POLYESTER COMPOSITIONS CONTAINING POLYAMIDE ADDITIVES

Harold E. Mains; Frederick R. Williams, and William L. O'Brien, all of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Sept. 7, 1976, Ser. No. 720,555
Int. Cl.[2] C08G *63/02;* C08L *77/12*
U.S. Cl. 260—22 D 13 Claims

1. A method for improving the flow characteristics and rheological properties of thermoplastic polyester and copolyester resins which comprises incorporating therein 0.01% to 20% by weight of a polyamide having a number average molecular weight from about 5,000 to 50,000 obtained by the reaction of a high molecular weight aliphatic or cycloaliphatic dibasic acid containing from 18 to 52 carbon atoms and up to 30 weight percent, based on the total acid charge, of a short-chain, saturated, aliphatic dibasic acid containing from 2 to 13 carbon atoms with an aliphatic saturated diamine containing from 2 to 10 carbon atoms or a mixture of said diamines.

9. An improved resin composition comprising a thermoplastic polyester or copolyester resin and from 0.01 to 20% by weight, based on the weight of said resin, of a high molecular weight polyamide obtained by the reaction of a high molecular weight aliphatic or cycloaliphatic dibasic acid having from 18 to 52 carbon atoms and up to 30 weight percent, based on the total dibasic acid charge, of a short-chain, saturated, aliphatic dibasic acid containing from 2 to 13 carbon atoms with an aliphatic, saturated diamine containing from 2 to 10 carbon atoms or a mixture of said diamines, said polyamide having a number average molecular weight from about 5,000 to 50,000 a softening point in the range 100° C to 240° C and amine value less than three.

4,066,588

COLD-CURING BINDER FOR FOUNDRY SAND CORES AND MOLDS

Kyohei Funabiki; Noriaki Matsushima; Toshiyuki Tachikawa, and Kazuichi Ikeda, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Sept. 27, 1976, Ser. No. 727,327
Claims priority, application Japan, Oct. 3, 1975, 50-118805
Int. Cl.[2] B22C *1/22;* C08G *63/48, 71/04*
U.S. Cl. 260—22 TN 14 Claims

1. A cold-curing binder for foundry sand cores and molds which comprises:

a. a tall oil fatty acid-modified alkyd resin prepared from components comprising a polybasic acid, a polyhydric alcohol, and a mixture of tall oil fatty acid, having a fatty acid content of at least about 90%, and linseed oil in a weight proportion of tall oil fatty acid to linseed oil in the range of from about 50:50 to about 70:30,

b. a polyisocyanate, present in the amount of about 5 to about 40 percent by weight of resin, and

c. a curing accelerator.

4,066,589

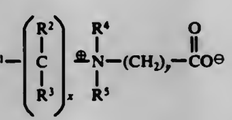
SOLVENT REPELLENT COMPLEXES

Nathaniel P. Langford, Somerset, Wis., and Edward W. Perrault, Roseville, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 23, 1975, Ser. No. 580,197
Int. Cl.[2] C08L *33/02*
U.S. Cl. 260—29.6 H 16 Claims

1. Complex formed by mixing together in an aqueous medium a water-soluble zwitterionic polymer selected from the group consisting of

a. polymers comprising carboxy betaines having the repeating formula



wherein R^1 is acrylate, methacrylate, acrylamide or methacrylamide; R^2 and R^3 are hydrogen or alkyl having 1 to 3 carbon atoms; R^4 and R^5 are hydrogen or alkyl having 1 to 6 carbon atoms; x and y are integers from 1 to 3 inclusive;

b. copolymers comprising monomers (1) and (2) shown below:

1. substituted acidic vinyl monomers of the formula

$CR^7H{=}CR^8CO_2H$

wherein R^7 is hydrogen or



and R^8 is hydrogen, chlorine or $-CH_3$; and

2. substituted basic vinyl monomers having the general formula

$CH_2{=}CR^6COQ$

wherein R^6 is hydrogen or $-CH_3$, and Q is an organic radical containing a basic nitrogen-containing group, wherein said acidic and basic functionalities are retained in the copolymer structure and wherein the mole ratio of basic monomer to acidic monomer in said copolymer is from 40/60 to 70/30, except where R^7 is



the mole ratio is 57/43 to 82/18, **with a fluorocarbon compound selected from the group consisting of**

a. $(R_f)_d{-}(W)_m{-}(A)_n$ wherein R_f is a monovalent fluorinated saturated non-aromatic aliphatic radical having 5 to 20 carbon atoms in the skeletal chain; W is a polyvalent linking radical free from functional groups which react with water; A is



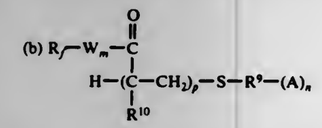


$-SO_3H$, $-OSO_3H$,

or $-OPO_3H_2$; d is one or two; m is zero or one, n is one or two, except when A is



m may be two, and when m is zero d is one, and salts thereof, said compound containing at least 40 percent by weight of fluorine derived by the R_f portion; and



wherein R_f, W, A and n are as defined above, R^9 is alkyl having 1 to 4 carbon atoms R^{10} is hydrogen or methyl, p is an integer from 2 to 4, inclusive, designating the same or different R_fW groups; and salts thereof said compound containing at least 40 percent by weight of fluorine derived from the R_f portion;

wherein the ratio of the amine equivalence of said zwitterionic polymer to the acid equivalence of said fluorocarbon is 1/1 to 150/1.

4,066,590

ETHYLENE-PROPYLENE ELASTOMERS AND ETHYLENE-PROPYLENE-DIENE ELASTOMERS WITH IMPROVED HEAT AND OIL RESISTANCE

Roger J. Eldred, Detroit; Stanley A. Iobst, Sterling Heights, and Ismat A. Abu-Isa, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1976, Ser. No. 714,027
Int. Cl.² C08L *91/00*
U.S. Cl. 260—28.5 A **5 Claims**

1. A high temperature and oil resistant elastomer composition comprising the peroxide-induced reaction product of, by weight,

100 parts of an elastomeric polymer selected from the group consisting of ethylene-propylene rubber and ethylene-propylene-diene rubber,

about 10 to 35 parts of a crosslinking monomer selected from the group consisting of trimethylolpropane trimethacrylate, triallyl isocyanurate, polyethylene glycol dimethacrylate and ethylene glycol dimethacrylate,

at least 6 parts of a chlorinated or brominated organic material that contains at least 30% of said halogen and is non-fugitive from said product at 350° F.,

about 0.025 to 0.055 equivalent per 100 parts of said polymer of a ditertiary butyl group hindered phenolic antioxidant that does not prevent said peroxide-induced reaction and 10 to 25 parts of zinc oxide,

said composition having a volume swell no greater than 130% when immersed in ASTM #3 oil at 150° C. for 70 hours (ASTM D-471-68) and having an ultimate elongation of about 90% or more after aging 168 hours at 177° V. (ASTM D-573-67).

4,066,591

WATER-REDUCED URETHANE COATING COMPOSITIONS

Roger L. Scriven, and Wen-Hsuan Chang, both of Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 2, 1975, Ser. No. 582,946
Int. Cl.² C08L *75/12*
U.S. Cl. 260—29.2 TN **33 Claims**

1. A non-sedimenting aqueous dispersion which is emulsifiable in the absence of added emulsifier of an ungelled polyurethane having a finely particulated dispersed phase of less than 10 microns which requires only mild agitation for dispersion formed by reacting in aqueous medium in which water is the principal ingredient:

A. NCO-containing polymer containing anionic salt groups having monovalent counter ions and having a salt group equivalent weight of 200 to 5000 being substantially free of highly active hydrogens, and having a viscosity of 50 to 10,000 centipoises, said polymer formed from:

1. an organic polyisocyanate and

2. an active hydrogen-containing material containing at least 2 active hydrogens per molecule,

said organic polyisocyanate and said active hydrogen-containing compound containing a total of not more than 1 gram-mole of compounds having a functionality of 3 or more per 500 grams of organic polyisocyanate and active hydrogen-containing material; the equivalent ratio of NCO in (1) to active hydrogen in (2) being at least 4/3; the anionic salt groups introduced into said NCO-containing polymer through the active hydrogen-containing material (2);

B. active hydrogen-containing material in which the active hydrogens are more reactive with NCO groups than water to form a polyurethane having an intrinsic viscosity less than 4.0 deciliters per gram; the ratio of active hydrogen groups in (B) to NCO groups in (A) being less than 2:1;

said aqueous dispersion containing at least 15 percent by weight aqueous medium based on total weight of ungelled polyurethane and aqueous medium of which at least 30 percent by weight of the aqueous medium is water with co-solvent constituting the remainder of the aqueous medium.

4,066,592

ZWITTERION-CONTAINING COMPOSITIONS

Marco Wismer, Gibsonia, and Joseph F. Bosso, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 167,476, July 29, 1971, Pat. No. 3,928,156, which is a continuation-in-part of Ser. No. 840,848, July 10, 1969, abandoned. This application July 25, 1975, Ser. No. 599,260
Int. Cl.² C25D *13/06*
U.S. Cl. 260—29.2 EP **8 Claims**

1. An ungelled, inherently water-dispersible, substantially epoxy group free, electrodepositable synthetic organic resin containing Zwitterions, said Zwitterions consisting of a quaternary ammonium base group and a carboxyl group which are derived from the reaction of an epoxy group-containing resin with an amino acid, solutions of said synthetic organic resin being substantially free of dissociated counter-ions.

4,066,593

WATER SOLUBLE WIRE ENAMELS

Thomas S. Czajka, Wheaton, and Richard P. Needham, Woodridge, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 23, 1975, Ser. No. 625,192
Int. Cl.² C08L *67/00, 79/08*
U.S. Cl. 260—29.2 E **5 Claims**

1. A water soluble wire enamel having a Class F thermal rating which is the reaction product of the ingredients comprising:

a. from 45 to 55 weight percent of a water soluble polyester resin which is the reaction product of the ingredients comprising from 25 to 35 weight percent terephthalic acid, from 5 to 15 weight percent trimellitic anhydride, from 10 to 15 weight percent adipic acid, from 25 to 35 weight percent neopentyl glycol, and from 5 to 10 weight percent tris 2-hydroxyethyl isocyanurate, said polyester resin being in the form of a 60 to 80 weight percent solution in an ether glycol;

b. from 3 to 5 weight percent of an ethanol-substituted amine;

c. from 35 to 50 weight percent water; and

d. from 1 to 2.5 weight percent of a triethanolamine titanate crosslinking agent.

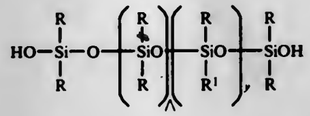
4,066,594

PROCESS FOR PREPARING A POLYSILOXANE

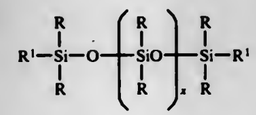
Richard E. Moeller, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 533,958, Dec. 18, 1974, Pat. No. 4,008,346. This application Aug. 4, 1976, Ser. No. 711,517
Int. Cl.² C08J *3/00*
U.S. Cl. 260—29.2 M **9 Claims**

1. A process for preparing a polysiloxane having the fromula:



or



wherein R is a monovalent hydrocarbon radical free of unsaturation; R^1 is a hydrocarbon radical having vinyl unsaturation; x and y are positive integers so that the silanol stopped polysiloxane has from 0.1 to 1% by weight of R^1 groups and the viscosity of the polymer ranges between 25,000 centipoises and 1,000,000 centipoises said process comprising:

a. homogenizing a mixture which consists essentially of:

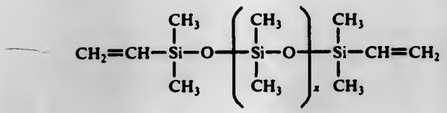
i. a compound of the formula $(R_2SiO)_4$ wherein R is a monovalent hydrocarbon free of unsaturation; or

ii. a compound of the formula:

$(RR^1SiO)_4$

wherein R is the same as hereinabove defined and R^1 is a hydrocarbon radical having vinyl unsaturation; and

iii. a benzene sulfonic acid compound of the formula:



wherein R^2 is an alkyl group of from 6–18 carbon atoms and;

iv. water;

b. heating the homogenized mixture of (a) to form said polysiloxane; and

c. adding a neutralizing amount of an alkanolamine to said mixture to neutralize said benzene sulfonic acid.

4,066,595

WATER-SOLUBLE DYE COMPOSITION

Hans-Henning Bunge, Suffern, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 11, 1975, Ser. No. 585,990
Int. Cl.² C08L *61/28*
U.S. Cl. 260—29.4 R **14 Claims**

1. A water-soluble composition comprising

a. 0.01% to 40% of a dye which is soluble in water-miscible solvents and insoluble solely in water;

b. 1.0% to 88% of a water-miscible solvent or mixture of solvents which is inert to said dye;

c. 0.1% to 89% of a water-soluble resin;

d. 10% to 98% water; and optionally, a basic compound to raise the pH of the solution to about 10.

4,066,596

AEROSOL DISPENSED LATEX PAINT AND PACKAGE CONTAINING THE SAME

David Stern, Roslyn, N.Y., assignor to Martin Paint & Chemical Corporation, Jamaica, N.Y.

Continuation-in-part of Ser. No. 168,916, Aug. 4, 1971, abandoned. This application Jan. 17, 1975, Ser. No. 541,850
Int. Cl.² C08J *3/20*; C09D *5/02, 9/04*
U.S. Cl. 260—29.6 R **5 Claims**

1. An aqueous polyvinyl acetate methyl acrylate copolymer emulsion paint for use with a pressurized container, wherein the paint is disposed within a collapsible piston housed within the pressurized container, a propellant vapor or gas of elevated pressure filling the space between the collapsible piston and the container, and acting against the bottom of the piston, said container having a valve communicating with the interior of the piston and through which the contents of the piston are discharged as the piston is compressed under the action of the propellant as the valve is opened, said valve being connected to a discharge nozzle, the polyvinyl acetate and methyl acrylate components of the copolymer being present in the proportion of 80:20, and wherein the paint comprises approximately 2–15% of a pigment suspended in approximately 98–85% of a vehicle comprising predominantly water and said copolymer, the copolymer constituting approximately 35% of the vehicle, said paint containing also small proportions of a surfactant and an anti-foam agent, and having a viscosity in the range of 10 to 60 sec., as measured on the No. 4 Ford cup (20 to about 209 cps.) at room temperature, said paint being discharged by the nozzle in the form of a spray from the collapsing piston on opening of the valve and substantially without foaming and thereby yielding a substantially uniform coating owing to the absence of the propellant in the paint.

4,066,597

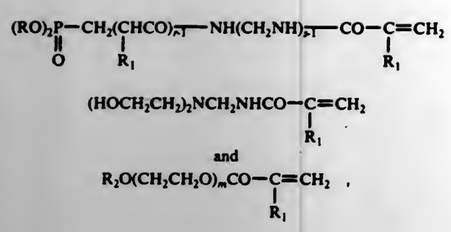
METHOD OF FINISHING SYNTHETIC ORGANIC FIBROUS MATERIAL, IN PARTICULAR OF PROVIDING IT WITH AN ANTISTATIC FINISH

Horst Jäger, Bettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 10, 1975, Ser. No. 639,312
Claims priority, application Switzerland, Dec. 20, 1974, 17038/74; Dec. 20, 1974, 17037/74; Dec. 20, 1974, 17036/74
Int. Cl.² C08F *220/58, 220/60*
U.S. Cl. 260—29.6 WB **11 Claims**

1. An aqueous or organic solution or emulsion for providing synthetic organic materials with an antistatic and dirt repellent finish containing 1-30 percent by weight of a composition consisting essentially of

a. 75 to 100 percent by weight of a copolymer having a molecular weight between about 2,000 and 50,000 of at least two monomers in a ratio of about 1:10 to 10:1 and of the formulae



(1)

(2)

or mixtures of such copolymers

wherein

R is straight-chain or branched alkyl of 1 to 8 carbon atoms,

R_1 is hydrogen or methyl,

R_2 is alkyl of 1 to 6 carbon atoms,

m is an integer from 6 to 15 and each of *r* and *s* is 1 or 2;

or said copolymer of at least two of (1), (2) and (3)

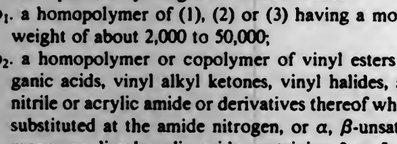
containing an additional monomer in a ratio of about 1:10 to 10:1 and selected from the group consisting of vinyl esters of organic acids, vinyl alkyl ketones, vinyl halides, acrylic nitrile or acrylic amide and derivatives thereof, which are substituted at the amide nitrogen and α, β-unsaturated monomor dicarboxylic acids containing 3 to 5 carbon atoms and esters thereof; and

b. 25 to 0 percent by weight of at least one of

b_1. a homopolymer of (1), (2) or (3) having a molecular weight of about 2,000 to 50,000;

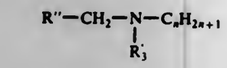
b_2. a homopolymer or copolymer of vinyl esters of organic acids, vinyl alkyl ketones, vinyl halides, acrylic nitrile or acrylic amide or derivatives thereof which are substituted at the amide nitrogen, or α, β-unsaturated mono- or dicarboxylic acids containing 3 to 5 carbon atoms or esters thereof, and having a molecular weight between about 2,000 and 50,000;

b_3. a compound of the formula

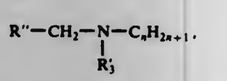


wherein R' is straight-chain or branched alkyl of 1 to 18 carbon atoms, R_1 is hydrogen or methyl, R_2' is hydrogen or C_nH_{2n+1} and *n* is an integer from 1 to 24; and

b_4. a compound of the formula

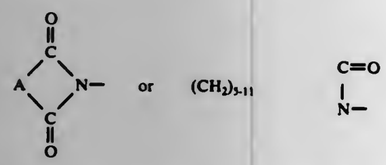


wherein R'' is



(5)

wherein A is $-CH_2CH_2-$, $-CH=CH-$ or



R_3' is hydrogen or C_nH_{2n+1} and *n* is an integer from 1 to 24.

4,066,598

ZINC ENRICHED LITHIUM SILICATE-LATEX COATING COMPOSITION

Ronald W. Beers, Spring, Tex., and Julian Lakritz, Edison, N.J., assignors to Matcote Company, Inc., Tex.

(2) **Division of Ser. No. 319,969, Dec. 29, 1972, Pat. No. 3,884,863, which is a continuation-in-part of Ser. No. 93,389, Nov. 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 708,785, Feb. 28, 1968, abandoned. This application Nov. 29, 1974, Ser. No. 528,526**

Int. Cl.² C08L *9/04, 9/08, 13/02;* C09D *5/10*

U.S. Cl. 260—29.7 S **7 Claims**

1. A homogeneous vehicle for a zinc-enriched, self-curing, water-resistant coating composition consisting essentially of:

a. between about 57 to 91 parts of an aqueous alkali-lithium silicate solution, said alkali and lithium silicates being employed in amounts sufficient to provide a molar ratio of X_2O, where X is selected from the group consisting of sodium, potassium, and quaternary ammonium, to lithium oxide to silicon dioxide, respectively, within the range from about 0.25 to 0.65 X_2O : 0.35 to 0.75 Li_2O : 2.5 to 4.5 SiO_2;

b. between 9 and 40 parts of a film-forming organic alkali stable latex of an interpolymer selected from the group consisting of interpolymers of acrylonitrile/butadiene/styrene, of styrene/butadiene/maleic acid, of styrene/butadiene/itaconic acid and of styrene/butadiene; and

c. between 0 and 3 parts of an alkali stable anionic surfactant.

6. A coating composition in accordance with claim 1 which comprises 20 to 33 parts by weight of a vehicle of claim 1, and 67 to 80 parts by weight of zinc dust.

4,066,599

COATING SYSTEM

Robert A. Zimmerman, 6601 Rockbrook, St. Louis, Mo. 63133

Filed May 12, 1975, Ser. No. 576,556

Int. Cl.² C08K *5/01, 5/49;* C08L *47/00, 75/04*

U.S. Cl. 260—30.6 R **13 Claims**

1. A liquid rubber precursor formulation adapted for reaction with a second formulation containing isocyanate groups to provide a moisture-proof barrier for a substrate, said liquid rubber precursor formulation comprising between about 12 and about 32% by weight of a hydroxyl terminated butadiene polymer, between about 2 and about 14% by weight of a polyether triol having a hydroxyl number of between about 300 and about 500, between about 0.08 and about 0.8% by weight of an organo-mercury catalyst, between about 2 and about 10% by weight carbon black, between about 2 and about 24% by weight of a low oil absorbency silica, between about 0.1% and about 1% by weight of fumed silica as a suspending agent for the low oil absorbency silica, between about 0.08 and about 2% by weight of a molecular sieve dessicant, up to about 8% by weight of an organic solvent selected from a group consisting of aromatic solvents, ketones, esters and glycol ethers, and lecithin in an amount sufficient to provide a formulation viscosity of not greater than about 20,000 cps at 27° C. and at which a reactive mixture prepared from said precursor formulation and said formulation can be readily sprayed onto a substrate.

7. A system adapted for the application of a moisture-proof barrier to a substrate comprising:

a first formulation containing between about 12 and about 32% by weight of a hydroxyl terminated butadiene polymer, between about 2 and about 14% by weight of a polyether triol having a hydroxyl number of between about 300 and about 500, between about 0.08 and about 0.8% by weight of an organo-mercury catalyst, between about 2 and about 10% by weight carbon black, between about 2 and about 24% by weight of a low oil absorbency silica, between about 0.1% and about 1% by weight of fumed silica as a suspending agent for the low oil absorbency silica, between about 0.08 and about 2% by weight of a molecular sieve dessicant, up to about 8% by weight of an organic solvent selected from the group consisting of aromatic solvents, ketones, esters and glycol ethers, and lecithin in an amount sufficient to provide a formulation viscosity of not greater than about 20,000 cps at 27° C. and at which a reactive mixture prepared from said first formulation and a second formulation containing isocyanate groups can be readily sprayed onto a substrate; and

a second formulation containing a urethane prepolymer derived from a polypropylene glycol ether polyol and toluene diisocyanate, containing between about 13 and 17% by weight free isocyanate groups;

the two formulations of said system being adapted for mixing to provide a reactive mixture for application to said substrate; said system comprising defined relative proportions of said formulations so as to provide a molar ratio of at least about 1.1 isocyanate groups per hydroxyl group in said reactive mixture, said first and second formulations being adapted for mixing to form said reactive mixture at the site of the substrate to be coated.

4,066,600

FRICTION-ACTIVATABLE ADHESIVE AND ARTICLES THEREOF

Wayne A. Pletcher, Roseville, and Roy Wong, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

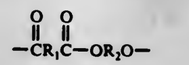
Filed Nov. 17, 1975, Ser. No. 632,573

Int. Cl.² C08K *5/12, 5/51;* C08L *67/02, 93/00*

U.S. Cl. 260—30.6 R **12 Claims**

7. An adhesive applicator stick comprising a mixture of

1. 25 to 95 parts by weight of a thermoplastic linear polyester having crystallizable ester units of the formula



wherein R_1 consists of the divalent radical remaining after removal of the carboxyl groups from one or more saturated aliphatic dicarboxylic acids and/or aromatic dicarboxylic acids, R_1 containing from 2 to 8 carbon atoms when it is an aliphatic radical and 6 to 13 carbon atoms when it is an aromatic radical, R_2 consists of the divalent radical remaining after removal of the hydroxyl groups from one or more saturated aliphatic diols containing from 2 to 12 carbon atoms, said polyester having a DTA melting temperature of from about 40° to 75° C. and an inherent viscosity of at least 0.2 dl/g at 25° C., as measured in a 0.5 g/dl solution of polymer in chloroform at 25° C.,

2. 5 to 50 parts by weight of a low molecular weight thermoplastic resin tackifier for the polyester selected from hydrocarbon resins, reaction products to hydroabietyl alcohol and toluene diisocyanate, bituminous asphalts, coal tar pitches, rosins, phenolic resins, chlorinated aliphatic hydrocarbon waxes and chlorinated polynuclear aromatic hydrocarbona, the phenolic resins being reaction products of one or more members of the class consisting of phenol itself, cresols, xylenols, p-tert-butylphenol and p-phenylphenol with one or more members of the class consisting of formaldehyde, acetaldehyde and furfuraldehyde, said tackifier having the ability to lower the melting temperature of the polyester and to raise its glass transition temperature,

3. 0 to 25 parts by weight of a plasticizer for the polyester selected from phthalates, phosphates and hydroabietyl alcohol, said plasticizer having the ability to lower the melting temperature and glass transition temperature of the polyester and to reduce its cohesive strength, the sum of (1), (2) and (3) being 100 parts by weight, said mixture being compatible and having

a. a softening temperature of at least about 40° C.,

b. a write on factor of at least about 0.06,

c. an open time of from about ½ to about 10 minutes,

d. peel adhesion in the open state of not less than about 50 grams per centimeter, and

e. peel adhesion in the closed state of not less than about 100 grams per centimeter.

4,066,601

OXADIAZOLE POLYMERS

Alexander Blackhall; Donald Lithgow Brydon, and John David Seddon, all of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 24, 1975, Ser. No. 634,751

Claims priority, application United Kingdom, Nov. 29, 1974, 51783/74

Int. Cl.² C08K *5/36*

U.S. Cl. 260—30.8 R **6 Claims**

1. A method for the production of a brominated, polyphenylene-1,3,4-oxadiazole solution having a viscosity above the minimum for subsequent effective extrusion, which comprises

a. forming a precursor solution of a polyphenylene-1,3,4-oxadiazole polymer by reacting at least one acid, selected from the group consisting of isophthalic acid and terephthalic acid, in oleum having a strength in the range 5 to 60%, with a compound selected from the group consisting of hydrazine and hydrazine salts in amounts such that the polymer has —COOH end groups making it capable of further polymerization, and the solution has a viscosity below the minimum for subsequent effective extrusion,

b. adding bromine to the precursor solution to brominate the polymer; and then

c. adding a compound selected from the group consisting of hydrazine and hydrazine salts to further polymerize the brominated polymer to an extent which effects an increase in the viscosity of the solution to or above the minimum for subsequent effective extrusion.

4,066,602

ABRASION RESISTANT ELASTOMERIC COMPOSITION

Michael A. Pellico, 3426 Jasmine, Los Angeles, Calif. 90034

Filed Oct. 12, 1976, Ser. No. 731,521

Int. Cl.² C08K *5/01, 5/02, 5/06, 5/07*

U.S. Cl. 260—30.8 R **11 Claims**

1. Abrasion resistant elastomeric compositions for filling, sealing and coating, comprising:

from about 10 to about 50 wt.% of an elastomeric block copolymer selected from the group consisting of polystyrene-polybutadiene-polystyrene copolymer, polystyrene-polyisoprene-polystyrene copolymer and mixtures of said copolymers, wherein the average molecular weight for each polystyrene block is from about 2,000 to about 100,000, and the average molecular weight for each of said polybutadiene and polyisoprene blocks is from about 25,000 to about 1,000,000;

from about 10 to about 40 wt.% of silica having a specific gravity from about 2.40 to about 2.66; and

a solvent for the elastomeric block copolymer to make up 100 wt.% of the composition, with the concentration of said solvent in said composition being at least about 20 wt.%.

4,066,603

SULFUR CONTAINING SILICONE ELASTOMER AND METHOD OF PREPARATION

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 3, 1976, Ser. No. 663,325

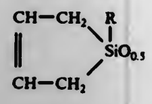
Int. Cl.² C08G *77/04*

U.S. Cl. 260—37 SB **19 Claims**

1. A composition curable to an elastomer comprising a material prepared by mixing

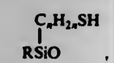
A. 5 to 95 weight percent based on the combined weight of (A) and (B) of a polydimethylsiloxane having a viscosity

of at least 0.3 Pa·s at 25° C. and being endblocked with a siloxy unit selected from the group consisting of methylphenylvinylsiloxy units, dimethylvinylsiloxy units and units of the formula

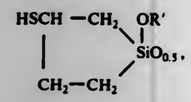


wherein R is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radicals,

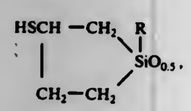
B. 5 to 95 weight percent based on the combined weight of (A) and (B) of a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, trimethylsiloxane units, units of the formula



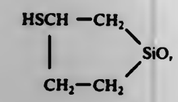
units of the formula



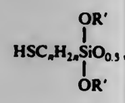
units of the formula



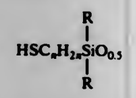
units of the formula



units of the formula



and units of the formula



wherein R is defined above, R' is methyl or ethyl and *n* has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of at least two sulfur containing siloxane units per molecule and no more than 16 weight percent —SH groups based on the weight of the mercaptoorganopolysiloxane, the molecular weight of the mercaptoorganopolysiloxane being at least 1,000, the amount of (A) and (B) being combined in weight ratios sufficient to provide a molar ratio of moles of —SH group in (B) per mole of C=C bond in (A) of 0.1:1 to 15:1,

C. 1.4 to 5.5 parts by weight organic peroxide based on 100 parts by weight of (A) and (B) combined.

4,066,604

BRANCHED POLYPHENYLENE-MICA COMPOSITES

Chen-Shen Wang, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 28, 1976, Ser. No. 736,389
Int. Cl.² C08K *3/34*
U.S. Cl. 260—37 R **10 Claims**

1. A high temperature resistant composite comprising from about 50 to 90 wt. % mica and from about 10 to 50 wt.% branched polyphenylene having at least about 8% by weight of its benzene ring structures bonded to three or more other benzene ring structures.

4,066,605

COMPOSITION FOR REHABILITATING SCORED AND MARRED SURFACES

La Vaughn R. McBride, 1017 Pacific Ave., Half Moon Bay, Calif. 94019; Jack D. Clark, 1708 Whipple Ave., Redwood City, Calif. 94062, and Dale Center, Box 123, Montara, Calif. 94037

Continuation of Ser. No. 688,294, May 20, 1976, abandoned, which is a continuation of Ser. No. 590,568, June 26, 1975, abandoned, which is a continuation of Ser. No. 279,889, Aug. 11, 1972, abandoned. This application Mar. 7, 1977, Ser. No. 774,684
Int. Cl.² C08L *00/00*
U.S. Cl. 260—37 EP **5 Claims**

1. A lubricative composition for restoring damaged areas of surfaces of scored cylinders and pistons and the like consisting essentially of a mixture of 10% to 90% of powdered molybdenum disulfide of particle size no larger than 60 microns and 90% to 10% of an epoxy resin adhesive that cures at temperatures of about 250° F. to 400° F., said resin being a glycidyl ether of bisphenol-A containing a curing agent and having a Brookfield viscosity of 400,000 cps at 75°.

4,066,606

MOULDING COMPOSITIONS INCLUDING AN UNSATURATED POLYESTER

Silvio Vargiu, Casatenovo (Como); Piero Paparatto, Milan; Beppino Passalenti, Lissone (Milan), and Antonio Parodi, Monza (Milan), all of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Oct. 20, 1976, Ser. No. 734,346
Claims priority, application Italy, Oct. 30, 1975, 28813/75
Int. Cl.² C08G *63/54, 63/68*
U.S. Cl. 260—40 R **10 Claims**

1. A granular molding composition suitable for injection molding comprising:

a. from 10 to 50% by weight of an unsaturated polyester consisting of the polycondensation product of a polyhydroxy alcohol selected from the group consisting of 2,2'-bis(4-hydroxycyclohexyl) propane and its halogenated derivatives, and an ethylenically unsaturated dicarboxylic acid selected from the group consisting of maleic and fumaric acids, having the following characteristics:
   — melting point (at the capillary) > 70° C
   — acid value (mg KOH/g) < 50
   — Gardner viscosity (at 25° C in 60 wt.% solution in styrene): from Y to Z_3

b. from 0.2 to 2% by weight of an organic peroxide which decomposes at a temperature above 70° C;

c. one or more inert fillers.

4,066,607

REINFORCED MOULDING COMPOSITION BASED ON THERMOPLASTIC POLYESTERS

Franz Breitenfellner, Bensheim; Lothar Buxbaum, Lindenfels, Odenwald, and Karl Leidig, Heppenheim, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 9, 1976, Ser. No. 703,712
Claims priority, application Switzerland, July 22, 1975, 9566/75
Int. Cl.² C08K *3/40*
U.S. Cl. 260—40 R **7 Claims**

1. A reinforced moulding composition which is based on a thermoplastic polyester and contains (a) a copolyester which is based on poly-1,4-butylene terephthalate and has a crystallisation temperature (T_C) of 35° to 70° C and an amount, which produces this T_C range, of one or more cocomponents which are selected from the group comprising orthophthalic acid, isophthalic acid, 4,4'-diphenylsulphonedicarboxylic acid, 2,2-bis-[4-(hydroxyethoxyphenyl)]-propane, 1,3-bis-hydroxyethyl-5,5-dialkyl-hydantoin, 1,3,3-trimethyl-5-carboxy-3-(p-carboxyphenyl)-indane and 1,4-cyclohexanedimethanol and (b) 2–60% by weight, relative to the total composition, of a reinforcing fibrous filler.

4,066,608

THREE COMPONENT STABILIZER SYSTEM FOR PROPYLENE POLYMERS CONTAINING GRAFTED ACRYLIC ACID WITH OR WITHOUT GLASS FIBER REINFORCEMENT

Robert A. van Brederode, Baytown, Tex., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Sept. 25, 1975, Ser. No. 616,769
Int. Cl.² C08K *7/14*
U.S. Cl. 260—42.18 **1 Claim**

1. A glass reinforced polyolefin composition comprising a major proportion of polyolefin and having outstanding resistance to oxidative degradation containing a synergistic stabilizer combination of

a. 0.15 to 0.25 wt. % of cyclic neopentanetetrayl bis(octadecylphosphite) and

b. 0.5 to 1.3 wt. % of a combination of distearyl thiodipropionate and

c. tris(3,5-di-t-butyl-4-hydroxybenzyl isocyanurate in a ratio of 3 or 4 :1.

4,066,609

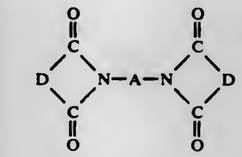
CROSSLINKED RESINS PREPARED FROM AN N,N'-BIS-IMIDE AND A SCHIFF BASE

Franklin P. Darmory, and Marianne DiBenedetto, both of Ardsley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 403,236, Oct. 3, 1973, Pat. No. 3,944,525.
This application Jan. 26, 1976, Ser. No. 652,941
Int. Cl.² C08G *69/29*
U.S. Cl. 260—42.18 **11 Claims**

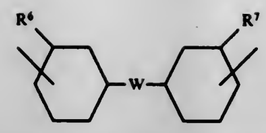
1. A glass fabric or fiber impregnated with a composition comprising

a. an unsaturated N,N'-bis-imide having the formula

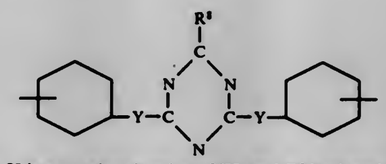


wherein

A is an alkylene group containing from 2 to 12 carbon atoms; cycloalkylene group containing from 4 to 6 carbon atoms, a xylylene group, an arylene group selected from phenylene, tolylene, biphenylene, naphthylene, a substituted arylene group of the formula

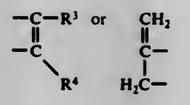


wherein W is sulfur, carbonyl, -NH, N-(lower)alkyl, -O-, -N-phenyl, sulfonyl, an alkylene group of from 1 to 3 carbon atoms, R^6 and R^7 are independent and each is hydrogen, chloro, or bromo, (lower)alkyl of from 1 to 5 carbon atoms, (lower)alkoxy containing from 1 to 5 carbon atoms, or a group having the formula



where Y is a covalent bond or -NH, and R^8 is phenyl, piperidino, hydrogen, diphenylamino or di(lower)alkyl amino;

D is a divalent radical containing olefinic unsaturation having the formula

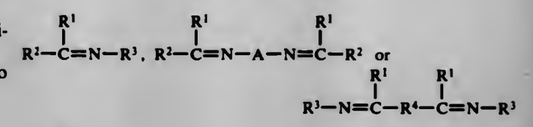


wherein

R^3 is hydrogen, methyl, bromo or chloro;

R^4 is hydrogen, methyl, bromo or chloro; and

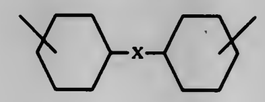
b. from about 0.5 to 0.166 mole equivalents per mole equivalent of (a) of a Schiff base having the formula



wherein

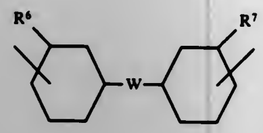
R^1 and R^2 independently is hydrogen, an alkyl group containing from 1 to 12 carbon atoms, an aryl group containing from 6 to 12 carbon atoms, an alkaryl group containing from 7 to 15 carbon atoms, an aralkyl group containing from 7 to 15 carbon atoms, chlorophenyl, alkoxyphenyl, said alkoxy containing from 1 to 5 carbon atoms, or together with the carbon to which they are attached from a monocyclic ring containing 5 to 6 carbon atoms, with the proviso that only one of R^1 or R^2 may be hydrogen at the same time; ; R^3 is an alkyl group containing from 1 to 12 carbon atoms, an aryl group containing from 6 to 12 carbon atoms, an alkaryl group containing from 7 to 15 carbon atoms, an aralkyl group containing from 7 to 15 carbon atoms, chlorophenyl, alkoxyphenyl, said alkoxy containing from 1 to 5 carbon atoms, cyclohexyl or cyclopentyl;

R^4 is an alkylene group containing from 2 to 12 carbon atoms, phenylene, tolylene, biphenylene, naphthylene, or an arylene group having the formula

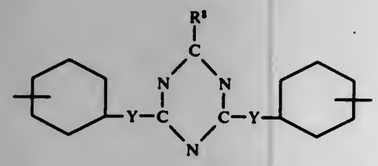


wherein X is, -S-, -O-, NH, N-phenyl, sulfonyl, or an alkylene group containing from 1 to 3 carbon atoms; and

A is an alkylene group containing from 2 to 12 carbon atoms; cycloalkylene group containing from 4 to 6 carbon atoms, a xylylene group, an arylene group selected from phenylene, tolylene, biphenylene, naphthylene, a substituted arylene group of the formula



wherein W is sulfur, carbonyl, -NH, -N(lower)alkyl, -O-, -N-phenyl, sulfonyl, an alkylene group of from 1 to 3 carbon atoms, R^6 and R^7 are independent and each is hydrogen, chloro, or bromo, (lower)alkyl of from 1 to 5 carbon atoms, (lower)alkoxy containing from 1 to 5 carbon atoms, or a group having the formula



wherein Y is a covalent bond or -NH, and R^8 is phenyl, piperidino, hydrogen, diphenylamino or di(lower)alkyl amino.

4,066,610

STABILIZED PIGMENTED POLYOLEFIN COMPOSITIONS

Kornel Dezso Kiss, Yonkers, N.Y.; John Leslie Hugh Allan, Glen Rock, and Marvin Michael Fein, Westfield, both of N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed July 14, 1976, Ser. No. 705,233
Int. Cl.² C08K *5/22*
U.S. Cl. 260—42.21 **17 Claims**

1. The method of reducing the detrimental effect of a copper phthalocyanine pigment on the stability of a polyolefin resin pigmented with said copper phthalocyanine, which comprises: including in the pigmented resin from about 0.01 to about 10 percent of at least one metal chelating agent based on the weight of the polyolefin resin.

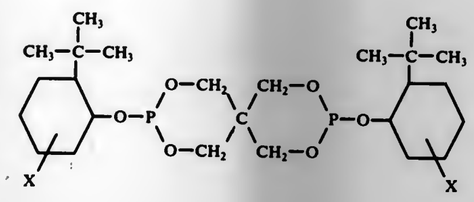
4,066,611

STABILIZED POLYCARBONATE COMPOSITION

Robert Jay Axelrod, Glenmont, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed June 23, 1976, Ser. No. 698,807
Int. Cl.² C08G *63/62*; C08K *5/52, 5/54*
U.S. Cl. 260—45.8 A **9 Claims**

1. A stabilized polycarbonate composition comprising in admixture, an aromatic carbonate polymer and a stabilizing amount of a cyclic diphosphite characterized by the following general formula:



wherein X is selected from the group consisting of lower alkyl of 1 to 6 carbon atoms; aryl, alkaryl and aralkyl of 6 to 20 carbon atoms and halogen.

4,066,612

Patent Not Issued For This Number

4,066,613

METHOD OF PREPARING HOMOGENEOUS THERMOSETTING POWDER PAINT COMPOSITIONS

Stephen Chung-Suen Peng, Rochester, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 389,845, Aug. 20, 1973, abandoned. This application Nov. 5, 1975, Ser. No. 629,160
Int. Cl.² C08J *3/14*
U.S. Cl. 260—42.54 **22 Claims**

1. A method of preparing a powder paint composition comprising:

A. passing a liquid paint composition comprising a solution of

1. a copolymer containing crosslinkable functional groups and having a glass transition temperature in the range of 40° C to 90° C and a number average molecular weight of between about 1,000 and about 15,000;
2. pigment; and
3. inert solvent through an evaporating zone comprising a tortuous path of relatively narrow cross-section, elongated in a direction lateral to the direction of flow of said solution through said zone;

B. heating said solution while it is confined within said evaporating zone to a temperature

1. above the melting point of said copolymer, but below the point at which degradation occurs;
2. above the temperature at which said inert solvent begins to vaporize

thus inducing turbulent flow of said solution within said evaporating zone and thereby maintaining an intimate homogeneous mixture of the vapors of the volatile components of said solution and dispersed particles of nonvolatile components of said solutios;

C. passing said homogeneous mixture from said evaporating zone into a separating zone and, while maintaining the temperature within said separating zone above the melting point of said copolymer, causing said solvent vapor to be removed and allowing said nonvolatile components to collect in a molten state;

D. removing said nonvolatile components from said separating zone;

E. cooling said nonvolatile components to form a solid material; and

F. pulverizing said solid material to form a uniformly pigmented powder.

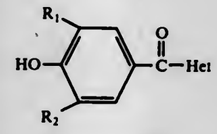
4,066,614

HETEROCYCLICAMIDES OF HINDERED 3,5-DIALKYL-4-HYDROXYBENZOIC ACIDS AND USE AS LIGHT STABILIZERS IN POLYOLEFINS

John Christian Oppelt, Somerville, and Peter Vincent Susi, Middlesex, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 30, 1974, Ser. No. 537,154
Int. Cl.² C07D *295/18*; C08K *5/34, 5/35, 5/47*
U.S. Cl. 260—45.8 NZ **10 Claims**

5. A polyolefin stabilized against the deteriorating effects of light by having incorporated therein an effective amount of a light stabilizer of the formula:



wherein R_1 and R_2 are each branch-chain alkyl of 3 to 8 carbon atoms and -Het is a nitrogen-containing heterocyclic moiety attached to the carbonyl carbon atom through a heterocyclic nitrogen.

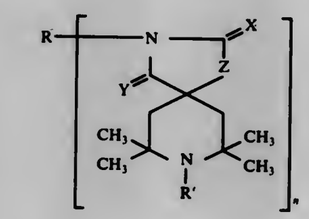
4,066,615

POLYMER COMPOSITIONS CONTAINING PIPERIDINE DERIVATIVES AS STABILIZERS

Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Toshimasa Toda; Eiko Mori; Hideo Horiuchi; Susumu Higashida; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Hisayou Ohsawa, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 414,281, Nov. 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 339,772, March 12, 1973, Pat. No. 3,941,744, which is a division of Ser. No. 258,392, May 31, 1972, abandoned. This application Apr. 11, 1975, Ser. No. 567,129
Claims priority, application Japan, June 5, 1971, 46-39630
The portion of the term of this patent subsequent to Mar. 2, 1993, has been disclaimed.
Int. Cl.² C08K *5/34, 5/35*
U.S. Cl. 260—45.8 NT **15 Claims**

1. A synthetic polymer composition stabilized against photo- and thermal deterioration wherein there is incorporated, in a sufficient amount to prevent said deterioration, a compound having the formula



(I)

wherein

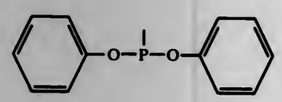
R' represents
- an alkyl group of 1 to 20 carbon atoms,
- a hydroxyalkyl group,
- an alkenyl group having from 3 to 4 carbon atoms,
- a 2-propynyl group,
- a cyanoalkyl group,
- an alkoxyalkyl group,
- an alkenyloxyalkyl group,
- an aryloxyalkyl group,
- an alkylthioalkyl group,
- an epoxyalkyl group,
- an acyloxyalkyl group,
- an alkoxycarbonylalkyl group,
- an aralkyl group,
- 2-hydroxy-2-phenylethyl,
- a 2-acyloxy-2-phenylethyl group having 10 to 20 carbon atoms,
- an acyl group,
- an alkoxycarbonyl group,
- an aralkyloxycarbonyl group,
- an amino group,
- an acylamino group,
- an alkylamino group, or
- the nitroso group;

X represents
- an oxygen atom, or
- a sulfur atom;

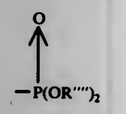
Y represents
- an oxygen atom,
- a sulfur atom or
- a group of the formula =N—R'' in which
  - R'' is a hydrogen atom,
    - a methyl group,
    - an allyl group,
    - 2-propynyl group,
    - 2-hydroxyethyl group,
    - 2-methoxyethyl group, or
    - a benzyl group;

Z represents

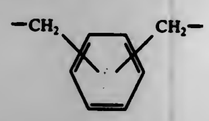
an oxygen atom, or
a group of the formula =N-R''' in which
R''' is a hydrogen atom,
an alkyl group having 1 to 4 carbon atoms,
an allyl group,
2-propynyl group,
2-hydroxyethyl group,
an ethoxymethyl group,
2-vinyloxyethyl group,
2-phenoxyethyl group,
2-acetoxyethyl group,
2-benzyloxyethyl group, or
a benzyl group;
n is an integer of 1 through 4 inclusive; and
R represents when n is 1, an alkyl group of 1 to 20 carbon atoms,
a hydroxyalkyl group,
an alkenyl group having from 3 to 4 carbon atoms,
a 2-propynyl group,
a cyanoalkyl group,
an alkoxyalkyl group,
an alkenyloxyalkyl group,
an aryloxyalkyl group,
an alkylthioalkyl group,
an epoxyalkyl group,
an acyloxyalkyl group,
an alkoxycarbonylalkyl group,
an aralkyl group,
2-hydroxy-2-phenylethyl group,
a 2-acyloxy-2-phenylethyl group having 10 to 20 carbon atoms,
a 2,3-epoxypropyloxycarbonylalkyl group,
an aryloxycarbonylalkyl group,
an aryl group of 6 to 10 carbon atoms,
a halogen or alkyl substituted phenyl or naphthyl group,
a cycloalkyl group,
an alkoxycarbonyl group,
an aralkyloxycarbonyl group,
a dialkoxyphosphine group,
the diphenoxyphosphine group of the formula



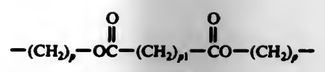
or a group of the formula



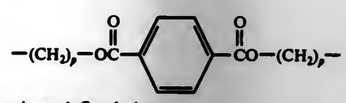
$(OR'''')_2$ in which R'''' is an alkyl group of from 1 to 8 carbon atoms, or a phenyl group;
when n is 2,a polymethylene group of 1 to 10 carbon atoms,
a group of the formula $-(CH_2)_p-CH=CH-(CH_2)_p-$ in which p is an integer of 1 through 8 inclusive and the p's may be the same or different,
an arylene group having 6 to 7 carbon atoms,
a xylylene group of the formula



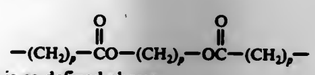
an alkylenediphenylene group having from 13 to 15 carbon atoms,
a bis-(alkoxycarbonyl)alkylene group of the formula



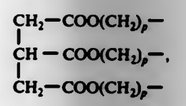
in which p is as defined above and p_1 is an integer of zero through 8 inclusive,
a group of the formula



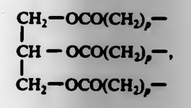
in which p is as defined above,
an alkylene-bis-(oxycarbonylalkyl)group of the formula



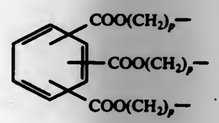
in which p is as defined above,
a dialkylene ether group or
a diphenylene ether group;
when n is 3, an alkanetriyl group,
a tris-(alkoxycarbonyl)-alkanetriyl group of the the formula



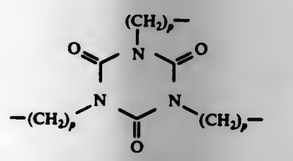
an alkanetriyl-tris-(oxycarbonylalkyl) group of the formula



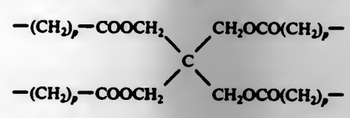
a group of the formula



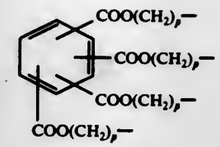
or a group of the formula



in which p is an integer of 1 through 8 inclusive and the p's may be the same or different, and when n is 4, an alkanetetrayl group, a tetrakis-(alkoxycarbonyl)alkanetetrayl group, an alkane-tetrayl-tetrakis(oxycarbonylalkyl)group of the formula



or a group of the formula



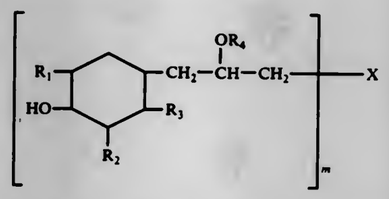
in which p = 1 to 8.

4,066,616
HYDROXYARYL HYDANTOINS AND THEIR USE AS STABILIZERS

Hanns Lind, Liestal, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 452,763, March 19, 1974, Pat. No. 3,956,298. This application Mar. 8, 1976, Ser. No. 664,451
Int. Cl.² C07D *233/78;* C08K *5/34*
U.S. Cl. 260—45.8 NT 10 Claims

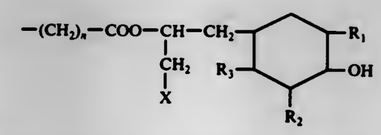
1. A compound of the formula



wherein *m* is an integer from 1 to 2 and R_1 denotes an alkyl group with 1 to 8 carbon atoms, a cycloalkyl group with 6 to 8 carbon atoms or an aralkyl group with 7 to 9 carbon atoms, R_2 denotes hydrogen, an alkyl group with 1 to 8 carbon atoms, cycloalkyl group with 6 to 8 carbon atoms or an aralkyl group with 7 to 9 carbon atoms, R_3 denotes hydrogen or a methyl group, R_4 denotes hydrogen or a

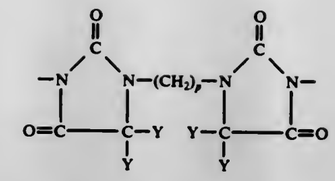


group, R_5, if *m* is 1 or 2, is an alkyl group with 1 to 17 carbon atoms, a cyclohexyl group, a phenyl group or phenyl substituted by halogen, hydroxyl groups, alkyl groups with 1 to 4 carbon atoms or alkoxy groups with 1 to 18 carbon atoms or an aralkyl group which can be substituted by alkyl and/or hydroxyl groups in the aromatic radical, and, if *m* is 1, is a group



X is selected from the group consisting of hydantoin, 5,5-dimethylhydantoin, and alkylene-bis-hydantoin, said hydantoin being bonded to the rest of the molecules via the nitrogen in position 3, and *n* denotes an integer from 2 to 8.

5. A compound of claim 1, wherein *m* is 2, R_1 and R_2 each is a tertiary butyl group, R_3 and R_4 are hydrogen, X is a group



where
Y is an alkyl group with 1 to 4 carbon atoms and *p* is an integer from 1 to 8.

4,066,617
STABILIZED POLY(ALKYLENE TEREPHTHALATES)

Herbert L. Rawlings, and Arthur L. Baron, both of New Martinsville, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 642,841, Dec. 22, 1975, abandoned. This application Aug. 23, 1976, Ser. No. 716,601
Int. Cl.² C08K *5/15*
U.S. Cl. 260—45.8 A 14 Claims

1. A stabilized polymeric molding material comprising:
a poly(alkylene terephthalate); and,
a stabilizing amount of a neutral ester of phosphorous acid with at least one oxetane group.

4,066,618
FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1973, Ser. No. 429,644
Int. Cl.² C08K *5/09*
U.S. Cl. 260—45.85 T 7 Claims

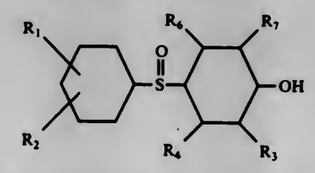
1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a flame retardant amount of an additive which is the metal salt of a halogenated non-aromatic carboxylic acid, wherein the metal salt is selected from the group consisting of alkali metals and alkali earth metals, and mixtures thereof, and the halogen is selected from the group consisting of bromine and chlorine and mixtures thereof, and fluorine, provided, however, that when fluorine is used, the carboxylic acid is a dicarboxylic acid.

4,066,619
4-HYDROXYDIPHENYL SULFOXIDE COMPOSITIONS

Dwight William Chasar, Northfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 2, 1976, Ser. No. 737,953
Int. Cl.² C08K *5/41*
U.S. Cl. 260—45.95 C 10 Claims

1. A polyolefin containing a stabilizing amount of a 4-hydroxydiphenyl sulfoxide of the formula



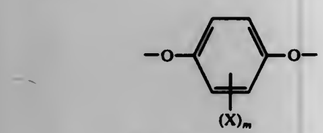
wherein R_1 is hydrogen, R_2 is a lower alkyl or halogen, wherein R_3 is hydrogen or a lower alkyl from one to 6 carbon atoms, R_4 is hydrogen or lower alkyl, R_6 is hydrogen, lower alkyl or alkoxy containing from 1 to 6 carbon atoms and R_7 is hydrogen or lower alkyl from 1 to 6 carbon atoms.

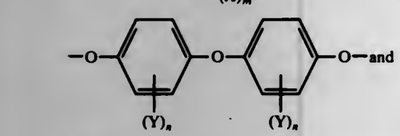
4,066,620
COPOLYESTER CAPABLE OF FORMING ANISOTROPIC MELT AND SHAPED ARTICLES THEREOF

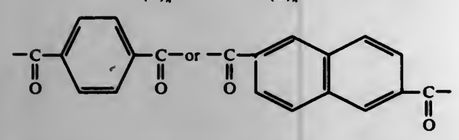
Jacob John Kleinschuster, Wilmington, and Terry Carl Pletcher, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 1, 1975, Ser. No. 601,074
Claims priority, application Sweden, Apr. 29, 1975, 7504996
Int. Cl.² C08G 63/18, 63/66
U.S. Cl. 260—47 C **13 Claims**

1. A fiber-forming melt-spinnable copolyester capable of forming an anisotropic melt consisting essentially of units of the formula:

I 

II 

III 

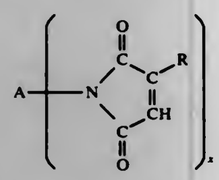
wherein X is selected from the group of chloro and methyl; *m* is 1 or 2; Y is methyl; *n* is 0 or 1; the mol ratio of formula I units to formula II units is within the range of from about 85/15 to 60/40.

4,066,621
CURABLE MIXTURES BASED ON POLYIMIDES OF UNSATURATED DICARBOXYLIC ACIDS AND INDOLE COMPOUNDS

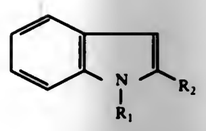
Albrecht Müller, Darmstadt, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 2, 1975, Ser. No. 618,994
Claims priority, application Switzerland, Oct. 10, 1974, 13625/74
Int. Cl.² C08G 73/12
U.S. Cl. 260—47 UA **10 Claims**

1. A curable composition of matter which comprises
a. polyimides of the formula III

(III) 

in which A denotes a *x*-valent organic radical with 2 to 30 carbon atoms, R denotes hydrogen or methyl, and *x* denotes the number 2 or 3;
b. indole or indole derivatives of the general formula II

(II) 

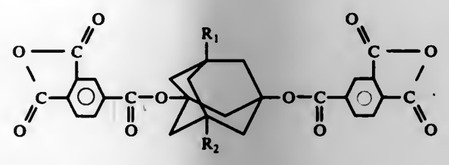
in which R_1 denotes hydrogen, alkyl with 1 to 4 carbon atoms or acyl with 2 to 5 carbon atoms, and R_2 denotes hydrogen or alkyl with 1 to 4 carbon atoms; and the ratio of components (a) and (b) being chosen to provide 0.005 to 1.0 mol of indole derivative (b) of formula II per each 1 equivalent of imide group in component (a).

4,066,622
POLYAMIDE ACIDS AND POLYESTERIMIDES FROM 1,3-ADAMANTYLENE-BIS-TRIMELLITATE DIANHYDRIDES

Allen Feinstein, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 597,339, July 21, 1975, Pat. No. 3,976,665.
This application Feb. 12, 1976, Ser. No. 657,442
Int. Cl.² C08G 73/16
U.S. Cl. 260—47 CP **8 Claims**

1. As a composition of matter, a polyamide acid formed by reacting about equimolar amounts of a dianhydride with a diamine at a temperature below 500° F., said dianhydride having the general formula



wherein R_1 and R_2 are individually selected from the group consisting of hydrogen, an alkyl radical, and an aryl radical, and said diamine having the general formula

$$H_2N-R_3-NH_2$$

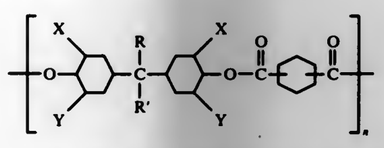
wherein R_3 is selected from the group consisting of alkylene and arylene groups.

4,066,623
INVERSE INTERFACIAL POLYMERIZATION FOR PREPARING CERTAIN HALOGENATED AROMATIC POLYESTERS

Michael M. Besso, West Orange, and Lowell Saferstein, Edison, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 26, 1976, Ser. No. 735,648
Int. Cl.² C08G 63/18, 63/24, 63/66
U.S. Cl. 260—47 C **23 Claims**

1. A process for preparing a halogenated aromatic polyester of the recurring structural formula



where X which may be the same or different is chlorine or bromine, Y which may be the same or different is hydrogen, chlorine or bromine, R and R' may be the same or different and

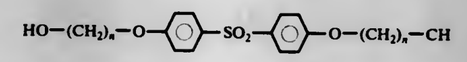
represent lower alkyl groups, hydrogen, or together constitute a cyclic hydrocarbon group, and *n* equals at least 13, by the inverse interfacial polymerization of a halogenated bisphenol and isophthaloyl chloride, terephthaloyl chloride or mixtures thereof which comprises:
I. providing an organic phase comprising
a. an organic solvent,
b. a phthaloyl chloride or mixtures thereof, and
c. a catalytic amount of a phase transfer catalyst;
II. providing an aqueous phase comprising
a. an aqueous solvent immiscible with said organic solvent and capable of dissolving an alkali salt of said halogenated bisphenol,
b. an alkali salt of said halogenated bisphenol, and
c. a base in amounts sufficient to provide a pH of at least 8 in said aqueous solution,
III. adding the aqueous phase to the organic phase over a period of time of not less than about 20% of the total polymerization time and in a manner sufficient to sustain the uniform availability of phase transfer catalyst for reaction with the alkali salt of the bisphenol during the polymerization reaction thereby providing a polyester having a low molecular weight fraction of not greater than about 3% by weight of the polyester;
IV. recovering the resulting polyester product.

4,066,624
POLYESTERS OF NAPHTHALENE CARBOXYLIC ACIDS AND HYDROXY ALKOXYDIPHENYL SULFONES

Shoji Kawase; Takatoshi Kuratsuji; Hiroo Inata; Kazuyoshi Suzuki, and Takeo Shima, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jan. 21, 1975, Ser. No. 542,793
Claims priority, application Japan, Jan. 25, 1974, 49-10078
Int. Cl.² C08G 63/18, 63/66, 63/68
U.S. Cl. 260—49 **8 Claims**

1. Polyesters having a reduced viscosity, as measured on an o-chlorophenol solution in a concentration of 1.2 g/dl at 35° C. of at least 0.5 which comprises (A) a difunctional carboxylic acid component containing at least 50 mol% of a naphthalene dicarboxylic acid and/or its lower alkyl ester or aryl ester, (B) a diol component containing an aromatic group and at least 50 mol% of said diol component being a 4,4'-bis-(ω-hydroxyalkoxy)diphenylsulfone of the general formula



wherein *n* is an integer of 2 to 6, and (C) is a diol component of the general formula

HO—R—OH

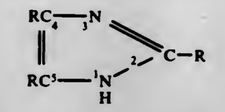
wherein R is an aliphatic or alicyclic hydrocarbon group containing 2 to 12 carbon atoms,
said polyester obtained by heat polymerizing, while distilling off the excessive of the component (C) out of the reaction system at a molar ratio of component (B) to component (A) of 0.05–1:1 and a molar ratio of the sum of components (B) and (C) to component (A) of 1.1–3.0:1.

4,066,625
UNITARY CURABLE RESIN COMPOSITIONS

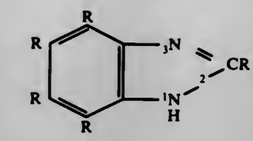
Justin C. Bolger, Needham, Mass., assignor to Amicon Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 635,394, May 2, 1967, abandoned, and a continuation-in-part of Ser. No. 736,605, June 13, 1968, abandoned, and a continuation of Ser. No. 53,304, July 8, 1970, abandoned. This application Jan. 24, 1973, Ser. No. 326,560
Int. Cl.² C08G 2/30
U.S. Cl. 260—59 R **31 Claims**

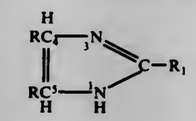
1. A curing agent suitable for use with epoxy resin systems comprising the solid thermoplastic reaction product of an epoxy resin containing a plurality of oxirane groups and an imidazole compound selected from

(a) 

wherein R is hydrogen, alkyl, alkenyl, aryl, or halo;

(b) 

wherein R is defined as above;

(c) 

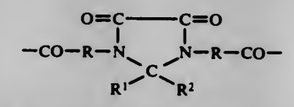
wherein R is defined as above and R_1 is alkyl, alkenyl, aryl, or halo; and
d. mixtures of such compounds, the ratio of oxirane groups in the epoxy resin to the molecules of imidazole compound being between 1:1 and 2:1, said reaction product having a melting point from about 70° C. to about 140° C.

4,066,626
LINEAR POLYESTERS BASED ON HETEROCYCLIC DICARBOXYLIC ACIDS

Hans Herzog, Badenweiler; Lothar Buxbaum; Thomas Kainmuller, both of Lindenfels, Odenwald, all of Germany, and Jürgen Habermeier, Pfeffingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 20, 1976, Ser. No. 678,573
Claims priority, application Switzerland, Apr. 23, 1975, 5203/75; Feb. 12, 1976, 1707/76
Int. Cl.² C08G 63/68
U.S. Cl. 260—75 N **12 Claims**

1. A linear thermoplastic polyester with a relative viscosity of 1.2 to 3, measured at 30° C in a 1% solution in a solvent consisting of equal parts of phenol and tetrachloroethane, and having a structural formula consisting of 50 molar percent of radicals derived from the dicarboxylic acids of components (a) plus (b) and 50 molar percent of radicals derived from the diols of component (c), which consists essentially of
a. 5 to 50 molar percent of dicarboxylic acid radicals of formula I

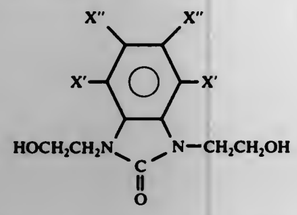
(I) 

wherein R represents alkylene of 1 to 2 carbon atoms;
alkylene of 1 to 2 carbon atoms substituted with alkyl of 1 to 6 carbon atoms; cyclohexylene, phenylene or benzylene, the methylene group of which is attached to the nitrogen atom; and
each of R^1 and R^2 represents hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 5 ring members or phenyl; or
R^1 and R^2 together represent $-(CH_2)_n-$, in which *n* is 4, 5,

6 or 7, and if R is phenylene, R^1 represents hydrogen and R^2 represents alkyl of 1 to 18 carbon atoms or cycloalkyl of 5 to 8 ring members;

b. 0 to 45 molar percent of dicarboxylic acid radicals derived from the acids selected from the group consisting of terephthalic acid, isophthalic acid, 2,6-naphthalenedicarboxylic acid, 4,4'-diphenylsulfone-dicarboxylic acid and alkanedioic acids of 6 to 12 carbon atoms; and

c. 50 molar percent diol radicals of at least one diol derived from the diols selected from the group consisting of the alkylene diols of 2 to 10 carbon atoms; 1,4-cyclohexanediol, 1,4-bis-(hydroxymethyl)cyclohexane, 1,1'-methylene-bis [3-(2-hydroxyethyl)-5,5-dimethylhydantoin] and a diol of the formula II



wherein X' and X'' represent hydrogen, chlorine or bromine, or X' represents hydrogen and X'' represents chlorine or bromine.

4,066,627

PRODUCTION OF POLYESTERS

Willem F. H. Borman, and Eugene P. Reilly, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 336,704, Feb. 28, 1973, abandoned. This application July 22, 1976, Ser. No. 707,708

Int. Cl.² C08G *63/18, 63/34*

U.S. Cl. 260—75 M **7 Claims**

1. A process for the preparation of a linear poly(1,4-butylene terephthalate) resin, said process comprising:

a. heating at a temperature in the range of from about 150° to about 300° C. a reaction mixture comprising an excess of 1,4-butanediol, dimethyl terephthalate and terephthalic acid, the proportions of the reactants satisfying the following equation:

$$\frac{\text{No. of moles of 1,4-butanediol}}{\text{No. of moles of TA}} = 1.25 \text{ to } 2.0$$

(95 - 75 mole % DTA + 5 – 25 mole % TPA)

wherein TA is the terephthalate mixture, DAT is dimethyl terephthalate and TAP is terephthalic acid; and

b. removing the excess 1,4-butanediol and methanol and water byproducts until a high molecular weight resin is formed.

4,066,628

OXAZOLIDONE CATALYST

Kaneyoshi Ashida, Hiratsuka, Japan; Kurt C. Frisch, Grosseille, and Panagiotis Kordomenos, Detroit, both of Mich., assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Aug. 2, 1976, Ser. No. 710,607

Int. Cl.² C08G *59/14*

U.S. Cl. 260—77.5 R **7 Claims**

1. A process for preparing oxazolidones which comprises reacting an organic isocyanate with an epoxide in the presence of from 0.001 to 5 weight percent, based on the reactants, of a catalyst selected from the group consisting of ZnR_2, $Zn(OCOR)_2$, ZnX and AlR_3 wherein R is an alkyl group having 1 to 12 carbon atoms and X is an organic bidentate group.

4,066,629

PROCESS FOR PREPARING CARBODIIMIDES UTILIZING A PHOSPHONIUM SALT CATALYST

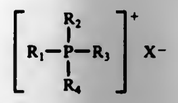
Robert Edelman, Staten Island, N.Y., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 28, 1976, Ser. No. 736,641

Int. Cl.² C08G *18/16*; C07C *119/055*; C08G *18/14*

U.S. Cl. 260—77.5 R **14 Claims**

1. A process for preparing organic carbodiimides from organic isocyanates having no active hydrogen containing substituents which are reactive with the isocyanate group which comprises heating said organic isocyanates, under anhydrous conditions and at a reaction temperature of about 155° to about 215° C, together with about 0.1 to about 10 mole percent based on isocyanate concentration of a phosphonium salt catalyst having a boiling point above the reaction temperature utilized and having the formula:



wherein R_1, R_2, R_3 and R_4 may be the same or different and represent alkyl groups of 1 to 8 carbon atoms, cycloalkyl, aryl, aralkyl, and alkaryl and their derivatives or two of said groups together may constitute a cyclic hydrocarbon, and X represents a halogen.

4,066,630

END CAPPED POLYALKYLENE CARBONATES HAVING IMPROVED THERMAL STABILITY

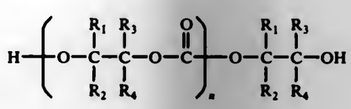
Dale D. Dixon, Kutztown; Michael E. Ford, Center Valley, and Gerald J. Mantell, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 10, 1977, Ser. No. 757,909

Int. Cl.² C08G *63/62*

U.S. Cl. 260—77.5 D **15 Claims**

1. A process for improving the thermal stability of a normally solid polycarbonate having substantially alternating epoxide and carbon dioxide units and having a plurality of free hydroxyl groups represented by the formula:



wherein:

R_1 is hydrogen, a halomethyl group, or a hydrocarbyl group having from 1 to 6 carbon atoms;

R_3 is hydrogen, a halomethyl group, or a hydrocarbyl group having from 1 to 6 carbon atoms;

R_2 and R_4 are hydrogen or a hydrocarbyl group having from 1 to 6 carbon atoms;

R_1, R_2, R_3 and R_4 are combined together constituting a carboxylic ring of from 4 to 7 carbon atoms; and

n is a number from about 250–6,500;

which comprises end-capping at least a portion of the free hydroxyl groups of said polycarbonate by reacting said hydroxyl groups with a hydroxyl reactive organic compound having the ability to replace the active hydrogen atom on said hydroxyl group for forming an oxygen-carbon bond, said reaction being carried out under conditions sufficient for effecting said reaction.

4,066,631

PROCESS FOR PREPARATION OF LINEAR POLYAMIDE-IMIDES FROM AROMATIC TRICARBOXYLIC ACID ANHYDRIDES AND DIAMINES

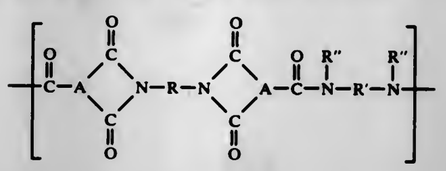
Daniel Ashton Dimmig, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed May 19, 1975, Ser. No. 578,711

Int. Cl.² C08G *73/14*

U.S. Cl. 260—78 R **5 Claims**

1. A process for preparing a linear polyamideimide consisting essentially of recurring units having the formula



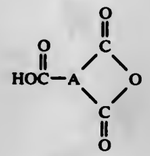
in which

A is an aromatic radical;

R and R' are araliphatic, aliphatic or cycloaliphatic radicals in which the carbon atoms attached to N are aliphatic carbon atoms;

R'' is H, or an araliphatic, aliphatic or cycloaliphatic radical; or both R'' radicals together form a divalent aliphatic radical; comprising the steps of

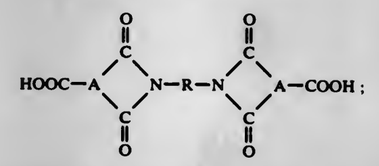
1. reacting an aromatic tricarboxylic acid anhydride having the formula



with a diamine of the formula

$H_2N—R—NH_2$

to form a diacid imide of the formula



forming the corresponding acid halide derivative by converting the carboxyl groups in the diacid imide to halocarbonyl groups; and then polycondensing said acid halide derivative of the imide with an amine of the formula

$HR''N—R'—N—R''H$.

4,066,632

CONTINUOUS REACTION FOR PREPARATION OF ARYLENE SULFIDE POLYMER

Kenneth L. Anderson, Bartlesville, Okla., and Donald G. Kuper, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 30, 1976, Ser. No. 671,776

Int. Cl.² C08G *75/16*

U.S. Cl. 260—79.1 **7 Claims**

1. A continuous process using a plurality of reaction vessels connected in series for producing arylene sulfide polymer by contacting a dihalo aromatic compound with a sulfur source in an organic amide to produce a particulate polymeric product, said method comprising:

a. introducing the reactant compounds into a first reaction vessel maintained at polymerization conditions of temperature and pressure sufficient to remove water and organic amide from the reaction by evaporation thereby producing a reaction mixture;

b. introducing effluent reaction mixture from the first reaction vessel to a second reaction vessel maintained at a pressure about 2 Kg/cm² below the pressure of the first reactor that flow of reactants is induced from said first reaction vessel to said second reaction vessel, said second reaction vessel maintained at a temperature sufficient to evaporate water and organic amide from the reaction mixture thereby concentrating the reaction mixture in the second reaction vessel; and

c. subjecting the effluent reaction mixture from the second reaction vessel to a reduced pressure sufficient to flash evaporate the liquid portion to recover a particulate, polymeric product and a condensible vapor.

4,066,633

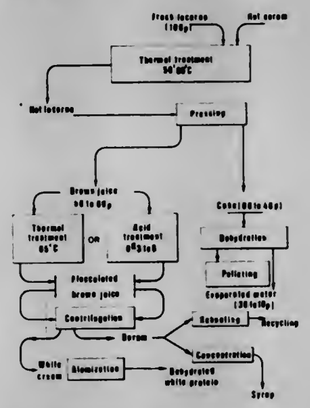
PROCESS FOR THE TREATMENT OF GREEN, LEAFY PLANTS FOR THE EXTRACTION OF PROTEINS IN THE PRESSING JUICES AND FOR ECONOMICAL DEHYDRATION OF CAKE

Charles Gastineau, Chalons-sur-Marne; Olivier de Mathan, Olivet, and Jan-Dominique Dilly, Chalons-sur-Marne, all of France, assignors to France Luzerne, Paris, France

Filed Nov. 3, 1975, Ser. No. 628,369

Int. Cl.² A23J *1/14*

U.S. Cl. 260—112 R **39 Claims**



1. In a process for treating green vegetable matter comprising the steps of:

a. preliminary treatment of the crude vegetable matter,

b. pressing the matter obtained in said step (a), thus providing a cake and a brown colored pressing juice,

c. dehydration of the cake obtained in said step (b), the improvement being that said treatment (a) is effected under conditions capable of producing flocculation of the chloroplastic proteins within the vegetable tissues, said conditions being selected from the group consisting of (i) treating said vegetable matter at a moderately high temperature at a pH of 4.5 to 8.5, (ii) treating said vegetable matter at a pH higher than 10, and (iii) treating said vegetable matter at a moderately high temperature and at a pH of approximately 12, said vegetable matter thereby retaining within its cells the greater portion of the chloroplastic proteins and pigments, while the pressing juice entrains a maximum amount of non-pigmented cytoplasmic proteins,

and that said brown colored pressing juice obtained from said step (b) is subjected to an acid or thermal treatment (d) capable of inducing flocculation of the cytoplasmic proteins and removal of the entrained pigments, and after said step (d), there is effected a separation (e) of the precipitated cytoplasmic proteins of said step (d) and a liquid serum; and further said treatment (a) is effected in a liquid medium, selected from the group consisting of water and said liquid serum recovered from said step (e), the ratio of the weight of said liquid medium to said crude vegetable matter being between 1:1 and 10:1.

4,066,634

PURIFICATION OF SYNTHETIC SOMATOSTATIN

William H. McGregor, Malvern, and Joseph J. Dougherty, Drexel Hill, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 31, 1976, Ser. No. 719,304
Int. Cl.² C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 S **2 Claims**

1. A process for producing chromatographically pure somatostatin which comprises

a. passing an aqueous solution of impure, synthetically produced somatostatin through a weakly acidic ion exchange resin containing ammonium carboxylate functional groups, with an ammonium hydroxide-ammonium acetate eluant in a volume/volume ratio of 1 to 9 : 1 and

b. collecting the somatostatin containing fraction of eluate.

4,066,635

L-PYROGLUTAMYL-L-HISTIDYL-L-PROLYL-BETA-ALANINAMIDE AND SALTS

Dieter Gillessen, Birsfelden; Rolf Studer, Bottmingen, both of Switzerland, and Arnold Trzeciak, Lorrach, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 603,405, Aug. 11, 1975, abandoned. This application Sept. 20, 1976, Ser. No. 724,796
Int. Cl.² C07C *103/52;* H61K *37/00*
U.S. Cl. 260—112.5 R **6 Claims**

1. L-Pyroglutamyl-L-histidyl-L-prolyl-beta-alaninamide and acid addition salts thereof.

4,066,636

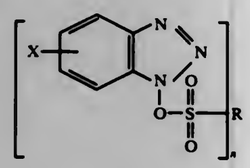
METHOD OF HARDENING GELATIN

Hidefumi Sera, and Kameji Nagao, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 1, 1977, Ser. No. 764,507
Claims priority, application Japan, Feb. 2, 1976, 51-10541
Int. Cl.² C09H *7/00*
U.S. Cl. 260—117 **7 Claims**

1. A method of hardening gelatin which comprises treating gelatin with a compound represented by the formula (I):

(I)



wherein X represents a hydrogen atom, an alkyl group having 6 or less carbon atoms, an aryl group having 6 to 8 carbon atoms, a haloalkyl group having 1 to 2 carbon atoms, an alkoxy group having 10 or less carbon atoms, a halogen atom, a carboxy group, a sulfo group, a salt of a carboxy group or a sulfo group, an alkyl ester having 4 or less carbon atoms in the alkyl moiety or an amide of said carboxy and sulfo group, an acylamino group or a nitro group, *n* represents 1 or 2, and R represents a monovalent or divalent organic group.

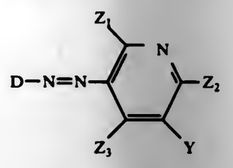
4,066,637

BASIC DIAMINOPYRIDINE-(3)-AZO DYESTUFFS

Visvanathan Ramanthan, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 480,457, June 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 316,803, Dec 20, 1972, abandoned. This application Aug. 18, 1975, Ser. No. 605,786
Int. Cl.² C09B *29/36, 45/00;* D06P *3/52, 3/76*
U.S. Cl. 260—146 R **25 Claims**

1. A basic azo dyestuff, free of acid groups conferring solubility in water, of the formula



wherein

Y is —CN or —$CONH_2$,

two of Z_1, Z_2 and Z_3 represent -NR'R" and the third represents -NR'R", -OR'" or -SR'", where R', R" and R'" independently represent hydrogen,

alkyl of up to 12 carbon atoms, which is unsubstituted or substituted by: hydroxy, carboxy, carbalkoxy of 2 to 6 carbon atoms, alkoxy of 1 to 8 carbon atoms, phenoxy, acyloxy or acylamino wherein acyl is alkanoyl of up to 5 carbon atoms, alkylcarbamyl of up to 5 carbon atoms, alkoxycarbonyl of up to 5 carbon atoms, phenylcarbamyl, phenoxycarbonyl, benzoyl, phenoxyacetyl, chloracetyl or phenylacetyl; or phenyl which is unsubstituted or substituted by halo, lower alkyl, lower alkoxy, β-hydroxyethyl or lower carboalkoxy;

phenyl which is unsubstituted or substituted by chloro, bromo, fluoro, alkyl of 1 to 6 carbon atoms which is unsubstituted or substituted by bromo, chloro, lower alkoxy, cyano or lower alkoxycarbonyl; lower alkoxycarbonyl, trifluoromethyl, acetyl, aminocarbonyloxy, aminosulfonyl, lower alkylaminosulfonyl, di(lower alkyl) aminosulfonyl, methylsulfonyl, ethylsulfonyl, methylthio, ethylthio or phenylthio; C_5–C_9 cycloalkyl; and

R' and R", taken together with the nitrogen atom to which they are linked, additionally represent piperidinyl, pyrollidinyl, morpholino, piperazinyl, methylpiperazinyl, acetylpiperazinyl or 3-picolyl;

D is phenyl;

phenyl substituted by chloro, bromo, fluoro, hydroxy, cyano, thiocyano, nitro, lower alkyl, trifluoromethyl, lower alkoxy, lower alkylmercapto, formyl, loweralkylcarbonyl, benzoyl, methylbenzoyl, lower alkoxycarbonyl, lower alkoxycarbonyloxy, benzyloxycarbonyloxy, cyclohexylcarbonyl, phenoxycarbonyl, benzoyloxy, lower alkylcarbonylamino, benzoylamino, loweralkylsulphonyl, chloroethylsulphonyl, hydroxyethylsulphonyl, aminosulphonyl, N-(lower alkyl) aminosulphonyl, N,N-(diloweralkyl) aminosulphonyl, di(β-hydroxyethyl) aminosulphonyl, phenylaminosulphonyl, (chloro-or methoxy-) phenylaminosulphonyl, benzylaminosulphonyl, N-piperidylsulphonyl, N-morpholinosulphonyl, lower alkylsulphonyloxy, cyclohexylsulphonyloxy, chloromethylsulphonyloxy, cyanoethylsulphonyloxy, phenylsulphonyloxy, aminosulphonyloxy, (chloro- or methoxy-) phenylsulphonyloxy, N-morpholinosulphonyloxy, ethyleneiminosulphonyloxy, lower monoalkylaminosulphonyloxy, phenylaminosulphonyloxy, N-phenyl-N(lower alkyl) aminosulphonyloxy, N-(methoxy- or chloro-) phenylaminosulphonyloxy, phenylamino, nitrophenylamino, dinitrophenylamino, phenyl, phenoxy or acetylphenyl; phenylazophenyl;

phenylazophenyl substituted by chloro, bromo, hydroxy, cyano, nitro, lower alkyl, trifluoromethyl, lower alkoxy or phenoxy; napthyl;

napthyl substituted by methoxy, ethoxy, phenylazo or dimethylaminosulphonyl; or

D is a nitrogen heterocyclic group selected from thiazolyl or thiazolyl substituted by chloro, bromo, cyano, thiocyano, lower alkyl, lower alkoxy, lower alkylmercapto, phenyl, benzyl, phenethyl, lower alkoxycarbonyl, trifluoromethyl, lower alkylcarbonyl or lower alkylsulphonyl;

benzythiazolyl or benzthiazolyl substituted by chloro, bromo, cyano, thiocyano, nitro, lower alkyl, lower alkoxy, benzyl, phenylethyl, lower alkylsulphonyl, phenyl, lower alkylmercapto, lower alkoxycarbonyl, lower alkylcarbonyl, trifluoromethyl, cyanoethylsulphonyl, aminosulphonyl, lower alkylaminosulphonyl, di(lower alkyl) aminosulphonyl;

pyrazolyl or pyrazolyl substituted by cyano, lower alkyl, lower alkoxy, lower alkoxycarbonyl or phenyl; thiadizolyl or thiadiazolyl substituted by lower alkoxy, lower alkyl, phenyl, lower alkylsulphonyl or lower alkylmercapto;

imidazolyl or imidazolyl substituted by nitro or lower alkyl;

isothiazolyl or isothiazolyl substituted by lower alkyl, nitro, lower alkylsulphonyl, lower alkoxycarbonyl, cyano or phenyl;

benzisothiazolyl or benzisothiazolyl substituted by lower alkyl, nitro or halo; benzimidazolyl or benzimidazolyl substituted by lower alkyl, nitro or halo;

napthiazolyl or napthiazolyl substituted by lower alkyl, nitro or halo;

quinolinyl or quinolyl substituted by lower alkyl, nitro or halo;

benzoxazolyl or benzoxazolyl substituted by lower alkyl, nitro or halo;

pyridinyl or pyridinyl substituted by lower alkyl, nitro or halo;

indazolyl or indazolyl substituted by lower alkyl, nitro or halo;

selenazolyl or selenazolyl substituted by lower alkyl, nitro or halo;

oxazolyl or oxazolyl substituted by lower alkyl, nitro or halo;

oxadiazolyl or oxadiazolyl substituted by lower alkyl, nitro or halo; and

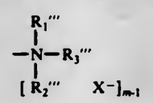
triazolyl or triazolyl substituted by lower alkyl, nitro or halo; or

D is thienyl or thienyl substituted by nitro, lower alkyl, lower alkylsulphonyl, lower alkoxycarbonyl or acetyl;

with the proviso that either

a. one of Z_1, Z_2, Z_3 or D is further substituted either by a direct bond or via an alkylene, alkyleneoxy, alkylenecarbonyl, carbonyloxy, carbonylamino, alkylenecarbonyloxy, alkylenecarbonylamino, alkylenesulphonylamino or alkylenesulphonyl group by

i)



wherein

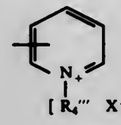
R_1'" and R_2'" independently represent lower alkyl, benzyl, phenethyl, β-hydroxyethyl, β-carbethoxyethyl or cyclohexyl,

R_3'" is lower alkyl, benzyl, cyclohexyl, lower alkoxy or —NH_2

and two of R_1'", R_2'" and R_3'" can further represent, together with the nitrogen to which they are attached, piperidino, methylpiperdino, pyrrolidino, morpholino, piperazinyl or imidazolyl,

X is an anion and *m* is 1 or 2; or by

ii)



wherein

R_4'" is alkyl of 1–4 carbon atoms, cyclohexyl or benzyl,

X is an anion and *m* is 1 or 2; or

b. when D is said nitrogen heterocyclic group, D is in the form of its N-(lower alkyl or benzyl) quaternary ammonium salt thereof.

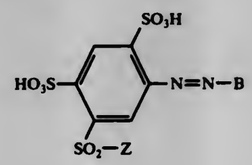
4,066,638

WATER-SOLUBLE FIBER REACTIVE PHENYL-AZO-NAPHTHYL DYESTUFFS CONTAINING TWO SULFO GROUPS IN THE PHENYL MOIETY

Hermann Fuchs, Kelkheim, Taunus; Gustav Kapaun, Neuenhain, Taunus, and Fritz Meininger, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 15, 1974, Ser. No. 514,994
Claims priority, application Germany, Oct. 17, 1973, 2351970
Int. Cl.² C09B *62/74;* D06P *1/384, 3/10, 3/66*
U.S. Cl. 260—196 **6 Claims**

1. A compound which, in the form of the free acid, corresponds to the formula



in which Z is

—CH_2-CH_2-A

or

—CH=CH_2

in which A is Cl, Br, OSO_3H, SSO_3H, OPO_3H_2, O-$COCH_3$ or SO_2-CH_3, B is naphthol, naphthylamine or aminonaphthol, unsubstituted or substituted on the aromatic moieties by one to four groups selected from alkyl, alkoxy, oxalkyl, cyanoalkyl, aminoalkyl or alkoxyalkyl, each alkyl and alkoxy moiety having 1 to 6 carbon atoms, or with chlorine, bromine, sulfonic acid, vinylsulfonyl, carboxyl, acylamino or arylamino groups.

4,066,639

BENZENE-SULFONYL SEMICARBAZIDES AND PROCESS FOR PREPARING THEM

Helmut Weber, Frankfurt am Main; Karl Muth, Kelkheim, Taunus; Rudi Weyer, Frankfurt am Main; Walter Aumuller, Kelkheim, Taunus, and Erich Haack, Heidelberg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 69,523, July 6, 1970, which is a continuation of Ser. No. 567,833, July 26, 1966, abandoned, which is a continuation-in-part of Ser. No. 542,723, May 6, 1965. This application Jan. 24, 1975, Ser. No. 544,018

Claims priority, application Germany, May 6, 1965, 45971

Int. Cl.[2] A61K *31/64*; C07D *211/98, 227/12, 295/22*

U.S. Cl. 260—239 BF **5 Claims**

1. The compound 4-[4-(β-{2-methoxy-5-chloro-benzamido}-ethyl)-benzene-sulfonyl]-1,1-(γ,γ-dimethyl-pentamethylene)-semicarbazide or its physiologically tolerable salt.

4,066,640

METHAMPICILLIN LYSINATE AND ITS METHOD OF MANUFACTURE

Young Sul Kim, 302-62, Yichon-dong, Yong San, Seoul, South Korea

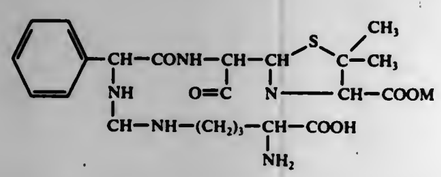
Division of Ser. No. 709,644, July 29, 1976, Pat. No. 4,031,076. This application Jan. 26, 1977, Ser. No. 762,663

Claims priority, application South Korea, July 31, 1975, 1686/75

Int. Cl.[2] C07D *499/44*

U.S. Cl. 260—239.1 **1 Claim**

1. A process for preparing Methampicillin Lysinate having the formula:



wherein M is selected from the group consisting of hydrogen, sodium, potassium, calcium and aluminum, which comprises the steps of:

a. solubilizing ampicillin by converting ampicillin to a water saluble salt;

b. reacting said water soluble salt of ampicillin with a solution of formaldehyde and formalin to produce methylene ampicillin;

c. reacting L-Lysine with said methylene ampicillin in acid solution to obtain Methampicillin Lysinate.

4,066,641

METHOD FOR CYCLIZATION TO GIVE CEPHEM RING

Yoshio Hamashima, 26-20, Katsurahitsuji-saru-cho,, Ukyo, Kyoto, Kyoto; Mitsuru Yoshioka, 2-5-A9-102, Shinsenri-higashi, Toyonaka, Osaka; Hiroshi Tanida, 1-5-9, Mandai, Abeno, Osaka, Osaka; Teruji Tsuji, 1-14-9, Yanagawa-cho, Takatsuki, Osaka; Masayuki Narisada, 3-24-5, Ayukawa, Ibaraki, Osaka; Taichiro Komeno, 2-6-23, Nishisuminoe, Suminoe, Osaka, Osaka, and Wataru Nagata, 6-10, Kawahigashi-cho, Nishinomiya, Hyogo, all of Japan

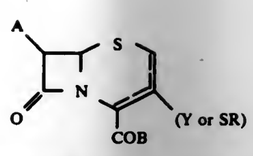
Filed July 21, 1976, Ser. No. 707,288

Claims priority, application Japan, July 22, 1975, 50-89915

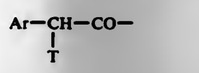
Int. Cl.[2] C07D *501/02*

U.S. Cl. 544—17 **8 Claims**

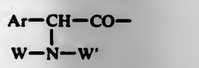
1. A process for preparing a compound of the formula



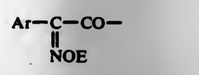
wherein A is amino, sulfenylamino or amino substituted by (1) C_1 to C_{10} alkanoyl, (2) C_1 to C_3 haloalkanoyl, (3) azidoacetyl, (4) cyanoacetyl, (5) acyl of the formula Ar—CQQ'—CO— in which each of Q and Q' is hydrogen or methyl and Ar is phenyl, dihydrophenyl or a monocyclic hetero aromatic group containing 1-4 hetero ring atoms selected from the group consisting of nitrogen, oxygen and sulfur, (6) 2-sydnon-3-acetyl, (7) (4-pyridon-1-yl)acetyl, (8) acyl of the formula Ar—G—CQQ'—CO— in which Ar, Q and Q' are as defined above and G is oxygen or sulfur, (9) acyl of the formula



in which Ar is as defined above and T is hydroxy, C_1 to C_{10} acyloxy, carboxy, C_2 to C_7 alkoxycarbonyl, C_2 to C_{15} aralkoxycarbonyl, C_1 to C_{12} aryloxycarbonyl, C_1 to C_7 alkanoyloxy-C_1 to C_3 alkoxycarbonyl, cyano, carbamoyl, sulfo or C_1 to C_7 alkoxysulfonyl, (10) acyl of the formula



in which Ar is as defined above and each of W and W' is hydrogen, C_2 to C_7 alkoxycarbonyl, C_3 to C_{10} cycloalkyl-C_2 to C_3 alkoxycarbonyl, C_5 to C_8 cycloalkoxycarbonyl, C_1 to C_4 alkylsulfonyl-C_1 to C_4 alkoxycarbonyl, halo C_1 to C_3 alkoxycarbonyl, C_1 to C_{15} aralkoxycarbonyl, C_1 to C_{10} alkanoyl, C_2 to C_{15} aroyl, pyronecarbonyl, thiopyronecarbonyl, pyridonecarbonyl, carbamoyl, guanidinocarbonyl, 3-methyl-2-oxoimidazolidin-1-ylcarbonyl, 3-methanesulfonyl-2-oxoimidazolidin-1-ylcarbonyl, 4-methyl-2,3-dioxopiperazin-1-ylcarbonyl, or 4-ethyl-2,3-dioxopiperazin-1-ylcarbonyl, or W and W' are combined together with the nitrogen atom to which they are attached to form phthalimido, maleimido or enamino derived from C_5 to C_{10} acetoacetate, C_4 to C_{10} acetacetamide, acetylacetone, acetoacetonitrile or 1,3-cyclopentanedione, (11) acyl of the formula



in which Ar is as defined above and E is hydrogen or C_1 to C_5 alkyl, (12) 5-aminoadipoyl, N-protected 5-aminoadipoyl wherein the protecting group is C_1 to C_{10} alkanoyl, C_1 to C_{10} aralkanoyl, C_2 to C_{11} aroyl, C_1 to C_5 haloalkanoyl or C_2 to C_{10} alkoxycarbonyl, or carboxy-protected 5-aminoadipoyl wherein the protecting group is C_1 to C_5 alkyl, C_2 to C_{21} aralkyl or C_1 to C_{10} aryl, (13) acyl of the formula L-O-CO- in which L is C_1 to C_{10} hydrocarbyl, (14) diacylimido derived from a C_4 to C_{10} polybasic carboxylic acid, (15) C_1 to C_{20} hydrocarbyl, (16) C_1 to C_{20} hydrocarbylidene, (17) C_2 to C_{10} organic silyl, (18) azido, (19) isocyanato, or (20) isocyano,

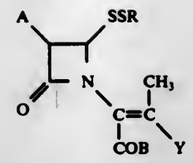
COB is a carboxylic ester group,

RS is benzothiazol-2-ylthio, thiazol-2-ylthio or acetylthio,

Y is C_1 to C_5 alkanoyloxy, C_1 to C_5 alkoxycarbonyloxy, C_7 to C_{12} aralkoxycarbonyloxy, C_6 to C_{11} aroyloxy, C_1 to C_5 alkanesulfonyloxy, C_6 to C_8 arylsulfonyloxy, cyano, thiocyanato, nitro, nitroso, chlorine, bromine or iodine, and

the dotted line represents a 2- or 3- double bond,

which comprises reacting a compound of the formula



wherein A, COB, RS and Y have the same meanings as above, with a base selected from the group consisting of trimethylamine, triethylamine, tripropylamine, butyldimethylamine, 1-methylpiperdine, N-methylmorpholine, quinuclidine, 4-piperidylpyridine, 1,2,2,6,6-pentamethylpiperidine, 1,4-diazabicyclo[2,2,2]octane, N,N-dimethylaniline, 1,8-bisdimethylaminonaphthalene and diisopropylamine.

4,066,642

PROCESS FOR THE PRODUCTION OF THIOPHOSPHORIC ACID ESTERS

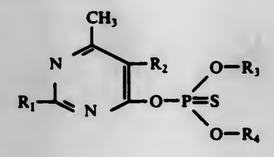
Yel S. Sury, Baton Rouge, La., and James M. Lignos, East Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 411,992, Nov. 1, 1973, abandoned. This application Apr. 19, 1976, Ser. No. 678,326

Int. Cl.[2] C07F *9/65*

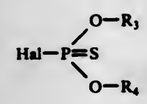
U.S. Cl. 260—251 P **3 Claims**

1. In a process for the production of thiophosphoric acid esters of the formula I



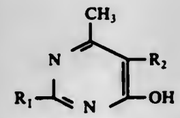
I

wherein R_1 is lower alkyl, lower alkenyl, lower alkoxy(lower-)alkyl or lower alkylmercapto(lower)alkyl, R_2 is hydrogen, lower alkyl or lower alkenyl and R_3 and R_4 are lower alkyl, which comprises reacting a dialkyl phosphoric acid halide of the formula II



II

wherein Hal represents chlorine or bromine and R_3 and R_4 are as defined hereinabove, with a hydroxypyrimidine of the formula III



III

wherein R_1 and R_2 have the significance given to them above, at elevated temperatures and in the presence of an organic solvent and an acid binding agent, the improvement which comprises adding the reactant of formula II and sodium or potassium hydroxide concomitantly to a reaction mixture in reflux consisting essentially of reactant of formula III and an inert non-polar organic solvent at uniform rates over a period of 1 to 7 hours while removing water substantially as it is formed, said reactant of formula III being in a molar excess of about 1 to 5% and said acid binding agent being in a molar excess of about 5 to 10%, and said reaction being carried out in the absence of a catalyst.

4,066,643

PYRAZOLO[1,5-A]PYRIDO[3,2-E]PYRIMIDINE-7-CARBOXYLIC ACID DERIVATIVES

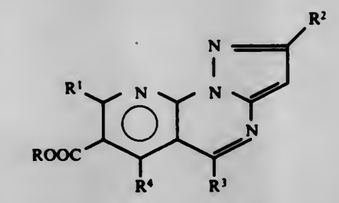
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 630,120, Nov. 7, 1975, Pat. No. 4,026,893. This application Feb. 2, 1977, Ser. No. 764,677

Int. Cl.[2] C07D *471/04*; A61K *31/415*

U.S. Cl. 260—256.4 F **7 Claims**

1. A compound of the formula



wherein

R, R^1 and R^3 each is hydrogen or lower alkyl;

R^2 is hydrogen, lower alkyl or phenyl;

R^4 is di-lower alkylamino-lower alkylamino or di-lower alkylamino-lower alkoxy;

and physiologically acceptable salts thereof.

4,066,644

PYRAZOLO [1,5-A]PYRIDO[3,2-E]PYRIMIDINE-7-CARBOXYLIC ACID HETEROCYCLIC DERIVATIVES

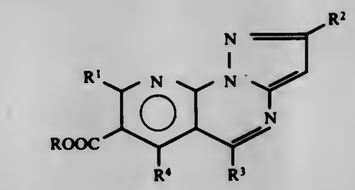
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 630,120, Nov. 7, 1975, Pat. No. 4,026,893. This application Feb. 2, 1977, Ser. No. 764,676

Int. Cl.[2] C07D *401/14*; A61K *31/415*; C07D *403/14*

U.S. Cl. 260—256.4 F **10 Claims**

1. A compound of the formula



wherein

R, R^1 and R^3 each is hydrogen or lower alkyl;

R^2 is hydrogen, lower alkyl or phenyl;

R^4 is aziridinyl, pyrrolidino, piperidino, pyrazolyl or piperazinyl, said heterocyclics being unsubstituted or substituted with a hydroxy-lower alkyl group or one or two lower alkyl groups;

and physiologically acceptable salts thereof.

4,066,645

DERIVATIVES OF PYRAZOLO [1,5-A]PYRIDO[3,4-E]PYRIMIDINE

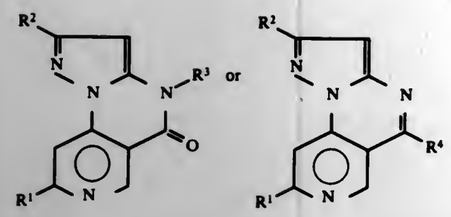
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 9, 1977, Ser. No. 794,769

Int. Cl.[2] C07D *471/04*; A61K *31/415*

U.S. Cl. 260—256.4 F **23 Claims**

1. A compound having the formula



wherein

R^1 is hydrogen, halogen, hydroxy, lower alkylthio or lower alkoxy;

R^2 and R^3 each is hydrogen or lower alkyl; and

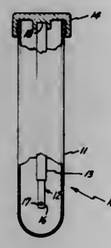
R^4 is lower alkoxy, lower alkylthio, amino, lower alkylamino or di(lower alkyl)amino.

4,066,646

DIAGNOSTIC DEVICE AND HOUSING THEREFOR

Oliver H. LeBlanc, Jr., and William J. Ward, III, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1976, Ser. No. 753,832
Int. Cl.² G01N *33/16, 31/22, 21/06*
U.S. Cl. 23—259 **7 Claims**



1. A diagnostic device and housing therefor comprising in combination:

an imperforate tubular member closed at one end;

means removably engageable with the open end of said tubular member for sealing said open end;

a functional test device interconnected with said sealing means and spaced therefrom, said test device comprising a specific protein layer on a metallic substrate; and

a longitudinally extending member interconnecting said sealing means and said test device, said member being affixed to both said sealing means and said test device.

4,066,647

SUBSTITUTED 6-(PIPERAZINYL)-10H-PYRIDO[3,2-B]THIENO[3,4-E][1,4]-DIAZEPINES

Sidney Robert Safir, River Edge, and Corris Mabelle Hofmann, Ho-Ho-Kus, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 12, 1976, Ser. No. 741,423
Int. Cl.² C07D *495/14*
U.S. Cl. 260—268 TR **1 Claim**

1. The compound 6-(4-methyl-1-piperazinyl)-10H-pyrido[3,2-b]thieno[3,4-e][1,4]-diazepine.

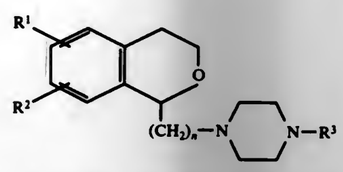
4,066,648

ISOCHROMAN DERIVATIVES

Yoshikazu Oka, Kobe; Akio Miyake, Takatsuki; Norio Tada, Akashi, and Katsumi Itoh, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

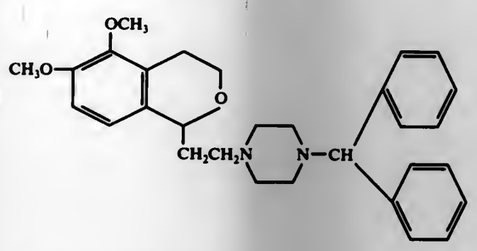
Filed May 28, 1976, Ser. No. 690,928
Claims priority, application Japan, Jan. 1, 1976, 51-1243
Int. Cl.² C07D *405/06*
U.S. Cl. 260—268 TR **24 Claims**

1. A compound of the formula



wherein R^1 ia hydrogen, lower alkoxy or hydroxyl and R^2 is lower alkoxy or hydroxyl of R^1 and R^2 when taken together form alkylenedioxy; R^3 is pyridyl, 3 or 4-chlorophenyl, 4-methoxyphenyl, 3,4-dimethoxyphenyl, 3,4,5-trimethoxyphenyl or phenyl and *n* is 1 or 2 or pharmaceutically acceptable salts thereof.

24. A compound of the formula:



and pharmaceutically acceptable salts thereof.

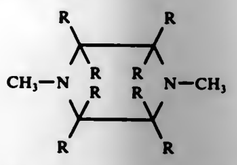
4,066,649

METHOD OF PRODUCING N,N'-(DIMETHYL) PIPERAZINE COMPOUNDS

Heinz Schulze, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

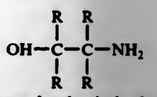
Filed Dec. 19, 1975, Ser. No. 642,225
Int. Cl.² C07D *295/02, 241/38*
U.S. Cl. 260—268 SY **8 Claims**

1. An improved process for producing an N,N'-(dimethyl) piperazine compound of the formula:



wherein each R is, independently, hydrogen or a C_{1-4} lower alkyl radical comprising the step of:

contacting a monoethanol amine having the formula:



wherein each R, independently, is hydrogen or a C_{1-4} lower alkyl radical with methyl alcohol in the presence of a catalytically effective amount of a phosphorus-containing substance selected from the group consisting of acidic metal phosphates,

orthophosphoric acid, metaphosphoric acid, polyphosphoric acid, orthophosphorous acid, alkyl or aryl phosphate esters, alkyl or aryl phosphite esters, alkyl or aryl substituted phosphorus and phosphoric acids wherein said alkyl groups have from 1 to 8 carbon atoms and said aryl groups have from 6 to 20 carbon atoms, alkali metal monosalts of phosphoric acid and mixtures of the above at a temperature of from 150° C to about 350° C. under pressure sufficient to maintain the mixture essentially in liquid phase; and

recovering from the resultant reaction mixture said N,N'-(dimethyl) piperazine compound.

4,066,650

KETO-ALDEHYDE-AMINE ADDITION PRODUCTS AND METHOD OF MAKING SAME

Laszlo G. Egyud, 12 Redgate Lane, Quissett, Falmouth, Mass. 02543

Continuation of Ser. No. 114,680, Feb. 11, 1971, abandoned. This application Feb. 25, 1975, Ser. No. 552,881
Int. Cl.² C07D *213/69, 207/44*
U.S. Cl. 260—281 G **2 Claims**

1. The compound, which is N'-(2-keto-propane-1-ol)-2,5-dioxo-pyrroline-3-ene.

2. The compound, which is N'-(2-keto-propane-1-ol)-2,6-dioxo-pyridine.

4,066,651

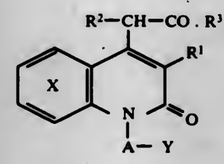
ALKANOIC ACID 2-QUINOLINE DERIVATIVES

David Robert Brittain; Edward Douglas Brown; Walter Hepworth, and Gilbert Joseph Stacey, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 1, 1976, Ser. No. 662,685
Claims priority, application United Kingdom, Mar. 20, 1975, 11644/75; Oct. 14, 1975, 42043/75
Int. Cl.² C07D *215/22*
U.S. Cl. 260—287 K **5 Claims**

1. A compound selected from the group consisting of α-[1(4-ethylbenzyl)-1,2-dihydro-2-oxoquinol-4-yl]propionic acid, α-[1-(4-trifluoromethylbenzyl)-1,2-dihydro-2-oxoquinol-4-yl]propionic acid, α-(1-benzyl-7-methyl-1,2-dihydro-2-oxoquinol-4-yl)propionic acid, α-(1-benzyl-6-methyl-1,2-dihydro-2-oxoquinol-4-yl)propionic acid, α-[1-(4-trifluoromethylbenzyl)-6-methyl-1,2-dihydro-2-oxoquinol-4-yl]propionic acid, α-[1-(4-chlorobenzyl)-6-methyl-1,2-dihydro-2-oxoquinol-4-yl]propionic acid, α-(1-benzyl-1,2-dihydro-2-oxoquinol-4-yl)propionic acid, α-[1-(4-methylbenzyl)-1,2-dihydro-2-oxoquinol-4-yl]propionic acid, α[1-(4-methylbenzyl)-6-methyl-1,2-dihydro-2-oxoquinol-4-yl]-propionic acid, and the pharmaceutically acceptable base addition salts thereof.

2. A quinolone alkanoic acid derivative of the formula:



I

wherein A is a methylene, ethylene or propenylene radical; R^1 is hydrogen; R^2 is methyl; R^3 is hydroxy, amino, hydroxylamino, C_{1-6} alkoxy or phenoxy; and wherein the benzene ring X is unsubstituted or bears either a single substituent selected from the group consisting of halogen atoms, methyl, methoxy, nitro and amino or two methyl substituents; and wherein the ring Y is phenyl which may optionally bear a single substituent selected from the group consisting of halogen, methyl, methoxy, methylthio and trifluoromethyl; or a pharmaceutically-acceptable salt thereof.

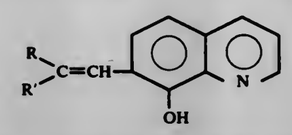
4,066,652

SUBSTITUTED 8-HYDROXYQUINOLINES AND PROCESS FOR THE PREPARATION THEREOF

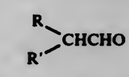
James A. Hartlage, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Sept. 12, 1973, Ser. No. 397,120
Int. Cl.² C07D *215/26*
U.S. Cl. 260—289 XA **4 Claims**

1. A process for preparing a compound of the formula:



wherein R and R' represent alkyl groups having a sum total of 6–18 carbon atoms, which comprises the steps of heating at a temperature of about 140°–200° C. substantially equal molar amounts of 8-hydroxyquinoline and a hindered aldehyde of the formula:



wherein R and R' have the above-mentioned meanings, to effect the condensation thereof and the concomitant removal of water of dehydration from the condensate and thereupon distilling the reaction product to recover the resultant alkylate.

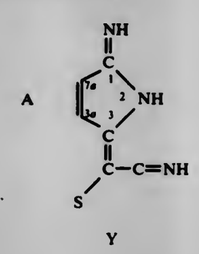
4,066,653

1-IMINO-3-(4-IMINO-5-THIAZOLIDINYLIDENE)ISOINDOLINES

Nathan N. Crounse, and Nicholas A. Ambrosiano, both of Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 564,725, April 3, 1975, Pat. No. 3,993,658, which is a continuation-in-part of Ser. No. 308,163, Nov. 20, 1972, Pat. No. 3,919,235. This application June 1, 1976, Ser. No. 691,637
Int. Cl.² C07D *417/14*
U.S. Cl. 260—293.61 **4 Claims**

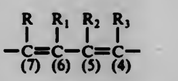
1. A compound of the formula



Y

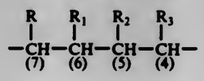
wherein:

A is a divalent radical combining with the —C═C— portion of the molecule to which it is attached to form a six-membered carbocyclic ring and is selected from the group consisting of



(7) (6) (5) (4)

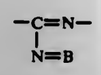
and



(7) (6) (5) (4)

where in each instance C(7) and C(4) are bonded to C(7a) and C(3a) respectively, and in which R, R_1, R_2 and R_3 are the sam or different and are selected from the class consisting of hydrogen, alkyl having one to three carbon atoms, alkoxy having one to three carbon atoms, halo, trifluoromethyl, phenyl and phenyl substituted by alkyl having one to three carbon atoms, alkoxy having one to three carbon atoms and halogen; and

Y is a divalent radical combining with the —S—C—C— portion of the molecule to form a five-membered heterocyclic ring having the same orientation as a thiazole ring and is



in which N=B is di-lower-alkylamino, piperidino, pyrrolidino, morpholino, (lower-alkyl)-(phenyl)-amino or (lower-alkyl)-(phenyl-lower-alkyl)amino.

4,066,654

1-TRIARYLALKYL-4-PHENYL-4-PIPERIDINE CARBOXYLIC ACIDS AND DERIVATIVES

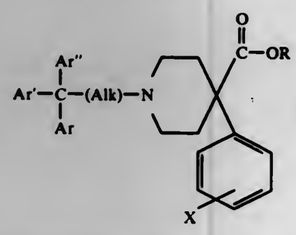
Gilbert W. Adelstein, Evanston; Esam Z. Dajani, Buffalo Grove, and Chung Hwai Yen, Skokie, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 568,439, April 16, 1975, Pat. No. 3,998,832. This application Nov. 15, 1976, Ser. No. 741,589

Int. Cl.² C07D *401/06, 211/64*

U.S. Cl. 260—293.69 **13 Claims**

1. A compound of the formula



wherein the Alk is straight or branched chain alkylene containing 2–4 carbon atoms; Ar and Ar′ are phenyl, alkyl substituted phenyl wherein the alkyl contains from 1–4 carbon atoms or halo substituted phenyl; Ar″ is phenyl, alkyl substituted phenyl wherein the alkyl contains 1–4 carbon atoms, halo substituted phenyl or pyridyl; X is hydrogen, halogen, trifluoromethyl or alkyl having from 1–4 carbon atoms; R is hydrogen, alkyl having from 1–7 carbon atoms, alkenyl having 3–7 carbon atoms, Ar″ as hereinbefore defined, or a cation selected from the group consisting of sodium, potassium, ammonium or calcium/2.

10. A compound according to claim 1 which is 1-[3,3-diphenyl-3-(2-pyridyl)propyl]-4-phenyl-4-piperidine carboxylic acid hydrochloride.

4,066,655

4,10-DIHYDRO-4,10-DIOXO-1H-1-BENZOPYRANO[3,2-B]PYRIDINE-3-CARBOXYLIC ACIDS, SALTS AND ESTERS

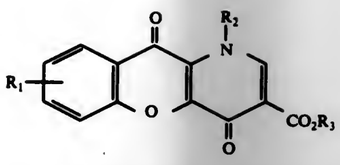
David T. Connor, Parsippany; Patricia A. Young, Madison, and Max von Strandtmann, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 29, 1976, Ser. No. 736,926

Int. Cl.² C07D *491/04*

U.S. Cl. 260—295.5 T **15 Claims**

1. A compound of the formula:



I.

wherein R_1 is hydrogen, lower alkyl, halogen, hydroxy or lower alkoxy; R_2 is hydrogen phenyl lower alkyl or lower alkyl; R_3 is hydrogen or lower alkyl and their pharmaceutically acceptable salts.

4,066,656

[1,2,5,6]TETRATHIOCINO-[3,4-C;7,8-C′]DIISOTHIAZOLE-3,8-DICARBONITRILE

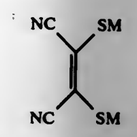
Susan Anne Vladuchick, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 13, 1976, Ser. No. 704,973

Int. Cl.² C07D *513/14*

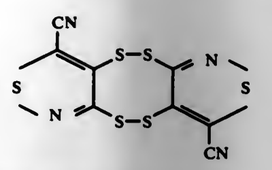
U.S. Cl. 260—302 F **20 Claims**

1. A process comprising (1) contacting a 1,2-dimercaptomaleonitrile salt of the formula

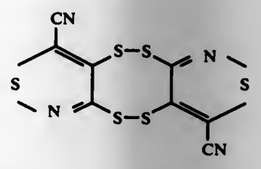


where M is an alkali metal or bis[tetra(lower alkyl ammonium)],

with sulfur in an alcohol solvent at a temperature of at least 50° C and (2) contacting the resulting product with an oxidizing agent selected from the group consisting of bromine, hydrogen peroxide, iodine, sodium hypochlorite, sodium hypobromite, iron (III) chloride and potassium hexacyanoferrate (III) to form:

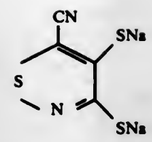


15. A compound having the formula



16. A process comprising heating the compound of claim 15 in an organic solvent at a temperature in the range of about 150°–300° C to prepare 1,4-dithiino-[2,3-c; 6,5-c′]diisothiazole-3,7-dicarbonitrile.

18. A process comprising heating the compound of claim 15 in an organic solvent at a temperature in the range of about 80°–155° C in the presence of a catalytic amount of



to prepare 1,4-dithiino[2,3-c; 6,5-c′]diisothiazole-3,7-dicarbonitrile.

4,066,657

2-[(CARBOXY)TRIPHENYLMETHYLAMINO)METHYL]-5,5-DIMETHYL-3-THIAZOLINE

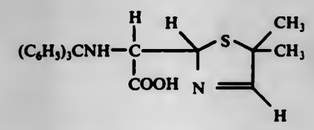
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 680,423, April 26, 1976, Pat. No. 4,031,077, which is a continuation-in-part of Ser. No. 619,634, Oct. 6, 1975, abandoned. This application Oct. 29, 1976, Ser. No. 736,956

Int. Cl.² C07D *277/10*

U.S. Cl. 260—306.7 R **1 Claim**

1. A compound of the formula (II)



(II)

and the sodium and potassium salts thereof.

4,066,658

RESOLUTION OF D,L-DEHYDROPROLINE

Arthur Martin Felix, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 11, 1975, Ser. No. 603,404

Int. Cl.² C07D *207/22*

U.S. Cl. 260—326.2 **6 Claims**

1. A method for the preparation of L-3,4-dehydroproline comprising in combination the steps of:

A. treating N-protected D,L-3,4-dehydroproline with R(+)-alpha-methyl-p-nitrobenzylamine so as to form the corresponding diastereomeric salt, the said N-protecting group being selected from conventional N-protecting groups which can be deblocked without racemization of the resolved compound;

B. selectively crystallizing the N-protected L-3,4-dehydroproline (R)-alpha-methyl-p-nitrophenethyl ammonium salt from solution;

C. decomposing the aforesaid diastereomeric salt with cold aqueous weak acid so as to produce N-protected-L-3,4-dehydroproline; and

D. removing the N-protecting group under conditions which do not cause racemization thereby yielding L-3,4-dehydroproline.

4,066,659

METHOD OF PREPARATION OF 3-(3-CARBOXY-4-HYDROXYPHENYL)-4,5-DIHYDRO-2-PHENYLBENZ (E) INDOLE AND VALUABLE INTERMEDIATES RELATED THERETO

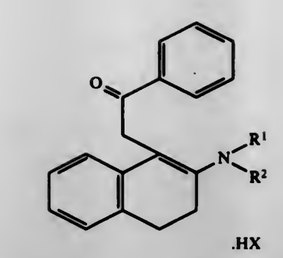
Richard C. Effland, Bridgewater, N.J., assignor to American Hoechst Corporation, Bridgewater, N.J.

Filed June 3, 1976, Ser. No. 692,331

Int. Cl.² C07D *209/18*

U.S. Cl. 260—326.13 F **14 Claims**

1. A method of preparing 3-(3-carboxy-4-hydroxyphenyl)-4,5-dihydro-2-phenylbenz[e]indole which comprises reacting an enammonium salt which, in one of the possible tautomeric forms, is represented by the formula



.HX

wherein R^1 and R^2 are the same or different and each represents alkyl of from 1 to 6 carbon atoms or, together with the nitrogen atom to which they are attached, form a pyrrolidino, or piperidino ring and X is bromine or chlorine with 5-aminosalicylic acid in a solvent and at a temperature of from about ambient to the boiling point of the solvent.

4,066,660

INTERMEDIATES IN THE PREPARATION OF INDOLOBENZOXAZEPINES

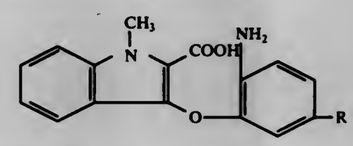
Richard E. Brown, East Hanover, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 620,734, Oct. 8, 1975, Pat. No. 4,013,641. This application Oct. 22, 1976, Ser. No. 734,791

Int. Cl.² C07D *209/20*

U.S. Cl. 260—326.14 R **3 Claims**

1. Compounds of the general formula



wherein R is —H or —Cl.

4,066,661

PROCESS FOR THE PREPARATION OF SUBSTITUTED TRICHLOROACETAMIDINE DERIVATIVES

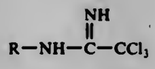
George H. Denny, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed June 1, 1976, Ser. No. 691,759

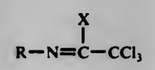
Int. Cl.² C07D *209/14*

U.S. Cl. 260—326.15 **9 Claims**

1. A process for the preparation of a compound having the formula

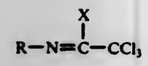


wherein R is 3-indolylmethyl, which comprises treating a compound having the formula:

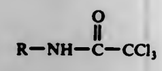


wherein R is as previously defined and X is loweralkoxy or halogen, with ammonia at a temperature of from room temperature to 100° C for a period of from 5 minutes to 1 week.

3. A process for the preparation of a compound having the formula:

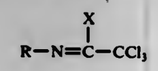


wherein R is 3-indolylmethyl, and X is loweralkoxy or halogen, which comprises treating a compound having the formula:



wherein R is as previously defined, with an imidating agent selected from triloweralkyloxonum tetrafluoroborate, at about room temperature for from 1 to 24 hours or phosphorous pentahalide at about 100° to 125° C for from 2 to 6 hours.

8. A compound having the formula:



wherein R is 3-indolylmethyl; and X is loweralkoxy or halogen.

4,066,662

N-SUBSTITUTED-2-AMINOMETHYL-3-AZABICYCLO(3,3,0)OCTANE COMPOUNDS

Laszlo Beregi, Boulogne, Seine; Pierre Hugon, Rueil-Malmaison; Xavier Pascaud, Paris, and Jean-Claude Poignant, Bures, all of France, assignors to Science Union et Cie., Societe Francaise de Recherche Medicale, Suresnes, France

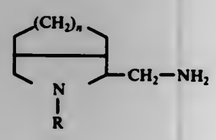
Division of Ser. No. 685,757, May 13, 1976, Pat. No. 4,042,598, which is a division of Ser. No. 525,623, Nov. 20, 1974, Pat. No. 3,972,994. This application Dec. 30, 1976, Ser. No. 755,476

Claims priority, application United Kingdom, Dec. 14, 1973, 58034/73

Int. Cl.² C07D *209/52;* A61K *31/40*

U.S. Cl. 260—326.85 **4 Claims**

1. A compound selected from the group consisting of bicycloalkanes compounds of the formula:



wherein *n* is 1, and wherein R is selected from the group consisting of saturated and unsaturated aliphatic hydrocarbon groups having one to five carbon atoms inclusive in the form of a straight or branched chain.

4,066,663

6,11-DIHYDRODIBENZO-[B.E.]-THIEPIN-11-ONE-3-ALDEHYDE AND 3-ACETAL DERIVATIVES

Jack Ackrell, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

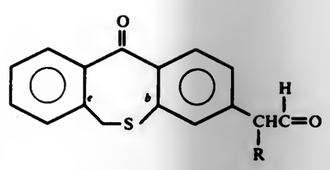
Filed July 1, 1976, Ser. No. 701,780

Int. Cl.² C07D *337/12*

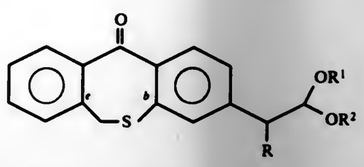
U.S. Cl. 260—327 B **18 Claims**

1. A compound selected from the group of those represented by the formulas

(A)



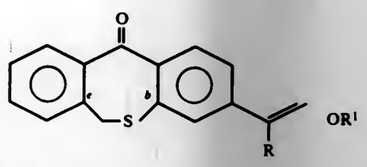
(B)



wherein R represents hydrogen or methyl, and each of R^1 and R^2, which can be the same or different, represents a lower alkyl group of 1 to 6 carbon atoms, or together represent a lower alkylene radical of 2 to 6 carbon atoms, provided that when R is methyl, the compounds are (dl) mixtures, and when R^1 and R^2 are different, the compounds are pairs of diasteroisomers and each diasteroisomeric isomer is a (dl) mixture.

14. A compound of the formula:

(C)



wherein R is hydrogen or methyl and R^1 is a lower alkyl group of 1 to 6 carbon atoms.

4,066,664

INTERMEDIATES FOR PREPARING α-CARBOXY-α-(3-THIENYL)PENICILLIN AND CEPHALOSPORIN DERIVATIVES

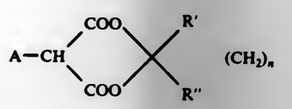
Pierre Crooij, Genval, and Guy Simonet, Perwez, both of Belgium, assignors to Recherche et Industrie Therapeutiques, Belgium

Division of Ser. No. 566,645, April 8, 1975, abandoned. This application Sept. 27, 1976, Ser. No. 727,198

Int. Cl.² C07D *333/24*

U.S. Cl. 260—332.2 H **4 Claims**

1. A compound of the formula:



wherein:

A is 3-thienyl; and

R′ and R″ are either identical or different and, when $n = 0$, represent lower alkyl radicals of from 1 to 4 carbon atoms, or, when *n* is an integer between 1 and 7, R′ and R″ are methylene radicals.

4,066,665

2-ALKYLAMINO-α-PHENYL-1-CYCLOHEXENE-1-METHYLENEIMINE, ITS SALTS AND PREPARATION

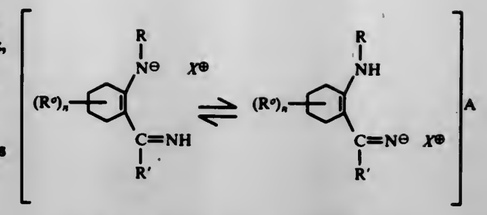
William G. Salmond, Mount Arlington, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 160,960, July 8, 1971, abandoned. This application June 19, 1974, Ser. No. 480,626

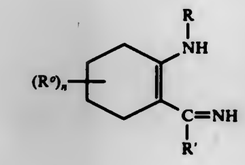
Int. Cl.² C07D *333/12*

U.S. Cl. 260—332.5 **10 Claims**

1. A compound of the formula:



in which R, R°, R′ and *n* are as defined in claim 1, and X is magnesium or an alkali metal corresponding to the metal in the base, and quenching said solution with water.



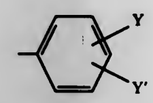
wherein

R° is alkyl of 1 to 3 carbon atoms,

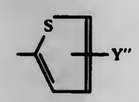
n is 0, 1 or 2,

R is alkyl of 1 to 5 carbon atoms, and

R′ is a group of the formula

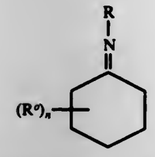


in which Y and Y′ are independently hydrogen, alkyl of 1 to 2 carbon atoms, alkoxy of 1 or 2 carbon atoms, fluoro or chloro or one of Y and Y′ is trifluoromethyl while the other is hydrogen, or a group of the formula



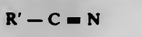
in which Y″ is hydrogen, fluoro, chloro, or alkyl of 1 to 3 carbon atoms.

7. A process for producing a compound of claim 1 which comprises reacting a cyclohexylidine of the formula:



in which R, R° and *n* are defined in claim 1 with:

1. a metal-containing base selected from the group consisting of methyl magnesium iodide and an alkali metal salt of a secondary amine; and 2 a compound of the formula:



in which R′ is as defined in claim 1, in an inert solvent to form a solution of the Salt A:

4,066,666

15-OXASTEROIDS

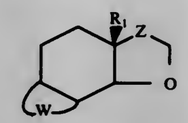
Perry Rosen, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 528,115, Nov. 29, 1974, Pat. No. 3,987,066, which is a division of Ser. No. 217,956, Jan. 14, 1972, Pat. No. 3,872,076. This application July 2, 1976, Ser. No. 702,243

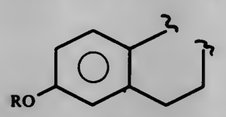
Int. Cl.² C07D *317/72, 319/04*

U.S. Cl. 260—340.9 AS **3 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl of from 1 to 5 carbon atoms; W is



wherein R is hydrogen, lower alkyl, cycloalkyl, lower alkanoyl or aroyl and Z is ketal protected carbonyl selected from the group consisting of ethylenedioxymethylene, 1,3-propylenedioxymethylene and 2,3-butylenedioxymethylene.

4,066,667

9-HYDROXY-7,8,9,10-TETRAHYDRO-6H, DIBENZO[B][D] PYRANS AND PYRANONES

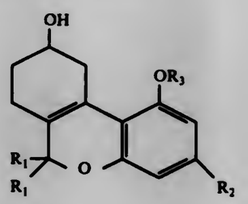
Cheuk Man Lee, Libertyville; Raymond John Michaels, Mundelein, both of Ill., and Louis Selig Harris, Richmond, Va., assignors to Abbott Laboratories, North Chicago, Ill.

Filed July 7, 1975, Ser. No. 593,352

Int. Cl.² C07D *311/78;* A61K *31/35, 31/335*

U.S. Cl. 260—345.3 **9 Claims**

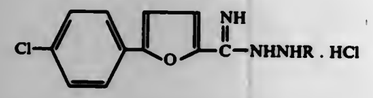
1. A compound of the formula



wherein R_1 is methyl, R_2 is C_1–C_{20} alkyl and R_3 is hydrogen, loweralkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl.

4,066,668
5-(4-CHLOROPHENYL)-2-FURIMIDIC ACID HYDRAZIDES
Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.
Filed Mar. 21, 1977, Ser. No. 779,612
Int. Cl.² C07D *307/68*
U.S. Cl. 260—347.3 3 Claims

1. A compound of the formula:



wherein R represents hydrogen or formyl.

4,066,669
DIETHYL ACETAMIDO[5-(4-NITROPHENYL)FURFURYL]MALONATE
Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.
Filed Mar. 11, 1977, Ser. No. 776,649
Int. Cl.² C07D *307/54*
U.S. Cl. 260—347.5 1 Claim

1. The compound diethyl acetamido[5-(4-nitrophenyl)furfuryl]malonate.

4,066,670
N-DIMETHYLAMINOPROPYL-5-(2-NITROPHENYL)-2-FURANCARBOXIMIDAMIDE DIHYDROCHLORIDE MONOHYDRATE
Stanford S. Pelosi, Jr.; Ronald E. White; George C. Wright, and Chia Nien Yu, all of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.
Filed Jan. 25, 1977, Ser. No. 765,621
Int. Cl.² C07D *307/68*
U.S. Cl. 260—347.7 1 Claim

1. The compound N-dimethylaminopropyl-5-(2-nitrophenyl)-2-furancarboximidamide dihydrochloride monohydrate.

4,066,671
(2,2-DIETHOXYETHYL)DIMETHYL[5-(4-NITROPHENYL)-2-FUROYLMETHYL]AMMONIUM CHLORIDE HEMIHYDRATE
Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.
Filed Feb. 7, 1977, Ser. No. 766,123
Int. Cl.² C07D *307/52*
U.S. Cl. 260—347.7 1 Claim

1. The compound (2,2-diethoxyethyl)dimethyl[5-(4-nitrophenyl)-2-furoylmethyl]ammonium chloride hemihydrate.

4,066,672
DIETHYL[5-(4-NITROPHENYL)FURFURYL]AMINE HYDROCHLORIDE
Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.
Filed Mar. 24, 1977, Ser. No. 780,857
Int. Cl.² C07D *307/52*
U.S. Cl. 260—347.7 1 Claim

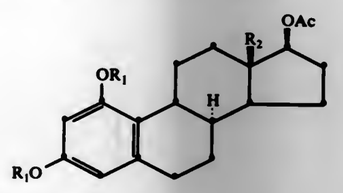
1. The compound diethyl[5-(4-nitrophenyl)furfuryl]amine hydrochloride.

4,066,673
PROCESS FOR MAKING QUATERNARY AMINES OF EPICHLOROHYDRIN
Joseph B. Doughty, Sullivan's Island, S.C., and Robert E. Klem, Columbia, Md., assignors to Westvaco Corporation, New York, N.Y.
Filed Feb. 25, 1974, Ser. No. 445,067
Int. Cl.² C07D *301/24, 301/00*
U.S. Cl. 260—348.13 2 Claims

1. In a process for preparing a 1,2-epoxy propyl trialkylamine chloride, the improvement which comprises; reacting epichlorohydrin in a methanol solution with a stoichiometric amount of trialkylamine at a temperature between 0° and 60° C., said methanol being about 5% to 70% by weight of the total.

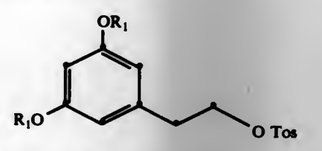
4,066,674
PROCESS FOR THE PREPARATION OF 1,3-OXYGENATED 8α-ESTRATRIENES AND NOVEL INTERMEDIATES OBTAINED THEREFROM
Ulrich Eder; Gerhard Sauer; Gregor Haffer; Guenter Neef, and Rudolf Wiechert, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany
Filed Nov. 12, 1976, Ser. No. 741,497
Int. Cl.² C07J *1/00*
U.S. Cl. 260—397.5 11 Claims

1. A process for the production of a 1,3-oxygenated-8α-estratriene optical isomer of the formula



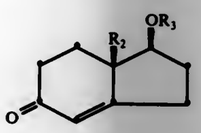
wherein R_1 is alkyl or aralkyl of up to 8 carbon atoms, R_2 is alkyl of 1–5 carbon atoms and Ac is alkanoyl of 1–8 carbon atoms, which comprises the steps of:

a. condensing, in the presence of a deprotonating agent, a compound of the formula

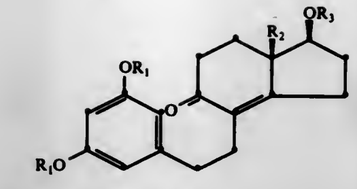


wherein R_1 is alkyl or aralkyl of up to 8 carbon atoms and Tos is tosyloxy,

with a tetrahydroindane-5-one compound of the formula

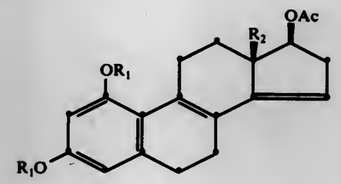


wherein R_2 is alkyl of 1-5 carbon atoms and R_3 is tert.-butyl, tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl or tri-p-xylylsilyl, to produce a condensate of the formula



wherein R_1, R_2, and R_3 are as above;

b. cyclizing the condensate in the presence of a strong acid and a carboxylic acid of 1–8 carbon atoms to an estrapentaene of the formula

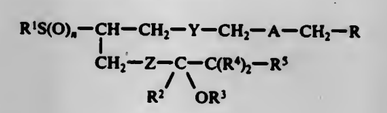


wherein R_1, R_2, and Ac are as above; and

c. hydrogenating the estrapentaene in the presence of a hydrogenation catalyst to said 1,3-oxygenated-8α-estratriene.

4,066,675
9-THIA- AND OXOTHIA- AND 9-DIOXOTHIA-11,12-SECO-PROSTAGLANDINS AND PROCESSES
Edward J. Cragoe, Jr.; John B. Bicking, and Robert L. Smith, all of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Division of Ser. No. 669,006, March 22, 1976, Pat. No. 4,018,802, which is a continuation-in-part of Ser. No. 566,566, April 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 483,178, June 25, 1974, abandoned. This application Nov. 22, 1976, Ser. No. 743,821
Int. Cl.² C07C *143/90*
U.S. Cl. 260—400 11 Claims

1. The compound of the formula



wherein

R is carboxy, a carboxy salt, or a carboxy ester; ;p1 A is methylene;

Y is selected from the group consisting of ethylene, vinylene, and ethynylene;

R^1 is selected from the group consisting of methyl, ethyl, 2-hydroxyethyl, 2-(loweralkoxy)ethyl, and vinyl;

n is 0, 1, or 2;

Z is selected from the group consisting of ethylene, vinylene, and ethynylene;

R^2 is hydrogen or methyl;

R^3 is hydrogen;

R^4 is hydrogen or methyl;

R^5, taken together as a single substituent with R^2 and the carbon chain joining R^2 and R^5, is a carbocyclic ring with from 5–9 members.

4,066,676
PHOTOSENSITIVE MATERIAL COMPRISING POLYACETYLENIC AMINE SALTS
Melvin S. Bloom, Rochester, and Sally S. Fico, Bergen, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 440,229, Feb. 6, 1974, Pat. No. 3,954,816, which is a division of Ser. No. 315,249, Dec. 14, 1972, Pat. No. 3,844,791, which is a division of Ser. No. 153,059, June 14, 1971, Pat. No. 3,743,505. This application Jan. 30, 1976, Ser. No. 653,807
Int. Cl.² C07C *87/30*
U.S. Cl. 260—402.5 4 Claims

1. Radiation-sensitive crystalline polyacetylenic amine salts having the structural formula:

$$D\text{-}(CH_2)_x(C{\equiv}C)_n(CH_2)_y\text{-}COO^-A^+$$

wherein:

n is an integer greater than 1;

x and *y* are each an integer from 0 to 10;

A is $NRR^1R^2R^3$ wherein R, R^1, R^2 and R^3 are H, alkyl of from 1 to 15 carbon atoms, aryl or substituted alkyl having substituents chosen from the group consisting of hydroxy, amino, carboxy and methoxy substituents;

D is selected from the group consisting of

CH_3,

$COOR^4$, and

$CONHR^5$, wherein

R^4 is H or lower alkyl,

R^5 is substituted alkyl of from 3 to 8 carbon atoms in which the substituent is alkylthio.

4,066,677
TWO-STAGE PROCESS FOR SEPARATING MIXED FATTY-ACID ESTERS
Armand J. Rosset, Clarendon Hills, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.
Continuation-in-part of Ser. No. 710,829, Aug. 2, 1976. This application Sept. 24, 1976, Ser. No. 726,363
Int. Cl.² C09F *5/10*
U.S. Cl. 260—428.5 38 Claims

1. A process for separating an ester of a polyethanoid fatty acid and an ester of a monoethanoid fatty acid from a first mixture comprising an ester of a polyethanoid fatty acid, an ester of a monoethanoid fatty acid and an ester of a saturated fatty acid which process comprises the steps of:

a. contacting at a temperature within the range of from about 20° to about 250° C. and a pressure within the range from about atmospheric to about 500 psig. said first mixture with a first adsorbent comprising a X or Y zeolite containing at exchangeable cationic sites at least one cation selected from the group consisting of cations of metals of Group IA of the Periodic Table of Elements and combinations thereof thereby selectively adsorbing said ester of a polyethanoid fatty acid and thereafter recovering said ester of a polyethanoid fatty acid;

b. removing from the first adsorbent a raffinate output stream comprising said ester of a monoethanoid fatty acid and said ester of a saturated fatty acid; and,

c. contacting at a temperature within the range of from about 20° to about 250° C. and a pressure within the range from about atmospheric to about 500 psig. a second mixture comprising said raffinate output stream with a second adsorbent comprising a X or a Y zeolite containing at exchangeable cationic sites copper cations and one or more second cations selected from the group consisting of sodium, potassium, rubidium dand cesium, thereby selectively adsorbing said ester of a monoethanoid fatty acid and thereafter recovering said ester of a monoethanoid fatty acid.

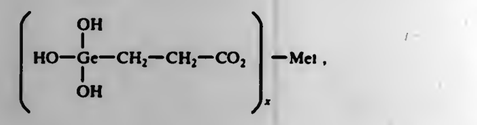
4,066,678

3-TRIHYDROXYGERMYL PROPIONIC ACID AND ITS SALTS AND A PROCESS FOR THE PRODUCTION THEREOF

Ryuichi Sato, Oizumimachi; Akira Ishikawa, Tokyo; Yukihito Ishida, Tokyo; Hiroshi Sato, Tokyo; Setsuo Tomisawa, Tokyo; Shigeshi Toyoshima, Tokyo, and Shiro Ikegami, Funabashi, all of Japan, assignors to Ryuichi Sato, Oizumimachi, Japan

Filed June 18, 1976, Ser. No. 697,568
Claims priority, application Belgium, Oct. 23, 1975, 161181
Int. Cl.² C07F 7/30
U.S. Cl. 260—429 R 5 Claims

1. A compound of the formula



wherein Met is a monovalent cation selected from the group consisting of Na, K, NH_4, and $NH_2(CH_3)_2$, or a divalent cation selected from the group consisting of Ca and Mg, and wherein x is 1 when Met is a monovalent cation and x is 2 when Met is a divalent cation.

4,066,679

BIMETALLIC SALTS AND DERIVATIVES THEREOF, THEIR PREPARATION AND USE IN THE COMPLEXING OF LIGANDS

Robert B. Long, Atlantic Highlands; Fred A. Caruso, Elizabeth, both of N.J.; Richard J. DeFeo, Baton Rouge, La., and David G. Walker, Baytown, Tex., assignors to Exxon Research & Engineering Co., Linden, N.J.

Division of Ser. No. 144,302, May 17, 1971, Pat. No. 3,887,600, which is a division of Ser. No. 805,912, Sept. 3, 1968, Pat. No. 3,651,159. This application Mar. 12, 1975, Ser. No. 557,494
Int. Cl.² C07F 1/08
U.S. Cl. 260—438.1 10 Claims

1. A complex bimetallic salt having the generic formula $CuAlX_4L_m$ wherein X is selected from the group consisting of chlorine, bromine and fluorine atoms, L is a complexible ligand selected from the group consisting of a C_2-C_6 acetylene, a C_4-C_{10} conjugated diolefin, a C_6-C_{16} polyolefin, a C_5-C_{10} cyclic olefin and a C_3-C_6 diolefin and m is equal to the complexing stoichiometry of L and is an integer ranging from 1 to 4.

4,066,680

PROCESS FOR MAKING ALPHA,OMEGA-SILOXANEDIOLS

Richard N. Lewis, Tecumseh, and Eugene R. Martin, Onsted, both of Mich., assignors to SWS Silicones Corporation, Adrian, Mich.

Filed Oct. 18, 1976, Ser. No. 733,564
Int. Cl.² C07F 7/08
U.S. Cl. 260—448.2 E 8 Claims

1. A process of making alpha,omega-siloxanediols of the formula $HO(R_2SiO)_nH$, in which at least 50 percent of the R groups are methyl and the remaining R groups are selected from the class consisting of vinyl and phenyl and n is a number of from 3 to 25, which comprises heating an alpha,omega-diacyloxysiloxane with an aqueous solution having a pH of from 8 to 11 to a temperature of at least 50° C.

4,066,681

THIOL- AND THIONCARBAMATES AND PROCESS FOR PREPARING SAME

Michael P. Wachter, Bloomsbury, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 31, 1975, Ser. No. 645,496
Int. Cl.² C07C 155/09, 155/08
U.S. Cl. 260—455 A 1 Claim

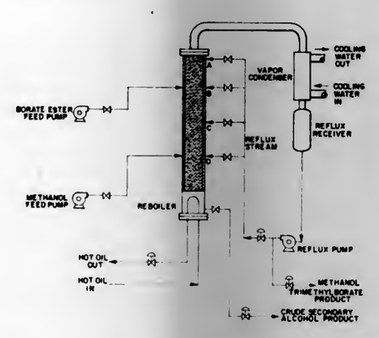
1. Ethyl-exo-5-N-(5,6-dihydro-endo-dicyclopentadienyl)-thiolcarbamate.

4,066,682

TRANSESTERIFICATION OF BORATE ESTERS FOR PRODUCING SECONDARY ALCOHOLS

Leland Robert Holliday, and Ronald Laurence Poe, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed July 6, 1976, Ser. No. 702,561
Int. Cl.² C07F 5/04
U.S. Cl. 260—462 R 3 Claims



1. An improved method for the transesterification of secondary alcohol borate esters containing alkyl groups having from about 6 to about 20 carbon atoms with methanol wherein borate esters and methanol are reacted in a transesterification column and a portion of the extractive distillation column overhead is separated and returned to the column as a reflux stream, the improvement comprising returning said reflux stream to the extractive distillation column at a point at or below the borate ester feed and above the methanol feed.

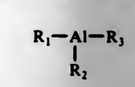
4,066,683

PROCESS FOR THE PREPARATION OF DIAMINOMALEONITRILE

Hideo Shidara, Ichinomiya, Japan, assignor to Nippon Chemicals Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1977, Ser. No. 756,182
Int. Cl.² C07C 120/00
U.S. Cl. 260—465.5 R 13 Claims

1. A process for the preparation of diaminoaleonitrile comprising polymerizing hydrogen cyanide in the presence of an alkyl aluminum compound having the general formula



wherein R_1 is alkyl containing 1 to 10 carbon atoms, and R_2 and R_3 are hydrogen, halogen having 17 to 53 of atomic number or alkyl containing 1 to 10 carbon atoms, wherein the alkyl aluminum compound is used in amounts of the molar ratio to hydrogen cyanide of from 0.001 to 1, and wherein the reaction is carried out at a temperature of from about −20° Cto about +150° C.

4,066,684

PREPARATION OF PEPTIDES

Linneaus C. Dorman, and Edwin C. Steiner, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 15, 1974, Ser. No. 460,840
Int. Cl.² C07C 125/04
U.S. Cl. 260—112.5 R 1 Claim

1. In the process for making methyl N,N'-dicarbobenzyloxy-ε-aminocaproyl-L-lysyl-ε-aminocaproate by reacting the azide of N,N'-dicarbobenzyloxy-ε-aminocaproyl-L-lysine hydrazide with methyl ε-aminocaproate, the improvement wherein said azide is provided as the reaction mixture formed by nitrosylating the corresponding hydrazide in an essentially anhydrous organic solvent medium using as the source of nitrous acid the alkali metal nitrite complex with the cyclic pentamer of ethylene oxide.

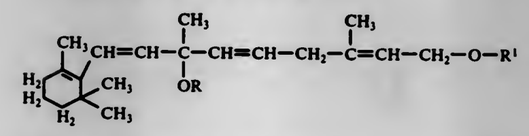
4,066,685

INTERMEDIATES FOR VITAMIN A

William Oroshnik, Plainfield, N.J., assignor to SCM Corporation, New York, N.Y.

Division of Ser. No. 353,215, April 23, 1973, Pat. No. 3,949,006, which is a continuation-in-part of Ser. No. 246,939, April 24, 1972, abandoned. This application Apr. 10, 1975, Ser. No. 566,982
Int. Cl.² C07C 175/00
U.S. Cl. 560—260 5 Claims

1. Compounds having the general formula:



in which R is lower alkyl, lower alkenyl, phenyl or aralkyl of up to 10 carbon atoms, and R^1 is hydrogen or CO-R^2, R^2 being lower alkyl, phenyl, or aralkyl of up to 10 carbon atoms.

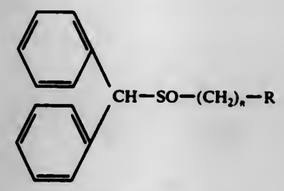
4,066,686

NEW BENZHYDRYSULPHINYL DERIVATIVES

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Filed Sept. 30, 1976, Ser. No. 728,054
Claims priority, application United Kingdom, Oct. 2, 1975, 40419/75
Int. Cl.² C07C 83/10; A61K 31/185
U.S. Cl. 260—500.5 H 4 Claims

1. Benzhydrylsulphinyl compounds of the formula:



I

in which n is 1, 2 or 3 and R is C(=O)NHOH and their addition salts.

4,066,687

2,3-CARBOXY ALKOXY SUCCINIC ACID AND SALTS THEREOF

Gunner E. Nelson, and Tillmon H. Pearson, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 385,545, Aug. 3, 1973, Pat. No. 3,980,578, which is a continuation-in-part of Ser. No. 153,816, June 16, 1971, Pat. No. 3,784,486. This application May 3, 1976, Ser. No. 682,320
Int. Cl.² C07C 59/12
U.S. Cl. 260—535 P 10 Claims

1. α,α'-carboxyalkoxy succinic acid and the water soluble salts thereof.

4,066,688

CHEMICAL PROCESS

Walter W. Lawrence, Jr.; Tom W. McKay, and Karl E. Wiegand, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 131,885, April 7, 1971, Pat. No. 3,770,796. This application Jan. 19, 1973, Ser. No. 325,174
Int. Cl.² C07C 59/16
U.S. Cl. 260—535 P 31 Claims

1. A process for producing alkali metal salts of citric acid which comprises:

A - forming a system of acetone dicarboxyl ions, cyanide ions and alkali metal ions in the proportions of about 1 mol equivalent cyanide ions and from about 1.5 to about 2.0 alkali metal atom equivalents per mol equivalent acetone dicarboxyl ions, and reacting said system for from about 0.1 to about 72 hours, at a temperature of from about 0° to about 100° C, and

B - reacting the system from Step A with caustic in a solution containing from about 5 to about 40 percent by weight caustic of an alkali metal for from about 0.25 to about 8 hours at from about −10° to about 180° C.

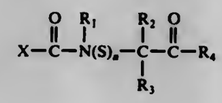
4,066,689

KETOALKANESULFENYLCARBAMOYL AND KETOALKANETHIOSULFENYLCARBAMOYL HALIDES

Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 20, 1976, Ser. No. 688,223
Int. Cl.² C07C 125/00, 125/03
U.S. Cl. 260—544 C 20 Claims

1. A compound of the formula:



wherein:

R_1 is alkyl;

R_2 is alkyl or chlorine;

R_3 is hydrogen, alkyl, phenyl, alkoxycarbonyl, alkanoyl or phenoxycarbonyl;

R_4 is hydrogen, alkyl, phenoxy, alkoxy or phenyl or R_3 and R_4 together may form as alkylene chain completing a five or six membered alicyclic ketone or dione;

n is 1 or 2;

X is chlorine or fluorine;

wherein R_1, R_2, R_3 and R_4 substituents individually may not include more than 6 aliphatic carbons.

4,066,690

PROCESS FOR THE PREPARING α-CHLOROACRYLIC ACID CHLORIDES

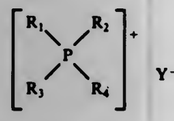
Dieter-Bernd Reuschling, Butzbach, and Harald Jensen, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 524,811, Nov. 18, 1974, abandoned. This application Sept. 20, 1976, Ser. No. 724,959
Claims priority, application Germany, July 24, 1975, 2357677
Int. Cl.² C07C *51/58*
U.S. Cl. 260—544 Y 16 Claims

1. A process for preparing α-chloroacrylic acid chloride by dehydrochlorinating α,β-dichloropropionic acid chloride at a temperature of from 60° to 120° C and a pressure of below 200 mm of Hg in the presence of a tertiary phosphine of the formula



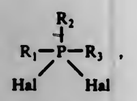
a quaternary phosphonium salt of the formula



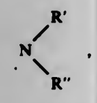
a tertiary phosphine oxide, sulfide or imine of the formula



or a tertiary phosphine halide of the formula



wherein R_1, R_2 and R_3 each is alkyl of from 1 to 20 carbon atoms; cycloalkyl of from 4 to 8 carbon atoms; phenyl; phenalkyl of from 7 to 20 carbon atoms; said alkyl, cycloalkyl, phenyl or phenalkyl which is substituted;



R′ and R″ each being alkyl of from 1 to 20 carbon atoms, phenyl, phenalkyl of from 7 to 20 carbon atoms, or said alkyl, phenyl or phenalkyl which is substituted; wherein R_4 is hydrogen; alkyl of from 1 to 20 carbon atoms; cycloalkyl of from 4 to 8 carbon atoms; phenyl; phenalkyl of from 7 to 20 carbon atoms; or said alkyl, cycloalkyl, phenyl or phenalkyl which is substituted; wherein Y is a radical of an organic or inorganic acid; wherein Z is oxygen, sulfur, or NR_5, R_5 being alkyl of from 1 to 20 carbon atoms, cycloalkyl of from 4 to 8 carbon atoms, phenyl, phenalkyl of from 7 to 20 carbon atoms, or said alkyl, cycloalkyl, phenyl or phenalkyl which is substituted; wherein Hal is halogen; and wherein any two of R_1, R_2, R_3, R_4, and R_5 may together form an aliphatic chain or said chain interrupted by nitrogen, oxygen or sulfur.

4,066,691

PROCESS FOR THE PRODUCTION OF PURE DIGLYCOLIC ACID BY OXIDATION OF DIETHYLENE GLYCOL WITH NITRIC ACID

Manfred Schroeder, Marl, Germany, assignor to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

Filed Sept. 8, 1976, Ser. No. 721,577
Claims priority, application Germany, Sept. 12, 1975, 2540726
Int. Cl.² C07C *51/26, 51/42*
U.S. Cl. 260—531 R 9 Claims

1. In a process for the production of pure diglycolic acid by oxidation of diethylene glycol with nitric acid in a reaction zone to form a reaction mixture containing diglycolic acid, the improvement comprising:

a. cooling at least a portion of the reaction mixture to −10° to +25° C. to crystallize a portion of the diglycolic acid therein;
b. separating the crystallized diglycolic acid from the cooled reaction mixture;
c. concentrating the resultant mother liquor at 5–530 mb. to a nitric acid concentration of 35–45% by weight;
d. cooling the concentrated mother liquor to −10° to +25° C. to crystallize a second portion of diglycolic acid;
e. separating the second portion of crystallized diglycolic acid from the cooled mother liquor; and
f. recycling the mother liquor to the reaction zone for oxidation of diethylene glycol with nitric acid.

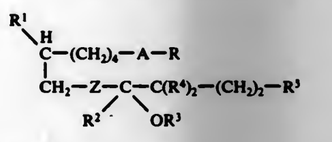
4,066,692

11,12-SECOPROSTAGLANDINS

Edward J. Cragoe, Jr.; John B. Bicking, and Robert L. Smith, all of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 571,038, April 23, 1975, abandoned, which is a continuation-in-part of Ser. No. 389,901, Aug. 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 302,365, Oct. 30, 1972, abandoned. This application Mar. 22, 1976, Ser. No. 669,118
Int. Cl.² C07C *59/00*
U.S. Cl. 424—312 43 Claims

1. The compound having the following formula:



wherein

R is carboxy, a carboxy salt, or carboxy having the formula —COOY wherein Y is alkyl having 1–10 carbon atoms, 1-succinimidoethyl, 1-(pivaloyloxy)ethyl, 2-acetamidoethyl, or diloweralkylaminoloweralkyl;

A is ethylene, trimethylene, α-methylethylene, β-methylethylene, α,α-dimethylethylene, or β,β-dimethylethylene;

R^1 is formyl, acetyl, propionyl, acryloyl, hydroxyacetyl, 3-hydroxypropionyl, hydroxymethyl, 1-hydroxyethyl, 1,2-dihydroxyethyl, 1,3-dihydroxypropyl, or 1-hydroxy-1-methylethyl;

Z is methylene, ethylene, trimethylene, tetramethylene, vinylene, or ethynylene;

R^2 is independently hydrogen or methyl;

R^3 is hydrogen;

R^4 is selected independently from the group consisting of hydrogen and methyl;

R^5 is selected from the group consisting of hydrogen, lower alkyl of 1–4 carbon atoms either straight or branched (e.g., methyl, ethyl, propyl, isopropyl, butyl, tert-butyl), vinyl, and 2,2,2-trifluoroethyl.

4,066,693

PROCESS FOR THE PREPARATION OF UREA

Dirk J. Venderbos, Geleen, Netherlands, assignor to Stamicarbon, N.V., Geleen, Netherlands

Filed Aug. 29, 1972, Ser. No. 284,476
Claims priority, application Netherlands, Sept. 2, 1971, 7112061
Int. Cl.² C07C *126/00*
U.S. Cl. 260—555 A 7 Claims

1. In a process for preparing urea by reacting ammonia and carbon dioxide to form an ammonium carbamate intermediate product in a first reaction zone, and then converting ammonium carbamate into urea in an additional reaction zone at a higher pressure, partially expanding the resulting urea synthesis solution and subjecting the urea synthesis solution to a stripping treatment, and separating gases released in the stripping treatment and from the urea synthesis solution and recycling the separated gases to the first reaction zone, the improvement comprising conducting the formation of ammonium carbamate from ammonia and carbon dioxide in said first reaction zone at a pressure of 90 - 140 atmospheres and a temperature of about 150° to 173° C, thereafter partly converting the ammonium carbamate into urea in a second reaction zone at substantially the same pressure as said first reaction zone and a temperature of about 165 to 183° C until at least 40% of the equilibrium amount of urea has been formed, and thereafter converting ammonium carbamate present in the synthesis solution from the second reaction zone into additional urea in a third reaction zone at a pressure of at least 160 atmospheres and a temperature of about 190° to 220° C until at least 85% of the equilibrium amount of urea that can be obtained in this zone has been formed.

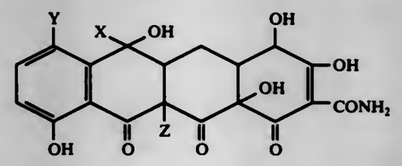
4,066,694

4-HYDROXY-4-DEDIMETHYLAMINO-TETRACYCLINES

Robert K. Blackwood, Gales Ferry, and Charles R. Stephens, Jr., East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 114,038, Feb. 9, 1971, Pat. No. 3,824,285, which is a division of Ser. No. 667,357, Sept. 13, 1967, Pat. No. 3,622,627, which is a continuation-in-part of Ser. No. 360,435, April 16, 1964, abandoned, which is a continuation-in-part of Ser. No. 247,874, Dec. 28, 1962, abandoned. This application Jan. 22, 1973, Ser. No. 325,628
Int. Cl.² C07C *103/19*
U.S. Cl. 260—559 AT 3 Claims

1. A compound selected from the group consisting of



and the alkali metal and alkaline earth metal salts thereof wherein Y is hydrogen or chloro; Z is hydrogen, chloro or fluoro and X is methyl or hydrogen with the proviso that X is methyl when Z is hydrogen.

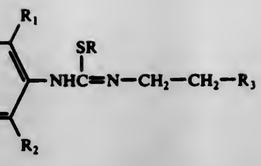
4,066,695

THIOUREA DERIVATIVES

Michael Robert Cohen, West Orange; Richard Wightman Kierstead, and Jefferson Wright Tilley, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 677,106, April 15, 1976. This application Jan. 27, 1977, Ser. No. 763,189
Int. Cl.² C07C *127/26*
U.S. Cl. 260—564 E 3 Claims

1. A compound of the formula



wherein R is lower alkyl; R_1 and R_2, independently, are halogen; R_3 is amino;
and addition salts thereof with pharmaceutically acceptable acids.

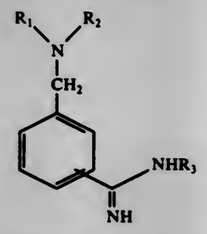
4,066,696

AROMATIC AMIDINES AS ANTIVIRAL AGENTS IN ANIMALS

Allen R. Kraska, East Lyme, and Rodney C. Schnur, Noank, both of, Conn. assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 708,180, July 23, 1976, Pat. No. 4,025,555. This application Feb. 18, 1977, Ser. No. 769,854
Int. Cl.² C07C *123/00*
U.S. Cl. 260—564 R 9 Claims

1. A compound of the structure



and the non-toxic acid addition salts thereof wherein

R_1 and R_2 are each alkyl of from twelve to twenty-four carbon atoms; and

R_3 is selected from the group consisting of

$-(CH_2)_nCH_2OH$,

$-(CH_2)_n-SO_3H$,

and

$-(CH_2)_nCF_3$,

wherein *n* is an integer of from one to six.

4,066,697

PROCESS FOR PREPARING TETRAMETHYLTHIURAM TETRASULFIDE

John P. Lawrence, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 28, 1976, Ser. No. 700,233
Int. Cl.² C07C *155/10*
U.S. Cl. 260—567 2 Claims

1. A process of preparing a sulfur donor for the sulfur vulcanization of rubber comprising oxidizing dimethylammonium dimethyl dithiocarbamate with hydrogen peroxide in the presence of carbon disulfide and sulfur in water with the proviso that no reactant is added subsequent to the addition of the hydrogen peroxide wherein the molar ratio of dimethylammonium dimethyl dithiocarbamate to carbon disulfide to hydrogen peroxide to sulfur is about 1:1–1.2:1–1.2:2–2.2.

4,066,698

PROCESS FOR THE MANUFACTURE OF ORGANIC HYDRAZINES

Hermann Classen, Falkenstein, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 20, 1975, Ser. No. 606,108
Claims priority, application Germany, Aug. 22, 1974, 2440238
Int. Cl.[2] C07C *109/02, 109/04*
U.S. Cl. 260—569 **13 Claims**

1. A process for the preparation of organic hydrazines which comprises introducing a gaseous chloramine selected from the group consisting of chloramine, monoalkyl chloramine and dialkyl chloramine into a substantially anhydrous liquid phase organic amine selected from the group consisting of primary amine and secondary amine while intensely agitating the liquid phase during the addition of the chloramine and selectively reacting the chloramine with the organic amine to form the corresponding organic hydrazine.

4,066,699

PROCESS FOR THE HYDROGENATION OF NITRATED PARAFFINS USING A PALLADIUM ON CARBON CATALYST CHARACTERIZED BY A LOW ASH AND A LOW HALIDE CONTENT

Robert M. Suggitt, Wappingers Falls; Joseph H. Coone, Jr., Fishkill, and Walter C. Gates, Jr., Newburgh, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,378
Int. Cl.[2] C07C *85/11*; B01J *21/18*
U.S. Cl. 260—583 R **14 Claims**

1. The method of preparing an amine by hydrogenating a corresponding charge nitrated hydrocarbon which comprises
hydrogenating said charge at hydrogenation conditions including hydrogenation temperature of 100°–450° F in the presence of a catalyst prepared by
leaching a high ash carbon in contact with a hydrohalic acid thereby forming a reduced ash carbon containing halide values;
leaching said reduced ash carbon in contact with a solution containing at least one composition selected from the group consisting of water-soluble organic carboxylic acids and ammonium salts thereof thereby forming a reduced ash carbon containing decreased halide values; and
depositing palladium on said reduced ash carbon containing decreased halide values thereby forming the catalyst;
thereby forming a product stream containing hydrogenated product; and
recovering said product stream containing said hydrogenated product.

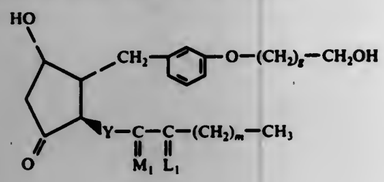
4,066,700

2-DECARBOXY-2-HYDROXYMETHYL-3,7-INTER-m-PHENYLENE-3-OXA-PGD$_1$ COMPOUNDS

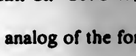
Norman A. Nesloe, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 647,363, Jan. 8, 1976, Pat. No. 4,028,419. This application Mar. 17, 1977, Ser. No. 778,771
Int. Cl.[2] C07C *49/84*
U.S. Cl. 260—590 C **22 Claims**

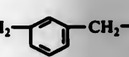
1. A prostaglandin analog of the formula



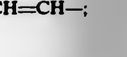
wherein
Y is trans—CH=CH—;
wherein M_1 is



or



wherein
R_5 is hydrogen or methyl;
wherein
L_1 is



or



or a mixture of



and



wherein
R_3 and R_4 are hydrogen, methyl, or fluoro, the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;
wherein g is one, 2, or 3; and
wherein m is one to 5, inclusive.

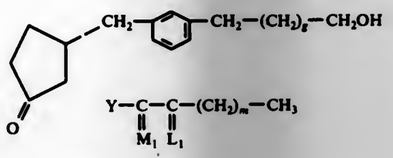
4,066,701

2-DECARBOXY-2-HYDROXYMETHYL-3,7-INTER-M-PHENYLENE-9-DIOXY-PGD$_1$ COMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

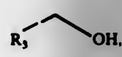
Division of Ser. No. 647,363, Jan. 8, 1976, Pat. No. 4,028,419. This application Mar. 17, 1977, Ser. No. 778,772
Int. Cl.[2] C07C *49/82*
U.S. Cl. 260—590 C **22 Claims**

1. A prostaglandin analog of the formula

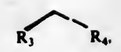


wherein Y is trans—CH=CH—;
wherein M_1 is

or

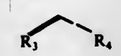


wherein R_5 is hydrogen or methyl;
wherein L_1 is





or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;
wherein g is one, 2, or 3; and
wherein m is one to 5, inclusive.

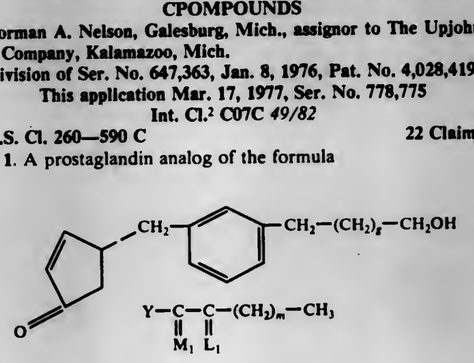
4,066,702

2-DECARBOXY-2-HYDROXYMETHYL-3,7-INTER-M-PHENYLENE-9-DEOXY-9,10-DIDEHYDRO-PGH$_1$ CPOMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 647,363, Jan. 8, 1976, Pat. No. 4,028,419. This application Mar. 17, 1977, Ser. No. 778,775
Int. Cl.[2] C07C *49/82*
U.S. Cl. 260—590 C **22 Claims**

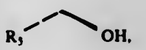
1. A prostaglandin analog of the formula



wherein Y is trans —CH=CH—;
wherein M_1 is

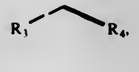


or



wherein R_5 is hydrogen or methyl;
wherein L_1 is





or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;
wherein g is 1, 2, or 3; and
wherein m is 1 to 5, inclusive.

4,066,703

METHOD FOR PRODUCING AROMATIC HYDROXIDE AND ALIPHATIC KETONE

Tsutomu Shintani; Azuhiro Ozeki; Haruo Kunihiro, and Kosuke Shigehiro, all of Oita, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 5, 1976, Ser. No. 729,850
Claims priority, application Japan, Oct. 13, 1975, 50-123410; Jan. 21, 1976, 51-6251
Int. Cl.[2] C07C *45/00, 37/08*
U.S. Cl. 260—592 **1 Claim**

1. In the method for producing an aromatic hydroxide and an aliphatic ketone by cleaving an oxidation product containing a hydroperoxide of at least one secondary alkyl substituted aromatic hydrocarbon selected from the group consisting of cumene, isopropyl-sec.-butylbenzene, cyclohexylbenzene, cymene, isopropylxylene, ethylisopropylbenzene, diisopropylbenzene, isopropyl-tertbutylbenzene, isopropylnaphthalene, isopropylbiphenyl and isomers thereof, in the presence of an acid catalyst selected from the group consisting of sulfuric acid, sulfuric acid anhydride, perchloric acid, sulfur dioxide, aromatic sulfonyl chlorides and trichloromethanesulfonic acid, at a temperature of about 50° to 80° C, the improvement which comprises incorporating at least one antioxidant selected from the group consisting of phenol antioxidants and amine antioxidants into the oxidation product in an amount of at least 0.001% by weight based on the weight of the oxidation product, prior to or during the cleavage,
the phenol antioxidant being 2,6-di-tert.butyl-4-methylphenol, 2,2'-methylene-bis-(6-tert.butyl-4-methylphenol), 4,4'-thiobis-(6-tert.butyl-3-methylphenol), 4,4'-butylidene-bis(6-tert.butyl-3-methylphenol), styrenated phenols or 1,1-bis-(4-hydroxyphenol)-cyclohexane, and the amine oxidant being phenyl-β-naphthylamine, N,N'-di-β-naphthyl-p-phenylenediamine, N,N'-diphenyl-p-phenylenediamine, 2,2,4-trimethyl-1,2-dihydroquinoline polymer or N-phenyl-N'-diisopropyl-p-phenylenediamine.

4,066,704

CATALYTIC OXIDATION

Norman Harris, and David Naden, both of Stockton-on-Tees, England, assignors to The Power-Gas Corporation Limited, Teesside, England

Filed Dec. 28, 1970, Ser. No. 102,067
Claims priority, application United Kingdom, Mar. 24, 1970, 14072/70; July 16, 1970, 34508/70; July 20, 1970, 35500/70; Oct. 22, 1970, 50131/70
Int. Cl.[2] C07C *45/02*; B01J *23/00*
U.S. Cl. 260—604 R **2 Claims**

1. A process for the catalytic oxidation or oxidative dehydrogenation of an alkane of 3 to 8 carbon atoms to an aldehyde, in which a feed gas comprising oxygen and the alkane in vapor phase is passed in the absence of ammonia and at a temperature in the range of 350° to 569° C. over a solid oxidation catalyst comprising one of the elements Sb, Mo, W, V and Bi; at least one other of those elements and/or at least one of the elements

Fe, Sn, U, Ti, Pb, Co, Cu and P; and oxygen, and in which the partial pressure of the alkane in the feed gas is in excess of 0.70 atmosphere absolute and the alkane constitutes more than 70% of the feed gas by volume.

4,066,705

POLYBENZIMIDAZOLE FIBER SUPPORTED CATALYST

O. Richard Hughes, Chatham, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 22, 1975, Ser. No. 624,798
Int. Cl.² C07C 45/08
U.S. Cl. 260—604 HF 4 Claims

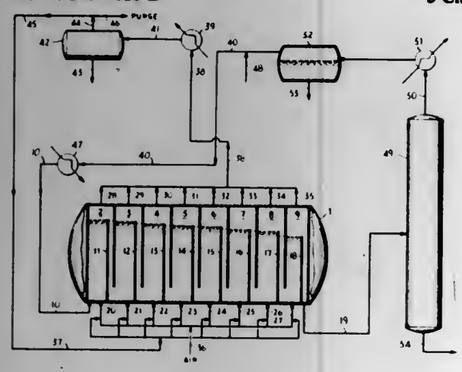
1. In a hydroformylation process in which an olefin of from 2 to 20 carbon atoms is reacted with carbon monoxide and hydrogen under hydroformylation conditions wherein the temperature varies from about 20° to about 200° C and the pressure varies from about 1 to about 50,000 psi to yield a product selected from the group consisting of aldehyde, alcohol and mixtures thereof; the improvement comprising carrying out the reaction in the presence of an insolubilized polybenzimidazole fiber supported rhodium catalyst wherein a rhodium carbonyl complex of the type $[Rh(CO)_nX_y]_2^{a'}$, where a may vary from 0 to −2, n may vary from 1 to 2, y may vary from 1 to 2, and X is a member selected from the group consisting essentially of a halogen, carboxylate, nitrate, thiocyanate and sulfate, forms a polybenzimidazole complex with the benzimidazole units of the polybenzimidazole fiber surface, said benzimidazole units acting as donor ligands for the rhodium carbonyl complex.

4,066,706

PREPARATION OF ETHYLBENZENE HYDROPEROXIDE

John P. Schmidt, Princeton, N.J., assignor to Halcon International, Inc., New York, N.Y.

Filed Apr. 21, 1975, Ser. No. 569,734
Int. Cl.² C07C 179/02
U.S. Cl. 260—610 B 5 Claims



1. A process for the preparation of ethylbenzene hydroperoxide by the liquid-phase molecular oxygen oxidation of ethylbenzene in a reaction zone wherein liquid flows from an upstream portion to a downstream portion of said reaction zone which comprises the steps of introducing liquid ethylbenzene into the upstream portion of said reaction zone, introducing air into said reaction zone for direct contact of said molecular oxygen with said ethylbenzene in said zone, removing vapors comprising non-condensible inert gases from said reaction zone, cooling said vapors to separate condensible components from said vapors, recycling said cooled non-condensible gases to said reaction zone, and removing a liquid stream containing product ethylbenzene hydroperoxide from the downstream portion of said reaction zone, said zone being under a pressure of about 1 psig to about 1000 psig and said cooled recycling noncondensible gases being introduced into said zone at a rate to control the temperature of said zone within the range of about 100° to about 165° C., said temperature decreasing from the upstream portion of said zone to the downstream portion of said zone.

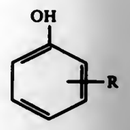
4,066,707

METHOD FOR MANUFACTURE OF DIPHENOLS AND MONOALKYL ETHERS OF DIPHENOLS

Kiyoshi Nakatani, Tokyo; Juichi Imamura, Chofu; Toshiyuki Ichikawa, Tokyo; Kouichi Takeuchi, Yokohama, and Kenji Kotaka, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology and Mitsui Toatsu Chemicals, Incorporated, both of Tokyo, Japan

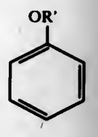
Filed Aug. 25, 1976, Ser. No. 717,534
Claims priority, application Japan, Aug. 28, 1975, 50-104451
Int. Cl.² C07C 37/00
U.S. Cl. 260—613 R 6 Claims

1. A method for the manufacture of at least one reaction product selected from the group consisting of diphenol and an ether of diphenol having the hydrogen atom of one hydroxy group thereof substituted with one member selected from the group consisting of alkyl and aryl groups of 1 to 12 carbon atoms, which method comprises subjecting at least one compound as the starting material selected from the group consisting of the compounds of the generic formula:



(I)

(wherein, R is selected from the group consisting of a hydrogen atom and alkyl groups having 1 to 12 carbon atoms) and the compounds of the generic formula:



(II)

(wherein, R' is selected from the group consisting of alkyl and aryl groups having 1 to 12 carbon atoms) to oxidation at temperatures in the range of from 30° to 150° C for a period of from 10 to 200 minutes with at least one organic per-acid selected from the group consisting of performic acid, peracetic acid, perpropionic acid, perbutyric acid, perisobutyric acid, permonochloroacetic acid, pertrichloroacetic acid and perbenzoic acid in an amount corresponding to 0.01 to 0.3 mol based on the compound as the starting material in the presence of at least one catalyst selected from the group consisting of acetyl acetone and acetonyl acetone in an amount corresponding to 0.001 to 2% by weight based on the compound as the starting material.

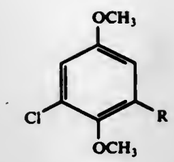
4,066,708

PROCESS FOR PREPARING CHLORINATED HYDROQUINONE DIMETHYL ETHERS

Hans Millauer, Eschborn, Taunus, and Rudolf Pistorius, Wehrheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

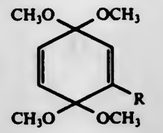
Filed Sept. 15, 1976, Ser. No. 723,486
Int. Cl.² C07C 41/00
U.S. Cl. 260—613 D 7 Claims

1. A process for preparing chlorinated hydroquinone dimethyl ethers of the formula



I,

wherein R is hydrogen or chlorine, from quinoid starting compounds which comprises mixing p-benzoquinone tetramethyl diketals of the formula



II,

wherein R is defined as in the formula I, with a solution of an excess of hydrogen chloride in an aprotic solvent, at a temperature from about −50° to +50° C and isolating the products of the formula I thus formed.

4,066,709

α-ETHYNY BENZHYDROLS

Edit Toth; Jozsef Törley; Sandor Görög; Laszlo Szporny; Eva Palosi, and Szabolcs Szeberenyi, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Division of Ser. No. 495,846, Aug. 8, 1974, Pat. No. 3,965,179.
This application Nov. 10, 1975, Ser. No. 630,511
Claims priority, application Hungary, Aug. 15, 1973, RI 520
Int. Cl.² C07C 31/16
U.S. Cl. 260—618 B 2 Claims

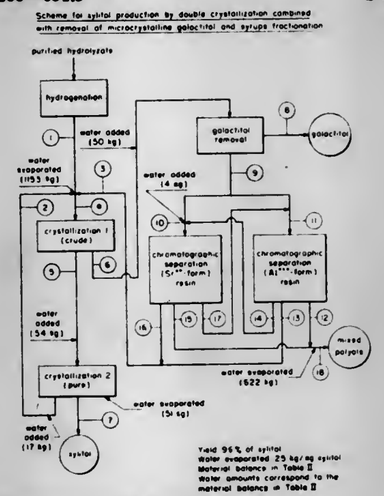
1. 2,5-dimethyl-α-ethynyl-benzhydrol.

4,066,710

UNSATURATED ALCOHOL

Paul Albert Ochsner, Geneva, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Continuation of Ser. No. 430,354, Jan. 2, 1974, abandoned. This application Aug. 19, 1976, Ser. No. 715,963
Int. Cl.² C07C 33/02
U.S. Cl. 260—631.5 1 Claim



1. 2,7-Dimethyl-5,7-octadien-2-ol.

4,066,711

METHOD FOR RECOVERING XYLITOL

Asko J. Melaja; Jouko J. Virtanen, and Heikki O. Heikkila, all of Kantvik, Finland, assignors to Suomen Sokeri Osakeyhtio (Finnish Sugar Company), Helsinki, Finland

Filed Mar. 15, 1976, Ser. No. 666,584
Int. Cl.² C07C 29/24
U.S. Cl. 260—637 R 10 Claims

1. A method for obtaining xylitol crystals of pharmaceutical grade from an aqueous solution of a mixture of polyols including xylitol which comprises the steps of

a. subjecting said solution to a crude xylitol crystallization step to crystallize a major portion of the xylitol therein while leaving a mother liquor,
b. removing the crude crystals from the mother liquor,
c. recrystallizing the xylitol by dissolving the crude crystals in water and crystallizing them to provide crystals of high purity, while leaving a mother liquor, and
d. recovering residual xylitol from the mother liquors from the crystallization and recrystallization steps by subjecting at least a portion of the mother liquors to a chromatographic fractionation using at least two columns containing sulfonated polystyrene cation exchange resins cross-coupled with di-vinyl benzene, one of said columns containing the resin in an alkaline earth form and the other of said columns containing the resin in an Al^{+++} or Fe^{+++} form.

4,066,712

REFORMING PROCESS USING CHROMIUM TRIOXIDE-GRAPHITE INTERCALATION CATALYST

Jesse R. Harris, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 25, 1975, Ser. No. 616,720
Int. Cl.² C07C 5/22, 15/00
U.S. Cl. 260—668 D 9 Claims

1. A process for reforming nonaromatic hydrocarbons to produce a product having an increased aromatic content which comprises contacting a nonaromatic hydrocarbon-containing feed under reforming conditions of temperature and pressure in the presence of a catalyst consisting of a molecular chromium trioxide-graphite intercalation complex to convert the nonaromatic hydrocarbons present in the feed to aromatics, and withdrawing a reformate rich in aromatics, said catalyst having been prepared by heating a mixture of chromium trioxide and graphite at an elevated temperature and for a period of time sufficient to form said complex having a weight ratio of chromium trioxide to graphite of about 0.01:1 to about 2.5:1.

4,066,713

PROCESS FOR THE ADDITION OF ORGANIC ACIDS TO ACETYLENIC COMPOUNDS CONTAINED IN INORGANIC OR ORGANIC HYDROCARBON STREAMS

Rocco Faraci; Carlo Rescalli, and Stefano Catini, all of San Donato (Milan), Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Filed July 6, 1976, Ser. No. 703,121
Claims priority, application Italy, July 8, 1975, 25171/75
Int. Cl.² C07C 11/02
U.S. Cl. 260—677 A 15 Claims

1. A method for the removal of acetylenic compounds contained in inorganic or organic hydrocarbon streams, characterized in that an organic acid is added to said acetylenic compounds in the presence of an acidic ion-exchange resin, the acidic groups of which have been totally exchanged with both mercuric ions and ions of alkali metal or alkaline earth metals.

4,066,714

MANUFACTURE OF LIGHT OLEFINS

Paul G. Rodewald, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 8, 1975, Ser. No. 638,403
Int. Cl.² C07C 1/20, 11/02
U.S. Cl. 260—682 7 Claims

1. A process for producing hydrocarbons which comprises contacting, under conversion conditions, a charge consisting essentially of one or more lower monohydric alcohols having up to four carbon atoms, the ethers derived therefrom, or mixtures of said alcohols and ethers with a catalyst comprising a crystalline aluminosilicate zeolite having a crystal size within the approximate range of 1 to 2 microns, a silica to alumina ratio of at least about 12, a constraint index within the approximate range of 1 to 12 and containing, in cationic form, between about 0.01 and about 1.9 milliequivalents per gram of a metal selected from the group consisting of cesium and barium.

4,066,715

METHOD FOR PREPARATION OF OLEFIN OLIGOMER

Hiroshi Isa; Toshiyuki Ukigai, both of Yachiyo; Anri Tominaga, Tokyo, and Michito Sato, Yokohama, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1976, Ser. No. 675,238
Claims priority, application Japan, Apr. 16, 1975, 50-45591
The portion of the term of this patent subsequent to Dec. 14, 1993, has been disclaimed.
Int. Cl.² C07C 3/18
U.S. Cl. 260—683.15 B 6 Claims

1. A method or preparing an olefin oligomer, which comprises polymerizing at a temperature of from 50° to 150° C, an olefin or a mixture of olefins having 6 or more carbon atoms, in the presence of a catalyst mixture of (a) a polyhydric alcohol derivative obtained by replacing the hydrogen atoms of all the hydroxyl groups of the polyhydric alcohol by either acyl groups exclusively or by acyl groups and alkyl groups, both of said groups having 1 to 20 carbon atoms, (b) an aluminum halide in an amount of 1.1 to 2.8 mole per one ester bond or ether bond of said polyhydric alcohol derivative, and (c) metallic aluminum powder; and recovering an olefin oligomer from the polymerization reaction mixture.

4,066,716

ALKYLATION PROCESS OF ALKANES WITH OLEFINS UTILIZING CHLORIDED ALUMINA CATALYST

Sheldon Herbstman, Spring Valley; Allen N. Webb, and John H. Estes, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 14, 1975, Ser. No. 604,586
Int. Cl.² C07C 3/52
U.S. Cl. 260—683.47 9 Claims

1. A process for the alkylation of alkanes with olefins which comprises contacting an alkane and an olefin under alkylation conditions with an improved catalyst consisting essentially of chlorine and alumina, said improved catalyst prepared by reacting a catalytically active chlorided alumina composite comprising from about 3.0 to 15.0 weight percent chlorine with aluminum chloride at a temperature of between 300° and 650° F. wherein 100 parts by weight of said composite is contacted with from about 2 to 40 parts by weight of vaporized aluminum chloride thereby further chlorinating said catalyst's surface with an additional 2 to 15 weight percent chlorine without the deposition of aluminum chloride.

4,066,717

THERMOPLASTIC RESIN COMPOSITIONS COMPRISING POLYINDENE OR COUMARONE-INDENE RESIN

George S. Li, Aurora, and Irving Rosen, Warrensville Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 24, 1975, Ser. No. 644,122
Int. Cl.² C08L 25/06
U.S. Cl. 260—874 2 Claims

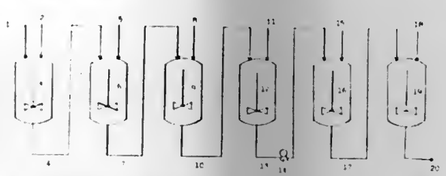
1. A composition having improved physical properties comprising a blend of (A) 100 parts by weight of polystyrene and (B) from 1 to 50 parts by weight of polyindene.

4,066,718

PROCESS FOR THE PRODUCTION OF ETHYLENE-PROPYLENE BLOCK COPOLYMERS

Shinichi Saito, Ichihara; Asaya Okaue, Kimitsu; Kazuo Baba, and Shigeo Tanaka, both of Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 8, 1976, Ser. No. 730,742
Claims priority, application Japan, Oct. 13, 1975, 50-123411
Int. Cl.² C08F 297/08
U.S. Cl. 260—878 B 5 Claims



1. A method for the continuous production of crystalline ethylene-propylene block copolymers containing propylene as the major component in a slurry-phase by homopolymerizing propylene and then copolymerizing ethylene and propylene in the presence of an inert hydrocarbon solvent and a stereoregular polymerization catalyst in polymerization vessels connected in series, which comprises hompolymerizing propylene in three polymerization vessels, wherein the inner pressure of the vessels is decreased in order to make the inner-pressure difference between each consecutive two vessels from 1 to 3 kg/cm^2, and then copolymerizing ethylene and propylene in at least two polymerization vessels, the resulting slurry being transferred from one vessel to the next vessel by the inner-pressure difference between the vessels in the homopolymerization step and being pressure-transferred by means of a slurry pump to at least one vessel in the copolymerization step.

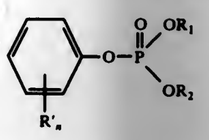
4,066,719

SELECTIVE PHOSPHORYLATION PROCESS

Roger P. Napier, Califon, N.J., and Orville L. Chapman, Los Angeles, Calif., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 548,508, Feb. 10, 1975, Pat. No. 4,003,966. This application Oct. 27, 1976, Ser. No. 736,020
Int. Cl.² C07F 9/12
U.S. Cl. 260—970 8 Claims

1. A process for selective preparation of 0,0-dialkyl phosphates of phenols having the following general formula:



wherein R' is alkylmercapto and n is 1–5; R_1 is alkyl of 1–12 carbon atoms; and R_2 is alkyl of 1–12 carbon atoms, comprising

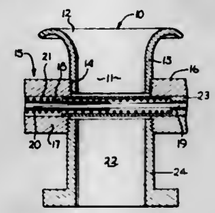
reacting, from about room temperature to the boiling point of the reactants, a phenolic compound with dimethyl disulfide and a trialkyl phosphite each alkyl grup thereof having from 1–12 carbon atoms, said phenolic compound being a phenol containing a ring substituent that is mercapto.

4,066,720

CARBURETOR AIR INTAKE VELOCITY STACK

Efton T. Carter, 2605 Irwin St., Lake Isabella, Calif. 93240

Filed Aug. 30, 1973, Ser. No. 392,883
Int. Cl.² F02M 9/06
U.S. Cl. 261—44 R 2 Claims



1. A carburetor air intake velocity stack engageable with a carburetor inlet comprising:

a. a cylindrical throat section having first and second ends, said throat section having a uniform, interior diameter, the first end thereof being adapted to be coupled to the carburetor; and

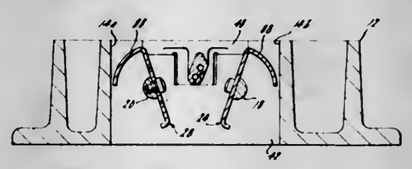
b. a terminus section integrally depending from the second end of said throat section and having an interior surface contiguous with the interior diameter of said throat section, said terminus section having first and second ends, the first end being contiguous with the second end of said throat section, the surface of said terminus section intermediate said first and second ends thereof being a surface of revolution about the axis of symmetry of said cylindrical throat section, said surface of revolution being defined by a curve having a constant first derivative of the radius of curvature, said terminus section intermediate said second and first ends thereof being defined by a radius of curvature commencing at said second end which radius of curvature increases at a constant, linear rate, whereby air drawn into said terminus is induced to flow in a substantially laminar manner.

4,066,721

THROTTLE BODY HAVING A NOVEL THROTTLE BLADE

Kenneth A. Graham, Beverly Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 30, 1976, Ser. No. 719,206
Int. Cl.² F02M 17/40
U.S. Cl. 261—62 3 Claims



1. A throttle body assembly comprising in combination:

a throttle body having a straight induction passage therein comprising four flat walls which, in transverse cross section perpendicular to the axis of the passage, define a rectangular cross section for the passage;

a pair of shafts extending across said passage, each shaft being journaled for rotation on the throttle body about its own axis, one of said shafts being disposed between the passage axis and one wall of said passage, the other shaft being disposed between the passage axis and the opposite wall;

a throttle blade disposed within said passage and affixed to said one shaft in approximate balance thereon, said throttle blade being formed from sheet metal stock of uniform thickness into a shape comprising a flat, rectangular main blade section which, in idle position, extends from said one wall partially across said passage toward said opposite wall but stops short of the other shaft and which fits closely between the remaining two walls of said passage;

a second throttle blade identical to said first throttle blade disposed within said passage and affixed to said other shaft in approximate balance thereon, said second throttle blade also being formed from sheet metal stock of uniform thickness into a shape comprising a flat, rectangular main blade section which, in idle position, extends from said other wall partially across said passage toward said one wall and cooperates with the first throttle blade to define an opening therebetween;

means for rotating said shafts so that the juxtaposed edges of the main blade sections of said blades are displaced from idle position in the downstream direction to increase the area of said opening;

said first throttle blade comprising an auxiliary blade section extending from the edge of its main blade section opposite the edge thereof which is juxtaposed to said second blade, said auxiliary blade section fitting closely between said two remaining walls and presenting a curved confronting surface to said one wall, which when viewed in a transverse cross section perpendicular to the axis of the shaft to which it is attached, is disposed on an at least approximately circular arc which is at least approximately concentric with the axis of the corresponding shaft and has a radius of curvature smaller than the minimum distance from the axis of the corresponding shaft to said one wall, and which is so disposed relative to said one wall as to preclude the intrusion of any appreciable induction flow between said first throttle blade and said one wall as the blades are displaced from idle position over an initial range of operative positions, but which increasingly separates from said one wall as the blades are displaced beyond said initial range to permit induction air to pass between said first throttle blade and said one wall; and

said second throttle blade comprising an auxiliary blade section extending from the edge of its main blade section opposite the edge thereof which is juxtaposed to said first blade, said auxiliary blade section of said second blade fitting closely between said two remaining walls and presenting a curved confronting surface to said other wall, which when viewed in a transverse cross section perpendicular to the axis of the shaft to which it is attached is disposed on an at least approximately circular arc which is at least approximately concentric with the axis of the corresponding shaft and has a radius of curvature smaller than the minimum distance from the axis of the corresponding shaft to said other wall, and which is so disposed relative to said other wall as to preclude the intrusion of any appreciable induction flow between the second throttle blade and said other wall as the blades are displaced from idle position over said initial range of operative positions, but which increasingly separates from said other wall as the blades are displaced beyond said initial range to permit induction air to pass between said second throttle blade and said other wall;

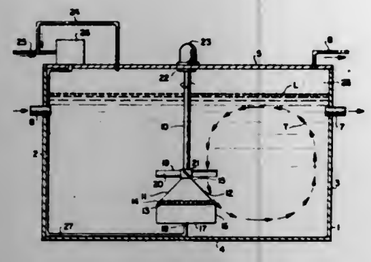
each of said throttle blades being of uniform cross sectional shape throughout its extent along the length of the axis of the shaft to which it is attached, as viewed in perpendicular cross section to the axis of the corresponding shaft.

4,066,722

APPARATUS FOR SPARGING GAS INTO LIQUID

John Joseph Pietruszewski, Buffalo; Carl Scaccia, Depew, and Ralph James Wagner, Tonawanda, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 21, 1976, Ser. No. 688,739
Int. Cl.² B01F *3/04*
U.S. Cl. 261—87 **14 Claims**



1. Apparatus for sparging gas into liquid comprising:
a. A vertically oriented rotatable shaft;
b. A hollow rotatable bell having a generally downwardly diverging symmetrical shape about a central vertical axis, connected to the lower end of the shaft for rotation therewith, with the outer wall surface of the bell including a circumferentially extending jet flow surface portion, with a plurality of circumferentially distributed gas flow wall openings in the base part of the jet flow surface wall portion, and an imperforate wall surface sealing segment joined to the base part of the jet flow surface wall portion to form a liquid seal for the gas flow wall openings, the jet flow surface portion of the wall being imperforate along its upper part and having a surface profile of continuous positive curvature from the base part thereof containing said gas flow wall openings to the upper part thereof with a base angle β of between about 0° and about 60° and an apex angle α of between about 0° and about 65° wherein β is the angle formed in a radial plane between a tangent to the base part surface portion and a horizontal radius line extending from the bell axis to the point of tangency and α is the angle formed in a radial plane between a tangent to the upper part surface portion and the bell axis;
c. Axial flow pumping means disposed about the rotatable bell aligned for flowing liquid downwardly over the jet flow surface portion of the bell wall from the upper part to the base part thereof, to provide a high shear jet flow of liquid over the gas flow wall openings; and
d. Means for introducing pressurized gas into the interior of the rotatable bell for discharge therefrom through the gas flow wall openings into the high shear jet flow of liquid, to provide a localized dispersion of the discharged gas in the jet flow liquid for gas-liquid contacting and bulk mixing thereof.

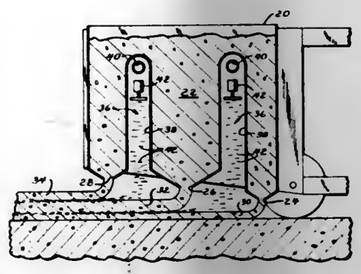
4,066,723

METHOD AND APPARATUS FOR MAKING FIBROUS CONCRETE

Ralph J. King, Dunlap; William H. Belke, Peoria, and William E. Dearlove, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 19, 1976, Ser. No. 668,352
Int. Cl.² E01C *11/18*
U.S. Cl. 264—34 **5 Claims**

1. A method of producing a sheet-like, fiber reinforced concrete structure of a desired thickness comprising the steps of:
a. extruding a sheet of concrete substantially free of reinforcing fibers on a support;
b. thereafter distributing from above the sheet an effective amount of staple reinforcing fibers on the surface of the sheet remote from the support resulting from step (a) before the sheet has set up such that the fibers lie essentially in the plane of said surface;
c. extruding a further sheet of concrete substantially free of reinforcing fibers on said surface of the sheet and the reinforcing fibers received thereon before the concrete sheet has set up;
d. repeating steps (b) and (c) until the desired thickness of the



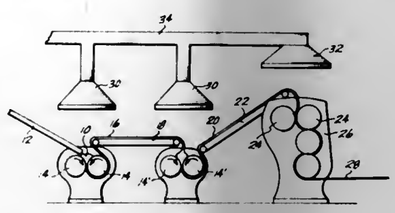
sheet-like structure is approached and before the concrete sheet(s) has set up;
e. extruding a further sheet of substantially fiber-free concrete over the structure resulting from step (d) before the concrete sheets have set up to achieve said desired thickness; and
f. varying the amount of staple fibers distributed during each performance of step (b) to obtain a predetermined fiber distribution from sheet to sheet.

4,066,724

METHOD FOR COLLECTING INDUSTRIAL VAPORS AND PARTICULATE MATTER

Shigeo Matsubara, Yokohama, Japan, assignor to Kohkoku U.S.A., Inc., Everett, Wash.

Division of Ser. No. 602,231, Aug. 6, 1975, Pat. No. 3,999,911.
This application Oct. 7, 1976, Ser. No. 730,603
Claims priority, application Japan, Dec. 25, 1974, 49-147968
Int. Cl.² B03C *3/00*; B29D *7/14*
U.S. Cl. 264—39 **1 Claim**



1. In the manufacture of film or sheet plastic products from plastic resins which are heated and mixed in mixing equipment and are then conveyed by conveyor means to and through a calendaring machine, a method of effectively collecting and removing by-product vapors and particulate matter, comprising:
positioning hood means over at least a portion of the heat and mixing equipment, the conveying means and the calendaring machine;
providing walls of an electrically statically charged clear plastic sheet material which are connected to their tops about border portions of the hood means and which depend therefrom, so as to form vapor collecting enclosures for the mixing and heating equipment, the conveying means and the calendaring machine;

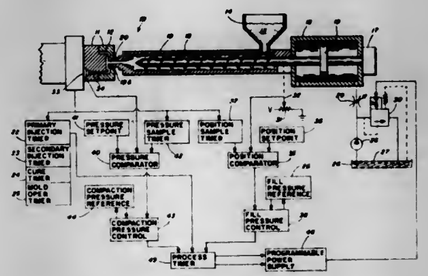
providing duct means extending from the hood means;
providing fan means connected to the duct means for drawing vapors upwardly from said enclosures, through the hood means and then through the duct means, including controlling the rate of vapor removal by the fan means to in this manner maintain the temperature within the enclosures at the level required for production of a quality final product; and
collecting the particulate matter on said material by electrostatic attraction, and replacing the clear plastic sheet material once it has reached its capacity of collected particulate matter.

4,066,725

INJECTION MOLDING CONTROL METHOD

Jon E. Boettner, Owens Township, Winnebago County, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Dec. 3, 1973, Ser. No. 421,115
Int. Cl.² B29G *3/00*
U.S. Cl. 264—40.5 **7 Claims**



1. A method for control of a process for injecting into and curing in a mold cavity a plasticized material comprising the steps of sensing at a predetermined time after initiation of injection the position of a ram injecting said plasticized material into the cavity, determining the deviation of said sensed position from a predetermined setpoint position, adjusting a fill pressure in a manner to compensate for said position deviation, and compacting the plasticized material in said cavity under an independent compaction pressure, wherein said compacting step comprises sensing the mold pressure in said cavity at a second predetermined time after initiation of injection and after completion of filling of the cavity, determining the deviation of said sensed mold pressure from a predetermined setpoint pressure, and adjusting said compaction pressure in a manner to compensate for the pressure deviation.

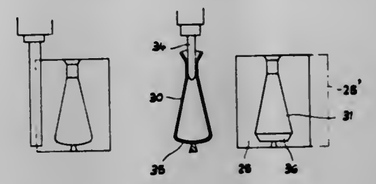
4,066,726

MULTI-STAGE METHOD OF BLOW MOLDING HOLLOW SHAPED ARTICLES

Gottfried Mehnert, Messeistr. 251, Berlin 33, Germany

Continuation of Ser. No. 415,806, Nov. 14, 1973, abandoned.
This application Oct. 14, 1975, Ser. No. 622,020
Claims priority, application Germany, Nov. 18, 1972, 2256683; Oct. 30, 1973, 2354214
Int. Cl.² B29C *17/07*
U.S. Cl. 264—89 **3 Claims**

1. A method of converting parisons into hollow shaped articles, comprising the steps of forming a succession of parisons including extruding plasticized synthetic plastic material substantially vertically downwardly at a first station; transferring parisons to a second station which is laterally offset from said first station, including moving a first multisection mold whose sections are movable between open and closed positions from said second to said first station while said sections are held in open positions, closing said sections around the parison at said first station, separating the thus confined parison from material which is being extruded, and moving the first mold to said second station while said sections remain in closed positions; introducing a hollow blowing mandrel into the mold at said second station and converting the confined parison into a hollow preform by introducing a gaseous blowing medium into the parison through the hollow mandrel; moving said sections to open positions and thereupon moving the mold to said first station for reception of a fresh parison while maintaining said mandrel at said second station with the preform suspended thereon; confining the preform on said mandrel at said second station in a second multi-section mold whose sections are movable between open and closed positions independently of the sections of said first mold so that the length of the interval of confinement of the preform in said second mold can deviate from the length of the interval of confinement of the



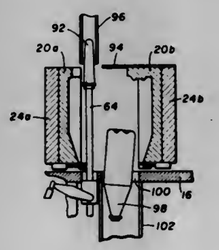
parison in said first mold, including moving the sections of said second mold to open positions at a third station which is laterally offset from said second station; moving the second mold to said second station so that the preform on said mandrel is received between the sections of said second mold and moving the sections of said second mold to closed positions; introducing into the thus confined preform a gaseous blowing medium through said mandrel to convert the preform into a shaped article; withdrawing the mandrel from the second mold at said second station while said sections of said second mold remain in closed positions; and ejecting the article from the second mold, including moving the sections of said second mold to open positions at said third station.

4,066,727

METHOD FOR CONTINUOUS STRETCH-BLOW MOLDING

Joseph R. Reilly, Naugatuck, and Leonard J. Witkowski, Windsor Locks, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 642,936, Dec. 22, 1975, Pat. No. 3,977,822, and a continuation-in-part of Ser. No. 558,841, March 17, 1975, abandoned. This application June 14, 1976, Ser. No. 695,943
Int. Cl.² B29C *17/07*
U.S. Cl. 264—94 **7 Claims**



1. In the process of blow molding articles from preforms which includes the steps of:
positioning such preforms within cavities of continuously moving blow molds;
distending such preforms within the moving molds to form the articles; and
discharging the articles from the still-moving molds at an eject station prior to charging with additional preforms;

the improvement in said process which comprises:

holding a preform temporarily at and moving with each such moving mold while an article is being formed in the cavity of such mold from a prior preform; and

charging said preform directly to said mold during or after discharge of an article formed from a prior preform from such mold at the eject station.

4,066,728

METHOD FOR SPECIMEN PREPARATION

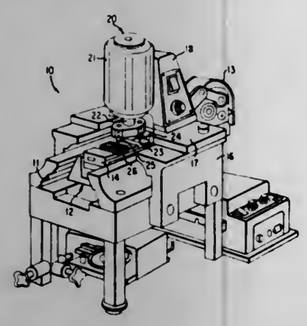
Werner Behme, Walldorf, and Manfred Berleth, Eppelheim, both of Germany, assignors to R. Jung AG Fabrik fur Prazisionsapparate, Heidelberg, Germany

Continuation of Ser. No. 453,142, March 20, 1974, abandoned. This application Apr. 19, 1976, Ser. No. 678,273

Claims priority, application Germany, Mar. 20, 1973, 2314029

Int. Cl.[2] B23C *3/12*; B28B *11/08*

U.S. Cl. 264—162 2 Claims



1. A method of preparing, in a microtome having a rotary milling cutter, a specimen composed of materials exhibiting differential hardness through a cross-section thereof the achieve a mirror-smooth and roughness-free specimen surface for viewing in reflected illumination such as in a scanning electron microscope comprising:

imbedding said specimen in a casting resin medium;

mounting said specimen on a specimen slide means in said microtome;

advancing said specimen along said slide means in a generally horizontally direction relatively toward said rotary milling cutter of said microtome in a plane parallel to the plane of said rotary milling cutter of said microtome;

removing a predetermined thickness of material of said specimen and casting resin medium by cutting by said rotary milling cutter thereby achieving a mirror-smooth, roughness-free, flatly-reduced, planar specimen surface.

4,066,729

EXTRUSION METHOD AND APPARATUS

Jan Baptist Van Cappellen, Berchem, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Continuation of Ser. No. 319,015, Dec. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 43,484, June 4, 1970, abandoned. This application Sept. 16, 1974, Ser. No. 506,574

Claims priority, application United Kingdom, June 4, 1969, 28315/69; Sept. 5, 1969, 44042/69

Int. Cl.[2] B29D *7/24*

U.S. Cl. 264—169 8 Claims

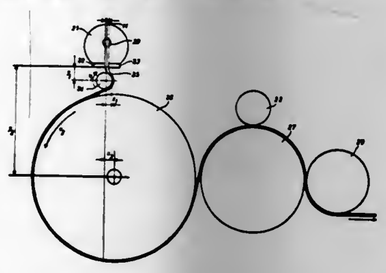
1. Method of producing polyethylene terephthalate film which comprises:

a. extruding molten polyethylene terephthalate along an extrusion plane in a generally downward direction through a downwardly opening slot orifice to form a molten film,

b. stretching the film longitudinally by drawing the film away from the extrusion orifice at a rate faster than the extrusion rate,

c. progressively delivering said stretched film into contact along one of the film surfaces with the peripheral surface of at least one quenching drum maintained at a conventional quenching temperature below the film softening range to solidify film and rotatably driven continuously in one direction to advance the drum surface substantially at said drawing away rate, said drum being located generally below said slot orifice with the peripheral surface region thereof which initially receives said film extending in one direction generally obliquely through and beyond the extrusion plane, and

d. in the gap between the extrusion slot and the adjacent peripheral section of said quenching drum surface, passing said film over its full width while still in substantially molten condition and before said one face is contacted with said quenching surface progressively into contact along its opposite face with an arcuate portion of a highly heat conductive smooth polished control surface moving at substantially said drawing away rate in an endless path including said arcuate portion, said arcuate surface portion arcuate surface portion having an angular extent of up to about 180° and sufficient to provide slip-resisting frictional contact between said film and said control surface and a radius of less than one-fourth the radius of the quenching drum and projecting through and beyond said extrusion plane in the opposite direction to said drum to introduce a bow-shaped deflection in the path of said film between said orifice and drum surface, said control surface being maintained at a temperature ranging from about ambient room temperature to a temperature less than that of the quenching surface at the initial point of contact of said film therewith to thereby provide a skin at the directly proximate stratum of film contacting the control surface, the clearance space between said extrusion slot and the intitial point of contact of said film with said control surface being not more than about 20 mm.



6. In an apparatus for forming polyethylene terephthalate films by extrusion along an extrusion plane in a generally downward direction of a molten polyethylene terephthalate through a downwardly opening slot orifice onto the surface of a rotatable quenching drum maintained at a conventional quenching temperature below the solidification temperature of the polymer, said drum being located beneath said orifice with the peripheral surface region thereof initially contacted by said film extending obliquely in one direction through and beyond the extrusion plane, the improvement comprising a continuous smooth polished control surface of a width at least equal to the width of said film and maintained at a temperature of at least about room temperature but less than the temperature of the quenching drum surface at the initial point of contact of said film with said developing drum surface to thereby provide a skin at the directly proximate stratum of film contacting said control surface, said control surface being movable through a continuous path including an arcuate portion with a radius less than one-fourth that of the quenching drum, at least said arcuate path portion being disposed in the gap between said orifice and said quenching surface for contact with the entire surface of the surface of said film opposite said quenching drum and projecting through and beyond said extrusion plane in the opposite direction to said drum to produce a bow-shaped deflection in the film path in said gap of an arcuate extent up to about 180° and sufficient to provide slip-resisting friction contact between the film and said control surface, and means for rotating the quenching drum surface and for advancing said control surface in the same direction as the film in contact therewith and at substantially the same linear speed which is higher than the linear rate of extrusion of said film in order to stretch said film, the clearance space between said extrusion slot and the initial point of contact of said film with said control surface being not more than about 20 mm.

4,066,730

METHOD FOR PRODUCING REGENERATED CELLULOSE FIBERS HAVING EXCELLENT FLAMEPROOFNESS

Koji Mimura, Otake; Atsushi Kawai, Hiroshima; Yoshiya Kametani, and Tetsuro Nakahama, both of Yokohama, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

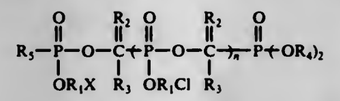
Filed Feb. 27, 1976, Ser. No. 661,859

Int. Cl.[2] D01F *2/08*

U.S. Cl. 264—191 11 Claims

1. A method for producing regenerated cellulose fibers having excellent flameproofness, which comprises:

adding a polyphosphonate represented by formula (1)



(1)

wherein R_1 is ethylene or propylene; R_2 and R_3 are methyl or ethyl which may be the same or different; R_4 is an alkyl group having 1 to 4 carbon atoms, or an aralkyl group in which the alkyl substituent has 1 to 4 carbon atoms and the hydrogen atoms in said alkyl and aralkyl groups may be substituted with chlorine or bromine; R_5 is an unsaturated or saturated aliphatic, alicyclic or aromatic group having 1 to 20 carbon atoms or combinations of said groups defining R_5 and R_5 may be a carbonyl group, or sulfonyl group containing substituent; X is halogen, and n is an integer from 1 to 1000, to a viscose in an amount of 5 to 40% by weight of the cellulose contained in the viscose; and then

spinning the viscose in a coagulation bath.

4,066,731

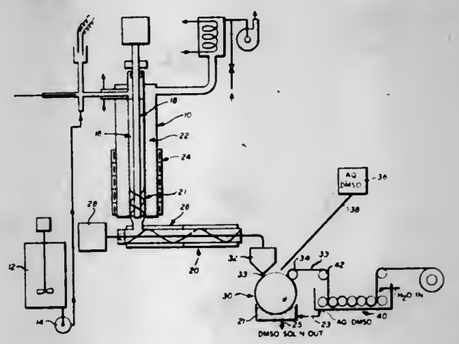
METHOD OF MAKING POLYMERIC ACRYLONITRILE FILMS

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1976, Ser. No. 676,843

Int. Cl.[2] B29D *7/02*

U.S. Cl. 264—216 20 Claims



1. A method for making a biaxially orientable film comprising applying onto a film supporting cooled surface a concentrated solution of an acrylonitrile polymer in a solvent therefor that is water soluble to provide a film comprising said polymer and said solvent, contacting the resulting film with an aqueous medium to substantially remove and replace with water the solvent in the film, and recovering as the resultant film a biaxially orientable film consisting essentially of the acrylonitrile polymer and from about 20 to 75% by weight water.

4,066,732

TOOTHED BELT MAKING

John D. Redmond, Jr., Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Nov. 19, 1976, Ser. No. 743,433

Int. Cl.[2] B29D *29/00*

U.S. Cl. 264—229 11 Claims



10. A method for manufacturing toothed elastomeric power transmission belting having a body and teeth attached thereto, and having a face cover formed on the outer surface of the teeth and substantially free of the elastomer, comprising: bonding the face cover temporarily to a notched mold surface with a temperature sensitive tackifier; elevating the temperature of the tackifier, sufficiently to cause the bond between the face cover and notched mold surface to be at least partially broken; introducing elastomeric material into the notches of the mold and curing the belting into a unitary member.

4,066,733

METAL EXTRACTION FROM SEA NODULES

Michael Dubeck, Birmingham, and Gordon G. Knapp, Southfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 562,904, March 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 396,763, Sept. 13, 1973, abandoned. This application Sept. 30, 1976, Ser. No. 728,275

Int. Cl.[2] C01G *3/14, 51/12, 53/12*

U.S. Cl. 423—32 11 Claims

1. In a process for recovering cobalt, nickel, copper and molybdenum from sea nodules containing copper, nickel, cobalt, molybdenum, manganese and iron and being substantially free of sulfidic sulfur which comprises

1. treating comminuted ore with gaseous reactant selected from the group consisting of alcohols, aldehydes and mixtures thereof;

2. leaching said treated ore with aqueous solution containing ammonia and ammonium salt other than a sulfite or bisulfite;

3. separating any insoluble material which remains after said leaching

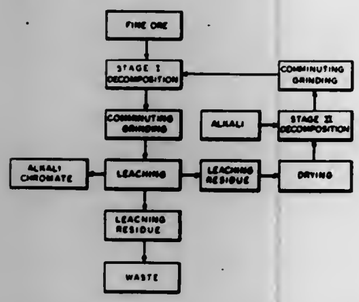
whereby a solution containing soluble copper, nickel, cobalt, and molybdenum substantially free of manganese and iron is obtained, the improvement which comprises treating said comminuted ore with said gaseous reactant at elevated temperatures lower than about 400° C., and providing sulfite in said leaching solution whereby cobalt solubilization is increased.

4,066,734

ALKALINE DISINTEGRATION OF CHROMITES

Wolfgang Bockelmann, Leverkusen; Hans-Georg Nieder-Vahrenholz, Cologne; Hans Niederprüm, Duesseldorf, and Heinz Jonas, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 7, 1976, Ser. No. 721,129
Claims priority, application Germany, Sept. 20, 1975, 2542054
Int. Cl.² C01G *37/00*
U.S. Cl. 423—61 3 Claims



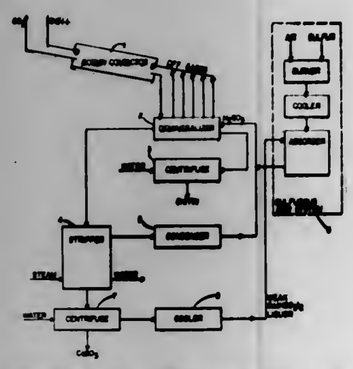
1. In the alkaline-oxidative disintegration of chromites into chromates with an alkali which is at least one member selected from the group consisting of sodium and potassium hydroxides and carbonates, comprising reacting a chromium ore with said alkali in the presence of oxygen and a diluent, and leaching the reaction mixture with at least one of water and/or a chromate-containing aqueous solution, the improvement which comprises heating the residue obtained after leaching with an excess of alkali, based on the chromium oxide content of the residue, in the presence of oxygen, the alkali being at least one member selected from the group consisting of sodium and potassium hydroxides and carbonates, grinding the reaction mixture and, without leaching, employing the ground reaction mixture as an alkali source in another chromite disintegration cycle.

4,066,735

PROCESS FOR DEMINERALIZATION OF CRUSTACEA SHELLS

Quintin P. Peniston, Rte. 7, Box 7710, Bainbridge Island, Wash. 98110, and Edwin Lee Johnson, Rte. 5, Box 4246, Issaquah, Wash. 98027

Continuation of Ser. No. 443,741, Feb. 19, 1974, abandoned. This application Nov. 15, 1976, Ser. No. 742,130
Int. Cl.² C01F *11/46*
U.S. Cl. 423—159 6 Claims



1. In a process for the production of chitin from crustacea shell containing calcium carbonate, the method of demineralizing said shell, comprising treating the shell with sulfurous acid in amount in excess of that required, on a molar basis, to convert the calcium carbonate of the shell to a solution of calcium bisulfite and sufficient to prevent calcium sulfite precipitation, separating the chitin in said shell from said solution, regenerating sulfurous acid from the calcium bisulfite solution and reusing the regenerated sulfurous acid to demineralize additional shell in the process.

4,066,736

PROCESS FOR PRODUCING CONCENTRATED SOLUTIONS OF HYDROXYLAMMONIUM NITRATE AND HYDROXYLAMMONIUM PERCHLORATE

Thomas Liggett, Indian Head, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 19, 1976, Ser. No. 668,569
Int. Cl.² C01B *21/14*
U.S. Cl. 423—386 12 Claims

1. In a process for producing concentrated hydroxylammonium nitrate solutions by reacting an alkaline earth nitrate salt selected from the group consisting of barium nitrate and calcium nitrate with a hydroxylammonium salt selected from the group consisting of hydroxylammonium sulfate and hydroxylammonium acid sulfate, the improvement comprising:

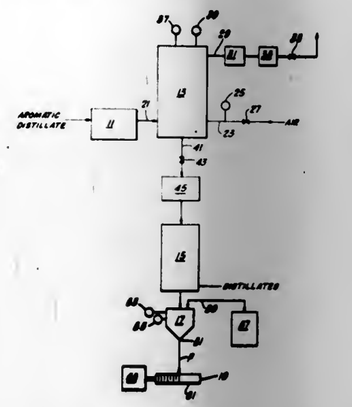
adding the hydroxylammonium salt to a slurry of particles of the alkaline earth nitrate salt suspended in a solvent selected from the group consisting of water and an aqueous hydroxylammonium nitrate solution at a rate which is slower than the rate of solution of the alkaline earth nitrate into the solvent so that an excess of alkaline earth ions over sulfate ions is maintained in the solvent to prevent the formation of a coating of the insoluble alkaline earth sulfate byproduct on the surfaces of the alkaline earth nitrate particles which would prematurely stop the reaction.

4,066,737

METHOD FOR MAKING ISOTROPIC CARBON FIBERS

George R. Romovacek, Monroeville, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 140,474, May 5, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,457
Int. Cl.² B01J *3/06*
U.S. Cl. 423—447.6 5 Claims



1. A method for preparing isotropic carbon fibers from hydrocarbon distillates selected from coal tar distillates boiling between about 200° to 400° C, straight run petroleum distillates boiling between about 200° to 600° C and catalytically cracked recycle petroleum distillates boiling between about 200° to 500° C comprising:

a. reacting the distillate with a gas containing elemental oxygen at a temperature of from about 250° to about 420° C until at least 0.5 standard cubic foot of elemental oxygen is reacted per pound of distillate and the distillate is converted to a pitch like substance which yields isotropic carbon upon subsequent carbonization;

b. forming a fiber from the oxidized hydrocarbon distillate;

c. carbonizing the fiber in an inert atmosphere at temperatures

in excess of 800° C.

4,066,738

PROCESS FOR PRODUCING A FUEL GAS AND SULFUR FROM A HYDROCARBON FUEL

Ernest L. Daman, Westfield, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 19, 1976, Ser. No. 743,444
Int. Cl.² C01B *17/06*
U.S. Cl. 423—569 3 Claims

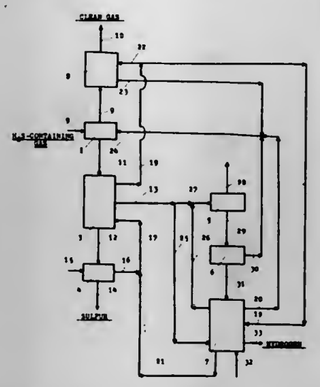
1. A process for producing a fuel gas and sulfur from a hydrocarbon fuel comprising the steps of establishing a first fluidized bed of sorbent material for the sulfur in said fuel, at least partially combusting said fuel in said bed under reducing conditions to produce a fuel gas and a sulfided sorbent, passing said fuel gas to the burners associated with a boiler, passing the combustion gases from said boiler to said fluidized bed, establishing a second fluidized bed, regenerating said sulfided sorbent in said second fluidized bed to produce regenerated sorbent and a sulfur containing gas, passing said sulfur containing gas into a reactor vessel, conveying a continuous supply of granular coal through said reactor vessel in contact with said sulfur containing gas under conditions to burn said coal and produce elemental sulfur, and passing the burned coal from said reactor vessel to said first fluidized bed to combust any unburned carbon present therein.

4,066,739

PROCESS FOR RECOVERING HYDROGEN AND ELEMENTAL SULFUR FROM HYDROGEN SULFIDE AND/OR MERCAPTANS-CONTAINING GASES

Wu-Chi Chen, 859 Brittmoore Road, Houston, Tex. 77079

Filed Mar. 30, 1976, Ser. No. 672,004
Int. Cl.² C01B *17/02, 1/03, 7/18, 7/14*
U.S. Cl. 423—571 2 Claims



1. A process for recovering hydrogen and elemental sulfur from hydrogen sulfide-containing gas consisting essentially of

a. removing hydrogen sulfide from hydrogen sulfide-containing gas by passing said hydrogen sulfide-containing gas through aqueous iodine slurry and operating at temperature between about −20° C. and +80° C. and pressure between about 10 psia. and 5000 psia. to obtain a mixture of elemental sulfur and concentrated hydriodic acid in which concentrated hydriodic acid contains more than 40% by weight of hydrogen iodide and less than 60% by weight of water, and to obtain hydrogen sulfide-lean gas which is subsequently washed with dilute hydriodic acid and fresh water to obtain a gaseous stream which is substantially free of sulfide and any entrained iodide;

b. recovering substantially pure elemental sulfur from said mixture of elemental sulfur and concentrated hydriodic acid by solid-liquid separation to obtain concentrated hydriodic acid filtrate and sulfur cake which is subsequently washed with wash water and is then melted to recover substantially pure elemental sulfur;

c. flashing said concentrated hydriodic acid filtrate to remove any dissolved hydrogen sulfide for recycling and to obtain sulfide-free solution which is then dehydrated to obtain anhydrous hydrogen iodide;

d. manufacturing hydrogen from said anhydrous hydrogen iodide by pressurizing anhydrous hydrogen iodide to between about 200 psia. and 5000 psia., heating this pressurized anhydrous hydrogen iodide to a decomposition temperature of about 150° C. to about 600° C., and then passing this pressurized and heated anhydrous hydrogen iodide through a high surface catalyst-containing bed to obtain a gaseous mixture of hydrogen, iodine, and hydrogen iodide; and

e. recovering substantially pure hydrogen from said gaseous mixture of hydrogen, iodine, and hydrogen iodide by cooling the gaseous mixture of hydrogen, iodine, and hydrogen iodide to above the dew point of hydrogen contained in the gaseous stream to condense and separate substantially pure liquid iodine from the gaseous stream for recycling and then cooling the resulting gaseous stream to below 150° C. to condense and separate liquid hydrogen iodide and trace amount of iodine for recycling and to obtain hydrogen-rich gas which is subsequently washed with concentrated and dilute hydriodic acid, and fresh water to obtain substantially pure hydrogen.

4,066,740

METHOD FOR PRODUCING ALUMINA

Henry Erickson, Park Forest, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 6, 1971, Ser. No. 205,355
Int. Cl.² C01F *7/02*; B01J *21/04*
U.S. Cl. 423—628 14 Claims

1. A method for producing calcined alumina having increased porosity which comprises:

1. forming a mixture of an aqueous slurry of hydrous alumina and at least one surface active agent, said hydrous alumina predominating in α-alumina monohydrate having a crystallite size of less than 100A, the molecules of said surface active agent comprising at least one hydrophobic portion and at least one hydrophilic portion, said hydrous alumina being present in the mixture in an amount from about 8% to about 14% by weight (calculated as Al_2O_3) of the total mixture and said surface active agent being present in the mixture in an amount of from about 0.001% to about 1% by weight based on the total amount of water present in said mixture, including the water of hydration, sufficient to increase the porosity of the calcined alumina hereinafter described;

2. drying said mixture to obtain a solid product which can be formed into macrosized particles;

3. forming said solid product into macrosized particles, said particles upon calcination having a minimum dimension of at least about 0.01 inch; and

4. calcining said macrosized particles to form calcined alumina having increased porosity.

4,066,741

PROCESS FOR THE PRODUCTION OF HYDROGEN BY THE THERMAL DECOMPOSITION OF WATER

Shoichi Sato, Mito, Japan, assignor to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Nov. 5, 1975, Ser. No. 628,930
Claims priority, application Japan, Nov. 8, 1974, 49-128652
Int. Cl.² C01B *1/02, 2/06, 1/08, 13/00*
U.S. Cl. 423—658 2 Claims

1. A process for the production of hydrogen by the decomposition of water at a temperature not greater than 1000° C, comprising an interrelated combination of the following five reactions:

1. reacting iron (II) chloride and carbon dioxide at a temperature of 500° C or greater thereby producing (a) iron oxides mainly comprising iron (III) oxide, (b) iron (III) chloride, and (c) carbon monoxide,
2. reacting said carbon monoxide (c) with water vapor thereby producing carbon dioxide and hydrogen;
3. reacting said iron (III) oxide produced in reaction (1) with hydrogen chloride produced in reaction (5) below, thereby producing iron (III) chloride and water;
4. thermally decomposing said iron (III) chloride, thereby producing iron (II) chloride which is recycled into reaction (1) above, and chlorine; and
5. reacting said chlorine produced in reaction (4) with water vapor thereby producing hydrogen chloride which is recycled into reaction (3) above, and oxygen;

the hydrogen produced in reaction (2) above, being the primary product of said process.

4,066,742

TC-99M SULFUR COLLOID RADIOPHARMACEUTICALS

Michael David Garrett, Alameda, Calif., assignor to Medi-Physics, Inc., Emeryville, Calif.

Filed Feb. 14, 1977, Ser. No. 768,128
Int. Cl.² A61K *29/00, 43/00;* G01T *1/161*
U.S. Cl. 424—1 7 Claims

1. A method for the preparation of a stannous sulfur colloid reagent suitable for the preparation of a size-stabilized Tc-99m-labeled radiopharmaceutical which comprises:

a. adding a sufficient quantity of a 1 molar colloid of stannous chloride in sterile, pyrogen-free water to a predetermined quantity of distilled water to achieve a stannous chloride concentration in the final reagent of between about 0.5 and about 2.0 millimoles;
b. adding to the mixture of step a) a sufficient quantity of 5% by weight aqueous solution of gelatin to achieve a gelatin concentration in the final reagent of between about 0.05% by weight and about 1.0% by weight;
c. treating the mixture of step b) with hydrogen sulfide gas;
d. purging the reagent formed in c) with nitrogen gas;
e. filtering said reagent through a filter having openings of 0.45 micron; and
f. aseptically sealing said reagent in a nitrogen-purged ampul.

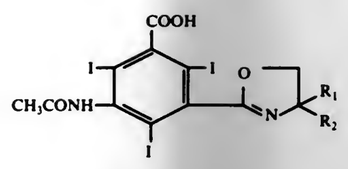
4,066,743

X-RAY CONTRAST AGENTS

Mills T. Kneller, University City, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed June 21, 1976, Ser. No. 697,999
Int. Cl.² C07D *263/14;* A61K *29/02*
U.S. Cl. 424—5 12 Claims

1. A compound of the formula:



wherein R_1 is hydroxymethyl and R_2 is selected from the group consisting of hydroxymethyl and a lower alkyl group containing between 1 and 4 carbon atoms, and esters thereof with lower alkanols, salts thereof with pharmaceutically acceptable cations, and acyl halides thereof.

10. An X-ray contrast medium comprising an aqueous solution of a salt of a compound selected from the group consisting of 3-acetamido-5-(4,4-bishydroxymethyl-2-oxazolinyl)-2,4,6-triiodobenzoic acid and 3-acetamido-5-(4-methyl-4-hydroxymethyl-2-oxazolinyl)-2,4,6-triiodobenzoic acid with at least one pharmaceutically acceptable cation.

4,066,744

SEROLOGICAL REAGENT, TEST SLIDE AND METHOD FOR GONORRHEAL ANTIBODIES

Richard T. Price, Verona, and Rita C. Prodell, West Orange, both of N.J., assignors to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 347,975, April 4, 1973, abandoned, which is a continuation-in-part of Ser. No. 214,213, Dec. 30, 1971, Pat. No. 3,770,383, which is a continuation-in-part of Ser. No. 131,172, April 5, 1971, Pat. No. 3,666,421, which is a continuation-in-part of Ser. No. 818,366, April 22, 1969, abandoned. This application Jan. 16, 1976, Ser. No. 649,768
Int. Cl.² C12K *1/04;* G01N *31/00, 31/02, 31/06*
U.S. Cl. 424—12 20 Claims

1. A reagent for the detection of gonorrheal antibodies in human blood serum or synovial fluid by the immunochemical reaction of the antibodies with gonorrheal antigens, consisting essentially of a supply of spheroidally-shaped latex particles having an average diameter of from 0.2 to 1.3 microns, said particles having adsorbed upon their surface

a. presensitizing protein, which is a dispersing agent for the particles and which is inert to and does not participate in the immunochemical reaction and does not detrimentally influence the antigen and antibody in the reaction, and
b. a sensitizing soluble heat labile gonorrheal antigen from ruptured bacterial cells of an antigenic strain of Neisseria gonorrhoeae bacteria exhibiting T_1 colonial morphology.

6. A test slide adapted for the performance on the surface thereof of an immunochemical test for detection of gonorrheal antibodies in human blood serum or synovial fluid, having as essential elements a substantially planar strip of substrate material having at least one test surface whereon is positioned (1) a deposit of solid dried latex particles having a generally spheroidal shape and having an average particle diameter of from 0.2 to 1.3 microns, said particles having adsorbed upon their surface, (a) a presensitizing protein which is a dispersing agent for the particles and which is inert thereto and does not participate in the immunochemical reaction and does not detrimentally influence the antigen and antibody involved in the reaction, and (b) a sensitizing soluble heat labile gonorrheal antigen from ruptured bacterial cells of an antigenic strain of Neisseria gonorrhoeae bacteria exhibiting T_1 colonial morphology, (2) a second dried deposit of absorbing antigen capable of combining with heterophile antibodies in said serum or synovial fluid, said test deposits being positioned in close proximity on said test surfaces.

4,066,745

DENTIFRICE

Kenneth Tomlinson, Bramhall, and Michael Harrison, New Castle upon Tyne, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 446,453, Feb. 27, 1974, Pat. No. 3,946,108, which is a continuation of Ser. No. 202,664, Nov. 26, 1971, abandoned. This application Feb. 25, 1976, Ser. No. 661,238
Int. Cl.² A61K *7/16*
U.S. Cl. 424—49 7 Claims

1. An extrudible visually clear gel flavored dentifrice with strengthened flavor, taste and smell sensations, containing evenly distributed therein visible bubbles of gas containing volatilized flavor material and of diameter in the 1 to 4 millimeter range and distributed uniformly throughout the dentifrice so that there are from 2 to 40 bubbles per cubic centimeter of dentifrice, which dentifrice is of attractive appearance and comprises a transparent polishing agent which is of a refractive index matching that of the rest of the dentifrice, is insoluble in the rest of the dentifrice and is in particulate form, with the particles thereof being less than 100 microns in diameter, a gelling agent which is an organic or inorganic gum or thickener which produces a clear gel in the described composition, a vehicle which includes a polyhydric alcohol having a refractive index matching that of the other constituents, and a detergent or foaming agent, and is of a viscosity sufficient to maintain positions of the bubbles suspended therein during a shelf life of 6 months.

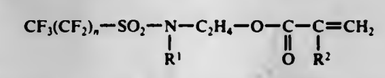
4,066,746

REDUCING THE DRYING TIME OF HAIR WITH FLUORINE-CONTAINING VINYL POLYMERS

Martin Callingham, Richmond, and Kenneth Vasey Curry, Camberley, both of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 458,150, April 5, 1974, abandoned, which is a continuation of Ser. No. 265,940, June 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 819,449, April 25, 1969, abandoned. This application Oct. 16, 1975, Ser. No. 623,166
Claims priority, application United Kingdom, May 1, 1968, 20651/68; June 13, 1968, 28145/68
Int. Cl.² A61K *7/06, 7/135*
U.S. Cl. 424—62 5 Claims

1. A method of treating hair on the head to reduce the time required for the drying thereof when wet, which comprises applying thereto in a cosmetically acceptable carrier suitable for application to human hair an effective amount of a vinyl polymer selected from the group consisting of homopolymers, copolymers, block copolymers and graft copolymers of a fluorine-containing monomer of the formula:



wherein R^1 is an alkyl group containing 1 to 6 carbon atoms
R^2 is hydrogen or methyl, and n is an integer from 3 to 11, the vinyl polymer having a molecular weight of from 20,000 to 1,000,000, and when the polymer is a copolymer, the ratio of the fluorine-containing monomer to the comonomer or comonomers being from 10:1 to 1:1 and said comonomer being selected from the group consisting of halogenated and non-halogenated maleic anhydride, acrylonitrile, vinyl acetate, vinyl chloride, vinyl silicones, styrene, methyl acrylate, methyl methacrylate, ethylene, isoprene and butadiene.

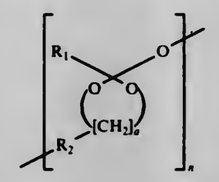
4,066,747

POLYMERIC ORTHOESTERS HOUSING BENEFICIAL DRUG FOR CONTROLLED RELEASE THEREFROM

Richard C. Capozza, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Apr. 8, 1976, Ser. No. 675,185
Int. Cl.² A61K *31/74*
U.S. Cl. 424—78 10 Claims

1. A composition of matter comprising an orthoester polymer of the formula:



wherein R_1 is a member selected from the group consisting of hydrogen, alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 20 atoms, cycloalkyl of 3 to 8 carbon atoms, cycloalkyl of 3 to 8 carbons substituted with a member selected from the group consisting of alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 20 carbon atoms and alkoxy of 1 to 20 carbon atoms, cycloalkenyl of 4 to 8 carbon atoms, and cycloalkenyl of 4 to 8 carbon atoms substituted with a member selected from the group consisting of alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 20 carbon atoms and alkoxy of 1 to 20 carbon atoms; and R_2 is a member selected from the group consisting of alkylene of 1 to 20 carbon atoms, alkenylene of 2 to 20 carbon atoms, cycloalkylene of 3 to 8 carbon atoms, cycloalkylene of 3 to 8 carbon atoms substituted with a member selected from the group consisting of alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 20 carbon atoms and alkoxy of 1 to 20 carbon atoms; cycloalkylene of 4 to 8 carbon atoms, and cycloalkenylene of 4 to 8 carbon atoms substituted with a member selected from the group consisting of alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 20 carbon atoms and alkoxy of 1 to 20 carbon atoms; a is 2 to 3, n is greater than 10, and about 0.01% to about 40% by weight of a beneficial drug dispersed in said polymer, and wherein said drug is released at a controlled and continuous rate to the environment of use as said polymer erodes over a prolonged period of time.

4,066,748

CONTINUOUS PROCESS FOR PRODUCING AN AQUEOUS SOLUTION OF FERRIC CHLORIDE

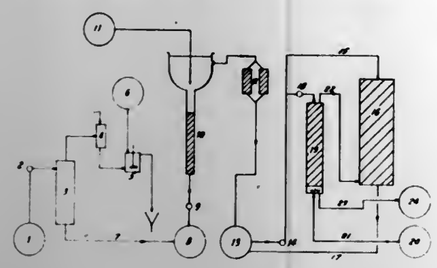
Jean-Marie Lietard, Gent, and Guido Matthijs, Mariakerke, both of Belgium, assignors to U C B, Societe Anonyme, Brussels, Belgium

Filed Aug. 13, 1976, Ser. No. 714,323
Claims priority, application United Kingdom, Aug. 13, 1975, 33701/75
Int. Cl.² C01G *49/10*
U.S. Cl. 424—147 5 Claims

1. A process for producing an aqueous solution of ferric chloride from a pickling liquor containing ferrous chloride comprising the steps of

1. continuously concentrating the pickling liquor by evaporation to at least about 34.25% by weight ferrous chloride concentration;
2. continously neutralizing the resulting concentrated liquor, which still contains free hydrochloric acid, by means of a fluidized bed of iron oxide particles; and
3. continuously countercurrently chlorinating the resulting neutralized concentrated liquor in two succesive reaction zones, to the extent of from 73 to 86% at a temperature of from 35° to 75° C in the first reaction zone and the balance at a temperature of from 40° to 100° C in the second reaction zone, whereby an aqueous solution containing

per liter at least 40% by weight of ferric chloride, less than 0.1% by weight of ferrous chloride and less than 0.1% by



weight of free hydrochloric acid, is obtained, said solution being directly usable for purifying water.

4,066,749

TETRAPEPTIDE ANALOG OF TRH

Daniel F. Veber, Ambler; Ruth F. Nutt, Green Lane, and Ralph F. Hirschmann, Blue Bell, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 24, 1977, Ser. No. 761,760
Int. Cl.² A61K *37/00;* **C07C** *103/52*
U.S. Cl. 424—177 **5 Claims**

1. A process for the preparation of the compound of formula:

L-Kpc-L-His-L-Tca-β-Ala-NH_2

or a pharmaceutically acceptable salt thereof, which comprises the formation of a peptide bond between:
1. L-Kpc-OH and L-His-L-Tca-β-Ala-NH_2;
2. L-Kpc-L-His-OH and L-Tca-β-Ala-NH_2;
3. L-Kpc-L-His-L-Tca-OH and β-ala-NH_2; or
4. L-Kcp-His-L-Tca-β-Ala-OH and NH_3.

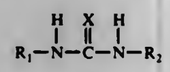
4,066,750

LACTOSYL SUBSTITUTED UREIDES IN RUMINANT FEEDSTUFF

Roy Henry Smith, and Alexander Baxter McAllan, both of Reading, England, assignors to Astra Chemical Products AB, Sodertalje, Sweden

Filed Aug. 2, 1976, Ser. No. 710,637
Int. Cl.² A61K *31/70;* **C07H** *5/06*
U.S. Cl. 424—180 **6 Claims**

1. A ruminant feedstuff composition for increasing beef and milk production containing as a non-protein nitrogen source an effective amount of a compound of the general formula



wherein R_1 is lactosyl, X is a functional group selected from the group consisting of O, S and =NH, and R_2 is a functional group selected from the group consisting of hydrogen, glucosyl and alkyl having 1–4 carbon atoms and a suitable nutritional base.

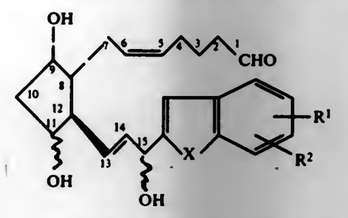
4,066,751

PROSTAGLANDIN ANALOGUES

Masaki Hayashi; Seiji Kori, and Tadao Tanouchi, all of Takatsuki, Japan, assignors to Ono Pharmaceutical Company, Osaka, Japan

Filed Oct. 23, 1975, Ser. No. 625,342
Claims priority, application United Kingdom, Oct. 28, 1974, 46597/74
Int. Cl.² A61K *31/715;* **C08B** *37/16*
U.S. Cl. 424—180 **10 Claims**

1. Prostaglandin analogues of the general formula:



(wherein X represents an oxygen or sulphur atom, R^1 and R^2, which may be the same or different, each represent a hydrogen atom or an alkyl group containing from 1 to 3 carbon atoms, an alkenyl group containing from 2 to 4 carbon atoms or a trifluoromethyl group, and the double bonds depicted in positions C_5–C_6 and C_{13}–C_{14} and cis and trans respectively), and cyclodextrin clathrates thereof.

6. A method for the production of a luteolytic effect in a female mammal which comprises the administration to the female mammal of a prostaglandin analogue as claimed in claim 1 or a cyclodextrin clathrate thereof.

4,066,752

1-DESAMINO-1-HYDROXY AND 1-DESAMINO-1-EPI-HYDROXY-4,6-DI-O-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLITOLS; 1-DESAMINO-1-OXO-4,6-DI-O-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLITOLS, INTERMEDIATES AND USE AS ANTIBACTERIAL AGENTS

Alan K. Mallams, West Orange, N.J., and David Huw Davies, Macclesfield, England, assignors to Schering Corporation, Kenilworth, N.J.

Filed June 21, 1976, Ser. No. 697,804
Int. Cl.² A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—180 **20 Claims**

19. The method of eliciting an antibacterial response in a warm-blooded animal having a susceptible bacterial infection which comprises administering to said animal a non-toxic antibacterially effective amount of a member selected from the group consisting of a 1-desamino-1-hydroxy and a 1-desamino-1-epihydroxy analog of a 4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol having antibacterial activity;
and the pharmaceutically acceptable acid addition salts thereof.

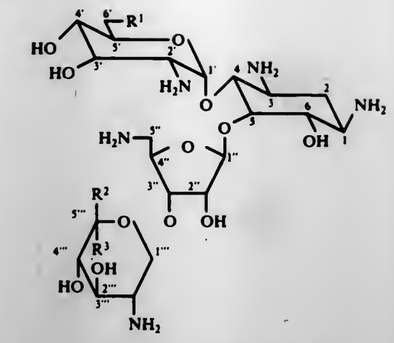
4,066,753

NEOMYCIN AND PAROMOMYCIN DERIVATIVES

Stephen Hanessian, Beaconsfield, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed May 27, 1976, Ser. No. 690,733
Int. Cl.² A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—181 **11 Claims**

1. A compound having the formula



wherein R^1 is selected from $-NH_2$ and $-OH$, one of R^2 and R^3 is $-CH_2NH_2$ and the other is hydrogen; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

11. A method of treating amoebic dysentery in human beings and in animals, which method comprises administering an effective amount of a compound according to claim 1 to the human being or animal.

4,066,754

SLOW RELEASE BOLUS

Shih-Toon Chou, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Apr. 26, 1976, Ser. No. 680,025
Int. Cl.² A61K *31/635, 31/65, 47/00*
U.S. Cl. 424—229 **29 Claims**

1. An improved method of preparing a sustained release veterinary bolus for ruminant animals having a therapeutically active substance, filler material, binder and lubricant wherein the improvement comprises forming the binder by combining an effective amount of zein and an organic solvent, mixing the binder with the therapeutically active substance and filler material to granulate the mixture, drying the mixture, adding a lubricant, blending the dried mixture with an effective amount of zein to insure sustained release of the therapeutically active substance and forming a bolus of sufficient density that will remain in a ruminant animal to release the therapeutically active substance for a period of time up to 15 days in a predictable, controllable pattern.

4,066,755

PHENYLAMINOETHANOL DERIVATIVES FOR TREATING HYPERTENSION

Lawrence Henry Charles Lunts, and David Trevor Collin, both of London, England, assignors to Allen & Hanburys Limited, London, England

Division of Ser. No. 420,547, Nov. 30, 1973, Pat. No. 4,012,444, which is a continuation of Ser. No. 59,979, June 29, 1970, abandoned. This application Dec. 22, 1976, Ser. No. 753,558
Claims priority, application United Kingdom, July 8, 1969, 34379/69
Int. Cl.² A61K *31/60*
U.S. Cl. 424—230 **10 Claims**

1. A pharmaceutical composition for the treatment of hypertension, comprising as active ingredient, an effective amount of 5-[1-hydroxy-2-(1-methyl-3-phenylpropyl)aminoethyl]-salicylamide or a physiologically acceptable acid addition salt thereof in association with a non-toxic pharmaceutically acceptable carrier.

7. A method of treating a human patient suffering from hypertension by blocking both α- and β-adrenergic receptors in the patient, characterized in that there is administered orally, by suppository or by injection, an effective amount of a compound having both α- and β-blocking activity, which compound is 5-[1-hydroxy-2-(1-methyl-3-phenylpropyl)amino-ethyl] salicylamide or a physiologically acceptable acid addition salt thereof.

4,066,756

THERAPEUTIC COMPOSITIONS OF 1,3-BIS(2-CARBOXYCHROMON-5-YLOXYL)PROPAN-2-OL AND ASPIRIN OR INDOMETHACIN

Thomas Samuel Campbell Orr, Melton Mowbray; David Edward Hall, Burton-on-the-Wolds, and John Mann, Long Whatton, all of England, assignors to Fisons Limited, London, England

Filed Nov. 18, 1976, Ser. No. 742,750
Claims priority, application United Kingdom, Nov. 28, 1975, 48935/75
Int. Cl.² A61K *31/35, 31/40, 31/625*
U.S. Cl. 424—232 **14 Claims**

1. A pharmaceutical composition comprising 1,3-bis-(2-carboxy-chromon-5-yloxy)propan-2-ol, or a pharmaceutically acceptable salt thereof, as active ingredient, in combination with about 0.12 to 6000 parts by weight of aspirin or about 0.02 to 1000 parts by weight of indomethacin to each part by weight of active ingredient.

4,066,757

ORAL CONTRACEPTIVE REGIMEN

Samuel A. Pasquale, Basking Ridge, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 26, 1973, Ser. No. 344,668
Int. Cl.² A61K *31/56, 31/57, 31/58*
U.S. Cl. 424—243 **6 Claims**

1. In a method for the prevention of conception of the type wherein a progestin is administered to the human female serially over at least the fifth through the twenty-fifth day of the cycle, the improvement consisting of:
administering a substantially higher dose of a progestin during approximately the last 7 days of administration than during approximately the first 7 days of administration and terminating the administration of the progestational agent on or after the twenty-fifth day of the cycle.

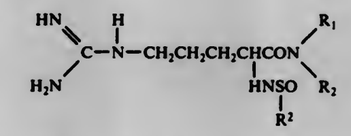
4,066,758

N^2-NAPHTHALENESULFONYL-L-ARGININE DERIVATIVES, AND THE PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Shosuke Okamoto, Kobe; Ryoji Kikumoto, Tokyo; Kazuo Ohkubo, Tokyo; Shinji Tonomura, Tokyo; Yoshikuni Tamao; Tohru Tezuka, both of Yokohama, and Akiko Hijikata, Kobe, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo and Shosuke Okamoto, both of, Japan

Continuation-in-part of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Mar. 29, 1976, Ser. No. 671,436
Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-23268; Feb. 26, 1975, 50-23635; Mar. 5, 1975, 50-26768; Mar. 11, 1975, 50-29357; Mar. 11, 1975, 50-29358
The portion of the term of this patent subsequent to Sept. 20, 1994, has been disclaimed.
Int. Cl.² A61K *31/445;* **C07D** *211/16*
U.S. Cl. 424—244 **11 Claims**

1. N^2-naphthalenesulfonyl-L-arginine amides having the formula



or the acid addition salts thereof with a pharmaceutically acceptable acid, wherein R_1 and R_2 are members selected from the group consisting of hydrogen and a hydrocarbon selected

from the group consisting of C_{1-10} alkyl, C_{6-10} aryl, C_{7-15} aralkyl, C_{3-10} cycloalkyl and C_{4-15} cycloalkylalkyl, or R_1 or R_2 together form a polymethyleneiminyl group of 3-10 carbon atoms, the methylene groups of which are optionally substituted by one or two alkyl groups of not more than 10 carbon atoms; and R' is a member selected from the class consisting of 1-naphthyl substituted with one member selected from the class consisting of alkoxy and alkoxycarbonyloxy, respectively containing not more than 10 carbon atoms; and 2-naphthyl substituted with a member selected from the class consisting of alkoxy and alkoxycarbonyloxy, respectively containing not more than 10 carbon atoms.

11. A method for inhibiting activity and suppressing of activation of thrombin in vivo, comprising administering to a patient a pharmaceutically effective amount of a compound of claim 1.

4,066,759

N^2-NAPHTHALENESULFONYL-L-ARGININE DERIVATIVES, AND THE PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Shosuke Okamoto; Akiko Hijikata, both of Kobe; Ryoji Kikumoto, Machida; Yoshikuno Tamao, Yokohama; Kazuo Ohkubo, Machida; Tohru Tezuka, Yokohama, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo and Shosuke Okamoto, both of, Japan

Continuation-in-part of Ser. No. 671,436, March 29, 1976, which is a continuation-in-part of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Jan. 19, 1977, Ser. No. 760,586

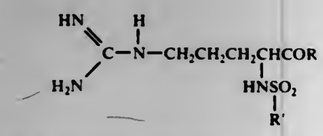
Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635; Mar. 5, 1975, 50-026768; Mar. 11, 1975, 50-029357; Mar. 11, 1975, 50-029358

The portion of the term of this patent subsequent to Jan. 3, 1995, has been disclaimed.

Int. Cl.[2] **A61K** *31/445;* **C07D** *211/16*

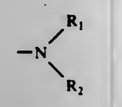
U.S. Cl. 424—244 **8 Claims**

1. N^2-naphthalenesulfonyl-L-arginine esters and amides having the formula



I

or the acid addition salts thereof with a pharmaceutically acceptable acid wherein R is selected from the class consisting of (1) alkoxy, alkenyloxy, alkynyloxy and cycloalkoxy, respectively containing not more than 10 carbon atoms, aralkyloxy of not more than 15 carbon atoms, tetrahydrofurfuryloxy, and alkoxy of not more than 10 carbon atoms substituted with an alkoxy group of not more than 10 carbon atoms, halogen or nitro; (2)



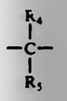
wherein R_1 is selected from the class consisting of alkenyl of not more than 10 carbon atoms, and substituted alkyl containing not more than 20 carbon atoms wherein said substituent is a member selected from the class consisting of alkoxy, alkoxycarbonyl, arylcarbamoyl, acyl, acyloxy, N,N-polymethylenecarbamoyl and carboxy; and R_2 is selected from the class consisting of hydrogen, alkyl and alkenyl, respectively containing not more than 10 carbon atoms; and substituted alkyl containing not more than 20 carbon atoms wherein said substituent is a member selected from the class consisting of alkoxy, alkoxycarbonyl, arylcarbamoyl, acyl, acyloxy, N,N-polymethylenecarbamoyl and carboxy; and (3)



wherein Z is a divalent group containing up to 20 carbon atoms, which consists of more than one group selected from the class consisting of methylene $-CH_2-$, mono-substituted methylene



wherein R_3 is selected from the class consisting of alkyl, acyl, alkoxy and alkoxycarbonyl, respectively containing not more than 10 carbon atoms, and carbamoyl; and disubstituted methylene



wherein R_4 and R_5 are alkyl groups of not more than 10 carbon atoms, and which may further contain at least one member selected from the class consisting of cycloalkylene of not more than 10 carbon atoms, phenylene



which may be arranged in any order and complete the



ring together with the said methylene, monosubstituted methylene or disubstituted methylene; with the proviso that Z is not polymethylene of 3–10 carbon atoms or polymethylene of 3–10 carbon atoms substituted by one or two alkyl groups of not more than 10 carbon atoms and R' is a member selected from the class consisting of 5,6,7,8-tetrahydro-1-naphthyl, 5,6,7,8-tetrahydro-2-naphthyl, 1-naphthyl, 2-naphthyl, 1-naphthyl substituted with one member selected from the class consisting of alkoxy and alkoxycarbonyloxy, respectively containing not more than 10 carbon atoms; and 2-naphthyl substituted with a member selected from the class consisting of alkoxy and alkoxycarbonyloxy, respectively containing not more than 10 carbon atoms.

8. A method for inhibiting activity and suppressing activation of thrombin in vivo, which comprises administering to a mammal a pharmaceutically effective amount of a compound of claim 1.

4,066,760

AGRICULTURAL AND HORTICULTURAL FUNGICIDAL COMPOSITIONS

Seigo Kawada, Fujieda, and Shigeru Hayashi, Shizuoka, both of Japan, assignors to Kumiai Chemical Industries Ltd., Tokyo, Japan

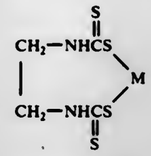
Filed Mar. 24, 1977, Ser. No. 781,042

Claims priority, application Japan, Mar. 29, 1976, 51-35013; Mar. 29, 1976, 51-35014

Int. Cl.[2] **A01N** *9/02, 9/12, 9/22*

U.S. Cl. 424—245 **7 Claims**

1. A fungicidal composition for agricultural and horticultural use comprising a suitable carrier and a fungicidally effective amount of a mixture consisting essentially of about 0.5 to 2 parts by weight of N-(4-fluorophenyl)-2,3-dichloromaleimide per part of at least one compound selected from the group consisting of a compound expressed by the formula:



(where M represents manganese or zinc, and when M is manganese, zinc may coordinate in the molecules), N-trichloromethylthio-4-cyclohexene-1,2-dicarboxyimide and 8-oxyquinoline copper.

4,066,761

7-ACYL-3-(UREIDOALKYL SUBSTITUTED TETRAZOLYLTHIOMETHYL)CEPHALOSPORINS

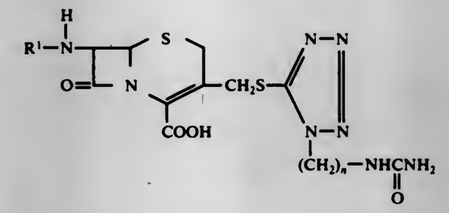
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 639,033, Dec. 9, 1975, Pat. No. 4,025,626. This application Dec. 22, 1976, Ser. No. 753,244

Int. Cl.[2] **C07D** *501/36;* **A61K** *31/545;* **260** */243 C*

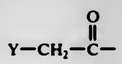
U.S. Cl. 424—246 **9 Claims**

1. A compound of the formula:



in which:

R^1 is an acyl group of the formula:



where:

Y is cyano, aminomethylphenyl, sydnone, thienyl, pyridone or tetrazolyl; and

n is two to five,

or a non-toxic pharmaceutically acceptable salt thereof.

6. A pharmaceutical composition comprising an anti-bacterially effective but nontoxic amount of a compound as claimed in claim 1 and a pharmaceutically acceptable carrier therefor.

4,066,762

DERIVATIVES OF 7-(2-SUBSTITUTED-2-HYDROXYIMINOACETAMIDO)-3-(1-SUBSTITUTED TETRAZOL-5-YLTHIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACID

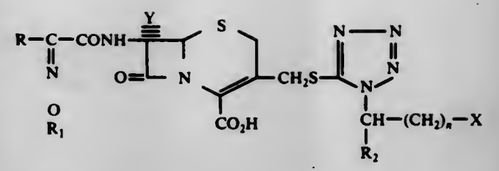
George Lawrence Dunn, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed July 12, 1976, Ser. No. 704,160

Int. Cl.[2] **C07D** *501/36;* **A61K** *31/545;* **C07D** *501/60*

U.S. Cl. 424—246 **18 Claims**

1. A compound of the formula:



in which:

R is thienyl, furyl or phenyl;

R_1 is hydrogen, lower alkyl, benzyl, phenethyl, thienylmethyl or furylmethyl;

n is selected from 0–9;

R_2 is hydrogen or methyl;

X is sulfo, sulfamyl, sulfamino or methylsulfonamido; and

Y is hydrogen or methoxy, together with its alkali metal salts.

15. A pharmaceutical composition having antibacterial activity comprising an active but nontoxic quantity of a compound of claim 1 and a pharmaceutically acdeptable carrier.

16. A method of inducing antibacterial activity in an infected patient comprising administering internally to said patient an effective but nontoxic quantity of a compound of claim 1.

4,066,763

THIAZINOINDOLES USEFUL AS ANTIDEPRESSANTS

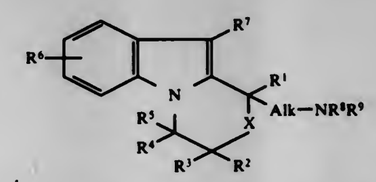
Christopher A. Demerson, Montreal; Leslie G. Humber, Dollard des Ormeaux; George Santroch, Montreal; Thomas A. Dobson, Dollard des Ormeaux, and Ivo Jirkovsky, Montreal, all of Canada, assignors to Ayerst McKenna and Harrison Ltd., Montreal, Canada

Division of Ser. No. 593,582, July 7, 1975, Pat. No. 4,012,511, which is a continuation-in-part of Ser. No. 473,646, May 28, 1974, Pat. No. 3,962,236, and Ser. No. 226,287, Feb. 14, 1972, Pat. No. 3,833,575. This application Dec. 13, 1976, Ser. No. 750,293

Int. Cl.[2] **C07D** *513/04;* **A61K** *31/38*

U.S. Cl. 424—246 **3 Claims**

2. A method of treating depression in a mammal which comprise administering to said mammal an antidepressant effective amount from about 0.1 to about 50 milligrams per kilogram of mammal weight per day of a compound of formula



in which R^1 is lower alkyl or lower cycloalkyl; R^2, R^3, R^4 and R^5 are the same or different selected from the group consisting of hydrogen and lower alkyl; R^6 is hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, nitro or halo, R^7 is lower alkyl; X is thio; and Alk—NR^8R^9 is an amino(lower)alkyl radical in which Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}$, $CR^{10}R^{11}CR^{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}$ and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ in which R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower alkyl, and R^8 and R^9 are either the same or different selected from the group consisting of hydrogen and lower alkyl, or R^8 and R^9 together with the nitrogen atom to which they are joined form a heterocyclic amine radical selected from the group consisting of 1-pyrrolidinyl, piperidino, morpholino, piperazino, 4-(lower alkyl)-1-piperazinyl and 4-[hydroxy(lower)alkyl]-1-piperazinyl, or a corresponding pharmaceutically acceptable acid addition salt thereof.

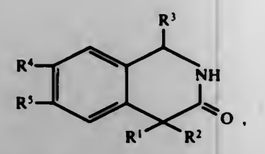
4,066,764

1,4-DIHYDRO-2H-ISOQUINOLINE DERIVATIVES

Rudolf Kunstmann, Hofheim, Taunus, and Joachim Kaiser, Bad Soden, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 515,659, Oct. 17, 1974, Pat. No. 3,980,655. This application Apr. 23, 1976, Ser. No. 679,782
Claims priority, application Germany, Oct. 20, 1973, 2352702; Sept. 14, 1974, 2444109
Int. Cl.[2] C07C *413/06;* A61K *31/535*
U.S. Cl. 424—248.54 4 Claims

1. A 1,4-dihydro-2H-isoquinoline compound of the formula



and physiologically tolerated salts thereof, wherein R^1 is hydrogen or straight-chain or branched alkyl of 1 to 6 carbon atoms; R^2 is morpholine-lower alkyl; R_3 is pyridyl, phenyl, or phenyl mono- or di-substituted by halo, nitro, amino, alkanoylamino having 1 to 4 carbon atoms or alkyl having 1 to 4 carbon atoms; and R^4 and R^5, which may be the same or different, are hydrogen or alkoxy having 1 to 4 carbon atoms.

4. A method for treating arrhythmia in a patient suffering therefrom which comprises administering an anti-arrhythmically effective amount of a compound as in claim 1.

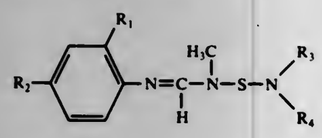
4,066,765

ARTHROPODICIDAL FORMAMIDINES

Victor L. Rizzo, Almena Township, Van Buren County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

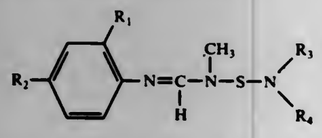
Division of Ser. No. 575,247, May 7, 1975, Pat. No. 3,998,969. This application Sept. 14, 1976, Ser. No. 723,076
Int. Cl.[2] A01N *9/22;* C07D *295/02*
U.S. Cl. 424—248.56 12 Claims

1. A compound of the formula:



wherein R_1 is lower alkyl of from 1 to 4 carbon atoms,; R_2 is hydrogen, halogen or lower alkyl of from 1 to 4 carbon atoms; and R_3 and R_4 taken together are a member selected from the group consisting of piperidino, morpholino, pyrazol-1-yl, tribromopyrazol-1-yl, N-methylpiperazine, pyrrol-1-yl, pyrrolidino, and 2-oxopyrrolidino.

5. A process for controlling arthropodal pest populations which comprises applying to a situs thereof an effective amount of a compound of the formula:



wherein R_1 is lower alkyl of from 1 to 4 carbon atoms; R_2 is hydrogen, halogen or lower alkyl of from 1 to 4 carbon atoms; and R_3 and R_4 taken together are a member selected from the group consisting of piperidino, morpholino, pyrazol-1-yl, tribromopyrazol-1-yl, N-methylpiperazino, pyrrol-1-yl, pyrrolidino, and 2-oxopyrrolidino.

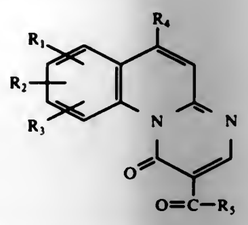
4,066,766

1-OXO-1H-6-SUBSTITUTED PYRIMIDO [1,2-a]QUINOLINE-2-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF AND THEIR USE AS ANTIALLERGY AGENTS

Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 554,966, March 3, 1975, abandoned, and Ser. No. 547,227, Feb. 5, 1975, abandoned, and Ser. No. 456,797, April 1, 1974, abandoned. This application Jan. 20, 1976, Ser. No. 650,713
Int. Cl.[2] A61K *31/505;* C07D *471/04*
U.S. Cl. 424—251 25 Claims

1. A compound of the formula



wherein each of the benzenoid substituents R_1, R_2 and R_3 is selected from the group consisting of hydrogen, alkoxy having from 1 to 5 carbon atoms, carboalkoxy having from 1 to 5 carbon atoms in the alkoxy group, fluoro, chloro, bromo, methylthio, methylsulfinyl and alkyl having from 1 to 5 carbon atoms; with the proviso that no more than two of R_1, R_2 and R_3 are bulky branched chain alkyl or branched chain alkoxy groups and when two of said R_1, R_2 and R_3 are bulky groups they are located on non-adjacent positions;

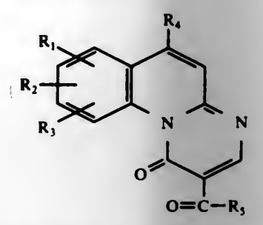
R_2 and R_3 when taken together are selected from the group consisting of 1,3-butadienyl and alkylenedioxy of 1 to 2 carbon atoms;

R_4 is selected from the group consisting of chloro, bromo and OR_4' wherein OR_4' is selected from the group consisting of alkoxy having from 1 to 5 carbon atoms, alkenyloxy of 3 to 4 carbon atoms and alkynyloxy of 3 to 4 carbon atoms;

R_5 is selected from the group consisting of hydroxy, alkoxy having from 1 to 5 carbon atoms and hydroxy substituted alkoxy having from 2 to 5 carbon atoms;

and the pharmaceutically-acceptable cationic salts of those compounds wherein R_5 is hydroxy.

14. The method of treating bronchial asthma in a mammalian subject requiring such treatment which comprises administering to said subject an anti-bronchial effective amount of a compound having the formula



wherein each of the benzenoid substituents R_1, R_2 and R_3 is selected from the group consisting of hydrogen, alkoxy having from 1 to 5 carbon atoms, carboalkoxy having from 1 to 5 carbon atoms in the alkoxy group, fluoro, chloro, bromo, methylthio, methylsulfinyl and alkyl having from 1 to 5 carbon atoms; with the proviso that no more than two of R_1, R_2 and R_3 are bulky branched chain alkyl or branched chain alkoxy groups and when two of said R_1, R_2 and R_3 are bulky groups they are located on non-adjacent positions;

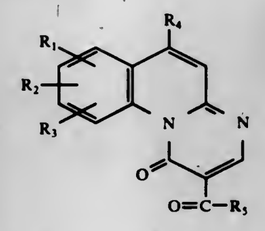
R_2 and R_3 when taken together are selected from the group consisting of 1,3-butadienyl and alkylenedioxy of 1 to 2 carbon atoms;

R_4 is selected from the group consisting of chloro, bromo and OR_4' wherein OR_4' is selected from the group consisting of alkoxy having from 1 to 5 carbon atoms, alkenyloxy of 3 to 4 carbon atoms and alkynyloxy of 3 to 4 carbon atoms;

R_5 is selected from the group consisting of hydroxy, alkoxy having from 1 to 5 carbon atoms and hydroxy substituted alkoxy having from 2 to 5 carbon atoms;

and the pharmaceutically-acceptable cationic salts of those compounds wherein R_5 is hydroxy.

21. A pharmaceutical composition useful in treating bronchial asthma in a mammalian subject requiring such treatment which comprises a pharmaceutically-acceptable carrier and a compound of the formula



wherein each of the benzenoid substituents R_1, R_2 and R_3 is selected from the group consisting of hydrogen, alkoxy having from 1 to 5 carbon atoms, carboalkoxy having from 1 to 5 carbon atoms in the alkoxy group, fluoro, chloro, bromo, methylthio, methylsulfinyl and alkyl having from 1 to 5 carbon atoms; with the proviso that no more than two of R_1, R_2 and R_3 are bulky branched chain alkyl or branched chain alkoxy groups, and when two of said R_1, R_2 and R_3 are bulky groups they are located on nonadjacent positions;

R_2 and R_3 when taken together are selected from the group consisting of 1,3-butanediol and alkylenedioxy of 1 to 2 carbon atoms;

R_5 is selected from the group consisting of hydroxy, alkoxy having from 1 to 5 carbon atoms; and hydroxy substituted alkoxy having from 2 to 5 carbon atoms;

R_4 is selected from the group consisting of chloro, bromo and OR_4' wherein OR_4' is selected from the group consisting of alkoxy having from 1 to 5 carbon atoms, alkenyloxy of 3 to 4 carbon atoms and alkynyloxy of 3 to 4 carbon atoms;

and the pharmaceutically-acceptable cationic salts of those compounds wherein R_5 is hydroxy.

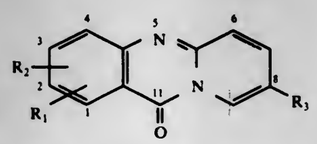
4,066,767

8-(1H-TETRAZOL-5-YL)-11H-PYRIDO[2,1-B]QUINAZOLIN-11-ONES AND METHOD OF TREATING BRONCHIAL ASTHMA USING THEM

Charles F. Schwender, Lebanon, and Brooks R. Sunday, Hackettstown, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 1, 1976, Ser. No. 737,878
Int. Cl.[2] A61K *31/505;* C07D *471/04*
U.S. Cl. 424—251 7 Claims

1. A compound of the formula:



I.

wherein R_1 and R_2 are hydrogen, halogen, hydroxy, methyl-

enedioxy or lower alkyl or alkoxy of 1 to 4 carbons; R_3 is 5-tetrazolyl and the pharmaceutically acceptable salts thereof.

7. A method for the treatment of bronchial asthma in a mammal suffering from asthma which comprises the administration of an anti-asthmatically effective amount of a compound according to claim 1 at an adult human dose of 0.001-20 mg/kg orally, parenterally, or by aerosol.

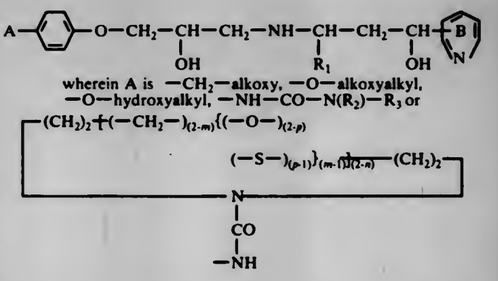
4,066,768

DERIVATIVES OF 1-PHENOXY-3-AMINO-PROPAN-2-OL

Thomas Raabe, Rodenbach; Otto Gräwinger, Frankfurt am Main; Josef Scholtholt, Mittelbuchen; Rolf-Eberhard Nitz, Bergen-Enkheim, and Eckhard Schraven, Frankfurt am Main, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 531,344, Dec. 10, 1974. This application Mar. 24, 1976, Ser. No. 669,995
Claims priority, application Luxembourg, Dec. 27, 1973, 34590
Int. Cl.[2] A61K *31/44;* C07D *213/36*
U.S. Cl. 424—263 12 Claims

1. A compound of the formula



wherein A is —CH_2—alkoxy, —O—alkoxyalkyl, —O—hydroxyalkyl, —NH—CO—N(R_2)—R_3 or

R_1 is —H or methyl;

each of R_2 and R_3 is, independently, —H, alkyl, alkenyl or cycloalkyl;

each of m, n and P is a positive whole number of at most 2; and

ring B is optionally substituted by up to three methyl substituents; each alkyl having from 1 to 4 carbon atoms, each alkoxy having from 1 to 4 carbon atoms, each alkenyl having 3 or 4 carbon atoms and cycloalkyl having from 5 to 7 carbon atoms;

or a pharmaceutically-acceptable acid-addition salt thereof.

3. A pharmaceutically-acceptable β-adrenergic-blocking composition comprising diluent or excipient and an effective concentration of a compound according to claim 1.

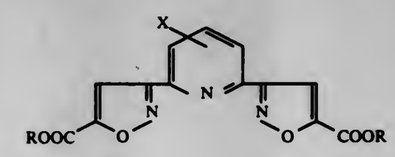
4,066,769

3,3'-(2,6-PYRIDINEDIYI) DI-5-ISOXAZOLE CARBOXYLIC ACIDS, SALTS, AND ESTERS, COMPOSITIONS AND METHODS OF USE THEREOF

John B. Wright, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 23, 1976, Ser. No. 753,719
Int. Cl.[2] C07D *413/14*
U.S. Cl. 424—263 20 Claims

1. A compound of the formula



wherein

X is hydrogen, alkyl of one to six carbon atoms, inclusive, alkoxy of one to six carbon atoms, inclusive, phenyl, cyano, nitro, trifluoromethyl, fluoro, chloro or bromo;

R is hydrogen, alkyl of one to eight carbon atoms, inclusive, and a physiologically acceptable metal or amine cation.

20. 3,3-(2,6-Pyridinediyl)di-5-isoxazolecarboxylic acid according to claim 1.

4,066,770

3-PYRIDYLISOXAZOLIDINE FUNGICIDES

Clive B. C. Boyce, Herne Bay, and Shirley B. Webb, Faversham, both of England, assignors to Shell Oil Company, Houston, Tex.

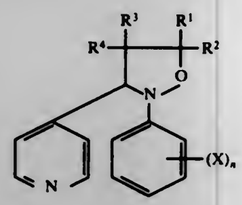
Filed Aug. 26, 1976, Ser. No. 717,803

Claims priority, application United Kingdom, Sept. 2, 1975, 36093/75

Int. Cl.² A01N 9/22

U.S. Cl. 424—263 3 Claims

1. A fungicidal composition comprising a carrier, optionally a surface-active agent, and, as active ingredient a fungicidally effective amount of at least one 3-pyridylisoxazolidine of the formula



wherein R^1 is hydrogen, alkyl or alkenyl; R^2 is hydrogen, cyano, alkyl, alkoxy, alkoxycarbonyl, alkanoyloxy, alkylthioalkyl, cyanoalkyl, haloalkyl, hydroxyalkyl, benzyloxyalkyl, or phenyl or phenylthio optionally substituted by from one to three moieties represented by X; R^3 is hydrogen or alkyl; R^4 is hydrogen, alkyl, alkoxycarbonyl, cyano or phenyl optionally substituted by from one to three moieties represented by X; with the proviso that R^1 and R^3 together can represent an alkylene moiety of from one to six carbon atoms optionally substituted by alkyl; X is halogen, nitro, cyano, alkyl, alkoxy or phenyl; n is zero, one, two or three, with the further provisos that each alkyl and alkylene moiety contains from one to six carbon atoms; and each alkenyl moiety contains from three to six carbon atoms.

4,066,771

SUBSTITUTED PHENOXYALKYL QUATERNARY AMMONIUM COMPOUNDS AS ANTIARRHYTHEMIC AGENTS

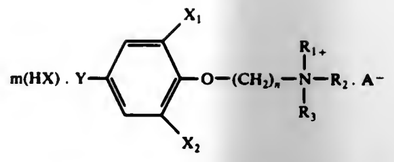
Stanley J. Strycker, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 484,525, July 1, 1974, Pat. No. 3,932,664. This application Jan. 12, 1976, Ser. No. 648,547

Int. Cl.² A61K 31/445

U.S. Cl. 424—267 8 Claims

5. A method for combatting cardiac arrhythmias which comprises administering to an animal a cardiac antiarrhythmic amount of a quaternary ammonium compound corresponding to the formula:



wherein Y represents amino, loweralkylamino or diloweralkylamino; R_1, R_2 and R_3 taken together represent a quinuclidine residue; X_1 and X_2 both represent halogen; A^- represents a stoichiometric equivalent quantity of a pharmaceutically-acceptable anion; *n* represents one of the integers 2, 3 or 4; HX represents a stoichiometric equivalent quantity of a pharmaceutically-acceptable acid; and *m* represents one of the integers zero and one.

4,066,772

1,3-DIHYDRO-1-{3-(1-PIPERIDINYL)PROPYL}-2H-BENZIMIDAZOL-2-ONES AND RELATED COMPOUNDS

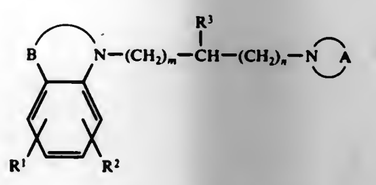
Jan Vandenberk, Beerse; Ludo E. J. Kennis, Vosselaar; Marcel J. M. C. Van der Aa, Vosselaar, and Albert H. M. Th. Van Heertum, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 597,793, July 21, 1975, abandoned. This application May 17, 1976, Ser. No. 687,139

Int. Cl.² A61K 31/445; C07D 401/06, 401/14

U.S. Cl. 424—267 15 Claims

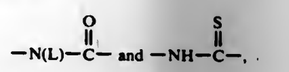
4. A pharmaceutical composition comprising an inert carrier material and as an active ingredient an effective antiemetic amount of a chemical compound selected from the group consisting of a 1-(benzazolylalkyl)piperidine derivative having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

R^1 and R^2 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

B is a member selected from the group consisting of the bivalent radicals



said L being a member selected from the group consisting of hydrogen, lower alkyl, lower alkylcarbonyl and lower alkenyl, and said bivalent radicals being attached to the benzene nucleus with their heteroatom;

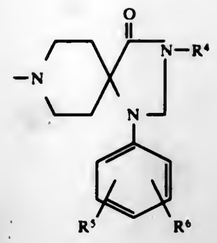
R^3 is a member selected from the group consisting of hydrogen and methyl;

m and *n* are each an integer of from 1 to 2 inclusive; and the radical



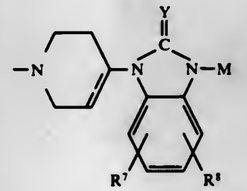
is a member selected from the group consisting of:

a. a radical having the formula:



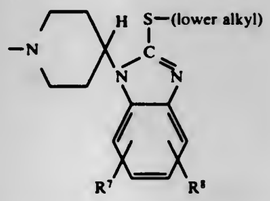
wherein R^4 is a member selected from the group consisting of hydrogen and lower alkyl; and R^5 and R^6 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

b. a radical having the formula:



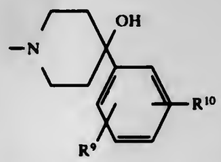
wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl; Y is a member selected from the group consisting of O and S; M is a member selected from the group consisting of hydrogen, lower alkyl and lower alkylcarbonyl; and the dotted line indicates that the double bond between the 3 and 4 carbon atoms of the piperidine nucleus is optional, provided that when said Y is S, then there is a single bond between said 3 and 4 carbon atoms of the piperidine nucleus, and the said M is hydrogen;

c. a radical having the formula:



wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, and trifluoromethyl; and

d. a radical having the formula:



wherein R^9 is selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl, and R^{10} is selected from the group consisting of hydrogen and halo.

4,066,773

N^2-ARYLSULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Shosuke Okamoto; Akiko Hijikata, both of Kobe; Ryoji Kikumoto, Tokyo; Yoshjkuno Tamao, Yokohama; Kazuo Ohkubo, Machida; Tohru Tezuka, Yokohama, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo and Shosuke Okamoto, both of Japan

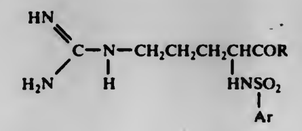
Continuation-in-part of Ser. No. 653,217, Jan. 28, 1976, and Ser. No. 713,486, Aug. 11, 1976, and Ser. No. 671,436, March 29, 1976, and Ser. No. 703,704, July 8, 1976, said Ser. No. 671,436, is a division of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Jan. 19, 1977, Ser. No. 760,745

Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635; Mar. 5, 1975, 50-026768; Mar. 11, 1975, 50-029357; Mar. 11, 1975, 50-029358

Int. Cl.² A61K 31/445; C07D 211/16

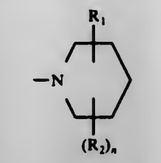
U.S. Cl. 424—267 6 Claims

1. An N^2-arylsulfonyl-L-argininamide having the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein R is



wherein R_1 is $-COOR_3$ wherein R_3 is hydrogen, C_1-C_{10} alkyl, C_6-C_{10} aryl, C_7-C_{12} aralkyl or 5-indanyl; each R_2 independently is hydrogen, C_1-C_{10} alkyl, phenyl, C_1-C_5 alkoxy, C_2-C_6 alkoxycarbonyl, or carboxy; *n* is an integer of 1 to 4, R_1 is substituted into the piperidine ring at the 2 to 3 position; and R_2 is substituted into the piperidine ring at the 2, 3, 4, 5 or 6 position;

and Ar is naphthyl substituted with at least one substituent selected from the group consisting of halo, nitro, cyano, hydroxy, C_1-C_{10} alkyl and C_2-C_{20} dialkylamino,

and at least one substituent selected from the group consisting of C_1-C_{10} alkoxy, sulfoamino, carbamoyl, C_3-C_{10} N,N-dialkylcarbamoyl, amino, C_1-C_{10} alkylamino, mercapto, C_1-C_{10} alkylthio, C_7-C_{10} aralkyl, carbonyl, C_2-C_{10} alkoxycarbonyl, C_2-C_{10} carboxyalkyl, C_1-C_{10} acylamino, C_2-C_{10} alkylcarbonyl, C_1-C_{10} hydoxyalkyl, C_1-C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1-C_5 alkoxy, or mixtures thereof;

naphthyl substituted with at least one C_1-C_5 alkoxy and at least one substituent selected from the group consisting of sulfoamino, carbamoyl, C_3-C_{10} N,N-dialkylcarbamoyl, amino, C_1-C_{10} alkylamino, mercapto, C_1-C_{10} alkylthio, C_7-C_{12} aralkyl, carboxyl, C_2-C_{10} alkoxycarbonyl, C_2-C_{10} carboxyalkyl, C_1-C_{10} acylamino, C_2-C_{10} alkylcarbonyl, C_1-C_{10} hydroxyalkyl, C_1-C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1-C_5 alkoxy or mixtures thereof;

naphthyl substituted with at least one substituent selected from the group consisting of sulfoamino, carbamoyl, C_3-C_{10} N,N-dialkylcarbamoyl, amino, C_1-C_{10} alkylamino, mercapto, C_1-C_{10} alkylthio, C_7-C_{12} aralkyl, carboxyl, C_2-C_{10} alkoxycarbonyl, C_2-C_{10} carboxyalkyl, C_1-C_{10} acylamino, C_2-C_{10} alkylcarbonyl, C_1-C_{10} hydroxyalkyl, C_1-C_{10}

haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1-C_5 alkoxy or mixtures thereof;

5,6,7,8-tetrahydronaphthyl substituted with at least one substituent selected from the group consisting of halo, nitro, cyano, hydroxy, C_1-C_{10} alkyl, C_1-C_{10} alkoxy, sulfoamino, carbamoyl, C_3-C_{10} N,N-dialkylcarbamoyl, amino, C_1-C_{10} alkylamino, mercapto, C_1-C_{10} alkylthio, C_7-C_{12} aralkyl, carboxyl, C_2-C_{10} alkoxycarbonyl, C_2-C_{10} carboxyalkyl, C_1-C_{10} acylamino, C_2-C_{10} alkylcarbonyl, C_1-C_{10} hydroxyalkyl, C_1-C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1-C_5 alkoxy or mixtures thereof;

C_7-C_{12} aralkyl, 9,10-dihydroanthryl, 5,6,7,8-tetrahydroanthryl, 9,10-dihydrophenanthryl, 1,2,3,4,5,6,7,8-octahydrophenanthryl, indenyl, indanyl, fluorenyl, acenaphthenyl, phenylthiophenyl, 1,2-ethylenedioxyphenyl, chromanyl, isochromanyl, 2,3-dihydrobenzofuranyl, 1,3-dihydroisobenzofuranyl, 2,3-ethylenedioxynaphthyl, xanthenyl, thioxanthenyl, 1,2-trimethylenedioxyphenyl, 2H-chromenyl, 3,4-dehydro-1-isochromanyl, 4H-chromenyl, indolinyl or isoindolinyl, group, any of which is unsubstituted or substituted with one or more groups selected from the group consisting of halo, nitro, cyano, hydroxy, C_1-C_{10} alkyl, C_1-C_{10} alkoxy, C_2-C_{20} dialkylamino, sulfoamino, carbamoy, C_3-C_{10} N,N-dialkylcarbamoyl, amino, C_1-C_{10} alkylamino, metcapto, C_1-C_{10} alkylthio, C_7-C_{12} aralkyl, carboxyl, C_2-C_{10} alkoxycarbonyl, C_2-C_{10} carboxyalkyl, C_1-C_{10} acylamino, C_2-C_{10} alkylcarbonyl, C;hd 1-C_{10} hydroxyalkyl, C_1-C_{10} haloalkyl, oxo and phenyl optionally substituted with at least one hydroxy, C_1-C_5 alkoxy or mixtures thereof;

naphthoquinonyl, anthryl, phenanthryl, pentalenyl, heptalenyl, azulenyl, biphenylenyl, as-indacenyl, s-indacenyl, acenaphthylenyl, phenylcarbonylphenyl, phenoxyphenyl, benzofuranyl, isobenzofuranyl, benzo [b] thienyl, isobenzothienyl, oxanthrenyl, thianthrenyl, dibenzofuranyl, dibenzothienyl, phenoxathiinyl, indolyl, IH-indazolyl, 1,8-naphthyridinyl, carbazolyl, or benzimidazolyl group, any of which is unsubstituted or substituted with one or more groups selected from the group consisting of halo, nitro, cyano, hydroxy, C_1-C_{10} alkyl, C_1-C_{10} alkoxy, C_2-C_{20} dialkylamino, sulfoamino, carbamoyl, C_3-C_{10} alkyl, C_1-C_{10} alkoxy, C_2-C_{20} dialkylamino, sulfoamic, carbamoyl, C_3-C_{10} N,N-dalkylcarbamoyl, amino, C_1-C_{10} alkylamino, mercapto, C_1-C_{10} alkylthio, C_7-C_{12} aralkyl, carboxyl, C_2-C_{10} alkoxycarbonyl, C_2-C_{10} carboxyalkyl, C_1-C_{10} acylamino, C_2-C_{10} alkylcarbonyl, C_1-C_{10} hydroxyalkyl, C_1-C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1-C_5 alkoxy or mixtures thereof.

4,066,774

METHOD OF KILLING INSECTS EMPLOYING A CERTAIN TRIAZOLE

Joel L. Kirkpatrick, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1976, Ser. No. 662,171
Int. Cl.² A01N 9/22
U.S. Cl. 424—269 **1 Claim**

1. The method of selectively killing corn rootworms in the presence of growing corn plants comprising applying to the locus of the corn rootworms an effective amount of 1-N,N-dimethylcarbamyl-3-tert.butyl-5-methylthio-1,2,4-triazole.

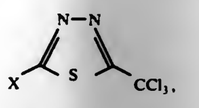
4,066,775

CERTAIN FUNGITOXIC 2-HALO-5-TRICHLOROMETHYL-1,3,4-THIADIAZOLES

Ernst-Heinrich Pommer, Limburgerhof; Helmut Hagen, Frankenthal, and Helmut Fleig, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Germany

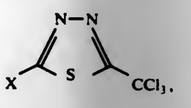
Filed May 21, 1976, Ser. No. 688,761
Claims priority, application Germany, June 12, 1975, 2526308
Int. Cl.² A61K 31/425; C07D 285/12
U.S. Cl. 424—270 **4 Claims**

1. A 2-halo-5-trichloromethyl-1,3,4-thiadiazole of the formula



where X denotes Cl or Br.

4. A process for combatting fungi wherein the objects to be protected against fungus attack, or the fungi themselves, are treated with a fungitoxic amount of a 2-halo-5-trichloromethyl-1,3,4-thiadiazole of the formula



where X denotes Cl or Br.

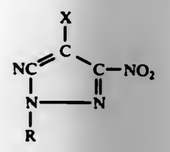
4,066,776

ANTI-BACTERIAL COMPOSITIONS CONTAINING CERTAIN 3-NITROPYRAZOLES

Reuben G. Jones, Cedar City, Utah, and Norman H. Terando, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

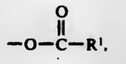
Continuation-in-part of Ser. No. 561,139, March 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 477,118, June 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 357,135, May 4, 1973, abandoned, which is a continuation-in-part of Ser. No. 211,791, Dec. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 124,463, March 15, 1971, abandoned. This application June 18, 1976, Ser. No. 697,516
Int. Cl.² C07D 231/16
U.S. Cl. 424—270 **30 Claims**

1. An antibacterial composition which comprises a physiologically-acceptable inert carrier and an antibacterially-effective amount of a compound of the formula



wherein R represents
A. C_3-C_4 epoxyalkyl,
B. hydrogen,
C. C_1-C_{10} alkyl, C_2-C_{10} alkenyl, C_3-C_{10} alkynyl, C_3-C_{10} cycloalkyl, cyclopropylmethyl, C_3-C_{10} cycloalkenyl, C_2-C_{10} alkyl mono- or disubstituted with halo or C_1-C_3 alkoxy, or C_1-C_{10} alkyl monosubstituted with
1. mercapto,
2. carboxamido,
3. keto oxygen,
4. hydroxy,
5. phthalimido,
6. C_1-C_3 alkylthio,

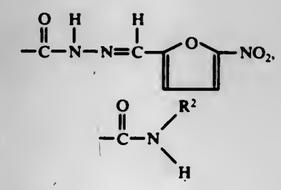
7. C_1-C_3 alkylsulfonyl,
8. C_1-C_3 alkanoyl,
9. phenyl,
10. phenyl monosubstituted with
a. C_1-C_3 alkyl,
b. C_1-C_3 haloalkyl,
c. hydroxy, or
d. halo,



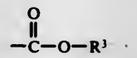
wherein R^1 represents
a. C_1-C_3 alkyl,
b. C_1-C_3 alkoxy,
c. C_1-C_3 haloalkyl,
d. amino,
e. C_3-C_6 cycloalkyl,
f. phenoxy,
g. phenyl, or
h. phenyl monosubstituted with
1. C_1-C_3 alkyl,
2. C_1-C_3 haloalkyl,
3. halo, or
4. hydroxy, or
12. cyano, or

D. 4-nitrophenyl, 5-nitro-2-thiazolyl, or 3-nitro-2-pyridyl; and

X represents
A. 5-methylamino-1,3,4-thiadiazol-2-yl,
B. cyano,



(C)



(D)

wherein R^2 represents
1. hydrogen, or
2. C_1-C_6 alkyl; or

(E)

wherein R^3 represents
C_1-C_6 alkyl;
provided that a C_1 alkyl R group is substituted only with phenyl or substituted phenyl.

30. An antibacterial composition which comprises a physiologically-acceptable inert carrier and an antibacterially-effective amount of 1,1'-(2,5-cyclohexadien-1,4-ylene)-bis-(3-nitro-4-pyrazolecarboxamide).

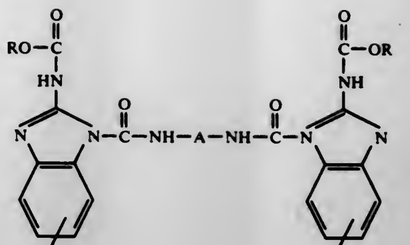
4,066,777

METHOD FOR PROTECTING LOCI AGAINST FUNGI AND MITES

Bruce Ivor Dittmar, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 229,559, Feb. 25, 1972, Pat. No. 3,970,668, which is a continuation-in-part of Ser. No. 841,987, July 15, 1969, abandoned. This application May 17, 1976, Ser. No. 687,177
Int. Cl.² A01N 9/22
U.S. Cl. 424—273 R **5 Claims**

1. The method of preventing injury due to mites or fungi consisting essentially of applying to the locus to be protected an effective amount of a compound of the formula



(11)

wherein
the R's can be the same or different and are methyl, ethyl, isopropyl or sec-butyl;
X is hydrogen, halogen, methyl or methoxy;
A is a difunctional group of 1 to 18 carbon atoms selected from
alkylene;
alkylene substituted by oxa, N-methylaza or thia;
alkenylene;
cycloalkylene;
cycloalkenylene;
bis (cyclohexylene)methylene;
alkylenated alkylcyclohexylene;
alkylated cyclohexylene;
alkylenated cyclohexylene;
bicycloalkylene;
phenylene;
methylated phenylene; and
bis(phenylene) methylene.

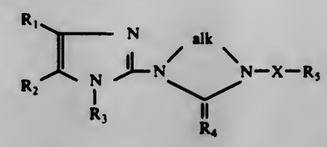
4,066,778

TETRAHYDROIMIDAZOLE COMPOUNDS USEFUL AS PHARMACEUTICALS

Kuppuswamy Nagarajan; Vishwa Prakash Arya, and Thomas George, all of Bombay, India, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 508,603, Sept. 23, 1974, Pat. No. 3,976,778. This application June 8, 1976, Ser. No. 694,115
Claims priority, application Switzerland, Sept. 24, 1973, 13667/73
Int. Cl.² A01N 9/22; C07D 233/02, 235/00; A61K 31/415
U.S. Cl. 424—273 R **13 Claims**

1. A compound of the formula



wherein one of the groups R_1 and R_2 is a hydrogen or lower alkyl and the other a nitro group, R_3 is a lower alkyl, hydroxy-lower alkyl, lower-alkoxy-lower-alkyl, lower-alkylsulphonyl-lower-alkyl or amino-lower-alkyl, R_4 is an oxo or thioxo group, X is a sulphinyl or sulphonyl group and R_5 is a lower alkyl, aryl, amino, alkylamino or diloweralkylamino group and alk is 1,2-ethylene, their pharmaceutically acceptable salts or N-oxides.

11. An antibacterial active composition useful as gram negative active agent comprising an antibacterially effective amount of a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutically acceptable diluent or carrier therefore.

4,066,779

PYRANOINDOLE DERIVATIVES, COMPOSITIONS AND METHOD OF USE

Christopher A. Demerson, Montreal; Leslie G. Humber, Dollard des Ormeaux; André A. Asselin, Lemoyne; Ivo Jirkovsky, Montreal, and Thomas A. Dobson, Roxboro, all of Canada, assignors to Ayerst, McKenna and Harrison Ltd., Montreal, Canada

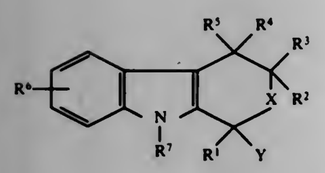
Division of Ser. No. 555,906, March 5, 1975, Pat. No. 4,003,913, which is a continuation-in-part of Ser. No. 377,837, July 9, 1973, Pat. No. 3,880,853, and Ser. No. 217,627, Jan. 13, 1972, Pat. No. 3,852,285. This application Oct. 28, 1976, Ser. No. 736,613

Int. Cl.[2] A61K *31/40, 31/535, 31/495, 31/445*

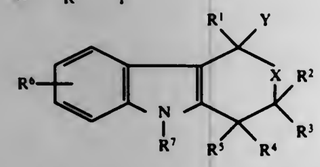
U.S. Cl. 424—274 **8 Claims**

1. A method of preventing and treating ulcers in warm blooded animals which comprises:

administering to said mammal an effective dose of from about 0.1 to about 50 milligrams per kilogram of mammal weight per day of a compound selected from those of the formulae I and Ia



I



Ia

in which R^1 is lower alkyl or lower cycloalkyl; R^2, R^3, R^4 and R^5 are the same or different selected from the group consisting of hydrogen and lower alkyl; R^6 is hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, nitro or halo; R^7 is hydrogen, lower alkyl, lower alkenyl, propargyl, phenyl(lower)alkyl or an amino(lower)alkyl radical of formula —Alk—NR^8R^9 wherein Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}CR^{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}$, and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ wherein R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower alkyl and R^8 and R^9 are either the same or different selected from the group consisting of hydrogen and lower alkyl, or R^8 is lower alkyl and R^9 is p-chlorophenacyl, or R^8 and R^9 together with the nitrogen atom to which they are joined form a heterocyclic amine radical selected from the group consisting of 1-pyrrolidinyl, piperidino, morpholino, 1 piperazinyl, 4-(lower alkyl)-1-piperazinyl and 4-[hydroxy(lower)alkyl]-1-piperazinyl; X is oxy: and Y is lower alkyl, phenyl(lower)alkyl or an amino(lower)alkyl radical of formula —Alk—NR^8R^9 wherein Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}$, $CR^{10}R^{11}CR^{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}$ and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ wherein R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower alkyl and R^8 and R^9 are as defined herein; with the proviso that at least one of R^7 and Y is —Alk—NR^8R^9 and that in the compounds of formula Ia, Y is —Alk NR^8R^9 as defined herein; and the corresponding acid addition salt with a pharmaceutically acceptable acid.

4,066,780

PYRANOINDOLE DERIVATIVES AS ANTIULCER AGENTS

Christopher A. Demerson, Montreal; Leslie G. Humber, Dollard des Ormeaux; Andre A. Asselin, Lemoyne; Ivo Jirkovsky, Montreal, and Thomas A. Dobson, Roxboro, all of Canada, assignors to Ayerst McKenna and Harrison Ltd., Montreal, Canada

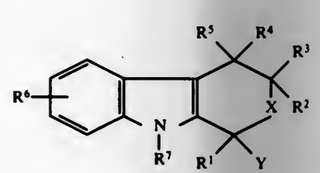
Division of Ser. No. 555,906, March 5, 1975, Pat. No. 4,003,913, and a continuation-in-part of Ser. No. 377,837, July 9, 1973, Pat. No. 3,880,853, which is a continuation-in-part of Ser. No. 217,627, Jan. 13, 1972, Pat. No. 3,852,285. This application Oct. 28, 1976, Ser. No. 736,606

Int. Cl.[2] A61K *31/40, 31/535, 31/495, 31/445*

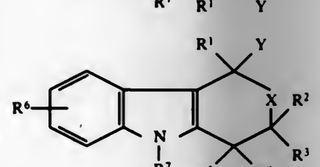
U.S. Cl. 424—274 **4 Claims**

1. A method of preventing and treating ulcers in warm blooded animals which comprises:

administering to said mammal an effective dose of from about 0.1 milligram to about 50 milligrams per kilogram of mammal weight per day of a compound selected from those of the formulae I and Ia



I



Ia

in which R^1 is lower alkyl or lower cycloalkyl; R^2, R^3, R^4 and R^5 are the same or different selected from the group consisting of hydrogen and lower alkyl; R^6 is hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, nitro or halo; R^7 is hydrogen, lower alkyl, lower alkenyl, propargyl, phenyl(lower)alkyl or an amino(lower)alkyl radical of formula —Alk-NR^8R^9 wherein Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}CR^{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}$, and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ wherein R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower alkyl and R^8 and R^9 are either the same or different selected from the group consisting of hydrogen and lower alkyl, or R^8 is lower alkyl and R^9 is p-chlorophenacyl, or R^8 and R^9 together with the nitrogen atom to which they are joined form a heterocyclic amine radical selected from the group consisting of 1-pyrrolidinyl, piperidino, morpholino, 1 piperazinyl, 4-(lower alloyl) 1-piperazinyl and 4-[hydroxy(lower)alkyl]-1-piperazinyl; X is oxy: and Y is lower alkyl, phenyl(lower)alkyl or an amino(lower)alkyl radical of formula —Alk-NR^8R^9 wherein Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}$, $CR^{10}R^{11}CR^{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}$and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ wherein R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower alkyl and R^8 and R^9 are as defined herein; with the proviso that at least one of R^7 and Y is —Alk-NR^8R^9 and that in the compounds of formula Ia, Y is —Alk NR^8R^9 as defined herein; and the corresponding acid addition salt with a pharmaceutically acceptable acid.

4,066,781

MITICIDAL METHOD

Hajime Shibuya, Komae, and Shiroh Shirato, Tokyo, both of Japan, assignors to Kaken Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1977, Ser. No. 763,234

Int. Cl.[2] A01N *9/28;* A61K *31/35*

U.S. Cl. 424—283 **3 Claims**

1. A method for destroying mites which comprises applying a composition comprising a miticidally effective amount of Salinomycin in combination with a carrier therefor, to imagines, larvae or ova of mites.

4,066,782

ANTIMICROBIAL (2-NITRO-3-BENZOFURANYL)PHENYLACETIC ACIDS

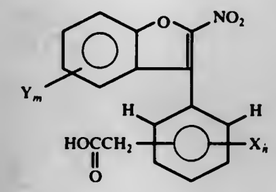
Robert A. Scherrer, White Bear Lake, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 616,276, Sept. 24, 1975, abandoned. This application Sept. 20, 1976, Ser. No. 724,716

Int. Cl.[2] A61K *31/35;* C07D *307/82*

U.S. Cl. 424—285 **8 Claims**

1. A compound of the formula



wherein X is halogen, lower alkyl, lower alkoxy or trifluoromethyl, Y is methyl, methoxy or halogen and *m* and *n* are independently 0, 1 or 2, or a lower alkyl ester, diethylaminoethyl ester, 2-hydroxyethyl ester, glyceryl ester or methoxymethyl ester or pharmaceutically acceptable salt thereof.

7. A method for inhibiting or arresting the growth of microorganisms whch comprises contacting said microorganisms with an effective amount of a compound of claim 1.

4,066,783

INSECTICIDAL AND ACARICIDAL METAL HALIDE COMPLEXES OF 4-CYANO-2,2-DIMETHYLBUTYRALDOXIME-N-METHYLCARBAMATE

William Arthur Henderson, Jr., Stamford, Conn., and Fausto Ramirez, Goshen, Va., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 455,481, March 27, 1974, Pat. No. 3,991,092. This application Aug. 11, 1975, Ser. No. 603,887

Int. Cl.[2] A01N *9/00*

U.S. Cl. 424—289 **13 Claims**

1. A method for controlling insects and acarina which comprises: exposing said insects and acarina to an insecticidally and acaricidally effective amount of a solid zinc, cobalt or cupric halide complex of 4-cyano-2,2-dimethylbutyraldoxime-N-methylcarbamate.

4,066,784

TROPONE DERIVATIVES

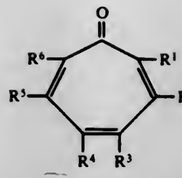
Jehan F. Bagli, Kirkland, and Tibor Bogri, Montreal, both of Canada, assignors to Ayerst, McKenna and Harrison Ltd., Montreal, Canada

Filed June 17, 1976, Ser. No. 697,295

Int. Cl.[2] C07C *153/09, 103/32, 55/06;* A61K *31/215*

U.S. Cl. 424—305 **6 Claims**

1. A compound of formula I



(1)

in which R^1, R^2, R^3, R^4, R^5 and R^6 are the same or different selected from the group consisting of hydrogen; halo, trifluoromethyl; lower alkoxy; lower alkyl; phenyl; hydroxy; phenoxy; mercapto; NR^7R^8 wherein each of R^7 and R^8 is hydrogen or lower alkyl; and a radical of formula Y-CR^9R^{10}-$COOR^{11}$ wherein Y is NR^{12} wherein R^{12} is hydrogen or lower alkyl, R^9 and R^{10} together are oxo and R^{11} is hydrogen or lower alkyl, with the proviso that one, two or three of R^1, R^2, R^3, R^4, R^5 and R^6 must be a radical of formula Y-CR^9R^{10}-$COOR^{11}$ wherein Y, R^9, R^{10} and R^{11} are as defined in each instance herein; and with the additional proviso that when R^1 and/or R^4 is a radical of formula Y-CR^9R^{10}-$COOR^{11}$ wherein Y is NR^{12} wherein R^{12} is as defined herein, R^9 and R^{10} together are oxo and R^{11} is as defined herein, then at least one of R^2, R^3, R^5 and R^6 must be a radical of formula Y-CR^9R^{10}-$COOR^{11}$ wherein Y, R^9, R^{10} and R^{11} are as defined in each instance herein; or a therapeutically acceptable salt thereof.

4,066,785

ESTERS OF α-HYDROPEROXY-BIS-P-HALO-PHENYLACETIC ACIDS

Yair Sprinzak, Rehovoth, Israel, assignor to Yeda Research & Development Co., Ltd., Rehovot, Israel

Division of Ser. No. 784,911, Dec. 18, 1968, Pat. No. 3,773,811. This application Nov. 15, 1973, Ser. No. 416,078

Claims priority, application Israel, Dec. 26, 1967, 29228; Mar. 8, 1968, 29602

Int. Cl.[2] A01N *9/24*

U.S. Cl. 424—308 **3 Claims**

1. A method of controlling acarid populations which comprises applying an acaricidally effective amount of an ester of the formula



in which R is allyl and R' is bromine, to plants or soil in need of such control.

4,066,786

PROCESS FOR COMBATING FUNGI

Keith Joseph Bent, Crowthorne, and John Angus William Turner, Wokingham, both of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 441,390, Feb. 11, 1974, Pat. No. 3,984,570. This application July 8, 1976, Ser. No. 703,673

Claims priority, application United Kingdom, Feb. 22, 1973, 8753/73; July 6, 1973, 32213/73

Int. Cl.[2] A01N *9/24*

U.S. Cl. 424—313 **5 Claims**

1. A process for combating overwintering powdery mildew in trees comprising spraying said trees while in a dormant phase, with an antifungally effective amount of an aqueous composition consisting essentially of water and at least 0.5% by volume of an active ingredient which is an anionic surface active agent selected from the group consisting of sodium lauryl sulphate, sodium dodecylbenzenesulphonate, butylnaphthalene sulphonate, a mixture of the sodium salts of diisopropyl- and triisopropyl-naphthalene sulphonic acids, and sodium dioctyl sulphosuccinate.

4,066,787

STABILIZED PROSTAGLANDIN COMPOSITION AND THE PROCESS FOR THE PREPARATION THEREOF

Kiyoshi Okazaki; Hiroitsu Kawada, both of Kawagoe; Hidemi Shimizu, Ageo; Tadayoshi Ohmura, Niiza, and Jun Sekino, Kashiwa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 18, 1977, Ser. No. 798,017
Claims priority, application Japan, May 21, 1976, 51-58702
Int. Cl.² A61K *31/19, 31/215*
U.S. Cl. 424—317 9 Claims

1. A stabilized prostaglandin composition comprising an active prostaglandin E group compound with an effective amount of calcium lactate and/or an effective amount of amylopectin.

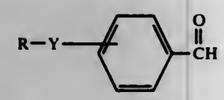
4,066,788

SUBSTITUTED BENZALDEHYDE HYPOLIPIDEMIC AGENTS

Thomas R. Biohm, Maderia; J. Martin Grisar, and Roger Alan Parker, both of Cincinnati, all of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Oct. 3, 1975, Ser. No. 619,304
Int. Cl.² A61K *31/11*
U.S. Cl. 424—333 9 Claims

1. A method of reducing the lipid concentration in the blood of a patient in need thereof which comprises orally or parenterally administering to said patient a lipid-lowering effective amount of a compound of the formula:



wherein Y is oxygen or divalent sulfur; and R is a straight or branched saturated hydrocarbon chain having from 10 to 20 carbon atoms or a straight or branched unsaturated hydrocarbon chain having from 10 to 20 carbon atoms and from 1 to 4 double bonds.

4,066,789

BLENDS OF LANOLIN WAX AND ESTERS OF ALIPHATIC POLYOLS AND FATTY ACIDS

Lee R. Mores, Cincinnati, Ohio; Justin P. McCarthy, Carteret, and James J. Slack, Bound Brook, both of N.J., assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Mar. 12, 1976, Ser. No. 666,432
Int. Cl.² A61K *7/00, 47/00, 7/027*
U.S. Cl. 424—365 9 Claims

1. A composition useful as a substitute for anhydrous lanolin U.S.P. consisting essentially of:

a. a hard wax fraction obtained from the fractionation of lanolin and melting in the range of 45°–60° C; and

b. an ester or partial ester of an aliphatic polyol containing from 2 to 20 carbon atoms or an ether polyol obtained by the condensation of from 2 to 8 of said aliphatic polyol units and an aliphatic monocarboxylic acid containing from about 8 to 20 carbon atoms, said ester or partial ester being a liquid at 25° C or lower; and said composition containing from about 30 to 70% by weight of component (a) and 30–70 weight percent of component (b).

4,066,790

CANNED MEAT PRODUCTS OF IMPROVED TENDERNESS

Francis G. Connick, Downers Grove, and Harry F. Bernholdt, Lombard, both of Ill., assignors to Swift & Company, Chicago, Ill.

Filed Dec. 22, 1975, Ser. No. 643,304
Int. Cl.² A23L *1/31*
U.S. Cl. 426—8 6 Claims

1. An improved method for producing a pasturized canned meat item of superior tenderness said method comprising: introducing into said meat item a functionally sufficient quantity of bromelin enzyme capable of complete thermal inactivation by temperatures within the range of 150°–170° F; sealing said meat item containing said enzyme into a container, said container being for delivery of the meat to consumers; and processing the sealed container through a single step of heating to pasturizing conditions that will gradually increase the meat temperature to a level within the range of 150°–185° F so as to first activate said enzyme to tenderize all portions of the meat at temperatures below 150° F and then inactivate said selected enzyme.

4,066,791

CHEESE MANUFACTURE WITH ACIDIFIED POWDERED MILK

Edgar A. Corbin, Jr., Manchester, Mo., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Aug. 4, 1976, Ser. No. 711,605
Int. Cl.² A23C *19/02, 9/00*
U.S. Cl. 426—39 14 Claims

1. An acid cheese curd making process comprising:

A. spraying on powdered milk an acidifying amount of a liquid food grade acid sufficient to produce an acidified powdered milk mixture which on reconstitution with water at from from 5° to about 40° C produces an acidified milk having a pH from about 4.95 to about 5.3, thereafter

B. reconstituting the acidified powdered milk mixture with water at from about 5° to about 40° C to produce an acidified milk, then

C. maintaining the acidified milk at about 26° to about 40° C, with the proviso that if the acidified milk is below 26° C, the milk is heated to about 26° to about 40° C, thereafter

D. adding to the acidified milk at about 26° to about 40° C from about 0.01 to about 0.05 parts by weight of proteolytic enzyme and, optionally, an acidogen in an amount up to about 0.5 parts by weight per 100 parts by weight of the acidified milk; and then

E. allowing the cheese, milk from step D to stand quiescent at from about 26° to about 40° C for about 45 minutes to about 2 hours so as to form an acid cheese curd suitable for making cottage chees, bakers' cheese, quark cheese, cream cheese and Neufachatel cheese.

4,066,792

METHOD OF PRODUCING SOYBEAN MILK YOGHURT

Hiroshi Kanda, Zushi, Japan; Hwa L. Wang, and Clifford W. Hesseltine, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 22, 1976, Ser. No. 725,224
Int. Cl.² A23C *9/12;* A23L *1/204*
U.S. Cl. 426—41 7 Claims

1. A process for preparing yoghurt from soybeans, comprising the steps of

a. extracting a soybean milk ultrasonically from soybeans that have been treated by soaking in water and hot aqueous sodium bicarbonate,

b. mixing the soybean milk with milk whey solids in an effective amount up to about 3% and sucrose in an amount sufficient to sweeten the soybean milk,

c. heating the soybean milk at a temperature of about 90°–121° C. for a period of 10–20 minutes,

d. mixing the hot soybean milk with a sterilized solution of a stabilizer in an amount sufficient to stabilize the soybean milk,

e. cooling said hot stabilized milk rapidly to a temperature of about 30°–35° C.,

f. inoculating said cooled milk with a mixture of *L. acidophilus* NRRL B-1910 and *L. acidophilus* NRRL B-2092 in approximately equal proportions, and

g. fermenting the so-inoculated milk to produce a yoghurt therefrom.

4,066,793

SEASONING COMPOSITION AND PREPARATION THEREOF

Hajime Eguchi, Yokohama, Japan, assignor to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 557,787, March 12, 1975, abandoned. This application May 26, 1976, Ser. No. 690,365
Claims priority, application Japan, Mar. 18, 1974, 49-30764
Int. Cl.² A23L *1/229, 1/23, 1/28*
U.S. Cl. 426—60 28 Claims

1. A process for the preparation of a seasoning composition which comprises:

1. decomposing suspended yeast cells by autolysis in the presence of potassium ions at a pH of 5 to 7 at a temperature of 30° C to 60° C, and thereafter performing the following steps in any selected order:

2. adding from 5% to 20% by weight sodium chloride so that the [K+]/[Na+] ratio is more than 0.5,

3. separating clear extract from the insoluble residue,

4. heating at from 90° C to 100° C for from 10 to 30 minutes, and

5. adding from 0.5% to 4% of a 5'-nucleotide;

the percent by weight being based on the weight of the final composition.

4,066,794

INSTANT YOGURT PREPARATION

Sylvia Schur, 171 Sutton Manor, New Rochelle, N.Y. 10805

Filed June 23, 1976, Ser. No. 699,225
Int. Cl.² A23C *9/12, 9/10, 9/00*
U.S. Cl. 426—61 5 Claims

1. An instant yogurt preparation adapted when mixed with water to form a composition whose smooth texture and nutritional value is comparable to that of natural yogurt, the preparation consisting essentially of dried yogurt powder in which the culture is deactivated, a dormant dried yogurt culture, water-soluble dried milk powder, sodium alginate in an amount of about 5.20 percent by weight to act as a setting agent to form a viscous colloidal solution in which the milk and yogurt constituents are dispersed, an organic dispersing agent to promote the uniform separation of the fine particles of the solution, said organic dispersing agent being sugar in an amount about 69.26% by weight, and a sequestrant constituted by EDTA in sufficient quantity to inhibit precipitation reactions that would otherwise cause the sodium alginate setting agent to curdle and create lumps in the composition.

4,066,795

FRESH MUSHROOM TREATMENT

Bhalchandra Anantray Dave, Glendora, Calif., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 26, 1976, Ser. No. 745,269
Int. Cl.² A23L *1/272;* A23B *7/14, 7/04*
U.S. Cl. 426—259 8 Claims

1. A method for treating fresh mushrooms comprising first washing said mushrooms with an aqueous, free-chlorine containing solution in an amount sufficient to remove adhered soil and at a solution concentration of free-chlorine sufficient to reduce slime forming organisms thereon, then treating said mushrooms with an aqueous solution containing sulfur dioxide at a concentration sufficient to neutralize chlorine present thereon and to whiten said mushrooms, drying said mushrooms and storing the dried mushrooms without freezing at a temperature ranging from 0° to about 8° C. and a relative humidity of at least 80%.

4,066,796

COATING PIZZA PRODUCTS

Donald H. McKee, Tampa, Fla., assignor to Food Research, Inc., Tampa, Fla.

Filed Apr. 16, 1976, Ser. No. 677,836
Int. Cl.² A21D *15/08*
U.S. Cl. 426—302 19 Claims

1. A method for processing a dough product comprising the steps of:

a. preparing a pizza crust having a surface for receiving pizza food ingredients,

b. applying a gel-forming effective amount of an aqueous dispersion of water-soluble algin to cover the food ingredient receiving surface of the pizza crust,

c. applying an effective amount of an aqueous, calcium ion containing gelling solution to the algin-coated pizza crust for a period of time sufficient to form a substantially continuous edible algin-containing gelled film along this surface of the pizza crust, said film being sufficient to effectively retard the migration of material from food ingredients placed on the food ingredient receiving surface,

d. placing pizza food ingredients on the food ingredient receiving surface,

e. applying an effective amount of an aqueous dispersion of water-soluble algin over the food ingredients, and

f. applying an effective amount of an aqueous gelling solution to the algin-coated food ingredients for a period of time sufficient to form a substantially continuous edible algin-containing film over the food ingredients and any exposed portion of the algin-coated crust, said film being sufficient to retard dehydration from said pizza crust and food ingredients, said film being effective to reduce breaking and splitting of the pizza to improve the transportability thereof, said film being sufficient to constitute an oxygen barrier for retarding oxidation to prevent ingredients highly susceptible to oxidation from becoming rancid, said film being sufficient to retain flavors within the pizza during cooking, said film being sufficient to hold the food ingredients physically in place on said one surface of the pizza crust while said crust is subjected to subsequent processing steps.

12. A method of preparing a dough product comprising the steps of:

a. preparing a shaped pizza crust having a surface for receiving pizza food ingredients,

b. preparing a gel-forming aqueous dispersion of a water soluble algin having a viscosity effective to substantially uniformly coat a surface of the pizza crust,

c. applying an effective amount of the aqueous dispersion to cover the surface for receiving pizza food ingredients and

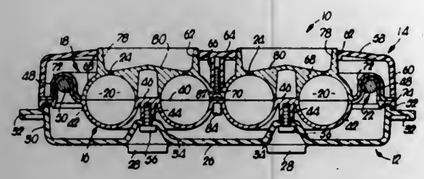
d. separately applying an effective amount of an aqueous, calcium ion containing gelling solution to the algin-coated surface for a period of time sufficient to form a substantially continuous edible algin-containing gelled film along said surface, said film being effective to reduce breaking and splitting of the pizza crust dough product to improve the transportability thereof, said film being sufficient to effectively retard the scorching of the dough product during any subsequent cooking step.

4,066,797

METHOD OF USING A HOME DONUT MAKER

Samuel L. McNair, Kansas City, Mo., assignor to Dazey Products Company, Industrial Airport, Kans.

Continuation of Ser. No. 745,119, Nov. 26, 1976, abandoned.
This application Apr. 6, 1977, Ser. No. 785,283
Int. Cl.[2] A21B *5/08;* A23L *1/01*
U.S. Cl. 426—307 5 Claims



1. A method of cooking a food item from a dough or batter material which expands during cooking thereof, said item having a predetermined shape, said method comprising the steps of:

providing a mold formed of heat-conductive metal, said mold having walls cooperatively presenting an enclosed cooking chamber having said predetermined shape and a predetermined volume, said walls including a concave bottom wall and a top wall which is shiftable relative to bottom wall in order to allow said mold to be opened for introduction of said material thereinto, structure defining one or more apertures through said top wall, and means defining an oil-collecting cavity on said top wall in communication with said one or more apertures;

placing said mold in ambient atmosphere;

opening said mold by shifting said top wall relative to said bottom wall;

placing a quantity of said material within the region defined by the concavity of said bottom wall;

closing said mold by shifting said top wall back to a position relative to said bottom wall for presenting said enclosed chamber; and

cooking said material within said chamber to present said food item by heating at least one of said chamber-defining walls to an extent and for a period of time for cooking said material therewithin and causing said material to expand, substantially assume said predetermined shape, and form a peripheral crust,

said cooking being conducted in said ambient atmosphere and further including the steps of passing an amount of cooking oil into said chamber through said apertures during said cooking prior to complete expansion of said material, said apertures presenting the only paths provided for passage of oil into and out of said chamber, the volume of said cooking oil passed into said chamber being less than said predetermined volume of said chamber, and thereafter simultaneously further heating and cooking said material and heating said oil, with consequent expansion of said material and evolution of steam therefrom, passing at least a portion of said heated oil and said steam out said chamber through said apertures as said cooking proceeds, collecting said portion of said oil within said oil-collecting cavity as the oil is passed out of said chamber, and thereafter repassing at least a part of said collected portion of said oil back into said chamber through said apertures for absorption thereof in the crust of said item.

4. A method of cooking a food item from a dough or batter material which expands during cooking thereof, said item having a predetermined shape, said method comprising the steps of:

providing a mold formed of, heat conductive metal, said mold having walls cooperatively presenting an enclosed cooking chamber having said predetermined shape and a predetermined volume, said walls including a concave bottom wall and a top wall which is shiftable relative to said bottom wall in order to allow said mold to be opened for introduction of said batter thereinto, structure defining one or more apertures through said top wall, and means defining an oil-collecting cavity on said top wall in communication with said one or more apertures;

placing said mold in ambient atmosphere;

opening said mold by shifting said top wall relative to said bottom wall;

placing a quantity of said material within the region defined by the concavity of said bottom wall;

closing said mold by shifting said top wall back to a position relative to said bottom wall for presenting said enclosed chamber; and

cooking said material within said chamber to present said food item by heating at least one of said chamber-defining walls to an extent and for a period of time for cooking said material therewithin and causing said material to expand, substantially assume said predetermined shape, and form a peripheral crust, said cooking being conducted in said ambient atmosphere, and

placing an amount of cooking oil in said cavity, and passing said cooking oil through said apertures after said material has substantially been cooked and has substantially assumed said predetermined shape for absorption of said oil into said crust, the volume of said cooking oil passed into said chamber being less than said predetermined volume of the chamber, said apertures presenting the only paths provided for passage of oil into said chamber.

4,066,798

PROCESS FOR VACUUM PACKING AND COOLING MEAT CUTS

Michael John Follett, Fleet, England, assignor to J. Sainsburg Limited, London, England

Continuation-in-part of Ser. No. 476,609, June 5, 1974, abandoned. This application Sept. 10, 1976, Ser. No. 722,287
Claims priority, application United Kingdom, June 25, 1973, 30063/73
Int. Cl.[2] B65B *25/00*
U.S. Cl. 426—393 10 Claims

1. A process for packing raw red meat into domestic cuts comprising removing at least part of one of the muscles of a carcass of raw red meat within ½ to 8 hours of the animal's death and forming domestic cuts thereof, vacuum packing said cuts in air impermeable plastics bags, cooling under controlled conditions said sealed bags in a coolant having a temperature of 23° F and 60° F for a sufficient length of time for the meat to fall to a temperature within this range and for a minimum of 10 hours in water or about 24 hours in air, the rate of cooling of the muscle being sufficiently slow so that the temperature gradient within the meat is relatively quickly reduced such that a substantially consistent rate of temperature fall is achieved throughout the muscle, and storing said bags at 28.5° F to 45° F and for a period of up to 6 weeks.

4,066,799

SODIUM CHLORIDE FLAVOR SUBSTITUTE COMPOSITION AND USE THEREOF

Dennis Alfred Cornelius; Nancy Jane Eberts, both of Elkhart, and Moshe M. Sternberg, South Bend, all of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 643,016, Dec. 22, 1975, abandoned. This application Oct. 18, 1976, Ser. No. 733,156
Int. Cl.[2] A23L *1/237*
U.S. Cl. 426—534 11 Claims

1. A sodium chloride substitute composition having a desirable saline flavor consisting essentially of a mixture of from about 20 to about 91 weight percent of a glycinamide salt and from about 9 to about 80 weight percent of a flavor potentiator, said weight percents being based on the total weight of such composition.

4,066,800

PREPARATION OF DAIRY-BASED CHEESE FOOD

John R. Rosenau, Amherst, Mass., and John C. Anderson, St. Paul, Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Nov. 30, 1973, Ser. No. 420,444
Int. Cl.[2] A23C *19/02, 19/12*
U.S. Cl. 426—582 4 Claims

1. A process for production of a dairy-based cheese food which comprises the steps of:

A. preparing a milk formulation of fat content from about 2 to 3.5%,

B. heating the milk to pasteurize the same and to denature the proteins,

C. acidifying the milk while still heated and with agitation to between about pH 4.2 and 5.1 to form curd particles,

D. while maintaining the pH, separating the curds from the resulting whey,

E. mixing a base with the curds to neutralize the same to between about pH 6.5 and 9 to solubilize the proteins,

F. mixing an acid with the neutralized curds to reacidify to about pH 5.3,

G. during mixing introducing at least one additive selected from the group consisting of coloring agents, flavoring agents, stabilizers and preservatives,

H. manipulating the curds during mixing, and

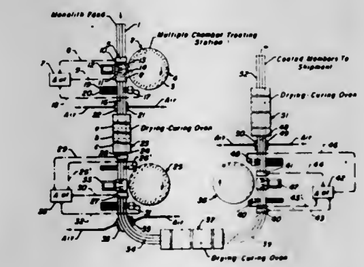
I. directly packaging the cheese food product.

4,066,801

CONTINUOUS SYSTEM FOR PROVIDING A CATALYTIC COATING ON SUPPORT MEMBERS

William A. Hoyer, Evanston; Lowell W. Johnson, and Richard J. Schoenenberger, both of Kildeer, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation of Ser. No. 516,519, Oct. 21, 1974, Pat. No. 3,959,520. This application Dec. 15, 1975, Ser. No. 641,118
The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.
Int. Cl.[2] B01J *37/02*
U.S. Cl. 427—8 7 Claims



1. A processing system which can provide for a continuous assembly-line procedure in effecting the placement of a catalytic coating on batches of particulated refractory members, which comprises the steps of:

a. placing each batch of particulated refractory members within a perforated wall containing means permitting fluid flow therethrough and around the members;

b. sequentially placing each batch of contained members into a pressure tight, confined chamber and supporting them therein to preclude blockage of fluid flow through the containing means and around the members;

c. evacuating said chamber to effect a vacuum in the pores of said refractory members;

d. subsequently filling said chamber with an aqueous treating media containing a catalytically active component to coat and fill the pores of said members;

e. draining said treating media from said confined chamber and then subsequently blowing pressurized air therethrough to remove excess media from said chamber and from the surface of said members;

f. sequentially effecting the removal of the thusly coated batches of members from said chamber;

g. sequentially passing each of the resulting batches of coated members to a drying and heat treating zone to effect the high temperature curing thereof; and

h. effecting the removal of the resulting catalytically impregnated members.

4,066,802

COLORED XEROGRAPHIC IMAGE TRANSFER PROCESS

Carl F. Clemens, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1975, Ser. No. 643,067
Int. Cl.[2] B44C *1/16;* G03G *13/16*
U.S. Cl. 427—24 16 Claims

1. A method of decalcomania comprising xerographically providing a toner image resting on an abhesive substrate, overlaying said image with an interposed sheet of polymeric plasticizing material, placing an image receiving medium in contact with said interposed sheet and applying heat and pressure to the composite formed by said image receiving medium, interposed sheet and said image bearing substrate to form a permanent image on said image receiving medium.

4,066,803

METHOD FOR APPLYING LUBRICATING MATERIALS TO METALLIC SUBSTRATES

Addison B. Scholes, Muncie, Ind.; David L. Dollar, Greeneville, Tenn., and Robert L. Hurst, Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 570,345, April 22, 1975, abandoned. This application Dec. 17, 1976, Ser. No. 751,690
Int. Cl.[2] B05D *5/08, 1/04, 1/06, 7/14*
U.S. Cl. 427—26 18 Claims

1. Method for electrostatically and uniformly dispersing particles of lubricating material upon a moving length of electrically conductive substrate, said method comprising the steps of:

providing apparatus including a housing having transverse dimensions sufficient to encompass the transverse dimensions of said substrate, having a longitudinal dimension sufficient to encompass at least a predetermined portion of said moving length of substrate and having a predetermined depth over at least one side of the intended travel path of the substrate, said housing having ingress and egress openings which permit the conductive substrate to be moved therethrough along the longitudinal axis of said housing and having a plurality of longitudinal partitions disposed within said housing on said at least one side dividing the interior of this side of the housing into a plurality of longitudinally extending sections, and including electrodes disposed within said longitudinal sections of the housing and spaced from said intended travel path of the substrate;

impressing a voltage difference between said electrodes and said substrate as it passes through said housing so as to maintain a corona discharge and charged plasma atmosphere within said longitudinal sections while a substrate is passing therethrough; and

supplying a predetermined quantity of particles of lubricating material to each longitudinal section.

4,066,804

METAL DEPOSITION PROCESS

Timothy Douglas Andrews, Manningtree, England, assignor to Imperial Chemical Industries Limited, London, England

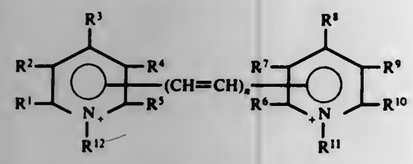
Division of Ser. No. 222,991, Feb. 2, 1972, Pat. No. 3,853,589, which is a continuation-in-part of Ser. No. 88,173, Nov. 9, 1970, abandoned. This application Oct. 1, 1974, Ser. No. 510,994

Claims priority, application United Kingdom, Nov. 26, 1969, 57862/69; May 26, 1970, 25203/70; May 20, 1971, 16006/71

Int. Cl.² B05D *5/12*

U.S. Cl. 427—98 **19 Claims**

1. A process for the deposition of metal in or on substrate characterized in that the substrate contains or consists of, as active component, a polymeric compound comprising units derived from a cation of the general formula



where R^{1-12} are hydrogen, halogen or organic substituents and $n = 0$ or an integer, comprising contacting the substrate with an electroless plating solution.

4,066,805

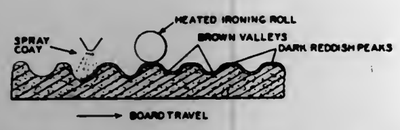
METHOD OF ACHIEVING A TWO-TONED FIBERBOARD PRODUCT

Jay D. Shenk, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Feb. 23, 1976, Ser. No. 659,983

Int. Cl.² B05D *3/02, 5/06*

U.S. Cl. 427—226 **4 Claims**



1. The method of forming a textured fiberboard product having a series of peaks or lands and intervening valleys and having a two-toned painted surface which varies from a brown to a deeper redish tone comprising:

a. forming a textured fiberboard having a series of peaks or lands and intervening valleys;

b. painting the textured surface overall with a liquid coating containing a yellow hydrated ferric oxide pigment to form an overall brown coating;

c. contacting said peaks or lands with a heated surface at a temperature and for a time sufficient to drive off the water of hydration associated with the yellow hydrated ferric oxide pigment, thus converting the yellow ferric oxide to a red ferric oxide to provide the peaks or lands with a darker reddish hue contrasting with the original brown color of the unaffected coated valleys; and thereafter

d. drying the coated fiberboard.

4,066,806

DIFFUSION COATING OF FERROUS METALS

Kenneth K. Speirs, Universal City, Tex., and Robert P. Bradley, Tilburg, Netherlands, assignors to Chromalloy American Corporation, New York, N.Y.

Filed June 22, 1976, Ser. No. 698,752

Int. Cl.² C23C *11/02*

U.S. Cl. 427—253 **11 Claims**

1. A pack cementation process for diffusing aluminum into a ferrous metal article while inhibiting substantial outgassing of aluminum chloride fumes during said process which comprises the steps of:

forming a dry aluminum pack containing by weight at least about 50% particulate aluminum, about ½ to ¾% $AlCl_3$ combined with about ½ to ¾% of a halide salt selected from the group consisting of an ammonium halide and an anhydrous metal chloride as an energizer, the balance particulate inert material, and maintaining said pack at a relative humidity ranging up to about 50%,

subjecting said dry pack to thermal pretreatment in a sealed retort at a temperature of about 750° to 900° F for at least about 10 hours at said temperature,

subjecting said pretreated pack to at least one more thermal pretreatment by again mixing therewith said energizer under said dry conditions and reheating said pack to a temperature in said range of about 750° to 900° F for at least about 10 hours,

thereafter again mixing with said further pretreated pack said energizer under said dry conditions the final total amount of said energizer not exceeding about 1½% by weight of said final pack,

embedding the ferrous metal article to be coated in said pack and sealing said pack and embedded article in a steel retort,

and then subjecting said pack and embedded article to a diffusion coating cycle by heating said pack to a diffusion coating temperature in the range of about 750° to 900° F and maintaining said pack at said temperature until the desired aluminum coating thickness has been obtained.

4,066,807

MARKING METAL

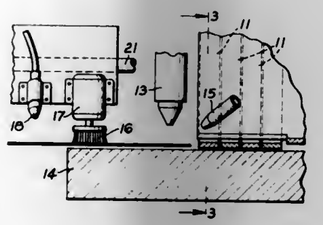
Alexander Robertson Craig, Glasgow, Scotland, assignor to Hilti Aktiengesellschaft, Schaan, Furstentum, Liechtenstein

Filed Feb. 17, 1976, Ser. No. 658,169

Claims priority, application United Kingdom, Feb. 19, 1975, 6953/75

Int. Cl.² B05D *1/32*

U.S. Cl. 427—282 **12 Claims**



1. A method of marking metal surfaces comprising moving a stencil member into a marking position, moving individual metal surfaces into the marking position, spraying a liquid metal from a liquid metal spray member through the stencil onto the metal surface in the marking position, and during the marking operation periodically applying a release compound from a release compound member to the surface of the stencil through which the liquid metal is sprayed and depositing a release coating on the stencil for aiding in the removal of the sprayed metal which remains on the stencil surface, periodically cleaning the surface of the stencil through which the liquid metal is sprayed and on which the release coating has been applied for removing the sprayed metal from the stencil surface, performing the step of applying the release compound for depositing the release coating before each step of spraying of the liquid metal for marking a metal surface and performing the step of cleaning the stencil surface after each spraying of the liquid metal, brushing the stencil surface with a brush member for carrying out the cleaning step, supporting the liquid metal spray member, the release compound member and the brush member on a support member, and moving the support member relative to the stencil surface through the stencil member and transversely of the direction of movement of the stencil member.

4,066,808

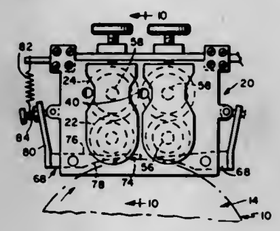
ADHESIVE APPLYING APPARATUS AND METHOD

Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Cleveland, Ohio

Continuation of Ser. No. 337,579, March 2, 1973, abandoned. This application Aug. 18, 1975, Ser. No. 605,726

Int. Cl.² B05C *1/02*; B05D *1/28, 1/36*

U.S. Cl. 427—428 **10 Claims**



1. The method of overall coating of labels supported on a rotor for rotation about a predetermined vertical axis so that the surfaces of the labels to be coated are substantially vertical, comprising rotating the rotor so as to move the labels successively along a predetermined circular path relative to a pair of applicator rolls supported for rotation about vertical axes parallel to the axis of the rotor, the rolls of the pair of rolls being spaced along said path of movement in substantially tangential relation to said path, at the first applicator roll applying adhesive to vertically spaced parallel areas of the labels at the place of application and as the leading end of the label leaves the place of tangency of the applicator roll with the rotor stripping it away from the surface of the applicator roll so that it remains on the surface of the rotor and at the second applicator roll applying adhesive to the vertically spaced areas of the labels between the areas previously coated and stripping the leading end of the totally coated label away from the surface of the second applicator roll so that it remains on the surface of the rotor.

4,066,809

METHOD FOR PREPARING SUBSTRATE SURFACES FOR ELECTROLESS DEPOSITION

Warren Alan Alpaugh, Chenango Forks; George Joseph Macur, Endwell, and Gary Paul Vlasak, Owego, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1976, Ser. No. 700,428

Int. Cl.² C23C *3/02*

U.S. Cl. 427—444 **9 Claims**

1. A method for conditioning the surfaces of a dielectric base material for the electroless plating of a conductive metal thereon, comprising the steps of:

contacting the surfaces of the dielectric base material with an aqueous stannous chloride sensitizing solution comprising between 53 and 57 grams per liter of $SnCl_2 \cdot 2H_2O$ with 37% HCl at a ratio of 50 milliliters per liter;

rinsing the excess stannous chloride solution from the surfaces with hot water;

contacting the surfaces of the dielectric base material with an aqueous palladium chloride activator solution, said aqueous palladium chloride activator solution formed by mixing about 50 grams of palladium chloride having a concentration of 0.13 to 0.17 grams per liter with approximately 3780 milliliters of 37% hydrochloric acid having a concentration of 10 milliliters per liter;

contacting the surfaces of the base material with an aqueous palladium chloride/stannous chloride/hydrochloric acid seeder bath, said palladium chloride/stannous chloride/hydrochloric acid seeder bath comprising from 1.2 to 2.5 grams per liter of $PdCl_2$, from 80 to 150 grams per liter of $SnCl_2 \cdot 2H_2O$, and from 290 to 360 milliliters per liter of 37% HCl; and,

baking the base material at a temperature of at least 105° C.

4,066,810

HEAT PRINTING SHEET AND HEAT PRINTING METHOD

Yujiro Kosaka; Masaru Uemura, both of Tokyo; Hitoshi Kuroki, Yokohama; Kanji Otomo, Machida; Yoshiaki Terauchi, Ichikawa, and Yasuo Arai, Kawasaki, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Mar. 31, 1976, Ser. No. 672,515

Claims priority, application Japan, Apr. 1, 1975, 50-39459

Int. Cl.² C09D *11/10*; B32B *3/00, 5/16, 27/06*

U.S. Cl. 428—195 **9 Claims**

1. A heat printing sheet which is prepared by the process consisting essential of

a. melting a hot melt ink at a temperature of 80°–250° C;

b. coating said hot melt ink on an engraved roll and instantaneously printing said hot melt ink on a synthetic polymer film having a thickness of 10–100μ and a smooth surface under a gauge pressure of 0.5–10 Kg/cm^2 to form a pattern of hot melt ink having a thickness of 10–300μ;

wherein said hot melt ink composition comprises:

5–60 weight parts of a base polymer of an ethylenevinyl acetate copolymer having 5–50 weight percent of the vinyl acetate content and 4–1000 g/10 min. of a melt index or a mixture of said ethylene-vinyl acetate and 5–60 weight percent of at least one member selected from the group consisting of styrene-butadiene copolymer, ethylene-acrylate copolymer, ethylene-isobutyl acrylate copolymer, cellulose derivatives, polyesters, polymethylmethacrylate; polyvinyl ethers and urethane;

20–80 weight parts of a tackifier selected from terpene resins, hydrogenated dicyclopentadiene resins, lower styrene resins, rosins, rosin polyol esters, hydrogenated rosin and rosin polyol esters and alicyclic hydrocarbon resins;

0.1–30 weight parts of a pigment or dye.

6. In hot printing a pattern of a hot melt ink composition onto a base, the improvement which comprises using a hot melt ink composition comprising:

5–60 wt parts of a base polymer of ethylene-vinyl acetate copolymer having 5–50 wt % of the vinyl acetate content and 4–1000 g/10 min of a melt index or a mixture of said ethylene-vinyl acetate substituted with 5–60 wt % of at least one member selected from the group consisting of styrene-butadiene copolymer, ethylene-acrylate copolymer, ethylene-isobutyl acrylate copolymer, cellulose derivatives, polyesters, polymethylmethacrylate, polyvinyl ethers and urethane;

20–80 wt parts of a tackifier selected from terpene resins, hydrogenated rosin and rosin polyol esters and alicyclic hydrocarbon resins;

0.1–30 wt parts of a pigment or dye,

the holt melt ink composition is melted at 80°–250° C and is coated on an engraved roll and is instantaneously printed on a base of synthetic polymer film having a thickness of 10–100μ and smooth surface under 0.5–10 kg/cm^2 (gauge) to form the pattern of the hot melt ink composition having a thickness of 10–300μ.

4,066,811

ETHYLENE-VINYL ACETATE FILM SUITABLE FOR STRETCH WRAPPING

Hirokuni Naito, Hino; Isao Yoshimura, Fujisawa; Norito Takao, Yokohama, and Yasuta Kawame, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Apr. 8, 1975, Ser. No. 566,513
Claims priority, application Japan, Apr. 19, 1974, 49-43284; Apr. 19, 1974, 49-43285; May 1, 1974, 49-48280
Int. Cl.² C08K 5/05, 5/06, 5/10; C08L 31/04
U.S. Cl. 428—220 14 Claims

1. Films for stretch wrapping which comprise (1) 99.7–98% by weight of an ethylene-vinyl acetate copolymer having a melt index of 0.5–15 and containing 5–30% by weight of vinyl acetate and (2) 0.3–2% by weight of an additive, said additive comprising (A) 10–40% by weight of at least one polyalkylene ether polyol having a boiling point of at least 200° C. at 760 mm. Hg and a viscosity of less than 1,000 cps at 23° C. and (B) 90–60% by weight of at least one non-ionic surfactant which is an ester of a polyhydric alcohol with either a straight chain saturated fatty acid having an alkyl group of 5 to 13 carbon atoms or a straight chain unsaturated fatty acid having an alkyl group of 17 to 21 carbon atoms, said films having a kinetic coefficient of friction of 0.1–0.5, a tack strength of 0.4–1.5 kg/cm², a haze of less than 5%, a heat shrinkage of 30–80% and an elastic recovery of at least 60%.

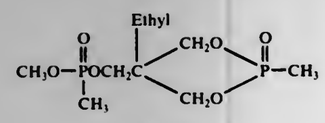
4,066,812

FIRE RETARDANT POLYESTER TEXTILE MATERIALS AND METHOD OF MAKING SAME

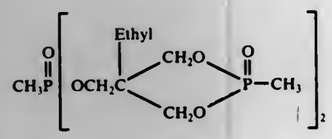
William B. Kaupin, Westwood, Mass., assignor to The William Carter Company, Needham Heights, Mass.

Continuation-in-part of Ser. No. 556,712, March 10, 1975, abandoned. This application Mar. 1, 1976, Ser. No. 662,504
Int. Cl.² B05D 1/36; D06M 13/28, 13/32
U.S. Cl. 428—265 7 Claims

1. The method of treating polyester textile materials to increase their fire resistant characteristics which comprises applying directly thereto a solution free from print binder, said solution containing at least 0.5% by weight of a water-soluble material selected from the group consisting of those having the structures



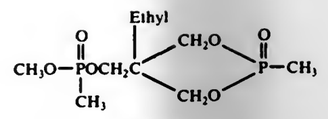
and



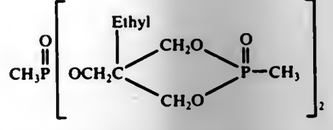
and mixtures thereof and

heating at a temperature of at least 250° F. to deposit on said textile materials from 0.5% to 15% of said material by weight.

6. The method of making printed polyester fabrics by printing thereon a pigment print paste free from fire retardants having a coverage of at least 30% of the total fabric area wherein the improvement comprises applying directly to said fabrics before printing a solution, free from print binder, containing at least 0.5% by weight of a water-soluble material selected from the group consisting of those having the structures



and



and mixtures thereof and

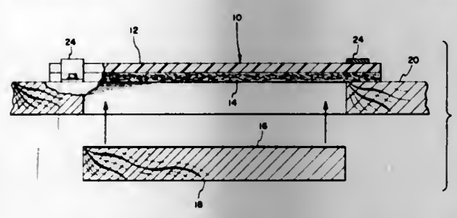
heating at a temperature of at least 250° F. to deposit on said fabrics from 0.5% to 15% of said material by weight.

4,066,813

METHODS OF REDUCING THE GROWTH OF CELLULOSE-BACKED FLOORING PRODUCTS AND THE RESULTING CELLULOSE-BACKED FLOORING PRODUCTS

Donald C. Winters, Whitehouse Station; Laurence F. Haemer, Fairfield, and William H. Powell, Livingston, all of N.J., assignors to Congoleum Corporation, Kearny, N.J.

Filed Feb. 4, 1977, Ser. No. 765,472
Int. Cl.² B32B 3/14, 3/16
U.S. Cl. 426—282 21 Claims



5. A resilient flooring product having reduced undesirable growth properties comprising: a resinous composition layer; and a fibrous cellulosic backing adhered to said resinous composition layer, said fibrous cellulosic backing comprising predominantly cellulosic fibers and substantially uniformly containing from about 0.05% by weight to about 4% by weight, based on the weight of said fibrous cellulosic backing, of a growth inhibitor from the group consisting of alums, aluminum sulfate, and mixtures thereof.

4,066,814

TRANSPARENT SUPPORTS FOR PHOTOGRAPHIC PRODUCTS

Charles K. Chiklis, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 354,008, April 24, 1973, Pat. No. 3,925,081. This application Dec. 8, 1975, Ser. No. 638,355
Int. Cl.² B32B 27/36; G03C 1/78, 1/80, 3/00
U.S. Cl. 428—333 41 Claims



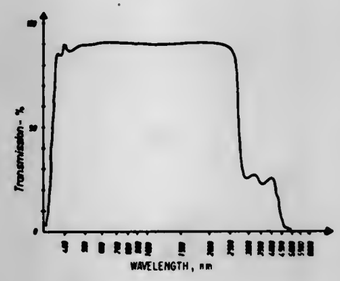
1. A transparent element comprising a polyester film base having coated directly on at least one surface thereof an anti-reflection coating comprising a fluorinated polymer, said anti-reflection coating having an index of refraction of about 1.3 to 1.45 and a quarter wave optical thickness, the index of refraction of said anti-reflection coating being at least 0.2 less than that of said polyester film base, said element including an isocyanate in said coating or between said coating and said transparent polyester support, said isocyanate being present in a quantity effective to increase the abrasion resistance of said fluorinated polymer coating.

4,066,815

GLAZING FOR TRANSMITTING SOLAR RADIATION

Jan Olink, Bois-Colombes, France, and Jacques Dela Ruye, Montigny-le-Tilleul, Belgium, assignors to BFG Glassgroup, Paris, France

Filed July 7, 1976, Ser. No. 703,221
Claims priority, application France, July 8, 1975, 75.72932
Int. Cl.² B32B 17/06
U.S. Cl. 428—336 18 Claims



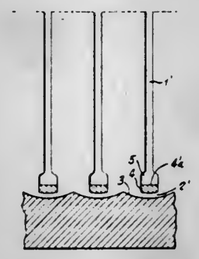
1. A glazing unit comprising, in combination: a soda-lime glass substrate having a composition such that its total energy transmittance for solar radiation is greater than that of a similarly dimensioned substrate of ordinary soda-lime glass which contains ferrous oxide, said substrate having a composition which contains iron oxide with substantially all of said iron oxide being ferric oxide, and a metal oxide coating of a composition which transmits solar radiation and at least partially reflects infrared radiation having wavelengths greater than 3μ at least partially covering at least one face of said substrate.

4,066,816

ELECTROLYTIC COLORING OF ANODIZED ALUMINIUM BY MEANS OF OPTICAL INTERFERENCE EFFECTS

Peter Geoffrey Sheasby, and Graham Cheetham, both of Banbury, England, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed July 9, 1976, Ser. No. 703,976
Claims priority, application United Kingdom, July 16, 1975, 29936/75
Int. Cl.² C25D 5/00, 5/24; B32B 3/00
U.S. Cl. 428—336 8 Claims



1. An aluminium article having a porous anodic oxide film on its surface, said porous anodic film having a thickness of at least 3 microns, the pores of said coating having inorganic pigmentary material deposited therein, characterized in that the average size of said deposits at their outer ends is at least 260 A and the separation between the outer ends of said deposits and the aluminium/aluminium oxide interface being in the range of 500 - 3000 A.

4,066,817

RELEASE COATING FOR ALUMINUM AND TINPLATE STEEL COOKWARE

Frank De Rossi, Zion, Ill., assignor to The Dexter Corporation, Windsor Locks, Conn.

Filed Mar. 10, 1976, Ser. No. 665,638
Int. Cl.² B32B 15/08, 15/18, 15/20
U.S. Cl. 428—339 8 Claims

1. A metal cooking utensil having a food contacting surface formed of a cured, adherent film having food release properties, which comprises:

a metal cooking utensil formed of metal from the group consisting of aluminum and tinplate steel, and having a cured, adherent surface film with food release properties;

said cured film being formed of a silanol-containing organopolysiloxane resin having fine particles of a fluorocarbon polymer dispersed therein and siloxane fluid;

said silanol-containing organopolysiloxane resin being the acetone-water hydrolysis product of an organo-halosilane blend consisting essentially of about 60 mole percent of methyltrichlorosilane, about 35 mole percent of phenyltrichlorosilane, and about 5 mole percent of dimethyldichlorosilane, and having an average ratio of about 1.05 organo radicals per silicon atom;

said fluorocarbon polymer being a member selected from the group consisting of completely fluorinated and fluorochlorinated polymers of C_2–C_4 olefins, having a molecular weight of at least about 250,000, and being in the form of fine particles;

the percent by weight of organopolysiloxane resin and fluorocarbon polymer present in said cured film being about 35 to 60 percent by weight of organopolysiloxane resin and up to about 25 percent by weight of the fluorocarbon polymer.

5. A metal cooking utensil having a food contacting surface formed of a cured, adherent film having food release properties, which essentially consists of:

a metal cooking utensil formed of metal from the group consisting of aluminum and tinplate steel, and having a cured, adherent, pigmented surface film with food release properties;

said cured film being formed of a silanol-containing organopolysiloxane resin having pigment and fine particles of a fluorocarbon polymer dispersed therein and siloxane fluid;

said silanol-containing organopolysiloxane resin being the hydrolysis product of an organohalosilane blend consisting essentially of about 60 mole percent of methyltrichlorosilane, about 35 mole percent of phenyltrichlorosilane, and about 5 mole percent of dimethyldichlorosilane in the presence of water, acetone and a water-immiscible organic solvent, and having an average ratio of about 1.05 organo radicals per silicon atom;

said fluorocarbon polymer being a member selected from the group consisting of completely fluorinated and fluorochlorinated polymers of C_2–C_4 olefins, having a molecular weight in the range of from about 250,000 to about 750,000, and being in the form of fine particles;

the percent by weight of organopolysiloxane resin, fluorocarbon polymer and pigment present in said cured film being about 35 to 60 percent by weight of organopolysiloxane resin, up to about 25 percent by weight of the fluorocarbon polymer, and about 10 to 40 percent by weight of pigment.

4,066,818

LEATHER DRESSING COMPOSITION OF AN AQUEOUS EMULSION OF SOLVENT SOLUTIONS OF SUBSTITUTED CELLULOSES AND POLYURETHANES

Peter Junge, Siegburg-Seligenthal; Horst Schulz, Lohmar-Heide; Rainer Schneider, Hennef; Werner Dreke, Neunkirchen-Seelscheid, and Gerhard Rieger, Troisdord-Spich, all of Germany, assignors to KEPEC Chemische Fabrik GmbH, Siegburg, Germany

Filed Sept. 20, 1976, Ser. No. 725,003
Claims priority, application Germany, Sept. 25, 1975, 2542767
Int. Cl.[2] C08L *1/14, 1/18*
U.S. Cl. 428—341 12 Claims

1. A composition for dressing leather and leather substitutes comprising an aqueous emulsion of organic solvent solutions of (A) a substituted cellulose selected from the group consisting of nitrocellulose having a D.S. of 1.9 to 2.4, cellulose acetate butyrate having a D.S. of 2.0 to 2.8 with a ratio of acetyl to butyryl groups of 1:1 to 4:1, and mixtures thereof, and (B) a linear polyurethane resin having a molecular weight range of from 10,000 to 500,000, in a weight ratio of A:B of 1:0.1 to 1:10, where the weight ratio of organic solvents to water is from 6:1 to 1:1, said aqueous emulsion containing from 10% to 60% by weight, based on the dry weight of said substituted cellulose of a non-ionic surface-active compound as an emulsifier and said organic solvents being water-immiscible and volatile in the temperature range of 80° to 160° C.

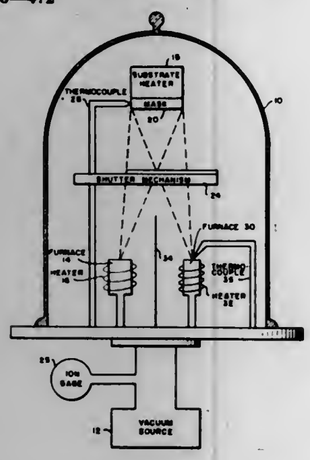
12. A leather or leather substitute dressed with from 10 gm to 35 gm dry weight per square meter of the composition for dressing leather and leather substitutes of claim 1.

4,066,819

METHOD OF BONDING GOLD FILMS TO NON-ELECTRICALLY CONDUCTING OXIDES AND PRODUCT THEREBY OBTAINED

Wallace E. Anderson, Beltsville; Albert M. Syeles, Silver Spring, and Albert D. Krall, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 21, 1971, Ser. No. 191,292
Int. Cl.[2] B32B *15/04*
U.S. Cl. 428—472 3 Claims



1. A microstrip board comprising a gold film which contains at least one-half weight percent of aluminum, bonded to a non-electrical conducting oxide of alumina.

4,066,820

PROCESSES FOR COATING FILMS

Roger Sidney Arthur Kelly, Stevenage, and John Robert Wilson, Knebworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 24, 1975, Ser. No. 561,663
Claims priority, application United Kingdom, Mar. 29, 1974, 13991/74; Mar. 29, 1974, 13992/74; Mar. 29, 1974, 13993/74
Int. Cl.[2] B32B *27/08*
U.S. Cl. 428—483 10 Claims

1. A process for the production of a coated film, which comprises coating a substrate layer applied to a self-supporting synthetic linear polyester film with an aqueous, cross-linking polymeric latex or solution, wherein said substrate layer comprises: (1) a copolymer formed from ethyl acrylate, methyl methacrylate and methacrylamide, or (2) a copolyester, and the aqueous polymeric latex or solution applied thereto comprises:

A.

i. one or more polymers or copolymers of one or more of acrylic acid, methacrylic acid, an ester of acrylic acid or methacrylic acid;

ii. an unhydrolysed or a partially hydrolysed polymer or copolymer of vinyl acetate; or

iii. one or more copolymers of vinylidene chloride; and

B.

one or more resinous components capable of intra-molecular cross-linking; thereby providing a polyester film having a substrate superimposed thereon coated with said polymeric latex or solution.

4,066,821

TUNGSTEN CARBIDE TOOLS TREATED WITH GROUP IVB AND VB METALS

Nathan Henry Cook, Cambridge, Mass., and Bruce M. Kramer, Wantagh, N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 324,889, Jan. 18, 1973, abandoned. This application Jan. 22, 1976, Ser. No. 651,269
Int. Cl.[2] C23C *11/08*
U.S. Cl. 428—539 26 Claims

1. A method for forming a coating of a Group IVB or VB metal carbide on a carbide tool, said method comprising the steps of applying a Group IVB or VB metal to the surface of said tool by vapor deposition in an atmosphere which consists essentially of a halide of the Group IVB or VB metal and elemental halogen, and diffusing said metal into said tool at a temperature which is sufficient to permit formation of the Group IVB or VB metal carbide, the source of the carbon in said Group IVB or VB metal carbide being the carbon in said carbide tool.

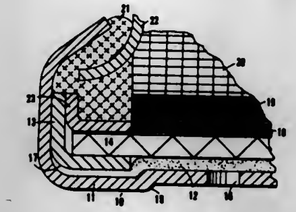
4,066,822

SELF SEALING MICROPOROUS MEMBRANE FOR ELECTROCHEMICAL CELLS AND METHOD OF FORMING SAME

Franciszek J. Przybyla, and Michael J. Smith, both of Mississauga, Canada, assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Sept. 28, 1976, Ser. No. 727,546
Int. Cl.[2] H01M *8/02*
U.S. Cl. 429—27 6 Claims

1. A gas-depolarized galvanic cell comprising an anode, a gas-depolarizable cathode, at least one electrolyte carrying separator disposed therebetween, and a container having a first terminal electrically associated with said anode and a second terminal electrically associated with said cathode, said terminals being electrically insulated one from the other; at least one opening in said second terminal portion of said container, a membrane of a hydrophobic microporous material interposed between said at least one opening and, said gas-depolarizable cathode, said gas-depolarizable cathode being in gas communication with said at least one opening which is positioned to permit gas to pass therethrough from the exterior environment to and through said membrane of hydrophobic microporous material; and a metal ring disposed in said container, a portion of said ring being positioned between said membrane and said



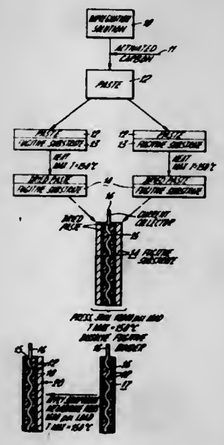
gas-depolarizable electrode and said ring being in electrical contact with said container, said ring being retained by interference fit in said container, and a portion of said membrane positioned between said ring and said container compressed to substantially zero porosity.

4,066,823

METHOD FOR A LOW TEMPERATURE OXYGEN ELECTRODE

William A. Armstrong, 1265 Greyrock Crescent, Ottawa, Ontario, Canada (K2C 2A6)

Continuation of Ser. No. 505,145, Sept. 11, 1974, abandoned. This application Sept. 15, 1976, Ser. No. 723,485
Claims priority, application Canada, Sept. 11, 1973, 180804
Int. Cl.[2] H01M *4/86*
U.S. Cl. 429—41 7 Claims



1. An improved method for preparing a gas permeable hydrophobic electrode structure comprising: the first step of applying a paste comprising water, a wetting agent and solids consisting essentially of a water-soluble noble metal salt, a fluorocarbon polymer, and activated carbon to a fugitive substrate; the second step of heating and drying such paste at a temperature not exceeding about 150° C for a time sufficient to provide a first unit comprising a dried paste of noble metal derived from said noble metal salt, said fluorocarbon polymer and said activated carbon on said fugitive substrate; the third step of placing a metal current collecting grid between a pair of said first units in contact with the dried paste of each said first units, thereby to provide a first sub-assembly comprising a sandwich of said metal current collecting grid between a pair of said first units; the fourth step of pressing the first sub-assembly at a temperature not exceeding about 150° C; the fifth step of removing said fugitive substrate, thereby to provide a second sub-assembly; the sixth step of applying a semi-permeable membrane to one face of said second sub-assembly, thereby to provide a third sub-assembly; and the final step of pressing said third sub-assembly together at a temperature not exceeding about 100° C, thereby to provide said electrode structure.

5. A gas permeable hydrophobic electrode structure produced in accordance with the method of claim 1, in which said wetting agent is octyl phenoxypolyoxyethanol; in which said metal, current collecting grid is formed of platinum, gold, stainless steel, nickel-clad iron, nickel wire mesh, silver wires mesh, expanded nickel, or expanded silver; in which said noble metal is silver, platinum or palladium; in which said fluorocarbon polymer is polytetrafluoroethylene; in which said semi-permeable membrane is a fibrous polytetrafluoroethylene membrane or a microporous polypropylene membrane; in which said fugitive substrate is aluminum foil, and in which said fugitive substrate is removed by dissolving with KOH solution; and in which the proportions of water soluble noble metal salt, fluorocarbon polymer and activated carbon are so selected that said dried paste on said first unit has the composition:

about 2.4 to about 7.5 mg/cm^2 noble metal,
about 20 mg/cm^2 activated carbon, and
about 2.0 to about 4.0 mg/cm^2 fluorocarbon polymer.

4,066,824

CELL CONTAINING CHALCOGENIDE CATHODE, ALKALI METAL ANODE AND SOLID HALO-ALUMINUM ALKALI METAL COMPOUND ELECTROLYTE

Bhaskara M. L. Rao, Fanwood, and Bernard G. Silbernagel, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Jan. 4, 1977, Ser. No. 756,637
Int. Cl.[2] H01M *10/44*
U.S. Cl. 429—50 13 Claims

1. A method of operating an electric current-producing cell, comprising: drawing a current from the cell at a temperature below the melting point of the electrolyte of the cell, wherein the cell contains:

a. an alkali metal-containing anode;

b. a cathode containing as its cathode-active material, one or more chalcogenides of the empirical formula:

$$M'Z_n$$

wherein M' is one or more metals selected from the group consisting of titanium, zirconium, hafnium, niobium, tantalum and vanadium, wherein Z is one or more chalcogens selected from the group consisting of oxygen, sulfur, selenium and tellurium, and wherein n is a numerical value between about 1.8 and about 3.2; and

c. a solid electrolyte consisting essentially of one or more compounds of the formula:

$$MAlX_4$$

wherein M is an alkali metal and X is one or more halogens selected from the group consisting of chlorine, bromine and iodine.

4,066,825

SYSTEM AND METHOD FOR PROTECTING THE ENVIRONMENT IN A BATTERY PRODUCTION ROOM

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

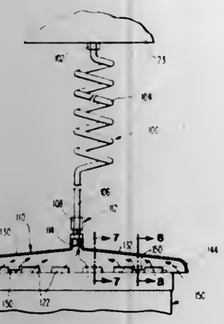
Continuation-in-part of Ser. No. 363,998, May 25, 1973, abandoned. This application Aug. 24, 1976, Ser. No. 717,362
Int. Cl.[2] H01M *2/12*
U.S. Cl. 429—71 9 Claims

1. A lead-acid storage battery forming room comprising:

a. a conveying surface for receiving batteries to be formed;

b. charging means for applying direct electric current to said batteries; and

c. a plurality of gas collection means, at least one for each battery to be formed, for collecting battery vapors generated during charging, each of said gas collection means



further comprising nozzle means for covering at least a portion of the fill holes of said batteries and resilient, conduit means for withdrawing said collected gases from said nozzle means, said conduit means biasing said nozzle means away from said conveying surface.

4,066,826

SODIUM SULPHUR CELLS

Ivor Wynn Jones; Graham Robinson, and Thomas Lewis Bird, all of Chester, England, assignors to The Electricity Council, London, England

Division of Ser. No. 550,072, Feb. 14, 1975, Pat. No. 3,982,957. This application Sept. 8, 1976, Ser. No. 721,625

Int. Cl.² H01M *4/36*

U.S. Cl. 429—104 **9 Claims**



1. In a sodium sulphur cell having a cathodic compartment and an anodic compartment separated by a solid electrolyte, a rigid cathode current collector in the cathodic compartment, which current collector has an external surface of carbon or graphite, the cathodic compartment containing a carbon or graphite matrix impregnated with a sulphur/polysulphide cathodic reactant extending between the current collectors and the electrolyte; the improvement in which said current collector is formed as an impermeable rod or tube containing a conductor effectively electrically connected thereto over substantially the whole length thereof and having, in its external surface, grooves or recesses into which the matrix material does not extend, said grooves or recesses thereby forming reservoirs for the cathodic reactant.

4,066,827

PROCESS FOR PRODUCING A POLYION COMPLEX HAVING A NUCLEIC ACID BASE

Toru Seita; Akihiko Shimizu, and Yujiro Kosaka, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed May 17, 1976, Ser. No. 687,220

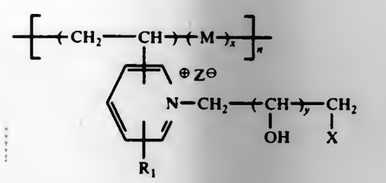
Claims priority, application Japan, May 22, 1975, 50-60241; May 22, 1975, 50-60242; May 27, 1975, 50-62533

Int. Cl.² C08F *8/30;* C08L *1/28*

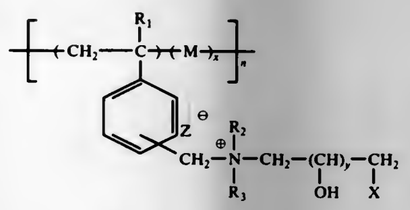
U.S. Cl. 526—50 **9 Claims**

1. A process for producing a polyion complex which comprises reacting a polyanion polyacrylic acid or polymethacrylic acid polymer, or alkali metal salts thereof, with a nucleic acid base-containing polycation polymer having the unit formula

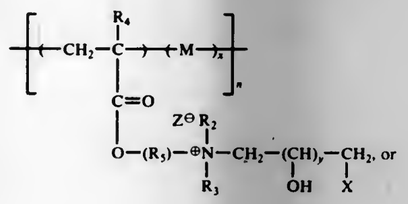
(1)



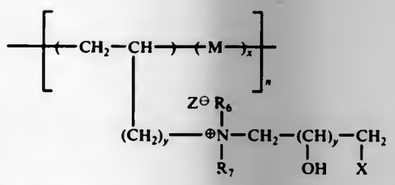
(2)



(3)



(4)



wherein R_1 is a hydrogen atom or a C_{1-4} alkyl group; R_2 and R_3 are each a C_{1-10} hydrocarbon group; R_4 is a hydrogen atom or a methyl group; R_5 is a C_{1-16} alkyl group; R_6 and R_7 are each a C_{1-4} alkyl group; M is a vinyl monomer; x is 0–450,000; Z is a halogen atom or an hydroxyl group; y is 0 or 1; n is an integer higher than 10; X is adenine, thymine, cytosine, uracil or a derivative thereof in which a purine nucleus is bonded to the 9-position and a pyrimidine nucleus is bonded to the 1-position.

4,066,828

PROCESS FOR THE PRODUCTION OF WATER-ADSORBING CELLULOSE ETHERS

Arno Holst; Helmut Lask, and Michael Kostrzewa, all of Wiesbaden, Germany, assignors to Hoechst Aktiengesellschaft, Germany

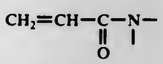
Filed May 6, 1976, Ser. No. 683,967

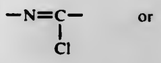
Claims priority, application Germany, May 7, 1975, 2520337

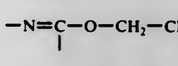
Int. Cl.² C08B *11/00, 11/20, 11/193, 15/10*

U.S. Cl. 536—87 **3 Claims**

1. In the process for the production of water-adsorbing, but at least partially water-insoluble, cellulose ethers in which cellulose is alkalized in a liquid reaction medium and etherified in a manner such that by etherification only an at least largely water-soluble carboxymethyl cellulose, carboxymethyl hydroxyethyl cellulose, hydroxyethyl cellulose or methyl hydroxyethyl cellulose is produced, and in which the cellulose is reacted in an alkaline reaction medium before, during or after the etherification with a cross-linking agent which is polyfunctional towards cellulose and selected from the group consisting of acrylamido methylene chloroacetamide, dichloroacetic acid, phosphorus oxychloride, or a compound in which at least two groups functional towards cellulose are

the acrylamido group 

the chlorazomethine group  or

the allyloxy azomethine group 

the improvement comprising effecting alkalization, etherification, and cross-linking in a liquid reaction medium selected from the group consisting of the organic solvents, dioxane, methyl ethyl ketone, ethanol, acetone and tertiary butyl alcohol, and the solvent water.

4,066,829

MALTO-DEXTRIN POLY(H-)SULFATES

Vijay Gopalan Nair, Nanuet, N.Y.; Joseph Peter Joseph, Cliffside Park, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed July 12, 1976, Ser. No. 704,583

Int. Cl.² C13L *1/10*

U.S. Cl. 536—103 **12 Claims**

1. A Fro-Dex® malto-dextrin poly(H-)sulfate and salt thereof prepared by sulfating a Fro-Dex® malto-dextrin in the presence of a member selected from the group comprising alkali metal, alkaline earth metal, trialkylamine (C_1-C_6), alkanolamine (C_1-C_6), cycloalkanolamine (C_3-C_6), pyrazine and piperidine.

4,066,830

BENZOXAZOLE-STYRYLS

Geza Kormany, Allschwil, and Guglielmo Kabas, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 3, 1976, Ser. No. 663,189

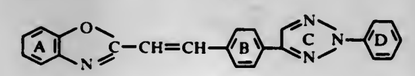
Claims priority, application Switzerland, Mar. 11, 1975, 3059/75

Int. Cl.² C07D *413/10*

U.S. Cl. 542—456 **7 Claims**

1. Benzoxazole-styryls of the formula

(1)



wherein the rings A, B, C and D are unsubstituted or substituted with non-chromophoric substituents, selected from the group consisting of unsubstituted alkyl with 1 to 4 carbon atoms, alkyl with 1 to 3 carbon atoms, which is substituted at the terminal carbon atom by a cyano group or COOR group, wherein R represents hydrogen, a salt-forming cation or alkyl with 1 to 5 carbon atoms, cyclohexyl, phenylakyl with 1 to 3 carbon atoms in the alkyl part, phenyl which is optionally substituted by 1 or 2 substituents from the series chlorine, methyl or methoxy; alkoxy with 1 to 4 carbon atoms, phenoxy which is optionally substituted by 1 or 2 substituents from the series chlorine, methyl or methoxy; chlorine, bromine, cyano, COOR, wherein R represents hydrogen, a salt-forming cation, alkyl with 1 to 5 carbon atoms or benzyl, CONR′ (R_1′), wherein R′ represents hydrogen, alkyl with 1 or 6 carbon atoms, alkyl with 2 to 4 carbon atoms, which is substituted at the terminal carbon atom by a dialkylamino group or an optionally quaternised dialkylamino group with 1 to 4 carbon atoms in each alkyl part, hydroxyalkyl with 1 to 4 carbon atoms, alkoxyalkyl with 2 to 8 carbon atoms, phenyl or benzyl and R_1′ represents hydrogen, alkyl with 1 to 6 carbon atoms, hydroxyalkyl with 1 to 4 carbon atoms or alkoxyalkyl with 2 to 8 carbon atoms, or R′ and R_1′, conjointly with the nitrogen, represent a morpholino or piperidino radical; SO_2OY, wherein Y denotes hydrogen, a salt-forming cation, alkyl with 1 to 5 carbon atoms, phenyl or alkyl-substituted phenyl SO_2NR' (R_1′), wherein R′ and R_1′ have the meaning indicated above, alkylsulphonyl with 1 to 6 carbon atoms, benzylsulphonyl, phenylsulphonyl or phenylsulphonyl which is substituted by chlorine or methyl, or a fused phenyl ring.

4,066,831

O-2-ISOCEPHEM-4-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS

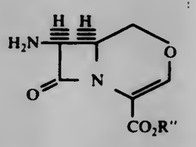
Bernard R. Belleau, Westmount, Canada; Terrence W. Doyle, Fayetteville, N.Y.; Bing Yu Luh, and Terry T. Conway, both of Brossard, Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 538,271, Jan. 2, 1975, Pat. No. 4,012,383. This application Aug. 19, 1976, Ser. No. 715,942

Int. Cl.² C07D *265/34*

U.S. Cl. 544—105 **5 Claims**

1. A compound having the formula



wherein R″ is hydrogen or an easily cleavable ester carboxyl-protecting group selected from the group consisting of benzhydryl, benzyl, p-nitrobenzyl, p-methoxybenzyl, trichloroethyl, trimethylsilyl, phenacyl, acetonyl, (lower)alkyl, triphenylmethyl, methoxymethyl, indanyl, phthalidyl, pivaloyloxymethyl and acetoxymethyl, or a pharmaceutically acceptable salt thereof.

4,066,832

0-2-ISOCEPHEM-4-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS

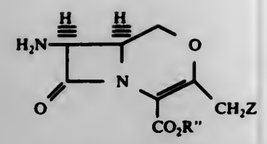
Marcel Menard; Gary M. F. Lim, both of Candiac, and Terry T. Conway, Brossard, all of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 567,323, April 11, 1975, Pat. No. 4,011,216. This application Aug. 19, 1976, Ser. No. 715,943

Int. Cl.² C07D *265/34*

U.S. Cl. 544—105 **5 Claims**

1. A compound having the formula



wherein Z is hydroxyl and R'' is hydrogen or an easily cleavable ester carboxyl-protecting group selected from the group consisting of benzhydryl, benzyl, p-nitrobenzyl, p-methoxybenzyl, trichloroethyl, trimethylsilyl, phenacyl, acetonyl, (lower)alkyl, triphenylmethyl, methoxymethyl, indanyl, phthalidyl, pivaloyloxymethyl and acetoxymethyl, or a pharmaceutically acceptable salt thereof.

4,066,833

2,3,7,8-TETRAAZASPIRO [4.4]NONANE, 2,3,7,8-TETRAAZASPIRO-[4.4]NONA-2,7-DIENE AND DERIVATIVES

Arnold T. Nielsen, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 22, 1976, Ser. No. 743,723
Int. Cl.[2] C07D *231/04, 231/06*
U.S. Cl. 548—356 **5 Claims**

1. 2,3,7,8-Tetraazaspiro[4.4]nonane.

5. A method for preparing 2,3,7,8-tetraazaspiro [4.4]nonane comprising the steps of:

A. preparing a solution of 4-phenylurazole in ethanolic potassium ethoxide and a solution of pentaerythrityl tetrabromide in dimethylformamide, forming a reaction mixture from the two solutions reacting it to cause 2,2'-diphenyl-1,1'3,3'-tetraoxo-6,6'-spirobi[hexahydropyrazobi 1,2-a]-s-triazole to be formed and recovering the s-triazole;

B. reacting the s-triazole from steps A. with sodium hydroxide and hydrochloric acid in succession to form 2,3,7,8-tetraazaspiro[4.4]nonane bishydrochloride and recovering the bishydrochloride;

C. reacting the bishydrochloride from step B. with potassium bisulfate to form 2,3,7,8-tetraazaspiro [4.4]nonane sulfate and recovering the sulfate; and

D. subjecting the sulfate to ammonia to form said 2,3,7,8-tetraazaspiro[4.4]nonane.

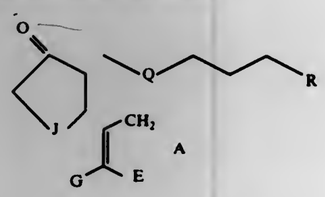
4,066,834

CYCLOALKENYL ANALOGUES OF PROSTAGLANDINS E

Warren Dexter Woessner; William Gerard Biddlecom; Henry Clifford Arndt, all of Madison; George Peter Peruzzotti, Middleton, and Charles John Sih, Madison, all of Wis., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 436,222, Jan. 24, 1974, abandoned, which is a division of Ser. No. 383,670, July 30, 1973, abandoned. This application Oct. 20, 1975, Ser. No. 624,099
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—121 **19 Claims**

1. A compound having the formula,



in which:

A is selected from the group consisting of methylene, ethylene, 1,1-dimethylethylene, trimethylene, tetramethylene, pentamethylene, hexamethylene, heptamethylene, and octamethylene;

E is selected from the group consisting of methylene, α-hydroxymethylene, and β-hydroxymethylene;

G is selected from the group consisting of hydrogen and methyl;

J is selected from the group consisting of methylene, α-hydroxymethylene, and β-hydroxymethylene;

Q is selected from the group consisting of ethylene and vinylene; and

R is selected from the group consisting of carboxyl, carbomethoxy, and carbethoxy.

4,066,835

PROCESS FOR PURIFYING THE WASTE WATER PRODUCED IN THE PROCESS OF PRODUCING ESTER PLASTICIZERS

Heinz-Dieter Hahn, and Jurgen Weber, both of Oberhausen, Germany, assignors to Ruhrchemie AG, Oberhausen, Germany

Continuation of Ser. No. 581,461, May 28, 1975, abandoned. This application Dec. 7, 1976, Ser. No. 748,269
Claims priority, application Germany, May 31, 1974, 2426448
Int. Cl.[2] C07C *69/34, 69/52*
U.S. Cl. 560—98 **11 Claims**

1. A process for the preparation of an ester plasticizer and the reduction of the chemical oxidation demand of the waste water obtained thereby which comprises

a. reacting a polybasic aliphatic or aromatic carboxylic acid with an alcohol in the presence of sulfuric acid;

b. thereafter neutralizing the raw esters with an alkaline solution thereby forming a first organic phase and a first aqueous phase;

c. separating said first aqueous phase from said first organic phase;

d. heating said first aqueous phase at a temperature of at least 200° C at the prevailing pressure thereby forming a second aqueous phase and a second organic phase which is immiscible with said second aqueous phase and which does not redissolve in said second aqueous phase upon cooling; and

e. physically separating said second organic phase from said second aqueous phase by centrifuging or decanting.

10. A process for removing an organic component from a single phase aqueous effluent obtained by the esterification of a polybasic aliphatic or aromatic carboxylic acid with an aliphatic alcohol in the presence of sulfuric acid, which water contains an alkyl hydrogen sulfate or a dialkyl sulfate, ester and unreacted reactants, which process consists essentially of:

A. Heating said effluent to a temperature above 200° C under the particular prevailing pressure thereby forming an organic phase and an aqueous phase from said effluent, which do not redissolve into each other upon cooling thereof; and

B. Thereafter mechanically removing by centrifuging or decanting said organic phase from said aqueous phase.

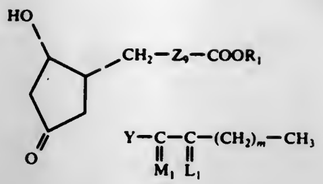
4,066,836

3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-PGD$_1$ COMPOUNDS

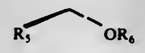
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sept. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 755,580
Int. Cl.[2] C05C *09/76*
U.S. Cl. 560—53 **33 Claims**

1. A prostaglandin analog of the formula



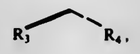
wherein Y is cis—CH=CH— or trans—CH=CH—;
wherein *m* is one to 5, inclusive;
wherein M_1 is



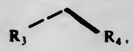
or



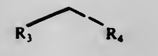
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



-continued



or a mixture of

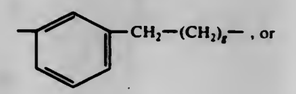


and

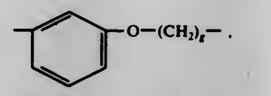


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein Z_0 is

(1)



(2)



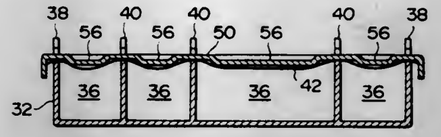
wherein *g* is one, 2, or 3.

4,066,837

HIGH FREQUENCY ELECTRICAL SHIELD ASSEMBLY

Katsuhiko Miura, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 21, 1976, Ser. No. 688,615
Claims priority, application Japan, May 22, 1975, 50-68994
Int. Cl.² H05K 9/00
U.S. Cl. 174—35 GC 7 Claims



1. An electrical shield assembly comprising:
an electrically conductive box having an open side;
an electrically conductive resilient sheet engaging with and covering the open side of the box;
an electrically conductive plate formed with protuberances facing into the box; and
biasing means urging the plate into firm contact with the sheet in such a manner that the sheet is resiliently deformed by the protuberances

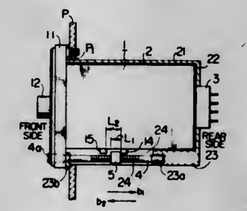
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4,066,838

APPARATUS FOR DETACHABLY MOUNTING ELECTRICAL ASSEMBLY UNITS TO SUPPORTING PANELS

Teizo Fujita, Ibaraki, and Tosiro Ohashi, Ikeda, both of Japan, assignors to Izumi Denki Corporation, Osaka, Japan

Filed Apr. 30, 1976, Ser. No. 681,931
Int. Cl.² H02G 3/12
U.S. Cl. 174—48 12 Claims



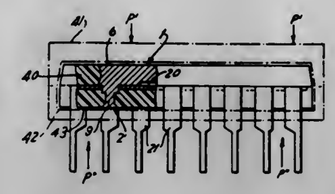
1. An apparatus for detachably mounting an electrical assembly unit to a panel, comprising:
a supporting frame adapted to be attached to said panel prior to the mounting of the electrical assembly unit;
a manipulating rod provided rotatably in said supporting frame and extending in the direction along which said unit is mounted or removed;
pressing means mounted on said manipulating rod and movable both axially of said rod and relative to said electrical assembly unit upon rotation of said rod; and
engaging means fixedly provided on said electrical assembly unit in a position to be engaged by said pressing means,
said manipulating rod being so arranged that the rotation thereof causes movement of said pressing means to bear pressingly against said engaging means whereby said electrical assembly unit is forcefully moved either to a mounted or clamped position or to a detached position in dependence upon the direction of rotation of said rod.

4,066,839

MOLDED BODY INCORPORATING HEAT DISSIPATOR

Giuseppe Cossutta, Sesto San Giovanni, and Marino Cellai, Bresso, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Continuation of Ser. No. 468,296, May 8, 1974, abandoned, which is a division of Ser. No. 415,748, Nov. 14, 1973, abandoned. This application Nov. 17, 1975, Ser. No. 632,589
Claims priority, application Italy, Nov. 16, 1972, 31713/72
Int. Cl.² H05K 5/00
U.S. Cl. 174—52 PE 8 Claims



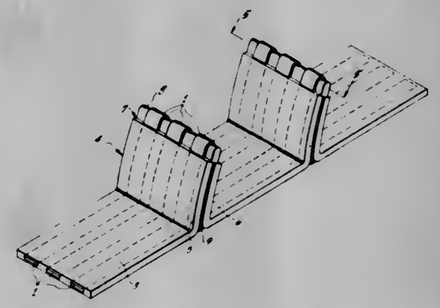
1. A modular unit comprising a generally prismatic body of plastic material and a heat-dissipating metal block imbedded in said body, said block having a large exposed surface flush with a face of said body and being rigid with at least one solid projection of constant width extending within said body and terminating in a flat broadened tip flush with an opposite face of said body, said projection rising from a side of said block remote from said exposed surface thereof for anchoring said block to said body.

4,066,840

STRIP SUPPLY LEAD WITH BRANCH LEADS AND METHOD OF MAKING SAME

Werner M. Allgaier, Westerham, Germany, assignor to Raychem GmbH, Putzbrunn, Germany

Filed June 27, 1975, Ser. No. 590,807
Claims priority, application Germany, June 28, 1974, 7422135[U]; Aug. 13, 1974, 2438878
Int. Cl.² H01B 7/08
U.S. Cl. 174—72 R 17 Claims



1. A method for providing strip supply lead, comprising a plurality of conductor elements embedded in an insulating material, with a branch lead comprising the steps in sequence:
A. removing a portion of the insulating material from each side of the strip supply lead in a zone intermediate the ends of the strip supply lead to completely bare a length of at least one conductor element;
B. folding the strip supply lead about the midpoint of the bared length of conductor element into a generally U-shaped configuration to bring the surfaces of portions of the intact strip supply lead immediately adjacent either end of the bared conductor element forming the extremities of the shanks of the U into an opposed relationship; and

C. bonding the opposed surfaces of intact strip supply lead to each other to form a generally U-shaped branch lead in which the bared length of conductor element provides an electrical contact.

10. A strip supply lead comprising a plurality of conductor elements embedded in an insulating material and comprising a branch lead, said branch lead comprising a generally U-shaped bend in said strip supply lead about the midpoint of a length of conductor elements bared on each side in a zone intermediate the ends of the strip supply lead, the shanks of said U having at their extremities a portion of intact strip supply lead the opposed surfaces of which are bonded to each other.

4,066,841

DATA TRANSMITTING SYSTEMS

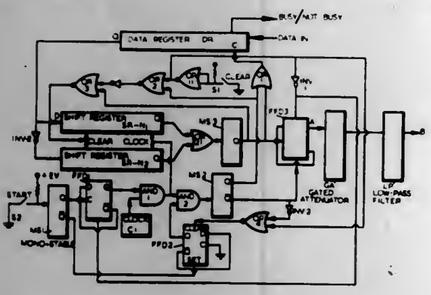
Robert Eric Young, Leamington Spa, England, assignor to Serck Industries Limited, Leamington Spa, England

Continuation of Ser. No. 544,521, Jan. 27, 1975, abandoned. This application Sept. 24, 1976, Ser. No. 726,323

Claims priority, application United Kingdom, Jan. 25, 1974, 3502/74

Int. Cl.² H04L *27/10*

U.S. Cl. 178—66 R **6 Claims**



1. In a frequency shift keying data transmission system for transmission of information in a binary coded pulse waveform in which the mark of the binary coded pulse waveform is represented by a half cycle of a first keying frequency and the space is represented by a half cycle of a second keying frequency, the improvement comprising: means for the generation of a signal of an approximately sinusoidal waveform having a phase continuous at the transitions of said sinusoidal waveform and wherein the time lengths of the mark and space symbols thereof are matched to the half time periods of the respective keying frequencies and the slope of said approximately sinusoidal waveform is constant at the cross-over points, and means for measuring the time duration between the crossover points of the binary coded pulse waveform signal and comparing the time duration with a reference to determine whether the duration corresponds with that of the shorter half time of the higher keying frequency or that of the longer half time period of the lower keying frequency, wherein said means for measuring and comparing includes a source of clock pulses, a counter connected to said source of clock pulses, means responsive to the beginning of a half cycle of binary coded pulse waveform signal for starting the counter, means responsive to the end of a half cycle of received signal for stopping the counter, and comparator means for determining whether the count of clock pulses during each enabled period is greater or less than a predetermined count corresponding to a time duration greater than the half time of the higher frequency and less than the half time of the lower frequency.

4,066,842

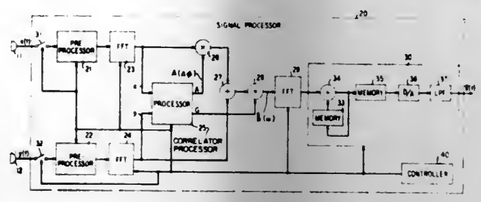
METHOD AND APPARATUS FOR CANCELLING ROOM REVERBERATION AND NOISE PICKUP

Jont Brandon Allen, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1977, Ser. No. 791,418

Int. Cl.² G10L *1/00*; H04R *3/00*

U.S. Cl. 179—1 P **47 Claims**



21. Apparatus for developing a nonreverberant signal including two microphones and circuitry for performing a co-phase and add operation on the output signals of said two microphones, the improvement comprising:

a processor connected to said circuitry for performing said co-phase and add operation for modifying the output signal of said circuitry in accordance with a gain control signal proportional to the averaged magnitude of the cross-spectrum function of said output signals developed by said two microphones.

4,066,843

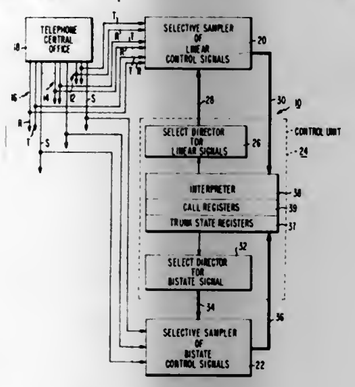
TELEPHONE CIRCUIT MONITORING SYSTEM

David J. Waks, Princeton, N.J., and Adolf Futterweit, Lahaska, Pa., assignors to Applied Data Research, Inc., Princeton, N.J.

Filed Mar. 28, 1975, Ser. No. 562,910

Int. Cl.² H04M *15/38*

U.S. Cl. 179—8 A **26 Claims**



1. Apparatus for monitoring signals on a plurality of telephone circuits to determine call disposition comprising:

separate input means for connection to each of said telephone circuits and for receiving call-state signals on the associated telephone circuit;

means responsive to different address signals respectively associated with said telephone circuits for detecting call-state signals on said input means associated with the addressed one of said telephone circuits, including means for detecting linear signal frequencies and the direct signal characteristics forming call-state signals appearing on said telephone circuits, and for producing corresponding signals representative of the detected signal frequencies and direct signal characteristics;

and means responsive to said representative signals for directing the generation of said address signals to control the operation of said detecting means for detecting said call-state signals.

4,066,844

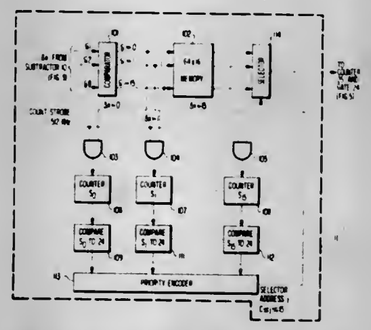
ADAPTABLE ZERO ORDER PREDICTOR FOR SPEECH PREDICTIVE ENCODING COMMUNICATIONS SYSTEMS

Robert Paul Ridings, Jr., Walkersville, and Raymond Henry Lanier, Hyattsville, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Nov. 13, 1975, Ser. No. 631,594

Int. Cl.² H04J *3/16*

U.S. Cl. 179—15 BW **10 Claims**



1. In a digital communications system wherein information from a designed maximum plurality of voice circuits at a transmitting station may be transmitted to a receiving station via a transmission path of given power level, bit rate and bandwidth, apparatus for enabling the transmission of information from a number greater than said designed maximum plurality of voice circuits over said transmission path comprising:

a. means at said transmitting station for periodically sampling the amplitude of voice signals on each circuit of said plurality of voice circuits;

b. means for comparing for each said circuits, a present amplitude sample with a prior amplitude sample which has been transmitted to said receiving station, said comparing means generating difference signals in response to said comparisons;

c. means for comparing said difference signals with a plurality of aperture threshold values and generating an activity map for each aperture threshold value;

d. means for selecting the smallest aperture value which results in an activity map corresponding to activity in not exceeding a fixed predetermined number of circuits; and

e. means for generating a transmission frame comprising a digital representation of those present amplitude samples conforming to the activity map of the selected aperture value and a digital word representing said activity map.

4,066,845

PULSIVE NOISE REMOVING APPARATUS FOR AN FM RECEIVER

Hiroyasu Kishi, Gunma, Japan, assignor to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co. Ltd., both of Moriguchi, Japan

Filed Jan. 5, 1977, Ser. No. 756,850

Claims priority, application Japan, Mar. 19, 1976, 51-31631

Int. Cl.² H04H *5/00*

U.S. Cl. 179—15 BT **6 Claims**

1. An apparatus for removing noise in a composite signal including an information signal and a reference signal of a predetermined frequency, said apparatus comprising:

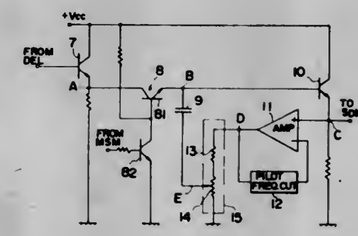
means for providing said composite signal,

means responsive to said composite signal providing means for detecting a noise signal included in said composite signal,

means responsive to said noise detecting means for providing an enabling signal of a predetermined time period upon occurence of said noise signal,

gate means responsive to said composite signal providing means and said enabling signal providing means for being opened when said enabling signal is provided from said enabling signal providing means for interrupting transmission of said composite signal and for being closed when said enabling signal is not provided from said enabling signal providing means for allowing transmission of said composite signal,

amplifying means coupled to the output of said gate means for selectively amplifying a signal component of a frequency commensurate with said predetermined frequency of said reference signal,



attenuating means coupled to the output of said amplifying means for attenuating the output from said amplifying means, and

storing means coupled to the output of said gate means and cooperative with said attenuating means for holding, when said gate means is opened, the signal level at the output of said gate means substantially to the value immediately before said gate means is opened,

said amplifying means, said attenuating means and said storing means constituting a closed loop, said closed loop forming a positive feedback circuit with respect to said reference signal frequency which serves as an oscillator of said reference signal frequency when said gate means is opened, thereby to provide a pseudo reference signal of said predetermined frequency.

4,066,846

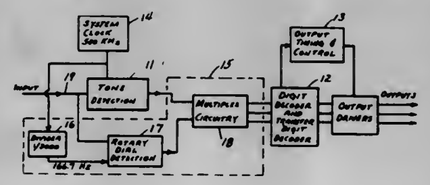
COMBINED ROTARY DIAL AND TOUCH-TONE TELEPHONE DECODING SYSTEM

Louis W. Champan, Kent, and Arthur T. Perkins, Bellevue, both of Wash., assignors to Melco, Bellevue, Wash.

Filed Aug. 17, 1976, Ser. No. 715,140

Int. Cl.² H04M *1/50*

U.S. Cl. 179—16 EC **18 Claims**



11. In a telephone dialing system, an input line adapted to receive Touch-Tone dialing signals and rotary dialing signals, Touch-Tone decoding means connected to said input line and comprising means to derive binary code words representing Touch-Tone frequencies corresponding to Touch-Tone dialed numbers, latched storage means to receive and store the binary code words, means responsive to rotary dial pulses in said

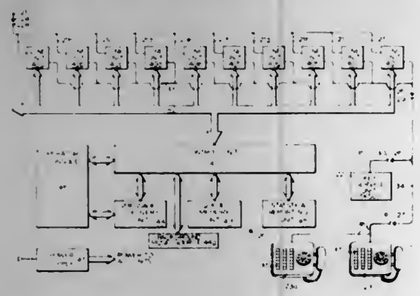
input line to generate an output code of binary signals compatible with said first-named binary code words, said output code representing a rotary dialed digit, and means to selectively connect said rotary dialed digit output code generating means and said Touch-Tone decoding means to said latched storage means in accordance with the presence or absence of rotary dial pulses in said input line, wherein said selective connecting means comprises multiplex circuit means normally connecting said Touch-Tone decoding means to said latched storage means, and means to disconnect said Touch-Tone decoding means from said latched storage means and connect said rotary dialed digit output code generating means to said latched storage means responsive to the presence of a valid rotary dialed pulse in said input line.

4,066,847

AUTOMATIC CALL ANSWERING AND SEQUENCING SYSTEM

John K. Giordano, Oakland, Calif., assignor to Automation Electronics Corporation, Oakland, Calif.

Filed Sept. 29, 1976, Ser. No. 727,684
Int. Cl.² H04M *1/72, 3/50*
U.S. Cl. 179—99 **23 Claims**



1. For use in combination with a subscriber's key telephone service unit connected to a plurality of incoming telephone lines, said unit being connected to at least one key telephone instrument provided with a plurality of indicator keys each for indicating visually the arrival of an incoming call thereon and for enabling an operator to select between said lines and to answer one of them at a time, an automatic call sequencing system comprising

scanning means connected to said lines for scanning said lines and for detecting arrival of an incoming call on each of said lines;

identifier means connected to said scanning means for identifying each line following detection of an unanswered call thereon by providing a line connection unit identifier signal;

queue memory means connected to said identifier means for storing in order of receipt all of said line connection unit identifier signals and for providing a queue-first control signal corresponding to said line having the oldest unanswered call, said queue memory means having an output queuing circuit responsive to said queue-first control signal;

key blinking control means connected to said key telephone instrument keys and to said output queuing circuit for providing said key corresponding to said line having the oldest unanswered call with a visual indication distinctly differing from visual indications of other said keys for lines having less senior unanswered incoming calls;

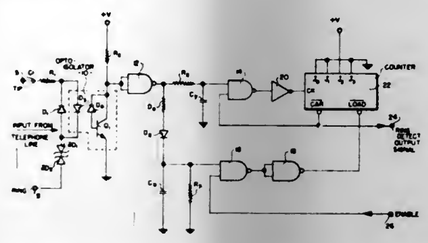
operator interrupt detection means connected to said lines and to said output queuing circuit for detecting the answering of said line having the oldest unanswered call by the operator and thereupon for advancing said queue memory means to a said line connection unit identifier signal being next in order whereupon a queue-first control signal is provided from said queue memory means through said output register queuing circuit to the said key corresponding to the next line then having the oldest unanswered call.

4,066,848

TELEPHONE RING DETECTOR CIRCUIT

James R. Darwood, Anaheim, Calif., assignor to T.A.D., Paramount, Calif.

Filed Sept. 7, 1976, Ser. No. 720,682
Int. Cl.² H04M *1/00*
U.S. Cl. 179—84 R **7 Claims**



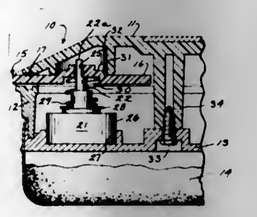
5. A detector system which is responsive to a first signal received in bursts individually having a predetermined minimum number of cycles and said bursts being separated by a first predetermined time interval, and which is unresponsive to a second signal received in bursts individually having a predetermined maximum number of cycles less than said minimum number of cycles of each burst of said first signal and separated by a second predetermined time interval, said system comprising: a counter; first circuit means connected to said counter for introducing pulses to said counter so as to cause said counter to count from a reference count; input circuit means connected to said first circuit means and responsive to the first and second signals to cause said first circuit means to introduce pulses to said counter to cause said counter to count from said reference count; reset circuit means connected to said counter to reset said counter to said reference count during the first and second predetermined time intervals; and output terminal means connected to said counter at which an output signal is produced only when said counter achieves a predetermined count corresponding to said predetermined minimum number of cycles of each of said bursts of said first signal.

4,066,849

ROTARY-TYPE CONTROL FOR HEADPHONE EARPIECE

Joseph J. Chladil, Sr., Milwaukee, Wis., assignor to Koss Corporation, Milwaukee, Wis.

Filed June 11, 1976, Ser. No. 694,973
Int. Cl.² H04R *1/10;* G05G *1/10*
U.S. Cl. 179—178 **12 Claims**



8. In an apparatus having a base containing a device having a shaft which can be rotated to control the device, shaft rotating means, and a cover for said apparatus which cover has an opening to expose a portion of the shaft rotating means so that it can be manually manipulated to control the shaft, the improvement which comprises:

a. shaft rotating means loosely keyed to the control shaft;

b. a journal and a journal bearing associated with the shaft rotating means and the cover which cooperate to level and center the shaft rotating means in the opening in the cover; and

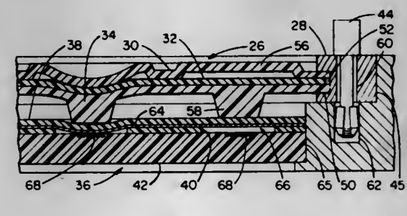
c. a spring which maintains the journal and journal bearing in cooperative relationship to level and center the shaft rotating means in the opening in the cover.

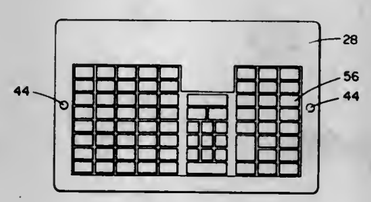
4,066,850

KEYBOARD SWITCH ASSEMBLY HAVING INTERCHANGEABLE COVER PLATE, INDICATING LAYER AND ACTUATOR SWITCH ASSEMBLY IN ANY OPERATIVE COMBINATION

George Heys, Jr., Byesville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed June 4, 1976, Ser. No. 693,032
Int. Cl.² H01H *9/00, 13/00*
U.S. Cl. 200—5 A **8 Claims**





7. A manually actuable keyboard assembly comprising:

a. a switch matrix comprising a substrate having a first conductor mounted in the top surface thereof;

b. an insulating member positioned on said substrate and having openings therein;

c. a deformable membrane positioned on said insulating member and adapted for movement through said opening, said membrane having second conductors mounted adjacent the opening of said insulating member, and said substrate, insulating member and membrane being secured together in a watertight relationship;

d. a jacket assembly positioned adjacent said membrane and comprising a second substrate having projections depending therefrom in registration with respective openings in said insulating member;

e. a transparent deformable membrane having key portions formed therein, said transparent membrane and said second substrate positioned in spaced apart relationship forming a recessed area;

f. a sheet removably positioned within said recessed area and having indicia thereon aligned with said key portions;

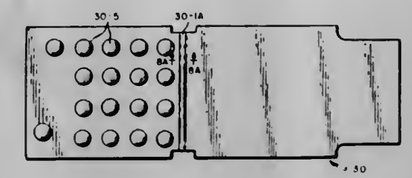
g. and a cover member having a configuration which extends over a predetermined portion of said transparent deformable membrane to expose a predetermined number of said key portions while overlying the remaining key portions whereby only those key portions exposed by said cover member are available for operation.

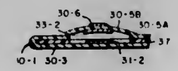
4,066,851

KEYBOARD SWITCH ASSEMBLY HAVING FOLDABLE PRINTED CIRCUIT BOARD, INTEGRAL SPACER AND PREFORMED DEPRESSION-TYPE ALIGNMENT FOLD

James N. White, Carlisle, and Richard E. Seeger, Topsfield, both of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 627,221, Oct. 30, 1975, abandoned. This application July 1, 1976, Ser. No. 701,508
Int. Cl.² H01H *9/00, 13/02*
U.S. Cl. 200—5 A **17 Claims**





1. A keyboard component for a keyboard comprising a unitary sheet of flexible and resilient insulator plastic having first and second sections supporting contactors and contacts respectively and a tail section supporting terminals, said first section having protrusions supporting at least some of said contactors, said sections being disposed to one another in an L configuration with said first section forming one leg of said "L" and said tail section and said second section forming the other leg of said "L," said first section being foldable over said second section to align said contactors with said contacts, a contactor of an on-off switch supported by said first section, a contact of an on-off switch supported by said second section, said contactor and contact spaced substantially equidistant from the intersection of the legs of the L, a first circuit line supported by said first, second and tail sections, and extending across said intersection of the legs of the L, a second circuit line adjacent said first circuit line and supported by said second and tail sections, said first circuit line coupled to said contactor and said second circuit line coupled to said contact, and terminals supported by said tail, one terminal coupled to each circuit line and actuator means movable between on and off positions to cause said contactor to engage said contact when said actuator is in said on position.

6. A keyboard comprising a unitary sheet of flexible and resilient insulator plastic having first and second sections for supporting at least some of contactors and contacts, said sections being relatively foldable with respect to each other, said sheet haing a foldable button retaining section having a plurality of openings, and buttons retained in said openings and movable to selectively urge said contactors against said contacts.

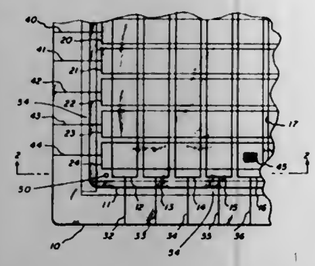
9. A keyboard component for a keyboard comprising a unitary sheet of flexible and resilient plastic having first and second sections, said first section supporting contractors and said second section supporting contacts on the same surface of the sheet and a preformed fold depression alignment means in said sheet between said first and second sections to align said contactors and contacts to one another when said sections are folded about said depression.

4,066,852

MEMBRANE-TYPE TOUCH PANEL EMPLOYING A PHOTO-RESIST INSULATING GRID ANTI-SHORT MEANS

George Edward Zenk, Richfield, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 22, 1976, Ser. No. 743,991
Int. Cl.² H01H 13/52, 1/50
U.S. Cl. 200—5 A 5 Claims



1. A transparent switch matrix to be carried on the face of a rigid insulator substrate having a predetermined radius of curvature, and comprising:

a. a plurality of spaced apart transparent conductive first strips firmly adhering to the face of the substrate;

b. a transparent resilient membrane having an undistorted contour substantially alike the pre-determined contour, and attached about its periphery to the face of the substrate in a position matching the membrane contour to the substrate contour and spaced apart from the first strips thereon in a predetermined area of the membrane;

c. a plurality of transparent, flexible, spaced apart conductive second strips firmly adhering to the resilient membrane surface facing the substrate, each of said second strips located in the area spaced apart from the first strips and thinner than the spacing therefrom, and each of said second strips crossing at least two first strips; and

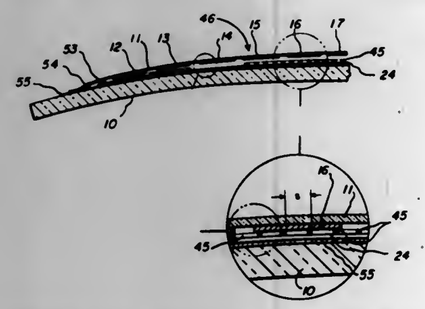
d. a thin insulating grid interposed between the first and second strips and absent external force separating the first strips from the second strips, and having within each crossover area between the first and second strips, a plurality of gaps permitting electrical contact between first and second strips responsive to manual pressure at each crossover area, said grid formed by insulating photo-resist material adherent to one of the two sets of strips.

4,066,853

MEMBRANE TYPE TOUCH PANEL EMPLOYING PIEZORESISTANT ANTI-SHORT MEANS

George Edward Zenk, Richfield, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 22, 1976, Ser. No. 744,080
Int. Cl.² H01H 13/50, 1/50
U.S. Cl. 200—5 A 3 Claims



1. A transparent switch matrix to be carried on the face of a rigid insulator substrate having a predetermined radius of curvature, and comprising:

a. a plurality of spaced apart transparent conductive first strips firmly adhering to the face of the substrate;

b. a transparent resilient membrane having an undistorted contour substantially alike the predetermined contour, and attached about its periphery to the face of the substrate in a position matching the membrane contour to the substrate contour and spaced apart from the first strips thereon in a predetermined area of the membrane;

c. a plurality of transparent, flexible, spaced apart conductive second strips firmly adhering to the resilient membrane surface facing the substrate, each of said second strips located in the area spaced apart from the first strips and thinner than the spacing therefrom, and each of said second strips crossing at least two first strips; and

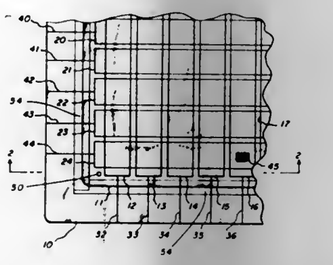
d. a piezoresistant coating interposed between the first and second strips, and permitting electrical conduction between a first and second strip responsive to manual pressure at their crossover area.

4,066,854

MEMBRANE-TYPE TOUCH PANEL EMPLOYING INSULATING GRID ANTI-SHORT MEANS

George Edward Zenk, Richfield, and Richard Joseph Ditzik, St. Paul, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 22, 1976, Ser. No. 744,207
Int. Cl.² H01H 13/52, 1/50
U.S. Cl. 200—5 A 8 Claims



1. A transparent switch matrix to be carried on the face of a rigid insulator substrate, having a predetermined radius of curvature, and comprising:

a. a plurality of spaced apart conductive first strips firmly adhering to the face of the substrate;

b. a transparent resilient insulating membrane having an undistorted contour substantially alike the predetermined contour, and attached about its periphery to the face of the substrate in a position matching the membrane contour to the substrate contour and spaced apart from the first strips thereon in a predetermined area of the membrane;

c. a plurality of transparent, flexible, spaced apart conductive second strips firmly adhering to the resilient membrane surface facing the substrate, each of said second strips located in the area spaced apart from the first strips and thinner than the spacing therefrom, and each of said second strips crossing at least two first strips; and

d. a thin insulating grip interposed between the first and second strips having within each crossover area between the first and second strips, a plurality of gaps permitting electrical contact between the first and second strips responsive to manual pressure at each crossover area.

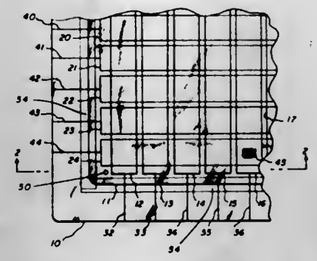
4. The switch matrix of claim 1, wherein the insulating grid comprises a crosshatch of lines formed of a flexible insulating material adhering to the surfaces of the second strips facing the substrate and the gaps in the grid have substantially smaller dimensions than the electrical contact area between a first and second strip.

4,066,855

VENTED MEMBRANE-TYPE TOUCH PANEL

George Edward Zenk, Richfield, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 22, 1976, Ser. No. 744,209
Int. Cl.² H01H 13/12, 1/50, 9/00
U.S. Cl. 200—5 A 1 Claim



1. A transparent switch matrix to be carried on the face of a rigid insulator substrate having a predetermined radius of curvature, and comprising:

a. a plurality of spaced apart transparent conductive first strips firmly adhering to the face of the substrate;

b. a transparent resilient membrane having an undistorted contour substantially alike the predetermined contour, and attached about its periphery to the face of the substrate in a position matching the membrane contour to the substrate contour and spaced apart from the first strips thereon in a predetermined area of the membrane, and having a vent permitting air flow into the space between the membrane and the substrate; and

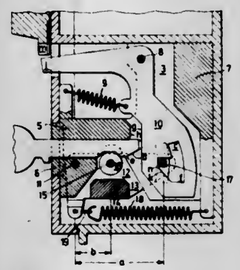
c. a plurality of transparent, flexible, spaced apart conductive second strips firmly adhering to the resilient membrane surface facing the substrate, each of said second strips located in the area spaced apart from the first strips and thinner than the spacing therefrom, and each of said second strips crossing at least two first strips.

4,066,856

LOCK FOR SAFETY CUT-OUT SWITCH

Paul Merkle, Eschenbrunnlestr. 48, 7032 Sindelfingen, Germany

Filed June 11, 1975, Ser. No. 585,750
Claims priority, application Germany, June 12, 1974, 2428454
Int. Cl.² H01H 9/28
U.S. Cl. 200—44 3 Claims



1. A safety cut-out switch for electrical lines, comprising

a switch actuation knob having at its base a switch toggle disk integral therewith, said disk having a notch at its lower periphery

a switch blocking bell crank lever having a downwardly arranged leg with a cut-out therein and a horizontally arranged leg with a forward end portion pivotable between an upper and lower position, which engages said notch in the upper position to block said switch

said horizontally arranged leg being adapted to be pivoted in a vertical plane which is perpendicular to said switch toggle disk,

a lock blocking means to block said bell crank lever in an upper switch b locking position,

and an unlocking means to remove said bell crank lever from its switch b locking position,

said lock blocking means and said unlocking means being actuated by horizontal in-and outward movement of a key and adapted to cooperate with said downwardly arranged leg of said switch blocking bellcrank lever,

a first tension spring for holding said bell crank lever in its upper switch blocking position, and acting on said lever in a first direction of rotation,

said lock blocking means and said unlocking means comprising a lock blocking lever having a roller pivotably secured thereon and adapted to be pivoted in the same plane as said switch blocking lever and being loaded in a second and opposite direction of rotation, by means of a second tension spring, thereby keeping said roller in close abutment to the lower edge of an in-and outwardly movable key,

an in-and outwardly movable key provided with a notch into which said roller snaps and locks said key in its innermost position, in which the tip of said key holds said bellcrank blocking lever in its unlocking position against the tension of said first tension spring,

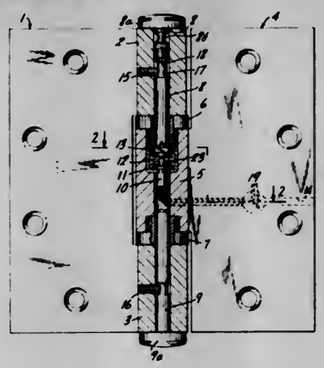
said lock blocking lever further being provided with a transverse lug, engaging said cut-out in said downwardly arranged leg, said cut-out having an oblique edge along which said lug moves during the pivoting downward motion of said lock blocking lever as said key is withdrawn, and against which said lug is abutting and thereby preventing said key from being fully withdrawn when said switch toggle disk is not in position to be blocked by said bell crank lever.

4,066,857

SWITCH ACTIVATING HINGE HAVING RECIPROCATING CAM FOLLOWER SWITCH ACTUATOR

Charles R. Suska, Roxbury, Conn., assignor to Stanley Works, New Britain, Conn.

Filed July 24, 1975, Ser. No. 598,716
Int. Cl.² H01H 3/16
U.S. Cl. 200—61.7 4 Claims



1. A switch activating hinge comprising first and second hinge leaves having axially aligned knuckles, a hinge pin fixed in the knuckle of the first leaf and extending into a knuckle of the second leaf for aligning the leaves for pivotal movement with respect to each other, a separate switch unit, including a switch actuating plunger aligned with the axis of said knuckles,

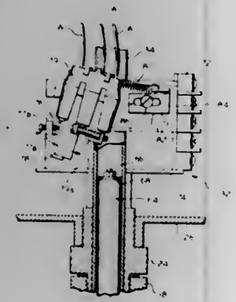
said switch unit being fixed in the knuckle of the second leaf and positioned adjacent the end of said hinge pin, a camming surface on one end of said hinge pin, follower means positioned between said camming surface and said plunger, said follower means comprising a non-circular element mounted within a corresponding non-circular case fixed in the knuckle of the second leaf and adapted for axial movement therein, said element having a cam following surface engaging said camming surface and being urged against said camming surface by a spring, whereby the relative pivotal movement between said hinge pin and said non-circular element causes axial displacement of said element, causing said element to engage said plunger and actuate said switch.

4,066,858

VERTICAL FLOAT SWITCH

Jack Richard Piper, Mount Prospect, and Leo W. Kaczmarek, Chicago, both of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 17, 1975, Ser. No. 632,168
Int. Cl.² H01H *35/40*
U.S. Cl. 200—84 C **7 Claims**



1. A float switch suitable for use with a boiler, said switch comprising, in combination:

A housing having a first chamber therein, said housing having first and second vertically spaced-apart wall openings for communicating said first chamber with said boiler, and said housing having a secondary chamber projecting away from said first chamber and in communication therewith;

a float rod having a float fixedly mounted at its lower end thereof and having an armature of magnetic material fixedly mounted at its upper end thereof;

means for slidably mounting said rod within said housing wherein said armature is translated within said secondary chamber in response to translation of said float within said first chamber between said first and second openings;

a switch frame mounted to an external surface of said housing adjacent said secondary chamber;

a magnet assembly including a permanent magnet mounted to said switch frame for translation toward and away from said secondary chamber;

first means for spring biasing said magnet to urge said magnet away from said secondary chamber until said armature is translated to a given point in proximity to said magnet whereupon the spring force of said first means is overcome by the magnetic force between said magnet and said armature and said magnet is translated toward said secondary chamber;

means for adjusting said spring force of said first means over a range of values so that said given point can be varied over a corresponding range;

an adjustable stop mounted to said frame and engaging a portion of said magnet assembly when said magnet is translated a given distance away from said secondary chamber to selectively limit the maximum translation of said magnet to control the maximum air gap between said magnet and said armature thereby cooperating with said first means and said means for adjusting said spring force for limiting the relative values of said spring force and said magnetic force wherein the maximum value of said spring force is less than the maximum value of said magnetic force; and,

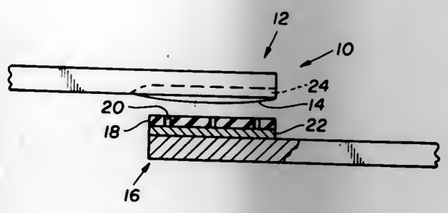
at least one switch operatively coupled to said magnet for controlling an external circuit in response to said translation of said magnet.

4,066,859

MERCURY WETTABLE CONTACT ASSEMBLY

Anthony Steinmetz, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1976, Ser. No. 688,543
Claims priority, application Netherlands, May 26, 1975, 7506140
Int. Cl.² H01H *1/08, 29/00*
U.S. Cl. 200—263 **9 Claims**



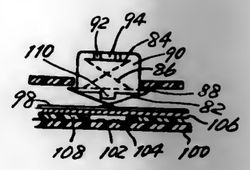
1. A switching device which comprises a moveable contact blade formed of a magnetizable metal and having a contact surface wetted with a liquid metal, and a stationary contact blade formed of a magnetisable metal and having on its contact surface a layer consisting of a non-metallic material that is not wetted by the liquid metal.

4,066,860

PUSHBUTTON SWITCH KEY ARRANGEMENT FOR KEYBOARDS HAVING INDICIA

Hiroshi Kawasaki, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sept. 25, 1975, Ser. No. 616,649
Claims priority, application Japan, Sept. 26, 1974, 49-113137; Oct. 2, 1974, 49-114083; Dec. 13, 1974, 49-143913
Int. Cl.² H01H *9/00, 13/14*
U.S. Cl. 200—308 **6 Claims**



1. A pushbutton switch key structure comprising:

a flexible unitary metal frame including a key top defining surface, a key top frame of metal strips integral with and dependent from said top surface;

an annular support shoulder integral with the lowermost end of said key top frame;

a plurality of actuating leaf spring means integrally affixed at one end to the periphery of said support shoulder and extending downwardly therefrom, and a metal base plate integrally affixed to the lower end of said spring means; and

a solid block of molded resin integrated with said key top frame in a desired push-button key configuration;

said molded resin block and said key top defining surface being configured to define operating indicia on said push-button switch key structure.

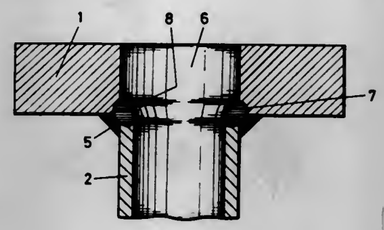
6. The invention defined in claim 1, wherein said resin overlies said key top surface, is substantially opaque and is selectively removed from said key top surface in the configuration of a desired indicia.

4,066,861

METHOD OF WELDING A PIPE TO A PIPE PLATE

Johannus Jacobus Broodman, Breskens, Netherlands, assignor to B.V. Koninklijke Maatschappij "De Schelde", Netherlands

Filed Jan. 19, 1976, Ser. No. 650,187
Claims priority, application Netherlands, Jan. 23, 1975, 7500814
Int. Cl.² B23K *31/00*
U.S. Cl. 219—61 **7 Claims**



1. Method of welding a pipe to a pipe plate comprising the steps of:

inserting one of the pipe ends over a short distance in a bore in the pipe plate, the bore being in alignment with the pipe;

sliding a ring over said pipe to such a point that it abuts against the pipe plate wall adjacent said bore;

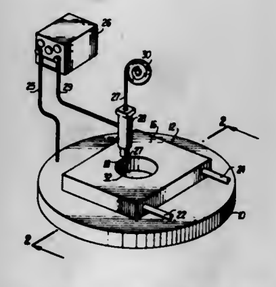
internal bore welding said pipe end to said plate by means of a non-consumable electrode positioned within said bore, and supplying so much welding heat that a portion only of the ring melts whereby the non-molten material of the ring serves as a support for the molten material.

4,066,862

METHOD OF BUILDING-UP A LAYER OF METAL ON A METAL SURFACE

Eugene R. Tippmann, 10120 Islepine Drive, Fort Wayne, Ind. 46815

Filed May 27, 1977, Ser. No. 801,238
Int. Cl.² B23K *9/00*
U.S. Cl. 219—76.14 **1 Claim**



1. A method of building up a layer of metal on a metal object comprising the steps of:

a. positioning a mold on said metal object in the area said layer of metal is to be deposited, said mold having a wall defining a cavity of the desired configuration of said metal layer,

b. feeding a consumable filler wire having a core containing flux into said cavity of said mold in a predetermined manner while providing an electric arc between said wire and said metal object to melt said wire and transfer said flux to said walls of said cavity,

c. cooling said mold to rapidly solidify said flux transferred thereto to thereby form a smooth, ceramic-like shield between said walls and said molten metal, and

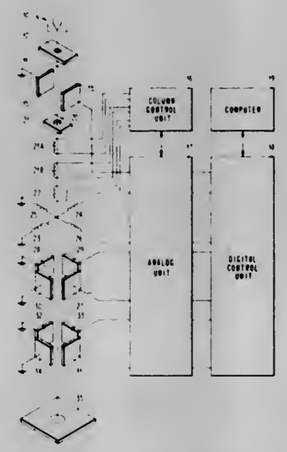
d. removing said mold when said molten metal solidifies.

4,066,863

METHOD AND SYSTEM FOR AUTOMATICALLY CORRECTING ABERRATIONS OF A BEAM OF CHARGED PARTICLES

Samuel K. Doran, Wappingers Falls, and Merlyn H. Perkins, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 26, 1974, Ser. No. 483,267
Int. Cl.² B23K *15/00*
U.S. Cl. 219—121 EM **57 Claims**



31. A method for automatically correcting the aberration of a beam of charged particles as the beam is moved from the center of a deflection field including:

moving the beam to any position within the field;

electronically dividing the field into a plurality of sectors by lines passing through the center of the field;

electronically determining any of the locations of the beam within the field to which the beam is moved by electronically determining in which sector the beam is located;

and correcting the aberration of the beam in accordance with the location of the beam in the field relative to the center of the field so that the beam has no aberration at its location in the field.

4,066,864

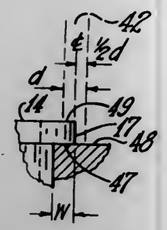
METHOD AND APPARATUS FOR PRODUCING FEEDERS FOR SUPPLY OF HEAT SOFTENABLE MATERIALS

Arthur C. Heitmann, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 377,854, July 9, 1973, abandoned. This application May 29, 1975, Ser. No. 582,058
Int. Cl.² B23K *9/00*
U.S. Cl. 219—121 EM **12 Claims**

1. In a method of forming a stream feeder wherein a tubular member having a flange and a shank is welded to a plate, the improvement comprising:

directing an electron beam along the peripheral edge of the flange to simultaneously contact the flange and the plate



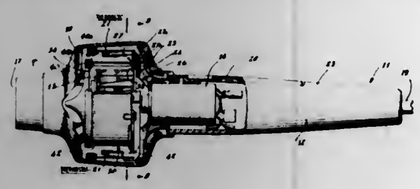
and to weld the flange to the plate in the absence of fusing the shank to the plate.

4,066,865

PORTABLE HAIR DRYING APPLIANCE AND HEATING ELEMENT ASSEMBLY THEREFOR

Siegfried Godel, Norwalk, and James Joseph Viola, Orange, both of Conn., assignors to Sperry Rand Corporation, Bridgeport, Conn.

Filed Dec. 29, 1975, Ser. No. 645,314
Int. Cl.² H05B 3/02; F24H 3/04; H01C 1/082, 3/10
U.S. Cl. 219—370 **11 Claims**



8. In an electrical appliance including in combination, a casing having air intake vents and an air discharge orifice spaced from said intake vents, a mounting member located within said casing between said intake vents and said discharge orifice, airflow generating means mounted in axial alignment with said mounting member, a cylindrical-shaped heater assembly mounted in axial alignment with said airflow operating means and comprising a pair of spaced disc members having a central opening therein to permit airflow therethrough, a cylindrical-shaped heater element extending between said disc members and formed of a flexible electrical resistance foil strip having a plurality of transverse ribs interconnected at their end portions to form a continuous resistance element, said ribs each having an air directing vane formed therein between said end portions, said end portions mounted on the periphery of said disc members, said airflow generating means being operable for generating an airstream in said casing from said intake vents through said heater assembly to said exhaust orifice and outwardly of said casing, the improvement comprising,

a. a plurality of spaced teeth formed around the periphery of each of said disc members,

b. said end portions of said heater element being mounted in engagement with said teeth, and

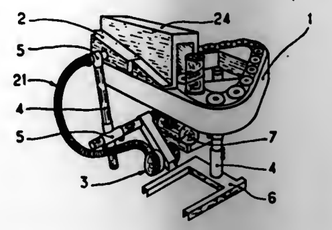
c. means cooperating with and contacting said teeth around the periphery of at least one of said disc members for containing said end portions lying between the teeth of said at least one disc member to prevent dislodgment of said end portions from said at least on disc member.

4,066,866

APPARATUS FOR SHRINKING SLEEVES AROUND CONTAINERS

Jacques Fresnel, Paris, France, assignor to SLEEVER Societe de droit francais (S.a.r.l.), Morangis, France

Filed Oct. 8, 1976, Ser. No. 731,090
Claims priority, application France, Oct. 9, 1975, 75.30896
Int. Cl.² F27B 9/06; F27D 11/02
U.S. Cl. 219—388 **13 Claims**



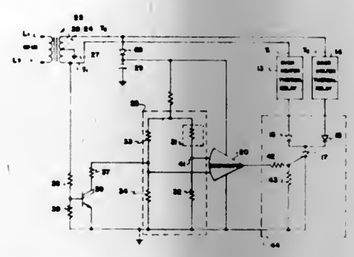
1. An apparatus for shrinking heat-shrinkable sleeves around containers or the like comprising a conveyor on which containers having heat-shrinkage sleeves thereon are to be moved; at least two diffuser housings, respective ones of said diffuser housings being positioned adjacent respective side edges of said conveyor and defining therebetween a heating station; at least one lengthwise slot for distributing hot air into said heating station extending along each said diffuser housing, said slot having a central portion having an inclination with respect to vertical and presenting vertical directional discontinuity along its two opposite end portions, said end portions having respective inclinations with respect to vertical different from the inclination of said central portion; and means for feeding hot air to said diffuser housings.

4,066,867

TEMPERATURE CONTROL CIRCUIT WITH TWO INDEPENDENT SWITCH OUTPUTS

Jon H. Bechtel, Wayne, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 19, 1976, Ser. No. 733,973
Int. Cl.² H05B 1/02
U.S. Cl. 219—483 **16 Claims**



1. An electrical temperature control circuit energized from an alternating current voltage supply comprising:

means for sensing temperature and generating a temperature signal representative thereof;

means including and for time sharing said temperature sensing means by alternately generating separate setpoint temperature signals representative of two preselected setpoint temperatures during alternate and opposite phases of said alternating current supply voltage;

comparator means for alternately comparing said temperature signal with each of said setpoint temperature signals during alternate and opposite phases of said alternating current supply voltage and generating an output control signal based on said comparison;

two control means; and

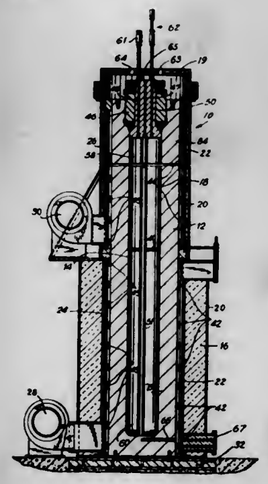
switching means responsive to said output control signal of said comparator means for alternately and selectively energizing said control means from said alternating current voltage supply.

4,066,868

TEMPERATURE CONTROL METHOD AND APPARATUS

Donald E. Witkin, and Arnold G. Bowles, both of Warren, Pa., assignors to National Forge Company, Irvine, Pa.

Division of Ser. No. 536,372, Dec. 26, 1974, Pat. No. 3,922,527.
This application July 7, 1975, Ser. No. 593,709
Int. Cl.² H05B 1/02
U.S. Cl. 219—486 **7 Claims**



1. A method for controlling the temperature difference between two locations is an interactive system comprising the steps of

sensing a first temperature at the first location,

sensing a second temperature at the second location,

applying fist and second output energy in response to the difference between the first and second sensed temperatures to first and second heater elements associated with the first and second locations respectively; and

maintaining the total energy applied to said first and second heater elements substantially constant.

4,066,869

COMPRESSOR LUBRICATING OIL HEATER CONTROL

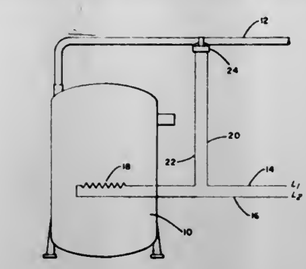
Thomas L. Apaloo, Carson; Wayne H. Garside, Arcadia, and Isaac Berger, Hacienda Heights, all of Calif., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,250
Int. Cl.² H05B 1/02
U.S. Cl. 219—490 **5 Claims**

1. A control for selectively energizing a heater provided to raise the temperature of lubricating oil of a compressor employed in a refrigeration unit comprising:

means to provide electrical energy to said heater; and

thermostatically operated switch means associated with said heater for selectively connecting said heater to said source of electrical energy, said switch means being responsive to the temperature of the ambient to connect said heater to said source of electrical energy when the sensed temperature is below a predetermined level and the compressor is deenergized, with said switch means disconnecting said heater from said source of electrical energy when the sensed ambient temperature exceeds said predetermined



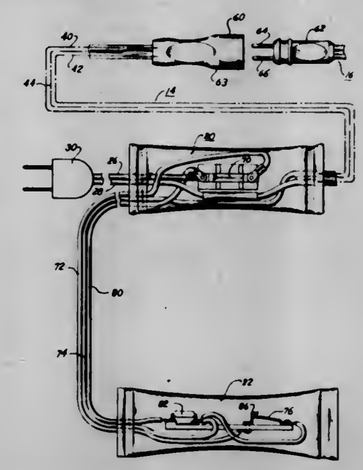
level or when said compressor is energized regardless of the ambient temperature.

4,066,870

FLEXIBLE ELECTRIC HEATING CABLE

Jerrold L. Colten, Lakeville, Ind., assignor to Bristol Products, Inc., Bristol, Ind.

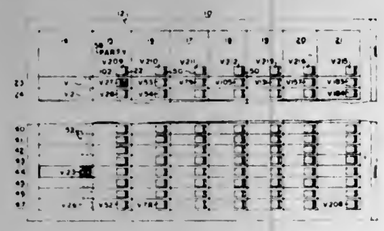
Filed Dec. 6, 1976, Ser. No. 747,815
Int. Cl.² H05B 3/36
U.S. Cl. 219—528 **10 Claims**



1. A flexible electric heating cable comprising a cold lead section having two cold wires, electrical means for connecting said cold wires to a source of electrical power, a heating section having a resistance heating wire and electrical insulation surrounding said heating wire, a thermostatic element connected to one of said cold wires, electrical means connecting the other of said cold wires to one end of said resistance wire, a light and manually operated, normally closed switch remotely located from said cold and heating sections, enclosure means containing said light and said enclosure means being at least partially flexible and partially translucent for operating said switch and observing said light switch, a first lead connecting at one end to said one cold lead between the source of power and said thermostatic element and at the other end to said light, a second lead connected to the other end of said resistance wire and to said light to complete a circuit through said light, a third lead connected to the side of said thermostatic element opposite said first lead and to said switch, and a means connecting said switch to said second lead, whereby said light glows when either said switch or thermostat is open

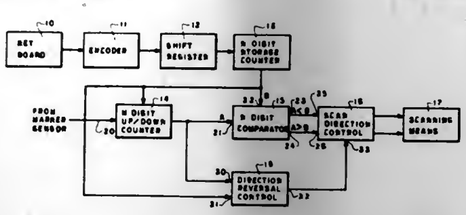
while the cable is connected to a source of power if neither the cold nor heating sections is defective.

4,066,871
VOTING SYSTEM
Charles M. Cason, Sr., 700 Watts Drive, Huntsville, Ala. 35801, and Charles M. Cason, III, 1207 Toney Drive, Huntsville, Ala. 35802
Filed Nov. 18, 1976, Ser. No. 742,873
Int. Cl.² G07C *13/00*
U.S. Cl. 235—54 F **4 Claims**



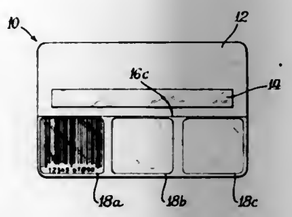
1. A voting system comprising:
a portable and hand-held vote entering means comprising:
display means including a plurality of spaced rows and columns wherein a matrix of areas are formed in which discrete ballot data may be inserted, and
selection means including a plurality of hand-operated designators associated with each said area, and wherein:
said designators arranged in a plurality of columns and rows each comprise a movable member which is shiftable from a first, reference, "no" vote representative position to a second, selected, "yes" vote representative position,
each said designator includes a viewable region which displays a first light responsive state when a said designator is in a "no" position and a contrasting and different and second light responsive state when in a "yes" position, and
vote reading means comprising optical means for viewing said viewable region of each said designator and providing a discrete output when a discrete vote designator is in a said "yes" position;
vote processing means, separate from said vote entering means, including receptacle means adapted to receive a said vote entering means including vote accumulating means responsive to a said vote entering means and to said output signals from said vote reading means for registering and providing discrete totals of votes cast by discrete said designators from a plurality of instances of engagement of said vote entering means with said receptacle means;
impermissible vote detection means coupled between said vote reading means and said vote accumulating means, and responsive to the state of said designators after an instance of use by a voter for signalling an error in the event that more than a selected number of said designators of a selected group of designators is moved to a "yes" position; and
reset means housed by said vote processing means for resetting all said designators to a "no" state.

4,066,872
INFORMATION RETRIEVAL SYSTEM WITH EXPANDED LOGIC CAPABILITY
Robert S. Karp, Evanston, and John R. Flint, Barrington, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Aug. 3, 1976, Ser. No. 711,175
Int. Cl.² G03B *23/12*; G11B *15/18*
U.S. Cl. 353—26 A **8 Claims**



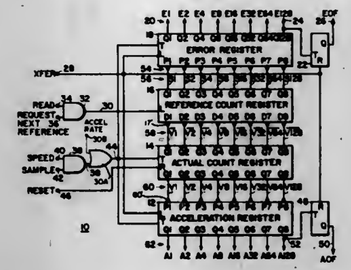
1. In an information retrieval system of the type having a scanning system for scanning information bearing elements in first and second directions to arrive at a selected information bearing element to be inspected from a currently inspected information bearing element, and wherein the scanning means is controlled by logic means having a finite *n* digit capacity which acts upon a target number representing a selected information bearing element and a current number representing a currently inspected information bearing element for providing normal direction scanning control for target and current numbers of *n* digits or less, a means for expanding the capacity of the logic means to provide proper direction scanning control for target or current numbers having more than *n* digits comprising:
difference means for determining the absolute numerical difference between the *n*th digit of said target number and *n*th digit of said current number; and
direction reversal control means coupled to said difference means and to the logic means for reversing the normal scanning means information bearing element scanning direction when said absolute numerical difference is equal to or greater than a preselected integer.

4,066,873
IDENTIFICATION AND ACCESS CARD WITH ASSOCIATED OPTICAL DECODING MEANS
Vernon L. Schatz, Northfield, Ill., assignor to The First National Bank of Chicago, Chicago, Ill.
Filed Jan. 26, 1976, Ser. No. 652,089
Int. Cl.² G06K *7/14*; G09F *3/02*
U.S. Cl. 235—487 **14 Claims**



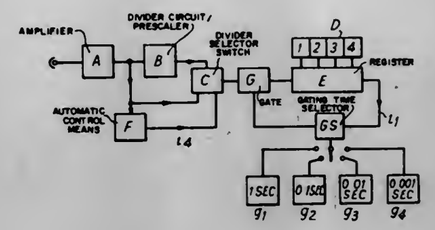
1. An identification and access card for use with an automatic optical scanning apparatus receiving products omnidirectionally bearing product identification codes thereon, comprising, in combination:
a plastic card blank having indicia thereon identifying a banking institution, said card blank being adapted to be embossed to provide raised indicia identifying the card holder to whom the card is issued;
at least two lables on said card spaced from each other to provide separate information labels, each of said labels being secured to said card blank and having a generally quadrilateral area substantially less than that of said card blank, each of said labels having a plurality of elongated dark bars separated by light bars therebetween, the thickness and spacing of said bars providing binary coded information identifying a routing number, transit number, branch number of said banking institution and an account number of the card holder;
at least one of said bars on each of said labels scannable for identifying the label as bearing identification and access numbers rather than product numbers;
said labels being located on said card blank so that different ones of said labels may be read first causing said labels to be read out of sequential order for these labels,
at least one of said bars on each of said labels scannable for identifying its sequential order relative to another label on said card for combining therewith to define the proper sequence for said numbers;
a thin coating of transparent material overlying said labels and providing a smooth transition between the surface of the blank and the surface over said labels.

4,066,874
DIGITAL SPEED CONTROL SYSTEM
Mark Layne Shaw, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed July 8, 1976, Ser. No. 703,479
Int. Cl.² G06M *3/08*; F22B *11/00*
U.S. Cl. 235—92 CM **5 Claims**



1. A digital system for use in a system for controlling vehicular speed and acceleration, said digital system comprising:
counting signal means for generating a first counting signal representative of a first velocity, a second counting signal representative of a predetermined acceleration, and a third counting signal representative of a second velocity;
first counting means responsive to said first, second, and third counting signals and coupled to said counting signal means for counting from an initial value to a first binary number representative of said first velocity in response to said first counting signal, counting from said first binary number to a second binary number in response to said second counting signal, and counting from an initial value to a third binary number representative of said second velocity in response to said third counting signal;
second counting means coupled to said counting signal means and to said first counting means for storing the logical complement of said second binary number and counting from said complement to a fourth binary number in response to said third counting signal;
first means coupled to said first counting means and said second counting means for generating said complement, and entering said complement into said second counting means;
decoding means coupled to said second counting means for decoding said fourth binary number to produce a binary number representing the algebraic difference between said second binary number and said third binary number.

4,066,875
HIGH SPEED PULSE COUNTER
David R. Ollington, 9 Woodland Way, Caterham, and Ishver L. Zala, 129 Fleetside, West Molesey, both of England
Filed Sept. 17, 1976, Ser. No. 724,374
Claims priority, application United Kingdom, Sept. 7, 1976, 37082/76
Int. Cl.² H03K *21/34*
U.S. Cl. 235—92 TF **3 Claims**



1. A high speed pulse counter comprising an input for a pulse signal to be counted,
a counter register,
a counter display responsive to the pulse count of the register,
a gate for gating the input signal to be counted, the gate being arranged between the input and the register,
a plurality of different gating time generators arranged to be coupled in sequence each having a discrete gating time,
a gating time selector adapted for stepping between and coupling a selected one of the gating time generators to the gate,
the register generating an overflow pulse in response to receipt of that one of the input pulses of the input signal to be counted succeeding the input pulse which causes the counter display to indicate a full register within the time period of a currently operative gating time itself determined by the operative position of the gating time selector,
the gating time selector being coupled to the register to receive any such overflow pulse and being operative to be stepped thereby to the next gating time generator in said sequence,
at least one divider circuit adapted to sub-divide the input signal to be counted and arrange for only a predetermined ratio of said input pulses to be counted by the register,
and means for automatically actuating the divider circuit comprising an input for the pulse signal to be counted to automatic control means operative to control a divider circuit selector switch according to whether said pulse signal exceeds a predetermined frequency.

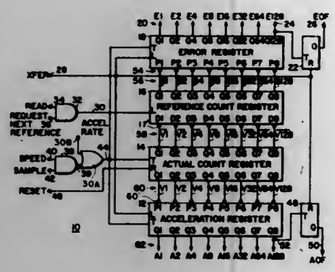
4,066,876
DIGITAL SPEED CONTROL SYSTEM
Mark Layne Shaw, Austin, Tex., and Howard Fredrick Weber, Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed July 8, 1976, Ser. No. 703,484
Int. Cl.² G06M *3/02, 3/08*; B60K *31/00*
U.S. Cl. 235—92 CM **8 Claims**

1. A logic circuit for producing a digital number equal to the algebraic difference between a second binary number and a third binary number, said logic circuit comprising:
first counting means for temporarily storing a first binary number and counting up to said second binary number from said first binary number in response to a counting signal;
second counting means coupled to said first counting means for temporarily storing the complement of said second binary number and counting up to said third binary number from said complement in response to said counting

signal, said second counting means including an overflow bit location;

first means coupling said first counting means to said second counting means for entering said complement into said second counting means; and

second means coupled to said second counting means for decoding said third binary number to produce a fourth binary number equal to the algebraic difference between said second binary number and said third binary number,



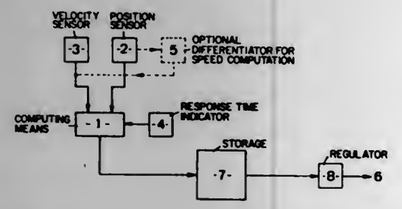
said fourth binary number consisting of all logical "zeros" if said overflow bit location contains a logical zero and said third binary number consists of all logical "ones", said fourth binary number being equal to said third binary number plus one if said overflow bit location contains a logical "one", and said fourth binary number being equal to the complement of said third binary number if said overflow bit location contains a logical "zero" and said third binary number does not consist of all logical "ones".

4,066,877

PROCEDURE AND SYSTEM FOR DRIVING A VEHICLE

Alain D. Virnot, and Simon A. Cynober, both of Paris, France, assignors to Jeumont-Schneider, Puteaux, France

Filed Apr. 20, 1976, Ser. No. 678,649
Claims priority, application France, Apr. 29, 1975, 75.13327
Int. Cl.[2] G06F *15/50*; B60K *31/00*
U.S. Cl. 364—426 **23 Claims**



1. A driverless method for operating a vehicle along a path comprising the steps of:

a. storing information pertaining to operation of several elements of the vehicle in relation to the vehicle's position on the path;

b. sensing data related to the vehicle's position along the path,

c. automatically operating one of said elements responsive to the sensed data and to the stored information, and

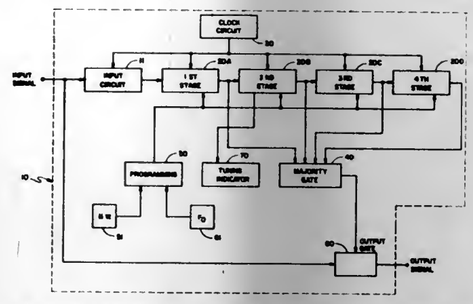
d. correcting said operating step in accordance with vehicle speed and response time of said elements.

4,066,878

TIME-DOMAIN FILTER FOR RECURSIVE TYPE SIGNALS

Raymond M. Miller, Fredericksburg, and John J. Teti, King George, both of Va.

Filed Mar. 29, 1976, Ser. No. 671,525
Int. Cl.[2] H04B *15/00, 1/10*
U.S. Cl. 364—724 **2 Claims**



1. A time-domain filter for extracting known, digital, synchronous pulses from extraneous signals or noise comprising:

a recursive pulse signal train input;

a dynamic data storage means for receiving said input signals and which automatically retrieves said input signals that occured in past time at multiples of the pulse repetition time measured in present time and for providing time related outputs comprising:

clocking means having a frequency higher than the input signal repetition rate and wherein the clock pulses are synchronized with said input pulses, and

a multi-stage delay wherein the stages are cascaded and each stage is operated by said clocking means, each stage including at least one shift register with delay length such that the pulse input reaches the output of the shift register in slightly less than one pulse repetition time of said recursive pulse signal train input, and a window generator which expands the output from said shift register to form a bandwidth window; a programming circuit comprising:

bandwidth switching means connected to each of said window generators to provide a variable window width, and

center frequency switching means for receiving the output of said bandwidth switching means and for providing a shift register of each stage delay with the inverse number of bits of shift such that the center frequency is positioned halfway between the two window limits;

correlation logic means for receiving the time related outputs of said dynamic data storage means and for generating an output whenever a selected percentage of necessary true inputs is exceeded, said output indicating a probable valid signal; and

gating means responsive to said correlation logic means for passing said input pulse signal whenever said correlation logic means generates an output indicating a probable valid signal.

4,066,879

MEANS AND METHOD FOR CONTROLLING ELUENT GRADIENT IN LIQUID CHROMATOGRAPHY

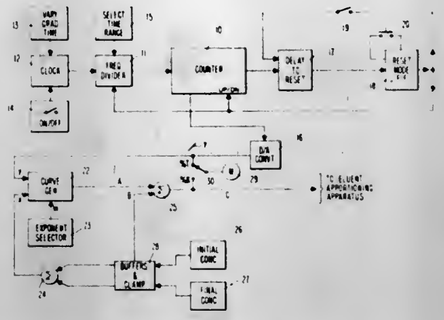
Brian E. Leaver, Lake Park, and William F. Dudley, Jr., Riviera Beach, both of Fla., assignors to Milton Roy Company, St. Petersburg, Fla.

Filed June 21, 1976, Ser. No. 698,278
Int. Cl.[2] B01D *15/08*; G01N *31/08*; G06G *7/58*
U.S. Cl. 364—498 **17 Claims**

9. A system for controlling the gradient between two eluents in a liquid chromatograph, comprising:

function generator means for producing a first, non-linear signal over a given range during a first, run period;

control means responsive to said signal for determining the instantaneous ratio of the eluents; and



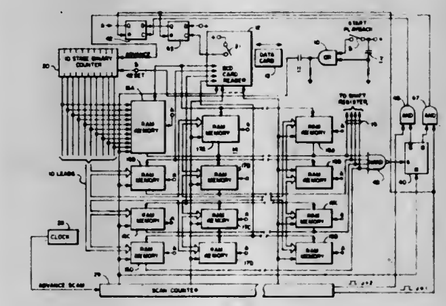
means for causing said function generator means to produce a second non-linear signal over said given range during a second, reset period which is shorter than said run period.

4,066,880

SYSTEM FOR PRETESTING ELECTRONIC MEMORY LOCATIONS AND AUTOMATICALLY IDENTIFYING FAULTY MEMORY SECTIONS

Ernest J. Salley, Phoenix, Ariz., assignor to Engineered Systems, Inc., Phoenix, Ariz.

Filed Mar. 30, 1976, Ser. No. 671,938
Int. Cl.[2] G11C *29/00*; G06F *11/00*
U.S. Cl. 235—302.3 **9 Claims**



1. A system for detecting errors and identifying error locations in read/write memory during use of such memory, including in combination:

read/write memory means for storing a plurality of binary encoded words at a plurality of address locations, each word having at least two binary bits, said memory means initially being cleared to a condition in which all of the binary bits thereof should be of the same type; identifying means coupled with said memory means and responsive to a readout of the words stored therein for identifying a faulty bit of a word at any address location which is not cleared; and

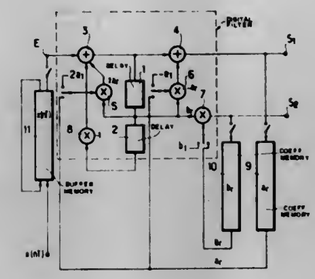
addressing means for selecting different address locations in said memory means, and means coupled with said identifying means for causing said addressing means to select a new address location upon identification of a faulty bit by said identifying means.

4,066,881

SAMPLED SIGNAL PROCESSING DEVICE

Jean-Pierre Houdard, St. Jean de la Ruelle, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 12, 1976, Ser. No. 713,947
Claims priority, application France, Aug. 13, 1975, 75.25231
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—726 **2 Claims**



1. A device for performing the discrete Fourier transform on a sequence of an arbitrary number, N, of equally spaced samples $x(nT)$ of a signal $x(t)$ to be processed, the device including a signal sample memory for the N samples x(nT), digital filter means having a transfer function H(z) with an input receiving samples from said memory to a pair of outputs, where:

$$H(z) = \frac{1 - e^{-2\pi j \frac{r}{N}} z^{-1}}{1 - 2(\cos \frac{2\pi r}{N}) z^{-1} + z^{-2}},$$

and

$$\cos \frac{2\pi r}{N} = a_r \sin \frac{2\pi r}{N} = b_r$$

and r is the order of the Fourier coefficient being calculated, the digital filter being such that application of the N samples in sequence at its input causes its outputs to produce respectively the real and imaginary components of the r-th Fourier coefficient, the device further comprising a respective sine/cosine memory for storing values of a_r and b_r for different r, and the filter including multiplier means connected to respective sine/-cosine memory to introduce the appropriate values of a_r and b_r into the filter during calculation, and switch means, coupled to said filter for putting the the device into a configuration in which a respective sine/cosine memory is connected to store successive values at the filter outputs for future use as values of a_r and b_r for successive r, the multiplier means connected to an input for initial values

$$a_1 = \cos \frac{2\pi}{N} \text{ and } b_1 = \sin \frac{2\pi}{N},$$

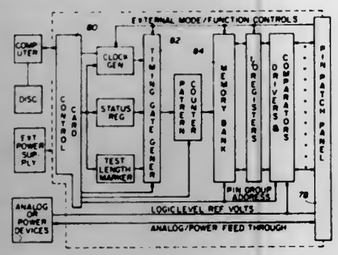
and the filter input connected to receive a unit impulse function u(rT) instead of the signal samples, where $u(rT) = 1$ for R $= o$ and o for $r \neq o$.

4,066,882

DIGITAL STIMULUS GENERATING AND RESPONSE MEASURING MEANS

Charles M. Esposito, St. James, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,561
Int. Cl.² G06F *11/00*; G01R *31/28*
U.S. Cl. 235—302 **36 Claims**



1. In a digital word generator, a control card module comprising:

first means to receive input instructions and data bits from a source thereof, said means including a device to receive commands for a logic network to transmit command and flag signals to initiate and terminate a sequence of an operation scheduled by the source;

second means connected to said first means and having decoder means for decoding computer instructions;

read-write control means utilizing a plurality of serially related flip-flops, said read-write control means being operably connected and operatively connected to said decoder means;

timing means operably connected to said first means, said timing means including an oscillator means driving a binary chain providing clock and timing sequence pulses and signals, respectively;

a counter and control means for generating card select signals in accordance with signals from the read-write control means and timing means to which said counter and control means is connected;

third means to be a buffer for data from the source and the decoder to deliver signals to an output connection;

a fourth means to receive external signals and data processed by reason of the signals from the third means to interface externally generated signals and data with the control card module; and

a data output means connected to said fourth means comprising a plurality of common clocked flip-flops that can be simultaneously loaded via a switching matrix to deliver data back to the source.

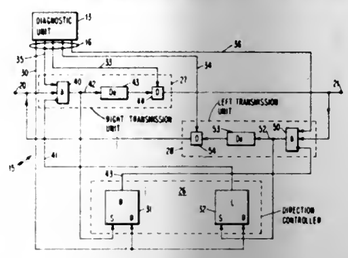
4,066,883

TEST VEHICLE FOR SELECTIVELY INSERTING DIAGNOSTIC SIGNALS INTO A BUS-CONNECTED DATA-PROCESSING SYSTEM

Delwyn Roche Wheeler, Jr., Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1976, Ser. No. 744,847
Int. Cl.² G06F *11/00*
U.S. Cl. 235—304 **11 Claims**

1. A test vehicle for a bus-connected data-processing system for selectively interjecting diagnostic signals on the bus via a pair of terminals adapted to be attached to a bus such that bus signals flow through the test vehicle via said terminals and to the exclusion of data processing signals normally on said bus characterized in that a pair of AND circuits are connected respectively to said terminals for receiving data processing signals therefrom, a pair of combining circuits respectively connected to receive signals from said AND circuits and having outputs connected to said terminals respectively not connected to said respective AND circuits, a pair of diagnostic input connections for receiving diagnostic input signals respectively connected to said combining circuits, and a direction controller receiving signals from said AND circuits and having



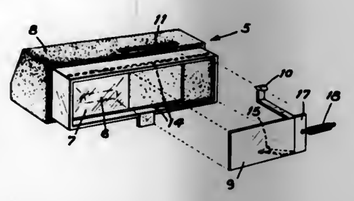
a diagnostic control connection for receiving control signals and having electrical connections to said AND circuits for enabling one and only one of said AND circuits in accordance with signals received by said direction controller.

4,066,884

MULTIPLE LIGHT INTENSITY FLASH UNIT

Robert L. Taylor, Imlaystown, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sept. 8, 1976, Ser. No. 721,660
Int. Cl.² G03B *15/02*
U.S. Cl. 362—16 **7 Claims**



1. A multiple light intensity flash unit for a camera comprising:

a housing;

a flash lamp mounted in said housing;

a light altering member slidably coupled in said housing;

an actuator arm coupled to said light altering member, said actuator arm accessible from without said housing;

a detent member coupled to said light altering member for retaining said light altering member in a first position in front of said flash lamp; and

a spring coupled to said light altering member and to said housing for returning said member to a rest position away from said lamp.

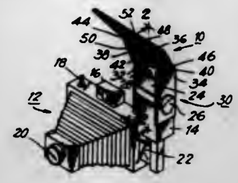
4,066,885

LIGHT EXTRACTOR-DIFFUSER

Norman Weinberg, 120-17 Debs Place, Bronx, N.Y. 10475

Filed June 25, 1976, Ser. No. 699,698
Int. Cl.² G03B *15/03*
U.S. Cl. 362—18 **14 Claims**

1. A light extractor-diffuser for illumination of a subject using artificial light which comprises a frame having two opposed spaced apart registered panels of substantially equal size; two triangular panels of substantially equal size, each of said triangular panels extending from intersection with a linear edge of one of said registered panels, with a base edge of each triangular panel being attached to said edge of one of said registered panels, said triangular panels diverging outwards from said frame at an angle so that the linear distance between the respective apexes of the triangular panels is greater than the distance between said registered panels, and a substantially bilateral trapezoidal panel, said trapezoidal panel extending angularly outwards from lateral attachment to two opposed edges of said triangular panels and having a wide terminal



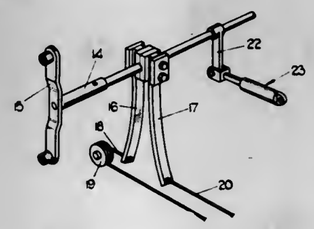
portion spaced away from the intersections of said trapezoidal panel with triangular panels, the narrower of the two parallel edges of said trapezoidal panel extending between opposed acute-angled base angles of said triangular panels.

4,066,886

MOTOR VEHICLE WITH HEADLAMP TILTING MECHANISM

Frederick Raymond Patrick Martin, Bromley, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Sept. 5, 1975, Ser. No. 610,857
Claims priority, application United Kingdom, Sept. 26, 1974, 41825/74
Int. Cl.² B60G *1/10*
U.S. Cl. 362—68 **4 Claims**



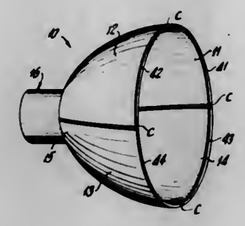
1. In a motor vehicle having a vehicle body, front and rear wheels upon which the body is suspended and a headlamp mounted on said body for upward or downward tilting movement, a headlamp tilting mechanism comprising a first element movable in response to changes in the attitude of said vehicle body relative to said front wheels, a second element movable in response to changes in the attitude of said vehicle body relative to said rear wheels, a rotatable shaft operably connected with said headlamp, a first blade spring arm connected at one of its ends to said shaft and attached at the other of its ends to said first element, and a second blade spring arm attached at one of its ends to said shaft and at the other of its ends to said second element, the arrangement being such that said first and second blade spring arms are normally biased by respective ones of said first and second members and act in opposition to each other on said shaft, said blade spring arms causing the shaft to rotate in either one direction or the other to cause the headlamp to tilt up or down in response to changing attitudes of said vehicle body.

4,066,887

SEGMENTED SECTIONAL REFLECTION FOR THE PROJECTION OF LIGHT BEAMS AND ITS METHOD OF PRODUCTION

Maurice Levis, 201 F 77 St., Apt. 7F, New York, N.Y. 10021

Filed Oct. 27, 1976, Ser. No. 736,237
Int. Cl.² F21V *7/00*; G02B *5/10*
U.S. Cl. 362—341 **15 Claims**



1. A projection system including a reflector, a light source positioned to illuminate the reflector, a film support having an aperture through which aperture light passes from the reflector, a projector lens and a screen, in which system the reflector comprises at least three reflector sectors;

each of said reflector sectors being a sector of a common deep-dish ellipse and having an original common axis, said sectors being radially outwardly translated relative to said common axis in the range of arc tan

$$\frac{0.1L}{FF} < \theta < \text{arc tan } \frac{0.8L}{FF}$$

where L is the shortest length of the aperture, θ is the angle of translation taken relative to the original axis, F is the primary focal point of the original deep-dish ellipse and F' is the secondary focal point of the original deep-dish ellipse;

said sectors each forming in at least one imaginary vertical plane cross-sectional to said original axis a circular line for each sector, said circular lines for the different sectors having different centers and having imaginary crossings in said plane if said lines are extended.

8. The method of forming a reflector for use in a projector system, said method comprising the following steps:

a. forming a bendable metal reflector material into the shape of a deep-dish ellipse having a primary focal point and an axis;

b. slitting said ellipse reflector into at least three reflector sectors, said slits starting at the outer edge and terminating at predetermined points at equal distances from the apex of said ellipse;

c. transposing the outer edges of each of the reflector sectors radially outward a distance in the range of arc tan

$$\frac{0.1L}{FF} < \theta < \text{arc tan } \frac{0.8L}{FF}$$

where L is the shortest length of the aperture, θ is the angle of translation taken relative to the original axis, F is the primary focal point of the original deep-dish ellipse and F' is the secondary focal point of the original deep-dish ellipse; and

d. clamping the outer edges of the reflector in their transposed position.

4,066,888

ENCLOSED HIGH-PRESSURE ELECTRIC DISCHARGE LAMP STRUCTURE WITH CABLE TERMINAL

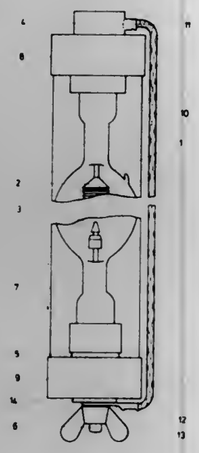
Michael Gassmann, Munich, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Filed July 6, 1976, Ser. No. 702,982

Claims priority, application Germany, July 14, 1975, 7522386[U]

Int. Cl.² F21S *3/00*

U.S. Cl. 362—223 **9 Claims**



1. Double-ended, elongated high-pressure electric discharge lamp having a pair of terminals, a lamp base (4, 5) at either end of the lamp, the bases being connected to respective lamp terminals, a connecting pin or bolt (6) at one base (5), a connection cable (10) rigidly mounted to and connected to the other base (4) in combination with a removable protective transparent tube (7) of insulating material enclosing the lamp, end caps (8, 9) fitted over both ends of the lamp, at least one end cap (9) having a central opening, the pin or bolt (6) extending through one (19) of the caps, wherein

the connection cable (10) is passed close to and along the outer wall surface of the tube in stretched condition and has a length to extend from said other base (4), up to the pin or bolt (6) of said one lamp base (5), said cable being detachably secured to the pin or bolt (6) immediately adjacent the respective end cap (9).

4,066,889

ILLUMINATED SKI POLE

David A. Hodgson, Hamburg, N.Y., assignor to International Power Pole, Ltd., Hamburg, N.Y.

Filed Nov. 22, 1976, Ser. No. 744,283

Int. Cl.² F21V *33/00*

U.S. Cl. 362—102 **5 Claims**

1. In a ski pole, a tubular body member, an arcuate window element of transparent or translucent material set into the wall of said tubular body member to form a smooth continuation of the outer wall thereof, a light source within said tubular body member to illuminate said window element and project light lengthwise in the interior of said body member, a lens in the wall of said body member relatively remote from said window element in an axial direction and a mirror element adjacent to



said lens for reflecting said projected light through said lens member to be emitted laterally of said ski pole.

4,066,890

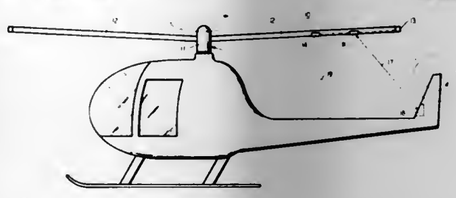
ROTOR TIP LIGHT CONTROL

Charles W. Hamilton, Colonia, and Alfred Kleider, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 24, 1976, Ser. No. 726,364

Int. Cl.² H04B *9/00*

U.S. Cl. 250—199 **8 Claims**



1. In combination with a helicopter having a shaft and a plurality of rotor blades fastened at one end to said shaft;

A rotor tip light mounted to the other end of at least one of said rotor blades;

means mounted to said one rotor blade for supplying electrical current to said rotor tip light;

means mounted to said rotor blade for controlling said current to said rotor tip light in a plurality of selective discrete incremental levels to change the intensity of said light; and

means mounted on the main body of said helicopter and synchronized with the rotation of said rotor blades for transmitting coded optical signals to said controlling means to instruct the same to selectively apply said incremental levels of current to said rotor tip light.

4,066,891

GEOCHEMICAL AND GEOPHYSICAL EXPLORATION

Peter R. Gray, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 6, 1976, Ser. No. 712,297

Int. Cl.² G01V *5/00*

U.S. Cl. 250—253 **7 Claims**

1. A process of prospecting for subterranean formations comprising

a. procuring earth samples from the earth at a depth of about 2 inches to about 5 feet below the earth surface, and

b. determining the Po210 concentration of these samples.

4,066,892

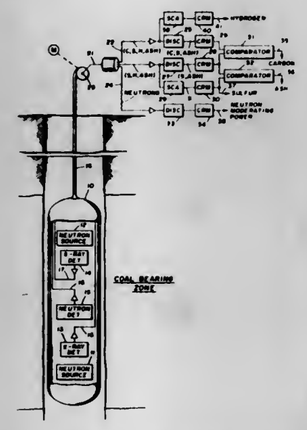
COAL LOGGING SYSTEM

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,441

Int. Cl.² G01V *5/00*

U.S. Cl. 250—270 **15 Claims**



1. A system for logging a coal-bearing formation traversed by a borehole, comprising:

a. a borehole tool,

b. means for locating said borehole tool adjacent a coal-bearing formation,

c. a first neutron source located within said borehole tool for irradiating the coal-bearing formation with neutrons of energy sufficient to produce 4.43-Mev gamma rays from inelastic neutron scattering in the carbon component of the coal-bearing formation,

d. a first detector located within said borehole tool for measuring the gamma rays returning to the borehole in response to irradiation of the coal-bearing formation by neutrons from said first neutron source,

e. a second neutron source located within said borehole tool at a spaced-apart position from said first neutron source for irradiating the coal-bearing formation with neutrons of energy insufficient to produce a significant number of 4.43-Mev gamma rays from inelastic neutron scattering in the carbon component of the coal-bearing formation,

f. a second detector located within said borehole tool for measuring the gamma rays returning to the borehole in response to irradiation of the coal-bearing formation by neutrons from said second neutron source,

g. means for producing a first count of those gamma rays measured by said first detector that are of an energy level above the energy level of the gamma rays produced by the hydrogen component of the coal-bearing zone,

h. means for producing a second count of those gamma rays measured by said second detector that are of an energy level above the energy level of the gamma rays produced by the hydrogen component of the coal-bearing zone, and

i. means for determining the differential between said first and second counts as an indication of the carbon content of the coal-bearing formation.

4,066,893

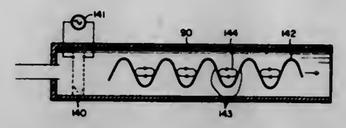
ISOTOPE SEPARATION BY ION WAVES

John Myrick Dawson, Pacific, Palisades, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 562,993, March 27, 1975. This application Feb. 17, 1976, Ser. No. 658,565

Int. Cl.² H01J *39/31*

U.S. Cl. 250—282 **4 Claims**



1. The method of separating one isotope of an element from the others which comprise the steps of:

a. generating a dense, substantially electrically neutral plasma including an element having at least two ionized isotopes to be separated;

b. maintaining each volume at a different electric potential and

c. maintaining each volume at a different electric potential and

d. generating a plasma shock wave in one of the volumes, whereby an ion wave is launced and the ionized isotope of the smaller mass is preferentially scattered by the propagating wavefront of the ion wave, while the ionized isotope of greater mass is capable of passing the wavefront, thereby to separate the isotopes.

4,066,894

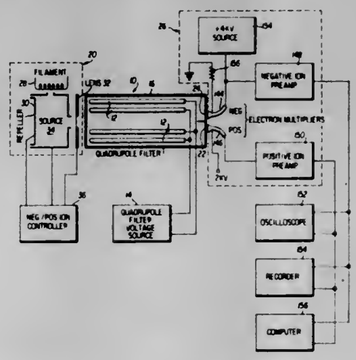
POSITIVE AND NEGATIVE ION RECORDING SYSTEM FOR MASS SPECTROMETER

Donald F. Hunt, and George C. Stafford, Jr., both of Charlottesville, Va., assignors to University of Virginia, Charlottesville, Va.

Filed Jan. 20, 1976, Ser. No. 650,783

Int. Cl.² H01J *39/34*

U.S. Cl. 250—292 **13 Claims**



1. A method of generating and monitoring positive and negative ions substantially simultaneously using a quadrupole mass spectrometer having an ion generator with repeller, source and lens electrodes, and a quadrupole filter, comprising the steps of:

operating the mass spectrometer under conditions favoring the generation of positive and negative ions;

alternately transmitting the positive ions and the negative ions at a frequency in excess of 1 kHz, through the quadrupole filter; and

separately extracting the alternately transmitted positive

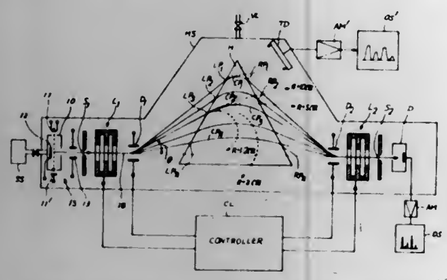
ions and negative ions at the output of the quadrupole filter.

4,066,895

SCANNING MASS SPECTROMETER HAVING CONSTANT MAGNETIC FIELD

Masaya Iwanaga, Kyoto, Japan, assignor to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed Sept. 8, 1976, Ser. No. 721,438
Claims priority, application Japan, Sept. 12, 1975, 50-111075
Int. Cl.² H01J *39/34, 37/26*
U.S. Cl. 250—296 **19 Claims**



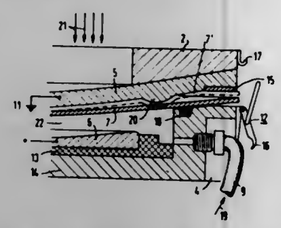
1. A mass spectrometer comprising an ion source for producing and ion beam of a sample; an analyzer including a constant magnetic field having at least a first end face at which said ion beam enters said magnetic field and a second end face at which said ion beam emerges out of said magnetic field; means for detecting ions; and means for deflecting said ion beam for scanning of the mass spectrum or selection of predetermined mass numbers of said sample, said ion beam deflecting means being provided between said ion source of said magnetic field so that as said ion beam is deflected, the point or angle of incidence on said first end face at which said ion beam enters said magnetic field is changed so as to change the radius of curvature of the trajectory of the ion that enters said ion detecting means.

4,066,896

IONOGRAPHIC CHAMBER

Gerhard Kuhn, Erlangen; Karl Ubler, Spardorf, and Karl-Hans Reiss, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 13, 1976, Ser. No. 686,801
Claims priority, application Germany, June 19, 1975, 2527253
Int. Cl.² G03B *41/16*
U.S. Cl. 250—315 A **7 Claims**



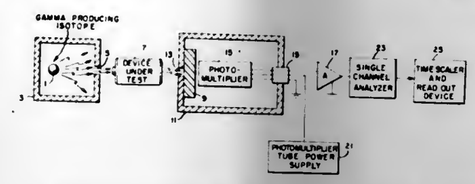
1. An ionography chamber with spherically curved first and second electrodes comprising, in combination, an electrically insulating sheet between said curved electrodes and covering said first electrode; means for applying an electrical potential between said electrodes; said first electrode having depression or projection contouring near its edge covered by a portion of said sheet; means forming a chamber between the sheet and the second electrode; and means for admitting a gas into said chamber between said sheet and the second electrode and means generating a pressure dfference whereby the pressure between said first electrode and said sheet is less than the pressure in said chamber between the sheet and the second electrode.

4,066,897

CHEMICAL CHANGE MEASURING APPARATUS

Ralph L. Belcher, 10603 Lorain Ave., Silver Spring, Md. 20901, and Harry R. Wood, 13331 Query Mill Road, Gaithersburg, Md. 20760

Filed Feb. 25, 1976, Ser. No. 661,107
Int. Cl.² G01N *23/06*
U.S. Cl. 250—358 R **25 Claims**



1. A method for measuring the degree of chemical change that has taken place in a device that undergoes chemical change wherein the reaction products are spatially separated comprising the steps of:

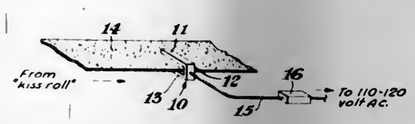
a. utilizing a beam of low energy gamma rays of a known energy level;
b. placing the device whose chemical change is to be measured in the path of said beam of gamma rays such that an element of said device is aligned with said path of said beam of gamma rays such that said gamma rays travel through said element;
c. detecting the level of said gamma rays exiting from said element;
d. generating electrical signals in response to the detected level of said gamma rays exiting from said element;
e. electronically processing said generated electrical signals to produce measuring signals indicative of the degree of chemical change that has taken place in said device;
f. producing a read out; and
g. correlating said read out with a known value obtained before said device that undergoes a chemical change has undergone any chemical change to thereby obtain a measure of the change that has taken place in said device that undergoes a chemical change.

4,066,898

METHOD AND APPARATUS FOR MONITORING AMOUNT OF A SUBSTANCE APPLIED TO A FABRIC

Arthur J. Kamp, and Philip G. Mischler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 12, 1976, Ser. No. 676,036
Int. Cl.² G01N *23/00*
U.S. Cl. 250—359 **45 Claims**



1. An apparatus capable of determining the amount of a substance applied to a fabric matrix, said substance being characterized as containing atoms of a non-radioactive element of atomic number 11 or greater, comprising:

a. a source of radiation which, within the range of from about 12 to about 19 Kev, emits a single predominant, monoenergetic radiation;
b. Spaced apart from the source and aligned so as to receive

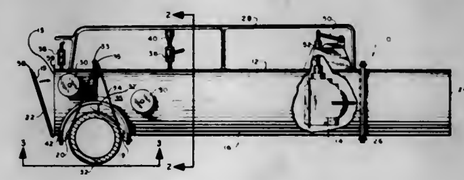
radiation from the source, a charge pulse detector having a resolution at least as sharp as about 20 percent, within the range of from about 12-19 Kev, which detector is sensitive to the predominant radiation from the source and which generates a pulse output which varies in amplitude with the energy of the instant radiation, said matrix being positioned between the source and the detector;
c. readout means; and
d. electronic circuit means connected to said detector for relating the detector output to the amount of substance in the matrix, and for generating a signal in said readout means in response to said relationship.

4,066,899

UNDERWATER RADIOGRAPHIC SYSTEM

Randle Gaspar, Rte. 2, Box 7, and Claud A. Burk, Rte. 2, Box 43 B, both of Luling, La. 70070

Filed Sept. 13, 1976, Ser. No. 722,570
Int. Cl.² G01N *23/00*; G03B *41/16*
U.S. Cl. 250—358 P **10 Claims**



1. An apparatus for making radiographic pictures of an object submerged in a liquid, comprising:

a. a substantially watertight elongated housing, said housing being provided with a lateral, recessed saddle, said housing being attachable to said object at said recessed saddle;
b. camera means for irradiating said object with a beam of X-rays, said camera means being encased and rigidly supported within said watertight housing, said camera means positioned at a point in said housing substantially removed from said recessed saddle in the longitudinal direction; and
c. sensitized film means for making radiographs encased in said housing at the opposite end portion of said housing from said camera means, said film means oriented so that at least a portion of said recessed section is between said radiation means and said film means.

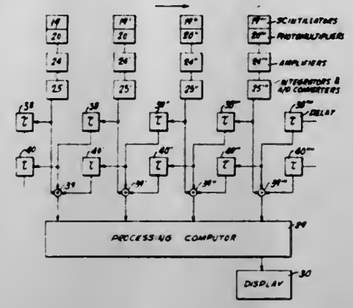
4,066,900

TECHNIQUE FOR CAT UTILIZING COMPOSITE BEAM PATHS WHICH ARE WIDER AT THEIR ENDS THAN THEREBETWEEN

Christopher Archibald Gordon LeMay, Osterley, England, assignor to EMI Limited, Hayes, England

Continuation-in-part of Ser. No. 668,518, March 19, 1976, Pat. No. 4,031,395. This application June 21, 1976, Ser. No. 698,047
Int. Cl.² A61B *6/02*; G01N *23/08*
U.S. Cl. 250—360 **14 Claims**

1. An apparatus for examining a body by means of penetrating radiation including means for generating output signals, representative of the absorption suffered by the radiation in passage along respective beam paths through a region of the body, for processing to provide a representation of the distribution of absorption of the radiation in the region, and combining means for combining groups of output signals relating to groups of beam paths, chosen so that the beam paths of a group are inclined to one another and pass through a common elemental area of the region, to provide composite output signals representing the absorption of the radiation in passage through the body along composite beam paths which are narrower in the vicinity of the respective elemental areas than in other parts of the region, so that said processing can be effected on a



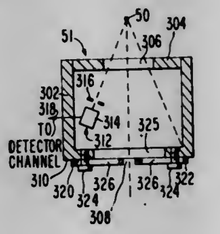
plurality of output signals including at least some of said composite output signals.

4,066,901

TOMOGRAPHIC SCANNING APPARATUS WITH IMPROVED COLLIMATOR STRUCTURE

Edward J. Seppi, and Frederick V. Murphy, both of Menlo Park, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sept. 13, 1976, Ser. No. 722,930
Int. Cl.² A61B *6/02*; G01N *23/08*; H05G *1/30*
U.S. Cl. 250—360 **3 Claims**



1. Apparatus for examining a bodily portion of a patient by means of penetrating radiation and providing a digital output signal for use in reconstruction of a two-dimensional representation of the bodily structure residing in a thin section taken through said body portion; said apparatus comprising:

an assembly rotatable about an axis extending along a central opening defined there;
means for positioning the portion of said body to be examined within said central opening, whereby said axis of assembly rotation is substantially perpendicular to said section;
a source of penetrating radiation being mounted on said assembly toward one side thereof;
a first collimating means being mounted proximate said source toward said one side of said assembly, said means including a first relatively wide opening toward said source, and a spaced relatively narrow slit aligned with said first opening, the radiation emerging from said slit being in the configuration of a fan beam;
detector means for said radiation positioned on said assembly opposite said source for detecting radiation progressing laterally across said section and not absorbed by said body portion;
means for rotating said assembly whereby said fan beam impinges upon said body portion at a plurality of incident directions:
signal processing and conditioning means mounted on said assembly and movable therewith, for receiving the output

signals from said detector means and amplifying and converting said signals to digital form; and

first interconnection means for receiving the outputs from said signal processing and conditioning means and enabling interfeed of said digitalized output signals to an image reconstruction station.

4,066,902

RADIOGRAPHY WITH DETECTOR COMPENSATING MEANS

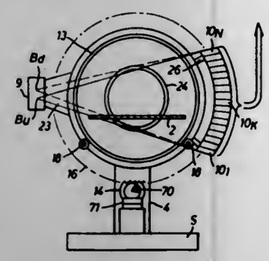
Christopher Archibald Gordon LeMay, Osterley, England, assignor to EMI Limited, Hayes, England

Filed Mar. 19, 1975, Ser. No. 559,715

Claims priority, application United Kingdom, Mar. 23, 1974, 13018/74; July 26, 1974, 33033/74

Int. Cl.² G01T 1/20

U.S. Cl. 250—363 S **6 Claims**



6. An apparatus for examining a slice of a body by means of penetrating radiation such as X- or γ - radiation including a source of a substantially planar fan of radiation intersecting the said slice and originating substantially from a point, a plurality of detectors for detecting the radiation after passage through the body along a plurality of beams at different angles within the fan, means for angularly displacing at least the source through a substantial angle about an axis which intersects the slice, and means for subjecting the said point of origin to a periodic displacement, of period short compared with the time of said angular displacement, relative to the detectors and in the plane of said fan.

4,066,903

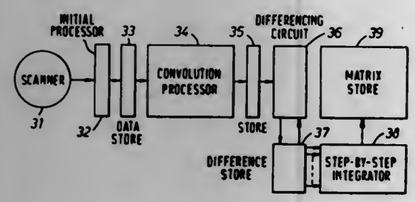
RADIOLOGY

Christopher Archibald Gordon LeMay, Osterley, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 596,623, July 17, 1975, Pat. No. 4,002,910. This application Oct. 26, 1976, Ser. No. 735,745

Int. Cl.² G01M 21/34

U.S. Cl. 250—363 S **2 Claims**



1. Medical radiographic apparatus, for constructing a representation of the distribution of a characteristic of a body with respect to penetrating radiation transmitted through a slice of a body of a patient including: radiographic examination means for providing data signals representing the intensity of radiation transmitted through the material of the body in different directions in the slice; initial processor means co-operating with the said radiographic examination means for converting the said data signals into a plurality of signals each representing the line integral of absorption of the radiation by material along a respective one of a plurality of beam paths in the slice, the paths being distributed in a plurality of sets of substantially parallel paths; data store means for storing the said signals representing line integrals at locations corresponding to the respective paths; processor means for modifying the said signals representing line integrals in response to other signals representing line integrals along paths of the same set of parallel paths to form further signals suitable for combination to provide the said representation; differencing circuit means for forming difference signals, for the further signals of each set of parallel paths, representing the differences of the further signals of the respective set extending to order *m*, where *m* is at least two; integrator means for providing interpolated difference signals and for combining the said interpolated difference signals by a process of recurrent addition to provide interpolated further signals, of the same form as the said modified line integrals but corresponding to paths interpolated between and parallel to the paths of the respective set; and matrix store means having a plurality of locations associated with a plurality of predetermined points in a field notionally delineated in the slice and for storing at each location the values of the further signals for original or interpolated beam paths whose centrelines pass within a predetermined distance of the respective point.

4,066,904

METHOD OF MEASUREMENT OF THE CONCENTRATION OF A SUBSTANCE CONTAINED IN A GAS AND DEVICES FOR CARRYING OUT SAID METHOD

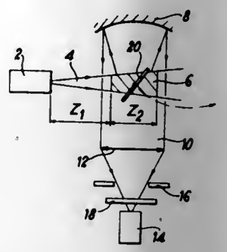
Jean-Loup Bertaux, Sevres, and Jacques Alain Quessette, Paris, both of France, assignors to Agence Nationale de Valorisation de la Recherche Anvar, Neuilly-sur-Seine, France

Filed May 6, 1976, Ser. No. 683,649

Claims priority, application France, May 14, 1975, 75.14952; Oct. 24, 1975, 75.32644

Int. Cl.² G01N 21/22

U.S. Cl. 250—372 **19 Claims**



1. A method of measurement of the concentration of a photodissociable substance contained in a gas, wherein:

a gas having an unknown content of photodissociable substance is irradiated with a radiation having a sufficiently short wavelength to photodissociate said substance,

a photometric measurement is carried out on at least one of the photodissociation products in order to determine its concentration under conditions under which the concentration of the photodissociation product is proportional to the concentration of the substance to be measured.

4,066,905

PARTICLE BEAM APPARATUS WITH ZONES OF DIFFERENT PRESSURE

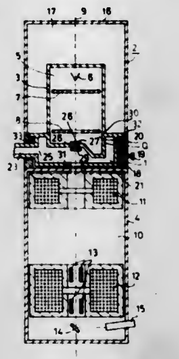
Joachim Dassler; Lee H. Veneklasen, and Martin Zschimmer, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 24, 1976, Ser. No. 669,804

Claims priority, application Germany, Mar. 27, 1975, 2514266

Int. Cl.² H01J 37/26

U.S. Cl. 250—396 R **7 Claims**



1. A particle beam optical apparatus of the type having means for directing a beam of charged particles along an axis, a housing surrounding the particle beam axis, and means located at an intermediate position along the beam axis for dividing the housing into two subspaces following sequentially along the beam axis, one of the subspaces being adapted to be evacuated to a first low pressure, and the other being adapted to be evacuated to a second low pressure higher than the first low pressure, wherein the means for dividing the housing into two subspaces comprises:

a pressure stage having a body that is detachably mounted in vacuum-tight relation to the housing at said intermediate position, the pressure stage including

a vacuum-tight partition dividing said body into a first portion communicating with the one subspace and a second portion communicating with the other subspace,

a first conduit leading from said first portion through the body and adapted for connection to a means for evacuating the one subspace to said first low pressure, and

a second conduit leading from said second portion through the body and adapted for connection to a means for evacuating the other subspace to said second low pressure,

the centerlines of said first and second conduits lying approximately in a common plane perpendicular to the beam axis.

4,066,906

SCANNING RADIOGRAPHIC APPARATUS

Godfrey Newbold Hounsfield, Newark, and Peter George Langstone, Gerrards Cross, both of England, assignors to EMI Limited, London, England

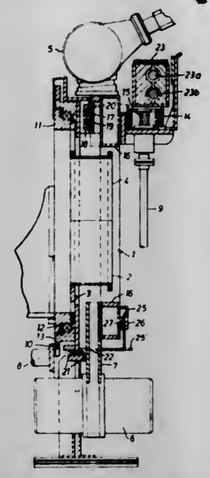
Filed June 2, 1976, Ser. No. 692,182

Claims priority, application United Kingdom, June 11, 1975, 25112/75

Int. Cl.² G01N 23/00

U.S. Cl. 250—445 T **10 Claims**

1. Radiographic apparatus including means defining a patient position, a source of penetrating radiation, such as X-radiation, arranged to project said radiation through said patient position along at least one beam path, scanning means for scanning the source of said radiation angularly and laterally relative to the patient position so as to project said radiation therethrough along further beam paths displaced angularly and/or laterally from said at least one beam path, a sensing arrangement for sensing the progress of said lateral scanning and for providing timing signals indicative thereof, detecting means including at least one detector device for detecting the amount of said radiation emergent from said patient position along each of said beam paths and for producing output signals indicative of said amounts, circuit means connected to receive



said timing signals and said output signals and adapted to utilise said timing signals to determine, at least in part, the effective widths of said beam paths to which said output signals relate, and means for varying a characteristic of said timing signals to change the effective widths of said paths.

4,066,907

GAMMA IRRADIATION PLANT

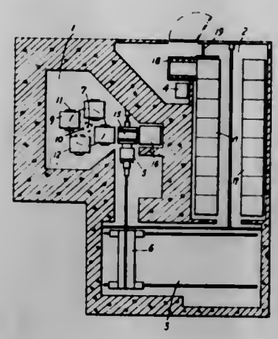
Karl-Heinz Tetzlaff, No. 3, Morikestrasse, 6233 Kelkheim, Germany

Filed Jan. 15, 1976, Ser. No. 649,601

Claims priority, application Germany, Jan. 15, 1975, 2501381

Int. Cl.² G01M 21/00

U.S. Cl. 250—453 **7 Claims**



1. A gamma irradiation plant for irradiating goods, comprising:

a. a carrier mounted for rotation about a central axially positioned source of radiation;

b. a plurality of support means mounted on said carrier for rotation about separate satellite axes spaced from each other and spaced radially about said central axis, said satellite axes being substantially parallel to said central axis;

c. at least two support shelves mounted on each of said support means for supporting said goods;

d. a plurality of shielding means, each mounted on said carrier along a radius extending from said central axis through the space between said support shelves mounted on adjacent of said support means, said shielding means being adapted to attenuate the radiation from said source, the attenuating effect being greater with increasing distance from said radiation source;

e. whereby as said carrier is rotated about said central axis the goods supported on said support shelves are rotated about said satellite axes while revolving about said radiation source and said shielding means serve to make the radiation dose more uniform across a given cross-sectional area of said goods; and

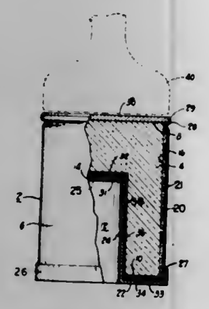
f. a housing means for said carrier, said housing means including article storage means remote from said carrier and article handling means adapted to transfer goods between said storage means and said support shelves and between said support shelves to load and unload goods.

4,066,908

WELL-TYPE SCINTILLATION ASSEMBLY

Mohammad R. Farukhi, Willoughby; George A. Mataraza, and Oley D. Wimer, both of Euclid, all of Ohio, assignors to The Harshaw Chemical Company, Cleveland, Ohio

Filed Mar. 31, 1976, Ser. No. 672,206
Int. Cl.² G01J 1/58
U.S. Cl. 250—483 **15 Claims**



1. In a well-type scintillation assembly including

a. an inorganic scintillation crystal in the shape of a right cylinder having a front face, a back face, and a well extending axially in from the back face toward the front face but terminating short thereof,

b. a housing conforming to the shape of said crystal and enclosing the same, and

c. an optical window coupled to the front face of said crystal,

the improvement comprising

a. a layer of an optically highly reflective material between said housing and said crystal along the side portion of said well and along the back face of said crystal, and

b. an optically high adsorbing filter between said housing at the bottom of said well capable of uniformly adsorbing between 10 and 90% of the light emitted in the area of said crystal near the bottom of said well.

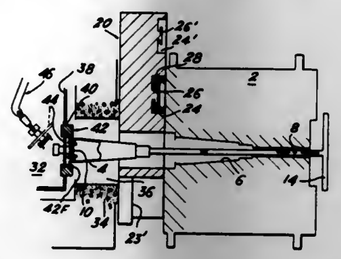
4,066,909

CONTAINER FOR RADIOACTIVE OBJECTS

Claude Bourdois, Palaiseau; Charles Glachet, Vendome; Paul Marchal, Gif-sur-Yvette, and Jean Vertut, Issy-les-Moulineaux, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 1, 1976, Ser. No. 728,841
Claims priority, application France, Oct. 3, 1975, 75.30442
Int. Cl.² G21F 5/02
U.S. Cl. 250—497 **14 Claims**

1. A container for radioactive objects of the type comprising on the one hand a shielded body provided with an internal cavity and on the other hand a capsule which can be inserted into said cavity, said capsule which is sealed on its front face by means of a removable door and the rear face of which is rigidly fixed to an operating rod being capable of sliding along the axis of said cavity through one of its extremities, wherein said cavity is sealed beyond the front face of said capsule by means



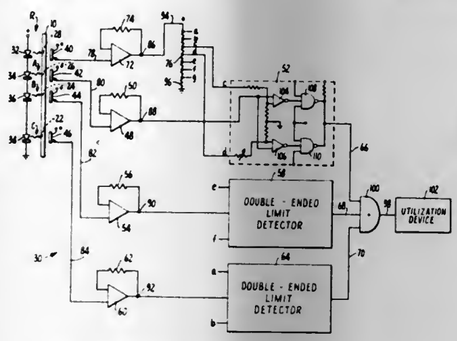
of a shielded element for positioning a cover opposite to the removable door of said capsule, said cover being capable of cooperating with corresponding means arranged within said capsule so as to permit either leak-tight coupling or uncoupling of the cover and the capsule as a result of relative movement of said cover and said capsule.

4,066,910

TRANSMISSIVITY-CODED DATA CARD SYSTEMS

David Merton Swift, Palo Alto, Calif., assignor to Lawrence Systems, Inc., San Francisco, Calif.

Filed Apr. 9, 1976, Ser. No. 675,467
Int. Cl.² G06K 7/10
U.S. Cl. 250—555 **20 Claims**



1. A reader for transmissivity-coded data cards each having a plurality of translucent digit representing areas the transmissivities of which correspond to the values of the digits represented and a translucent reference area, comprising:

a plurality of light souces disposed to transilluminate corresponding ones of said areas when one of said cards is in a reading position;

a plurality of photosensors disposed to receive light emerging from corresponding ones of said areas and to produce output currents proportional to the intensity of the received light; and

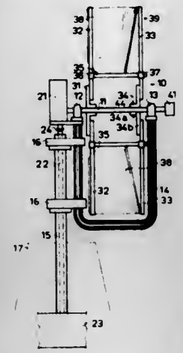
classifying means for classifying data cards positioned in said reading position in accordance with the output currents of the photosensors juxtaposed to said digit representing areas compared with corresponding ranges of percentages of the output current of the photosensor juxtaposed to said reference area.

4,066,911

WIND-DRIVEN PRIME MOVER

Douglas P. Sarchet, Apt. 6C, 143-06 Barclay Ave., Flushing, N.Y. 11355

Filed Oct. 4, 1976, Ser. No. 728,927
Int. Cl.² F03D 9/00; H02P 9/04
U.S. Cl. 290—44 **12 Claims**



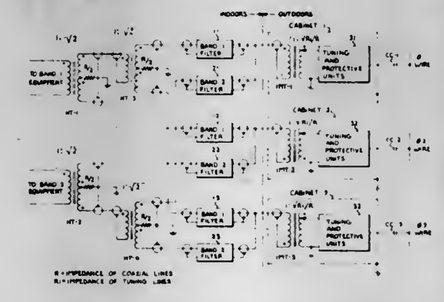
1. An adjustable wind-driven prime mover comprising a rotatably mounted drive shaft, a plurality of radially extending front masts connected to said drive shaft, a corresponding plurality of rear masts movably mounted on the drive shaft and extending radially outward therefrom, a corresponding plurality of boom members, each boom member being pivotally connected to a front mast and movably connected to a rear mast with the rear mast free to move longitudinally along and to rotate about its associated boom, each associated set of a front mast, rear mast and boom member forming a sail member supporting assembly, a corresponding plurality of sail members each being mounted on one of said sail member support assemblies, means for moving said rear masts relative to said front masts to adjust the area of the sail members facing into the wind, and means for controlling the operation of said moving means.

4,066,912

COUPLING ARRANGEMENT FOR POWER LINE CARRIER SYSTEMS

Daniel L. Wetherell, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Apr. 21, 1976, Ser. No. 678,962
Int. Cl.² H04M 11/00
U.S. Cl. 307—3 **8 Claims**



1. An improved arrangement for coupling first and second separated frequency bands to each of first, second, and third phase wires of a power transmission line comprising:

a. a first hybrid transformer having an input for said first frequency band and first and second outputs coupled thereto;

b. a second hybrid transformer having an input for said second frequency band and first and second outputs coupled thereto;

c. a third hybrid transformer having an input coupled to said first output of said first hybrid transformer and having first and second outputs coupled thereto;

d. a fourth hybrid transformer having an input coupled to said second output of said second hybrid transformer and having first and second outputs coupled thereto;

e. first, second, and third filters for said first frequency band;

f. fourth, fifth, and sixth filters for said second frequency band;

g. means connecting said first filter between said first output of said third hybrid transformer and said first phase wire;

h. means connecting said second filter between said second output of said first hybrid transformer and said second phase wire;

i. means connecting said third filter between said second output of said third hybrid transformer and said third phase wire;

j. means connecting said fourth filter between said first output of said fourth hybrid transformer and said first phase wire;

k. means connecting said fifth filter between said first output of said second hybrid transformer and said second phase wire;

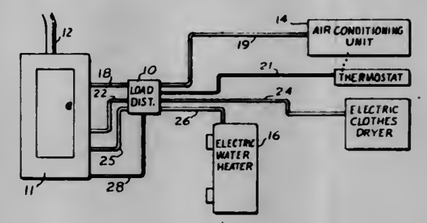
l. and means connecting said sixth filter between said second output of said fourth hybrid transformer and said third phase wire.

4,066,913

ELECTRIC LOAD DISTRIBUTOR

Michael L. Manning, 155 Lakeforest Drive; Thurman L. Anglin, 31 N. Stratford Drive, both of Athens, Ga. 30601, and Richard F. Grayson, Union Church Road, Watkinsville, Ga. 30677

Continuation-in-part of Ser. No. 611,526, Oct. 7, 1975, abandoned. This application July 19, 1976, Ser. No. 706,773
Int. Cl.² H02J 3/00
U.S. Cl. 307—38 **10 Claims**

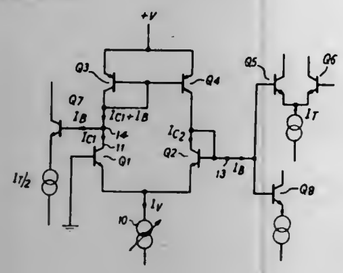


1. In an electric distribution system including a panel having a plurality of circuits, a power supply to said panel, and a plurality of loads connected to said plurality of circuits, a first load of said plurality of loads being the only load on a first circuit of said plurality of circuits, and a second load of said plurality of loads being the only load on a second circuit of said plurality of circuits, the improvements comprising a load distributor connected into said first circuit and said second circuit, said load distributor including a first circuit interrupting means for interrupting said first circuit between sad panel and said load, and a second circuit interrupting means for interrupting said second circuit between said panel and said second load, and disabling means for causing said second circuit interrupting means to interrupt said second circuit while said first circuit is completed to said first load, said disabling means including detecting means for determining when said first circuit is completed to said first load, and switch means responsive to said detecting means for interrupting said second circuit.

4,066,914
ELECTRICALLY VARIABLE IMPEDANCE CIRCUITS

Kenneth James Gundry, San Francisco, Calif., assignor to Dolby Laboratories, Inc., San Francisco, Calif.

Filed Oct. 27, 1976, Ser. No. 735,957
Claims priority, application United Kingdom, Oct. 31, 1975, 45199/75
Int. Cl.² H03K 5/08
U.S. Cl. 307—237 5 Claims

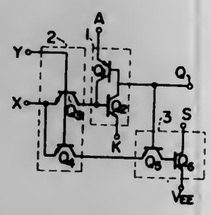


1. An electrically variable impedance circuit comprising first and second circuit branches having a point common thereto, a source of a variable control current feeding said first and second circuit branches in parallel, a circuit connected to said two branches and tending to equalize the currents in said two branches, each branch including at least one three-terminal semiconductor device having first, second and further terminals and connected in the branch by way of said first and second terminals, said further terminals of said devices being interconnected via junctions of the two semiconductor devices and said point common to said two branches, said junctions being connected back to back and variably forward biased by said control current to provide a controlled impedance between a first one of said further terminals corresponding to the first branch and serving as a voltage reference and the second one of said further terminals corresponding to said second branch serving as an input terminal, and the improvement comprising a first further semiconductor device connected to said first branch to pass a predetermined current establishing an offset between the current in that branch as determined by said current equalizing circuit and the current passing between said first and second terminals of said semiconductor device in said first branch.

4,066,915
MEMORY CIRCUIT

Ichiro Ohhinata, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Aug. 6, 1976, Ser. No. 712,261
Claims priority, application Japan, Aug. 9, 1975, 50-96999
Int. Cl.² G11C 11/34; H03K 17/72
U.S. Cl. 307—238 9 Claims

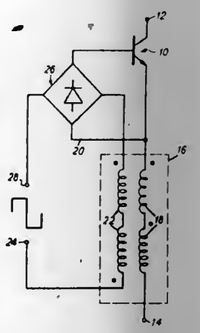


1. A memory circuit comprising a memory cell of PNPN-equivalent 4-layer construction with a write terminal and a read terminal, selective input means composed of a pair of an NPN transistor and PNP transistor, and read-out means having two input terminals for reading information stored in said memory cell, wherein the emitters of said NPN transistor and said PNP transistor included in said selective input means are connected to one of two selective input terminals, the bases of said transistors are connected to the other of said two selective input terminals, the collector of one of said transistors is connected to the write terminal of said memory cell, and the collector of the other transistor is connected to one of the two input terminals of said read-out means and the other input terminal is connected to the read terminal of said memory cell.

4,066,916
TRANSISTOR DRIVE CIRCUITS

Kenneth Gordon King, and Derek Ernest Burch, both of London, England, assignors to Westinghouse Brake & Signal Co. Ltd., England

Filed Mar. 2, 1976, Ser. No. 663,246
Claims priority, application United Kingdom, Mar. 25, 1975, 12491/75
Int. Cl.² H03K 17/00
U.S. Cl. 307—253 24 Claims



1. A transistor drive circuit for driving a transistor having base, emitter, and collector electrodes, comprising a direct current current-transformer having primary windings and secondary windings, a source of alternating current, rectifying means, means for connecting the primary windings in series with the collector-emitter path of the transistor to carry the collector current flowing therein, and means for connecting the source of alternating current in a series circuit with the secondary windings and through the rectifying means to the base-emitter path of the transistor to supply the base current flowing therein, the secondary windings being connected in a polarity sense such that increasing collector current and hence increasing current in the primary windings causes a decreasing of the impedance presented by the secndary windings and thus increasing current in the secondary windings and increasing base current.

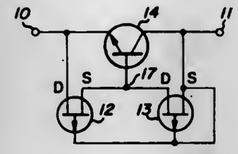
4,066,917
CIRCUIT COMBINING BIPOLAR TRANSISTOR AND JFET'S TO PRODUCE A CONSTANT VOLTAGE CHARACTERISTIC

James B. Compton, Los Gatos, and Sam S. Ochi, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 3, 1976, Ser. No. 682,290
Int. Cl.² H01L 29/80, 27/02; H03K 17/60
U.S. Cl. 307—304 4 Claims

1. An integrated circuit having both bipolar transistors and FET devices integrated on a common substrate and having a portion thereof that develops a constant volage when a current is passed in excess of a predetermined value, said portion comprising;

a bipolar transistor having emitter, base, and collector regions;
a first FET located in close proximity with said bipolar transistor and having a drain region in common with said base region of said bipolar transistor, a source region coupled to said collector region of said bipolar transistor, and a gate region in common with said collector region of said bipolar transistor;

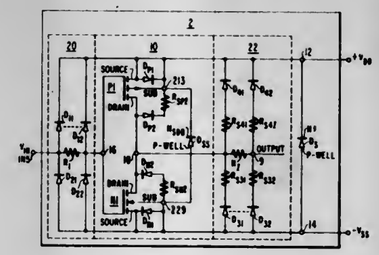


a second FET located in close proximity with said bipolar transistor and having a source region in common with said base region of said bipolar transistor, a drain region coupled to said emitter region of said bipolar transistor, and a gate region in common with said collector region of said bipolar transistor;
means to electrically isolate said portion from the remainder of said integrated circuit, and
terminal means coupled to said emitter and said collector regions of said bipolar transistor.

4,066,918
PROTECTION CIRCUITRY FOR INSULATED-GATE FIELD-EFFECT TRANSISTOR (IGFET) CIRCUITS

Robert Charles Heuner, Bound Brook; Michael Barnett Goldman, Belle Mead; Stanley Joseph Niemiec, Somerville, and George Ira Morton, Belle Mead, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 30, 1976, Ser. No. 728,223
Int. Cl.² H03K 17/00
U.S. Cl. 307—304 8 Claims

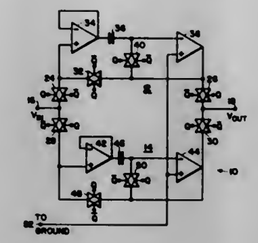


1. In combination with an insulated-gate field-effect transistor (IGFET) circuit having an input node, having an output node to which the drain of an IGFET is connected, and having first and second power terminals between which are coupled the source-to-drain path of an IGFET, a protection circuit comprising:
an input terminal and an output terminal;
means connecting said input node to said input terminal;
means connecting said output node to said output terminal;
first, second, third, fourth and fifth diodes extrinsic to said IGFETs, each of said diodes having an anode and a cathode and each having a forward voltage drop (V_F) when conducting current in the forward direction and having a reverse breakdown voltage drop (V_R) when conducting current in the reverse direction which is significantly greater than its V_F, and wherein the V_F and the V_R of said fifth diode is less than the V_F and the V_R, respectively, of the first, second, third or fourth diode for the same value of current therethrough;
means connecting the anode of said first diode and the cathode of said second diode to said input terminal;
means connecting the anode of said third diode and the cathode of said fourth diode to said output terminal;
means connecting the cathodes of said first and third diodes to said first power terminal;
means connecting the anodes of said second and fourth diodes to said second power terminal; and
means connecting the cathode of said fifth diode to said first terminal and its anode to said second terminal.

4,066,919
SAMPLE AND HOLD CIRCUIT

Robert Charles Huntington, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 1, 1976, Ser. No. 672,682
Int. Cl.² G11C 27/02
U.S. Cl. 307—353 8 Claims



1. A circuit for tracking magnitude of a time varying input signal and for producing upon command an output signal for a predetermined time having a magnitude which corresponds to an instantaneous value of the magnitude of the time varying input signal at the time of command, the circuit having at least an input terminal and an output terminal, comprising: means for supplying control signals; a first amplifier connected as a voltage follower and having an input and an output; first switching means responsive to the control signals, the first switching means being coupled from the input terminal to the input of the first amplifier; a second amplifier having an output, an inverting and a non-inverting input; first means for storing a voltage and being coupled from the output of the first amplifier to the inverting input of the second amplifier; second switching means responsive to the control signals and being coupled from the inverting input of the second amplifier to the output of the second amplifier; third switching means responsive to the control signals and being coupled from the input of the first amplifier to the output of the second amplifier; fourth switching means responsive to the control signals and being coupled from the output of the second amplifier to the output terminal of the circuit, a third amplifier connected as a voltage follower and having an input and an output; fifth switching means responsive to the control signals, the fifth switching means being coupled from the input terminal of the circuit to the input of the third amplifier; a fourth amplifier having an output, an inverting, and a non-inverting input; second means for storing a voltage and being coupled from the output of the third amplifier to the inverting input of the fourth amplifier; sixth switching means responsive to the control signals and being coupled from the inverting input of the fourth amplifier to the output of the fourth amplifier; seventh switching means responsive to the control signals and being coupled from the input of the third amplifier to the output of the fourth amplifier; and eight switching means responsive to the control signal and being coupled from the output of the fourth amplifier to the output terminal of the circuit, the means for supplying control signals controlling all the switching means to allow the first amplifier to be switched to the input terminal and simultaneously switching the fourth amplifier to the output terminal and then to allow the second amplifier to be switched to the

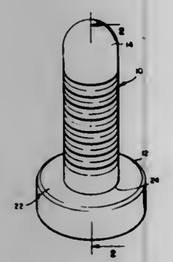
output terminal while simultaneously switching the third amplifier to the input terminal so that as the amplifiers are switched to the input terminal an input signal can be sampled and self compensation for offset voltage and common mode rejection is provided thereby eliminating manual accuracy adjustment requirements.

4,066,920

ELECTROSTATICALLY CHARGEABLE DEVICE

Paul L. Rodriguez, 2116 Center St., Garden City, Kans. 66030, and William A. Rhodes, 4421 N. 13th Place, Phoenix, Ariz. 85014

Filed June 28, 1976, Ser. No. 700,459
Int. Cl.² H02N *1/04*
U.S. Cl. 310—310 **11 Claims**



1. An electrostatically chargeable device consisting of a body; said body being an elongate, generally cylindrical shape and made of electrostatically chargeable material; said body having first and second opposite ends; said first end adapted to be rubbed on a fibrous material for electrostatically charging the same; said body having a longitudinal axis and having a series of endless parallel peripheral grooves and lands disposed at an angle to said longitudinal axis thereby affording a relatively great surface dimension between said first and second ends as compared to the overall length of said body.

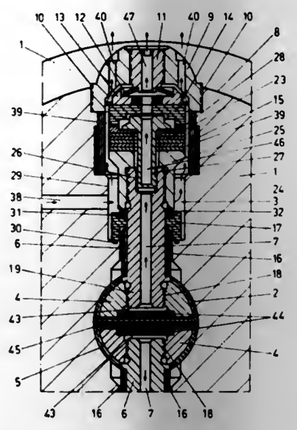
4,066,921

EXCITER-CURRENT LEAD-THROUGH BOLT INTERCONNECTING ROTOR SHAFT-ENCLOSED LEAD-IN CONDUCTOR BAR AND TERMINAL CONDUCTOR BAR LEADING TO ROTOR WINDING

Karl Blank, Mannheim, Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 5, 1976, Ser. No. 673,944
Claims priority, application Switzerland, Apr. 8, 1975, 4424/75
Int. Cl.² H02K *9/00*
U.S. Cl. 310—61 **11 Claims**

1. The combination with a rotor shaft of a dynamo-electric machine including a longitudinal bore containing an insulated exciter-current lead-in conductor bar and a radial bore extending from said longitudinal bore to the surface of the shaft, of an exciter-current lead-through bolt mounted in said radial bore, means securing the radially inner end of said lead-through bolt to said lead-in conductor bar, means securing an intermediate part of said lead-through bolt to a coductor member leading to an exciter winding located on said rotor, and means for applying a radially inwardly directed resilient force to the radially outer end of said lead-through bolt which comprises a locking component in the form of a cap nut secured to the outer end portion of said radial bore, said cap nut including means adjustable longitudinally of said lead-through bolt and which exerts a radially inwardly directed resilient pressure against the end



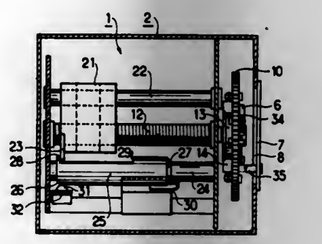
of said lead-through bolt by means including a spring member interposed therebetween.

4,066,922

ELECTRICAL MOTOR-CONTROL DEVICE FOR ELECTRICAL EQUIPMENT

Jean Hennemann, Hombliéres, and Bernard Daussin, St. Quentin, both of France, assignors to Unelec S.A., Paris Cedex, France

Filed July 22, 1976, Ser. No. 707,665
Claims priority, application France, July 28, 1975, 75.23524; Apr. 14, 1976, 76.10973
Int. Cl.² H02K *7/06*
U.S. Cl. 310—80 **4 Claims**



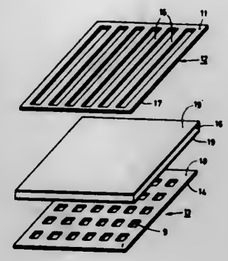
1. An electric motor-control device for electrical equipment having drive means including: electric motor means connected through a torque limiter for driving a movement transformation mechanism provided with a worm screw; a nut unit mounted on said worm screw and movable along said worm screw, said nut unit being connectable to an operating member of the electrical equipment to be controlled; said torque limiter being defined by an elastic connection between two rotating members, one connected to said drive means and the other to said movement transformation mechanism; and an accentric cam; said cam rotating with said worm screw and a drive member bearing against said cam, said cam being spring-mounted on a driven gear of said drive means, whereby said gear rotates freely about an axis common to said cam and said worm screw.

4,066,923

COLOR SELECTION LENS ELECTRODES CONNECTED BY DIFFUSION BONDS

Johannes van Esdonk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 13, 1977, Ser. No. 759,111
Claims priority, application Netherlands, Jan. 16, 1976, 7600419
Int. Cl.² H01J *29/07, 19/30*
U.S. Cl. 313—402 **7 Claims**



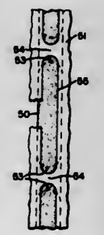
1. A colour display tube comprising in an evacuated envelope means to generate a number of electron beams, a display screen comprising a large number of regions luminescing in different colours, and colour selection means comprising a large number of apertures which assign each electron beam to luminescent regions of one colour, which colour selection means comprise a first and a second system of lens electrodes, a lens electrode belonging to the first system being electrically insulated from a lens electrode belonging to the second system by means of an insulating member, characterized in that the insulating member consists of a member which is metallized on two-sides of which one metallized side is connected to a lens electrode belonging to the first system by means of a diffusion bond and a lens electrode belonging to the second system is present on the other metallized side of the insulating member.

4,066,924

SCREEN FOR SLOTTED APERTURE MASK COLOR TELEVISION PICTURE TUBE

Wilfred Rublack, Liverpool, N.Y., assignor to General Electric Company, Portsmouth, Va.

Continuation of Ser. No. 472,349, May 22, 1974, abandoned. This application July 11, 1975, Ser. No. 595,260
Int. Cl.² H01J *29/28, 29/32, 31/20*
U.S. Cl. 313—408 **3 Claims**



1. In a cathode ray tube including a faceplate and a shadow mask containing an array of vertically oriented slotted apertures for restricting electron beams directed therethrough to impinge upon and excite selected areas of phosphor material on said faceplate, a viewing screen comprising:

a horizontally repetitive pattern of sets of three vertically oriented stripes of phosphor material extending vertically across and coating the inside surface of said faceplate, each stripe within a set being of different phosphor material so as to emit a different color when excited by the corresponding one of the three electron beams passing through the associated aperture in said shadow mask, and

a layer of light absorbing material coating the inside surface of said faceplate and containing a vertical and horizontal array of vertically oriented slotted openings, said stripes and openings being juxtaposed so that said openings define viewable portions of said stripes, each viewable portion being totally surrounded with light absorbing material,

said openings and stripes being aligned with the apertures in said shadow mask so that a corresponding one of said three electron beams is allowed to impinge upon each viewable portion,

the vertical dimension of each opening being greater than the vertical dimension of that part of said viewable portion excited by the electron beam impinging thereupon, such that a positive vertical guardband is provided, and

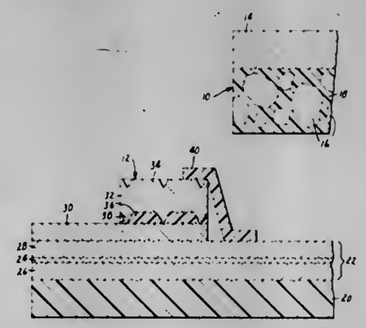
the horizontal dimension of each opening being less than the horizontal dimension of the impinging electron beam, such that a negative horizontal guardband is provided.

4,066,925

ELECTROLUMINESCENT LAMP AND ELECTRODE PREFORM FOR USE THEREWITH

Arthur D. Dickson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 3, 1976, Ser. No. 711,356
Int. Cl.² H05B *33/06, 33/26*
U.S. Cl. 313—503 **11 Claims**



1. A substantially continuous preform adapted to be wound upon itself in roll form for use in forming an electroluminescent device comprising

a web of transparent polymeric material,

a substantially transparent electrically conducting thin-film layer extending over and secured coextensively to one surface of the web,

a continuous electrically conductive metal film in intimate contact with and extending the length of a narrow portion of the thin-film layer, the conductive film exhibiting a surface resistivity not greater than one ohm per square, and

electrical contact means adhesively secured to and extending the length of the conductive film such that an electrical potential applied to the contact means is distributed through the conductive film and substantially uniformly distributed throughout the transparent thin-film layer.

6. In a flexible electroluminescent device comprising a light transmitting flexible resin body having opposing faces and finely divided electroluminescent phosphor particles embedded therein sandwiched between and bonded to electrically conducting electrode layers, one of which electrode layers is substantially transparent, the improvement wherein the substantially transparent electrode layer comprises a transparent polymeric substrate, a substantially transparent electrically conducting thin-film layer extending over and secured coex-

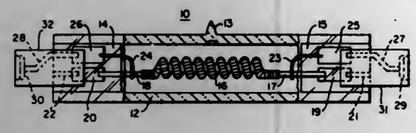
tensively to one surface of the substrate, and a continuous electrically conductive metallic film in intimate contact with and extending the length of a narrow portion of the thin-film layer, the conductive film exhibiting a surface resistivity not greater than one ohm per square, and where the device further includes an electrically conducting means adhesively secured to and extending along said substantial length in an electrically conducting relationship to the conductive film, and a layer of electrically insulating tape adhesively secured between an exposed surface of the electrically conducting means and the surface of the resin body which is elsewhere bonded to the thin-film layer to uniformly distribute an electrical potential applied to the electrically conducting means through the conductiive film and substantially uniformly throughout the transparent thin-film layer, while insulating said potential from the electrode layer on the opposite side of the resin body.

4,066,926

GAS-FILLED INCANDESCENT LAMP WITH INTEGRAL FUSE ASSEMBLY

Ralph E. Newton, Dover, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 12, 1976, Ser. No. 731,393
Int. Cl.² H01J *7/44, 13/46, 17/34, 19/78*
U.S. Cl. 315—73 **10 Claims**



1. An electric incandescent lamp comprising;
a vitreous envelope that contains an inert fill gas and is terminated at one end by an hermetic seal which has a pair of spaced ribbon-like conductors embedded therein,
a filament or refractory metal wire suspended within said envelope,
an inner lead-in conductor having one end disposed within the envelope and fastened to said filament and its other end embedded in said hermetic seal and connected to one of the ribbon-like conductors,
means for preventing the formation of a destructive electric arc within the energized lamp when the filament fails comprising a non-coiled member of fusible metal that has one end electrically connected to a non-embedded part of said inner lead-in conductor which is located within said envelope and its opposite end embedded in the hermetic seal and fastened to the other of said ribbon-like conductors, and
external connector means comprising an outer lead-in conductor that protrudes from said hermetic seal and has an end segment which is embedded in said hermetic seal and is electrically connected to the ribbon-like conductor which is fastened to said fusible metal member,
said hermetic seal having an additional conductor member embedded therein which extends from an exposed surface of the hermetic seal toward and is secured to the ribbon-like conductor that is fastened to the inner lead-in conductor.

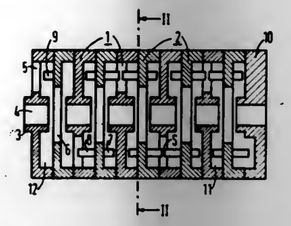
4,066,927

WIDE-BAND LOW-REFLECTION ATTENUATED DELAY LINE

Franz Gross, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 8, 1976, Ser. No. 693,840
Claims priority, application Germany, June 10, 1975, 2525845
Int. Cl.² H01P *1/22;* H01J *25/34;* H03F *3/58*
U.S. Cl. 315—3.5 **12 Claims**

1. In a wide-band, low-reflection attenuated delay line for traveling wave tubes, particularly for the amplification of millimeter waves, the combination of a hollow guide forming an attenuation section having transverse walls defining respective line cells therebetween, which walls each having a central opening for the passage of the electron beam and at least one coupling slot, elongated attenuating members disposed in the respective cells with their longitudinal axes extending at least



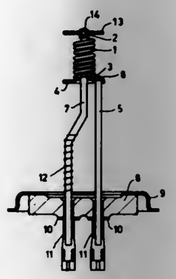
approximately parallel to the longitudinal axis of the delay line, said attenuating members having a substantially uniform effective penetration depth within the associated cells, and a line cell, forming a matching cell, disposed directly ahead of and/or behind the attenuation section for matching the latter to an adjacent section of the delay line, said matching cell, in each case, containing at least one matching member therein.

4,066,928

RESONANT CAVITY MAGNETRON HAVING A HELICAL CATHODE

Joannes Baptista Maria Adrianus Van Besouw; Egbert Bernardus Gretinus Willem Gotjé, and Franciscus Napoleon Adrianus Kerstens, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 30, 1976, Ser. No. 681,792
Claims priority, application Netherlands, May 20, 1975, 7505871
Int. Cl.² H01J *25/50*
U.S. Cl. 315—39.51 **3 Claims**



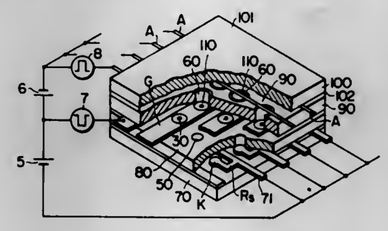
1. In a resonant cavity magnetron having a helical cathode having two ends being secured to two end plates which are supported by respective supporting rods, the improvement wherein each one of the two cathode ends is connected with a respective end plate and one of the associated supporting rods by a single collective weld, the cathode extending tangentially at its non-free end and being bent towards the axis at its free end.

4,066,929

ELECTRON-ACCELERATION TYPE FLATGAS-DISCHARGE PANEL WITH INTERNAL MEMORY FUNCTIONS AND METHOD OF DRIVING FOR SAME

Yukio Okamoto, and Masashi Mizushima, both of Hachioji, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 26, 1976, Ser. No. 652,167
Claims priority, application Japan, Jan. 24, 1975, 50-9717
Int. Cl.² H01J *61/04*
U.S. Cl. 315—169 TV **18 Claims**



2. A flat display panel comprising:
a plurality of common cathode lines disposed in parallel on top of a first insulation sheet;
a plurality of rows and columns of cathode electrodes provided on said first insulation sheet;
a plurality of resistors disposed on said first insulation sheet, each respective resistor connecting a respective cathode electrode to a common cathode line;
a second insulation sheet defining auxiliary discharge spaces above said cathode electrodes;
a plurality of grid electrodes in sheet form disposed on top of said second insulation sheet at a predetermined angle relative to said common cathode lines, and having apertures therethrough at positions corresponding to said auxiliary discharge spaces;
a third insulation sheet having spaces therein above said apertures, a main discharge being carried out in the spaces in said third insulation sheet;
a plurality of anode electrodes disposed on top of said third insulation sheet in parallel with said grid electrodes;
a transparent insulation sheet disposed on top of said anode electrodes;
gas sealed within and filling said main discharge spaces, auxiliary discharge spaces, and apertures provided in said grid electrodes; and
means for applying pulse signals to said grid and anode electrodes
so that said main discharge maintains an internal memory function due to electrons, which pass through said apertures, controlled and accelerated by a pulse signal applied to said grid and anode electrodes.

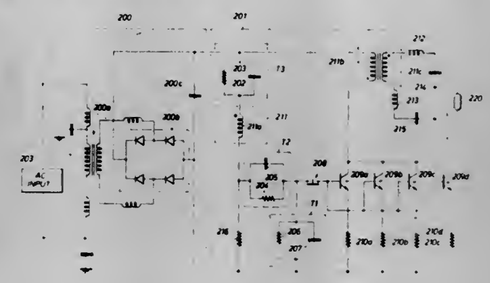
4,066,930

ENERGIZING CIRCUITS FOR FLUORESCENT LAMPS

Frank A. Summa, Staten Island, N.Y., assignor to Electrides Corporation, Staten Island, N.Y.

Continuation-in-part of Ser. No. 564,369, April 2, 1975, abandoned. This application Mar. 26, 1976, Ser. No. 669,591
Int. Cl.² H05B *41/29, 37/00*
U.S. Cl. 315—209 R **5 Claims**

1. In a transformer-coupled oscillator circuit for generating a high frequency signal across the secondary of the transformer to energize flourescent tubes, said oscillator circuit including at least one transistor and a DC power source with first and second terminals, the improvement comprising:
a ferromagnetic pot-core transformer having first and second primary windings and a secondary winding, said second primary winding coupled between the first terminal of the DC power source and the collector of each said transistor;
a first parallel R-C circuit having one end thereof coupled to the base of each said transistor and the second end thereof coupled to the second terminal of the DC power source;
a second parallel R-C circuit having one end thereof coupled to the base of each said transistor;
a bias resistor coupled between the second ends of said first and second R-C circuits;



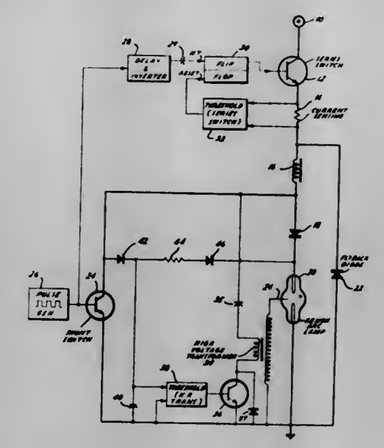
a serial combination of a third parallel R-C circuit and the first primary winding, coupled between the first terminal of the DC power source and the second end of said second R-C circuit; and
an emitter resistor coupled between the emitter of each said transistor and the second terminal of the DC power source.

4,066,931

SHUNT MODULATOR FOR HIGH CURRENT ARC LAMP

Daniel F. Morrill, Long Beach, Calif., assignor to Ford Aerospace & Communications Corporation, Dearborn, Mich.

Filed June 8, 1966, Ser. No. 556,005
Int. Cl.² H05B *37/02, 41/34*
U.S. Cl. 315—241 R **10 Claims**



1. In combination:
a. a circuit comprising the following elements connected in series: a potential source, a series switch, an inductor, and a load impedance,
b. a shunt switch connected across said load impedance,
c. means for rendering said shunt switch alternately conductive and nonconductive,
d. means for rendering said series switch conductive when said shunt switch is rendered nonconductive, and

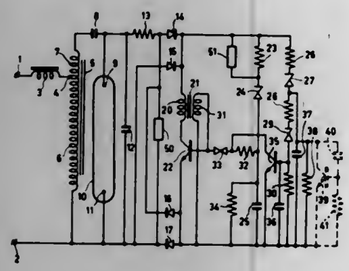
e. means for rendering said series switch nonconductive when the current in said inductor exceeds a predetermined value.

4,066,932

SATURABLE REACTOR DEVICE FOR OPERATING A DISCHARGE LAMP

Jacob Rottier, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1976, Ser. No. 661,055
Claims priority, application Netherlands, Mar. 5, 1975, 7502577
Int. Cl.² H05B *41/16, 41/232*
U.S. Cl. 315—244 **9 Claims**



1. A device for starting and operating a low pressure sodium vapor discharge lamp comprising, two input terminals for connection to a source of AC voltage, first and second inductor coils, means connecting said first and second coils in a series circuit across said two input terminals, a capacitor, means connecting said discharge lamp and the capacitor in a series circuit across two terminals of the second coil, said first and second coils being designed so that the first coil does not saturate in the operating condition of the lamp, whereas the second coil does saturate during operation of the lamp, and means connecting a starter including a semiconductor switch in shunt with the discharge lamp.

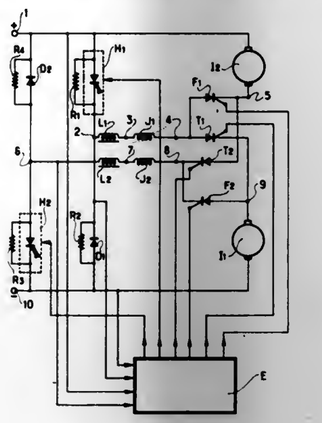
4,066,933

STATIC SWITCHING DEVICE FOR TWO DIRECT CURRENT MACHINES

Quang Minh Pham, Elancourt, and Jacques Soffer, Sceaux, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques Alsthom, Paris, France

Filed Dec. 2, 1975, Ser. No. 636,950
Claims priority, application France, Dec. 5, 1974, 74.39838
Int. Cl.² H02P *3/00, 7/68*
U.S. Cl. 318—60 **3 Claims**

1. Control system for solid state switching of two direct current machines operating as motors or generators, comprising two circuits connected in parallel on the terminals of a direct current source, the first circuit comprising, in series and in the following order, a first chopper, a first smoothing inductance, a field winding in the first machine, a first switching thyristor and an armature in the said first machine, the second circuit comprising, in series and in the following order, an armature in the second machine, a second switching thyristor, a field winding in the second machine, a second smoothing inductance and a second chopper, first and second connections for connecting the two circuits together, the first connection connecting the anodes of said first and second switching thyristors, the second connection connecting the cathodes of said first and second switching thyristors, the first connection comprising a third switching thyristor, the second connection comprising a fourth switching thyristor, the system comprising an electronic control unit transmitting control pulses to the triggers of said switching thyristors and to those of said first



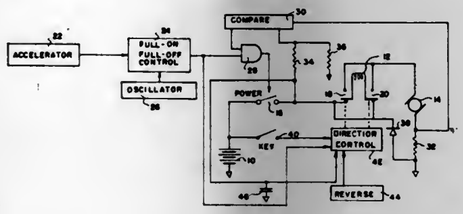
and second choppers for operating the machines as motors or generators.

4,066,934

MOTOR SPEED CONTROLLER

Lindsey E. Waldorf, and Kenneth E. Monroe, both of Ann Arbor, Mich., assignors to Lindsey E. Waldorf, Ann Arbor, Mich.

Filed Apr. 23, 1975, Ser. No. 570,628
Int. Cl.² H02P *5/00*
U.S. Cl. 318—139 **5 Claims**



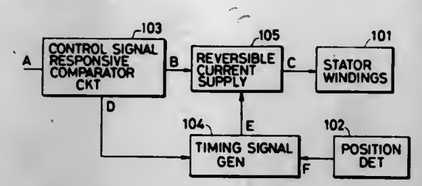
1. A system for controlling the electrical power applied to a DC drive motor for an electric vehicle, comprising: an operator controlled accelerator operative to provide an output electrical signal proportional to the accelerator position which is continuously variable between limiting values; a multi-vibrator having the output of the accelerator as its input and being operative to provide a periodically cycling bi-stable output wherein the ratio of on-time to off-time is a function of the signal received from the accelerator; a power switching device connected in series with the motor and battery; means for deriving an electrical signal having a value which is a direct function of the instantaneous current passing through the motor; comparator means operative to receive said instantaneous current signal and a reference value and to provide an output signal at such time as the current passing through the motor exceeds the reference value; and a gate for controlling said switching device, to pass current from the battery to the motor only and at all times when the output of the multi-vibrator is in an "on" state and a signal representative of the instantaneous value of the current passing through the motor does not exceed said reference signal.

4,066,935

STATOR WINDING CONTROL CIRCUIT FOR A BRUSHLESS D.C. MOTOR

Saburo Takaoka, and Norikazu Fujie, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 30, 1976, Ser. No. 728,325
Claims priority, application Japan, Oct. 2, 1975, 50-119272
Int. Cl.² H02K *29/00*
U.S. Cl. 318—138 **7 Claims**



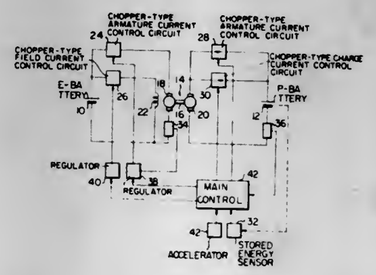
1. A brushless d.c. motor, comprising:
a. a stator including multi-phase windings,
b. a rotor having a plurality of magnetic poles,
c. position detecting means for producing output signals in response to the positional relationship between said stator and said rotor,
d. means including a comparator for producing a first output signal in response to the absolute value of an input control signal and a second output signal in response to the polarity of said input control signal,
e. means for producing a plurality of timing signals having a phase sequence in accordance with the polarity of said second output signal and timed in accordance with the output signals from said position detection means, and
f. means for sequentially driving said multi-phase stator windings with currents having magnitudes proportional to the absolute value of said first output signal and a phase sequence corresponding to that of said timing signals, whereby reversible torques may be produced in said motor.

4,066,936

HYBRID BATTERY ELECTRIC DRIVE

Toshio Hirota, No. 3-5-20, Nakahara, Isogo, Yokohama, Japan

Filed May 30, 1975, Ser. No. 582,359
Claims priority, application Japan, June 10, 1974, 49-65029
Int. Cl.² H02P *5/00*
U.S. Cl. 318—139 **2 Claims**



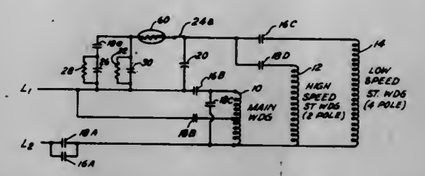
1. In a hybrid battery electric drive: a motor having a first armature coil, a second armature coil mechanically connected to said first armature coil for simultaneous rotation and insulated from said first armature coil and a field coil common to said first and second armature coils;
a first battery having a high specific energy, said first battery being electrically connectable in use with said first armature coil and said field coil;
a second battery having a specific power, said second battery being electrically connectable in use with said second armature coil; and
means for alternatively connecting in dependence upon the load on the motor said first battery to said first armature and to said first coil and second battery to said second armature coil.

4,066,937

CONTROL CIRCUIT FOR A TWO SPEED SINGLE PHASE MOTOR

David M. Pfarrer, Hurst, and Leonard J. Van Essen, Fort Worth, both of Tex., assignors to Lennox Industries, Inc., Marshalltown, Iowa

Filed Jan. 13, 1976, Ser. No. 648,622
Int. Cl.² H02P *1/44*
U.S. Cl. 318—221 G **7 Claims**



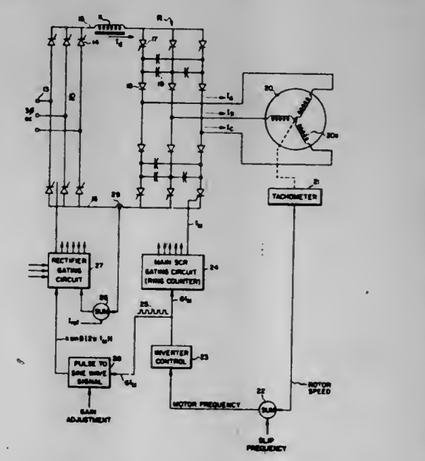
1. For use with a single-phase two-speed motor comprising a main winding, a start winding means including a low speed start winding and a high speed start winding in circuit with the main winding and adapted to provide either a high speed operation or low speed operation, low-speed contactor means, high speed contactor means, start relay means, start capacitor means and run capacitor means, a thermistor in series with the start contacts of the start relay means for preventing welding of the start contacts of the start relay means, the start capacitor means being in parallel with the run capacitor means and the thermistor and start contacts are electrically disposed between the start capacitor means and the run capacitor means.

4,066,938

INPUT CURRENT MODULATION TO REDUCE TORQUE PULSATIONS IN CONTROLLED CURRENT INVERTER DRIVES

Fred G. Turnbull, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 6, 1976, Ser. No. 730,145
Int. Cl.² H02P *5/40*
U.S. Cl. 318—227 **6 Claims**



1. A controlled current motor drive system comprising a voltage converter and a polyphase current source bridge inverter connected in cascade with a direct current reac-

tor therebetween for producing variable amplitude and frequency output current to be supplied to a motor,

first control means for operating said voltage converter to produce variable output voltage and thereby determine the magnitude of the undirectional input current fed to said inverter, and second control means for determining the operating frequency of said inverter and therefore the motor frequency,

said second control means including means for deriving a desired motor frequency signal and means for generating an inverter gating circuit signal having a frequency equal to six times the motor frequency, and

torque pulsation reduction control means for utilizing said inverter gating circuit signal to derive a sixth harmonic modulating signal which is used as an additional input to said first control means to selectively modulate the voltage converter output voltage and therefore the inverter input current at six times the motor frequency.

4,066,939

CONTROL CIRCUITS FOR ELECTRICALLY DRIVEN VEHICLES

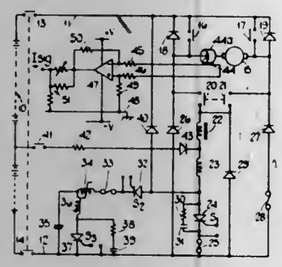
John Frank Joyes, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 26, 1976, Ser. No. 661,497

Claims priority, application United Kingdom, Feb. 28, 1975, 8349/75

Int. Cl.² H02P *3/12*

U.S. Cl. 318—251 **2 Claims**



1. A control circuit for an electrically driven vehicle having a series field D. C. motor having a motor field winding and a motor armature winding and also having a traction battery having a low voltage portion and low voltage tapping, said circuit comprising a thyristor current control circuit connected in series with said motor field winding, switch devices connecting said motor armature winding with said field winding and the battery and providing forward and reverse drive modes with said armature winding, said field winding and said current control circuit being arranged in series across said battery and also providing a brake mode with said armature winding, said field winding and said current control circuit in series in a loop exclusive of said battery, armature current sensing means arranged to detect the current flowing in the armature winding and providing a current feedback signal to said thyristor current control circuit, a switch control circuit controlling said switch devices and connected to said armature current sensing means so as to prevent operation of said switch devices to connect the motor in its braking mode while the armature current is in excess of a predetermined value, a relay having a normally open contact connecting said low voltage tapping on said battery to said field winding so that when said contact is closed said field winding and said current control circuit are in series across a low-voltage portion of said battery, and relay operating means controlled by said armature current sensing means and arranged to close said relay contact whenever the braking mode is selected and the armature current is below said predetermined level.

4,066,940

ELECTRICAL CONTROL APPARATUS

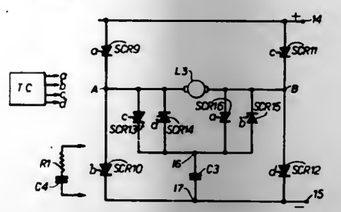
Ian Henderson, Edgefield, High St., Medstead, Alton, England

Continuation of Ser. No. 412,357, Nov. 2, 1973, which is a continuation-in-part of Ser. No. 273,293, July 19, 1972, Pat. No. 3,780,366. This application Oct. 6, 1975, Ser. No. 620,233

Claims priority, application United Kingdom, Sept. 9, 1971, 42132/71

Int. Cl.² H02P *7/00*

U.S. Cl. 318—294 **1 Claim**



1. Control apparatus for selectively supplying either always positive or always negative current to a load from a DC supply comprising first and second terminals for connection to said supply, a first thyristor, a second thyristor connected in series with the first thyristor, a fourth thyristor connected in series with said third thyristor between said first and second terminals, a load connected between the junction of the first and second thyristors and the junction of the third and fourth thyristors, a capacitor having first and second electrodes, said first electrode being connected to said second terminal, a fifth thyristor connected in one polarity between the junction of the first and second thyristors and the second electrode of said capacitor a sixth thyristor connected in parallel with said fifth thyristor, but in opposite polarity thereto, a seventh thyristor connected in one polarity between the junction of said third and fourth thyristors and the second electrode of said capacitor, and an eighth thyristor in parallel with the seventh thyristor but in opposite polarity thereto; first control means adapted to be connected to said first, seventh, eighth, and second thyristors for alternately rendering both said first and seventh thyristors conducting to charge the capacitor with current flowing through said load in a first direction, and then rendering both said eighth and second thyristors conducting to discharge the capacitor through the load with current flow through the load in said first direction; and second control means adapted to be connected to said third, fifth, sixth, and fourth thyristors for alternately rendering both said third and fifth thyristors conducting to charge said capacitor with current flowing through said load in an opposite direction to said first direction, and then rendering said sixth and fourth thyristors conducting to discharge the capacitor through the load with current flow through the load in said opposite direction; whereby, current flow through said load is always in said first direction during operation of the first control means, and always in said opposite direction during operation of said second control means.

4,066,941

MOTOR DRIVE CONTROL ARRANGEMENTS

Alan Foster, Hitchin, England, assignor to International Computers Limited, London, England

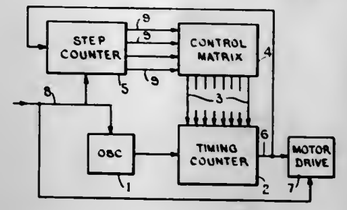
Filed Apr. 11, 1975, Ser. No. 567,197

Claims priority, application United Kingdom, Apr. 11, 1974, 16249/74

Int. Cl.² H02P *5/16*

U.S. Cl. 318—341 **8 Claims**

1. A motor drive control arranged to control the speed of a motor in accordance with a predetermined velocity variation curve including: a memory device including a plurality of addressable storage locations respectively containing different stored values relating to required increments of movement of the motor; a step counter operable to address the storage locations of the memory device, the location addressed being determined by the contents of the step counter; means operative to increment the step counter for each incremental movement of the motor to read out the values from the memory



device relating respectively to the required increments of movement of the motor; and drive means responsive to the values read out from the memory device to supply drive current to the motor so as to cause the motor to move in accordance with the predetermined velocity variation curve.

4,066,942

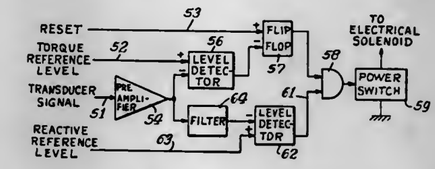
CONTROL CIRCUIT FOR A POWER TOOL

Francis G. Bardwell, Elmhurst, and Edmund C. Dudek, St. Charles, both of Ill., assignors to Thor Power Tool Company, Aurora, Ill.

Division of Ser. No. 418,762, Nov. 23, 1973, Pat. No. 3,926,264. This application Oct. 10, 1975, Ser. No. 621,485

Int. Cl.² H02K *17/32, 23/68, 27/30*

U.S. Cl. 318—434 **13 Claims**



1. A control circuit for use in a torque applying tool including a motor connected to turn a power output shaft of the tool and switch means connected to control energization of the motor, said control circuit comprising torque output level sensing means adapted to be coupled to said output shaft for generating a torque signal which is a function of the output torque, means providing a predetermined reaction torque reference signal, first comparing means for said torque signal and said reaction torque reference signal, said switch means being responsive to said comparing means to repeatedly energize and deenergize the motor, means providing a maximum torque reference signal above said reaction torque reference signal and second comparing means for said maximum torque reference signal and said torque signal to deenergize said motor when a preselected relation exists between said torque and reaction torque reference signals.

4,066,943

HIGH SPEED PRECISION CHUCK ASSEMBLY

Jacques L. Roch, San Jose, Calif., assignor to Electroglas, Inc., Menlo Park, Calif.

Division of Ser. No. 448,370, March 5, 1974, Pat. No. 3,936,743. This application Nov. 10, 1975, Ser. No. 630,662

Int. Cl.² H01H *3/02*

U.S. Cl. 318—468 **15 Claims**

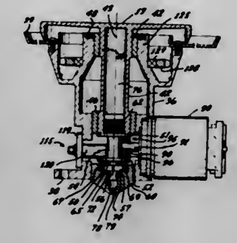
1. In a system for reciprocally moving a work table in a vertical direction along a particular axis while providing for rotation thereof about said axis comprising:

a chuck housing including a bore, the bore being disposed in alignment with said axis,

a chuck plate provided for supporting the work table and mounted for sliding movement vertically within said bore and in axial alignment with said axis,

spool means including spaced flanges mounted at one end of said chuck plate for providing a vertical movement of said chuck plate and for providing a rotation of said chuck plates with respect to said particular axis,

said chuck plate being perpendicular to said axis whereby rotation of said spool maintains said chuck plate in a plane perpendicular to said axis,



bearing means mounted between said spaced flange means for providing for a rotation of said spool means,

switching means associated with the spool means for indicating when the chuck plate has moved vertically through a particular distance, and

means cooperative with said switching means to provide a controlled vertical movement of the chuck plate through the particular distance.

4,066,944

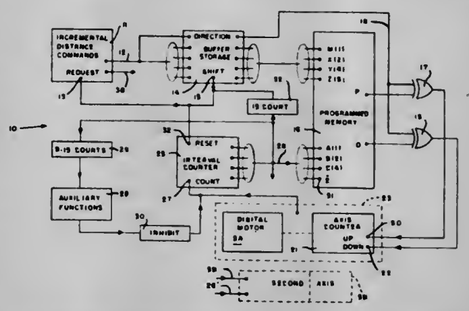
MOTION CONTROL SYSTEM WITH INCREMENTAL DATA COMMANDS

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 6, 1976, Ser. No. 683,883

Int. Cl.² G05B *19/28*

U.S. Cl. 318—571 **11 Claims**



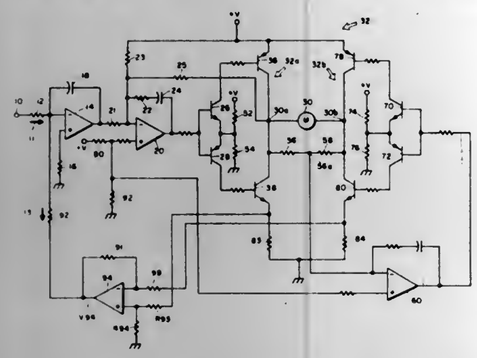
1. A motion control system for accepting an input command of the number of steps in an incremental movement and producing said movement comprising means for providing a representation of the number of steps in the movement with each representation being unique for each number of steps, means for providing a plurality of successive time intervals for the movement, means for representing each time interval with a representation unique to it, motion means for providing one number of steps for each time interval from a plurality of different numbers and for accepting a signal to increase, decrease or not change the number of steps in the next time interval from the previous time interval, and means for simultaneously sensing both representations and supplying the signal for each time interval.

4,066,945

LINEAR DRIVING CIRCUIT FOR A D.C. MOTOR WITH CURRENT FEEDBACK

Donald R. Korte, Jr., Pompano Beach, Fla., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 31, 1976, Ser. No. 672,106
Int. Cl.² G05F *1/08*
U.S. Cl. 318—681 **6 Claims**



1. A circuit for driving an electrical motor in response to a command signal comprising:
a voltage source;
a bridge circuit connected across said voltage source, said motor being connected between interior points of said bridge circuit, said bridge circuit including a first side comprising first and second controllable power transmission means and a second side comprising third and fourth controllable power transmission means;
a voltage divider connected across said motor;
first feedback means for generating a feedback signal related to the current flow through said motor;
means for combining said feedback signal with said command signal to produce a control signal;
first control means responsive to said control signal for controlling said first and second power transmission means;
second feedback means connected between said bridge circuit and said first control means for controlling the voltage on one of the terminals of said motor; and,
second control means responsive to the voltage at an interior point of said voltage divider for controlling said third and fourth power transmission means, wherein said first and second control means comprise first and second operational amplifiers respectively referenced to the same voltage whereby the quiescent voltage difference across said motor is zero.

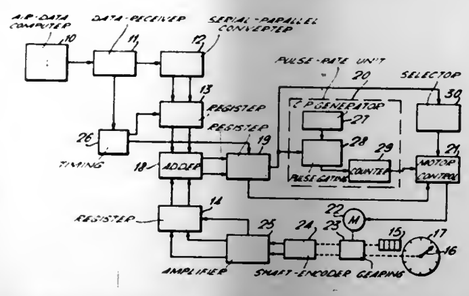
4,066,946

SERVO SYSTEMS

John W. D. Jones, Stonehouse, and Keith R. Oakey, Cheltenham, both of England, assignors to Smiths Industries Limited, London, England

Filed Dec. 5, 1975, Ser. No. 638,222
Claims priority, application United Kingdom, Dec. 6, 1974, 52927/74
Int. Cl.² G05B *19/40*
U.S. Cl. 318—685 **14 Claims**

1. In a servo system in which drive means provides output drive in accordance with error between the output of the servo and an input demand that is updated in value intermittently, the improvement for minimizing output-velocity fluctuation of the system in response to high-rates of change of the input-demand value, wherein the system includes means to staticize the said error in the intervals between successive updatings of the input demand, said staticizing means updating the staticized value of said error only in accordance with updating of the said input-demand value, and wherein said drive means is coupled to said staticizing means to respond to the error-values staticized in respect of successive updatings of said input demand, said



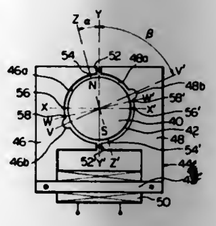
drive means responding to each such staticized error-value to drive the said output in accordance with the staticized error-value at a substantially constant rate throughout until the next updating of said error value.

4,066,947

STEPPING MOTOR FOR ELECTRONIC TIMEPIECE

Fumio Nakajima, Tokyo; Takayasu Machida, Iruma, and Kenji Yamada, Koganei, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Jan. 7, 1976, Ser. No. 647,282
Claims priority, application Japan, Sept. 25, 1975, 50-114897
Int. Cl.² H02K *37/00*
U.S. Cl. 318—696 **6 Claims**



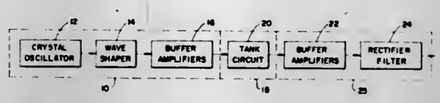
1. A reversible stepping motor comprising:
stator pole pieces having inwardly rounded peripheries and spaced from each other by air gaps, said stator pole pieces having indentations formed on said rounded peripheries on an axis angled at substantially 60° with respect to a center line of said air gaps, respectively, to provide an axis of static equilibrium at an angle of substantially 30° with respect to said center line of said air gaps, and said stator pole pieces being magnetically connected to each other by a magnetically conductive member on which a driving coil is wound;
a permanent magnet rotor rotatably mounted in a space defined between said rounded peripheries of said stator pole pieces and having a pair of North and South poles in a radial direction; and
a driver circuit connected to said driving coil and including gate means connected to a source of clock pulses to alternately apply two-phase pulses to said driving coil to alternately energize said stator pole pieces in North and South polarities for thereby causing said rotor to rotate in a normal direction, and circuit means connected to switch means and responsive to a switching signal delivered therefrom to cause said gate means to change the order of supply of said two-phase pulses being applied to said driving coil within a predetermined time interval for thereby permitting the reverse rotation of said rotor.

4,066,948

CONCENTRATION MEASURING APPARATUS AND PROCESS

Roger M. Hawk, Mentor, and Thomas A. Mitchell, Painesville, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Nov. 20, 1975, Ser. No. 633,954
Int. Cl.² G01N *27/42*
U.S. Cl. 324—30 R **21 Claims**



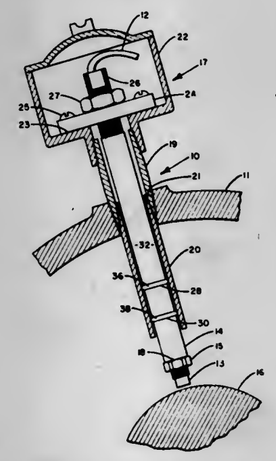
1. A concentration measuring apparatus comprising:
a means for generating a monochromatic alternating wave having a known power;
means for passing the wave through a liquid solution operatively connected to the means for generating; the means for generating including an electrode located in the solution for tranmission of the wave into the solution; the solution absorbing some of the power of the wave in an amount which is dependent on the concentration of the solution;
means for measuring an indication of the power of the alternating wave after passing through the solution operatively connected to the means for passing in order to determine the difference between the power of the wave before it is passed through the solution and after and thus determine the amount of power of the wave absorbed by the solution at a known temperature.

4,066,949

PROBE HOLDER FOR A MACHINE BODY POSITION SENSOR, WITH MEANS TO INCREASE ITS NATURAL FREQUENCY

Edward J. Condrac, East McKeesport, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 2, 1976, Ser. No. 720,012
Int. Cl.² G01R *33/12*
U.S. Cl. 324—262 **1 Claim**



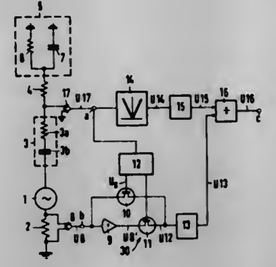
1. In an assembly for holding a sensing device operable to electrically observe the position of a body contained within a rotary machine over a defined air gap, including a mounting structure secured to the outside of the machine and having a generally elongated cylindrical housing section extending through an opening in said machine, the improvement comprising:
a removable probe holder supported in cantilevered fashion within said mounting structure, the elongated free end of said holder extending substantially coaxial within said elongated housing section and terminating in closely spaced relation to said observed body, said holder having a pair of spaced circumferentially extending grooves formed on the outer surface thereof in proximity to said free end thereof, said grooves being relatively closer to the free end of said holder than to the supported end thereof, the space between said grooves being at least three-fourths of an inch, each of said grooves having a resilient ring provided therein, with the outer surface of each of said resilient rings being in contact with the inner surface of said housing section to provide a resilient support structure for said holder within said housing said rings being designed to increase the natural frequency of the holder above the second harmonic of the maximum machine running speed.

4,066,950

CIRCUIT FOR MEASURING THE GROUND RESISTANCE OF AN UNGROUNDED POWER CIRCUIT

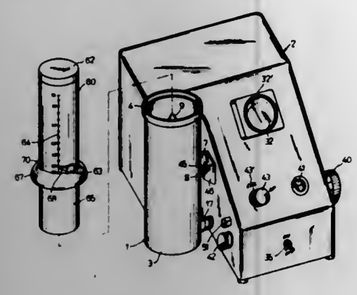
Gerhard Rumold, Bubenreuth, and Georg Russ, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 9, 1976, Ser. No. 721,852
Claims priority, application Germany, Sept. 25, 1975, 2542811
Int. Cl.² G01R *31/02, 27/08*
U.S. Cl. 324—51 **5 Claims**



1. A circuit arrangement for measuring the ground resistance of an ungrounded power circuit comprising:
a. a series circuit containing an ac voltage generator, a measuring resistor and a coupling member, coupled between the ungrounded power circuit and ground; and
b. an evaluating circuit, having inputs coupled respectively to the point at which said series circuit is coupled to said ungrounded power circuit and across said measuring resistor to provide first and second voltage inputs proportional respectively to the voltage at said ungrounded power circuit and the current through said measuring resistor, for determining the ratio of the components of said voltage and current which are in phase with each other, said evaluating circuit comprising:
1. an absolute magnitude circuit having as its input said first measured voltage;
2. a mean forming circuit having the output of said absolute value circuit as an input;
3. a phase sensitive rectifier circuit having as its input said second measured voltage, said rectifier circuit also coupled to said first measured voltage and providing at its output the portion of said second measured voltage which is in phase therewith;
4. a second mean forming circuit having at its input the output of said phase sensitive rectifier circuit; and
5. a divider having as inputs the outputs of said first and second mean forming circuits and providing an output which is one of the ground resistance and ground conductance of the circuit being measured.

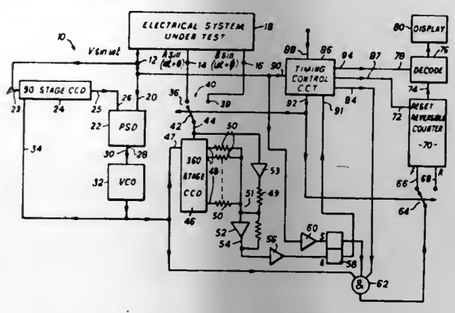
4,066,951
APPARATUS FOR CALIBRATING MOISTURE MEASURING INSTRUMENT
Robert O. Wang, 2744 S. 61st St., Milwaukee, Wis. 53219
Filed Oct. 4, 1976, Ser. No. 729,128
Int. Cl.² G01R *27/26*
U.S. Cl. 324—61 R **22 Claims**



1. In combination:
an instrument for measuring the moisture content of a sample of material;
said instrument comprising a test cell including a pair of spaced apart electrodes, one of said electrodes having the form of a hollow container open at one end and the other of said electrodes being disposed within said container, a meter providing a readout indicative of said moisture content, and adjustable means selectively operable for recalibrating said instrument to ensure that said meter provides a correct readout;
and apparatus for indicating whether or not said instrument is properly calibrated so that said adjustable means may be selectively operated to effect recalibration, if necessary, said apparatus comprising:
a removable member for insertion between the electrodes of said test cell;
means between said member and at least one of said electrodes for frictionally maintaining said member inserted in a predetermined position between said electrodes;
a pointer having a predetermined position with respect to said test cell; and
scale means on said member for cooperation with said pointer to indicate the extent to which said member is inserted between said electrodes and providing a readout on said scale correlated to the readout of the meter of said instrument when said instrument is properly calibrated and facilitating adjustment of said adjustable means to effect recalibration if said readout on said scale does not correlate to said readout of said meter.

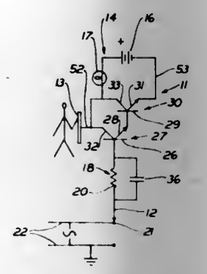
4,066,952
PHASE MEASURING APPARATUS
Anthony John Ley, New Canaan, Conn., assignor to The Solartron Electronic Group Ltd., Hampshire, England
Filed July 9, 1976, Ser. No. 703,733
Claims priority, application United Kingdom, July 12, 1975, 29386/75
Int. Cl.² G01R *25/00*
U.S. Cl. 324—83 D **18 Claims**

1. Apparatus for measuring the phase difference between two electrical signals having the same frequency *f*, one of which is a reference signal and the other of which may be contaminated by harmonics, comprising:
circuit means responsive to the reference signal for generating clock pulses at a frequency which is a predetermined multiple of the frequency *f* of the reference signal;
a transversal filter for receiving and filtering the other signal to produce a filtered output signal, the filter comprising an N-stage charge-coupled device for receiving and sampling the other signal in combination with summing means arranged to generate the filtered output signal by receiving and summing respective weighted signals each derived from a respective stage of the charge-coupled device, the charge-coupled device being clocked in dependence upon the clock pulses at a rate equal to N times *f* and the weights of said weighted signals being selected in accordance with a predetermined function such that the transversal filter substantially reduces the harmonics in said other signal;



means responsive to the reference signal for generating a first timing signal at a predetermined point in each cycle thereof;
means responsive to said output signal of the transversal filter to produce a second timing signal at a point in each cycle thereof corresponding to said predetermined point; and
means for determining the number of clock pulses between said first and second timing signals, said number being representative of the phase difference between the reference signal and the other signal.

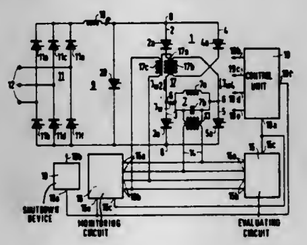
4,066,953
COMBINATION HIGH IMPEDANCE CONTINUITY AND VOLTAGE INDICATING INSTRUMENT
Charles Gold, Hallandale, Fla., assignor to Lawrence Gold, Berkeley, Calif., a part interest
Continuation of Ser. No. 512,191, Oct. 7, 1974. This application Nov. 3, 1976, Ser. No. 738,443
Int. Cl.² G01R *1/30, 31/02*
U.S. Cl. 324—123 R **3 Claims**



1. An electric testing instrument comprising:
an amplifier circuit having a pair of input terminals comprising a probe and a second terminal adapted for manual engagement by the user for completing an input circuit through the body of the user, and an output circuit comprising in series a collector, an emitter, a battery and a current responsive indicator;
said second terminal being connected to the side of said battery connected to said collector and having a polarity opposite to said emitter;

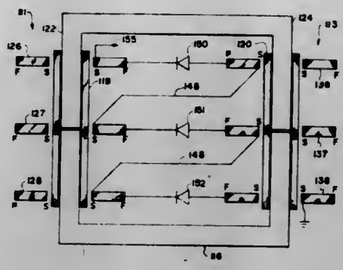
said indicator providing a manually discernible signal at and above an operating current flow in said output circuit, said amplifier having a gain of at least about 25,000 and providing said operating current flow in said output circuit when said input circuit is biased with an input current as low as about 1 microampere;
said input circuit providing said input current derived solely from said battery when said input terminals are connected across a resistance as high as at least 1 megohm, said input circuit providing said input current when said probe is connected to a conventional live power line providing approximately 110 volts AC and said second terminal is manually engaged.

4,066,954
FREQUENCY CONVERTER
Lovro Vukasovic, and Janos Raduka, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Sept. 15, 1976, Ser. No. 723,548
Claims priority, application Germany, Sept. 18, 1975, 2541701
Int. Cl.² H02M *1/18*; H02H *7/122*
U.S. Cl. 363—37 **10 Claims**



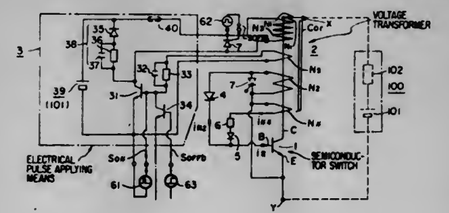
1. In a frequency converter comprising an inverter with thyristors in a bridge circuit, the a-c outputs of which are connected to a resonant circuit and the d-c inputs of which are connected to an a-c voltage source, via an intermediate d-c link with a smoothing choke and a controlled rectifier and having a voltage sensor for determining the resonant circuit voltage and a current sensor for determining the inverter output current, the outputs of which are inputs to evaluating circuit, the output of which is connected to the control unit for the thyristors of the inverter, which evaluating circuit determines by means of a trigger pulse, prior to every zero crossing of the resonant circuit voltage, a firing instant for thyristors of diagonal bridge arms of the inverter, the position of which depends on the commutation time of the inverter and the protection time of the thyristors, the improvement comprising:
a. the current sensor being one which measures and adds up to an ac current the currents in bridge arms with a common d-c terminal; and
b. a monitoring circuit having as inputs the outputs of the current and the voltage sensor and developing at its output a pulse if, between a firing instant (t_z) and the corresponding zero crossing (t_n) of the resonant circuit voltage, the inverter output current and the resonant circuit voltage remain in phase or developing said pulse if said current and voltage are in phase opposition after the zero crossing.

4,066,955
HIGH VOLTAGE TRANSFORMER WINDING ASSEMBLY WITH MULTIPLE FREQUENCY TUNING
Charles E. Suthers, Chesapeake, Va., assignor to General Electric Company, Portsmouth, Va.
Filed Dec. 29, 1975, Ser. No. 645,012
Int. Cl.² H01F *35/00*
U.S. Cl. 363—68 **6 Claims**



1. In a television receiver, a transformer for providing substantially rectangular shaped high-voltage output pulses to the cathode ray tube of said television receiver in response to input pulses, said transformer comprising:
a magnetic core having at least a pair of legs,
a primary winding mounted on at least one of said legs and responsive to said input pulses to produce magnetic flux in said core,
a high voltage winding assembly comprised of first and second subassemblies of windings, each subassembly being mounted on one of the legs of said core,
means interconnecting the windings of said first and second subassemblies to form a plurality of winding pairs, each winding pair being comprised of a winding of said first subassembly and a winding of said second subassembly, the interconnection being such that said windings are connected in series aiding relationship,
said pair of legs and the subassemblies mounted thereon being spaced from each other by a distance selected to enhance the leakage inductance to produce substantially rectangular output pulses from said high voltage winding assembly.

4,066,956
SEMICONDUCTOR SWITCH DEVICE HAVING MEANS FOR SUPPLYING CONTROL CURRENT TO A CONTROL ELECTRODE
Masahikò Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed July 12, 1976, Ser. No. 704,533
Claims priority, application Japan, Sept. 12, 1975, 50-111315
Int. Cl.² H02M *7/537*
U.S. Cl. 363—131 **13 Claims**



1. A semiconductor switch device comprising: a semiconductor switch having at least one pair of control electrodes and at least one pair of main electrodes, the control electrodes being supplied with a control current while the semiconductor

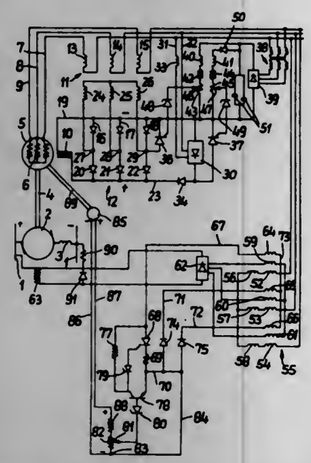
switch is maintained conductive between said main electrodes, and the main electrodes being serially inserted in a current path; and a transformer having a first conductor responding to a current passing said current path, a second winding connected to said control electrodes, a third winding producing a magnetomotive force reverse to that produced across said first conductor, and a fourth winding producing a control current to said control electrodes by induction from said third winding, the third winding being equipped with an electrical pulse applying means capable of causing said third winding to produce said reverse magnetomotive force.

4,066,957

CONTROL ARRANGEMENT FOR CONVERTER

Herbert Seeger, Essen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed June 9, 1976, Ser. No. 694,224
Claims priority, application Germany, June 14, 1975, 2526684
Int. Cl.² H02P 9/04
U.S. Cl. 322—16 **9 Claims**



1. In combination with a converter including a direct current motor having at least one exciter coil, a three-phase generator driven by said motor and having at least one exciter coil, and a circuit including a three-phase transformer, whose input is connected to the three-phase mains connected to the output of said generator, and a series connected three-phase rectifier, for feeding current to at least one of said exciter coils; a control means for controlling a selected parameter of said converter, said control means comprising in combination: at least one closed circuit including the series connection of a secondary winding of said transformer, a controlled thyristor, and two further secondary windings of said transformer which are connected in parallel with each other; and means responsive to said selected parameter for varying the control current of said thyristor to provide a two-point regulation of any saturation current for said transformer flowing through said closed circuit.

4,066,958

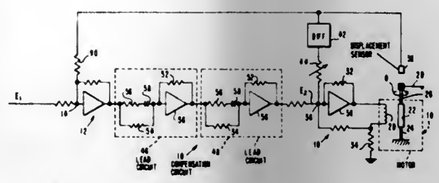
COMPENSATED GALVANOMETER

Edward Burke, Jr., Reading, Mass., assignor to MFE Corporation, Salem, N.H.

Filed June 17, 1976, Ser. No. 697,103
Int. Cl.² G01R 1/14; G01D 11/10
U.S. Cl. 324—125 **5 Claims**

1. A galvanometer of the type comprising a limited displacement motor, an output element displaced by said motor in response to an input signal applied to the galvanometer, and resilient means urging said motor to a neutral position, the galvanometer having a resonant angular frequency, ω_o, said galvanometer further comprising

A. means for essentially critically damping said motor so that the amplitude of the displacement of said output element varies with the frequency of the galvanometer input signal in essentially the same manner as the transfer function of a two-section lag circuit, and



B. a series compensation circuit

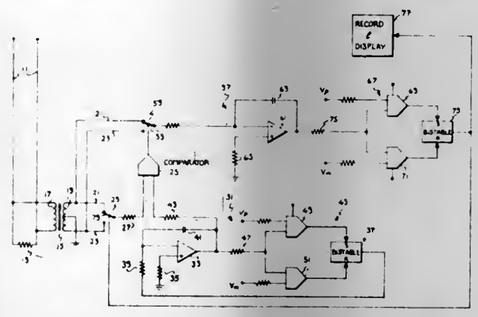
1. connected to pass the galvanometer input signal to said motor,
2. having a double-lead characteristic, and
3. having a break-point angular frequency of ω_o.

4,066,959

ELECTRONIC VOLT-SQUARE-HOUR METERING METHOD AND APPARATUS

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,398
Int. Cl.² G01R 21/06
U.S. Cl. 324—141 **10 Claims**



1. An electronic meter for measuring volts-square-hours in an electrical system comprising:

means for generating first and second analog signals, said signals being proportional to a voltage in said system, and said first analog signal being 180° out-of-phase with respect to said second analog signal,

means for pulse width modulating one of said analog signals to derive a signal having a pulse width proportional to the amplitude of said analog signal,

means for multiplying said pulse width amplitude by said first and second analog signals,

means for integrating the output of said multiplying means to derive a signal proportional to volts-square-hours,

means for converting said signal proportional to volts-square-hours to a pulse train proportional to volts-square-hours, and

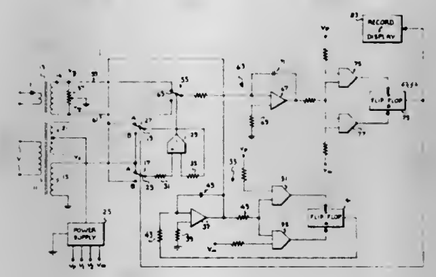
means for alternately coupling said first and second analog signals to said pulse width modulating means every nth time a pulse is generated by said converting means.

4,066,960

ELECTRONIC KILOWATT-HOUR-METER WITH ERROR CORRECTION

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,298
Int. Cl.² G01R 21/06
U.S. Cl. 324—142 **7 Claims**



1. An electronic meter for measuring energy consumed in an electrical system comprising:

means for generating first and second analog signals, said signals being proportional to a current in said system, and said first analog signal being 180° out-of-phase with respect to said second analog signal,

means for generating a third analog voltage proportional to a voltage in said system,

means for generating a relatively high frequency triangular waveform signal,

a comparator having an in-phase input and an inverting input,

switching means for selectively coupling said triangular waveform to one input of said comparator and said third analog signal to the other input of said comparator, the output of said comparator being a pulse width modulated signal having a pulse width proportional to the amplitude of the third analog signal,

means for multiplying said pulse width modulated output signal of said comparator with a signal proportional to said first and second current proportional analog signals, the output of said multiplier having an amplitude proportional to the electrical current in said system and having a pulse width proportional to the amplitude of the voltage in said system,

an integrator, said integrator being connected to the output of said multiplier, the output of said integrator being proportional to the energy consumed in said system,

a pulse generator, the input of said generator being connected to said integrator to thereby convert the output of said integrator to a pulse train, each pulse being proportional to energy consumed in said system,

means connected to said pulse generator for recording and displaying the energy consumed in said electrical system, and

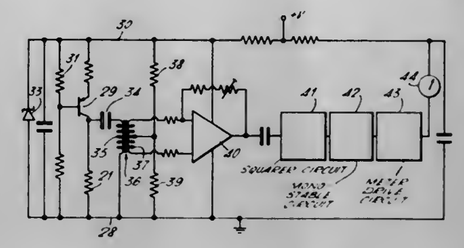
error correction means responsive to the output pulses of said generator for operating said switching means to reverse the input terminals of said comparator to which said triangular waveform signal and said third analog signal are connected to thereby correct offset integration errors in said meter.

4,066,961

SPEED SENSING

Dominic Paul Edmund Barnard, Witney, England, assignor to Smiths Industries Limited, London, England

Filed Feb. 4, 1976, Ser. No. 655,186
Claims priority, application United Kingdom, Feb. 5, 1975, 4975/75
Int. Cl.² G01P 3/46
U.S. Cl. 324—163 **7 Claims**



1. Speed sensing apparatus for a diesel engine in which air is intermittently drawn into a combustion chamber through a hot inlet of the engine, the air being warmed by the hot inlet comprising,

a temperature-responsive device which has an electrical characteristic that varies in accordance with the temperature of the air in said hot inlet

means supporting said device in said inlet of the diesel engne,

said device being of the kind which has a response time to temperature variations permitting its said electrical characteristic to vary in accordance with the cyclical variations in the temperature of the air in said hot inlet occurring upon each revolution of the engine,

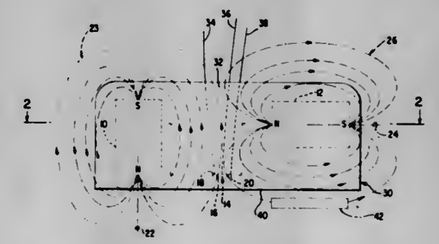
and means responsive to said variation of said electrical characteristic of said device for deriving a signal indicative of engine speed.

4,066,962

METAL DETECTING DEVICE WITH MAGNETICALLY INFLUENCED HALL EFFECT SENSOR

Wolfgang Jaffe, Roselle Park, N.J., assignor to The Singer Company, New York, N.Y.

Filed Dec. 8, 1976, Ser. No. 748,434
Int. Cl.² G01R 33/12
U.S. Cl. 324—208 **5 Claims**



1. The combination comprising a pair of permanent bar magnets and a solid state Hall effect sensor including input and output leads, the magnets and sensor being disposed in fixed spatial relationship and held in assembled relationship in a binder, the sensor being located between the magnets in a position wherein the broad plane of the sensor is parallel to an exposed surface of the binder and the magnets having their axes mutually perpendicular but parallel and perpendicular respectively with respect to said plane of the sensor in positions wherein flux from the magnets at least partially cancel-

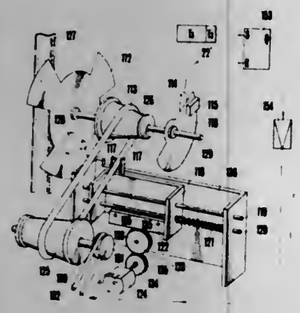
ling in the sensor, and a ferrous element relatively movable with respect to the sensor and magnets in a direction parallel to the broad plane of the sensor and effectively thereby to control voltage across the output leads during the application of a constant voltage to the input leads.

4,066,963

SYNCHRONIZATION SYSTEM OF THE CINE-PROJECTOR WITH THE SOUND TAPE REPRODUCER

Kiyoshi Takahashi, Kunitachi; Hiroyuki Takimoto, Tokyo; Takashi Yamada, Yokohama; Takashi Itani, Yokohama; Akira Ashida, Yokohama, and Kuniyoshi Suzaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1976, Ser. No. 667,448
Claims priority, application Japan, Mar. 24, 1975, 50-35178
Int. Cl.² G03B *31/00*
U.S. Cl. 352—12 **11 Claims**



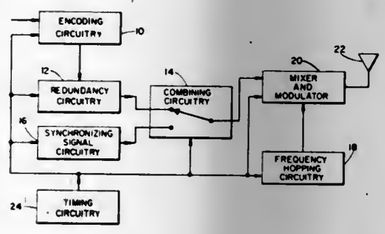
1. An improvement in a synchronization system, comprising:
1. sound tape reproducing apparatus for providing sound information, said apparatus including a signal generating means for producing a signal with a frequency corresponding to the tape speed;
2. a control means having at least two input terminals for receiving the output signals respectively emitted from various signals generating sources and one output terminal for detecting the phase difference of said two signals respectively received in said two input terminals to provide the output signals corresponding to said phase difference, one input terminal of said apparatus adapted to receive the output signal corresponding to the signal generating means of said sound tape reproducing apparatus;
3. a picture projection apparatus for providing picture information, said apparatus including:
a driving means including a motor of substantially constant speed of revolution at all times, and a rotary shaft driven by said motor,
a film feeding means,
a signal generating means for producing signals with a frequency corresponding to the film feeding speed of said film feeding means, signals generated in said signal generating means adapted to be supplied to the other input terminal of said control means,
a driven means having a rotary shaft to be actuated by a driving force of said driving means so as to operate said film feeding means;
4. a means for transmitting the rotational motion of the rotary shaft mounted on said driving means to the rotary shaft of said driven means as well as for optionally varying the transmission ratio of the rotational motion, said means including:
a pair of cone pulleys arranged to be inversely tapered off in a trapezoidal profile form with respect to each other, one of said cone pulleys being fixedly mounted on the rotary shaft of said driving means while the other of which is fixedly mounted on the rotary shaft of said driven means,
an endless belt stretched around said two cone pulleys,
a variable means for varying the position of said endless belt stretched around each of said cone pulleys; and
5. an operating means for actuating said variable means corresponding to the output of said control means, said operating means having the input terminal connected with the output of said control means and an output terminal connected with the input terminal of said variable means.

4,066,964

COMMUNICATION SYSTEM

Samuel T. Costanza, Santa Ana; Peter G. Franklin, San Marino; Frank L. Gebhardt, La Habra, all of Calif.; Jack D. Israel, Fort Wayne, Ind.; Charles R. Moore, Balboa Island, and Charles E. Wheatley, III, Manhattan Beach, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 6, 1967, Ser. No. 607,854
Int. Cl.² H04B *7/12*
U.S. Cl. 325—55 **54 Claims**



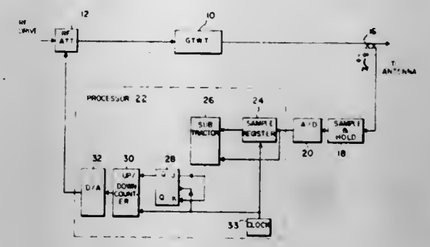
1. A communication system comprising:
A. a plurality of stations, selected said stations comprising a receiver, and at least one station comprising a transmitter;
B. means for varying the frequency of each receiver so that each receiver frequency-hops in an individual frequency-hopping sequence, said individual frequency-hopping sequence defining each individual receiver's address;
C. means for generating a transmitter carrier-wave that frequency-hops in the individual frequency-hopping sequence of any selected receiver, said means defining the transmitter's ability to address a transmission to any selected receiver;
D. means for varying the receiver-frequency, so that the receiver searches for a transmission addressed to said receiver;
E. means for stabilizing the receiver-frequency of said receiver, when said receiver finds a transmission addressed to it, to synchronize said receiver operation to said transmission;
F. means for producing a synchronizing-signal at said transmitter and for impressing said synchronizing-signal onto said addressed frequency-hopping carrier wave; and
G. means, activated at the receiver by said synchronizing-signal, for producing an activating-signal that synchronizes the receiver's operation to said synchronizing-signal.

4,066,965

RF GTWT SATURATING CIRCUIT

Leonard J. Schultz, Culver City; Alfred Steven Hamori, Huntington Beach, and Robert Rosen, Granada Hills, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 28, 1976, Ser. No. 727,559
Int. Cl.² H04B *1/04*; H01J *25/34*
U.S. Cl. 325—120 **7 Claims**



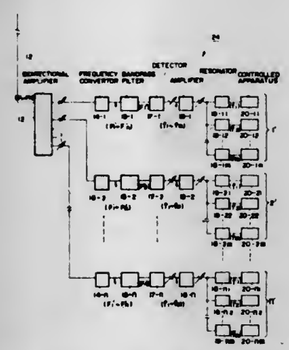
1. A circuit to maintain an RF gridded traveling wave tube in a saturation condition comprising:
an RF drive input;
a variable RF attenuator coupled to said RF drive input;
a gridded traveling wave tube coupled to the output of said variable RF attenuator, said gridded traveling wave tube having an output power which is maximum when said tube operates at its saturation point;
means for sensing the output power of said gridded traveling wave tube, said sensing means comprising sample and hold means coupled to said sensing means to detect the peaks of the output pulses of said gridded traveling wave tube; and
control means coupled to said sample and hold means and said variable RF attenuator for adjusting said variable RF attenuator in accordance with variations of the sensed output power of said gridded traveling wave tube to maintain said tube at its saturation point.

4,066,966

ALARM SYSTEM UTILIZING A BIDIRECTIONAL TRANSMISSION LINE IN CATV SYSTEM

Takeshi Takeuchi, Yokohama, and Hajime Masuda, Tokyo, both of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Apr. 15, 1976, Ser. No. 677,367
Int. Cl.² H04B *1/06*
U.S. Cl. 325—308 **6 Claims**



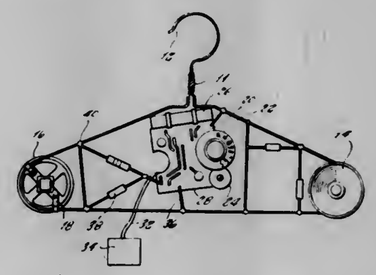
1. A subscription alarm system having locations in group units, utilizing a bidirectional transmission line of a wired television broadcasting system, said system employing a plurality of alarm signal generators located at the subscribers' locations, generating low frequency alarm signals of frequencies common to the respective group units, said frequencies being different for subscribers in given respective group units, each of said alarm signal generators being provided for each subscriber including:
modulator for each of said respective group units, for modulating the low frequency alarm signals of said alarm signal generators with different high frequency carrier signals;
a receiving means coupled to the respective modulators through said bidirectional transmission line, for receiving said modulated alarm signals, said receiving means comprising frequency converting means for converting modulated alarm signals transmitted from said modulators into signals having lower frequencies than the carrier frequencies of said modulated alarm signals,
a plurality of band-pass filters for dividing said modulated alarm signals from said frequency converting means into modulated alarm signals for respective subscriber groups,
a plurality of detectors for demodulating said modulated alarm signals from said band-pass filters and extracting therefrom alarm signals for respective subscriber groups,
a plurality of resonators for separating an alarm signal for each subscriber from said alarm signals of said detectors, and
a plurality of alarm indicators for responding to each alarm signal from each of said resonators.

4,066,967

HANGER RADIO

John Jerome Spina, 57-30 59th St., Maspeth, N.Y. 11378

Filed June 11, 1976, Ser. No. 695,254
Int. Cl.² H04B *1/08*
U.S. Cl. 325—310 **7 Claims**



1. In combination with a metal clothes hanger, a radio receiver comprising the usually known components including a volume control and a selective tuner, an antenna, and at least one loudspeaker; the metal clothes hanger being suitably electrically connected to the radio receiver, and the loudspeaker being mounted to the clothes hanger.

4,066,968

METHOD AND APPARATUS FOR PROVIDING A PERIODIC CONTROL SIGNAL, ESPECIALLY FOR CONTROLLING THE IGNITION OF AN INTERNAL COMBUSTION ENGINE

Serge Guipaud, Saint Papoul, France, assignor to Societe Anonyme pour l'Equipment Electrique des Vehicules S.E.V. Marchal, Issy-les-Moulineaux, France

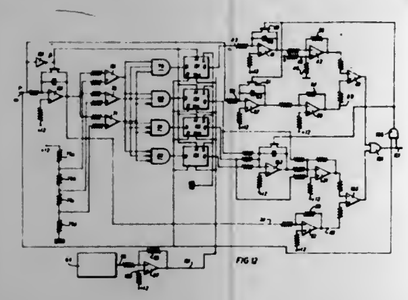
Filed Mar. 27, 1975, Ser. No. 562,844
Claims priority, application France, Mar. 28, 1974, 74.10861; Mar. 29, 1974, 74.11303
Int. Cl.² F02P *5/08*; H03K *5/20*
U.S. Cl. 328—1 **4 Claims**

1. In a method of assuring the periodic initiation of at least one operation in dependence upon at least one parameter, at least one of which parameters is dependent on the speed of rotation of a shaft, and in which said operation must be initi-

ated with a phase displacement with respect to a particular angular position of the shaft relative to a fixed point, the extent of said phase displacement being a function of the speed of rotation of the shaft, and a curve representing the angle of phase displacement as a function of said speed of rotation being a substantially straight line in a predetermined zone, said process comprising the step of

generating a signal $\bar{P}$ for a period $\bar{q}$ the duration of which corresponds to the passage of a rotating sector driven by said shaft and subtending an angle ϕ past said fixed point, the angle ϕ equal to $(2\pi - \phi)$corresponding to the absence of this signal for a period q, during which a signal P may be generated.

the improvement which comprises the steps of generating during one of the periods q and q following the beginning



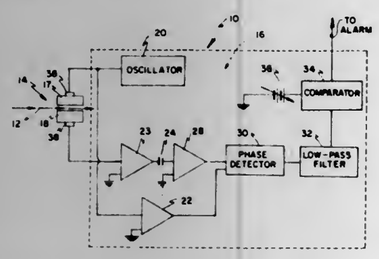
of the signal P, a first voltage which is a linear function of one of said periods, storing this first voltage, generating during one of the succeeding periods a second voltage which is independent of the first and a linear function of the time since the beginning of said succeeding period of time of said signal P, generating a control signal when the second of the said voltages becomes equal to the first, and utilizing this control signal to initiate said operation, and in which the curve of phase displacement as a function of the speed of rotation of the shaft consists of a succession of straight segments and in which a discriminator between speeds is provided which receives at least one of the signals P and P and selects the parameters of the linear function corresponding to the first or the second voltage in dependence on the speed of rotation of the shaft.

4,066,969

MULTIPLE SHEET DETECTING APPARATUS

Phillip W. Pearce, and Robert J. Hutchison, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 22, 1975, Ser. No. 615,651
Int. Cl.² B65H 7/12; G08C 27/00; G08B 21/00
U.S. Cl. 328—5 **8 Claims**



1. Apparatus for detecting the presence of multiple sheets moving along a predetermined path, comprising:

a. means for producing a first time varying electrical signal;

b. first transducer means disposed on one side of the path and responsive to said first time varying signal for producing a time varying ultrasonic signal which impinges upon sheet(s) at a first position along the path;

c. second transducer means disposed on the opposite side of the sheet path and aligned with said first transducer means to receive at least a portion of the ultrasonic wave which impinged upon said sheet(s) for producing a second time varying electrical signal; and

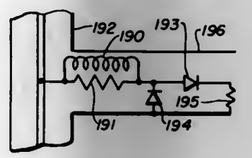
d. phase comparison means responsive to said first and second time varying electrical signals for comparing their phase relationship and producing an output signal when such phase relationship indicates a multiple sheet feed condition has occurred.

4,066,970

PULSE SHAPER FOR COAXIAL CABLE SYSTEM

Jonathan D. Young, Worthington, and Ross Caldecott, Columbus, both of Ohio, assignors to The Ohio State University, Columbus, Ohio

Division of Ser. No. 665,924, March 11, 1976, Pat. No. 4,028,707, which is a continuation-in-part of Ser. No. 437,927, Jan. 30, 1974, Pat. No. 3,967,282. This application Mar. 7, 1977, Ser. No. 775,385
Int. Cl.² H03K 3/86, 3/53
U.S. Cl. 328—67 **5 Claims**



1. For use in conjunction with a high voltage pulse generator of the coaxial tube type wherein a charge is capacitively accumulated at one side of a gap within said tube until dielectric breakdown occurs thereacross to produce an output signal at an opposite side of said gap, said opposite side being connected with a coaxial cable having a central conductor and an outer conductive sheath, said output signal being characterized by a high voltage pulse signal portion of very short duration and a contiguous, subsequent sustained signal portion of substantially lower voltage, the improved generating circuit for forming substantially sustained trigger signals from the two said output signal portions and asserting said trigger signals at a load, said generating circuit comprising:

a resistance connected to said central conductor for acting in voltage dividing relationship with said load for forming a portion of sustained trigger signal; and

a choke coupled in parallel circuit relationship with said resistance for forming another portion of said sustained trigger signal.

4,066,971

VOLTAGE REGULATOR CIRCUIT FOR AN ELECTRON MICROSCOPE

Siemer Siems, 13 Eldwick Court, Potomac, Md. 20854

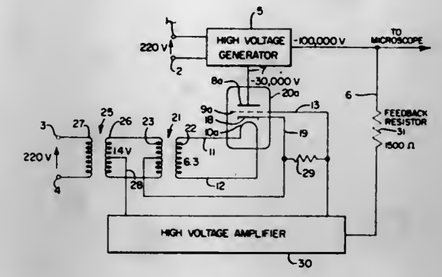
Filed Nov. 24, 1976, Ser. No. 744,865
Int. Cl.² H01J 21/00
U.S. Cl. 328—267 **5 Claims**

1. In a high voltage regulator circuit, especially one adapted for use in an electron microscope, said circuit having a pair of supply voltage terminals across which a supply voltage is supplied, a voltage regulator tube having a plate electrode adapted to be coupled to a high voltage generator, a grid electrode adapted to be coupled to a high voltage amplifier, and a filament, coupled to said pair of supply voltage terminals, for receiving a filament supply voltage,

the improvement wherein

said tube further includes a cathode separate from said filament, and wherein said circuit further comprises

a first transformer having a primary winding connected across said pair of supply voltage terminals and a secondary winding,



a second transformer having a tapped primary winding, connected in parallel with the secondary winding of said first transformer, and a secondary winding connected across the filament of said tube, and

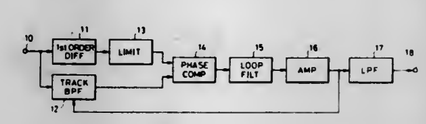
wherein the cathode of said tube is connected to the tapped primary winding of said second transformer.

4,066,972

SYSTEM FOR DEMODULATING ANGLE-MODULATED SIGNALS

Yukinobu Ishigaki, Yamato, and Kohei Sasamura, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 9, 1976, Ser. No. 712,707
Claims priority, application Japan, Aug. 15, 1975, 50-98498; Aug. 15, 1975, 50-98499
Int. Cl.² H03D 3/22
U.S. Cl. 329—134 **9 Claims**



1. A system for demodulating angle-modulated signals comprising:

tracking band-pass filtering means supplied with an angle-modulated input signal, said filter means having a pass band with a center frequency which is variably controlled by a control signal;

first amplitude limiting means for limiting the amplitude of the angle-modulated input signal;

phase-shifting means for establishing a phase difference of 90° between a signal passing through said tracking band-pass filtering means and a signal passing through said amplitude limiting means;

phase comparing means responsive to the 90° phase difference signals for producing an output error signal in accordance with said phase difference;

means responsive to said output error signal for controlling said tracking band-pass filtering means; and

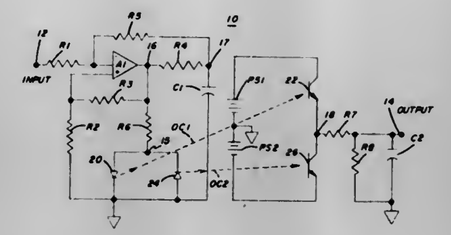
means responsive to said output error signal for deriving a demodulated signal.

4,066,973

ANALOG SIGNAL ISOLATOR

Paul F. McNally, Gibsonia, Pa., assignor to Contraves-Goerz Corporation, Pittsburgh, Pa.

Filed Sept. 15, 1976, Ser. No. 723,496
Int. Cl.² H03F 3/38
U.S. Cl. 330—10 **15 Claims**



12. An analog signal isolator comprising:

an input for receiving an analog signal;

a hysteretic switching device having an input and an output on which are provided a series of pulses in response to the signal applied to its input;

averaging means for providing some averaging of the pulses from said hysteretic switching device;

combining means connected between said input and the input to said hysteretic switching device for combining the signals applied thereto and providing the combined signal to the input of said hysteretic switching device;

feedback means connected between said averaging means and said combining means for providing a negative feedback signal from the averaging means to an input of said combining means;

optical coupling means operably responsive to the series of pulses on the output of said hysteretic switching device for providing a series of pulses, representative of the pulses from said hysteretic switching device, which are electrically isolated from said hysteretic switching device; and,

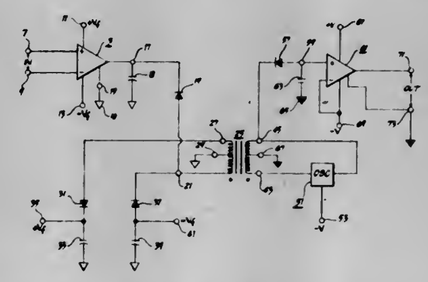
pulse to analog converting means connected to receive the series of pulses from said optical coupling means and converting them to an analog signal which is representative of but electrically isolated from the analog signal applied to said input.

4,066,974

ISOLATION AMPLIFIER

Clyde J. Reinhard, LaHabra, Calif., assignor to The Birtcher Corporation, Los Angeles, Calif.

Filed July 23, 1976, Ser. No. 708,037
Int. Cl.² H03F 3/38
U.S. Cl. 330—10 **4 Claims**



1. An isolation amplifier comprising:

input amplifier means for amplifying an electrical signal, said

input amplifier means having input, output, power supply and input reference ground terminals, the input terminals being adapted to receive an input signal;

output amplifier means for amplifying an electrical signal, said output amplifier means having input, output and output reference ground terminals, said reference ground terminals of said output amplifier means being isolated and independent from said input amplifier means input reference ground terminals;

a transformer having single primary and single secondary windings;

alternator means connected to said secondary winding for alternately presenting a voltage and a high impedance to said secondary winding;

first switching means connected between said primary winding and the output terminal of said input amplifier means for connecting said output terminal of said input amplifier means to said primary winding when said alternator means presents a high impedance to said secondary winding and for disconnecting said output terminal of said input amplifier means from said primary winding when said alternator means presents a voltage to said secondary winding, whereby a signal appearing on said output terminal of said input amplifier means in response to a signal applied to said input terminals is alternately connected to said primary winding; and

second switching means connected between said secondary winding and the input terminal of said output amplifier means for connecting said input terminal of said input amplifier means to said secondary winding when said alternator means presents a high impedance to said secondary winding and disconnecting said input terminal of said output amplifier means from said secondary winding when said alternator means presents a voltage to said winding whereby the signal appearing at said output terminal of said input amplifier is alternately coupled through said transformer to the input terminal of said output amplifier providing signal amplification from said input amplifier means to said output of said output means while isolating said input amplifier means input reference ground from said output amplifier means output reference ground.

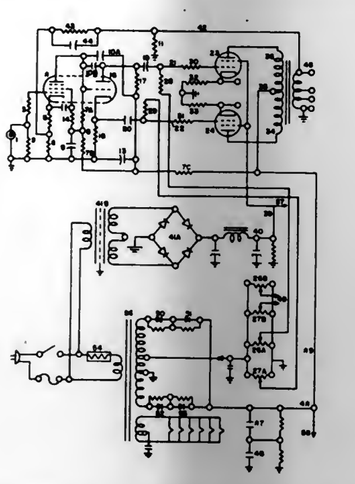
4,066,975

AUDIO AMPLIFIER WITH IMPROVED STABILITY

Walter W. Key, McLean, Va., and Eugene L. Coggins, Malvern, Pa., assignors to Paoli High Fidelity Consultants, Inc., Paoli, Pa.

Filed Sept. 2, 1975, Ser. No. 609,178
Int. Cl.² H03F *1/36, 3/28*
U.S. Cl. 330—81 **2 Claims**

1. In an audio amplifier including a single ended pentode preamplifier stage having a resistive and capacitive anode load and an unbypassed cathode resistive, a split load phase inverter having an anode, a cathode and a control grid, the control grid connected in cascade with the anode of said preamplifier stage, a push-pull power amplifier driven by said phase inverter such that one side of said power amplifier is driven from the cathode of said split load phase inverter and the other side of said power amplifier is driven from the anode of said split load phase inverter, said push-pull power amplifier including an output transformer having two primary windings each connected in one of said sides and a secondary winding from which a negative feedback loop terminates at the un-bypassed cathode resistance of the pentode preamplifier stage, and wherein high frequency parasitics are generated when said amplifier is connected to a loudspeaker which exhibits an impedance which is highly inductive, the improvement wherein said parasitics are substantially reduced by providing



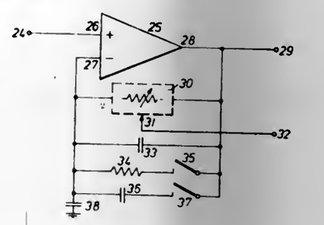
a means of lowering of the effective impedance of the phase splitter, as seen by the input of the push-pull power amplifier.

4,066,976

AMPLIFIER WITH VARIABLE GAIN

Gerhard Dickopp, and Ernst Schröder, both of Hannover, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed July 6, 1976, Ser. No. 703,117
Claims priority, application Germany, July 5, 1975, 2530144
Int. Cl.² H03F *1/36;* H03G *3/20*
U.S. Cl. 330—86 **15 Claims**



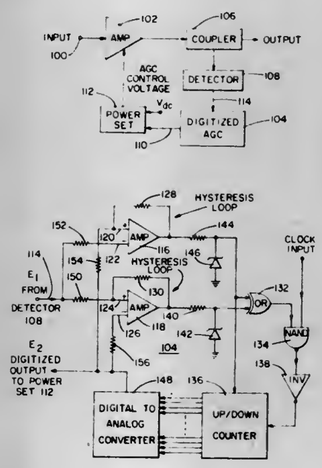
1. In an amplifier circuit arranged to be connected in a useful signal path and having a variable transmission factor and an effective transmission frequency band delimited by a lower limit frequency which can be varied as a function of a control voltage, the circuit including an amplifier member and circuit components defining a feedback path connected between the output of the amplifier member and an input thereof which is inverting with respect to the output signals of the amplifier member, the improvement wherein the components defining said feedback path comprise an electronically voltage-controllable resistor having a control voltage input and a first frequency dependent impedance connected in parallel with said resistor, and said circuit further comprises a second frequency dependent impedance connected between the inverting input of said amplifier member and a point at the circuit reference potential, and means for supplying the control voltage to the control voltage input of said controllable resistor.

4,066,977

DIGITIZED AGC AMPLIFIER WITH GAIN HYSTERESIS CIRCUIT

Ramon P. Chambers, Clearwater; David E. Sanders, St. Petersburg, and Robert S. Gordy, Largo, all of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Mar. 30, 1976, Ser. No. 671,846
Int. Cl.² H03G *3/20*
U.S. Cl. 330—129 **10 Claims**



1. A circuit for providing rapid automatic gain control for large variations in an input signal coupled thereto while concurrently preserving a predetermined low level modulation on said input signal at the output of said circuit, comprising:

AGC amplifier means having said input signal coupled thereto and having at least one output;

means for detecting said amplifier output and for deriving an output variable in amplitude with said detected amplifier output;

means for deriving a control voltage variable in discrete incremental steps in response to said detector output when said detector output variation exceeds a predetermined level;

means for coupling said control voltage to said AGC amplifier to provide automatic gain control,

said means for deriving a control voltage further comprising:

comparator means having two stable states and having a predetermined gain hysteresis range for changing from one of said stable states to the other of said stable states when said detector output variation exceeds said gain hysteresis range, and having an output;

means for deriving a clock input;

counter means;

logic means responsive to said comparator output for gating said clock to said counter means;

digital to analog converter means responsive to said counter for incrementally increasing or decreasing said control voltage in discrete steps; and

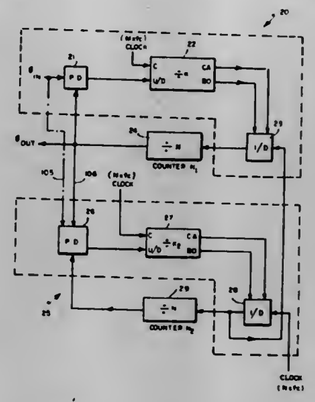
a feedback loop for sensing the output of said digital to analog converter and coupling said output to the reference input of said comparator.

4,066,978

DIGITAL PHASE-LOCKED LOOP FILTER

Duncan B. Cox, Jr., Manchester, and William H. Lee, Boston, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Division of Ser. No. 512,733, Oct. 7, 1974, Pat. No. 4,019,153.
This application Jan. 24, 1977, Ser. No. 761,853
Int. Cl.² H03B *3/04*
U.S. Cl. 331—1 A **8 Claims**



1. A phase processing system for filtering an input signal to produce a filtered output signal comprising

a plurality of successively interconnected phase-locked loops, each of said loops including

means responsive to first and second signals for producing a phase detected output signal representing the phase difference between said first and second signals;

means responsive to said phase detected output signal and a first clock signal for digitally integrating said phase detected output signal to generate a first control signal whenever the value of said integrated signal reaches a first preselected level and to generate a second control signal whenever the value of said integrated signal reaches a second preselected level;

means responsive to said first and second control signals and to a second clock signal for controllably changing the number of pulses from said second clock signal in accordance with the generation of said first or second control signal to produce an intermediate clock signal;

means responsive to said intermediate clock signal of said pulse changing means signal for producing said second signal;

the first signal of the first one of said successively connected loops being said input signal and the second signal of said first of said successively connected loops being said filtered output signal;

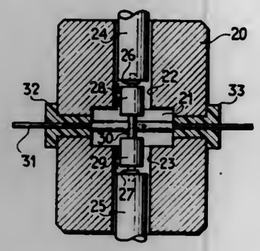
the first signal of each of the remaining ones of said successively inter-connected loops being a signal selected from the pair of signals comprising the first signal and the second signal of the preceding loop;

a reference clock means for producing a reference pulse clock signal having a fixed frequency;

the first clock signal of each of said loops having a preselected frequency determined by the frequency of said reference pulse clock signal;

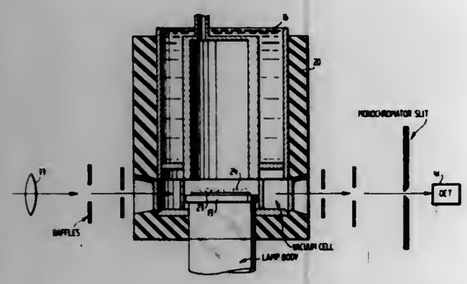
the second clock signal of the last of said successively connected plurality of loops having a preselected frequency determined by the frequency of said reference pulse clock signal and the intermediate clock signal of each of said loops except the first one of said loops being connected as the second clock signal of the pulse changing means in each preceding loop.

4,066,979
NEGATIVE RESISTANCE MICROWAVE CIRCUIT COMPRISING ONE OR MORE PAIRS OF DIODES
Felix Diamand; Guy Bourrabier, and Robert Antoine, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Nov. 18, 1976, Ser. No. 742,878
Claims priority, application France, Nov. 21, 1975, 75.35650
Int. Cl.² H03B 7/14
U.S. Cl. 331—56 4 Claims



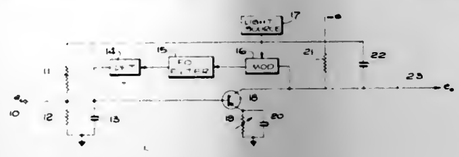
1. A negative-resistance microwave circuit comprising one wave-guide and at least a pair of chambers (22,23) with conductive walls forming a symmetrical arrangement in the right section plane (21) of said wave-guide, each chamber communicating with said wave-guide, and containing means (28, 29, 30) for supporting and polarizing a negative-resistance diode (26,27), said polarizing means forming with the walls of each chamber a coaxial line portion.

4,066,980
THIN FILM EXCITATION
Robert A. Young, R.R. No 2, Loretto, Canada
Filed July 9, 1975, Ser. No. 594,356
Int. Cl.² H01S 3/05
U.S. Cl. 331—94.5 G 6 Claims



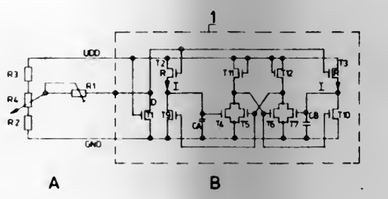
1. A device to produce and test a thin film of excited gas or liquid comprising
a helium resonance lamp having an emission at 584A;
an elongated window in said lamp of a material and design to be partially transparent to radiation at 584A;
a chamber surrounding said elongated window;
means for supplying a predetermined gas mixture containing helium to said chamber;
further windows located in the wall of said chamber adjacent to and spaced from said elongated window, said windows being transparent to emission emanating from the gas adjacent to the elongated window; and
the atmosphere in the space between said elongated window and said further windows having a predetermined optical transmission characteristic.

4,066,981
EMP RESISTANT OSCILLATOR WITH FIBER OPTIC FREQUENCY DETERMINING MEANS
Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 2, 1976, Ser. No. 746,797
Int. Cl.² H03B 5/02
U.S. Cl. 331—108 B 8 Claims



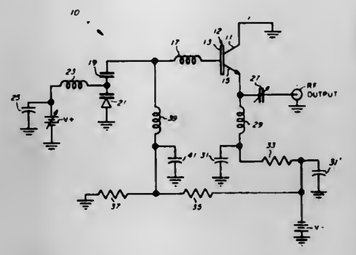
1. An oscillatory circuit comprising:
at least one gain producing element having an input and an output;
at least one feedback path connected between said input and said output of said gain producing element;
and frequency determining means within said feedback path comprising, at least one electric-to-optical transducer responsive to said output of said gain producing element, at least one fiber optic filter responsive to light signals from said transducer, and an optical-to-electric transducer responsive to said fiber optic filter, said fiber optic filter providing a phase shift within said feedback such as to produce positive feedback.

4,066,982
OSCILLATOR CIRCUIT COMPRISING INTEGRATED MIS FIELD-EFFECT TRANSISTORS
Klaus D. Strohl, Freiburg im Breisgau, Germany, assignor to ITT Industries, Incorporated, New York, N.Y.
Filed Mar. 11, 1977, Ser. No. 776,674
Claims priority, application Germany, Mar. 30, 1976, 2613421
Int. Cl.² H03K 3/283
U.S. Cl. 331—111 2 Claims



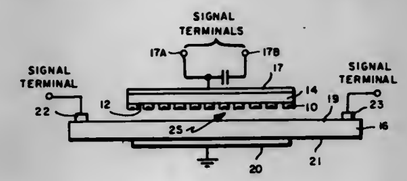
1. An oscillator circuit including temperature compensating means and means for coupling said oscillator circuit to an external power source having an internal resistance, comprising:
an RS flip-flop having first and second inputs;
first and second capacitors for coupling said first and second inputs respectively to ground;
first and second inverters, each containing a load transistor, said first and second inputs each controlled by one of said load transistors; and
a first transistor for providing temperature compensation of the oscillator frequency, said first transistor having a source electrode coupled to ground, a gate electrode coupled to a first source of supply voltage and a drain electrode coupled to the gate electrodes of said load transistors and to said external power source, said first transistor having a drain-source resistance in the order of the internal resistance of said external power source.

4,066,983
VOLTAGE CONTROLLED CLAPP OSCILLATOR HAVING OUTPUT ISOLATED FROM TUNED CIRCUIT
Zvi Gallani, Bedford, and Joseph A. Sullivan, Tewksbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Dec. 2, 1976, Ser. No. 746,775
Int. Cl.² H03B 5/12
U.S. Cl. 331—117 R 2 Claims



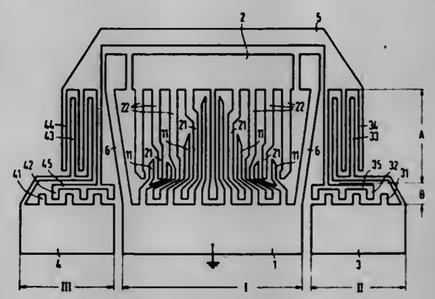
1. A voltage tunable oscillator comprising:
a. a transistor having first, second and third electrodes, said first electrode being grounded;
b. means connected to said second electrode and comprising an inductor, a capacitor and a varactor to form a resonant circuit across the interelectrode capacitance between said first and said second electrodes;
c. a feedback circuit comprising the interelectrode capacitance between said first and third electrodes;
d. an output circuit connected to said third electrode and including a variable capacitor for matching the impedance of said output circuit; and
e. means for biasing said second and third electrodes and for controlling the capacitance of the varactor thereby to control the frequency of operation.

4,066,984
SURFACE ACOUSTIC WAVE DEVICES FOR PROCESSING AND STORING SIGNALS
Ernest Stern, 31 Oxbow Road, Concord, Mass. 01742, and Kjell A. Ingebrigtsen, Einar Ofstis vei 27, 7000 Trondheim, Norway
Filed Aug. 11, 1976, Ser. No. 713,497
Int. Cl.² G06F 15/34; G06G 7/19; H01L 29/48; H03H 9/30
U.S. Cl. 333—30 R 17 Claims



1. A device for processing and storing signals comprising
a first piezoelectric substrate capable of propagating acoustic wave signals on a selected surface thereof;
at least one transducer means formed on said selected surface for generating surface acoustic waves travelling on said surface along a selected direction thereof in response to electrical signals;
a semiconductor material positioned so as to have a first surface thereof adjacent and spaced from said selected surface of said first substrate to form an interaction region which includes the region at or near said surfaces and the spatial region therebetween;
an array of diode elements disposed at said first surface;
an array of islands corresponding to and disposed over said diode elements and regions adjacent thereto, said islands being formed of a highly resistive material;
a layer of conductive material disposed on a second surface of said semiconductor material, said layer forming an electrode;
at least one means for providing a signal at said at least one transducer means to produce at least one travelling acoustic wave signal along said selected surface of said first substrate; and
means for applying a second signal uniformly over said interaction region to provide time-varying properties thereof for the interaction of said at least one signal and said second signal thereby producing a spatial charge variation among said diodes so as to provide an altered stationary conductivity pattern in said semiconductor material as said acoustic wave signal travels along said selected surface of said first substrate, said altered stationary conductivity pattern being stored in said semiconductor material and representing said interacted at least one and second signals.

4,066,985
TELEVISION IF FILTER CONSTRUCTED IN ACCORDANCE WITH THE SURFACE WAVE PRINCIPLE
Wilhelm Kuny, Gruenwald, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed June 2, 1976, Ser. No. 692,223
Claims priority, application Germany, June 3, 1975, 2524649
Int. Cl.² H03H 9/04, 9/26, 9/32; H01L 41/10
U.S. Cl. 333—72 6 Claims



1. A television IF filter in accordance with the surface wave principle, comprising:
a piezoelectric substrate,
an input transducer and a pair of output transducers constructed in toothed interdigital form, said output transducers arranged symmetrically of said input transducer and all three carried on the same surface of said substrate,
said input transducer comprising a main section and a subsidiary section electrically and mechanically connected in parallel with said main section,
said main section tuned to the center IF frequency and includes teeth having a variable overlapping range corresponding to the function $y = \sin x/x$,
said subsidiary section having a tuned resonance to produce a step in the filter curve at the sound carrier frequency,
each of said output transducers comprising a main section and a subsidiary section each tuned to the resonance of the corresponding input transducer sections,
said output transducers connected in series with each other and said main and subsidiary sections of each of said output transducers connected in parallel,
said main and subsidiary sections of each of said output transducers comprising teeth having a constant overlapping range,
the length of said teeth of said subsidiary sections being less than the length of said teeth of said main sections in accordance with the level different at the sound and picture

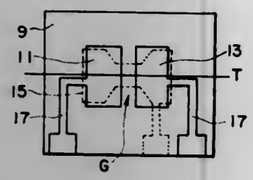
carrier frequency, respectively, of the pass characteristic curve.

4,066,986

TRAPPED ENERGY PIEZOELECTRIC FILTER

Katsuyoshi Takano, Tokyo; Masafumi Matsumoto, Kawagoe, and Kimihiko Orikasa, Sakado, all of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Nov. 29, 1976, Ser. No. 745,750
Claims priority, application Japan, Dec. 1, 1975, 50-143690
Int. Cl.² H03H *9/04, 9/20, 9/32*
U.S. Cl. 333—72 **6 Claims**



1. In a trapped energy type of electrical band pass filter including a polarized piezoelectric wafer, input and output electrodes secured to one major surface of the wafer, having like planar configurations, and spaced apart from each other at their adjacent edges by a constant width gap, and a planar ground electrode secured to the opposite major surface of the wafer and generally underlying the input and output electrodes, the improvements characterized by:

a. The configuration of the ground electrode being symmetrical about a longitudinal center line passing through the centers of the input and output electrodes, and about a transverse center line passing through the gap, and

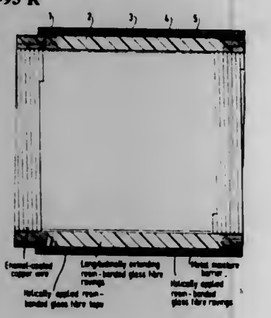
b. The width W_1 of the ground electrode in the area underlying the gap being different from the width W_2 thereof in the area underlying the center portions of the input and output electrodes.

4,066,987

ELECTROMAGNETIC WAVEGUIDES

Alexander Joseph Moore, Marlow; David Alexander Taylor, Kenton, and David James Greene, Harrow, all of England, assignors to BICC Limited, London, England

Claims priority, application in United Kingdom Mar. 29, 1974, 14175/74
Filed Mar. 25, 1975, Ser. No. 561,979
Int. Cl.² H01P *3/12*
U.S. Cl. 333—95 R **6 Claims**



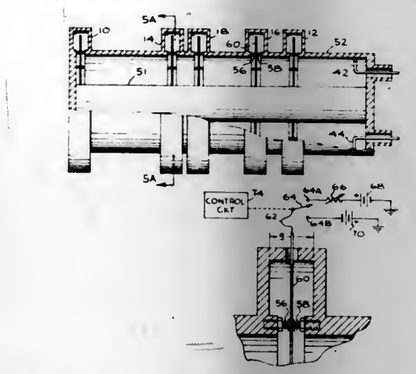
1. An electromagnetic waveguide comprising a circumferential electrically conductive layer and, surrounding the electrically conductive layer, a reinforcing wall comprising at least one layer of reinforcing elements bonded with resin, wherein reinforcing elements of said layer of the reinforcing wall extend substantially parallel to the axis of the waveguide throughout substantially the whole of its length.

4,066,988

ELECTROMAGNETIC RESONATORS HAVING SLOT-LOCATED SWITCHES FOR TUNING TO DIFFERENT FREQUENCIES

Arthur Karp, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Sept. 7, 1976, Ser. No. 720,556
Int. Cl.² H01P *7/04, 7/06, 1/20*
U.S. Cl. 333—82 B **15 Claims**



1. An electronically tunable waveguide resonator comprising:

walls defining an elongated waveguide resonator,

each of a plurality of means forming an inductive slot at said walls, said plurality of means being spaced along said walls at predetermined locations, along the axis of said waveguide resonator and each slot being substantially an annular slot about the axis, and

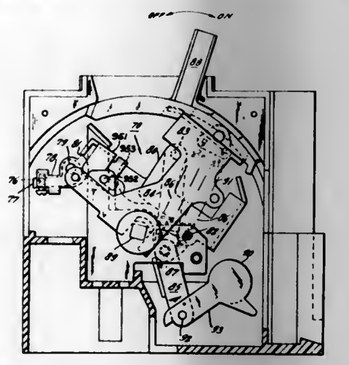
switch means for selectively shorting each of said plurality of means forming an inductive slot for altering the frequency tuning of said waveguide resonator.

4,066,989

TRIP UNIT TIE BAR HAVING INTEGRAL FLEXIBLY CONNECTED LINKS

Keith T. Krueger, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Apr. 28, 1976, Ser. No. 681,245
Int. Cl.² H01H *75/00, 77/00*
U.S. Cl. 335—9 **13 Claims**



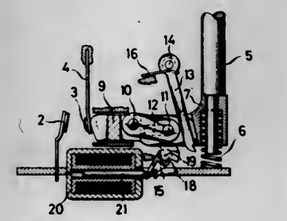
1. A multipole circuit breaker including cooperating contact means for each pole thereof, an operating mechanism operatively connected to said contact means, latch means for maintaining a releasable portion of said operating mechanism in a reset position wherein said operating means is effective to close said contact means, an automatic trip means including an individual overload sensing means for each of said poles, said automatic trip means including a common trip bar means comprising a single elongated plastic element, said element including first means defining a pivot axis for said trip bar means, second means operatively connected to said latch means, third means for each of said poles extending laterally from joining locations remote from said axis into operative engagement with said automatic trip means whereby operation of the latter is effective to pivot said trip bar means about said pivot axis causing said second means to trip said latch means to release said portion whereby said operating mechanism opens said contact means, said element also including an elongated bar having its axis generally parallel to and laterally offset from said pivot axis; said joining locations being spaced along said bar.

4,066,990

ELECTRIC CIRCUIT BREAKER

Endre Csutor, Ludenscheid, Germany, assignor to Brown, Boveri & Cie, A.G., Mannheim, Germany

Filed June 14, 1976, Ser. No. 696,069
Claims priority, application Germany, June 26, 1975, 2528481
Int. Cl.² H01H *71/58*
U.S. Cl. 335—174 **4 Claims**



1. A circuit breaker with manually and automatic tripping means having a contact-operating lever held in the circuit-closed position against spring bias by means of an overdrawn over-center linkage, said linkage being held in position by a latch mechanism including a latch lever and acted upon by the tripping means of the breaker to unlatch said latch mechanism, wherein the improvement comprises in that

a. said overdrawn over-center linkage consists of a single toggle lever (8) having one end (10) pivotally affixed to a first straight path slide member (9), the other end of said toggle lever (8) being affixed to a second straight path slide member (7) and movable by an operating handle in a direction at right angles to said first straight path slide member (9);

b. the end of said toggle lever (8) being joined to said second straight path slide member (7) by a pin (11) slidable in an oblong hole (12) and abutting against a first latch lever (13); and

c. wherein said first latch lever (13) is in latching engagement with a cooperating second latch lever (15) under the action of tripping means (20,21), both said first latch lever (13) and said cooperating second latch lever (15) being under the action of spring means (16,17) tending to oppose unlatching thereof.

4,066,991

PRESSURE SUPPORT FOR LIMITING STRAIN IN A SUPERCONDUCTING WINDING

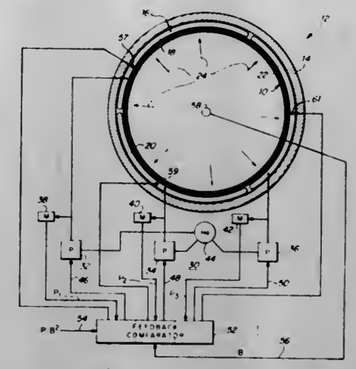
Peter G. Marston, Gloucester, and John J. Nolan, Cambridge, both of Mass., assignors to Sala Magnetics, Inc., Cambridge, Mass.

Filed Nov. 20, 1975, Ser. No. 633,975
Int. Cl.² H01F *7/22*
U.S. Cl. 335—216 **13 Claims**

1. A pressure support unit for limiting strain in a superconducting magnet coil induced by the magnetic field generated by the magnet coil comprising:

a restraining member surrounding said superconducting magnet coil for withstanding the force of the magnetic field generated by said superconducting magnet coil;

a pressure compartment disposed between said superconducting magnet coil and said restraining member and



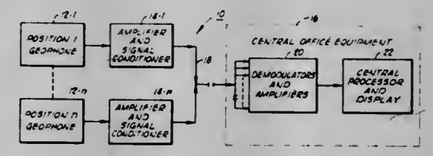
having a least one segment for receiving fluid pressurized proportional to the intensity of the field generated by said superconducting magnet coil for counterbalancing the force produced by the magnetic field and communicating a portion of the stress and resultant strain to said restraining member and reducing the strain in the said superconducting magnet coil.

4,066,992

SEISMIC MINE MONITORING SYSTEM

Paul L. Buller; William L. Chapman; Bobby J. Thomas, and James C. Fowler, all of Ponca City, Okla., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 9, 1975, Ser. No. 620,976
Int. Cl.² G01V *1/16, 1/22*
U.S. Cl. 340—15.5 MC **5 Claims**



1. A mine surveillance system for continually monitoring activity in and around an underground mine, comprising:

plural seismic energy sensing means wherein each comprises a geophone which is permanently encased and buried underground at preselected depths at each of selected positions of the earth surface over said underground mine,

plural signal conditioning means each disposed proximate a respective sensing means and receiving sensed seismic signals therefrom, and each of said signal conditioning means comprises gain controlled amplifier means wherein feedback to amplifier output to a field effect transistor circuit controls amplifier output to allow high gain output for a very brief interval relative to the characteristic time of the seismic signal input whereupon the output is clamped to a selected low amplitude for a predetermined long duration relative to said brief interval which duration reflects the character, propensities, and reoccurrences probabilities of seismic signals to be encountered at the mine,

means for modulating seismic signal output from each of said

signal conditioning means for carrier transmission to a central position,

receiving means at said central position for filtering and demodulating each of said transmission signals to regenerate said plurality of seismic signals,

plural threshold detection means each receiving one of said seismic signals to generate a threshold output when respective seismic signals exceed a predetermined amplitude,

computer means including a threshold interface receiving all threshold outputs to generate data indication of seismic disturbance for all selected positions over said underground mine,

carrier detector means each receiving demodulation output from a respective receiving means to generate a carrier output signal when respective carrier signals are present, and means for applying said detected carrier output signal to said threshold interface for logical input to said computer means,

display means receiving input from the output data indication of said computer means, and said computer means functions in response to the known positions and depth of each said seismic energy sensing means to process all threshold output data indications wherein said computer means continually checks threshold output data indications to assure that three or more of said threshold outputs were generated whereupon location of the seismic disturbance is then calculated for output display in relation to the bounds of said underground mine on said display means.

4,066,993

LIMITED-RANGE SEISMIC CONTROL SYSTEM

Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Nov. 8, 1976, Ser. No. 739,415
Int. Cl.² G01V *1/22, 1/02*
U.S. Cl. 340—15.5 TS **26 Claims**



1. A limited-range radio communications system for transmitting command and data signals between a seismic recording apparatus and at least one mobile unit having a seismic signal generator mounted thereon, said mobile unit being positioned adjacent to a desired line of survey and remotely from said recording apparatus, the system comprising;

an unterminated, electrically floating conductor positioned on the earth's surface substantially parallel to the line of survey, for electrostatically radiating radio signals;

first transceiver means associated with said recording apparatus and coupled to said floating conductor for transmitting coded command signals to and receiving data signals from said floating conductor;

second transceiver means mounted on said mobile unit and having an antenna coupled thereto for receiving command radio signals from and for electromagnetically transmitting data radio signals to said floating conductor.

4,066,994

WELL DATA TELEMETRY BY EXPLOSIONS

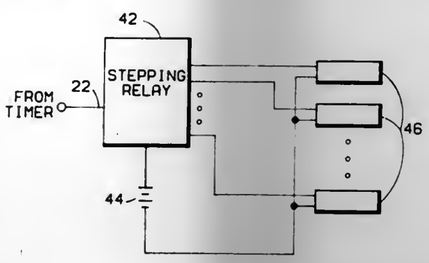
Jay G. Patchett, and Charles F. Hadley, both of Tulsa, Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 17, 1976, Ser. No. 742,490
Int. Cl.² G01V *1/40*
U.S. Cl. 340—18 NC **7 Claims**

1. Subsurface parameter measurement and telemetering apparatus for use at the bottom of a plugged borehole comprising:

sensing means for sensing a subsurface parameter and generating an electrical signal related to the value of such parameter,

timing means coupled to said sensing means for generating two time intervals, a first time interval being a preselected time delay interval and a second being a time interval



proportional to the electrical signal generated by said sensing means, said timing means having an output for providing pulses at the end of each of said two time intervals,

a plurality of charges which may be fired electrically, and

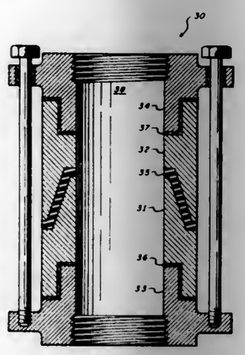
firing means coupled to said timing means and to said charges for sequentially firing one of said charges in response to the generation of a pulse at the output of said timing means.

4,066,995

ACOUSTIC ISOLATION FOR A TELEMETRY SYSTEM ON A DRILL STRING

Hugh B. Matthews, Acton, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 12, 1975, Ser. No. 648,074
Int. Cl.² G01V *1/40*
U.S. Cl. 340—18 LD **3 Claims**



1. A system for the transmission of acoustic signals representative of down hole drilling parameters encountered during operation of a drilling apparatus that includes a rotating table, a drill string coupled thereto, and a drill bit, driven through said drill string, wherein said acoustic signals are caused to propagate along said drill string on which acoustic noise exists that extends over an acoustic frequency spectrum having a lower acoustic frequency band and an upper acoustic frequency band, said system comprising:

an acoustic receiver coupled to said drill string to receive signals in an acoustic frequency passband within said upper acoustic frequency band of said acoustic noise frequency spectrum;

an acoustic transmitter coupled to said drill string at a predetermined distance from said acoustic receiver for transmitting an acoustic signal within said acoustic frequency passband of said receiver;

instrumentation means coupled to said acoustic transmitter for modulating said transmitted acoustic signal, said modulation representative of said downhole drilling parameters;

a first lowpass acoustic filter coupled between said instrumentation means and said drill bit comprising a first mass section, a second mass section, a compliance element, shaped in cross-section as an elongated S, circumferentially therebetween, and first and second coupling sections for coupling said first and second mass sections between sections of said drill string, said first and second coupling sections circumferentially coupled respectively to said first and second mass sections via first and second damping elements both having longitudinal and transverse sections, whereby noise generated during the drilling operation at acoustic frequencies within said passband of said receiver are attenuated for longitudinal, transverse and torsional modes; and

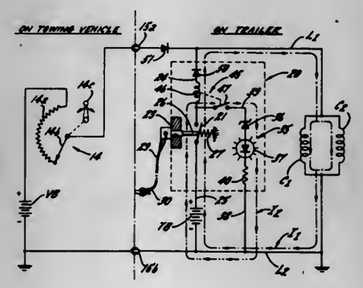
a second lowpass acoustic filter coupled between said acoustic receiver and said rotating platform comprising a first mass section, a second mass section, a compliance element, shaped in cross-section as an elongated S, circumferentially therebetween, and first and second coupling sections for coupling said first and second mass sections between sections of said drill string, said first and second coupling sections circumferentially coupled respectively to said first and second mass sections via first and second damping elements both having iongitudinal and transverse sections, whereby noise at acoustic frequencies within said passband of said receiver, generated by the rotation of said platform and the operation of equipment thereabove are attenuated for longitudinal, transverse and torsional acoustic modes.

4,066,996

BREAKAWAY PROTECTION FOR ELECTRICALLY CONTROLLED TRAILER BRAKES

Donald L. Davis, Rockford, Ill., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Feb. 20, 1976, Ser. No. 659,600
Int. Cl.² B60Q *1/44*; B60T *7/20*
U.S. Cl. 340—52 R **5 Claims**



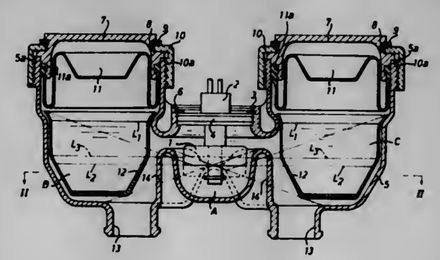
1. A safety system for use with a trailer adapted to be removably hitched to a towing vehicle and having a brake which is engaged when an associated coil is energized by a battery carried by said trailer, said safety system including first and second separable parts connectable to the trailer and the towing vehicle, respectively, a switching device rendered conductive when said first part is separated from said second part, means for connecting said switching device in a series path with said battery and said coil whereby current is normally supplied to said coil from said battery when said switching device is conductive, an indicator which produces a detectable signal when a voltage is applied thereto, and circuit connections placing said indicator electrically across at least one of said battery or said coil when said first and second parts are separated, the improvemet in said safety system comprising, means for sensing the current in said series path when said switching device is conductive and for disabling said indicator unless the magnitude of such current equals or exceeds a predetermined threshold value.

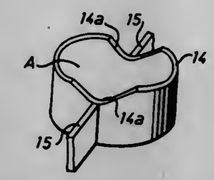
4,066,997

FLUID LEVEL INDICATOR FOR TANDEM MASTER CYLINDER

Atsushi Ohmi, Anjo, and Masayoshi Katagiri, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of, Japan

Filed June 21, 1976, Ser. No. 698,113
Claims priority, application Japan, June 23, 1975, 50-77743
Int. Cl.² G08B *21/00*
U.S. Cl. 340—59 **4 Claims**





1. In a tandem master cylinder having a casing defining front and rear fluid chambers therein to store an amount of brake fluid, said fluid chambers being in fluid communication to each other;

a lateral partition provided within said casing between said two fluid chambers to block the relative fluid communication between said fluid chambers after the fluid level within both said chambers drops below a predetermined lowest level defined by said lateral partition;

an annular partition provided on said lateral partition between said two fluid chambers to form a float chamber therein, said annular partition being higher than said lateral partition in a predetermined length and including at least a recessed portion adjacent to said lateral partition to permit fluid flow from said two chambers into said float chamber, the bottom of said recessed portion corresponding to an upper surface of said lateral partition to block fluid communication between said two chambers and said float chamber after the fluid level within said float chamber drops below said predetermined lowest level;

switch means mounted on said casing between said two chambers and adapted to actuate a warning device upon closing of said switch means; and

a single float disposed within said float chamber for vertical movement in response to variation of the fluid level within said chambers and operatively connected to said switch means;

whereby said switch means is closed to actuate said warning

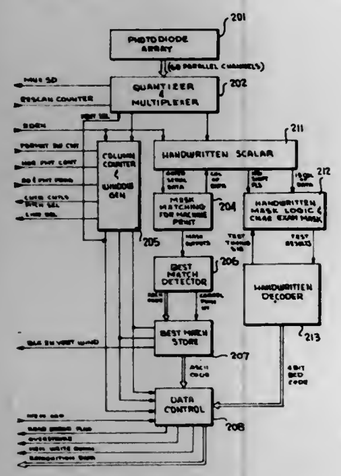
device only when the fluid level within said fluid chambers drops below the predetermined lowest level.

4,066,998

METHOD AND APPARATUS FOR DISCRIMINATING BETWEEN CHARACTERS IN CHARACTER RECOGNITION SYSTEMS

Harrison B. Lidkea, Satellite Beach, Fla., assignor to Optical Business Machines, Inc., Melbourne, Fla.

Filed Apr. 30, 1976, Ser. No. 682,026
Int. Cl.² G06K *9/12*
U.S. Cl. 340—146.3 AC **13 Claims**



1. In a character recognition system of the type wherein a character fascsimile, in the form of electrical signals, is examined for purposes of identification, said character being superposed on a grid, wherein said electrical signals are binary levels representing respective grid locations in which the presence of a character portion is represented by one binary level and the absence of a character portion is represented by another binary level, said grid locations being arranged in a plurality of vertical columns and horizontal rows, a method for improving character identification reliability comprising the steps of:
shifting a row at a time of said binary signals into an examination mask in the form of a shift register having as many storage locations as there are binary signals in a row;
simultaneously examining the entire row of binary signals in said examination mask to determine the left-most and right-most storage locations containing a character portion; and
sequentially interrogating only the grid locations in the examined row which lie between said left-most and right-most storage locations to determine the presence and absence of character portions.

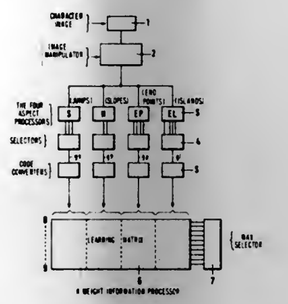
4,066,999

METHOD FOR RECOGNIZING CHARACTERS

Arie Adriaan Spanjersberg, Leiderdorp, Netherlands, assignor to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Filed May 28, 1976, Ser. No. 690,855
Claims priority, application Netherlands, June 2, 1975, 7506520
Int. Cl.² G06K *9/00*
U.S. Cl. 340—146.3 S **9 Claims**

1. A device for recognizing characters comprising:
A. means for manipulating the pattern of each character for scanning said pattern from a plurality of aspects,
B. means for detecting a plurality of features in each aspect and classifying the detected features in each of the aspects in a plurality of groups,
C. a plurality of register means for recording the number of times the detected features of each aspect occur for each class of patterns of the same character,
D. means for weighing the features detected in each pattern depending upon the shape of the pattern,



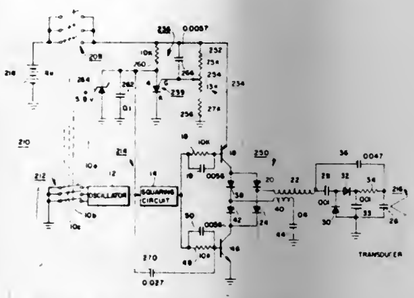
E. means for selecting features of the characters on the basis of the values of said weights,
F. a matrix means for multiplying the values of the weights by the number of times that feature has been stored in said recording means, and
G. means for selecting the largest multiplied value for indicating the class of the features and the character to be recognized.

4,067,000

REMOTE CONTROL TRANSMITTER WITH AN AUDIBLE BATTERY LIFE INDICATOR

David John Carlson, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 28, 1976, Ser. No. 691,188
Int. Cl.² H04Q *9/10*; H04B *11/00*; G08B *21/00*
U.S. Cl. 340—171 R **7 Claims**



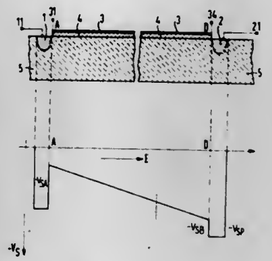
1. A remote control system comprising:
means for selecting a function to be controlled;
means for generating an ultrasonic frequency electrical signal in accordance with the function selected;
means for supplying energy to said ultrasonic frequency electrical signal generating means;
means for detecting when the energy available from said energy supplying means falls below a predetermined level;
means for generating an audio frequency electrical signal when the energy available from said energy supplying means has fallen below said predetermined level; and
ultrasonic transducer means for normally generating an inaudible acoustic signal in response to said ultrasonic frequency electrical signal, said audio frequency signal having a predetermined frequency selected so that said ultrasonic transducer means generates an audible acoustic signal in response to said audio frequency electrical signal.

4,067,001

LINE FOR TRANSPORTING CHARGES FROM STORAGE ELEMENTS IN A STORAGE FIELD

Kurt Hoffmann, Taufkirchen, Germany, assignor to Siemens Aktiengesellschaft, Germany

Filed May 25, 1976, Ser. No. 689,809
Claims priority, application Germany, May 28, 1975, 2523683; Feb. 17, 1976, 2606254
Int. Cl.² G11C *11/40, 13/00*
U.S. Cl. 365—174 **9 Claims**



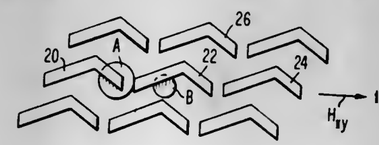
1. A method for rapidly transferring a charge from a first point to a second point along a line having a semiconductor material region, a layer of insulating material on said region, and a resistance layer on said layer of insulating material, said resistance layer having first and second end terminals and a first intermediate terminal, comprising the steps of:
a. maintaining a relatively low potential on said first end terminal;
b. introducing a charge into one end of said semiconductor material region adjacent the first end terminal;
c. transporting said charge from near the first end terminal to near the first intermediate terminal, by applying a relatively high potential to said first intermediate terminal to create a continuously changing potential beneath said resistance layer between the first end and first intermediate terminals;
d. transporting said charge from near the first intermediate terminal to near the second end terminal by applying a relatively low potential to said first intermediate terminal to replace the high potential and applying a relatively high potential to said second end terminal to create a continuously changing potential beneath said resistance layer between the second end and first intermediate terminals.

4,067,002

FIELD ACCESS OF BUBBLE DOMAIN LATTICE

Hsu Chang, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1975, Ser. No. 645,594
Int. Cl.² G11C *19/08*
U.S. Cl. 365—43 **24 Claims**



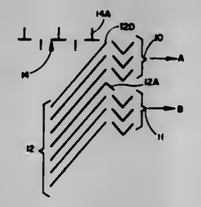
21. An apparatus for translating a two-dimensional lattice of interacting magnetic bubble domains in response to the reorientations of a magnetic field, comprisng:
a magnetic medium in which said bubble domains can be moved, and
an array of magnetic elements where said elements are located in positions in said array to provide a substantially even spatial distribution of magnetic poles attractive to said bubble domains when said magnetic field is present, said magnetic elements having geometries and thicknesses to provide an array in which the driving forces on said bubble domains in said two-dimensional lattice are substantially the same during different orientations of said magnetic field to thereby translate said lattice while substantially maintaining its integrity.

4,067,003

PASSIVE REPLICATOR

Peter K. George, Placentia, and Tsutomu Kobayashi, Orange, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 9, 1976, Ser. No. 656,688
Int. Cl.² G11C *11/14*
U.S. Cl. 365—12 **8 Claims**



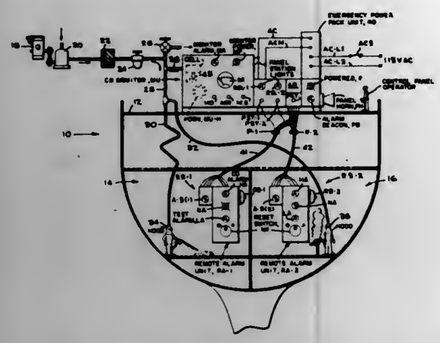
1. A passive replicator device comprising
first propagation path means for propagating information therealong in a first direction,
second and third propagation path means for propagating information therealong,
said second and third propagation paths disposed adjacent to said first propagation path in order to receive information from said first propagation path such that information is propagated in said first, second and third propagation paths substantially in said first direction,
said second and third propagation paths having ends thereof substantially adjacent to each other and in substantially parallel arrangement,
said first propagation path having an end thereof adjacent to said ends of said second and third propagation paths and substantially in abutment therewith,
a plurality of elongated bars in substantially parallel arrangement,
said plurality of elongated bars disposed adjacent to said ends of said first, second and third propagation paths,
an end of at least one of said elongated bars interposed between said end of said first propagation path and the end of at least one of said second and third propagation paths whereby said plurality of elongated bars will receive information propagating along said first propagation path and expand said information to substantially encompass said ends of said second and third propagation paths,
each of said plurality of elongated bars having length substantially greater than the length of said ends of said first, second and third propagation paths, and
a cutter bar associated with said elongated bars,
said cutter bar including an elongated bar having a relatively shorter bar portion disposed at an angle to said elongated bar and projecting between said ends of said second and third propagation paths.

4,067,004

REMOTE PERSONNEL STATION ALARM SYSTEM

William Gulbrantson, Portland, Oreg., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 5, 1976, Ser. No. 711,950
Int. Cl.[2] G08B 17/10
U.S. Cl. 340—237 R 6 Claims



1. A remote personnel station alarm system comprising an external station, a remote personnel station, means at said external station for supplying air to said remote station, a gas monitor unit at said external station having means for providing a primary alarm signal upon detection of dangerous gas in said air supply, a remote alarm unit normally at said remote station and having gas alarm warning means, means for electrically connecting said remote alarm unit to said gas monitor unit for providing a gas alarm warning at said remote alarm unit in response to a primary alarm signal from said monitor unit, and an electric power supply for said units; the improvement wherein said electrical connecting means comprises an external panel assembly electrically connected to said monitor unit and to said power supply, an electric signal wire cable connected to said remote alarm unit at one end and having plug means at the other end for connection to corresponding plug means for said panel assembly so that said remote unit can be disposed at said panel assembly for testing and at said remote station during operation, said panel assembly having a station test switch for said remote station and a normally dark station indicator light, said remote alarm unit also having a test alarm light and a light flasher, and means for causing operation of said station test switch at the panel assembly to light said station indicator light at said panel assembly and to light said test alarm light at the remote alarm unit through said flasher without operating the gas alarm warning means at said remote alarm unit.

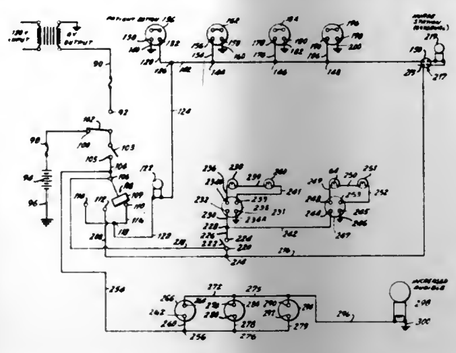
4,067,005

INVALID BED SYSTEM

Joshuah Levy; Isaac Levy, both of 802 Ave. "N", and Frank H. Klein, 614 Ave. "J", all of Brooklyn, N.Y. 11230

Continuation-in-part of Ser. No. 572,720, April 29, 1975, abandoned. This application Oct. 12, 1976, Ser. No. 731,366
Int. Cl.[2] G08B 21/00
U.S. Cl. 340—279 15 Claims

15. In a hospital having a bed with at least one rail, a nurse's station located at a distance from said bed, a wall terminal in proximity to said bed and means connecting said wall terminal to said nurse's station, the warning system combination of first and second elongated pressure sensitive switches on top of said rail, said first pressure sensitive switch being actuatable by light pressure, said second pressure sensitive switch being actuatable by heavy pressure, a first warning device at said nurse's station, a first lead connecting said first warning device to said connecting means, a second warning device at said nurse's station, and a second lead connecting said second warning device to said connecting means so that actuation of said first switch serves to actuate said first warning device, and



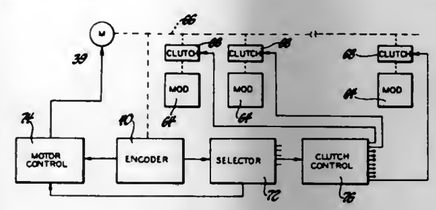
actuation of said second switch serves to actuate said second warning device.

4,067,006

CHANGEABLE ALPHANUMERIC SIGN WITH OPAQUE TAPE DISPLAY FORMING SEGMENTED CHARACTERS AND WORDS

William H. Saylor, South Laguna, and James O. Narey, Westminster, both of Calif., assignors to Associated Data Concepts, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 546,696, Feb. 3, 1975, abandoned. This application Dec. 3, 1975, Ser. No. 637,434
Int. Cl.[2] G09F 11/18
U.S. Cl. 340—325 6 Claims



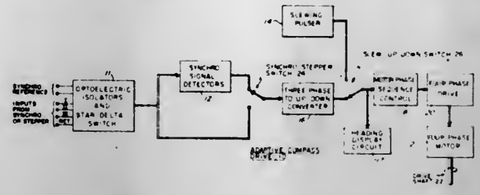
1. A changeable sign formed of plural alphanumeric characters, said sign comprising: plural window areas each adapted to display only a single character with discrete segments of the character allocated to discrete window segments of the window area, plural sets of display tapes, each set of display tapes being disposed at a different one of said window areas for collectively forming any of said characters one at a time, each tape having character segments imprinted thereon in a predetermined order at discrete parts of the tape along the length thereof, the number of character segments corresponding to the number of characters to be displayed and each segment corresponding to that portion of a character which is to occupy the corresponding discrete window segment when the character is displayed, movable support means for supporting each set of tapes so that only one of said tape segments can be seen at a time at each discrete window segment, with all segments of a selected character displayed together in the respective window area, each tape being one character wide and the plural sets of display tapes being arranged side-by-side so that plural characters can be displayed side-by-side whereby a word is formed by selectively positioning each set of tapes, a motor, a separate clutch means connected between said motor and the movable support means of each set of display tapes, and means for selectively actuating said clutch means for concurrently but independently displacing all sets of display tapes to change the characters of the sign.

4,067,007

ADAPTIVE COMPASS DRIVE SYSTEM

Joseph E. Bryden, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 5, 1976, Ser. No. 647,275
Int. Cl.[2] H03K 13/02
U.S. Cl. 340—347 SY 13 Claims



1. An adaptive compass drive system capable of operation over a wide variety of compass outputs and supply voltages and frequencies by provision of combination signals which employs a digital phase detector to convert gyro compass outputs in the form of multiphase analog signals to a stream of up-down pulses for activation of a multiphase stepper motor and a converter to which the compass output when in the form of overlapping digital signals is converted to said stream of up-down pulses for actuation of said stepper motor coupled to a bearing indicator which includes the method for providing direction information from the gyro compass by producing a combination signal from a single selection of synchro and stepper signals comprising the steps of:

converting said signals from said gyro compass to said combination signals having a predetermined amplitude and timing relationship;

coupling said combination signals to a decoder circuit and converting multi-phasic input signals having overlapping active states to multi-phasic signals in which only a single phase of said signals is activated at one time;

determining a first condition when said multi-phasic signals represent a first direction of of rotation and a second condition when said multi-phasic signals represent a second direction of rotation; and

providing first and second pulse streams, each pulse in each of said pulse streams representing a predetermined amount of rotation, pulses of said first stream being produced upon said first condition and pulses of said second stream being produced upon said second condition.

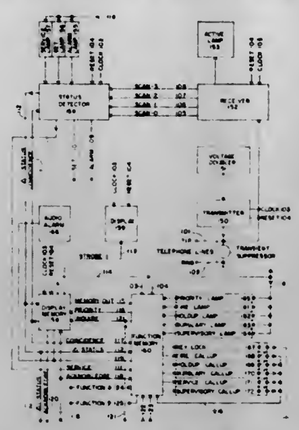
4,067,008

MULTIPLEX INTERROGATION SYSTEM USING PULSES

Joseph B. Sprowls, III, Broomfield, Colo., assignor to Denver Fire Reporter & Protective Co., Inc., Denver, Colo.

Filed Dec. 29, 1975, Ser. No. 644,913
Int. Cl.[2] G08B 29/00
U.S. Cl. 340—409 15 Claims

1. In an interrogation and response system for monitoring the status of a plurality of protection zones of the type in which the protection zones are interrogated in sequence repeatedly by a series of interrogation signals, each sequential interrogation of all the protection zones constituting a complete sequential scan thereof, and reply signals are sequentially supplied according to the status of each protection zone in response to the respective sequential interrogation signals, the improvement comprising: means for receiving said reply signals and generating for each of the protection zones a pattern of said reply signals for at least four of the most recent ones of said complete sequential scans of said zones; and means responsive to said reply signal patterns for determining and indicating therefrom the status of each particular protection zone, said zone status determining and indicating means indicating a change in status of one of said zones only when the entire pattern of the associated one of said reply signal patterns indicates a change in status whereby to substantially eliminate the effect of spurious signals on said system.

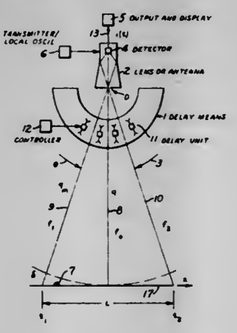


4,067,009

BEAM FOCUSED SYNTHETIC APERTURE

James Nickolas Constant, 1603 Danbury Drive, Claremont, Calif. 91711

Filed Aug. 1, 1975, Ser. No. 601,392
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—5 CM 30 Claims



1. In a synthetic aperture having first means for forming a beam for receiving radiation from a target, a detector for a radiation beam from said first means, and an output and display for using and viewing detected signals from the detector, the improvement comprising:

a delay means inserted between the target and the detector, said delay means including a spatial matched filter for said radiation from said target moving through the field of view of said radiation beam.

4,067,010

CIRCUIT FOR INHIBITION OF AUTOGENETIC FALSE ALARMS IN A COLLISION AVOIDANCE SYSTEM

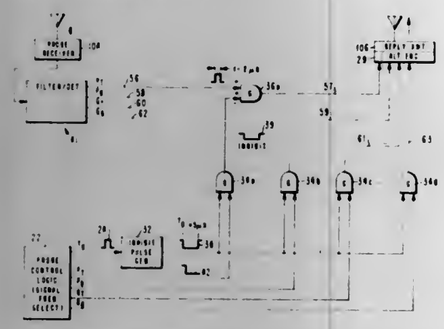
James Robert Hall, Canoga Park, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 22, 1975, Ser. No. 643,328

Claims priority, application United Kingdom, Apr. 14, 1975, 15217/75

Int. Cl.² G01S 9/56

U.S. Cl. 343—6.8 LC 3 Claims



1. A circuit in a probe-reply station of a collision avoidance system for inhibiting autogenetic false alarm signals generated by said station, comprising the combination of:

means for transmitting periodic probe signals including means for randomly selectively generating probe signals of different types and transmitting one probe signal of one of said types;

normally operative probe reply means for transmitting a reply signal in response to received probe signals; and

means responsive to said probe signal transmitting means indicative of the transmission of a probe signal for inhibiting said normally operative probe reply means from transmitting a reply signal for a predetermined but relatively short period of time following the transmission of each of said transmitted probes;

wherein said probe reply means includes means for receiving said probe signals, and means responsive to received probe signals for generating a reply signal corresponding to each of said probe signal types; and

wherein said inhibiting means includes means for inhibiting the transmission of said reply signals that correspond to said one probe signal type.

4,067,011

DIGITAL TRANSPONDER UNIVERSAL PULSE ASSEMBLY

Raymond L. Althaus, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 22, 1976, Ser. No. 734,786

Int. Cl.² G01S 9/56

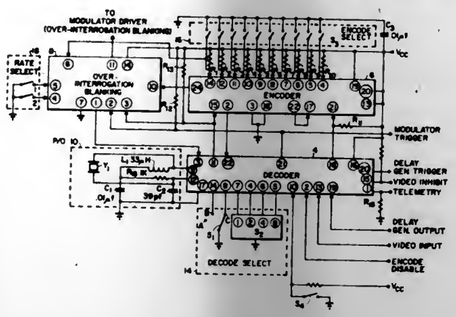
U.S. Cl. 343—6.8 LC 6 Claims

1. A universal pulse assembly apparatus for a transponder the transponder having a receiver and a transmitter, the apparatus in combination comprising:

means for decoding a coded video pulse signal from the receiver, said decoding means having first selecting means for determining one of a plurality of predetermined video pulse codes;

means for encoding a modulating pulse signal for the transmitter, said encoding means having second selecting means for determining one of a plurality of predetermined transmitter pulse codes; and

means for controlling the pulse response rate of the transponder; said controlling means having third selecting means for determining one of a plurality of maximum allowable transponder response rates, said controlling means operable to limit modulation of the transponder



when said response rate of the transponder exceeds said selectable maximum response rate.

4,067,012

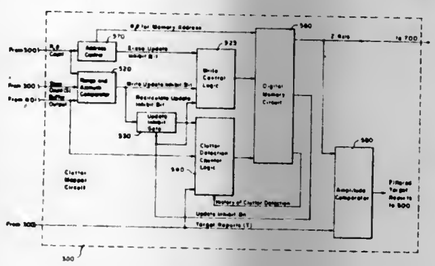
TRACKING FEEDBACK CLUTTER MAPPER CONTROL DEVICE

Vernon H. Platt, Fullerton, and Richard D. Wilmot, Buena Park, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 25, 1976, Ser. No. 717,712

Int. Cl.² G01S 7/46

U.S. Cl. 343—7 A 15 Claims



1. In an energy sensing system, the combination comprising:

a range-azimuth comparator;

an inhibit gate electrically connected to the range-azimuth comparator;

a digital memory circuit electrically connected to the range-azimuth comparator;

a clutter detection counter logic circuit, the output of which is electrically connected to the input of the memory, the output of the inhibit gate being electrically connected to the input of the clutter detection counter logic circuit.

4,067,013

AUTOMATIC THRESHOLDING AND REFERENCE CIRCUIT

Richard M. Smith, Ridgecrest, Calif., assignor to The United States of America as represented by the Navy, Washington, D.C.

Filed Nov. 12, 1976, Ser. No. 741,261

Int. Cl.² G01S 9/42, 7/34; H04B 1/12

U.S. Cl. 343—7.7 9 Claims

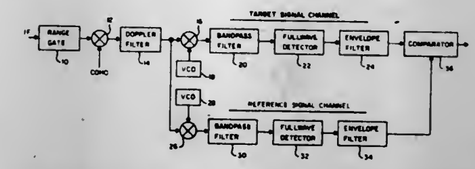
1. An automatic, adaptive-threshold circuit for processing signals received from a pulse Doppler radar comprising:

reception means for receiving a radar return signal from said pulse Doppler radar;

a target channel connected to the output of said reception means, tuned to a first narrow bandwidth, and outputting

a first time replica spectrum of said received output from said reception means;

a reference channel connected to the output of said reception means and in parallel with said target channel, said reference channel tuned to a second narrow bandwidth wider than said first narrow bandwidth and outputting a second time replica spectrum of said received output from said reception means, said second time replica spectrum being coarser than said first time replica spectrum; and



a comparator having a plurality of inputs connected to and receiving the outputs of said target channel and said reference channel, whereby said received radar return signal is processed in parallel fashion by said target and said reference channels, said reference channel output being the automatic, adaptive threshold against which said target channel output is compared in said comparator.

4,067,014

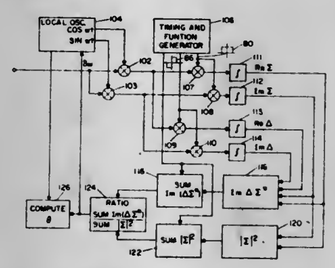
CORRELATION RECEIVER FOR DOPPLER MICROWAVE LANDING SYSTEM

Harold A. Wheeler, Smithtown, and Alfred R. Lopez, Commack, both of N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,063

Int. Cl.² G01S 5/02

U.S. Cl. 343—113 DE 8 Claims



1. Signal processing apparatus, for providing an error signal representative of the average frequency difference between a local oscillator signal and a supplied signal comprising a series of transmissions, each transmission occurring during a predetermined time interval, comprising:

correlation means, responsive to said supplied signal and said local oscillator signal, for developing a complex correlation signal representative of the amplitude and phase of said supplied signal with respect to said local oscillator signal;

first integrating means, responsive to said correlation signal and having a symmetrical frequency response characteristic, for producing complex sum signals representative of the symmetrical integrals of said correlation signal during selected time periods, each comprising at least a portion of one of said predetermined time intervals;

second integrating means, responsive to said correlation signal and having asymmetrical frequency response characteristics for producing complex difference signals representative of the asymmetrical integrals of said correlation signal during said selected time periods;

means, responsive to said sum and difference signals, for developing a first scalar signal representative of the summation of amplitude weighted components of said difference signals over a predetermined number of said time intervals;

means, responsive to said sum signals, for developing a second scalar signal representative of the summation of the magnitudes of said sum signals over said predetermined number of time intervals;

ratio means, responsive to said first and second scalar signals, for developing said error signal, representative of the average frequency deviation of said supplied signal from said local oscillator signal during said predetermined number of time intervals.

4,067,015

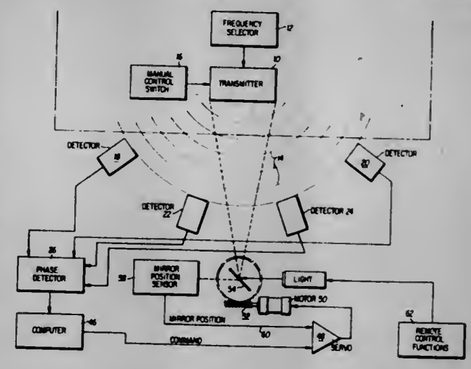
SYSTEM AND METHOD FOR TRACKING A SIGNAL SOURCE

Louis N. Mogavero, Alexandria, Va.; Edwin G. Johnson, Kensington, Md.; John M. Evans, Jr, Gaithersburg, Md., and James S. Albus, College Park, Md., assignors to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed July 11, 1975, Ser. No. 595,254

Int. Cl.² H04B 7/08

U.S. Cl. 343—225 4 Claims



1. A system for monitoring the movements of a performer over the area over which the performer is to move and for tracking the movements with a light beam produced by a spotlight, said system comprising:

at least one movable miniaturized transmitting means, adapted to be carried by a performer, for transmitting an omnidirectional signal capable of being tracked;

at least first and second detector means for sensing said omnidirectional signal and for respectively producing first and second output signals in response thereto, said detector means being remotely spaced from one another at different locations relative to the area over which the performer is to move and being positioned in a predetermined, fixed pattern with respect to the area over which the performer is to move;

phase detector means coupled to detector means for receiving said output signals and for producing an output in accordance with the phase difference between the output signals produced by said first and second detector means, said phase detector means comprising a first channel for receiving said first output signal and including a first multiplying means for multiplying the first and second output signals, and a low pass filter, and a second channel for receiving said second output signal and including a phase shifter, a second multiplying means for multiplying the first signal and the output signal from the phase shifter, and a second low pass filter;

command position signal generating means coupled to said phase detector means for receiving said output from said phase detector and for generating a position command signal in accordance therewith;

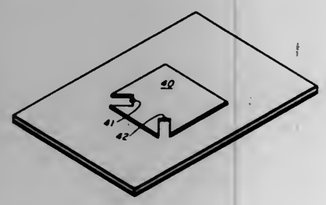
servo motor means;
servo network means coupled to said command position signal generating means for receiving said command signal and for controlling said servo motor means in accordance therewith;
movable tracking means coupled to and driven by said servo motor means in response to said command signal for tracking the transmitting means carried by the performer, said tracking means comprising a fixed spotlight for producing a light beam and a rotatable mirror for reflecting said beam so as to track said transmitting means, said rotatable mirror being controlled by said servo motor and positioned to receive said light beam produced by said spotlight; and
mirror position detector means coupled to said rotatable mirror and to said servo network means for providing tracking error signals to said servo network means so as to control the tracking movement of said mirror.

4,067,016

DUAL NOTCHED/DIAGONALLY FED ELECTRIC MICROSTRIP DIPOLE ANTENNAS

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 10, 1976, Ser. No. 740,692
Int. Cl.² H01Q *1/38, 9/28*
U.S. Cl. 343—700 MS **8 Claims**



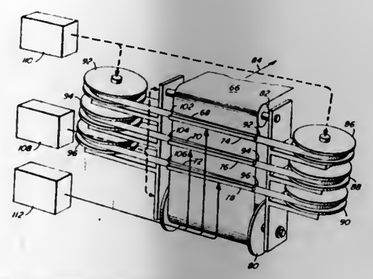
1. A dual notched/diagonally fed electric microstrip dipole antenna having low physical profile and conformal arraying capability, comprising:
a. a thin ground plane conductor;
b. a thin square radiating element for producing a radiation pattern being spaced from said ground plane;
c. said square radiating element being electrically separated from said ground plane by a dielectric substrate;
d. said square radiating element having a first feed point located along one diagonal line of the square radiating element and a second feed point located along the other diagonal line of the square radiating element, said diagonal lines being normal to one another; said first and second feed points being equidistant from the center point of said square radiating element;
e. said square radiating element having a first notch extending into said square radiating element along said one diagonal line of the square radiating element from the outer edge thereof to said first feed point and having a second notch extending into said square radiating element along said other diagonal line of the square radiating element from the outer edge thereof to said second feed point;
f. the resonant frequency of the antenna being determined primarily by the length of said square radiating element; the width of said first and second notches having a slight effect on the resonant frequency, as the width of the notches is increased the resonant frequency being increased slightly and vice versa;
g. the antenna input impedance being variable to match most practical impedances as said feed points are equidistantly moved along said diagonal lines between the square radiating element center point and edge of the square radiating element;
h. the antenna bandwidth being variable with the width of the square radiating element and the spacing between said square radiating element and said ground plane, said spacing between the square radiating element and the ground plane having somewhat greater effect on the bandwidth than the square radiating element width;
i. said square radiating element being operable to oscillate in two modes of current oscillation, each of said two modes being orthogonal to the other.

4,067,017

PARALLEL THERMAL PRINTER

Michael L. Dertouzos, Newton, Mass., and Huber L. Graham, Bath, Pa., assignors to Michael L. Dertouzos, Newton, Mass.

Continuation of Ser. No. 633,913, Nov. 20, 1975, Pat. No. 3,984,809. This application Sept. 30, 1976, Ser. No. 728,167
Int. Cl.² G01D *9/28*
U.S. Cl. 346—46 **5 Claims**



1. A thermal printer comprising:
a. means for continuous advancement of a visual medium receptive web;
b. means for continuous advancement of a plurality of visual medium carrier webs of different colors;
c. a plurality of elongated thermal element assemblages extending entirely across said visual medium receptive web;
d. each of said thermal element assemblages comprising a series of elongated thermal elements;
e. the direction of elongation of said thermal elements being transverse with respect to the direction of elongation of said thermal element assemblages;
f. a plurality of common bus means and a plurality of individual terminal means, one extremity of each of said thermal elements being connected to one each of said bus means, the other extremity of each of said thermal elements being connected to one each of said terminal means, said plurality of bus means serving as electrical grounds and as thermal heat sinks;
g. selection means for selecting certain of said thermal elements;
h. drive means for energizing said certain of said thermal elements; and
i. clock means for recycling said selection means and said drive means.

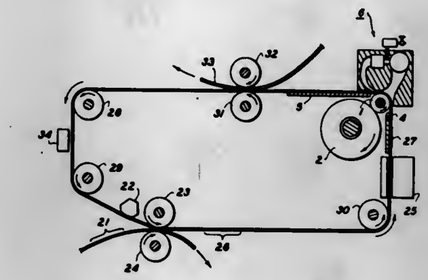
4,067,018

EXCESSIVE MAGNETIC DEVELOPER DISPLACEMENT SYSTEM

Stephen F. Pond, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 27, 1975, Ser. No. 608,357
Int. Cl.² G03G *15/08*
U.S. Cl. 346—74.1 **18 Claims**

1. Apparatus for displacing magnetic toner from a member bearing a latent magnetic image and having deposited thereon magnetic toner in both imagewise configuration and background areas, comprising:
a. means for moving the member; and
b. acceleration means at a toner removal station in the movement path for applying an acceleration to said mwmber only at said station of a magnitude sufficient to displace magnetic toner from background areas but insufficient to displace all of the magnetic toner in imagewise configuration.

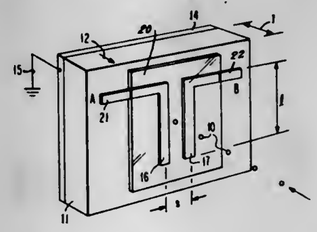


4,067,019

IMPACT POSITION TRANSDUCER FOR INK JET

John Martin Fleischer, and Richard Dwight Holmes, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 14, 1976, Ser. No. 696,101
Int. Cl.² G01D *15/18;* H01V *7/00*
U.S. Cl. 346—75 **12 Claims**



1. Apparatus for detecting the location of small projectile impact comprising:
a poled piezoelectric member for generating a signal due to mechanical stress produced by impact on a surface thereof by said projectile;
two parallel separated conductors on said surface of said piezoelectric member for receiving said signal; and
means for detecting the relative signal strength due to said mechanical stress on said conductors.

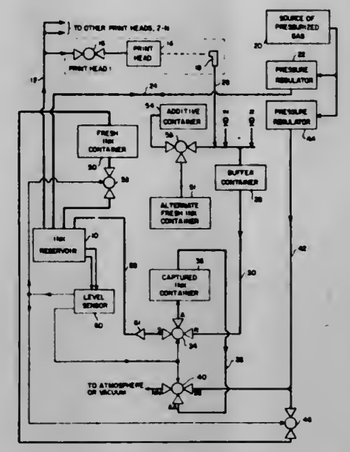
4,067,020

NONINTERRUPT INK TRANSFER SYSTEM FOR INK JET PRINTER

George Arway, River Grove, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Sept. 20, 1976, Ser. No. 724,994
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **8 Claims**

1. An ink jet printing system of the type wherein ink is supplied from a reservoir to a nozzle to be projected thereby as a stream of drops toward a target, some of the drops in said stream being deflected for printing on said target, the remaining ink drops in said stream being captured, the improvement comprising:
means for supplying a pressurized gas.
a first pressure regulator for applying gas at a first pressure from said means to said ink reservoir to thereby cause ink to flow out of said reservoir to said printing head,
a captured ink container,
a first valve means connected to said captured ink container, said first valve having a first position for enabling captured ink to be directed to said captured ink container, and a second position for closing said captured ink container and for directing ink from said captured ink container into said ink reservoir,



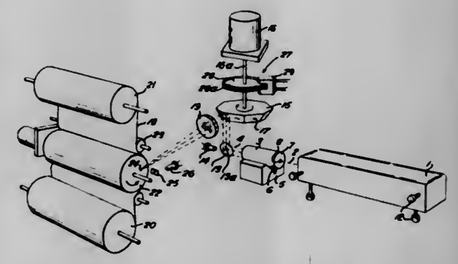
means for applying gas at a pressure higher than said first pressure to said captured ink container when said valve means is in its second position,
means for operating said first valve means from its first, to its second position and from its second to its first position,
a container for fresh ink, and
a second valve means having a first position for enabling ink to flow from said fresh ink container to said ink reservoir, and a second position for preventing the flow of fresh ink from said fresh ink container to said ink reservoir.

4,067,021

OPTICAL SCANNING APPARATUS

Howard Raymond Baylis, East Grinstead; Roger Alan Edwards, Crawley Down, and David Richard Sweatman Hedgeland, Redhill, all of England, assignors to The Monotype Corporation Limited, England

Filed May 20, 1976, Ser. No. 688,317
Claims priority, application United Kingdom, May 27, 1975, 23090/75
Int. Cl.² G01D *15/10, 9/42;* G02B *27/17*
U.S. Cl. 346—76 L **16 Claims**



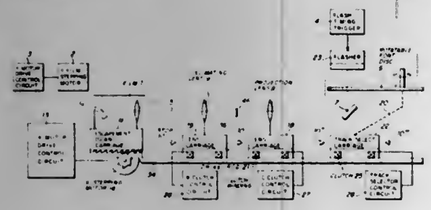
1. In optical scanning apparatus comprising a source of light, a rotatable reflecting element having a plurality of reflective facets which are inclined to the axis of rotation, means for

directing a beam of light derived from the source at said reflecting element in a direction parallel to its axis of rotation to impinge upon successive facets thereof as it is rotated, means for defining a position for a recording element having a surface that requires scanning, means for focussing the beam as reflected by said reflecting element onto said surface, a motor coupled to rotate the reflecting element, so that each facet in turn causes the focussed beam to scan across said surface in one direction, and a drive for moving the recording element substantially perpendicular to said on direction, past said focussed beam, the improvement comprising a generator responsive to the rotational movement of the reflecting element to generate a signal indicative of the angular position of said reflecting element, said generator including a readout device comprising a further light source and a photocell and a shutter comprising a pair of elements each provided with a grating formed by an array of alternate opaque and transparent portions, said photocell being arranged to view the light source through the gratings, said elements being mounted for relative movement in accord with the rotation of the reflecting element, whereby illumination of the photocell is modulated cyclically at a frequency which varies in accord with the speed of rotation of the reflecting element.

4,067,022
INEXPENSIVE AND RELIABLE CUSTOM PROGRAMMABLE PHOTOTYPESETTER

Peter R. Ebner, South Nashua, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 26, 1976, Ser. No. 652,024
Int. Cl.[2] B41B *21/20*
U.S. Cl. 354—7 62 Claims

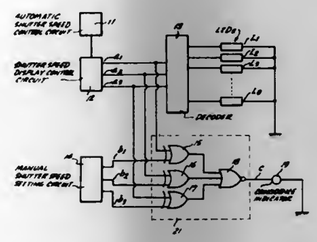


1. In a phototypesetter:
a. a character generator for producing images of illuminated characters to be projected along an optical axis upon a photosensitive medium;
b. an *x* positioning motor;
c. a first carrige coupled to said *x* positioning motor, for producing relative motion between said medium and said optical axis for sequentially positioning images of said characters to be typeset across said medium;
d. an elongated drive member coupled to said first carriage;
e. a second carrige having a first lens means coupled thereto for producing a first image of said characters;
f. a third carriage having a second lens means coupled thereto for relaying the image produced by said first lens means for subsequent projection upon said imaging medium;
g. second carriage clutch means associated with said second carriage for coupling and decoupling said second carriage to and from said elongated driving member;
h. third carriage clutch means associated with said third carriage for coupling and decoupling said third carriage to and from said elongated driving member;
i. *x* positioning motor drive control means for causing said positioning motor to drive said first carriage together with said elongated driving member;
j. second carriage positioning control means for actuating said second carriage clutch for selectively coupling said second carriage to said elongated driving member and for causing said *x* motor drive control circuit to actuate said *x* motor to position said second carriage at a position along said optical axis to produce an image of a selected size; and
k. third carriage positioning control means for actuating said third carriage clutch for selectively coupling said third carriage to said elongated driving member and for causing said *x* motor drive control circuit to actuate said positioning motor to position said second lens with respect to said first lens to focus said image upon said photosensitive medium.

4,067,023
SHUTTER SPEED DIGITAL DISPLAY DEVICE FOR CAMERAS

Naoyuki Uno, Urawa; Tetsuji Shono, Saitama; Fumio Urano, Omiya; Kunio Mita, Kamifukuoka; Masahiro Kawasaki, and Chiharu Mori, both of Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1975, Ser. No. 624,996
Claims priority, application Japan, Nov. 5, 1974, 49-133947[U]
Int. Cl.[2] G03B *17/18*
U.S. Cl. 354—23 D 10 Claims

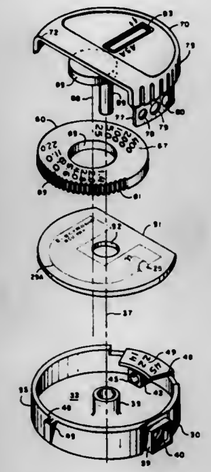


1. A shutter speed digital display device for cameras having both automatic and manual shutter speed controls comprising:
a. digital shutter speed display means for displaying shutter speed comprising:
1. a display control circuit connected to said automatic shutter speed control of said camera for generating an output representing the shutter speed determined by said automatic shutter speed control of said camera; and,
2. a liquid crystal display means connected to the output of said display control circuit in a manner such that a particular shutter speed digital display is created when a particular output of said display control circuit occurs;
b. a manual shutter speed setting circuit for generating an output representing the manual setting of the shutter speed of said camera;
c. comparator means connected to said display control circuit and to said manual shutter speed setting circuit for comparing a signal related to the digital shutter speed displayed by said liquid crystal display means with the output of said manual shutter speed setting circuit and generating an output related to whether or not there is coincidence between said shutter speed display and said output of said manual shutter speed setting circuit; and,
d. a coincidence indicator connected to the output of said comparator means for indicating when said comparator means senses coincidence between said shutter speed digital display and the output of said manual shutter speed setting circuit.

4,067,024
CALCULATOR

Peter T. Quinn, Littleton, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Mar. 11, 1976, Ser. No. 665,992
Int. Cl.[2] G03B *7/08*; G06C *3/00*
U.S. Cl. 354—23 R 11 Claims



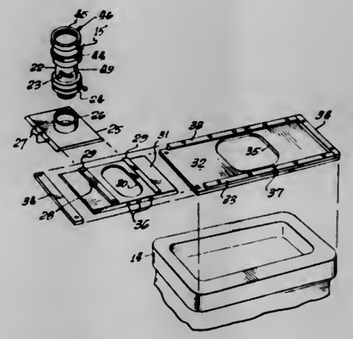
1. Apparatus comprising:
a first member including a first indicia bearing portion and a first observing portion;
a second member including a second indicia bearing portion and a third indicia bearing portion;
a third member including a second observing portion;
means mounting said second member on said third member for rotation about a first axis with the second observing portion cooperating with the second indicia to provide a first indication; and
means mounting said third member on said first member for rotation about a second axis displaced from the first axis with the second observing portion cooperating with the first indicia to provide a second indication and with the first observing portion cooperating with the third indicia to provide a third indication.

4,067,025
SELF DEVELOPING CAMERA FOR USE IN MACROPHOTOGRAPHY AND ENDOSCOPIC PATHOLOGY

Otto T. Nebel, Solana Beach; Louis J. Trujillo, and Carl C. Russell, both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1976, Ser. No. 682,815
Int. Cl.[2] G03B *15/14*
U.S. Cl. 354—62 5 Claims

1. An endoscopic photographic system for examining and recording the appearance of body cavities comprising in combination:
endoscopic optical means for insertion at a plurality of predetermined locations within a body cavity;
light conducting means connected to said endoscopic optical means for providing a light conducting path therefrom to the exterior of the body cavity;
lens and shutter means attached to said light conducting means for formation and timed transmission of an optical image of the view of each predetermined location within the body cavity transmitted via said endoscopic optical means and said light conducting means;
a camera back for positioning a single self developing film plate to receive each of said optical images formed and transmitted by said lens and shutter means; and
movable lens mount means positioned between said lens and shutter means and said camera back for producing a plurality of photographic images on said single film plate, each of said photographic images corresponding to one of said predetermined locations within the body cavity, wherein said movable lens mount means includes:
plate means attached to said camera back for establishing a light-tight closure therefor;
first retaining means mounted about the peripherial edge of said plate means for providing edge retention thereon;

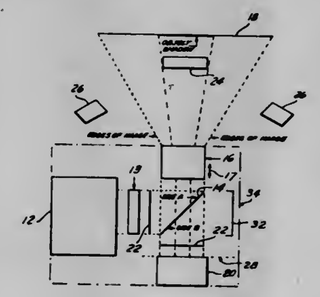


an aperture centrally located in said plate means and surrounded by said first retaining means;
movable first slide means having an aperture therein and held in sliding engagement with said plate means by cooperative edge retention by said first retaining means;
second retaining means mounted on said first slide means and said second retaining means surrounding the aperture in said first slide means for providing edge retention thereon; and
movable second slide means having an aperture therein and held in sliding engagement with said first slide means by cooperative edge retention by said second retaining means.

4,067,026
FRONT PROJECTION SYSTEM EMBODYING A SINGLE LENS

George Pappanikolaou, 621 90th St., Brooklyn, N.Y. 11228

Filed July 19, 1976, Ser. No. 706,780
Int. Cl.[2] G03B *29/00*
U.S. Cl. 354—77 10 Claims



1. An improved front projection system comprising: an image projecting device having a light source and an image projecting plane where an image producing device is located, means for focusing said light source, an image capturing device

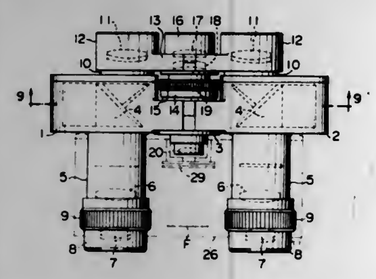
having an image capturing plane where an image capturing medium is located, a generally semi-reflective/semi-transparent element, and a common lens having front and rear surfaces for use with both said image projecting device and said image capturing device; said image projecting and capturing devices, said semi-reflective/semi-transparent element and said common lens being perpendicular to a mounting surface with the axis of said projecting and capturing devices and said common lens coinciding in a common plane and intersecting approximately at the center of said semi-reflective/semi-transparent element; said semi-reflective/semi-transparent element being disposed behind said rear surface of said common lens at an angle of about 45° with respect thereto; the planes of said image projecting and capturing devices being generally perpendicular to each other and each of the planes being at about a 45° angle with respect to said semi-reflective/semi-transparent element and with said element positioned so that light projected on the surface of said element is reflected to said rear surface of said common lens; the distance from the centers of the planes of said image projecting and capturing devices to the center of said semi-reflective/semi-transparent element being equal; and lens moving means for focusing said common lens; whereby said image projecting device and said image capturing device are used simultaneously for composite photography, commonly known as front projection.

4,067,027

BINOCULAR TELESCOPE CONTAINING A CAMERA

Shogo Yamazaki, Tokyo, Japan, assignor to Asia American Industries Ltd., Tokyo, Japan

Filed Aug. 31, 1976, Ser. No. 719,160
Int. Cl.² G03B *17/48*; G02B *21/00*
U.S. Cl. 354—79 **2 Claims**



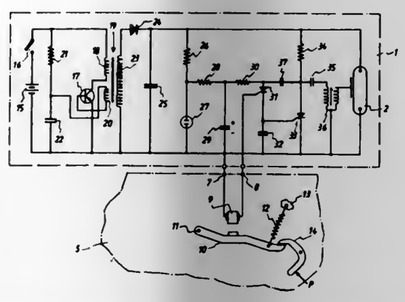
1. A binocular telescope containing a camera comprising:
a. a central tubular member;
b. a pair of rotary tubular members, each having first and second faces, respectively, said rotary tubular members being pivotally mounted to be rotatable about said central tubular member;
c. prism means contained within said rotary tubular members;
d. a pair of eyepiece tubular members protruding respectively from said first faces of said rotary tubular members;
e. a pair of eyepieces respectively threadably secured to said eyepiece tubular members;
f. a finder having a frame line provided in at least one of said eyepiece tubular members;
g. an objective lens tubular member protruding from said second face of each of said rotary tubular members, a pair of slidable tubular members connected by an arm, each of said slidable tubular members being slidably mounted on a said objective lens tubular member, each said slidable tube member containing an objective lens, said arm having a pivot joint surrounding a photographing lens tubular member;
h. a focus adjusting tubular member threadably mounted on said central tubular member and provided with a knob at one end thereof and further containing said photographic lens tubular member, said photographic lens tubular member containing photographic lenses; and
i. a camera body fixed to said central tubular member on the side thereof to receive images from said photographic lenses.

4,067,028

PROPER SYNCHRONIZATION OF THE FIRING OF ELECTRONIC FLASH UNITS

Peter Lermann, Narring, and Eduard Wagensonner, Aschheim, both of Germany, assignors to AGFA-Gevaert, AG, Leverkusen, Germany

Filed Mar. 15, 1976, Ser. No. 666,658
Claims priority, application Germany, Mar. 27, 1975, 2513812
Int. Cl.² G03B *15/03*
U.S. Cl. 354—141 **7 Claims**



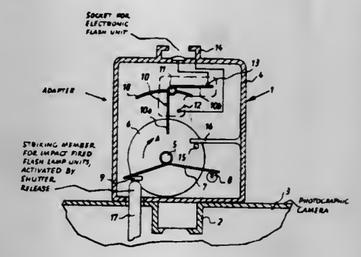
1. An arrangement for firing an electronic flash tube using the voltage impulses generated by a mechanically activated electromechanical transducer, particularly a piezoelectric transducer, of the type employed for generating voltage impulses and applying the same directly across the terminals of flashbulbs, the arrangement being operative for compensating for the time interval elapsing between the application of such voltage impulses to flashbulbs and the reaching of maximum flashbulb output illumination, on the one hand, and the different time interval elapsing between the firing of a flash tube and the reaching of maximum flash tube output illumination on the other hand, the arrangement comprising, in combination, firing means for firing the flash tube including a firing thyristor, a firing capacitor and firing-voltage-generating means connected in circuit, the firing thyristor when conductive discharging the firing capacitor, and a first charging resistor connected to the thyristor and capacitor, the resistor being operative when the thyristor is nonconductive for charging the capacitor, the resistor being operative upon capacitor discharge for carrying thyristor current, the resistance of the resistor being so high that upon capacitor discharge the thyristor current carried by the resistor is below the thyristor holding current; time-delay means having an output connected to the firing-thyristor control electrode for rendering the firing thyristor conductive and having an input, and including an activating thyristor in the current path of the time-delay means, the activating thyristor having a control electrode connected to the electromechanical transducer and being rendered conductive by the transducer voltage impulse; and means for furnishing a stabilized supply voltage to the input of the time-delay means including a storage capacitor connected to the input of the time-delay means and operative for discharging through the current path of the time-delay means when the activating thyristor becomes conductive, a second charging resistor connected to the storage capacitor and the activating thyristor, the second charging resistor being operative for charging the storage capacitor when the activating thyristor is non-conductive, the second charging resistor being operative upon discharge of the storage capacitor for carrying activating-thyristor current, the resistance of the second charging resistor being so high that upon storage-capacitor discharge the activating-thyristor current carried by the second charging resistor is below the activating-thyristor holding current, and a voltage-stabilizing means connected to the storage capacitor and to the input of the time-delay means and operative for causing the voltage applied from the storage capacitor to the input of the time-delay means to be the same each time the activating thyristor is rendered conductive.

4,067,029

ARRANGEMENT FOR THE DELAYED FIRING OF AN ELECTRONIC FLASH UNIT

Rainer Vesper, and Dieter Engelsmann, both of Unterhaching, Germany, assignors to AGFA-Gevaert, AG, Leverkusen, Germany

Filed Mar. 10, 1975, Ser. No. 557,075
Claims priority, application Germany, Mar. 12, 1974, 2411845
Int. Cl.² G03B *15/05*
U.S. Cl. 354—137 **8 Claims**



1. An adapter for effecting delayed firing of an electronic flash unit in response to activation of a photographic camera of the type provided with a striking member which otherwise serves to effect firing of impact-fired flash lamp units, comprising, in combination, a housing provided with mounting means for mounting said housing on such a camera with a predetermined position relative to the striking member of such camera; an inertial body mounted in said housing for swinging movement about a predetermined axis; biasing means urging said inertial body in a predetermined direction; and snchronizing switch means activatable by said body when the latter assumes a predetermined activating position for effecting firing of an electronic flash unit, said inertial body being so located relative to said mounting means as to be set into motion against the force of said biasing means by the striking force of a striking member on a camera on which the adapter is mounted to describe a predetermined path of movement in which said inertial body reaches said activating position, wherein said inertial body is provided with an engaging portion, wherein said switch means comprises a first and a second contact and an electrically conductive torsion spring mounted on said housing and having a first leg positioned in the path of movement of said inertial body to be moved by the latter into electrical engagement with said first contat and a second leg electrically connected to said second contact.

4,067,030

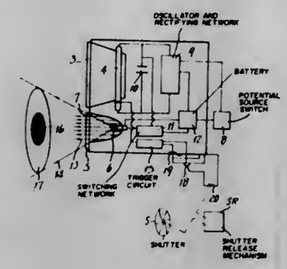
CAMERA FOCUSSING AID

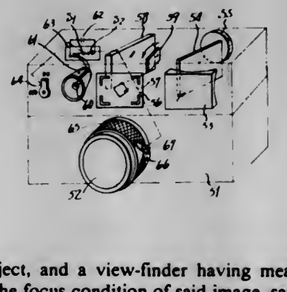
Yoshio Kuramoto, Toyonaka; Toshinori Imura, and Yoshiiku Kikukawa, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 20, 1976, Ser. No. 650,821
Claims priority, application Japan, Jan. 24, 1975, 50-10869; Mar. 24, 1975, 50-34542; Mar. 29, 1975, 50-37402
Int. Cl.² G03B *15/03, 3/00*
U.S. Cl. 354—139 **30 Claims**

1. An auxiliary illumination device for use with a photographic camera which includes a shutter and a view-finder having means for visibly indicating the focus condition of an image of a photographic object, and for use with a flash device which includes an electronic flash tube, a capacitor, means for charging said capacitor and a trigger circuit for discharging said capacitor for firing said electronic flash tube in synchronism with the opening of said shutter, said auxiliary illumination device comprising:
an illumination lamp for projecting light on a part of the photographic object;
a power supply circuit for supplying electric power to said illumination lamp; and
means for permitting and interrupting the power supply to said illumination lamp respectively upon accomplishment of the charging and discharging of said capacitor.

13. An auxiliary illumination device for use with a photographic camera which includes a shutter, a focus adjusting member for adjusting focus condition of an image of a photographic object, and a view-finder having means for visibly indicating the focus condition of said image, said illumination device comprising:





an illumination lamp for projecting light on a part of the photographic object;
a power supplying circuit for supplying electric power to said illumination lamp;
switching means disposed in said power supplying circuit and being normally non-conductive for interrupting the power supply to said illumination lamp; and
manual means operable for rendering said switching means conductive, said manual means being disposed at a position in which the same is operable together with said focus adjusting member while the latter is being operated.

4,067,031

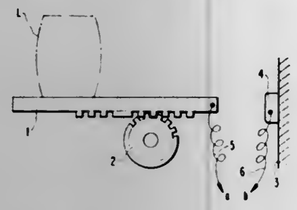
DEVICE FOR LIMITING THE EXTENT OF MOVEMENT OF A MOVEABLE MEMBER IN A MOTOR OPERATED FOCUSSING DEVICE IN A CAMERA

Shigeo Enomoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1976, Ser. No. 717,799
Claims priority, application Japan, Sept. 16, 1975, 50-111946
Int. Cl.² G03B *3/10*
U.S. Cl. 354—195 **4 Claims**

1. A control circuit for cutting the supply of current to a motor when a moveable member, continuously moveable by said motor, comes to a stop abutting relation with a stop member, comprising first and second circuit means for selectively applying current to said motor in first and second directions to cause said motor to rotate in first and second directions, re-

spectively, to move said moveable member in first and second directions, respectively, said moveable member moving toward said stop member in said first direction, said control circuit further comprising at least the abutting portions of said moveable member and stop member, at least said portions being electrically conductive, a pair of electric lead wires



electrically connected, respectively, at their first ends to the electrically conductive parts of said moveable and stop members, and switch means connected to the second ends of said pair of lead wires and responsive to completion of a circuit between said moveable and stop members for interrupting the current flow in said first circuit means.

4,067,032

STRUCTURE OF CAMERA BODY

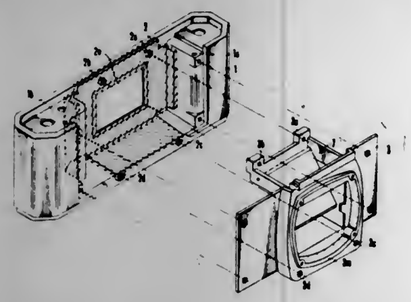
Ryoichi Yoshikawa, Kawasaki; Teruhisa Oda, Sagamihara; Kunio Tanaka, Yokohama; Yukio Iura, Yokosuka; Tadahide Fukushima, Tokyo, and Hiroshi Aizawa, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 30, 1975, Ser. No. 591,324

Claims priority, application Japan, July 5, 1974, 49-77158

Int. Cl.² G03B *17/00*

U.S. Cl. 354—288 **3 Claims**



1. A single lens reflex camera body comprising a molded plastic camera body including a rear wall, a front wall, and a bottom wall and side walls extending between said rear and front walls, a metal block inserted in said molded plastic camera body during the molding thereof, said metal block comprising a main section, a first section extending angularly from said main section and a pair of spaced second bent sections extending angularly from said main section, said first bent section being inserted in the bottom wall of said camera body and having a first mounting part provided on the edge of said first bent section spaced from said main section, said main section being inserted in said rear wall of said camera body and having a second mounting part adjacent the edge thereof spaced from said first and second bent sections, said main section having an aperture therethrough for determining the size of pictures and also having rail faces thereon for guiding film, a front plate unit made of a metallic material and having a photographic lens mounting seat and a mirror mounting parts, the front plate unit having a third mounting part located at the side of said mounting seat and aligned with said first mounting part and also having a fourth mounting part located at the mirror mounting part and aligned with said second mounting part, and connecting means for securing said front plate unit directly to said metal block inserted in said molded plastic camera body, said connecting means connecting said first mounting part to said third mounting part and said second mounting part to said fourth mounting part for ensuring the precision and strength of the camera body.

4,067,033

CORRECTING DEVICE FOR CAMERAS WITH AUTOMATIC EXPOSURE CONTROL

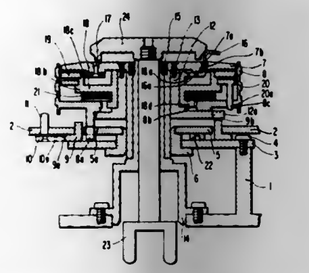
Fumio Urano, Omiya, and Junji Umetsu, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 11, 1976, Ser. No. 695,299

Claims priority, application Japan, June 23, 1975, 50-87063[U]

Int. Cl.² G03B *17/00*

U.S. Cl. 354—289 **4 Claims**



1. In a camera of the type having a variable impedance, the value of which constitutes one of the inputs of an exposure control circuit, a manually operated operating ring **8** for altering the value of said variable impedance, and a film sensitivity indicating ring **20** rotatably fixed to said operating ring to rotate therewith, the improvement comprising,

a. a first exposure correction indicating ring **19**,

b. a second exposure correction indicating ring **7**,

c. first interlocking means (**18** and **8**) for rotatably interlocking said operating ring and said first exposure correction indicating ring, said first interlocking means being manually disengagable to permit said operating ring to be rotated independently of said first exposure correction indicating ring,

d. second interlocking means (**16** and **18**) for rotatably interlocking said first and second exposure correction indicating rings, said second interlocking means being manually disengagable to permit said first exposure correction indicating ring to be rotated independently of said second exposure correction indicating ring, and

e. third manually disengagable locking means (**9**, **10**, and **11**) for preventing rotation of said second exposure correction indicating ring, whereby selective operation of said manually controlled interlocking means plus rotation of said operating ring causes selective rotation of one, two and three of said indicating rings.

4,067,034

PHOTOGRAPHIC DEVELOPING MACHINE

Wolfgang Kwiatkowski, Unterhaching, Germany, assignor to AGFA-Gevaert, AG, Leverkusen, Germany

Filed Oct. 1, 1976, Ser. No. 728,832

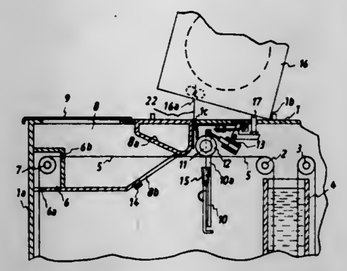
Claims priority, application Germany, Oct. 3, 1975, 2544322

Int. Cl.² G03D *13/06*

U.S. Cl. 354—310 **10 Claims**

1. In an apparatus for processing photographic strips, in combination, a plurality of processing stations; an endless pull strip extending through the successive processing stations; a

light lock compartment located in the path of travel of the pull strip and having an open side opening into the interior of the apparatus; a flap structure mounted for movement between a closed position in which the flap structure closes off the open side of the light lock compartment and an opened position; a holding socket on the processing apparatus for holding a light-tight cassette containing photographic strip material to be processed, the holding socket being provided with an infeed passage extending into the interior of the apparatus down-path of the light lock compartment, the flap structure being so



positioned relative to the infeedpassage that the path of motion of the flap structure from the opened to the closed positions thereof crosses the path of infeed travel of the leading end of a photographic strip extending through the infeed passage, whereby when the leading end of a strip is being fed through the infeed passage, displacement of the flap structure to closed position both seals off the light lock compartment from the interior of the apparatus and moves such leading end into the light lock compartment so that the leading end can be secured to the endless pull strip.

4,067,035

DAYLIGHT DEVELOPING MACHINE

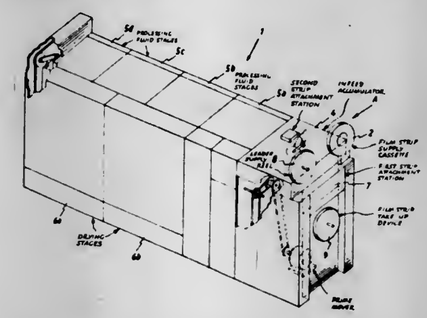
Gerald Plursch, Munich, and Jurgen Leuchter, Tutzing, both of Germany, assignors to AGFA-Gevaert, AG, Leverkusen, Germany

Filed June 18, 1976, Ser. No. 697,573

Claims priority, application Germany, June 20, 1975, 2527561

Int. Cl.² G03D *3/13*

U.S. Cl. 354—313 **14 Claims**



1. In a continuously operating developing machine for film strips of the type comprised of at least one processing fluid stage, at least one drying stage located downstream of the processing fluid stage and a discharge station located downstream of the drying stage, with film strips being guided connected one to the other through said stages and to said discharge station along a predetermined path, in combination, a first strip attachment station upstream of said stages provided with means for attaching the leading end of a new strip to the trailing end of a strip section which has already entered said path, an infeed accumulator located intermediate said first attachment station and said stages and provided with means for accumulating a length of strip being fed into said path so that strip can continue to be fed into said path during the detention of the trailing end of the strip in said accumulator at said first attachment station for attachment purposes, and a second strip attachment station intermediate said accumulator and said stages provided with means for attaching to the trailing end of a broken strip section leaving said accumulator the leading end of a leader strip so that as the trailing end of the broken strip section enters said path the leader strip will enter thereafter.

4,067,036

JUNCTION FIELD EFFECT TRANSISTOR OF VERTICAL TYPE

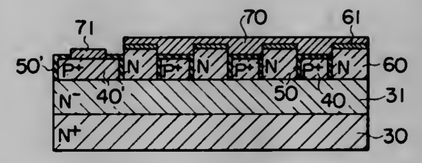
Takashi Yoshida, and Katsuhiko Ishida, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 4, 1976, Ser. No. 711,641

Claims priority, application Japan, Aug. 9, 1975, 50-96843

Int. Cl.² H01L *29/80, 29/78*

U.S. Cl. 357—22 **6 Claims**



1. A junction field effect transistor of a vertical type comprising:

a drain region having a first conductivity type;

a gate region having a second conductivity type opposite to said first type, said gate region including spaced branches formed by a selective growth method on a top surface of the drain region to define top and side surfaces of the branches;

an insulating layer covering the top surfaces and at least a portion of the side surfaces of said branches; and

source regions formed by a growth of the drain region on those portions on the top surface of the drain region not covered by the spaced branches and said insulating layer.

4,067,037

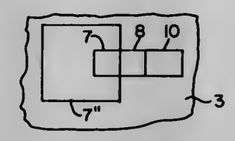
TRANSISTOR HAVING HIGH F, AT LOW CURRENTS

Paul Greiff, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 12, 1976, Ser. No. 676,019

Int. Cl.² H01L *29/72, 27/02, 27/12*

U.S. Cl. 357—34 **3 Claims**



1. A transistor having high f_T at low collector current, and a low rate of falloff at high collector current comprising

a collector,

a base having its minimum dimension no greater than 0.1 mil contained in said collector, said base having silicon dioxide walls forming the boundary of its periphery,

an emitter on one end of said base,

said emitter having a dimension along the maximum dimension of said base no greater than 0.1 mil.

said emitter having one edge and its bottom area in contact

with said base and its remaining three edges in contact with said base silicon dioxide walls,

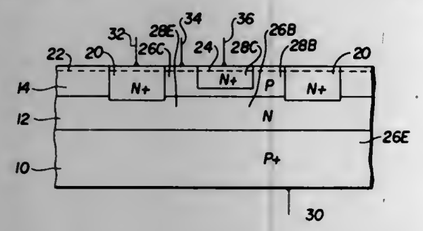
a base contact region on said base separated from said emitter.

4,067,038

SUBSTRATE FED LOGIC AND METHOD OF FABRICATION

Nicolaas W. Van Vonno, Melbourne, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Dec. 22, 1976, Ser. No. 753,027
Int. Cl.² H01L *27/02, 29/34*
U.S. Cl. 357—46 **4 Claims**



1. An integrated circuit having a pair of transistors comprising:

a substrate of a first conductivity type;

a first epitaxial layer of conductivity type opposite said first conductivity type on said substrate;

a second epitaxial layer on said first epitaxial layer of said first conductivity;

a high impurity concentration of said first conductivity type forming the surface of said second epitaxial layer;

the remainder of said second epitaxial layer having a substantially linear gradient of impurity concentration decreasing from the boundary with said first epitaxial layer to the boundary with the said high impurity concentration surface;

a ring of said opposite conductivity type extending through said second layer and partially into said first layer;

a diffused region of said opposite conductivity type in said surface of said second epitaxial layer within said ring; and

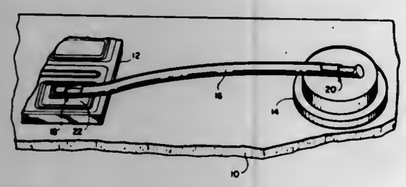
wherein said substrate, first epitaxial layer and said second epitaxial layer are the emitter, base and collector, respectively, of one of said transistors and said first epitaxial layer, second epitaxial layer and said diffused region are the emitter, base, and collector of the other transistor.

4,067,039

ULTRASONIC BONDING HEAD

Stanley Gaicki, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 558,745, March 17, 1975, abandoned. This application Aug. 16, 1976, Ser. No. 714,728
Int. Cl.² H01L *23/48, 29/40, 29/44*
U.S. Cl. 357—65 **2 Claims**



1. A semiconductor structure comprising;

a. a substrate,

b. said substrate further including at least one first electrically conductive terminal region and a separated semiconductor chip having at least one second electrically conductive terminal region,

c. a substantially thick wire attached between said first and second terminal regions, said wire having a diameter substantially in the range of 8-25 mils,

d. said wire being attached at each of its ends to said first and second conductive terminal regions, respectively, by first and second metallurgical bonds,

e. each end of said wire including a deformed portion connected to said first and second metallurgical bonds,

f. each of said deformed portions including a stepped multilevel portion,

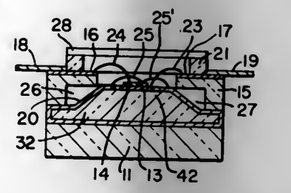
g. said stepped multilevel portion including first and second surfaces located at different planes, the first stepped surface being disposed outwardly and downwardly a predetermined vertical distance from said second stepped surface by a third surface intersecting the longitudinal axis of said thick wire, the vertical distance being measured substantially perpendicular to the longitudinal axis of said thick wire and substantially the entire cross sectional dimension of said stepped multi-level portion being less than the cross-sectional dimension of said thick wire.

4,067,040

SEMICONDUCTOR DEVICE

Naobumi Tsuzuki; Shinzo Anazawa, and Shozo Noguchi, all of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Dec. 9, 1976, Ser. No. 749,114
Claims priority, application Japan, Dec. 12, 1975, 50-147398
Int. Cl.² H01L *23/48, 23/02, 39/02*
U.S. Cl. 357—74 **12 Claims**



1. A semiconductor device comprising an insulator substrate having a first surface, a projected portion centrally located on said first surface, and a bottom face on the opposite side to said first surface; an insulating wall member mechanically coupled with said first surface of said insulator substrate and surrounding said projected portion, said wall member having a height not lower than that of said projected portion and the thickness of said wall member being less at a portion near said first surface that at a distant portion; a first metallized layer formed on a portion of the top surface of said projected portion of said insulator substrate;

a second metallized layer formed on said insulator substrate and extending from the peripheral portion of the top surface of said projected portion through said first surface to said bottom face, and a second metallized layer passing under said insulating wall member at said first surface;

a semiconductor element having a plurality of electrodes and disposed on said first metallized layer on said projected portion;

means for electrically connecting an electrode of said semiconductor element to said second metallized layer;

at least a third metallized layer formed on the upper end surface of said insulating wall member;

means for electrically connecting another electrode of said semiconductor element to said third metallized layer; and

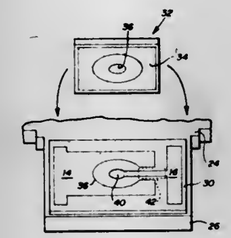
means coupled with said insulating wall member for hermetically sealing said semiconductor element.

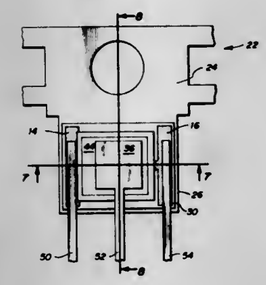
4,067,041

SEMICONDUCTOR DEVICE PACKAGE AND METHOD OF MAKING SAME

Jearld L. Hutson, P.O. Box 34235, Dallas, Tex. 75234

Filed Sept. 29, 1975, Ser. No. 617,443
Int. Cl.² H01L *23/48, 39/02, 23/02*
U.S. Cl. 357—80 **14 Claims**





1. A semiconductor device package comprising:

a metal heat sink support member,

a ceramic electrical insulating body bonded on a first side to said support member,

first and second spaced apart interdigitated conductive patterns formed on a second side of said ceramic body,

a semiconductor switching device having first and second terminal patterns formed on one side and a third terminal pattern on the other side, said switching device being bonded on said one side to said interdigitated conductive patterns with said first and second terminal patterns respectively bonded to and directly contacting said first and second conductive patterns,

said first conductive pattern including a first lead contact site formed on said second side of said ceramic body and extending beyond a side of said switching device bonded to said conductive patterns and said second conductive pattern including a second lead contact site formed on said second side of said ceramic body and extending beyond a side of said switching device bonded to said conductive patterns,

a first lead bonded to said first lead contact site and a second lead bonded to said second lead contact site, such that said switching device is isolated from mechanical stresses imposed on said leads, and

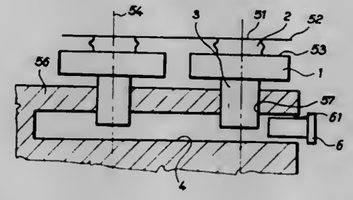
a third lead connected to said third terminal pattern of said switching device and extending from said third terminal outwardly from said ceramic body.

4,067,042

HEAT SINK MECHANISM HYDRAULICALLY PROPELLED INTO CONTACT WITH SEMICONDUCTOR DEVICES

Petr Novak; Michal Pellant, and Pavel Reichel, all of Prague, Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia

Filed Sept. 8, 1976, Ser. No. 721,377
Claims priority, application Czechoslovakia, Sept. 8, 1975, 6085/75
Int. Cl.² H01L *25/04, 23/48, 29/40*
U.S. Cl. 357—82 **8 Claims**



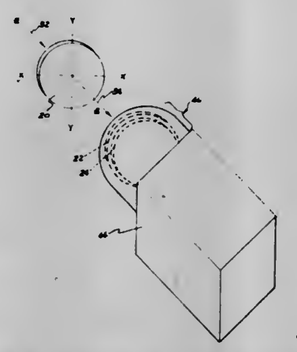
1. In an apparatus for simultaneously cooling a plurality of planar semiconductor devices, a common chamber containing a pressurized hydraulically compressible medium and having a plurality of aligned first openings in a bounary wall thereof, a plurality of parallel elongated rods individually extending outwardly from and slidably mounted within the respective first openings, the inner ends of the rods being in direct fluid pressure communication with the compressible medium, a plurality of heat sinks individually associated with the rods and having first and second opposed surfaces, the first surfaces of the heat sinks being engageable with corresponding surfaces of the respective semiconductive devices, means for individually and rigidly coupling the outer end of each rod to the second surface of the associated heat sink so that each resulting rod-heat sink assembly constitutes a rigid piston acted upon with the same pressure by the compressible medium, and means coupled to the interior of the chamber for varying the hydraulic pressure of the compressible medium within the chamber.

4,067,043

OPTICAL CONVERSION METHOD

William E. Perry, LaPorte, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 21, 1976, Ser. No. 651,007
Int. Cl.² H04N *9/04*
U.S. Cl. 358—55 **5 Claims**



5. The method of switching a television system between a

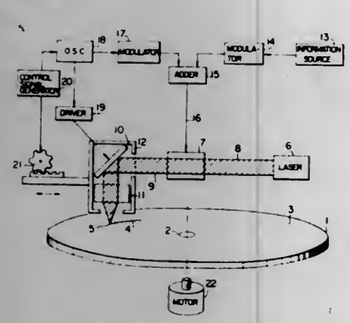
color mode and a black-and-white mode said television system having an optical pickup comprising an electrooptic device located between crossed polarizing devices comprising a first and second polarizing means all positioned along a common optical axis and capable of producing sequential color light signals, comprising the steps of converting said television system to said color mode by placing said first polarizing means along said optical path of said optical signal pickup, and converting said television system to said black-and-white mode by removing said first polarizer from said optical path of said optical signal pickup.

4,067,044

INFORMATION RECORDING AND RETRIEVAL APPARATUS

Takesi Maeda, Kokubunji; Mahito Kohmoto, Tokyo, and Seiji Yonezawa, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 3, 1976, Ser. No. 654,966
Claims priority, application Japan, Feb. 5, 1975, 50-14401
Int. Cl.² H04N 5/76; G11B 21/08
U.S. Cl. 358—128 **20 Claims**



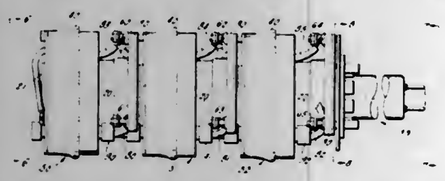
11. A rotary recording medium comprising a recording surface having an information signal and a standard signal recorded in superposed relation on a plurality of information tracks wobbling along concentric circles or a spiral line, said standard signal, at a given track, having a frequency varying depending on the recorded position of said track, wherein the frequency of track wobbling is equal to and synchronized with the frequency of the standard signal.

4,067,045

LOW LIGHT LEVEL CAMERA WITH PARALLEL-CONNECTED SLIDABLY MOUNTED INTENSIFIER ASSEMBLIES

John K. Provost, Babylon, and Charles Lien, Huntington, both of N.Y., assignors to Venus Scientific Inc., Farmingdale, N.Y.

Filed Sept. 28, 1976, Ser. No. 727,527
Int. Cl.² H04N 5/30
U.S. Cl. 358—211 **7 Claims**



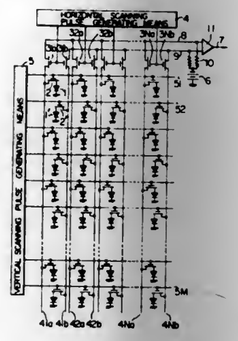
1. A low level light camera comprising, in combination:
a support frame;
a plurality of identical image intensifier assemblies each having a pair of high-voltage terminals;
a vidicon tube optically coupled to and axially aligned with said image intensifier assemblies;
a high-voltage power supply having an output voltage substantially equal to the required voltage for operating any one of said image intensifier assemblies;
connecting means connecting said plurality of identical image intensifier assemblies and said vidicon tube to said support frame;
and means connecting each of said pair of high-voltage terminals in parallel with one another and to said output voltage of said high-voltage power supply.

4,067,046

SOLID STATE IMAGING DEVICE

Hirokuni Nakatani; Toru Takamura, both of Takatsuki; Yoshimitsu Hiroshima, Hirakata, and Susumu Hashimoto, Katano, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Mar. 1, 1976, Ser. No. 662,337
Claims priority, application Japan, Mar. 10, 1975, 50-29373
Int. Cl.² H04N 5/30
U.S. Cl. 358—213 **6 Claims**



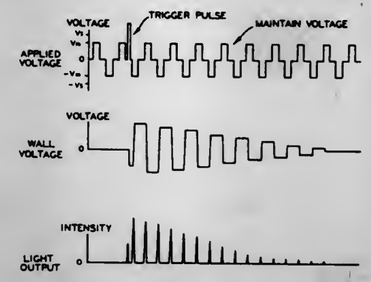
1. A solid state imaging device comprising a plurality of photo-electric transducing means arranged in rows and columns, each of said transducing means including a photo-sensitive device and a vertical switching device having a first electrode connected to one terminal of said photo-sensitive device, a second electrode and a control electrode, the control electrodes of the vertical switching devices in each row being connected in common; a plurality of pairs of horizontal switching devices, one pair being provided for each column, each horizontal switching device having a first electrode, a second electrode and a control electrode, the first electrode of one of said pair of horizontal switching devices being connected in common with the second electrodes of the vertical switching devices in the odd rows of its corresponding column and the first electrode of the other of said pair of horizontal switching devices being connected in common with the second electrodes of the vertical switching devices in the even rows of said corresponding column, the control electrodes of the horizontal switching device in each pair being connected together; a differential amplifier having a first input terminal connected in common to the second electrodes of one of the horizontal switching devices in each pair and a second input terminal connected in common to the second electrodes of the other of the horizontal switching devices in each pair; and first and second load resistors connected between the first and second input terminals of said differential amplifier, a power supply being connected between the junction of said resistors and the other terminals of said photo-sensitive device;
whereby, only noise components are derived from one of the horizontal switching devices in each pair and both noise and signal components in proportion to the quantity of light incident on a corresponding photo-sensitive device are derived from the other of said pair of horizontal switching device when scanning pulses are supplied sequentially to the control electrodes thereof, thereby obtaining only said signal components from the output of said differential amplifier.

4,067,047

CIRCUIT AND METHOD FOR GENERATING GRAY SCALE IN GASEOUS DISCHARGE PANELS

William H. Ryan, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 29, 1976, Ser. No. 671,163
Int. Cl.² H04N 5/66; H05B 41/00
U.S. Cl. 358—240 **20 Claims**



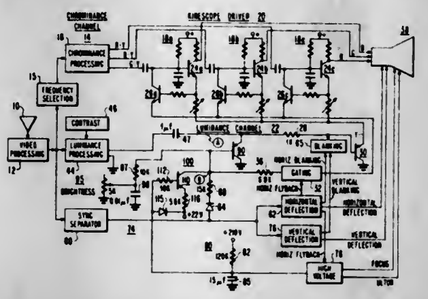
12. A method of obtaining variable light intensity from a gas discharge display/memory cell comprising the steps of:
sampling an analog video signal to generate a sample having a potential proportional to the magnitude of said video signal when said sample was taken;
storing said sample;
generating a trigger signal from said stored sample, said trigger signal having a wave form with at least one dimension proportional to the potential of said sample so as to cause a gas discharge proportional to the light intensity desired;
applying said trigger signal across said cell; and
applying an alternating current maintain voltage signal to said cell of a constant magnitude insufficient to initiate a gas discharge or to maintain a sequence of gas discharges or relatively constant intensity for an indefinite length of time, the maintain voltage magnitude being sufficient to maintain a sequence of gas discharges for a number of cycles of the maintain voltage signal proportional to the selected dimension of said trigger signal.

4,067,048

AUTOMATIC BEAM CURRENT LIMITER

Marvin Nell Norman, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 19, 1976, Ser. No. 715,861
Int. Cl.² H04N 5/68
U.S. Cl. 358—243 **7 Claims**



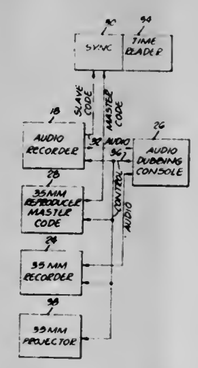
1. In a system for processing television signals including a luminance component, said system including a luminance channel for processing said luminance component, an image reproducing device, and high voltage supplying means for providing operating potential for said image reproducing device, apparatus responsive to excess current drawn by said image reproducing device comprising:
sensing means for deriving a control voltage representing the magnitude of current drawn by said image reproducing device from said high voltage supplying means;
a control amplifier transistor having an input coupled to said sensing means and having an output coupled to said luminance channel, said transistor exhibiting a threshold conduction level defining first and second conductive conditions; and
clamping means, exhibiting a clamping conduction level and operative independent of said transistor, coupled to said sensing means for clamping said control voltage to a reference potential to inhibit undesired excursions of said control voltage in one direction when said current is less than a predetermined level to thereby facilitate a desired response time of said apparatus, such that said control transistor exhibits said first conductive condition when the magnitude of current drawn by said image reproducing device is substantially equal to or less than said predetermined level;
said clamping means being rendered non-conductive and said control transistor exhibiting said second conductive condition when said current exceeds said predetermined level to provide an output signal of a magnitude proportional to the amount by which said predetermined level is exceeded for translating said luminance component in a direction to proportionally reduce the magnitude of said current toward said predetermined level.

4,067,049

SOUND EDITING SYSTEM

Joseph D. Kelly, Glendale; Emory M. Cohen, Santa Monica; Barry K. Henley, Canoga Park; Hammond H. Holt, Sherman Oaks, and John Agalsoff, Downey, all of Calif., assignors to Glen Glenn Sound, Hollywood, Calif.

Filed Oct. 2, 1975, Ser. No. 619,030
Int. Cl.² G11B 15/18
U.S. Cl. 360—14 **6 Claims**



1. A sound editing system comprising
a. a video recording means having means for starting and stopping said video recorder means;
b. a first multi-channelled audio tape recorder having means for starting and stopping said first audio tape recorder;
c. means for synchronizing the movement of said video recorder and said multi-channelled audio tape recorder;
d. means for visually displaying the position of at least one of said recorders at any time;
e. a second audio tape recorder, said second audio tape recorder having its audio output connected to a control board, said control board having means for activating a selected channel of said first multi-channelled audio tape

recorder, and the output of said control board connected to the input of said first multi-channelled audio recorder;

f. said control board having a plurality of means for acting upon the input signal to said control board to alter the characteristics of said input signal; and

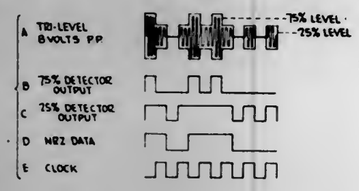
g. means for providing a switching signal on at least one channel of said first multi-channelled audio tape recorder for switching the output signal on a second channel of said first multi-channelled audio tape recorder to a selected one of said plurality of means for acting on the input signal to said control board.

4,067,050

PROGRAMMED PRESENTATION SYSTEM

Clement W. Munninghoff, Cincinnati, Ohio, assignor to Cincinnati Electronics Corporation, Cincinnati, Ohio

Division of Ser. No. 412,963, Nov. 5, 1973, Pat. No. 3,987,484. This application Sept. 1, 1976, Ser. No. 719,468
Int. Cl.² G11B *5/09, 5/02*
U.S. Cl. 360—40 **20 Claims**



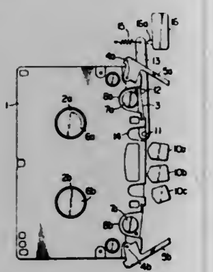
1. A system for detecting clock and binary data signals on a moving magnetic tape comprising a track on the tape having a relatively constant frequency audio carrier while the tape is moving at a substantially constant speed, said carrier having three predetermined envelope amplitude levels, two of said levels being associated with different binary values, and the third level being associated with clock pulses, playback means responsive to the audio carrier, said playback means including means for detecting the three amplitude levels of the carrier, and means responsive to the detected amplitude levels for deriving signals indicative of the magnitude of the binary data and of the occurrence of the clock pulses.

4,067,051

CARTRIDGE TYPE MAGNETIC RECORDING AND REPRODUCING SYSTEM

Yuji Nakamura, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed June 28, 1976, Ser. No. 700,497
Int. Cl.² G11B *15/66, 15/18*
U.S. Cl. 360—95 **2 Claims**



1. A magnetic recording and reproducing system of the type employing a tape cartridge having a magnetic tape wound therein on first and second reel hubs and including means for withdrawing a length of tape from the cartridge and pressing it against a magnetic transducer, wherein the improvement comprises:

first and second rotatable reel mounts having said reel hubs mounted thereon,

a take-up motor coupled to said first reel mount, said take-up motor rotating said first reel mount to wind the tape back into the cartridge when the pressure on said tape which holds it against said magnetic transducer is released and the tape becomes slack,

braking means for applying a braking force to said second reel mount when said system is not in the recording, reproducing or fast-forward modes,

a tape tension increase sensing member for sensing the increase in tape tension when said tape is wound back into said cartridge by said take-up motor, and

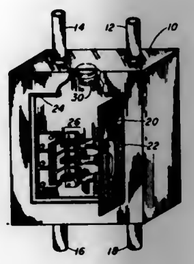
stopping means for stopping rotation of said first reel mount by said take-up motor when said sensing member senses the increase of tape tension, whereby said tape is accommodated within said cartridge without any slack therein.

4,067,052

PROCESS FOR DETECTING ELECTRICAL FAULTS

Charles J. Neuhoff, R.D. 5 Delta Lane, Johnstown, Pa. 15905

Continuation-in-part of Ser. No. 490,020, July 19, 1974, abandoned. This application May 3, 1976, Ser. No. 682,349
Int. Cl.² H02H *3/16*
U.S. Cl. 361—42 **11 Claims**



1. A process for detecting at an incipient stage thereof, phase-to-phase and phase to ground faults characterized by arcing and generated in an enclosure configured and dimentioned to provide a volumetric capacity substantially only for retaining select electrical power distribution and regulation components within a normally enclosed and stable environment of atmospheric air, said enclosure being situate at a predetermined location within a power input system wherein electrical circuits extend in power supply relationship into said enclosure and are coupled electrically with said components, comprising the steps of:

monitoring the said atmospheric air environment only of said enclosure by the surveillance thereof with ionization chamber detection means, the presence of said arcing characterized fault derived ionized matter and subsequently generated particulate matter within said enclosure altering a known electrical parameter thereof from a first to a second condition to sense the said incipient stage of a said fault;

generating an electrical signal in response to the said ionization chamber detection means electrical parameter alteration to said second condition;

transmitting said generated electrical signal to means for opening the said electrical circuit coupled to said component at which said fault occurs; and

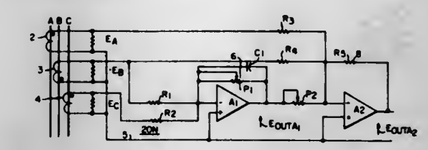
opening the said electrical circuit to halt the flow of current therewithin to said component at which said fault occurs in response to said signal transmitted to said means for opening said electrical circuit.

4,067,053

ACTIVE SYMMETRICAL COMPONENT SEQUENCE FILTER

Kung C. Chow, Whippany, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 3, 1976, Ser. No. 692,695
Int. Cl.² H02H *3/26*
U.S. Cl. 361—76 **24 Claims**



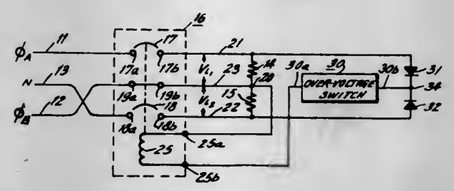
1. A symmetrical component deriving network for a three-phase electrical system having phase conductors *a, b* and *c* with a phase rotation *a,b,c,* said network comprising first and second circuit means energized by first and second electrical quantities respectively, said quantities being derived from the quantities Q of said phase conductors, said first circuit means having a first phasor voltage output quantity which is the phasor quantity $Qc-Qb$ where Qb and Qc are the quantities Q of the phase conductors *b* and *c* respectively, said second circuit means having a second phasor voltage output quantity which is the phasor quantity $Qa-Qb$ where Qa *and* Qb are the quantities Q of the phase conductor *a* and *b* respectively, a phase shifting device having its input energized with said first phasor quantity and having an output circuit, said phase shifting device being effective to shift the phase of said first phasor quantity to provide third phasor quantity at an angle of $+120°$ with respect to said first phasor quantity, a summing network having first and second input circuits and an output circuit, said first input circuit of said summing network being energized by the third phasor quantity, said second input circuit of said summing network being energized by said second phasor quantity, said summing network having an output quantity proportional to the negative symmetrical component of said electrical system having the phase rotation *a.b.c.*

4,067,054

OVER-VOLTAGE PROTECTION

William Randolph Clark, Bedford, MA, assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Apr. 29, 1976, Ser. No. 681,691
Int. Cl.² H02H *3/20*
U.S. Cl. 361—91 **9 Claims**



1. Circuit protection apparatus for disconnecting a power distribution circuit having a plurality of energized lines and a neutral line coupled between an A.C. energy source and a utilization device, said apparatus comprising:

circuit interruption means having a pole in electrical series connection with each said energized line;

trip means coupled to said circuit interruption means for substantially simultaneously disconnecting all said energized lines from said utilization device responsive to an energization of said trip means; and

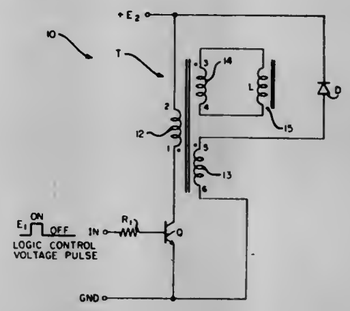
an over-voltage sensor of the Avalanche type coupled to each said energized line and adapted to couple a substantially zero amount of energy to said trip means when the voltages on all said energized lines are less than a predetermined value and to energize said trip means responsive to a voltage on at least one energized line in excess of said predetermined value, said over-voltage sensor and said trip means being connected to said power distribution circuit in such a manner that said sensor will energize said trip means even when said neutral line is open.

4,067,055

HIGH-SPEED INDUCTANCE DRIVER

Philip W. Koetsch, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 26, 1976, Ser. No. 735,662
Int. Cl.² H01H *47/32*
U.S. Cl. 361—159 **6 Claims**



1. A driver circuit comprising:

a transformer having primary, secondary and tertiary windings;

a driver switch for connecting a power source in circuit with the primary winding of said transformer;

an inductive load connected in circuit with the secondary winding of said transformer; and

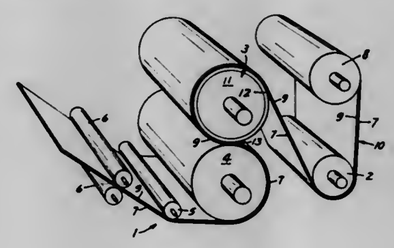
unidirectional current means connecting the tertiary winding in circuit to said power source for purposes of directing the energy stored in the inductive load back to the driving source.

4,067,056

POLING MACHINE FOR CONTINUOUS FILM OF PYROELECTRIC AND/OR PIEZOELECTRIC MATERIAL

Allen L. Taylor, Woodbury, and William F. Sheffield, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 479,663, June 17, 1974, abandoned. This application Oct. 1, 1976, Ser. No. 728,513
Int. Cl.² H01G *7/02*
U.S. Cl. 361—233 **8 Claims**



1. A poling apparatus for continuously processing a length of film of polymeric material to semipermanently align the

dipoles of the film to provide at least one of pyroelectric and piezoelectric properties in the film, which apparatus comprises:

a drive means for continuously advancing said film past a poling station;

a first means for applying an electrical potential on at least one side of a portion of said film;

a second means located at the poling station and spaced from an opposite side of said film for coacting with said first means to establish an electric field greater than 4,000 volts/mm across said portion of said film for aligning the dipoles of said portion to provide at least one of pyroelectric and piezoelectric properties in said portion of said film, one of which of said first and second means provides heat for raising the temperature of at least a segment of said portion of said film above the film poling temperature during at least a portion of the time the alignment of the dipoles of said segment is influenced by said electric field;

a current limiting layer carried on said second means for contacting said opposite side of said film, the electrical resistance between opposite surfaces of said layer being substantially less than the resistance between opposite surfaces of the film during normal poling operation, and providing current limiting protection when an electrical short occurs between the surfaces of the film; and

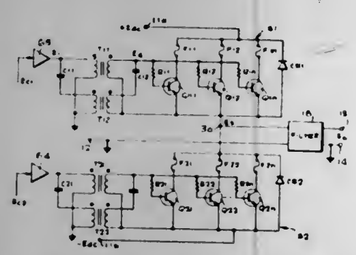
a fixing means for cooling the heated portion of said film below said poling temperature while the dipoles of said portion of said film are substantially held in alignment by the influence of said electric field.

4,067,057

DC TO AC SWITCHING CONVERTER

Fausto V. Taddeo, San Gabriel, and Raymond W. Pauly, Newport Beach, both of Calif., assignors to Pacific Electronic Enterprises Inc., Rosemead, Calif.

Filed June 25, 1976, Ser. No. 699,865
Int. Cl.² H02M 1/12
U.S. Cl. 363—41 **15 Claims**



1. A DC to AC power converter comprising:

a plurality of input terminals adapted to be connected to a source of DC power, one of said terminals being connectable to a reference voltage of said DC power source;

a plurality of switch means including at least first and second switches directly connected to at least some of said input terminals, each switch being switchable between On and Off states;

output means including a pair of converter output terminals to which an AC load is adapted to be connected, and including filter means connected between said switch means and said output terminals; and

control means connected to said output terminals and to said switch means for regulating the AC output voltage at said output terminals to be at a preselected output frequency, definable as f_o of a preselected waveshape, and for controlling the switching of each of said power switches between its On and Off states, with a selected switching frequency, definable as f_s, where $f_s = nf_o$, n being not less than 10

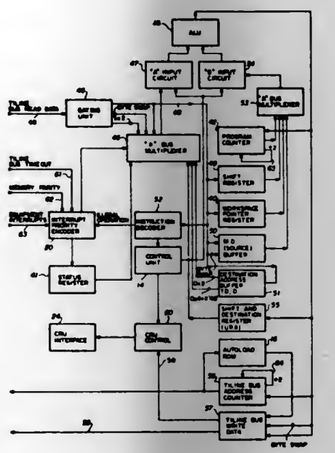
said control means include means for applying turn-on and turn-off signals to each of said switches, to respectively drive the switch to its On and Off states, respectively, and means for controlling the application of a turn-on signal to one of said switches only after the passage of a preselected time interval following the application of a turn-off signal to the other of said switches.

4,067,058

WORKSPACE ADDRESSING SYSTEM

David Peter Brandstaetter, and James Marion Harris, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 408,150, Oct. 19, 1973, Pat. No. 3,944,985. This application Sept. 8, 1975, Ser. No. 611,478
Int. Cl.² G06F 9/18, 9/20
U.S. Cl. 364—200 **7 Claims**



1. A high speed context switching computer having a memory comprising:

a. a multi-bit multi-function arithmetic unit having two inputs and an output;

b. a workspace pointer register, a program counter register and a status register containing the address of the first element of a first workspace in memory of a problem program, the address of the current instruction in the problem program and the status of the problem program, respectively;

c. a first and second multiplexer each having its output connected to a respective one of the inputs of the arithmetic unit, the workspace pointer register and the program counter register each being connected at their outputs to the inputs of one of the multiplexers, the input to the workspace pointer register being connected to the output of the memory and the input to the program counter register being connected to the output of the arithmetic unit;

d. means connected to the memory and to the arithmetic unit for executing the problem program;

e. control means having an interrupt signal input, said control means being connected to the means for executing and he arithmetic unit, operable upon occurrence of an interrupt signal, for stopping the problem program and for performing an interrupt program, said control means including means for storing in elements of a second workspace located at addresses in memory a predetermined number of locations from the absolute address of the first element thereof, the contents of the registers at the instant of the occurrence of the interrupt signal; and

f. control means operable upon completion of the interrupt program to return to the registers the contents of the predetermined elements for resumption of execution of

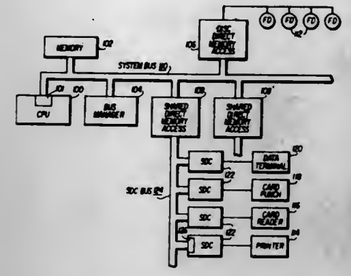
the problem program at the point therein at which the interrupt signal occured.

4,067,059

SHARED DIRECT MEMORY ACCESS CONTROLLER

Nicholas Derchak, Hatfield, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 29, 1976, Ser. No. 653,408
Int. Cl.² G06F 13/00
U.S. Cl. 364—200 **15 Claims**



1. In a data processing system having a common address bus and a common data bus interconnecting a central processor and a memory, and a plurality of peripheral devices, the improvement comprising:

an addressable direct memory access unit connected to said common address and data buses for controlling the direct transfer of data between said peripheral devices and said memory, a plurality of addressable subsystem device controllers connected between said direct memory access controller and the peripheral devices controlled by said direct memory access controller, a common subsystem device controllers to said direct memory access controller;

address recognition means in said shared direct memory access controller for recognizing some of the address bits on said common address bus as the address of said shared direct memory access controller;

gating means responsive to said address recognition means and an INPUT instruction from said central processor for gating address bits on said common address bus onto said common subsystem bus as the address of a status register in a selected on of said subsystem device controllers;

said selected subsystem device controller including a status register and means returning the value in its status register to said shared direct memory access controller over said common subsystem bus;

a register in said direct memory access controller for receiving and storing said value; and,

means transferring said value to said central processor from said register over said common data bus, whereby said INPUT instruction functions both to start a device controller and cause its status to be transferred to said central processor.

4,067,060

TRANSFER FUNCTION MEASUREMENT

Denis Poussart, and Udaya Ganguly, both of Ste-Foy, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed July 6, 1976, Ser. No. 702,764
Int. Cl.² G06F 15/34
U.S. Cl. 364—553 **4 Claims**

1. Apparatus for the measurement in real-time of the transfer function in both magnitude and phase of an unknown system comprising:

a. means for engendering a pseudo-random binary sequence test signal, said signal spectrum being white in amplitude;

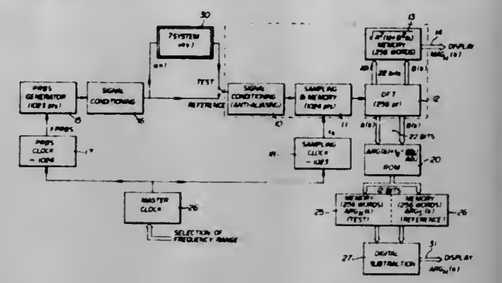
b. a sampling and memory circuit;

c. means to apply the test signal either directly to the sampling and memory circuit as a reference signal or to the unknown system such as to obtain a response signal that is applied to the sampling and memory circuit;

d. means to match the timing of the said test signal and the sampling and memory circuit;

e. means connected to the output of the sampling and memory circuit for measuring the discrete fourier transform in terms of magnitude and phase of the signal applied from the sampling and memory circuit;

f. means for computing the magnitude portion of the transfer function from the signal obtained from the means for measuring discrete fourier transform, storing said magnitude portion of the transfer function and passing to an output;



g. means for computing the phase portion of the transfer function from the signal obtained from the means for measuring discrete fourier transform;

h. a first memory means connected to the output of the means for computing the phase portion of the transfer function for storing the phase portion of the transfer function in relation to the reference signal;

i. a second memory means connected to the output of the means for computing the phase portion of the transfer function for storing the phase portion of the transfer function in relation to the response signal; and

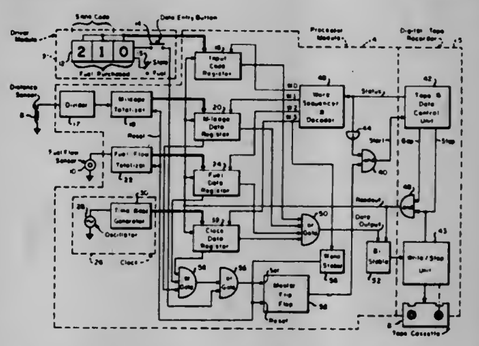
j. means for subtracting the signal obtained from the first and second memory means and passing the result to an output.

4,067,061

MONITORING AND RECORDING SYSTEM FOR VEHICLES

John Emil Juhasz, Lake Orion, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 18, 1975, Ser. No. 559,509
Int. Cl.² G06F 3/05, 3/02, 13/00
U.S. Cl. 364—900 **8 Claims**



1. A vehicle mounted system for monitoring and storing values of parameters associated with operation of the vehicle

comprising sensor means connected to the vehicle for sensing values of operational parameters of the vehicle, pulse producing means connected to the sensor means for producing pulses representative of the values of operational parameters of the vehicle in response to the sensor means, counter means connected to the pulse producing means for receiving and accumulating pulses from the pulse producing means and providing parallel signals representative of the accumulated pulses, temporary storage register means connected to the counter means for receiving and storing the signals from the counter means and including paralled to series converter means for converting the stored signals from paralled to series signals, sequencer and decoder means connected to the temporary storage register means for reading out the stored series signals in a predetermined sequence upon initiation, input code register means connected to the sequencer and decoder means for receiving and storing parallel signals and including parallel to series converter means for converting the stored parailel signals to a series signals and driver module input means connected to the input code register means for producing parallel signals, the driver module input means comprising a first manually settable counter means for producing parallel signals representative of states and a second manually settable counter means for producing parallel signals representative of amounts of fuel received, data entry means connected to the driver module input means and connected to the sequencer and decoder means for selectively initiating operation of the sequencer and decoder means, and permanent storage means connected to the temporary storage register means for receiving the signals read out from the temporary storage register means, said sequencer and decoder means reading out the stored series signals from the input code register to the permanent storage means, and permanent storage control means connected to the temporary storage register means and to the sequencer and decoder means and to the permanent storage means for starting the sequencer and decoder means and permanent storage means for reading out series signals from the temporary storage register means to the permanent storage means, in response to an overflow of the signals stored in the temporary storage register means.

DESIGN PATENTS

GRANTED JANUARY 3, 1978

ERRATA

For CLASS	See PATENT NO.
D12–133	246,838
D15–032	246,845
D15–127	246,846
D19–087	246,847

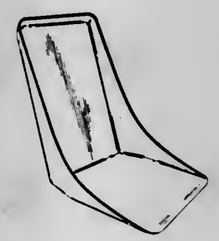
DESIGNS

JANUARY 3, 1978

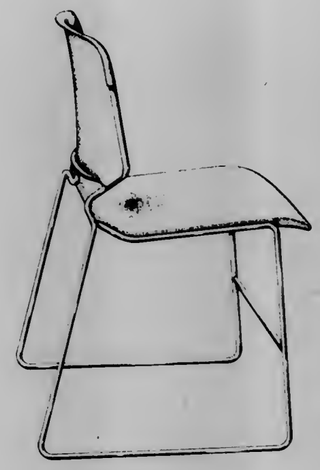
246,811
CHAIR
Gerhart P. Klein, and Brigitte I. Klein, both of 45 Raymond St., Manchester, Mass. 01944
Filed Aug. 4, 1976, Ser. No. 711,171
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



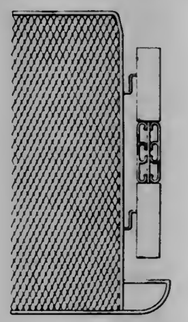
246,812
BOAT SEAT SHELL
Lawrence E. Canter, Bryan, and James E. Lammy, Napoleon, both of Ohio, assignors to Scott Port-A-Fold, Inc., Archbold, Ohio
Filed Sept. 12, 1973, Ser. No. 396,619
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



246,813
CHAIR
Thomas H. Tolleson, Green Bay, Wis., assignor to Krueger Metal Products, Inc., Green Bay, Wis.
Filed Aug. 2, 1976, Ser. No. 710,536
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



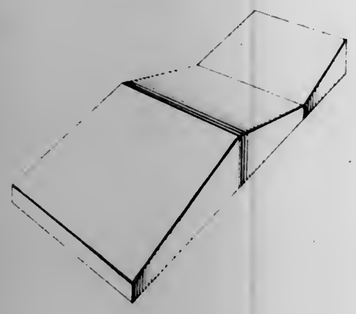
246,814
COMBINED DIVIDER AND SIGN HOLDER FOR MERCHANDISE BINS
Albert L. Peggs, 3450 Conata St., Duarte, Calif. 91010
Filed Mar. 24, 1976, Ser. No. 669,853
Term of patent 14 years
Int. Cl. D6—*99*; D20—*02*
U.S. Cl. D6—85



246,815
PILLOW
Phyllis S. Sillers, 14255 SW. Bonnie Brae St., Beaverton, Oreg. 97005
Filed Aug. 1, 1975, Ser. No. 601,022
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—202



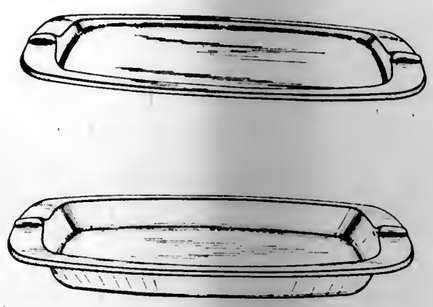
246,816
CONTOUR MAT
John Tam, 333 E. 53rd St., New York, N.Y. 10022, and Leonard Horowitz, 51 W. 81st St., New York, N.Y. 10028
Filed Mar. 12, 1974, Ser. No. 450,473
Term of patent 14 years
Int. Cl. D6—*09, 01*
U.S. Cl. D6—201



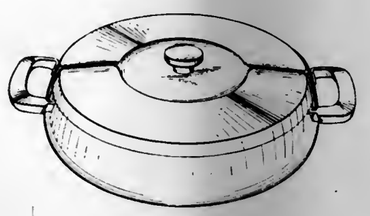
246,817
SKIRT HANGER
Mario Mainetti, Valdagno, (Vicenza), Italy, assignor to Mainetti S.p.A., Castelgomberto (Vicenza), Italy
Filed May 22, 1975, Ser. No. 579,826
Claims priority, application Italy, Dec. 5, 1974, 64296/74
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—252



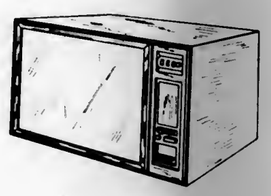
246,818
FOOD DISH
Carl-Arne Breger, Lilla Molleberga, 212 90 Malmo, Sweden
Division of Ser. No. 453,153, March 20, 1974, Pat. No. Des. 239,687. This application Mar. 29, 1976, Ser. No. 671,485
Claims priority, application Sweden, Sept. 21, 1973, 731724
Term of patent 7 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



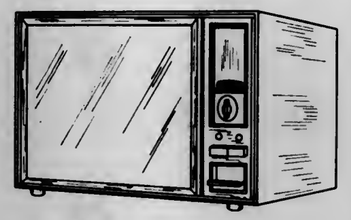
246,819
VEGETABLE DISH
Carl-Arne Breger, Lilla Molleberga, 212 90 Malmo, Sweden
Division of Ser. No. 453,153, March 20, 1974, Pat. No. Des. 239,687. This application Mar. 29, 1976, Ser. No. 671,484
Claims priority, application Sweden, Sept. 21, 1973, 731724
Term of patent 7 years
Int. Cl. D7—*01*
U.S. Cl. D7—17



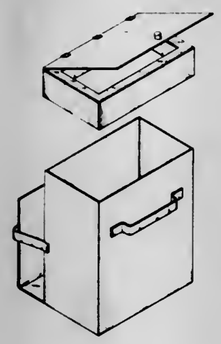
246,820
ELECTRONIC COOKING RANGE
Yoshio Suganoya, and Takao Miyake, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 16, 1976, Ser. No. 714,582
Claims priority, application Japan, Feb. 20, 1976, 51-5661
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—128



246,821
COOKING RANGE
Yoshio Suganoya, and Takao Miyake, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 16, 1976, Ser. No. 714,583
Claims priority, application Japan, Feb. 20, 1976, 51-5660
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—128



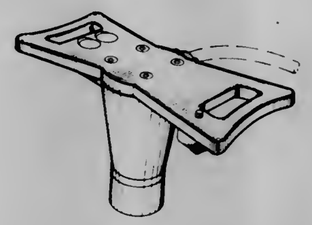
246,822
COMBINED TRASH CONTAINER AND TRASH BAG HOLDER
William Stoufer, 521 Alvarado Way, Davis, Calif. 95616
Filed Jan. 29, 1976, Ser. No. 653,365
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—194



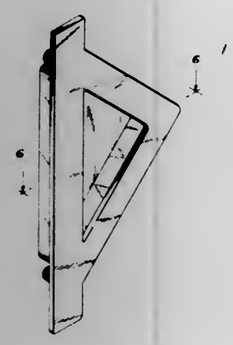
246,823
PLASTIC LINE MISSILE TO BE USED WITH FISHING LINE IN ELECTRICAL CONDUIT OR PIPE
Warren E. Duclon, Rockford, Ill., assignor to Greenlee Bros. & Co., Rockford, Ill.
Filed July 21, 1976, Ser. No. 707,414
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



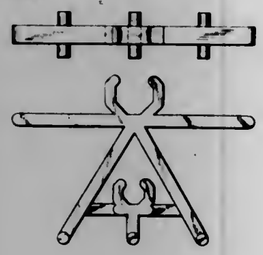
246,824
PORTABLE DENT REMOVER
Karl A. Hansen, and I. Glen Hendrickson, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Sept. 27, 1976, Ser. No. 726,871
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—67



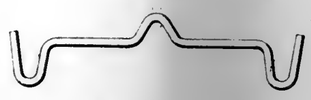
246,825
DRAWER PULL
Mortimer Deutsch, 50-39 175th Place, Fresh Meadows, N.Y. 11365
Filed Dec. 13, 1976, Ser. No. 749,668
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—319



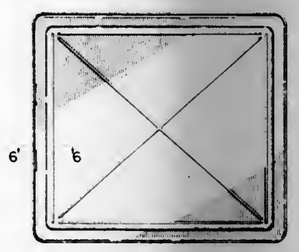
246,826
REINFORCING ROD SUPPORT
Robert J. Ilukowicz, 60 Howe Road, Coram, N.Y. 11727
Filed Feb. 6, 1976, Ser. No. 655,751
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



246,827
HOOK FOR SUSPENDING AN ANIMAL
Robert N. Crawford, 410 Lakeview, Sugarland, Tex. 77478
Filed Mar. 31, 1976, Ser. No. 672,529
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—370



246,828
TOTE BOX LID
Thomas H. White, Issaquah, Wash., assignor to Rubbermaid Industrial Products Corporation, Statesville, N.C.
Filed June 4, 1976, Ser. No. 693,223
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—267



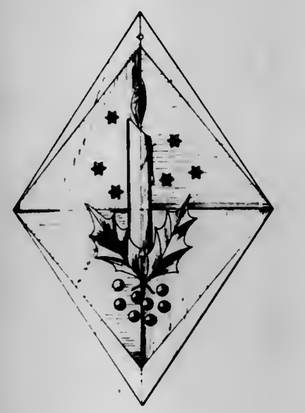
246,829
RAIN GAUGE BOX
Wilbur C. McEvers, 655 Ave. C. SW., Winter Haven, Fla.
Filed Dec. 9, 1975, Ser. No. 639,187
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—101



246,830
BRACELET
Elio Lossini, Johnston, R.I., assignor to Raybeth Tool & Die Co., Inc., Providence, R.I.
Filed June 1, 1976, Ser. No. 692,029
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—12



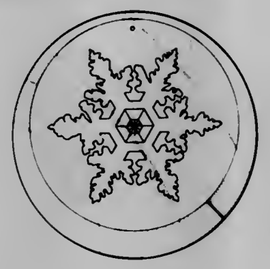
246,831
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Mar. 1, 1976, Ser. No. 662,752
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—125



246,832
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Mar. 1, 1976, Ser. No. 662,753
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—125



246,833
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 7, 1976, Ser. No. 674,530
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—125



246,834
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Mar. 1, 1976, Ser. No. 662,754
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—127



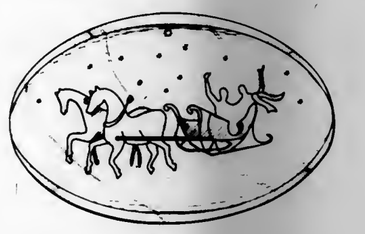
246,835
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Mar. 1, 1976, Ser. No. 662,755
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—127



246,836
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Mar. 1, 1976, Ser. No. 662,756
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—128



246,837
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 7, 1976, Ser. No. 674,524
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—128



246,838
COMBINED STROLLER CANOPY AND REAR DRAPE THEREFOR
Robert J. Boudreau, 626 S. Richard St., Bedford, Pa. 15522
Filed Jan. 21, 1976, Ser. No. 650,911
Term of patent 7 years
Int. Cl. D12—*12*
U.S. Cl. D12—133



246,839
PLAQUE
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 7, 1976, Ser. No. 674,528
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—133



246,840
PLAQUE
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 7, 1976, Ser. No. 674,529
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—134



246,841
PLAQUE
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 7, 1976, Ser. No. 674,527
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—136



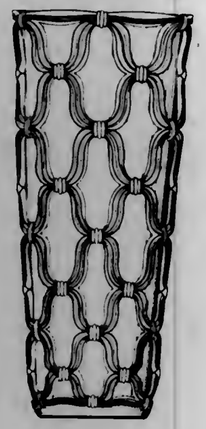
246,842
PLAQUE
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 7, 1976, Ser. No. 674,523
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—137



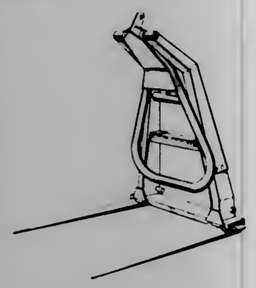
246,843
PLAQUE
Carl G. Bestler, Owatonna, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed May 24, 1976, Ser. No. 689,218
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—137



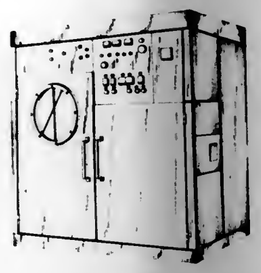
246,844
VASE
Ernest O. Brody, Cleveland, Ohio, assignor to Lancaster Colony Corporation, Columbus, Ohio
Filed Apr. 13, 1977, Ser. No. 787,067
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152



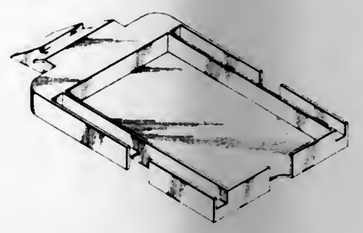
246,845
BALE HANDLING APPARATUS
Donald L. Sheesley, New Holland, and Allison W. Blanshine, Lititz, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Jan. 15, 1976, Ser. No. 649,379
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—32



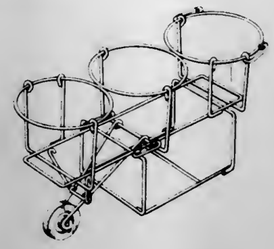
246,846
PLANING-MACHINE
Tosten Dahlin; John Grieves, both of Svartviksvagen 18, S-161 32 Bromma, and Torgny Lundin, Korpasv. 6A, S-433 00 Partille, all of Sweden
Continuation-in-part of Ser. No. 467,501, May 6, 1974, abandoned. This application May 28, 1976, Ser. No. 690,927
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—127

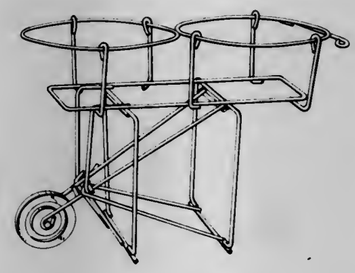


246,847
TELEPHONE ACCESSORY HOLDER
Paul H. Landau, and Harolyn S. Landau, both of 8632 W. Olympic Blvd., Los Angeles, Calif. 90035
Filed May 7, 1976, Ser. No. 684,164
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—87

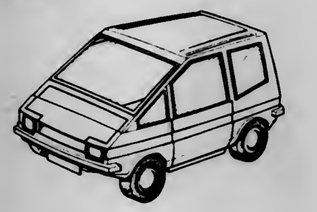


246,848
MOBILE GARBAGE CAN HOLDER
Johnny G. Allen, 603 Cedar Ave., Albany, Ga. 31701
Filed Dec. 9, 1976, Ser. No. 749,148
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—21

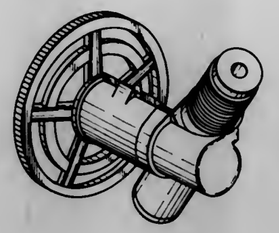




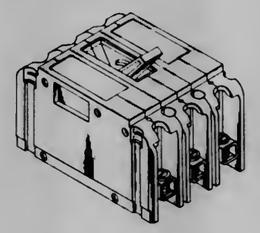
246,849
AUTOMOBILE
Frederick Leslie Hart, Cressage, England, assignor to GKN Sankey Limited, Bilston, England
Filed Mar. 4, 1977, Ser. No. 774,507
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—90



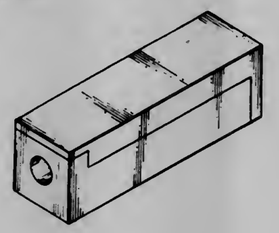
246,850
RIM DRIVE FOR A BICYCLE SPEEDOMETER
Charles F. Hennecke, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Dec. 18, 1975, Ser. No. 642,176
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



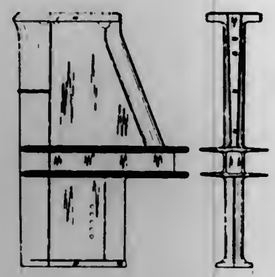
246,851
MULTI-POLE CIRCUIT BREAKER
Edward Tarchalski, Lawrenceville, N.J., and Albert D. Lisnay, Sarasota, Fla., assignors to Heinemann Electric Company, N.J.
Filed July 19, 1976, Ser. No. 706,277
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—34



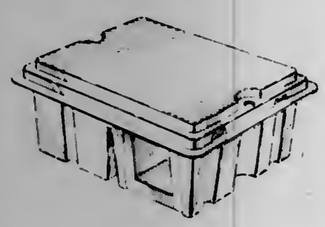
246,852
TELEPHONE JACK HOUSING AND COVER
James C. Deitch, Bloomington, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.
Filed May 27, 1976, Ser. No. 690,371
Term of patent 14 years
Int. Cl. D14—*99*; D13—*99*
U.S. Cl. D14—59



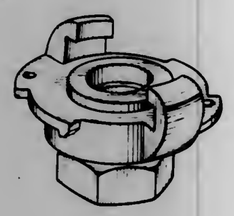
246,853
EXHAUST OUTLET HOUSING FOR OUTBOARD MOTORS
Donald J. Berchem, West Bend, Wis., assignor to Chrysler Corporation
Filed June 23, 1976, Ser. No. 699,106
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—4



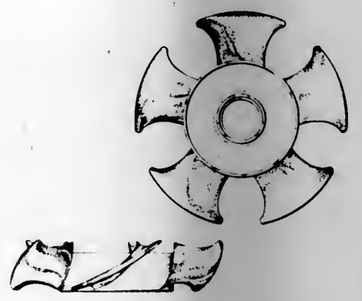
246,854
RODENT BAIT FEEDING BOX OR SIMILAR ARTICLE
Stanley Z. Baker, Cleveland Heights, Ohio, assignor to J. T. Eaton & Company, Cleveland, Ohio
Filed July 15, 1976, Ser. No. 705,689
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



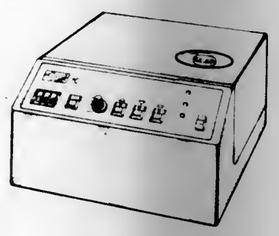
246,855
COUPLING
Howard Archibald Treloar, 52 Maitland St., Mitcham, Australia (5062)
Filed Apr. 1, 1976, Ser. No. 672,834
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



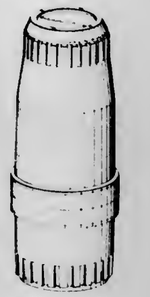
246,856
AIR IMPELLER
John F. O'Connor, Torrington, Conn., assignor to Torin Corporation, Torrington, Conn.
Filed Feb. 9, 1976, Ser. No. 656,394
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—165



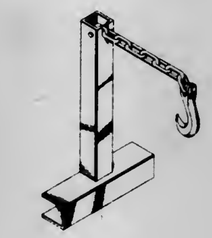
246,857
APPARATUS FOR DETERMINING THE MELTING POINT OF MATERIALS
Martin Meuli, Oetwil, and Josef Tresch, Greifensee, both of Switzerland, assignors to Mettler Instruments AG, Zurich, Switzerland
Filed June 16, 1976, Ser. No. 696,730
Term of patent 14 years
Int. Cl. D24—*01*; D10—*05*
U.S. Cl. D24—8



246,858
INSULATED HOLDER FOR A NURSING BOTTLE
Scott E. Larson, 313 Riverwoods Lane, Burnsville, Minn. 55337
Filed June 16, 1976, Ser. No. 696,682
Term of patent 14 years
Int. Cl. D24—*99*; D7—*01*
U.S. Cl. D24—48



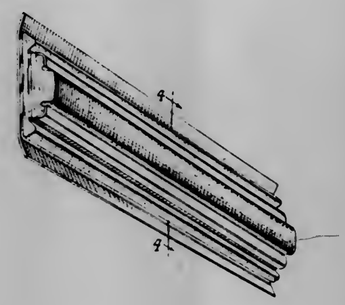
246,859
SCAFFOLD JACK
Earl E. Schmitz, 123 - 5th Ave. SE., Beach, N. Dak. 58621
Filed June 9, 1976, Ser. No. 694,164
Term of patent 7 years
Int. Cl. D25—*99*
U.S. Cl. D25—68



246,860
PLANT TRELLIS
Raymond L. Facey, 146-61 Lakewood Ave., Jamaica, N.Y. 11435
Filed Aug. 6, 1976, Ser. No. 712,249
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—71



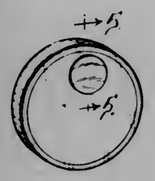
246,861
COMBINED TRIM STRIP AND REMOVABLE PAPER BACKING THEREFOR
Brian A. Wenrick, Dayton, Ohio, assignor to Helene Curtis Industries, Inc., Chicago, Ill.
Filed Jan. 26, 1976, Ser. No. 652,207
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—79



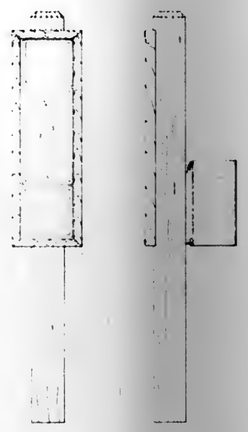
246,862
LIGHTER FOR SMOKERS
Lars-Erik Hallden, Geneva, Switzerland, assignor to Interfeudor S.A., Geneva, Switzerland
Filed July 15, 1976, Ser. No. 705,605
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—39



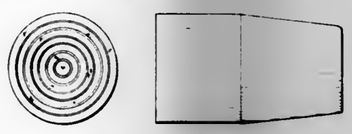
246,863
LIGHTER
Franz Alban Stützer, Mulheim (Main), Germany, assignor to Rowenta-Werke, GmbH, Offenbach (Main), Germany
Filed Nov. 24, 1976, Ser. No. 744,621
Claims priority, application Germany, June 4, 1976, 5 MR 9951
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



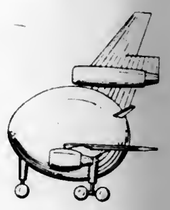
246,864
COMBINED FAIRWAY MAP REFUSE RECEIVER AND YARD MARKER FOR A GOLF COURSE
Peter J. Genova, P.O. Box 309, Oakdale, Calif. 95361
Filed June 28, 1976, Ser. No. 695,181
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



246,865
GOLF PUTTER HEAD
John F. Krysakowski, 186 Berrian Road, Stamford, Conn. 06905
Filed Mar. 1, 1976, Ser. No. 662,889
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



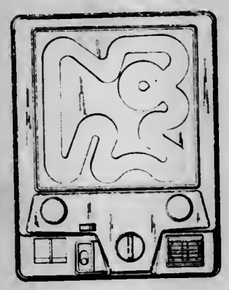
246,866
TOY AIRPLANE
James F. Loomis, Seattle, Wash., assignor to Industrial & Promotional Toys, Inc., Seattle, Wash.
Filed Nov. 28, 1975, Ser. No. 635,972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



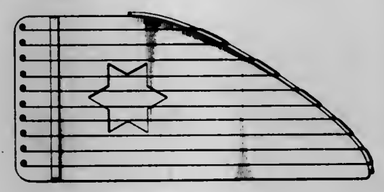
246,867
TOY AIRPLANE
James F. Loomis, Seattle, Wash., assignor to Industrial & Promotional Toys, Inc., Seattle, Wash.
Filed Nov. 28, 1975, Ser. No. 635,974
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



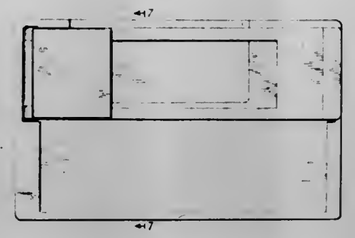
246,868
RACING GAME BOX
Hitoshi Itakura, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sept. 30, 1976, Ser. No. 728,384
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CC

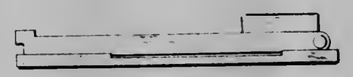


246,869
BOX HARP
Adele K. Ledford, 3211 Castlewood, Houston, Tex. 77025
Filed Dec. 18, 1975, Ser. No. 641,735
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A

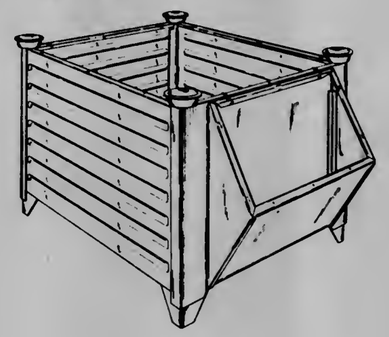


246,870
CREDIT CARD IMPRINTER OR SIMILAR ARTICLE
Paul A. Kalb, 268 Ocean Ave., Islip, N.Y. 11751, and Roy H. Lindberg, 164 S. Windsor Ave., Brightwaters, N.Y. 11718
Filed Mar. 22, 1976, Ser. No. 669,151
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B

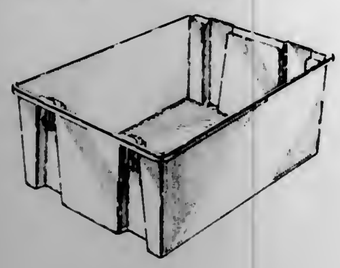




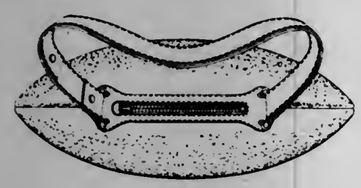
246,871
MATERIAL HANDLING BOX
Robert L. Silver, and Bert R. Eisenhut, both of Racine, Wis., assignors to Triple E Corporation, Racine, Wis.
Filed Mar. 10, 1976, Ser. No. 665,508
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



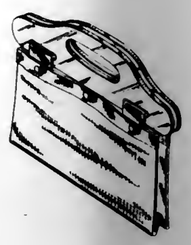
246,872
TOTE BOX
Thomas H. White, Issaquah, Wash., assignor to Rubbermaid Industrial Products Corporation, Statesville, N.C.
Filed June 4, 1976, Ser. No. 693,224
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D87—1 R



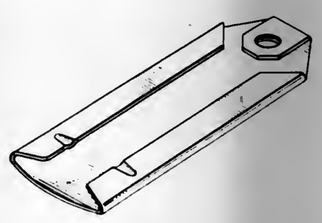
246,873
HANDBAG
Laura J. Kling, 2030 Amherst Road NE., Massillon, Ohio 44646
Filed Apr. 30, 1976, Ser. No. 682,106
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 C



246,874
HANDBAG
Lawrence B. Schwartz, Fairfield, Conn., assignor to Acricite Company, Inc., Bridgeport, Conn.
Filed Nov. 3, 1976, Ser. No. 738,583
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



246,875
COMBINED KEY AND COIN HOLDER
Wallace D. Ellison, 3116 Glendon Ave., Los Angeles, Calif. 90034
Filed Oct. 1, 1975, Ser. No. 618,377
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—8.4



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF JANUARY, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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A. B. Dick Company: *See—*
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Aatinen, Eino, to Valmet Oy. Rolls and roll-manufacturing methods. 4,065,842, Cl. 29-148.40D.
AB Bofors: *See—*
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AB Kabi: *See—*
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AB Tellusond: *See—*
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Abel, Heinz; and Topfl, Rosemarie, to I.W.S. Nominee Company Limited; and Ciba-Geigy AG. Process for modifying keratinous materials. 4,066,392, Cl. 8-127.500.
Abu-Isa, Ismat A.: *See—*
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Ackrell, Jack, to Syntex (U.S.A.) Inc. 6,11-Dihydrodibenzo-[b. e.]-thiepin-11-one-3-aldehyde and 3-acetal derivatives. 4,066,663, Cl. 260-327.00B.
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Addressograph-Multigraph Corporation: *See—*
Bradbury, Wilburn F., 4,066,255, Cl. 271-265.000.
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Adelstein, Gilbert W.; Dajani, Esam Z.; and Yen, Chung Hwai, to G. D. Searle & Co. 1-Triarylalkyl-4-phenyl-4-piperidine carboxylic acids and derivatives. 4,066,654, Cl. 260-293.690.
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Agence Nationale de Valorisation de la Recherche Anvar: *See—*
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Nakatani, Kiyoshi; Imamura, Juichi; Ichikawa, Toshiyuki; Takeuchi, Kouichi; and Kotaka, Kenji, 4,066,707, Cl. 260-613.00R.
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Agey, Michael J. Instant coffee dispenser. 4,066,186, Cl. 222-48.000.
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Plursch, Gerald; and Leuchter, Jurgen, 4,067,035, Cl. 354-313.000.
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Dixon, Dale D.; Ford, Michael E.; and Mantell, Gerald J., 4,066,630, Cl. 260-77.50D.
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Tosaka, Osamu; Morioka, Hajimu; Hirakawa, Hayao; Ishii, Kenji; Kubota, Koji; and Hirose, Yoshio, 4,066,501, Cl. 195-29.000.
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Mogavero, Louis N.; Johnson, Edwin G.; Evans, John M., Jr; and Albus, James S., 4,067,015, Cl. 343-225.000.
Alcalay, Joseph, to J. I. Case Company. Oscillatory electro-hydraulic system. 4,066,004, Cl. 91-183.000.
Alcan Research and Development Limited: *See—*
Sheasby, Peter Geoffrey; and Cheetham, Graham, 4,066,816, Cl. 428-336.000.
Alde, Murray William, Sr. Hydraulic engine. 4,066,003, Cl. 91-170.00R.
Aldridge, Clyde L.; and Bearden, Roby, Jr., to Exxon Research & Engineering Co. Hydroconversion of heavy hydrocarbons. 4,066,530, Cl. 208-112.000.
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Zaremski, Donald R.; and Krepler, Albert, 4,066,521, Cl. 204-141.500.
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Allen, David O.: *See—*
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Allied Chemical Corporation: *See—*
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Althaus, Raymond L., to Motorola, Inc. Digital transponder universal pulse assembly. 4,067,011, Cl. 343-6.8LC.
Alton Box Board Company: *See—*
Griffith, Harold J., 4,066,205, Cl. 229-17.00B.
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Naito, Hirokuni; Yoshimura, Isao; Takao, Norito; and Kawame, Yasuta, 4,066,811, Cl. 428-220.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Enomoto, Shigeo, 4,067,031, Cl. 354-195.000.
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; Mita, Kunio; Kawasaki, Masahiro; and Mori, Chiharu, 4,067,023, Cl. 354-23.00D.
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Asai, Soichiro; Matsuishi, Tsutomu; Matsushita, Katsunobu; Ikeda, Shigeho; Kobayashi, Kaetsu; and Maruyama, Hiromasa, to Ajinomoto Co., Inc. Method of producing carbon source for fermentation. 4,066,502, Cl. 195-47.000.
ASEA Aktiebolaget: *See—*
Elvin, Sten, 4,066,141, Cl. 180-2.00R.
Ashida, Akira: *See—*
Takahashi, Kiyoshi; Takimoto, Hiroyuki; Yamada, Takashi; Itani, Takashi; Ashida, Akira; and Suzaki, Kuniyoshi, 4,066,963, Cl. 352-12.000.
Ashida, Kaneyoshi; Frisch, Kurt C.; and Kordomenos, Panagiotis, to Mitsubishi Chemical Industries Ltd. Oxazolidone catalyst. 4,066,628, Cl. 260-77.50R.
Ashland Oil, Inc.: *See—*
Hartlage, James A., 4,066,652, Cl. 260-289.0XA.
Myers, George D.; Walters, Paul W.; and Cottage, Robert L., 4,066,533, Cl. 208-153.000.
Asia American Industries Ltd.: *See—*
Yamazaki, Shogo, 4,067,027, Cl. 354-79.000.
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Devlin, Thomas A., 4,066,300, Cl. 303-96.000.

Asselin, Andre A.: *See—*
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Associated Data Concepts: *See—*
Saylor, William H.; and Narey, James O., 4,067,006, Cl. 340-325.000.
Associated Portland Cement Manufacturers Limited, The: *See—*
Burke, Edward, 4,066,471, Cl. 106-104.000.
Shiel, Leslie Edward; and Jones, Kenneth Wilson, 4,066,469, Cl. 106-89.000.
Astra Chemical Products AB: *See—*
Smith, Roy Henry; and McAllan, Alexander Baxter, 4,066,750, Cl. 424-180.000.
Ataka, Hisanori: *See—*
Koide, Hiroshi; Iida, Katsuhiko; Ataka, Hisanori; and Homae, Taisaburo, 4,066,350, Cl. 353-27.00R.
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Blazek, William S.; Piwonka, Thomas S.; Jackson, James D.; and Atanmo, Philip N., 4,066,116, Cl. 164-17.000.
Ateliers de Constructions Mecaniques Seailles & Tison: *See—*
Tison, Eric, 4,066,016, Cl. 101-228.000.
Ateliers de la Motobecane: *See—*
Jaulmes, Eric, 4,065,945, Cl. 70-58.000.
Atkinson, Eulas R.; and Kemp, Willard E., to ACF Industries, Incorporated. Self compensating seat for a spherical plug valve. 4,066,240, Cl. 251-175.000.
Atlantic Richfield Company: *See—*
Erickson, Henry, 4,066,740, Cl. 423-628.000.
Simpson, Terry Lee, 4,065,929, Cl. 61-45.00D.
Spence, Andrew P., 4,066,297, Cl. 299-4.000.
Atlas Manufacturing, Inc.: *See—*
Wedel, Mark J., 4,066,308, Cl. 312-333.000.
Atlas Powder Company: *See—*
Fowler, Frank C., 4,066,514, Cl. 203-11.000.
Auhorn, Werner: *See—*
Scharf, Emil; Fikentscher, Rolf; Auhorn, Werner; and Streit, Werner, 4,066,494, Cl. 162-164.0EP.
Aumuller, Walter: *See—*
Weber, Helmut; Muth, Karl; Weyer, Rudi; Aumuller, Walter; and Haack, Erich, 4,066,639, Cl. 260-239.0BF.
Auriemma, Robert Sinbad. Underground drainage pipe. 4,065,925, Cl. 61-11.000.
Automation Electronics Corporation: *See—*
Giordano, John K., 4,066,847, Cl. 179-99.000.
Automation Industries, Inc.: *See—*
Arneson, Hal, 4,066,315, Cl. 339-89.00M.
Axelrod, Robert Jay, to General Electric Company. Stabilized polycarbonate composition. 4,066,611, Cl. 260-45.80A.
Ayerst, McKenna and Harrison Ltd.: *See—*
Bagli, Jehan F.; and Bogri, Tibor, 4,066,784, Cl. 424-305.000.
Demerson, Christopher A.; Humber, Leslie G.; Santroch, George; Dobson, Thomas A.; and Jirkovsky, Ivo, 4,066,763, Cl. 424-246.000.
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,066,779, Cl. 424-274.000.
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,066,780, Cl. 424-274.000.
Ayukawa, Buichiro, to Shikoku Paper Mfg. Co., Ltd. Method of purification of waste water by treatment with zirconium salt. 4,066,542, Cl. 210-51.000.
B. Braun Melsungen Aktiengesellschaft: *See—*
Breddin, Klaus; and Schremmer, Wolfgang, 4,066,360, Cl. 356-39.000.
B. F. Goodrich Company, The: *See—*
Chasar, Dwight William, 4,066,619, Cl. 260-45.95C.
Spaulding, David Chantrill, 4,066,583, Cl. 260-17.4SG.
Baatrup, Johannes Vagn; and Christensen, Thorkild, to Danfoss A/S. Hydraulic control means, particularly for vehicle steering means. 4,065,921, Cl. 60-385.000.
Baba, Kazuo: *See—*
Saito, Shinichi; Okaue, Asaya; Baba, Kazuo; and Tanaka, Shigeo, 4,066,718, Cl. 260-878.00B.
Babian, Gunther William; and Harris, Edward Bruce, to Union Carbide Corporation. Improved acrylate based radiation curable coating compositions containing nitrocellulose. 4,066,582, Cl. 260-17.00A.
Bachman, Paul L.; and Moskal, John J., to Horizons Incorporated, a division of Horizons Research Incorporated. Free radical photosensitive compositions with improved sensitivity and shelf life stability. 4,066,459, Cl. 96-45.200.
Backgard, Stig Gunnar Bengt: *See—*
Skoglund, Klas Axel Lennart; and Backgard, Stig Gunnar Bengt, 4,066,013, Cl. 100-53.000.
Baczek, Frank A.: *See—*
Emmett, Robert C., Jr.; Dicksa, James K.; Wojcik, Bruce C.; and Baczek, Frank A., 4,066,520, Cl. 204-108.000.
Badische Maschinenfabrik GmbH: *See—*
Dokoupil, Jiri; Zapfel, Horst; Gabelmann, Erich; and Breitwieser, Helmut, 4,065,943, Cl. 69-41.000.
Bagli, Jehan F.; and Bogri, Tibor, to Ayerst, McKenna and Harrison Ltd. Tropone derivatives. 4,066,784, Cl. 424-305.000.
Bahner, Randal E.; and Haws, Jay B. Locking stand for small, portable devices. 4,066,231, Cl. 248-13.000.
Bailey, David S.: *See—*
Mey, William; and Bailey, David S., 4,066,455, Cl. 96-1.50R.
Baitinger, William Frederick, Jr.: *See—*
Weyker, Robert George; and Baitinger, William Frederick, Jr., 4,066,391, Cl. 8-116.00P.
Baker, Charles E.; and Silverzweig, Abraham, to Elco Corporation. Method and apparatus for flat conductor cable termination. 4,066,319, Cl. 339-97.00R.
Balas, Salman Heskel; and Keiller, Clifton Quinton. Apparatus for playing a game. 4,066,263, Cl. 273-273.000.
Ball Corporation: *See—*
Scholes, Addison B.; Dollar, David L.; and Hurst, Robert L., 4,066,803, Cl. 427-26.000.
Ball, Dean M.; Fincher, Robert C.; and Orr, Clyde, Jr., to Micromeritics Instrument Corporation. Particle size separation by suspension flow in an unobstructed passageway. 4,066,536, Cl. 209-155.000.
Ballentine, Earle W. Apparatus for thawing frozen food. 4,066,011, Cl. 99-467.000.
Banoczi, Joseph A. Paint strainer. 4,066,557, Cl. 210-470.000.
Barbato, Mathew Martin: *See—*
Ackerman, Thomas Liddon; Barbato, Mathew Martin; and Vidmantas, Eugene, 4,065,965, Cl. 73-194.0EM.
Barber-Colman Company: *See—*
Boettner, Jon E., 4,066,725, Cl. 264-40.500.
Barding, Paul E. Anti-theft housing for vehicular communication equipment. 4,066,307, Cl. 312-242.000.
Bardonnet, Claude; Brun, Robert; and Pages, Michel, to Rhone-Poulenc Industries. Apparatus with supported tubular membranes for the treatment of fluids. 4,066,553, Cl. 210-321.00R.
Bardwell, Francis G.; and Dudek, Edmund C., to Thor Power Tool Company. Control circuit for a power tool. 4,066,942, Cl. 318-434.000.
Bargar Metal Fabricating Co.: *See—*
Penczak, John P., 4,065,896, Cl. 52-220.000.
Barlow, Roland J., to Ex-Cell-O Corporation. Actuator seal assembly. 4,066,007, Cl. 92-125.000.
Barmeier, Harold J., Jr.: *See—*
Walters, Chester H.; Barmeier, Harold J., Jr.; and Sullivan, Greig E., 4,066,545, Cl. 210-71.000.
Barnard, Dominick Paul Edmund, to Smiths Industries Limited. Speed sensing. 4,066,961, Cl. 324-163.000.
Baron, Arthur L.: *See—*
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Bartek, Gerhard: *See—*
Euer, Hartmut; and Bartek, Gerhard, 4,065,974, Cl. 73-430.000.
Barth, Wayne E., to Pfizer Inc. 2-[(Carboxy)(triphenylmethylamino)-methyl]-5,5-dimethyl-3-thiazoline. 4,066,657, Cl. 260-306.70R.
BASF Aktiengesellschaft: *See—*
Pommer, Ernst-Heinrich; Hagen, Helmut; and Fleig, Helmut, 4,066,775, Cl. 424-270.000.
Scharf, Emil; Fikentscher, Rolf; Auhorn, Werner; and Streit, Werner, 4,066,494, Cl. 162-164.0EP.
BASF Wyandotte Corporation: *See—*
Falkenstein, Georg; Fahrbach, Gerhard; and Wulff, Harald, 4,066,580, Cl. 260-2.5AW.
Bashkovich, Alexandr Pavlovich; Zimnukhova, Evgenia Semenovna; Prokopovich, Agnessa Vladimirovna; Polatovshaya, Olga Grigorievna; Pronina, Maria Ivanovna; Kulbakh, Valter Osvaldovich; Rivkina-Pevtsova, Khasya Ionovna; and Grinberg, Grigory Efimovich. Enzyme of hydrolytic action, enzymatic preparation, method for preparing both and their uses. 4,066,503, Cl. 195-62.000.
Basile, John. Equipment carrier. 4,066,156, Cl. 190-18.00A.
Bassani, Peppino. Seismic drill hole surface plug. 4,066,125, Cl. 166-202.000.
Bastert, Carl-Christian: *See—*
Gierse, Franz-Josef; Bastert, Carl-Christian; and Busch, Wilhelm, 4,065,837, Cl. 26-9.000.
Battelle Memorial Institute: *See—*
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Schneider, Michel, 4,066,505, Cl. 195-66.00R.
Bauer, Ernst, to Industriewerk Nachf. Seifert & Co. KG. Reel for cables, wires, and the like. 4,066,225, Cl. 242-118.800.
Bauereiss, Adolf: *See—*
Trattner, Hermann; Saatze, Kuno; and Bauereiss, Adolf, 4,065,956, Cl. 73-9.000.
Baum, Werner: *See—*
Frankle, Helmut; and Baum, Werner, 4,066,137, Cl. 175-14.000.
Bausch & Lomb Incorporated: *See—*
Van Exel, Gerrit A., 4,066,329, Cl. 350-77.000.
Baxter Travenol Laboratories, Inc.: *See—*
Achter, Eugene K., 4,066,361, Cl. 356-41.000.
Bayer Aktiengesellschaft: *See—*
Bockelmann, Wolfgang; Nieder-Vahrenholz, Hans-Georg; Niederprum, Hans; and Jonas, Heinz, 4,066,734, Cl. 423-61.000.
Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, 4,066,577, Cl. 260-2.00R.
Wolf, Gerhard Dieter; Miessen, Ralf; Kunzel, Hans Egon; and Bentz, Francis, 4,066,396, Cl. 8-178.00A.
Baylis, Howard Raymond; Edwards, Roger Alan; and Hedgeland, David Richard Sweatman, to Monotype Corporation Limited, The. Optical scanning apparatus. 4,067,021, Cl. 346-76.00L.
Baylor, John Merlin, to J. I. Case Company. Track joint with combined thrust and seal members. 4,066,302, Cl. 305-11.000.

BBC Brown Boveri & Company Limited: *See—*
Blank, Karl, 4,066,921, Cl. 310-61.000.
Giessner, Jean, 4,065,975, Cl. 73-510.000.
Schwarz, Martin, 4,066,100, Cl. 137-625.300.
Zeller, Hans Rudolf, 4,066,336, Cl. 350-160.00R.

Beach, Robert W.: *See—*
Cox, James P.; and Beach, Robert W., 4,066,400, Cl. 21-60.50R.

Bearden, Roby, Jr.: *See—*
Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,066,530, Cl. 208-112.000.

Beatrice Foods Co.: *See—*
Lindner, Henry, 4,066,236, Cl. 249-160.000.
Lindner, Henry, 4,066,331, Cl. 350-103.000.

Beaumont, Stanley. Apparatus for sewage treatment with countercurrent heat transfer means. 4,066,550, Cl. 210-183.000.

Bechtel International Corporation: *See—*
Leonard, Byron Herbert, Jr., 4,065,846, Cl. 29-407.000.

Bechtel, Jon H., to Robertshaw Controls Company. Temperature control circuit with two independent switch outputs. 4,066,867, Cl. 219-483.000.

Beck, Christian A.; Ross, William A.; and Burke, James E., to Pitney-Bowes, Inc. Copy paper storing and feeding apparatus. 4,066,220, Cl. 242-55.000.

Beck, Hans Werner; and Jager, Herbert Paul, to Valeron Corporation, The. Combined boring and threading tool. 4,066,380, Cl. 408-125.000.

Becton, Dickinson Electronics Company: *See—*
Wilner, Leslie B., 4,065,970, Cl. 73-727.00R.

Beelien, Cornelis W. Method and device for making a non-woven pile web. 4,066,487, Cl. 156-72.000.

Beers, Ronald W.; and Lakritz, Julian, to Matcote Company, Inc. Zinc enriched lithium silicate-latex coating composition. 4,066,598, Cl. 260-29.70S.

Beeston, John T., to Kirkpatrick, Robert E.; and Weaver, Curtis C. Silo level indicating system. 4,065,967, Cl. 73-295.000.

Behme, Werner; and Berleth, Manfred, to R. Jung AG Fabrik fur Prazisionsapparate. Method for specimen preparation. 4,066,728, Cl. 264-162.000.

Behringwerke Aktiengesellschaft: *See—*
Sieber, Axel, 4,066,581, Cl. 260-8.000.

Beilman, John L., to Calspan Corporation. Fluid speed indicating apparatus and densitometer. 4,065,957, Cl. 73-30.000.

Beisner, Klaus: *See—*
Brachthauser, Kunibert; Ramesohl, Hubert; Beisner, Klaus; and Herchenbach, Horst, 4,066,470, Cl. 106-100.000.

Belcher, Ralph L.; and Wood, Harry R. Chemical change measuring apparatus. 4,066,897, Cl. 250-358.00R.

Belke, William H.: *See—*
King, Ralph J.; Belke, William H.; and Dearlove, William E., 4,066,723, Cl. 264-34.000.

Bell & Howell Company: *See—*
Flint, John R., 4,066,349, Cl. 353-25.000.
Karp, Robert S.; and Flint, John R., 4,066,872, Cl. 353-26.00A.

Bell Telephone Laboratories, Incorporated: *See—*
Allen, Jont Brandon, 4,066,842, Cl. 179-1.00P.
Rollings, Robert William, 4,066,316, Cl. 339-91.00R.

Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., to Bristol-Myers Company. O-2-Isocephem-4-carboxylic acid derivatives as antibacterial agents. 4,066,831, Cl. 544-105.000.

Belyaev, Erik Konstantinovich: *See—*
Panov, Vadim Ivanovich; Tkach, Grigory Anatolievich; Tomenko, Viktor Mikhailovich; Zolotukhin, Boris Mikhailovich; and Belyaev, Erik Konstantinovich, 4,066,416, Cl. 23-283.000.

Bemmerl, Hans-Ferdinand: *See—*
Neu, Gustav; and Bemmerl, Hans-Ferdinand, 4,065,931, Cl. 61-45.00D.

Bender, Lawrence C. Removable toggle link. 4,065,833, Cl. 24-201.00A.

Bendix Corporation, The: *See—*
Eastman, James M., 4,066,002, Cl. 91-36.000.
Korte, Donald R., Jr., 4,066,945, Cl. 318-681.000.

Bent, Keith Joseph; and Turner, John Angus William, to Imperial Chemical Industries Limited. Process for combating fungi. 4,066,786, Cl. 424-313.000.

Bentz, Francis: *See—*
Wolf, Gerhard Dieter; Miessen, Ralf; Kunzel, Hans Egon; and Bentz, Francis, 4,066,396, Cl. 8-178.00A.

Bentz, Jack. Adjustable form stake assembly. 4,066,237, Cl. 249-213.000.

Benuzzi, Gino, to Giben Impianti S.p.A. Apparatus for feeding strips of panels. 4,065,991, Cl. 83-272.000.

Beny, Janos: *See—*
Meggs, Daniel H.; and Beny, Janos, 4,065,986, Cl. 81-128.000.

Beregi, Laszlo; Hugon, Pierre; Pascaud, Xavier; and Poignant, Jean-Claude, to Science Union et Cie., Societe Francaise de Recherche Medicale. N-substituted-2-aminomethyl-3-azabicyclo(3,3,0)octane compounds. 4,066,662, Cl. 260-326.850.

Berg, Jeffrey, to Johnson & Johnson. Disposable electrode. 4,066,078, Cl. 128-2.06E.

Berger, Isaac: *See—*
Apaloo, Thomas L.; Garside, Wayne H.; and Berger, Isaac, 4,066,869, Cl. 219-490.000.

Berges, David A., to SmithKline Corporation. 7-Acyl-3-(ureidoalkyl substituted tetrazolylthiomethyl)cephalosporins. 4,066,761, Cl. 424-246.000.

Berleth, Manfred: *See—*
Behme, Werner; and Berleth, Manfred, 4,066,728, Cl. 264-162.000.

Bernardo, Matthew: *See—*
Cretella, Salvatore J.; Bernardo, Matthew; and DeMusis, Ralph T., 4,065,879, Cl. 51-145.00R.

Bernfeld, Georg Josef. Wet magnetic separation of materials. 4,066,537, Cl. 209-223.00R.

Bernholdt, Harry F.: *See—*
Connick, Francis G.; and Bernholdt, Harry F., 4,066,790, Cl. 426-8.000.

Bernstein, Seymour: *See—*
Nair, Vijay Gopalan; Joseph, Joseph Peter; and Bernstein, Seymour, 4,066,829, Cl. 536-103.000.

Bernt, Erich: *See—*
Rauscher, Elli; Bernt, Erich; Gruber, Wolfgang; and Determann, Helmut, 4,066,508, Cl. 195-99.000.

Berry, Arthur E., to Berry, Madeline E. Fishing down-rigger vane and release. 4,065,869, Cl. 43-43.120.

Berry, Madeline E.: *See—*
Berry, Arthur E., 4,065,869, Cl. 43-43.120.

Bertaux, Jean-Loup; and Quessette, Jacques Alain, to Agence Nationale de Valorisation de la Recherche Anvar. Method of measurement of the concentration of a substance contained in a gas and devices for carrying out said method. 4,066,904, Cl. 250-372.000.

Besenmatter, Walter; Muszumanski, Trude; and Wendisch, Irmgard, to Vockenhuber, Karl; and Hauser, Raimund. Basic lens assembly for series of zoom objectives of different varifocal ratios. 4,066,340, Cl. 350-184.000.

Besso, Michael M.; and Saferstein, Lowell, to Celanese Corporation. Inverse interfacial polymerization for preparing certain halogenated aromatic polyesters. 4,066,623, Cl. 260-47.00C.

Beyer, Ralph E.: *See—*
Phillips, Carmen S.; Beyer, Ralph E.; and Sepich, Gerald E., 4,065,914, Cl. 56-341.000.

BFG Glassgroup: *See—*
Olink, Jan; and Dela Ruye, Jacques, 4,066,815, Cl. 428-336.000.

BICC Limited: *See—*
Moore, Alexander Joseph; Taylor, David Alexander; and Greene, David James, 4,066,987, Cl. 333-95.00R.

Bicking, John B.: *See—*
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,066,675, Cl. 260-400.000.
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,066,692, Cl. 424-312.000.

Biddlecom, William Gerard: *See—*
Woessner, Warren Dexter; Biddlecom, William Gerard; Arndt, Henry Clifford; Peruzzotti, George Peter; and Sih, Charles John, 4,066,834, Cl. 560-121.000.

Bierenfeld, Herbert H.; McGonigal, Charles; Horton, Chauncey M., Jr.; and Kelsey, John A., to Western Electric Company, Inc. Electrical conductor terminating system. 4,066,317, Cl. 339-91.00R.

Binard, Edouard, to N. V. Bekaert S. A. Method for making tubular welded wire screens. 4,066,202, Cl. 228-173.00E.

Bird, Thomas Lewis: *See—*
Jones, Ivor Wynn; Robinson, Graham; and Bird, Thomas Lewis, 4,066,826, Cl. 429-104.000.

Birtcher Corporation, The: *See—*
Reinhard, Clyde J., 4,066,974, Cl. 330-10.000.

Black Products Company: *See—*
Lau, Erwin M., 4,066,108, Cl. 141-68.000.

Blackhall, Alexander; Brydon, Donald Lithgow; and Seddon, John David, to Imperial Chemical Industries Limited. Oxadiazole polymers. 4,066,601, Cl. 260-30.80R.

Blackwood, Robert K.; and Stephens, Charles R., Jr., to Pfizer Inc. 4-Hydroxy-4-dedimethylamino-tetracyclines. 4,066,694, Cl. 260-559.0AT.

Blank, Karl, to BBC Brown Boveri & Company Limited. Exciter-current lead-through bolt interconnecting rotor shaft-enclosed lead-in conductor bar and terminal conductor bar leading to rotor winding. 4,066,921, Cl. 310-61.000.

Blanton, William A., Jr., to Chevron Research Company. Emerald green alumina. 4,066,573, Cl. 252-439.000.

Blazek, William S.; Piwonka, Thomas S.; Jackson, James D.; and Atanmo, Philip N., to TRW Inc. Mold assembly and method of making the same. 4,066,116, Cl. 164-17.000.

Bleckmann, Richard. Method of joining metal parts. 4,066,201, Cl. 228-115.000.

Bleicher, Manfred: *See—*
Wanner, Karl; Hahner, Reinhard; Schmid, Wolfgang; Hansel, Gernot; and Bleicher, Manfred, 4,066,136, Cl. 173-48.000.

Blick, John S., III; and Fuller, Ralph N., to Monogram Industries, Inc. Portable building structure. 4,065,885, Cl. 52-143.000.

Blohm, Thomas R.; Grisar, J. Martin; and Parker, Roger Alan, to Richardson-Merrell Inc. Substituted benzaldehyde hypolipidemic agents. 4,066,788, Cl. 424-333.000.

Bloom, Melvin S.; and Fico, Sally S., to Eastman Kodak Company. Photosensitive material comprising polyacetylenic amine salts. 4,066,676, Cl. 260-402.500.

Blutspendedienst der Landesverbande des Deutschen Roten Kreuzes Niedersachsen, Oldenburg und Bremen GmbH: *See—*
Oeser, Henning; and Ahrens, Ulrich, 4,066,549, Cl. 210-177.000.

Bobbe, Richard M., to Xerox Corporation. Half tone imaging system. 4,066,353, Cl. 355-4.000.

Bochumer Eisenhutte Heintzmann GmbH & Co.: *See—*
Neu, Gustav; and Bemmerl, Hans-Ferdinand, 4,065,931, Cl. 61-45.00D.
Spies, Klaus, 4,065,930, Cl. 61-45.00D.

Bockelmann, Wolfgang; Nieder-Vahrenholz, Hans-Georg; Niederprum, Hans; and Jonas, Heinz, to Bayer Aktiengesellschaft. Alkaline disintegration of chromites. 4,066,734, Cl. 423-61.000.

Bockenhoff, Hermann-Josef; Schaeffer, Walter; and Kranz, Berthold, to Arbed F & G Drahtwerke Cologne GmbH. Method of maintaining temperature of salt bath during quenching of steel wire. 4,066,477, Cl. 148-15.000.

Boehringer Mannheim GmbH: *See—*
Ceska, Miroslav, 4,066,509, Cl. 195-103.50R.
Rauscher, Elli; Bernt, Erich; Gruber, Wolfgang; and Determann, Helmut, 4,066,508, Cl. 195-99.000.

Boeing Company, The: *See—*
Johnson, Joseph M., 4,066,214, Cl. 239-265.190.

Boeniger, Regula: *See—*
Krasnobajew, Victor; and Boeniger, Regula, 4,066,504, Cl. 195-63.000.

Boettner, Jon E., to Barber-Colman Company. Injection molding control method. 4,066,725, Cl. 264-40.500.

Bogri, Tibor: *See—*
Bagli, Jehan F.; and Bogri, Tibor, 4,066,784, Cl. 424-305.000.

Bohm, Leslie Eric: *See—*
Jackson, W. Shaun; and Bohm, Leslie Eric, 4,066,196, Cl. 224-30.00A.

Bolger, Justin C., to Amicon Corporation. Unitary curable resin compositions. 4,066,625, Cl. 260-59.00R.

Boller, Arthur; Cereghetti, Marco; and Scherrer, Hanspeter, to Hoffman-La Roche Inc. Phenyl-pyrimidines. 4,066,570, Cl. 252-299.000.

Borchard, Heinz; Grottker, Gunter; and Thun, Peter, to TED Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec. Disc recording provided with legible matter. 4,066,268, Cl. 274-42.00R.

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Fenton, John William; Lee, Jerry Stevenson; and Buist, Richard James, 4,065,936, Cl. 62-3.000.
Gibbs, James Kiel, 4,066,157, Cl. 192-3.240.

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Boron, Alfred: *See—*
Karp, Alexander; and Boron, Alfred, 4,066,107, Cl. 141-11.000.

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Wismer, Marco; and Bosso, Joseph F., 4,066,592, Cl. 260-29.2EP.

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Diamand, Felix; Bourrabier, Guy; and Antoine, Robert, 4,066,979, Cl. 331-56.000.

Bowbin, John F., to Miller Fluid Power Corporation. Nuclear cylinder seal construction. 4,065,852, Cl. 308-3.500.

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Nobbs, William Harry; Bowker, Harold; and Tyburski, Peter Frank, 4,066,197, Cl. 224-42.010.

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Witkin, Donald E.; and Bowles, Arnold G., 4,066,868, Cl. 219-486.000.

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Brachthauser, Kunibert; Ramesohl, Hubert; Beisner, Klaus; and Herchenbach, Horst, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method for the treatment of finely grained material, particularly for the precalcining of cement. 4,066,470, Cl. 106-100.000.

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Speirs, Kenneth K.; and Bradley, Robert P., 4,066,806, Cl. 427-253.000.

Brake, Robert D. Mailbox signal kit. 4,066,209, Cl. 232-35.000.

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Loynes, Leslie M.; Walters, Darrel H.; and Penick, Clarence A., Jr., 4,065,946, Cl. 70-58.000.

Brandstaetter, David Peter; and Harris, James Marion, to Texas Instruments Incorporated. Workspace addressing system. 4,067,058, Cl. 364-200.000.

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Krylova, Eleonora Dmitrievna; and Brazhnikov, Nikolai Ivanovich, 4,065,958, Cl. 73-53.000.

Brdr. Schur International A/S, J. W. Schursevej: *See—*
Jorgensen-Beck, Frode; and Lambach, Heinrich Wilhelm, 4,066,207, Cl. 229-17.0SC.

Breddin, Klaus; and Schremmer, Wolfgang, to B. Braun Melsungen Aktiengesellschaft. Device for measuring and recording spontaneous blood platelet aggregation in platelet-rich citrated plasma. 4,066,360, Cl. 356-39.000.

Bredlau, Kenneth A. Amusement device. 4,066,265, Cl. 273-153.00R.

Breitenfellner, Franz; Buxbaum, Lothar; and Leidig, Karl, to Ciba-Geigy Corporation. Reinforced moulding composition based on thermoplastic polyesters. 4,066,607, Cl. 260-40.00R.

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Brentham, Jerry D. Neck exerciser. 4,066,259, Cl. 272-94.000.

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Bright, Charles R. Hollow plastic coop dowels with wood core. 4,066,042, Cl. 119-19.000.

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Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., 4,066,831, Cl. 544-105.000.
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,066,832, Cl. 544-105.000.

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Colten, Jerrold L., 4,066,870, Cl. 219-528.000.

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Waters, John M., 4,065,856, Cl. 33-287.000.

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Csutor, Endre, 4,066,990, Cl. 335-174.000.

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Ray, Louis M., Jr.; Pease, Leo L.; and Brown, Henry C., 4,066,296, Cl. 298-22.00J.

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Brown, Thomas: *See—*
Cuthbert, William Livingstone; and Brown, Thomas, 4,066,184, Cl. 220-9.0LG.

Brun, Robert: *See—*
Bardonnet, Claude; Brun, Robert; and Pages, Michel, 4,066,553, Cl. 210-321.00R.

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Hale, David Jerry, 4,066,057, Cl. 123-193.0CH.
Rostocil, Charles Edward, 4,066,000, Cl. 89-198.000.

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Bruschi, Barbara J., to Eastman Kodak Company. Multilayer analytical element. 4,066,403, Cl. 23-230.00B.

Bryden, Joseph E., to Raytheon Company. Adaptive compass drive system. 4,067,007, Cl. 340-347.0SY.

Brydon, Donald Lithgow: *See—*
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Bucalo, Louis. Method and structure for treating body fluids with cells therein. 4,066,359, Cl. 356-36.000.

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Cines, Martin R.; and Buchanan, Ben B., 4,066,538, Cl. 210-15.000.

Buchek, Francis Z., to Raymond Lee Organization, Inc., The. Drawer type luggage. 4,066,155, Cl. 190-3.000.

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Jungpeter, Raymond R.; and Buchholz, Jean L., 4,065,838, Cl. 26-94.000.

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Buckeye Molding Company: *See—*
Allen, David O.; and Wombold, Harry A. E., 4,066,182, Cl. 215-256.000.
Robinson, William H.; Allen, David O.; and Wombold, Harry A. E., 4,066,181, Cl. 215-256.000.

Budd Company, The: *See—*
Hannum, Joseph R.; and Santos, Gerard R., 4,066,489, Cl. 156-258.000.

Buist, Richard James: *See—*
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Buller, Paul L.; Chapman, William L.; Thomas, Bobby J.; and Fowler, James C., to United States of America, Interior. Seismic mine monitoring system. 4,066,992, Cl. 340-15.5MC.

Bunda, Tsuchio: *See—*
Takeuchi, Masaharu; Igarashi, Isemi; and Bunda, Tsuchio, 4,066,450, Cl. 75-229.000.

Bunge, Hans-Henning, to Ciba-Geigy Corporation. Water-soluble dye composition. 4,066,595, Cl. 260-29.40R.

Burch, Derek Ernest: *See—*
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Burdyn, Ralph F.: *See—*
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Burger, Manfred R.; Gagel, Ernst; Kalmovicz, Rudolf; and Prechtl, Alfred. Method to transfer heat or refrigerant and heat pump for practical application of this method. 4,065,937, Cl. 62-89.000.
Burgess, Roy. Menu planner. 4,065,863, Cl. 40-490.000.
Burgin, Kermit H. Rotary floor grain bin. 4,065,891, Cl. 52-65.000.
Burk, Claud A.: *See—*
Gaspar, Randle; and Burk, Claud A., 4,066,899, Cl. 250-358.00P.
Burke, Edward, to Associated Portland Cement Manufacturers Limited, The. Constructional cement. 4,066,471, Cl. 106-104.000.
Burke, Edward, Jr., to MFE Corporation. Compensated galvanometer. 4,066,958, Cl. 324-125.000.
Burke, James E.: *See—*
Beck, Christian A.; Ross, William A.; and Burke, James E., 4,066,220, Cl. 242-55.000.
Burr, Robert Page; Morino, Ronald; and Keogh, Raymond J., to Kollmorgen Technologies Corporation. Method of making multi-wire electrical interconnecting member having a multi-wire matrix of insulated wires mechanically terminated thereon. 4,065,850, Cl. 29-625.000.
Burrow, Reginald Edward Dowton; and Plaskitt, David Edmund, to Taylor Woodrow Construction Limited. Articulated joints for deep water installations. 4,065,935, Cl. 61-95.000.
Busch, Wilhelm: *See—*
Gierse, Franz-Josef; Bastert, Carl-Christian; and Busch, Wilhelm, 4,065,837, Cl. 26-9.000.
Buschor, Karl; and Ribnitz, Peter, to Gema AG Apparatebau. Apparatus for electrostatically applying coating material to articles and the like. 4,066,041, Cl. 118-629.000.
Buthmann, Hans-Peter, to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen. Method of cooling the ceiling reflector in a nuclear reactor. 4,066,499, Cl. 176-38.000.
Buxbaum, Lothar: *See—*
Breitenfellner, Franz; Buxbaum, Lothar; and Leidig, Karl, 4,066,607, Cl. 260-40.00R.
Herzog, Hans; Buxbaum, Lothar; Kainmuller, Thomas; and Habermeier, Jurgen, 4,066,626, Cl. 260-75.00N.
Buzzi, Leo; and Malobabic, Peter, to U.S. Philips Corporation. Reciprocating vibrating drive. 4,065,977, Cl. 74-49.000.
B.V. Koninklijke Maatschappij "De Schelde": *See—*
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C & E Enterprises, Inc.: *See—*
Crew, Robert T., 4,065,961, Cl. 73-117.300.
C. F. Scheer & Cie: *See—*
Fritsch, Rudolf Paul, 4,066,097, Cl. 137-563.000.
Cady, Norman F.: *See—*
Caron, James O.; Caron, Fred J.; and Cady, Norman F., 4,066,375, Cl. 404-121.000.
Caine, Gerard H., to Sundstrand Corporation. Combined pump and self-cleaning centrifugal contamination separator. 4,066,552, Cl. 210-304.000.
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Young, Jonathan D.; and Caldecott, Ross, 4,066,970, Cl. 328-67.000.
Callingham, Martin; and Curry, Kenneth Vasey, to Lever Brothers Company. Reducing the drying time of hair with fluorine-containing vinyl polymers. 4,066,746, Cl. 424-62.000.
Calspan Corporation: *See—*
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Calvert, Rodney K.; and Landrum, Charles Rabun, to Mead Corporation, The. Method for opening and erecting cartons. 4,066,009, Cl. 93-53.00M.
Campbell, James B. Ski clamping apparatus. 4,066,250, Cl. 269-43.000.
Canada Wire and Cable Limited: *See—*
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Canadian Patents and Development Limited: *See—*
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Takahashi, Kiyoshi; Takimoto, Hiroyuki; Yamada, Takashi; Itani, Takashi; Ashida, Akira; and Suzaki, Kuniyoshi, 4,066,963, Cl. 352-12.000.
Toyama, Masamichi; Takigawa, Tomoshi; Hirata, Noritsugu; and Ishikawa, Kazuo, 4,066,346, Cl. 352-72.000.
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Capozza, Richard C., to Alza Corporation. Polymeric orthoesters housing beneficial drug for controlled release therefrom. 4,066,747, Cl. 424-78.000.
Carli, Renzo, to Carrozzeria Pininfarina S.p.A. Automobile with sunshine roof. 4,066,292, Cl. 296-137.00C.
Carlin, Joseph T.; Ware, James W.; Mills, Melvin E., Jr.; and Wells, John A., to Texaco Inc. Salinity tolerant surfactant oil recovery process. 4,066,124, Cl. 166-252.000.
Carlson, David John, to RCA Corporation. Remote control transmitter with an audible battery life indicator. 4,067,000, Cl. 340-171.00R.
Carlsson, Hakan Hasse: *See—*
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Caron Compactor Company: *See—*
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Caron, Fred J.: *See—*
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Caron, James O.; Caron, Fred J.; and Cady, Norman F., to Caron Compactor Company. Replacement cap for compactor wheel. 4,066,375, Cl. 404-121.000.
Caron, LaVerne Andrew; Tomczak, Lawrence William; and Crall, Frederick William, to Chrysler Corporation. Transducer circuits. 4,066,054, Cl. 123-117.00R.
Carrier Corporation: *See—*
Apaloo, Thomas L.; Garside, Wayne H.; and Berger, Isaac, 4,066,869, Cl. 219-490.000.
Condrac, Edward J., 4,066,949, Cl. 324-262.000.
Carroll, Clifford Charles, to Milliken Research Corporation. Textile materials having improved elasticity and method for producing same. 4,066,397, Cl. 8-192.000.
Carrozzeria Pininfarina S.p.A.: *See—*
Carli, Renzo, 4,066,292, Cl. 296-137.00C.
Carson, William S. Container-dumping apparatus. 4,066,178, Cl. 214-313.000.
Carter, Efton T. Carburetor air intake velocity stack. 4,066,720, Cl. 261-44.00R.
Carter, Elbert P., to Du Pont de Nemours, E. I., and Company. Apparatus and method for performing photometric analysis. 4,066,362, Cl. 356-180.000.
Carter, Sidney T., to A-T-O Inc. Adhesive applying apparatus and method. 4,066,808, Cl. 427-428.000.
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King, Ralph J.; Belke, William H.; and Dearlove, William E., 4,066,723, Cl. 264-34.000.
Linne, Terry D., 4,066,269, Cl. 277-228.000.
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Hughes, O. Richard, 4,066,705, Cl. 260-604.0HF.
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Central Glass Company, Limited: *See—*
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Ceska, Miroslav, to Boehringer Mannheim GmbH. Detection of hydrolyzing enzymes. 4,066,509, Cl. 195-103.50R.
Chambers, Ramon P.; Sanders, David E.; and Gordy, Robert S., to E-Systems, Inc. Digitized AGC amplifier with gain hysteresis circuit. 4,066,977, Cl. 330-129.000.
Champan, Louis W.; and Perkins, Arthur T., to Melco. Combined rotary dial and touch-tone telephone decoding system. 4,066,846, Cl. 179-16.0EC.
Chang, Hsu, to International Business Machines Corporation. Field access of bubble domain lattice. 4,067,002, Cl. 365-43.000.
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Chang, Yew C.; Ovshinsky, Stanford R.; and Citkowski, Ronald W., to Energy Conversion Devices, Inc. Imaging and recording of information utilizing tellurium tetrahalide. 4,066,460, Cl. 96-48.00R.
Chapman, Arthur J. Bar jointing members. 4,066,371, Cl. 403-218.000.

Chapman, Orville L.: *See—*
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Chapman, William L.: *See—*
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Cheetham, Graham: *See—*
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Chen, Wu-Chi. Process for recovering hydrogen and elemental sulfur from hydrogen sulfide and/or mercaptans-containing gases. 4,066,739, Cl. 423-571.000.
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Chia, E. Henry, to Southwire Company. Method of producing a continuously processed copper rod. 4,066,475, Cl. 148-3.000.
Chiarolla, Victor D. Filter needle. 4,066,079, Cl. 128-218.00N.
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Chicago Fittings Corporation: *See—*
Struck, Leslie G., 4,066,283, Cl. 285-53.000.
Chiklis, Charles K., to Polaroid Corporation. Transparent supports for photographic products. 4,066,814, Cl. 428-333.000.
Chladil, Joseph J., Sr., to Koss Corporation. Rotary-type control for headphone earpiece. 4,066,849, Cl. 179-178.000.
Chlystun, Walter K. Container with collapsible pouring spout and improved reclosing means. 4,066,190, Cl. 222-529.000.
Choca, Monica E., to Nalco Chemical Company. Phospha-alumina gel and method of preparation. 4,066,572, Cl. 252-437.000.
Chollet, Jacques Antoine Leon Francois. Silicate-containing flame-resistant adhesive composition. 4,066,463, Cl. 106-15.0FP.
Chomerics, Inc.: *See—*
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Chovan, Stephan, to Societe Cyberson. Device for visually displaying luminous patterns. 4,065,865, Cl. 40-444.000.
Chow, Kung C., to Westinghouse Electric Corporation. Active symmetrical component sequence filter. 4,067,053, Cl. 361-76.000.
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Christie, Nick J.; Antisavage, Joseph P.; and Brupbacher, Eugene E. Stable hydrosulfite compositions. 4,066,390, Cl. 8-110.000.
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Nagarajan, Kuppuswamy; Arya, Vishwa Prakash; and George, Thomas, 4,066,778, Cl. 424-273.00R.
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von Bredow, Brigitta; and Pissiotas, Georg, 4,066,437, Cl. 71-91.000.
Cincinnati Electronics Corporation: *See—*
Munninghoff, Clement W., 4,067,050, Cl. 360-40.000.
Cines, Martin R.; and Buchanan, Ben B., to Phillips Petroleum Company. Water purification by treating with activated carbon before biochemical treatment. 4,066,538, Cl. 210-15.000.
Citizen Watch Company Limited: *See—*
Nakajima, Fumio; Machida, Takayasu; and Yamada, Kenji, 4,066,947, Cl. 318-696.000.
Citkowski, Ronald W.: *See—*
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Ciupke, Werner W., to Montron Corporation. Cartridge viewer. 4,066,348, Cl. 352-129.000.
CKD Praha, oborovy podnik: *See—*
Novak, Petr; Pellant, Michal; and Reichel, Pavel, 4,067,042, Cl. 357-82.000.
Clark, Garry E., to General Signal Corporation. Device for preventing traction power harmonic interference on high frequency track circuits. 4,066,229, Cl. 246-34.0CT.
Clark, Ian Sidney Rex; Pargeter, John Kenneth; and Ward, John Oliver, to International Nickel Company, Inc., The. Spray casting of gas atomized molten metal to produce high density ingots. 4,066,117, Cl. 164-46.000.
Clark, Jack D.: *See—*
McBride, La Vaughn R.; Clark, Jack D.; and Center, Dale, 4,066,605, Cl. 260-37.0EP.
Clark, William Randolph, to I-T-E Imperial Corporation. Over-voltage protection. 4,067,054, Cl. 361-91.000.
Clarke, Ellis Whiteside. Means for controlling fluid flow. 4,066,238, Cl. 251-6.000.
Clasen, Hermann, to Hoechst Aktiengesellschaft. Process for the manufacture of organic hydrazines. 4,066,698, Cl. 260-569.000.
Clatworthy, Edward Frederick: *See—*
Smith, Darrell Franklin, Jr.; Clatworthy, Edward Frederick; and Wenschhof, Donald Edward, Jr., 4,066,447, Cl. 75-122.000.
Clean Power Systems, Inc.: *See—*
Hager, Lowell T., 4,066,055, Cl. 123-119.00B.
Clemens, Carl F., to Xerox Corporation. Colored xerographic image transfer process. 4,066,802, Cl. 427-24.000.
Clements, Roy Milton, to Southern Pacific Transportation Company. Apparatus for locating a malfunctioning brake control valve on train. 4,066,299, Cl. 303-20.000.
Cobb, Thomas A. Dolly means. 4,066,272, Cl. 280-79.10R.
Coe, Norman O. Structural combination flange gauge. 4,065,855, Cl. 33-174.00R.
Coggins, Eugene L.: *See—*
Key, Walter W.; and Coggins, Eugene L., 4,066,975, Cl. 330-81.000.
Cohen, Antony. Loading ramp. 4,065,825, Cl. 14-72.500.
Cohen, Emory M.: *See—*
Kelly, Joseph D.; Cohen, Emory M.; Henley, Barry K.; Holt, Hammond H.; and Agalsoff, John, 4,067,049, Cl. 360-14.000.
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, to Hoffmann-La Roche Inc. Thiourea derivatives. 4,066,695, Cl. 260-564.00E.
Coleman, Kenneth L. Drinking and pouring spout for use with easy-opening containers. 4,066,191, Cl. 222-569.000.
Colgate-Palmolive: *See—*
Leonard, Ralph Spencer, 4,066,394, Cl. 8-137.000.
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Schaar, Charles H., 4,066,081, Cl. 128-287.000.
Tomlinson, Kenneth; and Harrison, Michael, 4,066,745, Cl. 424-49.000.
Collier, Milton F.: *See—*
Hare, William C.; and Collier, Milton F., 4,066,158, Cl. 193-34.000.
Collin, David Trevor: *See—*
Lunts, Lawrence Henry Charles; and Collin, David Trevor, 4,066,755, Cl. 424-230.000.
Collins, Johnny Will; Kochmanis, Gunars; and Lynch, Bobby Ross, to Owens-Illinois, Inc. Transfer device for nestable container bodies. 4,066,174, Cl. 214-7.000.
Collins Machinery Corporation: *See—*
Elkin, Robert D., 4,066,270, Cl. 279-2.00R.
Colten, Jerrold L., to Bristol Products, Inc. Flexible electric heating cable. 4,066,870, Cl. 219-528.000.
Columberg, Alfred, to Battelle Memorial Institute. Olefin-polymerization catalysts. 4,066,571, Cl. 252-431.00C.
Commissariat a l'Energie Atomique: *See—*
Borel, Joseph; Lacour, Jacques; and Merckel, Gerard, 4,065,847, Cl. 29-578.000.
Bourdois, Claude; Glachet, Charles; Marchal, Paul; and Vertut, Jean, 4,066,909, Cl. 250-497.000.
Dargent, Bruno; and Robert, Jacques, 4,066,333, Cl. 350-160.0LC.
Communications Satellite Corporation: *See—*
Ridings, Robert Paul, Jr.; and Lanier, Raymond Henry, 4,066,844, Cl. 179-15.0BW.
Compagnie Francaise des Petroles: *See—*
Corgnet, Jean Louis, 4,066,031, Cl. 114-294.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Houdard, Jean-Pierre, 4,066,881, Cl. 364-726.000.
Lepreux, Guy, 4,065,821, Cl. 9-8.00R.
Compton, James B.; and Ochi, Sam S., to National Semiconductor Corporation. Circuit combining bipolar transistor and JFET's to produce a constant voltage characteristic. 4,066,917, Cl. 307-304.000.
Conch L.N.G.: *See—*
Cuthbert, William Livingstone; and Brown, Thomas, 4,066,184, Cl. 220-9.0LG.
Condrac, Edward J., to Carrier Corporation. Probe holder for a machine body position sensor, with means to increase its natural frequency. 4,066,949, Cl. 324-262.000.

Congoleum Corporation: *See—*
Winters, Donald C.; Haemer, Laurence F.; and Powell, William H., 4,066,813, Cl. 426-282.000.
Conley, Fred Miller, to Gardner-Denver Company. Heavy duty industrial scale. 4,066,140, Cl. 177-134.000.
Connick, Francis G.; and Bernholdt, Harry F., to Swift & Company. Canned meat products of improved tenderness. 4,066,790, Cl. 426-8.000.
Connor, David T.; Young, Patricia A.; and von Strandtmann, Max, to Warner-Lambert Company. 4,10-Dihydro-4,10-dioxo-1H-1-benzopyrano[3,2-b]pyridine-3-carboxylic acids, salts and esters. 4,066,655, Cl. 260-295.5OT.
Considine, Brian: *See—*
Taylor, Peter; and Considine, Brian, 4,065,904, Cl. 52-731.000.
Constant, James Nickolas. Beam focused synthetic aperture. 4,067,009, Cl. 343-5.0CM.
Continental Oil Company: *See—*
Davis, J. Gilbert, II, 4,065,927, Cl. 61-36.00R.
Holliday, Leland Robert; and Poe, Ronald Laurence, 4,066,682, Cl. 260-462.00R.
Contraves-Goerz Corporation: *See—*
McNally, Paul F., 4,066,973, Cl. 330-10.000.
Control Data Corporation: *See—*
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Zenk, George Edward, 4,066,853, Cl. 200-5.00A.
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Conway, Terry T.: *See—*
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Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,066,832, Cl. 544-105.000.
Cook, Nathan Henry; and Kramer, Bruce M., to Massachusetts Institute of Technology. Tungsten carbide tools treated with group IVB and VB metals. 4,066,821, Cl. 428-539.000.
Coone, Joseph H., Jr.: *See—*
Suggitt, Robert M.; Coone, Joseph H., Jr.; and Gates, Walter C., Jr., 4,066,699, Cl. 260-583.00R.
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Cordis Corporation: *See—*
Hess, Stanley R., 4,066,085, Cl. 128-418.000.
Corgnet, Jean Louis, to Compagnie Francaise des Petroles. Device for regulation of anchorage forces. 4,066,031, Cl. 114-294.000.
Cornelius, Dennis Alfred; Eberts, Nancy Jane; and Sternberg, Moshe M., to Miles Laboratories, Inc. Sodium chloride flavor substitute composition and use thereof. 4,066,799, Cl. 426-534.000.
Corrado, Pasquale A.: *See—*
Olson, Larry Lee; and Jones, Richard Henry, 4,066,548, Cl. 210-160.000.
Cossutta, Giuseppe; and Cellai, Marino, to SGS-ATES Componenti Elettronici S.p.A. Molded body incorporating heat dissipator. 4,066,839, Cl. 174-52.0PE.
Costanza, Samuel T.; Franklin, Peter G.; Gebhardt, Frank L.; Israel, Jack D.; Moore, Charles R.; and Wheatley, Charles E., III, to Rockwell International Corporation. Communication system. 4,066,964, Cl. 325-55.000.
Cottage, Robert L.: *See—*
Myers, George D.; Walters, Paul W.; and Cottage, Robert L., 4,066,533, Cl. 208-153.000.
Courtney, John E.; Urso, Charles J.; and Dir, Gary A., to Xerox Corporation. Variable density lens. 4,066,335, Cl. 350-160.0LC.
Cowan, Glyndal D.: *See—*
Drake, Charles A.; and Cowan, Glyndal D., 4,066,417, Cl. 23-289.000.
Cox, Duncan B., Jr.; and Lee, William H., to Charles Stark Draper Laboratory, Inc., The. Digital phase-locked loop filter. 4,066,978, Cl. 331-1.00A.
Cox, James P.; and Beach, Robert W. Buoyant solid cover for ponds and method of making the same. 4,066,400, Cl. 21-60.50R.
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., to Merck & Co., Inc. 9-Thia- and oxothia- and 9-dioxothia-11,12-secoprostaglandins and processes. 4,066,675, Cl. 260-400.000.
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., to Merck & Co., Inc. 11,12-Secoprostaglandins. 4,066,692, Cl. 424-312.000.
Craig, Alexander Robertson, to Hilti Aktiengesellschaft. Marking metal. 4,066,807, Cl. 427-282.000.
Crall, Frederick William: *See—*
Caron, LaVerne Andrew; Tomczak, Lawrence William; and Crall, Frederick William, 4,066,054, Cl. 123-117.00R.
Cretella, Salvatore J.; Bernardo, Matthew; and DeMusis, Ralph T. Turbine vane air-foil surface grinder. 4,065,879, Cl. 51-145.00R.
Crew, Robert T., to C & E Enterprises, Inc. Engine actuated instrumentation and a fuel saving and diagnostic system based thereon. 4,065,961, Cl. 73-117.300.
Crooij, Pierre; and Simonet, Guy, to Recherche et Industrie Therapeutiques. Intermediates for preparing α-carboxy-α-(3-thienyl)penicillin and cephalosporin derivatives. 4,066,664, Cl. 260-332.20H.
Crounse, Nathan N.; and Ambrosiano, Nicholas A., to Sterling Drug Inc. 1-Imino-3-(4-imino-5-thiazolidinylidene)isoindolines. 4,066,653, Cl. 260-293.610.
Csutor, Endre, to Brown, Boveri & Cie, A.G. Electric circuit breaker. 4,066,990, Cl. 335-174.000.
Cumberland Corporation: *See—*
Hare, William C.; and Collier, Milton F., 4,066,158, Cl. 193-34.000.
Cummins, Betty L. Comfort cushion for infants. 4,066,072, Cl. 128-40.000.
Cunningham, Richard D., to Northern Natural Gas Company. Portable machine for testing protective coatings. 4,065,964, Cl. 73-150.00A.
Currier, James W., to International Minerals and Chemical Corporation. Process of stabilizing the operation of blast furnaces for producing molten iron. 4,066,443, Cl. 75-41.000.
Curry, Kenneth Vasey: *See—*
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Curtiss-Wright Corporation: *See—*
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Cuthbert, William Livingstone; and Brown, Thomas, to Conch L.N.G. Thermal insulation systems. 4,066,184, Cl. 220-9.0LG.
Cynober, Simon A.: *See—*
Virnot, Alain D.; and Cynober, Simon A., 4,066,877, Cl. 364-426.000.
Czajka, Thomas S.; and Needham, Richard P., to Standard Oil Company (Indiana). Water soluble wire enamels. 4,066,593, Cl. 260-29.20E.
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Haberle, Fritz; Riechers, Daniel; and Hochrathner, Alfred, 4,066,286, Cl. 293-87.000.
Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See—*
Horiguchi, Shojiro; Nakamura, Michiei; and Sugito, Yoshifumi, 4,066,462, Cl. 106-14.000.
Dajani, Esam Z.: *See—*
Adelstein, Gilbert W.; Dajani, Esam Z.; and Yen, Chung Hwai, 4,066,654, Cl. 260-293.690.
D'Altroy, Frederick A.; Harrington, Daniel J.; and Miller, Gerald W., to Western Electric Company, Inc. Gate-controlled bidirectional switching device. 4,066,483, Cl. 148-187.000.
Daman, Ernest L., to Foster Wheeler Energy Corporation. Process for producing a fuel gas and sulfur from a hydrocarbon fuel. 4,066,738, Cl. 423-569.000.
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Tandrup, Niels, 4,066,103, Cl. 137-625.640.
Danguillier, Wilhelm; and Grams, Wolfgang, to Dr. C. Otto & Comp. G.m.b.H. Process for the gasification of solid fuels. 4,066,420, Cl. 48-197.00R.
Dargent, Bruno; and Robert, Jacques, to Commissariat a l'Energie Atomique. Method of control of a liquid-crystal display cell. 4,066,333, Cl. 350-160.0LC.
Darmory, Franklin P.; and DiBenedetto, Marianne, to Ciba-Geigy Corporation. Crosslinked resins prepared from an N,N'-bis-imide and a Schiff base. 4,066,609, Cl. 260-42.180.
Dart Industries, Inc.: *See—*
Kiss, Kornel Dezso; Allan, John Leslie Hugh; and Fein, Marvin Michael, 4,066,610, Cl. 260-42.210.
Darwood, James R., to T.A.D. Telephone ring detector circuit. 4,066,848, Cl. 179-84.00R.
Dassler, Joachim; Veneklasen, Lee H.; and Zschimmer, Martin, to Siemens Aktiengesellschaft. Particle beam apparatus with zones of different pressure. 4,066,905, Cl. 250-396.00R.
Daussin, Bernard: *See—*
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Dave, Bhalchandra Anantray, to Pennwalt Corporation. Fresh mushroom treatment. 4,066,795, Cl. 426-259.000.
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Davies, David Peter, to McGraw-Edison Company. Method for electrically and hydraulically connecting a water-cooled conductor. 4,066,203, Cl. 228-180.00R.
Davis, Donald L., to Warner Electric Brake & Clutch Company. Breakaway protection for electrically controlled trailer brakes. 4,066,996, Cl. 340-52.00R.
Davis, George B., Jr. Coat hanger shoulder support attachment. 4,066,193, Cl. 223-88.000.
Davis, J. Gilbert, II, to Continental Oil Company. Method for blocking gas flow in a coal seam. 4,065,927, Cl. 61-36.00R.
Davis, Jerry B.; and Gant, Guy W., to Otis Engineering Corporation. Well flow control apparatus and method. 4,066,128, Cl. 166-315.000.
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Dawson, John Myrick, to TRW Inc. Isotope separation by ion waves. 4,066,893, Cl. 250-282.000.
Day, Ralph K. Replaceable double glazed window defogging appliance and window structure therefor. 4,065,894, Cl. 52-171.000.
Dazey Products Company: *See—*
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De Staat der Nederlanden, to Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See—*
Spanjersberg, Arie Adriaan, 4,066,999, Cl. 340-146.30S.

Dearlove, William E.: *See—*
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De Bonis, John C. Porsche automobile oil drain replacement tube. 4,066,281, Cl. 285-31.000.
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Anderkay, Glenn Allan, 4,066,058, Cl. 123-198.00E.
Rehn, Gary Allen, 4,066,132, Cl. 172-572.000.
Stampe, Richard Herbert, 4,066,213, Cl. 239-533.300.
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de Fries, Jan Richard. Multiple way valve. 4,066,101, Cl. 137-625.600.
De Haeck, Robert Jean, to La Soudure Electrique Autogene, Procedes Arcos, S.A. Basic agglomerated flux with a high CaO content for the welding of ordinary or low alloy steels. 4,066,478, Cl. 148-26.000.
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Demerson, Christopher A.; Humber, Leslie G.; Santroch, George; Dobson, Thomas A.; and Jirkovsky, Ivo, to Ayerst McKenna and Harrison Ltd. Thiazinoindoles useful as antidepressants. 4,066,763, Cl. 424-246.000.
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., to Ayerst, McKenna and Harrison Ltd. Pyranoindole derivatives, compositions and method of use. 4,066,779, Cl. 424-274.000.
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Denning, David B.: *See—*
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Denny, George H., to Merck & Co., Inc. Process for the preparation of substituted trichloroacetamidine derivatives. 4,066,661, Cl. 260-326.150.
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Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Pyrazolo[1,5-a]pyrido[3,2-e]pyrimidine-7-carboxylic acid derivatives. 4,066,643, Cl. 260-256.40F.
Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Pyrazolo [1,5-a]pyrido[3,2-e]pyrimidine-7-carboxylic acid heterocyclic derivatives. 4,066,644, Cl. 260-256.40F.
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Derchak, Nicholas, to Sperry Rand Corporation. Shared direct memory access controller. 4,067,059, Cl. 364-200.000.
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Dertouzos, Michael L.; and Graham, Huber L., to Dertouzos, Michael L. Parallel thermal printer. 4,067,017, Cl. 346-46.000.
Dery, Normand. Method of applying and repairing rear window defroster. 4,065,848, Cl. 29-611.000.
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Rauscher, Elli; Bernt, Erich; Gruber, Wolfgang; and Determann, Helmut, 4,066,508, Cl. 195-99.000.
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deZabala, Edward Francis: *See—*
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Diamand, Felix; Bourrabier, Guy; and Antoine, Robert, to Thomson-CSF. Negative resistance microwave circuit comprising one or more pairs of diodes. 4,066,979, Cl. 331-56.000.
Diamond Shamrock Corporation: *See—*
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DiBenedetto, Marianne: *See—*
Darmory, Franklin P.; and DiBenedetto, Marianne, 4,066,609, Cl. 260-42.180.
Dickler, Paul J. Locking mechanism for tamper-proof backpack or piece of luggage. 4,066,195, Cl. 224-8.00R.
Dickopp, Gerhard; and Schroder, Ernst, to Licentia Patent-Verwaltungs-G.m.b.H. Amplifier with variable gain. 4,066,976, Cl. 330-86.000.
Dicksa, James K.: *See—*
Emmett, Robert C., Jr.; Dicksa, James K.; Wojcik, Bruce C.; and Baczek, Frank A., 4,066,520, Cl. 204-108.000.
Dickson, Arthur D., to Minnesota Mining and Manufacturing Company. Electroluminescent lamp and electrode preform for use therewith. 4,066,925, Cl. 313-503.000.
Diebold, Robert J. A jet pump. 4,066,385, Cl. 417-172.000.
Diehl, Robert Eugene: *See—*
Lutz, Albert William; and Diehl, Robert Eugene, 4,066,441, Cl. 71-121.000.
Diepeveen, John C. Die placement tool or the like. 4,066,200, Cl. 228-3.100.
DiFerdinando, Frank L., to Westinghouse Electric Corporation. Turbine rotor blade having integral tenon thereon and split shroud ring associated therewith. 4,066,384, Cl. 416-189.000.
Dilly, Jan-Dominique: *See—*
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Dimmig, Daniel Ashton, to Pennwalt Corporation. Process for preparation of linear polyamide-imides from aromatic tricarboxylic acid anhydrides and diamines. 4,066,631, Cl. 260-78.00R.
Dinwiddie, Kendall L. Low impedance, high current pressure transducer. 4,065,969, Cl. 73-727.000.
Dir, Gary A.: *See—*
Courtney, John E.; Urso, Charles J.; and Dir, Gary A., 4,066,335, Cl. 350-160.0LC.
Dittmar, Bruce Ivor, to Du Pont de Nemours, E. I., and Company. Method for protecting loci against fungi and mites. 4,066,777, Cl. 424-273.00R.
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Dixon, Dale D.; Ford, Michael E.; and Mantell, Gerald J., to Air Products and Chemicals, Inc. End capped polyalkylene carbonates having improved thermal stability. 4,066,630, Cl. 260-77.50D.
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Dokoupil, Jiri; Zapfel, Horst; Gabelmann, Erich; and Breitwieser, Helmut, to Badische Maschinenfabrik GmbH. Rotary ironing machine. 4,065,943, Cl. 69-41.000.
Dolby Laboratories, Inc.: *See—*
Gundry, Kenneth James, 4,066,914, Cl. 307-237.000.
Dolch, Volker. Heart rate change sensor. 4,066,069, Cl. 128-2.06F.
Dollar, David L.: *See—*
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Dooley, Eddie W.: *See—*
Morey, Everett D.; and Dooley, Eddie W., 4,066,393, Cl. 8-137.000.
Doran, Samuel K.; and Perkins, Merlyn H., to International Business Machines Corporation. Method and system for automatically correcting aberrations of a beam of charged particles. 4,066,863, Cl. 219-121.0EM.
Dorman, Linneaus C.; and Steiner, Edwin C., to Dow Chemical Company, The. Preparation of peptides. 4,066,684, Cl. 260-112.50R.
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Stoger, Klaus; Dotzer, Richard; and Gehring, Johann, 4,066,515, Cl. 204-14.00N.
Dougherty, Joseph J.: *See—*
McGregor, William H.; and Dougherty, Joseph J., 4,066,634, Cl. 260-112.50S.
Doughty, Joseph B.; and Klem, Robert E., to Westvaco Corporation. Process for making quaternary amines of epichlorohydrin. 4,066,673, Cl. 260-348.130.
Dow Chemical Company, The: *See—*
Dorman, Linneaus C.; and Steiner, Edwin C., 4,066,684, Cl. 260-112.50R.
Johnston, Howard; and Senkbeil, Herman O., 4,066,438, Cl. 71-94.000.
Kamp, Arthur J.; and Mischler, Philip G., 4,066,898, Cl. 250-359.000.
Strycker, Stanley J., 4,066,771, Cl. 424-267.000.
Dow Corning Corporation: *See—*
Homan, Gary R.; and Lee, Chi-Long, 4,066,603, Cl. 260-37.0SB.

Dow, Norris F.: *See—*
Halton, Murray; Dow, Norris F.; Dow, Richard M.; and Hillebrand, Michael J., 4,066,104, Cl. 139-11.000.
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Doyle, Terrence W.: *See—*
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Drake, Charles A.; and Cowan, Glyndal D., to Phillips Petroleum Company. Solid-fluid contacting apparatus. 4,066,417, Cl. 23-289.000.
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Schepp, Horst; and Drawert, Manfred, 4,066,585, Cl. 260-18.00N.
Dreke, Werner: *See—*
Junge, Peter; Schulz, Horst; Schneider, Rainer; Dreke, Werner; and Rieger, Gerhard, 4,066,818, Cl. 428-341.000.
Drennan, John J.: *See—*
Hanna, Ward T.; Drennan, John J.; and Staroska, John T., 4,066,167, Cl. 206-627.000.
Dresser Industries, Inc.: *See—*
Read, Norman Weldon, 4,066,241, Cl. 251-361.000.
D'Silva, Themistocles D. J., to Union Carbide Corporation. Ketoalkanesulfenylcarbamoyl and ketoalkanethiosulfenylcarbamoyl halides. 4,066,689, Cl. 260-544.00C.
Dubeck, Michael; and Knapp, Gordon G., to Ethyl Corporation. Metal extraction from sea nodules. 4,066,733, Cl. 423-32.000.
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Bardwell, Francis G.; and Dudek, Edmund C., 4,066,942, Cl. 318-434.000.
Dudley, Michael A.; Parthasarathy, Mellapalayam R.; and Nerthersole, Douglas C., to Canada Wire and Cable Limited. Continuous powder feed system for maintaining a uniform powder coating thickness on objects being coated by electrostatic fluidized beds. 4,066,040, Cl. 118-629.000.
Dudley, William F., Jr.: *See—*
Leaver, Brian E.; and Dudley, William F., Jr., 4,066,879, Cl. 364-498.000.
Dulger, Viktor; and Ernst, Franz. Apparatus to regulate the pH value or other similar values of a solution. 4,066,092, Cl. 137-93.000.
Dunivan, Neal Duane: *See—*
Hall, Daniel L.; and Dunivan, Neal Duane, 4,066,285, Cl. 293-62.000.
Dunn, George Lawrence, to SmithKline Corporation. Derivatives of 7-(2-substituted-2-hydroxyiminoacetamido)-3-(1-substituted tetrazol-5-ylthiomethyl-3-cephem-4-carboxylic acid. 4,066,762, Cl. 424-246.000.
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Carter, Elbert P., 4,066,362, Cl. 356-180.000.
Dittmar, Bruce Ivor, 4,066,777, Cl. 424-273.00R.
Johnson, Donald R.; Nadeau, Richard G.; Nieuweboer, Gerrit; and Truett, William L., 4,066,412, Cl. 23-253.00R.
Jungpeter, Raymond R.; and Buchholz, Jean L., 4,065,838, Cl. 26-94.000.
Kilgren, Arnold William; Low, David Nicholson; and Porter, Robert Warwick, 4,066,424, Cl. 55-71.000.
Kleinschuster, Jacob John; and Pletcher, Terry Carl, 4,066,620, Cl. 260-47.00C.
Lovendusky, Charles Michael, 4,066,326, Cl. 339-221.00M.
McIntosh, Colin Leslie, 4,066,434, Cl. 71-86.000.
Vladuchick, Susan Anne, 4,066,656, Cl. 260-302.00F.
D'Urso, Giuseppe. Grinding tool fitted with an abrasive sheet having active face and edge surfaces. 4,065,882, Cl. 51-381.000.
Dyer, Richard S.: *See—*
Wiegert, Gerald A.; and Negele, James R., 4,066,290, Cl. 296-78.100.
Dynek Corporation: *See—*
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Dziedzic, Edward: *See—*
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Denzel, Theodor; and Hoehn, Hans, 4,066,643, Cl. 260-256.40F.
Denzel, Theodor; and Hoehn, Hans, 4,066,644, Cl. 260-256.40F.
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E-Systems, Inc.: *See—*
Chambers, Ramon P.; Sanders, David E.; and Gordy, Robert S., 4,066,977, Cl. 330-129.000.
Earnest, Ernest R., to Hydragon Corporation. Turbine stator nozzles. 4,066,381, Cl. 415-202.000.
Eastman, James M., to Bendix Corporation, The. Fluid pressure operated rotary stepper actuator. 4,066,002, Cl. 91-36.000.
Eastman Kodak Company: *See—*
Bloom, Melvin S.; and Fico, Sally S., 4,066,676, Cl. 260-402.500.
Bruschi, Barbara J., 4,066,403, Cl. 23-230.00B.
Mey, William; and Bailey, David S., 4,066,455, Cl. 96-1.50R.
Pearce, Phillip W.; and Hutchison, Robert J., 4,066,969, Cl. 328-5.000.
Schubert, Alvin Louis, 4,066,341, Cl. 350-285.000.
Easton, Harlan J. Feeding mechanism for granular material. 4,066,164, Cl. 198-616.000.
Eberle, William J., to General Battery Corporation. System and method for protecting the environment in a battery production room. 4,066,825, Cl. 429-71.000.
Eberts, Nancy Jane: *See—*
Cornelius, Dennis Alfred; Eberts, Nancy Jane; and Sternberg, Moshe M., 4,066,799, Cl. 426-534.000.
Ebner, Peter R., to Itek Corporation. Inexpensive and reliable custom programmable phototypesetter. 4,067,022, Cl. 354-7.000.
Echo Co., Ltd.: *See—*
Nakajima, Kiminori; and Shigenobu, Ikuo, 4,066,090, Cl. 137-62.000.
Eckle, Otto; and Stahl, Hermann, to Komet Stahlhalter- und Werkzeugfabrik, Robert Breuning GmbH. Turning tool with interchangeable polygonal cutting insert. 4,066,376, Cl. 407-101.000.
Edelman, Robert, to Celanese Corporation. Process for preparing carbodiimides utilizing a phosphonium salt catalyst. 4,066,629, Cl. 260-77.50R.
Eder, Ulrich; Sauer, Gerhard; Haffer, Gregor; Neef, Guenter; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 1,3-oxygenated 8α-estratrienes and novel intermediates obtained therefrom. 4,066,674, Cl. 260-397.500.
Edhlund, Ronald D., to American Photo-Graphics Corporation. Method and apparatus for preparing film for exposure with a film font. 4,065,990, Cl. 83-133.000.
Edwards, Roger Alan: *See—*
Baylis, Howard Raymond; Edwards, Roger Alan; and Hedgeland, David Richard Sweatman, 4,067,021, Cl. 346-76.00L.
Effland, Richard C., to American Hoechst Corporation. Method of preparation of 3-(3-carboxy-4-hydroxyphenyl)-4,5-dihydro-2-phenylbenz (e) indole and valuable intermediates related thereto. 4,066,659, Cl. 260-326.13F.
Egerstrom, Bengt Gunnar Wilhelm, to Nitro Nobel AB. Hose feeding winch. 4,066,093, Cl. 137-355.200.
Eggert, Frank, to Schlegel GmbH. Profile strip for framing and fastening secondary glazing panes. 4,065,900, Cl. 52-476.000.
Eguchi, Hajime, to Ajinomoto Co., Inc. Seasoning composition and preparation thereof. 4,066,793, Cl. 426-60.000.
Eguizabal, Julian, to Pioneer Products, Inc. Muzzle loading firearm. 4,065,866, Cl. 42-51.000.
Egyud, Laszlo G. Keto-aldehyde-amine addition products and method of making same. 4,066,650, Cl. 260-281.00G.
Eiselt, Gunter, to Recticel Deutschland Kunststoffe GmbH. Method of and device for packaging blocks of foamed synthetic material. 4,065,910, Cl. 53-24.000.
Eisentraut, Anna M., to Nuclear-Medical Laboratories, Inc. Thyroid hormone assay. 4,066,410, Cl. 23-230.600.
Ek, Jan Olof: *See—*
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Ekenstam, Bo Thuresson Af: *See—*
Branemark, Per Ingvar; and Ekenstam, Bo Thuresson Af, 4,065,817, Cl. 3-1.910.
Eknayan, Hrant. Pollution minimizing device and method for internal combustion engines. 4,065,919, Cl. 60-274.000.
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Hjelte, Sven Roland; and Eksell, Lennart, 4,066,222, Cl. 242-107.40B.
Elco Corporation: *See—*
Baker, Charles E.; and Silverzweig, Abraham, 4,066,319, Cl. 339-97.00R.
Elder, J. Calvin, to Westinghouse Air Brake Company. Route control system for railroad interlockings. 4,066,228, Cl. 246-5.000.
Eldred, Roger J.; Iobst, Stanley A.; and Abu-Isa, Ismat A., to General Motors Corporation. Ethylene-propylene elastomers and ethylene-propylene-diene elastomers with improved heat and oil resistance. 4,066,590, Cl. 260-28.50A.
Electricity Council, The: *See—*
Jones, Ivor Wynn; Robinson, Graham; and Bird, Thomas Lewis, 4,066,826, Cl. 429-104.000.
Electrides Corporation: *See—*
Summa, Frank A., 4,066,930, Cl. 315-209.00R.
Electroglas, Inc.: *See—*
Roch, Jacques L., 4,066,943, Cl. 318-468.000.
Eli Lilly and Company: *See—*
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ELITEX, Zavody textilniho strojirenstvi generalni reditelstvi: *See—*
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Elkin, Robert D., to Collins Machinery Corporation. Nipple chuck. 4,066,270, Cl. 279-2.00R.
Ellis Industries, Inc.: *See—*
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Ellis, Lawrence D.; and Evans, Robert E., to Ellis Industries, Inc. Lip extender for loading dock levelers. 4,065,824, Cl. 14-71.300.
Elola, Alfonso M. Brake shoe rivet removal press. 4,065,843, Cl. 29-252.000.
Elsey, Paul G.: *See—*
Wollensak, John C.; Ihrman, Kryn G.; and Elsey, Paul G., 4,066,562, Cl. 252-52.00R.
Elvin, Sten, to ASEA Aktiebolaget. Means for controlling the speed of a cable. 4,066,141, Cl. 180-2.00R.
Emerson, Reginald Stanley, to Leslie Hartridge Limited. Apparatus for measuring smoke density. 4,066,364, Cl. 356-207.000.
Emery Industries, Inc.: *See—*
Mains, Harold E.; Williams, Frederick R.; and O'Brien, William L., 4,066,587, Cl. 260-22.00D.
Mores, Lee R.; McCarthy, Justin P.; and Slack, James J., 4,066,789, Cl. 424-365.000.

EMI Limited: *See—*
Hounsfield, Godfrey Newbold; and Langstone, Peter George, 4,066,906, Cl. 250-445.00T.
LeMay, Christopher Archibald Gordon, 4,066,900, Cl. 250-360.000.
LeMay, Christopher Archibald Gordon, 4,066,902, Cl. 250-363.00S.
LeMay, Christopher Archibald Gordon, 4,066,903, Cl. 250-363.00S.
Emmett, Robert C., Jr.; Dicksa, James K.; Wojcik, Bruce C.; and Baczek, Frank A., to Envirotech Corporation. Slurry electrowinning process. 4,066,520, Cl. 204-108.000.
Energy Conversion Devices, Inc.: *See—*
Chang, Yew C.; Ovshinsky, Stanford R.; and Citkowski, Ronald W., 4,066,460, Cl. 96-48.00R.
Engelhard Minerals & Chemicals Corporation: *See—*
Pfefferle, William C., 4,065,917, Cl. 60-39.82C.
Engelsmann, Dieter: *See—*
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Engineered Systems, Inc.: *See—*
Salley, Ernest J., 4,066,880, Cl. 235-302.300.
Ennis, Daniel Martin. Synthetic N-releasing soil conditioner. 4,066,431, Cl. 71-27.000.
Enomoto, Shigeo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for limiting the extent of movement of a moveable member in a motor operated focussing device in a camera. 4,067,031, Cl. 354-195.000.
Ensor, John E. Smoke reducer for cigarette smokers. 4,066,088, Cl. 131-185.000.
Envirotech Corporation: *See—*
Emmett, Robert C., Jr.; Dicksa, James K.; Wojcik, Bruce C.; and Baczek, Frank A., 4,066,520, Cl. 204-108.000.
Epes, Archie C. Composite foundation framing assembly. 4,065,893, Cl. 52-169.110.
Eppinger, David P.: *See—*
Mastalski, Henry N.; Lucas, James P.; Dziedzic, Edward; and Eppinger, David P., 4,066,368, Cl. 403-211.000.
Equipto Electronics Corporation: *See—*
Gazarek, Kenneth F., 4,066,305, Cl. 312-195.000.
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Gotz, Martin, 4,065,954, Cl. 72-456.000.
Erickson, Henry, to Atlantic Richfield Company. Method for producing alumina. 4,066,740, Cl. 423-628.000.
Ernst, Franz: *See—*
Dulger, Viktor; and Ernst, Franz, 4,066,092, Cl. 137-93.000.
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Escher Wyss Limited: *See—*
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Esposito, Charles M., to Grumman Aerospace Corporation. Digital stimulus generating and response measuring means. 4,066,882, Cl. 235-302.000.
Essex Group, Inc.: *See—*
Furtah, Reginald D., 4,066,369, Cl. 403-115.000.
Estes, John H.: *See—*
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Ethyl Corporation: *See—*
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Johnston, James D.; Sanders, Robert N.; and Wood, James M., Jr., 4,066,445, Cl. 75-67.00R.
Lawrence, Walter W., Jr.; McKay, Tom W.; and Wiegand, Karl E., 4,066,688, Cl. 260-535.00P.
Nelson, Gunner E.; and Pearson, Tillmon H., 4,066,687, Cl. 260-535.00P.
Rifkin, Ellis B., 4,065,918, Cl. 60-274.000.
Wollensak, John C.; Ihrman, Kryn G.; and Elsey, Paul G., 4,066,562, Cl. 252-52.00R.
Euer, Hartmut; and Bartek, Gerhard, to Apparatebau Gauting GmbH. Spring system comprising an adjustable spring. 4,065,974, Cl. 73-430.000.
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Evans, John M., Jr: *See—*
Mogavero, Louis N.; Johnson, Edwin G.; Evans, John M., Jr; and Albus, James S., 4,067,015, Cl. 343-225.000.
Evans, Robert E.: *See—*
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Ex-Cell-O Corporation: *See—*
Barlow, Roland J., 4,066,007, Cl. 92-125.000.
Exxon Research & Engineering Co.: *See—*
Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,066,530, Cl. 208-112.000.
Gallo, Donald J., 4,066,098, Cl. 137-615.000.
Long, Robert B.; Caruso, Fred A.; DeFeo, Richard J.; and Walker, David G., 4,066,679, Cl. 260-438.100.
Rao, Bhaskara M. L.; and Silbernagel, Bernard G., 4,066,824, Cl. 429-50.000.
van Brederode, Robert A., 4,066,608, Cl. 260-42.180.
Fagan, John C., to Amtron, Division of the Sippican Corporation. Baconweigher. 4,065,911, Cl. 53-53.000.
Fahrbach, Gerhard: *See—*
Falkenstein, Georg; Fahrbach, Gerhard; and Wulff, Harald, 4,066,580, Cl. 260-2.5AW.
Fairchild Camera and Instrument Corporation: *See—*
O'Brien, David, 4,066,473, Cl. 148-1.500.
Falkenstein, Georg; Fahrbach, Gerhard; and Wulff, Harald, to BASF Wyandotte Corporation. Process for the manufacture of polyisocyanurate foams. 4,066,580, Cl. 260-2.5AW.
Faraci, Rocco; Rescalli, Carlo; and Catini, Stefano, to Snamprogetti, S.p.A. Process for the addition of organic acids to acetylenic compounds contained in inorganic or organic hydrocarbon streams. 4,066,713, Cl. 260-677.00A.
Farina, Frederick P. Box spring construction. 4,065,818, Cl. 5-288.000.
Farnbach, John S. Binary counting system. 4,065,915, Cl. 58-23.00R.
Farr, Glyn Phillip Reginald, to Girling Limited. Servo-motors for vehicle braking systems. 4,066,005, Cl. 91-369.00B.
Farr, Glyn Phillip Reginald, to Girling Limited. Dual hydraulic braking systems for vehicles. 4,066,150, Cl. 188-1.00A.
Farukhi, Mohammad R.; Mataraza, George A.; and Wimer, Oley D., to Harshaw Chemical Company, The. Well-type scintillation assembly. 4,066,908, Cl. 250-483.000.
Faulstich, Marga; and Geffcken, Walter, to Jenaer Glaswerk Schott & Gen. Optical glasses with improved varying partial dispersion in the optical positional range of lanthanum crown glasses and lanthanum flint glasses. 4,066,464, Cl. 106-47.00Q.
Faure, Louis H., to International Business Machines Corporation. High density cable connector. 4,066,312, Cl. 339-48.000.
Fayard, William S.: *See—*
Gullotti, Damian V.; Fayard, William S.; and Wedgeworth, Wiley W., 4,066,476, Cl. 148-11.50A.
Gullotti, Damian V.; Fayard, William S.; and Wedgeworth, Wiley W., 4,066,480, Cl. 148-11.50A.
Fein, Marvin Michael: *See—*
Kiss, Kornel Dezso; Allan, John Leslie Hugh; and Fein, Marvin Michael, 4,066,610, Cl. 260-42.210.
Feinstein, Allen; and Fields, Ellis K., to Standard Oil Company (Indiana). Polyamide acids and polyesterimides from 1,3-adamantylene-bis-trimellitate dianhydrides. 4,066,622, Cl. 260-47.0CP.
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Felix, Arthur Martin, to Hoffmann-La Roche Inc. Resolution of D,L-dehydroproline. 4,066,658, Cl. 260-326.200.
Fenner, Wolfgang. Framework joint. 4,065,890, Cl. 52-27.000.
Fenton, John William; Lee, Jerry Stevenson; and Buist, Richard James, to Borg-Warner Corporation. Counter-flow thermoelectric heat pump with discrete sections. 4,065,936, Cl. 62-3.000.
Fico, Sally S.: *See—*
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Fields, Ellis K.: *See—*
Feinstein, Allen; and Fields, Ellis K., 4,066,622, Cl. 260-47.0CP.
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Scharf, Emil; Fikentscher, Rolf; Auhorn, Werner; and Streit, Werner, 4,066,494, Cl. 162-164.0EP.
Fincher, Robert C.: *See—*
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Fine, David H., to Thermo Electron Corporation. Method and apparatus for chromatographically analyzing a liquid sample. 4,066,409, Cl. 23-230.0PC.
Fine, David H.; Fronduto, John J.; and Rounbehler, David P., to Thermo Electron Corporation. N-nitroso compound analyzer with sample atomization. 4,066,411, Cl. 23-253.0PC.
Finney, Roy P.; and Lynch, Henry Wilfred, to Medical Engineering Corporation. Composite rod penile implant. 4,066,073, Cl. 128-79.000.
First National Bank of Chicago, The: *See—*
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Fischer, Artur. Anchoring device for use in masonry and like structures. 4,065,996, Cl. 85-64.000.
Fischer, Kenneth Edmund. Airfoil, reduced profile, "Y" flow, hybrid. 4,066,226, Cl. 244-36.000.
Fisher, Gerald C.; and Scanland, Joseph E., to Roper Corporation. Safe cutter disc assembly for rotary lawn mower. 4,065,913, Cl. 56-295.000.
Fisher, Glenn: *See—*
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Fisons Limited: *See—*
Orr, Thomas Samuel Campbell; Hall, David Edward; and Mann, John, 4,066,756, Cl. 424-232.000.
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Fleischer, John Martin; and Holmes, Richard Dwight, to International Business Machines Corporation. Impact position transducer for ink jet. 4,067,019, Cl. 346-75.000.
Flint, John R., to Bell & Howell Company. Information retrieval system having ramp motor control. 4,066,349, Cl. 353-25.000.
Flint, John R.: *See—*
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FMC Corporation: *See—*
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Follett, Michael John, to J. Sainsburg Limited. Process for vacuum packing and cooling meat cuts. 4,066,798, Cl. 426-393.000.

Food Research, Inc.: *See—*
McKee, Donald H., 4,066,796, Cl. 426-302.000.
Ford Aerospace & Communications Corporation: *See—*
Morrill, Daniel F., 4,066,931, Cl. 315-241.00R.
Ford-Dunn, Martin Douglas, to Ricardo & Co., Engineers (1927) Limited. Two-stroke I.C. engines. 4,066,050, Cl. 123-73.0SP.
Ford, Michael E.: *See—*
Dixon, Dale D.; Ford, Michael E.; and Mantell, Gerald J., 4,066,630, Cl. 260-77.50D.
Ford Motor Company: *See—*
Peng, Stephen Chung-Suen, 4,066,613, Cl. 260-42.540.
Forero, Jorge E.: *See—*
Swanson, Harold V.; and Forero, Jorge E., 4,066,372, Cl. 403-302.000.
Foster, Alan. Motor drive control arrangements. 4,066,941, Cl. 318-341.000.
Foster, Edson Perkins, to Foster Needle Company, Inc. Method and apparatus for forming a uniform felting needle barb. 4,065,955, Cl. 72-476.000.
Foster Needle Company, Inc.: *See—*
Foster, Edson Perkins, 4,065,955, Cl. 72-476.000.
Foster Wheeler Energy Corporation: *See—*
Daman, Ernest L., 4,066,738, Cl. 423-569.000.
Fowler, Frank C., to Atlas Powder Company. Recovery of nitrated compounds from water by distillation. 4,066,514, Cl. 203-11.000.
Fowler, James C.: *See—*
Buller, Paul L.; Chapman, William L.; Thomas, Bobby J.; and Fowler, James C., 4,066,992, Cl. 340-15.5MC.
Fowlie, William J. C. Desk stand for holding in operative position pocket calculators and other desk-top articles. 4,066,171, Cl. 211-69.100.
Fox, Edgar N. One piece elastic body suit. 4,065,814, Cl. 2-79.000.
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Fraioli, Donato M., to Air Tech Industries Inc. Double wall fabric panel unit. 4,065,889, Cl. 52-2.000.
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Frankle, Helmut; and Baum, Werner, to PEI, Inc. Flame jet tool for drilling cross-holes. 4,066,137, Cl. 175-14.000.
Franklin, Peter G.: *See—*
Costanza, Samuel T.; Franklin, Peter G.; Gebhardt, Frank L.; Israel, Jack D.; Moore, Charles R.; and Wheatley, Charles E., III, 4,066,964, Cl. 325-55.000.
Franz, Helmut, to PPG Industries, Inc. Method of tempering in a fluidized quenching medium. 4,066,430, Cl. 65-116.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,066,020, Cl. 104-7.00B.
Fray, Adrian Forrest; and Jones, David, to National Research Development Corporation. Liquid crystal light deflector. 4,066,334, Cl. 350-160.0LC.
Freeman, Norman A.: *See—*
Patton, Phillips E.; and Freeman, Norman A., 4,065,872, Cl. 43-131.000.
Freimuth, Franz: *See—*
Lind, Erwin; and Freimuth, Franz, 4,066,453, Cl. 96-1.00R.
Frentzen, Hermann Josef; Gerretz, Richard; and Henn, Ewald, to Mannesmann Aktiengesellschaft. Mechanical tube expander. 4,065,953, Cl. 72-393.000.
Fresnel, Jacques, to SLEEVER Societe de droit francais (S.a.r.l.). Apparatus for shrinking sleeves around containers. 4,066,866, Cl. 219-388.000.
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, to Vockenhuber, Karl; and Hauser, Raimund. Sound-film camera. 4,066,345, Cl. 352-27.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Hoffmeister, Bernhard; and Schwarz, Wilhelm, 4,066,248, Cl. 266-216.000.
Seeger, Herbert, 4,066,957, Cl. 322-16.000.
Frisch, Kurt C.: *See—*
Ashida, Kaneyoshi; Frisch, Kurt C.; and Kordomenos, Panagiotis, 4,066,628, Cl. 260-77.50R.
Fritsch, Rudolf Paul, to C. F. Scheer & Cie. Apparatus for processing molten liquid plastics, particularly for extrusion of plastics. 4,066,097, Cl. 137-563.000.
Fronduto, John J.: *See—*
Fine, David H.; Fronduto, John J.; and Rounbehler, David P., 4,066,411, Cl. 23-253.0PC.
Fruh, Friedrich. Connecting element for wall or ceiling panels when constructed by a dry method. 4,065,901, Cl. 52-582.000.
Fuchs, Hermann; Kapaun, Gustav; and Meininger, Fritz, to Hoechst Aktiengesellschaft. Water-soluble fiber reactive phenyl-azo-naphthyl dyestuffs containing two sulfo groups in the phenyl moiety. 4,066,638, Cl. 260-196.000.
Fuji Photo Film Co., Ltd.: *See—*
Igarashi, Shunkichi; Okano, Takeshi; Takahama, Sho; and Hakamata, Yoshio, 4,066,354, Cl. 355-28.000.
Kato, Hisatoyo; and Miyahara, Junji, 4,066,332, Cl. 350-126.000.
Sasazawa, Koji; Dezawa, Shin-Ichiro; and Kitamoto, Tatsuji, 4,066,564, Cl. 252-62.560.
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Sera, Hidefumi; and Nagao, Kameji, 4,066,636, Cl. 260-117.000.
Shimamura, Isao; Ishiguro, Shoji; and Ogawa, Junkichi, 4,066,461, Cl. 96-66.300.
Fuji Seiki Machine Works, Ltd.: *See—*
Saito, Toshio; and Kobayashi, Tadahiko, 4,066,378, Cl. 408-46.000.
Fujie, Norikazu: *See—*
Takaoka, Saburo; and Fujie, Norikazu, 4,066,935, Cl. 318-138.000.
Fujikura, Nobuyuki: *See—*
Nohmi, Makoto; Fujikura, Nobuyuki; Ueda, Chiaki; and Toyota, Eiichi, 4,066,230, Cl. 246-182.00B.
Fujita, Teizo; and Ohashi, Tosiro, to Izumi Denki Corporation. Apparatus for detachably mounting electrical assembly units to supporting panels. 4,066,838, Cl. 174-48.000.
Fukunaka, Shiro: *See—*
Uchida, Kuniki; Araki, Kenzi; Fukunaka, Shiro; and Kurihara, Takao, 4,066,474, Cl. 148-2.000.
Fukushima, Tadahide: *See—*
Yoshikawa, Ryoichi; Oda, Teruhisa; Tanaka, Kunio; Iura, Yukio; Fukushima, Tadahide; and Aizawa, Hiroshi, 4,067,032, Cl. 354-288.000.
Fuller, Ralph N.: *See—*
Blick, John S., III; and Fuller, Ralph N., 4,065,885, Cl. 52-143.000.
Funabiki, Kyohei; Matsushima, Noriaki; Tachikawa, Toshiyuki; and Ikeda, Kazuichi, to Sumitomo Durez Company, Ltd. Cold-curing binder for foundry sand cores and molds. 4,066,588, Cl. 260-22.0TN.
Furnier-und Sperrholzwerk J. F. Werz Jr. KG Werzalit Pressholzwerk: *See—*
Munk, Edmund, 4,065,898, Cl. 52-241.000.
Furtah, Reginald D., to Essex Group, Inc. Override clip assembly. 4,066,369, Cl. 403-115.000.
Futaba Denshi Kogyo K. K.: *See—*
Takagi, Toshinori; Morimoto, Kiyoshi; and Utamura, Yukihiko, 4,066,527, Cl. 204-192.00N.
Futterweit, Adolf: *See—*
Waks, David J.; and Futterweit, Adolf, 4,066,843, Cl. 179-8.00A.
Future General Corporation: *See—*
Trumbull, Douglas, 4,066,256, Cl. 272-18.000.
G. D. Searle & Co.: *See—*
Adelstein, Gilbert W.; Dajani, Esam Z.; and Yen, Chung Hwai, 4,066,654, Cl. 260-293.690.
Meresz, Henry; and Tranquilla, Michael N., 4,065,978, Cl. 74-82.000.
Gabelmann, Erich: *See—*
Dokoupil, Jiri; Zapfel, Horst; Gabelmann, Erich; and Breitwieser, Helmut, 4,065,943, Cl. 69-41.000.
GAF Corporation: *See—*
Panasik, Theodore; Viro, Felix; Waxman, Burton H.; and Shannahan, Robert T., 4,066,457, Cl. 96-29.00D.
Waxman, Burton H.; Mourning, Michael C.; and Panasik, Theodore, 4,066,456, Cl. 96-29.00D.
Gagel, Ernst: *See—*
Burger, Manfred R.; Gagel, Ernst; Kalmovicz, Rudolf; and Prechtl, Alfred, 4,065,937, Cl. 62-89.000.
Gaicki, Stanley, to Motorola, Inc. Ultrasonic bonding head. 4,067,039, Cl. 357-65.000.
Gallani, Zvi; and Sullivan, Joseph A., to Raytheon Company. Voltage controlled Clapp oscillator having output isolated from tuned circuit. 4,066,983, Cl. 331-117.00R.
Gallo, Donald J., to Exxon Research & Engineering Co. Marine loading and bunkering arrangement. 4,066,098, Cl. 137-615.000.
Ganguly, Udaya: *See—*
Poussart, Denis; and Ganguly, Udaya, 4,067,060, Cl. 364-553.000.
Gant, Guy W.: *See—*
Davis, Jerry B.; and Gant, Guy W., 4,066,128, Cl. 166-315.000.
Garcia, Roberto, to Petroleo Brasileiro S.A. Petrobras. Process for producing premium coke and aromatic residues for the manufacture of carbon black. 4,066,532, Cl. 208-131.000.
Garcowski, Ronald J.; and Davis, William A., to Addressograph-Multigraph Corporation. Blanket cleaner for duplicating machines. 4,066,017, Cl. 101-425.000.
Gardner-Denver Company: *See—*
Conley, Fred Miller, 4,066,140, Cl. 177-134.000.
Gargour, Habib T. Vehicle carriers. 4,066,289, Cl. 296-1.00A.
Garrett, Michael David, to Medi-Physics, Inc. Tc-99m sulfur colloid radiopharmaceuticals. 4,066,742, Cl. 424-1.000.
Garside, Wayne H.: *See—*
Apaloo, Thomas L.; Garside, Wayne H.; and Berger, Isaac, 4,066,869, Cl. 219-490.000.
Gaspar, Randle; and Burk, Claud A. Underwater radiographic system. 4,066,899, Cl. 250-358.00P.
Gassmann, Michael, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Enclosed high-pressure electric discharge lamp structure with cable terminal. 4,066,888, Cl. 362-223.000.
Gastineau, Charles; de Mathan, Olivier; and Dilly, Jan-Dominique, to France Luzerne. Process for the treatment of green, leafy plants for the extraction of proteins in the pressing juices and for economical dehydration of cake. 4,066,633, Cl. 260-112.00R.
Gates Rubber Company, The: *See—*
Redmond, John D., Jr., 4,066,732, Cl. 264-229.000.
Gates, Walter C., Jr.: *See—*
Suggitt, Robert M.; Coone, Joseph H., Jr.; and Gates, Walter C., Jr., 4,066,699, Cl. 260-583.00R.
Gazarek, Kenneth F., to Equipto Electronics Corporation. Modular electronic desk. 4,066,305, Cl. 312-195.000.
Gebhardt, Frank L.: *See—*
Costanza, Samuel T.; Franklin, Peter G.; Gebhardt, Frank L.; Israel, Jack D.; Moore, Charles R.; and Wheatley, Charles E., III, 4,066,964, Cl. 325-55.000.

Geffcken, Walter: *See—*
Faulstich, Marga; and Geffcken, Walter, 4,066,464, Cl. 106-47.00Q.
Gehring, Johann: *See—*
Stoger, Klaus; Dotzer, Richard; and Gehring, Johann, 4,066,515, Cl. 204-14.00N.
Gema AG Apparatebau: *See—*
Buschor, Karl; and Ribnitz, Peter, 4,066,041, Cl. 118-629.000.
General Atomic Company: *See—*
Arya, Satya Prakash, 4,066,534, Cl. 209-82.000.
General Battery Corporation: *See—*
Eberle, William J., 4,066,825, Cl. 429-71.000.
General Electric Company: *See—*
Axelrod, Robert Jay, 4,066,611, Cl. 260-45.80A.
Borman, Willem F. H.; and Reilly, Eugene P., 4,066,627, Cl. 260-75.00M.
LeBlanc, Oliver H., Jr.; and Ward, William J., III, 4,066,646, Cl. 23-259.000.
Mark, Victor, 4,066,618, Cl. 260-45.85T.
Milkovic, Miran, 4,066,959, Cl. 324-141.000.
Milkovic, Miran, 4,066,960, Cl. 324-142.000.
Moeller, Richard E., 4,066,594, Cl. 260-29.20M.
Morey, Everett D.; and Dooley, Eddie W., 4,066,393, Cl. 8-137.000.
Moyson, Joseph, 4,066,484, Cl. 148-187.000.
Rublack, Wilfred, 4,066,924, Cl. 313-408.000.
Stitch, Richard C., 4,066,094, Cl. 137-387.000.
Suthers, Charles E., 4,066,955, Cl. 363-68.000.
Turnbull, Fred G., 4,066,938, Cl. 318-227.000.
VanVleck, Gordon T.; and Traver, Frank J., 4,066,560, Cl. 252-21.000.
Wetherell, Daniel L., 4,066,912, Cl. 307-3.000.
General Motors Corporation: *See—*
Eldred, Roger J.; Iobst, Stanley A.; and Abu-Isa, Ismat A., 4,066,590, Cl. 260-28.50A.
Pearce, Warren, Jr.; and Russo, Andrew, Jr., 4,066,325, Cl. 339-176.0MP.
General Refractories Company: *See—*
Peck, George L., 4,066,446, Cl. 75-96.000.
General Signal Corporation: *See—*
Clark, Garry E., 4,066,229, Cl. 246-34.0CT.
Lakin, Michael B.; and Lindsay, James R., 4,066,382, Cl. 416-186.00A.
Lakin, Michael B., 4,066,383, Cl. 416-186.00R.
George, Peter K.; and Kobayashi, Tsutomu, to Rockwell International Corporation. Passive replicator. 4,067,003, Cl. 365-12.000.
George, Thomas: *See—*
Nagarajan, Kuppuswamy; Arya, Vishwa Prakash; and George, Thomas, 4,066,778, Cl. 424-273.00R.
Gerretz, Richard: *See—*
Frentzen, Hermann Josef; Gerretz, Richard; and Henn, Ewald, 4,065,953, Cl. 72-393.000.
Gianuzzi, Ottavio: *See—*
Huber, John G.; and Gianuzzi, Ottavio, 4,066,249, Cl. 269-21.000.
Gibbs, James Kiel, to Borg-Warner Corporation. Impeller disconnect and brake mechanism. 4,066,157, Cl. 192-3.240.
Giben Impianti S.p.A.: *See—*
Benuzzi, Gino, 4,065,991, Cl. 83-272.000.
Gidley, John Arthur Frederick; Irving, Barry Frederick; and Johnson, Barry Keith, to Imperial Metal Industries (Kynoch) Limited. Location of objects. 4,066,177, Cl. 214-152.000.
Gierse, Franz-Josef; Bastert, Carl-Christian; and Busch, Wilhelm, to Muller, Franz. Apparatus for cutting pile fabric. 4,065,837, Cl. 26-9.000.
Giessner, Jean, to BBC Brown Boveri & Company Limited. Apparatus for measuring the slip of locomotive wheels and preventing sliding thereof. 4,065,975, Cl. 73-510.000.
Gillessen, Dieter; Studer, Rolf; and Trzeciak, Arnold, to Hoffmann-La Roche Inc. L-Pyroglutamyl-L-histidyl-L-prolyl-beta-alaninamide and salts. 4,066,635, Cl. 260-112.50R.
Gillette, Robert H. Guided honing tool. 4,065,881, Cl. 51-346.000.
Giordano, John K., to Automation Electronics Corporation. Automatic call answering and sequencing system. 4,066,847, Cl. 179-99.000.
Girling Limited: *See—*
Farr, Glyn Phillip Reginald, 4,066,005, Cl. 91-369.00B.
Farr, Glyn Phillip Reginald, 4,066,150, Cl. 188-1.00A.
Harries, David Anthony, 4,066,301, Cl. 303-115.000.
Givaudan Corporation: *See—*
Krasnobajew, Victor; and Boeniger, Regula, 4,066,504, Cl. 195-63.000.
Ochsner, Paul Albert, 4,066,710, Cl. 260-631.500.
Givens, Wyatt W., to Mobil Oil Corporation. Coal logging system. 4,066,892, Cl. 250-270.000.
Glachet, Charles: *See—*
Bourdois, Claude; Glachet, Charles; Marchal, Paul; and Vertut, Jean, 4,066,909, Cl. 250-497.000.
Glen Glenn Sound: *See—*
Kelly, Joseph D.; Cohen, Emory M.; Henley, Barry K.; Holt, Hammond H.; and Agalsoff, John, 4,067,049, Cl. 360-14.000.
Godel, Siegfried; and Viola, James Joseph, to Sperry Rand Corporation. Portable hair drying appliance and heating element assembly therefor. 4,066,865, Cl. 219-370.000.
Goettl, William H. Air conditioning system. 4,066,118, Cl. 165-18.000.
Gold, Charles, to Gold, Lawrence, a part interest. Combination high impedance continuity and voltage indicating instrument. 4,066,953, Cl. 324-123.00R.
Gold, Lawrence: *See—*
Gold, Charles, 4,066,953, Cl. 324-123.00R.
Goldin, Stanley M.: *See—*
Lai, Chung Jung; and Goldin, Stanley M., 4,066,512, Cl. 195-127.000.
Goldman, Michael Barnett: *See—*
Heuner, Robert Charles; Goldman, Michael Barnett; Niemiec, Stanley Joseph; and Morton, George Ira, 4,066,918, Cl. 307-304.000.
Goldstein, Peter, to Goldstein, Vianette. Automobile-tire snow chains. 4,066,112, Cl. 152-213.00A.
Goldstein, Vianette: *See—*
Goldstein, Peter, 4,066,112, Cl. 152-213.00A.
Goodrich, Allen R.; Horton, Chauncey M., Jr.; Thaeler, Leigh M.; and Toivola, John O., to Western Electric Company, Inc. Electrical conductor terminating system. 4,066,320, Cl. 339-98.000.
Goodyear Tire & Rubber Company, The: *See—*
Lawrence, John P., 4,066,697, Cl. 260-567.000.
Gordon, Abraham, to Technicon Instruments Corporation. Liquid sampler. 4,065,973, Cl. 73-423.00A.
Gordon, Murray A. Toe ring base and ornamental toe ring. 4,065,940, Cl. 63-2.000.
Gordy, Robert S.: *See—*
Chambers, Ramon P.; Sanders, David E.; and Gordy, Robert S., 4,066,977, Cl. 330-129.000.
Gorog, Sandor: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcs, 4,066,709, Cl. 260-618.00B.
Gorran, Jody A., to Medpro, Inc. Flotation support system. 4,065,819, Cl. 5-371.000.
Gotje, Egbert Bernardus Gretinus Willem: *See—*
Van Besouw, Joannes Baptista Maria Adrianus; Gotje, Egbert Bernardus Gretinus Willem; and Kerstens, Franciscus Napoleon Adrianus, 4,066,928, Cl. 315-39.510.
Goto, Eizo, to Tokyo Shibaura Electric Co., Ltd. Bonding method using a soldering glass. 4,066,427, Cl. 65-40.000.
Gotz, Martin, to Erich Grau Stanzwerk fur Elektrobleche. Ram-guiding frame. 4,065,954, Cl. 72-456.000.
Grabendorfer, Werner; Vogt, Herbert; Haacke, Harri; Kuhn, Harry; Pawelletz, Reinhard; and Ries, Karl, to Krautkramer GmbH; and Mannesmann Aktiengesellschaft. Method and apparatus for monitoring the operation of ultrasonic testing of tubes and bars. 4,065,960, Cl. 73-627.000.
Graham, Huber L.: *See—*
Dertouzos, Michael L.; and Graham, Huber L., 4,067,017, Cl. 346-46.000.
Graham, Kenneth A., to Chrysler Corporation. Throttle body having a novel throttle blade. 4,066,721, Cl. 261-62.000.
Graham, Roy R., to PPG Industries, Inc. Sized woven glass fabric. 4,066,106, Cl. 139-420.00C.
Grams, Wolfgang: *See—*
Danguillier, Wilhelm; and Grams, Wolfgang, 4,066,420, Cl. 48-197.00R.
Graves, Arthur H. Shelf structure and method of making same. 4,066,022, Cl. 108-14.000.
Grawinger, Otto: *See—*
Raabe, Thomas; Grawinger, Otto; Scholtholt, Josef; Nitz, Rolf-Eberhard; and Schraven, Eckhard, 4,066,768, Cl. 424-263.000.
Gray, Peter R., to Phillips Petroleum Company. Geochemical and geophysical exploration. 4,066,891, Cl. 250-253.000.
Grayson, Richard F.: *See—*
Manning, Michael L.; Anglin, Thurman L.; and Grayson, Richard F., 4,066,913, Cl. 307-38.000.
Green, Derek, deceased; and Green, Muriel Irene, executrix, to United Kingdom Atomic Energy Authority. Formation of articles. 4,065,950, Cl. 72-191.000.
Green, Muriel Irene, executrix: *See—*
Green, Derek, deceased; and Green, Muriel Irene, executrix, 4,065,950, Cl. 72-191.000.
Greene, David James: *See—*
Moore, Alexander Joseph; Taylor, David Alexander; and Greene, David James, 4,066,987, Cl. 333-95.00R.
Greer, Michael M. Pocket finger exercise board. 4,065,995, Cl. 84-465.000.
Greiff, Paul, to Massachusetts Institute of Technology. Transistor having high f,at low currents. 4,067,037, Cl. 357-34.000.
Gresh, Peter P. Rust retarder applicator. 4,066,146, Cl. 184-1.00R.
Griffith, Harold J., to Alton Box Board Company. Bin box. 4,066,205, Cl. 229-17.00B.
Grigat, Ernst: *See—*
Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, 4,066,577, Cl. 260-2.00R.
Grinberg, Grigory Efimovich: *See—*
Bashkovich, Alexandr Pavlovich; Zimnukhova, Evgenia Semenovna; Prokopovich, Agnessa Vladimirovna; Polatovshaya, Olga Grigorievna; Pronina, Maria Ivanovna; Kulbakh, Valter Osvaldovich; Rivkina-Pevtsova, Khasya Ionovna; and Grinberg, Grigory Efimovich, 4,066,503, Cl. 195-62.000.
Grisar, J. Martin: *See—*
Blohm, Thomas R.; Grisar, J. Martin; and Parker, Roger Alan, 4,066,788, Cl. 424-333.000.
Gross, Erwin; and Vowinkel, Hans, to Hoechst Aktiengesellschaft. Device for the transmission of solar energy to a liquid medium. 4,066,063, Cl. 126-271.000.
Gross, Erwin; and Vowinkel, Hans, to Hoechst Aktiengesellschaft.

Multi-layer radiator of plastic material and process for its manufacture. 4,066,122, Cl. 165-175.000.

Gross, Franz, to Siemens Aktiengesellschaft. Wide-band low-reflection attenuated delay line. 4,066,927, Cl. 315-3.500.

Grottker, Gunter: *See—*
Borchard, Heinz; Grottker, Gunter; and Thun, Peter, 4,066,268, Cl. 274-42.00R.

Gruber, Wolfgang: *See—*
Rauscher, Elli; Bernt, Erich; Gruber, Wolfgang; and Determann, Helmut, 4,066,508, Cl. 195-99.000.

Grumman Aerospace Corporation: *See—*
Esposito, Charles M., 4,066,882, Cl. 235-302.000.
Huber, John G.; and Gianuzzi, Ottavio, 4,066,249, Cl. 269-21.000.

GSE, Inc.: *See—*
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GTE Automatic Electric Laboratories Incorporated: *See—*
Vonder, David L.; and Wilkis, Anthony J., 4,066,318, Cl. 339-92.00M.

Guipaud, Serge, to Societe Anonyme pour l'Equipment Electrique des Vehicules S.E.V. Marchal. Method and apparatus for providing a periodic control signal, especially for controlling the ignition of an internal combustion engine. 4,066,968, Cl. 328-1.000.

Gulbrantson, William, to FMC Corporation. Remote personnel station alarm system. 4,067,004, Cl. 340-237.00R.

Gulf Oil Corporation: *See—*
Ahle, James L., 4,066,439, Cl. 71-111.000.
Kirkpatrick, Joel L., 4,066,436, Cl. 71-90.000.
Kirkpatrick, Joel L., 4,066,774, Cl. 424-269.000.

Gullotti, Damian V.; Fayard, William S.; and Wedgeworth, Wiley W., to Swiss Aluminium Ltd. Duplex process for improving the hot workability of aluminum-magnesium alloys. 4,066,476, Cl. 148-11.50A.

Gullotti, Damian V.; Fayard, William S.; and Wedgeworth, Wiley W., to Swiss Aluminium Ltd. Process for improving the hot workability of aluminum-magnesium alloys. 4,066,480, Cl. 148-11.50A.

Gundry, Kenneth James, to Dolby Laboratories, Inc. Electrically variable impedance circuits. 4,066,914, Cl. 307-237.000.

Gunther, Donald A., to American Sterilizer Company. Method for humidifying a gas sterilizer. 4,066,399, Cl. 21-58.000.

Gunthner, Franz, to Jenaer Glaswerk Schott & Gen. Method of applying vacuum while constricting the neck portion. 4,066,428, Cl. 65-66.000.

Gutmann, Walter: *See—*
Paulus, Rudolf; Gutmann, Walter; and Hofmann, Wilfried, 4,066,328, Cl. 350-7.000.

Guttmann, Hilda: *See—*
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Guyer, August, to Escher Wyss Limited. Filtration apparatus. 4,066,554, Cl. 210-342.000.

Gysin, Max. Printing roller. 4,065,841, Cl. 29-121.100.

Haack, Erich: *See—*
Weber, Helmut; Muth, Karl; Weyer, Rudi; Aumuller, Walter; and Haack, Erich, 4,066,639, Cl. 260-239.0BF.

Haacke, Harri: *See—*
Grabendorfer, Werner; Vogt, Herbert; Haacke, Harri; Kuhn, Harry; Pawelletz, Reinhard; and Ries, Karl, 4,065,960, Cl. 73-627.000.

Haberle, Fritz; Riechers, Daniel; and Hochrathner, Alfred, to Daimler-Benz Aktiengesellschaft. Bumper for motor vehicles. 4,066,286, Cl. 293-87.000.

Habermeier, Jurgen: *See—*
Herzog, Hans; Buxbaum, Lothar; Kainmuller, Thomas; and Habermeier, Jurgen, 4,066,626, Cl. 260-75.00N.

Hachisu, Takeshi; and Uchida, Akinari, to Hitachi, Ltd. Oil-recovering material and process for preparing and using the same. 4,066,539, Cl. 210-36.000.

Hadley, Charles F.: *See—*
Patchett, Jay G.; and Hadley, Charles F., 4,066,994, Cl. 340-18.0NC.

Haeberle, Ronald Mason, Jr., to International Nickel Company, Inc., The. Nickel-chromium-cobalt containing alloys. 4,066,448, Cl. 75-171.000.

Haemer, Laurence F.: *See—*
Winters, Donald C.; Haemer, Laurence F.; and Powell, William H., 4,066,813, Cl. 426-282.000.

Haffer, Gregor: *See—*
Eder, Ulrich; Sauer, Gerhard; Haffer, Gregor; Neef, Guenter; and Wiechert, Rudolf, 4,066,674, Cl. 260-397.500.

Hagen, Helmut: *See—*
Pommer, Ernst-Heinrich; Hagen, Helmut; and Fleig, Helmut, 4,066,775, Cl. 424-270.000.

Hagenuk Vormals Neufeldt & Kuhnke GmbH: *See—*
Scheler, Holger, 4,065,989, Cl. 82-38.00A.

Hager, Lowell T., to Clean Power Systems, Inc. Positive crankcase ventilation system. 4,066,055, Cl. 123-119.00B.

Hagiwara Denki Kabusiki Kaisha: *See—*
Hattori, Shuzo; Hiramatsu, Tadao; Katayama, Sunao; Ozawa, Hidenori; and Hiraiwa, Yasuyuki, 4,066,338, Cl. 350-161.00W.

Haglund, Kjell, to Aktiebolaget Karlstads Mekaniska Werkstad. Apparatus for mounting and dismounting a submerged propeller unit for a floating body. 4,066,034, Cl. 115-34.00R.

Haglund, Kjell; and Carlsson, Hakan Hasse, to Aktiebolaget Karlstads Mekaniska Werkstad. Apparatus for mounting and dismounting a submerged propeller unit for a floating body. 4,066,035, Cl. 115-34.00R.

Hahn, Heinz-Dieter; and Weber, Jurgen, to Ruhrchemie AG. Process for purifying the waste water produced in the process of producing ester plasticizers. 4,066,835, Cl. 560-98.000.

Hahner, Reinhard: *See—*
Wanner, Karl; Hahner, Reinhard; Schmid, Wolfgang; Hansel, Gernot; and Bleicher, Manfred, 4,066,136, Cl. 173-48.000.

Hakamata, Yoshio: *See—*
Igarashi, Shunkichi; Okano, Takeshi; Takahama, Sho; and Hakamata, Yoshio, 4,066,354, Cl. 355-28.000.

Hakkinen, Leo: *See—*
Strom, Rolf; Heikkila, Veikko; and Hakkinen, Leo, 4,065,845, Cl. 29-283.000.

Halcon International, Inc.: *See—*
Schmidt, John P., 4,066,706, Cl. 260-610.00B.
Winnick, Charles Nathan, 4,066,575, Cl. 252-475.000.

Hale, David Jerry, to Brunswick Corporation. Cylinder head mounting apparatus for internal combustion engines. 4,066,057, Cl. 123-193.0CH.

Hall, Daniel L.; and Dunivan, Neal Duane, to Trim-Line, Inc. Ornamental protective trim strip for motor vehicles. 4,066,285, Cl. 293-62.000.

Hall, David Edward: *See—*
Orr, Thomas Samuel Campbell; Hall, David Edward; and Mann, John, 4,066,756, Cl. 424-232.000.

Hall, James Robert, to RCA Corporation. Circuit for inhibition of autogenetic false alarms in a collision avoidance system. 4,067,010, Cl. 343-6.8LC.

Hall, Lowell R., to Caterpillar Tractor Co. Metering slot configuration for a valve spool. 4,066,239, Cl. 251-31.000.

Halton, Murray; Dow, Norris F.; Dow, Richard M.; and Hillebrand, Michael J., to N. F. Doweave, Inc. Triaxial fabric forming machine and components thereof. 4,066,104, Cl. 139-11.000.

Hamashima, Yoshio; Yoshioka, Mitsuru; Tanida, Hiroshi; Tsuji, Teruji; Narisada, Masayuki; Komeno, Taichiro; and Nagata, Wataru. Method for cyclization to give cephem ring. 4,066,641, Cl. 544-17.000.

Hamilton, Charles W.; and Kleider, Alfred, to United States of America, Army. Rotor tip light control. 4,066,890, Cl. 250-199.000.

Hamlin, Thomas J.: *See—*
Stange, Klaus K.; Smith, Richard E.; Hamlin, Thomas J.; and Cassano, James R., 4,066,254, Cl. 271-236.000.

Hamori, Alfred Steven: *See—*
Schultz, Leonard J.; Hamori, Alfred Steven; and Rosen, Robert, 4,066,965, Cl. 325-120.000.

Hanessian, Stephen, to Canadian Patents and Development Limited. Neomycin and paromomycin derivatives. 4,066,753, Cl. 424-181.000.

Hanna, Ward T.; Drennan, John J.; and Staroska, John T., to Keebler Company. Recloseable package. 4,066,167, Cl. 206-627.000.

Hannum, Joseph R.; and Santos, Gerard R., to Budd Company, The. Method for making annular articles. 4,066,489, Cl. 156-258.000.

Hansel, Gernot: *See—*
Wanner, Karl; Hahner, Reinhard; Schmid, Wolfgang; Hansel, Gernot; and Bleicher, Manfred, 4,066,136, Cl. 173-48.000.

Hardesty, Charles: *See—*
Peters, James W.; and Hardesty, Charles, 4,065,992, Cl. 83-285.000.

Hare, William C.; and Collier, Milton F., to Cumberland Corporation. Chute construction. 4,066,158, Cl. 193-34.000.

Hargreaves, Olivia Nancy: *See—*
Hargreaves, William; and Hargreaves, Olivia Nancy, 4,066,224, Cl. 242-115.000.

Hargreaves, William; and Hargreaves, Olivia Nancy. Knock-down shipping reel for flexible cable. 4,066,224, Cl. 242-115.000.

Harnsberger, Bobby G., to Texaco Inc. Processes for producing bitumen from tar sands and methods for forming a gravel pack in tar sands. 4,066,127, Cl. 166-278.000.

Harries, David Anthony, to Girling Limited. Modulator assemblies for vehicle hydraulic braking systems. 4,066,301, Cl. 303-115.000.

Harrington, Daniel J.: *See—*
D'Altroy, Frederick A.; Harrington, Daniel J.; and Miller, Gerald W., 4,066,483, Cl. 148-187.000.

Harrington, James Nelson, to King Radio Corporation. Command bar system. 4,066,036, Cl. 116-114.00R.

Harris Corporation: *See—*
Arends, Thomas Clark; and Miller, Warren Hastings, Jr., 4,066,342, Cl. 350-288.000.
Miaskoff, Leonard, 4,066,162, Cl. 198-377.000.
Van Vonno, Nicolaas W., 4,067,038, Cl. 357-46.000.

Harris, Edward Bruce: *See—*
Babian, Gunther William; and Harris, Edward Bruce, 4,066,582, Cl. 260-17.00A.

Harris, James Marion: *See—*
Brandstaetter, David Peter; and Harris, James Marion, 4,067,058, Cl. 364-200.000.

Harris, Jesse R., to Phillips Petroleum Company. Reforming process using chromium trioxide-graphite intercalation catalyst. 4,066,712, Cl. 260-668.00D.

Harris, Louis Selig: *See—*
Lee, Cheuk Man; Michaels, Raymond John; and Harris, Louis Selig, 4,066,667, Cl. 260-345.300.

Harris, Norman; and Naden, David, to Power-Gas Corporation Limited, The. Catalytic oxidation. 4,066,704, Cl. 260-604.00R.

Harrison, Michael: *See—*
Tomlinson, Kenneth; and Harrison, Michael, 4,066,745, Cl. 424-49.000.

Harshaw Chemical Company, The: *See—*
Farukhi, Mohammad R.; Mataraza, George A.; and Wimer, Oley D., 4,066,908, Cl. 250-483.000.

Harte, James Richard. Instructional apparatus with elastic sheet. 4,065,858, Cl. 35-9.00R.

Hartlage, James A., to Ashland Oil, Inc. Substituted 8-hydroxyquinolines and process for the preparation thereof. 4,066,652, Cl. 260-289.0XA.

Hartung, Kuhn & Co Maschinenfabrik GmbH: *See—*
Schulte, Fritz, 4,066,175, Cl. 214-35.00R.

Harwood, William James; and Snyder, Robert P., to Harwood, William James. Portable abrasion tool. 4,065,886, Cl. 51-166.0FB.

Hashiguchi, Setsuo, to Ichikoh Industries Limited. Breakaway mirror mounting. 4,066,235, Cl. 248-482.000.

Hashimoto, Mitsuru, to Kabushiki Kaisha Ricoh. Electrophotographic light-sensitive material containing indenothiophenone or its derivative and process of preparing indenothiophenone and its derivative. 4,066,454, Cl. 96-1.50R.

Hashimoto, Susumu: *See—*
Nakatani, Hirokuni; Takamura, Toru; Hiroshima, Yoshimitsu; and Hashimoto, Susumu, 4,067,046, Cl. 358-213.000.

Hattori, Shuzo; Hiramatsu, Tadao; Katayama, Sunao; Ozawa, Hidenori; and Hiraiwa, Yasuyuki, to Hagiwara Denki Kabusiki Kaisha. Electrooptic light modulator. 4,066,338, Cl. 350-161.00W.

Hattori, Tadashi: *See—*
Segawa, Yoshihiro; Sato, Susumu; Yasuda, Eturo; Hattori, Tadashi; and Aoki, Keiji, 4,066,413, Cl. 23-254.00E.

Hauser, Raimund: *See—*
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Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,066,345, Cl. 352-27.000.

Havel, Charles J. Method for processing and densifying metal powder. 4,066,449, Cl. 75-211.000.

Hawk, Roger M.; and Mitchell, Thomas A., to Diamond Shamrock Corporation. Concentration measuring apparatus and process. 4,066,948, Cl. 324-30.00R.

Haws, Jay B.: *See—*
Bahner, Randal E.; and Haws, Jay B., 4,066,231, Cl. 248-13.000.

Hayashi, Masaki; Kori, Seiji; and Tanouchi, Tadao, to Ono Pharmaceutical Company. Prostaglandin analogues. 4,066,751, Cl. 424-180.000.

Hayashi, Shigeru: *See—*
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Hazeltine Corporation: *See—*
Wheeler, Harold A.; and Lopez, Alfred R., 4,067,014, Cl. 343-113.0DE.

Heard, Robert Arthur Henderson. Securing device. 4,066,233, Cl. 248-231.000.

Heath Company: *See—*
Poulson, Daniel A., 4,066,311, Cl. 316-28.000.

Hedgeland, David Richard Sweatman: *See—*
Baylis, Howard Raymond; Edwards, Roger Alan; and Hedgeland, David Richard Sweatman, 4,067,021, Cl. 346-76.00L.

Hedstrom, Norman A.: *See—*
O'Toole, Jerome; Wright, David M.; and Hedstrom, Norman A., 4,066,168, Cl. 211-4.000.

Hegar, Gert: *See—*
Riat, Henri; and Hegar, Gert, 4,066,389, Cl. 8-41.00R.

Heikkila, Heikki O.: *See—*
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Heikkila, Veikko: *See—*
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Heinrich, Felix; Linka, Adolf; and Jocham, Reinhold, to Mayer & Cie. Method of and apparatus for forming a leno selvage on woven goods. 4,066,105, Cl. 139-54.000.

Heiser, Joachim, to Robert Bosch G.m.b.H. Flow regulating system. 4,066,006, Cl. 91-433.000.

Heitmann, Arthur C., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing feeders for supply of heat softenable materials. 4,066,864, Cl. 219-121.0EM.

Hellier, Stephen J., to S.A.E.S. Getters S.p.A. Water vapor releasing composition of matter and device, and process for their use. 4,066,309, Cl. 316-5.000.

Helm, Axel-Gunther. High speed transportation system. 4,066,021, Cl. 104-138.00R.

Helmberger, Josef; and Stadler, Klaus, to AGFA-Gevaert, AG. Solid-state color-copying scanner. 4,066,355, Cl. 355-38.000.

Henderson, Ian. Electrical control apparatus. 4,066,940, Cl. 318-294.000.

Henderson, William Arthur, Jr.; and Ramirez, Fausto, to American Cyanamid Company. Insecticidal and acaricidal metal halide complexes of 4-cyano-2,2-dimethylbutyraldoxime-N-methylcarbamate. 4,066,783, Cl. 424-289.000.

Henkin, Robert I., to United States of America, Health, Education and Welfare. Method for total protein fractionation and analysis of human saliva. 4,066,405, Cl. 23-230.00B.

Henley, Barry K.: *See—*
Kelly, Joseph D.; Cohen, Emory M.; Henley, Barry K.; Holt, Hammond H.; and Agalsoff, John, 4,067,049, Cl. 360-14.000.

Henn, Ewald: *See—*
Frentzen, Hermann Josef; Gerretz, Richard; and Henn, Ewald, 4,065,953, Cl. 72-393.000.

Hennemann, Jean; and Daussin, Bernard, to Unelec S.A. Electrical motor-control device for electrical equipment. 4,066,922, Cl. 310-80.000.

Heppner, Dedriuck. Dirt shield for roto tiller. 4,066,130, Cl. 172-81.000.

Hepworth, Walter: *See—*
Brittain, David Robert; Brown, Edward Douglas; Hepworth, Walter; and Stacey, Gilbert Joseph, 4,066,651, Cl. 260-287.00K.

Herbstman, Sheldon; Webb, Allen N.; and Estes, John H., to Texaco Inc. Alkylation process of alkanes with olefins utilizing chlorided alumina catalyst. 4,066,716, Cl. 260-683.470.

Herchenbach, Horst: *See—*
Brachthauser, Kunibert; Ramesohl, Hubert; Beisner, Klaus; and Herchenbach, Horst, 4,066,470, Cl. 106-100.000.

Hercules Incorporated: *See—*
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Hermanson, Fred H.: *See—*
Shank, Richard S.; and Hermanson, Fred H., 4,065,895, Cl. 52-210.000.

Hermeyer, Edward J. Clamp-on level holder. 4,066,232, Cl. 248-226.200.

Herzog, Hans; Buxbaum, Lothar; Kainmuller, Thomas; and Habermeier, Jurgen, to Ciba-Geigy Corporation. Linear polyesters based on heterocyclic dicarboxylic acids. 4,066,626, Cl. 260-75.00N.

Hesketh, Geoffrey: *See—*
Nobbs, William Harry; Bowker, Harold; and Tyburski, Peter Frank, 4,066,197, Cl. 224-42.010.

Hess, Stanley R., to Cordis Corporation. Contact device for muscle stimulation. 4,066,085, Cl. 128-418.000.

Hesseltine, Clifford W.: *See—*
Kanda, Hiroshi; Wang, Hwa L.; and Hesseltine, Clifford W., 4,066,792, Cl. 426-41.000.

Hesston Corporation: *See—*
Adee, Raymond A., 4,066,274, Cl. 280-411.00A.

Heuner, Robert Charles; Goldman, Michael Barnett; Niemiec, Stanley Joseph; and Morton, George Ira, to RCA Corporation. Protection circuitry for insulated-gate field-effect transistor (IGFET) circuits. 4,066,918, Cl. 307-304.000.

Hexcel Corporation: *See—*
Tan, Gene S. T., 4,066,486, Cl. 156-48.000.

Heys, George, Jr., to NCR Corporation. Keyboard switch assembly having interchangeable cover plate, indicating layer and actuator switch assembly in any operative combination. 4,066,850, Cl. 200-5.00A.

Hickman, John S. Weatherized system for motorcycle. 4,066,291, Cl. 296-78.100.

Higashida, Susumu: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,066,615, Cl. 260-45.8NT.

Hijikata, Akiko: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tonomura, Shinji; Tamao, Yoshikuni; Tezuka, Tohru; and Hijikata, Akiko, 4,066,758, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,759, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,773, Cl. 424-267.000.

Hill, Jan, to AB Tellusond. Method and device for examining pulp for the presence of shives. 4,066,492, Cl. 162-49.000.

Hillebrand, Michael J.: *See—*
Halton, Murray; Dow, Norris F.; Dow, Richard M.; and Hillebrand, Michael J., 4,066,104, Cl. 139-11.000.

Hillmann, Reinhart Michael: *See—*
Johnston, Gordon Boyd; Hillmann, Reinhart Michael; Kregler, Helmuth Martin; Janson, Bertil Sven; and Strandberg, Hasse Eivind, 4,066,304, Cl. 308-201.000.

Hilti Aktiengesellschaft: *See—*
Craig, Alexander Robertson, 4,066,807, Cl. 427-282.000.
Jochum, Peter; and Seghezzi, Hans Dieter, 4,066,198, Cl. 227-8.000.
Jochum, Peter; and Seghezzi, Hans Dieter, 4,066,199, Cl. 227-10.000.

Hiraiwa, Yasuyuki: *See—*
Hattori, Shuzo; Hiramatsu, Tadao; Katayama, Sunao; Ozawa, Hidenori; and Hiraiwa, Yasuyuki, 4,066,338, Cl. 350-161.00W.

Hirakawa, Hayao: *See—*
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Hiramatsu, Tadao: *See—*
Hattori, Shuzo; Hiramatsu, Tadao; Katayama, Sunao; Ozawa, Hidenori; and Hiraiwa, Yasuyuki, 4,066,338, Cl. 350-161.00W.

Hirata, Noritsugu: *See—*
Toyama, Masamichi; Takigawa, Tomoshi; Hirata, Noritsugu; and Ishikawa, Kazuo, 4,066,346, Cl. 352-72.000.

Hiroishi, Takashi: *See—*
Mohri, Yoshio; Hiroishi, Takashi; Sano, Kinzi; Huruya, Koichi; Muramoto, Tadashi; and Tao, Masato, 4,066,465, Cl. 106-50.000.

Hirose, Yasunori, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic organ with a three-finger chord and one-finger automatic chord playing mode selector. 4,065,993, Cl. 84-1.030.

Hirose, Yoshio: *See—*
Tosaka, Osamu; Morioka, Hajimu; Hirakawa, Hayao; Ishii, Kenji; Kubota, Koji; and Hirose, Yoshio, 4,066,501, Cl. 195-29.000.

Hiroshima, Yoshimitsu: *See—*
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Hirota, Toshio. Hybrid battery electric drive. 4,066,936, Cl. 318-139.000.

Hirschmann, Ralph F.: *See—*
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Hitachi Chemical Company, Ltd.: *See—*
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Hitachi, Ltd.: *See—*
Hachisu, Takeshi; and Uchida, Akinari, 4,066,539, Cl. 210-36.000.
Itoh, Tomo; and Yanagisawa, Syozo, 4,066,091, Cl. 137-79.000.
Maeda, Takesi; Kohmoto, Mahito; and Yonezawa, Seiji, 4,067,044, Cl. 358-128.000.
Nohmi, Makoto; Fujikura, Nobuyuki; Ueda, Chiaki; and Toyota, Eiichi, 4,066,230, Cl. 246-182.00B.
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Shimazoe, Michitaka; Nakamura, Kousuke; Matsushita, Yasuo; Shimada, Satoshi; Yamada, Kazuji; and Takahashi, Yukio, 4,065,971, Cl. 73-727.000.
Hjelte, Sven Roland; and Eksell, Lennart, to Svensk Tryckgjuntning SH AB. Device in connection with locking reeling means for safety belts for vehicles. 4,066,222, Cl. 242-107.40B.
Hochiki Corporation: *See—*
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Hochrathner, Alfred: *See—*
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Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen: *See—*
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Hodgson, David A., to International Power Pole, Ltd. Illuminated ski pole. 4,066,889, Cl. 362-102.000.
Hoechst Aktiengesellschaft: *See—*
Bork, Siegfried; and Sam, Georg, 4,066,576, Cl. 252-511.000.
Clasen, Hermann, 4,066,698, Cl. 260-569.000.
Fuchs, Hermann; Kapaun, Gustav; and Meininger, Fritz, 4,066,638, Cl. 260-196.000.
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Gross, Erwin; and Vowinkel, Hans, 4,066,122, Cl. 165-175.000.
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Reuschling, Dieter-Bernd; and Jensen, Harald, 4,066,690, Cl. 260-544.00Y.
Weber, Helmut; Muth, Karl; Weyer, Rudi; Aumuller, Walter; and Hasck, Erich, 4,066,639, Cl. 260-239.0BF.
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Denzel, Theodor; and Hoehn, Hans, 4,066,644, Cl. 260-256.40F.
Denzel, Theodor; and Hoehn, Hans, 4,066,645, Cl. 260-256.40F.
Hoffman-La Roche Inc.: *See—*
Boller, Arthur; Cereghetti, Marco; and Scherrer, Hanspeter, 4,066,570, Cl. 252-299.000.
Hoffmann, Jurgen; Hofmockel, Albrecht; and Lepie, Gunther, to Kraftwerk Union Aktiengesellschaft. Shut-off and safety device for a live steam line in a pressurized water reactor. 4,066,498, Cl. 176-38.000.
Hoffmann, Kurt, to Siemens Aktiengesellschaft. Line for transporting charges from storage elements in a storage field. 4,067,001, Cl. 365-174.000.
Hoffmann-La Roche Inc.: *See—*
Adams, Jim Mills; and deZabala, Edward Francis, 4,066,173, Cl. 214-1.00C.
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, 4,066,695, Cl. 260-564.00E.
Felix, Arthur Martin, 4,066,658, Cl. 260-326.200.
Gillessen, Dieter; Studer, Rolf; and Trzeciak, Arnold, 4,066,635, Cl. 260-112.50R.
Rosen, Perry, 4,066,666, Cl. 260-340.9AS.
Hoffmeister, Bernhard; and Schwarz, Wilhelm, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Charging device. 4,066,248, Cl. 266-216.000.
Hofmann, Corris Mabelle: *See—*
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Hofmann, Wilfried: *See—*
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Hofmockel, Albrecht: *See—*
Hoffmann, Jurgen; Hofmockel, Albrecht; and Lepie, Gunther, 4,066,498, Cl. 176-38.000.
Hoks, Dirk, to Stork-Werkspoor Sugar B.V. Method of feeding material for centrifugation to a continuously operating centrifuge, and a centrifuge for performing the method. 4,066,547, Cl. 210-78.000.
Holliday, Leland Robert; and Poe, Ronald Laurence, to Continental Oil Company. Transesterification of borate esters for producing secondary alcohols. 4,066,682, Cl. 260-462.00R.
Holloway, David John, to USM Corporation. Pull through blind riveting tool. 4,065,952, Cl. 72-391.000.
Holmes, Richard Dwight: *See—*
Fleischer, John Martin; and Holmes, Richard Dwight, 4,067,019, Cl. 346-75.000.
Holst, Arno; Lask, Helmut; and Kostrzewa, Michael, to Hoechst Aktiengesellschaft. Process for the production of water-adsorbing cellulose ethers. 4,066,828, Cl. 536-87.000.
Holt, Hammond H.: *See—*
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Holub, Fred F.; and Alter, H. Ward, to Terradex Corporation. Method and apparatus for underground deposit detection. 4,065,972, Cl. 73-421.50R.
Homae, Taisaburo: *See—*
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Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Sulfur containing silicone elastomer and method of preparation. 4,066,603, Cl. 260-37.0SB.
Honeycutt, Bass. Tobacco harvester. 4,066,176, Cl. 214-43.000.
Honeywell, Inc.: *See—*
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Hooker Chemicals & Plastics Corporation: *See—*
Lemper, Anthony L.; Witschard, Gilbert; and Pattison, Victor A., 4,066,612, Cl. 260-42.530.
Hooper, Bernard. Loop driven vehicles. 4,066,142, Cl. 180-33.00A.
Hope Co., Ltd.: *See—*
Murata, Masahiro, 4,066,277, Cl. 280-626.000.
Horiguchi, Shojiro; Nakamura, Michiei; and Sugito, Yoshifumi, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Anti-corrosive organic pigment. 4,066,462, Cl. 106-14.000.
Horiuchi, Hideo: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,066,615, Cl. 260-45.8NT.
Horizons Incorporated, a division of Horizons Research Incorporated: *See—*
Bachman, Paul L.; and Moskal, John J., 4,066,459, Cl. 96-45.200.
Horn, Richard E., to Pitt Metals and Chemicals, Inc. Production of potassium or sodium stannate. 4,066,518, Cl. 204-86.000.
Hornkohl, Owen T., to Angelica Corporation. Guiding, stitching and delivering system. 4,066,028, Cl. 112-121.290.
Horton, Chauncey M., Jr.: *See—*
Bierenfeld, Herbert H.; McGonigal, Charles; Horton, Chauncey M., Jr.; and Kelsey, John A., 4,066,317, Cl. 339-91.00R.
Goodrich, Allen R.; Horton, Chauncey M., Jr.; Thaeler, Leigh M.; and Toivola, John O., 4,066,320, Cl. 339-98.000.
Houdard, Jean-Pierre, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Sampled signal processing device. 4,066,881, Cl. 364-726.000.
Hough, Edmund Alan, to Imperial Chemical Industries Limited. Gloves. 4,065,826, Cl. 15-227.000.
Hounsfield, Godfrey Newbold; and Langstone, Peter George, to EMI Limited. Scanning radiographic apparatus. 4,066,906, Cl. 250-445.00T.
Houston, Elmer. Solar heating system. 4,066,062, Cl. 126-271.000.
Howard, Curtiss Gilmore, to United Technologies Corporation. Tool element placement means. 4,066,377, Cl. 408-1.00R.
Howard, Eddie. Mobile rack for refuse containers. 4,066,172, Cl. 211-78.000.
Howe, Robert K., to Monsanto Company. Plant growth regulators. 4,066,435, Cl. 71-86.000.
Hoyer, William A.; Johnson, Lowell W.; and Schoenenberger, Richard J., to Universal Oil Products Company. Continuous system for providing a catalytic coating on support members. 4,066,801, Cl. 427-8.000.
HT Management Company: *See—*
McGill, James C.; and Scott, William N., 4,066,423, Cl. 55-48.000.
Huang, Yueh, to Lee Hon Corporation. On-wall umbrella holder. 4,066,170, Cl. 211-63.000.
Huber, John G.; and Gianuzzi, Ottavio, to Grumman Aerospace Corporation. Modular vacuum work area. 4,066,249, Cl. 269-21.000.
Hudson, Kirk R. Ball player's glove. 4,065,813, Cl. 2-19.000.
Hughes Aircraft Company: *See—*
Lim, Hong Sup, 4,066,569, Cl. 252-299.000.
Platt, Vernon H.; and Wilmot, Richard D., 4,067,012, Cl. 343-7.00A.
Hughes, Amy Gray, to Procter & Gamble Company, The. U-shape intravaginal device. 4,066,075, Cl. 128-127.000.
Hughes, Kingdon R. Copy machine table. 4,066,023, Cl. 108-50.000.
Hughes, O. Richard, to Celanese Corporation. Polybenzimidazole fiber supported catalyst. 4,066,705, Cl. 260-604.0HF.
Hugon, Pierre: *See—*
Beregi, Laszlo; Hugon, Pierre; Pascaud, Xavier; and Poignant, Jean-Claude, 4,066,662, Cl. 260-326.850.
Hultgren, Karl Sten Rudolf; and Svensson, Sven-Hakan, to AB Bofors. Magazine for tank. 4,065,999, Cl. 89-36.00H.
Humber, Leslie G.: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Santroch, George; Dobson, Thomas A.; and Jirkovsky, Ivo, 4,066,763, Cl. 424-246.000.
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,066,779, Cl. 424-274.000.

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Hungerford, Gordon P., to Mobil Oil Corporation. Method of making polymeric acrylonitrile films. 4,066,731, Cl. 264-216.000.
Hunsucker, Jerry H., to IMC Chemical Group, Inc. Method of controlling the growth of bacteria, fungi and algae using members of the class of oxazolidines. 4,066,433, Cl. 71-67.000.
Hunt, Donald F.; and Stafford, George C., Jr., to University of Virginia. Positive and negative ion recording system for mass spectrometer. 4,066,894, Cl. 250-292.000.
Hunt, Morris Dean. Work transport apparatus for use with a button attachment machine. 4,066,026, Cl. 112-121.150.
Huntington Alloys, Inc.: *See—*
Smith, Darrell Franklin, Jr.; Clatworthy, Edward Frederick; and Wenschhof, Donald Edward, Jr., 4,066,447, Cl. 75-122.000.
Huntington, Robert Charles, to Motorola, Inc. Sample and hold circuit. 4,066,919, Cl. 307-353.000.
Huntsinger, Arnold G. Stop motion for drawing frames. 4,065,831, Cl. 19-.250.
Hurst, Robert L.: *See—*
Scholes, Addison B.; Dollar, David L.; and Hurst, Robert L., 4,066,803, Cl. 427-26.000.
Huruya, Koichi: *See—*
Mohri, Yoshio; Hiroishi, Takashi; Sano, Kinzi; Huruya, Koichi; Muramoto, Tadashi; and Tao, Masato, 4,066,465, Cl. 106-50.000.
Hutchison, Robert J.: *See—*
Pearce, Phillip W.; and Hutchison, Robert J., 4,066,969, Cl. 328-5.000.
Hutson, Jearld L. Semiconductor device package and method of making same. 4,067,041, Cl. 357-80.000.
Hwa, Chih Ming, to Chemed Corporation. Corrosion inhibition. 4,066,398, Cl. 21-2.70A.
Hydragon Corporation: *See—*
Earnest, Ernest R., 4,066,381, Cl. 415-202.000.
Hyster Company: *See—*
Ott, James I.; and Schwab, Delmar G., 4,065,922, Cl. 60-445.000.
I-T-E Imperial Corporation: *See—*
Clark, William Randolph, 4,067,054, Cl. 361-91.000.
Krueger, Keith T., 4,066,989, Cl. 335-9.000.
I.W.S. Nominee Company Limited: *See—*
Abel, Heinz; and Topfl, Rosemarie, 4,066,392, Cl. 8-127.500.
Ichikawa, Toshiyuki: *See—*
Nakatani, Kiyoshi; Imamura, Juichi; Ichikawa, Toshiyuki; Takeuchi, Kouichi; and Kotaka, Kenji, 4,066,707, Cl. 260-613.00R.
Ichikoh Industries Limited: *See—*
Hashiguchi, Setsuo, 4,066,235, Cl. 248-482.000.
Ichinose, Shiro. Driving method and apparatus. 4,065,980, Cl. 74-404.000.
ICI Americas Inc.: *See—*
Shay, Barry M.; and Santacecilia, Remo, 4,066,558, Cl. 252-8.900.
Igarashi, Isemi: *See—*
Takeuchi, Masaharu; Igarashi, Isemi; and Bunda, Tsuchio, 4,066,450, Cl. 75-229.000.
Igarashi, Shunkichi; Okano, Takeshi; Takahama, Sho; and Hakamata, Yoshio, to Fuji Photo Film Co., Ltd. Microfilm apparatus. 4,066,354, Cl. 355-28.000.
Ignatjev, Vladimir. Propeller disk projectile. 4,066,018, Cl. 102-67.000.
Iguchi, Susumu: *See—*
Yamaguchi, Kaichiro; and Iguchi, Susumu, 4,066,421, Cl. 48-213.000.
Ihrman, Kryn G.: *See—*
Wollensak, John C.; Ihrman, Kryn G.; and Elsey, Paul G., 4,066,562, Cl. 252-52.00R.
Iida, Katsuhiko: *See—*
Koide, Hiroshi; Iida, Katsuhiko; Ataka, Hisanori; and Homae, Taisaburo, 4,066,350, Cl. 353-27.00R.
Ikeda, Kazuichi: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; Tachikawa, Toshiyuki; and Ikeda, Kazuichi, 4,066,588, Cl. 260-22.0TN.
Ikeda, Shigeho: *See—*
Asai, Soichiro; Matsuishi, Tsutomu; Matsushita, Katsunobu; Ikeda, Shigeho; Kobayashi, Kaetsu; and Maruyama, Hiromasa, 4,066,502, Cl. 195-47.000.
Ikegami, Shiro: *See—*
Sato, Ryuichi; Ishikawa, Akira; Ishida, Yukihito; Sato, Hiroshi; Tomisawa, Setsuo; Toyoshima, Shigeshi; and Ikegami, Shiro, 4,066,678, Cl. 260-429.00R.
Ikemura, Akio, to Yoshida Kogyo Kabushiki Kaisha. Latch for windows or doors. 4,066,284, Cl. 292-62.000.
Illinois Tool Works Inc.: *See—*
Klygis, Mindaugas Julius, 4,066,166, Cl. 206-427.000.
Imamura, Juichi: *See—*
Nakatani, Kiyoshi; Imamura, Juichi; Ichikawa, Toshiyuki; Takeuchi, Kouichi; and Kotaka, Kenji, 4,066,707, Cl. 260-613.00R.
IMC Chemical Group, Inc.: *See—*
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Imperial Chemical Industries Limited: *See—*
Andrews, Timothy Douglas, 4,066,804, Cl. 427-98.000.
Bent, Keith Joseph; and Turner, John Angus William, 4,066,786, Cl. 424-313.000.
Blackhall, Alexander; Brydon, Donald Lithgow; and Seddon, John David, 4,066,601, Cl. 260-30.80R.
Brittain, David Robert; Brown, Edward Douglas; Hepworth, Walter; and Stacey, Gilbert Joseph, 4,066,651, Cl. 260-287.00K.
Hough, Edmund Alan, 4,065,826, Cl. 15-227.000.
Kelly, Roger Sidney Arthur; and Wilson, John Robert, 4,066,820, Cl. 428-483.000.
Mansfield, John Rickard, 4,066,528, Cl. 204-195.00T.
Imperial Metal Industries (Kynoch) Limited: *See—*
Gidley, John Arthur Frederick; Irving, Barry Frederick; and Johnson, Barry Keith, 4,066,177, Cl. 214-152.000.
Imura, Toshinori: *See—*
Kuramoto, Yoshio; Imura, Toshinori; and Kikukawa, Yoshiiku, 4,067,030, Cl. 354-139.000.
Inagaki, Sanji: *See—*
Kameda, Hiromi; and Inagaki, Sanji, 4,066,352, Cl. 355-3.0TE.
Inata, Hiroo: *See—*
Kawase, Shoji; Kuratsuji, Takatoshi; Inata, Hiroo; Suzuki, Kazuyoshi; and Shima, Takeo, 4,066,624, Cl. 260-49.000.
Industriewerk Nachf. Seifert & Co. KG: *See—*
Bauer, Ernst, 4,066,225, Cl. 242-118.800.
Ingebrigtsen, Kjell A.: *See—*
Stern, Ernest; and Ingebrigtsen, Kjell A., 4,066,984, Cl. 333-30.00R.
Institutul National Pentru Creatie Stintifica si Tehnica - Increst: *See—*
Teodorescu, Gheorghe Marcel; and Popa, Aurel, 4,066,049, Cl. 123-48.00R.
Inter Innovation AB: *See—*
Lundbald, Leif Jorgen I.; and Ek, Jan Olof, 4,066,253, Cl. 271-4.000.
International Business Machines Corporation: *See—*
Alpaugh, Warren Alan; Macur, George Joseph; and Vlasak, Gary Paul, 4,066,809, Cl. 427-444.000.
Chang, Hsu, 4,067,002, Cl. 365-43.000.
Doran, Samuel K.; and Perkins, Merlyn H., 4,066,863, Cl. 219-121.0EM.
Faure, Louis H., 4,066,312, Cl. 339-48.000.
Fleischer, John Martin; and Holmes, Richard Dwight, 4,067,019, Cl. 346-75.000.
Park, Kyu C.; and Reisman, Arnold, 4,065,840, Cl. 29-25.140.
Ruh, Wolf-Dieter; and Trippel, Gerhard, 4,066,491, Cl. 156-644.000.
Stuckert, Paul E., 4,066,458, Cl. 96-41.000.
Wheeler, Delwyn Roche, Jr., 4,066,883, Cl. 235-304.000.
International Harvester Company: *See—*
Phillips, Carmen S.; Beyer, Ralph E.; and Sepich, Gerald E., 4,065,914, Cl. 56-341.000.
Vidakovic, Aleksandar; Urman, Stanley; and Rudny, Donald F., 4,066,047, Cl. 123-41.120.
International Minerals and Chemical Corporation: *See—*
Currier, James W., 4,066,443, Cl. 75-41.000.
International Nickel Company, Inc., The: *See—*
Clark, Ian Sidney Rex; Pargeter, John Kenneth; and Ward, John Oliver, 4,066,117, Cl. 164-46.000.
Haeberle, Ronald Mason, Jr., 4,066,448, Cl. 75-171.000.
International Power Pole, Ltd.: *See—*
Hodgson, David A., 4,066,889, Cl. 362-102.000.
International Telephone and Telegraph Corporation: *See—*
Levine, Arnold M., 4,066,981, Cl. 331-108.00B.
Piper, Jack Richard; and Kaczmarek, Leo W., 4,066,858, Cl. 200-84.00C.
Taylor, Robert L., 4,066,884, Cl. 362-16.000.
Interpace Corporation: *See—*
Swanson, Harold V.; and Forero, Jorge E., 4,066,372, Cl. 403-302.000.
Iobst, Stanley A.: *See—*
Eldred, Roger J.; Iobst, Stanley A.; and Abu-Isa, Ismat A., 4,066,590, Cl. 260-28.50A.
Irving, Barry Frederick: *See—*
Gidley, John Arthur Frederick; Irving, Barry Frederick; and Johnson, Barry Keith, 4,066,177, Cl. 214-152.000.
Isa, Hiroshi; Ukigai, Toshiyuki; Tominaga, Anri; and Sato, Michito, to Lion Fat & Oil Co., Ltd. Method for preparation of olefin oligomer. 4,066,715, Cl. 260-683.15B.
Ishida, Katsuhiko: *See—*
Yoshida, Takashi; and Ishida, Katsuhiko, 4,067,036, Cl. 357-22.000.
Ishida, Yukihito: *See—*
Sato, Ryuichi; Ishikawa, Akira; Ishida, Yukihito; Sato, Hiroshi; Tomisawa, Setsuo; Toyoshima, Shigeshi; and Ikegami, Shiro, 4,066,678, Cl. 260-429.00R.
Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, 4,066,541, Cl. 210-51.000.
Ishigaki, Yukinobu; and Sasamura, Kohei, to Victor Company of Japan, Ltd. System for demodulating angle-modulated signals. 4,066,972, Cl. 329-134.000.
Ishigami, Noriakira, to Aisin Seiki Kabushiki Kaisha. Brake pressure-difference warning system for vehicles. 4,066,303, Cl. 303-6.00C.
Ishiguro, Shoji: *See—*
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Ishii, Kenji: *See—*
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Sato, Ryuichi; Ishikawa, Akira; Ishida, Yukihito; Sato, Hiroshi; Tomisawa, Setsuo; Toyoshima, Shigeshi; and Ikegami, Shiro, 4,066,678, Cl. 260-429.00R.
Ishikawa, Kazuo: *See—*
Toyama, Masamichi; Takigawa, Tomoshi; Hirata, Noritsugu; and Ishikawa, Kazuo, 4,066,346, Cl. 352-72.000.

Israel, Jack D.: *See—*
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Itek Corporation: *See—*
Ebner, Peter R., 4,067,022, Cl. 354-7.000.

Ito, Hiroshi: *See—*
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Itoh, Katsumi: *See—*
Oka, Yoshikazu; Miyake, Akio; Tada, Norio; and Itoh, Katsumi, 4,066,648, Cl. 260-268.0TR.

Itoh, Tomo; and Yanagisawa, Syozo, to Hitachi, Ltd. Pressure switching valve device. 4,066,091, Cl. 137-79.000.

ITT Industries, Incorporated: *See—*
Strohl, Klaus D., 4,066,982, Cl. 331-111.000.

Iura, Yukio: *See—*
Yoshikawa, Ryoichi; Oda, Teruhisa; Tanaka, Kunio; Iura, Yukio; Fukushima, Tadahide; and Aizawa, Hiroshi, 4,067,032, Cl. 354-288.000.

Iwanaga, Masaya, to Shimadzu Seisakusho Ltd. Scanning mass spectrometer having constant magnetic field. 4,066,895, Cl. 250-296.000.

Izumi Denki Corporation: *See—*
Fujita, Teizo; and Ohashi, Tosiro, 4,066,838, Cl. 174-48.000.

J. I. Case Company: *See—*
Alcalay, Joseph, 4,066,004, Cl. 91-183.000.
Baylor, John Merlin, 4,066,302, Cl. 305-11.000.

J. Sainsburg Limited: *See—*
Follett, Michael John, 4,066,798, Cl. 426-393.000.

J. W. Greer, Inc.: *See—*
Korstvedt, Harald Olaf, 4,066,246, Cl. 366-293.000.

Jablin, Richard. Coke quenching steam generator. 4,066,513, Cl. 201-39.000.

Jackson, Earl V., to Xerox Corporation. Velocity compensation for bead bypass. 4,066,452, Cl. 96-1.0PE.

Jackson, James D.: *See—*
Blazek, William S.; Piwonka, Thomas S.; Jackson, James D.; and Atanmo, Philip N., 4,066,116, Cl. 164-17.000.

Jackson, W. Shaun; and Bohm, Leslie Eric. Handlebar bag. 4,066,196, Cl. 224-30.00A.

Jacob, Adir, to LFE Corportion. Apparatus for depositing dielectric films using a glow discharge. 4,066,037, Cl. 118-49.100.

Jaffe, Wolfgang, to Singer Company, The. Metal detecting device with magnetically influenced Hall effect sensor. 4,066,962, Cl. 324-208.000.

Jager, Herbert Paul: *See—*
Beck, Hans Werner; and Jager, Herbert Paul, 4,066,380, Cl. 408-125.000.

Jager, Horst, to Ciba-Geigy Corporation. Method of finishing synthetic organic fibrous material, in particular of providing it with an antistatic finish. 4,066,597, Cl. 260-29.6WB.

James G. Brown & Associates, Inc.: *See—*
Dysarz, Edward David, 4,065,934, Cl. 61-87.000.

Janson, Bertil Sven: *See—*
Johnston, Gordon Boyd; Hillmann, Reinhart Michael; Kregler, Helmuth Martin; Janson, Bertil Sven; and Strandberg, Hasse Eivind, 4,066,304, Cl. 308-201.000.

Janssen Pharmaceutica N.V.: *See—*
Vandenberk, Jan; Kennis, Ludo E. J.; Van der Aa, Marcel J. M. C.; and Van Heertum, Albert H. M. Th., 4,066,772, Cl. 424-267.000.

Japan Atomic Energy Research Institute: *See—*
Machi, Sueo; Wada, Takeshi; and Sekiya, Hiroshi, 4,066,522, Cl. 204-159.240.
Sato, Shoichi, 4,066,741, Cl. 423-658.000.

Jaulmes, Eric, to Ateliers de la Motobecane. Anti-theft device for helmet and helmet for use with the device. 4,065,945, Cl. 70-58.000.

Jenaer Glaswerk Schott & Gen.: *See—*
Faulstich, Marga; and Geffcken, Walter, 4,066,464, Cl. 106-47.00Q.
Gunthner, Franz, 4,066,428, Cl. 65-66.000.

Jenkins, Leonard A.: *See—*
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Jensen, Harald: *See—*
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Jeumont-Schneider: *See—*
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Jirkovsky, Ivo: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Santroch, George; Dobson, Thomas A.; and Jirkovsky, Ivo, 4,066,763, Cl. 424-246.000.
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,066,779, Cl. 424-274.000.
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,066,780, Cl. 424-274.000.

Jocham, Reinhold: *See—*
Heinrich, Felix; Linka, Adolf; and Jocham, Reinhold, 4,066,105, Cl. 139-54.000.

Jochum, Peter; and Seghezzi, Hans Dieter, to Hilti Aktiengesellschaft. Fastening element setting gun with an ejection member. 4,066,198, Cl. 227-8.000.

Jochum, Peter; and Seghezzi, Hans Dieter, to Hilti Aktiengesellschaft. Explosive charge feed arrangement for a setting gun. 4,066,199, Cl. 227-10.000.

Johnsen, Edward L. Continuous business form or the like adapted for subsequent processing into combination mailing envelopes and return envelopes having a common back ply panel. 4,066,251, Cl. 270-37.000.

Johnson, Alan J.; Soberano, Mercedes E.; Ong, Eng Bee; and Levy, Milton, to United States of America, Health, Education and Welfare. Method of separating and purifying two active forms of urokinase using affinity chromatography. 4,066,506, Cl. 195-66.00B.

Johnson, Barry Keith: *See—*
Gidley, John Arthur Frederick; Irving, Barry Frederick; and Johnson, Barry Keith, 4,066,177, Cl. 214-152.000.

Johnson, Christopher Linley; and Millns, Colin, to Rolls-Royce Limited. Priming systems for pumps. 4,066,386, Cl. 417-199.00A.

Johnson, David A. Revolver speed loader. 4,065,868, Cl. 42-89.000.

Johnson, Donald R.; Nadeau, Richard G.; Nieuweboer, Gerrit; and Truett, William L., to Du Pont de Nemours, E. I., and Company. Automatic clinical analyzer. 4,066,412, Cl. 23-253.00R.

Johnson, Edmond L. Vehicle body part holding and positioning device. 4,066,243, Cl. 254-133.00R.

Johnson, Edwin G.: *See—*
Mogavero, Louis N.; Johnson, Edwin G.; Evans, John M., Jr; and Albus, James S., 4,067,015, Cl. 343-225.000.

Johnson, Edwin Lee: *See—*
Peniston, Quintin P.; and Johnson, Edwin Lee, 4,066,735, Cl. 423-159.000.

Johnson, J. Ralph. Method of and apparatus for the tape loading and use of a single turntable in the rendition of a taped program. 4,066,221, Cl. 242-55.19A.

Johnson & Johnson: *See—*
Berg, Jeffrey, 4,066,078, Cl. 128-2.06E.
Vaillancourt, Vincent Louis, 4,066,556, Cl. 210-448.000.

Johnson, Joseph M., to Boeing Company, The; and Aeritalia S.p.A. Gas turbine exhaust nozzle for controlled temperature flow across adjoining airfoils. 4,066,214, Cl. 239-265.190.

Johnson, Lowell W.: *See—*
Hoyer, William A.; Johnson, Lowell W.; and Schoenenberger, Richard J., 4,066,801, Cl. 427-8.000.

Johnson, Steven H.: *See—*
Taenzer, Jon C.; and Johnson, Steven H., 4,065,976, Cl. 73-633.000.

Johnston, Gordon Boyd; Hillmann, Reinhart Michael; Kregler, Helmuth Martin; Janson, Bertil Sven; and Strandberg, Hasse Eivind, to SKF Industrial Trading and Development Company B.V. Bearing cage. 4,066,304, Cl. 308-201.000.

Johnston, Howard; and Senkbeil, Herman O., to Dow Chemical Company, The. Substituted aminodi- or trihalopyridines and method of use. 4,066,438, Cl. 71-94.000.

Johnston, James D.; Sanders, Robert N.; and Wood, James M., Jr., to Ethyl Corporation. Process for producing magnesium utilizing aluminum metal reductant. 4,066,445, Cl. 75-67.00R.

Jonas, Heinz: *See—*
Bockelmann, Wolfgang; Nieder-Vahrenholz, Hans-Georg; Niederprum, Hans; and Jonas, Heinz, 4,066,734, Cl. 423-61.000.

Jones, Charles; and Loyd, Robert William, Jr., to Curtiss-Wright Corporation. Rotary engine with tongue and groove inserts in rotor faces. 4,066,044, Cl. 123-8.090.

Jones, David: *See—*
Fray, Adrian Forrest; and Jones, David, 4,066,334, Cl. 350-160.0LC.

Jones, Eric Mynard, to Karl Storz Endoscopy-America, Inc. Coupler for joining optical devices. 4,066,330, Cl. 350-80.000.

Jones, Ivor Wynn; Robinson, Graham; and Bird, Thomas Lewis, to Electricity Council, The. Sodium sulphur cells. 4,066,826, Cl. 429-104.000.

Jones, John W. D.; and Oakey, Keith R., to Smiths Industries Limited. Servo systems. 4,066,946, Cl. 318-685.000.

Jones, Kenneth Wilson: *See—*
Shiel, Leslie Edward; and Jones, Kenneth Wilson, 4,066,469, Cl. 106-89.000.

Jones, Norman A. Theft resistant receptacle. 4,066,208, Cl. 232-1.00C.

Jones, Reuben G.; and Terando, Norman H., to Eli Lilly and Company. Anti-bacterial compositions containing certain 3-nitropyrazoles. 4,066,776, Cl. 424-270.000.

Jones, Richard Henry: *See—*
Olson, Larry Lee; and Jones, Richard Henry, 4,066,548, Cl. 210-160.000.

Jones, Robert Alexander. Flying saucer toy. 4,065,873, Cl. 46-75.000.

Jones, Thomas M., to Tennessee Valley Authority. Production of suspension fertilizers from wet-process orthophosphoric acids. 4,066,432, Cl. 71-34.000.

Jonsson, Kjartan A., to Sun-Econ, Inc. Air-conditioning apparatus with booster heat exchanger. 4,065,938, Cl. 62-160.000.

Jonsson, Nils Ake; Merenyi, Ferenc; and Westlund, Lars-Erik, to AB Kabi. Chromogen-reactive-indicator preparations containing A 3,3'-di(carbonyloxy- or sulfonyloxy-group-containing) benzidine derivative chromogen. 4,066,408, Cl. 23-230.00R.

Jorgensen-Beck, Frode; and Lambach, Heinrich Wilhelm, to Brdr. Schur International A/S, J. W. Schursevej. Dispenser carton boxes. 4,066,207, Cl. 229-17.0SC.

Joseph, Joseph Peter: *See—*
Nair, Vijay Gopalan; Joseph, Joseph Peter; and Bernstein, Seymour, 4,066,829, Cl. 536-103.000.

Jossel, Franklin: *See—*
Mammino, Joseph; and Jossel, Franklin, 4,066,563, Cl. 252-62.10P.

Joyes, John Frank, to Lucas Industries Limited. Control circuits for electrically driven vehicles. 4,066,939, Cl. 318-251.000.

Juhasz, John Emil, to Rockwell International Corporation. Monitoring and recording system for vehicles. 4,067,061, Cl. 364-900.000.

Junge, Peter; Schulz, Horst; Schneider, Rainer; Dreke, Werner; and Rieger, Gerhard, to KEPEC Chemische Fabrik GmbH. Leather dressing composition of an aqueous emulsion of solvent solutions of substituted celluloses and polyurethanes. 4,066,818, Cl. 428-341.000.

Jungpeter, Raymond R.; and Buchholz, Jean L., to Du Pont de Nemours, E. I., and Company. Tenter frame clip-opening wheel with resilient rim. 4,065,838, Cl. 26-94.000.

Jutus, Marvin W.: *See—*
Skinner, David R.; Jutus, Marvin W.; and Sowell, Miles L., 4,066,123, Cl. 166-68.500.

Juvinall, John W., to Owens-Illinois, Inc. Apparatus and method for inspecting glass containers. 4,066,363, Cl. 356-198.000.

Kabas, Guglielmo: *See—*
Kormany, Geza; and Kabas, Guglielmo, 4,066,830, Cl. 542-456.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Nishijima, Komio; and Kojima, Masakazu, 4,066,001, Cl. 90-3.000.
Umeda, Haruhiko; Ito, Hiroshi; and Suketomo, Toshitaka, 4,066,143, Cl. 180-77.00S.

Kabushiki Kaisha Ricoh: *See—*
Hashimoto, Mitsuru, 4,066,454, Cl. 96-1.50R.

Kabushiki Kaisha Toyota Cho Kenkyusho: *See—*
Takeuchi, Masaharu; Igarashi, Isemi; and Bunda, Tsuchio, 4,066,450, Cl. 75-229.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kamigaito, Osami; and Oyama, Yoichi, 4,066,468, Cl. 106-73.400.

Kaczmarek, Leo W.: *See—*
Piper, Jack Richard; and Kaczmarek, Leo W., 4,066,858, Cl. 200-84.00C.

Kadija, Igor V.; and Ahn, Byung K., to Olin Corporation. Cell and process for electrolyzing aqueous solutions using a porous metal separator. 4,066,519, Cl. 204-98.000.

Kadin, Saul B., to Pfizer Inc. 1-Oxo-6-substituted pyrimido [1,2-a]quinoline-2-carboxylic acids and derivatives thereof and their use as antiallergy agents. 4,066,766, Cl. 424-251.000.

Kagata, Akira, to Matsushita Electric Industrial Co., Ltd. Knife-edge bearing system. 4,066,267, Cl. 274-23.00R.

Kainmuller, Thomas: *See—*
Herzog, Hans; Buxbaum, Lothar; Kainmuller, Thomas; and Habermeier, Jurgen, 4,066,626, Cl. 260-75.00N.

Kaiser, Joachim: *See—*
Kunstmann, Rudolf; and Kaiser, Joachim, 4,066,764, Cl. 424-248.540.

Kaken Chemical Co., Ltd.: *See—*
Shibuya, Hajime; and Shirato, Shiroh, 4,066,781, Cl. 424-283.000.

Kalmovicz, Rudolf: *See—*
Burger, Manfred R.; Gagel, Ernst; Kalmovicz, Rudolf; and Prechtl, Alfred, 4,065,937, Cl. 62-89.000.

Kaloi, Cyril M., to United States of America, Navy. Dual notched/diagonally fed electric microstrip dipole antennas. 4,067,016, Cl. 343-700.0MS.

Kameda, Hiromi; and Inagaki, Sanji, to Minolta Camera Kabushiki Kaisha. Electroconductive elastic spone member and electrostatic image transfer mechanism. 4,066,352, Cl. 355-3.0TE.

Kametani, Yoshiya: *See—*
Mimura, Koji; Kawai, Atsushi; Kametani, Yoshiya; and Nakahama, Tetsuro, 4,066,730, Cl. 264-191.000.

Kamigaito, Osami; and Oyama, Yoichi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Ceramics of silicon nitride. 4,066,468, Cl. 106-73.400.

Kamp, Arthur J.; and Mischler, Philip G., to Dow Chemical Company, The. Method and apparatus for monitoring amount of a substance applied to a fabric. 4,066,898, Cl. 250-359.000.

Kamp, Heinz, to W. Schlafhorst & Co. Method and device for supplying empty conical coil cores to the individual winding stations of a textile machine. 4,066,218, Cl. 242-35.50A.

Kanda, Hiroshi; Wang, Hwa L.; and Hesseltine, Clifford W., to United States of America, Agriculture. Method of producing soybean milk yoghurt. 4,066,792, Cl. 426-41.000.

Kantner, Otto: *See—*
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,066,345, Cl. 352-27.000.

Kapaun, Gustav: *See—*
Fuchs, Hermann; Kapaun, Gustav; and Meininger, Fritz, 4,066,638, Cl. 260-196.000.

Kaptanis, Panoyotis, to Stabilus GmbH. Pneumatic spring of adjustable length. 4,066,279, Cl. 280-711.000.

Karino, Takafumi: *See—*
Sakamoto, Masakatsu; Watanabe, Syosaku; Karino, Takafumi; Yazu, Junichi; Takashima, Kouichi; Miyashiro, Hiroshi; Takagi, Takeo; and Konno, Takao, 4,066,298, Cl. 302-2.00R.

Karl Lautenschlager KG., Mobelbeschlagfabrik: *See—*
Lautenschlager, Karl, 4,065,829, Cl. 16-145.000.

Karl Storz Endoscopy-America, Inc.: *See—*
Jones, Eric Mynard, 4,066,330, Cl. 350-80.000.

Karns, Ed, III. Hydraulic post hole auger apparatus. 4,066,134, Cl. 173-27.000.

Karp, Alexander; and Boron, Alfred. Packaging machine and method for chitterlings. 4,066,107, Cl. 141-11.000.

Karp, Arthur, to Stanford Research Institute. Electromagnetic resonators having slot-located switches for tuning to different frequencies. 4,066,988, Cl. 333-82.00B.

Karp, Robert S.; and Flint, John R., to Bell & Howell Company. Information retrieval system with expanded logic capability. 4,066,872, Cl. 353-26.00A.

Kasama, Tsuneo; Wada, Makoto; Sano, Masakatu; and Tsuji, Shinzo, to Nippon Oil and Fats Co., Ltd. Gas generator for inflatable life raft. 4,066,415, Cl. 23-281.000.

Katagiri, Masayoshi: *See—*
Ohmi, Atsushi; and Katagiri, Masayoshi, 4,066,997, Cl. 340-59.000.

Katayama, Ichiro, to Takenaka Komuten Company, Ltd. Method of reforming the ground. 4,065,933, Cl. 61-50.000.

Katayama, Sunao: *See—*
Hattori, Shuzo; Hiramatsu, Tadao; Katayama, Sunao; Ozawa, Hidenori; and Hiraiwa, Yasuyuki, 4,066,338, Cl. 350-161.00W.

Kato, Hisatoyo; and Miyahara, Junji, to Fuji Photo Film Co., Ltd. Rear projection screens. 4,066,332, Cl. 350-126.000.

Kaupin, William B., to William Carter Company, The. Fire retardant polyester textile materials and method of making same. 4,066,812, Cl. 428-265.000.

Kawada, Hiroitsu: *See—*
Okazaki, Kiyoshi; Kawada, Hiroitsu; Shimizu, Hidemi; Ohmura, Tadayoshi; and Sekino, Jun, 4,066,787, Cl. 424-317.000.

Kawada, Seigo; and Hayashi, Shigeru, to Kumiai Chemical Industries Ltd. Agricultural and horticultural fungicidal compositions. 4,066,760, Cl. 424-245.000.

Kawai, Atsushi: *See—*
Mimura, Koji; Kawai, Atsushi; Kametani, Yoshiya; and Nakahama, Tetsuro, 4,066,730, Cl. 264-191.000.

Kawame, Yasuta: *See—*
Naito, Hirokuni; Yoshimura, Isao; Takao, Norito; and Kawame, Yasuta, 4,066,811, Cl. 428-220.000.

Kawamura, Tateo: *See—*
Takagi, Atsushi; Kuroiwa, Hiroyuki; Miyaguchi, Masao; and Kawamura, Tateo, 4,065,928, Cl. 61-36.00R.

Kawasaki, Hiroshi, to Sharp Kabushiki Kaisha. Pushbutton switch key arrangement for keyboards having indicia. 4,066,860, Cl. 200-308.000.

Kawasaki, Masahiro: *See—*
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; Mita, Kunio; Kawasaki, Masahiro; and Mori, Chiharu, 4,067,023, Cl. 354-23.00D.

Kawase, Shoji; Kuratsuji, Takatoshi; Inata, Hiroo; Suzuki, Kazuyoshi; and Shima, Takeo, to Teijin Limited. Polyesters of naphthalene carboxylic acids and hydroxy alkoxydiphenyl sulfones. 4,066,624, Cl. 260-49.000.

Kearney & Trecker Corporation: *See—*
Lohneis, Earl R.; and Schachte, John J., 4,065,988, Cl. 82-2.700.

Keebler Company: *See—*
Hanna, Ward T.; Drennan, John J.; and Staroska, John T., 4,066,167, Cl. 206-627.000.

Keiller, Clifton Quinton: *See—*
Balas, Salman Heskel; and Keiller, Clifton Quinton, 4,066,263, Cl. 273-273.000.

Kejnovsky, Bohumil; and Kopecny, Miroslav, to ELITEX, Zavody textilniho strojirenstvi generalni reditelstvi. Panties or the like and method of manufacturing same. 4,065,942, Cl. 66-177.000.

Keller, Karlheinz: *See—*
Soiron, Charles; and Keller, Karlheinz, 4,066,395, Cl. 8-169.000.

Keller, Martin. Protective guard and method for forming and applying. 4,066,074, Cl. 128-89.00R.

Kelley, Albert W. Container system for plant husbandry. 4,065,877, Cl. 47-85.000.

Kelly, Joseph D.; Cohen, Emory M.; Henley, Barry K.; Holt, Hammond H.; and Agalsoff, John, to Glen Glenn Sound. Sound editing system. 4,067,049, Cl. 360-14.000.

Kelly, Roger Sidney Arthur; and Wilson, John Robert, to Imperial Chemical Industries Limited. Processes for coating films. 4,066,820, Cl. 428-483.000.

Kelsey, John A.: *See—*
Bierenfeld, Herbert H.; McGonigal, Charles; Horton, Chauncey M., Jr.; and Kelsey, John A., 4,066,317, Cl. 339-91.00R.

Kemp, Willard E.: *See—*
Atkinson, Eulas R.; and Kemp, Willard E., 4,066,240, Cl. 251-175.000.

Kennis, Ludo E. J.: *See—*
Vandenberk, Jan; Kennis, Ludo E. J.; Van der Aa, Marcel J. M. C.; and Van Heertum, Albert H. M. Th., 4,066,772, Cl. 424-267.000.

Keogh, Raymond J.: *See—*
Burr, Robert Page; Morino, Ronald; and Keogh, Raymond J., 4,065,850, Cl. 29-625.000.

KEPEC Chemische Fabrik GmbH: *See—*
Junge, Peter; Schulz, Horst; Schneider, Rainer; Dreke, Werner; and Rieger, Gerhard, 4,066,818, Cl. 428-341.000.

Kerstens, Franciscus Napoleon Adrianus: *See—*
Van Besouw, Joannes Baptista Maria Adrianus; Gotje, Egbert Bernardus Gretinus Willem; and Kerstens, Franciscus Napoleon Adrianus, 4,066,928, Cl. 315-39.510.

Key, Walter W.; and Coggins, Eugene L., to Paoli High Fidelity Consultants, Inc. Audio amplifier with improved stability. 4,066,975, Cl. 330-81.000.

Keystone International, Inc.: *See—*
Killian, Henry R., 4,065,979, Cl. 74-89.150.

Kidd, Wayne L., to Xerox Corporation. Variable illumination optical system. 4,066,351, Cl. 355-3.00R.

Kierstead, Richard Wightman: *See—*
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, 4,066,695, Cl. 260-564.00E.

Kikukawa, Yoshiiku: *See—*
Kuramoto, Yoshio; Imura, Toshinori; and Kikukawa, Yoshiiku, 4,067,030, Cl. 354-139.000.
Kikumoto, Ryoji: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tonomura, Shinji; Tamao, Yoshikuni; Tezuka, Tohru; and Hijikata, Akiko, 4,066,758, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,759, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,773, Cl. 424-267.000.
Kilgren, Arnold William; Low, David Nicholson; and Porter, Robert Warwick, to Du Pont de Nemours, E. I., and Company. Selectively recovering metal chlorides from gaseous effluent. 4,066,424, Cl. 55-71.000.
Killian, Henry R., to Keystone International, Inc. Traveling nut stop assembly. 4,065,979, Cl. 74-89.150.
Kim, Young Sul. Methampicillin Lysinate and its method of manufacture. 4,066,640, Cl. 260-239.100.
King, Arthur Elgin. Trench compactor. 4,066,374, Cl. 404-117.000.
King, Kenneth Gordon; and Burch, Derek Ernest, to Westinghouse Brake & Signal Co. Ltd. Transistor drive circuits. 4,066,916, Cl. 307-253.000.
King Radio Corporation: *See—*
Harrington, James Nelson, 4,066,036, Cl. 116-114.00R.
King, Ralph J.; Belke, William H.; and Dearlove, William E., to Caterpillar Tractor Co. Method and apparatus for making fibrous concrete. 4,066,723, Cl. 264-34.000.
Kirkhuff, William J. Interlocking combination shingle and sheeting arrangement. 4,065,899, Cl. 52-309.800.
Kirkpatrick, Joel L., to Gulf Oil Corporation. Method of controlling sicklepod in soybeans. 4,066,436, Cl. 71-90.000.
Kirkpatrick, Joel L., to Gulf Oil Corporation. Method of killing insects employing a certain triazole. 4,066,774, Cl. 424-269.000.
Kirkpatrick, Robert E.: *See—*
Beeston, John T., 4,065,967, Cl. 73-295.000.
Kishi, Hiroyasu, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co. Ltd. Pulsive noise removing apparatus for an FM receiver. 4,066,845, Cl. 179-15.0BT.
Kiss, Kornel Dezso; Allan, John Leslie Hugh; and Fein, Marvin Michael, to Dart Industries, Inc. Stabilized pigmented polyolefin compositions. 4,066,610, Cl. 260-42.210.
Kitamoto, Tatsuji: *See—*
Sasazawa, Koji; Dezawa, Shin-Ichiro; and Kitamoto, Tatsuji, 4,066,564, Cl. 252-62.560.
Sasazawa, Koji; Dezawa, Shin-Ichiro; and Kitamoto, Tatsuji, 4,066,565, Cl. 252-62.560.
Kiyoshi, Hashimoto: *See—*
Toyoaki, Ueno; Seizo, Takayama; Kiyoshi, Hashimoto; and Masashi, Uchida, 4,066,189, Cl. 222-334.000.
Klebe, Elmer C., Jr., to Singer Company, The. Cutter head assembly for power planers. 4,066,111, Cl. 145-4.000.
Kleider, Alfred: *See—*
Hamilton, Charles W.; and Kleider, Alfred, 4,066,890, Cl. 250-199.000.
Klein, Frank H.: *See—*
Levy, Joshuah; Levy, Isaac; and Klein, Frank H., 4,067,005, Cl. 340-279.000.
Kleine, Charles A.; and Middleton, Verne L., to Olin Corporation. Heat exchanger with header having improved fluid distribution. 4,066,121, Cl. 165-170.000.
Kleinschuster, Jacob John; and Pletcher, Terry Carl, to Du Pont de Nemours, E. I., and Company. Copolyester capable of forming anisotropic melt and shaped articles thereof. 4,066,620, Cl. 260-47.00C.
Klem, Robert E.: *See—*
Doughty, Joseph B.; and Klem, Robert E., 4,066,673, Cl. 260-348.130.
Klinder, Edward F. Utility cabinet with tilting mirrored door. 4,066,306, Cl. 312-224.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Brachthauser, Kunibert; Ramesohl, Hubert; Beisner, Klaus; and Herchenbach, Horst, 4,066,470, Cl. 106-100.000.
Strauss, Werner, 4,066,535, Cl. 209-139.00A.
Klockner-Werke AG: *See—*
Kosmider, Hans, 4,066,444, Cl. 75-58.000.
Klygis, Mindaugas Julius, to Illinois Tool Works Inc. Bottle multipackage. 4,066,166, Cl. 206-427.000.
Knapp, Gordon G.: *See—*
Dubeck, Michael; and Knapp, Gordon G., 4,066,733, Cl. 423-32.000.
Kneller, Mills T., to Mallinckrodt, Inc. X-ray contrast agents. 4,066,743, Cl. 424-5.000.
Kobale, Manfred; Krueger, Hans; and Lorenz, Hans-Peter, to Siemens Aktiengesellschaft. Display system incorporating a liquid crystal. 4,066,337, Cl. 350-160.0LC.
Kobashi, Kiyoshi: *See—*
Nohira, Hidetaka; Kobashi, Kiyoshi; and Tanaka, Masaaki, 4,066,056, Cl. 123-119.00A.
Kobayashi, Kaetsu: *See—*
Asai, Soichiro; Matsuishi, Tsutomu; Matsushita, Katsunobu; Ikeda, Shigeho; Kobayashi, Kaetsu; and Maruyama, Hiromasa, 4,066,502, Cl. 195-47.000.
Kobayashi, Tadahiko: *See—*
Saito, Toshio; and Kobayashi, Tadahiko, 4,066,378, Cl. 408-46.000.
Kobayashi, Tsutomu: *See—*
George, Peter K.; and Kobayashi, Tsutomu, 4,067,003, Cl. 365-12.000.
Kochmanis, Gunars: *See—*
Collins, Johnny Will; Kochmanis, Gunars; and Lynch, Bobby Ross, 4,066,174, Cl. 214-7.000.
Koetsch, Philip W., to NCR Corporation. High-speed inductance driver. 4,067,055, Cl. 361-159.000.
Kohkoku U.S.A., Inc.: *See—*
Matsubara, Shigeo, 4,066,724, Cl. 264-39.000.
Kohmoto, Mahito: *See—*
Maeda, Takesi; Kohmoto, Mahito; and Yonezawa, Seiji, 4,067,044, Cl. 358-128.000.
Koide, Hiroshi; Iida, Katsuhiko; Ataka, Hisanori; and Homae, Taisaburo, to Ricoh Company, Ltd. Character display and input device. 4,066,350, Cl. 353-27.00R.
Kojima, Masakazu: *See—*
Nishijima, Komio; and Kojima, Masakazu, 4,066,001, Cl. 90-3.000.
Kojima, Minoru: *See—*
Yukuta, Toshio; Ohashi, Takashi; Kojima, Minoru; Suzuki, Akira; and Taniguchi, Yoshiko, 4,066,579, Cl. 260-2.5AP.
Kollmorgen Technologies Corporation: *See—*
Burr, Robert Page; Morino, Ronald; and Keogh, Raymond J., 4,065,850, Cl. 29-625.000.
Komeno, Taichiro: *See—*
Hamashima, Yoshio; Yoshioka, Mitsuru; Tanida, Hiroshi; Tsuji, Teruji; Narisada, Masayuki; Komeno, Taichiro; and Nagata, Wataru, 4,066,641, Cl. 544-17.000.
Komet Stahlhalter- und Werkzeugfabrik, Robert Breuning GmbH: *See—*
Eckle, Otto; and Stahl, Hermann, 4,066,376, Cl. 407-101.000.
Komiyama, Yoshiki; Yamamoto, Seiya; and Yasumasa, Yoshiaki, to Sumitomo Chemical Company, Limited. Analytical method and apparatus for determination of total nitrogen and/or carbon contents in aqueous systems. 4,066,402, Cl. 23-230.0PC.
Konno, Takao: *See—*
Sakamoto, Masakatsu; Watanabe, Syosaku; Karino, Takafumi; Yazu, Junichi; Takashima, Kouichi; Miyashiro, Hiroshi; Takagi, Takeo; and Konno, Takao, 4,066,298, Cl. 302-2.00R.
Kono, Akira: *See—*
Satake, Toshihiko; Kono, Akira; and Yanagihara, Hiromichi, 4,066,012, Cl. 99-618.000.
Kopecny, Miroslav: *See—*
Kejnovsky, Bohumil; and Kopecny, Miroslav, 4,065,942, Cl. 66-177.000.
Koppers Company, Inc.: *See—*
Romovacek, George R., 4,066,159, Cl. 196-132.000.
Romovacek, George R., 4,066,737, Cl. 423-447.600.
Kordomenos, Panagiotis: *See—*
Ashida, Kaneyoshi; Frisch, Kurt C.; and Kordomenos, Panagiotis, 4,066,628, Cl. 260-77.50R.
Kori, Seiji: *See—*
Hayashi, Masaki; Kori, Seiji; and Tanouchi, Tadao, 4,066,751, Cl. 424-180.000.
Kormany, Geza; and Kabas, Guglielmo, to Ciba-Geigy Corporation. Benzoxazole-styryls. 4,066,830, Cl. 542-456.000.
Korstvedt, Harald Olaf, to J. W. Greer, Inc. Sanitary pipeline mixer. 4,066,246, Cl. 366-293.000.
Korte, Donald R., Jr., to Bendix Corporation, The. Linear driving circuit for a d.c. motor with current feedback. 4,066,945, Cl. 318-681.000.
Kosaka, Yujiro; Uemura, Masaru; Kuroki, Hitoshi; Otomo, Kanji; Terauchi, Yoshiaki; and Arai, Yasuo, to Toyo Soda Manufacturing Co., Ltd. Heat printing sheet and heat printing method. 4,066,810, Cl. 428-195.000.
Kosaka, Yujiro: *See—*
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, 4,066,827, Cl. 526-50.000.
Kosmider, Hans, to Klockner-Werke AG. Process for deoxidizing steel by means of molten aluminum. 4,066,444, Cl. 75-58.000.
Koss Corporation: *See—*
Chladil, Joseph J., Sr., 4,066,849, Cl. 179-178.000.
Kostrzewa, Michael: *See—*
Holst, Arno; Lask, Helmut; and Kostrzewa, Michael, 4,066,828, Cl. 536-87.000.
Kotaka, Kenji: *See—*
Nakatani, Kiyoshi; Imamura, Juichi; Ichikawa, Toshiyuki; Takeuchi, Kouichi; and Kotaka, Kenji, 4,066,707, Cl. 260-613.00R.
Koto Sangyo Kabushiki Kaisha: *See—*
Aoki, Sadashiro, 4,065,941, Cl. 64-7.000.
Kozacka, Frederick J., to Chase-Shawmut Company, The. Process of manufacturing electric fuse. 4,065,849, Cl. 29-623.000.
Kraftwerk Union Aktiengesellschaft: *See—*
Hoffmann, Jurgen; Hofmockel, Albrecht; and Lepie, Gunther, 4,066,498, Cl. 176-38.000.
Krall, Albert D.: *See—*
Anderson, Wallace E.; Syeles, Albert M.; and Krall, Albert D., 4,066,819, Cl. 428-472.000.
Kramer, Bruce M.: *See—*
Cook, Nathan Henry; and Kramer, Bruce M., 4,066,821, Cl. 428-539.000.
Kranz, Berthold: *See—*
Bockenhoff, Hermann-Josef; Schaeffer, Walter; and Kranz, Berthold, 4,066,477, Cl. 148-15.000.

Kraska, Allen R.; and Schnur, Rodney C., to Pfizer Inc. Aromatic amidines as antiviral agents in animals. 4,066,696, Cl. 260-564.00R.
Krasnobajew, Victor; and Boeniger, Regula, to Givaudan Corporation. Aliphatic dialdehyde-aromatic polyamine condensation products bound to proteins and enzymes. 4,066,504, Cl. 195-63.000.
Kraus, Werner. Coil structure for electromagnetic therapy. 4,066,065, Cl. 128-1.500.
Krautkramer GmbH: *See—*
Grabendorfer, Werner; Vogt, Herbert; Haacke, Harri; Kuhn, Harry; Pawelletz, Reinhard; and Ries, Karl, 4,065,960, Cl. 73-627.000.
Kregler, Helmuth Martin: *See—*
Johnston, Gordon Boyd; Hillmann, Reinhart Michael; Kregler, Helmuth Martin; Janson, Bertil Sven; and Strandberg, Hasse Eivind, 4,066,304, Cl. 308-201.000.
Krepler, Albert: *See—*
Zaremski, Donald R.; and Krepler, Albert, 4,066,521, Cl. 204-141.500.
Krueger, Hans: *See—*
Kobale, Manfred; Krueger, Hans; and Lorenz, Hans-Peter, 4,066,337, Cl. 350-160.0LC.
Krueger, Keith T., to I-T-E Imperial Corporation. Trip unit tie bar having integral flexibly connected links. 4,066,989, Cl. 335-9.000.
Krylova, Eleonora Dmitrievna; and Brazhnikov, Nikolai Ivanovich. Method of controlling physical characteristics of fluid medium. 4,065,958, Cl. 73-53.000.
Kubota, Koji: *See—*
Tosaka, Osamu; Morioka, Hajimu; Hirakawa, Hayao; Ishii, Kenji; Kubota, Koji; and Hirose, Yoshio, 4,066,501, Cl. 195-29.000.
Kuhn, Gerhard; Ubler, Karl; and Reiss, Karl-Hans, to Siemens Aktiengesellschaft. Ionographic chamber. 4,066,896, Cl. 250-315.00A.
Kuhn, Harry: *See—*
Grabendorfer, Werner; Vogt, Herbert; Haacke, Harri; Kuhn, Harry; Pawelletz, Reinhard; and Ries, Karl, 4,065,960, Cl. 73-627.000.
Kulbakh, Valter Osvaldovich: *See—*
Bashkovich, Alexandr Pavlovich; Zimnukhova, Evgenia Semenovna; Prokopovich, Agnessa Vladimirovna; Polatovshaya, Olga Grigorievna; Pronina, Maria Ivanovna; Kulbakh, Valter Osvaldovich; Rivkina-Pevtsova, Khasya Ionovna; and Grinberg, Grigory Efimovich, 4,066,503, Cl. 195-62.000.
Kumiai Chemical Industries Ltd.: *See—*
Kawada, Seigo; and Hayashi, Shigeru, 4,066,760, Cl. 424-245.000.
Kummer, Franz; Mai, Gerhard; Ruthardt, Rolf; and Thiede, Horst, to W. C. Heraeus GmbH. Method of making metallic support carrier for semiconductor elements. 4,065,851, Cl. 29-630.00R.
Kunihiro, Haruo: *See—*
Shintani, Tsutomu; Ozeki, Azuhiro; Kunihiro, Haruo; and Shigehiro, Kosuke, 4,066,703, Cl. 260-592.000.
Kunstmann, Rudolf; and Kaiser, Joachim, to Hoechst Aktiengesellschaft. 1,4-Dihydro-2H-isoquinoline derivatives. 4,066,764, Cl. 424-248.540.
Kuny, Wilhelm, to Siemens Aktiengesellschaft. Television IF filter constructed in accordance with the surface wave principle. 4,066,985, Cl. 333-72.000.
Kunzel, Hans Egon: *See—*
Wolf, Gerhard Dieter; Miessen, Ralf; Kunzel, Hans Egon; and Bentz, Francis, 4,066,396, Cl. 8-178.00A.
Kuper, Donald G.: *See—*
Anderson, Kenneth L.; and Kuper, Donald G., 4,066,632, Cl. 260-79.100.
Kuramoto, Yoshio; Imura, Toshinori; and Kikukawa, Yoshiiku, to Minolta Camera Kabushiki Kaisha. Camera focussing aid. 4,067,030, Cl. 354-139.000.
Kuratsuji, Takatoshi: *See—*
Kawase, Shoji; Kuratsuji, Takatoshi; Inata, Hiroo; Suzuki, Kazuyoshi; and Shima, Takeo, 4,066,624, Cl. 260-49.000.
Kurihara, Takao: *See—*
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Kuroiwa, Hiroyuki: *See—*
Takagi, Atsushi; Kuroiwa, Hiroyuki; Miyaguchi, Masao; and Kawamura, Tateo, 4,065,928, Cl. 61-36.00R.
Kuroki, Hitoshi: *See—*
Kosaka, Yujiro; Uemura, Masaru; Kuroki, Hitoshi; Otomo, Kanji; Terauchi, Yoshiaki; and Arai, Yasuo, 4,066,810, Cl. 428-195.000.
Kurumada, Tomoyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,066,615, Cl. 260-45.8NT.
Kwiatkowski, Wolfgang, to AGFA-Gevaert, AG. Photographic developing machine. 4,067,034, Cl. 354-310.000.
L. C. Company, Inc.: *See—*
Armstrong, Nelson W., 4,066,183, Cl. 215-247.000.
La Soudure Electrique Autogene, Procedes Arcos, S.A.: *See—*
De Haeck, Robert Jean, 4,066,478, Cl. 148-26.000.
Labes, Mortimer M., to Temple University. Liquid crystal cumulative dosimeter. 4,066,567, Cl. 252-299.000.
Labor Muszeripari Muvek: *See—*
Pungor, Erno; and Varadi, Maria, 4,066,406, Cl. 23-230.00R.
Laboratoire L. Lafon: *See—*
Lafon, Louis, 4,066,686, Cl. 260-500.50H.
LaCapria, Anthony, to American Bank Note Company. Documents of value printed to prevent counterfeiting. 4,066,280, Cl. 283-8.00R.
Lacour, Jacques: *See—*
Borel, Joseph; Lacour, Jacques; and Merckel, Gerard, 4,065,847, Cl. 29-578.000.
Lafant Research Company: *See—*
Lauster, Frederick L., 4,066,566, Cl. 252-136.000.
Lafon, Louis, to Laboratoire L. Lafon. New benzhydrysulphinyl derivatives. 4,066,686, Cl. 260-500.50H.
Lagan Press AB: *See—*
Skoglund, Klas Axel Lennart; and Backgard, Stig Gunnar Bengt, 4,066,013, Cl. 100-53.000.
Lai, Chung Jung; and Goldin, Stanley M., to Millipore Corporation. Biologically active membrane material. 4,066,512, Cl. 195-127.000.
Lakin, Michael B.; and Lindsay, James R., to General Signal Corporation. Surface aeration impeller. 4,066,382, Cl. 416-186.00A.
Lakin, Michael B., to General Signal Corporation. Surface aeration impeller. 4,066,383, Cl. 416-186.00R.
Lakritz, Julian: *See—*
Beers, Ronald W.; and Lakritz, Julian, 4,066,598, Cl. 260-29.70S.
Lambach, Heinrich Wilhelm: *See—*
Jorgensen-Beck, Frode; and Lambach, Heinrich Wilhelm, 4,066,207, Cl. 229-17.0SC.
Lancaster, Alfred John. Hingeing attachment. 4,065,828, Cl. 16-128.00R.
Landes Manufacturing Company: *See—*
Meier, Heinz, 4,066,293, Cl. 297-325.000.
Meier, Heinz, 4,066,294, Cl. 297-325.000.
Landrum, Charles Rabun: *See—*
Calvert, Rodney K.; and Landrum, Charles Rabun, 4,066,009, Cl. 93-53.00M.
Landwer, Robert G.: *See—*
Moore, Leota J.; and Landwer, Robert G., 4,066,052, Cl. 123-119.00A.
Langford, Nathaniel P.; and Perrault, Edward W., to Minnesota Mining and Manufacturing Company. Solvent repellent complexes. 4,066,589, Cl. 260-29.60H.
Langstone, Peter George: *See—*
Hounsfield, Godfrey Newbold; and Langstone, Peter George, 4,066,906, Cl. 250-445.00T.
Lanier, Raymond Henry: *See—*
Ridings, Robert Paul, Jr.; and Lanier, Raymond Henry, 4,066,844, Cl. 179-15.0BW.
Laporte Industries Limited: *See—*
Pickard, Keith John, 4,066,493, Cl. 162-158.000.
Larsson, Kim. Automatic baster. 4,066,010, Cl. 99-346.000.
Lask, Helmut: *See—*
Holst, Arno; Lask, Helmut; and Kostrzewa, Michael, 4,066,828, Cl. 536-87.000.
Lau, Erwin M., to Black Products Company. Valve bag filler, handling and sealing system. 4,066,108, Cl. 141-68.000.
Lauster, Frederick L., to Lafant Research Company. Denture cleaner. 4,066,566, Cl. 252-136.000.
Lautenschlager, Karl, to Karl Lautenschlager K.G., Mobelbeschlagfabrik. Over-center hinge. 4,065,829, Cl. 16-145.000.
Lawrence, John P., to Goodyear Tire & Rubber Company, The. Process for preparing tetramethylthiuram tetrasulfide. 4,066,697, Cl. 260-567.000.
Lawrence, Robert Raymond. Removable low level building carrier. 4,065,892, Cl. 52-143.000.
Lawrence Systems, Inc.: *See—*
Swift, David Merton, 4,066,910, Cl. 250-555.000.
Lawrence, Walter W., Jr.; McKay, Tom W.; and Wiegand, Karl E., to Ethyl Corporation. Chemical process. 4,066,688, Cl. 260-535.00P.
Leaver, Brian E.; and Dudley, William F., Jr., to Milton Roy Company. Means and method for controlling eluent gradient in liquid chromatography. 4,066,879, Cl. 364-498.000.
LeBlanc, Oliver H., Jr.; and Ward, William J., III, to General Electric Company. Diagnostic device and housing therefor. 4,066,646, Cl. 23-259.000.
Lee, Cheuk Man; Michaels, Raymond John; and Harris, Louis Selig, to Abbott Laboratories. 9-Hydroxy-7,8,9,10-tetrahydro-6H, dibenzo[b][d] pyrans and pyranones. 4,066,667, Cl. 260-345.300.
Lee, Chi-Long: *See—*
Homan, Gary R.; and Lee, Chi-Long, 4,066,603, Cl. 260-37.0SB.
Lee Hon Corporation: *See—*
Huang, Yueh, 4,066,170, Cl. 211-63.000.
Lee, Jerry Stevenson: *See—*
Fenton, John William; Lee, Jerry Stevenson; and Buist, Richard James, 4,065,936, Cl. 62-3.000.
Lee, Kuo-Liang. Single element imprinting assembly with inertially and kinematically independent motion controls. 4,066,160, Cl. 197-18.000.
Lee, William H.: *See—*
Cox, Duncan B., Jr.; and Lee, William H., 4,066,978, Cl. 331-1.00A.
Leenhouts, Albert C., to Superior Electric Company, The. Motion control system with incremental data commands. 4,066,944, Cl. 318-571.000.
Leidig, Karl: *See—*
Breitenfellner, Franz; Buxbaum, Lothar; and Leidig, Karl, 4,066,607, Cl. 260-40.00R.
Leland, Ragnvald G. Sock donning assist device. 4,066,194, Cl. 223-111.000.
LeMay, Christopher Archibald Gordon, to EMI Limited. Technique for cat utilizing composite beam paths which are wider at their ends than therebetween. 4,066,900, Cl. 250-360.000.
LeMay, Christopher Archibald Gordon, to EMI Limited. Radiography with detector compensating means. 4,066,902, Cl. 250-363.00S.

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Lemper, Anthony L.; Witschard, Gilbert; and Pattison, Victor A., to Hooker Chemicals & Plastics Corporation. Post bulk polymerization process for polyvinyl halide and composition thereof. 4,066,612, Cl. 260-42.530.

Lennox Industries, Inc.: *See—*
Pfarrer, David M.; and Van Essen, Leonard J., 4,066,937, Cl. 318-221.00G.

Leonard, Byron Herbert, Jr., to Bechtel International Corporation. Process for constructing clamp-welded pipe joint. 4,065,846, Cl. 29-407.000.

Leonard, Ralph Spencer, to Colgate-Palmolive. Reusable zeolite water softener for clothes washing. 4,066,394, Cl. 8-137.000.

Lepie, Gunther: *See—*
Hoffmann, Jurgen; Hofmockel, Albrecht; and Lepie, Gunther, 4,066,498, Cl. 176-38.000.

Lepreux, Guy, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Acoustic buoy. 4,065,821, Cl. 9-8.00R.

Lermann, Peter; and Wagensonner, Eduard, to AGFA-Gevaert, AG. Proper synchronization of the firing of electronic flash units. 4,067,028, Cl. 354-141.000.

Lermer Apparatebau GmbH: *See—*
Liebscher, Gunther; and Christ, Gunther, 4,066,151, Cl. 188-5.000.

Leslie Hartridge Limited: *See—*
Emerson, Reginald Stanley, 4,066,364, Cl. 356-207.000.

Leuchter, Jurgen: *See—*
Pfursch, Gerald; and Leuchter, Jurgen, 4,067,035, Cl. 354-313.000.

Leuschner, Horst, to Texas Instruments Incorporated. Electronic timepiece. 4,065,916, Cl. 58-23.0BA.

Lever Brothers Company: *See—*
Callingham, Martin; and Curry, Kenneth Vasey, 4,066,746, Cl. 424-62.000.

Levine, Arnold M., to International Telephone and Telegraph Corporation. EMP Resistant oscillator with fiber optic frequency determining means. 4,066,981, Cl. 331-108.00B.

Levis, Maurice. Segmented sectional reflection for the projection of light beams and its method of production. 4,066,887, Cl. 362-341.000.

Levy, Isaac: *See—*
Levy, Joshuah; Levy, Isaac; and Klein, Frank H., 4,067,005, Cl. 340-279.000.

Levy, Joshuah; Levy, Isaac; and Klein, Frank H. Invalid bed system. 4,067,005, Cl. 340-279.000.

Levy, Milton: *See—*
Johnson, Alan J.; Soberano, Mercedes E.; Ong, Eng Bee; and Levy, Milton, 4,066,506, Cl. 195-66.00B.

Lewandowski, Edward F.; and Anderson, Petrus A., to United States of America, Energy Research and Development Administration. Portable punch and die jig. 4,065,853, Cl. 30-361.000.

Lewin, Menachem; and Guttmann, Hilda, to State of Israel Ministry of Commerce and Industry, The. Method of improving the sorption capacity of polymers. 4,066,387, Cl. 8-4.000.

Lewis, Richard N.; and Martin, Eugene R., to SWS Silicones Corporation. Process for making alpha,omega-siloxanediols. 4,066,680, Cl. 260-448.20E.

Ley, Anthony John, to Solartron Electronic Group Ltd., The. Phase measuring apparatus. 4,066,952, Cl. 324-83.00D.

LFE Corportion: *See—*
Jacob, Adir, 4,066,037, Cl. 118-49.100.

Li, George S.; and Rosen, Irving, to Standard Oil Company, The. Thermoplastic resin compositions comprising polyindene or coumarone-indene resin. 4,066,717, Cl. 260-874.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Dickopp, Gerhard; and Schroder, Ernst, 4,066,976, Cl. 330-86.000.

Lidkea, Harrison B., to Optical Business Machines, Inc. Method and apparatus for discriminating between characters in character recognition systems. 4,066,998, Cl. 340-146.3AC.

Liebscher, Gunther; and Christ, Gunther, to Lermer Apparatebau GmbH. Braking and locking apparatus for a movable or rolling container. 4,066,151, Cl. 188-5.000.

Lien, Charles: *See—*
Provost, John K.; and Lien, Charles, 4,067,045, Cl. 358-211.000.

Lieser, Donna Jean: *See—*
Lieser, Martin J.; and Lieser, Donna Jean, 4,065,844, Cl. 29-258.000.

Lieser, Martin J.; and Lieser, Donna Jean. Bearing puller for washing machines. 4,065,844, Cl. 29-258.000.

Lietard, Jean-Marie; and Matthijs, Guido, to U C B, Societe Anonyme. Continuous process for producing an aqueous solution of ferric chloride. 4,066,748, Cl. 424-147.000.

Liggett, Thomas, to United States of America, Navy. Process for producing concentrated solutions of hydroxylammonium nitrate and hydroxylammonium perchlorate. 4,066,736, Cl. 423-386.000.

Lignos, James M.: *See—*
Sury, Yel S.; and Lignos, James M., 4,066,642, Cl. 260-251.00P.

Lim, Gary M. F.: *See—*
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,066,832, Cl. 544-105.000.

Lim, Hong Sup, to Hughes Aircraft Company. Dopants for dynamic scattering liquid crystals. 4,066,569, Cl. 252-299.000.

Lind, Charles F., Jr., to Aqueduct, Inc. Flow-control valve. 4,066,096, Cl. 137-504.000.

Lind, Erwin; and Freimuth, Franz, to Hoechst Aktiengesellschaft. Process for the preparation of printing forms. 4,066,453, Cl. 96-1.00R.

Lind, Hanns, to Ciba-Geigy Corporation. Hydroxyaryl hydantoins and their use as stabilizers. 4,066,616, Cl. 260-45.8NT.

Lindal, Sir Walter. Sheetmetal covered roof planks having waterproof joints. 4,065,902, Cl. 52-622.000.

Lindner, Henry, to Beatrice Foods Co. Cube corner type retroreflector bodies and molds made therewith. 4,066,236, Cl. 249-160.000.

Lindner, Henry, to Beatrice Foods Co. Cube corner type retroreflectors with improved cube corner unit relationships. 4,066,331, Cl. 350-103.000.

Lindsay, James R.: *See—*
Lakin, Michael B.; and Lindsay, James R., 4,066,382, Cl. 416-186.00A.

Linka, Adolf: *See—*
Heinrich, Felix; Linka, Adolf; and Jocham, Reinhold, 4,066,105, Cl. 139-54.000.

Linne, Terry D., to Caterpillar Tractor Co. Dual-material self-bonding lip seal. 4,066,269, Cl. 277-228.000.

Linton, John D.; Willits, Samuel P.; and Mohan, William L., to Spartanics, Ltd. Weapon training simulator. 4,065,860, Cl. 35-25.000.

Lion Fat & Oil Co., Ltd.: *See—*
Isa, Hiroshi; Ukigai, Toshiyuki; Tominaga, Anri; and Sato, Michito, 4,066,715, Cl. 260-683.15B.

Livingston, Almer K. Apparatus for collecting objects from a surface. 4,066,179, Cl. 214-356.000.

Lo-Rise Elevator Company: *See—*
Brown, Richard L., 4,066,148, Cl. 187-17.000.

Lodge & Shipley Company, The: *See—*
Rowekamp, Edward F., 4,066,163, Cl. 198-442.000.

Loeffler, Herbert H., to Woodstream Corporation. Low impact animal trap. 4,065,871, Cl. 43-88.000.

Lohneis, Earl R.; and Schachte, John J., to Kearney & Trecker Corporation. Unitary work changer for a machining center. 4,065,988, Cl. 82-2.700.

Lohr, Raymond J. Toy vehicle. 4,066,271, Cl. 280-1.182.

Lohr, Raymond J. Toy car. 4,066,273, Cl. 280-211.000.

Long, Robert B.; Caruso, Fred A.; DeFeo, Richard J.; and Walker, David G., to Exxon Research & Engineering Co. Bimetallic salts and derivatives thereof, their preparation and use in the complexing of ligands. 4,066,679, Cl. 260-438.100.

Lopez, Alfred R.: *See—*
Wheeler, Harold A.; and Lopez, Alfred R., 4,067,014, Cl. 343-113.0DE.

Lorenz, Hans-Peter: *See—*
Kobale, Manfred; Krueger, Hans; and Lorenz, Hans-Peter, 4,066,337, Cl. 350-160.0LC.

Lorenzen, James Walter; and Schaefer, Bruce John. Hydrostatically activated release mechanism. 4,065,823, Cl. 9-9.000.

Lovendusky, Charles Michael, to Du Pont de Nemours, E. I., and Company. Circuit board contact. 4,066,326, Cl. 339-221.00M.

Low, David Nicholson: *See—*
Kilgren, Arnold William; Low, David Nicholson; and Porter, Robert Warwick, 4,066,424, Cl. 55-71.000.

Loyd, Robert William, Jr.: *See—*
Jones, Charles; and Loyd, Robert William, Jr., 4,066,044, Cl. 123-8.090.

Loynes, Leslie M.; Walters, Darrel H.; and Penick, Clarence A., Jr., to Brammall, Inc. Tamper proof attachment system. 4,065,946, Cl. 70-58.000.

Lucas Electrical Company Limited, The: *See—*
Martin, Frederick Raymond Patrick, 4,066,886, Cl. 362-68.000.

Lucas Industries Limited: *See—*
Joyes, John Frank, 4,066,939, Cl. 318-251.000.

Lucas, James P.: *See—*
Mastalski, Henry N.; Lucas, James P.; Dziedzic, Edward; and Eppinger, David P., 4,066,368, Cl. 403-211.000.

Luh, Bing Yu: *See—*
Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., 4,066,831, Cl. 544-105.000.

Lundbald, Leif Jorgen I.; and Ek, Jan Olof, to Inter Innovation AB. Apparatus for dispensing banknotes, tickets or the like. 4,066,253, Cl. 271-4.000.

Lunts, Lawrence Henry Charles; and Collin, David Trevor, to Allen & Hanburys Limited. Phenylaminoethanol derivatives for treating hypertension. 4,066,755, Cl. 424-230.000.

Lupica, Vincent. Body fluid testing system and process. 4,066,407, Cl. 23-230.00B.

Lutz, Albert William; and Diehl, Robert Eugene, to American Cyanamid Company. Preemergence herbicidal methods and compositions using 2,6-dinitroxylidine compounds. 4,066,441, Cl. 71-121.000.

Lynch, Bobby Ross: *See—*
Collins, Johnny Will; Kochmanis, Gunars; and Lynch, Bobby Ross, 4,066,174, Cl. 214-7.000.

Lynch, Henry Wilfred: *See—*
Finney, Roy P.; and Lynch, Henry Wilfred, 4,066,073, Cl. 128-79.000.

Lyu, Seung W., to National Can Corporation. Split punch for drawing and ironing containers. 4,065,951, Cl. 72-349.000.

Machi, Sueo; Wada, Takeshi; and Sekiya, Hiroshi, to Japan Atomic Energy Research Institute. Process for the production of high molecular weight acrylamide polymers. 4,066,522, Cl. 204-159.240.

Machida, Takayasu: *See—*
Nakajima, Fumio; Machida, Takayasu; and Yamada, Kenji, 4,066,947, Cl. 318-696.000.

Macur, George Joseph: *See—*
Alpaugh, Warren Alan; Macur, George Joseph; and Vlasak, Gary Paul, 4,066,809, Cl. 427-444.000.

Maeda, Nobutaka: *See—*
Tsukamoto, Hidehiko; and Maeda, Nobutaka, 4,065,948, Cl. 72-108.000.

Maeda, Takesi; Kohmoto, Mahito; and Yonezawa, Seiji, to Hitachi, Ltd. Information recording and retrieval apparatus. 4,067,044, Cl. 358-128.000.

Maher, Galeb H., to Sprague Electric Company. Method of forming a glass-reacted-ceramic with cadmium. 4,066,426, Cl. 65-18.000.

Mai, Gerhard: *See—*
Kummer, Franz; Mai, Gerhard; Ruthardt, Rolf; and Thiede, Horst, 4,065,851, Cl. 29-630.00R.

Mains, Harold E.; Williams, Frederick R.; and O'Brien, William L., to Emery Industries, Inc. Thermoplastic polyester compositions containing polyamide additives. 4,066,587, Cl. 260-22.00D.

Mak, Sze Hong. Model track section. 4,066,211, Cl. 238-10.00F.

Malefant, Jean-Yves: *See—*
Saleil, Jean; Debras, Maurice; and Malefant, Jean-Yves, 4,066,442, Cl. 75-12.000.

Mallams, Alan K.; and Davies, David Huw, to Schering Corporation. 1-Desamino-1-hydroxy and 1-desamino-1-epi-hydroxy-4,6-di-o-(aminoglycosyl)-1,3-diaminocyclitols; 1-desamino-1-oxo-4,6-di-o-(aminoglycosyl)-1,3-diaminocyclitols, intermediates and use as antibacterial agents. 4,066,752, Cl. 424-180.000.

Mallinckrodt, Inc.: *See—*
Kneller, Mills T., 4,066,743, Cl. 424-5.000.

Malobabic, Peter: *See—*
Buzzi, Leo; and Malobabic, Peter, 4,065,977, Cl. 74-49.000.

Mammino, Joseph; and Jossel, Franklin, to Xerox Corporation. Copper-tetra-4-(octadecylsulfonomido) phthalocyanine electrophotographic carrier. 4,066,563, Cl. 252-62.10P.

Manasevit, Harold M.; and Simpson, William I., to Rockwell International Corporation. Metalorganic chemical vapor deposition of IVA-IVA compounds and composite. 4,066,481, Cl. 148-174.000.

Mann, John: *See—*
Orr, Thomas Samuel Campbell; Hall, David Edward; and Mann, John, 4,066,756, Cl. 424-232.000.

Mannesmann Aktiengesellschaft: *See—*
Dorr, Wolfgang; and Matzner, Hartwig, 4,066,114, Cl. 164-4.000.
Frentzen, Hermann Josef; Gerretz, Richard; and Henn, Ewald, 4,065,953, Cl. 72-393.000.
Grabendorfer, Werner; Vogt, Herbert; Haacke, Harri; Kuhn, Harry; Pawelletz, Reinhard; and Ries, Karl, 4,065,960, Cl. 73-627.000.

Manning, Michael L.; Anglin, Thurman L.; and Grayson, Richard F. Electric load distributor. 4,066,913, Cl. 307-38.000.

Mansfield, John Rickard, to Imperial Chemical Industries Limited. Analytical apparatus. 4,066,528, Cl. 204-195.00T.

Mantell, Gerald J.: *See—*
Dixon, Dale D.; Ford, Michael E.; and Mantell, Gerald J., 4,066,630, Cl. 260-77.50D.

Marchal, Paul: *See—*
Bourdois, Claude; Glachet, Charles; Marchal, Paul; and Vertut, Jean, 4,066,909, Cl. 250-497.000.

Marforio, Nerino, to Rockwell-Rimoldi S.p.A. Workpiece feeder device for the traveling gripper of a sewing unit. 4,066,027, Cl. 112-121.150.

Mark, Victor, to General Electric Company. Flame retardant polycarbonate composition. 4,066,618, Cl. 260-45.85T.

Marston, Peter G.; and Nolan, John J., to Sala Magnetics, Inc. Pressure support for limiting strain in a superconducting winding. 4,066,991, Cl. 335-216.000.

Martin, Eugene R.: *See—*
Lewis, Richard N.; and Martin, Eugene R., 4,066,680, Cl. 260-448.20E.

Martin, Frederick Raymond Patrick, to Lucas Electrical Company Limited, The. Motor vehicle with headlamp tilting mechanism. 4,066,886, Cl. 362-68.000.

Martin, Hans. Ski brake. 4,066,275, Cl. 280-605.000.

Martin Paint & Chemical Corporation: *See—*
Stern, David, 4,066,596, Cl. 260-29.60R.

Martos, Placido: *See—*
Perry, Robert A.; and Martos, Placido, 4,066,033, Cl. 116-34.00R.

Maruishi Cycle Industries, Ltd.: *See—*
Mimura, Yasuo, 4,065,983, Cl. 74-625.000.

Maruyama, Hiromasa: *See—*
Asai, Soichiro; Matsuishi, Tsutomu; Matsushita, Katsunobu; Ikeda, Shigeho; Kobayashi, Kaetsu; and Maruyama, Hiromasa, 4,066,502, Cl. 195-47.000.

Masashi, Uchida: *See—*
Toyoaki, Ueno; Seizo, Takayama; Kiyoshi, Hashimoto; and Masashi, Uchida, 4,066,189, Cl. 222-334.000.

Massa, Donald P.: *See—*
Massa, Frank, 4,066,095, Cl. 137-486.000.

Massa, Frank, to Dellorfano, Fred M., Jr.; and Massa, Donald P., trustees of The Stoneleigh Trust. Automatic leakage detection system for pipelines carrying fluids. 4,066,095, Cl. 137-486.000.

Massachusetts Institute of Technology: *See—*
Cook, Nathan Henry; and Kramer, Bruce M., 4,066,821, Cl. 428-539.000.
Greiff, Paul, 4,067,037, Cl. 357-34.000.
Thilly, William G., 4,066,510, Cl. 195-103.50R.

Massey-Ferguson Services N.V.: *See—*
Quick, Donald J., 4,065,912, Cl. 56-13.900.

Mastalski, Henry N.; Lucas, James P.; Dziedzic, Edward; and Eppinger, David P., to A. B. Chance Company. Helical rod deadend having segmented rod receiving connector. 4,066,368, Cl. 403-211.000.

Masuda, Hajime: *See—*
Takeuchi, Takeshi; and Masuda, Hajime, 4,066,966, Cl. 325-308.000.

Mataraza, George A.: *See—*
Farukhi, Mohammad R.; Mataraza, George A.; and Wimer, Oley D., 4,066,908, Cl. 250-483.000.

Matcote Company, Inc.: *See—*
Beers, Ronald W.; and Lakritz, Julian, 4,066,598, Cl. 260-29.70S.

Matsubara, Shigeo, to Kohkoku U.S.A., Inc. Method for collecting industrial vapors and particulate matter. 4,066,724, Cl. 264-39.000.

Matsui, Katsuaki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,066,615, Cl. 260-45.8NT.

Matsuishi, Tsutomu: *See—*
Asai, Soichiro; Matsuishi, Tsutomu; Matsushita, Katsunobu; Ikeda, Shigeho; Kobayashi, Kaetsu; and Maruyama, Hiromasa, 4,066,502, Cl. 195-47.000.

Matsumoto, Masafumi: *See—*
Takano, Katsuyoshi; Matsumoto, Masafumi; and Orikasa, Kimihiko, 4,066,986, Cl. 333-72.000.

Matsunaga, Yoshiaki: *See—*
Wada, Shinji; Matsunaga, Yoshiaki; and Noda, Michihiro, 4,066,540, Cl. 210-44.000.

Matsushima, Noriaki: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; Tachikawa, Toshiyuki; and Ikeda, Kazuichi, 4,066,588, Cl. 260-22.0TN.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kagata, Akira, 4,066,267, Cl. 274-23.00R.
Nakamura, Yuji, 4,067,051, Cl. 360-95.000.

Matsushita Electronics Corporation: *See—*
Nakatani, Hirokuni; Takamura, Toru; Hiroshima, Yoshimitsu; and Hashimoto, Susumu, 4,067,046, Cl. 358-213.000.

Matsushita, Katsunobu: *See—*
Asai, Soichiro; Matsuishi, Tsutomu; Matsushita, Katsunobu; Ikeda, Shigeho; Kobayashi, Kaetsu; and Maruyama, Hiromasa, 4,066,502, Cl. 195-47.000.

Matsushita, Yasuo: *See—*
Shimazoe, Michitaka; Nakamura, Kousuke; Matsushita, Yasuo; Shimada, Satoshi; Yamada, Kazuji; and Takahashi, Yukio, 4,065,971, Cl. 73-727.000.

Matthews, Hugh B., to Sperry Rand Corporation. Acoustic isolation for a telemetry system on a drill string. 4,066,995, Cl. 340-18.0LD.

Matthijs, Guido: *See—*
Lietard, Jean-Marie; and Matthijs, Guido, 4,066,748, Cl. 424-147.000.

Matzner, Hartwig: *See—*
Dorr, Wolfgang; and Matzner, Hartwig, 4,066,114, Cl. 164-4.000.

Maw, Philip Arthur, to Molins Limited. Sharpener for cut-off having a helical knife. 4,065,880, Cl. 51-247.000.

Mayer & Cie: *See—*
Heinrich, Felix; Linka, Adolf; and Jocham, Reinhold, 4,066,105, Cl. 139-54.000.

Mayer, Edward A.; and Nolting, Jerry L., to Texaco Inc. Fuel injection nozzle valve and ignition system. 4,066,059, Cl. 123-32.0SA.

Mazelsky, Bernard, to ARA, Incorporated. Variable energy absorbing system. 4,066,149, Cl. 188-1.00C.

Mazier, Paul. Compensatory expansion bellows and its production. 4,065,947, Cl. 72-59.000.

McAlister, Roy E. Method and apparatus for fuel injection-spark ignition system for an internal combustion engine. 4,066,046, Cl. 123-32.0ST.

McAllan, Alexander Baxter: *See—*
Smith, Roy Henry; and McAllan, Alexander Baxter, 4,066,750, Cl. 424-180.000.

McBride, La Vaughn R.; Clark, Jack D.; and Center, Dale. Composition for rehabilitating scored and marred surfaces. 4,066,605, Cl. 260-37.0EP.

McCarthy, Justin P.: *See—*
Mores, Lee R.; McCarthy, Justin P.; and Slack, James J., 4,066,789, Cl. 424-365.000.

McCoy, Drew E., to Texaco Inc. Continuous process for non-catalytic oxidation of sulfite-containing waters. 4,066,543, Cl. 210-63.00R.

McGill, James C.; and Scott, William N., to HT Management Company. Adsorption-absorption vapor recovery system. 4,066,423, Cl. 55-48.000.

McGinniss, Vincent D., to SCM Corporation. Dual cure cathodic electrocoating composition. 4,066,523, Cl. 204-159.150.

McGonigal, Charles: *See—*
Bierenfeld, Herbert H.; McGonigal, Charles; Horton, Chauncey M., Jr.; and Kelsey, John A., 4,066,317, Cl. 339-91.00R.

McGraw-Edison Company: *See—*
Davies, David Peter, 4,066,203, Cl. 228-180.00R.
Vandas, Edward B., 4,066,064, Cl. 126-299.00E.

McGregor, William H.; and Dougherty, Joseph J., to American Home Products Corporation. Purification of synthetic somatostatin. 4,066,634, Cl. 260-112.50S.

McIntosh, Colin Leslie, to Du Pont de Nemours, E. I., and Company. Plant growth retardant compositions containing iminocarbonylphosphonates and iminocarbonylphosphonates. 4,066,434, Cl. 71-86.000.

McKay, Tom W.: *See—*
Lawrence, Walter W., Jr.; McKay, Tom W.; and Wiegand, Karl E., 4,066,688, Cl. 260-535.00P.

McKee, Donald H., to Food Research, Inc. Coating pizza products. 4,066,796, Cl. 426-302.000.
McNair, Samuel L., to Dazey Products Company. Method of using a home donut maker. 4,066,797, Cl. 426-307.000.
McNally, Paul F., to Contraves-Goerz Corporation. Analog signal isolator. 4,066,973, Cl. 330-10.000.
Mead Corporation, The: *See*—
Calvert, Rodney K.; and Landrum, Charles Rabun, 4,066,009, Cl. 93-53.00M.
Mears, Stowell Whitney. Method and apparatus for constructing buildings. 4,065,906, Cl. 52-745.000.
Mecklenborg, Richard A., to Singer Company, The. Visual display apparatus. 4,065,859, Cl. 35-12.00N.
Medi-Physics, Inc.: *See*—
Garrett, Michael David, 4,066,742, Cl. 424-1.000.
Medical Engineering Corporation: *See*—
Finney, Roy P.; and Lynch, Henry Wilfred, 4,066,073, Cl. 128-79.000.
Medpro, Inc.: *See*—
Gorran, Jody A., 4,065,819, Cl. 5-371.000.
Medrano, Joseph, Jr. Load adjustable release device. 4,066,288, Cl. 294-83.00R.
Medtronic, Inc.: *See*—
Alferness, Clifton A.; and Adams, John M., 4,066,086, Cl. 128-421.000.
Meeks, Crawford R., Jr. Compressible fluid velocity measuring instrument. 4,065,966, Cl. 73-228.000.
Meggs, Daniel H.; and Beny, Janos. Self-adjusting wrench. 4,065,986, Cl. 81-128.000.
Mehnert, Gottfried. Multi-stage method of blow molding hollow shaped articles. 4,066,726, Cl. 264-89.000.
Mehnert, Walter, to TECHNICO Development and Financing S.A. Electronic hand grenade. 4,066,019, Cl. 102-70.20R.
Meier, Heinz, to Landes Manufacturing Company. Adjustable carrier apparatus to define furniture or the like. 4,066,293, Cl. 297-325.000.
Meier, Heinz, to Landes Manufacturing Company. Adjustable carrier apparatus to define furniture or the like. 4,066,294, Cl. 297-325.000.
Meininger, Fritz: *See*—
Fuchs, Hermann; Kapaun, Gustav; and Meininger, Fritz, 4,066,638, Cl. 260-196.000.
Melaja, Asko J.; Virtanen, Jouko J.; and Heikkila, Heikki O., to Suomen Sokeri Osakeyhtio (Finnish Sugar Company). Method for recovering xylitol. 4,066,711, Cl. 260-637.00R.
Melco: *See*—
Champan, Louis W.; and Perkins, Arthur T., 4,066,846, Cl. 179-16.0EC.
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., to Bristol-Myers Company. 0-2-Isocephem-4-carboxylic acid derivatives as antibacterial agents. 4,066,832, Cl. 544-105.000.
Mendenhall, Robert L. Mixing apparatus. 4,066,247, Cl. 366-24.000.
Merck & Co., Inc.: *See*—
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,066,675, Cl. 260-400.000.
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,066,692, Cl. 424-312.000.
Denny, George H., 4,066,661, Cl. 260-326.150.
Veber, Daniel F.; Nutt, Ruth F.; and Hirschmann, Ralph F., 4,066,749, Cl. 424-177.000.
Merckel, Gerard: *See*—
Borel, Joseph; Lacour, Jacques; and Merckel, Gerard, 4,065,847, Cl. 29-578.000.
Merenyi, Ferenc: *See*—
Jonsson, Nils Ake; Merenyi, Ferenc; and Westlund, Lars-Erik, 4,066,408, Cl. 23-230.00R.
Meresz, Henry; and Tranquilla, Michael N., to G. D. Searle & Co. Synchronized drive and cable handling system for a rotational machine element. 4,065,978, Cl. 74-82.000.
Merkle, Paul. Lock for safety cut-out switch. 4,066,856, Cl. 200-44.000.
Metal Box Limited: *See*—
Shutie, Orin S.; and Jenkins, Leonard A., 4,066,038, Cl. 118-218.000.
Mey, William; and Bailey, David S., to Eastman Kodak Company. Selenium containing multi-active photoconductive element. 4,066,455, Cl. 96-1.50R.
Meyer, Russell L., to American Express Company. Method and apparatus for synchronizing data and clock signals. 4,065,862, Cl. 364-200.000.
MFE Corporation: *See*—
Burke, Edward, Jr., 4,066,958, Cl. 324-125.000.
Miaskoff, Leonard, to Harris Corporation. Orbital turn. 4,066,162, Cl. 198-377.000.
Michaels, Raymond John: *See*—
Lee, Cheuk Man; Michaels, Raymond John; and Harris, Louis Selig, 4,066,667, Cl. 260-345.300.
Michalon, Daniel; and Rolin, Pierre, to Centre Stephanois de Recherches. Chain with links of variable length. 4,066,161, Cl. 198-334.000.
Micheli, Antoine, to DEMATEX Development & Investment Establishment. Vial stopper for blood sampling device. 4,066,067, Cl. 128-2.00F.
Micromeritics Instrument Corporation: *See*—
Ball, Dean M.; Fincher, Robert C.; and Orr, Clyde, Jr., 4,066,536, Cl. 209-155.000.
Middleton, Verne L.: *See*—
Kleine, Charles A.; and Middleton, Verne L., 4,066,121, Cl. 165-170.000.
Miessen, Ralf: *See*—
Wolf, Gerhard Dieter; Miessen, Ralf; Kunzel, Hans Egon; and Bentz, Francis, 4,066,396, Cl. 8-178.00A.
Miles Laboratories, Inc.: *See*—
Cornelius, Dennis Alfred; Eberts, Nancy Jane; and Sternberg, Moshe M., 4,066,799, Cl. 426-534.000.
Woessner, Warren Dexter; Biddlecom, William Gerard; Arndt, Henry Clifford; Peruzzotti, George Peter; and Sih, Charles John, 4,066,834, Cl. 560-121.000.
Milkovic, Miran, to General Electric Company. Electronic volt-square-hour metering method and apparatus. 4,066,959, Cl. 324-141.000.
Milkovic, Miran, to General Electric Company. Electronic kilowatt-hour-meter with error correction. 4,066,960, Cl. 324-142.000.
Millauer, Hans; and Pistorius, Rudolf, to Hoechst Aktiengesellschaft. Process for preparing chlorinated hydroquinone dimethyl ethers. 4,066,708, Cl. 260-613.00D.
Miller Fluid Power Corporation: *See*—
Bowbin, John F., 4,065,852, Cl. 308-3.500.
Miller, Gerald W.: *See*—
D'Altroy, Frederick A.; Harrington, Daniel J.; and Miller, Gerald W., 4,066,483, Cl. 148-187.000.
Miller, Raymond M.; and Teti, John J. Time-domain filter for recursive type signals. 4,066,878, Cl. 364-724.000.
Miller, Warren Hastings, Jr.: *See*—
Arends, Thomas Clark; and Miller, Warren Hastings, Jr., 4,066,342, Cl. 350-288.000.
Milliken Research Corporation: *See*—
Carroll, Clifford Charles, 4,066,397, Cl. 8-192.000.
Millipore Corporation: *See*—
Lai, Chung Jung; and Goldin, Stanley M., 4,066,512, Cl. 195-127.000.
Millns, Colin: *See*—
Johnson, Christopher Linley; and Millns, Colin, 4,066,386, Cl. 417-199.00A.
Mills, Melvin E., Jr.: *See*—
Carlin, Joseph T.; Ware, James W.; Mills, Melvin E., Jr.; and Wells, John A., 4,066,124, Cl. 166-252.000.
Milone, Louis. Mechanical coupling for marine vehicles. 4,066,030, Cl. 114-230.000.
Milton Roy Company: *See*—
Leaver, Brian E.; and Dudley, William F., Jr., 4,066,879, Cl. 364-498.000.
Mimura, Koji; Kawai, Atsushi; Kametani, Yoshiya; and Nakahama, Tetsuro, to Mitsubishi Rayon Co., Ltd. Method for producing regenerated cellulose fibers having excellent flameproofness. 4,066,730, Cl. 264-191.000.
Mimura, Yasuo, to Maruishi Cycle Industries, Ltd. Device for changing the gear ratio of a variable speed gear mounted to a bicycle. 4,065,983, Cl. 74-625.000.
Minami, Hidehiro; and Waku, Makio. Two barrel carburetor. 4,065,920, Cl. 60-276.000.
Minnesota Mining and Manufacturing Company: *See*—
Dickson, Arthur D., 4,066,925, Cl. 313-503.000.
Langford, Nathaniel P.; and Perrault, Edward W., 4,066,589, Cl. 260-29.60H.
Pletcher, Wayne A.; and Wong, Roy, 4,066,600, Cl. 260-30.60R.
Taylor, Allen L.; and Sheffield, William F., 4,067,056, Cl. 361-233.000.
Minolta Camera Kabushiki Kaisha: *See*—
Kameda, Hiromi; and Inagaki, Sanji, 4,066,352, Cl. 355-3.0TE.
Kuramoto, Yoshio; Imura, Toshinori; and Kikukawa, Yoshiiku, 4,067,030, Cl. 354-139.000.
Mischler, Philip G.: *See*—
Kamp, Arthur J.; and Mischler, Philip G., 4,066,898, Cl. 250-359.000.
Mita, Kunio: *See*—
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; Mita, Kunio; Kawasaki, Masahiro; and Mori, Chiharu, 4,067,023, Cl. 354-23.00D.
Mitchell, Thomas A.: *See*—
Hawk, Roger M.; and Mitchell, Thomas A., 4,066,948, Cl. 324-30.00R.
Mitsubishi Chemical Industries Ltd.: *See*—
Ashida, Kaneyoshi; Frisch, Kurt C.; and Kordomenos, Panagiotis, 4,066,628, Cl. 260-77.50R.
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tonomura, Shinji; Tamao, Yoshikuni; Tezuka, Tohru; and Hijikata, Akiko, 4,066,758, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,759, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,773, Cl. 424-267.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Akamatsu, Masahiko, 4,066,956, Cl. 363-131.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Tsukamoto, Hidehiko; and Maeda, Nobutaka, 4,065,948, Cl. 72-108.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Mimura, Koji; Kawai, Atsushi; Kametani, Yoshiya; and Nakahama, Tetsuro, 4,066,730, Cl. 264-191.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Nakatani, Kiyoshi; Imamura, Juichi; Ichikawa, Toshiyuki; Takeuchi, Kouichi; and Kotaka, Kenji, 4,066,707, Cl. 260-613.00R.
Miura, Katsuhiko, to Alps Electric Co., Ltd. High frequency electrical shield assembly. 4,066,837, Cl. 174-35.0GC.

Miyaguchi, Masao: *See*—
Takagi, Atsushi; Kuroiwa, Hiroyuki; Miyaguchi, Masao; and Kawamura, Tateo, 4,065,928, Cl. 61-36.00R.
Miyahara, Junji: *See*—
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Miyake, Akio: *See*—
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Miyoshi, Kunisuke: *See*—
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Mizushima, Masashi: *See*—
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Mobay Chemical Corporation: *See*—
Rawlings, Herbert L.; and Baron, Arthur L., 4,066,617, Cl. 260-45.80A.
Mobil Oil Corporation: *See*—
Givens, Wyatt W., 4,066,892, Cl. 250-270.000.
Hungerford, Gordon P., 4,066,731, Cl. 264-216.000.
Napier, Roger P.; and Chapman, Orville L., 4,066,719, Cl. 260-970.000.
Nnadi, John C., 4,066,561, Cl. 252-33.400.
Owen, Hartley; Venuto, Paul B.; and Rosinski, Edward J., 4,066,531, Cl. 208-120.000.
Rodewald, Paul G., 4,066,714, Cl. 260-682.000.
Waite, Jerry M.; and Burdyn, Ralph F., 4,066,126, Cl. 166-273.000.
Moeller & Neumann GmbH: *See*—
Morath, Gunther, 4,065,949, Cl. 72-164.000.
Moeller, Richard E., to General Electric Company. Process for preparing a polysiloxane. 4,066,594, Cl. 260-29.20M.
Moen, Lowell J., to Caterpillar Tractor Co. Wear-resistant composite material and method of making an article thereof. 4,066,422, Cl. 51-309.00R.
Moffett, F. Wesley, Jr. Portable garden and method of producing same. 4,065,876, Cl. 47-83.000.
Mogavero, Louis N.; Johnson, Edwin G.; Evans, John M., Jr; and Albus, James S., to United States of America, National Aeronautics and Space Administration. System and method for tracking a signal source. 4,067,015, Cl. 343-225.000.
Mohan, William L.: *See*—
Linton, John D.; Willits, Samuel P.; and Mohan, William L., 4,065,860, Cl. 35-25.000.
Mohri, Yoshio; Hiroishi, Takashi; Sano, Kinzi; Huruya, Koichi; Muramoto, Tadashi; and Tao, Masato, to Central Glass Company, Limited. Alkali-resistant glass composition. 4,066,465, Cl. 106-50.000.
Mold, Donald F.; and Rice, Ronald G., to Owens-Illinois, Inc. Recuperator structures and method of making same. 4,066,120, Cl. 165-165.000.
Molins Limited: *See*—
Maw, Philip Arthur, 4,065,880, Cl. 51-247.000.
Moller, Bynum W. Treadmill exercising device. 4,066,257, Cl. 272-69.000.
Monogram Industries, Inc.: *See*—
Blick, John S., III; and Fuller, Ralph N., 4,065,885, Cl. 52-143.000.
Monotype Corporation Limited, The: *See*—
Baylis, Howard Raymond; Edwards, Roger Alan; and Hedgeland, David Richard Sweatman, 4,067,021, Cl. 346-76.00L.
Monroe, Kenneth E.: *See*—
Waldorf, Lindsey E.; and Monroe, Kenneth E., 4,066,934, Cl. 318-139.000.
Monsanto Company: *See*—
Howe, Robert K., 4,066,435, Cl. 71-86.000.
Reilly, Joseph R.; and Witkowski, Leonard J., 4,066,727, Cl. 264-94.000.
Montagnon, Paul A. F. Analytic device and method. 4,066,511, Cl. 195-103.50M.
Montague, Archer A., Jr. Watchband. 4,065,834, Cl. 24-204.000.
Montron Corporation: *See*—
Ciupke, Werner W., 4,066,348, Cl. 352-129.000.
Moore, Alexander Joseph; Taylor, David Alexander; and Greene, David James, to BICC Limited. Electromagnetic waveguides. 4,066,987, Cl. 333-95.00R.
Moore, Charles R.: *See*—
Costanza, Samuel T.; Franklin, Peter G.; Gebhardt, Frank L.; Israel, Jack D.; Moore, Charles R.; and Wheatley, Charles E., III, 4,066,964, Cl. 325-55.000.
Moore, Leota J.; and Landwer, Robert G. Exhaust recycling and carbon monoxide eliminator for combustion engines. 4,066,052, Cl. 123-119.00A.
Morath, Gunther, to Moeller & Neumann GmbH. Straightening apparatus. 4,065,949, Cl. 72-164.000.
Mores, Lee R.; McCarthy, Justin P.; and Slack, James J., to Emery Industries, Inc. Blends of lanolin wax and esters of aliphatic polyols and fatty acids. 4,066,789, Cl. 424-365.000.
Morey, Everett D.; and Dooley, Eddie W., to General Electric Company. Reusable water softener system for clothes washer. 4,066,393, Cl. 8-137.000.
Morgan, Thomas D.; and Regier, Robert B., to Phillips Petroleum Company. Determination of deuterium concentration in water. 4,066,404, Cl. 23-230.0EP.
Mori, Chiharu: *See*—
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; Mita, Kunio; Kawasaki, Masahiro; and Mori, Chiharu, 4,067,023, Cl. 354-23.00D.
Mori, Eiko: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,066,615, Cl. 260-45.8NT.
Mori, Yutaka. Process camera. 4,066,357, Cl. 355-66.000.
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Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,066,615, Cl. 260-45.8NT.
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Morley, John Godfrey, to National Research Development Corporation. Fixation and/or support means. 4,065,903, Cl. 52-704.000.
Morrill, Daniel F., to Ford Aerospace & Communications Corporation. Shunt modulator for high current arc lamp. 4,066,931, Cl. 315-241.00R.
Mortimer, James R.: *See*—
Reese, Thomas J.; Tobin, Melvin W.; and Mortimer, James R., 4,066,429, Cl. 65-107.000.
Morton, Douglas Ross, Jr., to Upjohn Company, The. 3,7-Inter-m-phenylene-4,5,6-trinor-PGD_1 compounds. 4,066,836, Cl. 560-53.000.
Morton, George Ira: *See*—
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Pelosi, Stanford S., Jr., 4,066,669, Cl. 260-347.500.
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Motorola, Inc.: *See*—
Althaus, Raymond L., 4,067,011, Cl. 343-6.8LC.
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Huntington, Robert Charles, 4,066,919, Cl. 307-353.000.
Shaw, Mark Layne, 4,066,874, Cl. 235-92.0CM.
Shaw, Mark Layne; and Weber, Howard Fredrick, 4,066,876, Cl. 235-92.0CM.
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Mourning, Michael C.: *See*—
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Moyson, Joseph, to General Electric Company. Method of manufacture of a gold diffused thyristor. 4,066,484, Cl. 148-187.000.
Mueller, Martin, to Owens-Illinois, Inc. Method and apparatus for sealing tamper-indicating tabs to a container sidewall. 4,065,908, Cl. 53-15.000.
Mueller, Martin, to Owens-Illinois, Inc. Method and apparatus for applying a lid and tamper-indicating sheet to a container. 4,065,909, Cl. 53-15.000.
Muko, Sakae. Fish-feeder. 4,065,870, Cl. 43-44.990.
Muller, Albrecht, to Ciba-Geigy Corporation. Curable mixtures based on polyimides of unsaturated dicarboxylic acids and indole compounds. 4,066,621, Cl. 260-47.0UA.
Muller, Franz: *See*—
Gierse, Franz-Josef; Bastert, Carl-Christian; and Busch, Wilhelm, 4,065,837, Cl. 26-9.000.
Multorgan S.A.: *See*—
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Munk, Edmund, to Furnier-und Sperrholzwerk J. F. Werz Jr. KG Werzalit Pressholzwerk. Knock-down partition wall system. 4,065,898, Cl. 52-241.000.
Munninghoff, Clement W., to Cincinnati Electronics Corporation. Programmed presentation system. 4,067,050, Cl. 360-40.000.
Muramoto, Tadashi: *See*—
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Murata, Masahiro, to Hope Co., Ltd. Ski boot heel binding having improved unlocking device. 4,066,277, Cl. 280-626.000.
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, to Sankyo Company Limited. Polymer compositions containing piperidine derivatives as stabilizers. 4,066,615, Cl. 260-45.8NT.
Murch, Robert M.; Wilson, Mary Lynn; and Wood, Louis Leonard, to W. R. Grace & Co. Heavily loaded flame retardant urethane and method. 4,066,578, Cl. 260-2.5AG.

Murphy, Frederick V.: *See—*
Seppi, Edward J.; and Murphy, Frederick V., 4,066,901, Cl. 250-360.000.
Muszumanski, Trude: *See—*
Besenmatter, Walter; Muszumanski, Trude; and Wendisch, Irmgard, 4,066,340, Cl. 350-184.000.
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Myers, George D.; Walters, Paul W.; and Cottage, Robert L., to Ashland Oil, Inc. Separation of catalyst from effluent of a fluidized catalytic hydrocarbon conversion process. 4,066,533, Cl. 208-153.000.
N. F. Doweave, Inc.: *See—*
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N. V. Bekaert S. A.: *See—*
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Nadeau, Richard G.: *See—*
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Sera, Hidefumi; and Nagao, Kameji, 4,066,636, Cl. 260-117.000.
Nagarajan, Kuppuswamy; Arya, Vishwa Prakash; and George, Thomas, to Ciba-Geigy Corporation. Tetrahydroimidazole compounds useful as pharmaceuticals. 4,066,778, Cl. 424-273.00R.
Nagata, Wataru: *See—*
Hamashima, Yoshio; Yoshioka, Mitsuru; Tanida, Hiroshi; Tsuji, Teruji; Narisada, Masayuki; Komeno, Taichiro; and Nagata, Wataru, 4,066,641, Cl. 544-17.000.
Nagel, John G. Extension pull through device to allow for easier passage of flexible fiber endoscope. 4,066,071, Cl. 128-7.000.
Nair, Vijay Gopalan; Joseph, Joseph Peter; and Bernstein, Seymour, to American Cyanamid Company. Malto-dextrin poly(H-)sulfates. 4,066,829, Cl. 536-103.000.
Naito, Hirokuni; Yoshimura, Isao; Takao, Norito; and Kawame, Yasuta, to Asahi-Dow Limited. Ethylene-vinyl acetate film suitable for stretch wrapping. 4,066,811, Cl. 428-220.000.
Nakahama, Tetsuro: *See—*
Mimura, Koji; Kawai, Atsushi; Kametani, Yoshiya; and Nakahama, Tetsuro, 4,066,730, Cl. 264-191.000.
Nakajima, Fumio; Machida, Takayasu; and Yamada, Kenji, to Citizen Watch Company Limited. Stepping motor for electronic timepiece. 4,066,947, Cl. 318-696.000.
Nakajima, Kazuo, to Xenoah, Co. Internally accommodated speed change mechanism applicable to a bicycle. 4,065,984, Cl. 74-750.00B.
Nakajima, Kiminori; and Shigenobu, Ikuo, to Echo Co., Ltd. Water cock with non-freezing valve. 4,066,090, Cl. 137-62.000.
Nakamura, Kousuke: *See—*
Shimazoe, Michitaka; Nakamura, Kousuke; Matsushita, Yasuo; Shimada, Satoshi; Yamada, Kazuji; and Takahashi, Yukio, 4,065,971, Cl. 73-727.000.
Nakamura, Michiei: *See—*
Horiguchi, Shojiro; Nakamura, Michiei; and Sugito, Yoshifumi, 4,066,462, Cl. 106-14.000.
Nakamura, Yuji, to Matsushita Electric Industrial Co., Ltd. Cartridge type magnetic recording and reproducing system. 4,067,051, Cl. 360-95.000.
Nakano, Eiichi: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, 4,066,541, Cl. 210-51.000.
Nakatani, Hirokuni; Takamura, Toru; Hiroshima, Yoshimitsu; and Hashimoto, Susumu, to Matsushita Electronics Corporation. Solid state imaging device. 4,067,046, Cl. 358-213.000.
Nakatani, Kiyoshi; Imamura, Juichi; Ichikawa, Toshiyuki; Takeuchi, Kouichi; and Kotaka, Kenji, to Agency of Industrial Science & Technology; and Mitsui Toatsu Chemicals, Incorporated. Method for manufacture of diphenols and monoalkyl ethers of diphenols. 4,066,707, Cl. 260-613.00R.
Nakazawa, Atushi; and Ono, Muneichi, to Nippon Pulp Industry Company Limited. Method of producing microcapsules. 4,066,568, Cl. 252-316.000.
Nalco Chemical Company: *See—*
Choca, Monica E., 4,066,572, Cl. 252-437.000.
Napier, Loyd S. Bow string release device. 4,066,060, Cl. 124-35.00A.
Napier, Roger P.; and Chapman, Orville L., to Mobil Oil Corporation. Selective phosphorylation process. 4,066,719, Cl. 260-970.000.
Napierski, Reinhard Hans. Fluid inflatable spatially expandable hollow body construction. 4,065,888, Cl. 52-2.000.
Narang, Ashish: *See—*
Narang, Rajendra K.; Narang, Manish; and Narang, Ashish, 4,066,109, Cl. 144-28.110.
Narang, Manish: *See—*
Narang, Rajendra K.; Narang, Manish; and Narang, Ashish, 4,066,109, Cl. 144-28.110.
Narang, Rajendra K.; Narang, Manish; and Narang, Ashish. Pencil sharpener with replaceable blades. 4,066,109, Cl. 144-28.110.
Narey, James O.: *See—*
Saylor, William H.; and Narey, James O., 4,067,006, Cl. 340-325.000.
Narisada, Masayuki: *See—*
Hamashima, Yoshio; Yoshioka, Mitsuru; Tanida, Hiroshi; Tsuji, Teruji; Narisada, Masayuki; Komeno, Taichiro; and Nagata, Wataru, 4,066,641, Cl. 544-17.000.
National Can Corporation: *See—*
Lyu, Seung W., 4,065,951, Cl. 72-349.000.
National Forge Company: *See—*
Witkin, Donald E.; and Bowles, Arnold G., 4,066,868, Cl. 219-486.000.
National Marine Service, Incorporated: *See—*
Walters, Chester H.; Barmeier, Harold J., Jr.; and Sullivan, Greig E., 4,066,545, Cl. 210-71.000.
National Research Development Corporation: *See—*
Fray, Adrian Forrest; and Jones, David, 4,066,334, Cl. 350-160.0LC.
Morley, John Godfrey, 4,065,903, Cl. 52-704.000.
National Semiconductor Corporation: *See—*
Compton, James B.; and Ochi, Sam S., 4,066,917, Cl. 307-304.000.
NCR Corporation: *See—*
Heys, George, Jr., 4,066,850, Cl. 200-5.00A.
Koetsch, Philip W., 4,067,055, Cl. 361-159.000.
Nebel, Otto T.; Trujillo, Louis J.; and Russell, Carl C., to United States of America, Navy. Self developing camera for use in macrophotography and endoscopic pathology. 4,067,025, Cl. 354-62.000.
Needham, Richard P.: *See—*
Czajka, Thomas S.; and Needham, Richard P., 4,066,593, Cl. 260-29.20E.
Neef, Guenter: *See—*
Eder, Ulrich; Sauer, Gerhard; Haffer, Gregor; Neef, Guenter; and Wiechert, Rudolf, 4,066,674, Cl. 260-397.500.
Neely, Homer E., Jr., to PPG Industries, Inc. Low pollution glass fiber compositions. 4,066,466, Cl. 106-50.000.
Negele, James R.: *See—*
Wiegert, Gerald A.; and Negele, James R., 4,066,290, Cl. 296-78.100.
Nelson, Gunner E.; and Pearson, Tillmon H., to Ethyl Corporation. 2,3-Carboxy alkoxy succinic acid and salts thereof. 4,066,687, Cl. 260-535.00P.
Nelson, Lawrence B.; Mott, Stuart A.; and Flugger, Ray T., to Sunfresh Products. Dehydrator and method for dehydrating foodstuffs. 4,065,857, Cl. 34-30.000.
Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-3,7-inter-m-phenylene-9-dioxy-PGD$_1$ compounds. 4,066,701, Cl. 260-590.00C.
Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-3,7-inter-m-phenylene-9-deoxy-9,10-didehydro-PGH$_1$ cpompounds. 4,066,702, Cl. 260-590.00C.
Nerthersole, Douglas C.: *See—*
Dudley, Michael A.; Parthasarathy, Mellapalayam R.; and Nerthersole, Douglas C., 4,066,040, Cl. 118-629.000.
Neslon, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-3,7-inter-m-phenylene-3-oxa-PGD$_1$ compounds. 4,066,700, Cl. 260-590.00C.
Nett, Louis A. Ventilating apparatus including exhaust filter exchanger. 4,066,425, Cl. 55-242.000.
Neu, Gustav; and Bemmerl, Hans-Ferdinand, to Bochumer Eisenhutte Heintzmann GmbH & Co. Guiding arrangement for underground excavating systems. 4,065,931, Cl. 61-45.00D.
Neuenschwander, Rudolf, to Scott Paper Company. Apparatus for forming a fibrous structure. 4,065,832, Cl. 19-156.300.
Neuhoff, Charles J. Process for detecting electrical faults. 4,067,052, Cl. 361-42.000.
Neuzil, Richard W.: *See—*
Rosset, Armand J.; and Neuzil, Richard W., 4,066,677, Cl. 260-428.500.
Newton, Ralph E., to Westinghouse Electric Corporation. Gas-filled incandescent lamp with integral fuse assembly. 4,066,926, Cl. 315-73.000.
Nieder-Vahrenholz, Hans-Georg: *See—*
Bockelmann, Wolfgang; Nieder-Vahrenholz, Hans-Georg; Niederprum, Hans; and Jonas, Heinz, 4,066,734, Cl. 423-61.000.
Niederprum, Hans: *See—*
Bockelmann, Wolfgang; Nieder-Vahrenholz, Hans-Georg; Niederprum, Hans; and Jonas, Heinz, 4,066,734, Cl. 423-61.000.
Nielsen, Arnold T., to United States of America, Navy. 2,3,7,8-Tetraazaspiro [4.4]nonane, 2,3,7,8-tetraazaspiro-[4.4]nona-2,7-diene and derivatives. 4,066,833, Cl. 548-356.000.
Nieman, Charles Wayne; Turkovich, Robert Peter; and Castronovo, Robert Frank, to Trident Products Inc. Valve unit for liquid dispensers. 4,066,187, Cl. 222-57.000.
Niemiec, Stanley Joseph: *See—*
Heuner, Robert Charles; Goldman, Michael Barnett; Niemiec, Stanley Joseph; and Morton, George Ira, 4,066,918, Cl. 307-304.000.
Nieuweboer, Gerrit: *See—*
Johnson, Donald R.; Nadeau, Richard G.; Nieuweboer, Gerrit; and Truett, William L., 4,066,412, Cl. 23-253.00R.
Nilsson, Gert Erik; and Oberg, Ake Per, to Servo Med AB. Method and apparatus for determining the amount of a substance emitted by diffusion from a surface such as a derm surface. 4,066,068, Cl. 128-2.00R.
Nippon Chemicals Co., Ltd.: *See—*
Shidara, Hideo, 4,066,683, Cl. 260-465.50R.
Nippon Electric Company, Ltd.: *See—*
Tsuzuki, Naobumi; Anazawa, Shinzo; and Noguchi, Shozo, 4,067,040, Cl. 357-74.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hirose, Yasunori, 4,065,993, Cl. 84-1.030.
Yoshida, Takashi; and Ishida, Katsuhiko, 4,067,036, Cl. 357-22.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Takagi, Kenkichi; Yamamoto, Yukio; Yamazaki, Tadao; Yamaguchi, Hiroshi; and Umezawa, Hamao, 4,066,507, Cl. 195-80.00R.
Nippon Kokan Kabushiki Kaisha: *See—*
Uchida, Kuniki; Araki, Kenzi; Fukunaka, Shiro; and Kurihara, Takao, 4,066,474, Cl. 148-2.000.
Nippon Light Metal Co., Ltd.: *See—*
Sato, Toshihiko, 4,066,516, Cl. 204-15.000.
Nippon Oil and Fats Co., Ltd.: *See—*
Kasama, Tsuneo; Wada, Makoto; Sano, Masakatu; and Tsuji, Shinzo, 4,066,415, Cl. 23-281.000.
Nippon Pulp Industry Company Limited: *See—*
Nakazawa, Atushi; and Ono, Muneichi, 4,066,568, Cl. 252-316.000.
Nippon Soken, Inc.: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,066,043, Cl. 123-3.000.
Segawa, Yoshihiro; Sato, Susumu; Yasuda, Eturo; Hattori, Tadashi; and Aoki, Keiji, 4,066,413, Cl. 23-254.00E.
Nippon Steel Corporation: *See—*
Shimoyama, Yoshiaki; and Miyoshi, Kunisuke, 4,066,479, Cl. 148-111.000.
Nishijima, Komio; and Kojima, Masakazu, to Kabushiki Kaisha Komatsu Seisakusho. Skiving cutter for use in cutting internal spur gear. 4,066,001, Cl. 90-3.000.
Nitro Nobel AB: *See—*
Egerstrom, Bengt Gunnar Wilhelm, 4,066,093, Cl. 137-355.200.
Nitz, Rolf-Eberhard: *See—*
Raabe, Thomas; Grawinger, Otto; Scholtholt, Josef; Nitz, Rolf-Eberhard; and Schraven, Eckhard, 4,066,768, Cl. 424-263.000.
Nnadi, John G., to Mobil Oil Corporation. Organometallic compounds and compositions thereof with lubricants. 4,066,561, Cl. 252-33.400.
Nobbs, William Harry; Bowker, Harold; and Tyburski, Peter Frank, to Nobbs, William Harry; Bowker, Harold; Tyburski, Peter Frank; and Hesketh, Geoffrey, part interest to each. Vehicle roof rack. 4,066,197, Cl. 224-42.010.
Noda, Michihiro: *See—*
Wada, Shinji; Matsunaga, Yoshiaki; and Noda, Michihiro, 4,066,540, Cl. 210-44.000.
Noe, John B., to Plasmatronics Company. Electronic ignition system. 4,066,053, Cl. 123-148.0CA.
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, to Nippon Soken, Inc. Fuel reforming system for an internal combustion engine. 4,066,043, Cl. 123-3.000.
Noguchi, Shozo: *See—*
Tsuzuki, Naobumi; Anazawa, Shinzo; and Noguchi, Shozo, 4,067,040, Cl. 357-74.000.
Nohira, Hidetaka; Kobashi, Kiyoshi; and Tanaka, Masaaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculator. 4,066,056, Cl. 123-119.00A.
Nohmi, Makoto; Fujikura, Nobuyuki; Ueda, Chiaki; and Toyota, Eiichi, to Hitachi, Ltd. Automatic braking or acceleration control system for a vehicle. 4,066,230, Cl. 246-182.00B.
Nolan, John J.: *See—*
Marston, Peter G.; and Nolan, John J., 4,066,991, Cl. 335-216.000.
Nolting, Jerry L.: *See—*
Mayer, Edward A.; and Nolting, Jerry L., 4,066,059, Cl. 123-32.0SA.
Norden, Alexander R. Electrical terminal blocks. 4,066,323, Cl. 339-126.00R.
Nordson Corporation: *See—*
Scholl, Charles H.; and Akers, Larry D., 4,066,188, Cl. 222-146.0HE.
Norman, Marvin Neil, to RCA Corporation. Automatic beam current limiter. 4,067,048, Cl. 358-243.000.
Northern Natural Gas Company: *See—*
Cunningham, Richard D., 4,065,964, Cl. 73-150.00A.
Novak, Petr; Pellant, Michal; and Reichel, Pavel, to CKD Praha, oborovy podnik. Heat sink mechanism hydraulically propelled into contact with semiconductor devices. 4,067,042, Cl. 357-82.000.
Novus Inc.: *See—*
Tenquist, David A., 4,065,884, Cl. 52-37.000.
Nuclear-Medical Laboratories, Inc.: *See—*
Eisentraut, Anna M., 4,066,410, Cl. 23-230.600.
Nutt, Ruth F.: *See—*
Veber, Daniel F.; Nutt, Ruth F.; and Hirschmann, Ralph F., 4,066,749, Cl. 424-177.000.
Nycum, James M., to United States of America, Navy. Universal shock and vibration mounts. 4,066,234, Cl. 248-358.00R.
Oakey, Keith R.: *See—*
Jones, John W. D.; and Oakey, Keith R., 4,066,946, Cl. 318-685.000.
Oberg, Ake Per: *See—*
Nilsson, Gert Erik; and Oberg, Ake Per, 4,066,068, Cl. 128-2.00R.
O'Brien, David, to Fairchild Camera and Instrument Corporation. Method of fabricating high-gain transistors. 4,066,473, Cl. 148-1.500.
O'Brien, William L.: *See—*
Mains, Harold E.; Williams, Frederick R.; and O'Brien, William L., 4,066,587, Cl. 260-22.00D.
Ochi, Sam S.: *See—*
Compton, James B.; and Ochi, Sam S., 4,066,917, Cl. 307-304.000.
Ochsner, Paul Albert, to Givaudan Corporation. Unsaturated alcohol. 4,066,710, Cl. 260-631.500.
O'Connor, Chadwell. Rotating fluidized bed combustor. 4,066,024, Cl. 110-8.00F.
Oda, Teruhisa: *See—*
Yoshikawa, Ryoichi; Oda, Teruhisa; Tanaka, Kunio; Iura, Yukio; Fukushima, Tadahide; and Aizawa, Hiroshi, 4,067,032, Cl. 354-288.000.
Oeser, Henning; and Ahrens, Ulrich, to Blutspendedienst der Landesverbande des Deutschen Roten Kreuzes Niedersachsen, Oldenburg und Bremen GmbH. Apparatus for the precipitation of human blood plasma components. 4,066,549, Cl. 210-177.000.
Ogawa, Junkichi: *See—*
Shimamura, Isao; Ishiguro, Shoji; and Ogawa, Junkichi, 4,066,461, Cl. 96-66.300.
Oger, Jacques Francois, to Sogelerg; and Setec Travaux Publics. Casing voussoir and method for producing the voussoir. 4,065,932, Cl. 61-45.00R.
Ohashi, Takashi: *See—*
Yukuta, Toshio; Ohashi, Takashi; Kojima, Minoru; Suzuki, Akira; and Taniguchi, Yoshiko, 4,066,579, Cl. 260-2.5AP.
Ohashi, Tosiro: *See—*
Fujita, Teizo; and Ohashi, Tosiro, 4,066,838, Cl. 174-48.000.
Ohhinata, Ichiro, to Hitachi, Ltd. Memory circuit. 4,066,915, Cl. 307-238.000.
Ohio State University, The: *See—*
Young, Jonathan D.; and Caldecott, Ross, 4,066,970, Cl. 328-67.000.
Ohkubo, Kazuo: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tonomura, Shinji; Tamao, Yoshikuni; Tezuka, Tohru; and Hijikata, Akiko, 4,066,758, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,759, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,773, Cl. 424-267.000.
Ohmi, Atsushi; and Katagiri, Masayoshi, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Fluid level indicator for tandem master cylinder. 4,066,997, Cl. 340-59.000.
Ohmura, Tadayoshi: *See—*
Okazaki, Kiyoshi; Kawada, Hiroitsu; Shimizu, Hidemi; Ohmura, Tadayoshi; and Sekino, Jun, 4,066,787, Cl. 424-317.000.
Ohsawa, Hisayou: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,066,615, Cl. 260-45.8NT.
Ohta, Noriyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,066,615, Cl. 260-45.8NT.
Ohtani, Iwao; and Takahashi, Hashime, to Tokico Ltd. Method for producing heat pipe units. 4,066,115, Cl. 164-9.000.
Oka, Yoshikazu; Miyake, Akio; Tada, Norio; and Itoh, Katsumi, to Takeda Chemical Industries, Ltd. Isochroman derivatives. 4,066,648, Cl. 260-268.0TR.
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tonomura, Shinji; Tamao, Yoshikuni; Tezuka, Tohru; and Hijikata, Akiko, to Mitsubishi Chemical Industries Limited; and Okamoto, Shosuke. N^2-naphthalenesulfonyl-L-arginine derivatives, and the pharmaceutically acceptable acid addition salts thereof. 4,066,758, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, to Mitsubishi Chemical Industries Limited; and Okamoto, Shosuke. N^2-naphthalenesulfonyl-L-arginine derivatives, and the pharmaceutically acceptable acid addition salts thereof. 4,066,759, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, to Mitsubishi Chemical Industries Ltd.; and Okamoto, Shosuke. N^2-arylsulfonyl-L-argininamides and the pharmaceutically acceptable salts thereof. 4,066,773, Cl. 424-267.000.
Okamoto, Yukio; and Mizushima, Masashi, to Hitachi, Ltd. Electron-acceleration type flatgas-discharge panel with internal memory functions and method of driving for same. 4,066,929, Cl. 315-169.0TV.
Okano, Takeshi: *See—*
Igarashi, Shunkichi; Okano, Takeshi; Takahama, Sho; and Hakamata, Yoshio, 4,066,354, Cl. 355-28.000.
Okaue, Asaya: *See—*
Saito, Shinichi; Okaue, Asaya; Baba, Kazuo; and Tanaka, Shigeo, 4,066,718, Cl. 260-878.00B.
Okazaki, Kiyoshi; Kawada, Hiroitsu; Shimizu, Hidemi; Ohmura, Tadayoshi; and Sekino, Jun, to Yamanouchi Pharmaceutical Co., Ltd. Stabilized prostaglandin composition and the process for the preparation thereof. 4,066,787, Cl. 424-317.000.
Oldshue, James Y. Replacement valve assembly. 4,066,113, Cl. 152-430.000.
Olin Corporation: *See—*
Kadija, Igor V.; and Ahn, Byung K., 4,066,519, Cl. 204-98.000.
Kleine, Charles A.; and Middleton, Verne L., 4,066,121, Cl. 165-170.000.
Olink, Jan; and Dela Ruye, Jacques, to BFG Glassgroup. Glazing for transmitting solar radiation. 4,066,815, Cl. 428-336.000.
Ollington, David R.; and Zala, Ishver L. High speed pulse counter. 4,066,875, Cl. 235-92.0TF.
Olson, Larry Lee; and Jones, Richard Henry, to Jones, Richard Henry;

and Corrado, Pasquale A. Sludge hydroextractor. 4,066,548, Cl. 210-160.000.
Olympus Optical Co., Ltd.: *See—*
Utsugi, Mikio, 4,066,070, Cl. 128-4.000.
Ong, Eng Bee: *See—*
Johnson, Alan J.; Soberano, Mercedes E.; Ong, Eng Bee; and Levy, Milton, 4,066,506, Cl. 195-66.00B.
Ono, Muneichi: *See—*
Nakazawa, Atushi; and Ono, Muneichi, 4,066,568, Cl. 252-316.000.
Ono Pharmaceutical Company: *See—*
Hayashi, Masaki; Kori, Seiji; and Tanouchi, Tadao, 4,066,751, Cl. 424-180.000.
Oppelt, John Christian; and Susi, Peter Vincent, to American Cyanamid Company. Heterocyclicamides of hindered 3,5-dialkyl-4-hydroxybenzoic acids and use as light stabilizers in polyolefins. 4,066,614, Cl. 260-45.8NZ.
Optical Business Machines, Inc.: *See—*
Lidkea, Harrison B., 4,066,998, Cl. 340-146.3AC.
Orikasa, Kimihiko: *See—*
Takano, Katsuyoshi; Matsumoto, Masafumi; and Orikasa, Kimihiko, 4,066,986, Cl. 333-72.000.
Oroshnik, William, to SCM Corporation. Intermediates for Vitamin A. 4,066,685, Cl. 560-260.000.
Orr, Clyde, Jr.: *See—*
Ball, Dean M.; Fincher, Robert C.; and Orr, Clyde, Jr., 4,066,536, Cl. 209-155.000.
Orr, Thomas Samuel Campbell; Hall, David Edward; and Mann, John, to Fisons Limited. Therapeutic compositions of 1,3-bis(2-carboxychromon-5-yloxyl)propan-2-ol and aspirin or indomethacin. 4,066,756, Cl. 424-232.000.
Orth, Charles D.: *See—*
Thornbery, James M.; and Orth, Charles D., 4,065,939, Cl. 62-217.000.
Ortho Pharmaceutical Corporation: *See—*
Pasquale, Samuel A., 4,066,757, Cl. 424-243.000.
Wachter, Michael P., 4,066,681, Cl. 260-455.00A.
Osaka Gas Co. Ltd.: *See—*
Yamaguchi, Kaichiro; and Iguchi, Susumu, 4,066,421, Cl. 48-213.000.
Otis Engineering Corporation: *See—*
Davis, Jerry B.; and Gant, Guy W., 4,066,128, Cl. 166-315.000.
Otomo, Kanji: *See—*
Kosaka, Yujiro; Uemura, Masaru; Kuroki, Hitoshi; Otomo, Kanji; Terauchi, Yoshiaki; and Arai, Yasuo, 4,066,810, Cl. 428-195.000.
O'Toole, Jerome; Wright, David M.; and Hedstrom, Norman A., to Wright Line Inc. Reference manual stand. 4,066,168, Cl. 211-4.000.
Ott, James I.; and Schwab, Delmar G., to Hyster Company. Load lifting and lowering control system. 4,065,922, Cl. 60-445.000.
Ovshinsky, Stanford R.: *See—*
Chang, Yew C.; Ovshinsky, Stanford R.; and Citkowski, Ronald W., 4,066,460, Cl. 96-48.00R.
Owen, Hartley; Venuto, Paul B.; and Rosinski, Edward J., to Mobil Oil Corporation. Processing heavy reformate feedstock. 4,066,531, Cl. 208-120.000.
Owens-Corning Fiberglas Corporation: *See—*
Heitmann, Arthur C., 4,066,864, Cl. 219-121.0EM.
Owens-Illinois, Inc.: *See—*
Collins, Johnny Will; Kochmanis, Gunars; and Lynch, Bobby Ross, 4,066,174, Cl. 214-7.000.
Juvinall, John W., 4,066,363, Cl. 356-198.000.
Mold, Donald F.; and Rice, Ronald G., 4,066,120, Cl. 165-165.000.
Mueller, Martin, 4,065,908, Cl. 53-15.000.
Mueller, Martin, 4,065,909, Cl. 53-15.000.
Ryan, William H., 4,067,047, Cl. 358-240.000.
Oxy Metal Industries Corporation: *See—*
Stevens, Peter; and Deuber, John M., 4,066,517, Cl. 204-43.00N.
Oy Tampella AB: *See—*
Strom, Rolf; Heikkila, Veikko; and Hakkinen, Leo, 4,065,845, Cl. 29-283.000.
Oyama, Yoichi: *See—*
Kamigaito, Osami; and Oyama, Yoichi, 4,066,468, Cl. 106-73.400.
Ozawa, Hidenori: *See—*
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Dave, Bhalchandra Anantray, 4,066,795, Cl. 426-259.000.
Dimmig, Daniel Ashton, 4,066,631, Cl. 260-78.00R.
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Peterson, Charles L., to Uarco Incorporated. Continuous envelope assembly. 4,066,206, Cl. 229-69.000.
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Blackwood, Robert K.; and Stephens, Charles R., Jr., 4,066,694, Cl. 260-559.0AT.
Kadin, Saul B., 4,066,766, Cl. 424-251.000.
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Cines, Martin R.; and Buchanan, Ben B., 4,066,538, Cl. 210-15.000.
Drake, Charles A.; and Cowan, Glyndal D., 4,066,417, Cl. 23-289.000.
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Harris, Jesse R., 4,066,712, Cl. 260-668.00D.
Morgan, Thomas D.; and Regier, Robert B., 4,066,404, Cl. 23-230.0EP.
Rohde, Raymond, 4,066,559, Cl. 252-10.000.
Pickard, Keith John, to Laporte Industries Limited. Treating cellulosic materials. 4,066,493, Cl. 162-158.000.
Pietruszewski, John Joseph; Scaccia, Carl; and Wagner, Ralph James, to Union Carbide Corporation. Apparatus for sparging gas into liquid. 4,066,722, Cl. 261-87.000.
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Piper, Jack Richard; and Kaczmarek, Leo W., to International Telephone and Telegraph Corporation. Vertical float switch. 4,066,858, Cl. 200-84.00C.
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Pistorius, Rudolf: *See—*
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Plentz, Rudolf. Brake cylinder for a hydraulic brake. 4,066,153, Cl. 188-196.00M.
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Kleinschuster, Jacob John; and Pletcher, Terry Carl, 4,066,620, Cl. 260-47.00C.
Pletcher, Wayne A.; and Wong, Roy, to Minnesota Mining and Manufacturing Company. Friction-activatable adhesive and articles thereof. 4,066,600, Cl. 260-30.60R.
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Holliday, Leland Robert; and Poe, Ronald Laurence, 4,066,682, Cl. 260-462.00R.
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Chiklis, Charles K., 4,066,814, Cl. 428-333.000.
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Bashkovich, Alexandr Pavlovich; Zimnukhova, Evgenia Semenovna; Prokopovich, Agnessa Vladimirovna; Polatovshaya, Olga Grigorievna; Pronina, Maria Ivanovna; Kulbakh, Valter Osvaldovich; Rivkina-Pevtsova, Khasya Ionovna; and Grinberg, Grigory Efimovich, 4,066,503, Cl. 195-62.000.
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PPG Industries, Inc.: *See—*
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Graham, Roy R., 4,066,106, Cl. 139-420.00C.
Neely, Homer E., Jr., 4,066,466, Cl. 106-50.000.
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Rinehart, Jay K., 4,066,440, Cl. 71-119.000.
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Scriven, Roger L.; and Chang, Wen-Hsuan, 4,066,591, Cl. 260-29.2TN.
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Provost, John K.; and Lien, Charles, to Venus Scientific Inc. Low light level camera with parallel-connected slidably mounted intensifier assemblies. 4,067,045, Cl. 358-211.000.

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Rainwater, Orman M. Collapsible shelter structure. 4,066,089, Cl. 135-3.00E.

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Hall, James Robert, 4,067,010, Cl. 343-6.8LC.
Heuner, Robert Charles; Goldman, Michael Barnett; Niemiec, Stanley Joseph; and Morton, George Ira, 4,066,918, Cl. 307-304.000.
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Rosnowski, Wojciech; and Denning, Richard, 4,066,485, Cl. 148-188.000.

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Reed, Donald M. Dimensional gauging apparatus. 4,065,854, Cl. 35-168.00R.

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Reichert, Dieter. Switch for controlling door locks. 4,065,812, Cl. 200-11.00R.

Reilly, Eugene P.: *See—*
Borman, Willem F. H.; and Reilly, Eugene P., 4,066,627, Cl. 260-75.00M.

Reilly, Joseph R.; and Witkowski, Leonard J., to Monsanto Company. Method for continuous stretch-blow molding. 4,066,727, Cl. 264-94.000.

Reinhard, Clyde J., to Birtcher Corporation, The. Isolation amplifier. 4,066,974, Cl. 330-10.000.

Reisman, Arnold: *See—*
Park, Kyu C.; and Reisman, Arnold, 4,065,840, Cl. 29-25.140.

Reiss, Karl-Hans: *See—*
Kuhn, Gerhard; Ubler, Karl; and Reiss, Karl-Hans, 4,066,896, Cl. 250-315.00A.

Rescalli, Carlo: *See—*
Faraci, Rocco; Rescalli, Carlo; and Catini, Stefano, 4,066,713, Cl. 260-677.00A.

Reuschling, Dieter-Bernd; and Jensen, Harald, to Hoechst Aktiengesellschaft. Process for the preparing α-chloroacrylic acid chlorides. 4,066,690, Cl. 260-544.00Y.

Revy von Belvard, Peter: *See—*
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,066,345, Cl. 352-27.000.

Reynolds, Donald F. Car wash mop. 4,066,366, Cl. 401-285.000.

Rhodes, William A.: *See—*
Rodriguez, Paul L.; and Rhodes, William A., 4,066,920, Cl. 310-310.000.

Rhone-Poulenc Industries: *See—*
Bardonnet, Claude; Brun, Robert; and Pages, Michel, 4,066,553, Cl. 210-321.00R.

Riat, Henri; and Hegar, Gert, to Ciba-Geigy Corporation. Sulfophenylamino containing tetrareactive triazine disazo dyestuffs and dyestuff compositions thereof. 4,066,389, Cl. 8-41.00R.

Ribnitz, Peter: *See—*
Buschor, Karl; and Ribnitz, Peter, 4,066,041, Cl. 118-629.000.

Ricardo & Co., Engineers (1927) Limited: *See—*
Ford-Dunn, Martin Douglas, 4,066,050, Cl. 123-73.0SP.

Rice, Edward K., to Unicon Parking Structures, Inc. Demountable multiple level building structures. 4,065,907, Cl. 52-747.000.

Rice, Ronald G.: *See—*
Mold, Donald F.; and Rice, Ronald G., 4,066,120, Cl. 165-165.000.

Richardson, Harold W., to Richmore Company. Portable viscometer apparatus. 4,065,959, Cl. 73-56.000.

Richardson-Merrell Inc.: *See—*
Blohm, Thomas R.; Grisar, J. Martin; and Parker, Roger Alan, 4,066,788, Cl. 424-333.000.

Richmore Company: *See—*
Richardson, Harold W., 4,065,959, Cl. 73-56.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcs, 4,066,709, Cl. 260-618.00B.

Ricoh Company, Ltd.: *See—*
Koide, Hiroshi; Iida, Katsuhiko; Ataka, Hisanori; and Homae, Taisaburo, 4,066,350, Cl. 353-27.00R.

Ridings, Robert Paul, Jr.; and Lanier, Raymond Henry, to Communications Satellite Corporation. Adaptable zero order predictor for speech predictive encoding communications systems. 4,066,844, Cl. 179-15.0BW.

Riechers, Daniel: *See—*
Haberle, Fritz; Riechers, Daniel; and Hochrathner, Alfred, 4,066,286, Cl. 293-87.000.

Rieger, Gerhard: *See—*
Junge, Peter; Schulz, Horst; Schneider, Rainer; Dreke, Werner; and Rieger, Gerhard, 4,066,818, Cl. 428-341.000.

Ries, Karl: *See—*
Grabendorfer, Werner; Vogt, Herbert; Haacke, Harri; Kuhn, Harry; Pawelletz, Reinhard; and Ries, Karl, 4,065,960, Cl. 73-627.000.

Ries, Peter E., to Pentapharm A.G. Sterile surgical collagen product. 4,066,083, Cl. 128-325.000.

Rifkin, Ellis B., to Ethyl Corporation. Exhaust systems. 4,065,918, Cl. 60-274.000.

Riker Laboratories, Inc.: *See—*
Scherrer, Robert A., 4,066,782, Cl. 424-285.000.

Rinehart, Jay K., to PPG Industries, Inc. Symmetrical alkynyl ureas. 4,066,440, Cl. 71-119.000.

Rivkina-Pevtsova, Khasya Ionovna: *See—*
Bashkovich, Alexandr Pavlovich; Zimnukhova, Evgenia Semenovna; Prokopovich, Agnessa Vladimirovna; Polatovshaya, Olga Grigorievna; Pronina, Maria Ivanovna; Kulbakh, Valter Osvaldovich; Rivkina-Pevtsova, Khasya Ionovna; and Grinberg, Grigory Efimovich, 4,066,503, Cl. 195-62.000.

Rizzo, Victor L., to Upjohn Company, The. Arthropodicidal formamidines. 4,066,765, Cl. 424-248.560.

Robert Bosch G.m.b.H.: *See—*
Heiser, Joachim, 4,066,006, Cl. 91-433.000.
Voss, Klaus, 4,066,133, Cl. 173-12.000.
Wanner, Karl; Hahner, Reinhard; Schmid, Wolfgang; Hansel, Gernot; and Bleicher, Manfred, 4,066,136, Cl. 173-48.000.

Robert, Jacques: *See—*
Dargent, Bruno; and Robert, Jacques, 4,066,333, Cl. 350-160.0LC.

Robertshaw Controls Company: *See—*
Bechtel, Jon H., 4,066,867, Cl. 219-483.000.

Robin, Gordon: *See—*
Arcan, Mircea; Robin, Gordon; and Simkin, Ariel, 4,066,082, Cl. 128-303.00R.

Robinson, Graham: *See—*
Jones, Ivor Wynn; Robinson, Graham; and Bird, Thomas Lewis, 4,066,826, Cl. 429-104.000.

Robinson, William H.; Allen, David O.; and Wombold, Harry A. E., to Buckeye Molding Company. Container and closure assembly. 4,066,181, Cl. 215-256.000.

Roch, Jacques L., to Electroglas, Inc. High speed precision chuck assembly. 4,066,943, Cl. 318-468.000.

Rocha, John G., to United States of America, Army. Gun lock and firing mechanism for 30mm cannon. 4,065,998, Cl. 89-11.000.

Rockwell International Corporation: *See—*
Costanza, Samuel T.; Franklin, Peter G.; Gebhardt, Frank L.; Israel, Jack D.; Moore, Charles R.; and Wheatley, Charles E., III, 4,066,964, Cl. 325-55.000.
George, Peter K.; and Kobayashi, Tsutomu, 4,067,003, Cl. 365-12.000.
Juhasz, John Emil, 4,067,061, Cl. 364-900.000.
Manasevit, Harold M.; and Simpson, William I., 4,066,481, Cl. 148-174.000.

Rockwell-Rimoldi S.p.A.: *See—*
Marforio, Nerino, 4,066,027, Cl. 112-121.150.

Rodewald, Paul G., to Mobil Oil Corporation. Manufacture of light olefins. 4,066,714, Cl. 260-682.000.

Rodgers, Robert E., Jr. Metal-plastic composite racquet. 4,066,260, Cl. 273-73.00C.

Rodgers, Rolza J., to Ross Agricultural Company, Inc. Pea shelling apparatus. 4,066,087, Cl. 130-30.00H.

Rodriguez, Paul L.; and Rhodes, William A. Electrostatically chargeable device. 4,066,920, Cl. 310-310.000.

Rohde, Raymond, to Phillips Petroleum Company. Container for oil-additive release. 4,066,559, Cl. 252-10.000.

Rolin, Pierre: *See—*
Michalon, Daniel; and Rolin, Pierre, 4,066,161, Cl. 198-334.000.

Rollings, Robert William, to Bell Telephone Laboratories, Incorporated. Electrical connector construction. 4,066,316, Cl. 339-91.00R.

Rolls-Royce Limited: *See—*
Johnson, Christopher Linley; and Millns, Colin, 4,066,386, Cl. 417-199.00A.

Romovacek, George R., to Koppers Company, Inc. Method and apparatus for the control of pitch still operation. 4,066,159, Cl. 196-132.000.

Romovacek, George R., to Koppers Company, Inc. Method for making isotropic carbon fibers. 4,066,737, Cl. 423-447.600.

Roper Corporation: *See—*
Fisher, Gerald C.; and Scanland, Joseph E., 4,065,913, Cl. 56-295.000.

Rosen, Irving: *See—*
Li, George S.; and Rosen, Irving, 4,066,717, Cl. 260-874.000.

Rosen, Perry, to Hoffmann-La Roche Inc. 15-Oxasteroids. 4,066,666, Cl. 260-340.9AS.

Rosen, Robert: *See—*
Schultz, Leonard J.; Hamori, Alfred Steven; and Rosen, Robert, 4,066,965, Cl. 325-120.000.

Rosenau, John R.; and Anderson, John C., to University of Minnesota, The Regents of the. Preparation of dairy-based cheese food. 4,066,800, Cl. 426-582.000.

Rosinski, Edward J.: *See—*
Owen, Hartley; Venuto, Paul B.; and Rosinski, Edward J., 4,066,531, Cl. 208-120.000.

Rosnowski, Wojciech; and Denning, Richard, to RCA Corporation. Method of fabricating a semiconductor device. 4,066,485, Cl. 148-188.000.

Ross Agricultural Company, Inc.: *See—*
Rodgers, Rolza J., 4,066,087, Cl. 130-30.00H.

Ross, Haldon, to AMF Incorporated. Self-adjusting bike brake operating mechanism. 4,066,154, Cl. 188-196.0BA.

Ross, Hubertus R. Cartesian toy submarine. 4,065,874, Cl. 46-94.000.

Ross, William A.: *See—*
Beck, Christian A.; Ross, William A.; and Burke, James E., 4,066,220, Cl. 242-55.000.

Rosset, Armand J.; and Neuzil, Richard W., to UOP Inc. Two-stage process for separating mixed fatty-acid esters. 4,066,677, Cl. 260-428.500.

Rostocil, Charles Edward, to Brunswick Corporation. Machine gun. 4,066,000, Cl. 89-198.000.

Rottier, Jacob, to U.S. Philips Corporation. Saturable reactor device for operating a discharge lamp. 4,066,932, Cl. 315-244.000.

Rottloff, Gunther: *See—*
Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, 4,066,577, Cl. 260-2.00R.

Rounbehler, David P.: *See—*
Fine, David H.; Fronduto, John J.; and Rounbehler, David P., 4,066,411, Cl. 23-253.0PC.

Rowekamp, Edward F., to Lodge & Shipley Company, The. Row former for articles. 4,066,163, Cl. 198-442.000.

Rowley, James R., to PPG Industries, Inc. Sling assembly for lifting sheet material. 4,066,287, Cl. 294-74.000.

Rowman, Philip J. Drum halting system for game apparatus. 4,066,264, Cl. 273-143.00R.

Rublack, Wilfred, to General Electric Company. Screen for slotted aperture mask color television picture tube. 4,066,924, Cl. 313-408.000.

Rudny, Donald F.: *See—*
Vidakovic, Aleksandar; Urman, Stanley; and Rudny, Donald F., 4,066,047, Cl. 123-41.120.

Rudy, Erwin. Carbide compositions for wear-resistant facings and method of fabrication. 4,066,451, Cl. 75-240.000.

Ruh, Wolf-Dieter; and Trippel, Gerhard, to International Business Machines Corporation. Method of simultaneously etching multiple tapered viaducts in semiconductor material. 4,066,491, Cl. 156-644.000.

Ruhrchemie AG: *See—*
Hahn, Heinz-Dieter; and Weber, Jurgen, 4,066,835, Cl. 560-98.000.

Rumold, Gerhard; and Russ, Georg, to Siemens Aktiengesellschaft. Circuit for measuring the ground resistance of an ungrounded power circuit. 4,066,950, Cl. 324-51.000.

Ruskin, Henry. Staples and production methods. 4,066,165, Cl. 206-340.000.

Russ, Georg: *See—*
Rumold, Gerhard; and Russ, Georg, 4,066,950, Cl. 324-51.000.

Russell, Carl C.: *See—*
Nebel, Otto T.; Trujillo, Louis J.; and Russell, Carl C., 4,067,025, Cl. 354-62.000.

Russo, Andrew, Jr.: *See—*
Pearce, Warren, Jr.; and Russo, Andrew, Jr., 4,066,325, Cl. 339-176.0MP.

Ruthardt, Rolf: *See—*
Kummer, Franz; Mai, Gerhard; Ruthardt, Rolf; and Thiede, Horst, 4,065,851, Cl. 29-630.00R.

Ryan, William H., to Owens-Illinois, Inc. Circuit and method for generating gray scale in gaseous discharge panels. 4,067,047, Cl. 358-240.000.

S.A.E.S. Getters S.p.A.: *See—*
Hellier, Stephen J., 4,066,309, Cl. 316-5.000.

Saatze, Kuno: *See—*
Trattner, Hermann; Saatze, Kuno; and Bauereiss, Adolf, 4,065,956, Cl. 73-9.000.

Saferstein, Lowell: *See—*
Besso, Michael M.; and Saferstein, Lowell, 4,066,623, Cl. 260-47.00C.

Safir, Sidney Robert; and Hofmann, Corris Mabelle, to American Cyanamid Company. Substituted 6-(piperazinyl)-10H-pyrido[3,2-b]thieno[3,4-e][1,4]-diazepines. 4,066,647, Cl. 260-268.0TR.

Saito, Shinichi; Okaue, Asaya; Baba, Kazuo; and Tanaka, Shigeo, to Sumitomo Chemical Company, Limited. Process for the production of ethylene-propylene block copolymers. 4,066,718, Cl. 260-878.00B.

Saito, Toshio; and Kobayashi, Tadahiko, to Fuji Seiki Machine Works, Ltd. Multi-spindle drilling machine. 4,066,378, Cl. 408-46.000.

Sakamoto, Masakatsu; Watanabe, Syosaku; Karino, Takafumi; Yazu, Junichi; Takashima, Kouichi; Miyashiro, Hiroshi; Takagi, Takeo; and Konno, Takao, to Hitachi, Ltd. Hydraulically transported capsule. 4,066,298, Cl. 302-2.00R.

Sala Magnetics, Inc.: *See—*
Marston, Peter G.; and Nolan, John J., 4,066,991, Cl. 335-216.000.

Saleil, Jean; Debras, Maurice; and Malefant, Jean-Yves. Method of making chrome steel in an electric arc furnace. 4,066,442, Cl. 75-12.000.

Salisbury, Winfield W.; and Stiles, Walter J. Earth boring apparatus employing high powered laser. 4,066,138, Cl. 175-16.000.

Salley, Ernest J., to Engineered Systems, Inc. System for pretesting electronic memory locations and automatically identifying faulty memory sections. 4,066,880, Cl. 235-302.300.

Salmond, William G., to Sandoz, Inc. 2-Alkylamino-α-phenyl-1-cyclohexene-1-methyleneimine, its salts and preparation. 4,066,665, Cl. 260-332.500.

Salomon, Georges Pierre Joseph, to S.A. Etablissements Francois Salomon et Fils. Ski brake. 4,066,276, Cl. 280-605.000.

Sam, Georg: *See—*
Bork, Siegfried; and Sam, Georg, 4,066,576, Cl. 252-511.000.

Samsonite Corporation: *See—*
Workman, David E., 4,066,373, Cl. 403-391.000.

Sanchez, Alejandro C. Frangible cap for bottles. 4,066,180, Cl. 215-254.000.

Sanders, David E.: *See—*
Chambers, Ramon P.; Sanders, David E.; and Gordy, Robert S., 4,066,977, Cl. 330-129.000.

Sanders, Robert N.: *See—*
Johnston, James D.; Sanders, Robert N.; and Wood, James M., Jr., 4,066,445, Cl. 75-67.00R.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, 4,066,541, Cl. 210-51.000.

Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, to Sando Iron Works Co., Ltd. Process for treating waste water containing polyvinyl alcohol. 4,066,541, Cl. 210-51.000.

Sandoz, Inc.: *See—*
Salmond, William G., 4,066,665, Cl. 260-332.500.

Sankyo Company Limited: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,066,615, Cl. 260-45.8NT.

Sano, Kinzi: *See—*
Mohri, Yoshio; Hiroishi, Takashi; Sano, Kinzi; Huruya, Koichi; Muramoto, Tadashi; and Tao, Masato, 4,066,465, Cl. 106-50.000.

Sano, Masakatu: *See—*
Kasama, Tsuneo; Wada, Makoto; Sano, Masakatu; and Tsuji, Shinzo, 4,066,415, Cl. 23-281.000.

Santacecilia, Remo: *See—*
Shay, Barry M.; and Santacecilia, Remo, 4,066,558, Cl. 252-8.900.

Santos, Gerard R.: *See—*
Hannum, Joseph R.; and Santos, Gerard R., 4,066,489, Cl. 156-258.000.

Santroch, George: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Santroch, George; Dobson, Thomas A.; and Jirkovsky, Ivo, 4,066,763, Cl. 424-246.000.

Sanyo Electric Co., Ltd.: *See—*
Kishi, Hiroyasu, 4,066,845, Cl. 179-15.0BT.

Sarchet, Douglas P. Wind-driven prime mover. 4,066,911, Cl. 290-44.000.

Sarno, Richard L. Apparatus for splitting logs. 4,066,110, Cl. 144-193.00A.

Sasaki, Jiro, to Toshin Science Co., Ltd.; and Sekisui Kagaku Kogyo Kabushiki Kaisha, part interest to each. Continuous filtering process and an apparatus therefor. 4,066,546, Cl. 210-75.000.

Sasamura, Kohei: *See—*
Ishigaki, Yukinobu; and Sasamura, Kohei, 4,066,972, Cl. 329-134.000.

Sasazawa, Koji; Dezawa, Shin-Ichiro; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Process for producing cobalt- and iron-containing ferromagnetic powder by heat-treatment in the presence of an oxidizing agent. 4,066,564, Cl. 252-62.560.

Sasazawa, Koji; Dezawa, Shin-Ichiro; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Process for producing cobalt- and iron-containing ferromagnetic powder. 4,066,565, Cl. 252-62.560.

Satake Engineering Co., Ltd.: *See—*
Satake, Toshihiko; Kono, Akira; and Yanagihara, Hiromichi, 4,066,012, Cl. 99-618.000.

Satake, Toshihiko; Kono, Akira; and Yanagihara, Hiromichi, to Satake Engineering Co., Ltd. Roll type huller. 4,066,012, Cl. 99-618.000.

Sato, Hiroshi: *See—*
Sato, Ryuichi; Ishikawa, Akira; Ishida, Yukihito; Sato, Hiroshi; Tomisawa, Setsuo; Toyoshima, Shigeshi; and Ikegami, Shiro, 4,066,678, Cl. 260-429.00R.

Sato, Michito: *See—*
Isa, Hiroshi; Ukigai, Toshiyuki; Tominaga, Anri; and Sato, Michito, 4,066,715, Cl. 260-683.15B.

Sato, Ryuichi; Ishikawa, Akira; Ishida, Yukihito; Sato, Hiroshi; Tomisawa, Setsuo; Toyoshima, Shigeshi; and Ikegami, Shiro, to Sato, Ryuichi. 3-Trihydroxygermyl propionic acid and its salts and a process for the production thereof. 4,066,678, Cl. 260-429.00R.

Sato, Shoichi, to Japan Atomic Energy Research Institute. Process for the production of hydrogen by the thermal decomposition of water. 4,066,741, Cl. 423-658.000.

Sato, Susumu: *See—*
Segawa, Yoshihiro; Sato, Susumu; Yasuda, Eturo; Hattori, Tadashi; and Aoki, Keiji, 4,066,413, Cl. 23-254.00E.

Sato, Takao, to Hitachi, Ltd. Abnormal state detecting apparatus utilizing control rod for use in nuclear reactor. 4,066,497, Cl. 176-22.000.

Sato, Toshihiko, to Nippon Light Metal Co., Ltd. Method for forming colorless or colored pattern having shade difference on an aluminum or aluminum alloy article. 4,066,516, Cl. 204-15.000.

Sauer, Gerhard: *See—*
Eder, Ulrich; Sauer, Gerhard; Haffer, Gregor; Neef, Guenter; and Wiechert, Rudolf, 4,066,674, Cl. 260-397.500.

Savit, Carl H., to Western Geophysical Company of America. Limited-range seismic control system. 4,066,993, Cl. 340-15.5TS.

Sawyer, Philip Nicholas. Surgical method of using a sterile packaged prosthesis. 4,065,816, Cl. 3-1.500.

Saxl, Erwin J. Tension meter. 4,065,963, Cl. 73-144.000.

Saylor, William H.; and Narey, James O., to Associated Data Concepts. Changeable alphanumeric sign with opaque tape display forming segmented characters and words. 4,067,006, Cl. 340-325.000.

Scaccia, Carl: *See—*
Pietruszewski, John Joseph; Scaccia, Carl; and Wagner, Ralph James, 4,066,722, Cl. 261-87.000.

Scanland, Joseph E.: *See—*
Fisher, Gerald C.; and Scanland, Joseph E., 4,065,913, Cl. 56-295.000.

Schaar, Charles H., to Colgate-Palmolive Company. Diaper with extensible fastener. 4,066,081, Cl. 128-287.000.

Schachte, John J.: *See—*
Lohneis, Earl R.; and Schachte, John J., 4,065,988, Cl. 82-2.700.

Schaefer, Bruce John: *See—*
Lorenzen, James Walter; and Schaefer, Bruce John, 4,065,823, Cl. 9-9.000.

Schaeffer, Walter: *See—*
Bockenhoff, Hermann-Josef; Schaeffer, Walter; and Kranz, Berthold, 4,066,477, Cl. 148-15.000.

Scharf, Emil; Fikentscher, Rolf; Auhorn, Werner; and Streit, Werner, to BASF Aktiengesellschaft. Nitrogenous condensation products used as retention aids in papermaking. 4,066,494, Cl. 162-164.0EP.

Schatz, Vernon L., to First National Bank of Chicago, The. Identification and access card with associated optical decoding means. 4,066,873, Cl. 235-487.000.

Scheler, Holger, to Hagenuk Vormals Neufeldt & Kuhnke GmbH. Arrangement for feeding rod shaped workpieces to a machine tool. 4,065,989, Cl. 82-38.00A.

Schepp, Horst; and Drawert, Manfred, to Schering Aktiengesellschaft. Printing inks and printing methods employing the same. 4,066,585, Cl. 260-18.00N.

Schering Aktiengesellschaft: *See—*
Eder, Ulrich; Sauer, Gerhard; Haffer, Gregor; Neef, Guenter; and Wiechert, Rudolf, 4,066,674, Cl. 260-397.500.
Schepp, Horst; and Drawert, Manfred, 4,066,585, Cl. 260-18.00N.

Schering Corporation: *See—*
Mallams, Alan K.; and Davies, David Huw, 4,066,752, Cl. 424-180.000.

Scherrer, Hanspeter: *See—*
Boller, Arthur; Cereghetti, Marco; and Scherrer, Hanspeter, 4,066,570, Cl. 252-299.000.

Scherrer, Robert A., to Riker Laboratories, Inc. Antimicrobial (2-nitro-3-benzofuranyl)phenylacetic acids. 4,066,782, Cl. 424-285.000.

Schlegel GmbH: *See—*
Eggert, Frank, 4,065,900, Cl. 52-476.000.

Schlegel (UK) Limited: *See—*
Aardal, Martin John, 4,065,827, Cl. 16-106.000.

Schmid, Wolfgang: *See—*
Wanner, Karl; Hahner, Reinhard; Schmid, Wolfgang; Hansel, Gernot; and Bleicher, Manfred, 4,066,136, Cl. 173-48.000.

Schmidt, John P., to Halcon International, Inc. Preparation of ethylbenzene hydroperoxide. 4,066,706, Cl. 260-610.00B.

Schneider, Michel, to Battelle Memorial Institute. Process for extracting a polypeptide from an aqueous solution. 4,066,505, Cl. 195-66.00R.

Schneider, Rainer: *See—*
Junge, Peter; Schulz, Horst; Schneider, Rainer; Dreke, Werner; and Rieger, Gerhard, 4,066,818, Cl. 428-341.000.

Schnur, Rodney C.: *See—*
Kraska, Allen R.; and Schnur, Rodney C., 4,066,696, Cl. 260-564.00R.

Schoeller-Bleckmann Stahlwerke Aktiengesellschaft: *See—*
Woltron, Klaus; and Stuckler, Peter, 4,066,500, Cl. 176-78.000.

Schoenenberger, Richard J.: *See—*
Hoyer, William A.; Johnson, Lowell W.; and Schoenenberger, Richard J., 4,066,801, Cl. 427-8.000.

Scholes, Addison B.; Dollar, David L.; and Hurst, Robert L., to Ball Corporation. Method for applying lubricating materials to metallic substrates. 4,066,803, Cl. 427-26.000.

Scholl, Charles H.; and Akers, Larry D., to Nordson Corporation. Thermoplastic adhesive dispenser having an internal heat exchanger. 4,066,188, Cl. 222-146.0HE.

Scholtholt, Josef: *See—*
Raabe, Thomas; Grawinger, Otto; Scholtholt, Josef; Nitz, Rolf-Eberhard; and Schraven, Eckhard, 4,066,768, Cl. 424-263.000.

Schraven, Eckhard: *See—*
Raabe, Thomas; Grawinger, Otto; Scholtholt, Josef; Nitz, Rolf-Eberhard; and Schraven, Eckhard, 4,066,768, Cl. 424-263.000.

Schremmer, Wolfgang: *See—*
Breddin, Klaus; and Schremmer, Wolfgang, 4,066,360, Cl. 356-39.000.

Schroder, Ernst: *See—*
Dickopp, Gerhard; and Schroder, Ernst, 4,066,976, Cl. 330-86.000.

Schroeder, Manfred, to Chemische Werke Huis Aktiengesellschaft. Process for the production of pure diglycolic acid by oxidation of diethylene glycol with nitric acid. 4,066,691, Cl. 260-531.00R.

Schubert, Alvin Louis, to Eastman Kodak Company. Scanner alignment mechanism. 4,066,341, Cl. 350-285.000.

Schulte, Fritz, to Hartung, Kuhn & Co Maschinenfabrik GmbH. Coke-oven filling system. 4,066,175, Cl. 214-35.00R.

Schultz, Leonard J.; Hamori, Alfred Steven; and Rosen, Robert, to United States of America, Navy. RF GTWT Saturating circuit. 4,066,965, Cl. 325-120.000.

Schulz, Horst: *See—*
Junge, Peter; Schulz, Horst; Schneider, Rainer; Dreke, Werner; and Rieger, Gerhard, 4,066,818, Cl. 428-341.000.

Schulze, Heinz, to Texaco Development Corporation. Method of producing N,N'-(dimethyl) piperazine compounds. 4,066,649, Cl. 260-268.0SY.

Schur, Sylvia. Instant yogurt preparation. 4,066,794, Cl. 426-61.000.

Schwab, Delmar G.: *See—*
Ott, James I.; and Schwab, Delmar G., 4,065,922, Cl. 60-445.000.

Schwarz, Martin, to BBC Brown Boveri & Company Limited. Control valve. 4,066,100, Cl. 137-625.300.

Schwarz, Wilhelm: *See—*
Hoffmeister, Bernhard; and Schwarz, Wilhelm, 4,066,248, Cl. 266-216.000.

Schwender, Charles F.; and Sunday, Brooks R., to Warner-Lambert Company. 8-(1H-Tetrazol-5-yl)-11H-pyrido[2,1-b]quinazolin-11-ones and method of treating bronchial asthma using them. 4,066,767, Cl. 424-251.000.

Science Union et Cie., Societe Francaise de Recherche Medicale: *See—*
Beregi, Laszlo; Hugon, Pierre; Pascaud, Xavier; and Poignant, Jean-Claude, 4,066,662, Cl. 260-326.850.

SCM Corporation: *See—*
McGinniss, Vincent D., 4,066,523, Cl. 204-159.150.
Oroshnik, William, 4,066,685, Cl. 560-260.000.
Woo, James T. K.; and Evans, James M., 4,066,525, Cl. 204-181.000.

Scott Paper Company: *See—*
Neuenschwander, Rudolf, 4,065,832, Cl. 19-156.300.

Scott, Roderic M., to Perkin-Elmer Corporation, The. Configuration control apparatus. 4,066,343, Cl. 350-295.000.

Scott, William N.: *See—*
McGill, James C.; and Scott, William N., 4,066,423, Cl. 55-48.000.

Scriven, Roger L.; and Chang, Wen-Hsuan, to PPG Industries, Inc. Water-reduced urethane coating compositions. 4,066,591, Cl. 260-29.2TN.

Seddon, John David: *See—*
Blackhall, Alexander; Brydon, Donald Lithgow; and Seddon, John David, 4,066,601, Cl. 260-30.80R.

Seeger, Herbert, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Control arrangement for converter. 4,066,957, Cl. 322-16.000.

Seeger, Richard E.: *See—*
White, James N.; and Seeger, Richard E., 4,066,851, Cl. 200-5.00A.

Segawa, Yoshihiro; Sato, Susumu; Yasuda, Eturo; Hattori, Tadashi; and Aoki, Keiji, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Gas component detection apparatus. 4,066,413, Cl. 23-254.00E.

Seghezzi, Hans Dieter: *See—*
Jochum, Peter; and Seghezzi, Hans Dieter, 4,066,198, Cl. 227-8.000.
Jochum, Peter; and Seghezzi, Hans Dieter, 4,066,199, Cl. 227-10.000.

Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, to Toyo Soda Manufacturing Co., Ltd. Process for producing a polyion complex having a nucleic acid base. 4,066,827, Cl. 526-50.000.

Seizo, Takayama: *See—*
Toyoaki, Ueno; Seizo, Takayama; Kiyoshi, Hashimoto; and Masashi, Uchida, 4,066,189, Cl. 222-334.000.

Sekino, Jun: *See—*
Okazaki, Kiyoshi; Kawada, Hiroitsu; Shimizu, Hidemi; Ohmura, Tadayoshi; and Sekino, Jun, 4,066,787, Cl. 424-317.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Sasaki, Jiro, 4,066,546, Cl. 210-75.000.

Sekiya, Hiroshi: *See—*
Machi, Sueo; Wada, Takeshi; and Sekiya, Hiroshi, 4,066,522, Cl. 204-159.240.

Selby, Donald. One piece tube and microscope slide manipulative laboratory device. 4,066,414, Cl. 23-259.000.

Sen-Jung, Chen. Hydraulically controlled artificial leg. 4,065,815, Cl. 3-1.200.

Senkbeil, Herman O.: *See—*
Johnston, Howard; and Senkbeil, Herman O., 4,066,438, Cl. 71-94.000.

Sepich, Gerald E.: *See—*
Phillips, Carmen S.; Beyer, Ralph E.; and Sepich, Gerald E., 4,065,914, Cl. 56-341.000.

Seppi, Edward J.; and Murphy, Frederick V., to Varian Associates, Inc. Tomographic scanning apparatus with improved collimator structure. 4,066,901, Cl. 250-360.000.

Sera, Hidefumi; and Nagao, Kameji, to Fuji Photo Film Co., Ltd. Method of hardening gelatin. 4,066,636, Cl. 260-117.000.

Serck Industries Limited: *See—*
Young, Robert Eric, 4,066,841, Cl. 178-66.00R.

Servo Med AB: *See—*
Nilsson, Gert Erik; and Oberg, Ake Per, 4,066,068, Cl. 128-2.00R.

Setec Travaux Publics: *See—*
Oger, Jacques Francois, 4,065,932, Cl. 61-45.00R.

Severson, Harvey M. Chair and base frame therefor. 4,066,295, Cl. 297-443.000.

SGS-ATES Componenti Elettronici S.p.A.: *See—*
Cossutta, Giuseppe; and Cellai, Marino, 4,066,839, Cl. 174-52.0PE.

Shamlian, Ralph Barr. Mouthpiece retainer tabs. 4,066,077, Cl. 128-145.00A.

Shank, Richard S.; and Hermanson, Fred H. Wood building construction. 4,065,895, Cl. 52-210.000.

Shannahan, Robert T.: *See—*
Panasik, Theodore; Viro, Felix; Waxman, Burton H.; and Shannahan, Robert T., 4,066,457, Cl. 96-29.00D.

Sharp, Austin S., to Wellington Puritan Mills, Inc. Twine winding assembly. 4,066,219, Cl. 242-46.200.

Sharp Kabushiki Kaisha: *See—*
Kawasaki, Hiroshi, 4,066,860, Cl. 200-308.000.

Shaw, Don W., to Texas Instruments Incorporated. Selective epitaxial growth technique for fabricating waveguides for integrated optics. 4,066,482, Cl. 148-175.000.

Shaw, Mark Layne, to Motorola, Inc. Digital speed control system. 4,066,874, Cl. 235-92.0CM.

Shaw, Mark Layne; and Weber, Howard Fredrick, to Motorola, Inc. Digital speed control system. 4,066,876, Cl. 235-92.0CM.

Shay, Barry M.; and Santacecilia, Remo, to ICI Americas Inc. Low viscosity spin finish systems for neat finish application. 4,066,558, Cl. 252-8.900.

Sheasby, Peter Geoffrey; and Cheetham, Graham, to Alcan Research and Development Limited. Electrolytic coloring of anodized aluminium by means of optical interference effects. 4,066,816, Cl. 428-336.000.

Sheffield, William F.: *See—*
Taylor, Allen L.; and Sheffield, William F., 4,067,056, Cl. 361-233.000.

Shell Oil Company: *See—*
Boyce, Clive B. C.; and Webb, Shirley B., 4,066,770, Cl. 424-263.000.
Wharton, David G., 4,066,419, Cl. 44-72.000.

Shenk, Jay D., to Armstrong Cork Company. Method of achieving a two-toned fiberboard product. 4,066,805, Cl. 427-226.000.

Sherosky, Frank. Brush shave device. 4,066,367, Cl. 401-286.000.

Shibuya, Hajime; and Shirato, Shiroh, to Kaken Chemical Co., Ltd. Miticidal method. 4,066,781, Cl. 424-283.000.

Shidara, Hideo, to Nippon Chemicals Co., Ltd. Process for the preparation of diaminomaleonitrile. 4,066,683, Cl. 260-465.50R.

Shiel, Leslie Edward; and Jones, Kenneth Wilson, to Associated Portland Cement Manufacturers Limited, The. Rapid hardening cement. 4,066,469, Cl. 106-89.000.

Shigehiro, Kosuke: *See—*
Shintani, Tsutomu; Ozeki, Azuhiro; Kunihiro, Haruo; and Shigehiro, Kosuke, 4,066,703, Cl. 260-592.000.

Shigenobu, Ikuo: *See—*
Nakajima, Kiminori; and Shigenobu, Ikuo, 4,066,090, Cl. 137-62.000.

Shikoku Paper Mfg. Co., Ltd.: *See—*
Ayukawa, Buichiro, 4,066,542, Cl. 210-51.000.

Shima, Takeo: *See—*
Kawase, Shoji; Kuratsuji, Takatoshi; Inata, Hiroo; Suzuki, Kazuyoshi; and Shima, Takeo, 4,066,624, Cl. 260-49.000.

Shimada, Satoshi: *See—*
Shimazoe, Michitaka; Nakamura, Kousuke; Matsushita, Yasuo; Shimada, Satoshi; Yamada, Kazuji; and Takahashi, Yukio, 4,065,971, Cl. 73-727.000.

Shimadzu Seisakusho Ltd.: *See—*
Iwanaga, Masaya, 4,066,895, Cl. 250-296.000.

Shimamura, Isao; Ishiguro, Shoji; and Ogawa, Junkichi, to Fuji Photo Film Co., Ltd. Color photographic process. 4,066,461, Cl. 96-66.300.

Shimazoe, Michitaka; Nakamura, Kousuke; Matsushita, Yasuo; Shimada, Satoshi; Yamada, Kazuji; and Takahashi, Yukio, to Hitachi, Ltd. Semiconductor pressure transducer. 4,065,971, Cl. 73-727.000.

Shimizu, Akihiko: *See—*
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, 4,066,827, Cl. 526-50.000.

Shimizu, Hidemi: *See—*
Okazaki, Kiyoshi; Kawada, Hiroitsu; Shimizu, Hidemi; Ohmura, Tadayoshi; and Sekino, Jun, 4,066,787, Cl. 424-317.000.

Shimoyama, Yoshiaki; and Miyoshi, Kunisuke, to Nippon Steel Corporation. Process for producing non-directional electric steel sheets free from ridging. 4,066,479, Cl. 148-111.000.

Shin Nihon Ryokugaku Kabushiki Kaisha: *See—*
Yoshimi, Mitsuru, 4,066,490, Cl. 156-276.000.

Shintani, Tsutomu; Ozeki, Azuhiro; Kunihiro, Haruo; and Shigehiro, Kosuke, to Sumitomo Chemical Company, Limited. Method for producing aromatic hydroxide and aliphatic ketone. 4,066,703, Cl. 260-592.000.

Shirato, Shiroh: *See—*
Shibuya, Hajime; and Shirato, Shiroh, 4,066,781, Cl. 424-283.000.

Shoberg, Ralph S., to GSE, Inc. Load cell. 4,065,962, Cl. 73-141.00A.

Shoemaker, Arthur H., to American Optical Corporation. Optometer eyepiece. 4,066,339, Cl. 350-175.00E.

Shono, Tetsuji: *See—*
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; Mita, Kunio; Kawasaki, Masahiro; and Mori, Chiharu, 4,067,023, Cl. 354-23.00D.

Shrader, Thomas E. Soapstone sharpener. 4,065,887, Cl. 51-358.000.

Shultz, Gilbert F., to Whitlock, Inc. Control for hopper loader for granular materials. 4,066,245, Cl. 366-139.000.

Shutie, Orin S.; and Jenkins, Leonard A., to Metal Box Limited. Printing and coating apparatus. 4,066,038, Cl. 118-218.000.

Sieber, Axel, to Behringwerke Aktiengesellschaft. Process for producing a bond between polyvinylene glycol and a substance containing primary amino groups. 4,066,581, Cl. 260-8.000.

Siemens Aktiengesellschaft: *See—*
Dassler, Joachim; Veneklasen, Lee H.; and Zschimmer, Martin, 4,066,905, Cl. 250-396.00R.
Gross, Franz, 4,066,927, Cl. 315-3.500.
Hoffmann, Kurt, 4,067,001, Cl. 365-174.000.
Kobale, Manfred; Krueger, Hans; and Lorenz, Hans-Peter, 4,066,337, Cl. 350-160.0LC.

Kuhn, Gerhard; Ubler, Karl; and Reiss, Karl-Hans, 4,066,896, Cl. 250-315.00A.
Kuny, Wilhelm, 4,066,985, Cl. 333-72.000.
Pointner, Martin, 4,065,839, Cl. 29-17.00R.
Rumold, Gerhard; and Russ, Georg, 4,066,950, Cl. 324-51.000.
Stoger, Klaus; Dotzer, Richard; and Gehring, Johann, 4,066,515, Cl. 204-14.00N.
Trattner, Hermann; Saatze, Kuno; and Bauereiss, Adolf, 4,065,956, Cl. 73-9.000.
Vukasovic, Lovro; and Raduka, Janos, 4,066,954, Cl. 363-37.000.
Wirbser, Oskar; and Ernst, Nikolaus, 4,066,204, Cl. 228-264.000.

Siems, Siemer. Voltage regulator circuit for an electron microscope. 4,066,971, Cl. 328-267.000.

Sih, Charles John: *See—*
Woessner, Warren Dexter; Biddlecom, William Gerard; Arndt, Henry Clifford; Peruzzotti, George Peter; and Sih, Charles John, 4,066,834, Cl. 560-121.000.

Silbernagel, Bernard G.: *See—*
Rao, Bhaskara M. L.; and Silbernagel, Bernard G., 4,066,824, Cl. 429-50.000.

Silverzweig, Abraham: *See—*
Baker, Charles E.; and Silverzweig, Abraham, 4,066,319, Cl. 339-97.00R.

Simkin, Ariel: *See—*
Arcan, Mircea; Robin, Gordon; and Simkin, Ariel, 4,066,082, Cl. 128-303.00R.

Simonet, Guy: *See—*
Crooij, Pierre; and Simonet, Guy, 4,066,664, Cl. 260-332.20H.

Simpson, Terry Lee, to Atlantic Richfield Company. Mine roof support and method in longwall mining of thick mineral seams. 4,065,929, Cl. 61-45.00D.

Simpson, William I.: *See—*
Manasevit, Harold M.; and Simpson, William I., 4,066,481, Cl. 148-174.000.

Singer Company, The: *See—*
Jaffe, Wolfgang, 4,066,962, Cl. 324-208.000.
Klebe, Elmer C., Jr., 4,066,111, Cl. 145-4.000.
Mecklenborg, Richard A., 4,065,859, Cl. 35-12.00N.
Suchsland, Alfred R.; and Wilson, Terry L., 4,066,029, Cl. 112-158.00E.
Thornbery, James M.; and Orth, Charles D., 4,065,939, Cl. 62-217.000.

SKF Industrial Trading and Development Company B.V.: *See—*
Johnston, Gordon Boyd; Hillmann, Reinhart Michael; Kregler, Helmuth Martin; Janson, Bertil Sven; and Strandberg, Hasse Eivind, 4,066,304, Cl. 308-201.000.

Skinner, David R.; Jutus, Marvin W.; and Sowell, Miles L., to Standard Oil Company (Indiana). Hydraulic pumping unit with a variable speed triplex pump. 4,066,123, Cl. 166-68.500.

Skoglund, Klas Axel Lennart; and Backgard, Stig Gunnar Bengt, to Lagan Press AB. Mechanical safety device for the plunger in presses of the down-stroke or eccentric type. 4,066,013, Cl. 100-53.000.

Slack, James J.: *See—*
Mores, Lee R.; McCarthy, Justin P.; and Slack, James J., 4,066,789, Cl. 424-365.000.

SLEEVER Societe de droit francais (S.a.r.l.): *See—*
Fresnel, Jacques, 4,066,866, Cl. 219-388.000.

Smith, Darrell Franklin, Jr.; Clatworthy, Edward Frederick; and Wenschhof, Donald Edward, Jr., to Huntington Alloys, Inc. Low expansion superalloy. 4,066,447, Cl. 75-122.000.

Smith, Michael J.: *See—*
Przybyla, Franciszek J.; and Smith, Michael J., 4,066,822, Cl. 429-27.000.

Smith, Richard E.: *See—*
Stange, Klaus K.; Smith, Richard E.; Hamlin, Thomas J.; and Cassano, James R., 4,066,254, Cl. 271-236.000.

Smith, Richard M., to United States of America, Navy. Automatic thresholding and reference circuit. 4,067,013, Cl. 343-7.700.

Smith, Robert E.; Chytil, Frank S.; Feldstein, George; and Swartz, Dorman J., to Allied Chemical Corporation. Tail end grip mechanism. 4,066,217, Cl. 242-25.00R.

Smith, Robert L.: *See—*
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,066,675, Cl. 260-400.000.
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,066,692, Cl. 424-312.000.

Smith, Roy Henry; and McAllan, Alexander Baxter, to Astra Chemical Products AB. Lactosyl substituted ureides in ruminant feedstuff. 4,066,750, Cl. 424-180.000.

SmithKline Corporation: *See—*
Berges, David A., 4,066,761, Cl. 424-246.000.
Dunn, George Lawrence, 4,066,762, Cl. 424-246.000.

Smiths Industries Limited: *See—*
Barnard, Dominick Paul Edmund, 4,066,961, Cl. 324-163.000.
Jones, John W. D.; and Oakey, Keith R., 4,066,946, Cl. 318-685.000.

Snamprogetti, S.p.A.: *See—*
Faraci, Rocco; Rescalli, Carlo; and Catini, Stefano, 4,066,713, Cl. 260-677.00A.

Sneider, Vincent R. Disposable syringes. 4,066,080, Cl. 128-251.000.

Snyder, Robert P.: *See—*
Harwood, William James; and Snyder, Robert P., 4,065,886, Cl. 51-166.0FB.

Soberano, Mercedes E.: *See—*
Johnson, Alan J.; Soberano, Mercedes E.; Ong, Eng Bee; and Levy, Milton, 4,066,506, Cl. 195-66.00B.

Sociedad Espanola Del Acumulador Tudor S.A.: *See—*
Adderley, Edward, 4,066,418, Cl. 29-623.500.

Societa Italiana Resine S.I.R. S.p.A.: *See—*
Vargiu, Silvio; Paparatto, Piero; Passalenti, Beppino; and Parodi, Antonio, 4,066,606, Cl. 260-40.00R.

S.A. Etablissements Francois Salomon et Fils: *See—*
Salomon, Georges Pierre Joseph, 4,066,276, Cl. 280-605.000.

Societe Anonyme pour l'Equipment Electrique des Vehicules S.E.V. Marchal: *See—*
Guipaud, Serge, 4,066,968, Cl. 328-1.000.

Societe Cyberson: *See—*
Chovan, Stephan, 4,065,865, Cl. 40-444.000.

Societe Generale de Constructions Electriques et Mecaniques Alsthom: *See—*
Pham, Quang Minh; and Soffer, Jacques, 4,066,933, Cl. 318-60.000.

Soes, Lucas, to AMP Incorporated. Electrical connector assemblies. 4,066,327, Cl. 339-252.00R.

Soffer, Jacques: *See—*
Pham, Quang Minh; and Soffer, Jacques, 4,066,933, Cl. 318-60.000.

Sogelerg: *See—*
Oger, Jacques Francois, 4,065,932, Cl. 61-45.00R.

Soiron, Charles; and Keller, Karlheinz, to Ciba-Geigy Corporation. Process for dyeing or printing aromatic polyamide fibres. 4,066,395, Cl. 8-169.000.

Solartron Electronic Group Ltd., The: *See—*
Ley, Anthony John, 4,066,952, Cl. 324-83.00D.

Solomon, Arie. Long term storage apparatus. 4,066,401, Cl. 21-61.000.

Sonneville, Roger Paul. Spring rail clip with tightening limiting feature. 4,066,212, Cl. 238-349.000.

Southern Pacific Transportation Company: *See—*
Clements, Roy Milton, 4,066,299, Cl. 303-20.000.

Southwire Company: *See—*
Chia, E. Henry, 4,066,475, Cl. 148-3.000.
Peters, James W.; and Hardesty, Charles, 4,065,992, Cl. 83-285.000.

Sowell, Miles L.: *See—*
Skinner, David R.; Jutus, Marvin W.; and Sowell, Miles L., 4,066,123, Cl. 166-68.500.

Spanjersberg, Arie Adriaan, to De Staat der Nederlanden, to Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Method for recognizing characters. 4,066,999, Cl. 340-146.30S.

Spartanics, Ltd.: *See—*
Linton, John D.; Willits, Samuel P.; and Mohan, William L., 4,065,860, Cl. 35-25.000.

Spaulding, David Chantrill, to B. F. Goodrich Company, The. Flexible water absorbent polymer compositions comprising (A) unsaturated carboxylic acid, acrylic ester containing alkyl group 10-30 carbon atoms, additional monomer plus (B) aliphatic diol. 4,066,583, Cl. 260-17.4SG.

Speer, Billy Logan. Hem folding machine. 4,066,025, Cl. 112-121.290.

Speirs, Kenneth K.; and Bradley, Robert P., to Chromalloy American Corporation. Diffusion coating of ferrous metals. 4,066,806, Cl. 427-253.000.

Spence, Andrew P., to Atlantic Richfield Company. Process for the recovery of uranium. 4,066,297, Cl. 299-4.000.

Sperry Rand Corporation: *See—*
Derchak, Nicholas, 4,067,059, Cl. 364-200.000.
Godel, Siegfried; and Viola, James Joseph, 4,066,865, Cl. 219-370.000.
Matthews, Hugh B., 4,066,995, Cl. 340-18.0LD.
Waldrop, Thomas W.; and Flanagan, John R., 4,066,216, Cl. 241-190.000.

Spies, Klaus, to Bochumer Eisenhutte Heintzmann GmbH & Co. Mine roof support. 4,065,930, Cl. 61-45.00D.

Spina, John Jerome. Hanger radio. 4,066,967, Cl. 325-310.000.

Sprague Electric Company: *See—*
Maher, Galeb H., 4,066,426, Cl. 65-18.000.

Sprinzak, Yair, to Yeda Research & Development Co., Ltd. Esters of α-hydroperoxy-bis-p-halo-phenylacetic acids. 4,066,785, Cl. 424-308.000.

Sprowls, Joseph B., III, to Denver Fire Reporter & Protective Co., Inc. Multiplex interrogation system using pulses. 4,067,008, Cl. 340-409.000.

Srna, Richard Frank, to University of Delaware. Selective destruction of certain algae. 4,065,875, Cl. 47-1.400.

Stabilus GmbH: *See—*
Kaptanis, Panoyotis, 4,066,279, Cl. 280-711.000.

Stacey, Gilbert Joseph: *See—*
Brittain, David Robert; Brown, Edward Douglas; Hepworth, Walter; and Stacey, Gilbert Joseph, 4,066,651, Cl. 260-287.00K.

Stadler, Klaus: *See—*
Helmberger, Josef; and Stadler, Klaus, 4,066,355, Cl. 355-38.000.

Stafford, George C., Jr.: *See—*
Hunt, Donald F.; and Stafford, George C., Jr., 4,066,894, Cl. 250-292.000.

Stahl, Hermann: *See—*
Eckle, Otto; and Stahl, Hermann, 4,066,376, Cl. 407-101.000.

Stamicarbon, N.V.: *See—*
Venderbos, Dirk J., 4,066,693, Cl. 260-555.00A.

Stampe, Richard Herbert, to Deere & Company. Fuel injection nozzle assembly. 4,066,213, Cl. 239-533.300.

Standard Alliance Industries Inc.: *See—*
Trumbull, Douglas, 4,066,256, Cl. 272-18.000.

Standard Oil Company, The: *See—*
Li, George S.; and Rosen, Irving, 4,066,717, Cl. 260-874.000.

Standard Oil Company (Indiana): *See—*
Czajka, Thomas S.; and Needham, Richard P., 4,066,593, Cl. 260-29.20E.
Feinstein, Allen; and Fields, Ellis K., 4,066,622, Cl. 260-47.0CP.
Patchett, Jay G.; and Hadley, Charles F., 4,066,994, Cl. 340-18.0NC.
Skinner, David R.; Jutus, Marvin W.; and Sowell, Miles L., 4,066,123, Cl. 166-68.500.
Wang, Chen-Shen, 4,066,604, Cl. 260-37.00R.

Stanford Research Institute: *See—*
Karp, Arthur, 4,066,988, Cl. 333-82.00B.
Taenzer, Jon C.; and Johnson, Steven H., 4,065,976, Cl. 73-633.000.

Stange, Klaus K.; Smith, Richard E.; Hamlin, Thomas J.; and Cassano, James R., to Xerox Corporation. Three-way pneumatic registration apparatus. 4,066,254, Cl. 271-236.000.

Stanley, William Joseph, to 234966 Wholesale Ltd. Stamp stock sheet. 4,065,864, Cl. 40-405.000.

Stanley Works: *See—*
Suska, Charles R., 4,066,857, Cl. 200-61.700.

Stark, Walter, to Multorgan S.A. Method and apparatus for electro shock degermination of water. 4,066,544, Cl. 210-64.000.

Staroska, John T.: *See—*
Hanna, Ward T.; Drennan, John J.; and Staroska, John T., 4,066,167, Cl. 206-627.000.

Starratt, Medford L., Jr. Molded boat hulls. 4,065,820, Cl. 9-6.00P.

State of Israel Ministry of Commerce and Industry, The: *See—*
Lewin, Menachem; and Guttmann, Hilda, 4,066,387, Cl. 8-4.000.

Staunton, John J. J., to Perkin-Elmer Corporation, The. Temperature control apparatus. 4,066,365, Cl. 356-244.000.

Stedman, Robert N., to Caterpillar Tractor Co. Rotatable radiator assembly for a vehicle. 4,066,119, Cl. 165-41.000.

Steel Engineering Company, The: *See—*
Wallace, Trevor Evelyn, 4,066,135, Cl. 173-44.000.

Steiner, Edwin C.: *See—*
Dorman, Linneaus C.; and Steiner, Edwin C., 4,066,684, Cl. 260-112.50R.

Steinmetz, Anthony, to U.S. Philips Corporation. Mercury wettable contact assembly. 4,066,859, Cl. 200-263.000.

Stephens, Charles R., Jr.: *See—*
Blackwood, Robert K.; and Stephens, Charles R., Jr., 4,066,694, Cl. 260-559.0AT.

Stephens, Gerald D., to Valor Enterprises, Inc. Solderless coaxial cable terminator. 4,066,324, Cl. 339-126.00J.

Stephenson, Robert L., to Allied Chemical Corporation. Safety belt buckle. 4,065,836, Cl. 24-230.00A.

Sterling Drug Inc.: *See—*
Crounse, Nathan N.; and Ambrosiano, Nicholas A., 4,066,653, Cl. 260-293.610.

Stern, David, to Martin Paint & Chemical Corporation. Aerosol dispensed latex paint and package containing the same. 4,066,596, Cl. 260-29.60R.

Stern, Emanuel, to Dynek Corporation. Portable water filtration device. 4,066,551, Cl. 210-282.000.

Stern, Ernest; and Ingebrigtsen, Kjell A. Surface acoustic wave devices for processing and storing signals. 4,066,984, Cl. 333-30.00R.

Sternberg, Moshe M.: *See—*
Cornelius, Dennis Alfred; Eberts, Nancy Jane; and Sternberg, Moshe M., 4,066,799, Cl. 426-534.000.

Stevens, Peter; and Deuber, John M., to Oxy Metal Industries Corporation. Electrodeposition of palladium. 4,066,517, Cl. 204-43.00N.

Stevenson, Arzella F. Photocopy machine. 4,066,358, Cl. 355-75.000.

Stewart, Marvin L. Multi-layered archery target. 4,066,261, Cl. 273-102.00B.

Stiefel, Arthur A. Game target for projectiles. 4,066,262, Cl. 273-105.00R.

Stiles, Walter J.: *See—*
Salisbury, Winfield W.; and Stiles, Walter J., 4,066,138, Cl. 175-16.000.

Stitch, Richard C., to General Electric Company. Combination drain sump and air pressure chamber for automatic clothes washing machine. 4,066,094, Cl. 137-387.000.

Stoger, Klaus; Dotzer, Richard; and Gehring, Johann, to Siemens Aktiengesellschaft. Apparatus and method for the electrodepositing of aluminum. 4,066,515, Cl. 204-14.00N.

Storey, Dale A. Lock for rifle. 4,065,867, Cl. 42-69.00R.

Stork-Werkspoor Sugar B.V.: *See—*
Hoks, Dirk, 4,066,547, Cl. 210-78.000.

Strandberg, Hasse Eivind: *See—*
Johnston, Gordon Boyd; Hillmann, Reinhart Michael; Kregler, Helmuth Martin; Janson, Bertil Sven; and Strandberg, Hasse Eivind, 4,066,304, Cl. 308-201.000.

Strauss, Werner, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for the classification of fine material from a stream of material in a circulating air classifier. 4,066,535, Cl. 209-139.00A.

Streit, James L. Musical instrument support stand. 4,065,994, Cl. 84-453.000.

Streit, Werner: *See—*
Scharf, Emil; Fikentscher, Rolf; Auhorn, Werner; and Streit, Werner, 4,066,494, Cl. 162-164.0EP.

Strohl, Klaus D., to ITT Industries, Incorporated. Oscillator circuit comprising integrated MIS field-effect transistors. 4,066,982, Cl. 331-111.000.

Strom, Rolf; Heikkila, Veikko; and Hakkinen, Leo, to Oy Tampella AB. Device for changing bore crowns. 4,065,845, Cl. 29-283.000.

Struck, Leslie G., to Chicago Fittings Corporation. High pressure insulated coupling. 4,066,283, Cl. 285-53.000.

Strycker, Stanley J., to Dow Chemical Company, The. Substituted phenoxyalkyl quaternary ammonium compounds as antiarrhythemic agents. 4,066,771, Cl. 424-267.000.

Stuckert, Paul E., to International Business Machines Corporation. Mask-exposure scheme. 4,066,458, Cl. 96-41.000.

Stuckler, Peter: *See—*
Woltron, Klaus; and Stuckler, Peter, 4,066,500, Cl. 176-78.000.

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Gillessen, Dieter; Studer, Rolf; and Trzeciak, Arnold, 4,066,635, Cl. 260-112.50R.

Suchsland, Alfred R.; and Wilson, Terry L., to Singer Company, The. Electromechanical remote cam selector for sewing machines. 4,066,029, Cl. 112-158.00E.

Suggitt, Robert M.; Coone, Joseph H., Jr.; and Gates, Walter C., Jr., to Texaco Inc. Process for the hydrogenation of nitrated paraffins using a palladium on carbon catalyst characterized by a low ash and a low halide content. 4,066,699, Cl. 260-583.00R.

Sugito, Yoshifumi: *See—*
Horiguchi, Shojiro; Nakamura, Michiei; and Sugito, Yoshifumi, 4,066,462, Cl. 106-14.000.

Suketomo, Toshitaka: *See—*
Umeda, Haruhiko; Ito, Hiroshi; and Suketomo, Toshitaka, 4,066,143, Cl. 180-77.00S.

Sullivan, Greig E.: *See—*
Walters, Chester H.; Barmeier, Harold J., Jr.; and Sullivan, Greig E., 4,066,545, Cl. 210-71.000.

Sullivan, Joseph A.: *See—*
Gallani, Zvi; and Sullivan, Joseph A., 4,066,983, Cl. 331-117.00R.

Sumitomo Chemical Company, Limited: *See—*
Komiyama, Yoshiki; Yamamoto, Seiya; and Yasumasa, Yoshiaki, 4,066,402, Cl. 23-230.0PC.
Saito, Shinichi; Okaue, Asaya; Baba, Kazuo; and Tanaka, Shigeo, 4,066,718, Cl. 260-878.00B.
Shintani, Tsutomu; Ozeki, Azuhiro; Kunihiro, Haruo; and Shigehiro, Kosuke, 4,066,703, Cl. 260-592.000.

Sumitomo Durez Company, Ltd.: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; Tachikawa, Toshiyuki; and Ikeda, Kazuichi, 4,066,588, Cl. 260-22.0TN.

Sumiyoshi, Masaharu: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,066,043, Cl. 123-3.000.

Summa, Frank A., to Electrides Corporation. Energizing circuits for fluorescent lamps. 4,066,930, Cl. 315-209.00R.

Sun-Econ, Inc.: *See—*
Jonsson, Kjartan A., 4,065,938, Cl. 62-160.000.

Sunagawa, Yoshihiko, to Tokyo Keiso Kabushiki Kaisha. Liquid level measuring apparatus. 4,065,968, Cl. 73-313.000.

Sunday, Brooks R.: *See—*
Schwender, Charles F.; and Sunday, Brooks R., 4,066,767, Cl. 424-251.000.

Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, to Bayer Aktiengesellschaft. High molecular weight polytriazines of soluble polymeric N-cyano-isourea ethers. 4,066,577, Cl. 260-2.00R.

Sundstrand Corporation: *See—*
Caine, Gerard H., 4,066,552, Cl. 210-304.000.

Sunfresh Products: *See—*
Nelson, Lawrence B.; Mott, Stuart A.; and Flugger, Ray T., 4,065,857, Cl. 34-30.000.

Suomen Sokeri Osakeyhtio (Finnish Sugar Company): *See—*
Melaja, Asko J.; Virtanen, Jouko J.; and Heikkila, Heikki O., 4,066,711, Cl. 260-637.00R.

Superior Electric Company, The: *See—*
Leenhouts, Albert C., 4,066,944, Cl. 318-571.000.

Sury, Yel S.; and Lignos, James M., to Ciba-Geigy Corporation. Process for the production of thiophosphoric acid esters. 4,066,642, Cl. 260-251.00P.

Susi, Peter Vincent: *See—*
Oppelt, John Christian; and Susi, Peter Vincent, 4,066,614, Cl. 260-45.8NZ.

Suska, Charles R., to Stanley Works. Switch activating hinge having reciprocating cam follower switch actuator. 4,066,857, Cl. 200-61.700.

Sutcliffe Engineering Holdings Limited, The: *See—*
Yates, Victor Horace, 4,066,258, Cl. 272-85.000.

Suthers, Charles E., to General Electric Company. High voltage transformer winding assembly with multiple frequency tuning. 4,066,955, Cl. 363-68.000.

Suzaki, Kuniyoshi: *See—*
Takahashi, Kiyoshi; Takimoto, Hiroyuki; Yamada, Takashi; Itani, Takashi; Ashida, Akira; and Suzaki, Kuniyoshi, 4,066,963, Cl. 352-12.000.

Suzuki, Akira: *See—*
Yukuta, Toshio; Ohashi, Takashi; Kojima, Minoru; Suzuki, Akira; and Taniguchi, Yoshiko, 4,066,579, Cl. 260-2.5AP.

Suzuki, Kazuyoshi: *See—*
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Suzuki, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine provided with precombustion chamber. 4,066,045, Cl. 123-30.00D.

Svensk Tryckgjuntning SH AB: *See—*
Hjelte, Sven Roland; and Eksell, Lennart, 4,066,222, Cl. 242-107.40B.

Svensson, Sven-Hakan: *See—*
Hultgren, Karl Sten Rudolf; and Svensson, Sven-Hakan, 4,065,999, Cl. 89-36.00H.
Swanson, Harold V.; and Forero, Jorge E., to Interpace Corporation. Slotted flange connector useable in a method for replacing an existing utility pole without disturbing hardware mounted thereon. 4,066,372, Cl. 403-302.000.
Swartz, Dorman J.: *See—*
Smith, Robert E.; Chytil, Frank S.; Feldstein, George; and Swartz, Dorman J., 4,066,217, Cl. 242-25.00R.
Swift & Company: *See—*
Connick, Francis G.; and Bernholdt, Harry F., 4,066,790, Cl. 426-8.000.
Swift, David Merton, to Lawrence Systems, Inc. Transmissivity-coded data card systems. 4,066,910, Cl. 250-555.000.
Swiss Aluminium Ltd.: *See—*
Gullotti, Damian V.; Fayard, William S.; and Wedgeworth, Wiley W., 4,066,476, Cl. 148-11.50A.
Gullotti, Damian V.; Fayard, William S.; and Wedgeworth, Wiley W., 4,066,480, Cl. 148-11.50A.
SWS Silicones Corporation: *See—*
Lewis, Richard N.; and Martin, Eugene R., 4,066,680, Cl. 260-448.20E.
Sybron Corporation: *See—*
Ackerman, Thomas Liddon; Barbato, Mathew Martin; and Vidmantas, Eugene, 4,065,965, Cl. 73-194.0EM.
Sycles, Albert M.: *See—*
Anderson, Wallace E.; Sycles, Albert M.; and Krall, Albert D., 4,066,819, Cl. 428-472.000.
Syntex (U.S.A.) Inc.: *See—*
Ackrell, Jack, 4,066,663, Cl. 260-327.00B.
Szeberenyi, Szabolcs: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcs, 4,066,709, Cl. 260-618.00B.
Szporny, Laszlo: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcs, 4,066,709, Cl. 260-618.00B.
T.A.D.: *See—*
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Tachikawa, Toshiyuki: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; Tachikawa, Toshiyuki; and Ikeda, Kazuichi, 4,066,588, Cl. 260-22.0TN.
Tada, Norio: *See—*
Oka, Yoshikazu; Miyake, Akio; Tada, Norio; and Itoh, Katsumi, 4,066,648, Cl. 260-268.0TR.
Taddeo, Fausto V.; and Pauly, Raymond W., to Pacific Electronic Enterprises Inc. DC to AC switching converter. 4,067,057, Cl. 363-41.000.
Taenzer, Jon C.; and Johnson, Steven H., to Stanford Research Institute. Mechanical scanning method and apparatus for ultrasonic imaging, or the like. 4,065,976, Cl. 73-633.000.
Taga, Yutaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oil pressure control system for an automatic transmission system. 4,065,985, Cl. 74-869.000.
Takada, Juichiro, to Takata Kojyo Co., Ltd. Automatic locking safety belt retractor device. 4,066,223, Cl. 242-107.40A.
Takagi, Atsushi; Kuroiwa, Hiroyuki; Miyaguchi, Masao; and Kawamura, Tateo, to Takenaka Komuten Company, Ltd. Method for constructing a reliable foundation in soft soil formations. 4,065,928, Cl. 61-36.00R.
Takagi, Kenkichi; Yamamoto, Yukio; Yamazaki, Tadao; Yamaguchi, Hiroshi; and Umezawa, Hamao, to Nippon Kayaku Kabushiki Kaisha. Process for producing L-leupeptins. 4,066,507, Cl. 195-80.00R.
Takagi, Takeo: *See—*
Sakamoto, Masakatsu; Watanabe, Syosaku; Karino, Takafumi; Yazu, Junichi; Takashima, Kouichi; Miyashiro, Hiroshi; Takagi, Takeo; and Konno, Takao, 4,066,298, Cl. 302-2.00R.
Takagi, Tatsuya. Stabilizer assembly for use in vehicles. 4,066,278, Cl. 280-710.000.
Takagi, Toshinori; Morimoto, Kiyoshi; and Utamura, Yukihiko, to Futaba Denshi Kogyo K. K. Method of producing semiconductor device. 4,066,527, Cl. 204-192.00N.
Takahama, Sho: *See—*
Igarashi, Shunkichi; Okano, Takeshi; Takahama, Sho; and Hakamata, Yoshio, 4,066,354, Cl. 355-28.000.
Takahashi, Hashime: *See—*
Ohtani, Iwao; and Takahashi, Hashime, 4,066,115, Cl. 164-9.000.
Takahashi, Kiyoshi; Takimoto, Hiroyuki; Yamada, Takashi; Itani, Takashi; Ashida, Akira; and Suzaki, Kuniyoshi, to Canon Kabushiki Kaisha. Synchronization system of the cine-projector with the sound tape reproducer. 4,066,963, Cl. 352-12.000.
Takahashi, Yukio: *See—*
Shimazoe, Michitaka; Nakamura, Kousuke; Matsushita, Yasuo; Shimada, Satoshi; Yamada, Kazuji; and Takahashi, Yukio, 4,065,971, Cl. 73-727.000.
Takamura, Toru: *See—*
Nakatani, Hirokuni; Takamura, Toru; Hiroshima, Yoshimitsu; and Hashimoto, Susumu, 4,067,046, Cl. 358-213.000.
Takano, Katsuyoshi; Matsumoto, Masafumi; and Orikasa, Kimihiko, to Toko, Inc. Trapped energy piezoelectric filter. 4,066,986, Cl. 333-72.000.
Takao, Norito: *See—*
Naito, Hirokuni; Yoshimura, Isao; Takao, Norito; and Kawame, Yasuta, 4,066,811, Cl. 428-220.000.
Takaoka, Saburo; and Fujie, Norikazu, to Pioneer Electronic Corporation. Stator winding control circuit for a brushless d.c. motor. 4,066,935, Cl. 318-138.000.
Takashima, Kouichi: *See—*
Sakamoto, Masakatsu; Watanabe, Syosaku; Karino, Takafumi; Yazu, Junichi; Takashima, Kouichi; Miyashiro, Hiroshi; Takagi, Takeo; and Konno, Takao, 4,066,298, Cl. 302-2.00R.
Takata Kojyo Co., Ltd.: *See—*
Takada, Juichiro, 4,066,223, Cl. 242-107.40A.
Takeda Chemical Industries, Ltd.: *See—*
Oka, Yoshikazu; Miyake, Akio; Tada, Norio; and Itoh, Katsumi, 4,066,648, Cl. 260-268.0TR.
Takenaka Komuten Company, Ltd.: *See—*
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Takagi, Atsushi; Kuroiwa, Hiroyuki; Miyaguchi, Masao; and Kawamura, Tateo, 4,065,928, Cl. 61-36.00R.
Takeuchi, Kouichi: *See—*
Nakatani, Kiyoshi; Imamura, Juichi; Ichikawa, Toshiyuki; Takeuchi, Kouichi; and Kotaka, Kenji, 4,066,707, Cl. 260-613.00R.
Takeuchi, Masaharu; Igarashi, Isemi; and Bunda, Tsuchio, to Kabushiki Kaisha Toyota Cho Kenkyusho. Metal body having large surface area and process for producing same. 4,066,450, Cl. 75-229.000.
Takeuchi, Takeshi; and Masuda, Hajime, to Hochiki Corporation. Alarm system utilizing a bidirectional transmission line in CATV system. 4,066,966, Cl. 325-308.000.
Takigawa, Tomoshi: *See—*
Toyama, Masamichi; Takigawa, Tomoshi; Hirata, Noritsugu; and Ishikawa, Kazuo, 4,066,346, Cl. 352-72.000.
Takimoto, Hiroyuki: *See—*
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Talapatra, Dipak Chandra. Light-weight arch type structures for large reflective mirrors. 4,066,344, Cl. 350-310.000.
Tamao, Yoshikuni: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tonomura, Shinji; Tamao, Yoshikuni; Tezuka, Tohru; and Hijikata, Akiko, 4,066,758, Cl. 424-244.000.
Tamao, Yoshikuno: *See—*
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Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,773, Cl. 424-267.000.
Tamm, Paul W., to Chevron Research Company. Hydrocarbon hydrotreating catalyst composition. 4,066,574, Cl. 252-439.000.
Tan, Gene S. T., to Hexcel Corporation. Cable pressure block forming kit and valve apparatus. 4,066,486, Cl. 156-48.000.
Tanaka, Kunio: *See—*
Yoshikawa, Ryoichi; Oda, Teruhisa; Tanaka, Kunio; Iura, Yukio; Fukushima, Tadahide; and Aizawa, Hiroshi, 4,067,032, Cl. 354-288.000.
Tanaka, Masaaki: *See—*
Nohira, Hidetaka; Kobashi, Kiyoshi; and Tanaka, Masaaki, 4,066,056, Cl. 123-119.00A.
Tanaka, Shigeo: *See—*
Saito, Shinichi; Okaue, Asaya; Baba, Kazuo; and Tanaka, Shigeo, 4,066,718, Cl. 260-878.00B.
Tanaka, Taro: *See—*
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Tanaka, Yukiyasu: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,066,043, Cl. 123-3.000.
Tandrup, Niels, to Danfoss A/S. Hydraulic regulator. 4,066,102, Cl. 137-625.640.
Tandrup, Niels, to Danfoss A/S. Hydraulic regulator. 4,066,103, Cl. 137-625.640.
Tanida, Hiroshi: *See—*
Hamashima, Yoshio; Yoshioka, Mitsuru; Tanida, Hiroshi; Tsuji, Teruji; Narisada, Masayuki; Komeno, Taichiro; and Nagata, Wataru, 4,066,641, Cl. 544-17.000.
Taniguchi, Yoshiko: *See—*
Yukuta, Toshio; Ohashi, Takashi; Kojima, Minoru; Suzuki, Akira; and Taniguchi, Yoshiko, 4,066,579, Cl. 260-2.5AP.
Tanouchi, Tadao: *See—*
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Tanuma, Tuneo; and Yoshida, Teruo, to Hitachi Chemical Company, Ltd. Polyester-modified vinyl polymer and production method thereof. 4,066,586, Cl. 260-22.0CB.
Tao, Masato: *See—*
Mohri, Yoshio; Hiroishi, Takashi; Sano, Kinzi; Huruya, Koichi; Muramoto, Tadashi; and Tao, Masato, 4,066,465, Cl. 106-50.000.
Taylor, Allen L.; and Sheffield, William F., to Minnesota Mining and Manufacturing Company. Poling machine for continuous film of pyroelectric and/or piezoelectric material. 4,067,056, Cl. 361-233.000.
Taylor, David Alexander: *See—*
Moore, Alexander Joseph; Taylor, David Alexander; and Greene, David James, 4,066,987, Cl. 333-95.00R.
Taylor, Peter; and Considine, Brian. Support systems. 4,065,904, Cl. 52-731.000.
Taylor, Robert L., to International Telephone and Telegraph Corporation. Multiple light intensity flash unit. 4,066,884, Cl. 362-16.000.

Taylor Woodrow Construction Limited: *See—*
Burrow, Reginald Edward Dowton; and Plaskitt, David Edmund, 4,065,935, Cl. 61-95.000.
TECHNICO Development and Financing S.A.: *See—*
Mehnert, Walter, 4,066,019, Cl. 102-70.20R.
Technicon Instruments Corporation: *See—*
Gordon, Abraham, 4,065,973, Cl. 73-423.00A.
TED Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec: *See—*
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Teijin Limited: *See—*
Kawase, Shoji; Kuratsuji, Takatoshi; Inata, Hiroo; Suzuki, Kazuyoshi; and Shima, Takeo, 4,066,624, Cl. 260-49.000.
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Labes, Mortimer M., 4,066,567, Cl. 252-299.000.
Tennessee Valley Authority: *See—*
Jones, Thomas M., 4,066,432, Cl. 71-34.000.
Tenquist, David A., to Novus Inc. Window drip collector. 4,065,884, Cl. 52-37.000.
Teodorescu, Gheorghe Marcel; and Popa, Aurel, to Institutul National Pentru Creatie Stintifica si Tehnica - Increst. Internal combustion engine having a variable engine displacement. 4,066,049, Cl. 123-48.00R.
Terando, Norman H.: *See—*
Jones, Reuben G.; and Terando, Norman H., 4,066,776, Cl. 424-270.000.
Terauchi, Yoshiaki: *See—*
Kosaka, Yujiro; Uemura, Masaru; Kuroki, Hitoshi; Otomo, Kanji; Terauchi, Yoshiaki; and Arai, Yasuo, 4,066,810, Cl. 428-195.000.
Terradex Corporation: *See—*
Holub, Fred F.; and Alter, H. Ward, 4,065,972, Cl. 73-421.50R.
Teti, John J.: *See—*
Miller, Raymond M.; and Teti, John J., 4,066,878, Cl. 364-724.000.
Tetzlaff, Karl-Heinz. Gamma irradiation plant. 4,066,907, Cl. 250-453.000.
Texaco Development Corporation: *See—*
Schulze, Heinz, 4,066,649, Cl. 260-268.0SY.
Texaco Inc.: *See—*
Carlin, Joseph T.; Ware, James W.; Mills, Melvin E., Jr.; and Wells, John A., 4,066,124, Cl. 166-252.000.
Harnsberger, Bobby G., 4,066,127, Cl. 166-278.000.
Herbstman, Sheldon; Webb, Allen N.; and Estes, John H., 4,066,716, Cl. 260-683.470.
Mayer, Edward A.; and Nolting, Jerry L., 4,066,059, Cl. 123-32.0SA.
McCoy, Drew E., 4,066,543, Cl. 210-63.00R.
Suggitt, Robert M.; Coone, Joseph H., Jr.; and Gates, Walter C., Jr., 4,066,699, Cl. 260-583.00R.
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Texas Instruments Incorporated: *See—*
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Leuschner, Horst, 4,065,916, Cl. 58-23.0BA.
Shaw, Don W., 4,066,482, Cl. 148-175.000.
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Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,759, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,773, Cl. 424-267.000.
Thaeler, Leigh M.: *See—*
Goodrich, Allen R.; Horton, Chauncey M., Jr.; Thaeler, Leigh M.; and Toivola, John O., 4,066,320, Cl. 339-98.000.
Thermo Electron Corporation: *See—*
Fine, David H., 4,066,409, Cl. 23-230.0PC.
Fine, David H.; Fronduto, John J.; and Rounbehler, David P., 4,066,411, Cl. 23-253.0PC.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track tamping and track position correction machine. 4,066,020, Cl. 104-7.00B.
Thibodeau, Leo Thomas. Water conducting members spaced between spaced exposed building support beams. 4,065,883, Cl. 52-11.000.
Thiede, Horst: *See—*
Kummer, Franz; Mai, Gerhard; Ruthardt, Rolf; and Thiede, Horst, 4,065,851, Cl. 29-630.00R.
Thilly, William G., to Massachusetts Institute of Technology. Assay for mutagenesis in diploid human lymphoblasts. 4,066,510, Cl. 195-103.50R.
Thomas, Bobby J.: *See—*
Buller, Paul L.; Chapman, William L.; Thomas, Bobby J.; and Fowler, James C., 4,066,992, Cl. 340-15.5MC.
Thompson, Wilmer B. Splicing tape assembly and dispenser therefor. 4,066,185, Cl. 221-26.000.
Thomson-CSF: *See—*
Diamand, Felix; Bourrabier, Guy; and Antoine, Robert, 4,066,979, Cl. 331-56.000.
Thor Power Tool Company: *See—*
Bardwell, Francis G.; and Dudek, Edmund C., 4,066,942, Cl. 318-434.000.
Thornbery, James M.; and Orth, Charles D., to Singer Company, The. Combination valve. 4,065,939, Cl. 62-217.000.
Thun, Peter: *See—*
Borchard, Heinz; Grottker, Gunter; and Thun, Peter, 4,066,268, Cl. 274-42.00R.
Tillander, Hans. Blood emptying device. 4,066,084, Cl. 128-327.000.
Tilley, Jefferson Wright: *See—*
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, 4,066,695, Cl. 260-564.00E.
Tippmann, Eugene R. Method of building-up a layer of metal on a metal surface. 4,066,862, Cl. 219-76.140.
Tison, Eric, to Ateliers de Constructions Mecaniques Seailles & Tison. Printer with intermittant variable web feed. 4,066,016, Cl. 101-228.000.
Tkach, Grigory Anatolievich: *See—*
Panov, Vadim Ivanovich; Tkach, Grigory Anatolievich; Tomenko, Viktor Mikhailovich; Zolotukhin, Boris Mikhailovich; and Belyaev, Erik Konstantinovich, 4,066,416, Cl. 23-283.000.
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Toda, Toshimasa: *See—*
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Goodrich, Allen R.; Horton, Chauncey M., Jr.; Thaeler, Leigh M.; and Toivola, John O., 4,066,320, Cl. 339-98.000.
Tokico Ltd.: *See—*
Ohtani, Iwao; and Takahashi, Hashime, 4,066,115, Cl. 164-9.000.
Toko, Inc.: *See—*
Takano, Katsuyoshi; Matsumoto, Masafumi; and Orikasa, Kimihiko, 4,066,986, Cl. 333-72.000.
Tokyo Keiso Kabushiki Kaisha: *See—*
Sunagawa, Yoshihiko, 4,065,968, Cl. 73-313.000.
Tokyo Sanyo Electric Co. Ltd.: *See—*
Kishi, Hiroyasu, 4,066,845, Cl. 179-15.0BT.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Goto, Eizo, 4,066,427, Cl. 65-40.000.
Tomczak, Lawrence William: *See—*
Caron, LaVerne Andrew; Tomczak, Lawrence William; and Crall, Frederick William, 4,066,054, Cl. 123-117.00R.
Tomenko, Viktor Mikhailovich: *See—*
Panov, Vadim Ivanovich; Tkach, Grigory Anatolievich; Tomenko, Viktor Mikhailovich; Zolotukhin, Boris Mikhailovich; and Belyaev, Erik Konstantinovich, 4,066,416, Cl. 23-283.000.
Tominaga, Anri: *See—*
Isa, Hiroshi; Ukigai, Toshiyuki; Tominaga, Anri; and Sato, Michito, 4,066,715, Cl. 260-683.15B.
Tomisawa, Setsuo: *See—*
Sato, Ryuichi; Ishikawa, Akira; Ishida, Yukihito; Sato, Hiroshi; Tomisawa, Setsuo; Toyoshima, Shigeshi; and Ikegami, Shiro, 4,066,678, Cl. 260-429.00R.
Tomlinson, Kenneth; and Harrison, Michael, to Colgate-Palmolive Company. Dentifrice. 4,066,745, Cl. 424-49.000.
Tonomura, Shinji: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tonomura, Shinji; Tamao, Yoshikuni; Tezuka, Tohru; and Hijikata, Akiko, 4,066,758, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,759, Cl. 424-244.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,066,773, Cl. 424-267.000.
Topfl, Rosemarie: *See—*
Abel, Heinz; and Topfl, Rosemarie, 4,066,392, Cl. 8-127.500.
Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcs, 4,066,709, Cl. 260-618.00B.
Tosaka, Osamu; Morioka, Hajimu; Hirakawa, Hayao; Ishii, Kenji; Kubota, Koji; and Hirose, Yoshio, to Ajinomoto Co., Inc. Method for producing L-lysine by fermentation. 4,066,501, Cl. 195-29.000.
Toshin Science Co., Ltd.: *See—*
Sasaki, Jiro, 4,066,546, Cl. 210-75.000.
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcs, to Richter Gedeon Vegyeszeti Gyar Rt. α-Ethyny benzhydrols. 4,066,709, Cl. 260-618.00B.
Toyama, Masamichi; Takigawa, Tomoshi; Hirata, Noritsugu; and Ishikawa, Kazuo, to Canon Kabushiki Kaisha. Motion picture camera with a built in color conversion filter. 4,066,346, Cl. 352-72.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Kosaka, Yujiro; Uemura, Masaru; Kuroki, Hitoshi; Otomo, Kanji; Terauchi, Yoshiaki; and Arai, Yasuo, 4,066,810, Cl. 428-195.000.
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, 4,066,827, Cl. 526-50.000.
Toyoaki, Ueno; Seizo, Takayama; Kiyoshi, Hashimoto; and Masashi, Uchida, to Ube Industries, Ltd. Apparatus for controlled injection of a molten material under pressure. 4,066,189, Cl. 222-334.000.
Toyomoto, Hiromitsu. Automatic lubricating device for remotely operable bowden cable. 4,066,147, Cl. 184-15.00R.
Toyoshima, Shigeshi: *See—*
Sato, Ryuichi; Ishikawa, Akira; Ishida, Yukihito; Sato, Hiroshi; Tomisawa, Setsuo; Toyoshima, Shigeshi; and Ikegami, Shiro, 4,066,678, Cl. 260-429.00R.

Toyota, Eiichi: *See—*
Nohmi, Makoto; Fujikura, Nobuyuki; Ueda, Chiaki; and Toyota, Eiichi, 4,066,230, Cl. 246-182.00B.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nohira, Hidetaka; Kobashi, Kiyoshi; and Tanaka, Masaaki, 4,066,056, Cl. 123-119.00A.
Ohmi, Atsushi; and Katagiri, Masayoshi, 4,066,997, Cl. 340-59.000.
Segawa, Yoshihiro; Sato, Susumu; Yasuda, Eturo; Hattori, Tadashi; and Aoki, Keiji, 4,066,413, Cl. 23-254.00E.
Suzuki, Takao, 4,066,045, Cl. 123-30.00D.
Taga, Yutaka, 4,065,985, Cl. 74-869.000.
Tranquilla, Michael N.: *See—*
Meresz, Henry; and Tranquilla, Michael N., 4,065,978, Cl. 74-82.000.
Trattner, Hermann; Saatze, Kuno; and Bauereiss, Adolf, to Siemens Aktiengesellschaft. Variable load, high vacuum shaft bearing test apparatus. 4,065,956, Cl. 73-9.000.
Traver, Frank J.: *See—*
VanVleck, Gordon T.; and Traver, Frank J., 4,066,560, Cl. 252-21.000.
Travis, Calvin C. Electrically powered outboard motor means. 4,066,032, Cl. 115-18.00E.
Trident Products Inc.: *See—*
Nieman, Charles Wayne; Turkovich, Robert Peter; and Castronovo, Robert Frank, 4,066,187, Cl. 222-57.000.
Trim-Line, Inc.: *See—*
Hall, Daniel L.; and Dunivan, Neal Duane, 4,066,285, Cl. 293-62.000.
Trippel, Gerhard: *See—*
Ruh, Wolf-Dieter; and Trippel, Gerhard, 4,066,491, Cl. 156-644.000.
Truett, William L.: *See—*
Johnson, Donald R.; Nadeau, Richard G.; Nieuweboer, Gerrit; and Truett, William L., 4,066,412, Cl. 23-253.00R.
Trujillo, Louis J.: *See—*
Nebel, Otto T.; Trujillo, Louis J.; and Russell, Carl C., 4,067,025, Cl. 354-62.000.
Trumbull, Douglas, to Future General Corporation; and Standard Alliance Industries Inc. Amusement ride. 4,066,256, Cl. 272-18.000.
TRW Inc.: *See—*
Blazek, William S.; Piwonka, Thomas S.; Jackson, James D.; and Atanmo, Philip N., 4,066,116, Cl. 164-17.000.
Dawson, John Myrick, 4,066,893, Cl. 250-282.000.
Trzeciak, Arnold: *See—*
Gillessen, Dieter; Studer, Rolf; and Trzeciak, Arnold, 4,066,635, Cl. 260-112.50R.
Tsugane, Sachio. Automatic door opening and shutting device. 4,065,878, Cl. 49-360.000.
Tsuji, Shinzo: *See—*
Kasama, Tsuneo; Wada, Makoto; Sano, Masakatu; and Tsuji, Shinzo, 4,066,415, Cl. 23-281.000.
Tsuji, Teruji: *See—*
Hamashima, Yoshio; Yoshioka, Mitsuru; Tanida, Hiroshi; Tsuji, Teruji; Narisada, Masayuki; Komeno, Taichiro; and Nagata, Wataru, 4,066,641, Cl. 544-17.000.
Tsukamoto, Hidehiko; and Maeda, Nobutaka, to Mitsubishi Jukogyo Kabushiki Kaisha. Roll-forming dies in a cross-rolling machine. 4,065,948, Cl. 72-108.000.
Tsuzuki, Naobumi; Anazawa, Shinzo; and Noguchi, Shozo, to Nippon Electric Company, Ltd. Semiconductor device. 4,067,040, Cl. 357-74.000.
Turkovich, Robert Peter: *See—*
Nieman, Charles Wayne; Turkovich, Robert Peter; and Castronovo, Robert Frank, 4,066,187, Cl. 222-57.000.
Turnbull, Fred G., to General Electric Company. Input current modulation to reduce torque pulsations in controlled current inverter drives. 4,066,938, Cl. 318-227.000.
Turner, John Angus William: *See—*
Bent, Keith Joseph; and Turner, John Angus William, 4,066,786, Cl. 424-313.000.
Tyburski, Peter Frank: *See—*
Nobbs, William Harry; Bowker, Harold; and Tyburski, Peter Frank, 4,066,197, Cl. 224-42.010.
U C B, Societe Anonyme: *See—*
Lietard, Jean-Marie; and Matthijs, Guido, 4,066,748, Cl. 424-147.000.
Uarco Incorporated: *See—*
Peterson, Charles L., 4,066,206, Cl. 229-69.000.
Polko, Peter R., 4,066,015, Cl. 101-228.000.
Ube Industries, Ltd.: *See—*
Toyoaki, Ueno; Seizo, Takayama; Kiyoshi, Hashimoto; and Masashi, Uchida, 4,066,189, Cl. 222-334.000.
Ubler, Karl: *See—*
Kuhn, Gerhard; Ubler, Karl; and Reiss, Karl-Hans, 4,066,896, Cl. 250-315.00A.
Uchida, Akinari: *See—*
Hachisu, Takeshi; and Uchida, Akinari, 4,066,539, Cl. 210-36.000.
Uchida, Kuniki; Araki, Kenzi; Fukunaka, Shiro; and Kurihara, Takao, to Nippon Kokan Kabushiki Kaisha. Method of making high strength cold reduced steel by continuous annealing process. 4,066,474, Cl. 148-2.000.
Ueda, Chiaki: *See—*
Nohmi, Makoto; Fujikura, Nobuyuki; Ueda, Chiaki; and Toyota, Eiichi, 4,066,230, Cl. 246-182.00B.
Uemura, Masaru: *See—*
Kosaka, Yujiro; Uemura, Masaru; Kuroki, Hitoshi; Otomo, Kanji; Terauchi, Yoshiaki; and Arai, Yasuo, 4,066,810, Cl. 428-195.000.
Ukigai, Toshiyuki: *See—*
Isa, Hiroshi; Ukigai, Toshiyuki; Tominaga, Anri; and Sato, Michito, 4,066,715, Cl. 260-683.15B.
Umeda, Haruhiko; Ito, Hiroshi; and Suketomo, Toshitaka, to Kabushiki Kaisha Komatsu Seisakusho. Vehicle with rotating cab. 4,066,143, Cl. 180-77.00S.
Umetsu, Junji: *See—*
Urano, Fumio; and Umetsu, Junji, 4,067,033, Cl. 354-289.000.
Umezawa, Hamao: *See—*
Takagi, Kenkichi; Yamamoto, Yukio; Yamazaki, Tadao; Yamaguchi, Hiroshi; and Umezawa, Hamao, 4,066,507, Cl. 195-80.00R.
Unelec S.A.: *See—*
Hennemann, Jean; and Daussin, Bernard, 4,066,922, Cl. 310-80.000.
Unicon Parking Structures, Inc.: *See—*
Rice, Edward K., 4,065,907, Cl. 52-747.000.
Union Carbide Corporation: *See—*
Babian, Gunther William; and Harris, Edward Bruce, 4,066,582, Cl. 260-17.00A.
D'Silva, Themistocles D. J., 4,066,689, Cl. 260-544.00C.
Pietruszewski, John Joseph; Scaccia, Carl; and Wagner, Ralph James, 4,066,722, Cl. 261-87.000.
United Kingdom Atomic Energy Authority: *See—*
Green, Derek, deceased; and Green, Muriel Irene, executrix, 4,065,950, Cl. 72-191.000.
United States of America
Agriculture: *See—*
Kanda, Hiroshi; Wang, Hwa L.; and Hesseltine, Clifford W., 4,066,792, Cl. 426-41.000.
Army: *See—*
Hamilton, Charles W.; and Kleider, Alfred, 4,066,890, Cl. 250-199.000.
Rocha, John G., 4,065,998, Cl. 89-11.000.
Energy Research and Development Administration: *See—*
Brown, Robert L., 4,066,496, Cl. 176-3.000.
Lewandowski, Edward F.; and Anderson, Petrus A., 4,065,853, Cl. 30-361.000.
Health, Education and Welfare: *See—*
Henkin, Robert I., 4,066,405, Cl. 23-230.00B.
Johnson, Alan J.; Soberano, Mercedes E.; Ong, Eng Bee; and Levy, Milton, 4,066,506, Cl. 195-66.00B.
Interior: *See—*
Buller, Paul L.; Chapman, William L.; Thomas, Bobby J.; and Fowler, James C., 4,066,992, Cl. 340-15.5MC.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Zebus, Paul P.; and Packer, Poley N. Adjustable securing base. 4,066,039, Cl. 118-500.000.
National Aeronautics and Space Administration: *See—*
Mogavero, Louis N.; Johnson, Edwin G.; Evans, John M., Jr; and Albus, James S., 4,067,015, Cl. 343-225.000.
Perry, William E., 4,067,043, Cl. 358-55.000.
Navy: *See—*
Anderson, Wallace E.; Syeles, Albert M.; and Krall, Albert D., 4,066,819, Cl. 428-472.000.
Kaloi, Cyril M., 4,067,016, Cl. 343-700.0MS.
Liggett, Thomas, 4,066,736, Cl. 423-386.000.
Nebel, Otto T.; Trujillo, Louis J.; and Russell, Carl C., 4,067,025, Cl. 354-62.000.
Nielsen, Arnold T., 4,066,833, Cl. 548-356.000.
Nycum, James M., 4,066,234, Cl. 248-358.00R.
Schultz, Leonard J.; Hamori, Alfred Steven; and Rosen, Robert, 4,066,965, Cl. 325-120.000.
Smith, Richard M., 4,067,013, Cl. 343-7.700.
U.S. Philips Corporation: *See—*
Buzzi, Leo; and Malobabic, Peter, 4,065,977, Cl. 74-49.000.
Rottier, Jacob, 4,066,932, Cl. 315-244.000.
Steinmetz, Anthony, 4,066,859, Cl. 200-263.000.
Van Besouw, Joannes Baptista Maria Adrianus; Gotje, Egbert Bernardus Gretinus Willem; and Kerstens, Franciscus Napoleon Adrianus, 4,066,928, Cl. 315-39.510.
van Esdonk, Johannes, 4,066,923, Cl. 313-402.000.
United Technologies Corporation: *See—*
Howard, Curtiss Gilmore, 4,066,377, Cl. 408-1.00R.
Universal Oil Products Company: *See—*
Hoyer, William A.; Johnson, Lowell W.; and Schoenenberger, Richard J., 4,066,801, Cl. 427-8.000.
University of Delaware: *See—*
Srna, Richard Frank, 4,065,875, Cl. 47-1.400.
University of Minnesota, The Regents of the: *See—*
Rosenau, John R.; and Anderson, John C., 4,066,800, Cl. 426-582.000.
University of Virginia: *See—*
Hunt, Donald F.; and Stafford, George C., Jr., 4,066,894, Cl. 250-292.000.
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; Mita, Kunio; Kawasaki, Masahiro; and Mori, Chiharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Shutter speed digital display device for cameras. 4,067,023, Cl. 354-23.00D.
UOP Inc.: *See—*
Rosset, Armand J.; and Neuzil, Richard W., 4,066,677, Cl. 260-428.500.
Upjohn Company, The: *See—*
Morton, Douglas Ross, Jr., 4,066,836, Cl. 560-53.000.

Nelson, Norman A., 4,066,701, Cl. 260-590.00C.
Nelson, Norman A., 4,066,702, Cl. 260-590.00C.
Neslon, Norman A., 4,066,700, Cl. 260-590.00C.
Rizzo, Victor L., 4,066,765, Cl. 424-248.560.
Wright, John B., 4,066,769, Cl. 424-263.000.
Urano, Fumio; and Umetsu, Junji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Correcting device for cameras with automatic exposure control. 4,067,033, Cl. 354-289.000.
Urano, Fumio: *See—*
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; Mita, Kunio; Kawasaki, Masahiro; and Mori, Chiharu, 4,067,023, Cl. 354-23.00D.
Urman, Stanley: *See—*
Vidakovic, Aleksandar; Urman, Stanley; and Rudny, Donald F., 4,066,047, Cl. 123-41.120.
Urso, Charles J.: *See—*
Courtney, John E.; Urso, Charles J.; and Dir, Gary A., 4,066,335, Cl. 350-160.0LC.
USM Corporation: *See—*
Holloway, David John, 4,065,952, Cl. 72-391.000.
Utamura, Yukihiko: *See—*
Takagi, Toshinori; Morimoto, Kiyoshi; and Utamura, Yukihiko, 4,066,527, Cl. 204-192.00N.
Utsugi, Mikio, to Olympus Optical Co., Ltd. Tubular medical instrument having a flexible sheath with cuffs. 4,066,070, Cl. 128-4.000.
Vaillancourt, Vincent Louis, to Johnson & Johnson. Fluid filter and method of making same. 4,066,556, Cl. 210-448.000.
Valerio, Joseph F., Jr. Rescue apparatus. 4,066,144, Cl. 182-140.000.
Valeron Corporation, The: *See—*
Beck, Hans Werner; and Jager, Herbert Paul, 4,066,380, Cl. 408-125.000.
Valmet Oy: *See—*
Aatinen, Eino, 4,065,842, Cl. 29-148.40D.
Valor Enterprises, Inc.: *See—*
Stephens, Gerald D., 4,066,324, Cl. 339-126.00J.
Van Besouw, Joannes Baptista Maria Adrianus; Gotje, Egbert Bernardus Gretinus Willem; and Kerstens, Franciscus Napoleon Adrianus, to U.S. Philips Corporation. Resonant cavity magnetron having a helical cathode. 4,066,928, Cl. 315-39.510.
van Brederode, Robert A., to Exxon Research & Engineering Co. Three component stabilizer system for propylene polymers containing grafted acrylic acid with or without glass fiber reinforcement. 4,066,608, Cl. 260-42.180.
Van Cappellen, Jan Baptist, to AGFA-Gevaert, N.V. Extrusion method and apparatus. 4,066,729, Cl. 264-169.000.
Vandas, Edward B., to McGraw-Edison Company. Kitchen ventilator damper actuator and control. 4,066,064, Cl. 126-299.00E.
Vandenberk, Jan; Kennis, Ludo E. J.; Van der Aa, Marcel J. M. C.; and Van Heertum, Albert H. M. Th., to Janssen Pharmaceutica N.V. 1,3-Dihydro-1-[3-(1-piperidinyl)propyl]-2H-benzimidazol-2-ones and related compounds. 4,066,772, Cl. 424-267.000.
Van der Aa, Marcel J. M. C.: *See—*
Vandenberk, Jan; Kennis, Ludo E. J.; Van der Aa, Marcel J. M. C.; and Van Heertum, Albert H. M. Th., 4,066,772, Cl. 424-267.000.
van der Lely, Cornelis. Prefabricated building sections or room units and methods for the manufacture of such sections or units. 4,065,905, Cl. 52-741.000.
Van Driessche, Paul. Assembling piece. 4,066,370, Cl. 403-217.000.
van Esdonk, Johannes, to U.S. Philips Corporation. Color selection lens electrodes connected by diffusion bonds. 4,066,923, Cl. 313-402.000.
Van Essen, Leonard J.: *See—*
Pfarrer, David M.; and Van Essen, Leonard J., 4,066,937, Cl. 318-221.00G.
Van Exel, Gerrit A., to Bausch & Lomb Incorporated. Optical adjustment knob with spaced apart platforms. 4,066,329, Cl. 350-77.000.
van Haaften, Peter, to American Bank Note Company. Pressurized ink applicator for intaglio printing press. 4,066,014, Cl. 101-157.000.
Van Heertum, Albert H. M. Th.: *See—*
Vandenberk, Jan; Kennis, Ludo E. J.; Van der Aa, Marcel J. M. C.; and Van Heertum, Albert H. M. Th., 4,066,772, Cl. 424-267.000.
Vann, Roy R. Positive tubing release coupling. 4,066,282, Cl. 285-39.000.
VanVleck, Gordon T.; and Traver, Frank J., to General Electric Company. Silicone compositions useful as green tire lubricants. 4,066,560, Cl. 252-21.000.
Van Vonno, Nicolaas W., to Harris Corporation. Substrate fed logic and method of fabrication. 4,067,038, Cl. 357-46.000.
Varadi, Maria: *See—*
Pungor, Erno; and Varadi, Maria, 4,066,406, Cl. 23-230.00R.
Vargiu, Silvio; Paparatto, Piero; Passalenti, Beppino; and Parodi, Antonio, to Societa Italiana Resine S.I.R. S.p.A. Moulding compositions including an unsaturated polyester. 4,066,606, Cl. 260-40.00R.
Varian Associates, Inc.: *See—*
Seppi, Edward J.; and Murphy, Frederick V., 4,066,901, Cl. 250-360.000.
VCA Corporation: *See—*
Patton, Phillips E.; and Freeman, Norman A., 4,065,872, Cl. 43-131.000.
Veber, Daniel F.; Nutt, Ruth F.; and Hirschmann, Ralph F., to Merck & Co., Inc. Tetrapeptide analog of TRH. 4,066,749, Cl. 424-177.000.
Venderbos, Dirk J., to Stamicarbon, N.V. Process for the preparation of urea. 4,066,693, Cl. 260-555.00A.
Veneklasen, Lee H.: *See—*
Dassler, Joachim; Veneklasen, Lee H.; and Zschimmer, Martin, 4,066,905, Cl. 250-396.00R.
Venus Scientific Inc.: *See—*
Provost, John K.; and Lien, Charles, 4,067,045, Cl. 358-211.000.
Venuto, Paul B.: *See—*
Owen, Hartley; Venuto, Paul B.; and Rosinski, Edward J., 4,066,531, Cl. 208-120.000.
Vertut, Jean: *See—*
Bourdois, Claude; Glachet, Charles; Marchal, Paul; and Vertut, Jean, 4,066,909, Cl. 250-497.000.
Vesper, Rainer; and Engelsmann, Dieter, to AGFA-Gevaert, AG. Arrangement for the delayed firing of an electronic flash unit. 4,067,029, Cl. 354-137.000.
Victor Company of Japan, Ltd.: *See—*
Ishigaki, Yukinobu; and Sasamura, Kohei, 4,066,972, Cl. 329-134.000.
Vidakovic, Aleksandar; Urman, Stanley; and Rudny, Donald F., to International Harvester Company. Toroidal heat exchanger having a hydraulic fan drive motor. 4,066,047, Cl. 123-41.120.
Vidmantas, Eugene: *See—*
Ackerman, Thomas Liddon; Barbato, Mathew Martin; and Vidmantas, Eugene, 4,065,965, Cl. 73-194.0EM.
Villazon, Francisco, to AMP Incorporated. Electrical connector. 4,066,321, Cl. 339-98.000.
Viola, James Joseph: *See—*
Godel, Siegfried; and Viola, James Joseph, 4,066,865, Cl. 219-370.000.
Virnot, Alain D.; and Cynober, Simon A., to Jeumont-Schneider. Procedure and system for driving a vehicle. 4,066,877, Cl. 364-426.000.
Viro, Felix: *See—*
Panasik, Theodore; Viro, Felix; Waxman, Burton H.; and Shannahan, Robert T., 4,066,457, Cl. 96-29.00D.
Virtanen, Jouko J.: *See—*
Melaja, Asko J.; Virtanen, Jouko J.; and Heikkila, Heikki O., 4,066,711, Cl. 260-637.00R.
Vivitar Corporation: *See—*
Parker, John C., 4,066,356, Cl. 355-63.000.
Vladuchick, Susan Anne, to Du Pont de Nemours, E. I., and Company. [1,2,5,6]Tetrathiocino-[3,4-c; 7,8-c']diisothiazole-3,8-dicarbonitrile. 4,066,656, Cl. 260-302.00F.
Vlasak, Gary Paul: *See—*
Alpaugh, Warren Alan; Macur, George Joseph; and Vlasak, Gary Paul, 4,066,809, Cl. 427-444.000.
Vockenhuber, Karl: *See—*
Besenmatter, Walter; Muszumanski, Trude; and Wendisch, Irmgard, 4,066,340, Cl. 350-184.000.
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,066,345, Cl. 352-27.000.
Vogt, Herbert: *See—*
Grabendorfer, Werner; Vogt, Herbert; Haacke, Harri; Kuhn, Harry; Pawelletz, Reinhard; and Ries, Karl, 4,065,960, Cl. 73-627.000.
Voigt, John E.; and Pender, Herbert, Jr., to Anheuser-Busch, Incorporated. Method of making paper containing cationic starch and an anionic retention aid. 4,066,495, Cl. 162-168.0NA.
von Bredow, Brigitta; and Pissiotas, Georg, to Ciba-Geigy Corporation. Triazolidine compounds useful as herbicides. 4,066,437, Cl. 71-91.000.
von dem Hagen, Tronje. Safety guard for electrical plugs. 4,066,313, Cl. 339-75.00P.
Vonder, David L.; and Wilkis, Anthony J., to GTE Automatic Electric Laboratories Incorporated. Electrical connector assembly. 4,066,318, Cl. 339-92.00M.
von der Lehr, Alfred. Process for the joining (bonding) of lines (strips). 4,066,488, Cl. 156-83.000.
von Strandtmann, Max: *See—*
Connor, David T.; Young, Patricia A.; and von Strandtmann, Max, 4,066,655, Cl. 260-295.50T.
Voss, Klaus, to Robert Bosch G.m.b.H. Power hand tool. 4,066,133, Cl. 173-12.000.
Vowinkel, Hans: *See—*
Gross, Erwin; and Vowinkel, Hans, 4,066,063, Cl. 126-271.000.
Gross, Erwin; and Vowinkel, Hans, 4,066,122, Cl. 165-175.000.
Vukasovic, Lovro; and Raduka, Janos, to Siemens Aktiengesellschaft. Frequency converter. 4,066,954, Cl. 363-37.000.
W. C. Heraeus GmbH: *See—*
Kummer, Franz; Mai, Gerhard; Ruthardt, Rolf; and Thiede, Horst, 4,065,851, Cl. 29-630.00R.
W. R. Grace & Co.: *See—*
Murch, Robert M.; Wilson, Mary Lynn; and Wood, Louis Leonard, 4,066,578, Cl. 260-2.5AG.
W. Schlafhorst & Co.: *See—*
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Wachter, Michael P., to Ortho Pharmaceutical Corporation. Thiol- and thioncarbamates and process for preparing same. 4,066,681, Cl. 260-455.00A.
Wada, Makoto: *See—*
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Wada, Shinji; Matsunaga, Yoshiaki; and Noda, Michihiro, to Agency of Industrial Science & Technology. Apparatus and method for continuous froth flotation. 4,066,540, Cl. 210-44.000.
Wada, Takeshi: *See—*
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Wagensonner, Eduard, to AGFA-Gevaert, AG. Motion picture camera with variable aperture control rate. 4,066,347, Cl. 352-141.000.
Wagensonner, Eduard: *See—*
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Wagner, Ralph James: *See—*
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Waite, Jerry M.; and Burdyn, Ralph F., to Mobil Oil Corporation. Surfactant waterflooding with hydrocarbon slug. 4,066,126, Cl. 166-273.000.
Waks, David J.; and Futterweit, Adolf, to Applied Data Research, Inc. Telephone circuit monitoring system. 4,066,843, Cl. 179-8.00A.
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Waldorf, Lindsey E.; and Monroe, Kenneth E., to Waldorf, Lindsey E. Motor speed controller. 4,066,934, Cl. 318-139.000.
Waldrop, Thomas W.; and Flanagan, John R., to Sperry Rand Corporation. Toothed plate for facilitating disintegration of crop material clumps by the hammermill mechanism of a tub grinder machine. 4,066,216, Cl. 241-190.000.
Walker, David G.: *See—*
Long, Robert B.; Caruso, Fred A.; DeFeo, Richard J.; and Walker, David G., 4,066,679, Cl. 260-438.100.
Wallace, Trevor Evelyn, to Steel Engineering Company, The. Telescopic rock drill mounting. 4,066,135, Cl. 173-44.000.
Wallis, Jamie Malcolm. Sampling drill. 4,066,139, Cl. 175-232.000.
Walters, Chester H.; Barmeier, Harold J., Jr.; and Sullivan, Greig E., to National Marine Service, Incorporated. Bilge water disposal system including oil recovery means. 4,066,545, Cl. 210-71.000.
Walters, Darrel H.: *See—*
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Walters, Paul W.: *See—*
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Wang, Chen-Shen, to Standard Oil Company (Indiana). Branched polyphenylene-mica composites. 4,066,604, Cl. 260-37.00R.
Wang, Hwa L.: *See—*
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Wang, Robert O. Apparatus for calibrating moisture measuring instrument. 4,066,951, Cl. 324-61.00R.
Wanner, Karl; Hahner, Reinhard; Schmid, Wolfgang; Hansel, Gernot; and Bleicher, Manfred, to Robert Bosch G.m.b.H. Torque and impulse transmitting machine. 4,066,136, Cl. 173-48.000.
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Ward, William J., III: *See—*
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Ware, James W.: *See—*
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Warner Electric Brake & Clutch Company: *See—*
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Warner-Lambert Company: *See—*
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Connor, David T.; Young, Patricia A.; and von Strandtmann, Max, 4,066,655, Cl. 260-295.50T.
Schwender, Charles F.; and Sunday, Brooks R., 4,066,767, Cl. 424-251.000.
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Waters, John M., to British Railways Board. Maintenance machines for railway track. 4,065,856, Cl. 33-287.000.
Waxman, Burton H.; Mourning, Michael C.; and Panasik, Theodore, to GAF Corporation. Incorporated carboxy substituted p-phenylenediamine color developer. 4,066,456, Cl. 96-29.00D.
Waxman, Burton H.: *See—*
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Weber, Helmut; Muth, Karl; Weyer, Rudi; Aumuller, Walter; and Haack, Erich, to Hoechst Aktiengesellschaft. Benzene-sulfonyl semicarbazides and process for preparing them. 4,066,639, Cl. 260-239.0BF.
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Weber, Jurgen: *See—*
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Webster, James A. Cycle pump security system. 4,065,944, Cl. 70-58.000.
Wedel, Mark J., to Atlas Manufacturing, Inc. Cash drawer. 4,066,308, Cl. 312-333.000.
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Gullotti, Damian V.; Fayard, William S.; and Wedgeworth, Wiley W., 4,066,480, Cl. 148-11.50A.
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Westinghouse Brake & Signal Co. Ltd.: *See—*
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Newton, Ralph E., 4,066,926, Cl. 315-73.000.
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Weyer, Rudi: *See—*
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Weyker, Robert George; and Baitinger, William Frederick, Jr., to American Cyanamid Company. Flame retardant finish for textiles. 4,066,391, Cl. 8-116.00P.
Wharton, David G., to Shell Oil Company. Gasoline compositions. 4,066,419, Cl. 44-72.000.
Whateley, Eric Albert; and Pengilly, Eric Alexander, to David Brown Gear Industries Limited. Gearing. 4,065,981, Cl. 74-410.000.
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Wheeler, Harold A.; and Lopez, Alfred R., to Hazeltine Corporation. Correlation receiver for doppler microwave landing system. 4,067,014, Cl. 343-113.0DE.
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Williams, Robert A. Electrical connector backshell accessory indexing body. 4,066,314, Cl. 339-89.00R.
Williamson, Larry H. Rebreathable gas mixing and control device. 4,066,076, Cl. 128-142.200.

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Wirbser, Oskar; and Ernst, Nikolaus, to Siemens Aktiengesellschaft. Process and device for unsoldering semiconductor modules in the flip-chip technique. 4,066,204, Cl. 228-264.000.
Wismer, Marco; and Bosso, Joseph F., to PPG Industries, Inc. Zwitter-ion-containing compositions. 4,066,592, Cl. 260-29.2EP.
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Wolf, Morris A. Display form for pants. 4,066,192, Cl. 223-72.000.
Wolford, William E. Ash collector cover and combustion enhancer for a fireplace. 4,066,061, Cl. 126-135.000.
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Young, Daniel Arthur. Method of lining a waterway or reservoir. 4,065,924, Cl. 61-7.000.
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Young, Robert A. Thin film excitation. 4,066,980, Cl. 331-94.50G.
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Zeller, Hans Rudolf, to BBC Brown Boveri & Company Limited. Electrode for a controllable electrochromic indicator device and method of manufacture. 4,066,336, Cl. 350-160.00R.
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Zenk, George Edward, to Control Data Corporation. Membrane-type touch panel employing a photo-resist insulating grid anti-short means. 4,066,852, Cl. 200-5.00A.
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Zezelj, Branko. Precast skeleton spatial monolithic structure. 4,065,897, Cl. 52-227.000.
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Forsythe, George Daniel, to Du Pont de Nemours, E. I., and Company. Apparatus and method for multiple strand web formation. T966,001, 1-3-78, Cl. 28-100.000.
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Williams, James E. Oxidation of p-xylene to terephthalaldehyde. T966,008, 1-3-78, Cl. 260-599.000.

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Schwenzfeier, Otto Kurt, to Long-Lok Fasteners Corporation. Apparatus for forming self locking fasteners. Re. 29,507, Cl. 156-498.000.
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Young, Richard W.; and Siebert, Sidney A., to Cabot Corporation. Method of sealing the end of a filled welding rod. Re. 29,506, Cl. 29-527.400.

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McRae, Edward A., to Melridge, Inc. Lily plant: Lilium 'Lovesong'. 4,178, 1-3-78, Cl. 68.000.
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McRae, Edward A., to Melridge, Inc. Lily plant Lilium 'Dayspring'. 4,181, 1-3-78, Cl. 68.000.
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CLASS 23

230 B 4,066,403
4,066,405
4,066,407
230 EP 4,066,404
230 PC 4,066,402
4,066,409
230 R 4,066,406
4,066,408
230.6 4,066,410
253 PC 4,066,411
253 R 4,066,412
254 E 4,066,413
259 4,066,414
4,066,646
281 4,066,415
283 4,066,416
289 4,066,417

CLASS 24

201 A 4,065,833
204 4,065,834
205.16 R 4,065,835
230 A 4,065,836

CLASS 26

9 4,065,837
94 4,065,838

CLASS 29

17 R 4,065,839
25.14 4,065,840
121.1 4,065,841
148.4 D 4,065,842
252 4,065,843
258 4,065,844
283 4,065,845
407 4,065,846
527.4 Re.29,506
578 4,065,847
611 4,065,848
623 4,065,849
623.5 4,066,418
625 4,065,850
630 R 4,065,851

CLASS 30

361 4,065,853

CLASS 33

174 R 4,065,855
287 4,065,856

CLASS 34

30 4,065,857

CLASS 35

9 R 4,065,858
12 N 4,065,859
25 4,065,860
168 R 4,065,854

CLASS 36

133 4,065,861

CLASS 40

405 4,065,864
444 4,065,865
490 4,065,863

CLASS 42

51 4,065,866
69 R 4,065,867
89 4,065,868

CLASS 43

43.12 4,065,869
44.99 4,065,870
88 4,065,871
131 4,065,872

CLASS 44

72 4,066,419

CLASS 46

75 4,065,873
94 4,065,874

CLASS 47

1.4 4,065,875
83 4,065,876
85 4,065,877

CLASS 48

197 R 4,066,420
213 4,066,421

CLASS 49

360 4,065,878

CLASS 51

145 R 4,065,879
166 FB 4,065,886
247 4,065,880
309 R 4,066,422
346 4,065,881
358 4,065,887
381 4,065,882

CLASS 52

2 4,065,888
4,065,889
11 4,065,883
27 4,065,890
37 4,065,884
65 4,065,891
143 4,065,885
4,065,892
169.11 4,065,893
171 4,065,894
210 4,065,895
220 4,065,896
227 4,065,897
241 4,065,898
309.8 4,065,899
476 4,065,900
582 4,065,901
622 4,065,902
704 4,065,903
731 4,065,904
741 4,065,905
745 4,065,906
747 4,065,907

CLASS 53

15 4,065,908
4,065,909
24 4,065,910
53 4,065,911

CLASS 55

48 4,066,423
71 4,066,424
242 4,066,425

CLASS 56

13.9 4,065,912
295 4,063,913
341 4,065,914

CLASS 58

23 BA 4,065,916
23 R 4,065,915

CLASS 60

39.82 C 4,065,917
274 4,065,918
4,065,919
276 4,065,920
385 4,065,921
445 4,065,922

CLASS 61

1 F 4,065,923
7 4,065,924
11 4,065,925
13 4,065,926
36 R 4,065,927
4,065,928
45 D 4,065,929
4,065,930
4,065,931
45 R 4,065,932
50 4,065,933
87 4,065,934
95 4,065,935

CLASS 62

3 4,065,936
89 4,065,937
160 4,065,938
217 4,065,939

CLASS 63

2 4,065,940

CLASS 64

7 4,065,941

CLASS 65

18 4,066,426
40 4,066,427
66 4,066,428
107 4,066,429
116 4,066,430

CLASS 66

177 4,065,942

CLASS 69

41 4,065,943

CLASS 70

58 4,065,944
4,065,945
4,065,946

CLASS 71

27 4,066,431
34 4,066,432
67 4,066,433
86 4,066,434
4,066,435
90 4,066,436
91 4,066,437
94 4,066,438
111 4,066,439
119 4,066,440
121 4,066,441

CLASS 72

59 4,065,947
108 4,065,948
164 4,065,949
191 4,065,950
349 4,065,951
391 4,065,952
393 4,065,953
456 4,065,954
476 4,065,955

CLASS 73

9 4,065,956
30 4,065,957
53 4,065,958
56 4,065,959
117.3 4,065,961
141 A 4,065,962
144 4,065,963
150 A 4,065,964
194 EM 4,065,965
228 4,065,966
295 4,065,967
313 4,065,968
421.5 R 4,065,972
423 A 4,065,973
430 4,065,974
510 4,065,975
627 4,065,960
633 4,065,976
727 4,065,969
4,065,971
727 R 4,065,970

CLASS 74

49 4,065,977
82 4,065,978
89.15 4,065,979
404 4,065,980
410 4,065,981
473 R 4,065,982
625 4,065,983
750 B 4,065,984
869 4,065,985

CLASS 75

12 4,066,442
41 4,066,443
58 4,066,444
67 R 4,066,445
96 4,066,446
122 4,066,447
171 4,066,448
211 4,066,449
229 4,066,450
240 4,066,451

CLASS 81

128 4,065,986
177 A 4,065,987

CLASS 82

2.7 4,065,988
38 A 4,065,989

CLASS 83

133 4,065,990
272 4,065,991
285 4,065,992

CLASS 84

1.03 4,065,993
453 4,065,994
465 4,065,995

CLASS 85

64 4,065,996

CLASS 86

39 4,065,997

CLASS 89

11 4,065,998
36 H 4,065,999
198 4,066,000

CLASS 90

3 4,066,001

CLASS 91

36 4,066,002
170 R 4,066,003
183 4,066,004
369 B 4,066,005
433 4,066,006

CLASS 92

125 4,066,007

CLASS 93

49 R 4,066,008
53 M 4,066,009

CLASS 96

1 PE 4,066,452
1 R 4,066,453
1.5 R 4,066,454
4,066,455
29 D 4,066,456
4,066,457
41 4,066,458
45.2 4,066,459
48 R 4,066,460
66.3 4,066,461

CLASS 99

346 4,066,010
467 4,066,011
618 4,066,012

CLASS 100

53 4,066,013

CLASS 101

157 4,066,014
228 4,066,015
4,066,016
425 4,066,017

CLASS 102

67 4,066,018
70.2 R 4,066,019

CLASS 104

7 B 4,066,020
138 R 4,066,021

CLASS 106

14 4,066,462
15 FP 4,066,463
47 Q 4,066,464
50 4,066,465
4,066,466
56 4,066,467
73.4 4,066,468
89 4,066,469
100 4,066,470
104 4,066,471

CLASS 108

14 4,066,022
50 4,066,023

CLASS 110

8 F 4,066,024

CLASS 112

121.15 4,066,026
4,066,027
121.29 4,066,025
4,066,028
158 E 4,066,029

CLASS 114

230 4,066,030
294 4,066,031

CLASS 115

18 E 4,066,032
34 R 4,066,034
4,066,035

CLASS 116

4,066,033
114 R 4,066,036

CLASS 118

49.1 4,066,037
218 4,066,038
500 4,066,039
629 4,066,040
4,066,041

CLASS 119

19 4,066,042

CLASS 123

3 4,066,043
8.09 4,066,044
30 D 4,066,045
32 SA 4,066,059
32 ST 4,066,046
41.12 4,066,047
41.49 4,066,048
48 R 4,066,049
73 SP 4,066,050
117 R 4,066,054
119 A 4,066,052
4,066,056
119 B 4,066,055
148 CA 4,066,053
193 CH 4,066,057
198 E 4,066,058

CLASS 124

35 A 4,066,060
86 4,066,051

CLASS 126

135 4,066,061
271 4,066,062
4,066,063
299 E 4,066,064

CLASS 128

1.5 4,066,065
2 F 4,066,067
2 R 4,066,068
2.05 P 4,066,066
2.06 E 4,066,078
2.06 F 4,066,069
4 4,066,070
7 4,066,071
40 4,066,072
79 4,066,073
89 R 4,066,074
127 4,066,075
142.2 4,066,076
145 A 4,066,077
218 N 4,066,079
251 4,066,080
287 4,066,081
303 R 4,066,082
325 4,066,083
327 4,066,084
418 4,066,085
421 4,066,086

CLASS 130

30 H 4,066,087

CLASS 131

185 4,066,088

CLASS 134

34 4,066,472

CLASS 135

3 E 4,066,089

CLASS 137

62 4,066,090
79 4,066,091
93 4,066,092
355.2 4,066,093
387 4,066,094
486 4,066,095
504 4,066,096
563 4,066,097
615 4,066,098
625.3 4,066,100
625.6 4,066,101
625.64 4,066,102
4,066,103
625.66 4,066,099

CLASS 139

11 4,066,104
54 4,066,105
420 C 4,066,106

CLASS 141

11 4,066,107
68 4,066,108

CLASS 144

28.11 4,066,109
193 A 4,066,110

CLASS 145

4 4,066,111

CLASS 148

1.5 4,066,473
2 4,066,474
3 4,066,475
11.5 A 4,066,476
4,066,480
15 4,066,477
26 4,066,478
111 4,066,479
174 4,066,481

175 4,066,482
187 4,066,483
4,066,484
188 4,066,485

CLASS 152

213 A 4,066,112
430 4,066,113

CLASS 156

48 4,066,486
72 4,066,487
83 4,066,488
258 4,066,489
276 4,066,490
498 Re.29,507
644 4,066,491

CLASS 162

49 4,066,492
158 4,066,493
164 EP 4,066,494
168 NA 4,066,495

CLASS 164

4 4,066,114
9 4,066,115
17 4,066,116
46 4,066,117

CLASS 165

18 4,066,118
41 4,066,119
165 4,066,120
170 4,066,121
175 4,066,122

CLASS 166

68.5 4,066,123
202 4,066,125
252 4,066,124
273 4,066,126
278 4,066,127
315 4,066,128

CLASS 169

37 4,066,129

CLASS 172

81 4,066,130
572 4,066,132
680 4,066,131

CLASS 173

12 4,066,133
27 4,066,134
44 4,066,135
48 4,066,136

CLASS 174

35 GC 4,066,837
48 4,066,838
52 PE 4,066,839
72 R 4,066,840

CLASS 175

14 4,066,137
16 4,066,138
232 4,066,139

CLASS 176

3 4,066,496
22 4,066,497
38 4,066,498
4,066,499
78 4,066,500

CLASS 177

134 4,066,140

CLASS 178

66 R 4,066,841

CLASS 179

1 P 4,066,842
8 A 4,066,843
15 BT 4,066,845
15 BW 4,066,844
16 EC 4,066,846
84 R 4,066,848
99 4,066,847
178 4,066,849

CLASS 180

2 R 4,066,141
33 A 4,066,142
77 S 4,066,143

CLASS 182

140 4,066,144
153 4,066,145

CLASS 184

1 R 4,066,146
15 R 4,066,147

CLASS 187

17 4,066,148

CLASS 188

1 A 4,066,150
1 C 4,066,149
5 4,066,151
171 4,066,152
196 BA 4,066,154
196 M 4,066,153

CLASS 190

3 4,066,155
18 A 4,066,156

CLASS 192

3.24 4,066,157

CLASS 193

34 4,066,158

CLASS 195

29 4,066,501
47 4,066,502
62 4,066,503
63 4,066,504
66 B 4,066,506
66 R 4,066,505
80 R 4,066,507
99 4,066,508
103.5 M 4,066,511
103.5 R 4,066,509
4,066,510
127 4,066,512

CLASS 196

132 4,066,159

CLASS 197

18 4,066,160

CLASS 198

334 4,066,161
377 4,066,162
442 4,066,163
616 4,066,164

CLASS 200

5 A 4,066,850
4,066,851
4,066,852
4,066,853
4,066,854
4,066,855
11 R 4,065,812
44 4,066,856
61.7 4,066,857
84 C 4,066,858
263 4,066,859
308 4,066,860

CLASS 201

39 4,066,513

CLASS 203

11 4,066,514

CLASS 204

14 N 4,066,515
15 4,066,516
43 N 4,066,517
86 4,066,518
98 4,066,519
108 4,066,520
141.5 4,066,521
159.15 4,066,523
159.23 4,066,524
159.24 4,066,522
181 4,066,525
186 4,066,526
192 N 4,066,527
195 T 4,066,528

CLASS 206

340 4,066,165
427 4,066,166
627 4,066,167

CLASS 208

11 R 4,066,529
112 4,066,530
120 4,066,531
131 4,066,532
153 4,066,533

CLASS 209

82 4,066,534
139 A 4,066,535
155 4,066,536
223 R 4,066,537

CLASS 210

15 4,066,538
36 4,066,539
44 4,066,540
51 4,066,541
4,066,542
63 R 4,066,543
64 4,066,544
71 4,066,545
75 4,066,546
78 4,066,547
160 4,066,548
177 4,066,549
183 4,066,550
282 4,066,551
304 4,066,552
321 R 4,066,553
342 4,066,554
402 4,066,555
448 4,066,556
470 4,066,557

CLASS 211

4 4,066,168
57.1 4,066,169
63 4,066,170
69.1 4,066,171
78 4,066,172

CLASS 214

1 C 4,066,173
7 4,066,174
35 R 4,066,175
43 4,066,176
152 4,066,177
313 4,066,178
356 4,066,179

CLASS 215

247 4,066,183
254 4,066,180
256 4,066,181
4,066,182

CLASS 219

61 4,066,861
76.14 4,066,862
121 EM 4,066,863
4,066,864
370 4,066,865
388 4,066,866
483 4,066,867
486 4,066,868
490 4,066,869
528 4,066,870

CLASS 220

9 LG 4,066,184

CLASS 221

26 4,066,185

CLASS 222

48 4,066,186
57 4,066,187
146 HE 4,066,188
334 4,066,189
529 4,066,190
569 4,066,191

CLASS 223

72 4,066,192
88 4,066,193
111 4,066,194

CLASS 224

8 R 4,066,195
30 A 4,066,196
42.01 4,066,197

CLASS 227

8 4,066,198
10 4,066,199

CLASS 228

3.1 4,066,200
115 4,066,201
173 E 4,066,202
180 R 4,066,203
264 4,066,204

CLASS 229

17 B 4,066,205
17 SC 4,066,207
69 4,066,206

CLASS 232

1 C 4,066,208
35 4,066,209

CLASS 235

54 F 4,066,871
92 CM 4,066,874
4,066,876
92 TF 4,066,875
302 4,066,882
302.3 4,066,880
304 4,066,883
487 4,066,873

CLASS 237

53 4,066,210

CLASS 238

10 F 4,066,211
349 4,066,212

CLASS 239

265.19 4,066,214
533.3 4,066,213

CLASS 241

46.11 4,066,215
190 4,066,216

CLASS 242

25 R 4,066,217
35.5 A 4,066,218
46.2 4,066,219
55 4,066,220
55.19 A 4,066,221
107.4 A 4,066,223
107.4 B 4,066,222
115 4,066,224
118.8 4,066,225

CLASS 244

36 4,066,226
118 P 4,066,227

CLASS 246

5 4,066,228
34 CT 4,066,229
182 B 4,066,230

CLASS 248

13 4,066,231
226.2 4,066,232
231 4,066,233
358 R 4,066,234
482 4,066,235

CLASS 249

160 4,066,236
213 4,066,237

CLASS 250

199 4,066,890
253 4,066,891
270 4,066,892
282 4,066,893
292 4,066,894
296 4,066,895
315 A 4,066,896
358 P 4,066,899
358 R 4,066,897
359 4,066,898
360 4,066,900
4,066,901
363 S 4,066,902
4,066,903
372 4,066,904
396 R 4,066,905
445 T 4,066,906
453 4,066,907
483 4,066,908
497 4,066,909
555 4,066,910

CLASS 251

6 4,066,238
31 4,066,239
175 4,066,240
361 4,066,241

CLASS 252

8.9 4,066,558
10 4,066,559
21 4,066,560
33.4 4,066,561
52 R 4,066,562
62.1 P 4,066,563
62.56 4,066,564
4,066,565
136 4,066,566
299 4,066,567
4,066,569
4,066,570
316 4,066,568
431 C 4,066,571
437 4,066,572
439 4,066,573
4,066,574
475 4,066,575
511 4,066,576

CLASS 254

10.5 4,066,242
133 R 4,066,243

CLASS 256

1 4,066,244

CLASS 260

2 R 4,066,577
2.5 AG 4,066,578
2.5 AP 4,066,579
2.5 AW 4,066,580
8 4,066,581
17 A 4,066,582
17.4 CL 4,066,584
17.4 SG 4,066,583
18 N 4,066,585
22 CB 4,066,586
22 D 4,066,587
22 TN 4,066,588
28.5 A 4,066,590
29.2 E 4,066,593
29.2 EP 4,066,592
29.2 M 4,066,594
29.2 TN 4,066,591
29.4 R 4,066,595
29.6 H 4,066,589
29.6 R 4,066,596
29.6 WB 4,066,597
29.7 S 4,066,598
30.6 R 4,066,599
4,066,600
30.8 R 4,066,601
4,066,602
37 EP 4,066,605
37 R 4,066,604
37 SB 4,066,603
40 R 4,066,606
4,066,607
42.18 4,066,608
4,066,609
42.21 4,066,610
42.53 4,066,612
42.54 4,066,613
45.8 A 4,066,611
4,066,617
45.8 NT 4,066,615
4,066,616
45.8 NZ 4,066,614
45.85 T 4,066,618
45.95 C 4,066,619
47 C 4,066,620
4,066,623
47 CP 4,066,622
47 UA 4,066,621
49 4,066,624
59 R 4,066,625
75 M 4,066,627
75 N 4,066,626
77.5 D 4,066,630
77.5 R 4,066,628
4,066,629
78 R 4,066,631
79.1 4,066,632
112 R 4,066,633
112.5 R 4,066,635
4,066,684
112.5 S 4,066,634
117 4,066,636
146 R 4,066,637
196 4,066,638
239 BF 4,066,639
239.1 4,066,640
251 P 4,066,642
256.4 F 4,066,643
4,066,644
4,066,645
268 SY 4,066,649
268 TR 4,066,647
4,066,648
281 G 4,066,650
287 K 4,066,651
289 XA 4,066,652
293.61 4,066,653
293.69 4,066,654
295.5 T 4,066,655
302 F 4,066,656
306.7 R 4,066,657
326.13 F 4,066,659
326.14 R 4,066,660
326.15 4,066,661
326.2 4,066,658
326.85 4,066,662
327 B 4,066,663
332.2 H 4,066,664
332.5 4,066,665
340.9 AS 4,066,666
345.3 4,066,667
347.3 4,066,668
347.5 4,066,669
347.7 4,066,670
4,066,671
4,066,672
348.13 4,066,673
397.5 4,066,674
400 4,066,675
402.5 4,066,676
428.5 4,066,677
429 R 4,066,678
438.1 4,066,679
448.2 E 4,066,680
455 A 4,066,681
462 R 4,066,682
465.5 R 4,066,683
500.5 H 4,066,686
531 R 4,066,691
535 P 4,066,687
4,066,688
544 C 4,066,689
544 Y 4,066,690
555 A 4,066,693
559 AT 4,066,694
562 B Re.29,508
564 E 4,066,695
564 R 4,066,696
567 4,066,697
569 4,066,698
583 R 4,066,699
590 C 4,066,700
4,066,701
4,066,702
592 4,066,703
604 HF 4,066,705
604 R 4,066,704
610 B 4,066,706
613 D 4,066,708
613 R 4,066,707
618 B 4,066,709
631.5 4,066,710
637 R 4,066,711
668 D 4,066,712
677 A 4,066,713
682 4,066,714
683.15 B 4,066,715
683.47 4,066,716
874 4,066,717
878 B 4,066,718
970 4,066,719

CLASS 261

44 R 4,066,720
62 4,066,721
87 4,066,722

CLASS 264

34 4,066,723
39 4,066,724
40.5 4,066,725
89 4,066,726
94 4,066,727
162 4,066,728
169 4,066,729
191 4,066,730
216 4,066,731
229 4,066,732

CLASS 266

216 4,066,248

CLASS 269

21 4,066,249
43 4,066,250

CLASS 270

37 4,066,251

CLASS 271

3 4,066,252
4 4,066,253
236 4,066,254
265 4,066,255

CLASS 272

18 4,066,256
69 4,066,257
85 4,066,258
94 4,066,259

CLASS 273

73 C 4,066,260
102 B 4,066,261
105 R 4,066,262
143 R 4,066,264
153 R 4,066,265
273 4,066,263

CLASS 274

23 R 4,066,266
4,066,267
42 R 4,066,268

CLASS 277

228 4,066,269

CLASS 279

2 R 4,066,270

CLASS 280

1.182 4,066,271
79.1 R 4,066,272
211 4,066,273
411 A 4,066,274
605 4,066,275
4,066,276
626 4,066,277
710 4,066,278
711 4,066,279

CLASS 283

8 R 4,066,280

CLASS 285

31 4,066,281
39 4,066,282
53 4,066,283

CLASS 290

44 4,066,911

CLASS 292

62 4,066,284

CLASS 293

4,066,285
87 4,066,286

CLASS 294

74 4,066,287
83 R 4,066,288

CLASS 296

1 A 4,066,289
78.1 4,066,290
4,066,291
137 C 4,066,292

CLASS 297

325 4,066,293
4,066,294
443 4,066,295

CLASS 298

22 J 4,066,296

CLASS 299

4 4,066,297

CLASS 302

2 R 4,066,298

CLASS 303

6 C 4,066,303
20 4,066,299
96 4,066,300
115 4,066,301

CLASS 305

11 4,066,302

CLASS 307

3 4,066,912
38 4,066,913
237 4,066,914
238 4,066,915
253 4,066,916
304 4,066,917
4,066,918
353 4,066,919

CLASS 308

3.5 4,065,852
201 4,066,304

CLASS 310

61 4,066,921
80 4,066,922
168 Re.29,509
310 4,066,920

CLASS 312

195 4,066,305
224 4,066,306
242 4,066,307
333 4,066,308

CLASS 313

402 4,066,923
408 4,066,924
503 4,066,925

CLASS 315

3.5 4,066,927
39.51 4,066,928
73 4,066,926
169 TV 4,066,929
209 R 4,066,930
241 R 4,066,931
244 4,066,932

CLASS 316

5 4,066,309
19 4,066,310
28 4,066,311

CLASS 318

60 4,066,933
138 4,066,935
139 4,066,934
4,066,936
221 G 4,066,937
227 4,066,938
251 4,066,939
294 4,066,940
341 4,066,941
434 4,066,942
468 4,066,943
571 4,066,944
681 4,066,945
685 4,066,946
696 4,066,947

CLASS 322

16 4,066,957

CLASS 324

30 R 4,066,948
51 4,066,950
61 R 4,066,951
83 D 4,066,952
123 R 4,066,953
125 4,066,958
141 4,066,959
142 4,066,960
163 4,066,961
208 4,066,962
262 4,066,949

CLASS 325

55 4,066,964
120 4,066,965
308 4,066,966
310 4,066,967

CLASS 328

1 4,066,968
5 4,066,969
67 4,066,970
267 4,066,971

CLASS 329

134 4,066,972

CLASS 330

10 4,066,973
4,066,974
81 4,066,975
86 4,066,976
129 4,066,977

CLASS 331

1 A 4,066,978
56 4,066,979
94.5 G 4,066,980
108 B 4,066,981
111 4,066,982
117 R 4,066,983

CLASS 333

30 R 4,066,984
72 4,066,985
4,066,986
82 B 4,066,988
95 R 4,066,987

CLASS 335

9 4,066,989
174 4,066,990
216 4,066,991

CLASS 339

48 4,066,312
75 P 4,066,313
89 M 4,066,315
89 R 4,066,314
91 R 4,066,316
4,066,317
92 M 4,066,318
97 R 4,066,319
98 4,066,320
4,066,321
111 4,066,322
126 J 4,066,324
126 R 4,066,323
176 MP 4,066,325
221 M 4,066,326
252 R 4,066,327

CLASS 340

15.5 MC 4,066,992
15.5 TS 4,066,993
18 LD 4,066,995
18 NC 4,066,994
52 R 4,066,996
59 4,066,997
146.3 AC 4,066,998
146.3 S 4,066,999
171 R 4,067,000
237 R 4,067,004
279 4,067,005
325 4,067,006
347 SY 4,067,007
409 4,067,008

CLASS 343

5 CM 4,067,009
6.8 LC 4,067,010
4,067,011
7 A 4,067,012
7.7 4,067,013
113 DE 4,067,014
225 4,067,015
700 MS 4,067,016

CLASS 346

46 4,067,017
74.1 4,067,018
75 4,067,019
4,067,020
76 L 4,067,021

CLASS 350

7 4,066,328
77 4,066,329
80 4,066,330
103 4,066,331
126 4,066,332
160 LC 4,066,333
4,066,334
4,066,335
4,066,337
160 R 4,066,336
161 W 4,066,338
175 E 4,066,339
184 4,066,340
285 4,066,341
288 4,066,342
295 4,066,343
310 4,066,344

CLASS 352

12 4,066,963
27 4,066,345
72 4,066,346
129 4,066,348
141 4,066,347

CLASS 353

25 4,066,349
26 A 4,066,872
27 R 4,066,350

CLASS 354

7 4,067,022
23 D 4,067,023
23 R 4,067,024
62 4,067,025
77 4,067,026
79 4,067,027
137 4,067,029
139 4,067,030
141 4,067,028
195 4,067,031
288 4,067,032
289 4,067,033
310 4,067,034
313 4,067,035

CLASS 355

3 R 4,066,351
3 TE 4,066,352
4 4,066,353
28 4,066,354
38 4,066,355
63 4,066,356
66 4,066,357
75 4,066,358

CLASS 356

36 4,066,359
39 4,066,360
41 4,066,361
180 4,066,362
198 4,066,363
207 4,066,364
244 4,066,365

CLASS 357

22 4,067,036
34 4,067,037
46 4,067,038
65 4,067,039
74 4,067,040
80 4,067,041
82 4,067,042

CLASS 358

55 4,067,043
128 4,067,044
211 4,067,045
213 4,067,046
240 4,067,047
243 4,067,048

CLASS 360

14 4,067,049
40 4,067,050
95 4,067,051

CLASS 361

42 4,067,052
76 4,067,053
91 4,067,054
159 4,067,055
233 4,067,056

CLASS 362

16 4,066,884
18 4,066,885
68 4,066,886
102 4,066,889
223 4,066,888
341 4,066,887

CLASS 363

21 Re.29,510
37 4,066,954
41 4,067,057
68 4,066,955
131 4,066,956

CLASS 364

200 4,065,862
4,067,058
4,067,059
245 4,066,877
246 4,066,761
4,066,762
724 4,066,878
726 4,066,881
900 4,067,061

CLASS 365

12 4,067,003
43 4,067,002
174 4,067,001

CLASS 366

267 4,066,771
4,066,772
4,066,773
269 4,066,774
293 4,066,246

CLASS 401

285 4,066,366
286 4,066,367

CLASS 403

115 4,066,369
211 4,066,368
217 4,066,370
218 4,066,371
302 4,066,372
391 4,066,373

CLASS 404

117 4,066,374
121 4,066,375

CLASS 407

101 4,066,376

CLASS 408

1 R 4,066,377
46 4,066,378
125 4,066,379
4,066,380

CLASS 415

202 4,066,381

CLASS 416

186 A 4,066,382
186 R 4,066,383
189 4,066,384

CLASS 417

172 4,066,385
199 A 4,066,386

CLASS 423

32 4,066,733
61 4,066,734
159 4,066,735
386 4,066,736
447.6 4,066,737
569 4,066,738
571 4,066,739
628 4,066,740
658 4,066,741

CLASS 424

1 4,066,742
5 4,066,743
12 4,066,744
49 4,066,745
62 4,066,746
78 4,066,747
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181 4,066,753
229 4,066,754
230 4,066,755
232 4,066,756
243 4,066,757
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245 4,066,760
246 4,066,761
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4,066,763
248.54 4,066,764
248.56 4,066,765
251 4,066,766
4,066,767
263 4,066,768
4,066,769
4,066,770
267 4,066,771
4,066,772
4,066,773
269 4,066,774
270 4,066,775
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273 R 4,066,777
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4,066,780
283 4,066,781
285 4,066,782
289 4,066,783
305 4,066,784
308 4,066,785
312 4,066,692
313 4,066,786
317 4,066,787
333 4,066,788
365 4,066,789

CLASS 426

8 4,066,790
39 4,066,791
41 4,066,792
60 4,066,793
61 4,066,794
259 4,066,795
282 4,066,813
302 4,066,796
307 4,066,797
393 4,066,798
534 4,066,799
582 4,066,800

CLASS 427

8 4,066,801
24 4,066,802
26 4,066,803
98 4,066,804
226 4,066,805
253 4,066,806
282 4,066,807
428 4,066,808
444 4,066,809

CLASS 428

195 4,066,810
220 4,066,811
265 4,066,812
333 4,066,814
336 4,066,815
4,066,816
339 4,066,817
341 4,066,818
472 4,066,819
483 4,066,820
539 4,066,821

CLASS 429

27 4,066,822
41 4,066,823
50 4,066,824
71 4,066,825
104 4,066,826

CLASS 526

50 4,066,827

CLASS 536

87 4,066,828
103 4,066,829

CLASS 542

456 4,066,830

CLASS 544

17 4,066,641
105 4,066,831
4,066,832

CLASS 548

356 4,066,833

CLASS 560

53 4,066,836
98 4,066,835
121 4,066,834
260 4,066,685

CLASSIFICATION OF DESIGNS

D6—	37	246,811		194	246,822			246,833	D12—	21	246,848	D23—	43	246,855		5 GH	246,865
	48	246,812	D8—	14	246,823		127	246,834		90	246,849		165	246,856		15 HH	246,866
	75	246,813		67	246,824			246,835		114	246,850	D24—	8	246,857			246,867
	85	246,814		319	246,825		128	246,836		133	246,838		48	246,858	D56—	1 A	246,869
	201	246,816		354	246,826			246,837	D13—	34	246,851	D25—	68	246,859	D64—	11 B	246,870
	202	246,815		370	246,827		133	246,839	D14—	59	246,852		71	246,860	D87—	1 R	246,871
	252	246,817	D9—	267	246,828		134	246,840	D15—	4	246,853		79	246,861			246,872
D7—	1	246,818	D10—	101	246,829		136	246,841		32	246,845	D27—	39	246,862		3 C	246,873
	17	246,819	D11—	12	246,830		137	246,842		127	246,846		42	246,863		3 F	246,874
	128	246,820		125	246,831			246,843	D19—	87	246,847	D34—	5 CB	246,864		8.4	246,875
		246,821			246,832		152	246,844	D22—	18	246,854		5 CC	246,868			

CLASSIFICATION OF PLANTS

P.—	68	4,174			4,176			4,178			4,179			4,180			4,181
		4,175			4,177												

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

28—	100	T966,001															
93—	8 VB	T966,002	176—	40	T966,004	260—	49	T966,006	296—	28 R	T966,007	323—	61	T966,010	428—	259	T966,012
96—	94 BF	T966,003	179—	90 B	T966,005		599	T966,008	302—	2 R	T966,009	340446.3	AC	T966,011	526—	140	T966,013

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
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Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 4,066,316	4,066,180	4,066,988	12 : 4,065,820	4,066,166	4,066,618
4,066,432	4,066,187	4,067,003	4,065,906	4,066,167	4,066,799
4,066,871	4,066,192	4,067,006	4,065,926	4,066,183	4,066,803
2 : 4,065,995	4,066,194	4,067,009	4,065,961	4,066,191	4,066,862
4 : 4,065,862	4,066,200	4,067,010	4,066,073	4,066,205	4,066,870
4,065,867	4,066,217	4,067,012	4,066,085	4,066,206	4,067,000
4,066,046	4,066,231	4,067,013	4,066,146	4,066,236	4,067,048
4,066,118	4,066,242	4,067,016	4,066,178	4,066,239	19 : 4,065,967
4,066,874	4,066,256	4,067,019	4,066,262	4,066,255	4,065,998
4,066,880	4,066,265	4,067,025	4,066,342	4,066,269	4,066,058
4,066,919	4,066,270	4,067,049	4,066,379	4,066,283	4,066,099
4,067,011	4,066,281	4,067,055	4,066,381	4,066,305	4,066,213
4,067,039	4,066,285	4,067,057	4,066,385	4,066,306	4,066,302
5 : 4,066,061	4,066,290	7 : 4,066,164	4,066,548	4,066,310	20 : 4,065,833
4,066,555	4,066,293	8 : 4,065,915	4,066,796	4,066,318	4,066,036
6 : Re.29,506	4,066,294	4,065,959	4,066,879	4,066,331	4,066,274
Re.29,507	4,066,299	4,066,074	4,066,945	4,066,349	4,066,436
4,065,813	4,066,329	4,066,529	4,066,953	4,066,365	4,066,439
4,065,824	4,066,330	4,066,732	4,066,977	4,066,398	4,066,774
4,065,843	4,066,348	4,066,883	4,066,998	4,066,422	4,066,920
4,065,844	4,066,356	4,067,008	4,067,038	4,066,443	21 : 4,066,025
4,065,846	4,066,373	4,067,024	13 : 4,066,009	4,066,467	4,066,094
4,065,855	4,066,374	9 : 4,065,854	4,066,080	4,066,552	4,066,393
4,065,857	4,066,375	4,065,879	4,066,087	4,066,572	4,066,533
4,065,873	4,066,438	4,066,018	4,066,179	4,066,593	22 : 4,065,822
4,065,885	4,066,473	4,066,155	4,066,185	4,066,604	4,065,872
4,065,887	4,066,481	4,066,220	4,066,219	4,066,622	4,065,893
4,065,892	4,066,486	4,066,343	4,066,317	4,066,654	4,066,030
4,065,899	4,066,534	4,066,377	4,066,475	4,066,667	4,066,221
4,065,907	4,066,569	4,066,476	4,066,536	4,066,677	4,066,445
4,065,919	4,066,573	4,066,480	4,066,913	4,066,723	4,066,530
4,065,929	4,066,574	4,066,557	16 : 4,066,237	4,066,725	4,066,642
4,065,940	4,066,602	4,066,657	17 : 4,065,852	4,066,740	4,066,687
4,065,966	4,066,605	4,066,694	4,065,853	4,066,790	4,066,688
4,065,969	4,066,663	4,066,696	4,065,860	4,066,801	4,066,899
4,065,970	4,066,720	4,066,727	4,065,908	4,066,817	24 : 4,066,062
4,065,976	4,066,742	4,066,766	4,065,909	4,066,858	4,066,088
4,065,986	4,066,747	4,066,783	4,065,911	4,066,872	4,066,193
4,066,011	4,066,795	4,066,857	4,065,936	4,066,873	4,066,361
4,066,024	4,066,833	4,066,865	4,065,951	4,066,942	4,066,405
4,066,033	4,066,847	4,066,944	4,065,978	4,066,996	4,066,578
4,066,039	4,066,848	4,066,952	4,065,990	4,067,020	4,066,736
4,066,048	4,066,869	06 : 4,066,931	4,066,015	18 : Re.29,508	4,066,819
4,066,072	4,066,893	10 : 4,065,875	4,066,047	Re.29,509	4,066,844
4,066,076	4,066,901	4,066,362	4,066,052	4,065,881	4,066,897
4,066,077	4,066,910	4,066,412	4,066,055	4,065,891	4,066,971
4,066,079	4,066,914	4,066,424	4,066,081	4,065,946	25 : 4,065,871
4,066,089	4,066,917	4,066,434	4,066,108	4,065,992	4,065,963
4,066,096	4,066,943	4,066,558	4,066,119	4,066,002	4,066,037
4,066,137	4,066,964	4,066,620	4,066,131	4,066,134	4,066,095
4,066,140	4,066,965	4,066,656	4,066,132	4,066,145	4,066,138
4,066,149	4,066,974	4,066,777	4,066,154	4,066,307	4,066,168
4,066,156	4,066,981	11 : 4,065,814	4,066,157	4,066,433	4,066,246

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31 : 4,065,964
4,066,148
32 : 4,065,861
4,066,232
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33 : 4,065,849
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34 : 4,065,819
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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

18 : T966,010
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27 : T966,011
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UNITED STATES PATENT and TRADEMARK OFFICE

January 10, 1978 Volume 966 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

National Inventors Day

The Sixth Annual Inventors Day Exposition will be held on Saturday and Sunday, February 11 and 12, 1978 at the Patent and Trademark Office in Arlington, Virginia.

Limited space is available for appropriate display and demonstration of patented materials, devices or methods. Such limited space dictates early consideration by perspective participants. No application can be considered after January 20, 1978.

Other than electricity and allotted space—floor, wall or table top, all expenses must be borne by the exhibitor. Arrangements for delivery, return, set up and take down, as well as individual exhibits and personnel are the exhibitor's responsibility. Neither the Patent and Trademark Office nor individual employees can accept a collect shipment or provide storage.

The Patent and Trademark Office National Inventors Day Committee will select the items to be exhibited and allot available space. Suitability for dynamic demonstration and current public interest are prime consideration in selecting exhibits.

Inventors or firms interested in participating are encouraged to contact the National Inventors Day Committee (phone: 557-3428). Communications should be directed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attn: Oscar Mastin, Office of Information Services.

JOSEPH PETERS,
Chairman.

Dec. 7, 1977

National Inventors Day

The Patent and Trademark Office will be sponsoring National Inventors Day in the Public Search Room on Saturday, February 11, from 1:00 p.m. to 5:00 p.m. and Sunday February 12, 1978 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend a formal program at 2:00 p.m. on Sunday.

In order to accommodate the exhibits, it will be necessary to close the Public Search Room at 5:00 p.m. on Friday, February 10, 1978.

We would appreciate the cooperation of all users of the Search Room facilities in removing all personal items and belongings in order to permit the early closing time.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

Dec. 7, 1977

Trademark Rule 2.165 Requirements Where a Section 8 Affidavit or Declaration Is Held Insufficient

Several recent Petitions to the Commissioner have indicated a failure on the part of registrants and their attorneys to follow the requirements of Trademark Rule 2.165. Therefore, reviewing certain basic elements of this rule is considered timely so as to alert registrants and attorneys to technical errors which might lead to the cancellation of a valuable trademark registration.

Part (a) of Rule 2.165 indicates that the examiner will notify the registrant when an affidavit or declaration of use under Section 8 of the Statute is insufficient and the reasons therefor. When the registrant wishes the examiner to reconsider the affidavit or declaration, or when the registrant has taken additional steps to rectify the deficiencies and desires to have the examiner reconsider the affidavit or declaration in light of those steps, the request for reconsideration must be submitted within 6 months of the date of mailing of the notice of insufficiency.

Note, however, that a supplemental or substitute affidavit or declaration required by Section 8 cannot be considered unless it is received before the expiration of the six year anniversary of the registration. Consequently, registrants should file their affidavits as early as possible during the sixth year following registration.

There are situations where correcting the deficiency in the affidavit or declaration requires recording an assignment with the Assignment Division of this Office. If the recording cannot be completed within 6 months, the registrant must at least repond to the examiner's notice of insufficiency within that period. The response must indicate the steps being taken to correct the deficiency. The examiner can then allow the registrant additional time or suspend action depending on the circumstances. Registrants must always observe the "six month response" period whenever responding to the examiner from an adverse action.

Part (b) of Rule 2.165 permits a registrant to request the Commissioner to review the action of the examiner when he is dissatisfied with that action. Review by the Commissioner should be sought only where it is believed that the examiner has erred in his action. In other words, the Commissioner's role is to review the correctness of the examiner's action and not to serve as an alter ego of the examiner before whom the registrant may seek to correct deficiencies.

When review by the Commissioner has been sought, the decision on that request constitutes the final action of the Patent and Trademark Office. If no review by the Commissioner is sought and if no request for reconsideration of an examiner's action is timely filed, the Commissioner will notify the registrant of the deficiency in the affidavit or declaration after the sixth year has expired. Such notice is never mailed prior to the expiration of the sixth year following registration nor until a reasonable time has elapsed following a six month period from the last action mailed by this Office. This notice constitutes the final action of the Patent and Trademark Office in those cases where the Commissioner's review has not been sought. Once this notice has been mailed, it is too late (under the Rules of Practice) to request the Commissioner to review the action of the examiner. Review would only be proper if an affiant could show circumstances sufficient to suspend the finality element of Rule 2.165(b) pursuant to Rule 2.148.

Registrants will be held to strict compliance with Rule 2.165 as it has been briefed above. Therefore, parties are urged to respond fully as soon as possible after an action is received from the examiner.

BERNARD A. MEANY,
Assistant Commissioner for Trademarks.

Dec. 12, 1977.

Official Journal of the European Patent Office

The European Patent Office has requested that the following notice be published in the OFFICIAL GAZETTE. It should be noted that the first applications under the European Patent Convention will be accepted on June 1, 1978. The notice reads as follows:

Official Journal of the European Patent Office

"The first issue of the Official Journal of the European Patent Office will appear in December 1977. The contents will include an announcement concerning the filing of patent applications and the fields of technology in which it is hoped to accept patent applications from 1 June 1978 and from 1 December 1978, an organigram of the European Patent Organisation, the rules relating to fees and amendments to the Implementing Regulations. Single copies will cost DM 10.—(within Europe) and DM 12.—(overseas) including postage.

"The second issue of the Official Journal of the European Patent Office will appear in January 1978. It will contain the first list of professional representatives (Article 163 EPC), the provisions adopted by the Administrative Council under Article 134 (8) EPC and the forms for authorisations and general authorisations (Rule 101 EPC). Single copies will cost DM 16.—(within Europe) and DM 19.—(overseas) including postage.

"These two issues can be ordered separately or together from:

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Telex 05 23 656

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LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

Dec. 14, 1977.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,811,069, A. H. Faulkner, ELECTRICAL MUSICAL INSTRUMENT, filed Jan. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c138, *Alfred H. Faulkner* v. *Gulbransen Industries, Inc.* By agreement order the plaintiff's complaint is dismissed with prejudice and the defendant's counterclaim is dismissed with prejudice, Dec. 12, 1973.

3,018,500, J. W. Anderson, WINDSHIELD WIPER BLADE; **3,372,423,** same, WINDSHIELD CLEANER, filed Dec. 26, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3238, *The Anderson Co.* v. *The Gates Rubber Co.* Joint motion of parties for entry of order of dismissal, etc. granted, Sept. 25, 1975.

3,024,805, B. M. Horton, NEGATIVE FEEDBACK FLUID AMPLIFIER; **3,122,165,** same, FLUID-OPERATED SYSTEM, **3,185,166,** Horton and Bowles, FLUID OSCILLATOR; **3,396,619,** Bowles and Warren, FLUID AMPLIFIER EMPLOYING BOUNDARY LAYER EFFECT; **3,439,695,** P. Bauer, FLUID-DRIVEN TIMING MECHANISM, filed Aug. 11, 1977, D.C. Md. (Baltimore), Doc. HM77-1331, *Bowles Fluidics Corporation* v. *Sears, Roebuck and Company.*

3,062,108, C. R. Mayo, ELECTROPHOTOGRAPHIC COPYING APPARATUS; **3,062,536,** Rutkus and Mott, SHEET STRIPPING APPARATUS; **3,090,618,** Eichler, Eichorn and Rutkus, SHEET HANDLING CONTROL APPARATUS; **3,539,161,** J. R. Byrne, HEAT FIXING APPARATUS FOR FUSIBLE MATERIAL; **3,615,129,** Drawe, Wagner and Wirley, DUPLEXING XEROGRAPHIC REPRODUCING MACHINE WITH A COPY SHEET REVERSING STATION; **3,743,405,** F. J. Sanza, TRANSPORT ASSEMBLY; **3,778,147,** Reehil and Buddendeck, ELECTROSTATIC REPRODUCTION MACHINE HAVING SELECTABLE MAGNIFICATION RATIOS; **3,805,739,** Feldeisen and Stanley, CONTROLLING MULTIPLE VOLTAGE LEVELS FOR ELECTROSTATIC PRINTING, filed Mar. 4, 1977, D.C., S.D.N.Y., Doc. 77-C-1074 (LPG), *Xerox Corporation* v. *International Business Machines Corporation.*

3,062,536. (See 3,062,108.)

3,090,618. (See 3,062,108.)

3,122,165. (See 3,024,805.)

3,149,431, M. B. Blish, SELF-ALIGNING NECK CARD LABEL, filed Sept. 18, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2398, *Matthew B. Blish* v. *Pfizer, Inc.* Stipulation to dismiss complaint and counterclaim granted, Mar. 15, 1974.

3,165,811, Kleimack, Loar and Theuerer, PROCESS OF EPITAXIAL VAPOR DEPOSITION WITH SUBSEQUENT DIFFUSION INTO THE EPITAXIAL LAYER, filed Apr. 21, 1976, D.C., N.D. Ill. (Chicago), Doc. 76c1476, *Western Electric Company, Inc.* v. *Euro Electronics, Inc. and Allgemeine Elektricitats-Gesellschaft-AEG Telefunken.* Filed plaintiff's notice of dismissal against Euro Electronics, Inc. pursuant to 41 (a) (1) (i), Jan. 4, 1977.

3,167,279, B. R. A. Refell, PARACHUTE, filed Oct. 5, 1971, United States Court of Claims (District of Columbia), Doc. 755-71, *Walter Kidde & Company, Inc. and Walter Kidde Company, Ltd.* v. *The United States.* Judgment is entered for plaintiff, Aug. 15, 1977.

3,185,166. (See 3,024,805.)

3,249,426, R. S. Haydock, HOODED CASTER WHEEL ASSEMBLY, filed Apr. 23, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1288, *Raymond Haydock, Jr. and Sandra Haydock Newman* v. *Slidematic Products Co.* By agreement of parties, all matters in controversy having been resolved, it is ordered that this action is dismissed as to all parties, Aug. 21, 1975.

3,372,423. (See 3,018,500.)

3,396,619. (See 3,024,805.)

3,396,689, R. W. Allington APPARATUS PROVIDING A CONSTANT-RATE-TWO COMPONENT FLOW STREAM, filed Feb. 17, 1977, D.C. Mass. (Boston), Doc. CA77-506-T, *Waters Associates, Inc.* v. *Instrumentation Specialties Co.* Notice of Dismissal of complaint without prejudice, July 26, 1977.

3,439,695. (See 3,024,805.)

3,514,765, A. O. Christensen, SENSE AMPLIFIER COMPRISING CROSS COUPLED MOSFETS OPERATING IN A RACE MODE FOR SINGLE DEVICE PER BIT MOSFET MEMORIES; **3,678,473,** S. Wahlstrom, READ-WRITE CIRCUIT FOR CAPACITIVE MEMORY ARRAYS, filed July 5, 1977, D.C., N.D. Tex. (Dallas), Doc. CA3-77-0899-F, *Shell Oil Company* v. *Texas Instruments Incorporated.* Same, filed July 5, 1977, D.C., N.D. Tex. (Dallas), Doc. CA3-77-0900, *Shell Oil Company* v. *Mostek Corporation.*

3,539,161. (See 3,062,108.)

3,615,129. (See 3,062,108.)

3,678,473. (See 3,514,765.)

3,743,405. (See 3,062,108.)

3,778,147. (See 3,062,108.)

3,805,739. (See 3,062,108.)

3,898,004, E. Tiger, MICROFICHE READER-PRINTER, filed Aug. 3, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2823, *Bell & Howell Company* v. *GAF Corporation.*

3,910,434, Ebeling and Ebeling, MECHANICALLY ACTUATED SIDE LOADING ARRANGEMENT FOR A VEHICLE BODY; **3,944,092,** same, CONTAINER EMPTYING DEVICE, filed July 27, 1977, D.C., W.D. Tex. (San Antonio), Doc. SA77-CA-226, *Franklin D. Ebeling et al.* v. *Pak-Mor Manufacturing Company.*

3,944,092. (See 3,910,434.)

3,954,265, D. L. Taylor, BALANCED GOLF CLUB; D. 240,715, R. R. Schwartz, TISSUE BOX COVER OR SIMILAR ARTICLE, filed Aug. 8, 1977, D.C., S.D. Calif. (San Diego), Doc. 77-0518-S, *Taylorcraft* v. *Clf., Inc., doing business as House of Golf; John P. Duffy, Lois K. Duffy and John W. Ketchen.*

3,988,207, K. Aunstrup, PREPARATION OF A MILK-COAGULATING ENZYME, filed Aug. 1, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2778, *Novo Terapeutisk Laboratorium A/S* v. *Travenol Laboratories, Inc.*

4,005,237, I. Panken, NON-BLEED PRE-PRINTED SPIRIT DUPLICATING MASTERS, filed Aug. 15, 1977, D.C., W.D. Mich. (Grand Rapids), Doc. K77-413 CA8, *The Mazer Corporation* v. *R. W. Patterson Printing Co., Inc.*

4,032,009, R. E. Taylor, CONTAINER SYSTEM FOR GARAGE DOOR OPENER, filed July 29, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2756. *Robert E. Taylor and Aaron M. Schmidt* v. *Sears, Roebuck & Co. and Chamberlain Manufacturing Corporation.*

D. 212,408, D.D. Fishback, SET OF SIGN PANEL LETTERS, NUMERALS AND SYMBOLS, filed Aug. 3, 1977, D.C. Colo. (Denver), Doc. 77-F-734, *David D. Fishback* v. *Globemaster Rocky Mountain, Inc. et al.*

D. 216,209, L. J. Campbell, TRICYCLE, filed Aug. 1, 1977, D.C., S.D.N.Y., Doc. 77-C-3717 LFM, *Louis Marx & Co. Inc.* v. *Plascor Inc.*

D. 218,999, Ross and Wilkens, BICYCLE FRAME; **Reg. No. 944,510** (APOLLO), Chain Bike Corporation, filed July 7, 1977, D.C., S.D.N.Y., Doc. 77-C-3311, *Chain Bike Corporation* v. *S.S.T. Trade & Development et al.* Consent judgment. defendant is permanently enjoined from infringing said patent and trademark registration, Aug. 4, 1977.

D. 237,121, M. J. Metsner, TOOL CHEST OR SIMILAR ARTICLE; Reg. No. 964,447 ("JUST IN CASE"), Glovemakers, Inc., doing business as Sterling Novelty Products, filed Oct. 9, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3408, *Glovemakers, Inc.* v. *Eins Products, Inc.* Final judgment entered by consent, defendant is enjoined from further infringement, Feb. 2, 1976.

D. 240,715. (See 3,954,265.)

Reg. No. 944,510. (See D. 218,999.)

Reg. No. 964,447. (See D. 237,121.)

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 220,013, Re. S.N. 852,161, Filed Nov. 16, 1977, Cl. D29/99, WARNING SIGNAL, Martin Kaltman, Owner of Record: *Queens Devices, Incorporated, Long Island City, N.Y.*, Attorney or Agent: Leon Zitver, Ex. Gp.: 290

3,278,327, Re. S.N. 850,034, Filed Nov. 9, 1977, Cl. 282/27.5, COLORLESS RECORDING PAPER, Chester Davis, Owner of Record: *Scott Paper Company, Philadelphia, Pa.*, Attorney or Agent: Rudolf E. Hutz, et al., Ex. Gp.: 164

3,916,820, Re. S.N. 848,772, Filed Nov. 4, 1977, Cl. 116/124.2 R, ELONGATED STRIP TYPE INDICATOR ARRANGEMENT FOR UHF TELEVISION TUNER, Alarico A. Valdettaro, Owner of Record: *Sarkes Tarzian, Inc., Bloomington, Ind.*, Attorney or Agent: Richard D. Mason, et al., Ex. Gp.: 244

3,918,434, Re. S.N. 850,770, Filed Nov. 11, 1977, Cl. 128/2 A, METHOD AND APPARATUS FOR DETERMINING THE PERFUSION EFFICIENCY FACTOR OF ANIMAL TISSUE, Dietrich W. Lubbers, et al., Owner of Record: *Eschweiler & Co., Kiel, Germany*, Attorney or Agent: Norman E. Brunell, et al., Ex. Gp.: 335

3,918,817, Re. S.N. 848,773, Filed Nov. 4, 1977, Cl. 356/208, TURBIDIMETERS, Edward S. Posgate, Owner of Record: *H. F. Instruments Limited, Bolton, Ontario, Canada*, Attorney or Agent: Gordon W. Hodson, et al., Ex. Gp.: 357

3,922,872, Re. S.N. 849,569, Filed Nov. 8, 1977, Cl. 62/48, IRON TITANIUM MANGANASE ALLOY HYDROGEN STORAGE, James J. Reilly, et al., Owner of Record: *The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.*, Attorney or Agent: James E. Denny, et al., Ex. Gp.: 344

3,928,566, Re. S.N. 850,030, Filed Nov. 9, 1977, Cl. 424/94, LYOPHILIZED BIOLOGICAL PRODUCTS, Angelis R. Briggs, et al., Owner of Record: *E. I. Du Pont de Nemours and Company, Wilmington, Del.*, Attorney or Agent: James L. Jersild, Ex. Gp.: 125

3,939,671, Re. S.N. 849,236, Filed Nov. 7, 1977, Cl. 66/204, MACHINE FOR KNITTING CORD-LIKE STRUCTURES, John B. Lawson, Owner of Record: *Lawson-Hemphill, Inc., Central Falls, R.I.*, Attorney or Agent: William W. Rymer, Ex. Gp.: 352

3,946,225, Re. S.N. 846,733, Filed Oct. 31, 1977, Cl. 250/237 G, OPTOELECTRONIC SWITCH, Carlos Luis Beeck, Owner of Record: *Tektronix, Inc., Beaverton, Oreg.*, Attorney or Agent: Kenneth M. Durk, et al., Ex. Gp.: 256

3,991,392, Re. S.N. 849,880, Filed Nov. 9, 1977, Cl. 335/213, DEFLECTION UNIT FOR COLOR TELEVISION DISPLAY TUBES, Adriaan Jacob Groothoff, Owner of Record: *U.S. Philips Corporation, New York, N.Y.*, Attorney or Agent: Frank R. Trifari, Ex. Gp.: 212

4,011,437, Re. S.N. 843,637, Filed Oct. 19, 1977, Cl. 235/151.11, METHOD AND APPARATUS FOR COMPENSATING FOR UNPROGRAMMED CHANGES IN RELATIVE POSITION BETWEEN A MACHINE AND WORKPIECE, Richard E. Hohn, Owner of Record: *Cincinnati Milacron Inc., Cincinnati, Ohio*, Attorney or Agent: Jack J. Earl, et al., Ex. Gp.: 236

PATENT NOTICES

Certificates of Correction for the Week of Jan. 10, 1978

Re. 29,285	4,004,151	4,038,029	4,045,335
D. 227,498	4,012,131	4,038,108	4,045,611
3,549,562	4,016,125	4,038,478	4,045,988
3,734,904	4,020,081	4,038,651	4,046,254
3,766,470	4,020,190	4,038,679	4,046,304
3,831,576	4,020,253	4,040,670	4,046,356
3,834,740	4,026,301	4,041,020	4,046,729
3,838,463	4,026,927	4,041,142	4,047,340
3,947,738	4,027,292	4,041,228	4,047,394
3,950,528	4,029,503	4,041,273	4,047,526
3,951,763	4,029,790	4,041,592	4,047,572
3,962,455	4,030,838	4,042,841	4,048,102
3,962,637	4,031,707	4,043,257	4,048,310
3,965,077	4,031,957	4,043,819	4,048,685
3,972,225	4,032,812	4,043,836	4,048,845
3,976,627	4,033,480	4,043,895	4,049,126
3,978,943	4,033,941	4,044,700	4,049,249
3,982,382	4,034,799	4,044,794	4,049,428
3,982,909	4,034,904	4,045,001	4,049,498
3,991,187	4,035,268	4,045,005	4,049,845
3,991,202	4,036,107	4,045,170	4,049,870
4,000,091	4,036,446	4,045,207	4,052,168
4,000,439	4,037,011	4,045,231	
4,001,223	4,037,236	4,045,237	
4,003,302	4,037,337	4,045,313	

Disclaimers

3,522,764.—*Conrad H. Biber*, Needham, and *William R. Pope, Jr.*, Cambridge, Mass. RANGEFINDING SYSTEM FOR PHOTOGRAPHIC CAMERAS AND THE LIKE. Patent dated Aug. 4, 1970. Disclaimer filed Oct. 2, 1977, by the assignee, *Polaroid Corporation*.

Hereby enters this disclaimer to claim 1 of said patent.

3,911,408.—*George C. Zobel*, Palatine, Ill. APPARATUS AND METHOD FOR CONTROLLING A COMMUNICATIONS TERMINAL. Patent dated Oct. 7, 1975. Disclaimer filed Oct. 19, 1977, by the assignee, *Teletype Corporation*.

Hereby disclaims the entire term of said patent.

3,924,429.—*Francis Joseph Fuchs, Jr.*, Princeton Junction, N.J. METHOD AND APPARATUS FOR REDUCING EXTRUSION START-UP PRESSURE. Patent dated Dec. 9, 1975. Disclaimer filed Nov. 3, 1977, by the assignee, *Western Electric Company, Incorporated*.

Hereby enters this disclaimer to claims 5 through 12 of said patent.

3,930,622.—*Akira Tanaka*, Northridge, and *Avraham Ziv*, Sepulveda, Calif. ENERGY STORING SAFETY BELT RETRACTOR. Patent dated Jan. 6, 1976. Disclaimer filed Oct. 27, 1977, by the assignee, *American Safety Equipment Corporation*.

Hereby enters this disclaimer to claims 1, 5, 10, 11, 15 and 20 of said patent.

4,051,155.—*Robert C. Hoare*, Rabat, Morocco. ANTHRAQUINONE DYES. Patent dated Sept. 27, 1977. Disclaimer filed Oct. 17, 1977, by the assignee, *Allied Chemical Corporation*.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

Dedications

3,239,772.—*Tom L. Dennis, Jr.*, Cedar Rapids, Iowa. HIGHLY EFFICIENT SEMICONDUCTOR SWITCHING AMPLIFIER. Patent dated Mar. 8, 1966. Dedication filed Nov. 11, 1977, by the assignee, *Westinghouse Electric Corporation*.

Hereby dedicates to the Public the entire term of said patent.

3,905,742.—*David W. McCarty*, Roscoe, Ill. VALVE FOR AN INJECTION MOLDING MACHINE. Patent dated Sept. 16, 1975. Dedication filed Oct. 25, 1977, by the assignee, *Beloit Corporation*.

Hereby dedicates said patent to the Public.

3,932,141. *Glenn Lee Beall*, Gurnee, *John Dennis Dodge*, Arlington Heights, *Robert Francis Koschalk*, Zion, and *Emil Henry Soika*, Lindenhurst, Ill. APPARATUS FOR DETERMINING IMMUNOASSAYS OF ANTIGENS AND THEIR ANTIBODIES. Patent dated Jan. 13, 1976. Dedication filed Oct. 28, 1977, by the assignee, *Abbott Laboratories*.

Hereby dedicates to the Public the entire term of said patent.

Errata

All reference to Patent No. 4,059,390 to Michio B. Nozaki of Illinois for Hot Water Heater Burner Assembly appearing in the OFFICIAL GAZETTE of November 22, 1977 should be deleted since no patent was granted.

All reference to Patent No. 4,060,986 to John Anton Bihlmaier of California for Valve Actuator System appearing in the OFFICIAL GAZETTE of December 6, 1977 should be deleted since no patent was granted.

All reference to Patent No. 4,061,003 to Aksel Pilvet of Canada for Key Operated Lock appearing in the OFFICIAL GAZETTE of December 6, 1977 should be deleted since no patent was granted.

All reference to Patent No. 4,061,018 to Christoph Benedikt Burckhardt and Pierre-Andre Grandchamp of Switzerland and Heinz Hoffman of Germany for Method and Apparatus for Distance Measurement in an Ultrasonics Scanning Image appearing in the OFFICIAL GAZETTE of December 6, 1977 should be deleted since no patent was granted.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 3, 1977

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-3-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oso and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-21-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-7-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-6-76
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-3-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-18-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-8-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-24-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-5-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-3-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-6-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-15-76
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking: Tools; Cutlery; Jacks.	4-1-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-8-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	12-2-76
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures: Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-1-77

Expiration of patents: The patents within the range of numbers indicated below expire during December 1977, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,962,719 to 2,966,680, inclusive
Plant Patents..... Numbers 1,991 to 2,008, inclusive

REISSUES

JANUARY 10, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

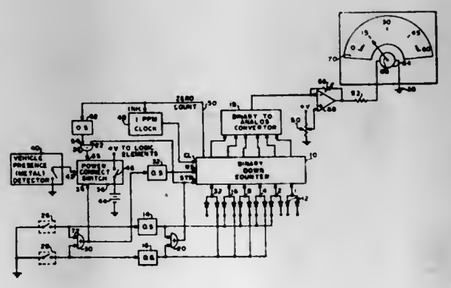
Re. 29,511
PARKING METER

Barrell R. Rubenstein, 3604 Jefferson, Kansas City, Mo. 64111

Original No. 3,930,363, dated Jan. 6, 1976, Ser. No. 490,221, July 19, 1974. Application for reissue Apr. 26, 1976, Ser. No. 680,575

Int. Cl.[2] G07C *1/30*

U.S. Cl. 58—142 **6 Claims**



1. A parking meter comprising:
counting means comprising:
an electrical down counter,
first input means responsive to a selected input for initially setting said down counter to a selected count, and
second input means for providing clock input signals to said down counter, whereby with each signal said down counter is counted down a selected count;
coin-operated switching means including at least one coin switch and means responsive to the receipt of a particular coin for operating said switch and providing a selected count input to said first input means of said down counter;
vehicle detection means responsive to the detection of the presence of a vehicle for applying a circuit operating bias to at least said counting means;
clock means for providing electrical pulses at a selected time rate to said second input means; and
readout means responsive to the output of said down counter for visually indicating an output state of said down counter.

Re. 29,512
VIBRATORY MATERIAL HANDLING DEVICE WITH VARIABLE FORCE

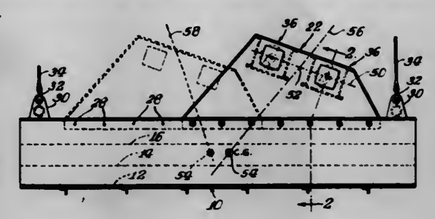
Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Original No. 3,796,299, dated Mar. 12, 1974, Ser. No. 160,679, July 8, 1971. Application for reissue Mar. 6, 1975, Ser. No. 556,179

Int. Cl.[2] B65G *27/00*

U.S. Cl. 198—770 **3 Claims**

2. A vibratory material handling device comprising: means defining an elongated surface adapted to carry material to be worked upon; a pair of parallel walls on either side of said surface and extending in the direction of elongation thereof; a vibratory mechanism including a frame, a pair of spaced parallel shafts rotatably mounted in the frame and extending transversely of the direction of elongation of the material carrying surface and parallel to said surface, an eccentric weight carried by each shaft, means for rotating one of said shafts, independent means for rotating the other of said shafts, said frame carrying said shafts and rotating means in fixed position relative to each other; means mounting said material carrying surface for vibratory movement; and means for securing the vibratory mechanism to the material-carrying member in a position whereby a line intersecting the plane in which the parallel shafts lie at a point midway between said shafts and



passing through the center of gravity of the device intersects said plane at an obtuse angle, the means for rotating said shafts permitting the shafts to self-adjust to direct vibratory force along said line.

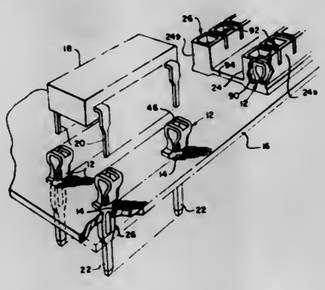
Re. 29,513
ELECTRICAL CONNECTION APPARATUS

Lennart B. Johnson, Milford, N.H., assignor to Teradyne, Inc., Boston, Mass.

Original No. 3,917,375, dated Nov. 4, 1975, Ser. No. 479,843, June 17, 1974. Application for reissue July 29, 1976, Ser. No. 709,872

Int. Cl.[2] H01R *13/00*

U.S. Cl. 339—112 R **20 Claims**



1. Panel-mounted electrical socket apparatus for a circuit device from which extend leads arranged in two side-by-side rows, said apparatus comprising
A. first and second side-by-side rows of socket contacts,
1. each socket contact extending within a separate aperture in [*each*] *such* panel and having a folded contact clip disposed at least partly thereabove,
2. said contact clip having a folded, inverted, U-shaped configuration including a first clip arm extending toward and within the aperture, a bridging fold uppermost on said clip and apertured to receive a lead of said circuit device, and a second clip arm extending alongside said first clip arm and forming a resiliently-expandable contact area therewith for receiving therebetween the electrical lead, and
B. a heat sink of thermally-conductive material having an upper panel disposed between said rows of socket contacts and arranged for contiguous abutment against the bottom of such circuit device.

Re. 29,514

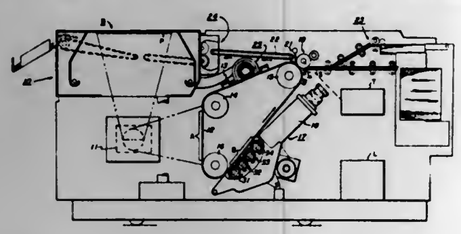
PROGRAMMING CONTROL SYSTEM FOR PRINTING MACHINE

James M. Donohue, Los Alamitos, Calif., and Daniel L. Mueller, Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Original No. 3,796,486, dated Mar. 12, 1974, Ser. No. 244,734, Apr. 17, 1972. Continuation of Ser. No. 97,745, Dec. 14, 1970, abandoned. Application for reissue Aug. 20, 1975, Ser. No. 606,155

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—16 12 Claims



10. An electrostatic printing apparatus for reproducing copies of an original having an endless movable photoreceptor belt including,

means for producing electrostatic latent images on said belt,

development means for applying developing material to each of the latent images to develop the same,

transfer station adjacent the moving belt,

means for feeding copy material from a supply thereof to said transfer station at which each developed image is transferred to said copy material,

programming means associated with said image producing means and said feeding means and operative when activated for controlling actuation of the latter in timed sequence relative to the production of each latent image by said image producing means, said programming means including means for effecting the activation of said feeding means once in each of predetermined time cycles, and

means responsive to the speed of movement of the belt for resetting said time cycle.

Re. 29,515

METAL CYANIDE COMPLEXES

René Antoine Páris, 152 Cours Gambetta, Lyon; Paul Alexis Amblard, 3 rue Julien Baudran, Brou, Rhone, and Abel Claude Rousset, 37 bis, rue Jean Moulin, Caluire, Rhone, all of France

Original No. 3,904,737, dated Sept. 9, 1975, Ser. No. 250,079, May 3, 1972. Application for reissue Feb. 4, 1976, Ser. No. 655,169

Int. Cl.[2] C01F *15/00, 17/00;* C01B *21/00*

U.S. Cl. 423—252 13 Claims

1. A metal-metal cyanide complex selected from the group which consists of: [Mg [Mg $(CN)_4$], Be [Be $(CN)_4$], Al [Al $(CN)_6$],] Ti [Ti $(CN)_3$], Zr [Zr $(CN)_3$], Th [Th $(CN)_3$], *and* Y [Y $(CN)_6$]. [and Ln [Ln $(CN)_6$], wherein Ln represents a lanthanide element with an atomic number between 57 and 71 inclusive.]

PLANT PATENTS

GRANTED JANUARY 10, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,182

CRAPE MYRTLE

David Earl Chopin, Baton Rouge, La., assignor to Chopin & Wright Nursery, Ltd., Baton Rouge, La.

Division of Ser. No. 742,378, Nov. 16, 1976. This application Apr. 8, 1977, Ser. No. 781,197

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—54 1 Claim

1. A new distinct variety of *Lagerstroemia indica* plant substantially as shown and described, characterized by the distinctive Neyron Rose color, its height up to 10 to 20 inches, substantially no vertical growth at full maturity, and a weeping growth habit at full maturity.

4,183

CRAPE MYRTLE

David Earl Chopin, Baton Rouge, La., assignor to Chopin & Wright Nursery, Ltd., Baton Rouge, La.

Division of Ser. No. 742,378, Nov. 16, 1976. This application Mar. 25, 1977, Ser. No. 781,196

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—54 1 Claim

1. A new distinct variety of *Lagerstroemia indica* plant substantially as shown and described, characterized by the distinctive Rose-Bengal color, its height up to 10 to 20 inches, substantially no vertical growth at full maturity, and a weeping growth habit at full maturity.

4,184

CRAPE MYRTLE

David Earl Chopin, Baton Rouge, La., assignor to Chopin & Wright Nursery, Ltd., Baton Rouge, La.

Division of Ser. No. 742,378, Nov. 16, 1976. This application Apr. 8, 1977, Ser. No. 781,195

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—54 1 Claim

1. A new distinct variety of *Lagerstroemia indica* plant substantially as shown and described, characterized by the distinctive Violet-Purple color, its height up to 9 to 20 inches, substantially no vertical growth at full maturity, and a weeping growth habit at full maturity.

4,185

CRAPE MYRTLE

David Earl Chopin, Baton Rouge, La., assignor to Chopin & Wright Nursery, Ltd., Baton Rouge, La.

Division of Ser. No. 742,378, Nov. 16, 1976. This application Apr. 14, 1977, Ser. No. 781,181

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—54 1 Claim

1. A new distinct variety of *Lagerstroemia indica* plant substantially as shown and described, characterized by the distinctive White color, its height up to 10 to 20 inches, substantially no vertical growth at full maturity, and a weeping growth habit at full maturity.

4,186

CRAPE MYRTLE

David Earl Chopin, Baton Rouge, La., assignor to Chopin & Wright Nursery, Ltd., Baton Rouge, La.

Division of Ser. No. 742,378, Nov. 16, 1976. This application Mar. 25, 1977, Ser. No. 781,513

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—54 1 Claim

1. A new distinct variety of *Lagerstroemia indica* plant substantially as shown and described, characterized by the distinctive Neyron Rose color, its height up to 10 to 20 inches, substantially no vertical growth at full maturity, and a weeping growth habit at full maturity.

PATENTS

GRANTED JANUARY 10, 1978

ERRATA

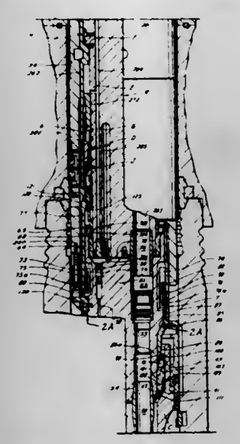
For CLASS	See PATENT NO.
028–118	4,067,087
179–175.3 R	4,067,104
297–330	4,067,249
034–208	4,067,318
038–097	4,067,349
229–042	4,067,482
285–319	4,067,534
074–579 R	4,067,549
366–228	4,067,550
366–332	4,067,551
366–024	4,067,552
366–082	4,067,553
366–084	4,067,554
180–089.12	4,067,598
051–033 R	4,067,701
252–446	4,067,894
560–138	4,067,900
560–147	4,067,901
260–156	4,068,085
219–137.2	4,068,106
362–033	4,068,117
362–123	4,068,118
362–414	4,068,119
362–351	4,068,120
363–075	4,068,157
365–182	4,068,217
365–237	4,068,218
365–027	4,068,219
365–030	4,068,220
361–190	4,068,296

PATENTS

GRANTED JANUARY 10, 1978

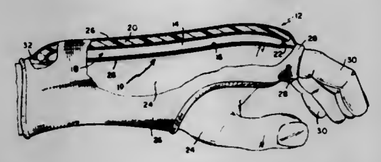
GENERAL AND MECHANICAL

4,067,062
HYDRAULIC SET TUBING HANGER
Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc.
Filed June 11, 1976, Ser. No. 695,265
Int. Cl.[2] E21B *23/00, 33/03*
U.S. Cl. 166—125 **11 Claims**



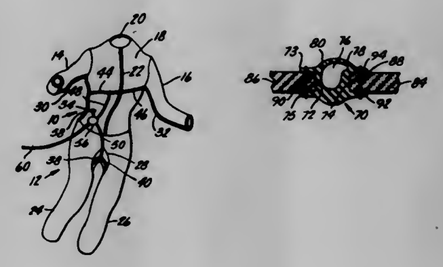
1. A tubing hanger comprising:
an inner body having a tubing string passage therethrough for connecting a tubing string;
releasable lock means for locking said tubing hanger to a running tool including a shear dog having a shear pin and teeth for engagement by an actuator sleeve surrounding said tubing hanger body to shear said shear pin when said actuator body is moved longitudinally relative to said tubing hanger body.

4,067,063
PNEUMATIC ATHLETIC GUARD
Donald N. Ettinger, 6400 Lonas Drive, Apt. 213, Knoxville, Tenn. 37919
Filed Mar. 31, 1975, Ser. No. 563,488
Int. Cl.[2] A41D *13/00*
U.S. Cl. 2—2 **5 Claims**



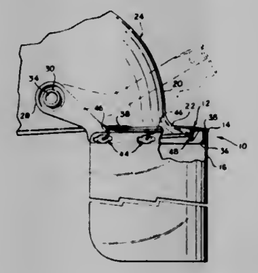
3. A protective guard for an athlete, comprising a valveless, seamless elastomeric pneumatic pad having an uninterrupted exterior surface and a substantially uniform wall thickness, said pad having a substantially uninterrupted hollow interior in which a quantity of air is trapped during formation of said pad , said air being trapped in said pad at substantially atmospheric pressure; a resilient cushion adhesively mounted on one side of said pad to maintain the shape thereof, said cushion having generally the same size and shape of said pad with a length and width slightly greater than the length and width of said pad so that said cushion overlays and protects the edges of said pad; and elastic positioning means having a pocket formed therein for receiving and retaining said pad and cushion in a protective position on the athlete with said pad adjacent the athlete's body and the cushion presented outwardly for receiving blows and for distributing said blows evenly to said pad.

4,067,064
DIVING SUIT
Leon A. Cerniway, Mission Viejo, and Bruce C. Marx, Fountain Valley, both of Calif., assignors to U.S. Divers Co., Santa Ana, Calif.
Filed Jan. 9, 1976, Ser. No. 647,797
Int. Cl.[2] A62B *17/00*; B63C *11/28*
U.S. Cl. 2—2.1 R **12 Claims**



1. A conduit in combination with a wet suit formed therewith for delivering heated fluid such as water to a diver within the wet suit to provide warmth to the diver comprising:
a wet suit;
a main elongated conduit body having a passage therethrough adapted to be connected to a source of heated fluid;
means along each side of said main conduit body in the form of flanges for receiving wet suit material thereagainst so that the material can be joined by said conduit with said flanges to form said wet suit; and,
openings within said conduit passing through the walls thereof in spaced relationship to each other adapted to be placed in proximate relationship to the skin on the interior surface of said wet suit so as to provide a flow of heated fluid to the diver.

4,067,065
CHEMICAL SPLASH SHIELD
Patrick F. Slosek, Dudley, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 8, 1976, Ser. No. 748,804
Int. Cl.[2] A61F *9/00*
U.S. Cl. 2—10 **4 Claims**



1. A safety shield comprising:

a main body member having an overall generally semi-circular configuration with a depending facepiece mounting flange and peripheral overhang;
a transparent facepiece detachably connected to said flange beneath said overhang;
said flange and facepiece having a succession of matched openings and at each sequent a button extending therethrough for providing said detachable connection;
a flexible sprig extending from each of said buttons to said main body member, said main body member, sprigs and buttons being a one-piece molded plastic unit.

4,067,066
COMBINED BODY GARMENT AND TOTE BAG CONSTRUCTION

Wilfred Bruno, 293 E. 38th St., Brooklyn, N.Y. 11203
Filed Jan. 10, 1977, Ser. No. 758,261
Int. Cl.² A41D 1/22
U.S. Cl. 2—105 18 Claims

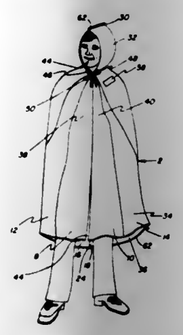


1. In a garment adapted to be converted into a tote bag and vice versa, the combination comprising first, second and third panel sections superimposed one upon another, with said first and third panel sections forming the front and back panels of the garment, with said first and second panel sections being engageable with the front and back respectively of the wearer, said first and second panel sections having neck, waist and arm openings, each panel section having top and bottom edge portions and side edge portions, means securing the side edge portions of said panel sections and the top edge portions of said panel sections together except for said arm openings and said neck opening respectively, the bottom edge portions of said first and third panel sections being unattached to one another, a draw cord carried by the bottom edge portions of said first and third panel sections for securing the panel sections about the waist of the wearer, the bottom edge portion of said second panel section being unattached to said first and third panel sections, with said second panel section cooperating with said third panel section to form a tote bag compartment which is secured around the edge portions thereof except at the bottom edge portions of said second and third panel sections, said draw cord providing a constrictable mouth portion between said second and third panel sections when the garment is converted into the tote bag.

4,067,067
PRECIPITATION COVER

Frederick W. Neuls, Roanoke, Ind., assignor to Industrial Engineering, Inc., Fort Wayne, Ind.
Filed Dec. 29, 1975, Ser. No. 645,194
Int. Cl.² A41D 9/00
U.S. Cl. 2—84 13 Claims

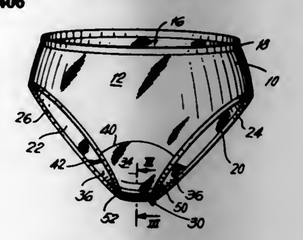
1. A precipitation cover comprising a thin, flexible and elongated sheet of material, said material being impervious to water, said sheet having a plurality of laterally extending folds, a reinforced seam holding said folds together at one end of said sheet, thereby defining two pleats of a plurality of layers of said material joined at said seam, said sheet having an opening at the opposite end of said sheet, said seam and said pleats thereby forming an envelope, said envelope having a side opening centered between said pleats, said pleats having a common border at the side opposite said side opening of said envelope, said pleats remote from said seam being movable from a first position in which said pleats are folded to a second position in



which said pleats are unfolded to close said side opening, whereby a person within said envelope with said pleats unfolded to close said side opening is sheltered from rain or other precipitation.

4,067,068
PANTY

Henry Bregstein, and Holly Bregstein, both of 1500 Palisade Ave., Fort Lee, N.J. 07024
Filed Aug. 9, 1976, Ser. No. 712,463
Int. Cl.² A41B 9/04
U.S. Cl. 2—406 9 Claims



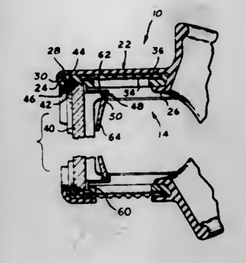
1. A panty comprising a body portion, a waist band section on said body portion, a pair of leg band sections on said body portion defining leg openings, and a crotch area between the leg openings and connected to said body portion, said crotch area comprising an inner layer and a further layer outside of said inner layer, said inner layer being of a porous, non-absorbent and non-retentive material, and said further layer being of a moisture and fluid absorbing material, whereby moisture and fluid are absorbed by said further layer said crotch including an outer layer outside of said further layer, said outer layer being of a porous non-retentive material.

4,067,069
SAFETY GOGGLE

Patrick F. Slosek, Dudley, Mass., and Robert R. Fischlein, Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.
Filed June 21, 1976, Ser. No. 697,907
Int. Cl.² A61F 9/02
U.S. Cl. 2—441 5 Claims

1. a goggle comprising:
a one-piece pliable facepiece of soft non-toxic material having an elastic memory, said facepiece further having a rearwardly-disposed continuous face-engaging margin adapted to extend without interruption across the brow

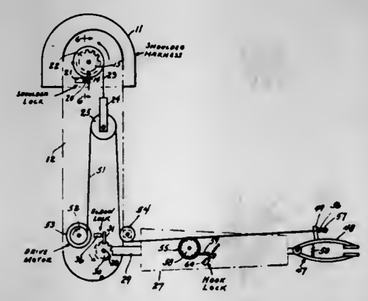
about the temples and over the nose and cheeks of a wearer and a pair of forwardly-extending generally cylindrical eyecup cage portions each having an eyecup retaining lip adaptable to deformation for receiving an eyecup and returnable to its initially-molded configuration for fixing the eyecup in place, each of said cage portions further having a series of lateral openings;
a rigid lens-supporting eyecup in each cage portion, said eyecups being of a tubular configuration and having side



openings positionally matching said lateral openings in respective cage portions, said side openings in said eyecups each being screened with a first inwardly-disposed fine mesh screen for preventing passage of fine particulate matter and a second outer relatively coarse mesh screen for resisting damage to said first screen by large particle impact and each of said eyecups still further having a forwardly-directed lens-receiving seat;
a safety lens disposed against said seat in each eyecup; and
means for retaining said lenses so in place.

4,067,070
PROSTHETIC JOINT LOCK AND CABLE MECHANISM

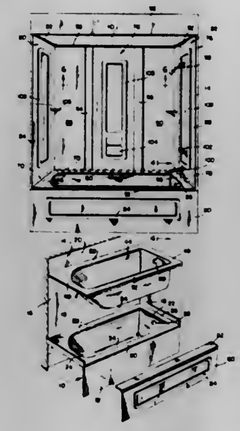
Woodrow Seamone, and John H. Loveless, both of Silver Spring, Md., assignors to The United States of America as represented by the Administrator of Veterans' Affairs, Washington, D.C.
Filed Nov. 3, 1976, Ser. No. 738,580
Int. Cl.² A61F 1/00, 1/06
U.S. Cl. 3—1.1 12 Claims



1. In an artificial limb unit, a support adapted to be attached to the wearer's body, a limb assemblage connected to said support and including a drive motor and at least one pivoted limb member, means to energize said drive motor, cable and pulley means operatively interconnecting said limb assemblage, support and pivoted limb member for rotating said limb member responsive to energization of said drive motor, and means to lock said pivoted limb member in a rotated position at the end of a predetermined timed period following energization of said motor.

4,067,071
BATHTUB, WALL AND CEILING LINER ASSEMBLY

Murray Altman, Scarsdale; Richard Altman, Bardonia, and Arthur Roberts, Westbury, all of N.Y., assignors to Thermasol Ltd., Leonia, N.J.
Filed June 10, 1976, Ser. No. 694,555
Int. Cl.² A47K 3/08, 3/00
U.S. Cl. 4—145 16 Claims



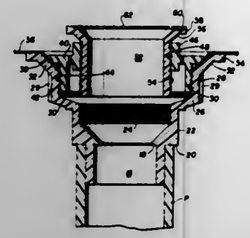
1. Bathtub renovating means for refurbishing an existing bathtub installed in a wall recess and having a tub cavity and marginal ledges extending outwardly from the upper end of said tub cavity,
said bathtub renovating means including a bathtub liner formed of a substantially flexible plastic material and comprising a tub portion having a bottom wall and upstanding side and end walls, and peripheral flanges extending perpendicularly outward from the top ends of said side and end walls,
the tub portion of said bathtub liner being of lesser length and lesser width than the tub cavity of said bathtub, and being of a height greater than the depth of said tub cavity,
whereby said bathtub liner is sized for insertion on said existing bathtub in a mounted position in which said tub portion of said liner is seated within the tub cavity of said bathtub with the bottom wall of said liner resting upon the bottom surface of said tub cavity, at least some of the side and end walls of said liner spaced from the corresponding side and end walls of the tub cavity, the peripheral flanges of said liner overlying the marginal ledges of said bathtub, and the weight of the bathtub liner supported substantially solely by the bottom surface of the cavity of said existing bathtub.

4,067,072
PLASTIC DRAIN ASSEMBLY

Lewis B. Izzi, 918 Surrey Drive, Shelby, N.C. 28150
Filed July 21, 1976, Ser. No. 706,187
Int. Cl.² E03C 1/12, 1/26
U.S. Cl. 4—288 7 Claims

1. A drain pipe assembly for the floor of showers, etc. comprising, in combination, an outlet section to be mounted on a system drain pipe; said outlet section having an upper rim section and upper and lower threaded inner faces of larger and smaller diameters respectively; a clamping collar having a peripheral rim section for engaging said outlet upper rim section and exterior threads engageable with said larger threaded inner face; said clamping collar having an inner face with threads axially aligned with said smaller diameter outlet

threaded inner face; and a strainer drain plate supporting barrel having an exterior threaded face engageable with said clamp-

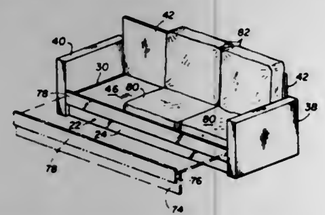


ing collar inner threads and with said smaller inner threaded outlet face.

4,067,073
CONVERTIBLE SOFA AND METHOD FOR ASSEMBLING AND DISASSEMBLING SAME

Anatoli N. Komarov, 100-24 Erskine Place, Co-Op City, Bronx, N.Y. 10475

Filed Aug. 12, 1976, Ser. No. 713,905
Int. Cl.² A47C 17/14
U.S. Cl. 5—13 9 Claims

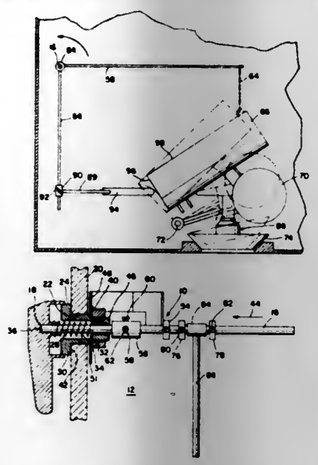


1. An assemblable and disassemblable furniture as a convertible sofa comprising:
a base assembly including spaced apart front and rear walls, spaced apart side walls, connecting wall means positioned inwardly of said side walls and a planar top wall, said connecting walls extending between said front and said rear walls;
first fastener means for removably securing said side walls of said base assembly to said front and said rear walls of said base assembly;
arm rests mounted on said side walls externally thereof, whereby said first fastener means are concealed;
second fastener means for removably securing said side walls of said base assembly to said arm rests, said second fastener means extending in an outward direction from a position inside of said side walls without completely passing through said arm rests and being concealed by said top wall of said base assembly;
a back wall mounted on said rear wall of said base assembly;
third fastener means for removably securing said rear wall of said base assembly to said back wall, said third fastener means extending in an outward direction from a position inside of said rear wall of said base assembly without passing completely through said back wall and being concealed by said top wall of said base assembly;
a planar sliding board assembly slidable in planar overlying engaging relation with said top wall and having a rear edge that is positioned adjacent said back wall when said sofa is in the closed condition with a portion of said sliding board assembly being movable to a position wherein said rear edge thereof is spaced from said back wall to thereby define the opened condition of said sofa;
and displacing means for moving said sliding board assembly between said closed and said opened condition.

4,067,074
WATER SAVER FLUSH VALVE MECHANISM

Stanley Harrison, 1629 S. 16th St., Philadelphia, Pa. 19145

Filed June 16, 1976, Ser. No. 696,520
Int. Cl.² E03D 1/14
U.S. Cl. 4—324 10 Claims

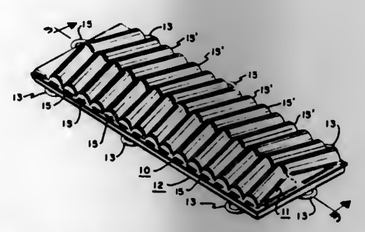


1. In a water saver flush valve mechanism for use within toilet tanks of the type including a flush valve which is movable about a pivot upon function of an operating handle, the improvement which comprises
A. main shaft means connected to the operating handle and being axially movable by the handle from a first mode of operation position to a second mode of operation position;
B. support rod means carried by the main shaft means, said support rod means being moved from a first position to a second position upon function of the main shaft means to the said second mode of operation position; and
C. operating finger means carried by the support rod means and being movable from a first position to a second position when the main shaft means is moved from its first mode of operation position to its second mode of operation position;
1. said operating finger means contacting a portion of the flush valve when in the said first position and not contacting the portion of the flush valve when in the second position.

4,067,075
INFLATABLE STRETCHER

Kenneth L. Leathers, Rte. 2, Box 475 K, and T. J. Botner, Rte. 3, Box 582, both of Ontario, Oreg. 97914

Filed Oct. 23, 1973, Ser. No. 408,698
Int. Cl.² A61G 1/00
U.S. Cl. 5—82 R 3 Claims

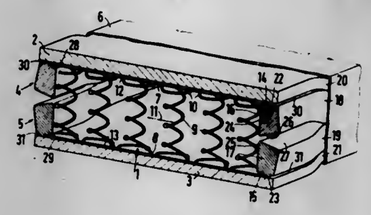


1. An inflatable stretcher, comprising:
a top structure being fabricated of a suitably flexible air tight material and including a plurality of inflatable compartments, each of said compartments issuing to each side of the longitudinal center line of said stretcher at opposing angles in a herringbone-like pattern, said compartments communicating with each other to inflate from a single inflating stem;
a bottom pad being laminated to said top structure; and
handles fastened to the terminal edges at intervals from said stretcher.

4,067,076
UPHOLSTERED BODY

Philipp Krier, Stuttgart, Germany, assignor to Mirabed AG, Zug, Switzerland

Filed Aug. 17, 1976, Ser. No. 715,936
Int. Cl.² A47C 23/04
U.S. Cl. 5—351 11 Claims



1. An upholstered body, especially mattress, which includes: a spring core comprising a plurality of rows of helical springs arranged in an axis-parallel manner with regard to each other, at least one cover plate means of elastic foamed material arranged in spaced axial relationship to and at least at one end of said springs while covering up the respective adjacent ends of all of said springs and projecting laterally and longitudinally beyond said spring core, marginal body means arranged on at least two oppositely located sides of said upholstered body, intermediate layer means interposed between said cover plate means and said springs, and the improvement in combination therewith which comprises bend-elastic bar-shaped stiffening means of set synthetic foam material arranged on and connected securely to said marginal body means and also having said intermediate layer means securely connected thereto as well as extending continuously only marginally entirely around the upholstered body in a homogeneous transition between the cover plate means and the marginal body means.

4,067,077
CIRCULAR WATERBED

Fredrick R. Feretto, 2905 San Pablo Dam Road, El Sobrante, Calif. 94803

Filed Sept. 25, 1975, Ser. No. 616,777
Int. Cl.² A47C 27/08
U.S. Cl. 5—365 9 Claims

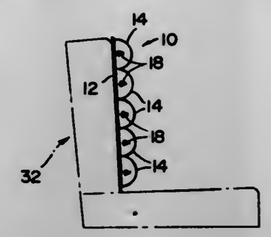


1. A circular waterbed kit comprising a soft, endless, flexible band of material of minimal stretchability, unfoldable from a relaxed condition to a circle having a predetermined diameter, and a circular inflatable bag having a diameter in its uninflated condition exceeding that of said soft flexible band in its unfolded condition, whereby upon installing said bag, in its uninflated condition, within said flexible band and then inflating said bag, said band will confine said bag and cause said bag to stiffen said band in response to pressure developed in said bag.

4,067,078
ADJUSTABLE BACK SUPPORTER

Emanuel A. Winston, 190A Skokie Valley Road, Highland Park, Ill. 60035

Filed June 10, 1976, Ser. No. 694,824
Int. Cl.² A47C 27/14, 27/08
U.S. Cl. 5—368 8 Claims



1. An adjustable back support adapted for use on an existing chair comprising: base means including a backing member, a plurality of compartment means mounted on said backing member in adjacent, fluid segregated relation to one another, each of said plurality of compartments including at least a portion disposed in substantially transverse relation to the upright axis of said backing member, each of said compartments being in immediate adjacent parallel relation to one another, valving means disposed in fluid flow regulating relation between the interior and the exterior of said plurality of compartment means, each of said compartment means secured to said backing member in fluid tight engagement therewith, whereby the volume of fluid within each of said compartment means is independently regulated through manipulation of said valving means, support means including a sheet element configured to substantially correspond to at least a portion of said backing member, said sheet element being formed from a substantially rigid material, whereby said sheet element is disposed to orient said backing member in a substantially upright orientation, and each of said plurality of compartments being disposed in transverse relation along the entire length of said support means, said valving means comprising a two-way valve assembly mounted in each of said compartment means, whereby fluid may selectively flow into and out of each of said compartment means independently.

4,067,079
PATIENT SHIFTING AID AND METHOD OF USING SAME

Ernest C. Buchman, 13105 Knollcrest, Houston, Tex. 77015

Filed Apr. 5, 1976, Ser. No. 674,042
Int. Cl.² A61G 1/02; A47B 83/04
U.S. Cl. 5—81 R 1 Claim



1. A patient shifting aid comprising:
a plastic slab having rounded corners forming a rectangular support surface upon which a patient is adapted to be placed and having sufficient thickness to support the weight of a patient placed thereon while enabling the obtaining of x-rays through the plastic slab to determine the extent of patient injury without the necessity of additional shifting of the patient;
a plurality of openings in said slab and disposed adjacent the periphery of said support surface providing means for

gripping the plastic slab to effect sliding movement of the plastic slab and the patient support thereon;

said plurality of openings comprising generally rectangular openings having rounded corners and rounded openings for grasping the slab for moving a patient;

said openings being disposed inwardly from the periphery of the slab a greater distance than the thickness of the slab;

said slab having a sliding surface opposite said support surface which frictionally engages the support for the patient shifting and, said sliding surface and said support surface being formed smoothly to minimize frictional resistance to sliding movement; and

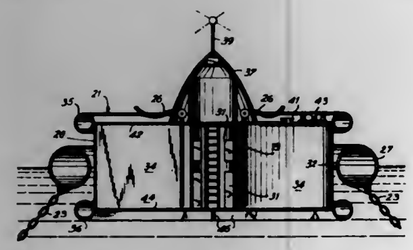
said slab having sufficient flexibility to allow bending to provide clearance for the hands of a person effecting shifting of a patient.

4,067,080

SEA TERMINAL

Leroy M. Sylverst, 910 Riverside Drive, New York, N.Y. 10032

Continuation of Ser. No. 529,651, Dec. 4, 1974, abandoned. This application Oct. 6, 1976, Ser. No. 730,109
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 P 7 Claims



1. A self-contained terminal for the storage of products at sea and for the transference of products between a cargo vessel and said terminal and said terminal comprising a first structure, positioning means carried by said first structure for maintaining said terminal at a preselected location, a second structure having a generally cylindrical configuration and a central vertical axis, said first structure including a ring surrounding said second structure, means mounting said second structure in rotatable relationship about said central vertical axis with respect to said first structure for maintaining said second structure in said preselected location while permitting relative rotational movement between said second and said first structures and while permitting vertical movement between said first and second structure, said second structure including at least one product storage container, mooring means carried by said second structure and positioned eccentrically with respect to said central vertical axis for mooring a vessel to said terminal, at least one product transfer means carried by said second structure independently of said mooring means and positioned eccentrically with respect to said central vertical axis for the transfer therethrough of product between said product storage container and the vessel, and limiting means acting between said first and second structures to limit the relative vertical movement between said first and second structures.

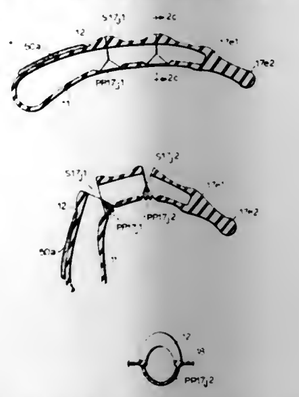
4,067,081

SWIMMER'S GLOVE

Gary Clyde Dreecher, 1000 Lindbergh Ave., Stroudsburg, Pa. 18360

Filed Oct. 20, 1976, Ser. No. 734,353
The portion of the term of this patent subsequent to Feb. 17, 1993, has been disclaimed.
Int. Cl.² A63B *31/02*
U.S. Cl. 9—308 15 Claims

13. In a swimmer's glove having a hand portion with a palm portion of flexible, non-stretchable material and a back portion, a plurality of partially hollow generally tubular fingers extending from said hand portion in a normal position, joints joining said fingers to said hand portion, at least one joint along each of said fingers outwardly of said hand portion, flexible webs between adjacent fingers, a wrist portion, and a joint between said hand portion and said wrist portion having an upper portion projecting at least to the back side of the glove and including means for permitting bending of the joint in the closing direction of the hand and wrist and for reinforcing the wrist of the swimmer against bending in the opening direction of the hand and wrist when force is exerted on the glove from the



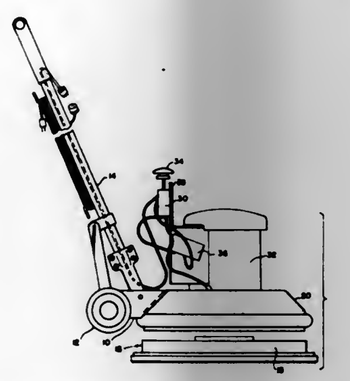
side toward the closing direction as the swimmer moves the glove through the water while swimming, the improvement comprising a lower joint portion means of a flexible, non-stretchable material and constituting part of the joint on the palm side of the glove and which is connected with the hand portion of the glove and wrist portion on either side thereof for forming a flexible, non-stretchable hinge and for positioning the hand portion of the glove and the wrist portion closer to each other with the glove and the wrist portion in the closed position, whereby the glove can be bent easily around the lower portion of the joint when the hand of the swimmer is bent around the wrist.

4,067,082

CARPET CLEANING

John L. Armstrong, 4482 Holly Drive, Palm Beach Garden, Fla. 33410

Filed Nov. 4, 1976, Ser. No. 738,707
Int. Cl.² A47L *13/40*
U.S. Cl. 15—1.5 R 14 Claims



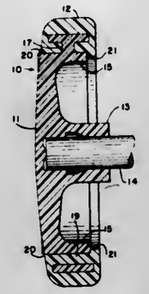
1. Carpet cleaning apparatus comprising a carriage movable over a carpet to be cleaned, a rotor mounted on said carriage for rotation about a vertical axis, a motor on said carriage connected to said rotor for rotating said rotor as said carriage is moved over such carpet, said rotor comprising static charge accumulating means and cleaning pad drive means electrically connected thereto, said drive means being located at the bottom of said rotor and including means for detachable engagement with the upper surface of a cleaning pad which is in sliding contact with the upper surface of such carpet.

4,067,083

COMPOSITE CASTER

Frederick C. Greene, St. Joseph, Mich., assignor to Shepherd Products U.S. Inc., St. Joseph, Mich.

Filed Nov. 12, 1976, Ser. No. 741,474
Int. Cl.² B60B *33/00*
U.S. Cl. 16—45 2 Claims



1. A composite caster comprised of a center insert and a separate tread portion, the insert and tread portions being made from plastic materials having respectively different characteristics, said tread portion being molded directly onto the center insert, and said center insert having means interengaging with the tread portion to prevent separation of the tread from the insert, said center insert comprising a generally disc-like body having a central hub and an annular rim in spaced relation to the hub, said annular rim including a free edge and said interengaging means comprising an outer rim concentric with said annular rim, and a central web comprising a vertical wall integrally connecting said outer rim with said annular rim, said molded tread portion extending over the outer rim and engaged with said central web under the outer rim whereby the outer rim and central web are fully enclosed by the tread portion, said tread portion overlying at least a portion of the free edge of said annular rim, and an annular projection of said disc-like body extending outwardly from the face of the body forming an annular ring adjacent the peripheral edge of said body to provide a seal preventing the tread portion from extending over the face of the body.

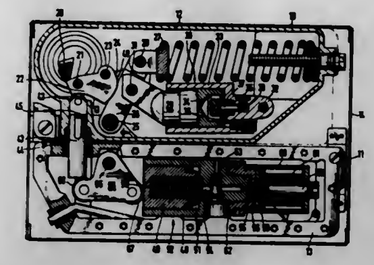
4,067,084

AUTOMATIC DOOR CLOSER

Horst Tillmann, Eanepetal, Germany, assignor to Dorma-Baubeschlag G.m.b.H. & Co. K. G., Eanepetal-Voerde, Germany

Filed Feb. 28, 1977, Ser. No. 772,969
Claims priority, application Germany, Mar. 3, 1976, 2608671
Int. Cl.² E05F *1/08*
U.S. Cl. 16—80 12 Claims

1. An automatic door closer comprising housing means; a closer shaft adapted to be connected to a door to be closed, said shaft being mounted with an end portion thereof in said housing means turnable about its axis between a first position in which the door is closed and a plurality of second positions in which the door is turned through different angles from the closed position; means in said housing means for biasing said closer shaft to said first position and comprising spring means and link means including a first link connected to said closer shaft so as to change its position upon turning of the latter, said first link having a first convexly curved cam face rising in direction of the movement of the door away from said closed position; follower means arranged to engage said cam face when the door is turned beyond a predetermined angle from the closed position and said cam face being constructed to



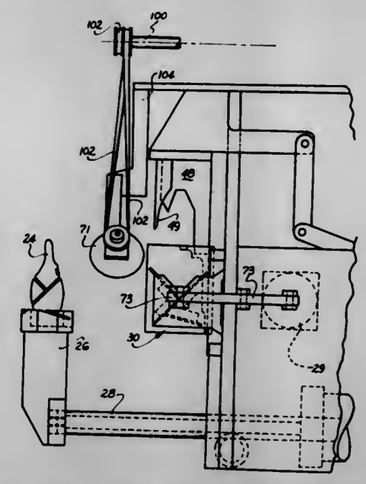
displace said follower means to an increasing extent to a plurality of adjusted positions when the door is turned in opening direction beyond said predetermined angle; and releasable means for holding said follower means in any of said adjusted positions and therewith said closer shaft in a position in which the door connected thereto is held in a selected open position.

4,067,085

AUTOMATIC POULTRY CUTTING APPARATUS

Geno N. Gasbarro, 1305 NoeBixby, Columbus, Ohio 43227

Filed Feb. 9, 1976, Ser. No. 656,101
Int. Cl.² A22C *21/00*
U.S. Cl. 17—11 9 Claims



1. An automatic cutting apparatus comprising, in combination, a frame means; a poultry support member including a poultry retaining mandrel mounted on said frame means and adapted to receive a commercially dressed carcass; a poultry retaining enclosure mounted on said frame means and adapted to receive said mandrel having a commercially dressed poultry carcass mounted thereon to define a cutting station to retain said poultry carcass in a stable position, said enclosure provided with a plurality of blade receiving openings, said mandrel and said enclosure being movably mounted in relationship to one another between said cutting station and a loading station defined by said mandrel being disposed outside of said enclosure; a plurality of cutting means disposed adjacent to said cutting station and aligned with said blade receiving open-

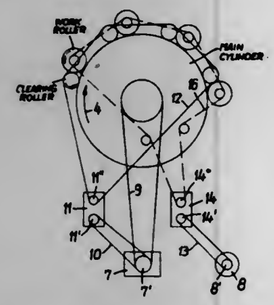
ings in said enclosure, said cutting means being movably mounted for force transmitting engagement with a poultry carcass mounted on said mandrel at said cutting station, each of said cutting means being disposed in a predetermined position and provided with a configuration to engage predetermined portions of said poultry carcass for severing said carcass into a plurality of predetermined pieces; drive means operatively connected to said cutting means; and control means operatively connected to said drive means to actuate coordinated movement of said cutting means into engagement with a poultry carcass mounted on said mandrel.

4,067,086

METHOD FOR PROCESSING STAPLE FIBERS ON A ROLLER CARD UNIT

Siegfried Bernhardt, Bremen-Farge, and Gerhard Kutscher, Bremen, both of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed June 18, 1975, Ser. No. 588,175
Claims priority, application Germany, July 3, 1974, 2431870
Int. Cl.² D01G *15/04*
U.S. Cl. 19—101 **3 Claims**



1. In a method for processing staple fibers on a roller card unit composed of a rapidly rotating main cylinder and a plurality of pairs of rollers, each pair being constituted by a work roller and a clearing roller associated therewith, which method includes rotating the main cylinder and the rollers at speeds such that the peripheral speed of the main cylinder is higher than that of each of the rollers and the peripheral speed of each of the clearing rollers is higher than that of the work roller of the same pair, and rotating the rollers at speeds sufficient to cause the sum of the peripheral speeds of the work roller and the clearing roller of each pair to be greater than 250 m/min, the improvement wherein said step of rotating the rollers comprises rotating each said work roller at a rate corresponding to a peripheral speed of greater than 90 m/min.

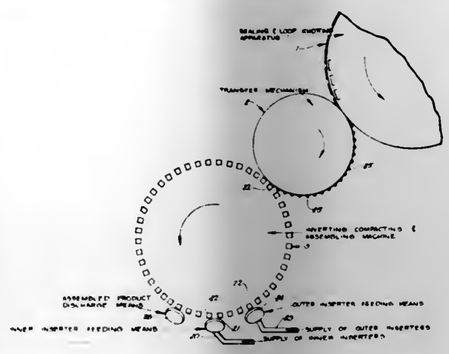
4,067,087

METHOD OF FORMING TAMPONS AND ASSEMBLING SAME IN INSERTERS

John George Mast, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 531,222, Dec. 10, 1974, Pat. No. 4,006,515. This application June 21, 1976, Ser. No. 698,120
Int. Cl.² A61L *15/00*
U.S. Cl. 28—118 **11 Claims**

1. A method for forming and assembling tampons in inserters, comprising the steps of providing a tampon sack having an elongated tubular body containing a particulate material and a withdrawal string at one end, engaging and pulling on the withdrawal string to bring the tampon sack into vertical position with its withdrawal string lowermost, expanding the tubular body of the sack radially outwardly while maintaining the sack in vertical position by means of its withdrawal string, and as an incident of the radial expansion of the sacks folding the end of the sack opposite the withdrawal string inwardly along its longitudinal axis to form an exterior portion and a re-entrant inner portion, utilizing the withdrawal string to move the folded sack into a compression zone, compressing the folded structure radially inwardly to compacted cylindrical shape,



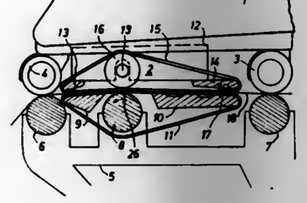
positioning a tubular inserter in axial alignment with the compacted tampon, and displacing the tampon axially into the inserter.

4,067,088

APRON DRAFTING ARRANGEMENT

Arthur Würmli, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Aug. 19, 1976, Ser. No. 715,930
Claims priority, application Switzerland, Sept. 12, 1975, 11887/75
Int. Cl.² D01H *5/86*
U.S. Cl. 19—253 **16 Claims**



1. An apron drafting arrangement for fibrous material moving in a predetermined direction of material flow, comprising a pair of back rolls, a pair of intermediate rolls, a pair of front rolls, the intermediate pair of rolls including a top roll and bottom roll, a top apron guide cage comprising a pair of non-rotatable top deflecting elements connected to said cage in spaced relation, a top apron loosely placed about the top roll of the intermediate pair of rolls and about said pair of top deflecting elements, said top pair of deflecting elements, viewed in the direction of material flow, including a respective one of said deflecting elements located upstream and downstream of the top roll of the intermediate pair of rolls, said top apron guide cage including means for receiving the top intermediate roll, a pair of bottom deflecting elements including a respective one of such deflecting elements located upstream and downstream of said bottom roll of said intermediate pair of rolls, a bottom apron loosely guided about said deflecting elements of said second pair of deflecting elements which are located upstream and downstream of the bottom intermediate roll, the intermediate pair of rolls being arranged closer to the downstream located deflecting elements,

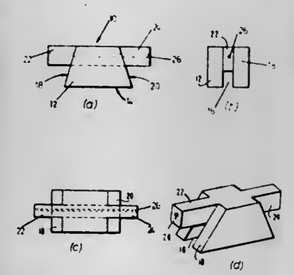
said top and bottom aprons including a respective lower and upper run disposed in confronting relationship between said pairs of deflecting elements located upstream and downstream of said intermediate rolls to provide a supported travel path for said fibrous material moving from between one pair of deflecting elements to another pair of deflecting elements.

4,067,089

INTERCONNECTIBLE PREFABRICATION ELEMENTS

Lorenzo Forno, Largo Colle Caprile 17-5, 16030 Uscio, Genoa, Italy

Filed Mar. 16, 1976, Ser. No. 667,357
Int. Cl.² A44B *19/06*; E04C *1/04*
U.S. Cl. 24—205.13 R **9 Claims**



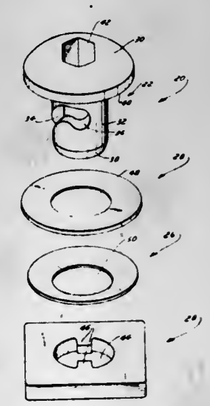
1. An element for use with others of a like kind in the prefabrication of structures, comprising a hexahedral body of rectangular cross-section, the two faces of one of the two pairs of parallel faces defining said cross-section being of unequal length with that of relatively greater length having therein a longitudinal parallel-sided groove penetrating the remaining two faces of the body, and a parallel-sided tongue similar in width to said groove projecting from at least one of said remaining two faces.

4,067,090

FASTENER

Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Jan. 7, 1976, Ser. No. 647,093
Int. Cl.² A44B *17/00*
U.S. Cl. 24—221 K **12 Claims**



1. A fastener for coupling two relatively thin members with each member having an elongated opening therein and adapted to be placed in overlapping relationship with the elongated openings being in at least partially aligned position with respect to one another and the members being subject to severe shear loads comprising:

a stud having an enlarged head portion and a body portion extending therefrom and means in the head of the stud for reception of a tool to facilitate rotation of the stud between the fastened and unfastened positions;

the body portion being adapted to pass through the openings and the head being adapted to engage with the surface of the adjacent thin member and being larger than the opening therein;

a receptacle adapted to interengage and disengage with the stud body between the fastened and unfastened positions;

at least one spiral cam slot on one of the stud and receptacle and a corresponding cam surface on the other of the stud and receptacle whereby relative rotation therebetween will cause the cam surface to follow the cam slot between the fastened and unfastened positions, each spiral cam slot terminating in a detent for facilitating retention of the cam surface when the stud and receptacle are in the fastened position;

spring means positioned to be biased as the cam surface follows the spiral cam slot thereby assisting in drawing the two members into tight interengagement and retaining the stud and receptacle in fastened condition;

retention means for tending to retain the proper orientation of the fastener when the members are subjected to a shear load and to assume a substantial portion of tension load applied to the fastener so that the primary load on the coupled stud and receptacle is a shear load thereby increasing the load bearing capacity of the fastener, the retention means including a rigid washer of hard material and having a central aperture for passage of the stud body therethrough and the aperture being slightly larger in diameter than the outer diameter of the stud to provide a close fitting relationship, the surfaces forming the aperture having sharp edges so that when the stud body is passed through the two members to be fastened and the rigid washer is positioned on the stud body between the members to be fastened and the receptacle, the spring means will be resiliently deformable to permit rotation of the stud and corresponding movement of the cam surface along the cam slot between the locked and unlocked positions and the rigid washer will be positioned so that when the stud is subjected to a shear load and is rotationally biased the rigid washer will bite into the stud and will assist in retaining the stud from rotational movement thereby maintaining the coupled stud and receptacle in position for primary subjection to a shear load in contrast to a tension load.

4,067,091

METHOD OF PREPARING HUMAN REMAINS FOR STORAGE

Philip E. Backman, 2570 Gay St., Eugene, Oreg. 97401

Filed Nov. 15, 1976, Ser. No. 741,552
Int. Cl.² A01N *1/00*
U.S. Cl. 27—21 **1 Claim**

1. The method of preparing human remains for storage consisting of the steps of,

subjecting the body while intact to below-freezing temperatures to prevent deterioration,

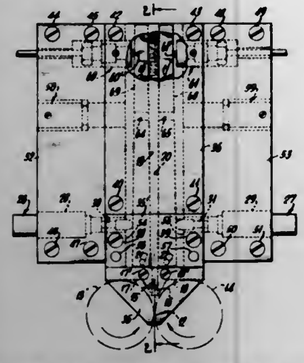
subjecting the intact body to a cryogenic environment thereby reducing the temperature of same to a point below −100° C.,

subjecting the intact body to mechanical fracturing to reduce same to a particulate state, and

subjecting the particulate to a freeze-drying environment for removal of approximately 95% of its water content by direct evaporation of certain solids, and

depositing the freeze-dried material into an individual storage container which may be sealed against ambient air.

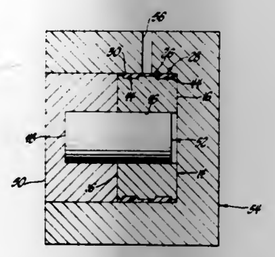
4,067,092
COMPRESSION CRIMPING APPARATUS
John S. Roberts, 3450 Tyler Court, Ellicott, Md. 21043
Filed June 16, 1976, Ser. No. 696,699
Int. Cl.² D02G 1/12
U.S. Cl. 28—251 5 Claims



1. Apparatus for compression crimping fibrous material comprising means defining a compression crimping zone in which a plug of compression crimped fibrous material is formed, means for feeding fibrous material into the compression crimping zone, means for withdrawing compression crimped fibrous material from the compression crimping zone, means for sensing the presence of the plug at a predetermined position in the zone and for the regulating at least one of the fibrous material feeding means and fibrous material withdrawing means in response to said sensing thereby to prevent said plug from moving substantially beyond said position, at least one movable member defining a lateral wall of the zone and being biased toward the fibrous material to restrict egress of the fibrous material from the zone and thereby exert a back pressure on the fibrous material, and means for deactuating the fibrous material feeding means and withdrawing means in response to displacement beyond a predetermined extent of the movable member in a direction opposite to the direction in which the movable member is biased, the deactuating means being arranged to operate if the plug advances substantially beyond said position whereby operation of the apparatus is interrupted.

5. Apparatus for compression crimping fibrous material comprising means defining a compression crimping zone in which a plug of compression crimped fibrous material is formed, means for feeding fibrous material into the compression crimping zone, means for withdrawing compression crimped fibrous material from the compression crimping zone, means for sensing the presence of the plug at a predetermined position in the zone and for regulating at least one of the fibrous material feeding means and fibrous material withdrawing means in response to said sensing thereby to prevent said plug from moving substantially beyond said position, the sensing means comprising a light-emitting diode and a sensor for the light emitted by the diode, said diode and said sensor being arranged on opposite sides of said zone with a path being defined for passage of the light from the diode to the sensor on a line which intersects the compression crimping zone at said predetermined position, said apparatus further comprising at least one movable member defining a lateral wall of the zone and being biased toward the fibrous material to restrict egress of the fibrous material from the zone and thereby exert a back pressure on the fibrous material, causing the fibrous material to buckle and thereby crimp in the zone, and means for deactuating the fibrous material feeding means and withdrawing means in response to displacement beyond a predetermined extent of the movable member in a direction opposite to the direction in which the movable member is biased, the deactuating means being arranged to operate if the plug advances substantially beyond said light path, whereby operation of the apparatus is interrupted in response to malfunctioning of control of the position of the plug in the crimping zone.

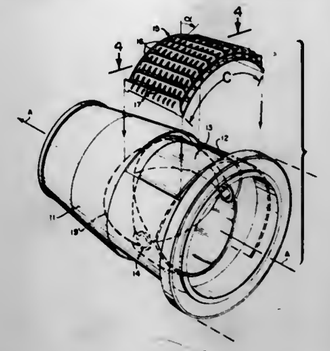
4,067,093
PISTON ASSEMBLY AND METHOD FOR MANUFACTURING
Roger R. Schumacher, Birmingham, Mich., and William Olson, Elm Grove, Wis., assignors to Dynamic Seals Incorporated, Troy, Mich.
Division of Ser. No. 688,967, May 24, 1976, abandoned. This application Jan. 7, 1977, Ser. No. 757,553
Int. Cl.² B23P 15/10, 13/00
U.S. Cl. 29—156.5 R 1 Claim



1. A method for manufacturing a piston assembly including a cylindrical metal piston having end faces and a circular peripheral surface extending between the end faces and a central bore therethrough, the piston being adapted for sliding movement within a cylinder, the method comprising; disposing the piston on positioning means engaging the central bore and in an enclosed mold cavity defined within a mold with the cavity extending completely about the circular peripheral surface and between the end faces thereof, filling the space between the circular peripheral surface of the piston and the enclosed mold cavity between the end faces of the piston with a fluid plastic bearing material so that the outer circular peripheral surface of the piston is completely covered between the end faces of the piston with the bearing material, allowing the fluid plastic bearing material to harden, machining the outer surface of the plastic bearing material relative to the central bore so that the outer surface thereof is concentric with the central bore, and thereafter machining an annular groove through the outer surface of the plastic bearing material and into the metal piston.

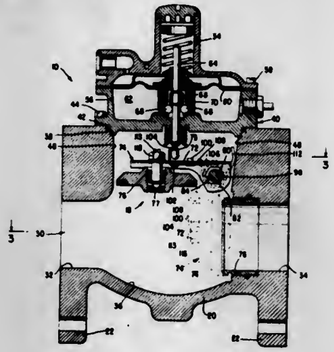
4,067,094
LOAD BEARING VANE STRUCTURE FOR THRUST REVERSAL
Nelson Carl Ittner, Blue Jay, Calif., assignor to Harry Feick Co., Inc. and JRS Mfg. Inc., both of Los Angeles, Calif., a part interest to each
Filed Apr. 26, 1976, Ser. No. 680,173
Int. Cl.² B23P 15/04
U.S. Cl. 29—156.8 R 1 Claim

1. A method of providing a fixed vane structure for reversing the thrust direction of a jet engine, including the steps of:
a. positioning and holding a plurality of beams in parallel vertical planes, the medial longitudinal lines of the beams following a convex curved surface when viewed from above;
b. adjusting the spacing between said vertical planes to progressively decrease in a direction from the center of said convex surface to the outer sides;
c. forming individual slots having predetermined angulated edges in said beams by electrical discharge machining;
d. passing successive vanes through correspondingly aligned slots in a transverse direction in said beams to provide an egg crate like interlocked grid structure, the predetermined angulated edges of the successive slots being as required to provide a minimum clearance when each vane is passed through all of the beams in a manner to follow said convex curved surface;
e. brazing the vanes to the beams at the points they pass through the slots, the decrease in spacing between said



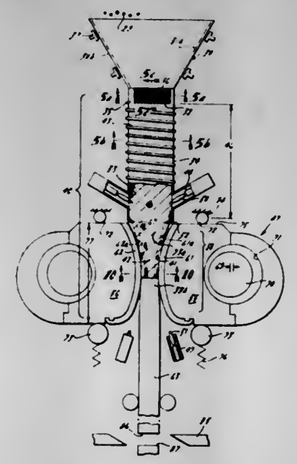
vertical planes being such that the chord length of each vane portion between successive beams are equal; and,
f. securing said vane structure in a permanent position in a side opening of said jet engine to intercept and guide reverse thrust gases from said engine.

4,067,095
CLOSING SPRING ASSEMBLY FOR SLAM-SHUT VALVES
Albert Rea Cameron, Huntingdon Beach, Calif., assignor to The Singer Company, New York, N.Y.
Filed June 2, 1976, Ser. No. 692,164
Int. Cl.² B23P 15/00
U.S. Cl. 29—157.1 R 2 Claims



1. A method of assembling a closing spring assembly in a housing of a slam-shut valve including the steps of:
a. forming a channel shaped lever with a substantially full top and downturned opposing sides,
b. slotting the end of the top of the lever with a non-linear slot,
c. nesting a coil spring on the underside of the top of the lever,
d. affixing one end of the spring to the lever inwardly of the end thereof,
e. pretensioning the spring by releasably disposing the other end of the spring in the lever slot,
f. positioning the lever in the housing unconnected,
g. passing a reset shaft through the coil spring, with the shaft to journal the lever at the downturned sides in the housing, and
h. releasing the said other end of the spring from the lever slot to have it biased against the housing to urge the lever to shift to a closed position.

4,067,096
METHOD FOR MAKING A RECONSTITUTED METAL STRAND
Mark E. Whalen, Jr., 250 Ceder Ridge Drive, Apartment No. 714, Monroeville, Allegheny County, Pa. 44124
Filed Nov. 12, 1975, Ser. No. 631,409
Int. Cl.² B22F 3/16
U.S. Cl. 29—403 12 Claims



1. A method of making a reconstituted coherent metal strand, comprising:
a. converting a supply of scrap metal to regularized particles,
b. continuously feeding said regularized particles through a desired aperture to form a moving stream of particles of predetermined volume and uniform cross-section,
c. while entraining said stream of particles, differentially heating the latter so that the temperature of the particles in an outer peripheral zone of said stream are at a temperature assuring extrusion and welding between adjacent particles under pressure, while the particles in a central core of said stream are at a temperature inhibiting welding but permitting molding, said differential heating being carried out by the use of electrical induction energy to heat the peripheral zone to said high temperature, the penetration of said inductive energy limiting the degree to which heating can be carried out effectively within the core section of said stream,
d. immediately and continuously passing said heated stream between compacting dies, certain of said dies being pulsated to form of said stream a composite self-supporting strand having an end, with the particles in said outer

peripheral zone forming an impervious encapsulating shell, and

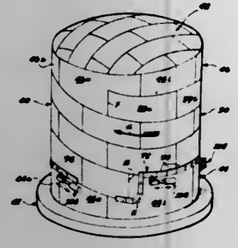
e. sealing said end of said strand against oxidation to provide a product in which the longitudinally extending central core of said strand, other than said outer peripheral zone is less than 90% fully dense.

4,067,097

METHOD OF AND ARRANGEMENT FOR BUILDING CYLINDRICAL HOLLOW STRUCTURE

Chikashi Okamoto, Yokka-Ichi, Japan, assignor to Nippon Kakoki Company, Limited, Tokyo, Japan

Filed Oct. 8, 1976, Ser. No. 731,100
Claims priority, application Japan, Oct. 10, 1975, 50-122058
Int. Cl.² B21D *39/03*
U.S. Cl. 29—429 14 Claims



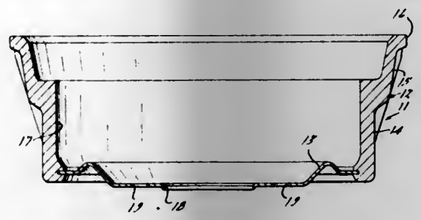
1. A method of building a cylindrical hollow structure, comprising (1) preparing separate lower and upper structural units having substantially congruent circular cross sections, the lower structural unit having a helical upper edge having lowermost and uppermost ends and continuously sloping upwardly from the lowermost end to the uppermost end and a vertical edge joining the lowermost and uppermost ends and the upper structural unit having a helical lower edge having uppermost and lowermost ends and continuously sloping downwardly from the uppermost end to the lowermost end of the lower edge and a vertical edge joining the uppermost and lowermost ends of said lower edge, the respective helix curves of the helical upper and lower edges of the lower and upper structural units being substantially identical with each other, (2) positioning a pliurality of carriers on said helical upper edge at predetermined intervals substantially throughout the length of the upper edge, each of said carriers being in rollable contact with said helical upper edge, and an open-end chain of link units on said carriers, said link units being pivotally connected to one another and each having a cross wall portion having substantially flat lower and upper faces located over the adjacent portion of said helical upper edge, each of said link units having at least one of said carriers located below the cross wall portion thereof, (3) mounting said upper structural unit on said chain in weight transmitting relationship to said lower structural unit through the respective cross wall portions of said link units and said carriers, said vertical edge of the upper structural unit being located adjacent to said vertical edge of the lower structural unit, (4) intermittently driving said chain for stepwise moving the chain upwardly along said helical upper edge of the lower structural unit with said carriers in rolling contact with the helical upper edge, the upper structural unit being thereby stepwise rotated about the vertical center axis thereof and moved upwardly over the lower structural unit and the vertical edge of the upper structural unit being stepwise spaced apart from the vertical edge of the lower structural unit for forming a generally parallelogrammic open space between the vertical edges, (5) securely connecting an additional structural member edgewise to the upper structural unit through said open space, the additional structural unit thus connected to the upper unit having a vertical edge slightly spaced apart from said vertical edge of the lower structural unit, (6) repeating the step of (5) a predetermined number of times for successively applying a plurality of additional structural members to the upper structural unit and the structural members precedingly applied to the upper structural unit for forming part of an intermediate side wall portion of the hollow structure to be built, (7) further applying additional structural members to the intermediate side wall portion being constructed and to the structural members precedingly applied to the incomplete intermediate side wall portion until the upper structural unit is raised to a desired level, (8) lifting the intermediate side wall portion and the upper structural unit above said chain, and (9) removing said chain and said carriers from the lower structural unit and the intermediate side wall portion.

4,067,098

METHOD OF MANUFACTURING BRAKE DRUMS

James W. Blair, Jr., Dearborn, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Apr. 16, 1976, Ser. No. 677,825
Int. Cl.² B23P *13/04*
U.S. Cl. 29—558 7 Claims



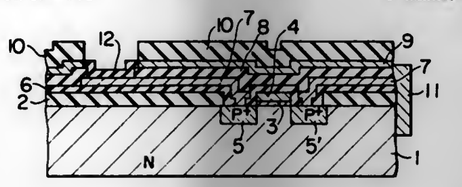
1. A method of making a brake drum or the like having a drum rim with an inner cylindrical surface to be machined, an outer unmachined surface and a drum center in which at least one locating hole is to be formed, which locating hole determines the rotational axis of the drum, said method comprising the steps of locating the drum relative to a forming machine by using the unmachined outer surface of the drum as a locating surface prior to finishing of the inner surface into the inner cylindrical surface, performing a forming operation to form the final dimensions of the locating hole of the located drum to accurately determine the locating surface thereof and establish the axis of rotation of the drum relative to the unmachined outer surface and finish machining the rim inner surface about the axis of rotation determined by the finished locating hole into the inner cylindrical surface.

4,067,099

METHOD OF FORMING PASSIVATION FILM

Satoru Ito, Ninodemachi; Masataka Ota, Itsukaichimachi, and Katsuro Sugawara, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 31, 1976, Ser. No. 719,239
Claims priority, application Japan, Sept. 5, 1975, 50-106997
Int. Cl.² H01L *21/203*
U.S. Cl. 29—571 9 Claims



9. A method of fabricating a MOS IC, comprising the steps of

a. forming a thermal oxide film (SiO_2) on the surface of an N-type Si substrate;

b. selectively removing said thermal oxide film to expose a part of said N-type Si substrate;

c. forming a gate oxide film (SiO_2) on the exposed surface of said substrate;

d. forming a polycrystalline Si layer doped with impurity on said gate oxide film;

e. etching away said polycrystalline Si layer and said gate oxide film, with that part of said polycrystalline Si layer which serves as a gate electrode being used as a mask;

f. forming P+ layers for serving as a source and a drain by diffusing P-type impurity through the surface formed as a result of said etching;

g. depositing PSG layer through CVD method on said thermal oxide film and said polycrystalline Si layer, except the portions where a source and a drain electrode are attached;

h. forming a first Al film extending to said oxide film for provision of source and drain electrodes;

i. covering said first Al film with a surface protection film selected from among a CVD SiO_2 film, a PIQ resin film and CVD PSG film;

j. selectively etching away said surface protection film so as to make exposed that part of said first Al film which serves as a bonding pad;

k. forming through vapor-deposition a second conductive Al film over the entire portion of said surface protection film and the entire part of said Al film which has been exposed by etching;

l. connecting said conductive Al film covering said entire portion of said surface protection film and said entire part of said first Al film with said substrate utilizing a conductor so as to maintain said second film and substrate at the same fixed potential;

m. forming on said second conductive Al film a SiO_2 film to be used as a passivation film through sputtering;

n. selectively removing that part of said SiO_2 film which lies on said bonding pad through photoetching;

o. rendering the part of said second conductive A1 film adjacent said bonding pad to a non-conductive Al_2O_3 film through an anode oxidation method;

p. selectively removing the part of said Al_2O_3 film on said bonding pad so as to make said bonding pad exposed; and

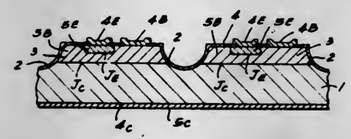
q. attaching a gold bonding wire onto said bonding pad.

4,067,100

METHOD OF MAKING A SEMICONDUCTOR DEVICE

Akira Kojima, 257-2 Sagami-dai, Zama, Kanagawa; Teruaki Aoki, 3-23-8 Kami-Kitazawa, Setagaya, Tokyo, and Norio Suzuki, 252-1 Shimo-Kawairi, Atsugi, Kanagawa, all of Japan

Filed Aug. 27, 1976, Ser. No. 718,339
Claims priority, application Japan, Aug. 29, 1975, 50-104557
Int. Cl.² B01J *17/00*
U.S. Cl. 29—578 16 Claims



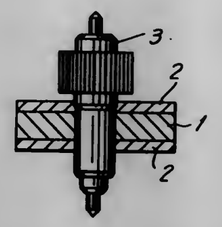
1. A method of making a semiconductor device comprising the steps of providing a semiconductor body having two major surfaces, one of said surfaces having a plurality of plane surface areas surrounded by recesses and being covered with a passivation layer forming a photoresist layer in a predetermined pattern on said plane surface areas forming a metal layer on said passivation layer and said photoresist layer, removing said photoresist layer together with those portions of said metal layer formed directly thereon to form windows and removing said passivation layer by etching through said windows, further comprising the steps of removing said metal layer, and forming a metal electrode layer on the areas exposed by said etching step.

4,067,101

METHOD OF MAKING A ROTOR FOR ELECTRONIC WRISTWATCH STEP MOTOR

Yoshikazu Ono, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Division of Ser. No. 531,009, Dec. 9, 1974, Pat. No. 3,943,698.
This application Nov. 24, 1975, Ser. No. 634,802
Claims priority, application Japan, Dec. 10, 1973, 48-137545
Int. Cl.² H02K *15/02*
U.S. Cl. 29—598 1 Claim



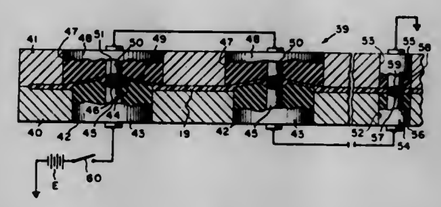
1. A method for forming a high performance permanent magnet rotor for an electronic wristwatch step motor comprising the steps of punching a brittle permanent magnet core, resin bonding reinforcing plates to said brittle magnet core and forcing same together by press means to sandwich the core therebetween, and interference fitting said permanent permanent magnet rotor formed thereby upon a rotor pinion shaft whereby said reinforcing plates prevent cracking in said brittle magnet core when same is interference fit upon said rotor shaft.

4,067,102

METHODS OF MANUFACTURING TACTILE SWITCH FOR KEYBOARDS AND THE LIKE

Gideon A. DuRocher, and Daniel J. DuRocher, both of Mt. Clemens, Mich., assignors to Essex International, Inc., Ft. Wayne, Ind.

Continuation-in-part of Ser. No. 411,345, Oct. 31, 1973, Pat. No. 3,876,586. This application Mar. 14, 1975, Ser. No. 558,481
Int. Cl.² H01H *11/00, 11/06*
U.S. Cl. 29—622 20 Claims



1. A method of making an electrical switching device comprising forming an electrically non-conductive material into a substantially planar, relatively rigid body surrounding a stiff but relatively flexible portion protruding to one side of the plane of said body and having a thickness less than that of said body; forming an opening in said flexible portion; filling said opening with a module of uncured, heat curable, electrically non-conductive resin having a plurality of electrically conductive particles dispersed therein; and heating said module to a temperature and for a period of time sufficient to cure said

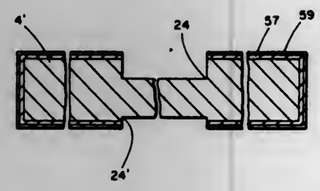
resin and form an electrically conductive member supported by said flexible portion.

4,067,103

METHOD OF MAKING A PLUG-IN FUSE

Allen L. Cressler, Palatine, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Feb. 7, 1977, Ser. No. 766,185
Int. Cl.² H01H 69/02
U.S. Cl. 29—623 16 Claims



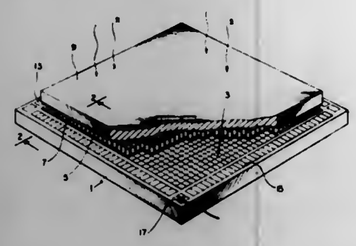
1. A method of making a plug-in fuse element including a plate-like body of an ambient air oxidizable fuse metal having a pair of spaced confronting generally parallel terminal blade portions to be received by pressure clip terminals or the like, current-carrying extensions at the inner ends of said pair of terminal blade portions and a fuse link portion interconnecting the current-carrying extensions, the method comprising the steps of providing a strip of fuse metal having longitudinally spaced blank portions from which individual plug-in fuse elements are to be formed, each blank portion having corresponding portions spaced transversely of the length of the strip from which said fuse link portions, on the one hand, and at least said terminal blade portions, on the other hand, of a plug-in fuse element is to be formed, providing bands of non-oxidizing conductive coatings on the opposite faces of said fuse metal strip which cover at least the terminal blade-forming portions of said blank portions of said strip, the fuse link-forming portions thereof being free of such coatings, sequentially advancing the strip of fuse metal, and blanking said strip in each of said blank portions thereof to form said pairs of terminal blade portions coated with said conductive non-oxidizing coating, said current-carrying extensions interconnected by a fuse link portion free of said non-oxidizing coatings.

4,067,104

METHOD OF FABRICATING AN ARRAY OF FLEXIBLE METALLIC INTERCONNECTS FOR COUPLING MICROELECTRONICS COMPONENTS

John M. Tracy, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 24, 1977, Ser. No. 771,730
Int. Cl.² H05K 3/30, 3/36
U.S. Cl. 29—626 12 Claims



4. A method of providing at least one interconnector for microelectronic components, comprising the steps of:

a. providing a microelectronic component having a surface with a coat of photoresist and at least one surface uncoated with photoresist;

b. applying a deposit of metal on the uncoated surface;

c. applying photoresist to the deposit of metal and to the coat of photoresist;

d. removing the photoresist from the top surface of said deposit of metal;

e. repeating steps (b), (c), and (d) until a predetermined height of deposited metal is reached;

f. applying a top deposit of metal on the uncoated surface;

g. smoothing said top deposit of metal and the surrounding photoresist as required to make their upper surfaces flush and free from surface irregularities, whereby at least one supported interconnect is provided on said microelectronic component.

11. A method of interconnecting a two-dimensional array of sensors, each sensor having an electrical output location, with signal processor means having a two-dimensional array of electrical input locations, comprising:

a. applying photoresist to the surface of said processor means having said electrical input locations;

b. removing photoresist from said array of electrical input locations;

c. applying a deposit of metal on said electrical input locations;

d. applying photoresist to the deposit of metal and to the applied photoresist;

e. removing the photoresist from the top surface of said deposit of metal;

f. applying a deposit of metal on the uncoated surface;

g. repeating steps (d), (e), and (f), until a predetermined height of deposited metal is reached;

h. applying a top coat of photoresist on the uppermost deposit of metal and applied photoresist;

i. removing material from said top coat of photoresist and from said uppermost deposit of metal until their upper surfaces are flush and free from surface irregularities;

j. applying a final deposit of metal on said uppermost deposit of metal;

k. positioning said output locations on said sensors against said final deposit; and

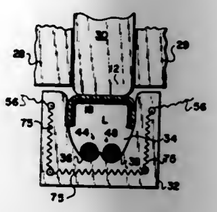
l. bonding said output locations of said sensors to said final deposit.

4,067,105

METHOD OF MAKING AN INSULATED SPLICE AND AN INSULATED TERMINAL AND COMPOSITE SUPPLY STRIP THEREFOR

Irwin Zahn, New York, N.Y.; Wilhelm R. Meisinger, Verona, N.J., and Edward M. Fischer, New Gardens Hills, N.Y., assignors to General Staple Co., Inc., New York, N.Y.

Division of Ser. No. 537,532, Dec. 30, 1974, which is a continuation of Ser. No. 335,417, Feb. 23, 1973, abandoned. This application Aug. 4, 1976, Ser. No. 711,604
Int. Cl.² H01R 43/04
U.S. Cl. 29—628 25 Claims



1. A method of making insulated splices for joining elements; said method comprising:

providing an elongated layer of non-conductive material having a first predetermined width;

embedding a stiffening element within said layer of nonconductive material;

adhering said layer of non-conductive material to an elongated layer of electrically conductive material having a second predetermined width so as to form a composite supply strip; and

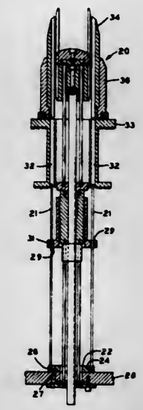
crimping said composite supply strip about said elements until said electrically conductive material is in electrical contact with said elements.

4,067,106

APPARATUS FOR PLACING INSULATORS

Ronald H. Brown, Hamilton, and Richard W. Bale, Feanville, both of Mich., assignors to General Electric Company, Fort Wayne, Ind.

Filed July 12, 1976, Ser. No. 704,677
Int. Cl.² H02K 15/10
U.S. Cl. 29—734 4 Claims



1. In apparatus for placing at least insulators in the slots of magnetic cores wherein said apparatus comprises a plurality of insulator guide walls; a plurality of elongate insulator pushers; and a mechanism for moving the pushers axially relative to the insulator guide walls; the improvement wherein: at least one of the pushers is an elongate aluminum member having at least the leading end thereof anodized, and also having the anodized portion impregnated with a lubricant material, whereby reduced wear of the at least one pusher will occur during operation of the apparatus and whereby removal of the at least one pusher from the apparatus is facilitated in the event that an insulator slips between the leading end of the at least one pusher and an insulator guide wall.

4,067,107

SNOW AND ICE REMOVER

Philip Scafetta, Snyder Road, R.D. No. 1, Green Lane, Pa. 18054

Filed May 2, 1977, Ser. No. 792,785
Int. Cl.² A47L 1/06, 13/08
U.S. Cl. 30—136.5 8 Claims

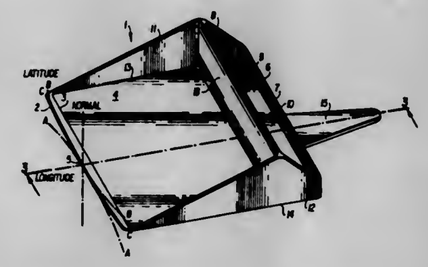
1. A hand implement for engaging and removing snow and/or ice from curved and/or flat surfaces, such as windshields, windows, hoods, roofs, and trunk lids of motor vehicles and the like, comprising:

a generally dustpan-shaped plastic member having

a. a planar surface;

b. a leading edge on the forward end of said planar surface, said leading edge being sufficiently rigid in the direction of the longitudinal axis of said planar surface to engage and remove snow and/or ice from said surfaces and sufficiently flexible in the direction normal to said longitudinal axis of said planar surface to permit a substantial portion of said leading edge to conform to any curvature of said curved and/or flat surfaces when said leading edge is pressed against said curved and/or flat surfaces;

c. a manual gripping means for said plastic member at the rear end of said plastic member, said manual gripping means trafsmitting both flexing and scraping force from the user through the plane of said planar surface to said leading edge in the direction of the longitudinal axis of said planar surface, without causing damage to said curved and/or flat surfaces;



d. side walls extending forwardly from said manual gripping means to said leading edge, said side walls lending rigidity to said leading edge in the direction of the longitudinal axis of said planar surface; and

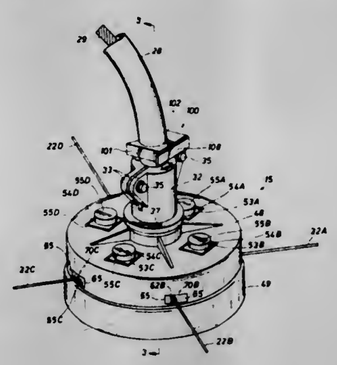
e. barrier means positioned forwardly of said manual gripping means and rearwardly of said leading edge and extended from said planar surface for keeping snow and/or ice away from said manual gripping means.

4,067,108

ROTARY CUTTING ASSEMBLY

George C. Ballas, Houston, Tex., assignor to Weed Eater, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 633,456, Nov. 18, 1975, Pat. No. 4,035,912. This application Dec. 3, 1976, Ser. No. 747,380
Int. Cl.² B26B 27/00
U.S. Cl. 30—276 7 Claims



1. Apparatus for cutting vegetation and the like, comprising:

a housing rotatable in a cutting plane about an axis of rotation and having at least one flexible non-metallic line with a free end extending outward of the periphery of said housing and with an unobstructed peripheral travel in said cutting plane,

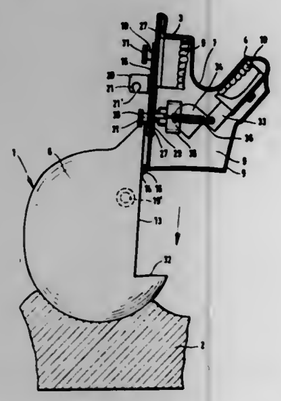
driving means for revolving said housing about an axis and to extend said free end of said line radially from said housing into said cutting plane,

tubular handle means connected between said housing and said driving means to manipulate said apparatus,
a cutting blade assembly for manually and selectively cutting said line adjacent said free end,
mounting means for securing said cutting blade assembly on said tubular handle means in spaced relationship from said cutting plane, and
said mounting means providing for movement of said cutting blade assembly to a selected location along said tubular handle means whereby said line in taut configuration is severed by said cutting blade assembly to a predetermined working length of said free end of said line which extends radially into said cutting plane for effective and efficient vegetation cutting.

4,067,109
DUMMY HEAD FOR USE IN TEACHING DENTISTRY

Rudolf Engeser, Biberach, Germany, assignor to Kaltenbach & Voigt, Biberach an der Riss, Germany

Filed July 8, 1976, Ser. No. 703,504
Claims priority, application Germany, July 14, 1975, 2531437
Int. Cl.² A61C *19/00*
U.S. Cl. 32—71 12 Claims



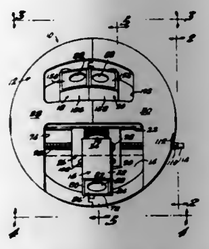
1. A dummy head for use in teaching dentistry and comprising;
a skull portion;
a jaw portion;
said skull and jaw portions respectively cooperating to form said dummy head;
upper and lower jaws provided in said jaw portion and arranged to define a mouth aperture;
dentures arranged in each of said upper and lower jaws, respectively;
wherein: said jaw portion containing said dentures is of unitary construction and is releasably connected to said skull portion for detachment therefrom to permit separation of the jaw from the skull portion.

4,067,110
THUMB FINGER HOLE POSITIONING DEVICE FOR BOWLING BALLS

Anthony Amello, 5424 New Castle Ave., Apt. No. 107, Encino, Calif. 91316

Filed Dec. 22, 1975, Ser. No. 643,343
Int. Cl.² G01B *5/00, 5/14*
U.S. Cl. 33—174 F 15 Claims

1. A thumb and finger hole positioning device for bowling balls including means whereby each individual bowling ball may be fitted to the physical characteristics of an individual's bowling hand comprising:
a bowling ball shaped device (10) providing a spherical shell (12) defining an interior chamber (14);
three receptacles each with an outwardly facing opening located in said chamber including a thumb hole receptacle (32) and two finger hole receptacles, spaced from said thumb hole receptacle;
a first enlarged opening (74) in said shell surrounding the outwardly facing opening of said thumb hole receptacle (32);
a second enlarged opening in said shell surrounding the outwardly facing openings of said finger hole receptacles;
a first adjustment means (98) to transversely adjust the position of said thumb hole receptacle (32);
a second adjustment means (124) to pivotally adjust said thumb hole receptacle toward and away from said two finger hole receptacles;

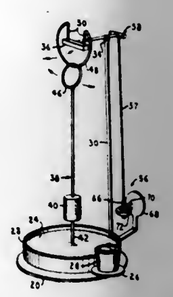


third and fourth adjustment means for the respective finger hole receptacles to individually pivot said two finger hole receptacles toward or away from said thumb hole receptacle;
a fifth adjustment means comprised of like individual adjustment means for said thumb hole receptacle and each of said two finger hole receptacles comprising a universal ball joint connection (34) at the inner end of each of said three receptacles carried by individual support means journaled on a fixed, transverse rod (22), diametrically spanning said chamber, so that the outwardly facing opening of each of said receptacles may be rocked about said universal ball joint connection, and locking means to lock each receptacle in any desired outwardly diverging angular relationship to a radial axis passing through said receptacle.

4,067,111
PENDULUM DEVICE

Thomas E. Truitt, Suite 140 Crown Center West Village, 2450 Grand Ave., Kansas City, Mo. 64108

Continuation-in-part of Ser. No. 576,725, May 12, 1975, abandoned. This application Mar. 3, 1976, Ser. No. 663,515
Int. Cl.² B43L *11/00*
U.S. Cl. 33—27 L 15 Claims

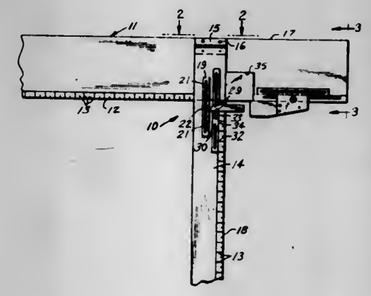


1. A kinetic sculpture apparatus comprising:
a base provided with a receiver containing a fine, particulate material presenting a bed thereof,
a pendulum having an upper end and a lower end, the latter presenting a scribe,
a standard on said base extending upwardly therefrom,
means on said standard spaced from said base and suspending said pendulum thereover with said scribe contacting said material, and establishing a primary horizontal axis of swinging movement of the pendulum,
said upper end of the pendulum being provided with a secondary coupling connecting the pendulum to said suspension means, and
said standard being vertically elongated and transversely reslient to sway with the directional pull of the pendulum, when the latter is in motion through a sufficient displacement to assist in maintaining pendulum swing and to cause the scribe to make sculptured patterns in the bed of material of greater intricacy.

4,067,112
CUTTING GUIDE FOR CUSTOM MATS

Melvin L. Cox, 214 W. Randolph, Enid, Okla. 73701

Filed Oct. 26, 1976, Ser. No. 735,387
Int. Cl.² B43L *13/00*
U.S. Cl. 33—76 R 5 Claims

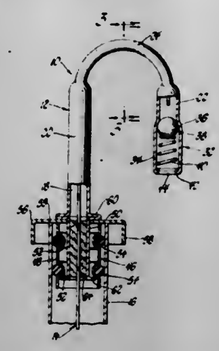


1. A cutting guide for producing custom mats comprising:
an elongated base having a straight longitudinal side edge for registering with one outside edge of a mat to be cut;
elongated scale means pivotally secured to said base and projecting normal to said straight longitudinal edge for guiding a knife device moved along said scale means in a direction perpendicular to said straight longitudinal edge of said base, and for indicating the length dimension of a cut made in said mat, and the location thereof in relation to said straight longitudinal edge and said one registering outside edge of said mat;
first adjustable stop means carried on said elongated scale means, and adjustably positioned along the length of said elongated scale means to selectively limit the distance a knife device can be moved along said scale member in a direction perpendicular to said straight longitudinal edge of said base;
second adjustable stop means secured to said base at a location along said longitudinal side edge and selectively positionable at varying distances from said scale means for locating a second outside edge of a mat extending perpendicular to said first-mentioned outside edge; and
second scale means secured to said base and having graduations thereon visually correlatable with the position of said second adjustable stop means to indicate the dimension of the border of a mat formed by moving a knife device along said first-mentioned scale means in a direction perpendicular to said straight longitudinal edge of said base.

4,067,113
DIPSTICK WITH PRESSURE RELIEF VALVE

Walter E. Haines, Bloomfield Hills, and Mason E. Richardson, Warren, both of Mich., assignors to Estan Manufacturing Company, Troy, Mich.

Filed Oct. 6, 1976, Ser. No. 729,991
Int. Cl.² G01F *23/04*
U.S. Cl. 33—126.7 R 12 Claims

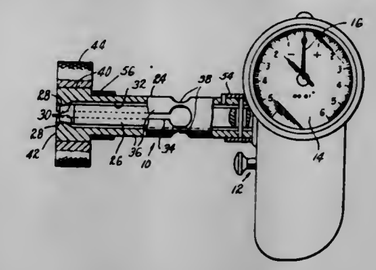


1. A dipstick assembly for measuring the fluid level within a sealed chamber, such as a vehicle transaxle, wherein the dipstick is removably received within an access tube, said dipstick assembly comprising:
a handle member having a passageway extending therethrough between the ends thereof for establishing communication between the interior and exterior of the access tube,
a measuring blade connected to said handle member,
sealing means supported by said handle member for perfecting a seal between said assembly and the interior of the access tube when said dipstick assembly is inserted therein, and
one-way check valve means located within said passageway of said handle member for automatically releasing pressure within the chamber when the pressure exceeds a predetermined maximum.

4,067,114
VARIABLE AMPLIFICATION EXPANDING PLUG GAGE

Franklin Meyer, Jr., P.O. Box 1, Forestdale, R.I. 02824

Filed Sept. 8, 1976, Ser. No. 721,389
Int. Cl.² G01B *5/12*
U.S. Cl. 33—178 R 4 Claims



1. An expanding plug gage assembly adapted to be coupled to an amplifying and indicating mechanism, comprising an elongated plug body longitudinally slotted along part of its length to form a pair of spring limbs extending from an integral hinge to an expandable measuring end portion including a pair of generally semi-cylindrical measuring surfaces and a planar end surface, a first plunger having a tapered end formed to an

included angle adapted to provide a pre-determined degree of primary amplification, and a pair of opposed seats in the plug body near the end surface, defined by the intersection of semi-cylindrical interior surfaces and conical relief surfaces along a line of contact with the tapered end of the plunger, the included angle of the conical relief surfaces being greater than that of the tapered end, whereby contact between the plunger and the seats remains at the intersection throughout the operating range of the assembly.

4. Gaging apparatus adapted to measure different tolerance bands about a common dimension, comprising a single elongated hollow plug body longitudinally slotted along part of its length to form a pair of spring limbs extending from an integral hinge to an expandable measuring end portion including a pair of generally semi-cylindrical measuring surfaces and a planar end surface, a pair of opposed seats in the plug body near the end surface, the seats being defined by the intersection in a transverse plane of semi-cylindrical interior surfaces and conical relief surfaces, a plurality of plungers each having a tapered end formed to an included angle adapted to provide a predetermined degree of primary amplification when inserted into the plug body and into engagement with the seats and an amplifying and indicating mechanism related to each plunger, each mechanism having a dial face calibrated in accordance with the primary amplification of the related plunger.

4,067,115

ROLLING MILL EQUIPMENT

Gerald V. Beston, Rotherham, England, assignor to British Steel Corporation, London, England

Filed Apr. 2, 1976, Ser. No. 672,977
Claims priority, application United Kingdom, Apr. 8, 1975, 14397/75
Int. Cl.² G01B 5/14
U.S. Cl. 33—182 7 Claims



1. A rolling mill alignment monitor comprising
a bar, said bar having
a common shank and
first and second portions in the form of tapered flexibly mounted prongs extending from the shank and together insertable into roll pass defined between cooperating mill rolls,
a web extending between and secured to the said portions, and
sensors carried on said web and responsive to any displacement between the first and second portions whereby to detect any misalignment of the pass between the said rolls.

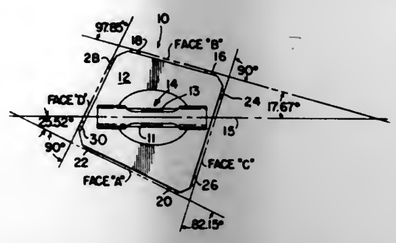
4,067,116

GEOMETRIC PITCH DETERMINING DEVICE

Alex M. Bryner, Menlo Park, Calif., and Richard P. Laird, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 26, 1973, Ser. No. 428,407
Int. Cl.² G01B 3/56; G01C 9/28
U.S. Cl. 33—343 5 Claims

1. A device used in determining the geometric pitch of an accurately formed propeller disposed horizontally or vertically having a hub portion with a center of rotation and having a blade extending radially outwardly from said hub portion with a pressure surface thereon, said device comprising: level means, said level means including a first axis, said level means operative for indicating when said first axis is disposed in a horizontal plane, said device having support means for supporting said level means thereupon, said support means including at least first and second engagement means for operatively engaging said pressure surface, first and second of said engagement means lying in a first predetermined plane which is oblique to and intersected by said first axis at a first predetermined angle, said first predetermined angle being such that said first axis is disposed in a horizontal plane with said engagement in operative engagement with said pressure surface only when said device is disposed upon said blade at a first predetermined radial distance from said center of rotation of said hub portion, said support means including a flat plate member having a



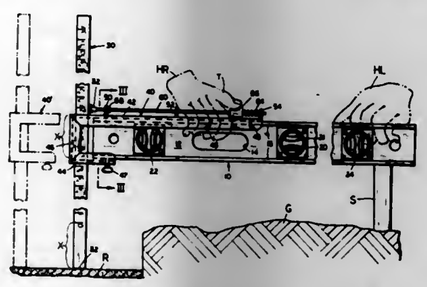
plurality of faces and having two opposed parallel side surfaces, said at least first and second engagement means include first and second protuberances extending outwardly from one of said faces, said flat plate member including four faces, and said at least first and second engagement means further include third, fourth, fifth, sixth, seventh and eighth protuberances, a pair of said protuberances extending from each of said faces other than said one of said faces.

4,067,117

GRADE CHECKING TOOL

Ray A. Bernard, 5853 Glasgow Road, Sylvania, Ohio 43560

Filed June 3, 1976, Ser. No. 692,532
Int. Cl.² G01C 9/00
U.S. Cl. 33—375 8 Claims



1. In a grade checking tool comprising:
A. a longitudinal spirit level having a web with top and bottom transverse working surfaces, at least one vial near its center,
B. a measuring stick movable transversly of said level, and
C. means on said level for guiding and clamping the movement of said measuring stick,
the improvement is said guiding and clamping means comprising:
a. a guide aperture extending transversely through said level near an end thereof and through which aperture said measuring stick is freely slidable,
b. longitudinally slidable rod means parallel to said level extending along the major portion of the distance between said aperture and said central vial,
c. a resilient friction knob attached to one end of said rod means for engaging said measuring stick,
d. spaced guide bracket means adjustably attached to one of said working surfaces for guiding said rod means,

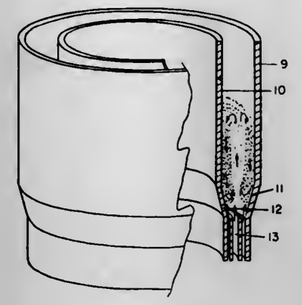
said bracket means having thumb screws for clamping said guide bracket means to said working surface and said bracket means having upstanding flanges with apertures therein for guiding said rod means,
e. thumb-engaging manual means on said rod means between the two flanges most remote from said guide aperture and adjacent said central vial for longitudinally moving said rod means to disengage said knob from said measuring stick to permit said stick to slide freely through said guide aperture, whereby said measuring stick is movable and directly readable by a single operator of said tool from either side of said tool,
f. spring means between the flange which is most remote from said guide aperture and said manual means for longitudinally urging said knob on said rod means towards said guide aperture for frictionally engaging said measuring stick for normally preventing said stick from freely sliding through said guide aperture, and
g. stop means on the other end of said rod means to prevent longitudinal movement of said rod means past the aperture of said most remote flange.

4,067,118

FLUIDIZED BED REACTOR

Claude Morin, St. Lattier, France, assignor to CERCA, Compagnie pour l'Etude et la Realisation de Combustibles Atomiques, Paris, France

Filed Feb. 25, 1976, Ser. No. 661,354
Claims priority, application France, Apr. 15, 1975, 75.12267
Int. Cl.² F26B 3/08, 17/00
U.S. Cl. 34—10 12 Claims



1. In a central jet fluidized bed reactor in which systematic circulation of the particles comprising the bed is effected by at least one jet of fluid the combination comprising a reactor vessel having walls defining an upright generally annular upper chamber for containing the particles forming the fluidized bed, and means for centrally introducing a generally annular fluidizing stream upwardly into the annular chamber approximately equidistant from the walls wherein the particles of the bed are carried rapidly upward by the fluidizing stream as a diluted bed in a region whose axis is approximately equidistant from the walls which particles then travel down along the vicinity of the walls as a dense nearly unfluidized stream.

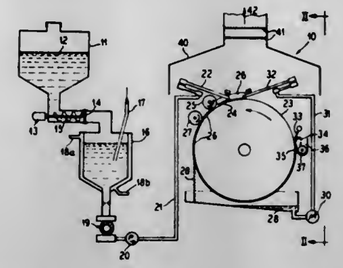
4,067,119

METHOD OF DRYING BLOOD

Glen Overton, 304 W. High St., Dowagiac, Mich. 49047

Filed Oct. 20, 1976, Ser. No. 734,329
Int. Cl.² F26B 7/00
U.S. Cl. 34—12 18 Claims

1. The method of drying blood without destruction of blood solids or discharge of polluting effluents which comprises comminuting the blood to break up globules and lumps therein, coagulating the plasma in the blood at low temperatures, pressing the comminuted coagulated blood on a rotating drier drum heated to temperatures sufficient to evaporate the water content of the blood without destroying or forming a dust from the solid content of the blood to form a film on the drum, drying



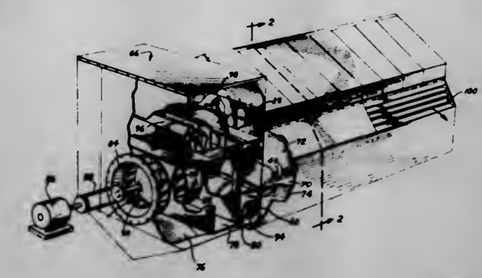
the film on the drum as it rotates with the drum, scraping the dried film from the drum, and breaking up the film to form a dried blood meal of desired particulate size.

4,067,120

GRAIN DRYER WITH AIR RECYCLING DUCTS

John O. Bradford, Gibson City, Ill., assignor to M & W Gear Company, Gibson City, Ill.

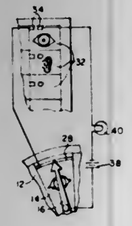
Filed Aug. 2, 1976, Ser. No. 710,545
Int. Cl.² F26B 17/12
U.S. Cl. 34—65 6 Claims



1. In a continuous flow, grain dryer of the type having an enclosed bin with a wet grain inlet at the top of said bin and grain outlets at the bottom of said bin including a plurality of spaced, parallel horizontal hot fluid inlet ducts for directing a fluid drying medium downwardly through a bed of grain in said bin, a plurality of spaced, parallel, horizontal cold fluid inlet ducts for directing a fluid cooling medium upwardly through said bed of grain, said cold fluid inlet ducts positioned parallel to and below said hot fluid inlet ducts and spaced from one another to provide a plurality of grain discharge outlets from said bin, fluid inlet means at one end of said inlet ducts, means for adding wet grain through said wet grain inlet, means for withdrawing dry grain from said grain outlets, horizontal exhaust duct means intermediate said hot and cold fluid inlet ducts and transverse thereto to receive and exhaust fluid medium flowing from said hot inlet ducts in a concurrent direction to grain flow and also exhaust cold fluid medium flowing from said cold inlet ducts in a countercurrent direction to grain flow, each of said exhaust duct means having outlets through said bin on opposite sides thereof, the region of the bin generally above the exhaust ducts defining a drying section of the bin, and the region of the bin generally below the exhaust ducts defining a cooling section of the bin, and means for providing hot fluid to said hot inlet duct inlets and cold fluid to said cold inlet duct inlets, the improvement comprising:
fluid plenum means including means for directing external cold fluid medium into the cold fluid inlet ducts, manifold means for recycling a portion of fluid from the exhaust

duct means and for exhausting the remainder to the outside of the dryer, said manifold means for recycling comprising means for collecting the fluid portion from the exhaust duct means and means for directing all the collected fluid portion through the means for providing hot fluid to the hot fluid inlet ducts, said manifold means including an exhaust vent for exhausting the remainder of the exhaust fluid to the outside of the dryer.

4,067,121
EDUCATIONAL GAME
Jacob Waszmer, 15 E. Bedell St., Freeport, N.Y. 11520
Filed Aug. 3, 1976, Ser. No. 711,387
Int. Cl.² G09B *7/00*
U.S. Cl. 35—9 D **3 Claims**



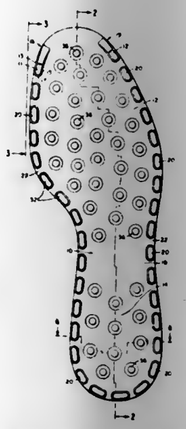
1. A game comprising:
a stand;
a wheel having a center mounted on said stand, said wheel having a plurality of circumferentially equispaced and different indicia thereon;
a pointer spinnable relative to said wheel about said center;
a plurality of cards, each of said cards having first and second sides, said first sides having card-indicia thereon corresponding to the wheel indicia, respectively, said second sides having words thereon corresponding to said card-indicia, respectively, said wheel including a plurality of conductive segments corresponding to the wheel indicia, respectively, each of said segments being electrically contactable by said pointer, and means defining a plurality of spaces corresponding to one of said pluralities of cards, each of said spaces corresponding to said card indicia, respectively, and including a pair of contacts placed thereon, respectively, each of the contact placements differing from another of the contact placements, each of said first plurality of cards including a conductive strip thereon substantially invisible from the first side thereof for bridging selected contact pairs, the contact pair of the space having one of said indicia disposed thereon being only bridgeable by one of said cards having said one of said indicia on the first side thereof, said pointer, the pointer-selected contact pair, an electrical voltage source and an electrically operable indicator being placeable in closed circuit when one of said cards is placed in a corresponding one of said spaces so that the electrical indicator is actuated only when the card with said corresponding one of said strips bridges the contact pair in the space having said one of said indicia disposed thereon, whereby when a person relatively spins the wheel and pointer, and the pointer comes to rest pointing to one of said indicia, and the person subsequently selects one of said card-indicia corresponding to the pointer-selected wheel indicium on the first card side and places the card in the corresponding space, the spelling of the selected indicium on the second card side is verifiable by actuation of the indicator.

4,067,122
TUTOR SYSTEM
Santiago Julio Fernandez, and Maria del Carmen Fernandez, both of 45-475 Verba Santa Drive, Palm Desert, Calif. 92260
Filed Oct. 17, 1975, Ser. No. 623,320
Int. Cl.² G09B *19/06*
U.S. Cl. 35—35 R **2 Claims**



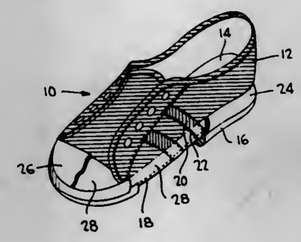
1. A language teaching device to be used by a plurality of users comprising, in combination, at least two distinct and unique lists, each of said lists comprising a plurality of bound sheets and containing a selected number of questions in the given language followed respectively by at least a portion of its model answer in the given language to be elicited by the user receiving the question; the totality of questions being constituted by a sequentially numbered set, the sequence alternating between the respective user's lists, the questions of each list being so designed and coordinated as to simulate a conversation.

4,067,123
SOLE CONSTRUCTION
Robert P. Minihane, Concord, Mass., assignor to Hyde Athletic Industries, Inc., Cambridge, Mass.
Filed Jan. 31, 1977, Ser. No. 763,729
Int. Cl.² A43B *13/06*
U.S. Cl. 36—32 R **4 Claims**



1. A sole for an athletic shoe comprising, a base, a first plurality of cleats extending from the base and disposed in two groups with the cleats of each group being disposed in relatively uniformly spaced relationship, said group being disposed in the sole area and in the heel area respectively, said groups of cleats being separated by an area between the groups of said first plurality of cleats, and a second plurality of elongated cleats spaced and peripherally disposed about the edge of the sole base continuously from a first position on one side of the region of said sole rearwardly and about the heel of the sole to a second position on the other side of said toe region with the space between said first and second position spanning said toe and of a length greater than the length of the space between adjacent elongated cleats.

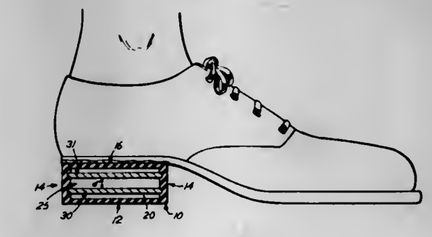
4,067,124
PREVENTION OF COLOR MIGRATION IN SHOES
John Rys-Sikora, Bel Air, and Reuben Abraham, Belcamp, both of Md., assignors to Bata Shoe Company, Inc., Belcamp, Md.
Filed Nov. 30, 1976, Ser. No. 746,082
Int. Cl.² A43B *23/00, 1/02;* A43D *00/00*
U.S. Cl. 36—45 **14 Claims**



1. In a shoe comprising a dyed fabric upper provided with elastomeric trimming bonded thereto, the improvement whereby discoloration of said elastomeric trimming due to migration of the dye from said fabric is prevented without adversely affecting the adhesion of said elastomeric trimming to said fabric, said improvement consisting of an anti-color-migration coating on the portion of said fabric underlying said elastomeric trimming, said anti-color-migration coating comprising a chlorinated rubber and a bleaching agent for said dye.

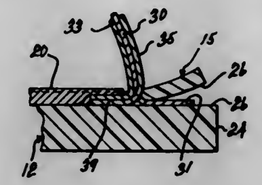
8. In a method of manufacturing a shoe including the step of bonding elastomeric trimming to a dyed fabric upper, the improvement whereby discoloration of said elastomeric trimming due to migration of the dye from said fabric is prevented without adversely affecting the adhesion of said elastomeric trimming to said fabric, said improvement comprising the steps of applying onto the portion of said fabric which is to underlie said elastomeric trimming a coating composition comprising a chlorinated rubber, an organic solvent for said chlorinated rubber and a bleaching agent for said dye, evaporating the solvent from the coated fabric, and thereafter bonding said elastomeric trimming to the coated portion of said fabric.

4,067,125
RESILIENT FOOTWEAR HEEL
Hilliard Frank Greene, Sr., 400 E. Randolph St., Chicago, Ill. 60601
Filed Mar. 7, 1977, Ser. No. 774,856
Int. Cl.² A43B *21/26*
U.S. Cl. 36—35 R **8 Claims**



1. An improved resilient heel for use with footwear and the like, the improved resilient heel being capable of substantially absorbing the jolts to the wearer's body produced when the heel of wearer's foot makes contact with the ground during the act of walking, said heel comprising in combination:
an outer casing having a generally heel shaped body that has a first surface adapted to be secured to the heel of footwear and a second surface adapted to be brought into contact with the ground during the act of walking, said outer casing having a side wall and a hollow interior cavity defined by the first surface, the second surface and the side wall;
a first plate disposed within the hollow interior cavity in a first position, the first plate being made of a highly ferromagnetic material that has been permanently magnetized;
a second plate disposed within the hollow interior cavity in a second position spaced apart from the first plate, the second plate also being made of a ferromagnetic material that has been permanently magnetized;
the first and second plates being positioned within the hollow cavity so that the magnetic poles of the first and second plates create a repulsive magnetic force between the first and second plates; and
means for elastically securing the first and second plates within the hollow interior cavity in their first and second positions, respectively.

4,067,126
CROSS-COUNTRY TYPE SKI BOOTS
Normand A. Bergeron, Boucherville, and Claude E. Villeneuve, Montreal, both of Canada, assignors to Les Chaussures de Randonnai Shoes, Inc., Canada
Filed Aug. 31, 1976, Ser. No. 719,252
Int. Cl.² A43B *5/04, 23/00*
U.S. Cl. 36—117 **8 Claims**

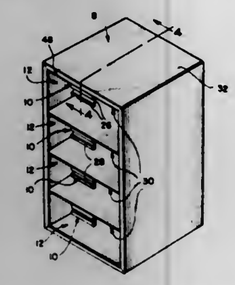


1. A cross-country type ski boot comprising a boot upper for receiving a foot therein, said boot upper being attached to a sole, said sole having at least a front edge extending beyond a toe portion of said boot upper to define a front ledge portion, said boot upper having a reinforcing fabric piece secured on said toe portion and having a securable free end extending beyond a lower edge of said toe portion, said securable free end being secured to said front ledge portion forwardly of said toe portion, said front ledge portion being provided with a horizontal slot in at least a portion thereof aligned with said securable free end to receive and secure said securable free end therein, said sole being provided with a boot upper cavity in a top surface thereof, said cavity having a flat base, an elevated peripheral ledge defined about said cavity, and said horizontal slot being constituted by slitting said front ledge portion from a front edge thereof to said cavity and in horizontal alignment with an upper surface of said flat base.

4,067,127
DETACHABLE LABEL HOLDER
Gerald R. Klaus, St. Charles, Ill., assignor to Fellowes Manufacturing Company, Franklin Park, Ill.
Filed Nov. 1, 1976, Ser. No. 737,714
Int. Cl.² G09F *3/18*
U.S. Cl. 40—16.4 **6 Claims**

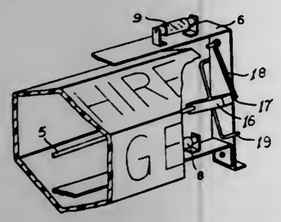
1. An open-ended storage compartment comprising, in combination:
1. a compartment including;
at least one open-end; and

a plurality of walls adjacent said open-end;
at least one of said walls having at least
a first and a second layer;
said first and second layer being adjacent one to another;
said first layer including a slot and being separable from said second layer at least along its length from said slot to said open-end; and
2. at least one detachable label holder including;
a generally U-shaped member including a first leg, a second leg and a base;



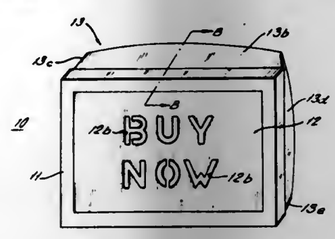
said first leg being positioned between said first and second layers and extending from the slot toward said open-end; and
an arm on said second leg disposed near said open-end, said arm including a label holding means;
whereby said label holder may be attached and detached from said storage compartment without additional mounting apparatus.

4,067,128
TAXI INDICATOR
Breier B. Kempster, 24 Hume Street, Adelaide, Australia (5000)
Filed Apr. 6, 1976, Ser. No. 674,135
Int. Cl.² G09F *11/02*
U.S. Cl. 40—473 3 Claims



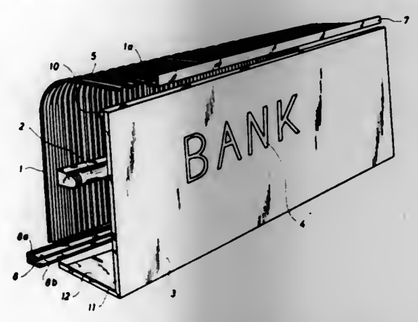
1. An indicator for a taxi cab, comprising a housing, means to fix the housing to an exterior surface of the vehicle, the housing having at least one window through which can be displayed, a rotatable indicator having a plurality of positions to display alternate information relating to the condition of the taxi, means to move the indicator through a limited arc including a pair of solenoids interconnected by a rod forming the armature for the solenoids, a pair of spaced guides attached to and projecting from the rod to slidably engage therebetween a crank pin on a crank mounted on the indicator, the solenoids moving the rod longitudinally from a central position whereby the rod movement causes partial rotation of the indicator to its said positions.

4,067,129
DISPLAY APPARATUS HAVING MEANS FOR CREATING A SPECTRAL COLOR EFFECT
Allan P. Abramson, Upper Montclair; John G. Dewees, Morristown, and Richard J. Lasky, Clifton, all of N.J., assignors to Trans-World Manufacturing Corporation, Little Ferry, N.J.
Filed Oct. 28, 1976, Ser. No. 736,541
Int. Cl.² G09F *13/06*
U.S. Cl. 40—563 11 Claims



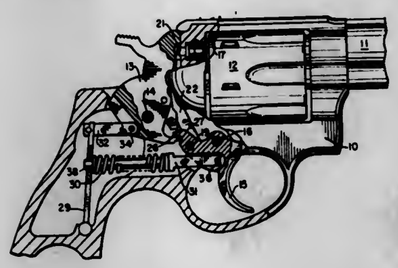
1. A display apparatus comprising:
a mirrored front surface having transparent portions formed therein, said transparent portions cooperating with said mirrored front surface to define a message being presented;
a diffraction grating comprising a series of narrow slits or grooves which, by diffracting light, produce a large number of beams which interfere in such a manner as to produce spectra;
a housing for positioning said diffraction grating behind and spaced from said front surface;
a light source mounted on said housing in a position which will cause light produced thereby to impinge on and be diffracted by said diffraction grating whereby said light is diffracted into substantially all of the colors of the visible spectrum;
said light source and diffraction grating being positioned within said housing in such a manner that said light diffracted by said diffraction grating passes through said transparent portions of said mirrored front surface, whereby the colors viewed by an observer of said apparatus change as the observer changes position relative to said mirrored front surface.

4,067,130
SIGN BOARD CASING
Poul Rasmussen, Esbjerg, Denmark, assignor to Colorlux a-s, Esbjerg, Denmark
Filed Nov. 4, 1976, Ser. No. 738,962
Claims priority, application Denmark, Nov. 14, 1975, 5137/75
Int. Cl.² G09F *13/00*
U.S. Cl. 40—563 2 Claims



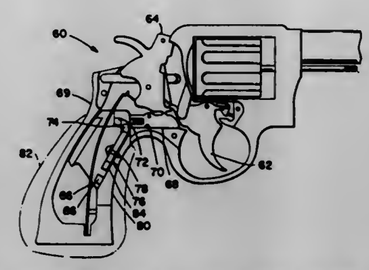
1. A self supporting illuminated sign casing defined by a reflector of corrugated sheet, diffusing light means employing one or several light sources such as fluorescent tubes, said light sources being mounted on said reflector, and a front plate mounted at the edges of the reflector, the corrugations of said reflector sheet being substantially parallel embossings extending in planes substantially perpendicular to a longitudinal axis, said casing including: said corrugated reflector sheet comprising two substantially plane zones substantially perpendicular to each other and a curved intermediate zone having a radius of curvature of 3 to 20 cm, and by the front plate being secured to the two plane reflector zones perpendicular to each other, said front plate being further defined by a bottom portion with flange means and a sharp edge to enable placement of said sign board casing in adjoining relation to a proximate surface.

4,067,131
FIRING MECHANISM FOR A REVOLVER
William B. Ruger, Southport, and Harry H. Sefried, II, New Haven, both of Conn., assignors to Sturm, Ruger & Co., Inc., Southport, Conn.
Filed Mar. 24, 1977, Ser. No. 776,632
Int. Cl.² F41C *19/00*
U.S. Cl. 42—65 12 Claims



1. In a revolver having a frame, a cylinder rotatably mounted on the frame, a hammer pivotally mounted on the frame rearwardly of the cylinder, a trigger pivotally mounted on the frame below and forwardly of the hammer, and a main spring urging the hammer and the trigger to their respective at-rest positions, said hammer and said trigger having mutually engageable cam surfaces that cooperate to cause the hammer to be rotated from its at-rest position to its ready-to-fire position when the trigger is rotated from its at-rest position to its ready-to-fire position and to cause the trigger to be rotated from its at-rest position to its ready-to-fire position when the hammer is rotated from its at-rest position to its ready-to-fire position, the improvement which comprises
a generally vertically disposed main spring lever positioned rearwardly of the hammer and the trigger the lower end of which lever is pivotally mounted on the frame and the upper end of which lever is operatively connected to the pivotally mounted hammer at a point thereon below the pivot axis thereof, and
a generally horizontally disposed main spring positioned between the trigger and the main spring lever the forward end of which spring is operatively connected to the pivotally mounted trigger at a point thereon below the pivot axis thereof and the rearward end of which spring is operatively connected to the main spring lever at a point intermediate the lower and upper ends of said lever.

4,067,132
SAFETY DEVICE FOR PREVENTING THE UNAUTHORIZED FIRING OF A WEAPON
Joseph E. Smith, 170 Locksunart, Apartment 23, Sunnyvale, Calif. 94087
Continuation-in-part of Ser. No. 530,891, Dec. 9, 1974, Pat. No. 3,978,604. This application Mar. 26, 1976, Ser. No. 670,937
Int. Cl.² F41C *17/08*
U.S. Cl. 42—66 13 Claims



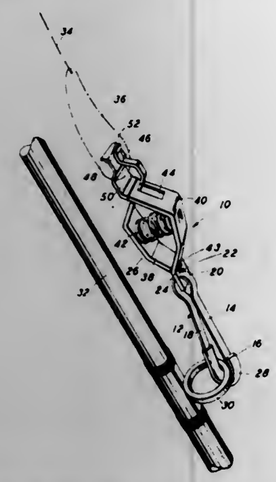
1. A safety device for preventing unauthorized firing of a weapon having a trigger, a hammer, and a hammer actuation means, comprising:
a magnetically actuable member pivotally mounted with respect to said hammer actuation means, said member having at least one magnetically polarized end;
stop means for preventing said member from pivoting beyond a predetermined arc;
bias means for maintaining said member in a position of the arc for preventing the actuation of said hammer actuation means firing said weapon;
means responsive to the position of said magnetically actuable member for blocking operation of said hammer actuation means; and,
a magnetic ring for wearing on a finger of a hand gripping said weapon, said ring being operative to repel said polarized end when said ring is being worn on a finger of the weapon-gripping hand.

4,067,133
FISHING POLE ADAPTOR KIT
Cecil E. Livingston, 1920 Chanslor Ave., Richmond, Calif. 94801
Filed Aug. 4, 1976, Ser. No. 711,600
Int. Cl.² A01K *87/00*
U.S. Cl. 43—18 R 2 Claims



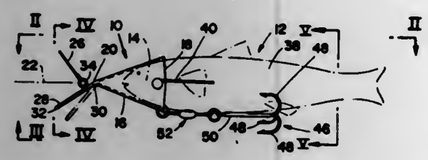
1. A fishing pole adaptor kit for conventional long casting poles, having a butt section with a socket connector and at least one extension section insertable in the socket connector, said kit converting the casting poles into short deep sea poles, the kit comprising:
a plurality of adaptor couplers each having a first shaft end insertable into the socket connector and having a second receptacle end with a socket wherein each first shaft end is of different diameter and each second receptacle end is of identical diameter; and
a plurality of pole tip sections of different lengths each having a first end snugly insertable into said socket of said receptacle end of said adaptor coupler and each having a second distal end with a line guide tip.

4,067,134
FISHING LINE HOLDER
Maurice A. Billings, P.O. Box 533, Kimberling City, Mo. 65686
Filed Oct. 13, 1976, Ser. No. 732,006
Int. Cl.² A01K 97/06
U.S. Cl. 43—25.2 7 Claims



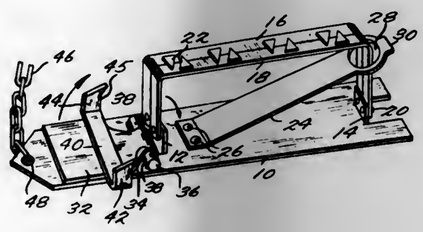
1. A fishing line holder adapted to be mounted on a guide on a fishing rod comprising:
a spring snap having a J-shaped terminal end portion pivotably connected to a substantially linear arm resiliently abutting the terminal end portion, said J-shaped terminal portion being adapted to swivelly receive a guide on a fishing rod on its interior surface which is locked thereto by said linear arm; and
a reverse acting clamp pivotably connected to the juncture of said linear arm and J-shaped terminal portion of said snap swivel, said clamp including
a pair of jaws having a first portion pivotably connected at one end, one of said jaws passing through a slot in the other, the other ends of said jaws defining a clamping second portion bent back towards each other to receive a lure or the like on the end of a fishing line on said rod in clamped engagement therebetween; and
means between the first portion of said jaws for normally urging the first portion of said jaws away from each other and the second portion thereof towards each other.

4,067,135
FISHING LURE AND BAIT THEREFOR
Raymond W. Martin, 1601 Little Orchard St., San Jose, Calif. 95110
Filed Aug. 12, 1976, Ser. No. 713,787
Int. Cl.² A01K 83/06
U.S. Cl. 43—43.14 12 Claims



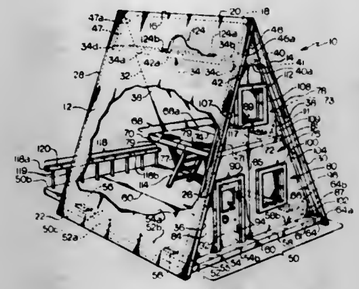
1. A fishing lure adapted to hold live, dead and artificial bait and useful for deep fishing, shallow fishing and trolling, comprising:
1. a cup having a generally elliptical open end and a generally linear closed end for holding a first portion of a bait therein, a first plane passing through a first of the two axes of said generally elliptical open end generally including said linear closed end and a second plane passing through a second of said two axes of said generally elliptical open end being generally perpendicular to said linear closed end;
2. a generally isosceles triangular member extending from said linear closed end of said cup with a base end of said triangle being generally co-extensive with said linear closed end of said cup and an apex of said triangle being spaced from said first plane so that said triangular member forms an angle with said first plane;
3. a leader engaging means extending from generally a central portion of said base end of said triangle in the direction of said first plane;
4. a bait holding means extending from said open end of said cup generally longitudinally away from said linear closed end thereof, said bait holding means including anchoring means for anchoring into a second portion of said bait; and
5. a fish hook means extending from said open end of said cup into the general vicinity of said second portion of said bait.

4,067,136
ANIMAL TRAP
Andrew J. Green, P.O. Box 70, Salem, N. Mex. 87941
Filed Oct. 8, 1976, Ser. No. 731,098
Int. Cl.² A01M 23/26
U.S. Cl. 43—93 2 Claims



1. An animal trap comprising:
an elongated base member,
a pair of opposed trap jaws each disposed to extend longitudinally of said base member, each of said jaws being pivotally connected at their ends to the base member for relative pivotal movement with respect thereto towards and away from each other between an open and closed position,
spring means secured to said base member and in engagement with said trap jaws for constantly urging said trap jaws toward said closed position, and
a jaw release member including a plate portion and having one end thereof pivotally secured to said base member for rotation about an axis which extends perpendicular to the longitudinal direction of and substantially in the plane of said base member, between a first position with said plate portion extending substantially perpendicular to the base member and wherein said release member engages said jaws to restrain said jaws from closing, to a second position outwardly from said base member away from said jaws, said plate portion being of a size such that, when said trap is placed in a burrow, said plate portion, in said first position, will obstruct passage through said burrow and an animal engaging said plate portion will operate said jaw release member with its nose when its body is within the region whereat the jaws will converge.

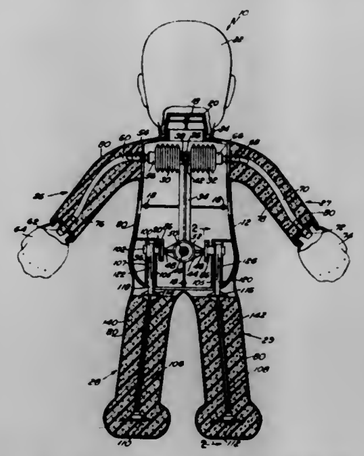
4,067,137
COLLAPSIBLE DOLL HOUSE
Craig F. Korthase, 3606 Magnolia Blvd., Seattle, Wash. 98199
Filed June 1, 1976, Ser. No. 691,502
Int. Cl.² A63H 33/00
U.S. Cl. 46—12 13 Claims



1. A collapsible doll house, comprising:
a. first and second panel members, each having top and bottom edges, said panel members being positioned relative to each other when the doll house is erect so as to (1) mate along their respective top edges to form a ridge for the doll house, and further (2) extend downwardly and outwardly from said ridge such that said lower edges are spaced a substantial distance apart, said panel members thereby forming both the side walls and the roof of the doll house when it is erect;
b. an upper bracing member extending between and secured to said panel members in the vicinity of said upper edges thereof in position to be horizontally disposed between said panel members when the doll house is erect, said upper bracing member comprising first and second portions extending longitudinally of said panel members and first means positioned substantially intermediate said panel members for interconnecting said first and second longitudinal portions of said upper bracing member for relative movement about a first axis;
c. a lower bracing member extending between and secured to said panel members in the vicinity of said lower edges thereof in position to be horizontally disposed between said panel members when the doll house is erect, said bracing member comprising first and second portions extending longitudinally of said panel members and second means positioned substantially intermediate said panel members for interconnecting said first and second longitudinal portions of said lower bracing member, for relative movement about a second axis parallel to said first axis, so that, when the doll house is erect, upon proper movement of said first and second longitudinal portions of both said upper and lower bracing members about said axes, said lower edges of said panel members move toward each other and said upper edges of said panel members move away from each other until the distance between said panel members is substantially the same at the upper edges as at the lower edges thereof when the doll house is completely collapsed, said distance being relatively small compared to the other dimensions of said panel members.

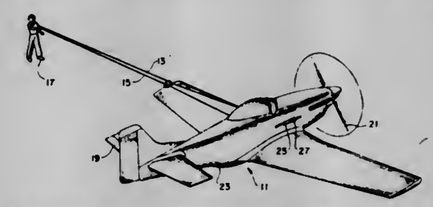
4,067,138
PNEUMATICALLY ACTUATED WALKING DOLL
Carl Cederholm, Providence, R.I., and Robert H. Hudson, Seekonk, Mass., assignors to Hasbro Development Corporation, Pawtucket, R.I.
Continuation of Ser. No. 613,192, Sept. 15, 1975, abandoned.
This application Sept. 27, 1976, Ser. No. 727,388
Int. Cl.² A63H 29/16
U.S. Cl. 46—44 14 Claims

1. A walking doll, comprising a hollow body, opposed arms located at the upper portion of said body and a pair of legs located at the lower portion of said body and being mounted for pivotal movement relative thereto, independently air operated pneumatic systems for producing the pivotal movement of said legs, each of said pneumatic systems including a bellows unit located in said body and being expandable in response to the introduction of air therein and an air conduit extending through a said arm interiorly of said body and communicating



with a said bellows unit, each of said arms including a hollow member mounted on the outermost end of a said air conduit and defining a hand of said doll, and actuating means interconnecting each leg to said body and being interconnected to said bellows units, so that upon deforming, one of said hollow member, air is injected through its associated air conduit communicating therewith into its associated bellows unit for the expansion thereof, wherein said actuating means effects a corresponding movement of each of said legs in a walking action.

4,067,139
ELECTRIC POWERED FLYING MODEL AIRPLANE
Kenneth R. Pinkerton, Cypress, and Douglas J. Malewicki, Tustin, both of Calif., assignors to L. M. Cox Manufacturing Co., Inc., Santa Ana, Calif.
Filed July 16, 1976, Ser. No. 705,979
Int. Cl.² A63H 27/12, 29/02
U.S. Cl. 46—249 23 Claims



1. An electric powered model airplane comprising:
an electric motor mounted in the nose of said airplane, said motor including a short armature shaft extending through the nose of said airplane and supporting a driving propeller, said motor further including a pair of spring biased friction electrical contacts;
a rechargeable battery located in the fuselage of said airplane aft of the wings thereof;
a pair of nonconductive surfaces formed within the fuselage of said airplane adjacent to a pair of electrical terminals of said rechargeable battery;
a first semi-rigid conductor engaged at one end with one of said electrical contacts of said motor, extending from said

one end to a position between one of said nonconductive surfaces and one of said pair of electrical battery terminals for contacting said one of said pair of battery terminals, and extending from said one end of said battery terminals to a position outside the fuselage of said airplane for contact with a recharging source;

a second semi-rigid conductor engaged at one end with the other of said electrical contacts of said motor, and extending from said one end to form a resilient switch contact; and

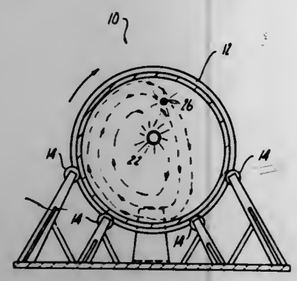
a third semi-rigid conductor having a first end positioned adjacent said resilient switch contact, extending from said first end to a position outside the fuselage of said airplane for contact with said recharging source, and extending from said position outside the fuselage to a second end positioned between the other of said pair of nonconductive surfaces and the other of said pair of electrical battery terminals for contacting said other of said pair of battery terminals.

4,067,140

MULCH AND PROCESS OF MAKING SAME

John C. Thomas, 105 Kathy Drive, Clinton, Mich. 49236

Filed Apr. 7, 1976, Ser. No. 674,555
Int. Cl.² A01G 7/00
U.S. Cl. 47—9 14 Claims



1. A process of making soil mulch comprising, reducing essentially dry sheet like used paper consisting essentially of wastepaper and used newsprint which is unsaturated with moisture to essentially dry fibers of used paper unsaturated with moisture and with at least 90 percent by weight of the dry fibers having a maximum fiber length not greater than one inch, said reducing of the used paper to dry fibers occurring without contacting the used paper with any aqueous mixture, contacting the dry fibers of used paper with a quantity of a liquid mixture which is not greater than 65 percent by weight of the dry fibers of the use paper and the liquid mixture, said liquid mixture containing a wetting agent which will enhance the ability of the fibers of used paper to be mixed with, suspended in, and absorb water, and said contacting of the liquid mixture and the dry fibers of used paper occurring while the fibers of used paper are suspended in air such that the fibers of used paper take up the liquid mixture and retain the wetting agent without saturating the fibers of used paper with moisture and without agglomerating the fibers of used paper such that the fibers of used paper contacted with the liquid mixture and retaining the wetting agent can be packaged and used as a mulch without any further processing to remove moisture from the fibers of paper and to break up the mass of fibers of used paper contacted with the liquid mixture and retaining the wetting agent.

4,067,141

COATED SEED CONTAINING PULLULAN-BASED RESIN USED AS BINDER

Hiroomi Matsunaga, Kobe; Kozo Tsuji, and Masashi Watanabe, both of Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited and Hayashibara Biochemical Laboratories, Incorporated, both of, Japan

Filed July 7, 1976, Ser. No. 703,264
Claims priority, application Japan, July 11, 1975, 50-85561
Int. Cl.² A01C 1/06
U.S. Cl. 47—57.6 5 Claims

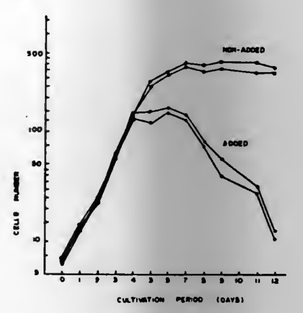
1. A coated seed comprising a seed and a coating thereon of an inorganic substance customarily used in coating seeds so they may be sown by machine, said inorganic substance being bonded by 0.1 to 50%, based on the total weight of said inorganic substance, of pullulan, etherified pullulan, esterified pullulan, phosphorylated pullulan, oxidized pullulan or pullulan graft-polymerized with a vinyl compound, to said seed to form a coating thereon having sufficient hardness for machine-seeding and adequate disintegration characteristics in soil.

4,067,142

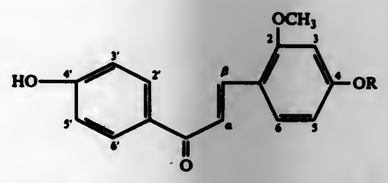
ECHINATIN GLYCOSIDES AND THEIR PREPARATION

Tsutomu Furuya, Tokyo; Shinichi Ayabe, Yokosuka; Miyuki Kobayashi, Ube, and Tadao Tanimoto, Okayama, all of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Division of Ser. No. 672,623, April 1, 1976. This application Nov. 29, 1976, Ser. No. 745,848
Claims priority, application Japan, Apr. 17, 1975, 50-47240; Apr. 17, 1975, 50-47241
Int. Cl.² A01G 1/00
U.S. Cl. 47—58 6 Claims



1. A process for the production of echinatin-4-glucoside, represented by formula



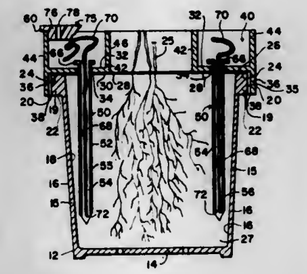
wherein R is a glucopyranosyl residue, comprising cultivating calli of *Glycyrrhiza echinata* L. (Leguminosae) in a nutrient medium until echinatin-4-glucoside is produced in the calli and culture broth, and extracting and separating the echinatin-4-glucoside from the calli and the culture broth.

4,067,143

PLANT WATERING REMINDER

Patrick J. Alwell, 10 Randolph Place, Hazlet, N.J. 07730

Filed Aug. 3, 1976, Ser. No. 711,388
Int. Cl.² A01G 25/00
U.S. Cl. 47—79 5 Claims



1. A plant watering device for use in conjunction with a plant pot having a rim, the watering device responsive to maintain a desired moisture condition within the planting medium, and comprising,

a. housing means adapted to be readily applicable and removable from the rim of the plant pot,

b. retaining means extending downwardly from said housing means to peripherally encompass the rim to prevent lateral movement relative thereto so that said housing means is retained in seated position relative to the plant pot,

c. reservoir means extending upwardly from said housing means and in partially overlapping relationship to the planting medium in the plant pot,

d. said reservoir means includes a pair of vertically extending peripherally spaced apart walls for receiving the fluid therebetween,

e. an aperture formed by the inner of said walls substantially centrally disposed on said housing means for the plant to extend therethrough,

f. fluid transferring means extending between said reservoir means and into the soil medium for a gradual transfer of fluid from within the reservoir means to the planting medium, said fluid transferring means including:

1. an opening extending through said housing means to provide access between said reservoir and the planting medium,

2. a fluid transferring member having a rigid wall with an axially extending passageway therethrough, said fluid transferring member adapted to removably extend vertically through said opening and into the planting medium,

3. a plurality of fluid ports extending between said passageway and the exterior of said fluid transferring member,

4. an elongated irrigating wick having the upper end thereof positioned within said reservoir and the lower end thereof within said passageway, such that fluid is transferred in response to the moisture condition of the planting medium, and

5. said forward end of said fluid transferring member is tapered to facilitate entry thereof into the planting medium, and

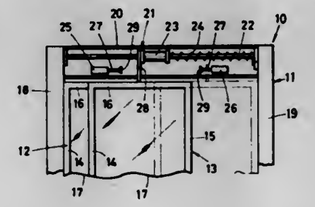
g. stop means at the upper end of said fluid transferring member to prevent said fluid transferring member from passing through said opening and also being removable from said housing.

4,067,144

METHOD OF DRIVING DOOR OF AUTOMATIC DOOR ASSEMBLY

Masaaki Ogishi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 24, 1976, Ser. No. 688,944
Claims priority, application Japan, May 24, 1975, 50-62107
Int. Cl.² E05F 15/18
U.S. Cl. 49—360 5 Claims



1. A method of using a linear motor for driving a door of an automatic door assembly of the type having a pair of cushioning devices for dampening the movement of the door at the ends of its opening and closing strokes, comprising the steps of:

a. driving the door throughout the duration of each stroke by a normal constant propulsion force obtained from the linear motor;

b. driving the door by an additional constant propulsion force, which produces a net force which is greater than said normal propulsion force, during a final portion of at least one of the strokes of the door for thereby overcoming a reaction force of one of the cushioning devices so as to bring the door completely to the end of said one of its strokes; and

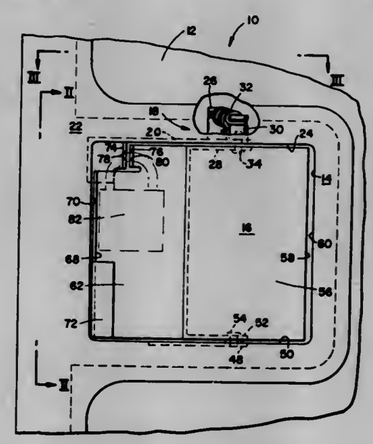
c. removing said additional propulsion force upon arrival of the door at said end.

4,067,145

SPRING LOADED ACCESS DOOR

Norman J. Hodge, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 18, 1976, Ser. No. 733,551
Int. Cl.² E05F 1/12
U.S. Cl. 49—386 9 Claims



1. In a compartment on a vehicle which includes an opening through a wall thereof and a cover positionable to cover said opening, an improved means for mounting a door to said compartment to serve as said cover, comprising:

a first member extending inwardly of said compartment

from the wall thereof adjacent a first side of said opening having a first post extending generally perpendicularly therefrom away from said opening and generally parallel thereto;

a first bracket extending inwardly of said compartment from said door adjacent and generally parallel to said first member on an opposite side thereof from said first post, said first bracket having a second post extending therefrom past said first member and generally parallel to, spaced latitudinally from, proceeding generally in the same direction as and generally of an equal length with said first post;

means biasing said first and second posts towards one another; and

first means pivotally coupling said first bracket to said first member at a position intermediate said door and said first post to define a first and a second position for said door, said door being biased at each of said positions by said biasing means to be stably held in place, said first pivotal coupling means being located in an area defined by a first line connecting the centers of said posts in said first position, a second line connecting the centers of said posts in said second position and said door when in said first and second positions.

4,067,146

SEALING JOINTS FOR AUTOMOBILE BODY AND AN EXTRUSION HEAD FOR EXTRUDING SUCH JOINTS

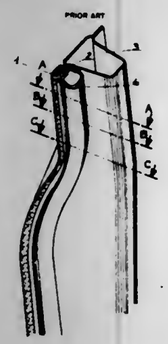
Francois Mesnel, 6 Bis rue Salignac Fenelon, Neuilly-sur-Seine, and Gerard Mesnel, 17 rue Victor-Hugo, Carrieres-sur-Seine, both of France

Filed May 7, 1976, Ser. No. 684,373

Claims priority, application France, July 8, 1975, 75.21344; July 30, 1975, 75.23720

Int. Cl.² E06B 7/23

U.S. Cl. 49—490 **4 Claims**



1. An extruded tubular sealing joint for mounting on a first closure element of an automobile body, said first closure element having a predetermined length made up of successive straight and angular portions forming a predetermined pattern, and said joint comprising:

an elongated, hollow tubular member made of flexible extruded material adapted to be mounted on said successive straight and angular portions of said first closure element, and having a longitudinal sealing face adapted to come in contact with a second closure element of said automobile body during movement of said first and said second closure elements into a closed, mating relationship, said second closure element having a predetermined length made up of successive straight and angular portions forming a predetermined pattern that is arranged to mate with said predetermined pattern of said first closure element; and

a group of elongated parallel flexible sealing lips on said sealing face of said tubular member for each of said angular portions of said predetermined pattern of said first closure element, each group of sealing lips being extrudedly formed on and with said tubular member and extending longitudinally thereof, the portions of said tubular member extending between said groups being free of sealing lips, and said groups of sealing lips compensating for localized flattening of the tubular member occurring along said angular portions of said predetermined pattern of said first closure element when said tubular member is mounted thereon.

4,067,147

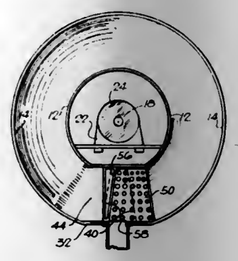
METHOD AND APPARATUS FOR BOWL TYPE VIBRATORY FINISHING

Raymond M. Leliaert, South Bend, Ind., assignor to Wheelabrator-Frye, Inc., Hampton, N.H.

Filed Sept. 3, 1976, Ser. No. 720,267

Int. Cl.² B24B 31/06, 1/00

U.S. Cl. 51—163.2 **12 Claims**



1. A finishing mill having a substantially annular trough adapted to contain media and parts, means for vibrating the trough to cause the media and parts therein to travel in admixture about the trough, the improvement for separating the parts from the media comprising a segment forming a part of the trough but extending downwardly as a well to below the normal level of the bottom of the trough with the return from the well to the bottom of the trough being at a relatively small incline, and a separating screen positionable to extend crosswise of the trough substantially as a continuation of the bottom wall thereof to overlie an initial portion of the well to retain the parts on the surface thereof while the media passes through into the underlying portion of the well for return to the trough, and means for removing the parts from the surface of the separating screen.

4,067,148

FEED APPARATUS FOR GRINDING MACHINE

Makoto Kikuchi, Kariya, Japan, assignor to Toyoda Koki Kabushiki-Kaisha, Aichi, Japan

Filed Aug. 24, 1976, Ser. No. 717,153

Claims priority, application Japan, Sept. 18, 1975, 50-112155; May 11, 1976, 51-54000

Int. Cl.² B24B 49/00

U.S. Cl. 51—165.77 **11 Claims**

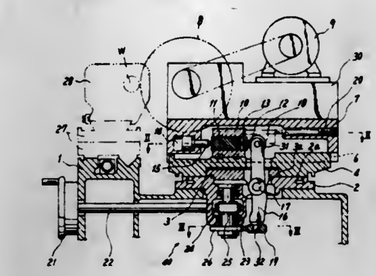
1. A feed apparatus for a grinding machine including a bed, a swivel base rotatably mounted on said bed, a wheel support slidably mounted on said swivel base for sliding movement in a direction oriented by a predetermined angle with respect to a radial direction of a workpiece, comprising:

a transmission shaft operatively connected to said wheel support and being movable in the same direction as the sliding movement of said wheel support;

means movable in the radial direction of said workpiece;

driving means for moving said movable means; and

transmitting means arranged between said transmission shaft and said movable means for transmitting movement of said movable means in the radial direction of the workpiece to said wheel support through said transmission shaft in such a manner as to be movable on said movable means relatively in the axial direction of said workpiece in proportion to movement of said movable means in the radial direction of said workpiece.



4,067,149

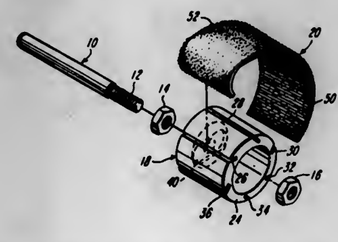
SANDING, BUFFING AND POLISHING TOOLS

Frank F. Ali, and Phillip Glen Ali, both of 2973 Pascal Drive, Fairborn, Ohio 45324

Filed Mar. 14, 1977, Ser. No. 777,310

Int. Cl.² B24B 9/04

U.S. Cl. 51—364 **5 Claims**



1. A tool for sanding, buffing and/or polishing comprising an operating head the body of which includes a surface portion the peripheral configuration of which is defined by a line revolved about a central axis, a peripheral surface portion of said head having therein a plurality of cuts directed in a sense longitudinally and inwardly thereof to extend into the body of said head in a direction at an angle to a radius of said head, said cuts including cuts of different width and being formed to receive and to provide for an anchoring therein of one end of a selected segment of an abrasively surfaced sheet-like material to enable the remainder thereof to be wrapped over said peripheral surface portion of said head and to dispose in substantially coextensive relation thereto.

4,067,150

SANDBLAST ABRADING APPARATUS

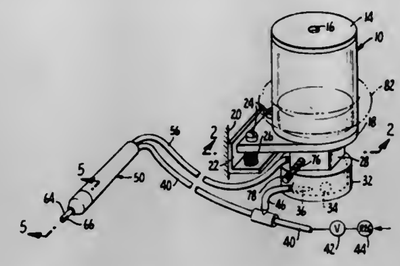
James P. Merrigan, Walnut Creek, Calif., assignor to Argonite, Inc., Pleasant Hill, Calif.

Filed Nov. 3, 1975, Ser. No. 628,325

Int. Cl.² B24C 7/00, 5/04

U.S. Cl. 51—436 **5 Claims**

1. Sandblast abrading apparatus comprising a container containing fine particle abrading material, and vibrator means attached to the container operable to vibrate it with components of both horizontal and vertical movement whereby said material is caused to become suspended in the form of a cloud within said container, said vibrator means comprising a housing having a bottom wall and having defined therein a cylindrical space, a ball member disposed within said space and movable therearound with horizontal and vertical components of movement, means to impart such movement to said ball member comprising a source of pressurized air, an air inlet connected to said source and tangentially communicating with said space, a vertically directed air outlet communicating with said space through said bottom wall, said vibrator means further comprising means resiliently and pivotally supporting said container for limited up and down arcuate movement.



4,067,151

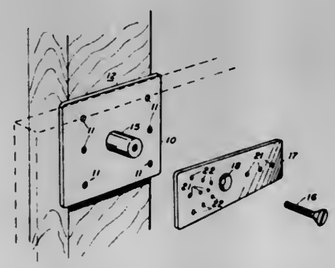
CURTAIN ROD SUPPORT

Melvin Drakulic, Box 482, Trafford, Pa. 15085

Filed July 27, 1976, Ser. No. 709,232

Int. Cl.² E04F 19/00

U.S. Cl. 52—27 **5 Claims**



1. A support apparatus to carry a window dressing and the like, said apparatus comprising the combination of:

rod means adapted to support said window dressing,

adapter brackets to releasably support the ends of said rod means while spaced outwardly from the finished face surface of a wall,

two base plates embedded within said wall at two locations which are spaced apart and inwardly spaced from said finished face surface,

connector means carried by each of said base plates to project outwardly from said finished face surface,

two carrier plates each including means to releasably secure an adapter bracket of said rod means thereto and thereby support an end of said rod means while said carrier plates abut in a flush relation with the finished face surface of the wall, and

fastening means to secure each of said two carrier plates to said connector means for transferring the load carried by said rod means onto the wall by said two base plates.

4,067,152

FASCIA COMPRESSION CLIP

Rodney J. Wolma, Grand Rapids, Mich., assignor to Philip L. Johnson, Grand Rapids, Mich.

Filed Dec. 17, 1976, Ser. No. 751,978

Int. Cl.² E04D 13/15

U.S. Cl. 52—60 **9 Claims**

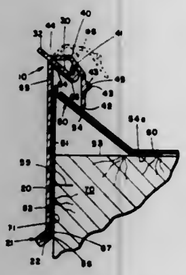
1. A fascia compression clip for providing a water tight seal

between a roof covered by roof material and an adjacent wall with a generally vertical outer side including:

a generally planar front face extending downwardly in a generally vertical direction along the outer side of the wall and having an inwardly opening receiving means for attaching said front face to the wall;

a deformable leg extending from said front face across the wall toward the roof, said deformable leg deformable from an initial position to a securing position for engaging the roof thereby securing, in cooperation with said receiving means in said front face, said fascia compression clip to the roof and compressing the roof material;

securing means extending from said front face toward said



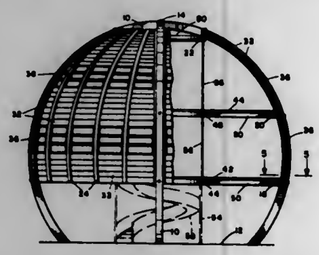
deformable leg for coupling to and securing said deformable leg in said securing position, said securing means including a support leg extending from said front face so said support leg is positioned between said deformable leg and the roof; said support leg having an engaging means which engages said deformable leg in said securing position and prevents movement of said deformable leg from said securing position, said engaging means including a pair of interacting hooks, one hook extending from said deformable leg and one hook extending from said support leg; and

a lever receiving means including a pair of longitudinal, spaced flanges forming a slot therebetween extending along the outside of said deformable leg.

4,067,153
DOME STRUCTURE

Richard Phillip Davis, P.O. Box 881, San Diego, Calif. 92112

Filed Aug. 29, 1975, Ser. No. 609,031
Int. Cl.² E04B 7/32
U.S. Cl. 52—80 **6 Claims**



1. A dome structure comprising:

a. a pair of main support beams each describing a substantially circular arc and lying in a vertical plane with the ends thereof seated on a supporting surface;

b. said beams orthogonally intersecting each other at their uppermost extremity to define a portion of a sphere;

c. a plurality of secondary ribs, each defining a substantially circular arc;

d. means supporting said ribs in angularly spaced relation between said beams and in the spherical surface define thereby;

e. each of said ribs having a pair of elongated channels, one in each side thereof such that each pair of adjacent ribs defines a pair of facing channels; which are arcuate essentially in the direction of a great circle defined by the channel defining ribs;

f. a multiplicity of laterally extended slats seated in said facing channel pairs and, said slats being vertically contiguous to define a substantially continuous wall segment between each pair of adjacent ribs and being substantially planar and of width and height dimensions to seat at least roughly within said arcuate facing channel pairs despite being planar;

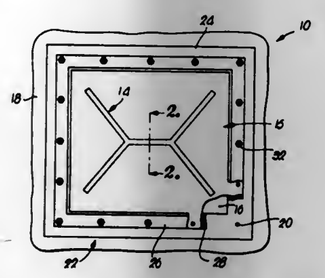
g. an annular floor supported by two coplanar circular joists disposed beneath the inner and outer circumference thereof respectively; and

h. said circular joists being suspended by cables from overlying portions of said beams and including a plurality of radial joists extending between said inner and outer circular joists, and the outer of said joists being mounted to said beams.

4,067,154
INSTANTANEOUS VENTING, NON-FRANGIBLE BURST PANEL STRUCTURE

Lester Lyman Fike, Jr., Blue Springs, Mo., assignor to Fike Metal Products Corporation, Blue Springs, Mo.

Continuation-in-part of Ser. No. 551,339, Feb. 20, 1975, abandoned. This application July 2, 1976, Ser. No. 702,240
Int. Cl.² E04C 2/26
U.S. Cl. 52—99 **12 Claims**



1. A frangible burst membrane or panel adapted to be mounted in normally covering and closing disposition to a vent opening provided with a chamber or area to be protected subject to the buildup of dangerously high internal pressure said membrane comprising:

a thin, flexible substrate sheet formed of a frangible metallic material capable of bursting at relatively low pressures;

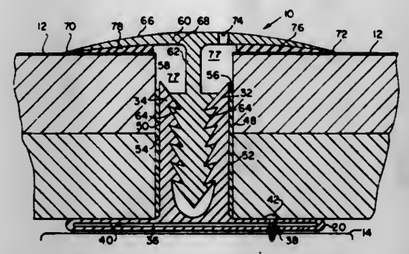
elongated, nonrigid flexible, pattern-defining means on at least one face of said sheet and flexible with the latter extending across a significant part of the sheet, at least one edge of said pattern-defining means presenting a sharp-breaking, predetermined burst pattern for the sheet; and

a non-metallic, flexible, relatively thin coating of abrasion and corrosion resistant material on said sheet, said burst pattern-defining means being configured and arranged and cooperable with said coating to cause the membrane to burst at a lower pressure than the burst pressure of the sheet and assuring substantially instantaneous bursting of said sheet along said pattern when the pressure within said chamber or the like reaches a relatively low predetermined magnitude, and for substantially instantaneous essentially non-fragmenting outward movement of the bursted portions of the sheet for venting of said chamber or the like through substantially the entirety of said vent opening.

4,067,155
SEALING SYSTEM

David L. Ruff, Torrance; Sherman A. Stewart, Palos Verdes Penn., and Harlan E. Tarbell, Torrance, all of Calif., assignors to Grefco, Inc., Bala Cynwyd, Pa.

Filed Aug. 28, 1975, Ser. No. 608,751
Int. Cl.² E04B 1/00
U.S. Cl. 52—105 **14 Claims**



1. A system for joining and adhering a pair of panels to a rigid substrate and providing a seal against thermal and moisture transfer comprising:

a. an elongated receptacle member of substantially constant transverse cross-section for attachment to said rigid substrate including a base, and a pair of spaced vertical elements extending upwardly from said base to define a channel, the adjacent side walls of said vertical elements including a plurality of vertically spaced, downwardly angled teeth projecting inwardly towards the center of said channel;

b. a reinforcing metal plate embedded in the base of said receptacle member providing for the secure attachment of said receptacle member to said rigid substrate, said plate including a plurality of holes for passage of fastening means and the surface of said base including indentations that are formed adjacent said holes;

c. an elongated resilient insert member of substantially constant transverse cross-section including a cap, and a projection having a pair of spaced side wall surfaces extending downwardly from said cap, a portion of both of said side wall surfaces including a plurality of vertically spaced, upwardly angled teeth projecting outwardly from said side walls a sufficient distance to engage the downwardly angled teeth of said receptacle member when said projection is inserted in said channel, said cap being deformable upon insertion of said projection of said insert member in said receptacle member, with the resilience of said cap providing a slight upward force on said projection to exert a positive, engaging force that tends to lock said projection in said receptacle member; and

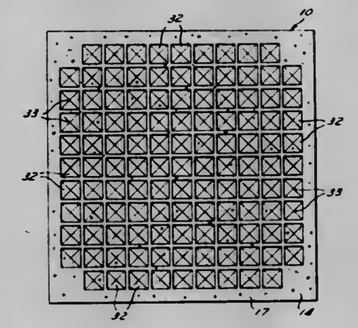
d. a layer of tacky resilient sealant attached to the lower surface of said cap on each side of said projection to seal said cap to each of said panels.

4,067,156
COMPUTER FLOOR STRUCTURE

Lucien R. Downing, Jr., Avon Lake, Ohio, assignor to Donn Products, Inc., Westlake, Ohio

Filed Jan. 12, 1976, Ser. No. 648,045
Int. Cl.² E04B 5/08; E04C 2/06
U.S. Cl. 52—126 **10 Claims**

1. A generally rectangular floor panel adapted to be supported at its corners comprising a body of nonflammable concrete-like material having substantial compressive strength, low tensile strength and a low co-efficient of thermal transfer, said body having a planar upper surface and a lower surface, a grid of reinforcing elements embedded in said body substantially adjacent said lower surface arranged in arrays of elements which divide said panel into a plurality of reinforcing element bounded zones, said body being formed with a plurality of cavities within said zones which are open to said lower surface and are substantially uniformly sloped inward and upward toward said upper surface at an angle with respect to said lower surface substantially no greater than 45°, said cavities terminating at a location spaced from said upper surface, said body providing a substantially homogeneous upper portion above said cavities of substantially uniform thickness and integral depending walls located around said cavities and extending from said upper portion to said lower surface, said upper portion being free of reinforcing elements and being supported substantially throughout its lower extremity by said wall portions, said wall portions being sufficiently wide adja-

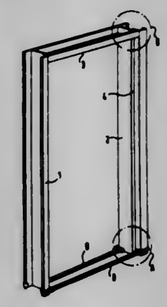


cent to said upper portion to support substantially the entire lower extremity of said upper portion, said walls extending downwardly with substantially uniformly decreasing width to said lower surface and being free of reinforcing elements except substantially adjacent to said lower surface, said body and grid cooperating so that loads applied to said upper surface produce compressive stresses in said concrete-like material without any significant tensile stresses and produce tensile stresses in said elements of said grid without any significant compressive stresses, the strength of said panel with respect to said loads on said upper surface being substantially the same as a similar panel without said cavities.

4,067,157
ELEMENTS FOR FORMING FRAMES

Brian Robinson, Usk, England, assignor to Catnic Components Limited, Caerphilly, Wales

Filed Sept. 15, 1975, Ser. No. 613,167
Claims priority, application United Kingdom, Sept. 23, 1974, 41345/74; June 2, 1975, 23796/75
Int. Cl.² E06B 1/04; E04C 2/38
U.S. Cl. 52—127 **11 Claims**



1. A metal door frame for defining a doorway through an opening in a wall, comprising:

a pair of door jambs and a head rail, each of said jambs and said head rail having a substantially identical channel-

shaped cross-section comprising opposed flanges connected by a web, said flanges being directed away from said opening towards the body of said wall; and

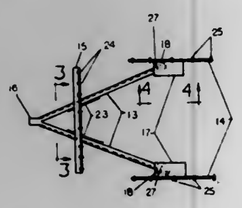
a bracket secured to the free end of the head rail, said bracket having a body of L-shaped cross-section, one limb of said L-shaped body being secured to the head rail and the other limb of said L-shaped body extending upwardly from the end edge of the web of said head rail in a plane at substantially right angles to the length axis of the head rail, said bracket further incorporating a spring clip leg having an upper portion integrally continuing from the upper end of said upward extending bracket limb, said spring clip leg extending convergently downward from the upper edge of said upward extending bracket limb close along the outboard face of latter for snugly receiving and resiliently gripping therebetween the upper edge portion of the web of the adjacent jamb, thereby securing said head rail on said jamb, said upward extending limb and spring clip leg including opposed portions spaced not more than the thickness of the web of the adjacent jamb, said spring clip leg being resiliently bendable away from said outboard face of said upward extending body limb.

4,067,158

TOWING A-FRAME STRUCTURE FOR PREFABRICATED BUILDING

Robert Raymond Lawrence, 205 W. Fifth St., Alturas, Calif. 96101

Filed Sept. 13, 1976, Ser. No. 722,884
Int. Cl.² E04B *1/343*
U.S. Cl. 52—143 **1 Claim**



1. In combination, a prefabricated building and a towing "A" frame structure comprising

a. a prefabricated building having an elongated body and which is structurally suitable for being towed by means of said towing "A" frame along a line parallel to the longitudinal axis of said building,

b. a towing "A" frame structure attached to said building at the forward end of said building, said "A" frame comprising,

1. two longitudinally elongated leg members lying in the same horizontal plane and lying at an angle relative to one another,

2. a front load distributing member, horizontally disposed lying perpendicular to the longitudinal axis of said prefabricated building,

3. two identical load distributing side plates of rectangular shape lying in a vertical plane, parallel to each other and separated by a distance substantially equal to the width of the prefabricated building.

4. means connecting said leg members to load distributing side plates said means being by attaching said leg members to vertical gusset plates by bolts and connecting said vertical gusset plates to horizontal gusset plates by welding and connecting said horizontal gusset plates to said load distributing side plates by welding,

5. means connecting leg members together at their apex said means being by bolting, welding or riveting said leg members to a trailer hitch coupler,

6. means connecting load distributing front member to said leg members said means being by connecting said leg members to height adjusting brackets by bolts, rivets or welding and connecting said brackets to said load distributing front member by bolts at two locations along the length of said load distributing front member,

7. means connecting load distributing front member to prefabricated building, said means being by connecting said load distributing front member to prefabricated building by lag bolts, screws or bolts,

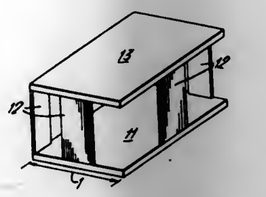
8. means connecting load distributing side members to prefabricated building, said means being by connecting said load distributing side members to prefabricated building by lag bolts, screws or bolts.

4,067,159

BUILDING CLUSTER OF A PLURALITY OF BUILDING UNITS

Ivan Bertram Juriss; Roger Douglas Hay; Andrew Culross Goodfellow; Thomas Townson, and Keith Eric Hay, all of Auckland, New Zealand, assignors to Industrialised Building Systems Limited, New Zealand

Continuation of Ser. No. 418,216, Nov. 23, 1973, abandoned.
This application Oct. 31, 1975, Ser. No. 627,857
Claims priority, application New Zealand, Nov. 22, 1972, 169084
Int. Cl.² E04H *1/00*
U.S. Cl. 52—234 **11 Claims**



1. A building cluster comprising a plurality of building units, each said building unit forming at least one room at least when connected to one or more adjacent building units, each said building unit being of a width and length selected from a plurality of a modular unit dimension, said plurality of a modular unit dimension being arranged in two directions as a horizontal modular grid, each said building units being arranged to be joined together to form said building cluster so that the center line of any joint between said building units coincides with any selected grid line of said modular grid and so that any wall between any two adjacent said rooms formed by any two adjacent said building units is a wall common to both said building units, and is further arranged so that the center line of said wall coincides with the center line of any said joint between said building units and with said selected line of said modular grid, each said building unit being constructed separately from any other building unit in said building cluster and comprising a stressed skin floor member and a stressed skin roof member both the same length and width, and a plurality of wall panel members on at least two sides of said separately constructed building unit, said wall panel members being disposed between said floor member and said roof member and removably connected thereto by means of lug members inserted on the center line of the top and bottom edges of said wall panel members, and removably connected to the edges of said floor member and said roof member in which at least some of which removable connections of said lugs to the edges of said floor members and said roof members are adapted to resist shear forces due to side sway or lozenging forces on said building unit without changing the configuration of said wall panel members, said wall panel members being spaced apart from and connected to each other in their vertical edges by means of removable spacing members such that at the connection of at least two said wall panel members a continuous cavity is formed the least dimension of which is at least conci-

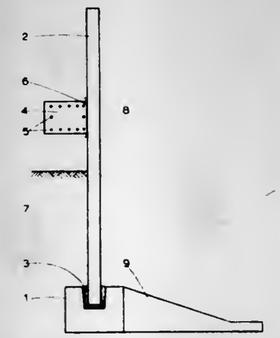
dent with the thickness of any said wall panel member arranged to enable changes selected from removal and addition of any said wall panel member without disturbing any other said wall panel member in the building unit and without disturbing any electrical wires in the cavity, the relationship of the edges of said floor members and said roof members and said wall panel members to said modular grid being such that where *M* represents said modular unit dimension and *n* represents any whole number and *nM* represents any plurality of said modular unit dimension, and where *d* represents the spaced distance apart of the edges of any two adjacent said floor members or the edges of any two adjacent roof members and coincides with the thickness of any one said lug, *t* represents the thickness of any one said wall panel member, and is always greater than *d*, then any said floor member and any said roof member has a length or width of $nM-d$, and any said wall panel member has a width of no greater than $nM-t$ and no less than $nM-2t$ so that any said floor member or any said roof member or any said wall panel members has a fixed relationship of its vertical edges to said modular grid regardless of the plurality of modular unit dimensions selected for its horizontal dimensions, and so that the intersection of the center lines of at least three said wall panel members, when one said wall panel members is at right angles to the other two said wall panel members, will concide with the center line of the joint between at least two building units and with the intersection of the lines of said horizontal modular grid with the vertical edges of these panels a fixed distance away from said intersection so that such vertical edges define a space between the panels.

4,067,160

CONCRETE RESERVOIR COMPOSED OF PREFABRICATED SECTIONS

Arnoldus J. Reijnders, Voerendaal; Jacobus J. Hage, Sittard, and Peter J. Segers, Heerlen, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 22, 1976, Ser. No. 679,494
Claims priority, application Netherlands, Apr. 29, 1975, 7505062
Int. Cl.² E04C *2/04*; E04G *11/06*; E04H *7/26*
U.S. Cl. 52—245 **7 Claims**



1. A reservoir consisting of a plurality of contiguous, prefabricated, plate-shaped concrete sections connected together so as to be movable and water-tight, comprising:

a plurality of vertically extending concrete sections, each having front, back, top, bottom and side wall portions;

a foundation extending around the full length of the reservoir circumference;

upwardly facing groove means provided within said foundation for receiving the bottom portion of said concrete sections together with an amount of mortar for securing the concrete sections therein;

pliable side sealing means for connecting together adjacent side portions of said concrete sections;

each of the side portions of said concrete sections being provided with rabbet means located in the front plain of said concrete sections for receiving said pliable side sealing means;

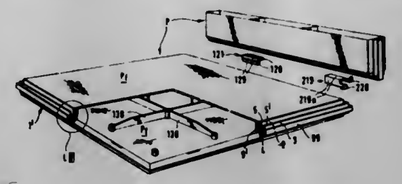
each of said pliable side sealing means including a deformable spacer extending between the adjacent side wall portions of adjacent concrete sections and from the back to the front thereof, deformable sealing plate means positioned on the front side of said spacer for making the joint between adjacent concrete sections watertight, clamp means for clamping said deformable sealing plate means in a watertight relationship with respect to said concrete sections, said clamping means extending along the length of said deformable sealing plate means.

4,067,161

MODULAR FURNITURE

Eberhard G. Rensch, Lerchesbergring 24, 6 Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 407,600, Oct. 18, 1973, abandoned. This application Sept. 22, 1975, Ser. No. 615,484
Claims priority, application Germany, Sept. 29, 1974, 2445015; Aug. 2, 1975, 2534552
Int. Cl.² E04B *1/54*; A47B *47/00*
U.S. Cl. 52—285 **13 Claims**



1. In a piece of modular furniture, in combination:

a pair of modular elements in the shape of elongate profiles each provided with three parallel flanges held spaced apart by an integral transverse web, said flanges terminating in beveled edges lying in a common plane, the beveled edges of corresponding flanges of said profiles contacting each other along said plane with formation of two pairs of angularly adjoining grooves between said flanges; and

a pair of generally L-shaped connectors with legs respectively received in each pair of angularly adjoining grooves for holding said profiles together.

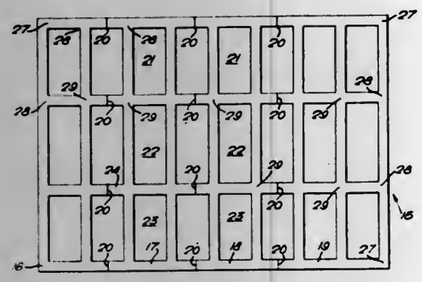
5. In a piece of modular furniture, in combination:

a pair of polygonal plates lying in mutually orthogonal planes;

two sets of modular elements respectively framing said plates, each modular element having the shape of an elongate profile and being provided with at least two parallel flanges including a first flange proximal to the respective panel and a second flange separated from said first flange by an integral transverse web, the flanges of each modular element differing from each other in both length and width and terminating in beveled coplanar longitudinal edges and in beveled coplanar transverse edges, the modular elements of each set adjoining each other along their beveled transverse edge, the resulting frames having a common side defined by one modular element of each set whose flanges contact each other along beveled longitudinal edges; and

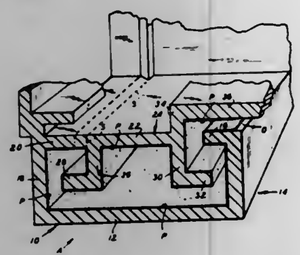
a pair of generally L-shaped connectors disposed at respective ends of said common side, each of said connectors having two legs respectively received in a pair of outwardly open grooves formed between the contacting flanges of the two modular elements defining said common side, said legs terminating in transverse end stops received between flanges of adjoining modular elements of the respective sets to form a corner joint.

4,067,162
BUILDING CONSTRUCTION
Ronald Howorth, Littleborough, England, assignor to BTR Industries Limited, London, England
Filed Nov. 29, 1976, Ser. No. 745,826
Claims priority, application United Kingdom, June 23, 1976, 26172/76
Int. Cl.² E04B 1/38
U.S. Cl. 52—393 18 Claims



1. A method of constructing a lattice for sealing cladding panels on a structure of a building comprising the steps of preforming a plurality of lattice portions of elastomeric material, each lattice portion comprising a generally rectangular framework for sealing at least one cladding panel and at least one member which is an extension of a side of the rectangle extending from each corner of the rectangle a distance of half the length of the side of the rectangle from which the member extends, assembling said preformed lattice portions on a structure of a building and joining together said preformed lattice portions into a continuous lattice by forming junctions between adjacent lattice portions or between lattice portions and intermediate spacing members which connect the lattice portions.

4,067,163
THERMALLY INSULATED AND CONNECTED WINDOW FRAME MEMBERS AND THE METHOD OF MAKING THE SAME
Frank W. Hetman, 124 Paisley Lane, Minneapolis, Minn. 55422
Filed Mar. 11, 1977, Ser. No. 776,664
Int. Cl.² E04B 1/62
U.S. Cl. 52—403 5 Claims

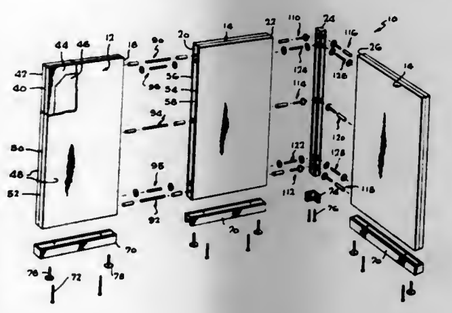


1. In a window construction the method of thermally insulating and connecting a first frame with a second frame having interfitting portions with voids therebetween consisting in forming an initial web connecting the first frame with the second frame then coating the internal surfaces of the interfitting frames with a bond inhibitor, then applying a resinous self-hardening material into the voids between the interfitting frames, then allowing the resinous material to set, then removing the initial connecting web, with the sole connection of the frame members being the resinous material with the frame members freely slidable upon the bond inhibitor relative to the other during expansion and contraction of the frame members.

4,067,164
COMPOSITE PANELS FOR BUILDING CONSTRUCTIONS
William J. McMillan, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sept. 24, 1975, Ser. No. 617,334
Int. Cl.² E04C 2/20
U.S. Cl. 52—309.12 8 Claims

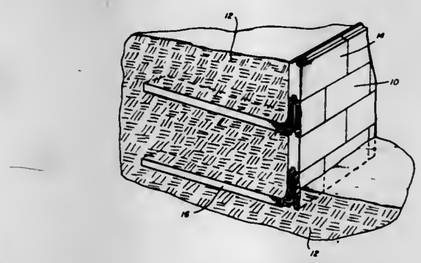
1. A building panel comprising a main body portion of a closed cell, generally smooth skinned styrene polymer foam material having a surface containing one or more regions having indentations therein, said surface having applied thereto a substantially continuous binder coating of a styrene-butadiene copolymer latex consisting essentially of a styrene-butadiene-1,3 copolymer having a styrene to butadiene weight ratio of about 30:70 to 70:30, and based on the weight of said copolymer, (a) from about 2 to about 10 percent of non-ionic surfactant, (b) from about 0.75 to 7.5 percent of anionic surfactant, at least about 15 percent of which is sodium alkyl sulfate in which the alkyl groups contain 9 to 17 carbon atoms, the sum of (a) and (b) not exceeding about 11 percent by weight of said copolymer and the weight ratio of (a) to (b) being within the range of about 0.7:1 to 10:1, and adhered to said binder coating a protective cementitious facing material, a portion of which is contained in said indentations, said facing material consisting essentially of an admixture of portland cement, mineral aggregate and from about 5 to about 25 percent based on the weight of said cement of a styrene-butadiene-1,3 copolymer having a styrene to butadiene weight ratio of about 30:70 to 70:30, water in amount of from about 25 to 65 percent based on the weight of said cement, and based on the weight of said copolymer, (a) from about 2 to about 10 percent of non-ionic surfactant, (b) from about 0.75 to 7.5 percent of anionic surfactant, at least about 15 percent of which is a sodium alkyl sulfate in which the alkyl group contains 9 to 17 carbon atoms, and (c) from about 0.1 to 5 percent of a polyorganosiloxane foam depressant based on the weight of active polyorganosiloxane, the sum of (a) and (b) not exceeding about 11 percent by weight of said copolymer and the weight ratio of (a) to (b) being within the range of about 0.7:1 to 10:1.

4,067,165
PANEL SYSTEM
Jay Timmons, Palos Verdes Estates, Calif., assignor to Hiebert, Inc., Torrance, Calif.
Filed Nov. 19, 1976, Ser. No. 743,360
Int. Cl.² E04B 2/72
U.S. Cl. 52—585 14 Claims



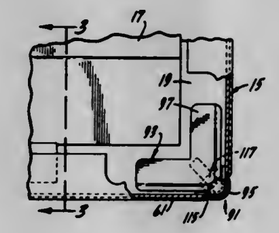
1. An arrangement for releasably joining a pair of panel members together, each of the panels having a relatively flat end surface, comprising the combination of a plurality of aligning means, each of which includes an elongated element extending from the end surface of one of the pair of panel members and means defining an aligning aperture adjacent the end surface of the other one of the pair of panel members to align the panel members with the end surfaces in contact with each other, the aligning aperture having a shape similar to and being slightly larger than the elongated element to provide relatively free movement of the elongated element into and out of the aligning aperture while preventing lateral movement of the elongated element within the aligning aperture, and a plurality of securing means, each of which includes an elongated member extending from the end surface of one of the pair of panel members in a direction generally parallel to the direction of elongation of the elongated element and means defining a securing aperture adjacent the end surface of the other one of the pair of panel members, the securing aperture being slightly smaller than the elongated member so as to bind the elongated member therein and secured the panel members together with the end surfaces in contact with each other.

4,067,166
RETAINING BLOCK
Edmund C. Sheahan, One Orchard St., Wellesley Hills, Mass. 02181
Filed June 12, 1975, Ser. No. 586,202
Int. Cl.² E02D 5/00
U.S. Cl. 52—593 3 Claims



1. A block used in constructing a retaining wall composed of a number of blocks and comprising;
- a facing wall portion of rectangular construction having a rectangular facing surface, a rectangular rear surface and top, bottom and side surfaces,
- said top and bottom surfaces of said facing wall portion having tongue and groove means permitting interlocking between blocks,
- an elongated support bar integral with the facing wall portion having a rectangular cross section and extending rearwardly from the rear surface and having a bottom surface that is substantially flush with the bottom surface of the facing wall portion,
- said support bar having a width greater than its height and said facing wall portion having its width greater than the width of the support bar,
- a pair of elongated L-shaped reinforcing rods embedded in the block, each having only one short leg of only a linear rod section embedded in the facing wall portion and only one long leg of only a linear rod section embedded in the support bar, said elongated rods disposed in parallel with each rod forming a cantilever support within the block with the ends of the rod terminating free and in orthogonal directions.
- a first straight long rod disposed in the facing wall portion parallel to the top surface thereof and means for welding the long rod to the L-shaped rods,
- a second straight long rod disposed adjacent the joining edge line between the top surface of the support bar and the rear surface of the facing wall portion and means for welding the second rod to the elongated rods at a position between the joining edge line and the bend in the elongated rods between the long and short legs,
- a plurality of shorter straight rods all disposed in parallel to each other within the support bar and means for welding the shorter rods to the two elongated rods.

4,067,167
TOP ASSEMBLY
Clarence A. F. Anderson, Fruitport, Mich., assignor to The Shaw-Walker Company, Muskegon, Mich.
Filed Apr. 8, 1976, Ser. No. 674,984
Int. Cl.² A47B 13/08
U.S. Cl. 52—614 4 Claims

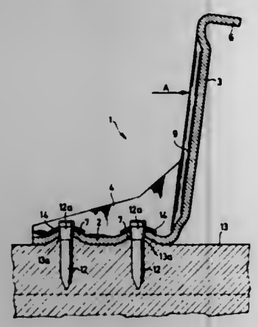


1. A top assembly for desks, tables, credenzas and similar items, said top assembly including:
- a sheet metal member having a planar top surface of generally rectangular shape, depending side and end walls extending generally at right angles to said planar top surface and inwardly projecting portions at the lower edges of said side and end walls with said inwardly projecting portions extending generally parallel to said planar top surface,
- a one piece sheet of laminated plastic adhered to said top surface, said side and end walls and said inwardly projecting portions to closely follow the contours thereof and to provide a laminated plastic surface for said top assembly which is continuous and uninterrupted along the side and end edges of the top assembly,
- gaps formed in said sheet metal member between the side and end walls at the corners thereof;
- said laminated plastic sheet having similar but narrower gaps at the corners thereof so that the laminated plastic sheet overlaps the gaps in the corners of the sheet metal member, and
- metal caps positioned at the corners of the top assembly with the metal caps covering the gaps in the laminated plastic sheet but not in the sheet metal member so that the caps force the laminated plastic sheet into the gaps formed in the corners of the sheet metal member to position the outer surfaces of the metal caps flush with the outer surfaces of the laminated plastic sheet.

4,067,168
CONNECTING ELEMENT FOR A COMPOSITE BEAM
Elmar Thurner, Gisingen, Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed July 1, 1976, Ser. No. 701,941
Claims priority, application Germany, July 9, 1975, 7521823[U]
Int. Cl.² E04B 1/16; E04C 5/01
U.S. Cl. 52—733 10 Claims

1. A connecting element for use in a composite beam structure formed of an upper concrete slab and a structural steel member depending downwardly from the concrete slab for connecting the concrete slab to the structural steel member, comprising a substantially L-shaped member, said L-shaped member including an elongated base member having a first face and an oppositely directed second face with a pair of laterally spaced first edges extending in the elongated direction

of said base member along two opposite edges of said first and second faces and a pair of second edges spaced apart in and extending transversely of the elongated direction of said base member and extending along two other opposite edges of said first and second faces, an elongated anchor strap formed integrally with said base member and extending angularly from one of said second edges of said base member with the elongated direction of said anchor strap forming an angular continuation of the elongated direction of said base member so that the integrally formed said base member and anchor strap provide said member with its L-shape, said anchor strap having a first face and an oppositely directed second face with the first face thereof forming an angularly disposed continuation of the first face on said base member, said first face and second face having a pair of laterally spaced first edges extending in the elongated direction of said anchor strap and a pair of second edges spaced apart in and extending transversely of the elongated direction of said anchor strap, at least one opening ex-



tending through said base member between said first and second faces thereof with the opening being spaced inwardly from said first edges and said second edges, a fastening element insertible through the opening in said base member for securing said base member to a structural steel member of a composite beam structure by driving the fastening element into the structural steel member, supporting webs formed integrally with said base member along said first edges thereof and secured to said anchor strap along said first edges thereof, said base member having a deformation zone extending along each of the first edges thereof and located between said supporting webs and the opening through said base plate so that if a force is applied to said anchor strap increasing the angular displacement between the first faces of said anchor strap and said base member, said supporting webs effect a pulling force along the first edges of said base member with the deformation zone of said base member bending away from the structural steel member to which it is attached.

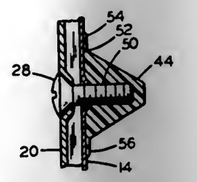
4,067,169

METHOD OF FORMING A WALL PLATE PACKAGE

Louis Zampini, Jr., Providence, and Joseph P. Stefani, Warwick, both of R.I., assignors to General Electric Company, New York, N.Y.

Division of Ser. No. 591,226, June 27, 1975. This application Mar. 17, 1977, Ser. No. 778,419
Int. Cl.² B65B *15/00*
U.S. Cl. 53—3 **4 Claims**

1. The method of packaging an article which comprises,
providing a platform having a recess alignable with a screw hole in a card package,
depositing molten plastic in the recess,
disposing a card package onto the platform to align a screw hole of said card with said recess,
disposing an article to be packaged onto said card to align a screw hole of said article with said card screw hole and with said recess,
inserting a screw through said article screw hole and card screw hole into said molten plastic,



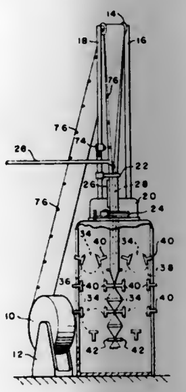
and removing said packaged article from said platform when said molten plastic is self supporting and is adherent to said card package.

4,067,170

TUBULAR PACKAGE FORMING APPARATUS AND METHOD

Robert V. Yates, Jr., Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 19, 1976, Ser. No. 715,710
Int. Cl.² B65B *57/18, 41/18, 9/12*
U.S. Cl. 53—28 **3 Claims**



1. A method to provide registered print on a carton forming machine comprising the steps of: supplying a roll of carton stock material with spaced indicia thereon, forming said paper stock into a tube, detecting the position of said indicia on said stock material, changing the perimeter of said tube if said detected indicia is in a predetermined position and providing a signal to an operator if the machine attempts to either decrease or increase the perimeter of the tube for a period greater than a predetermined time.

4,067,171

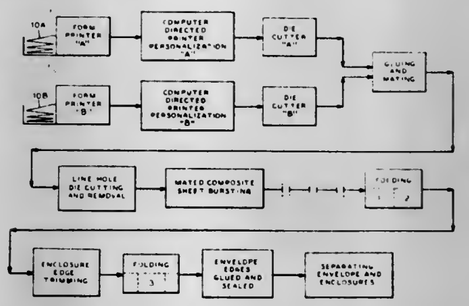
METHOD OF MAKING MULTIPLE ENCLOSURE MAILER

Everett H. Herbert, Fairfield; Randolph S. Lyon, Jr.; Kurt E. Volk, Jr., both of Westport, and Robert W. Wassmer, Fairfield, all of Conn., assignors to Kurt H. Volk, Inc., Milford, Conn.

Filed Feb. 7, 1977, Ser. No. 766,552
Int. Cl.² B31B *49/04*
U.S. Cl. 53—31 **11 Claims**

1. A method of preparing an envelope containing multiple separate enclosure sheets which comprises:
a. mating in a superposed aligned configuration a first composite sheet consisting of:
i. an envelope sheet defining a flap, a front panel and a rear panel, and integral therewith

ii. a first enclosure sheet joined along a transverse line to said rear panel;
and a second composite sheet containing integral second and third enclosure sheets;
b. maintaining the mated configuration of the composite sheets by bonding means applied along a narrow segment adjacent to each, and lying between the opposite longitudinal edges of the superposed enclosure sheets;
c. folding the bonded composite sheets to position the enclosure sheets between the front and rear panels of the envelope sheets;



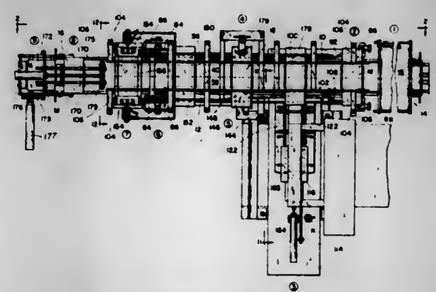
d. removing the bonded longitudinal edge segments while the sheets are in the folded configuration;
e. bonding the longitudinal edges of the front and rear envelope panels to form an envelope pocket containing the enclosure sheets; and
f. while the envelope flap is open, simultaneously separating the rear envelope panel from the first enclosure sheet, and the second from the third enclosure sheet, to thereby provide an envelope containing multiple separate enclosure sheets.

4,067,172

CARTON SET-UP AND LOADING MACHINE

Eugene H. Paules, Red Lion, Pa., assignor to ExCel Engineering, Inc., Red Lion, Pa.

Filed Jan. 28, 1977, Ser. No. 763,645
Int. Cl.² B65B *57/06, 43/28*
U.S. Cl. 53—53 **18 Claims**



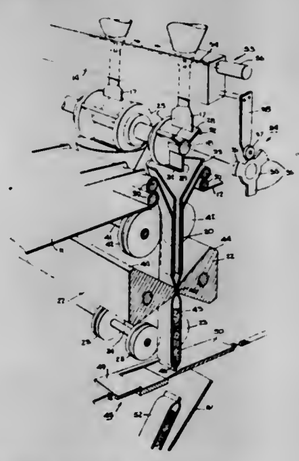
1. A carton set-up and loading machine comprising in combination:
a. a magazine to hold a supply stack of flattened die-cut cartons having flaps projecting from all edges of the opposite ends thereof,
b. endless conveyor means having a loading end positioned substantially opposite said magazine successively to receive individual cartons therefrom and the opposite end comprising a discharge end,
c. suction means adjacent said loading end of said conveyor means beneath said magazine and mounted for vertical movement into engagement with the lowermost carton in said magazine and operable to pull the same from said magazine and deposit it onto said conveyor means in transverse position thereon,
d. means to set up said cartons on said conveyor in expanded condition, comprising perpendicular members on said endless conveyor means spaced therealong and pusher means supported adjacent said magazine and operable sequentially relative to alternate perpendicular members to set up each carton from flat condition prior to said cartons being engaged by the next successive perpendicular member,
e. article-loading means extending transversely to said conveyor and having one end adjacent one edge of said conveyor intermediately between said ends thereof, and including
f. guide means adjacent one edge of said conveyor means, pusher means movable reciprocably along said guide means to push articles along said guide means toward said conveyor means, and controlled power means to operate said pusher in timed sequence,
g. means along said conveyor means between said magazine and said article-loading means operable to fold closed the side flaps and lower end flap on the end of a deposited carton adjacent the opposite edge of said conveyor means from said article-loading means, thereby to arrange said carton to receive articles moved into the opposite open loading end of said carton by said article-loading means,
h. means operable to fold closed the side and bottom flaps of the loading end of said carton after the same has had articles inserted therein while the upper flaps at the bottom and loading ends of the carton remain projected outwardly,
i. means to apply adhesive simultaneously to the lower surfaces of said projecting upper flaps,
j. means operable to fold said upper flaps shut to permit said adhesive to adhere to the previously folded flaps, and
k. means operable to advance said conveyor stepwise between the operations of said aforementioned means.

4,067,173

PACKAGING MACHINE

Denis Borrello, Poughkeepsie, N.Y., assignor to Foodways National, Inc., Hawthorne, N.Y.

Continuation-in-part of Ser. No. 558,132, March 13, 1975, Pat. No. 4,004,399. This application Apr. 7, 1976, Ser. No. 674,559
Int. Cl.² B65B *9/12, 51/30*
U.S. Cl. 53—180 M **9 Claims**



1. A packaging machine comprising
a hopper for receiving a supply of flowable material, said hopper having a plurality of outlet nozzles in a base

thereof for outflow of a plurality of streams of the flowable material;

a rotatable dumper shaft below said hopper, said dumper shaft having a plurality of flow measuring means thereon, each said measuring means being disposed below a respective hopper outlet nozzle and including a plurality of material receiving chambers circumferentially disposed about said shaft, each said chamber being of adjustable size to receive varying amounts of material from a respective outlet nozzle;

a plurality of guide tubes, each said tube being aligned with a respective measuring means to guide a measured amount of material therethrough;

a pair of conduits adjacent each respective guide tube, each said conduit extending to the lower end of a respective guide tube;

suction means connected to said conduit to evacuate the region surrounding the lower end of a respective guide tube;

means for moving a pair of continuous sheets over said guide tubes;

means for sealing the continuous sheets to each other between and alongside said guide tubes; and

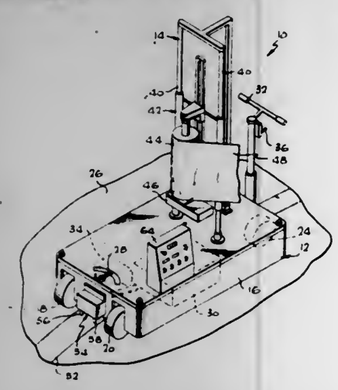
a pair of rotatable seal bars below said guide tubes for sealing the sheets to each other transversely of said guide tubes to define sequentially spaced packets containing measured amounts of the material.

4,067,174

STRETCH WRAP MACHINE

Joseph Goldstein, 9838 Chicopee Ave., Northridge, Calif. 91325

Filed Dec. 20, 1976, Ser. No. 752,444
Int. Cl.² B65B *13/10*
U.S. Cl. 53—184 R 12 Claims



1. A mobile stretch-wrap machine for stretch-wrapping stationary material comprising:

a vehicle having wheels supporting it for steerable movement on a floor and capable of moving to the site of said stationary material and then moving on the floor around said material;

motive means for propelling said vehicle on the floor;

guidance control means for guiding the vehicle along a path which passes around the stationary material to be wrapped; and

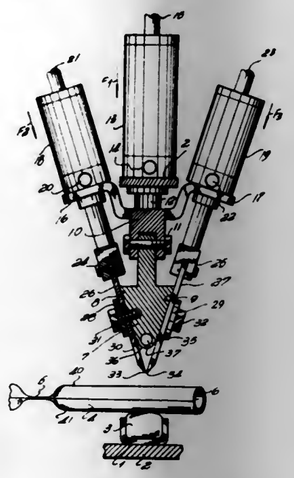
a stretch-wrap unit mounted on said vehicle for movement therewith along the floor and including a supply of stretch-wrap web and means for releasing said web to wind the stretch-wrap web around the stationary material as said vehicle moves on the floor and carries said stretch-wrap unit around the stationary material to be wrapped.

4,067,175

DEVICE FOR SEALING CONTAINERS MADE OF HEAT-SEALABLE MATERIAL

Isaac Vinokur, Ave. Forest 1485, 7°A Buenos Aires, Argentina

Filed Sept. 22, 1976, Ser. No. 725,915
Claims priority, application Argentina, Aug. 4, 1976, 264207
Int. Cl.² B65B *51/14, 51/26*
U.S. Cl. 53—373 3 Claims



1. A device for sealing containers made of heatsealable material, particularly suitable for the closure of containers containing pasty fat substances, comprising an elastic means for supporting one of the two walls of the container which are to be heat-sealed to one another, an assembly movable towards the mean plane of said container, said assembly including a head on which are slidably mounted two rigid plane members on either side thereof which are downwardly and inwardly convergent such that the lower portions thereof may be in substantial engagement with each other, the lower edges of each plane member being tapered to a sharp point, said head having mounted thereon at the lower portion thereof a heating means such that movement of said head downwardly relative to said members places said heating means into engagement with the outer wall of the container and pushes the container into engagement with said elastic support, said downward movement of said head further moving said members away from each other while said members engage the upper wall of the container, the angle of said members being maintained constant during said movement and said plane members remaining in coextensive engagement with the respective surfaces of said head, means for causing the movement of the assembly towards said elastic support, and means for causing the movement of said rigid plane members relative to the head.

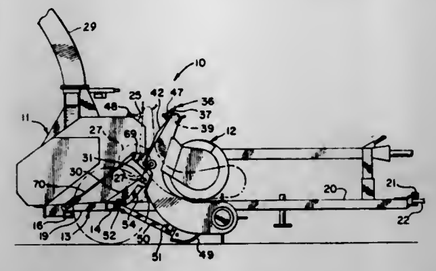
4,067,176

GATHERING UNIT ATTACHING APPARATUS

Manfried L. Hoch, Lockport; Edward A. Fritz, Hinsdale, and Peter Sammarco, Downers Grove, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed June 21, 1976, Ser. No. 698,372
Int. Cl.² A01D *89/00*
U.S. Cl. 56—15.6 11 Claims

8. Apparatus for attaching a gathering unit to a forage harvester baiic unit, said basic unit having a mobile frame and a fore-and-aft housing mounted in fixed position on said frame having a crop infeed inlet, comprising a pair of transverse pivot pins mounted on said basic unit frame in axial alignment and defining a fixed horizontal axis adjacent said crop infeed inlet, a transversely planar attaching yoke defining an unobstructed crop passage, said yoke having a pair of transversely spaced members pivotally mounted on said pivot pins for swinging movements in a vertical fore-and-aft plane relative to said housing, means on said yoke remote from said pivot pins for pivotally engaging a complementary pivot means on the upper portion of said gathering unit along an auxiliary axis parallel to said fixed axis and movable to said basic unit, cooperative means on said yoke and on said gathering unit remote from said



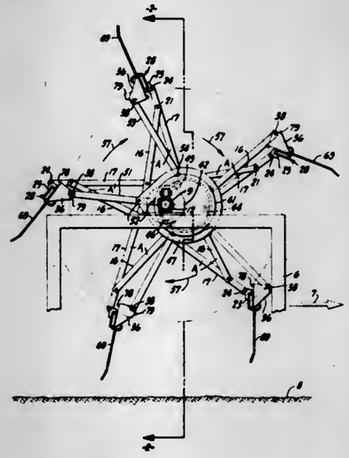
auxiliary axis for providing a securing connection therebetween upon said gathering unit pivoting about said auxiliary axis toward said attaching yoke such that, upon said gathering unit being secured to said yoke, said gathering unit articulates about said fixed axis, means associated with said basic unit for pivoting said attaching yoke about said pivot pins between a rotationally forward pickup position and operating and transport positions rotationally upwardly therefrom.

4,067,177

HARVESTER REEL

William R. Tout, Ames, Iowa, assignor to Universal Harvester Company, Inc., Ames, Iowa

Filed Aug. 9, 1976, Ser. No. 712,889
Int. Cl.² A01D *57/02*
U.S. Cl. 56—226 9 Claims



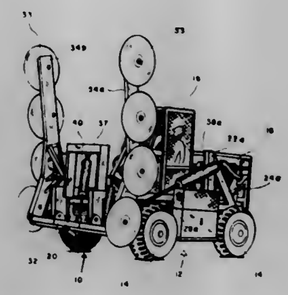
1. A harvester reel comprising a frame, a shaft, means on said frame for journalling said shaft for rotation relative to said frame about a main horizontal axis, a pair of axially spaced mounting arms fixed on and extending outwardly of said shaft, a bat, means on said arms for journalling said bat adjacent the outer ends of said arms for movement about a bat axis parallel to said main axis, a crank pin having a crank pin axis, means engaging said pin and said bat for fixing said crank pin to said bat with said pin axis eccentric from and parallel to said bat axis, a circular guide having a guide axis, means engaging said frame and said guide for fixing said guide on said frame with said guide axis eccentric from and parallel to said main axis, a follower journalled on said circular guide, and a rod having a connection to said follower and to said crank pin.

4,067,178

COMBINED HEDGER-TOPPER

Charles Dale Miller, Winter Park, Fla., assignor to A. Duda and Sons, Oviedo, Fla.

Filed May 7, 1976, Ser. No. 684,111
Int. Cl.² A01D *55/18*
U.S. Cl. 56—235 14 Claims



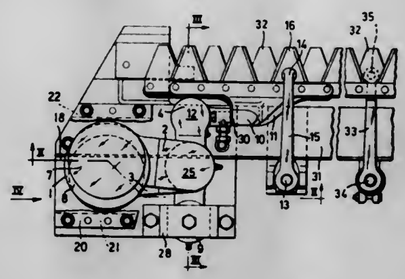
1. An apparatus for maintaining a grove or orchard in properly trimmed and topped condition, comprising a vehicle adapted for movement along the ground in a direction essentially parallel and adjacent to a row of trees, a base member capable of substantial heightwise adjustments mounted on said vehicle, power means under the control of an operator for bringing about selected heightwise movements of said base member, a pair of elongate booms rotatably mounted upon said base member, with each boom operatively serving as a mounting for a plurality of spaced, power driven saw blades, and means for maintaining said base member in a proper rotational orientation with respect to the ground at all times, such that said saw booms are easily positionable to effect either a hedging operation or a topping operation.

4,067,179

DRIVING ARRANGEMENT FOR A HARVESTER

Rudolf Schneider, Remscheid, Germany, assignor to Busatis-Werke KG, Remscheid, Germany

Filed June 3, 1976, Ser. No. 692,541
Claims priority, application Germany, June 3, 1975, 2524464
Int. Cl.² A01D *55/02*
U.S. Cl. 56—297 15 Claims



1. In a cutting machine, particularly in a harvester, a combination comprising support means; cutting means including a first and a second cutting member having respective cutting edges; means for mounting said cutting means on said support means for individual displacement along a common plane located intermediate said cutting members, including at least

one first and one second arm, a first and a second journal mounting said first and second arms, respectively, on said support means for movement in parallel planes, and a first and a second pivot articulating said first and second arms, respectively, to said first and second cutting members, said first pivot being spaced a first distance from said first journal, and said second pivot being spaced a second distance from said second journal; and means for displacing said cutting means, including driving means, crank means driven by said driving means into rotation about an axis normal to said parallel planes and including a first and a second crank portion offset from said axis, and transmission means including a first and a second lever, a first and a second additional journal mounting said first and second levers, respectively, on said support means for movement in parallel planes, a first and a second additional pivot articulating said first and second levers, respectively, to said first and second cutting members, said first additional pivot being spaced said first distance from said first additional journal and said second additional pivot being spaced said second distance from said second additional journal, and a first and a second connecting rod mounted on said first and second crank portions, respectively, and pivoted to said first and second levers, respectively.

4,067,180

BOBBIN HOLDER ARRANGEMENT FOR A DOUBLE TWIST THREAD TWISTING SPINDLE

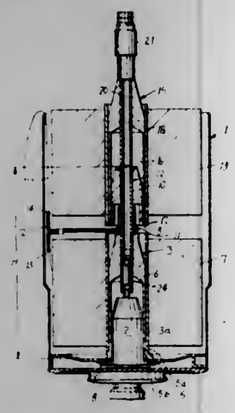
Heinz Bleeck, Probstried, Germany, assignor to Saurer-Allma GmbH, Allgauer Maschinenbau, Kempten, Germany

Filed Sept. 27, 1976, Ser. No. 726,916

Claims priority, application Germany, Oct. 6, 1975, 7531686[U]

Int. Cl.² D01H *7/86*

U.S. Cl. 57—58.52 **11 Claims**



1. A bobbin holder arrangement, comprising:

an open top stationary bobbin box having first bobbin carrier means removably mounted therein for supporting a first thread carrying bobbin thereon;

rotary flyer means rotatably secured to said first bobbin carrier means and removable therewith and having thread guide means thereon for guiding a thread from said first bobbin; and

second bobbin carrier means releasably mounted on said first bobbin carrier means for supporting a second thread carrying bobbin thereon and above said rotaty flyer means, said thread guide means on said rotary flyer means being located at a location greater in diameter than the maximum diameter of said second bobbin whereby said thread on said first bobbin is unwound therefrom through said thread guide means on said rotary flyer means and being held in spaced relation from the periphery of said thread wound on said second bobbin.

4,067,181

FIBER-DISINTEGRATING UNIT FOR A SPINNING MACHINE

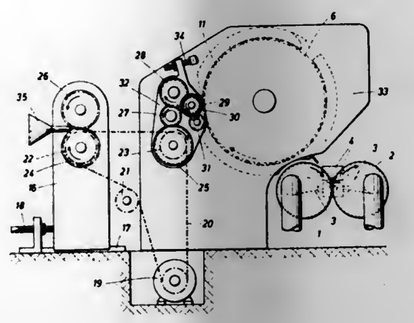
Ernst Fehrer, Auf der Gugl 28, Linz, Austria

Continuation-in-part of Ser. No. 641,748, Dec. 18, 1975, abandoned. This application Nov. 26, 1976, Ser. No. 745,075

Claims priority, application Austria, Jan. 23, 1975, 509/75

Int. Cl.² D01H *1/12*; D01G *15/40*

U.S. Cl. 57—58.91 **2 Claims**



1. In a spinning machine, a unit for disintegrating a fibrous mass into spinnable fibers, the unit comprising

a. a drum for disintegrating the mass into spinnable fibers, the drum having serrations generating a cylinder and being operable to rotate in a predetermined direction,

b. a first smooth feed roller for guiding the mass, the first feed roller being disposed adjacent the cylinder and defining with the cylinder first and second wedge-shaped spaces, respectively, on the sides of which the serrations approach and depart from the first feed roller during a rotation of the drum in the predetermined direction, the first feed roller being mounted for adjustment to vary the distance thereof from the cylinder,

c. a second clamping and smoothing feed roller comprising a hard core and an elastic surface layer, the second feed roller being disposed in the first wedge-shaped space and defining a nip with the first feed roller,

(1) the feed rollers being in surface contact, having axes of rotation at a fixed distance during operation and being operable to feed the mass through through the nip to the serrations,

d. a cover extending into the second wedge-shaped space, the cover being closely spaced from the first feed roller and spaced as closely as possible from the cylinder,

e. a first pair of pinch rollers operable to feed the fibrous mass between them to the nip,

f. a second pair of pinch rollers operable to feed the fibrous mass between them to the first pair of pinch rollers, each of the pinch rollers comprising a hard core and an elastic surface layer, and each pair of pinch rollers having axes of rotation at a fixed distance during operation, and

g. means for driving the second pair of pinch rollers, for driving the first pair of pinch rollers at a peripheral velocity higher than that of the second pair of pinch rollers, and for driving the first and second feed rollers at a peripheral velocity higher than that of the first pair of pinch rollers.

4,067,182

METHOD OF AND APPARATUS FOR SEPARATING STAPLE FIBERS FROM A FIBROUS SLIVER

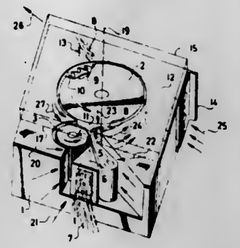
Frantisek Jaros; Zdenek Kotrba; Josef Ripka, all of Usti nad Orlici; Vaclav Voborsik, Lethorad; Jan Janek, Usti nad Orlici; Vladimir Ohlidal, Usti nad Orlici; Frantisek Hortlik, Usti nad Orlici; Marie Brozkova, Usti nad Orlici, and Vera Zakovska, Brandys nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Sept. 24, 1976, Ser. No. 726,147

Claims priority, application Czechoslovakia, Oct. 3, 1975, 6709/75

Int. Cl.² D01H *1/12*

U.S. Cl. 57—58.95 **6 Claims**



3. A device for separating fibers from a fibrous sliver and for supplying the separated fibers to a twist forming element of an open-end spinning unit, comprising in combination,

a housing having a bore and a cavity communicating with said bore;

a combing-out cylinder operatively axially mounted in said bore and defining an annular space between the cylinder and bore walls which forms a fiber separating zone;

a sliver feeding device having an inlet and operatively mounted in said cavity and adapted to feed a condensed sliver to said fiber separating zone;

means covering both ends of said bore and at least one of the sides of said housing, said means being constructed and shaped in such a way that ambient air has open access to at least a portion of said cavity housing said sliver feeding device and is sucked into said cavity during operation of the device.

4,067,183

THREAD GUIDE FOR THE PRODUCTION OF CORD TWISTS

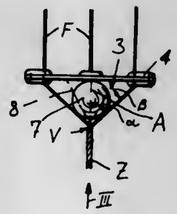
Walter Klose, Kempten, Germany, assignor to Saurer-Allma GmbH, Allgauer Maschinenbau, Kempten, Germany

Filed Sept. 27, 1976, Ser. No. 726,914

Claims priority, application Germany, Oct. 6, 1976, 7531677[U]

Int. Cl.² D01H *13/04*

U.S. Cl. 57—106 **4 Claims**



1. In a thread guide for the production of cord twists for a thread consisting of a plate arranged essentially horizontally and having at least three guide eyes arranged symmetrically to one another for the separating guiding of the threads to be twisted, the improvement comprising a separating member secured to the underside of said plate between and symmetrical to said guide eyes, said separating member being smaller in width than the spacing between said guide eyes and having surface means thereon converging from said plate towards a terminal location spaced from said plate, said surface means being opposed to each of said guide eyes whereby when a pulling force is applied to the twisted threads during a twisting operation pulling same away from said plate, said threads are normally free of engagement with said surface means on said separating member and in engagement with said surface means during a time when said pulling force has been reduced.

4,067,184

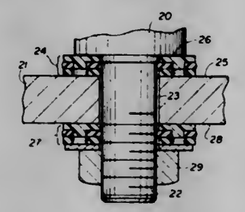
NOISE REDUCING SPINDLE WASHERS

Joseph John Johnson, Jr., Powder Springs, Ga., assignor to Coats & Clark, Inc., Stamford, Conn.

Filed Oct. 12, 1976, Ser. No. 731,758

Int. Cl.² D01H *7/08*

U.S. Cl. 57—135 **4 Claims**



1. A noise suppression washer for the spindles of textile machinery, comprising a composite washer formed of first and second coaxial outer washers having aligned central spindle-receiving holes, and a coaxial intermediate washer sandwiched therebetween and having a central spindle-receiving hole aligned with said first-mentioned holes, said outer washers being of a hard plastic material, said intermediate washer being of a resilient material and having an even number of holes extending axially therethrough at a given radius, each of said outer washers having alternating holes and projections aligned with the holes of said intermediate washer, whereby the holes of one outer washer are aligned with the projections of the other outer washer, and the projections of each of said outer washers extend substantially through said intermediate washer in the unloaded state of said noise suppression washer, the portion of said intermediate washer adjacent the spindle-receiving hole therein being deformable in the loaded state of said noise suppression washer to flow radially inward into said spindle-receiving hole to contact a corresponding one of said spindles.

4,067,185

TIMEPIECE

Freddy Huguenin, Lausanne, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Aug. 25, 1975, Ser. No. 607,232

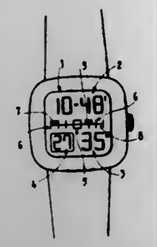
Claims priority, application Switzerland, Sept. 23, 1974, 12836/74

Int. Cl.² G04B *19/34*

U.S. Cl. 58—50 R **4 Claims**

1. A display for a timepiece adapted to be driven, including a plurality of separate indicia other than numerical or letter characters on said timepiece aligned with each other along a common line, and indicating means for visually identifying selected indicia corresponding to days of the week, the improvement residing in formation of one of the separate indicia

of a configuration geometrically different and distinct from the other of the separate indicia, said other of the separate indicia



being spatially disposed in zones located in symmetrical relation to said one of the separate indicia.

4,067,186

ROTATABLE CRYSTAL AND BEZEL ASSEMBLY FOR ACHIEVING SPECIAL VISUAL EFFECTS IN A TIMEPIECE

Raymond J. Grohoski, Watertown, and Harwell B. Thompson, Cheshire, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Dec. 17, 1976, Ser. No. 751,779
Int. Cl.² G04B *39/00*
U.S. Cl. 58—91 **7 Claims**



1. In a timepiece of the type having a case, a movement within the case, rotatable time indicating members driven by said movement, a dial disposed between the movement and the time indicating members for telling the time, and a regular crystal member mounted in the case and covering said time indicating members, the improvement comprising:

a supplementary crystal member disposed on the exterior of said regular crystal member and mounted thereon so as to be manually rotatable with respect thereto.

4,067,187

ELECTRONIC TIMEPIECE

Fukuo Sekiya; Shigeru Morokawa, and Yasushi Nomura, all of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 584,821, June 9, 1975, abandoned, which is a continuation of Ser. No. 422,553, Dec. 6, 1973, abandoned. This application Mar. 22, 1976, Ser. No. 668,839
Claims priority, application Japan, Dec. 28, 1972, 48-1802; May 11, 1973, 48-52358
Int. Cl.² G04C *3/00*
U.S. Cl. 58—23 R **12 Claims**

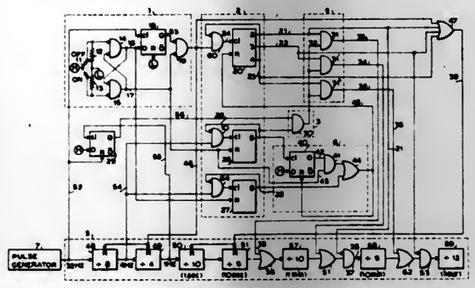
1. In an electronic timepiece, in combination:

chronometric display means including a plurality of pulse-actuatable digital-indicators;

a single display-setting switch with an OFF position and an ON position manually operable in a plurality of indicator-identifying setting modes and a control mode, said setting modes comprising short-term reversals of said switch for periods less than a predetermined threshold interval, said control mode comprising a maintenance of said switch in said ON position for a time exceeding said threshold interval;

discriminator means connected to said switch for detecting any of said setting modes and distinguishing same from said control mode, said discriminator means including a counter for registering the number of switch reversals and a timer for measuring the duration of each switch reversal;

selector means connected to said discriminator means for establishing a stepping circuit to an indicator identified by a detected setting mode;



a source of stepping pulses for advancing said indicators at an accelerated rate; and

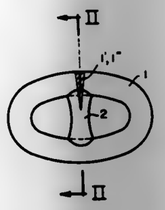
control circuitry operable by said discriminator means for connecting said source to said stepping circuit to advance the indicator so identified upon a changeover of said switch from any of said setting modes to said control mode.

4,067,188

HEAVY-DUTY OFFSHORE STUD CHAIN LINK

Soroku Takahashi, Tokyo, Japan, assignor to Kyuroku Kabushiki-Kaisha

Filed Sept. 24, 1976, Ser. No. 726,125
Claims priority, application Japan, Sept. 30, 1975, 50-118688
Int. Cl.² B21L *3/00*; F16G *15/12*
U.S. Cl. 59—35 CP **6 Claims**



1. A heavy-duty stud chain link consisting of:

a steel rod of a predetermined length bent to form a link having a central opening of oblong shape, said link having two ends which abut each other;

a metal stud being insertedly fitted within the central opening of the link so as to extend transversely across the center thereof;

the abutting edges formed by the two ends of the link overlying one end of said stud and being fusion welded together by a plurality of adjacent weld beads which run substantially parallel with each other, and are provided by a heat source of electron beams or plasma arcs; and

said one end of said stud being secured to the link by means of roots of said weld beads, certain of which roots extend substantially parallel to each other with lacunae therebetween, and

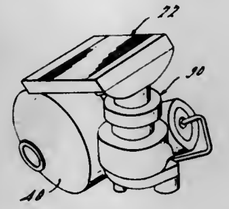
said weld beads extending from the link into the stud with said roots thereof being disposed within the outer peripheral surface of said stud, and substantially in a plane which is coplanar with the abutting ends of the link and substantially at a right angle with the axis of the link.

4,067,189

MULTICYCLE TURBINE ENGINE

Ernest R. Earnest, Hobe Sound, Fla., assignor to The Hydragon Corporation, Lake Park, Fla.

Filed Dec. 16, 1974, Ser. No. 532,747
Int. Cl.² F02C *7/02*
U.S. Cl. 60—39.18 B **6 Claims**



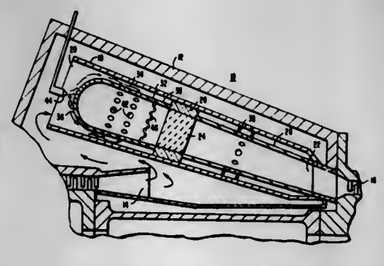
1. An integrated Brayton-Rankine cycle engine of the type designed for use with an organic Rankine fluid, comprising two power generating modules including a first module comprising a Rankine turbine and a rotary compressor driven thereby, a second module comprising a Brayton main power turbine having no driving connection with the compressor, said second module also including an intercycle heat exchanger heated by the exhaust of the Brayton turbine and delivering heat to the Rankine fluid for powering the Rankine turbine, a burner and air supply assembly connecting the two modules for delivering to the Brayton turbine air from the compressor together with products of combustion from the burner, characterized in that each of the said two modules is of substantially circular cross section, and means securing said modules closely together with their axes substantially perpendicular to each other.

4,067,190

CATALYTIC GAS TURBINE COMBUSTOR WITH A FUEL-AIR PREMIX CHAMBER

James R. Hamm, Franklin Borough, and Prith P. Singh, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 617,616, Sept. 29, 1975, abandoned. This application Dec. 10, 1976, Ser. No. 749,594
Int. Cl.² F02C *7/22*
U.S. Cl. 60—39.69 A **1 Claim**



1. A combustor arrangement for a gas turbine including:

a combustor shell having an upstream portion in fluid flow communication with high pressure incoming air and a discharge end for discharging the products of combustion;

means for delivering fuel to said shell adjacent the upstream portion;

a catalytic reactor element disposed within said shell intermediate said upstream portion and in a confined fluid flow path to said discharge end; and,

means within said shell for generally uniformly mixing the air and fuel delivered to said catalytic member, said mixing means comprising:

a tubular member defined by a cylindrical wall having a major axis generally parallel to the air flow through said shell and spaced from the wall of said shell to form an annular space therebetween;

an end wall closing the upstream end of said cylindrical wall, the opposite end of said cylindrical wall defining a confined fluid flow path for discharging directly into said catalytic element for combustion therein;

flame arrester means within said tubular member generally intermediate of said upstream end and said catalytic element to prevent combustion moving from said catalytic element to said upstream end; and

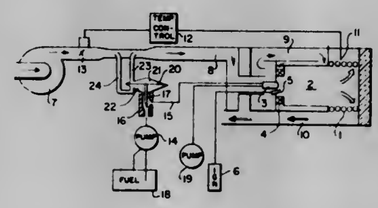
A plurality of apertures in the cylindrical wall of said tubular member generally adjacent the upstream end thereof whereby air and fuel entering the upstream end of said shell must initially flow axially into said annular space then radially to enter said tubular member through said apertures and again axially to flow through said catalytic element whereby said air and fuel must flow in a tortuous flow path including the upstream end of said clindrical wall producing thorough mixing of the air-fuel prior to entering said catalytic element.

4,067,191

SYSTEM FOR SUPPLYING FUEL AND COMBUSTION AIR TO AN EXTERNAL COMBUSTION ENGINE

Karl Olof Ragnar Grönvall, and Per Henrik Gosta Nystrom, both of Borensberg, Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Oct. 10, 1975, Ser. No. 621,524
Int. Cl.² F02C *9/08, 9/14*
U.S. Cl. 60—39.27 **3 Claims**



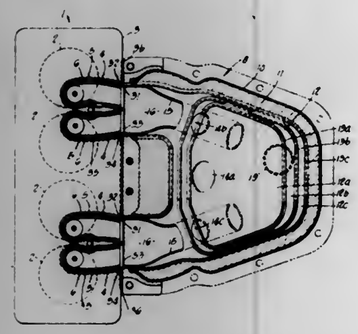
1. A system for supplying fuel and combustion air to an external combustion engine with a combustion chamber operable with a predetermined proportion of fuel and air flow thereinto as temperature changes with variable engine loads comprising in combination, means for measuring the temperature of a high temperature part of said engine, governing means for adjusting the mass flow of combustion air fed to said combustion chamber of the engine in proportion to the difference between the measured and the desired temperature of said high temperature engine part, means for measuring the mass flow of air supplied to said combustion chamber comprising a turbulator nozzle supplying air into said combustion chamber and a pressure drop measuring device measuring the mass flow of air through said turbulator nozzle by sampling air flow inside and outside the combustion chamber, and means for supplying fuel in said predetermined proportion to the prevailing mass flow.

4,067,192

EXHAUST MANIFOLD FOR INTERNAL COMBUSTION ENGINE

Shuichi Yamazaki, Kamifukuoka, and Ikuo Kajitani, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1976, Ser. No. 679,365
Claims priority, application Japan, Apr. 30, 1975, 50-52777; Apr. 30, 1975, 50-52778; Apr. 30, 1975, 50-59163[U]; Apr. 30, 1975, 50-59164[U]
Int. Cl.² F01N 3/10
U.S. Cl. 60—282 6 Claims



1. In combination, an internal combustion engine adapted to burn an air-fuel mixture leaner than stoichiometric so that excess oxygen is present in the exhaust gases, the engine having exhaust ports each provided with a liner insulated from the port walls, an exhaust manifold having a plurality of preliminary oxidation reaction chambers connected to receive exhaust gases directly from exhaust port liners, a main oxidation reaction chamber receiving exhaust gases from said preliminary oxidation reaction chambers, said main oxidation reaction chamber enclosing the major portion of said preliminary oxidation reaction chambers, said main oxidation reaction chamber comprising a first subchamber enclosed and surrounded by a second subchamber, said second subchamber being enclosed and surrounded by a third subchamber, a single opening establishing communication between the first subchamber and the second subchamber, spaced openings connecting the second subchamber and the third subchamber, said single opening and said spaced openings all being mis-aligned, means exposed to said third subchamber for heating an intake mixture supplied to the engine, and means for discharging gases from said third subchamber.

4,067,193

COMBINED HYDROSTATIC TRANSMISSION IMPLEMENT SYSTEM

William B. Norick, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

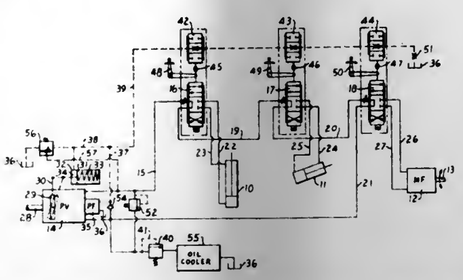
Filed Nov. 22, 1976, Ser. No. 743,833
Int. Cl.² F16H 39/46
U.S. Cl. 60—445 14 Claims

1. A hydraulic system comprising a plurality of hydraulic motors, a variable displacement pump for supplying pressurized fluid for operation of said motors and a plurality of directional control valves for selectively directing pressurized fluid from said variable displacement pump to said hydraulic motors, the improvement comprising:

pressure responsive variable displacement means for varying the displacement of said pump;

a source of pressurized fluid communicating with said variable displacement means; and,

pressure varying means connected to at least one of said directional control valves for varying the pressure of said source of pressurized fluid in response to movement of said one of said directional control valves for varying the displacement of said variable displacement pump, wherein



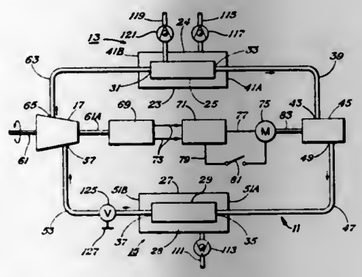
said pressure varying means comprising separate and discrete throttling means for variably restricting the flow of said fluid via said conduit means to said sump.

4,067,194

CLOSED CIRCUIT POWER SYSTEM

Robert C. Fenley, 3358 Cromart, Fort Worth, Tex. 76133

Filed Nov. 8, 1976, Ser. No. 739,504
Int. Cl.² F15B 21/04
U.S. Cl. 60—456 3 Claims



1. A closed circuit power system comprising:

a sealed cooling chamber,

an interior cooling chamber, having an inlet and an outlet, located in said sealed cooling chamber,

a sealed heating chamber,

an interior heating chamber, having an inlet and an outlet, located in said sealed heating chamber,

first conduit means coupled to said outlet of said interior cooling chamber and to said inlet of said interior heating chamber for providing a fluid flow path from said interior cooling chamber to said interior heating chamber,

said first conduit means extending through the walls of said cooling chamber and through the walls of said heating chamber,

a fluid driven work producing means having a fluid inlet and a fluid outlet,

second conduit means coupled to said outlet of said interior heating chamber and to said inlet of said work producing means for providing a fluid flow path from said interior heating chamber to said work producing means,

said second conduit means extending through the walls of said heating chamber,

third conduit means coupled to said outlet of said work producing means and to the inlet of said interior cooling chamber for providing a fluid flow path from said work producing means to said interior cooling chamber,

said third conduit means extending through the walls of said cooling chamber,

a working fluid in said first, second, and third conduit means and in said interior heating and cooling chambers,

a gas under high pressure in said cooling chamber for maintaining the interior thereof and said interior cooling chamber at a low temperature,

a liquid under high pressure in said heating chamber for maintaining the interior thereof and said interior heating chamber at a high temperature, and

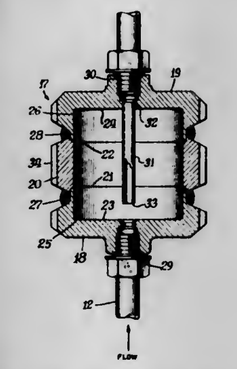
means coupled to said first conduit means for forcing the working fluid from said interior cooling chamber to said interior heating chamber for flow through said work producing means back to said interior cooling chamber.

4,067,195

FLUID-BORNE NOISE-SUPPRESSOR FOR HYDRAULIC PUMP

Richard J. Malecha, Cleveland, Ohio, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 20, 1975, Ser. No. 633,753
Int. Cl.² F16D 3/12; F04B 39/00
U.S. Cl. 60—469 5 Claims



1. A segmented noise-suppressor for fluid-borne noises in hydraulic systems, comprising:

a pair of first segments including cup-shaped unitary end caps, each having a flat end and a tubular wall extending therefrom;

at least one second segment including one tubular center section joining said end caps at joints spaced from the flat ends thereof by said tubular walls thereof for defining an enlarged chamber with said caps at the ends thereof and aligned coaxially with one another;

one of said caps having means defining an inlet coaxial thereof;

the other of said caps having an outlet coaxial thereof and

an internal inertence tube coaxial with said inlet and said outlet and communicating with said outlet.

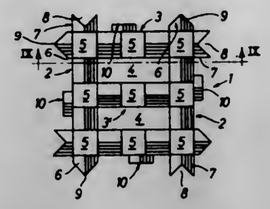
4,067,196

DECORATIVE STONE

Paul Schraudenbach, Schneemannstr. 22, 8000 Munich 70, Germany

Filed Oct. 9, 1975, Ser. No. 621,164
Claims priority, application Germany, Nov. 18, 1974, 2454614
Int. Cl.² E02D 17/20; E02B 3/14
U.S. Cl. 61—35 48 Claims

1. A stone for use in forming a soil erosion preventing revetment having a plurality of stones 7 comprising at least two parallel rib members spaced from each other, at least two parallel crosspiece members spaced from each other extending transversely to said rib members and interconnecting at least the respective ends thereof, said rib members including end portions projecting beyond said crosspiece members at the point of connection therewith, said crosspiece members including end portions projecting beyond said rib members at the point of connection therewith, end surfaces on said end portions of said ribs and crossbars being formed with substantially corresponding projections and recesses alternating with each other on all sides of said stone and also from each side to the adjacent side so that said end portions on each side of said stone may be joined to end portions on any side of an adjacent stone, and at least one extension portion provided on said rib members and said crosspiece members disposed between the



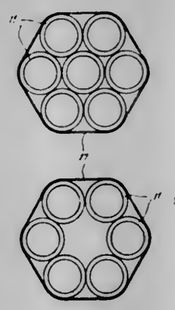
projecting end portions of said crosspiece members and between the projecting end portions of said rib members, said extension portions being shorter than said end portions so as not to interfere with the joining of the end portions of one stone with those on another stone, whereby undermining of the hollow space defined between said crosspiece members, and said rib members is prevented.

4,067,197

MEANS FOR STABILIZING SOIL

Paul Ritter, 76 Brookton Highway, Kelmscott, Western Australia, Australia

Filed July 20, 1976, Ser. No. 706,953
Claims priority, application Germany, Nov. 26, 1975, 2553086
Int. Cl.² E02D 3/12
U.S. Cl. 61—35 7 Claims



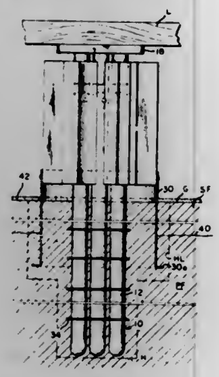
1. A means of providing a surface for receiving traffic such as a pathway, driveway or road surface and permitting the growth of grass thereon, said means comprising a plurality of rings of tubular configuration and of rigid material which is resistant to wear and corrosion, means fastening said rings together defining a mat like structure comprising a single layer of spaced rings, where the central longitudinal axes of said rings are perpendicular to the plane of the layer and said fastening means being capable of preventing the lateral displacement of said rings in said mat like structure whereby said mat like structure can be laid over the surface area.

4,067,198

METHOD AND STRUCTURAL SUPPORT FOR INCREASING LOAD CARRYING CAPACITY IN PERMAFROST

Erwin L. Long, 5741 College Drive, Anchorage, Alaska 99504

Filed June 18, 1975, Ser. No. 587,917
Int. Cl.² E02D 3/08, 5/24, 27/32
U.S. Cl. 61—36 A 12 Claims



1. A structural, modular, thermal pile unit for use in a hole in permafrost, comprising at least two hollow, cylindrical piles having external surfaces adapted to be exposed to the sidewall of the hole and each having an active heat transfer fluid therein and a plurality of radially and axially extending fins at the upper ends of each pile extending externally of the pile and adapted to be positioned at least partially above ground for increased heat dissipation to the atmosphere for cooling the heat transfer fluid, the improvement comprising means located laterally outwardly of each pile external surface rigidly joining adjacent fins of each pile to form an integral, combined, multiple-pile unit for use in a single hole as a substitution for a single larger pile in the hole and thereby increasing the lateral load-carrying capacity of the area around the hole as well as providing additional vertical load-carrying capacity area surrounding the hole and increased below ground cooling capacity over that of the single large pile for which the unit is a substitute.

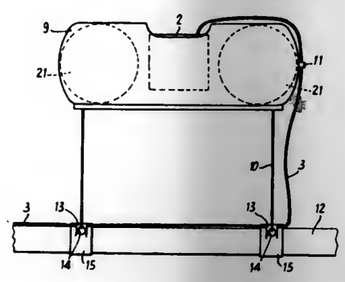
4,067,199

METHOD AND APPARATUS OF LAUNCHING FLOATS TO LIGHTEN UNDERWATER CONDUITS

Michel J. Jegousse, Nantes, France, assignor to Compagnie Francaise des Petroles, Paris Cedex; Etudes Petrolieres Marines, Societe Responsabilite Limitee, Paris; Ateliers et Chantiers de Bretagne, A.C.B., Societe Anonyme, Nantes; Compagnie Maritime d'Expertises, Societe Anonyme, Marseille; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (Doris), Societe Anonyme and Entreprise de Recherches et d'Activites Petrolieres (E.R.A.P.) Etablissement public, both of Paris, all of, France

Filed July 24, 1975, Ser. No. 598,916
Claims priority, application France, Aug. 5, 1974, 74.27075
Int. Cl.² F16L 1/04
U.S. Cl. 61—63 16 Claims

1. An apparatus for releasing a float supporting a submerged load comprising: a cable, an elastically deformable buoy, said buoy having an attachment point for coupling said cable to said buoy, a housing containing said buoy, an inflation valve capable of being introduced into said housing through an opening in said housing, said buoy inflated to deform under the effect of a predetermined hydrostatic pressure and freely pass through



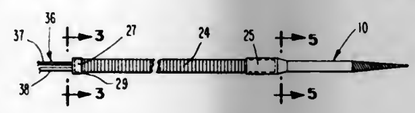
said opening and rise to the surface with said cable attached to it, and means to release said cable from the load.

4,067,200

DEVICE AND METHOD FOR INSTALLING DUCTS IN HOLES PRODUCED BY SOIL PIERCING TOOL

John L. Watts, Jr., Twin Silo Road, R.D. No. 2, Doylestown, Pa. 18901, and James H. Patton, 48 Bristol Road, Feasterville, Pa. 19047

Filed Aug. 11, 1976, Ser. No. 713,379
Int. Cl.² F16L 1/00; E21B 11/02
U.S. Cl. 61—72.5 10 Claims



1. An apparatus for pulling flexible duct through soil comprising:

a. means for penetrating the soil having a leading end and a trailing end;

b. means mounted to the trailing end of the penetrating means for receiving an end of the duct;

c. means mounted to said penetrating means and said duct for pulling said duct through said soil simultaneously as said penetrating means moves through and penetrates said soil, the pulling means comprising:

a. a member mounted to said duct to the rear of the end of said duct,

b. means having one end mounted to said penetrating means and another end mounted to the member for interconnecting said penetrating means and said member so that movement in one direction by said penetrating means will pull the interconnecting means and said member in the one direction.

4,067,201

DEVICE FOR ERECTING A SEGMENTED TUNNEL WALL LINING

Richard Lovat, 42 Grovetree Avenue, Rexdale, Ontario, Canada

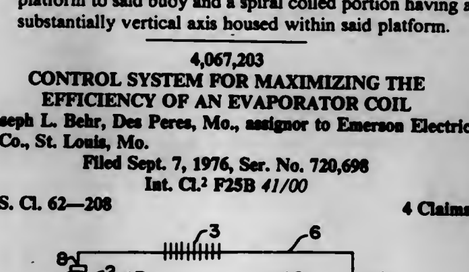
Filed July 21, 1976, Ser. No. 707,440
Int. Cl.² E21D 11/08
U.S. Cl. 61—84 8 Claims

1. A device for positioning segments to form a tunnel wall lining, comprising:

drive means having an axially rotatable shaft, and means to support the drive means whereby the drive shaft is substantially coincident with the axis of the tunnel;

an articulated arm having an upper arm member and a lower arm member pivotably connected therewith, the upper arm member being pivotably connected to the drive shaft on an axis normal to the shaft and to the upper arm member, the arm lying in a plane through said normal axis;

extendable means interconnecting the lower and upper arm members intermediate their ends; and



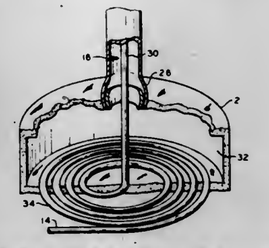
means on the free end portion of the lower arm member to attach a segment releasably thereto.

4,067,202

SINGLE POINT MOORING BUOY AND TRANSFER FACILITY

Edwin E. Reed, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 30, 1976, Ser. No. 681,969
Int. Cl.² E02D 21/00
U.S. Cl. 61—86 12 Claims



1. A single point mooring and transfer facility comprising:

a floating buoy,

a submerged platform,

means for maintaining said buoy in position relative to said platform,

first conduit means for conducting fluid to and from said platform,

second conduit means for conducting fluid to and from said buoy, and

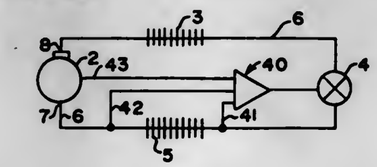
third conduit means connecting said first conduit means and said second conduit means, said third conduit means consisting essentially of a straight portion extending from said platform to said buoy and a spiral coiled portion having a substantially vertical axis housed within said platform.

4,067,203

CONTROL SYSTEM FOR MAXIMIZING THE EFFICIENCY OF AN EVAPORATOR COIL

Joseph L. Behr, Des Peres, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sept. 7, 1976, Ser. No. 720,698
Int. Cl.² F25B 41/00
U.S. Cl. 62—208 4 Claims



1. A system and control means therefor, comprising:

a compressor, said compressor including a fluid sump;

a first coil operatively connected to said compressor;

a second coil operatively connected to said first coil and to said compressor;

an electrically operable expansion valve connected between said first and said second coils, said expansion valve including electrically energizable means for controlling the position of said valve; and

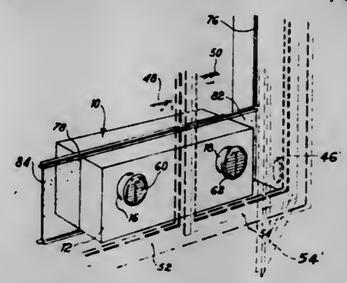
control means operatively connected between said system and the electrically energizable means of said expansion valve, said control means including a first sensor for sensing a condition in said system, a second sensor for sensing the same condition in said system at a point displaced from said first sensor, differential means for comparing the condition sensed by said first and said second sensors, said differential comparing means having an input side operatively connected to said first and said second sensors, and an output side, a mixer amplifier having a first input operatively connected to the output of said differential comparing means, and a second input, and override means having an output side forming a second input to said mixer amplifier, said override means including a third sensor for sensing a condition in said system, amplifier means operatively connected to said third sensor, and feedback means connected between the output and the input sides of said amplifier, said feedback means acting to remove the output of said amplifier under certain predetermined conditions sensed by said third sensor, the output side of said mixer amplifier being operatively connected to said electrically energizable means, said control means acting to regulate fluid flow through said expansion valve so as to establish equality in the condition sensed by said first and said second sensors.

4,067,204

AIR CONDITIONER

Valerio Giordano Riello, Legnano (Verona), Italy, assignor to Riello Condizionatori di Giordano Riello & C. S.p.A., Bevilacqua (Verona), Italy

Filed Oct. 13, 1976, Ser. No. 732,185
Claims priority, application Italy, Apr. 21, 1976, 22496/76
Int. Cl.² F25D 23/12
U.S. Cl. 62—262 7 Claims



1. In an assembly of the type including a window frame in a wall dividing an interior room from the exterior, said window frame having a substantially horizontally extending window sill and substantially vertically extending opposite frame edges, at least one inner window unit having a substantially vertically extending side pivotally mounted to one of said vertical frame edges of said window frame at a position thereon adjacent the side thereof closest to said interior room, said inner window unit being pivotable about a substantially vertical axis, in a direction inwardly toward said interior room, from a closed position extending in a plane parallel to and closing said window frame to an open position extending non-parallel to and spaced from said window frame, and an air conditioner supported by said window frame for conditioning the air in said interior room, the improvement wherein:

said entire air conditioner is supported and positioned at a location exterior of said interior room and exterior of said plane of said inner window unit when said inner window unit is in said closed position;

said air conditioner having inlet and outlet openings facing said interior room for removing and introducing flows of air into said interior room, said inlet and outlet openings being positioned to open into said plane of said inner window unit when said inner window unit is in said closed position; and

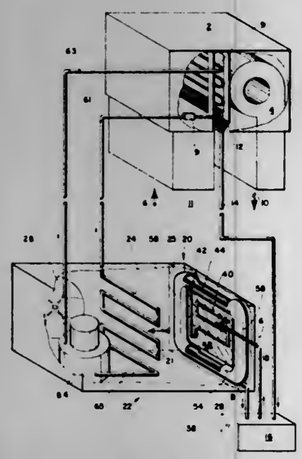
said inner window unit having therein orifices, said orifices being dimensioned and positioned to coincide and align with said inlet and outlet openings of said air conditioner when said inner window unit is in said closed position, thereby providing communication between said interior room and said inlet and outlet openings, and whereby said inner window unit may be opened and closed without the necessity of removal or realignment of any components of said air conditioner.

4,067,205

SUPER COOLER FOR AN AIR CONDITIONING SYSTEM

Jack Mayhue, P.O. Box 2271, Clearwater, Fla. 33517

Filed July 8, 1976, Ser. No. 703,680
Int. Cl.² F25B 47/00; F28D 5/00; F25B 39/04
U.S. Cl. 62—279 **23 Claims**



1. In a system for refrigerating air in a compartment, including a refrigerant compressor, a condenser coil connected to the output of said compressor for cooling the compressed refrigerant, a first fan located proximate to said condenser coil moving an air flow across said condensor coil for forced air cooling of the coil, a refrigerant evaporator located proximate to said compartment, having its input connected to the output of said coil, and a second fan located proximate to said compartment, for moving air across said evaporator and into said compartment for cooling the compartment, the improvement of which comprises:

a first collecting means proximate to said evaporator for collecting chilled water condensate from the air which has been cooled as it was moved across said evaporator by said second fan;

means for cooling said air flow across said condenser coil by said first fan, comprising:

a fibrous heat exchanging air filter located upstream from said condenser coil in the air flow produced by said first fan;

a heat exchanging coil having an input connected to said means for collecting water condensate, located upstream from said condenser coil in the air flow produced by said first fan and proximate to said air filter, for conducting said chilled water condensate for absorbing heat from said air flow over the heat exchanging coil;

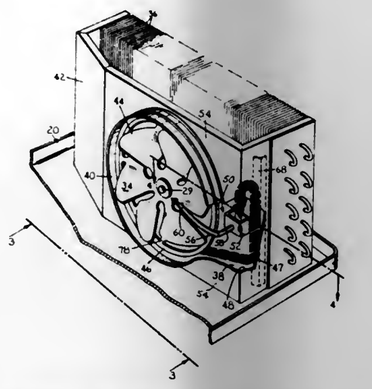
said heat exchanging coil conducting said chilled water condensate so as to flow onto said heat exchanging air filter where said air flow through the filter is further cooled by evaporative cooling.

4,067,206

CONDENSATE EVAPORATION SYSTEM FOR AIR CONDITIONERS

Hayden N. Smith, Galesburg, Ill., assignor to Admiral Corporation, Schaumburg, Ill.

Filed Sept. 15, 1976, Ser. No. 723,374
Int. Cl.² D01D 47/16; C10J 1/18; F24F 3/14
U.S. Cl. 62—280 **4 Claims**



1. A moisture evaporation system for an air conditioner having a housing and a condenser, an axial flow fan to the side for directing an airstream onto the condenser, and a sump adjacent the fan in which moisture collects; said system comprising:

an annular slinger ring on the periphery of the fan rotating through the moisture in the sump and centrifugally discharging the moisture from the sump upwardly along a wall of the housing; a reservoir on the wall for collecting moisture flowing downwardly along the wall, and a conduit having an inlet at the reservoir and an outlet discharging moisture interior of the airstream and upstream of the fan whereby the moisture is atomized and carried by the airstream for evaporation at the condenser.

4,067,207

FLEXIBLE COUPLING AND TORQUE-TRANSMITTING ELEMENT THEREFOR

Heinz-Dieter Böhm, Peukinger Weg 18, Unna, Germany (475); Dietwald Darenberg, Ostholz 16, Frondenberg-Ardey, Germany (5758); Lothar Ernst, Iserlohnerstr. 27a, Unna, Germany (475), and Werner Rüggen, Lessingstr. 7, Holzwickede, Germany (4755)

Filed May 28, 1976, Ser. No. 691,175
Claims priority, application Germany, June 5, 1975, 2525009
Int. Cl. F16d 23/10
U.S. Cl. 64—26 **14 Claims**

1. A flexible coupling including

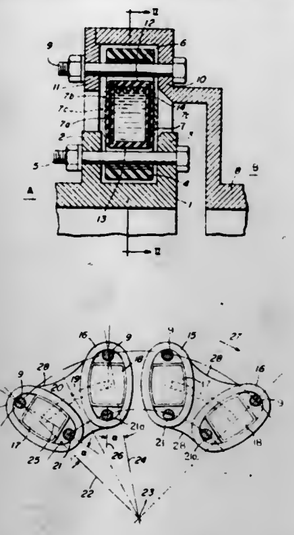
a. a driving member;

b. a driven member;

c. a plurality of flexible torque-transmitting members arranged in a circular pattern each forming an elongated closed loop, each of said torque-transmitting members being supported at one point thereof by a stud supported by said driving member and each of said torque-transmitting members being supported at another point thereof by a rod supported by said driven member so that said plurality of torque-transmitting members transmit torques from said driving member to said driven member;

d. a plurality of resilient inserts each arranged inside of one of said plurality of torque-transmitting members and each subject to deformation by stresses imposed upon said plurality of torque-transmitting members incident to transmission of the torques from said driving member to said driven member; and

e. a plurality of interconnected bodies of fluid under the action of said plurality of inserts for establishing a shock-



absorbing damping action by flows of fluid in response to deformation of said plurality of resilient inserts.

4,067,208

WARP-KNIT SLIDE-FASTENER SUPPORT TAPE AND METHOD OF MAKING SAME

Helmut Heimberger, Locarno, Switzerland, assignor to Optilon W. Erich Heilmann GmbH, Cham, Switzerland

Filed Sept. 30, 1976, Ser. No. 728,031
Claims priority, application Germany, June 15, 1976, 2626663
Int. Cl.² D04B 23/08, 21/00
U.S. Cl. 66—193 **24 Claims**



1. A slide-fastener support tape comprising:

a plurality of relatively thin warp yarns forming an array of longitudinally extending and transversely spaced wales defining respective warp pillars;

a group of first weft yarns crossing said warp yarns and each extending transversely over a plurality of wales;

a group of second yarns lapped into and forming loops from course to course in said warp yarns and each extending over a plurality of said wales, said yarns forming a ground knit omitting a warp pillar immediately from a wale; at an edge of the tape; and

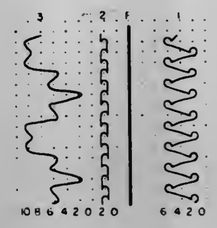
a relatively thick laid-in warp yarn extending parallel to said wales between the wale at the edge of said array and the adjacent wale at the location of the omitted warp pillar and between said first weft yarns on one side and said second yarns on the other side.

4,067,209

WARP KNIT UPHOLSTERY FABRICS

Frank Joseph Kucera, Ilkley, and Thomas Desmond Brown, Keighley, both of England, assignors to IWS Nominee Company Limited, London, England

Filed June 2, 1976, Ser. No. 691,980
Claims priority, application United Kingdom, June 4, 1975, 24084/75
Int. Cl.² D04B 23/00
U.S. Cl. 66—195 **4 Claims**



1. A compound upholstery fabric knitted on a warp knitting machine formed from at least 3 guide bars and including fall plate and ground yarns, suitable for providing the sole body-supporting surface in a seat construction with an open frame, said fabric comprising:

a rigid warp knit net structure comprising pillar and laid-in stitches of high tensile ground yarns constituting a base fabric having dimensional stability in the warp and weft directions;

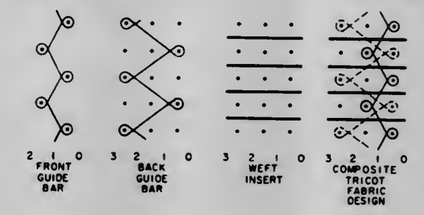
and a knitted fabric surface comprising the fall plate yarns of a softer handle than the ground yarns, the yarns of said fabric surface being regularly interlaced with said rigid net structure to maintain said fabric surface in interengagement with said base fabric.

4,067,210

WARP KNIT FABRIC CONTAINING WEFT OF PROTECTIVE YARN-COVERED ACTIVATED-CARBON YARN

Gilbert N. Arons, Newton Highlands; Laurance G. Coffin, Westwood, and Richard N. Macnair, Cambridge, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 14, 1975, Ser. No. 621,730
Int. Cl.² D04B 7/16, 23/08
U.S. Cl. 66—202 **10 Claims**



1. An improved warp knitted activated-carbon fabric, said fabric having a weft comprising a protective yarn-covered activated-carbon yarn every course thereof being inserted across the full width of said fabric and having non-activated-carbon warp yarns in the wales and courses of said fabric, said fabric being a tricot knit fabric having a design represented by the bar movement pattern:

front guide bar: 1-0, 1-2

back guide bar: 2-3, 1-0

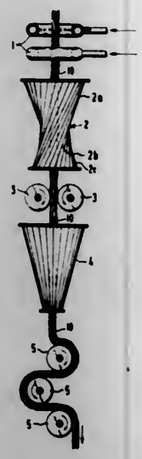
back guide bar: 2-0, 2-4.

4,067,211

DEVICE FOR THE EVEN CONTINUOUS IMPREGNATION OF TEXTILES IN ROPE FORM

Hans-Ulrich von der Eltz, Frankfurt am Main, Germany, assignor to Hans-Ulrich von der Eltz, Frankfurt am Main, Germany

Filed Dec. 9, 1976, Ser. No. 748,942
Claims priority, application Germany, Dec. 15, 1975, 2556487
Int. Cl.² D06B *1/02*
U.S. Cl. 68—21 1 Claim



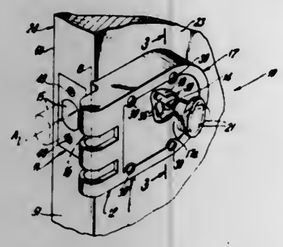
1. A device for the even, continuous impregnation of a textile rope comprising at least two, vertically spaced circular jet or spray tubes for spraying said rope, each tube being horizontally disposed; an adjustable, double conical shaped device disposed vertically below said jet or spray tubes and serving as an impregnation element for said rope; a pair of transport rollers disposed vertically below said double conical shaped device for continuously conveying said rope through said jet or spray tubes and then through said double conical shaped device; a compression compartment disposed vertically below said pair of transport rollers for compressing said rope; and at least three rollers arranged in a staggered manner below said compression compartment for passing said rope in narrow loops for fulling thereof.

4,067,212

DOOR LOCK

Arthur Vorob, 40 W. Hampshire Road, Paramus, N.J. 07652

Filed June 23, 1976, Ser. No. 698,937
Int. Cl.² E05B *59/04, 63/14*
U.S. Cl. 70—103 18 Claims



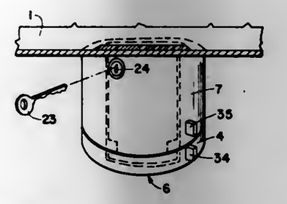
1. A lock comprising a first frame portion and a first bold slidable with the first frame portion, a second frame portion and a second bolt slidable with the second frame portion, means for operably interconnecting said bolts, further comprising means to mount said frame portions to a door, and wherein said first bolt is horizontally disposed and said second bolt is vertically disposed when the lock is mounted to the door, said vertically disposed bolt being mountable so as to be disposed on a side of the door, and said vertically disposed bolt having a leading portion to engage a receiving member mounted adjacent the door jamb, and the horizontally disposed bolt being mountable on the door and having a leading portion to slide into a receiving member recessed within the door jamb, said leading portions of said bolts being transversely disposed one directly behind the other and being spaced one behind the other when in the respective receiving members to provide a locked position and means to actuate said interconnecting means being mounted more adjacent one frame portion than the other frame portion whereby the actuating means causes the interconnecting means to slide the leading portions of both bolts from the respective frame portions into the respective receiving members to the locked position.

4,067,213

TRUCK TRAILER FIFTH WHEEL PIN LOCK

Oney M. Little, Muncy, Pa., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed July 23, 1976, Ser. No. 708,004
Int. Cl.² F16B *41/00*
U.S. Cl. 70—232 2 Claims



1. A truck trailer fifth wheel pin lock for protecting a truck trailer from theft by obstructing the fifth wheel pin of the trailer to prevent coupling thereof to a tractor, said fifth wheel pin having a circumferential circular groove extending thereabout, said truck trailer fifth wheel pin lock comprising

a bowl-like housing, said housing having an open mouth; and

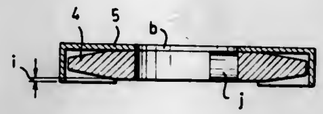
locking means for selectively locking the housing substantially coaxially around the fifth wheel pin of a truck trailer thereby obstructing said fifth wheel pin and preventing coupling thereof to a tractor, said locking means comprising an annular guide member coaxially rotatably mounted on the housing at the open mouth thereof and having a plurality of slots formed therethrough, a plurality of locking members, each having spaced opposite first and second ends, pivotally mounted in the housing at the mouth thereof in equiangularly spaced relation in the area of the first end of each, each of said locking members having a pin extending therefrom through a corresponding one of the slots for guiding the second end of the locking member into locking engagement in the groove of the fifth wheel pin in one position of said guide member and for guiding the second end of the locking member out of locking engagement with the groove of the fifth wheel pin and free therefrom in another position of said guide member, spring means coupled to the housing and the guide member for urging the locking members into locking engagement when the guide member is rotated in a predetermined direction about its axis, and key-released latch means for securing said locking members in position in locking engagement.

4,067,214

SAFETY LOCK

Franz Kiraly, Tavastgatan 1 A 11, 20500 Abo 50, Finland

Filed June 18, 1976, Ser. No. 697,642
Claims priority, application Finland, June 24, 1975, 751866
Int. Cl.² E05B *15/14*
U.S. Cl. 70—366 4 Claims



1. A safety lock comprising

a cylinder casing;

a drum rotatable in the cylinder casing;

a lock lever for locking and unlocking the drum;

a plurality of discs positioned in a stack within the cylinder casing, at least some of which discs are tumbler discs rotatable with a lock key, each such tumbler disc having on its periphery at least one recess which recesses are aligned with each other when the key is inserted in the lock to form a groove to receive the lock lever whereupon the drum is unlocked;

at least one key guiding element fixed in relation to the drum but rotatable in relation to the cylinder casing; and

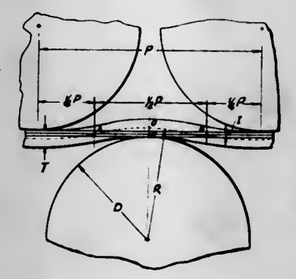
said tumbler discs being of such configuration that each tumbler disc contacts an adjacent disc of the stack only over a relatively small area near the center of the discs.

4,067,215

METHOD FOR PRODUCING STEEL PLATE FROM A HOT ROLLED STEEL COIL

Tsuyoshi Nakajima, and Toshio Shigesawa, both of Kisarazu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 611,805, Sept. 9, 1975, abandoned, which is a continuation of Ser. No. 336,458, Feb. 28, 1973, abandoned, which is a continuation of Ser. No. 71,649, Sept. 14, 1970, abandoned. This application Jan. 30, 1976, Ser. No. 653,960
Claims priority, application Japan, Sept. 13, 1969, 44-73777
Int. Cl.² B21D *1/02*
U.S. Cl. 72—40 16 Claims



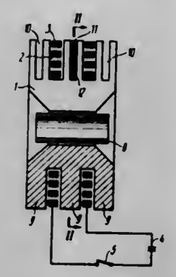
1. A method for producing hot rolled steel plates, which are cut from a hot rolled steel coil having a thickness of not less than 4.5mm and substantially free from warp when cut into cut plates, comprising the steps of subjecting a steel strip obtained from the hot rolled steel coil to a cold roller leveling to give the steel a maximum surface strain ϵ max within the range of $0.60\% \leqq \epsilon \text{ max} \leqq 3.0\%$ for reducing the residual stress in the central portion of the steel, diminishing surface strain ϵ of the steel to the range of the elastic limit strain of the steel for reducing the residual stress in the surface portion of the steel, and cutting said steel strip subsequent to the step of giving said steel the maximum surface strain in order to produce said steel plates.

4,067,216

INDUCTOR FOR MAGNETIC PULSE SHAPING OF METALS

Lev Timofeevich Khimenko, poselok Pokotilovka, ulitsa Ulyanovskaya, 35; Evgeny Nikolaevich Degtyarev, ulitsa Pushkina, 79, kv. 25; Mikhail Ivanovich Baranov, ulitsa Galana, 3, kv. 30, all of Kharkov; Anatoly Vasilievich Legeza, ulitsa Sportivnaya, 19a, kv. 26, Merefa Kharkovskoi oblasti, and Alexandr Tikhonovich Mezhuev, ulitsa Daeprovskaya, 19, kv. 7, Kharkov, all of U.S.S.R.

Filed Apr. 12, 1976, Ser. No. 676,398
Int. Cl.² B21D *26/02*
U.S. Cl. 72—56 2 Claims



1. An inductor for magnetic pulse shaping of metals, comprising a concentrator having a radial slot and an axial opening to receive an article to be worked, said concentrator also having circumferential annular flutes on the outer surface thereof which are axially spaced from each other to form annular ribs; a winding laid in said flutes; rectangular-shaped grooves provided in said ribs of said concentrator, the depth of said grooves being equal to that of said flutes, said grooves extending perpendicularly to the plane of said radial slot; and electrically conducting, segment-shaped inserts disposed in said grooves, insulated from said concentrator and overlapping or bridging said radial slot, said inserts being generally coextensive with the outer peripheral surface of said concentrator, whereby the electromagnetic fields of the coils of said winding are significantly shielded to thereby reduce the magnetic flux in said radial slot between said winding coils and decrease the axial and radial electrodynamic forces acting on the turns of said winding.

4,067,217

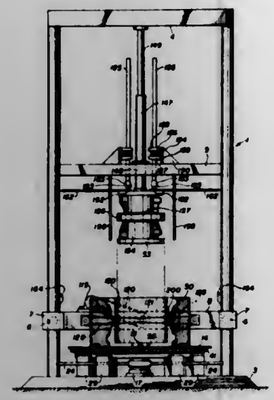
APPARATUS FOR FORMING A WHEEL RIM

Gerard Bisaillon, and Gilles Bisaillon, both of Chemin Couture, Magog, Canada

Filed Mar. 11, 1977, Ser. No. 776,707
Claims priority, application Canada, Nov. 2, 1976, 264651
Int. Cl.² B21H *1/10*
U.S. Cl. 72—91 10 Claims

1. An apparatus for forming a wheel rim from a cylindrical blank comprising a rotatable turntable; first drive means for rotating said turntable; a female die mounted on said turntable for rotation therewith, said female die having a generally cylindrical, profiled cavity for receiving a cylindrical blank; second drive means for opening and closing said female die; a male die including at least two separate roller shafts and rollers mounted on each roller shaft; third drive means for inserting the male die into the blank in the female die; and fourth drive

means for moving each roller shaft individually towards and away from the blank and female die, whereby when the blank



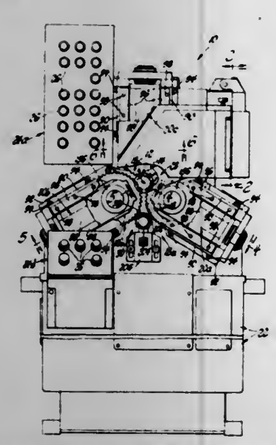
and female die are rotating, the blank is deformed sequentially against the female die cavity to form a wheel-rim.

4,067,218

APPARATUS AND METHOD AND MEANS FOR REMOVING SURFACE DEFECTS FROM A WORKPIECE

William H. Bibbens, 16500 N. Park Drive, Southfield, Mich. 48075

Filed Dec. 16, 1976, Ser. No. 751,409
Int. Cl.[2] B21H *5/00*
U.S. Cl. 72—107 **21 Claims**



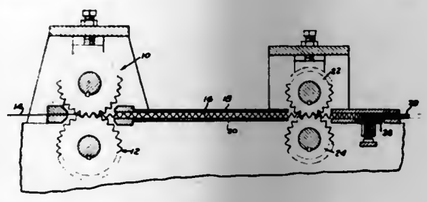
1. Apparatus for removing surface defects from a formed workpiece having a rotary axis about which the workpiece is designed to rotate, said apparatus comprising: at least two rotary tools rotatably mounted in spaced relationship to each other so as to receive the workpiece therebetween; at lease one of said rotary tools being power driven; pressure applying means for independently biasing each tool radially in an inward direction with respect to the rotary axis of the workpiece and for independently permitting each tool to move outwardly in a radial direction with respect to he rotary axis of the workpiece, rotation of said power driven tool causing rotation of the workpiece while said pressure applying means engages the tools with the workpiece to remove surface defects therefrom, and the pressure applying means permitting each tool to move outwardly independently of each other tool upon engaging a defect of the workpiece while the workpiece continues rotating with the rotary axis thereof at a fixed location; said pressure applying means including a plurality of cylinders having pistons therein which allow leakage flow between the opposite sides thereof within their associated cylinders, each cylinder and piston being respectively associated with one tool; and fluid pump means for biasing the pistons within the cylinders while leakage flow takes place at an increased rate to permit outward tool movement upon engagement with a defect on the workpiece.

4,067,219

HEAT EXCHANGER FIN ROLL

Sabatino A. Bianchi, Bloomfield Hills, Mich., assignor to Bernard J. Wallis, Dearborn, Mich.

Filed Mar. 23, 1977, Ser. No. 780,428
Int. Cl.[2] B21D *53/04*
U.S. Cl. 72—186 **10 Claims**



1. A pair of heat exchanger fin forming rolls, each comprising a plurality of gear-like discs having teeth spaced uniformly around the periphery thereof, said rolls being arranged on generally spaced parallel axes so that the teeth of the discs on one roll mesh with the teeth on the discs of the other roll when the rolls are rotated in one direction, each tooth terminating in a generally rounded tip at the radially outer end thereof and being connected with the adjacent teeth by a generally rounded crotch of greater curvature than the tip, each tooth having a leading face and a trailing face relative to said direction of rotation, said faces being beveled in a direction transversely of the plane of the disc so that each of said faces has circumferentially spaced inner and outer edges, said outer edges defining cutting edges on the opposite faces of the discs, said beveled faces of the teeth on the two sets of discs being in generally parallel overlapping relation when rotated into meshing relation, the leading face of each tooth being beveled from a point within the adjacent crotch in a direction radially outwardly through the tip of the tooth, the trailing face of each tooth being beveled from a point within the crotch to a point adjacent, but spaced radially inwardly from, the tip of the tooth, the radially inner end of the cutting edge of each trailing face terminating closer to the vertex of said crotch than the radially inner end of the cutting edge of each leading face.

4,067,220

ROLLING OF BILLETS

Rudolf Hoffmann, Krefeld, Germany, assignor to Maschinenfabrik Sack GmbH, Dusseldorf-Rath, Germany

Filed Oct. 15, 1976, Ser. No. 732,593
Claims priority, application Germany, Oct. 14, 1975, 2545935
Int. Cl.[2] B21B *45/02*
U.S. Cl. 72—201 **5 Claims**

1. A method of rolling a slab to form a billet characterized as free from "dog's bone" defects, comprising the steps of:

a. introducing a slab of substantially uniform cross-section to a rolling apparatus comprising first and second sets of opposing face-working rolls and a set of opposing edge-working rolls disposed intermediately said sets of face-working rolls;

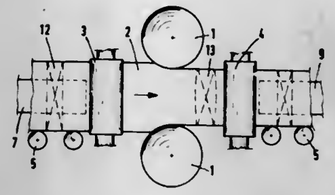
b. cycling said slab along a reciprocable path between said face-working and said edge-working rolls;

c. maintaining a positive temperature gradient from the center line of said slab outwardly thereof to effect greater deformation resistance to the edge regions than the central portion of said slab;

d. alternately applying deformation forces between said edge-working rolls and said first and second face-working rolls during said cycling step to:

i. effect longitudinal elongation of said slab; and,

ii. alternately effect maximum material deformation of the slab in the central portion thereof to yield a bulged-shape cross-section due to application of deformation



force between said edge-working rolls and to at least restore said slab to a substantially uniform cross-section by elimination of said bulged shape due to application of deformation force to the set of face-working rolls next adjacent said edge-working rolls in the direction of travel of said slab along said reciprocable path; thus precluding the formation of "dog's bone" defects in the cross-section.

4,067,221

SOLDER RECOVERY SYSTEM

Willard Graydon McGary, 8261-4th Northeast, Seattle, Wash. 98115

Filed Dec. 22, 1975, Ser. No. 643,188
Int. Cl.[2] B22C *23/00*
U.S. Cl. 72—263 **4 Claims**

1. An extruding mechanism adapted for use in insulations having limited space, comprising:

a. a first rigid member having a bore therethrough,

b. a second rigid member, spaced from and parallel to the first rigid member,

c. rigid means extending between and interconnected with the first and second rigid means, maintaining them in a fixed relative position, die chamber means and die means fixedly secured to the first rigid means whereby material extruded through the dye will pass without impedance through the bore,

d. a pair of trunnion blocks secured to the second rigid member, said trunnion blocks have identical oblong bores extending therethrough, and ram means including trunnions pivotly received in the trunnion blocks blocks between the first and second rigid members, said ram means including a planar surface which is in contact with the second rigid member during extrusion thereby relieving the trunnions of such strain locatable in a position coaxial with the die chamber whereby the ram contact a billet within the die chamber and extrude the solder through the die and the bore through first rigid member.

4,067,222

VEHICLE AXLE STRAIGHTENING SYSTEM

Leonard F. Eck, McPherson, Kans., assignor to Kansas Jack, Inc., McPherson, Kans.

Continuation-in-part of Ser. No. 626,450, Oct. 28, 1975, abandoned. This application Jan. 13, 1977, Ser. No. 758,845
Int. Cl.[2] B21D *1/12*
U.S. Cl. 72—389 **16 Claims**



1. A vehicle axle straightening system comprising:

a. a plurality of anchors attached to a floor and positioned in laterally spaced rows substantially parallel to an axle to be straightened;

b. means attached to certain of said anchors and in engagement with a certain portion of a vehicle axle to be straightened for retaining same in a selected position, said axle retaining means being adapted to resist upward movement of the vehicle axle;

c. means extending between the floor and a selected portion of the vehicle axle for applying a force to said selected portion, said force applying means being spaced from said axle retaining means;

d. said anchors each having a liner member extending downwardly from adjacent an upper surface of said floor, said anchor liner members being fixed in said floor;

e. certain of said anchors having an elongate bar with a plurality of ears extending therefrom and engageable with said axle retaining means;

f. certain of said anchors having cooperative means on said elongate bar and said liner member for engagement upon raising of said bar for engagement of certain of said ears thereof with said respective axle retaining means.

4,067,223

RIVET SETTING TOOL

Richard L. Cunningham, West Boylston, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Filed Oct. 4, 1976, Ser. No. 729,419
Int. Cl.[2] B21J *15/34*
U.S. Cl. 72—391 **8 Claims**

1. A rivet setting tool for setting a rivet having a mandrel, comprising:

a. a lower handle having an input port and having a hollow head at one end,

b. an upper handle having one end lying in the hollow head and being connected thereto for pivotal movement about a first transverse pin,

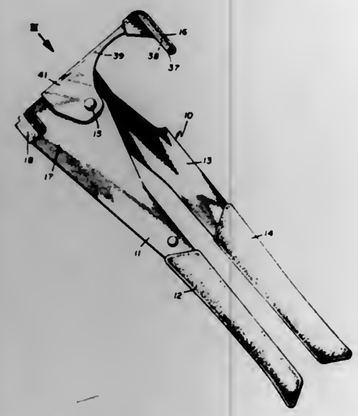
c. a support arm is provided and lies within the hollow head and is connected thereto for pivotal movement about a second transverse pin substantially spaced from the first pin lengthwise of the lower handle,

d. a gripper is mounted on the support arm for pivotal movement about a third transverse pin, the support arm and the gripper forming a grasping means, operated by movement of the upper handle to cause the mandrel to move along a path passing through the input port, the gripper, and an exit port in the direction from the gripper opposite that of the input port,

e. a first spring means is provided and biases the upper handle and the support arm,

f. a second spring means is provided and biases the gripper and the support arm,

g. a fourth pivot pin extending between the upper handle and the support arm is provided so that, as the upper and lower arms are brought together by pivotal movement about the first pin, the fourth pin causes pivotal movement of the support arm with the gripper about the second pin, and



h. a pressure pad which intersects the path to limit the movement of the mandrel along the path and which can be pressed by the user's hand to press the anvil against the work, a pair of flanges extending from the pressure pad and embrace the said head of the lower handle and are held in place by the said first transverse pin.

4,067,224

SWAGING DIES

Cedric Gwilliam Birks, 13 Northwood Park, Woodlesford, Leeds, West Yorkshire, England

Filed Aug. 2, 1976, Ser. No. 710,815

Claims priority, application United Kingdom, Aug. 4, 1975, 32601/75

Int. Cl.² B21J *13/02*

U.S. Cl. 72—416 **6 Claims**



1. For use in a press for swaging a sleeve onto a bar a pair of coacting high strength metal dies, each of said dies comprising a recess extending parallel to the longitudinal axis of said bar and having a ribbed medial portion including a plurality of radially projecting ribs extending along said axis, said ribs projecting upward from said recess, with the recess portions between immediately adjacent ribs being concavely relieved, the ribs being so located that when said diesare in contact with each other their recesses conjoin to form a polygonal opening, with the concave relieved portions of the dies equidistantly spaced about the periphery of said polygonal opening so that upon swaging the material of the sleeve adjacent each of said concave relieved portions conveniently flows into said relieved portions.

4,067,225

CAPACITANCE TYPE NON-CONTACT DISPLACEMENT AND VIBRATION MEASURING DEVICE AND METHOD OF MAINTAINING CALIBRATION

Richard A. Dorman, Troy; Curtis D. Kissinger, Gloversville, and Lawrence J. Lagace, Jr., Albany, all of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Mar. 21, 1977, Ser. No. 779,748

Int. Cl.² G01B *7/22*; G01H *11/00*

U.S. Cl. 73—1 DV **9 Claims**



1. In a capacitance type non-contact displacement and/or vibration measurement system of the type including a sensing head wherein a central sensing probe member having an exposed end defining a capacitor electrode for physical placement adjacent a conductive member coacting with the exposed end of said central sensing probe member as an opposed capacitor electrode to establish an electrical capacitance therebetween, the value of which is representative of the physical distance between the exposed end of said sensing probe member and the adjacent conducting member, and wherein a first electrically conductive guard ring is disposed in coaxial, electrically insulated relationship about said central sensing probe member and wherein an alternating current potential of substantially the same voltage value and frequency is applied to said central probe member and to said first guard ring, the improvement comprising:

a. A second electrically conducting guard ring disposed in coaxial, electrically insulated relationship about said first guard ring; and

b. Means applying an alternating current potential to said second guard ring having a value which is higher than the alternating current potential applied to said central probe member and said first guard ring.

4,067,226

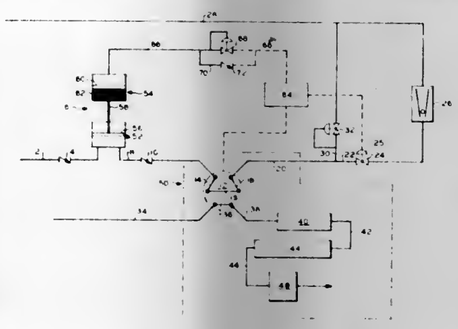
CHROMATOGRAPHIC APPARATUS

Otis E. Ririe, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 2, 1976, Ser. No. 711,030

Int. Cl.² G01N *31/08*

U.S. Cl. 73—23.1 **5 Claims**



1. A chromatographic analyzer comprising:

a chromatographic column to separate the components of a fluid sample introduced to same;

detecting means in operable communication with said chromatographic column for detecting a property of a fluid representative of the composition thereof;

sample valve means in operable communication with said chromatographic column, said sample valve means having a sample chamber calibrated to contain a predetermined volume of sample;

means for maintaining said chromatographic column, said detecting means and said sample valve means at a temperature T;

conduit means in operable communication with said sample valve means for passing a fluid sample stream at a first pressure P_1 to said sample valve means and through said sample chamber;

valve means downstream of said sample chamber for terminating the flow of sample stream therethrough;

means in operable communication with said conduit means for increasing the pressure on the portion of said sample stream in said conduit means and in said sample chamber from said pressure P_1 to a higher pressure P_2, said pressure P_2 being sufficient to maintain said sample in the liquid state at said temperature T;

relief valve means downstream of said sample chamber for allowing said sample stream to flow through said sample chamber at said pressure P_2, said relief valve means being normally closed and preset to open at said pressure P_2; and

means for introducing a portion of said sample stream at said pressure P_2 into said chromatographic column.

4,067,227

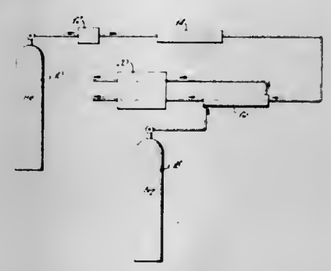
HYDROGEN TRANSFER SYSTEM FOR GAS CHROMATOGRAPH

Theron Johns, Orange, and Edward A. Berry, Anaheim, both of Calif., assignors to Carle Instruments, Inc., Fullerton, Calif.

Filed Mar. 19, 1975, Ser. No. 559,807

Int. Cl.² G01N *31/08*

U.S. Cl. 73—23.1 **10 Claims**



1. A gas chromatograph for quantitatively determining hydrogen gas, comprising:

a helium carrier gas system;

a nitrogen carrier gas system;

means for injecting a sample which includes hydrogen gas as a sample constituent into the helium carrier gas system;

a chromatographic column in the helium carrier gas system for separating the sample into constituents;

means for transferring the hydrogen constituent of the sample from the helium carrier gas system to the nitrogen carrier gas system without transferring other sample constituents, said nitrogen carrier gas flowing countercurrently to the helium carrier gas in said means for transferring the hydrogen;

means in the helium carrier gas system for detecting sample constituents other than hydrogen; and

means in the nitrogen carrier gas system for detecting the hydrogen constituent of the sample.

4,067,228

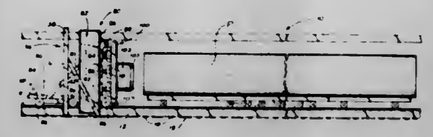
PIPE TESTING APPARATUS

Ralph C. Elle, and Jerry L. Walker, both of Portland, Oreg., assignors to Northwest Pipe & Casing Co., Clackamas, Oreg.

Filed Dec. 9, 1976, Ser. No. 748,688

Int. Cl.² G01M *3/28*

U.S. Cl. 73—49.1 **17 Claims**



1. Apparatus for testing a pipe under internal fluid pressure comprising

an elongate, hollow mandrel movable relatively into one end of the pipe to a testing position therewithin;

first sealing means for producing a fluid-sealed condition between one end of said mandrel and said pipe end;

second sealing means shiftable in a coaxial direction relative to said mandrel for producing a fluid-sealed condition between the other end of said mandrel and the opposite end of the pipe when said mandrel is disposed in the testing position, said second sealing means including a pressure plate and a plug means extending therefrom, said pressure plate being positionable against the opposite end of the pipe and said plug means being insertable within the other end of said mandrel; and

means for introducing fluid under pressure between said mandrel and the pipe.

4,067,229

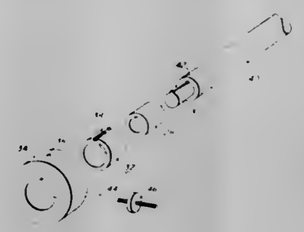
VISCOMETER FOR INDICATING RHEOLOGICAL PROPERTIES OF BIOLOGICAL FLUIDS

Samuel R. Schuster, Wellesley, Mass., assignor to Ovutime, Inc., Brookline, Mass.

Continuation-in-part of Ser. No. 472,611, May 23, 1974, abandoned, and Ser. No. 523,047, Nov. 12, 1974, Pat. No. 3,982,423, which is a continuation-in-part of Ser. No. 462,298, April 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 433,767, Jan. 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 300,187, Oct. 24, 1972, abandoned. This application Sept. 10, 1976, Ser. No. 722,166

Int. Cl.² G01N *11/00*

U.S. Cl. 73—54 **2 Claims**



1. A device for testing mucus from a bodily cavity, said device comprising a base, inner bearing means and outer bearing means, said inner bearing means and said outer bearing means being arranged for motion with respect to each other on said base, means for biasing said inner bearing means and said outer bearing means for said motion, and means for indicating the occurrence of said motion, said inner bearing means and

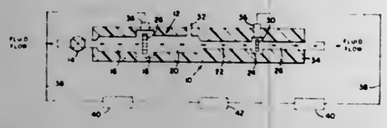
said outer bearing means have inner and outer cylindrical bearing surfaces, each of said bearing surfaces having a surface finish ranging from approximately 0.2 microns to 3.2 microns in valley to peak height, the clearance between said bearing surfaces ranging from approximately 0.25 microns to 254.0 microns, said means for indicating including indicia movable with at least one of said bearing elements and indicia fixed in operation with respect to said base, said base including an elongated rod, said inner bearing member projecting from said rod and being substantially coaxial therewith, said rod including means for indicating the position of said outer bearing member with respect to said rod.

4,067,230

DUAL TURBINE IN-LINE VISCOMETER AND FLOWMETER

John M. Ball, 3128 Millbrook Drive NW., Huntsville, Ala. 35810

Filed Dec. 15, 1976, Ser. No. 750,928
Int. Cl.² G01N *11/14*
U.S. Cl. 73—54 **1 Claim**



1. An apparatus for making fluid flow viscosity measurements during operating conditions comprising: a dual turbine in-line viscometer; said viscometer including an upstream flow straightner; a turbine housing; a turbine disposed in said housing; a downstream flow straightner; a second upstream flow straightner; a second turbine housing; a second turbine disposed in said second housing and a second downstream flow straightner; said second upstream flow straightner, second turbine housing, second turbine and second downstream flow straightner being of a smaller diameter than said first upstream flow straightner, turbine housing, turbine and downstream flow straightner; a frequency indicator connected to each of said housings; a frequency readout for reading each separate frequency and a frequency ratio indicator for comparing each of said frequency response; said in-line viscometer being provided with a temperature probe encased by insulation to control the temperature of said viscometer.

4,067,231

DEVICE FOR MEASURING PARAMETERS OF IMPACT PULSES

Alexandr Sergeevich Yakshin, ulitsa Malaya Filevskaya 66, kv. 104; Oleg Nikolaevich Novikov, ulitsa Kuznetsky most 18/7, kv. 6; Dmitry Alexeevich Grechinsky, ulitsa Tolbukhina 8, korpus 2, kv. 48; Viktor Alexandrovich Klochko, ulitsa Oktyabrskaya 38, kv. 374, and Viktor Georgievich Rygalin, 3 Dorozhny proezd, 5, korpus 2, kv. 103, all of Moscow, U.S.S.R.

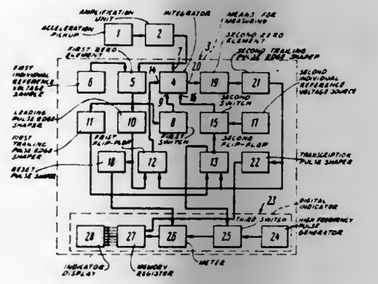
Filed Dec. 1, 1976, Ser. No. 746,296
Int. Cl.² G01P *15/00*
U.S. Cl. 73—658 **12 Claims**

1. A device for measuring parameters of impact pulses comprising:

an acceleration pickup having an output and which converts mechanical vibrations of the tested object into electrical signals;

an amplification unit having an input and an output, said input being connected to said output of said acceleration pickup; and

a means for measuring the impact speed variation having an input and being connected by said input to said output of said amplification unit, said means for measuring includes an integrator having a first, a second, a third and a fourth input and an output and being connected by said first input to said output of said amplification unit; a first zero element having a first input, which is joined with said first input of said integrator and serves as said input of said means for measuring, a second input and an output; a first reference voltage source having an output and being connected by said output to the second input of the first zero element; a first switch having an input and an output being connected by its input to said output of the first zero element and by its output to said second input of said integrator so that the first switch permits passage of the input signal from said amplification unit to said first input of said integrator when a signal is fed to said first switch from the first zero element; a leading pulse edge shaper having an input and an output and being connected by its input to said output of the first zero element; a first flip-flop having a first and a second input and an output and being connected by its first input to said output of said leading pulse edge shaper and by its output to said third input of said integrator so that it ensures putting the integrator out of the zero state during the time of passage of the input signal from said amplification unit to said integrator; a first trailing pulse edge shaper having an input and an output and being connected by its input to said output of the first zero element; a second flip-flop having a first and a second input, and output, and an inverting



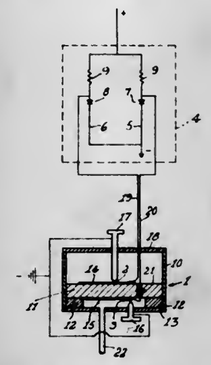
output and being connected by its first input to said output of said first trailing pulse edge shaper; a second switch having an input and an output and being connected by its input to said inverting output of the second flip-flop; a second reference voltage source, whose polarity is opposite to the polarity of said input signal of said integrator, having an output; said second switch having its output connected to said fourth input of said integrator so that it ensures connection of said output of said second reference voltage source to said fourth input of said integrator; a reset pulse shaper having an input and an output and being connected by its input to said output of said leading pulse edge shaper; a second zero element having an input and an output and being connected by its input to said output of said integrator; a second trailing pulse edge shaper having an input and an output and being connected by its input to said output of said second zero element and by its output to the second inputs of the first and second flip-flops; a transcription pulse shaper having an input and an output and being connected by its input to said output of said second trailing pulse edge shaper; and a digital indicator of the value of the impact speed variation having a first, a second and a third input and being connected by its first input to said output of the second flip-flop, by its second input to said output of said reset pulse shaper and by its third input to said output of said transcriptranscription pulse shaper.

4,067,232

INDICATION OF RATES OF FUEL CONSUMPTION

Alan B. Murray, Kloof, South Africa, assignor to Control Logic (Proprietary) Limited, South Africa

Filed July 21, 1976, Ser. No. 707,341
Claims priority, application South Africa, July 23, 1975, 75/4747
Int. Cl.² G01M *15/00*
U.S. Cl. 73—115 **8 Claims**



1. A method of indicating changes in the rate of fuel consumption in internal combustion engines from a predetermined rate, wherein the rates of fuel consumption are proportional to the vacuum values in the inlet manifold of the engine, comprising the steps of:

actuating an electrical switch mechanism, electrically connected to a single, light-emitting display means, to any one of a plurality of different positions by means of a vacuum value which is either above or below at least one predetermined vacuum level; and

energizing said single display means comprising a plurality of light emitting diodes in a plurality of different modes, respectively corresponding to the different operational positions of said switch mechanism, so as to cause the color of the light emitted by said single display means to change dependent upon the alternative or simultaneous energization of said diodes and thereby visually indicate changes in the rate of said fuel consumption from said predetermined rate.

4,067,233

INTAKE AIR AMOUNT MEASURING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hideki Obayashi, Aichi; Tokio Kohama, Nishio; Hisasi Kawai, Toyohashi, and Tsuneyuki Egami, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 10, 1977, Ser. No. 776,292
Claims priority, application Japan, May 2, 1976, 51-50556
Int. Cl.² G01M *15/00*
U.S. Cl. 73—116 **7 Claims**

1. An intake air amount measuring system for an internal combustion engine which has an intake air passage and a throttle valve positioned therein, comprising:

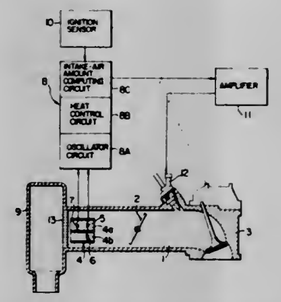
an electric heater positioned upstream of the throttle valve, for heating a part of intake air flowing through said intake passage in accordance with a direct current voltage applied thereto through a voltage detecting resistor connected in series therewith;

a first thermally-sensitive resistor positioned between said electric heater and said throttle valve to be responsive to temperature of said part of the intake air heated by said electric heater;

a second thermally-sensitive resistor connected in series with said first thermally-sensitive resistor and positioned upstream of said throttle valve to be responsive to temperature of the remaining part of the intake air flowing through said intake passage;

series-connected reference resistors connected in parallel with said series-connected first and second thermally-sensitive resistors to constitute a bridge circuit therewith;

an oscillator circuit, connected to said bridge circuit, for supplying said bridge circuit with a pulsated voltage the amplitude of which is proportional to said direct current voltage supplied thereto;



a heat control circuit, connected to said bridge circuit, for supplying said electric heater and said oscillator circuit with said direct current voltage which varies to maintain a voltage difference between a voltage at a junction point of said first and second thermally-sensitive resistors and a voltage at a junction point of said series-connected reference resistors to be constant; and

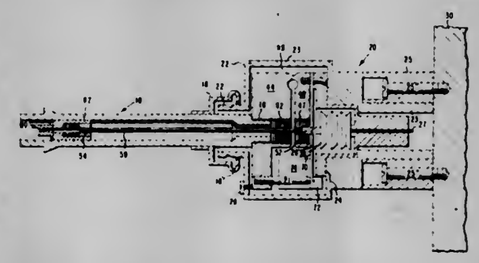
computation means, connected to said electric heater, for computing an amount of the intake air in response to the direct current voltages across said electric heater and across said voltage detecting resistor.

4,067,234

TENSION TRANSDUCER

John Seymour Seney, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1976, Ser. No. 751,210
Int. Cl.² G01L *5/08, 5/10*
U.S. Cl. 73—144 **5 Claims**



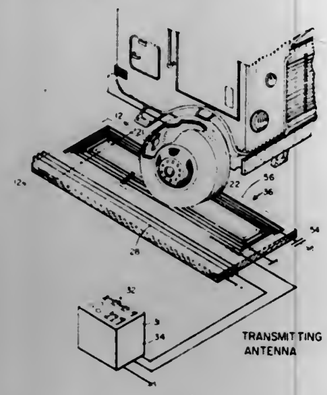
1. A yarn tension transducer for measuring threadline tension in running lengths of yarn comprising: a frame; a U-shaped member having first and second legs separated by a base member, said base member having a reduced flexure section located between the two legs; a hollow tube over which yarn passes connected to said first leg of said U-shaped member the other leg of said member being connected to said frame; an elongated rod having one end mounted within said hollow tube, a strain transducer connected between said other leg of said U-shaped member and the other end of said elongated rod responsive to relative movement between said other leg and said rod.

4,067,235

METHOD AND APPARATUS FOR MEASURING AIR PRESSURE IN PNEUMATIC TIRES

Richard Donald Markland, Cupertino; Frank Fred Stucki, Portola Valley, and Paul Max Bryant, San Jose, all of Calif., assignors to Consolidated Freightways, Inc., San Francisco, Calif.

Filed Nov. 27, 1974, Ser. No. 527,641
Int. Cl.² B60C *23/02*; G01L *9/10*
U.S. Cl. 73—146.5 69 Claims



1. Apparatus for remotely measuring the pressure in a pneumatic tire, comprising:

a. means for generating a current inducing field;

b. a tire pressure sensor coupled to the field, said pressure sensor having means for converting the field into D.C. current to operate the sensor, means in communication with the interior of the pneumatic tire for measuring the pressure in the pneumatic tire, and independent means for transmitting an electromagnetic signal indicating the pressure measured in the tire, and;

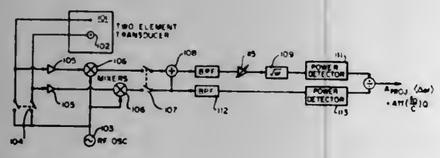
c. a tire pressure signal processor means that receives the electromagnetic pressure signal from the transmitting means and displays the pressure measured in the tire.

4,067,236

METHOD AND SYSTEM FOR UNAMBIGUOUS METHOD OF VOLUME FLOW

Charles F. Hottinger, Stanford, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford Calif.

Filed Nov. 10, 1975, Ser. No. 630,268
Int. Cl.² G01F *1/66*
U.S. Cl. 73-194A 14 Claims



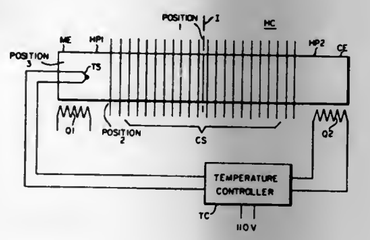
1. A system for measurement of fluid volume flow in a conduit including ultrasonic transmitting transducer means, means for driving said transducer means to ensonify a thin sample volume surface in the conduit in which fluid volume flow is to be measured, receiving transducer means positioned to receive backscattered power from particles in said sample volume surface and form a backscatter signal, means for processing the backscatter signal of the receiving transducer means to obtain a first signal which is proportional to the first moment of the Doppler power spectrum, means including transducer means for obtaining a second signal from said sample volume surface, means for processing said first and second signals to scale the first signal by a scale factor which is proportional to the Doppler power received from a unit area of the sample volume surface within the conduit to provide an output signal which is proportional to the volume flow in said conduit.

4,067,237

NOVEL HEAT PIPE COMBINATION

Frank G. Arcella, Bethel Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1976, Ser. No. 713,175
Int. Cl.² G01F *1/68*; G01K *11/02*; F28D *15/00*
U.S. Cl. 73—204 19 Claims



1. Apparatus for monitoring, controlling and measuring the heat generation or dissipation rate, i.e., heat strength, of a monitored environment, comprising:

a heat pipe combination means including a first and second pipe means each having an evaporator section and a condenser section, said first and second heat pipe means being coupled such that said condenser sections combine to form a common condenser section, the evaporator section of said first heat pipe means exposed to the monitored environment,

heat sink means operatively coupled to said common condenser section, and

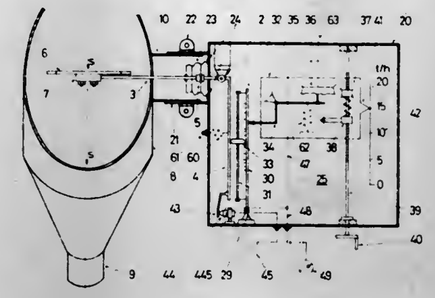
a source of heat energy coupled to the evaporator section of said second heat pipe means for supplying a heat input to the evaporator section of said second heat pipe means to vary the amount of condenser section available to the evaporator section of said first heat pipe means.

4,067,238

DEVICE FOR MEASURING THE RATE OF FLOW OF FLOWABLE PRODUCTS, PARTICULARLY LOOSE MATERIAL

Hans Oetiker, St. Gallen, Switzerland, assignor to Gebruder Buhler AG, Switzerland

Filed Mar. 4, 1976, Ser. No. 663,917
Claims priority, application Switzerland, Mar. 5, 1975, 2691/75
Int. Cl.² B67D *5/08*; G01F *1/28*
U.S. Cl. 73—228 16 Claims



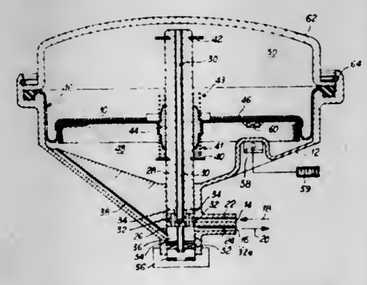
1. A device for measuring the rate of flow of a flowable material comprising means for containing a stream of flowable material, a balance beam adapted to extend into said container means, a measuring plate secured to said balance beam so as to be disposed in said stream of material flowing through said container means, said plate being mounted on said balance beam so that its measuring surface extends substantially parallel to the longitudinal axis of said balance beam, a housing mounted on said container means, said balance beam having an end portion extending into said housing, a pivot for said balance beam disposed in said housing, said pivot having a pivot axis extending in a first plane which is normal to a second plane containing the longitudinal axis of said balance beam in the position of equilibrium of said balance beam, and which first plane is parallel to a stationary centroidal axis of said stream of flowable material, and such pivot having its axis obliquely disposed relative to the intersection of said first and second planes, and a mechanism disposed in said housing operatively associated with said balance beam to act on said balance beam in opposition to the deflecting forces acting on said measuring plate.

4,067,239

ADDING FLOWMETER

Jacques Arvisenet, 17, rue Guibert, 78 La Celle St. Cloud, France

Filed Aug. 2, 1976, Ser. No. 710,463
Int. Cl.² G01F *3/20*
U.S. Cl. 73—270 5 Claims



1. An adding flowmeter adapted for arrangement in series in a liquid flowpath between a liquid supply pipe and a liquid outlet pipe and comprising:

a liquid chamber enclosed in a casing having an inlet duct and an outlet duct which both open into a cylindrical bore provided in a portion of the casing, said liquid chamber being divided, in a liquid-tight manner, into first and second compartments by a movable dividing wall;

a single slide-valve comprising an actuating rod arranged for slidable movement into the said bore between a first and second stable positions, said rod having internal ducts for connecting the inlet duct and the outlet duct respectively to the first compartment and the second compartment when the rod is in the first stable position, and respectively to the second and the first compartment when the rod is in its second stable position;

a resilient mechanical connection between said dividing wall and said rod;

first magnetic means at one end of the rod, cooperating with second magnetic means carried by the casing, arranged so as to establish a physical contact between said first and second magnetic means when the rod is in either one or the other of the two said stable positions, in order to create a threshold force to be overcome for enabling a movement of said actuating rod;

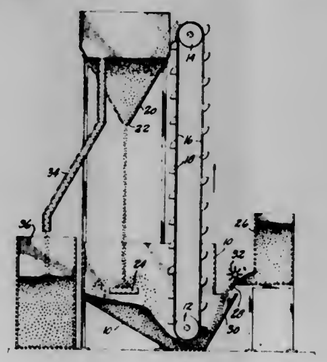
counting means responding to the displacement of the dividing wall for counting back and forth movements of said wall.

4,067,240

PROCESS OF SHOT PEENING AND CLEANING AND PREPARING SHOT PELLETS THEREFOR

John C. Straub, 2508 Lincolnway West, South Bend, Ind. 46628

Continuation-in-part of Ser. No. 607,241, Aug. 25, 1975, Pat. No. 4,034,585. This application Mar. 9, 1977, Ser. No. 775,690
Int. Cl.² B21D *31/00*
U.S. Cl. 72—377 7 Claims



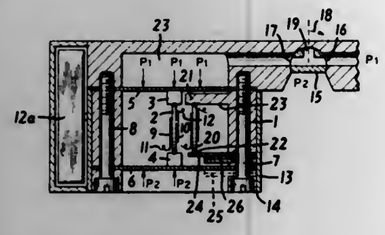
1. In a process of compression stressing shot pellets for use in shot peening and cleaning operations, the step of imparting residual compressive stresses to substantially the entire surface of each pellet before use thereof in a peening or cleaning operation, said stresses being imparted to said pellets by impact of a value less than that to which the pellets are subjected in peening and cleaning operations and so related to the hardness and notch sensitivity of the metal of the pellets as to stress the surfaces of the pellets without creating cracks in the surfaces of the pellets and to produce a distribution of residual stresses in the pellets favorable to increase of fatigue strength thereof.

4,067,241

IMPROVEMENTS IN OR RELATING TO OSCILLATING CRYSTAL TRANSDUCER SYSTEMS

James Patrick Corbett, 50 Rolling Hill Drive, Chatham Township, Morris County, N.J. 07928

Continuation-in-part of Ser. No. 499,489, Oct. 22, 1974, Pat. No. 4,020,448
Filed July 1, 1976, Ser. No. 699,451
Int. Cl.² G01L 7/08
U.S. Cl. 73—717 13 Claims



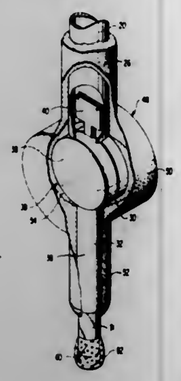
1. A fluid pressure transducer comprising;
a chamber;
two matched plate-like piezo-crystals disposed within the chamber;
electrical means for exciting each of the crystals;
two diaphragms situated on the chamber;
means for transmitting forces originating from fluid pressures on the diaphragms to the edges of at least one of the crystals.

4,067,242

MOLTEN METAL SAMPLING DEVICE AND METHOD

James R. Judge, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 525,230, Nov. 19, 1974, abandoned. This application Jan. 30, 1976, Ser. No. 653,911
Int. Cl.² G01N 1/14
U.S. Cl. 73—425.6 9 Claims



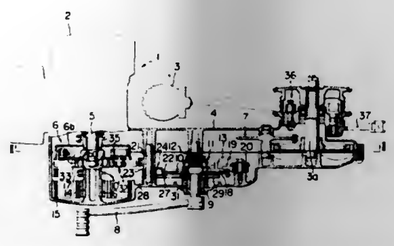
1. A molten metal sampling device for obtaining a test specimen of molten metal so as to determine an oxygen content in the metal comprising
means forming a mold cavity for the reception of molten metal being sampled and the formation of a solid sample,
a killing agent for the molten metal in the cavity, the killing agent having as an essential ingredient metallic germanium in quantity sufficient to kill the molten metal in at least part of the cavity so as to form a sound sample for analysis.

4,067,243

ENGINE STARTING DEVICE FOR A MOTORCYCLE

Noboru Kurata, Kamifukuoka; Goroei Wakatsuki, Ohimachi, and Mikihiro Koyama, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1976, Ser. No. 715,903
Claims priority, application Japan, Aug. 25, 1975, 50-102734
Int. Cl.² F02N 3/04, 5/02
U.S. Cl. 74—6 6 Claims



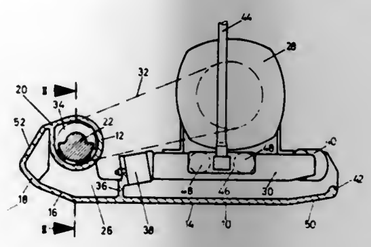
1. An engine starting device for a motorcycle comprising: a transmission casing arranged adjacent an engine installed on the motorcycle body, a pedal arm pivotally connected to said transmission casing and operatively connected to an engine crankshaft, a force accumulating means secured at one end to said transmission casing and at the other end to a winding means; said winding means being adapted to wind-up said force accumulating means and being operatively connected with said pedal arm through release means; a control system actuatable for rendering the motorcycle inoperative and being operatively connected to said release means for causing the latter to unlock said force accumulating means in response to the actuation thereof; and one-way clutch means interposed between said winding means and said crankshaft for transmitting a rotational force only in the direction from the former to the latter, whereby in an operative condition of said release means, said winding means by oscillatory motion of said pedal arm, rotates to effect accumulation of a spring force of said force accumulating means while said release means is in an inoperative condition, said crankshaft being rotatable for engine cranking during release of the accumulated force by said force accumulating means.

4,067,244

SELF-PROPELLED VIBRATORY PLATE

Hans Baumers, Dusseldorf-Hubbelrath, Germany, assignor to Losenhausen Maschinenbau AG, Dusseldorf, Germany

Continuation of Ser. No. 532,924, Dec. 16, 1976. This application July 12, 1976, Ser. No. 704,478
Int. Cl.² F16H 33/00
U.S. Cl. 74—61 18 Claims



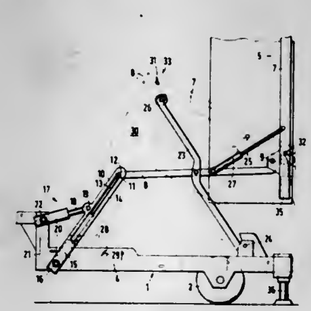
1. In a self-propelled vibratory plate excited by unbalance vibrations and comprising a ground plate having a front and a rear, a sole plate and an upwardly extending part at the front of the sole plate; an unbalance vibrator including a casing, an eccentric centrifugal weight for generating an exciting force, and means including bearings rotatably mounting the weight in said casing for rotation about a horizontal axis transverse to the front to rear direction, said casing being adjacent the front of the ground plate, remote from the rear of the ground plate and above the ground plate; a motor operatively connected to said weight to rotate the weight, said motor being positioned between the casing and the rear of the ground plate; and resilient elements supporting the motor on the ground plate, the improvement comprising:
said casing being integral with said upwardly extending part of the ground plate along substantially the total width thereof, ribs positioned in the planes of said bearings, said ribs being integral with said ground plate and said casing.

4,067,245

LEVER TRANSMISSION PARTICULARLY FOR LIFTING MEANS

Blaz Santić, Burgau, and Otto Volz, Reisensburg, both of Germany, assignors to Karl Mengele & Sohne, Gunzburg, Germany

Filed July 29, 1975, Ser. No. 600,069
Claims priority, application Germany, Aug. 10, 1974, 2438566
Int. Cl.² F16H 21/44
U.S. Cl. 74—96 17 Claims



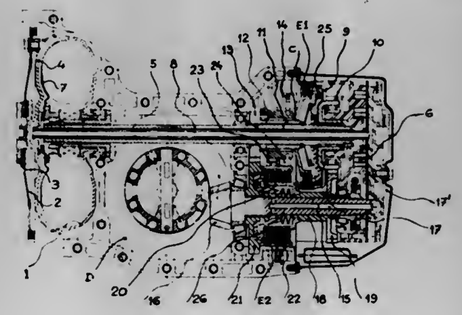
1. A lever drive lifting unit comprising an undercarriage having a pair of laterally spaced legs each having a first end and a second end and a transverse spar interconnecting the first ends of said legs, two pair of pivotally connected scissors arms with one pair of said scissors arms mounted on and extending along each of said legs, each said pair of scissors arms comprising a first scissors arm and a second scissors arm each having a first end and a second end with said first and second scissors arms being pivoted together intermediate the first and second ends thereof, in each said pair of scissors arms said first scissors arm and second scissors arm are displaceable from a folded position resting on the associated said leg of said undercarriage to a plurality of lifting positions with said first and second scissors arms being pivotally displaced upwardly from the folded position, means for pivotally displacing said arms upwardly from the folded position on said undercarriage, said first ends of said first and second arms being located adjacent the first end of the associated said leg of said undercarriage and said second ends being located adjacent the second ends of the associated said leg of said undercarriage when said scissors arms are in the folded position, a supporting frame for receiving alternating loads supported by at least said first scissors arms, at least one swing mechanism mounted on said undercarriage adjacent the transverse spar end thereof, said swing mechanism having an elongated sliding guide formed therein, a guide member on each said first scissors arm adjacent the first end thereof and slidably positionable within said sliding guide, said means for pivotally displacing said scissors arms comprising a first telescopically extendable member for effecting the displacement of said guide member within said sliding guide as said pairs of scissors arms are moved from the folded position to the lifting positions for thereby lifting said supporting frame, and a second telescopically extendable member for pivotally displacing said supporting frame relative to said first scissors arms.

4,067,246

AUTOMATIC CHANGE-SPEED TRANSMISSION MECHANISM

Francois Leorat, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Mar. 8, 1976, Ser. No. 664,669
Claims priority, application France, Mar. 7, 1975, 75.07139
Int. Cl.² F16H 3/08
U.S. Cl. 74—329 3 Claims



1. In an automatic change-speed transmission mechanism having two forward transmission ratios and one reverse transmission ratio, said mechanism further comprising an input shaft, a first bell-shaped clutch housing rigidly mounted on the input shaft, a first multi-plate clutch rotatably mounted within the first bell-shaped clutch housing on the input shaft and being hydraulically controlled by a first piston moveable in the first bell-shaped clutch housing, the first piston moving the first multi-plate clutch between a disengaged position and an engaged position in frictional engagement with portions of the first bell-shaped clutch housing, a first idle pinion mounted for free rotation on the input shaft and being connectably to the first multiplate clutch, a first fixed pinion rigidly mounted on the input shaft, an output shaft parallel to the input shaft, a second bell-shaped clutch housing rigidly mounted on the output shaft, a second multi-plate clutch rotatably mounted within the second bell-shaped clutch housing on the output shaft and being hydraulically controlled by means of a second piston moveably in the second bell-shaped clutch housing, the second piston moving the second multi-plate clutch between a disengaged position and an engaged position in frictional engagement with portions of the second bellshaped clutch housing, a second idle pinion connected to the second multi-plate clutch and mounted for free rotation on the output shaft in meshing engagement with the first fixed pinion, a second fixed pinion rigidly connected to the output shaft and being in meshing engagement with the first idle pinion, the first of the two forward transmission ratios being formed by the first idle pinion being connected to and rotated by the first multi-plate clutch in the engaged position and driving the second fixed pinion, the second of the two forward transmission ratios being formed by the first fixed pinion driving the second idle pinion with the second multi-plate clutch being in the engaged position and the first multi-plate clutch being in the disengaged position, the improvement wherein the distance between the axial centers of the input and output shafts is sufficient to allow positioning of a reverse gear driven pinion on the second bell-shaped housing and wherein a reverse driving pinion is connected to the first multi-plate clutch and slideably mounted on the input shaft for movement between a released position and an engaged position, in the engaged position the reverse

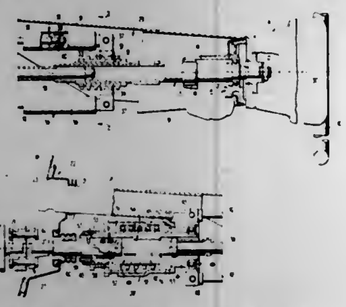
driving pinion connecting the first idle pinion to the first multi-plate clutch and in the released position the reverse driving pinion being in meshing engagement with the reverse gear driven pinion, the reverse transmission ratio being formed by the first multi-plate clutch being in the engaged position and rotating the reverse driving pinion thereby driving the reverse gear driven pinion through its meshing engagement with the reverse driving pinion in its released position.

4,067,247

STEERING MECHANISM WITH DERIVATIVE ACTION TIMER

Klaus Niemann, Weinstadt-Endersbach, and Helmut Wulf, Nelliagen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Dec. 30, 1975, Ser. No. 645,327
Claims priority, application Germany, Jan. 17, 1975, 2501752
Int. Cl.² B62D *1/20, 5/06*
U.S. Cl. 74—499 **29 Claims**



1. A steering mechanism with time-rate action for vehicles, in which the wheel deflection angle of the steered vehicle wheels is composed of an angle component dependent on the angle of the steering wheel deflection and of an angle component dependent on the angular velocity of the steering wheel deflection and which includes a first adjusting means operatively connected with the steerable vehicle wheels and having an adjusting path dependent on the wheel deflection angle, a second adjusting means operatively connected with the steering wheel and having an adjusting path dependent on the angle of the steering wheel deflection, and a third adjusting means operatively connected with the steering wheel by way of a means producing an adjusting magnitude dependent on the angular velocity of the steering wheel deflection and having an adjusting path dependent on said angular deflection, characterized in that said second adjusting means is gearingly connected without interconnection of elastic means with the steering wheel as also with the two other adjusting means by way of a summation transmission means.

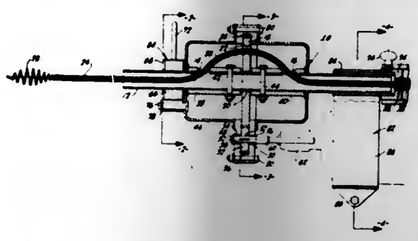
4,067,248

CABLE ROTATOR

Lawrence J. Lavagetto, 815 1st West St., No. 28, Sonoma, Calif.

Filed Aug. 9, 1976, Ser. No. 712,822
Int. Cl.² F16C *1/16*
U.S. Cl. 74—501 R **10 Claims**

1. A cable rotator comprising:
a. hollow member having a pair of spaced openings disposed in the wall thereof;
b. a collar providing a first and second opening therethrough, said hollow member passing through said collar's first opening and selectively grippingly engaging and slippingly engaging the sides of said collar's first opening, the cable passing through the interior of said hollow member with a portion of the cable disposed to the exterior of said hollow member through said pair of spaced openings,



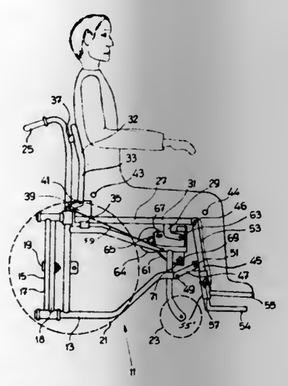
said exterior cable portion passing through said second opening in said collar;
c. rotating means for rotating with said collar.

4,067,249

RAISING CHAIR

Conrad R. Deucher, Uster, Switzerland, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 2, 1976, Ser. No. 692,071
Claims priority, application Switzerland, June 3, 1975, 7116/75
Int. Cl.² A61G *5/00*
U.S. Cl. 297—330 **13 Claims**



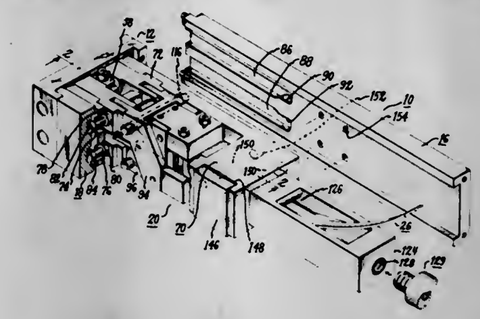
1. A raising chair comprising
a support frame (11);
a seat structure (27);
seat pivot means (63) pivotally connecting said support frame (11) and said seat structure (22) to pivot between a substantially horizontal attitude for supporting a patient in a seated position and a substantially vertical attitude upon raising the patient to a substantially erect position,
said seat pivot means (63) being located below the seating plane of said seat surface structure (27) and in the vicinity of the front edge of said seating plane of said seat surface structure (27) and offset rearwardly from the front edge of said surface structure (27);
a foot rest (45);
foot rest pivot means (46) pivotally connecting said seat surface structure (27) and said foot rest (45);
a seat back rest (32);
back rest pivot means (41) connecting said seat surface structure (27) and said back rest (32),
said back rest pivot means (41) being located above the seating plane of said seat surface structure (27) when the chair is in sitting position;
and a mechanism (61, 64, 63, 29) to rotate the seat surface structure (27) between substantially horizontal and vertical positions in which said seat is, respectively, in substantially horizontal and vertical attitude;
the pivot axes of said seat pivot means (63) and of the back-rest pivot means (41) being spaced from the front and plane of the seat surface structure (27) to position the respective pivot means relative to the hip and knee joints (43, 44) of a patient supported by the seat surface structure of the raising chair when in sitting position to cause substantially no relative motion between the seat surface structure (27) and the back rest (32), and the patient when said mechanism to rotate said seat surface structure is actuated to raise the chair and patient to erected position.

4,067,250

MECHANISM FOR STRIPPING INSULATION FROM WIRE

William S. Owen, Jr., Lenox, and George C. Lovejoy, Pittsfield, both of Mass., assignors to General Electric Company, Philadelphia, Pa.

Filed Feb. 2, 1976, Ser. No. 654,365
Int. Cl.² H02G *1/12*
U.S. Cl. 81—9.51 **9 Claims**



1. A wire stripping mechanism for stripping bonded insulation from an insulated wire, said mechanism comprising, at least one wire stripping knife said wire stripping knife being mounted in a knife carrier, a linkage device, said linkage device engaging said knife carrier and providing a first orthogonal movement of said at least one knife and including means to cause said knife to penetrate the insulation and the wire and an actuator device for moving said knife and knife carrier in a longitudinal direction for removing insulation and a thin sliver of metal from the insulated wire.

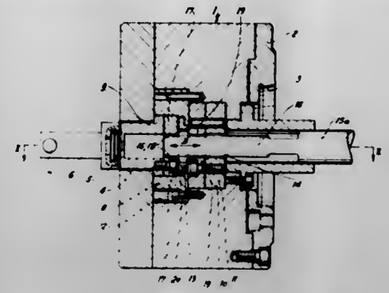
4,067,251

FACING AND INSIDE-TURNING HEAD

Otto Eckle, and Paul Winger, both of Loechgau, Germany, assignors to Komet Stahlhalter-und Werkzeugfabrik Robert Breuning GmbH, Besigheim, Germany

Filed Feb. 9, 1977, Ser. No. 767,166
Claims priority, application Germany, Mar. 4, 1976, 7606473
Int. Cl.² B23B *41/00, 51/00*
U.S. Cl. 82—1.2 **6 Claims**

1. Facing and inside-turning head comprising a supporting body to be fixed by its back to the spindle of a turning machine or the like, a slide shiftable radially at the front of the supporting body in a guide extending perpendicularly and symmetrically with respect to the axis of rotation, to which slide a tool holder can be fixed, and an adjusting rod slidable in the supporting body coaxially with the axis of rotation and the axial movement of which produces a radial movement of the slide via an interposed drive, comprising the improvement wherein between the back of the supporting body and the side guide another guide extending axially offset and parallel with respect to the slide guide is provided in which a counterweight corresponding substantially in its mass to the mass of the slide, including the tool holder and tool, is radially slidable, and wherein between the adjusting rod and counterweight another drive is provided which, on actuation of the adjusting rod,



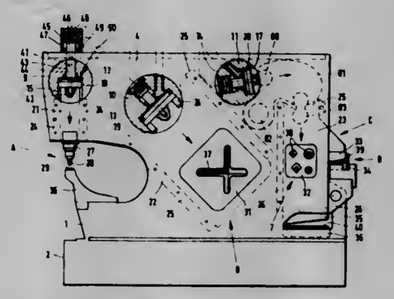
produces a radial movement of the counterweight of equal extent, but of opposite direction, with respect to the slide.

4,067,252

MACHINE TOOL WITH CYLINDRICAL ASSEMBLY UNITS

Rolf Peddinghaus, and Ludwig Regenbrecht, both of Gevelsberg, Germany, assignors to Rolf Peddinghaus, Gevelsberg, Germany

Filed June 3, 1976, Ser. No. 692,558
Claims priority, application Germany, June 6, 1975, 2525391
Int. Cl.² B26D *5/04, 5/12*
U.S. Cl. 83—571 **8 Claims**



1. A machine tool including a stand having tool slide mechanisms longitudinally displaceable relative thereto towards respective workpiece holders, said stand defining a plurality of bores extending therethrough transverse to the working direction of the tool slide mechanisms, and a substantially cylindrical assembly unit fitted with a push-fit in at least one of said bores, each said assembly unit including a working cylinder containing a working piston and a piston rod to be actuated by a pressure medium for positioning said piston rod mounted in the stand for moving its respective tool slide mechanism, whereby high shear forces relative to said stand can be sustained and torquing forces can be handled without difficulty.

4,067,253

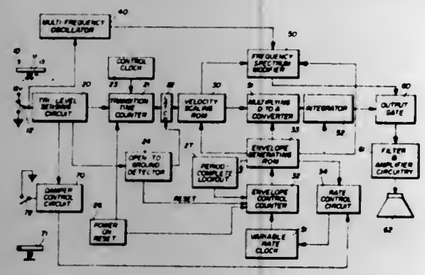
ELECTRONIC TONE-GENERATING SYSTEM

Robert W. Wheelwright, Town of Tonawanda, and Peter E. Solender, Williamsville, both of N.Y., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Apr. 2, 1976, Ser. No. 673,194
Int. Cl.² G10H *1/02, 5/00*
U.S. Cl. 84—1.1 **33 Claims**

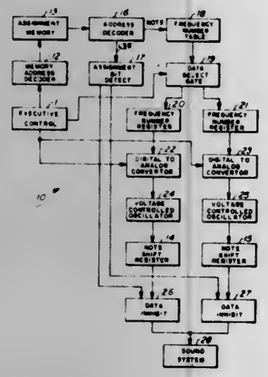
1. A tone-generating system for an electronic musical instrument of the percussion type wherein an audible tone is generated electronically in response to the manual actuation of the

system by the player of the instrument, with said tone having a predetermined frequency spectrum and an envelope characteristic which varies in accordance with the intensity of the manual actuation by which the player of the instrument actuates the tone, said system comprising: manualy actuable means for initiating generation of said tone; detector means coupled to said tone initiating means and responsive to the actuation of said tone initiating means for developing a control signal indicative of the intensity with which the tone initiating means is manually actuated; means coupled to said detector means and responsive to said control signal for generating a digital scaling signal representative of the variations in amplitude of said initiated tone with respect to the intensity with which said tone initiating means is actuated; oscillator means coupled to said



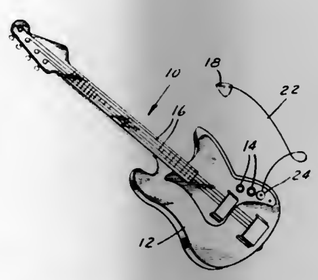
tone initiating means and responsive to the actuation of said tone initiating means for generating an oscillatory signal having said predetermined frequency spectrum; clock means for generating a timing signal; means coupled to said clock means and responsive to said timing signal for generating a digital envelope signal; converter means coupled to said digital scaling signal generating means and to said digital envelope signal genertng means to form a composite analog signal; output means coupled to said oscillator means and to said converter means for modulating said oscillatory signal with said composite signal to produce an electrical signal representative of said initiated tone; and an electromechanical transducer coupled to said output means and responsive to said electrical signal for converting said electrical signal into an audible tone.

4,067,254
FREQUENCY NUMBER CONTROLLED CLOCKS
Ralph Deutsch, and Leslie Joseph Deutsch, both of Sherman Oaks, Calif., assignors to Deutsch Research Laboratories, Ltd., Sherman Oaks, Calif.
Filed Nov. 24, 1975, Ser. No. 634,533
Int. Cl.² G10H *1/00*
U.S. Cl. 84—101 **19 Claims**



1. In an electronic musical instrument of a type wherein the tone generator utilizes a plurality of voltage controlled oscillators, the fundamental frequency of the generated tones being proportional to analog frequency control voltages applied to said oscillators, the improvement comprising;
assignment memory means for writing assignment data to be thereafter read out,
decoding means responsive to said assignment data read out from said assignment memory means,
memory means for storing frequency data words,
addressing means responsive to said decoding means whereby said frequency data words are caused to be read from said memory means,
conversion means whereby data read out from said memory means is converted into analog frequency control voltages,
oscillator means responsive to said analog frequency control voltages whereby oscillator frequencies are caused to vary frequency responsive to analog frequency control voltages, and
inhibit means responsive to said decoding means whereby in response to said assignment data output signals from said electronic musical instrument is inhibited for unassigned oscillator means.

4,067,255
RETRACTABLE GUITAR PICK
Ron Camaioni, 17778 Foothill, Fontana, Calif. 92335
Filed Dec. 6, 1976, Ser. No. 748,051
Int. Cl.² G10D *3/16*
U.S. Cl. 84—322 **6 Claims**

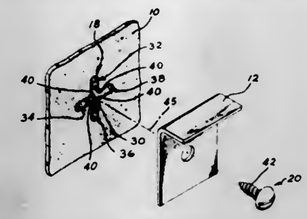


1. A retractable guitar pick device in combination with a guitar having a main body portion to which said device is mounted thereto, wherein said device comprises:
a guitar pick having an aperture disposed therein;
an elongated cable attached to said pick through said hole;
a circular housing having a hole therein to receive said cable therethrough;
retracting means concentrically arranged within said housing, whereby said cable is attached thereto;
a releasable locking means mounted within said retracting means;
a central pin affixed to and positioned in said housing to rotatably receive thereon said retracting means; and
a take-up spring connected between said retracting means and said central pin.

4,067,256
FASTENER ANCHOR FORMED IN THERMOPLASTIC SHEET
Roger C. Turner, Arlington, Va., assignor to General Electric Company, Louisville, Ky.
Filed Oct. 7, 1976, Ser. No. 730,311
Int. Cl.² F16B *17/00, 37/00*
U.S. Cl. 85—32 V **7 Claims**

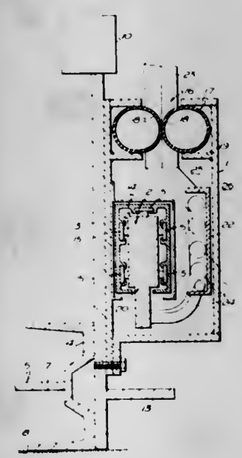
1. A recess-type fastener formed in a plastic component vacuum-formed from a thermoplastic sheet:
said fastener integrally formed in said component;

said fastener adapted for receiving a male fastener and comprising:
a central portion, said central portion including a central recess in the interior thereof; and
a gusset-like fold extending from said fastener central



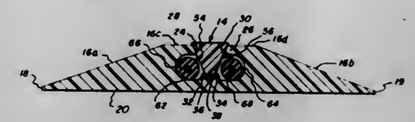
portion to a portion of the plastic sheet surrounding said central portion, said gusset-like fold forming a side recess in communication with said central recess and distributing a load exerted by the male fastener over a large area of the plastic component surrounding said recess.

4,067,257
ELECTRICAL CONDUIT
Gerald Richard Oldham Pentith, Barnsley, England, assignor to Pitcraft Limited, Barnsley, England
Filed May 6, 1975, Ser. No. 574,948
Claims priority, application United Kingdom, May 21, 1974, 22541/74; Aug. 6, 1974, 34537/74
Int. Cl.² B60M *1/34*
U.S. Cl. 104—140 **18 Claims**



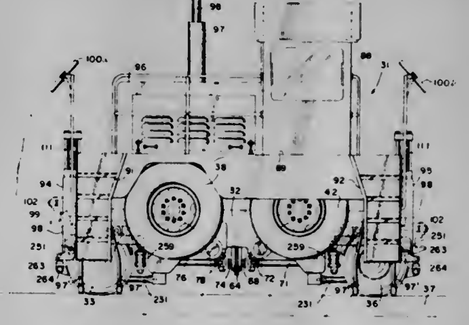
1. An apparatus for supplying electrical power in a potentially explosive atmosphere to a mining machine having an electrical pick-up means for receiving electrical power, comprising:
an elongate conduit means;
an elongate, electrical conductor located in said conduit means;
said conduit means having a longitudinal slot formed therein to provide access to said conductor by the mining machine pick-up means;
flexible sealing means extending longitudinally of said conduit means and normally enclosing said slot; and
means for creating a substantially uniform, substantially constant internal pressure throughout said conduit means, said internal pressure being greater than the air pressure outside said conduit means to prevent ingress of air into said conduit means through said seal means.

4,067,258
CROSSOVER UNIT UTILIZING SLOTTED PAD AND WEDGE-SHAPED CLOSURE STRIP
William J. Valeri, Pengilly, Minn., assignor to Irathane Systems Incorporated, Hibbing, Minn.
Filed Aug. 30, 1976, Ser. No. 718,478
Int. Cl.² E01B *7/28*
U.S. Cl. 104—275 **9 Claims**



1. A crossover unit comprising an elongated pad of resilient material having top, bottom and inclined surfaces, said pad having a longitudinally directed slot therein extending downwardly from said top surface and laterally toward one side of said pad to provide an integral lip having a generally vertical free edge with the lateral portion of said slot residing beneath said lip, and an insert received in said slot, said insert engaging the free edge of said lip, a portion of the pad at the opposite side of said slot, as well as a portion of the pad at the bottom of said slot, the top of the insert being adjacent the top surface of said pad and said insert reducing the downward deformation of said lip due to a load on the top surface of the unit so that an elongated member such as a cable can be accommodated in the lateral portion of said slot.

4,067,259
CONVERTIBLE RAIL-HIGHWAY TRACTION VEHICLE
Victor H. Ames, and Marshall V. Hartelius, both of Midlothian, Ill., assignors to Whiting Corporation, Harvey, Ill.
Continuation-in-part of Ser. No. 437,283, Jan. 28, 1975, Pat. No. 3,884,154. This application Feb. 24, 1975, Ser. No. 552,711
Int. Cl.² B61C *11/00, 13/00, 15/00*; B61G *5/00*
U.S. Cl. 105—26 R **32 Claims**



1. A rail car moving vehicle adapted for travel along a railway track on rail wheels and for transferring weight from a rail car coupled thereto to said vehicle for increasing the traction between the rail wheels and the railway track, said vehicle comprising: a frame; a plurality of rail wheels mounted to said frame; spring means mounted between said frame and said rail wheels; shock absorber means including a hydraulic cylinder and piston also mounted between said frame and wheels and operatively associated with said spring means for dampening the action of said spring means; a coupler mounted to said vehicle and adapted for mating draft and lifting engagement with a coupler on a rail car to be moved by said vehicle; and hydraulic means for selectively raising and lowering said vehicle coupler to effect the transfer of weight from a rail car coupled thereto, said hydraulic means including a weight transfer cylinder and piston assembly operatively connected to

said frame and vehicle coupler to selectively raise and lower said coupler with respect to said rail wheels, means for producing a source of high pressure fluid, means for selectively charging high pressure fluid to said weight transfer cylinder to apply a weight transfer force to the piston in said weight transfer cylinder, means for selectively charging high pressure fluid to the hydraulic cylinder of said shock absorber means to apply a force to the piston in the shock absorber means which counteracts said weight transfer force; whereby, spring depression induced by the transfer of weight from a coupled rail car to said vehicle is at least partially overcome to maintain said spring means in an active condition during the travel of said vehicle along a railway track while in a weight transfer condition.

4,067,260

RACK AND PINION AND ADHESION DRIVE LOCOMOTIVE

Emil Finsterwald, Winterthur, Switzerland, assignor to Schweizerische Lokomotiv-und Maschinenfabrik, Winterthur, Switzerland

Filed Dec. 29, 1975, Ser. No. 644,955

Claims priority, application Switzerland, Jan. 14, 1975, 410/75

Int. Cl.² B61B *13/02*; B61C *11/04, 15/08, 15/14*

U.S. Cl. 105—29 R **4 Claims**



1. A transmission for a railway vehicle having a drive motor, a gear wheel rack and pinion drive and an adhesion wheel drive, said transmission including

a differential gear drivingly connected with said motor, said differential gear having two output drive positions;

a first reduction drive having a first set of gears connected to said adhesion wheel drive and to a first drive position of said differential gear;

a second reduction drive having a second set of gears connected to said gear wheel drive and to a second drive position of said differential gear, said gears of said second set of gears being independently driven from said gears of said first set of gears; and

a clutch for selectively coupling said first and said second sets of gears together for simultaneous rotation at said first and said second drive positions.

4,067,261

DAMPING RAILWAY VEHICLE SUSPENSION

Herbert Scheffel, Pretoria; South Africa, assignor to South African Inventions Development Corporation, Pretoria, Transvaal, South Africa

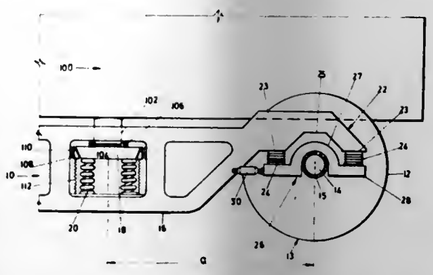
Continuation-in-part of Ser. No. 415,232, Nov. 12, 1973, abandoned, and a continuation-in-part of Ser. No. 565,888, April 7, 1975. This application July 2, 1976, Ser. No. 702,304

Claims priority, application South Africa, Nov. 10, 1972, 72/7978; Nov. 10, 1972, 72/7979; Oct. 9, 1973, 73/7884; Oct. 9, 1973, 73/7885; Apr. 5, 1974, 74/2192; Apr. 22, 1974, 74/2546; Nov. 11, 1974, 74/5770

Int. Cl.² B61F *3/10, 5/14, 5/24, 5/30*

U.S. Cl. 105—157 R **14 Claims**

1. A railway truck comprising at least two live wheelsets each having a pair of spaced wheels solidly mounted on an axle; axle supported bearing means adjacent each wheel; load-bearing means for distributing truck load forces to each bearing means; the truck being characterized by each wheelset being self-steering in that its wheels each have a profiled tread of high effective tread conicity to obtain a differential effect between the wheel diameters of the outer and inner wheels on curved track; elastic constraint means; supportingly positioned between the load-bearing means and each axle supported bearing means, and providing elastic constraints to relative lateral and yawing movement between each wheelset and the load bearing means wherein the forces of elastic constraint on each wheelset are lower than the steering forces generated by the differential effect between the outer and inner wheels on curved track which increases the tendency for hunting oscillations of the wheelsets to occur while allowing both wheels to



carry out substantially rolling movement as the truck traverses track curves; and wheelset coupling means interconnecting the wheelsets directly to link their turning movements in opposite sense to avoid interfering with the self-steering ability of each wheelset on track curves and to cause pivoting of either wheelset to produce substantial opposite pivoting of the other wheelset as the truck traverses straight and curved track, thereby the coupling means provides oscillation transmission between the wheelsets for damping of the increased hunting tendency of the wheelsets.

4,067,262

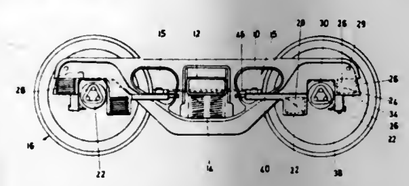
RAILWAY TRUCK

Herbert Scheffel, Pretoria, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

Filed Apr. 7, 1975, Ser. No. 565,888

Int. Cl.² B61F *3/08, 5/30, 5/38, 5/50*

U.S. Cl. 105—168 **17 Claims**



1. A railway truck having a longitudinal axis in its direction of travel and including:

a. at least one load-bearing member;

b. two live wheelsets each having profiled wheel treads whereby steering forces are generated on curved track;

c. a pair of axle bearings for each wheelset;

d. an adaptor seated on each bearing, each adaptor being fixed laterally and longitudinally with respect to its bearing;

e. resilient means elastically suspending each adaptor laterally and longitudinally to a load-bearing member and imposing constraints against yawing movement of the wheelsets relatively to the load-bearing member which are lower than the steering forces generated on the wheelsets on curved track whereby each wheelset is self-steering; and

f. means interconnecting the wheelsets to couple yawing movements of the wheelsets in opposite senses thereby to counteract hunting of the wheelsets without interferring with their natural self-steering ability, the interconnecting means comprising a first extension member secured to an adaptor on the first wheelset, an identical second extension member secured to a diagonally opposite adaptor on the second wheelset and a rod extending diagonally across the truck pivotally connected to the free ends of the first and second extension members.

3. A railway truck having a longitudinal axis in its direction of travel and including:

a. at least one load-bearing member;

b. a pair of live axle wheelsets each equipped with a pair of bearings and each having profiled wheel treads;

c. an adaptor for each bearing;

d. load-transmitting means suspending each adaptor to a load-bearing member for low yaw constraint on the wheelsets relatively to the load-bearing member, whereby the low yaw constraint in combination with the profile of the wheel treads makes the wheelsets self-steering; and

e. means interconnecting the wheelsets to couple their yawing movements in opposite senses thereby to counteract hunting of the wheelsets, the interconnecting means comprising a pair of extension members for each wheelset, each extension member being secured to an adaptor; a cross-beam connected between the extension members on each wheel-set to form with the extension members a sub-frame on the wheelset; and two rods which cross one another pivotally connected between the sub-frames of the wheelsets.

14. A radial railway truck including a pair of live axle wheelsets each equipped with a pair of axle bearings and each having profiled wheel treads whereby steering forces are generated on curved track; an adaptor for each axle bearing, each adaptor comprising a web seated on the bearing and a pair of supports depending from the web and straddling the bearing with each support presenting an upwardly facing seat for a load-transmitting member; a pair of side-frames each of which is formed with a central opening having a base wall forming a seat for supporting a bolster; load-transmitting membes supporting each side-frame on the seats of each adaptor for low yaw constraint relative movement between the wheelsets and the side-frames whereby the wheelsets can assume substantially radial positions during curving; a bolster formed with two diagonally extending clearance spaces; spring means supporting the bolster on the seats of the side-frames; an extension member extending in clearance relation to the side-frames from each adaptor towards the bolster; and cross-anchor means connected to the extension members of diagonally opposed adaptors, the cross-anchors passing freely through the diagonally extending clearance spaces in the bolster.

4,067,263

CARGO SYSTEM WITH RESTRAINT BAR

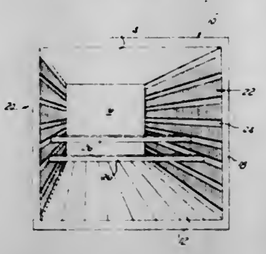
Faisal A. Naffa, Sterling Heights, Mich., and Rudolph Messerschmidt, Alexandria, Va., assignors to Brooks & Perkins, Incorporated, Southfield, Mich., by said Faisal A. Naffa and The United States of America as represented by the Secretary of the Army, Washington, D.C., by said Rudolph Messerschmidt

Filed July 19, 1976, Ser. No. 706,501

Int. Cl.² B61D *17/08*; B60P *7/14*

U.S. Cl. 105—499 **27 Claims**

1. A cargo carrier having a floor, a top wall, opposed side walls, and vertical posts at the corners thereof, a pair of preassembled panels permanently secured to the side walls and connected to said posts, each of said panels comprising rigid top and bottom caps extending horizontally for the full length of each panel, and rigid end caps extending vertically at the ends of each panel, said caps being rigidly connected together at their ends to form a rigid rectangular frame, a panel skin of corrugated metal entirely covering the space between said caps, the corrugations of said skin extending vertically to define a multiplicity of vertical elongated channels and interposed ribs exposed at the inboard sides of the panel, a multiplicity of belt rails extending horizontally between said end caps and secured thereto in spaced apart relation at the inboard side of said panel, said rails having latch receiving openings in



registration with said channels, and cargo restraint bars dimensioned to extend across the space between said panels and having latch means releasably received in opposed openings in said belt rails.

4,067,264

LOCOMOTIVE CAB RUNNING BOARDS

Tom Ensink, Velsen-Zuid, Netherlands, assignor to Hoogovens Ijmuiden B.V., Ijmuiden, Netherlands

Filed Jan. 15, 1976, Ser. No. 649,318

Claims priority, application Netherlands, Jan. 30, 1975, 7501080

Int. Cl.² B61C *5/00, 17/04*; B61D *49/00*; B61J *3/00*

U.S. Cl. 105—456 **3 Claims**

1. A rail-borne shunting locomotive which is adapted for radio control having,

a supporting deck with two opposite ends and two opposite sides, at least one step at each end on each side,

at each end of said deck is an open platform permitting walking movement of the driver from one said step to the other said step, which steps are at a lower level than the platform,

at each end of said deck is spaced inwardly from the end than said open platform, a shelter cabin for the driver, extending between the opposite sides of the deck while between the said two shelter cabins is a power plant compartment, and

at each side of the deck is a gangway extending alongside the power plant compartment from one said cabin to the other said cabin, each said cabin having doorways that are directly accessible to the driver from the respective open platform and from each of the said gangways, to enable movement between said open platforms, gangways and floors of said cabins which are all on the same level.

4,067,265

DISPLAY RACK

James C. Watson, 6 Crestview Drive, Westboro, Mass. 01581

Filed Aug. 27, 1976, Ser. No. 718,181

Int. Cl.² A47F *5/12*

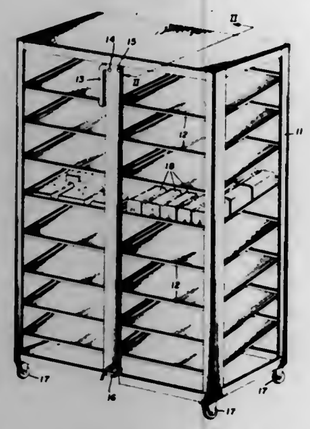
U.S. Cl. 108—7 **6 Claims**

1. Display rack, comprising

a. a frame having a plurality of supporting wheels,

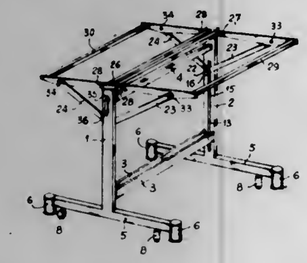
b. a series of tray supports mounted one above the other on the frame for tilting movement,

c. a vertical actuating bar to which each of the tray supports is pivotally attached,
d. an actuating handle pivotally mounted on and lying entirely within the frame and connected to the actuating bar to move it from an upper position in which all of the tray



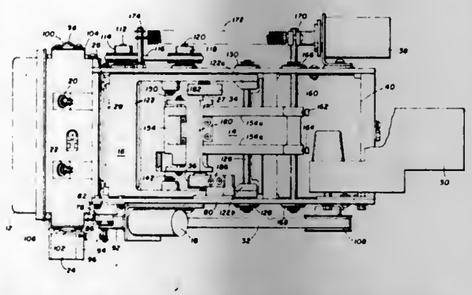
supports are inclined, the actuating bar and handle being located at the side of the frame at which the lower edges of the tray supports are located, and
e. a brake foot directly attached to the lowermost tray support and movable with it into contact with the floor when the actuating bar is in the said lower position.

4,067,266
FOLDING TABLE
Jean Lafargue, 21, rue Chevilly, 94262, France
Filed Feb. 9, 1977, Ser. No. 766,954
Claims priority, application France, May 20, 1976, 76.15214; Oct. 27, 1976, 76.32333
Int. Cl.² A47B 3/00
U.S. Cl. 108—112 13 Claims



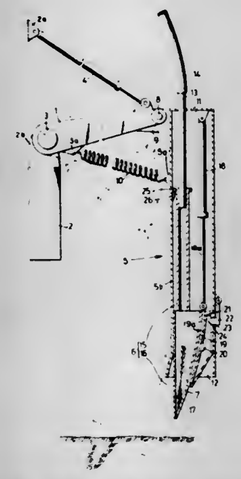
1. A folding table comprising:
a pair of spaced apart legs, said legs being oriented generally vertically and being substantially parallel to one another, said legs each including a tubular member, said tubular members being provided with elongated slots, the slots in said legs being in facing relationship;
tabletop means;
base means, said base means being affixed to said legs adjacent the lower ends thereof, said base means including a pair of substantially parallel U-shaped members, each of said base means U-shaped members being affixed intermediate its length to the lower end of a tubular member of one of said legs, the openings of said U-shaped base means members facing downwardly, said base means further including a rigid foot extending downwardly from each end of each of said U-shaped members;
a plurality of casters;
a bar mounted within each of said base means U-shaped members, said bars being oriented generally parallelly with said U-shaped members and having said casters affixed thereto;
a connecting rod extending upwardly from each of said bars into the tubular members of said legs;
slide means movable within each of said legs, said slide means each including a projection, said slide means contacting the upper ends of said connecting rods when said tabletop means is moved to the stored position whereby said bars and the casters affixed thereto are urged downwardly to thereby raise said feet from the surface on which the table is supported;
a pivot pin affixed to each of said slide means, said pivot pins respectively extending through and moving along said facing slots in the tubular members of said legs;
means joining said tabletop means to said legs, said joining means including at least a first strut extending between each of said pivot pins and said tabletop means, said struts being pivotally attached to said pins and tabletop means whereby said tabletop means may pivot between stored and use positions with movement of said slide means; and
latch means pivotally mounted within each of said legs, said latch means cooperating with said slide means projections to lock said slide means in a first position commensurate with said tabletop means being in the use position.

4,067,267
DEPOSITORY SYSTEM
Richard S. McLaughlin, Dallas; Walter Plaski, Irving, and Robert F. Swartzendruber, Plano, all of Tex., assignors to Docutel Corporation, Dallas, Tex.
Filed Oct. 21, 1974, Ser. No. 516,592
Int. Cl.² G07G 5/00
U.S. Cl. 109—24.1 7 Claims



1. An automatic document depository responsive to externally generated signals, comprising in combination:
a storage bin;
an entry gate to said depository, said entry gate including actuating means responsive to externally generated signals to actuate said gate from a closed and locked position to an open position for receiving a deposited document;
a pinch and pressure roller transport receiving a deposited document at said entry gate for movement of the document to a print station displaced therefrom and for movement from the print station to said storage bin positioned at one end of said transport;
sensor means responsive to a document moving on said pinch and pressure roller transport to generate a signal when the document has been positioned at the print station to actuate the entry gate from an open position to a closed and locked position,
means for printing during a print cycle identifying data on the document at the print station in response to the generated signal;
a security door at the one end of said transport for said storage bin that receives a document from the print station;
means responsive to a signal generated at the end of the print cycle to unlock and open said security door; and
means for sensing the deposit of a document in the storage bin to generate a signal to close and lock said security door.

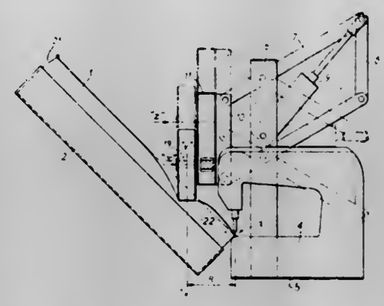
4,067,268
DIGGING AND PLANTING MACHINE
Stig-Gunnar Lofgren, and Bo Gunnar Ekeborg, both of Jarved, Sweden, assignors to Mooch Domsjo Aktiebolag, Ornskoldsvik, Sweden
Filed Apr. 26, 1976, Ser. No. 680,270
Claims priority, application Sweden, Apr. 29, 1975, 7504949
Int. Cl.² A01C 11/00
U.S. Cl. 111—2 14 Claims



1. A digging and planting machine comprising, in combination, a vehicle, and, carried on the vehicle, a tubular digging and planting tool having an open digging and planting tip end for digging a hole and conveying a plant to the hole; means for compacting earth about the plant after it has been deposited in the hole; means for moving each of the digging and planting tool and the compacting means separately, between ground-elevated and ground-contacting positions; and means for moving the digging and planting tool and the compacting means together between ground-elevated and ground-contacting positions; the digging and planting tool being reciprocably mounted on the compacting means for movement towards and away from a ground-contacting position for digging a hole for a plant to be transferred from the machine, and the compacting means being reciprocably mounted on the vehicle, for movement towards and away from a ground-containing position for compacting earth about the plant simultaneously with withdrawal of the digging and planting tool.

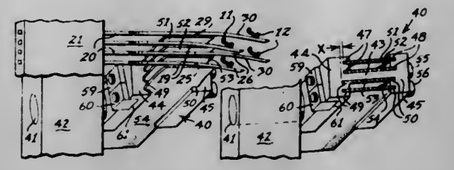
4,067,269
TAPE EDGE CLOSING MACHINE
Peter Frederick Walter Fanghanel, Baldock, England, assignor to P. Fanghanel & Co. Ltd., United Kingdom
Filed June 23, 1976, Ser. No. 698,982
Claims priority, application United Kingdom, June 30, 1975, 27519/75
Int. Cl.² D05B 11/00
U.S. Cl. 112—3 R 9 Claims

1. A mattress tape edge closing machine comprising a sewing machine movable relative to a mattress on a carrier therefor; means for holding the mattress stationary relative to the carrier; a de-tensioning apparatus carried with the sewing machine, a first cylindrical wheel of said apparatus in advance of the sewing head of the machine and means for selectively moving said first wheel into and out of an operative position in



which it depresses the upper surface of a mattress on the carrier against the natural resiliency of the mattress so as to relieve tension in an edge part of said upper surface immediately in advance of the sewing head while the mattress remains stationary relative to the carrier.

4,067,270
NARROW GAUGE CUT PILE TUFTING APPARATUS
Hoyt E. Short, Chattanooga, Tenn., assignor to Tuftco Corporation, Chattanooga, Tenn.
Filed Aug. 4, 1976, Ser. No. 711,492
Int. Cl.² D05C 15/22
U.S. Cl. 112—79 R 13 Claims



1. In a cut pile tufting machine having a plurality of needles, a looper cooperating with each of said needles, and a knife cooperating with each of said loopers for cutting yarns on said loopers to form cut pile, knife support means comprising:
a. a reciprocal knife bar having a rocking axis substantially parallel to the transverse alignment of said needles,
b. at least one knife block, said knife block having a longitudinal axis,
c. means securing said knife block to said knife bar at a predetermined pitch angle,
d. a plurality of opposed pairs of recesses formed longitudinally in said knife block, each pair of recesses being adapted to slidably receive one of said knives at said pitch angle,
e. at least one pair of said recesses being staggered relative to another pair of said recesses to support said knives in substantial alignment parallel to the rocking axis of said hook bar.

3. In a tufting machine having means for supporting a base fabric for longitudinal movement in a feeding direction through said machine, a narrow gauge tufting apparatus comprising:
a. a first row of uniform first needles movable in reciprocal axial paths for introducing yarns through the base fabric to form first loops, said first needles being uniformly spaced transversely of said longitudinal feeding direction,
b. a second row of uniform second needles movable in reciprocal axial paths for introducing yarns through the base

fabric to form second loops, said second needles being uniformly spaced transversely of said longitudinal feeding direction,

c. said second needles being uniformly and transversely staggered relative to said first needles so that the transverse distance between adjacent longitudinal vertical planes containing the axes of said first and second needles is a uniform narrow gauge,

d. said uniform narrow gauge being less than the transverse dimension of each of said uniform needles,

e. said first and second rows of needles being longitudinally spaced apart a predetermined distance substantially greater than said narrow gauge,

f. a first hook for each first needle, said first hook having a throat and a bill projecting from said throat,

g. a second hook for each second needle, said second hook having a throat and a bill projecting from the throat of said second hook,

h. reciprocal hook bar means extending transversely of said feeding direction adjacent said fabric supporting means,

i. means fixing each hook to said hook bar means so that the bill of each of said hooks extends longitudinally in a hook path intercepting the axial path of its corresponding needle,

j. said hook bar means being reciprocable to move each said bill between an inoperative position spaced from and projecting toward its corresponding needle and an operative position engaging said corresponding needle,

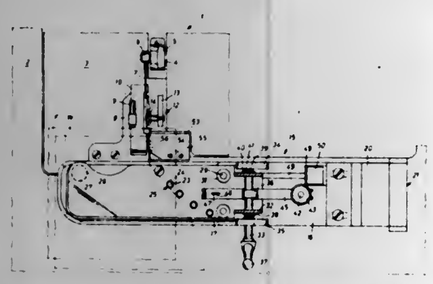
k. each of said bills having a uniform narrow width substantially less than said gauge and being relatively more flexible than its corresponding needle, so that said bill flexes transversely of its corresponding needle and said longitudinal feeding direction as said bill engages its corresponding needle and moves toward its operative position.

4,067,271

WORKPIECE GUIDING DEVICE FOR SEWING MACHINES

Eugen Angele, Kaiserslautern, and Erich Willenbacher, Karlsruhe, both of Germany, assignors to Pfaff Industriemaschinen GmbH, Germany

Filed June 15, 1976, Ser. No. 696,397
Claims priority, application Germany, July 24, 1975, 7523600
Int. Cl.² D05B *35/10*
U.S. Cl. 112—153 **13 Claims**



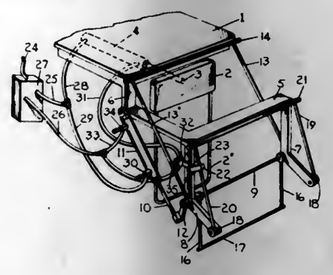
1. A guiding device for sewing machines having means for feeding cloth workpieces into association with a moving needle in a stitch forming area for effecting edge parallel seams, comprising a support table, a bottom plate supported on said support table, a top plate overlying said bottom plate and defining a workpiece layer passageway therebetween and having a pressure point at a spaced location from the stitch forming area, means defining a ruler between said top and bottom plates in said workpiece layer passageway and extending laterally at an acute angle to a line extending in the workpiece feed direction, spring means bearing downwardly on said top plate, and adjustment means carried on said table and operatively associated with said spring means and said top plate to vary both the effect of biasing force thereof and the spacing between said top and bottom plates.

4,067,272

DEVICE FOR STACKING ARTICLES OF CLOTHING IN A SEWING UNIT

Nerino Marforio, Milan, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Sept. 29, 1976, Ser. No. 727,876
Claims priority, application Italy, Oct. 2, 1975, 27871/75
Int. Cl.² D05B *33/00*
U.S. Cl. 112—121.29 **4 Claims**



1. A garment stacking device for a sewing unit having a work surface along which a garment is advanced as it is sewn and from which it descends for reception by said stacking device, the improvement comprising:

a. a fixed stacking bar (5) attached in spaced relation to one end of said work surface;

b. a plate (2) mounted for reciprocating movement on the underside of the work surface for engaging and moving a garment descending from the latter into engagement with said stacking bar;

c. means (14) interconnected with said stacking bar and movable between positions for engaging and folding that portion of a garment extending from the work surface over said stacking bar;

d. clamping means (21) operatively connected to said stacking bar for clamping a garment thereto after presentation by said folding means; and

e. thrust means disposed beneath said fixed stacking bar and operatively connected to said folding means for moving the ends of the stacked garments furthest removed from said fixed stacking bar to a position spaced from the garment descent zone so as to maintain this zone clear during the descent of each successive garment.

4,067,273

DEVICE FOR CUTTING AND INSERTING A STRIP BENEATH THE PRESSER FOOT OF A SEWING MACHINE

Nerino Marforio, Milan, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Sept. 29, 1976, Ser. No. 727,875
Claims priority, application Italy, Oct. 3, 1975, 27914/75
Int. Cl.² D05B *37/04, 35/06*
U.S. Cl. 112—130 **5 Claims**

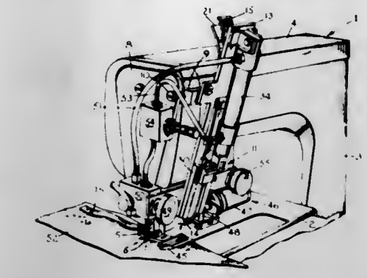
1. A device for cutting and inserting a strip beneath the presser foot of a sewing machine for attachment during the stitching operation to a workpiece, said device comprising:

a. a guide bar (14) slidably mounted on the sewing machine for guiding strip material from its source to the presser foot;

b. means operatively connected to said guide bar for moving it between an operating position in close proximity to the presser foot and an inactive position spaced therefrom;

c. means carried and actuated by said moving means for engaging and advancing the strip material while said guide bar is in its operating position to effect movement thereof to a position beneath the presser foot; and

d. cutting means attached to the sewing machine and mov-



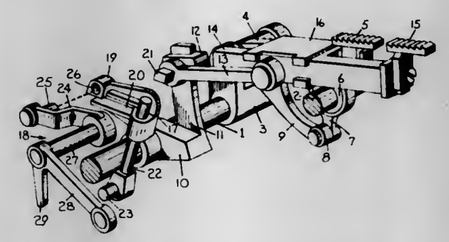
able to a position in operative association with the presser foot and guide bar for selectively cutting the strip material extending therebetween when said guide bar (14) is in its inactive position.

4,067,274

FEED ADJUSTING DEVICE FOR SEWING MACHINES

Nerino Marforio, Milan, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Oct. 29, 1976, Ser. No. 736,892
Claims priority, application Italy, Nov. 7, 1975, 29054/75
Int. Cl.² D05B *27/02*
U.S. Cl. 112—209 **3 Claims**



1. A feed adjusting device for sewing machines in which the feed dog bar is actuated by a drive link interconnecting it with a slider movably mounted on a guide bar having an arm oscillatably driven by the machine's feed advance shaft, said feed adjusting device comprising:

a. a forked slider (17) operatively connected to the slider;

b. a control means (18) connected to said forked slider (17) for effecting movement of the slider on the guide bar during movement thereof by the feed advance shaft; and

c. support means (22, 33) attached to said forked slider for positioning the latter so as to maintain the axis (30) thereof substantially coincident with the path of travel of the slider.

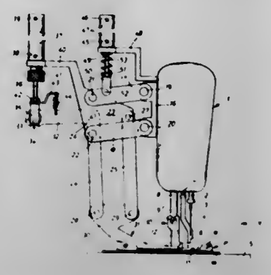
4,067,275

DEVICE FOR SEWING MACHINES FOR DISPLACING SEWN MATERIAL FOR A SHORT PERIOD OF TIME

Erich Willenbacher, Karlsruhe, Germany, assignor to Pfaff Industriemaschinen GmbH, Germany

Filed Dec. 7, 1976, Ser. No. 748,195
Claims priority, application Germany, Dec. 11, 1975, 7539495[U]
Int. Cl.² D05B *27/04*
U.S. Cl. 112—212 **7 Claims**

1. A device for displacing sewn material for use with a sewing machine, comprising a shifting foot, a linkage connected to said foot, means for supporting said linkage adjacent the sewing machine, foot lifting drive means connected to said linkage to raise and lower said foot to move it out of and into engagement with the material, foot shifting drive means connected to said linkage to shift said foot relative to the material feed direction, said foot shifting drive means including a mov-



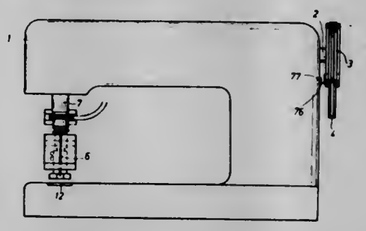
able member, a lost motion connection between said movable member and said linkage for displacing said linkage with said shifting foot while permitting said foot to give way and adjustable stop means for limiting the displacement of said shifting foot.

4,067,276

CONTROL DEVICE FOR A SEWING MACHINE

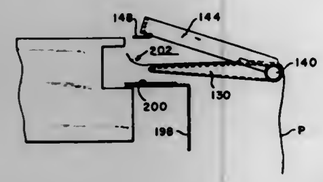
Oskar Mohilo, Lorch; Karl H. Kessler, Esslingen-Sulzgries, and Friedrich Wilhelm Stumpf, Kaiserslautern, all of Germany, assignors to Pfaff Industriemaschinen GmbH; Oskar Mohilo and Karl H. Kessler, all of, Germany

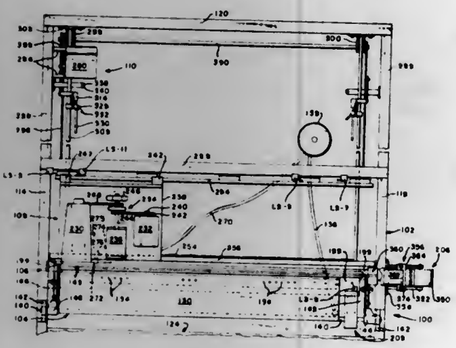
Filed Oct. 15, 1976, Ser. No. 732,891
Claims priority, application Germany, Nov. 14, 1975, 2551133
Int. Cl.² D05B *69/18, 71/04*
U.S. Cl. 112—220 **15 Claims**



1. A control device, for a sewing machine having a sewing needle which, during sewing operation, is exposed to the influence of heat generated by friction between the sewing needle and the material being sewn, a motor control controlling the sewing speed of the sewing needle, a presser foot structure including a presser bar and a presser foot with a sole, and a needle bar mounting the sewing needle, said control device comprising, in combination, at least one reference needle mounted at a location spaced from said sewing needle; respective measuring members operable to determine the respective temperatures of said sewing and reference needles; a differential comparator circuit connected to said measuring members and providing, as an output, the differential voltage of said measuring members; and a signal generator operatively associated with said sewing needle and producing an output signal responsive to reciprocation of said sewing needle; said signal generator controlling connection of the output of said differential comparator circuit to the input of said motor control to control the sewing speed of said sewing needle automatically in a manner such that the temperature of said sewing needle does not exceed an adjustable predetermined value.

4,067,277
AUTOMATIC BUCKRAM ATTACHMENT MACHINE FOR DRAPERIES AND PROCESS
Anthony T. Solomon, Reidsville, and William B. Crawford, Greensboro, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed Mar. 12, 1976, Ser. No. 666,400
Int. Cl.² D05B 1/00
U.S. Cl. 112—262 16 Claims





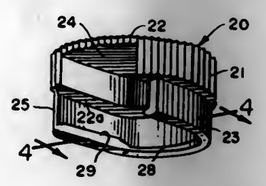
1. A process for sewing a strip of buckram along the top edge of a drapery panel comprising the steps of:
loading the top portion of a drapery panel onto a pivotal support member;
moving the drapery panel into contact with a strip of buckram;
clamping the panel and buckram together along the top portion of the panel
seaming the panel and buckram together by moving a sewing machine across the top portion of the panel while simultaneously operating said sewing machine;
severing the buckram and thread adjacent the side of the panel where seaming was completed;
returning the sewing machine to a home position and simultaneously supplying buckram material for the next panel;
unclamping the sewn panel, doffing the panel previously loaded;
and automatically controlling the sequence of process steps after the loading of the panel.

4,067,278
METHOD OF DECORATING A FABRIC AND THE DECORATED FABRIC
Eugene B. Davis, 1100 E. 10th St., Los Angeles, Calif. 90021
Filed Nov. 19, 1976, Ser. No. 743,486
Int. Cl.² D05B 1/00
U.S. Cl. 112—262 2 Claims

1. A method of producing a decorative fabric comprising the steps of providing a base fabric, cutting an elongate strip of fabric for application to the base fabric, securing the elongate strip of fabric to the base fabric with a line of stitching closely adjacent to one side edge of the strip of fabric but spaced inwardly therefrom, and washing the fabric in a washing machine to fray the edges of the strip outside of the line of stitching.



4,067,279
CRIMPER FOR BOTTLE CLOSURES
Steven W. Lester, Alhambra; John F. Cromelin, Yorba Linda, and James M. Davenport, Van Nuys, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed June 3, 1976, Ser. No. 692,390
Int. Cl.² B63B 9/08
U.S. Cl. 113—1 D 12 Claims

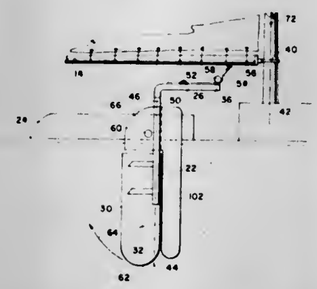


1. A device for crimping inwardly the cylindrical skirt of an outer protective replacement cap for a conventional solution bottle, said bottle having a neck of predetermined outside diameter and said skirt being of predetermined height and diameter, wherein said device comprises a body having top and side walls defining a cavity open at its bottom and one side thereof, said cavity being of a width adapted for closely and rotatably receiving the replacement cap for a solution bottle, an inturned flange along the bottom of said side wall defining a reduced bottom opening for said cavity, said reduced opening having a width adapted to receive the neck of such solution bottle and substantially less than the width of said cavity, and a crimping shoulder extending inwardly into said cavity along a portion of said side wall above the level of said flange, said shoulder being adapted to engage the lower portion of the skirt of such replacement cap for crimping the same inwardly as said device is rotated relative to the solution bottle.

4,067,280
SAILBOAT CONTROL APPARATUS
Albert Serfess, 123 Bank St., Grass Valley, Calif. 95945
Filed Aug. 3, 1976, Ser. No. 711,133
Int. Cl.² B63B 41/00
U.S. Cl. 114—128 1 Claim

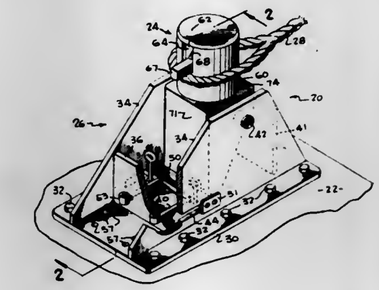
1. In a sailing vessel, a centerboard, a mainmast, a mainsail boom, said mainsail boom extending radially outwardly from said mainmast and aftermost therefrom, the improvement comprising a centerboard pivot means for pivotably rotating said centerboard about a line, said line extending substantially parallel to the longitudinal axis of said mainmast, said line being disposed along the fore and aft centerline of said sailing vessel and aft of said longitudinal axis of said mainmast, linkage means for pivotably linking the angular position of the trailing edge of said centerboard to said mainsail boom, said trailing edge being disposed in an outboard direction opposite to the outboard direction assumed at a sternmost point of said mainsail boom when said mainsail boom is skew to said fore and aft centerline of said sailing vessel, said linkage means including a flexible adjustable linkage element between said centerboard and said mainsail boom for adjusting said angular position and for permitting said mainsail boom to assume diverse positions

along the height of said mainmast, said centerboard pivot means including a centerboard pivot axle and a centerboard pivot arm and disengagable joining means for selectively connecting one end of said pivot arm to the uppermost end of said centerboard pivot axle, a flexible line element, the other end of said pivot arm releasably engaged to a point along the length of said flexible line element, one end of said flexible line element being disposed in releasable engagement with said mainsail boom at a joining point intermediate said mainmast and said



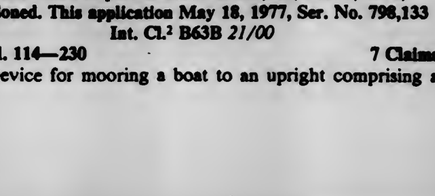
stermost point, said joining point being substantially intermediate said longitudinal axis of said mainmast and said line when said mainsail boom extends along said fore and aft centerline, a quick release cleat, a snap ring, a snap, said other end of said pivot arm being fixedly secured to said quick release cleat, a portion of the length of said flexible line element releasably engaged with said quick release cleat, one end of said flexible line element fixedly secured to said snap, said snap being removably engaged with said snap ring, said snap ring being fixedly secured to said mainsail boom at said joining point.

4,067,281
SAFETY RELEASE BITT
Arnold V. Walker, Rte. 1, Box 1144, Pascagoula, Miss. 39567, and Harris H. Rose, Sr., 2117 Guardian St., Gretna, La. 70053
Filed May 23, 1977, Ser. No. 799,358
Int. Cl.² B63B 21/06
U.S. Cl. 114–218 14 Claims



1. A safety release bitt comprising a fixedly positioned bitt base, a bitt member, means supporting said bitt member on said bitt base for pivotal movement about a horizontal axis between a first position in which the bitt member is oriented with its axis extending in a vertical direction and a second position in which the bitt member is oriented with its axis extending in a horizontal direction, a cross pin mounted on an upper portion of said bitt member when said bitt member is in said first position, means supporting said cross pin for movement between an extended position in which the cross pin extends outwardly of said bitt member and a retracted position in which said cross pin is positioned inwardly of the outer surface of said bitt member and cross pin control means for automatically moving said cross pin from its extended position to its retracted position in response to movement of said bitt from its first position to its second position.

4,067,282
RELEASABLE AND RETRIEVABLE MOORING SYSTEM
David C. Guinn; Archie K. Haggard, and John P. Thomas, all of P.O. Box 1126, Houston, Tex. 77001
Filed Oct. 4, 1976, Ser. No. 729,492
Int. Cl.² B63B 21/50
U.S. Cl. 114—230 8 Claims

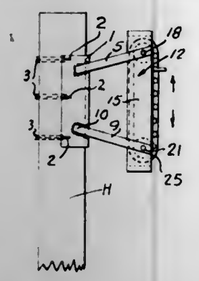


5. A releasable and retrievable mooring system for a vessel comprising,
at least one anchor,
an anchor chain connected to the anchor,
an explosive link in each anchor chain remote from the anchor arranged to separate the anchor chain upon detonation,
an acoustic receiver secured to the explosive link,
means operable from the vessel to send an acoustic signal to the acoustic receiver effective to detonate the explosive link,
a marker anchor buoy arranged to be on the surface at least after detonation of the explosive link,
a line extending from the marker anchor buoy to the anchor chain adjacent to and downstream of the explosive link, and
a stopper on the chain adjacent to and upstream from the link,
whereby on sending the acoustic signal the anchor chain is severed into a free portion upstream from the link and an anchor portion downstream from the link, thereby freeing the vessel from the anchor, the free portion can be hauled in and the stopper arranged to prevent the free portion's end from falling into its chain locker, the end of the anchor portion adjacent the link can be retrieved and hauled in for connection to the free end by the line.

4,067,283
BOAT MOORING DEVICE
Robert A. Warwick, 5128 Chalkpoint Road, West River, Md. 20881
Continuation-in-part of Ser. No. 654,982, Feb. 3, 1976, abandoned. This application May 18, 1977, Ser. No. 798,133
Int. Cl.² B63B 21/00
U.S. Cl. 114—230 7 Claims

1. Device for mooring a boat to an upright comprising a

plate, means for attaching said plate to an upright, arms being fixedly attached to and extending from said plate an open side casing being fixedly supported by said arms lengthwise of said plate, a plurality of spaced apart axles extending between sides



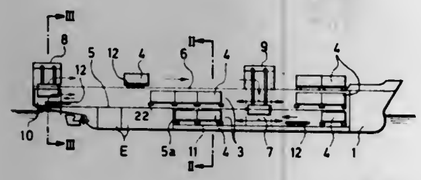
of said casing, annular members being rotatably mounted on said axles, a flexible member extending around said annular members, and means being connected to said flexible member and capable of attachment to the boat whereby said connected means would ride up and down with the boat.

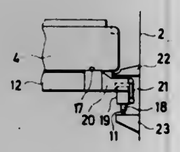
4,067,284

BARGE-CARRYING SHIP

Nishino Yasushi, Akashi; Adachi Saburo, Nishinomiya; Karashima Koji, Kobe, and Iwai Ken, Yokohama, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1976, Ser. No. 656,163
Claims priority, application Japan, Mar. 26, 1975, 50-35331
Int. Cl.² B63B *35/40*
U.S. Cl. 114—260 **8 Claims**





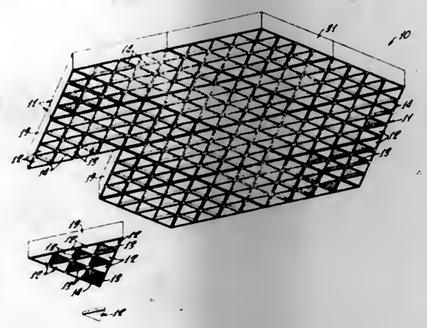
1. A barge carrying ship comprising a hull having at least an upper deck, sides and a unitary open hold having a bottom deck, at least one opening provided at the stern of said hull for access to said hold, first lifting means located at the stern of said hull for moving barges to and from said deck and said hold, rail pairs laid from said stern lifting means in the fore and aft direction on the upper deck, the bottom deck and along the inner walls of the sides of said hull, truck means located above and within said hull movable along said rail pairs for transporting said barges, said truck means comprising a pair of side bogies and transversely connecting frame extending beneath said barges, jack means located on said side bogies for raising and lowering said trucks and the barges thereon and stationary supports spaced above said rail pairs and protruding inwardly between said truck means and the barges thereon to support said barges in stowed accommodation upon lowering of said jack means.

4,067,285

MODULAR FLOATING STRUCTURE

Robert M. Jones, 532 E. Las Palmas, Fullerton, Calif. 92631, and Don E. Johnson, 256 N. Fraser West, Mesa, Ariz. 85203

Continuation-in-part of Ser. No. 564,419, April 2, 1975, Pat. No. 3,951,085, which is a continuation of Ser. No. 385,689, Aug. 6, 1973, abandoned. This application Apr. 14, 1976, Ser. No. 676,756
Int. Cl.² B63B *35/44*
U.S. Cl. 114—266 **7 Claims**



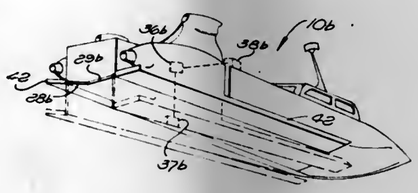
1. A buoyant structure comprising
a plurality of polygonal modules grouped in adjacency,
each of said modules including a plurality of upstanding walls,
said walls of said modules being positioned in a plurality of aligned rows extending in different directions,
said rows intersecting at the ends of said walls,
means defining openings through said walls such that said openings in each of said rows are in substantial axial alignment,
and elongated tension members in said openings and extending the lengths of said rows for bearing upon said walls at the ends of said rows and holding said modules together,
said elongated tension members where said rows so intersect being at different levels so that said tension members do not interfere with each other.

4,067,286

HYDRO-SKI CRAFT WITH LONGITUDINAL FLAPS

Ernest G. Stout, Glendale, and Francis L. Thornburg, Canoga Park, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Feb. 18, 1975, Ser. No. 550,564
Int. Cl.² B63B *1/20*
U.S. Cl. 114—283 **22 Claims**



1. A hydro-ski craft comprising:

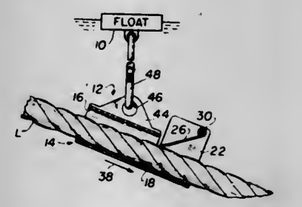
a hull;
powered means for advancing said hull in a predetermined forward direction along a body of water;
means carried by said hull forming a downwardly facing planing surface adapted to engage and plane along the upper surface of said body of water;
an auxiliary planing element having a planing surface and mounted for movement between an active position in which said planing surface thereof is located to contact and plane along the upper surface of a body of water and supplement the load supporting effect of said first mentioned planing surface, and an upwardly retracted position; and
a spray dam attached to and movable with said auxiliary planing element between a retracted position and an active position in which it is located to block upward movement of water when said auxiliary planing element is in its retracted position.

4,067,287

ANCHOR FLOAT ADAPTER

Dominick A. Sabella, 84 Adams St., East Rockaway, N.Y. 11518

Filed Nov. 24, 1976, Ser. No. 744,503
Int. Cl.² B63B *21/46*
U.S. Cl. 114—299 **15 Claims**



12. An anchor float adapter for positioning about and removal from an anchor line comprising:
an elongate body having an essentially uniformly hollow interior along the length thereof and a linear opening defined in the elongate wall thereof through which an anchor line may pass as a unit for insertion into the hollow interior of said body and for removal therefrom;
a section operable on said body to open said opening for the insertion of an anchor line into the interior of said body and operable to close said opening to prevent the removal of an anchor line from said body interior;
tabs on said body outward of said hollow interior; and engaging means on said tabs and extending into said hollow interior for engaging an anchor line therein to prevent relative movement of the anchor line and said body in one direction and to permit relative movement thereof in another direction.

4,067,288

METHOD OF DETECTING PUNCTURE OF A PNEUMATIC TIRE

Shigeru Saito, Higashi-Yamato; Masahiko Suzuki, Kodaira, and Takeshi Sato, Higashi-Yamato, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 16, 1976, Ser. No. 742,324
Claims priority, application Japan, Nov. 25, 1975, 50-140900
Int. Cl.² B60C *23/04*
U.S. Cl. 116—34 R **3 Claims**

1. A method of detecting puncture of a pneumatic tire having an inner tube provided with an air inlet valve and incorporated within the tire, a wheel rim united with said tire and inner tube and provided with an alarm means and a valve hole engaged with said air inlet valve, bead portions of said tire and said inner tube being hermetically sealed to said wheel rim, comprising the steps of introducing, when said tire is punctured, that inflation pressure which is leaked into a normally closed region between an outer surface of said inner tube and an inner surface of said tire into a normally closed space between said bead portion, said inner tube and said rim by contraction of said inner tube, and operating said alarm means by the action of said introduced pressure in said space.

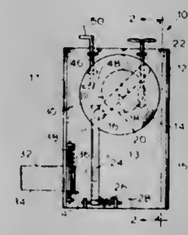


4,067,289

PORTABLE MECHANICAL ALARM FOR DOORS, WINDOWS AND THE LIKE

Curtis B. Joyner, Jr., 112 Shore Acres, Mount Dora, Fla. 32757

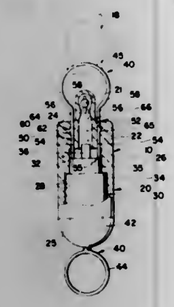
Filed Aug. 18, 1976, Ser. No. 715,308
Int. Cl.² G08B *13/08*
U.S. Cl. 116—77 **7 Claims**



1. A portable alarm for selective, temporary attachment adjacent a closure such as a door, window, or the like, and useful for indicating unauthorized entry into said closure, comprising in combination:
a housing;
a bell casing mounted in said housing;
a clacker arm rotatably mounted within said casing and adapted to strike the inner periphery of said casing responsive to rotation thereof to create an audible signal;
means for rotating said clacker arm;
a trigger arm rotatably mounted with an end thereof adjacent a side of said housing and having the other end thereof extending into said casing and adjacent said clacker arm;
first biasing means for biasing said other end of said trigger arm in a first direction against said clacker arm to prevent rotation thereof;
an actuator having a lever arm and a pressure plate, said actuator pivotably mounted along an edge of said housing such that said lever arm extends outside said housing, and with said pressure plate dimensioned so as to cooperate with said lever arm to move said trigger arm in a second direction opposing said first direction responsive to movement of said lever arm;
second biasing means for biasing said actuator plate contact with said trigger arm; and wherein
a force caused by movement of the closure against said lever arm substantially in said first direction causes said lever arm to overcome said second and first biasing means, respectively, and forces said other end of said trigger arm

out of engagement with said clacker arm, thereby effecting said audible signal.

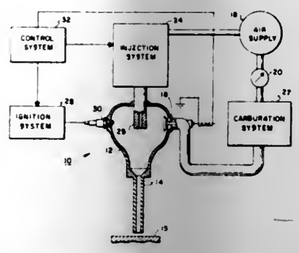
4,067,290
PURSE THEFT ALARM
Allen W. Hartley, 74 Erdman Ave., Princeton, N.J. 08540
Filed Feb. 10, 1977, Ser. No. 767,240
Int. Cl.² A45C *13/20*; G08B *13/14*
U.S. Cl. 116—99 **7 Claims**



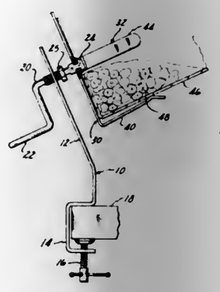
1. A theft alarm device adapted to be utilized with a lady's purse having a strap assoicated therewith, said device comprising:
a whistle;
a housing means connected to said whistle;
a valve mounted within said housing means;
an aerosol container connected to an operatable by said valve;
coupling means connected to said device for securing same between said purse and said purse strap; and,
activating means operatively assoicated with said coupling means and said container so as to obtain a release of said valve such that the aerosol gas activates said whistle to produce said audible sound when a predetermined force is applied to said lady's purse, said activating means including:
at least one restraining means for engaging said valve and restraining same in the normally closed position thereof, said restraining member being connected to one of said coupling means; and,
shear means for releasing said restraining means in response to said predetermined force.

4,067,291
COATING SYSTEM USING TAPE ENCAPSULATED PARTICULATE COATING MATERIAL
John Allen Park, Houston, Tex., assignor to H. B. Zachry Company, San Antonio, Tex.
Division of Ser. No. 458,898, April 8, 1974, abandoned. This application Jan. 30, 1976, Ser. No. 654,014
Int. Cl.² B05B *7/00*; B05C *5/00*
U.S. Cl. 118—7 **32 Claims**

1. The system for coating a work piece with particulate coating material comprising:
means includng a chamber for producing hot gases within the chamber, the chamber having an open outlet for directing the hot gases against the work piece,
an elongated tape having a predetermined quantity of particulate coating material encapsulated therein per unit length of the tape, and
stripping means outside the chamber for stripping the particulate material from the tape outside the chamber and then pneumatically transporting and injecting the particulate material into the chamber whereby the particulate materials will be heated by the gases in the chamber and accelerated by the gases escaping through the outlet and impacted against the surface of the work piece.

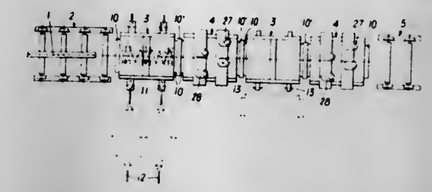


4,067,292
DEVICE FOR COATING POPCORN
Aaron M. Friedman, and Jean J. Friedman, both of 27501 Kingsgate Way, Apt. 1, Farmington, Mich. 48024
Continuation of Ser. No. 250,603, May 5, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,368
Int. Cl.² A23G *3/26*
U.S. Cl. 118—19 **3 Claims**



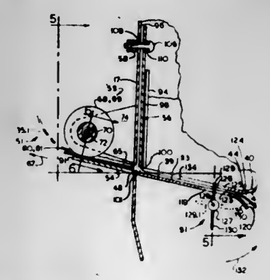
1. A device suitable for coating popcorn in a rotating vessel, said device comprising (a) an axle positioned to form an acute angle with a horizontal plane; (b) means for rotating said axle; (c) a plurality of prongs releasable secured to said axle for rotation therewith, said prongs each having a portion lying generally parallel to the axis of rotation of said axle, and said prong portions being spaced radially from each other and adapted to grip said vessel therebetween; (d) wherein there are four prongs formed from two U-shaped members releasably secured to said axle with the bases of said members positioned at right angles to each other; (e) said axle being generally cylindrical and is flattened at one end thereof, said end being provided with oppositely disposed radial indentations; (f) each of said bases of said U-shaped members being provided with a slot to permit said members to pass over said flattened end of said axle; and (g) said device further comprising a spring pressure-exerting spacer member comprising two legs and a recess therebetween, wherein said spacer member is adapted to be slidably fixed into said indentations to straddle said axle, to press resiliently inwardly against said U-shaped members, and to press resiliently outwardly against said flattened end of said axle.

4,067,293
PLANT FOR SURFACE TREATING, IN PARTICULAR PICKLING AND PHOSPHATIZING, METALLIC WORK PIECES
Walter Probst, Vienna-Mauer, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria
Filed July 7, 1976, Ser. No. 703,129
Claims priority, application Austria, July 11, 1975, 5362/75
Int. Cl.² B05C *5/00, 15/00*
U.S. Cl. 118—73 **12 Claims**



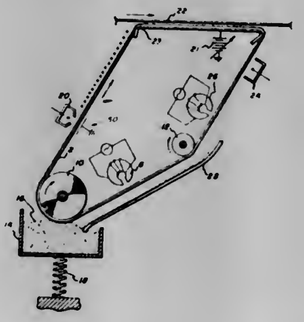
1. In a plant for surface treating, in particular pickling and phosphatizing metallic work pieces having a plurality of treatment chambers arranged one behind the other, tightly connected to one another and provided with internal equipment, such as working tools, supporting elements and conveying rollers for transportation of the work pieces within the treatment chambers, the improvement wherein there are at least three chambers, each chamber having releasable connecting means at both ends for releasable connection to adjoining chambers, said connecting means of all chambers being substantially identical and all chambers being of equal length so that all chambers are interchangeable with one another, and means for individual displacement of each of the treatment chambers transversely of the direction of transportation of the work pieces to enable at least part of the internal equipment of a chamber to be removed from the chamber in a longitudinal direction parallel to the direction of transportation of the work pieces, and to enable the chambers to be replaced or interchanged.

4,067,294
DRY WALL ADHESIVE TAPE APPLICATOR
Edward Matechuk, 1061 Thomas Ave., Coquitlam, B. C., Canada (V3K 2K5)
Filed Nov. 4, 1976, Ser. No. 738,644
Int. Cl. B05c *3/18*
U.S. Cl. 118—415 **12 Claims**



1. A tape adhesive dispenser having a hopper to contain adhesive, the hopper having tape inlet and outlet openings generally adjacent a lower wall of the hopper, and roll supporting means to carry a roll of tape, a run of tape being adapted to pass between the openings and along an upper surface of the lower wall so as to be exposed to adhesive in the hopper, so that adhesive is carried on the tape as the tape passes outwards from the hopper to the outlet opening, the dispenser being further characterized by outfeed guide means including:
i. an outfeed platform extending outwards from the outlet opening and having spaced edge guide means to sandwich opposite edges of the tape between an upper surface of the platform and the guide means as the tape passes along the upper surface of the platform, each edge guide means being an overhanging strip extending substantially along an edge of the platform, the strips having inner edges spaced apart at outer ends thereof to provide clearance therebetween,
ii. a pair of relatively thin, parallel, spaced discs mounted for rotation above the platform within planes aligned with direction of feed of tape along the platform so that lowermost portions of the rims of the discs are spaced closely from the platform and within the clearance between the outer ends of the edge guide means to permit the tape to pass between the discs and the platform whilst maintaining the tape generally adjacent the platform, the discs being spaced apart from each other adjacent to an area of contact with the tape so that adhesive is retained on the tape as it passes beneath the tape restrainer, and spaced inwardly of the inner edges of the strips to restrain the tape adjacent the central portion thereof.

4,067,295
MAGNETIC MICROFIELD DONOR SYSTEM
Delmer G. Parker, Irondequoit; Lawrence J. Fraser, Rochester, and Joseph L. Scaletta, Henrietta, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 556,249, March 7, 1975, abandoned. This application July 16, 1976, Ser. No. 705,974
Int. Cl.² G03G *15/08, 15/09*
U.S. Cl. 118—653 **4 Claims**



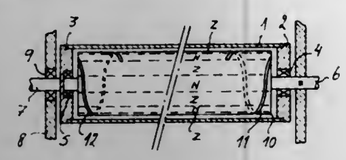
1. An apparatus for developing a latent electrostatic image on a receptor member by directing toner material thereto, comprising:
a magnetically recordable donor member having a path of travel spaced apart from said receptor member by a distance of from about 0.005 to about 0.010 inches; means for magnetically recording a multiplicity of magnetic poles on said magnetically recordable donor member, adjacent magnetic poles being spaced apart on the order of about 0.010 inches and of opposite magnetic polarity; means for contacting the magnetically recorded donor member with magnetic toner to form thereon an about 1 to about 2 mils thick uniform layer of magnetic toner on said magnetically recorded donor member; and means for substantially uniformly maintaining the separation distance of from about 0.005 to about 0.010 inches between said receptor member and said donor member to define a development zone.

4,067,296

MAGNETIC ROLLER

Bernardus Wilhelmus L. M. Sessink, Venlo, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Aug. 18, 1976, Ser. No. 715,639
Claims priority, application Netherlands, Aug. 20, 1975, 7509870
Int. Cl.² B05B 5/02
U.S. Cl. 118—658 16 Claims



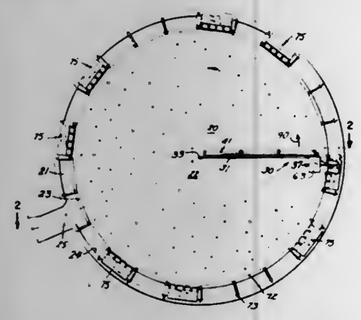
1. In a magnetic roller comprising a rotatable diamagnetic cylinder and magnet means inside the cylinder for generating a magnetic field throughout an elongate region extending axially of the cylinder over at least a part of its circumference, the improvement which comprises means associated with said magnet means for forming in said magnetic field near each extremity of said region a spirally extending bandlike field range in which the field stength at any point deviates from the field strength at any point lying on the same descriptive in the part of said region between the bandlike ranges.

4,067,297

SWINE FINISHING BARN

Terry D. Johnson, 444 N. Lake Drive, Watertown, S. Dak. 57201

Filed Aug. 2, 1976, Ser. No. 711,074
Int. Cl.² A01K 1/00
U.S. Cl. 119—16 9 Claims



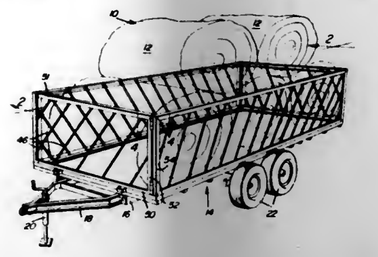
1. An animal enclosure comprising, in combination:
a substantially circular animal supporting surface;
a trench surrounding said surface;
cleaning apparatus for said surface mounted for pivotal movement around the center thereof, including
a. a radially extending scraper for engaging said surface to release and gather waste material deposited thereon,
b. radially extending conveyor means mounted in alignment with said surface and said scraper and operable to convey only outwardly, toward said trench, material gathered by said scraper, and
c. motor means for causing pivotal movement of said apparatus and operation of said conveyor;
and means retaining animals on said surface within said trench while enabling radial discharge of waste material into said trench.

4,067,298

HAY BALE HAULER AND FEEDER

John B. Jones, Nashville, and Robert W. Upton, Pulaski, both of Tenn., assignors to Four Star, Inc., College Grove, Tenn.

Filed Oct. 7, 1975, Ser. No. 620,362
Int. Cl.² A01K 5/00
U.S. Cl. 119—60 1 Claim



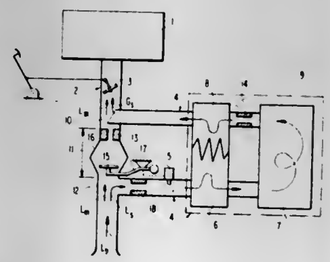
1. A hauler and feeder adapted to receive a plurality of large cylindrical hay bales from a bale loading device, haul the bales to a feeding area and support the bales while cattle consume the hay, said hauler and feeder comprising a wheeled platform, tongue means connected to the platform to enable the hauler and feeder to be towed to a desired site, and a peripheral upstanding side member on said platform, said side member including a plurality of spaced, parallel bars with the space between the bars being sufficient to enable passage of the heads of cattle for access to the hay, said bars being slanted at a small angle from vertical to enable entry of the head with little restraint so that the bars are positioned alongside the neck of the cattle when feeding, said slanted bars engaging the upper poriton of the neck and adjacent portion of the rear of the head of cattle when the cattle raise their heads and move outwardly from a normal eating position adjacent the lower portion of the hay thus tending to retain the head of cattle inwardly of the bars when the cattle are chewing and swallowing thereby reducing hay loss caused by cattle pulling hay from the hay bales on the platform to a position outwardly of the periphery of the platform while feeding and dropping some hay from their mouths onto the ground, with the width of the platform being generally equal to the length of the hay bales oriented transversely of the platform whereby upper hay bales in a stack will lower toward the platform as the lower hay bales are consumed by the cattle, said platform being of rectangular configuration with the tongue means being disposed at only one end thereof, leveling jack means attached to said tongue means for supporting the tongue means when not attached to a towing vehicle for supporting the platform so that it is substantially level from end to end, said side member including parallel side portions and parallel end portions with the side portions and end portions being perpendicular to each other and rigid from end to end, means detachably supporting the side member from the platform to enable the side member to be removed for use of the platform as a utility trailer, said side member including a one-piece lower rail and a one-piece upper rail oriented in vertically spaced and aligned relation, the ends of the upper and lower rails being rigidly interconnected by vertical rails, means detachably connecting the ends of the side portions and end portions of the side member to enable assembly and disassembly of the portions of the side member, said wheeled platform including a tandem wheel assembly adjacent the center of the length of the platform, said tandem wheel assembly including a pair of tandem wheels at each side of the platform with the pair of wheels at each side of the platform being rotatably supported from a walking beam pivotally supported from the platform for rocking movement about a transverse axis to uniformly distribute the weight of the platform and hay bales to the tandem wheels, said means detachably connecting the side member to the platform including a plurality of depending pins rigid with the lower rail on each of the portions of the side member, said platform including a plurality of sockets removably receiving said pins, said lower rails being disposed against the platform and generally oriented in alignment with the outer upper edge of the tandem wheels whereby cattle can gain access to the hay by inserting their heads between any pair of adjacent bars throughout the periphery of the platform, said lower rails of the side member including an upwardly extending flange along the outer edge and throughtout the length therof for retaining hay.

4,067,299

SPLIT-GAS PRODUCTION FOR INTERNAL COMBUSTION ENGINE

Klaus Lindenmaier, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Sept. 17, 1976, Ser. No. 724,347
Claims priority, application Germany, Sept. 25, 1975, 2542681
Int. Cl.² F02B 43/08; F23N 1/00; C10J 3/00
U.S. Cl. 123—3 33 Claims



9. An apparatus for continuously producing a charge-gas mixture for the operation of an internal combustion engine, comprising means for partially oxidizing liquid hydrocarbons within a reactor means into a combustible gas mixture under shortage of air including preheating means for preheating a first partial air quantity flow prior to entry thereof into the reactor means, means for admixing liquid hydrocarbons to said first partial air quantity flow at a predetermined ratio below the stoichiometric ratio, means for cooling off the hot gas mixture formed in the reactor means by giving off at least a considerable portion of its heat to the first partial air quantity flow, means for mixing the thus-cooled partial air quantity flow at an at least stoichiometrically approximately constant mixture ratio with a second partial air quantity flow, and means for feeding the thus obtained mixture to the internal combustion engine, characterized by measuring means continuously measuring as regards quantity, the second partial air quantity flow, metering means connected to said measuring means for metering the supply of the liquid hydrocarbons as a function of the magnitude of the measured quantity flow, and throttle means for throttling the quantity flow of the gas-mixture formed by the reactor means in relatively hot condition.

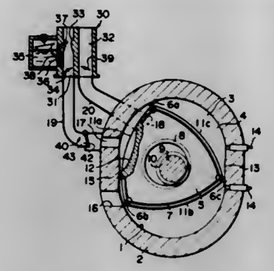
4,067,300

ROTARY PISTON ENGINE

Toshiyuki Kono, Toyoake, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed June 19, 1975, Ser. No. 588,503
Claims priority, application Japan, Feb. 25, 1975, 50-23333
Int. Cl.² F02B 53/04
U.S. Cl. 123—8.13 2 Claims

1. A rotary piston engine comprising:
a casing composed of a rotor housing which has a trochoidal inner peripheral surface and side housings which close opposite ends of said rotor housing;
a polygonal rotor disposed in said casing and adapted to rotate eccentrically therein;
said polygonal rotor containing apex portions which slide over said trochoidal inner peripheral surface;
said casing being provided with a first intake port which opens to said trochoidal inner peripheral surface and a second intake port which opens to the inner surface of said side housing at a position advanced from said frist intake port as seen in the rotational direction of the rotor;
supply means and passage means for supplying a fuel-air mixture to said first intake port;
means for supplying only air to said second intake port;
a check valve provided in said passage means, said check valve being adapted to permit a flow through said passage means from said fuel-air mixture supply means toward said first intake port and to prevent a flow through said passage means in the opposite direction;
a throttle valve provided in said fuel-air mixture supply means and a linkage mechanism operationally interconnecting said check valve with said throttle valve; and
said linkage mechanism being adapted to forcibly open said check valve when said throttle valve is opened beyond a predetermined limit.

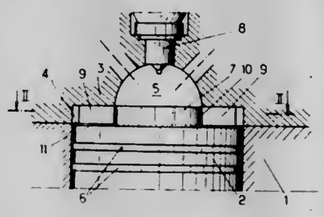


4,067,301

TWO-STROKE ENGINE

Philippe Jarry, Sevres, France, assignor to Le Moteur Moderne, Boulogne-Billancourt, France

Filed Feb. 18, 1976, Ser. No. 658,857
Int. Cl.² F02B 41/00, 3/00, 23/00
U.S. Cl. 123—26 4 Claims



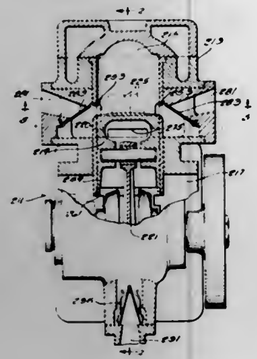
1. A two-stroke engine comprising:
a cylinder;
a piston movable in the cylinder;
a cylinder head including a combustion chamber having a cross-sectional area smaller than the cylinder, the combustion chamber including means for the introduction of fuel mixture directly therein;
a ventilation chamber formed in the cylinder head around the combustion chamber and opening directly into both the cylinder and the combustion chamber, the ventilation chamber forming an impeller surface; and
a circular flange formed on the head of the piston and coaxial therewith, the flange having a radius substantially less than that of the piston progressively closing the opening of the ventilation chamber into the combustion chamber as the piston approaches top dead center.

4,067,302

TWO-STROKE INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATION THEREOF

Josef Ehrlich, Ashridge, near Berkhemsted, England, assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 579,808, May 22, 1975. This application Feb. 20, 1976, Ser. No. 659,736
Int. Cl.[2] F02B *33/04*
U.S. Cl. 123—73 AA 17 Claims



1. A method of operating an internal combustion engine including a combustion chamber, a piston movable relative to the combustion chamber between top dead center and bottom dead center positions and relative to first, second, and third positions respectively spaced from top dead center position at respectively greater distances, a source of fuel at a relatively high pressure, a transfer chamber, and means for supplying fresh air to the transfer chamber, said method including the steps of supplying fresh air to the transfer chamber during piston travel between top dead center position and the first position, thereafter isolating the air introduced into the transfer chamber during piston movement from the first position to the second position, subsequently establishing communication between the transfer chamber and the combustion chamber during piston travel between the second position and bottom dead center position so as to permit flow of the air supplied to the transfer chamber into the combustion chamber from the transfer chamber, and thereafter establishing communication between the transfer chamber and the source of fuel during piston travel between the third position and bottom dead center position so as to permit flow of fuel into the combustion chamber through the transfer chamber from the fuel source.

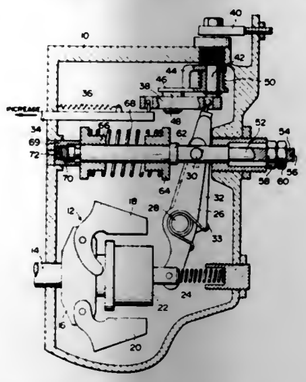
4,067,303

FUEL INJECTION PUMP GOVERNOR

Hachiro Aoki, Higashi Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1975, Ser. No. 642,258
Claims priority, application Japan, Dec. 19, 1974, 49-144984; Dec. 19, 1974, 49-144985; Dec. 19, 1974, 49-153264[U]; Dec. 19, 1974, 49-153265[U]; Dec. 19, 1974, 49-153266[U]; May 2, 1975, 50-58893[U]
Int. Cl.[2] F02D *1/04*
U.S. Cl. 123—140 R 29 Claims

1. A fuel injection pump governor comprising:
a housing;
a fuel control member;
a flyweight;
a linkage connecting the flyweight to the fuel control member;
a governor rod extending from within the housing and having an external end which is external of the housing;
a nut threaded on a portion of the governor rod which is inside the housing;
guide means for axially guiding the nut;
first and second spring seats slidably carried by the governor rod between the linkage and the nut; and
a governor spring disposed between the first and second spring seats, the linkage being engageable with the first spring seat to move the first spring seat toward the nut so



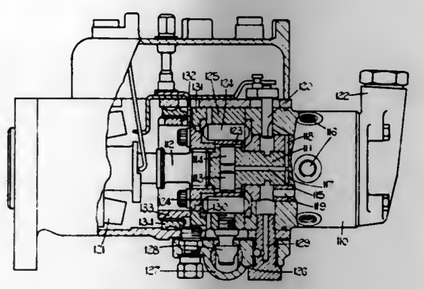
that the governor spring is compressed between the first and second spring seats as the rotational speed of the flyweights increases, whereby:
rotation of the external end of the governor rod produces axial movement of the nut.

4,067,304

FUEL PUMPING APPARATUS

James Charles Potter, London, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 1, 1976, Ser. No. 746,348
Claims priority, application United Kingdom, Dec. 6, 1975, 50131/75
Int. Cl.[2] F02D *1/04*
U.S. Cl. 123—140 MP 17 Claims



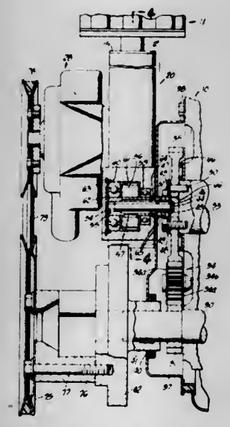
1. A fuel pumping apparatus for supplying fuel to internal combustion engines and comprising a pumping plunger movable inwardly within a bore to displace fuel from the bore to a fuel outlet, pump means for supplying fuel to the bore to urge the plunger outwardly, valve means for controlling the output pressure of said pump means so that it varies in accordance with the speed at which the apparatus is driven, control means operable to control the amount of fuel supplied to the bore, a cam for effecting inward movement of the plunger, stop means operable to determine the maximum outward movement of the plunger thereby to limit the maximum amount of fuel which can flow through said outlet irrespective of the setting of said control means, said stop means comprising a stop member movable to determine the outward movement of the plunger, a further member movable between three positions and cooperating with said stop member so that in the first of said positions excess of fuel may be supplied by the apparatus, in the second of said positions the maximum amount of fuel for low engine speeds may be supplied by the apparatus and in the third of said positions the maximum amount of fuel for higher engine speeds may be supplied by the apparatus, said apparatus including fluid pressure operable means for moving said further member between said three positions, said fluid pressure operable means being responsive to the output pressure of said pump means.

4,067,305

CONVERTER KIT FOR DRIVING AN ENGINE DISTRIBUTOR FROM THE FRONT END OF THE ENGINE CAMSHAFT

Maurus E. Jackson, 1905 Victory Blvd., No. 9, Glendale, Calif. 91201

Filed Mar. 1, 1976, Ser. No. 662,552
Int. Cl.[2] F02F *7/00*
U.S. Cl. 123—195 A 18 Claims



1. That improvement for an internal combustion engine of the type manufactured with one end of its camshaft driven from the crankshaft and its other end driving the distributor rotor, said improvement comprising: a converter kit for driving the distributor from the driven end of the camshaft to eliminate timing errors caused by torque distortion of the camshaft, said converter kit including a tubular main body open at its upper end and having a drive shaft opening in its sidewall near the lower end thereof, a shaft supporting a spiral gear journalled in said main body with the shaft end projecting through the sidewall of said main body, bracket means projecting from said main body securable to the engine beyond the periphery of the camshaft cover plate with said shaft end positioned to extend through said cover plate and to be coupled to the adjacent end of the engine camshaft, and the driven gear of the engine distributor being insertable into the upper end of said tubular main body and into mesh with said spiral gear.

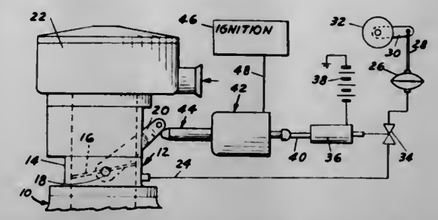
4,067,306

SOLENOID OPERATED DEVICE TO CONTROL CURB IDLE POSITION OF THROTTLE VALVE

John J. Berich, St. Louis; John H. Krein, Florissant; Mervin L. Augstin, Florissant, and Jesse L. Szwargulski, Florissant, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed June 24, 1976, Ser. No. 699,448
Int. Cl.[2] F02B *77/00*
U.S. Cl. 123—198 D 9 Claims

1. A solenoid actuated device in combination with an internal combustion engine having a carburetor with a throttle valve therein, and an ignition system for the engine electrically connected to the device, said device controlling the curb idle position of the said throttle valve and permitting the throttle valve to close below the curb idle setting upon deactivation of the ignition system, and comprising:
a shaft mounted within a central bore in said solenoid actuated device for longitudinal movement between an extended energized position of the solenoid device and a retracted deenergized position of the solenoid device, linkage means between the throttle valve and the shaft, said linkage means being out of electrical contact with the



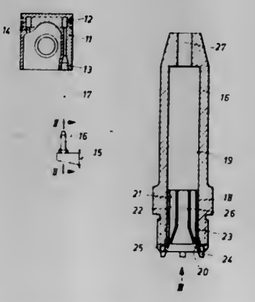
shaft when the trottle valve is opened above the curb idle setting and being in electrical contact with an end of the shaft when the trottle valve is at curb idle position and below curb idle position, said shaft end being electrically insulated from said device and connected to a source of electrical energy for grounding said source when the shaft is in electrical contact with the linkage means thereby to permit the energizing of other selective electrically actuated devices.

4,067,307

FREE-JET-NOZZLE

Hubert Höfle, Eriskirch, and Erwin Flesch, Uhldingen, both of Germany, assignors to Motoren- und Turbinen Union Friedrichshafen GmbH, Germany

Filed Aug. 23, 1974, Ser. No. 499,929
Claims priority, application Germany, Aug. 30, 1973, 2343655
Int. Cl.[2] F01P *1/04*; A62C *31/02*
U.S. Cl. 123—41.35 30 Claims

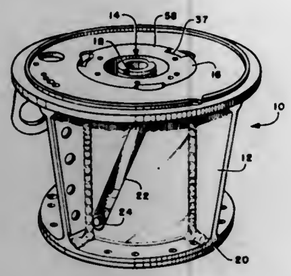


1. A free-jet-nozzle intended to bring about a substantially vortex-free flow of cooling medium flowing through the nozzle characterized in that the nozzle is provided with a flow channel means for the cooling medium which includes at least over a portion of its length, radially inwardly extending rib means, said rib means leaving open in the center of the channel means a free passage, said rib means including a plurality of elongated spaced rib members extending in the axial direction of the nozzle, said flow channel means being constructed to provide a focused discharge jet of the cooling medium.

4,067,308
SPIN EJECTOR

John A. Andersen; John J. Flanigan, and Robert J. Kindley, all of Alburquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 2, 1976, Ser. No. 737,649
Int. Cl.² F41B 7/00
U.S. Cl. 124—16 4 Claims

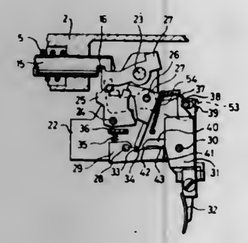


1. An apparatus for spin ejecting a body having a flat plane base containing bosses, said apparatus comprising:
a base plate;
a main ejection shaft extending perpendicularly from said base plate;
a compressible cylindrical spring disposed about said shaft; bearing means comprising elastically compression fit balls between said shaft and said spring;
a housing releasably engaged with said base plate surrounding said shaft, bearing means and spring, said housing containing a helical aperture;
a piston having a flat surface containing guide pins insertable into said bosses of said body's base to provide a non-slip releasable drive coupling between said body and said piston, said piston being seated on said spring and guided by said shaft and bearing, said piston comprising an aperture follower fixed thereon and juxtaposed within said helical aperture to control the spin rate of said piston;
means for compressing said spring; and
means comprising an ordnance operated nut for releasing said compressed spring to cause said piston to spin eject.

4,067,309
AIR GUN WITH TRIGGER MECHANISM THEREFOR

Edwin Johannes Wohrstein, Oberndorf-Altoberndorf, Germany, assignor to Feinwerkblau, Westinger & Altenburger KG, Oberndorf, Germany

Filed Apr. 22, 1976, Ser. No. 679,144
Claims priority, application Germany, Apr. 24, 1975, 2518146
Int. Cl.² F41B 11/00
U.S. Cl. 124—67 10 Claims

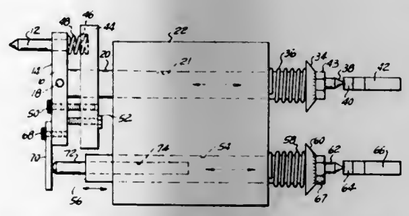


1. In an air gun including a spring loaded piston, a trigger mechanism comprising:
cocking means movable between a rest position and a cocking position for cocking the piston;
trigger mechanism means for retaining and releasing the cocked piston, which trigger mechanism means includes a retaining member connected to said piston, a trigger lever engageable with said retaining member when said piston is cocked, said trigger lever having a portion overlapping said retaining member when in engagement therewith, and a trigger coupled to said trigger lever for moving said trigger lever out of engagement with said retaining member; and
intermediate means including intermediate members operatively coupling said cocking means and said trigger lever for reducing the overlap of said trigger lever over said retaining member after cocking during the last part of travel of said cocking means back to said rest position.

4,067,310
WHEEL TRIMMER

Edward Z. Krygier, Royal Oak, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Aug. 16, 1976, Ser. No. 714,830
Int. Cl.² B24B 53/08
U.S. Cl. 125—11 TP 12 Claims



1. A trimmer for a grinding wheel having a template provided with a form which is the reverse of the general form to be trimmed into the periphery of a grinding wheel at a 1:1 ratio spaced from and generally parallel to the portion of the wheel to be trimmed, a holder movable across the space between the template form and the portion of the wheel to be trimmed, an elongated slide movable longitudinally between said template form and said wheel portion, a template follower at one end of said slide, a carrier movably mounted on the slide, a trimming point mounted on the carrier, an abutment on said slide, resilient means normally urging said carrier against said abutment to oppose movement of said carrier relative to said slide, means for traversing said holder across the space between said template and wheel to produce a corresponding path of movement of said trimming point while said carrier engages said abutment, and modification control mechanism operable in timed relation to movement of said follower across said template to move said carrier away from said abutment and relative to said slide to produce a modification of a portion of the path of movement of said trimming point from the shape of said template.

4,067,311
METHOD FOR SAWING HARD MATERIAL

Giorgio Benetello, Via S. Rosa, 46, Padova, Italy

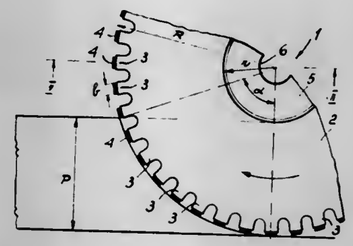
Continuation-in-part of Ser. No. 607,639, Aug. 25, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,488
Claims priority, application Italy, Aug. 29, 1974, 41666/74
Int. Cl.² B28D 1/04
U.S. Cl. 125—13 R 3 Claims

1. A method for sawing hard material with circular abrasive disc saws of the kind having secured to the periphery of the disc arcuated cutting segments of bonded diamond abrasives, comprising the steps of:
selecting a speed of rotation of the abrasive disc;
selecting a cutting depth of the disc;

selecting a longitudinal feed for said abrasive disc;
providing on said arcuated cutting segments of bonded diamond abrasives an effective total peripheral cutting surface consisting of the sum of the cutting surfaces of the single arcuated segments and having along a peripheral circumference an optimum average number of cutting points of the bonded diamond abrasive per one millimeter width as determined by the following formula:

$$z = (a/a_z \cdot n)$$

where:
z is the said optimum average number of cutting points of the bonded diamond abrasive per one millimeter width along the peripheral circumference,
a is said selected longitudinal feed expressed in microns per minute,

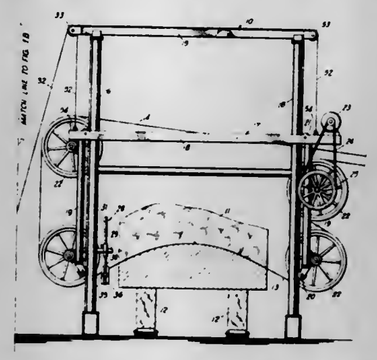


n is said selected speed of rotation of the abrasive disc expressed in rounds per minute,
a_z is a preestablished parameter indicating the average specific optimum incision depth expressed in microns and cut into the material to be cut by one single average cutting point of the bonded diamond abrasive during n revolutions of the disc and with said selected longitudinal feed thereof,
and wherein said preestablished parameter of average specific optimum incision depth is in the range of from about 2.5 to about 3.5,
and cutting the hard material with said so provided optimum number of cutting points and with said selected longitudinal feed and said selected speed of rotation of the abrasive disc and with said selected cutting depth.

4,067,312
AUTOMATIC FEEDBACK CONTROL FOR WIRE SAW

Roy Lynnard Tessner, Atlanta, Ga., assignor to Elberton Granite Association, Inc., Elberton, Ga.

Filed Sept. 8, 1976, Ser. No. 721,395
Int. Cl.² B28D 1/08
U.S. Cl. 125—21 7 Claims

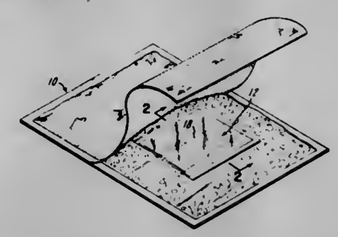


1. In a wire saw having a support frame, a dolly for supporting and guiding a stone cutting wire movably mounted on the support frame, motor winch means and associated suspension cable means for moving said dolly on said frame, an automatic feedback control comprising:
an *rf* inductive proximity switch electrically coupled to said motor winch means, said switch including a feedback sensor mounted on the dolly near a bowed section of the wire and responsive to changes in wire bow curvature during cutting for activating the motor winch means to move the dolly in a direction to correct wire bow curvature to an optimum degree for most efficient stone cutting.

4,067,313
EXOTHERMIC COMPOSITION AND HOT PACK

William R. Donnelly, Piqua, Ohio, assignor to Readi Temp, Inc., Piqua, Ohio

Filed Dec. 7, 1976, Ser. No. 748,167
Int. Cl.² F24J 1/02
U.S. Cl. 126—263 19 Claims

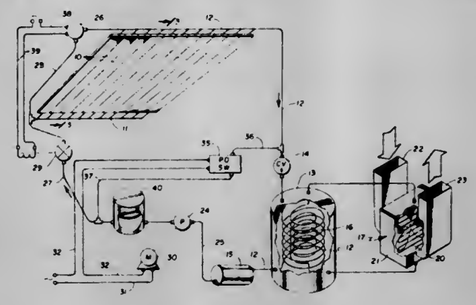


1. A composition producing an exothermic reaction over an extended period of time when mixed with water, consisting essentially of, in parts by weight, about 40 to about 90 parts anhydrous calcium chloride, about 12 to about 25 parts anhydrous sodium acetate, and about 5 to about 15 parts calcium oxide, said composition forming a moldable gel upon mixing with about 40 to about 90 parts by weight of water at ambient temperature and maintaining a temperature not in excess of about 107° C for a period of time up to about 20 minutes.

4,067,314
SOLAR ENERGY COLLECTOR SYSTEM

Dwight L. Bollefer, Underwood, Minn., assignor to Dwight L. Bollefer, Underwood, Minn.

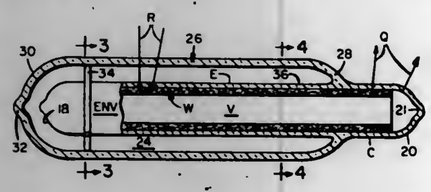
Filed Dec. 29, 1975, Ser. No. 645,274
Int. Cl.² F24J 3/02
U.S. Cl. 126—270 1 Claim



1. A solar energy collector system comprising:
a. solar collector cell means having a substantially flat heat absorbing surface on at least one side thereof, said cell means including at least one fluid passage having input and output orifices;
b. heat storage means having conduit means formed internally thereof, with one end of said conduit means commu-

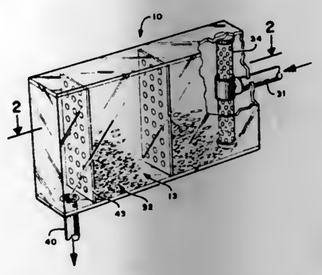
nicating with said output orifice of said solar collector cell means, and having fluid conductors in said heat storage means independent of said conduit means constructed and arranged to be connected to a heat use device;
c. liquid receiver tank means having its input port connected to the other end of said conduit means and having an output port;
d. injection pump means having its input connected to said output port of said liquid receiver tank means and having its output connected to the input orifice of said solar collector cell means;
e. a heat transfer medium having characteristics of a halogenated hydrocarbon fluid changing state between a gas and a liquid contained within each of said means;
f. liquid level control means communicating with the input orifice of said solar collector cell means and the output orifice of said injection pump means, said liquid level control means controlling the level of said heat transfer medium in said solar collector cell means;
g. check valve means fluidly disposed between said solar collector cell means output orifice and said one end of said first conduit means in said heat storage means preventing flow of said heat transfer medium towards said solar collector cell means;
h. a liquid surge tank having its input and output connected between the output and input orifices respectively of said injection pump means and said solar collector cell means;
i. and a pressure differential switch fluidly communicating with said input and output orifices of said solar collector cell means and controllably connected to said injection pump means for controlling the fluid level of said heat transfer medium.

4,067,315
SOLAR HEAT PIPE
Francis P. Fehlner, and Ugur Ortabasi, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Oct. 24, 1975, Ser. No. 625,650
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **6 Claims**



1. Solar heat pipe apparatus comprising a hermetically sealed envelope having an evaporator region for receiving solar radiation and a condensor region for transferring heat therefrom, a quantity of vaporizable working fluid within said envelope, wick means within said envelope for transporting said working fluid, at least the evaporator region of said envelope having wall portions substantially transparent with respect to radiation in a selected range of the solar spectrum whereby such radiation is transmittable through such wall portions of said evaporator region, said wick means having a surface portion which is substantially absorptive of radiation in at least a portion of said selected range of the solar spectrum, said absorptive surface portion of said wick means being positioned within said envelope adjacent the inner surface of said substantially transparent wall portions to receive and absorb radiation transmitted through such wall portions of the evaporator region whereby solar radiation is converted into heat within said absorptive surface portion for evaporating working fluid in said wick means, a vapor duct surrounded by said wick means for directing the movement of the vaporized working fluid from said evaporator region to said condensor region, said condensor region having wall portions for condensing said vaporized working fluid and for transferring heat therefrom, and evacuated, at least partially transparent, container means surrounding said evaporator region for thermally insulating the wall portions of the evaporator region from the ambience.

4,067,316
SOLAR ENERGY COLLECTOR
Raymond L. Brin, Cedar Crest, and Thomas L. Pace, Albuquerque, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 22, 1976, Ser. No. 734,839
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **1 Claim**

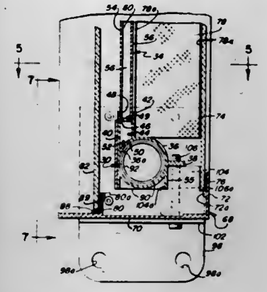


1. A solar energy collecting device comprising a rectangular container having top, bottom, and side walls with said top wall being transparent for transmission of solar rays to the interior of said container, an inlet passageway to said container extending through one of said side walls, a perforate diffuser conduit connected with said inlet passageway and extending across the interior of said device substantially from one side wall to an opposite side wall for distributing incoming fluid substantially uniformly throughout a cross section of said container, and a heat transferring matrix, an outlet passageway spaced from said inlet passageway and extending through a side wall adjacent an end of the device opposite said inlet passageway and diffuser, a matrix of heterogeneously and closely intertwined solar energy absorbing blackened metallic lathe turnings adjacent said transparent wall filling a major portion of the space intermediate said passageways and substantially enclosing said diffuser conduit, all fluid passing from said inlet passageway and diffuser conduit to said outlet passageway flowing lengthwise through said matrix for receiving heat from the blackened metallic lathe turnings and elevating the temperature of said fluid.

4,067,317
SOLAR ENERGY COLLECTOR PANEL
S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.
Filed June 18, 1976, Ser. No. 697,488
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **17 Claims**

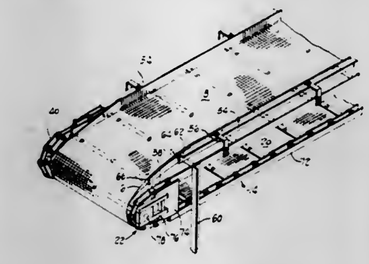
1. A solar panel for collecting solar radiation energy for heating fluid passing through the panel comprising:
a plurality of elongated, spaced apart, hollow, tubular headers formed of heat conductive extruded metal and having an integrally formed internal wall defining separated primary and secondary flow conduits in communication with each other through one or more openings in said internal wall, said headers including an elongated recess formed on an outside wall having a bottom wall portion adjacent said secondary flow conduit,
at least one pair of elongated hollow tubular panel elements formed of heat conductive extruded metal, each including a spaced apart inner and outer wall adapted to face and

receive solar radiation for heating fluid passing through the interior of said element;
said elements extending transversely between said headers in edge to edge relation with opposite ends of each of said panel elements seated in said recess and in fluid communication with said secondary flow conduits of said respective headers and abutting said bottom wall portions thereof;
each of said headers having one or more openings therein for passing fluid between the secondary flow conduits in said



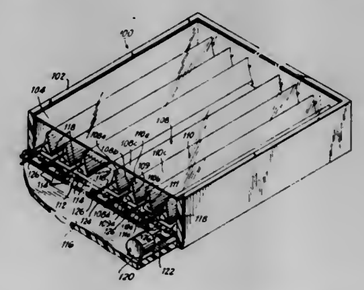
headers and the adjacent hollow interior of said panel elements seated in said recess;
each panel element including an elongated tongue along one longitudinal edge and an elongated groove along an opposite edge, said tongue and groove of adjacent panel elements interlocking together; and
means at opposite ends of at least one of said headers for facilitating fluid interconnection between said primary flow conduits thereof with those of adjacent solar panels in an array.

4,067,318
DRYER CONVEYOR
George Donald Flaith, Philadelphia, and K. A. George, Levittown, both of Pa., assignors to Proctor & Schwartz, Inc., Philadelphia, Pa.
Continuation-in-part of Ser. No. 642,291, Dec. 19, 1975, abandoned. This application Aug. 30, 1976, Ser. No. 718,920
Int. Cl.² F26B 19/00
U.S. Cl. 34—208 **6 Claims**



1. Apparatus for treating matter comprising in combination a housing having an exit end and an entrance end;
means for supplying a treating medium to said housing;
a closed path conveyor means having an upper carrying run;
said conveyor means including
an endless, normally flat, one-piece, resilient, flexible, moving fabric screen;
support means for the fabric screen in said upper carrying run;
means for moving said fabric screen through said housing; and
longitudinally extending trough-forming means for deforming the edges of said fabric screen upward to form said screen into a trough for substantially the length of said carrying run, said fabric screen returning to its inherent flat condition at the end of the carrying run;
said housing including stationary baffle means extending longitudinally within the dryer in sealing engagement with the trough-forming means whereby, in addition to containing the matter being treated, in the carrying run, the fabric screen sides effectively seal the treating medium flow such that the same passes through or is directed against said matter.

4,067,319
SOLAR ENERGY CONVERTING APPARATUS
Kurt J. Wasserman, Schefflers Road, Westtown, N.Y. 10998
Division of Ser. No. 605,872, Aug. 19, 1975, abandoned. This application July 26, 1976, Ser. No. 708,746
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **8 Claims**

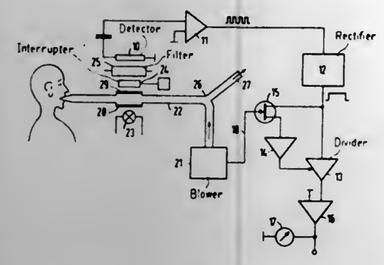


1. Solar energy converting apparatus comprising a plurality of parallel, substantially parabolic-shaped troughs having receiving portions for receiving solar radiation and for directing same to exit portions thereof, adjacent troughs being formed with side walls in back-to-back relation, with at least one end wall provided between a pair of back-to-back side walls; pivot means comprising shafts extending from said end walls and being substantially parallel to the longitudinal axes of said troughs, said troughs being pivotable about said axes; support means for supporting said troughs; and heat transfer means disposed adjacent said exit portions of said troughs and defining a conduit for heat transfer fluid to transfer heat to said heat transfer fluid.

4,067,320
ARRANGEMENT FOR DRIFT COMPENSATION IN A GAS ANALYZER
Sven-Gunnar Olsson, Sollentuna; Rolf Castor, Hagersten, and Gabriel Tchang, Stockholm, all of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Apr. 30, 1976, Ser. No. 682,167
Claims priority, application Germany, May 6, 1975, 2520197
Int. Cl.² A61B 5/00; G01N 31/00
U.S. Cl. 128—2 C **7 Claims**

1. An arrangement for automatic drift compensation in a gas analyzer for detemining the content of a specific gas contained in a gas mixture exhaled by a patient, said arrangement comprising a radiation source for radiating through the gas to be analyzed, a radiation detector onto which the radiation through the gas is directed, circuit means connected to said radiation detector and forming an amplified output signal corresponding to the output of the radiation detector, the output of said radiation detector corresponding to the gas concentration, storage means for storing a signal corresponding to said output signal when the gas to be analyzed has a predetermined concentration, and comparator means con-

nected to said storage means for comparing the output signal from said detector with the signal stored in said storage means, and means connected between the output of the detector and



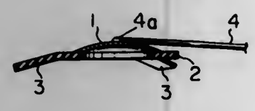
the input of said comparator means for delivering to said storage means the signal corresponding to said output signal during the inspiration phase of a patient.

4,067,321

ELECTRODES FOR ELECTROENCEPHALOGRAPHIC EXAMINATIONS

Jun Oda, Chofu; Einosuke Koga, Tokyo; Shiro Endo, Chofu; Ichiro Aizawa, and Kyoko Nishihara, both of Tokyo, all of Japan, assignors to Governor of Tokyo Metropolis, Japan

Filed June 29, 1976, Ser. No. 701,045
Int. Cl.² A61B 5/04
U.S. Cl. 128—2.1 E **6 Claims**



1. An electrode for attachment to the head of a subject for electroencephalographic examinations which comprises:

a dish-type metal electrode plate having an upper surface and a lower peripheral edge;

a lead wire with one terminal connected to the electrode plate on the upper surface thereof and with its other terminal adapted to be connected to an electroencephalograph;

coating means for insulatingly covering the upper surface of said electrode plate and said one terminal;

an annular insulating plate mounted on the electrode plate at the lower peripheral edge thereof;

three elongated leg pieces fitted to the annular insulating plate and extending outwardly equiangularly in the radial direction from the center of the electrode and downwardly from said insulating plate for intimate contact with the head skin of the subject; and

means for adhesively attaching said insulating plate and said elongated leg pieces to the head skin of the subject to produce stable adhesion of said electrode to the subject's head.

4,067,322

DISPOSABLE, PRE-GEL BODY ELECTRODES

Joseph H. Johnson, 3611 Terminal Court South, Seattle, Wash. 98144

Continuation of Ser. No. 490,082, July 19, 1974, abandoned. This application Jan. 28, 1976, Ser. No. 653,227
Int. Cl.² A61B 5/04
U.S. Cl. 128—2.06 E **3 Claims**

1. A disposable, skin-contacting body electrode having a self-contained electrolyte gel therein, comprising:

a flexible, non-conductive foamed sheet material having a thickness ranging from one-sixteenth to one-fourth inch, an aperture therein with sidewalls the thickness of the foamed sheet material, an adhesive-coated lower surface for contacting the skin surface and a non-adhesive-coated upper surface;

a semi-rigid disc overlying the aperture and adhesively secured to the portion of the non-adhesive coated upper surface of the foamed sheet material surrounding the aperture to form an open-ended, cup-shaped cavity with the sidewalls of the aperture forming the sidewalls of the cavity and the semi-rigid disc overlying the aperture forming the base of the cavity;

a pad impregnated with an electrolyte gel inserted within the cavity formed by the non-conductive sheet material and disc, the pad having a thickness greater than the thickness of the non-conductive sheet material so that when the electrode is adhesively secured to the skin the pad is compressed against the surface of the skin;



an electrical terminal extending through and secured to the disc, making electrical contact with the gel-impregnated pad;

a strippable sheet completely covering the adhesive-coated surface of the foamed sheet material so as to not expose the adhesive-coated surface of the hoamed sheet material until the electrode is ready for application to the skin; and

a removable cylindrical cap closed at one end and open at the other end, the cap covering the gel-impregnated pad until the electrode is ready for application to the skin and having a sidewall terminating in a rim at the open end, the outer diameter of the sidewall being slightly greater than the diameter of the aperture in the foamed sheet material so as to frictionally engage therewith to isolate the gel-impregnated pad from contact with the atmosphere and thereby minimize loss of moisture from the electrolyte gel, and the height of the sidewall being equal to or greater than the thickness of the gel-impregnated pad so as not to compress the pad when the cap is in place over the pad.

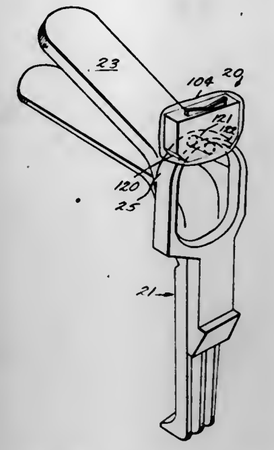
4,067,323

LIGHT FOR VAGINAL SPECULUM

Vernon H. Troutner, St. Petersburg, and Raymond W. Simmons, North Pinellas Park, both of Fla., assignors to Concept Inc., Clearwater, Fla.

Filed Dec. 2, 1975, Ser. No. 636,833
Int. Cl.² A61B 1/06
U.S. Cl. 128—18 **5 Claims**

1. A medical examination light able to be removably secured to a speculum of the type having a body and plurality of dilator members extending from said body, at least one said dilator members defining a curved rear wall, said light comprising light means adapted to mount directly to said curved rear wall of said dilator member of said speculum body, said light means comprising a housing, clip means defined by said housing allowing said housing to be securely yet moveably mounted to said curved upper wall of said upper dilator member, said clip means comprising a cylindrical boss protruding substantially perpendicular from said housing and a curved end wall defined by said housing spaced from said cylindrical boss a distance allowing the housing to be securely yet moveably placed on said speculum body, a light source mounted on said clip means and a source of power contained within said housing adapted



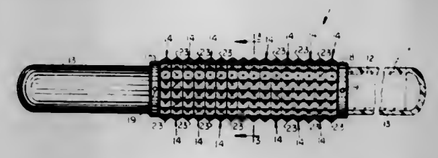
to selectively energize said light source through switch means mounted on said housing.

4,067,324

THERAPEUTIC APPARATUS FOR STIMULATION OF ACUPUNCTURE MERIDIANS

Monte H. Greenawalt, 1901 Rockdale Road, Dubuque, Iowa 52001

Filed June 16, 1976, Ser. No. 696,607
Int. Cl.² A61H 15/00
U.S. Cl. 128—57 **1 Claim**



1. A therapeutic apparatus for stimulating acupuncture points of the body, said apparatus comprising:

elongated support means;

a pair of handle members, each handle member being slidably affixed over one end of said support means;

a plurality of roller means for stimulating acupuncture points, said roller means being rotatably attached to and disposed in side-by-side relationship upon said support means and between said handle means, each of said roller means being independently rotatable about said support means; and

each of said roller means being annular in shape and having inner, outer and side surfaces, said inner surface being disposed against said support means, said side surfaces interconnecting said inner and outer surfaces, said roller means having a plurality of radially and outwardly directed projections formed upon said outer surface, each of said projections spanning the width of said outer surface, being pyramidal in configuration, and abutting with adjacent projections, said projections completely covering said outer surface and engaging the body to stimulate the acupuncture points thereof when said support means is moved with respect to the body.

4,067,325

FRICTION MASSAGE MEMBER

Antoinette S. Olasik, 600 NE. 36 St. Charter Club No. 802, Miami, Fla. 33137

Filed Sept. 7, 1976, Ser. No. 720,554
Int. Cl.² A61H 7/00
U.S. Cl. 128—62 R **5 Claims**



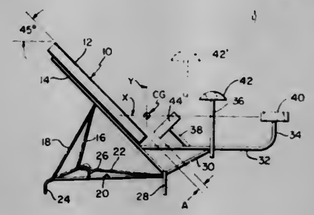
1. A piece of cloth including means for gripping the same and which cloth is for use in massaging and cleaning the body and comprises a pattern of knitted strands which are each composed of an interwoven mixture of 50% animal hair and 50% of vegetable hair, said vegetable hair being about 50% sisal and about 50% alfa and said animal hair being about a) 50% animal hair selected from the class which includes horse hair and b) 50% animal hair selected from the class which includes elephant hair, and said animal hairs being bleached and mixed with said vegetable fiber prior to weaving the strands and knitting the material.

4,067,326

POSTURE SUPPORTING APPARATUS

Kenneth George Lay, 33 Goose Pond Road, Lincoln, Mass. 01773

Filed Aug. 20, 1976, Ser. No. 716,125
Int. Cl.² A61F 5/00
U.S. Cl. 128—69 **8 Claims**



1. Posture correcting and muscle stimulating apparatus comprising

means defining a straight pipe form element extending at an acute angle to horizontal for engaging the spinal area of a user over a width of 3–6 inches and a length of at least 2 feet,

means for supporting the pipe form element at said angle and in a height relation to allow the user to rest with his spine essentially fully engaging the pipe form element and adjacent muscle areas of at least the upper back free of such engagement allowing gravity to gently exercise at least the upper back muscles of the user.

4,067,327

TABBED TOWEL

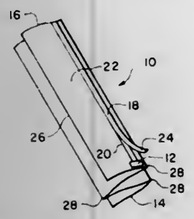
A. Vernon Shannon, Sr., 19 Greenhouse Drive, Princeton, N.J. 08540

Filed Sept. 13, 1976, Ser. No. 722,980
Int. Cl.² A61F 13/00
U.S. Cl. 128—132 D **8 Claims**

1. A tabbed towel comprising:

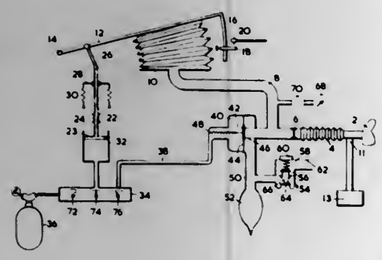
a towel having at least a first and a second edge;

an adhesive layer attached to said towel and extending from said first edge to said second edge, said adhesive layer having a predetermined width, less than the width of said towel;
a release layer attached to said adhesive layer extending from said first edge to said second edge, said release layer having substantially the same width as said adhesive layer;
a first tab located between said adhesive layer and said release layer, said tab having a length less than the length



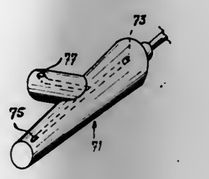
of either the adhesive layer and said release layer and a width substantially the same as said release layer and said adhesive layer, said tab being at the first edge of said towel; and,
a second tab located between said adhesive layer and said release layer, said second tab havng a length less than the length of either the adhesive layer and said release layer and a width substantially the same as said release layer and said adhesive layer, said second tab being at the second edge of said towel.

4,067,328
LUNG VENTILATOR
Roger Edward Wentworth Manley, Farnham Common, England, assignor to The Medishield Corporation Limited, London, England
Filed July 26, 1976, Ser. No. 708,731
Claims priority, application United Kingdom, July 29, 1975, 31765/75
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.6 **4 Claims**



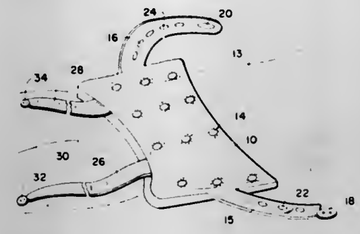
1. A closed-circuit lung ventilator comprising:
a bellows for delivering respirable gas and/or gaseous anaesthetic to a patient during the inspiratory phase of a patient's breathing cycle and receiving said gas from the patient during the expiratory phase of the patient's breathing cycle:
inlet means for admitting said gas from a supply therefor to the ventilator;
a gas port adapted to have attached thereto a breathing mask for delivering said gas to the patient;
a first conduit connecting said bellows to said gas port;
a rebreathing bag;
a second conduit connecting the rebreathing bag to said gas port through said first conduit;
biased flow control valve means in said second conduit for preventing flow of gas along said first and second conduits from said bellows to said rebreathing bag at controlled time intervals but allowing at all times flow of said gas from said rebreathing bag to said gas port on the manual compression of said rebreathing bag;
means for establishing controlled time intervals which are a function of the patient's breathing cycle;
means for forcibly inflating and deflating the bellows at times which are a function of said time intervals;
means for altering the position of said biased flow control valve as a function of said time intervals so that said valve is open during the expiratory phase of the patient's breathing cycle and closed during the inspiratory phase of the patient's breathing cycle, except when the rebreathing bag has been manually compressed to force the gas therein through the biased flow control valve to the gas port for delivery to the patient;
the arrangement being such that, in operation of the ventilator, during the inspiratory phase of the patient's breathing cycle the bellows is forcibly deflated to cause a controlled volume of respirable gas and/or gaseous anaesthetic to flow into the patient's lungs while said biased flow control valve is in a position which prevents said gas from flowing from the bellows into the rebreathing bag, and during the expiratory phase of the patient's breathing cycle, the bellows is caused to inflate and take in gas while the biased flow control valve is in a position which allows gas from the patient to be delivered to the bellows and to the rebreathing bag.

4,067,329
TUBE DISCONNECTION WARNING DEVICE
Bernard Winicki, Neuilly sur Seine, France, assignor to Union Chimique Continentale-U.C.C., Puteaux, France
Filed Jan. 7, 1976, Ser. No. 647,199
Claims priority, application France, Jan. 17, 1975, 75.01398
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.8 **11 Claims**



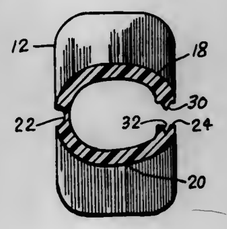
11. In an oxygen administration device for a patient, a canula defining three open-ended legs, tubular apparatus for communicating with a patient being attached at one end in interface relationship with the outer surface of a first of said legs a tube communicating between a second of said legs and an oxygen source, and being attached at one end in an interface relationship with the outer surface of said second leg a removable stopper being attached in interface relationship with the inner surface of a third of said legs to permit aspiration of tracheal secretions; a branched tube passing through said branched canula including three legs each terminating in an orifice, said orifices of said first and second legs of said branched canula communicating with the outer surfaces of said first and second legs, respectively, and located within the interface of said tubular apparatus and said tube and said first and second legs, respectively, and said orifice of said third leg of said branched canula communicating with an inner surface of said third leg and located within the interface of said third leg and said stopper, said branched tube being connected with pneumatic pressure sensing warning device means which provides a positive pressure to said tube, and activates an alarm means when said positive pressure falls below a predetermined level.

4,067,330
BED SORE BANDAGE COVER
Mina V. Roache, Jamaica, N.Y., assignor to The Raymond Lee Organization, Inc., New York,, N.Y.
Filed June 15, 1976, Ser. No. 696,291
Int. Cl.² A61B *19/00*
U.S. Cl. 128—149 **5 Claims**



1. A pad for use over bed sores, comprising:
a pad forming a concave lower edge and forming a concave upper edge,
a small round air opening formed through the pad, and means of attaching the pad around a buttocks are of a user.

4,067,331
INTUBATING PHARYNGEAL AIRWAY
Robert A. Berman, 501 Cedar Hill Road, Far Rockaway, N.Y. 11691
Filed July 23, 1976, Ser. No. 708,274
Int. Cl.² A61M *16/00, 25/00*
U.S. Cl. 128—208 **1 Claim**



1. An intubating airway, comprising:
a. A curved tubular longitudinally extending body member, said body member having a curved longitudinally extending side opening, defined therein,
b. said member having a distal end for insertion into the mouth and throat of a patient and a proximal end for location at the mouth of the patient,
c. said distal end having a ball tip adopted to fit into the vallecular of the patient,
d. said member further having a hinge on its side opposite the location of said side opening,
e. said hinge having an inner flex portion adjacent said distal end and a separate outer flex portion adjacent said proximal end,
f. said inner flex portion and said outer flex portion being non-coaxially aligned and being flexible,
g. whereby said side opening may be opened or closed by rotation about the said hinge.

4,067,332
SYRINGE PUMP DRIVE SYSTEM AND DISPOSABLE SYRINGE CARTRIDGE
Stephen H. O'Leary, San Diego, Calif., assignor to IVAC Corporation, San Diego, Calif.
Division of Ser. No. 554,230, Feb. 28, 1975, Pat. No. 3,993,061.
This application Aug. 25, 1976, Ser. No. 717,769
Int. Cl.² A61M *5/00*
U.S. Cl. 128—214 F **18 Claims**



1. In a syringe pump, the combination comprising:
a syringe means having a piston and a piston rod;
a drive system for linearly reciprocating said piston and said piston rod, said piston rod having a pair of integral, outwardly extending mounting bosses adjacent a cut-away portion of said piston rod; and
a coupling shoe connected between said drive system and said piston rod, said coupling shoe having a pair of upstanding flanges containing a pair of oppositely disposed, confronting guide slots and a locking retention channel extending therebetween, said guide slots being adapted to receive said mounting bosses with the longitudinal axis of said syringe horizontal, enable rotation of said syringe to a position wherein said longitudinal axis is substantially vertical, and restrain said syringe against horizontal or vertical dislocation relative to said mounting shoe when said longitudinal axis is vertical.

4,067,333
SYRINGE FOR STORAGE AND APPLICATION OF AT LEAST TWO INJECTION MEDIA
Ferdinand Reinhardt, and Walter Simonich, both of Vienna, Austria, assignors to IMMUNO Aktiengesellschaft fur chemisch-medizinische Produkte, Vienna, Austria
Filed July 27, 1976, Ser. No. 709,092
Claims priority, application Austria, Aug. 7, 1975, 6115/75
Int. Cl.² A61M *5/00*
U.S. Cl. 128—218 R **3 Claims**

1. A syringe set for storing at least two injection media and for separately administering said at least two injection media at different locations or at different times, which comprises:
a cylindrical syringe body terminating in a syringe cone at a forward end thereof;
a first piston slidably disposed within said cylindrical syringe body;
at least one second piston floatingly arranged within said cylindrical syringe body between said first piston and said syringe cone, said at least one second piston dividing the cylindrical syringe body into at least first and second compartments, each to accommodate one injection medium, said first compartment located ahead of said second piston and said second compartment located behind said second piston;
a single pointed needle means detachably securable to said syringe cone for administration of the injection medium of said first compartment;
an actuating rod securable to said first piston for advancing said first and second pistons to eject the injection medium

of said first compartment through said single pointed needle means;

a double pointed needle means securable to said syringe cone following removal of said single pointed needle means, said double pointed needle means comprising a puncture portion and a perforation portion, the perforation portion



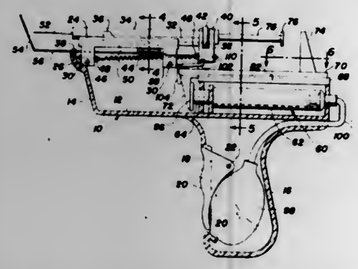
being of a length to extend into said cylindrical syringe body and pierce said advanced second piston, for communicating the injection medium behind said second piston with said puncture portion and enable the administration of the last-named injection medium through said puncture portion in response to further advancement of said first piston.

4,067,334

SELF-INJECTING HYPODERMIC SYRINGE DEVICE

J. Gilbert Haller, 20 W. Andrew St., Lancaster, Pa. 17603

Filed Oct. 29, 1976, Ser. No. 736,761
Int. Cl.² A61M 5/00
U.S. Cl. 128—218 A 13 Claims



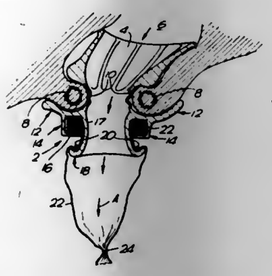
1. A portable device for holding a loaded hypodermic syringe and effecting an instantaneous injection of the needle of the syringe into the flesh followed by operation of the plunger of the syringe, said device comprising in combination, a handle frame having a longitudinal guideway, a syringe slide movable along said guideway, means on said slide to support a syringe having a needle on one end and a plunger knob on the other, a spring connected between said syringe slide and handle frame, a sear engageable with said syringe slide and operable to secure the same in a retracted position in said guideway, and injecting means on said handle frame comprising relatively movable cylinder and piston elements, one of said elements being movable to a first position to release said sear and thereby cause said spring instantly to move said slide and a syringe when mounted thereon to inject the needle thereon into flesh, and continued movement of said element thereafter effecting movement of the plunger of said syringe to inject the contents of the syringe through said needle thereof.

4,067,335

MATTER COLLECTING UNIT

Beverley Silvanov, 99 Gloucester Avenue, London NW1, England

Filed Feb. 10, 1976, Ser. No. 656,799
Claims priority, application United Kingdom, Feb. 12, 1975, 5988/75
Int. Cl.² A61F 5/44
U.S. Cl. 128—283 18 Claims



1. Apparatus for collecting human waste matter, said apparatus being wearable by a user, said apparatus comprising

a tubular member, connection means for attaching the inlet end of said tubular member to a human waste passage to receive waste therefrom,

a flexible tube having a closed end for receiving and retaining human waste matter passed through the outlet end of said tubular member, said flexible tube being contracted in its longitudinal direction in a storage attitude until use thereof is required, said flexible tube being comprised of successive waste matter receiving portions each of which can be severed in turn from the remainder of said flexible tube after use thereof, and said flexible tube being reclosed for delivery of matter into a succeeding portion after use of a preceding portion, and

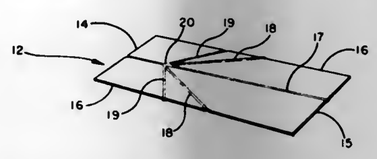
retainer means engageable with said flexible tube, said retainer means cooperating with said flexible tube to permit stepwise extension of said flexible tube out of said storage attitude into a waste receiving attitude to provide said successive waste matter receiving portions.

4,067,336

PERINEAL SHIELD AND DISCHARGE CONTAINMENT DEVICE

Russell L. Johnson, Weyauwega, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 27, 1976, Ser. No. 726,964
Int. Cl.² A61F 13/16
U.S. Cl. 128—284 25 Claims



1. A perineal shield and discharge containment device comprised of a sheet of flexible material in generally elongate form defined by a top body-contacting surface, a bottom surface, a front edge, a back edge and two side edges; said sheet being provided with a plurality of pre-established fold lines along which said sheet is folded prior to use;

said lines comprising:

a. a main fold line centrally and longitudinally disposed on said sheet and extending the full length of said sheet,

b. a first pair of rearwardly diverging fold lines originating on said main fold line at a common point spaced from the front edge of said sheet, and said diverging fold lines extending from said point to the perimeter of said sheet,

c. a second pair of rearwardly diverging fold lines disposed between said first pair of diverging lines and the side edges of said sheet, said second pair of lines also originating at said point on said main fold line and extending from said point to the perimeter of said sheet;

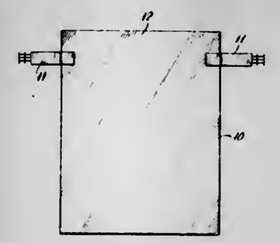
said sheet being adapted for inward folding on said main fold line, outward folding on said first pair of rearwardly diverging fold lines, and inward folding on said second pair of rearwardly diverging fold lines.

4,067,337

RE-USABLE TAPE TAB FOR DISPOSABLE DIAPERS

Irving Stanley Ness, Princeton, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Feb. 19, 1976, Ser. No. 659,313
Int. Cl.² A61F 13/16
U.S. Cl. 128—287 7 Claims



1. In a disposable diaper of the type having an inside surface and an absorbent layer between said surfaces, and an adhesive tape tab for repositionable and reapplicable use on said diaper, said adhesive tape tab having a first portion attached to one part of the diaper and having a second extendable portion for attachment to said outside film on another part of the diaper; adhesive material on one surface of the second portion of said adhesive tape tab, said adhesive material being interrupted and divided into segments by filaments and intersections of a non-adhesive, open-mesh sheet material on said surface of the second portion of the adhesive tape tab, said openings of said sheet material defining the adhesive segments, each of said adhesive segments having an area so that the peel strength between said section portion of adhesive tape tab and said film over said segmented area is less than the tearing strength of said film over the same segmented area, but providing, on a combined basis with a plurality of similar adhesive segments, adequate holding strength of the adhesive tape tab to the diaper.

4,067,338

DISPOSABLE DIAPER WITH IMPROVED TAPE FASTENER

Raymond August Van Vliet, Castle Rock, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

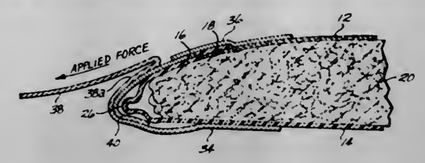
Filed Nov. 22, 1976, Ser. No. 743,896
Int. Cl.² A61F 13/16; A41B 13/02
U.S. Cl. 128—287 8 Claims

1. In an absorbent article of the type having a fluid-permeable body contacting top sheet, a fluid-impermeable plastic film backing sheet, and an absorbent filler disposed therebetween together with a tape fastener system along at least one edge of the article, the improvement comprising:

at least one tape having a fixed portion attached to the plastic film backing sheet and an attachment portion having an open and closed position,

a release liner fixed to at least a portion of the fluid-permeable top sheet in a position whereby the tape attachment portion can overlay at least part of the release liner in its closed position, and

a stress-accepting insert member attached to and extending



outwardly from the edge of the release liner around a side edge of the article to a position where it is attached to at least a portion of the fixed portion of the tape,

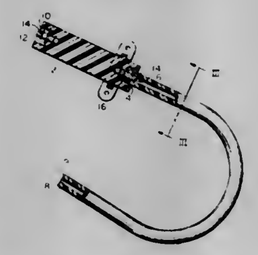
said insert members being arranged and adapted to accept in-use stresses, transferring a substantial portion of them when accepted from the attachment portion of the tape to at least one material within the article that has greater strength than the backing sheet.

4,067,339

ENTEROSTOMY RETAINER

Robert D. Chiulli, Somerville, Mass., assignor to Medico Developments, Inc., Boxford, Mass.

Filed Sept. 7, 1976, Ser. No. 721,175
Int. Cl.² 403/361; A61B 17/00
U.S. Cl. 128—303 R 4 Claims



1. An enterostomy retainer comprising a substantially rigid cylindrical portion having a smooth exterior wall and a flexible tubular portion connected to and extending from a first end of said cylindrical portion, said tube being of substantially smaller outside diameter than said cylindrical portion, a second end of said cylindrical portion having a projection extending axially outwardly from said cylindrical portion and being of a diameter smaller than the diameter of said cylindrical portion and generally complementary to the inside diameter of said tube, said projection having barb means thereon, and a free end of said tubular portion being adapted to engage and be engaged by said barb means, whereby said cylindrical portion may be placed beneath on externalized bowel to retain said bowel in the externalized position resting upon said smooth exterior wall and said free end of said tubular portion may be permanently connected to said second end of said cylindrical portion by engagement of said barb means with interior portions of said tubular portion free end to encircle said bowel and prevent loss of said retainer.

4,067,340

SURGICAL INSTRUMENT FOR MENISCECTOMY AND METHOD OF USING THE SAME

James L. Le Noir, 4500 Magnolia St., Suite 335, New Orleans, La. 70115

Filed Mar. 19, 1976, Ser. No. 668,361
Int. Cl.² A61B 17/32
U.S. Cl. 128—305 37 Claims



5. A surgical instrument for detaching a greater part of the posterior portion of the meniscus from its support comprising:

a flexible elongated cutting blade having a cutting edge at one end and having two longitudingal side edges,

first blade guiding means for insertion below the meniscus and between the tibia and coronary ligaments that attach to the base of the meniscus comprising a curved grooved guide and an elongated handle therefor, said handle and said blade guide being in substantialy the same plane,

second blade guiding means for insertion intra-articularly into the synovial pocket above the meniscus, and between the femur and the adjacent synovia comprising a curved grooved blade guide and an elongated handle therefor, said handle and said grooved blade guide being in substantially the same plane,

said first and second blade guiding means being separate from each other to permit them to be separately inserted into the knee,

said curved grooved blade guides each having substantially the same size and curvature, and when held in complementary positions, said guides defining complementary grooves, that receive said two side edges respectively, for guiding a flexible cutting blade along a predefined path adjacent the periphery of the posterior portion of the meniscal base,

a frame having an elongated portion for supporting both of said handles,

means for securing said handles to said elongated portion of said frame for insuring that said curved grooved guides assume the aforesaid complementary positions so that their respective grooves will guide a flexible cutting blade,

said frame having a change in direction adjacent the base of said grooved guides when they are mounted on the frame, to provide an extended portion of the frame which extends in a direction away from and generally aligned with those ends of said grooves which are closest to the handles, and

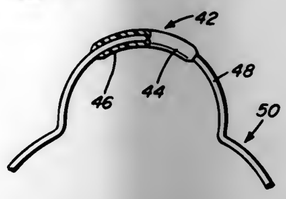
driving means mounted on said extended portion of the frame for driving said blade with said cutting edge at the forward end of the moving blade and said side edges moving along said grooves respectively so that said blade will follow the curvature of said grooved guides and detach a meniscus accordingly.

4,067,341

PIERCED EARLOBE PROTECTOR

Mary C. Ivey, Atlanta, Ga., assignor to David S. Bailey; Richard J. Pope and Earrs, Inc., all of Gainesville, Ga.

Filed Mar. 15, 1976, Ser. No. 667,020
Int. Cl.² A61F 11/00
U.S. Cl. 128—330 2 Claims



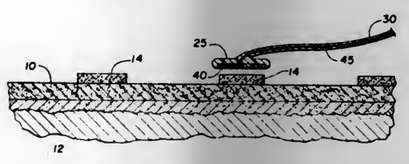
1. In an earring assembly having a metal stem; the improvement being a protector for previously pierced earlobes, comprising, a hollow tube of one piece unitary construction and forming a through passage for receiving the metal stem of said earring, said tube being provided with a generally cylindrical outer surface and constructed of a hypoallergenic flexible plastic material for protecting the tissue of an earlobe from irritation and allergic reaction by the metal of the earring stem, said tube fitting tightly on and being frictionally held on the earring stem for insertion of the assembled tube and earring stem and removal of the assembled tube and earring stem with respect to the pierced earlobe, the ends of the tube extending to the front and rear surfaces of the earlobe for spacing the metal stem from the earlobe and for retention therein along with the earring stem.

4,067,342

TAPE ELECTRODE

Charles V. Burton, Wayzata, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 6, 1976, Ser. No. 674,176
Int. Cl.² A61N 1/04
U.S. Cl. 128—418 11 Claims



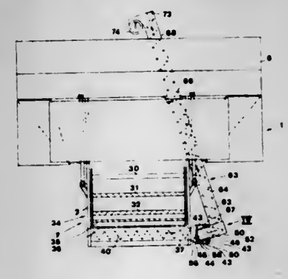
1. A solvent activated conductive dry tape electrode for prolonged adhesion to the epidermal layer of the skin of a human which is readily activated and adherable with the application of a non-aqueous solvent comprising, a highly porous tape substrate, a conductive coating positioned on one surface of the substrate, said coating including a mixture of skin compatible metal particles blended into a water insoluble low tack adhesive matrix in an amount sufficient to supply electrical continuity between the metal particles with said adhesive matrix being non-toxic and non-irritating and including a non-allergenic polymer that is at least partially soluble in a volatile organic solvent, the adhesive matrix coating having a thickness such as to permit permeation of a water vapor generated on the surface of the skin through the coating layer and tape substrate, and a further coating including a mixture of said conductive coating and a magnetic material in which the conductive coating has the water insoluble adhesive matrix and metal particles to provide the electrical continuity between the particles and with the magnetic material being mixed in amounts sufficient to provide magnetic continuity between the magnetic particles, said further coating being applied to one surface of the substrate and separated from the conductive coating in a position to allow electrical continuity to exist between said coatings when the electrode is activated.

4,067,343

GRAIN CONVEYOR MEANS

Cornelis G. M. Muijs, Flagey-Echezeaux, France, and Frans J. G. C. Decoene, Zedelgem, Belgium, assignors to Clayson N. V., Zedelgem, Belgium

Filed June 23, 1976, Ser. No. 699,112
Claims priority, application United Kingdom, June 26, 1975, 27066/75
Int. Cl.² A01F 12/60
U.S. Cl. 130—27 R 11 Claims



1. An agricultural harvesting machine comprising:

a. a chassis adapted to travel across a field;

b. first conveyor means for conveying crop material from the field to the chassis;

c. threshing, separating and cleaning means mounted to the chassis for threshing and separating crop material and for cleaning the threshed and separated crop material;

d. second conveyor means associated with the cleaning means, said second conveyor means being of the auger type with an auger flight mounted on an auger shaft and which extends generally horizontally and transversely of the machine at a location below the grain cleaning means and has a discharge end at one side of the machine and is operable to collect clean grain from the cleaning means and to convey the clean grain to its discharge end;

e. third conveyor means mounted to the chassis and disposed at an angle relative to the second conveyor means; and

f. transition means joining the second conveyor means to the third conveyor means, the transition means comprising:

1. a first impeller means associated with the discharge end of the second conveyor means and operable to receive crop material from the second conveyor means, said first impeller means including an impeller casing of generally cylindrical shape with generally slat side walls and having a generally axial inlet opening and a generally circumferential discharge opening and at least one impeller blade contained within the impeller casing and mounted on the auger shaft of the second conveyor means adjacent its discharge end, the impeller being adapted to receive crop material generally axially from the second conveyor means and to discharge the crop material substantially tangentially through said discharge opening; and

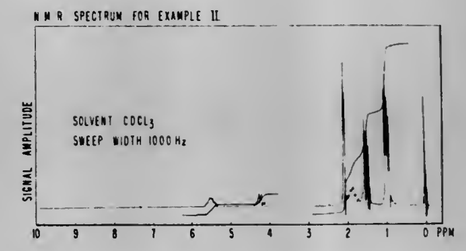
2. a second impeller means associated with the inlet of the third conveyor means and operable to receive crop material from the first impeller means and to transfer crop material received from the first impeller means to the third conveyor means.

4,067,344

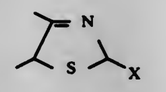
NOVEL TOBACCO PRODUCT COMPRISING ONE OR MORE THIAZOLINES AND PROCESS

Joaquin F. Vinals, Red Bank, N.J.; Jacob Kiwala, Brooklyn; Donald Arthur Withycombe, Linoroft, both of N.Y.; Braja Dulal Mookherjee, Holmdel, and Cynthia J. Mussinan, Bricktown, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

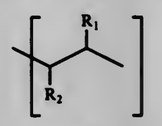
Filed Oct. 7, 1976, Ser. No. 730,157
Int. Cl.² A24B 3/12
U.S. Cl. 131—17 R 10 Claims



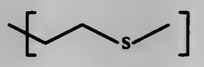
1. A smoking tobacco product comprising smoking tobacco and having added thereto and intimately admixed therewith an amount sufficient to augment or enhance the flavor or aroma of said smoking tobacco product, of one or more thiazoline compounds having the formula:



wherein X is selected from the group consisting of:



or



and wherein R_1 and R_2 are selected from the group consisting of hydrogen and methyl, R_1 and R_2 being different.

4,067,345

METHOD AND COMPOSITIONS FOR RETARDING CHEMICAL DAMAGE TO HAIR WITH TREATING AGENTS CONTAINING TWO OR MORE POLAR GROUPS

Ralph Kelly, Cincinnati, and Edmond Jean Ritter, Loveland, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 696,509, Jan. 9, 1968, Pat. No. 3,630,934, which is a continuation-in-part of Ser. No. 613,095, Feb. 1, 1967, Pat. No. 3,538,009. This application June 15, 1970, Ser. No. 46,560
Int. Cl.² A45D 7/00, 7/04; A61K 7/06, 7/135
U.S. Cl. 132—7 8 Claims

1. In a process for treating hair comprising subjecting hair to an aqueous hair damaging composition, the improvement comprising reducing the degree of hair damage by applying to the hair prior to or concurrently with subjecting the hair to said hair damaging composition, an aqueous composition con-

taining protective agent in an amount effective to reduce the degree of hair damage, said protective agent being compatible and dispersible in the aqueous composition by which it is applied to the hair; said protective agent being an organic compound containing at least two polar groups separated by a chain of at least 15 atoms, a majority of which are carbon atoms, and which contains a cyclic moiety; said polar groups selected from the class consisting of carboxyl; carboxyl salt in which the salt forming group is a metal, ammonia or an amine; hydroxyl; amino; substituted amino wherein the substituents are aliphatic or aromatic hydrocarbon radicals of 1 to 12 carbon atoms, or said substituents taken together form a 3 to 6 membered carbocyclic or heterocyclic ring with the amino nitrogen; amido, substituted amido wherein the substituents are aliphatic or aromatic hydrocarbon radicals of 1 to 12 carbon atoms, or said substituents taken together form a 3 to 6 membered carbocyclic or heterocyclic ring with the amido nitrogen, quaternary ammonium wherein the nitrogen substituents are alkyl of 1 to 6 carbon atoms; lower alkyl ester; sulfate; sulfonate; phosphate; phosphonate; and polar groups containing further substituents in said alkyl, aliphatic or aromatic hydrocarbon radicals selected from the class defined above.

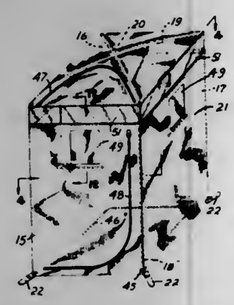
5. The process of claim 1 in which hair is treated with a hair damaging bleaching composition subsequent to the step of subjecting the hair to said aqueous composition containing protective agent.

4,067,346

COLLAPSIBLE HUNTING BLIND

Guy L. Husted, 156 E. 2nd St., Lansdale, Pa. 19446

Filed May 24, 1976, Ser. No. 688,969
Int. Cl.² A45F *1/16*
U.S. Cl. 135—4 R **9 Claims**



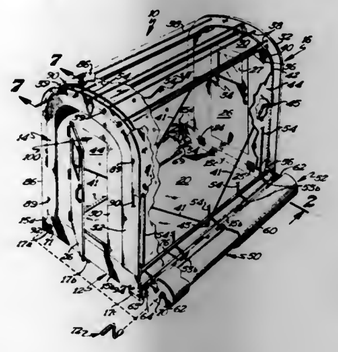
1. A hunting blind comprising four substantially vertical corner posts, each including a succeeding series of first and second sections, a hinged connection on one side of the post between each first and the next second section, a hinged connection on the other side of the post between each second and the next first section so that the hinged connections alternate on opposite sides of the post along its length, each hinged connection including a hinge pin which is transverse to the post length and is at a face of the post so the sections will fold flat against each other in a compact assembly but are in a straight line in their extended position to form the post, the end sections having axially projecting pins extending upwardly and also extending downwardly therefrom, spring latch means on the abutting first and second sections at the faces of the sections opposite from the hinged connection at said first and second section ends, said latch means including a notch therein into which the latch mechanically snaps for releasibly locking the sections together in an extended straight line position; two top struts, each including divisions which are pivoted together so that the divisions may be folded together in a compact assembly or be extended into a straight line, the struts crossing but being unconnected to each other and extending diagonally across the top of the blind, the struts having openings at their ends receiving the top pin of the adjacent corner post, each strut being slat-like in structure with transverse pins pivotally connecting them together so that the divisions swing to positions flatwise against each other when they are collapsed; means for yieldably retaining the divisions in a straight line position so that each strut presses the tops of the corner posts apart, said retaining means including a ball carried by one division and a recess on the adjacent division positioned to receive the ball; and a covering material enclosing and forming a tent about said posts and said struts.

4,067,347

SOLAR HEATED SHELTER WITH MOVEABLE SECONDARY ROOF

Vincent B. Lipinski, P.O. Box 41, Chaska, Minn. 55318

Filed July 30, 1976, Ser. No. 710,099
Int. Cl.² A45F *1/16*
U.S. Cl. 135—4 R **12 Claims**



1. A solar energy heated shelter comprising:

a rigid, substantially horizontal frame adapted to be disposed upon a supporting surface, said frame defining a generally flat floor surface;

a first upright, generally vertical end wall coupled to said frame;

a second upright, generally vertical end wall spaced apart from said first wall and coupled to said frame;

wall support means extending between said first and second end walls for maintaining said first and second walls in an upright generally vertical position;

a first flexible weather-resistant roof layer extending between and fixed to said first and second end walls, said first roof layer forming roof and side walls, and thereby cooperating with said frame and said first and second end walls to define an enclosure;

a second flexible roof layer moveably mounted relative to said first roof layer for movement between a storage position, wherein said second roof layer is clear of said first roof layer to permit solar energy to be incident on said first roof layer, and a deployed position, wherein said second roof layer at least partially covers said first roof layer to intercept solar energy otherwise incident on said first roof layer and to better contain within said enclosure solar energy already absorbed by the enclosure;

storage spool means carried by said frame for storing said second roof layer when in storage position and for selectively outputting said second roof layer in response to unwinding of said spool means to move said second roof layer to deployed position;

take up spool means revolvably attached to said frame opposite said storage spool means for cooperating with said storage spool means to draw said second roof layer into deployed position over said enclosure; and

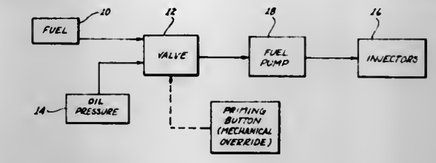
door means defined in at least one of said first and second end walls for selectively enabling access to said enclosure.

4,067,348

FUEL SHUT-OFF VALVE

Bill G. Davis, Phoenix, Ariz., assignor to Jetco, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 544,802, Jan. 28, 1975, abandoned. This application Apr. 26, 1976, Ser. No. 680,576
Int. Cl.² F16K *31/12*
U.S. Cl. 137—87 **14 Claims**



1. A valve comprising

a. a body having a cylindrical bore;

b. a radially inwardly extending annular seat dividing said bore into first and second sections;

c. a first inlet passage communicating with said first bore section for connection to a fuel tank;

d. a second inlet passage communicating with said second bore section for connection to a source of oil having a predetermined normal operating pressure;

e. an outlet passage communicating with said second bore section for connection to a fuel pump for transmitting fuel from said valve to said pump;

f. a first piston slidably positioned in said cylindrical bore, said piston including

1. a pressure receiving face positioned between said second inlet and said outlet for subjection to the pressure of said oil;

2. a fuel positioned within said first bore section for subjection to the pressure of said fuel; and

3. a reduced diameter portion positioned between said fuel face and said pressure-receiving face to permit fuel to flow through said second bore section;

g. a first annular sealing means positioned in said second bore section between said pressure-receiving face and said outlet to prevent oil from passing said face to said outlet;

h. a second annular sealing means positioned in said first bore section and movable in said bore with said piston to a position engaging said annular seat to prevent passage of fuel from said first bore section to said second bore section;

i. a biasing spring mounted in said bore urging said piston to a sealed position wherein said second annular sealing means engages said annular seat, said biasing spring exerting a force on said piston in a direction opposite to, but less than, the force exerted on said piston by said normal operating pressure;

j. passage means providing communication between said first bore section and said second bore section for permitting a predetermined quantity of fuel to pass through said valve when said second annular sealing means is in said position engaging said annular seat.

4,067,349

PACKER FOR TESTING AND GROUTING CONDUITS

Carl E. Austin; Ramon K. Hamilton, and W. L. Qualls, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

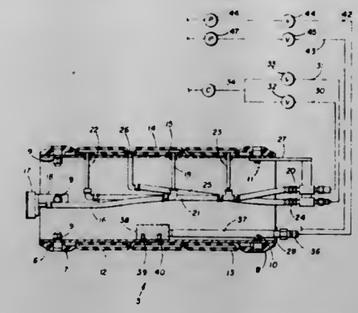
Filed Nov. 15, 1976, Ser. No. 742,147
Int. Cl.² F16L *55/18; G01M 3/28*
U.S. Cl. 138—97 **8 Claims**

1. In a sleeve packer operable for testing and repairing subsurface conduits and having spaced apart inflatable end means for isolating a portion of a subsurface conduit to be tested, a normally expandable center element positioned between said spaced apart inflatable end means, and means for applying fluid pressure to said isolated portion, the improvement comprising:

fluid pressure conduit means connected to said center element for conducting fluid pressure from said center element to one end of said sleeve packer;

pressure indicating means located on said one end of said sleeve packer and connected to said fluid pressure conduit for visually indicating the fluid pressure in said fluid pressure conduit means and said connected center element; and

pressure transmitting fluid located in said center element and said fluid pressure conduit means, and deploying said center element for filling the space between said spaced apart inflatable end means and for presenting a pressure responsive surface to a portion of a subsurface conduit isolated by said inflatable end means.

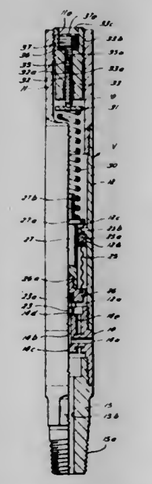


4,067,350

GAS LIFT VALVE

Ivan J. Raggio, 6154 Canal Blvd., New Orleans, La. 70124

Continuation of Ser. No. 688,061, May 19, 1976, abandoned, which is a continuation of Ser. No. 407,088, Oct. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 309,175, Nov. 24, 1972, abandoned. This application June 22, 1977, Ser. No. 808,985
Int. Cl.² F04F *1/08*
U.S. Cl. 137—155 **1 Claim**



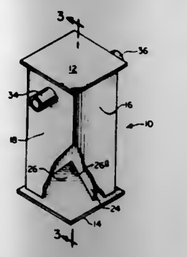
1. A gas lift valve capable of being actuated by fluid in a tubing string including:

a valve housing including means for supporting said housing with the tubing;

a valve seat mounted within said housing;
a valve element being positioned in two positions, said first position being on said valve seat and said second position being away from said valve seat;
a bellows section positioned above said valve seat including a bellows chamber area;
a bellows closure member mounted with said valve element and positioned in said bellows chamber area;
a flexible bellows mounted with said bellows closure member and extending upwardly in said bellows chamber area;
a sealing member mounted with said valve housing for suitably sealing the upper end of said bellows thereto;
a longitudinal rod positioned internally with said bellows and mounted with said bellows closure member and extending upwardly through said sealing member;
a shoulder member mounted with said rod immediately adjacent and outside of said bellows chamber area;
resilient means being received by said shoulder and extending upwardly therefrom;
a short guide stem extending upwardly from said shoulder to thereby eliminate a long valve stem which eliminates cork screwing or bowing of the spring and improper dragging and seating of the valve element;
an adjustable threaded sealing section receiving the other end of said resilient means for adjusting the urging force of said resilient means, the resilient means being located in an area sealed off from well fluids for using atmospheric pressure within said bellows during normal operating conditions and enabling the use of materials in said resilient means which provide more desirable spring rate characteristics than those usable under high pressure and corrosive atmospheric conditions;
at least one lateral port positioned below the valve seat;
a first longitudinal passage relative to said housing communicating with said lateral port at one end and said valve seat at the other end to permit fluid and gas communication from outside the tubing into said first longitudinal passage; and
a second longitudinal passage relative to said housing extending from the interior of the tubing string to said bellows chamber area while being prevented from communication with said lateral port and said first longitudinal passage when the valve element is seated and permitting communication by unseating the valve element with fluid flowing from within the interior of the tubing string through the second longitudinal passage into the bellows chamber area for acting upon the bellows which thereby permits gas and fluid on the exterior of the tubing string to move upwardly through the first longitudinal passage and down the second longitudinal passage into the interior of the tubing string to lift the liquids therein to a higher elevation.

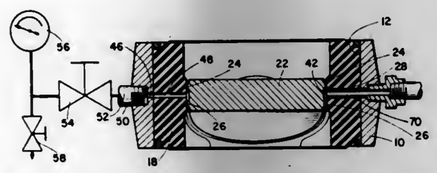
4,067,351
HYDRAULIC VENT VALVE
Lynn R. Causey, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Continuation-in-part of Ser. No. 546,276, Feb. 3, 1975, abandoned. This application Aug. 30, 1976, Ser. No. 718,848
Int. Cl.² F16K *9/00*
U.S. Cl. 137—254 **4 Claims**

1. A hydraulic pressure-vacuum valve for maintaining a constant head of pressure or vacuum on a fluid in a shipboard cargo tank, said valve being free of mechanical parts and fail-safe in oscillatory motion in any direction up to 45° from the vertical axis of said valve, which comprises a reservoir having top, side and bottom walls defining the body of said valve; two ports located in the upper portion of said reservoir, one of which communicates with the cargo tank and the other of which communicates with the atmosphere; a dividing plate which sealably separates the upper portion of said reservoir into two chambers, one of which communicates through one of said ports to the cargo tank and the other of which communicates through the other of said ports to the atmosphere, said dividing plate extending to the bottom wall of said reservoir and having a passway aperture in the shape of an inverted V located in said dividing plate adjacent said bottom wall for communication between said chambers of said reservoir; and a reservoir liquid in an amount sufficient to hold the desired



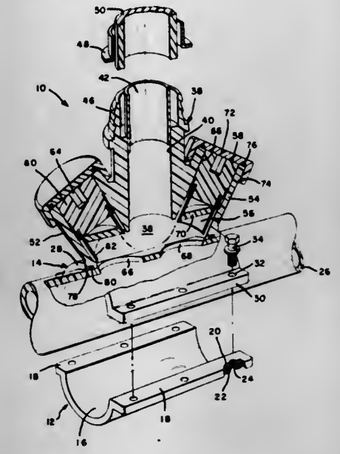
pressure or vacuum on the fluid in said shipboard cargo tank such that a pressure or vacuum greater than that desired in said shipboard cargo tank depresses said reservoir liquid in one of said chambers to a point below said aperture to relieve the excess pressure or vacuum to the desired level.

4,067,352
VALVE HAVING INTEGRITY ASSURANCE MEANS
Joseph Charles Halpine, 1908 W. Latimer Place, Tulsa, Okla. 74127
Filed Dec. 22, 1975, Ser. No. 642,750
Int. Cl.² F16K *1/226*
U.S. Cl. 137—312 **4 Claims**



1. A valve having integrity assurance means, comprising:
a valve body having an axial flow passageway therethrough and having a stem opening intersecting the flow passageway perpendicular the axis thereof, the body having a valve seat therein surrounding said flow passageway and having a stem opening coaxial with said body stem opening and having a small diameter test opening communicating between said valve seat and the exterior of the valve body;
a planar valve disc having a circumferential sealing surface, the disc being supported in said body fluid passageway in a plane oblique to the axis of said stem openings in the body and valve seat, the disc being rotatable between an open position permitting fluid flow through the valve to either side of the disc, and a closed position wherein the valve circumferential sealing surface sealably contacts said valve seat around the full periphery thereof to block flow through said passageway, said valve seat and said disc sealing surface being cooperatively configured to provide two spaced apart circumferential uninterrupted sealing contacts, the sealing contacts being to either side of said test opening and displaced from said stem opening; and
a stem rotatably supported in said valve stem opening, the inner end of the stem engaging said disc oblique to the plane thereof and spaced away from said disc sealing surface and the outer end extending exteriorly of said valve providing means of rotatably positioning said disc.

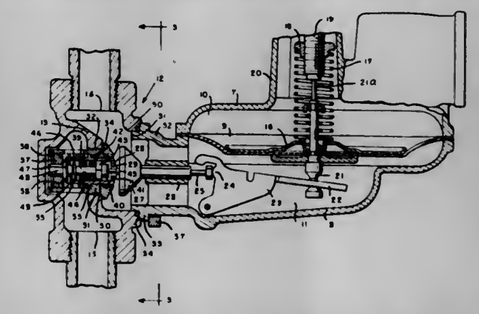
4,067,353
PIPELINE TAP AND CONNECTING DEVICE
Robert Eugene DeHoff, Mount Joy, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 28, 1976, Ser. No. 727,549
Int. Cl.² F16K *43/00*
U.S. Cl. 137—318 **3 Claims**



1. A device for tapping into a pipeline and for providing a branch line connection thereon, which comprises:
a. a first elongated half shell comprising an arcuate wall and laterally projecting flanges along each side of the wall, and an opening through the wall, said first half shell adapted to be positioned longitudinally onto a pipeline;
b. a second elongated half shell comprising an arcuate wall and laterally projecting flanges along each side of the wall, said second half shell adapted to be positioned longitudinally onto a pipeline in alignment with the first half shell whereby the flanges may be fastened together thereby clamping the first and second half shells around the pipeline;
c. first, second and third passage-containing tubes integral with and projecting laterally from the arcuate wall of the first half shell, the first tube being perpendicular to the wall and the second and third tubes being at angles thereto, said passages merging at the opening in the arcuate wall; and
d. cutting means movably positioned in the second and third tubes for cutting holes into the pipeline through the arcuate wall opening to allow communication from the interior of the pipeline to the passage in the first tube.

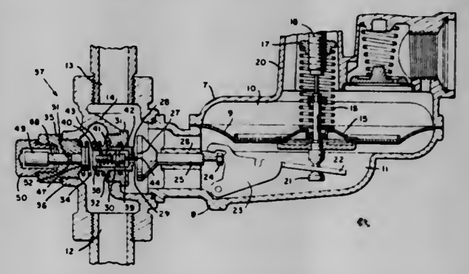
4,067,354
GAS PRESSURE REGULATOR HAVING HIGH AND LOW PRESSURE SHUTOFF MEANS
Theodore A. St. Clair, Fairfield, Conn., assignor to Textron Inc., Providence, R.I.
Filed July 19, 1976, Ser. No. 706,571
Int. Cl.² F16K *43/00*
U.S. Cl. 137—329.4 **5 Claims**

1. A gas pressure regulator comprisng a valve housing having an inlet means, outlet means and a wall separating said inlet means and said outlet means; a diaphragm casing; means for removably securing said diaphragm casing to said valve housing, said diaphragm casing having a gas chamber communicating with said outlet means and an air chamber leading to the atmosphere; a diaphragm mounted in said diaphragm casing; a bushing mounted in said wall of said valve housing; an orifice sleeve slidably mounted in said bushing and extending between and communicating with said inlet means and said outlet means, said orifice sleeve having a terminal upstream valve seat and an orifice having a downstream valve seat; resilient means in said bushing yieldingly retaining said orifice sleeve in normal position; a main valve; means operated by said diaphragm for moving said main valve toward and from said downstream valve seat of the orifice to regulate the flow of gas to said gas chamber and outlet means; means including a valve body slidably mounted in said bushing and having a high pressure shutoff valve positioned to be engaged by said terminal upstream valve seat on said orifice sleeve to shut off the flow of gas to and through said orifice sleeve to said gas chamber and outlet means when the pressure of the gas in the gas chamber rises above a predetermined acceptable pressure, said high



pressure shutoff valve being caused by the pressure of the gas in said inlet means to remain in engagement with said terminal upstream valve seat and keep the flow of gas shut off when said orifice sleeve returns to normal position upon the pressure of the gas in the regulator becoming acceptable; and means in the orifice sleeve positioned to engage said shutoff valve including means extending through the downstream orifice of said orifice sleeve and accessible for manual engagement and operation when said diaphragm casing is removed from said valve housing for separating said high pressure shutoff valve from said upstream valve seat on said orifice sleeve to restore the flow of gas therethrough.

4,067,355
GAS PRESSURE REGULATOR HAVING HIGH AND LOW PRESSURE SHUT-OFF MEANS
Theodore A. St. Clair, Fairfield, Conn., assignor to Textron Inc., Providence, R.I.
Filed Apr. 26, 1976, Ser. No. 680,584
Int. Cl.² G05D *16/06*
U.S. Cl. 137—458 **1 Claim**



1. A gas pressure regulator comprising a housing having an inlet means, outlet means and a wall separating said inlet means and said outlet means; a diaphragm in the housing forming a gas chamber communicating with said outlet means and a chamber open to the atmosphere; an orifice sleeve extending between and communicating with said inlet means and said outlet means; means for mounting said orifice sleeve in said wall for axial sliding movement relative to said wall, said

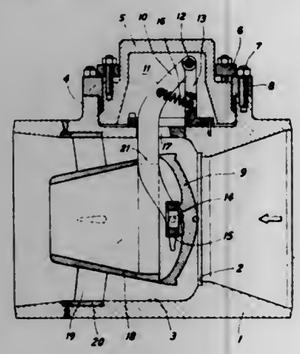
orifice sleeve having an orifice, an upstream valve seat and a downstream valve seat; a main valve; means operated by said diaphragm for moving said main valve toward and from said downstream valve seat of the orifice sleeve to regulate the flow of gas to said gas chamber and outlet means; and means including a valve rod slidably mounted in said housing and a high pressure safety valve mounted on said rod and positioned to be engaged by said upstream valve seat to shut off the flow of gas through said orifice sleeve to said gas chamber and outlet means when the pressure of the gas in the gas chamber rises above a predetermined acceptable pressure, said safety valve being caused by pressure of the gas in said inlet means to remain in engagement with said upstream valve seat and keep the flow of gas shut off when said orifice sleeve returns to normal position upon the pressure of the gas in the regulator becoming acceptable; and manually operable means for separating said high pressure safety valve from said upstream valve seat on said upstream orifice, said orifice sleeve having a second upstream valve seat between said first-named upstream valve seat and said downstream valve seat, and a spring-urged valve slidably mounted in said orifice sleeve and controlled by said diaphragm for stopping the flow of gas through said downstream valve seat when the pressure of the gas in the gas chamber falls below a predetermined pressure, and manually operated means for causing the flow of gas to the gas chamber to be resumed.

4,067,356

CHECK VALVE FOR LARGE CONDUITS

Alfred Kreuz, Hardterwaldstr. 148, 4050 Monchengladbach-Hardt, Germany

Filed Oct. 14, 1975, Ser. No. 622,381
Claims priority, application Germany, Oct. 19, 1974, 2449857
Int. Cl.² F16K *15/03*
U.S. Cl. 137—527 **9 Claims**



1. A check valve comprising in combination:

an elongated, generally tubular valve housing, the housing bore having an axial inlet end and an axial outlet end adapted for connection to matching openings of a pipe system;

a valve seat defined by a radially inwardly narrowed mid-portion of the housing bore, in a plane transverse to the housing axis;

an enlarged-diameter bore portion in the housing immediately behind the valve seat;

a hollow stationary valve core positioned coaxially inside the enlarged-diameter bore portion, so as to form an annular flow channel therewith, the valve core having an open forward end facing the valve seat at an axial distance behind it and an open rearward end of a diameter which occupies a substantial portion of the housing bore, thereby forming an inner flow channel through the core, for a reverse flow;

a generally dish-shaped valve poppet arranged in the axial space between the valve seat and the forward end of the valve core, the valve poppet being movable between a normal open position in which it is seated against the forward end of the valve core, thereby covering said open end in the manner of a lid, and a closed position in which it is seated against the valve seat, following a closing motion resulting from a reverse flow of liquid through said inner flow channel; and

means for guiding the valve poppet in its motion between the open and closed valve positions; and wherein

the valve poppet guide means includes an elongated pivot lever engaging with one lever extremity the valve poppet and with the other lever extremity a fixed outer pivot point which is located radially outside the housing bore, so that the valve poppet is guided to execute a short arcuate motion approximating a straight-line axial motion between its open and closed positions; and

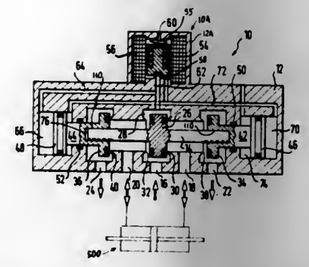
the valve housing includes a closed, laterally extending head for the accommodation therein of said fixed pivot point of the pivot lever.

4,067,357

PILOT-OPERATED DIRECTIONAL CONTROL VALVE

Erich Ruchser, Stetten, Germany, assignor to Herion-Werke KG, Fellbach, Germany

Filed June 9, 1975, Ser. No. 585,294
Claims priority, application Germany, June 14, 1974, 2428888; Sept. 14, 1974, 2443981
Int. Cl.² F15B *13/043*
U.S. Cl. 137—596.16 **13 Claims**



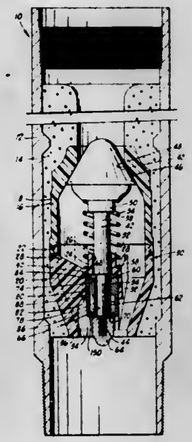
1. In a pilot-operated directional control valve, a combination comprising a hollow valve body having a pressure port, an internal space communicating with said pressure port, spaced-apart first and second seats in said space, first and second working ports flanking said pressure port and respectively communicating with said first and second seats, and first and second return ports respectively adjacent to said first and second working ports; a spool reciprocable in said body and including an elongated shank having first and second end portions, a center land rigid with said shank and disposed in said space between said seats, and first and second outer lands respectively disposed intermediate and having permanent freedom of movement between said first working port and said first return port and between said second working port and said second return port, said first and second outer lands respectively having first and second recesses reciprocally receiving said first and second end portions of said shank; and first and second pistons mounted in said body and respectively cooperating with said first and second outer lands, said pistons being movable in said body so that lengthwise movement of said shank and said lands is effected, and said end portions of said shank being reciprocally moved relative to said outer lands in said recesses of the latter.

4,067,358

INDEXING AUTOMATIC FILL-UP FLOAT VALVE

Steven G. Streich, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 597,376, July 18, 1975, Pat. No. 4,014,727.
This application Jan. 2, 1976, Ser. No. 646,284
Int. Cl.² F16K *31/12*
U.S. Cl. 137—624.13 **18 Claims**



1. A flow responsive fluid check valve for controlling forward and reverse fluid flow through a conduit, comprising:

a valve body having a substantially longitudinally aligned passage therethrough;

means for connecting said valve body in a conduit;

a valve seat disposed in the passage in said valve body and facing in the direction of forward fluid flow through said valve body;

valve member means having a valve stem formed thereon and extending in longitudinal alignment with said valve body, said valve member means being movably disposed in the passage in said valve body for engagaing said valve seat to close said fluid check valve to reverse fluid flow and, alternately, for disengaging from said valve seat to open said fluid check valve to reverse fluid flow;

biasing means operatively engaging said valve member means for urging said valve member means toward said valve seat; and

flow responsive means operatively mutually engaging said valve body and said valve member means, said flow responsive means including:

an indexing sleeve secured to said valve stem and having at least one outwardly extending protuberance formed thereon, and

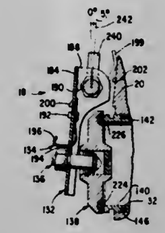
J-slot means carried by said valve body, and having a longitudinal passage formed therein in which said indexing sleeve is slidably received and having a cam slot formed therein in which the protuberance is slidably received, for engaging the protuberance to retain said valve member means disengaged from said valve seat against the urging of said biasing means to thereby allow reverse fluid flow through the passage in said valve body, for releasing said valve member means for engagement with said valve seat under the urging of said biasing means in response to an application of foward fluid flow through the passage in said valve body to thereby prevent reverse fluid flow therethrough, and for again retaining said valve member means disengaged from said valve seat against the urging of said biasing means in response to another application of forward fluid flow through the passage in said valve body to thereby again allow reverse fluid flow therethrough.

4,067,359

RESET ASSEMBLY FOR SLAM-SHUT VALVES

Theodore Emil Kwast, Anaheim, Calif., assignor to The Singer Company, New York, N.Y.

Filed June 2, 1976, Ser. No. 692,163
Int. Cl.² F16K *31/52*
U.S. Cl. 137—630.14 **1 Claim**



1. A reset assembly for a slam-shut valve having a diaphragm actuated release shaft releasable upon the diaphragm sensing an overpressure condition, the release shaft journaled in a diaphragm housing mounted upon a valve housing in a chamber formed therein above a flow passage, the reset assembly comprising:

a. a reset shaft rotatably mounted in the chamber with an externally extending bolt head, and an internally formed bolt head,

b. a lever journaled on the shaft having a socket means therein adapted to receive the internal bolt head,

c. a latch carried by the lever normally to engage the release shaft to hold the lever in raised position, and to be disengaged from the release shaft upon actuation thereof to release the lever,

d. a slam-shut valve element responsive upon release of the lever to close the flow passage,

e. the slam-shut valve element having a counterbored central aperture,

f. an equalizer valve having a cylindrical body portion having one end rigidly connected to the lever and having the other free end portion configured as a valve head seating surface and extending into the aperture of the slam-shut valve element with substantial clearance formed between the side walls of the counterbored aperture and the body portion adapted to permit relative universal motion of the equalizer valve or the slam-shut valve element,

g. a coil spring disposed about the body portion within the said clearance with one end thereof connected to the body portion and the other end thereof connected to the valve element normally to urge the free end of the body portion to close the aperture of the valve element and to permit the slam-shut valve element to be self-aligning on closure thereof,

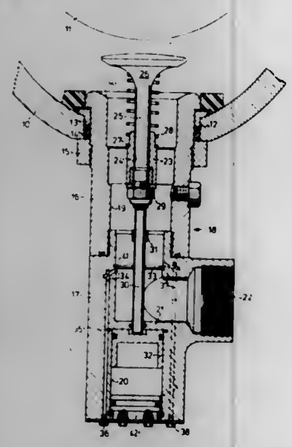
h. the body portion to transcribe an arcuate motion within the said clearance to open the aperture to equalize the pressure across the slam-shut valve element, and upon collapse of the spring the slam-shut valve element to be moved away from the flow passage,

i. a pair of retaining members, one connected adjacent the larger opening of the said counterbore and the other connected adjacent the seating surface end of the body portion, and; the spring is entrapped between the retaining members.

4,067,360
VALVE FOR CONTROLLING AN OPENING FOR THE PASSAGE OF FLUID INTO AND OUT OF A PRESSURE ACCUMULATOR

Wilhelm Zirps, Hemmingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 25, 1976, Ser. No. 699,861
Claims priority, application Germany, Aug. 16, 1975, 2536484
Int. Cl.² F16L 55/04
U.S. Cl. 138—30 8 Claims



1. In combination with a pressure accumulator having an opening for the passage of fluid into and out of the same and an elastic membrane opposite said opening, a valve for controlling said opening, said valve comprising an elongated valve housing having an inner end provided with a valve seat and extending in a sealed manner through said opening to the outside of said pressure accumulator; fluid passage means communicating with the interior of the valve housing spaced from said inner end; a valve member movable between a closed position engaging said valve seat and an open position; biasing means biasing said valve member to said open position; a piston slidably guided in said valve housing; a push rod abutting with opposite ends respectively against said piston and said valve member; an orifice plate arranged in said valve housing between said inner end and said fluid passage means and creating during flow of fluid through said valve housing a pressure difference in the latter to opposite sides of said orifice plate; and channel means in said valve housing for transmitting such pressure difference to opposite sides of said piston so that the latter acts through said push rod on said valve member tending to maintain the latter in said open position during outflow of fluid from said pressure accumulator and expanding of the elastic membrane of said pressure accumulator towards said valve member.

4,067,361
SILENT SELF-CONTROLLED ORIFICIAL RESTRICTOR

James F. Hollister, Waterford; James E. McGill, Norwich, and William H. Stoddard, N. Stonington, all of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

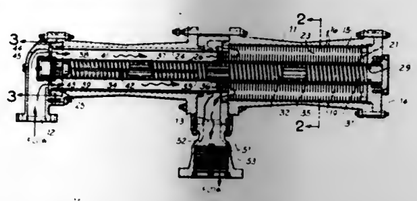
Filed Apr. 21, 1976, Ser. No. 679,127
Int. Cl.² F15D 1/02
U.S. Cl. 138—42 5 Claims

1. A low noise orificial restrictor valve for providing constant fluid flow for different pressure differentials comprising,

a casing having an inlet and an outlet,

a plurality of spaced circular orifice plates transversely mounted in said casing, each said circular orifice plate having a front flat face and a rear flat face and having a plurality of holes extending from said front face to said rear face, and

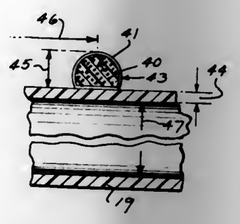
a hollow cylinder having opened ends slidably positioned in said casing receiving fluid entering said inlet, said hollow cylinder having an inside diameter greater than the diameter of each said circular orifice plate, said hollow cylinder being telescopically movable around said circular orifice plates and being positioned by fluid entering said inlet for directing said fluid through a number of said circular orifice plates dependent upon the position of said hollow cylinder.



4,067,362
REINFORCED RIBBED TUBULAR STRUCTURE AND METHOD OF MAKING SAME

Robert M. Jackman, Little Rock, Ark., assignor to A. O. Smith-Inland, Inc., Milwaukee, Wis.

Filed Feb. 2, 1976, Ser. No. 654,356
Int. Cl.² F16L 9/14
U.S. Cl. 138—173 6 Claims



1. A ribbed tubular structure having an outer surface and reinforcing members secured to said outer surface and forming substantially encircling ribs, said reinforcing members including a series of resin impregnated filaments arranged in an elongated bundle and surrounded by a plurality of filaments helically formed from separate axially spaced filaments separately wound and secured to the bundle and providing a plurality of spaced adjacent convolutions surrounding said elongated resin impregnated filaments.

4,067,363
SHEDDING DEVICE FOR WEAVING LOOMS, IN PARTICULAR FOR DOUBLE-LIFT OPEN-SHED JACQUARD MACHINES

Walter Keim, Gerlenhofen, Germany, assignor to Firma Grosse Webereimaschinen GmbH, Neu-Ulm (Donube), Germany

Filed July 23, 1976, Ser. No. 708,086
Claims priority, application Germany, July 25, 1975, 2533216
Int. Cl.² D03C 3/00, 3/08
U.S. Cl. 139—59 10 Claims

1. A shedding device for a double-lift open-shed Jacquard weaving loom, comprising:

an array of upright vertically displaceable lifters each having an upper end formed with a pair of oppositely extending downwardly inclined projections;

a pair of generally horizontal lifting blades flanking said array and each formed with a plurality of longitudinally spaced inclined surfaces respectively engageable with a projection of a respective lifter upon an upward movement of the respective blade rim to said lifters, said blades being each formed with regions between said surfaces permitting relative displacement of said lifters and said blades without mutual entrainment; and

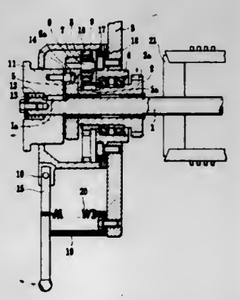


means for displacing said lifters laterally from a position in which a respective projection is engageable by a respective one of said surfaces of a respective blade and into an adjoining one of said regions for selectively enabling entrainment of said lifters by said blades during upward movement of the blades and preventing such entrainment.

4,067,364
APPARATUS FOR REVERSING AND RACING A CARD IN A DOBBY MACHINE

Nishikayama Tomio, Nagoya, Japan, assignor to Yamada Dobby Co., Ltd., Nagoya, Japan

Filed Dec. 24, 1975, Ser. No. 644,147
Claims priority, application Japan, Dec. 28, 1974, 50-2239
Int. Cl.² D03D 51/00
U.S. Cl. 139—324 12 Claims

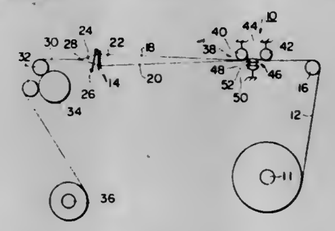


1. An apparatus for reversing and racing a card cylinder in a dobby machine comprising a shaft adapted to be drivingly connected to the card cylinder; a first gear rotatably mounted on said shaft; a second gear secured to and axially spaced from said first gear; an annular housing positioned about said shaft having an internal gear extending circumferentailly therewithin; a planetary gear means including a disc element rotatably mounted about said shaft, a pin carried by said disc element adjacent the periphery thereof, and a planetary gear mounted on said pin and rotatable relative to said disc element; a card handle mounted on said shaft at the longitudinal end thereof remote from the operative connection of said shaft with the card cylinder to be axially movable therealong the thereby selectively rotatable therewith; and an operating handle connected operatively to said planetary gear and operable to be rotated to thereby effect reversing of the card cylinder.

4,067,365
APPARATUS OF STOPPING OPERATION OF A WEAVING LOOM

Miyuki Gotoh, 4-48-21, Midori-cho, Tokorozawa, Japan

Filed Mar. 2, 1976, Ser. No. 663,141
Claims priority, application Japan, Mar. 6, 1975, 50-27384
Int. Cl.² D03D 51/18
U.S. Cl. 139—370.1 3 Claims



1. An apparatus for stopping the operation of a weaving loom when woven fabric of the weaving loom lacks a weft yarn completely inserted, said apparatus comprising,

first means for sensing the tension in a warp yarn existing between a back rest roller of a weaving loom and the fell of the woven fabric at each beat-up and for generating a first signal having a value representative of the sensed tension in the warp yarn,

second means comprising comparator means electrically connected to said first means for receiving said first signal therefrom for comparing the value of said first signal from said first means with a reference value and for generating a second signal when the value of said first signal is greater than said reference value,

a pulse generator for generating successive pulse signals each generated at each successive cycle of the weaving loom, and

third means comprising

means electrically connected to said pulse generator for receiving said pulse signals therefrom for adding said pulse signals on one-by-one reception of said pulse signals to obtain a total thereof at each reception of each of said pulse signals;

means electrically connected to said second means for receiving said second signal therefrom for restoring said total to zero in response to said second signal from said second means, and

means for generating a third signal for stopping the operation of the weaving loom when said total has reached a predetermined number exceeding two.

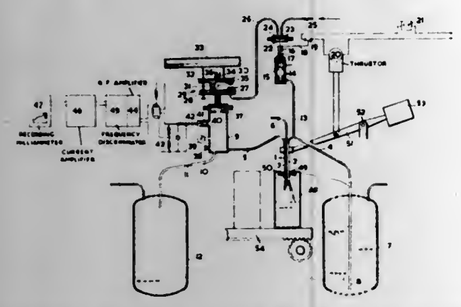
4,067,366
APPARATUS FOR FILLING CONTAINERS WITH LIQUID

Frank Horton Conway, Salisbury, and Innis Raymond Myles, Allington, near Salisbury, both of England, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

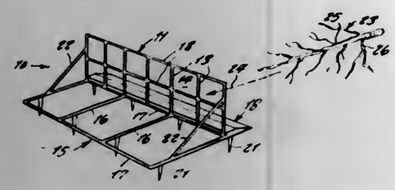
Filed Nov. 2, 1953, Ser. No. 389,656
Int. Cl.² B65B 31/00
U.S. Cl. 141—59 12 Claims

1. An apparatus for filling sealed containers with a predetermined quantity of liquid comprising a reservoir for the filling liquid, a separator container under vacuum, a filling nozzle having three orifices, one of the orifices having a pipeline connection to the separator, a second orifice having a pipeline connection to the separator and the third orifice having a

pipeline connection to the atmosphere, said pipeline connection to the reservoir having a valve therein opening to a source of pressure and means for opening said valve when the desired amount of liquid has entered the sealed container.



4,067,367
TREE DELIMBER
Milam Adamson, Rte. 2, Roanoke, Ala. 36274
Filed Apr. 1, 1977, Ser. No. 783,958
Int. Cl.² B27L *1/06*
U.S. Cl. 144—2 Z 3 Claims



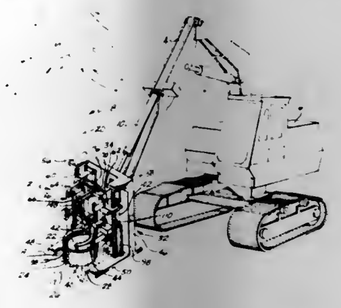
1. A tree delimber, comprising, in combination, an upright frame and a horizontal frame, said upright frame being supported vertically upon said horizontal frame, and said vertical frame incorporating means whereby a fallen tree, pulled through said vertical frame, is delimbed; said vertical frame being comprised of a plurality of vertical and horizontal pipes welded together and forming a plurality of square openings, said trees being pulled through said openings; said horizontal frame being comprised of a plurality of parallel, longitudinally extending pipes and a plurality of transverse extending pipes welded together, together with a deflector, and means for anchoring said horizontal frame in a stationary position upon a ground.

4,067,368
CABIN LOG SHAPER
William K. Beecroft, Rte. 2, Box 109, Frederic, Wis. 54837
Filed Apr. 20, 1976, Ser. No. 678,682
Int. Cl.² B27C *5/00*
U.S. Cl. 144—3 R 10 Claims



1. In combination, elongated base means including elongated guide structure, router means supported from said guide structure for guided movement therealong in a predetermined path, support means supported from said base means and defining a reference axis paralleling said path, said support means including means for stationarily supporting a log in position generally concentric with said axis, said router means including blade means operative to form a first convex semi-cylindrical surface generally concentric with said axis on a first adjacent side of a log supported along said axis and to form a central outwardly opening keyway groove in said surface extending therealong, said support means including key means receivable in said keyway groove, when said log is angularly displaced 180 degrees about its longitudinal axis subsequent to forming said first semi-cylindrical surface and keyway groove on and in said log, to support said log in keyed position from said support means with the side of said log remote from the first grooved semi-cylindrical surface opposing said path and said log positioned for forming a second grooved semicylindrical surface thereon by said router means with said first and second semi-cylindrical surfaces substantially coextensive and said keyway grooves substantially diametrically opposite each other.

4,067,369
WHOLE TREE EXTRACTION DEVICE
Grady R. Harmon, LaFayette, Ala., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Jan. 5, 1976, Ser. No. 646,465
Int. Cl.² A01G *23/06*
U.S. Cl. 144—34 R 13 Claims

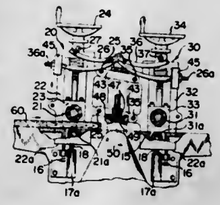


1. A device for harvesting rooted trees where at least the lower portion of a tree together with a substantial portion of the root system is harvested, comprising:
- a load frame,
- a power frame mounted on said load frame arranged and adapted to move relative to said load frame,
- a vibrator frame mounted on said power frame extending forwardly thereof arranged and adapted to be substantially rigidly supported horizontally and flexibly supported vertically with respect to said power frame,
- shearing means mounted on said vibrator frame towards the bottom thereof,
- means to vibrate said shearing means in a plane substantially parallel to said load frame, and
- means mounted on said shearing means to selectively grip the lower portion of a tree holding it with respect to said power frame.

4,067,370
AUTOMATIC PLANK PLANING MACHINE
Chen-Wan Chang, 453, Feng Shih Road, Feng Yuan Chen Tai-chung, Hsien, China /Taiwan
Filed Oct. 18, 1976, Ser. No. 733,283
Int. Cl.² B27C *1/12*
U.S. Cl. 144—117 R 6 Claims

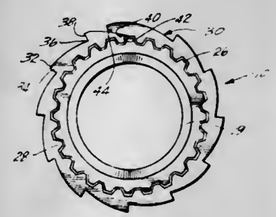
1. An automatic lumber planing machine comprising:
- a machine body;

- a planing table mounted on said machine body and having follower roller troughs defined therein;
- two movable roller housings, each movably mounted on said planing table to be disposed thereabove;
- conveyor rollers mounted on each of said roller housings;
- a follower roller mounted in each of said planing table follower roller troughs;
- adjustable set screws connecting said housings to said machine body;
- spring means mounted on said machine body and connected to each said housings;
- a stationary member secured to said machine body between said two roller housings;



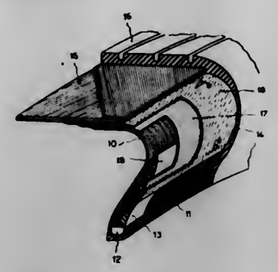
- a horizontal rod mounted on each of said movable housings;
- two bars each having opposite ends and each being pivotally connected to said stationary member, each bar having a balance weight on one end thereof with the other end of said each bar being forced upwardly against said horizontal rod by said weight so that each roller housing can be moved upwardly to allow said conveyor roller to follow a natural warp of a plank being put through the planing machine, whereby the frictional driving engagement of said rollers with the plank will not exert sufficient pressure on that plant to deform the same.

4,067,371
MECHANICALLY LOCKING FASTENER
Edgar L. Stencel, Huntington Beach, Calif., assignor to VSI Corporation, Rosemead, Calif.
Filed July 15, 1976, Ser. No. 705,397
Int. Cl.² F16B *39/32*
U.S. Cl. 151—41.73 18 Claims



1. An improvement of the fasteners of the type which lock to a workpiece in a bore thereof by means which prevent rotation of the fastener with respect to the workpiece in a direction tending to separate the two, the improvement comprising:
- a. external threads on the fastener for receipt in internal threads of the bore of the workpiece;
- b. means on the fastener for accepting a cooperating fastener;
- c. an external groove on the fastener; and
- d. a lock ring received in the groove and having;
  - i. radially extending, external teeth having a form to permit sliding rotational movement between the teeth and the wall of the bore of the workpiece in a setting rotational direction of the fastener, and biting engagement into the wall of the bore in a loosening direction of rotation of the fastener to thereby prevent separation of the fastener from the workpiece;
  - ii. a slit through the ring to permit free expansion and contraction of the ring, the slit being at an angle to both the radius of the lock ring and a tangent to the circumference of the lock ring so that expansion and contraction of the ring has abutting edges of the slit in engagement to thereby maintain the concentricity of the ring; and
  - iii. means on the inside of the ring and the groove to rotationally couple the ring to the fastener so as to prevent rotation of one with respect to the other.

4,067,372
RADIAL TIRE HAVING SIDEWALLS REINFORCED WITH A RUBBERY MIXTURE HAVING A HIGH MODULUS
Yves Masson, Paris, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, France
Filed Feb. 26, 1975, Ser. No. 553,117
Claims priority, application France, Feb. 26, 1974, 74.06958
Int. Cl.² B60C *9/02, 9/18*
U.S. Cl. 152—354 R 9 Claims

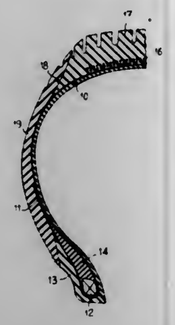


1. A tire comprising a tread, a radial carcass formed of at least one of cord fabric, a top belt located under the tread of the tire, and sidewalls having external sidewall strips, said sidewalls including at least two reinforcing layer comprised of a reinforced rubber mixture exhibiting anisotropy of at least 2:1 with a modulus of elasticity of at least 200 kg/cm² at 100% elongation in the direction of the strongest resistance to elongation, the directions of the strongest resistance of each of the reinforcing layers being crossed at angles on the order of 20°–70° with respect to the cords of the radial carcass, said reinforcing layers being more extensible than said radial carcass and being placed under said sidewall strips and extending over the entire height of each of the sidewalls and the upper end portions of said reinforcing layers being inserted between the carcass and the lateral edges of the belt for a distance of approximately 15 to 35 mm.

4,067,373
TIRES
Emile-Jean Delobelle, Colombes, and Francois Madec, Puteaux, both of France, assignors to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, France
Continuation of Ser. No. 432,208, Jan. 10, 1974, abandoned. This application Sept. 22, 1975, Ser. No. 615,467
Claims priority, application France, Jan. 10, 1973, 73.00802
Int. Cl.² B60C *9/02, 15/00*
U.S. Cl. 152—354 R 9 Claims

1. A tire of the type having a radial carcass and a top belt for vehicles, which comprises a tread, sidewalls and beads, each flange portion of a sidewall having a filler section made from a hard rubber material surmounting the bead, said filler section being positioned between a portion of the carcass and folded-over edges of the carcass and comprising a rubbery material which is a rubbery mixture containing for 100 parts of natural

or synthetic elastomer, from 50 to 90 parts of carbon black and from 20 to 50 parts of polyethylene or polypropylene having a high molecular weight of at least 500,000, said rubbery material having at the same time a dynamic modulus of at least about 200 kg/cm² and a low hysteresis expressed by a low loss angle on the order of from about 7° to 13° and said sidewalls



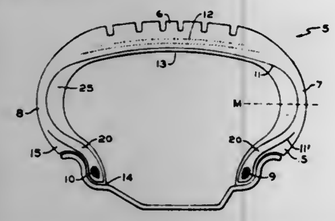
each having an exterior portion extending from a rim portion of the tire to the exterior lateral edges of the sides of the tread, each portion comprising a non-reinforced flexible rubbery material having a Shore hardness A of approximately 60 and a medium modulus of elasticity on the order of 15 kg/cm² at 100% elongation.

4,067,374

PNEUMATIC TIRE

John Todd Alden, Akron; Michael Grant Miller, Cuyahoga Falls, and Stephen Charles Sabo, Barberton, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 513,413, Oct. 9, 1974, abandoned. This application May 11, 1976, Ser. No. 685,346
Int. Cl.² B60C *9/06, 17/00, 15/02*
U.S. Cl. 152—354 R **3 Claims**



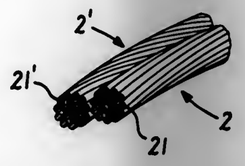
1. A pneumatic tire comprising a carcass with an annular tread having a circumferentially extending crown therebeneath; said crown having an inner circumferentially extending surface; a pair of shoulders formed at opposite edges of said tread; said carcass having a pair of spaced apart beads; each bead having a toe and heel portion; said carcass having a sidewall on each side of said tire extending from one of said beads to said tread; a cord reinforcing ply with radially disposed cords in said carcass extending from one of said beads to the other of said beads through each of said sidewalls and said crown; said cord ply lying closely adjacent to the outermost surface of said sidewall at about said midpoint excluding the width of any air impervious liner or inner tube; said cord ply extending gradually from about said midpoint in said sidewall to said toe of said bead and extending gradually in the other direction to said crown of said tire to be closely adjacent with the inner wall surface of said crown presenting a crescent shaped mass of rubber in vertical cross section of said tire carcass without any cord reinforcing material in said crescent shaped mass of rubber or inwardly to the inner wall surface of said carcass; said carcass having a plurality of circumferentially extending belts positioned in said crown between said tread and said cord reinforcing ply; one of said belts having wire strands extending transversely across said crown; said wire strands lie in planes that contain the axis of rotation of said tire; and said one belt being closer to said tread than the remaining ones of said belts to place said wire strands of said one belt in compression and said cords of said reinforcing ply in tension in said crown upon deflation of said tire while placing said crescent shaped mass of rubber in compression.

4,067,375

BEAD CORE HAVING OPPOSITELY TWISTED BEAD RINGS

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, France

Filed Jan. 28, 1976, Ser. No. 653,126
Claims priority, application France, Jan. 29, 1975, 75.02871
Int. Cl.² B60C *15/04*
U.S. Cl. 152—362 R **4 Claims**



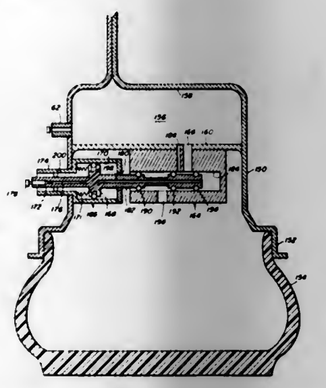
1. A pneumatic tire with a bead seat and whose bead reinforcement comprises at least two metallic unitary bead rings forming a composite bead ring around which a carcass reinforcement is anchored, the said unitary bead rings being stranded bead rings and being, as seen in radial section, in tangentail contact with each other, characterized by the fact that the said unitary stranded bead rings each comprise a peripheral layer of wires stranded or twisted in opposite direction from the peripheral layer of wires of the other unitary stranded bead ring.

4,067,376

TIRE PRESSURE WARNING SYSTEM

William A. Barabino, North Reading, Mass., assignor to Safety Research & Engineering Corporation, North Reading, Mass.

Division of Ser. No. 421,538, Dec. 4, 1973, Pat. No. 3,934,223. This application Jan. 16, 1976, Ser. No. 649,846
Int. Cl.² B60C *23/04, 23/12*
U.S. Cl. 152—418 **1 Claim**



1. An automatic air replenishment and low pressure warning system for a pneumatic tire, comprising

a. a wheel adapted to support a tire mounted thereto,

b. said wheel being formed with spaced tire supporting front and rear walls joined at their inner portions and an annular wall between said front and rear walls defining an integral annular concentric chamber adapted to store a quantity of compressed air at a pressure higher than the normal pressure in said tire,

c. normally closed pressure responsive valve means connecting said chamber to the interior of said tire and adapted to open when the pressure in said tire drops to a predetermined level whereby replenishing pressurized air is delivered into said tire,

d. said valve means including a release valve fixed to said annular wall and formed with a cylindrical chamber therein, a spring loaded rod movably mounted in said chamber and adapted to open and close said chamber according to the pressure in said tire,

e. said valve means formed with a passageway and including an acoustical signal generating device operatively connected to said rod through said passageway and adapted to produce an acoustical warning signal in the event of a low pressure condition in said tire, and,

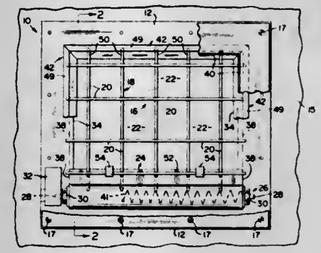
f. acoustic sensing means disposed remotely from said tire and responsive to an acoustic signal generated thereby, said sensing means including warning means actuated by said sensing means upon sensing of an acoustic signal.

4,067,377

AIR CONTROL DAMPER

Leonard R. Phillips, St. Petersburg, Fla., assignor to Anemostat Products Division, Dynamics Corporation of America, Scranton, Pa.

Continuation-in-part of Ser. No. 524,141, Nov. 15, 1974, abandoned. This application June 15, 1976, Ser. No. 696,311
Int. Cl.² A47H *1/00;* E06B *3/32*
U.S. Cl. 160—98 **9 Claims**



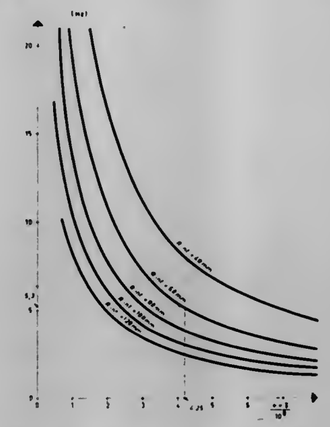
1. A fire damper assembly of the type primarily designed for mounting in a conduit in an air distribution system, said damper assembly comprising frame means adapted to be connected in the conduit and defining an air passageway communicating with the conduit for conduit air flow therethrough, marginal sealing means in said frame means about said air passageway, a damper in said frame means comprising at least one thin flexible sheet of fire resistant material having passageway opening and closing positions, the sheet of material extending transversely across said passageway in its passageway closing position, means for moving said sheet of material between its said passageway opening and closing positions, and support means for said sheet of material extending transversely across said air passageway adjacent and on a downstream side of said sheet of material in the passageway closing position of the latter, said support means being open to conduit air flow therethrough but of substantially rigid construction so as to lend structural integrity to the sheet material when the latter is forced thereagainst by conduit air pressure, and said sheet of material in its passageway closing position also engaging said marginal sealing means whereby to provide a positive fire stop.

4,067,378

CONTINUOUS CASTING OF A METALLIC PRODUCT BY ELECTROMAGNETIC CENTRIFUGING

Robert Alberny; Jean-Pierre Birat, both of Metz, and Roger Ventavoli, Algrange, all of France, assignors to Institut de Recherches de la Siderurgie Francaise (IRSID), St.-Germain-en-Laye, France

Filed Jan. 31, 1977, Ser. No. 763,971
Claims priority, application France, Feb. 11, 1976, 76.03802
Int. Cl.² B22D *11/10*
U.S. Cl. 164—49 **4 Claims**



1. In a process for continuously casting a metallic product, wherein a liquid metal is injected into an open top of a cooled ingot mold having a mold chamber defined by the wall of the mold, the chamber having an axis and a radius, the metal is rotated in the mold chamber by applying thereto a magnetic field turning about the axis, and the metal product is extracted from an open bottom of the mold is partially solidified condition, the turning magnetic field imparting a driving force to the liquid metal in the mold chamber and the frequency of rotation of the magnetic field being held in the range of 4 to 15 Hz, the driving force being directly proportional to the frequency and inversely proportional to the induced currents in the mold wall caused by an increase in the frequency, the improvement comprising the step of setting the maximum value of the driving force as a function of the radius of the mold chamber and the thickness and electric conductivity of the mold wall, this value being determined by the highest frequency permissible to increase the driving force before the frequency is so high that the currents induced thereby in the mold wall decrease the driving force below the maximum value.

4,067,379

METHOD FOR THE MANUFACTURE OF MULTILAYERED CONTACTS FOR MEDIUM-VOLTAGE VACUUM POWER CIRCUIT BREAKERS

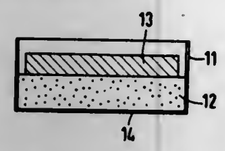
Heinrich Hässler, Wendelstein, and Horst Kippenberg, Nuraberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 11, 1976, Ser. No. 713,597
Claims priority, application Germany, Aug. 13, 1975, 2536153
Int. Cl.² H01R *9/00;* B22D *19/00*
U.S. Cl. 164—69 **11 Claims**

1. A method for preparing pore-free, multilayered contacts for medium-voltage vacuum power circuit breakers which comprises:

a. impregnating under vacuum with oxygen-free, liquid copper a composite body of metal powders consisting of at least 35% by volume of a metal selected from the group consisting of chromium and vanadium and at least one metal selected from the group consisting of chromium,

vanadium, cobalt, nickel and iron, in a crucible comprised of a metal selected from the group consisting of iron, steel and chromium-nickel steel; and



b. removing at least part of the crucible to expose a contact surface.

4,067,380

MAKING FOUNDRY MOULDS

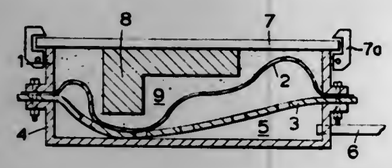
William McCormack, Studley, England, assignor to British Cast Iron Research Association, Birmingham, England

Division of Ser. No. 483,767, June 27, 1974, Pat. No. 3,989,087. This application May 4, 1976, Ser. No. 682,846

Claims priority, application United Kingdom, June 28, 1973, 30943/73

Int. Cl.² B22C *13/08, 15/08*

U.S. Cl. 164—166 4 Claims



1. Apparatus for forming foundry refractory mold components comprising an open-topped frame, a bottom wall on said frame in the form of a flexible and extensible first diaphragm impermeable to gas pressure, a flexible and extensible second diaphragm forming a support layer immediately below said first diaphragm and serving to support said first diaphragm in a substantially flat horizontal state during filling of said frame to the top edge thereof with a layer of granular refractory material whereby said layer of refractory material is of substantially uniform thickness, said second diaphragm being of greater stiffness than said first diaphragm but being permeable to gas pressure, means defining a plenum chamber below said second diaphragm, a pattern plate carrying a downwardly facing pattern, means clamping said pattern plate carrying said downwardly facing pattern to the open top of said frame to close the same with said pattern held fixedly in said refractory material, and means communicating with said plenum chamber for applying gas pressure to said plenum chamber.

4,067,381

TEMPERATURE COMPENSATED QUANTITY INDICATOR

Thomas J. Lord, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 596,103, July 16, 1975, abandoned. This application July 30, 1976, Ser. No. 710,262

Int. Cl.² F01P *11/18;* G01F *15/02*

U.S. Cl. 165—11 10 Claims

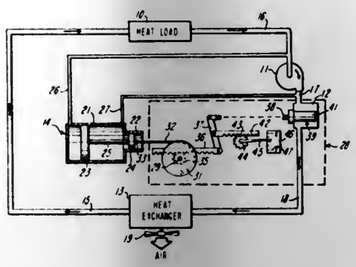
1. In a system circulating a fluid coolant;

a. an accumulator-reservoir device communicating with the system and having a pressure applying piston a position of which in the device is effected by changing system quantity and by fluid expansion and contraction due to temperature change,

b. means positionable to indicate the quantity of fluid coolant in the system,

c. a mechanical connection from said piston to said indicating means translating movement of said piston into adjustment in the position of said indicating means,

d. thermal means sensing temperature change in the fluid coolant, and



e. means operated from said thermal means introducing a correction in said connection so that movement of said piston resulting from temperature change is not translated into adjustment in the position of said indicating means.

4,067,382

HEAT RECLAIM SYSTEM

Alan English, Cleveland, Ohio, assignor to The Hanna Mining Company, Cleveland, Ohio

Filed Sept. 23, 1974, Ser. No. 508,184

Int. Cl.² F28D *15/00*

U.S. Cl. 165—35 13 Claims



1. A heat reclaim system for reclaiming waste heat from a material heat processing line comprising means for bleeding heated air from a plurality of points on a material heat processing line, an economizer containing a bank of serpentine coils, means for circulating water through said coils, means for directing such heated air through said economizer in a single pass to permit extraction of heat from the air by the water flowing through said coils to heat the water, heat extraction means for subsequently extracting the heat from the water after leaving said economizer for use in other processes, and means providing a closed water system permitting continuous flow of the water between said economizer and heat extraction means, each said means for bleeding heated air from the material processing line comprising a supply air conduit for passage of heated air from a point on the material heat processing line to said economizer, a supply air valve for selectively opening and closing said supply air conduit, a bypass conduit for passage of heated air from such point on such material heat processing line to a stack, a bypass air valve for selectively opening and closing said bypass conduit, and means for closing said supply air valve and opening said bypass air valve for stopping air flow through said economizer in response to a drop in the bleed air temperature below a predetermined level to provide automatic dew point safety control.

4,067,383

HEATING AND COOLING SYSTEM FOR A MULTIPLE COIL INSTALLATION

William R. Padden, 13823 Heritage Drive, Riverview, Mich. 48192

Filed Aug. 4, 1976, Ser. No. 711,752

Int. Cl.² G05D *23/00;* F28F *27/02*

U.S. Cl. 165—35 7 Claims



1. A heating and cooling system for supplying hot or cold water to a multiple coil installation comprising a heating circuit, a cooling circuit and a bypass circuit, said heating circuit including, a water reservoir, a temperature sensing control and a first pump, said cooling circuit including said water reservoir, a temperature sensing control and a second pump, a first conduit intersecting said heating and cooling circuits and extending to the inlet side of the multiple coil installation, a second conduit connecting the outlet side of the multiple coil unit with said reservoir, said bypass circuit including a third conduit connecting said first and second conduits, a check valve in said third circuit, and a third pump in said first conduit downstream of the intersection of said first and third conduits, said third pump being continuously energized when the system is in a heating or cooling mode, and control means for energizing said first pump or said second pump to circulate hot or cold water through said heating or cooling circuit respectively, one of said first or second pumps being energized and the other one of said first or second pump being energized depending on whether the system is in the heating mode or cooling mode, said check valve being closed in said third conduit while said first pump or said second pump is energized, and remaining closed until the temperature sensing control of the heating or cooling circuit shuts off the corresponding first or second pump after which time said check valve opens, whereby the water from the multiple coil installation is circulated by said third pump in a closed path through said bypass circuit, said conduits and the multiple coil installation, thus bypassing said heating and cooling circuits, said first and second pumps both being deenergized when said bypass circuit is opened.

4,067,384

HEAT EXCHANGER CORE ASSEMBLY FOR ENGINE COOLING SYSTEM

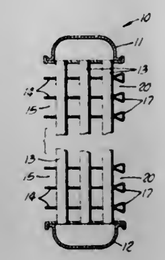
Gene K. Miyakawa, 4209 No. Cutler Ave., Baldwin Park, Calif. 91706

Filed June 17, 1976, Ser. No. 697,136

Int. Cl.² F28D *1/04;* F28F *1/32, 13/08*

U.S. Cl. 165—151 3 Claims

1. In a heat exchanger core assembly of the type having a multiplicity of cooling medium tubes arranged in spaced apart parallel relation between a pair of headers and piercing a multiplicity of heat conductive fins arranged in spaced apart parallel relation in good heat conducting intimacy to each of said tubes and cooperating to provide air flow passages crosswise of said tubes, that improvement which comprises: enlargements extending lengthwise of and restricted to the leading edges of said fins along the air inlets to said air flow passages, said enlargements cooperating with one another to form venturi-



shaped air inlets into said air flow passages lying in a common plane at the air entrance of said air flow passages and effective to increase the velocity of air flow and the heat exchange between said tubes, fins and the air, and the portions of said air flow passages inwardly of said venturi shaped air inlets and between said cooling medium tubes being imperforate, parallel to one another and free of air flow disturbing obstructions.

4,067,385

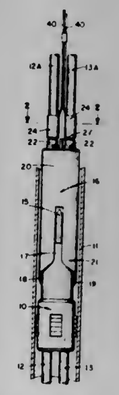
APPARATUS AND METHOD FOR CONNECTING A TUBING STRING TO DOWNHOLE WELL EQUIPMENT

Thomas E. Schwager, and Joseph A. Burkhardt, both of New Orleans, La., assignors to Exxon Production Research Company, Houston, Tex.

Filed Sept. 29, 1976, Ser. No. 727,738

Int. Cl.² E21B *33/035, 33/122*

U.S. Cl. 166—.6 10 Claims



1. Apparatus for tieing at least one tubing string suspended in a well pipe from a non-rotatable subsea christmas tree to a non-rotatable downhole hanger affixed to said well pipe comprising:

tool means arranged on the lower end of said tubing string containing first cam means,

second cam means arranged on said hanger,

said first and second cam means cooperating to orient said tool means to a predetermined angular position, and

means arranged on said tubing string to permit said tool means to rotate without torsionally loading said tubing string, said means comprising a housing, a nipple arranged within said housing and connected to and rotatable with

said tubing string, said tubing string and said nipple being rotatable relative to said housing upon rotation of said tool means.

10. A method for tieing back at least two tubing strings suspended in a well pipe from a non-rotatable subsea christmas tree to a downhole hanger fixed to said well pipe comprising the steps of:

lowering said plurality of tubing strings through said well pipe to said hanger,

engaging first cam means provided on said downhole hanger with second cam means provided on tool means arranged on the lower ends of said tubing strings, and

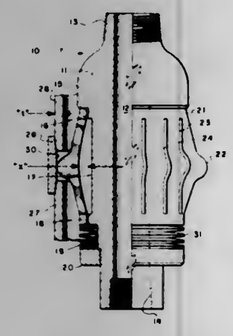
rotating said tool means to a selected angular position relative to said hanger and said tubing strings without torsionally loading said tubing strings.

4,067,386

CASING COLLAR INDICATOR

Stanley Allan Weise, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 23, 1976, Ser. No. 708,259
Int. Cl.² E21B *47/00*
U.S. Cl. 166—64 **9 Claims**



1. A casing collar engaging tool comprising:

tubular cylindrical housing means having connecting means at each end for interconnection in a conduit string;

sleeve means encircling said housing means and having a plurality of resilient, outwardly biased integral arms;

shoulder means on said longitudinal arms projecting radially outward and adpated to snugly engage in a casing collar; and,

means for holding said sleeve means longitudinally on said housing means.

4,067,387

SUBSURFACE WELL APPARATUS HAVING FLEXING MEANS AND METHOD OF USING SAME

James D. Mott, Houston, Tex., assignor to Hydril Company

Division of Ser. No. 580,228, May 23, 1975. This application June 7, 1976, Ser. No. 693,325
Int. Cl.² E21B *33/16, 43/12*
U.S. Cl. 166—156 **48 Claims**

1. A safety valve apparatus adapted for movement through the bore of a well tubing to a desired subsurface location in a well for controlling flow of well fluids through the bore of the well tubing at the subsurface location in response to control signals communicated to the safety valve from a remote location, including:

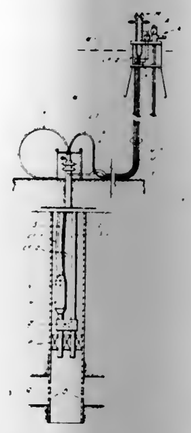
tubular frame means for movement through the bore of the well tubing to and from the desired subsurface location;

means with said frame means operable for releasably securing said tubular frame means with the well tubing against relative longitudinal movement thereto at the desired subsurface location;

bore closure means mounted with said frame means for movement relative to said frame means to and from an open position enabling flow of well fluids through the bore of the well tubing and a closed position for blocking flow of well fluids through the bore of the well tubing;

said tubular frame means forming a downwardly facing annular seat for sealing engagement with said bore closure means for blocking flow of well fluids through the bore of the well tubing;

tubular operator means movable relative to said frame means for effecting movement of said bore closure means to and



from the open and closed positions, said operator means moving relative to said frame means in response to control signals transmitted to said operator means independently of the well tubing from the remote location for moving said bore closure means; and

said tubular frame means having first and second tubular portions and means for connecting said first and second portions for enabling limited angular movement of said first tubular portion relative to said second tubular portion wherein said frame means flexes in moving to and from the desired subsurface location.

4,067,388

HYDRAULIC OPERATED CASING HANGER RUNNING TOOL

Edmund M. Mouret, Houston, and Michael R. Garrett, Spring, both of Tex., assignors to FMC Corporation, San Jose, Calif.

Continuation of Ser. No. 681,641, April 29, 1976. This application Apr. 4, 1977, Ser. No. 783,993
Int. Cl.² E21B *43/10*
U.S. Cl. 166—208 **9 Claims**

1. A hydraulic operated well tool for running a well device into an underwater well, comprising:

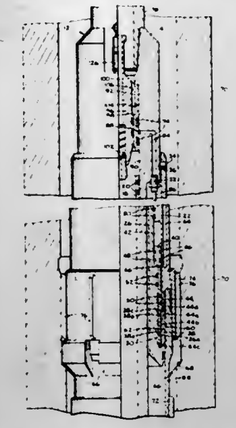
a. a tool body having means for connection to a pipe string,

b. a split, resilient latch ring surrounding said tool body,

c. means on said latch ring to threadedly engage said well device, said means facilitating release of said well tool from said well device by relative rotation between said tool and device,

d. hydraulic piston means within said tool body and interconnected with said latch ring to actuate said latch ring into engagement with said well device, and

e. means to conduct hydraulic pressure from a remote location to said hydraulic piston means to actuate said piston



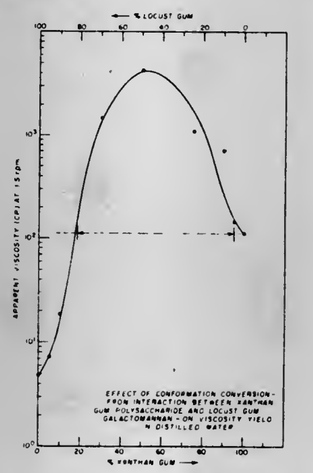
means and release said well tool from said well device without rotation of said tool body or said pipe string.

4,067,389

HYDRAULIC FRACTURING TECHNIQUE

Joseph George Savins, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed July 16, 1976, Ser. No. 705,866
Int. Cl.² E21B *43/26*
U.S. Cl. 166—246 **4 Claims**



1. A method of fracturing a subterranean formation penetrated by a well, comprising:

a. injecting down said well and into said formation at a pressure sufficient to fracture said formation a fracturing fluid comprised of a reaction product of an aqueous mixture of a microbial polysaccharide produced by the bacterial action of the genus Xanthomonas and a galactomannan gum obtained from locust bean gum;

b. thereafter injecting down said well and into said formation and fracture, an aqueous solution of a halide salt to contact said halide salt and said fracturing fluid and reduce the viscosity of said fracturing fluid; and

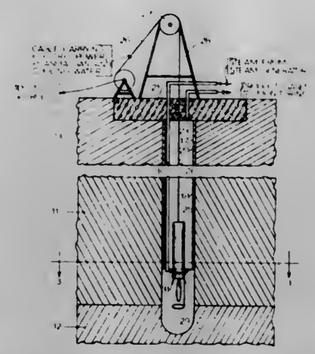
c. backflowing said fracturing fluid and halide salt from said formation and fracture into said well.

4,067,390

APPARATUS AND METHOD FOR THE RECOVERY OF FUEL PRODUCTS FROM SUBTERRANEAN DEPOSITS OF CARBONACEOUS MATTER USING A PLASMA ARC

Salvador Lujan Camacho, Raleigh, N.C., and Louis Joseph Circeo, Jr., Mons, Belgium, assignors to Technology Application Services Corporation, Raleigh, N.C.

Filed July 6, 1976, Ser. No. 702,964
Int. Cl.² E21B *43/24*
U.S. Cl. 166—302 **27 Claims**



1. A method of subjecting a subterranean stratum of carbonaceous matter to heating for effecting a desired physical transformation of such stratum in order to produce recoverable fuel products, comprising the steps of:

a. establishing a shaft from the ground surface communicating with said stratum;

b. lowering a stabilized long arc column forming plasma arc torch with appropriate electric, plasma gas, transferred arc operator, and coolant supply means into said shaft and positioning said torch at a selected depth within said stratum;

c. operating said torch to sustain a stabilized, plasma long arc column in a transferred mode;

d. in the absence of appreciable combustion, utilizing the heat from said plasma column to effect the desired physical transformation of said stratum to recoverable fuel products; and

e. recovering such fuel products from said stratum.

19. An apparatus for heating a subterranean stratum of carbonaceous matter surrounding a shaft communicating therewith and recovering the fuel products released thereby, comprising in combination:

a. a stabilized long arc column forming plasma arc torch having appropriate electric, plasma gas and coolant supply means and being supported in said shaft at a selected position within said stratum;

b. means for operating said torch to sustain said column including means for operating said torch in a transferred arc mode; and

c. means for collecting fuel products produced by the heating of said deposit.

4,067,391

IN-SITU EXTRACTION OF ASPHALTIC SANDS BY COUNTER-CURRENT HYDROCARBON VAPORS

Robert R. Dewell, 1517 Nancy Lane, Liberty, Mo. 64068

Filed June 18, 1976, Ser. No. 697,330
Int. Cl.² E21B *43/24*
U.S. Cl. 166—303 **9 Claims**

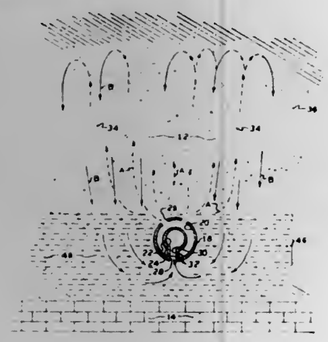
1. A method of extracting viscous oil from a non-fracturable earthen formation wherein the oil is present at a temperature below the pour point, said method comprising the steps of:

forming a first conduit in the vicinity of the bottom of said formation,

said conduit extending generally transversely of the vertical plane of the formation and having an opening communicating with said formation;

communicating said conduit with a source of hydrocarbon vapors characterized by a boiling point above the pour point of the oil in said formation;

directing said vapors upwardly from said conduit and into said formation to thereby raise the temperature of the oil above its pour point causing the oil to flow downwardly in the direction of said first conduit and toward the bottom of the formation;



forming a second conduit in said formation in close proximity to said first conduit and extending generally transversely of the vertical plane of the formation for conveying the oil flowing toward the bottom away from the formation;

said second conduit having an opening communicating with said formation which opening is below the level of the opening in the first conduit; and

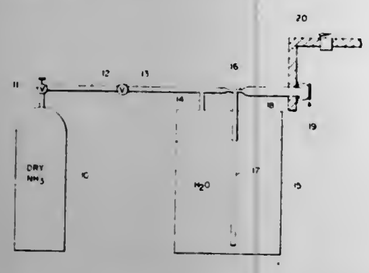
moving liquified oil heated above its pour point through said second conduit to a distal location.

4,067,392

TOXIC GAS CONTROL FOR RF ABSORBER FIRES

Alan H. Rich, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 24, 1976, Ser. No. 689,692
Int. Cl.² A62C 3/00
U.S. Cl. 169—47 **2 Claims**



1. A method of controlling toxic outgassing from smouldering and burning materials which produces hydrogen cyanide and/or hydrogen chloride under such conditions which comprises:

mixing ammonia with steam; and

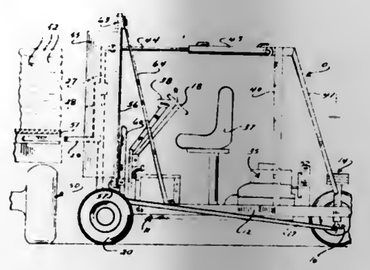
spraying said ammonia-steam mixture on said materials to combine with gases produced by said materials.

4,067,393

METHOD AND APPARATUS FOR HANDLING AND LAYING STRIPS OF SOD

Raphael J. Szarkowski, Rte. No. 2, Bismarck, N. Dak. 58501

Filed Aug. 5, 1975, Ser. No. 601,992
Int. Cl.² A01B 79/00; B65G 47/00
U.S. Cl. 172—1 **9 Claims**



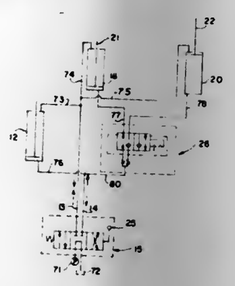
1. A sod handling apparatus for loading and unloading pallets of sod, including a mobile machine frame having means for supporting and propelling the machine over the ground, a lift fork member at one end of said frame including means for lifting and lowering pallets generally vertically, a pair of uprightly extending guide members mounted to said frame adjacent the sides of said lift fork member for guiding sod stacked on a pallet held on said lift fork member and preventing substantial movement sideways of said sod on a pallet being held, means to mount said guide members on said frame independently of said lift fork member and adjacent the lateral sides thereof, said means to mount said guide members on said frame including means to pivotally mount said guide members about substantially vertical axes, lever means connected between said lift fork member and said guide members to cause said guide members to be pivoted about said vertical axes toward each other in response to the pivoting of lift fork member about said horizontal axis by said power means, means to mount said lift fork member to said frame about a generally horizontal axis and power means to tilt the lift fork member about said generally horizontal axis relative to said frame and said guide members from a position wherein a substantial portion of said lift fork member extends outwardly from said frame beyond said guide members to a position wherein substantial portions pf said lift fork member are between said guide members.

4,067,394

IMPLEMENT WITH AUTOMATIC SEQUENCING VALVE AND SYSTEM

Harry C. Deckler, South Bend, Ind., assignor to White Farm Equipment Company, Cleveland, Ohio

Filed Jan. 22, 1976, Ser. No. 651,443
Int. Cl.² A01B 63/10, 39/28
U.S. Cl. 172—2 **5 Claims**



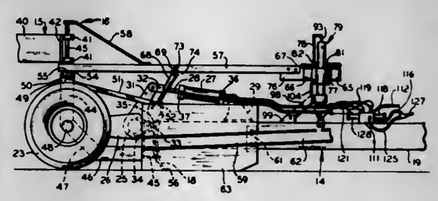
1. In combination with an implement adapted to be propelled by a tractor having a hydraulic system including hydraulic control valve means, said implement having operatively mounted thereon a pair of first and second members adapted to be alternately operated by a pair of first and second member-actuating hydraulic cylinders mounted on said implement and operatively connected with said first and second members, respectively, for actuating the same, an automatic hydraulically actuated and hydraulically controlled member-control sequencing valve having a valve spool shiftable by differential hydraulic pressures acting thereon and created by the flow of hydraulic fluid through restricted passageways within said valve including restricted passageways through said valve spool, said valve being connected in hydraulic circuit relationship with said first and second member-actuating hydraulic cylinders and adapted to also be connected in hydraulic circuit relationship with said tractor hydraulic control valve means for receiving hydraulic fluid under pressure from said tractor hydraulic system and automatically operable each time hydraulic fluid is delivered thereto after delivery has been interrupted to shift said valve spool and actuate the one of said first and second member-actuating cylinders not actuated immediately preceding.

4,067,395

LAND LEVELER WITH RELATIVE HEIGHT CONTROL

Leonard J. Verhoff, Rte. No. 2, Continental, Ohio 45831

Filed Mar. 1, 1976, Ser. No. 662,580
Int. Cl.² E02F 3/76
U.S. Cl. 172—4.5 **12 Claims**



1. A land leveler comprising:

a substantially horizontal main frame having a front portion, a rear portion, and a longitudinal axis;

a coupling at said front portion of said main frame adapted to be engaged by a tractor;

a ground working blade mounted on said main frame at said rear portion thereof;

at least two spaced wheels mounted to support the rear portion of the main frame on the ground adapted for advance of said frame over the ground parallel to said longitudinal axis;

a gauge frame having a front portion, a rear portion, and a longitudinal axis;

a wheel for supporting said gauge frame at its rear portion;

an upright member on the rear portion of said main frame; a coupling between said upright member and said gauge frame which maintains a constant front to rear inclination relationship between said upright member and said gauge frame whereby said upright member is adapted to be altered in its front to rear inclination relative to said main frame by the relative ground supported position of said gauge frame with respect to said main frame;

a gauge arm coupled to said upright member and extending toward said front portion of said main frame;

a coupling between said upright member and said gauge arm which maintains a constant front to rear inclination relationship between said upright member and said gauge arm, whereby the front to rear inclination relationship between said gauge arm and gauge beam is constant and said gauge arm is adapted to be altered in its inclination relative to said main frame by the relative ground supported position of said gauge frame with respect said main frame;

at least one of said couplings between said upright member and said gauge frame and gauge arm providing pivotal motion around the longitudinal axis of said upright member;

a first control means mounted on said main frame;

a second control means mounted on said gauge arm spaced from said upright member and adapted to cooperate with said first control means;

means to constrain motion of said gauge arm to maintain said second control means in operative relationship with said first control means throughout a range of positional relationships of said main frame and said gauge frame; and

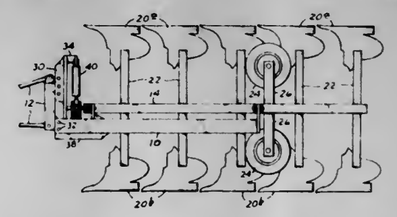
drive means for adjusting the relative height of said ground working blade and said wheels responsive to the operative spatial relationships between said first and second control means.

4,067,396

ROLL-OVER MECHANISM FOR TWO-WAY PLOW

Glen A. Watts, Rte. 1, Box 258, McMinnville, Oreg. 97127

Filed June 14, 1976, Ser. No. 695,583
Int. Cl.² A01B 3/40, 3/56
U.S. Cl. 172—212 **4 Claims**



1. A roll-over mechanism for a two-way gang plow having right and left hand plow bottoms mounted on a supporting frame rotatable about a horizontal axis carried by a main frame, the roll-over mechanism comprising:

a. a pair of extensible, reciprocative actuation means for rotating the supporting frame,

b. mounting means on the main frame for securing one end of each of the pair of actuation means in fixed position relative to the main frame,

c. a lever pivotally interconnecting the opposite end of each of the pair of actuation means and the supporting frame, and

d. fulcrum means coaxial with said horizontal axis arranged for engagement by said levers intermediate the ends thereof for providing leverage in initiating rotation of the supporting frame from the operative positions of the plow bottoms.

4,067,397

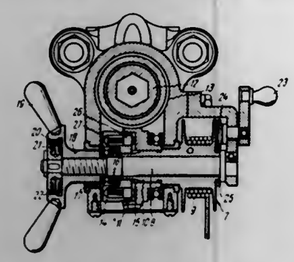
HAND-OPERATED DEVICE FOR DRILLING BLAST-HOLES

Samuil Iosifovich Dobroborsky, ulitsa Detskaya, 17, kv. 57, Leningrad, U.S.S.R.

Filed Aug. 6, 1975, Ser. No. 602,261
Int. Cl.² E21C 9/00
U.S. Cl. 173—32 **8 Claims**

1. A hand-operated device for drilling blast holes comprising a perforator which has an impact tool and a rotatable box which carries a rod with a drilling bit; a power-operated pulling winch mounted on said perforator and having a pulling element which can be secured to solid rock, said pulling winch having a shaft on which said pulling winch is fixedly mounted; drive means in the nature of a gear drive cooperating with said rotatable box for converting the movements of said rotatable box into movements about said shaft of said pulling winch; coupling means including adjusting means for selectively coupling the movements of said drive means to said pulling winch, whereby coupling of said drive means to said pulling winch

causes the perforator to be fed progressively by said rotating box, said rotatable box having an external surface, and said gear drive comprising a worm thread formed on said external surface, and a gear mounted on said shaft of said pulling winch and meshed with said worm thread in an engagement zone, whereby actuation of said rotatable box translates the move-



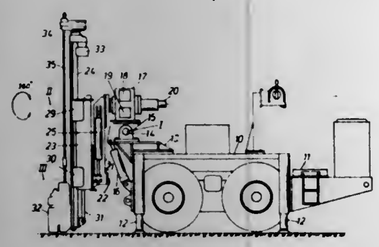
ments thereof to rotary movements coaxial with said shaft of said pulling winch; and a hollow bushing on said shaft of said pulling winch, said gear being mounted on said bushing for free rotation thereon, the rotary movements of said gear only being transmitted to said bushing when said coupling means couples said worm wheel and said bushing together.

4,067,398

RING DRILLING RIG

Sven Mauritz Franzéa, Jarfalla, and Lars Magnus Gunnar Söderlund, Skarholmen, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed May 25, 1976, Ser. No. 689,802
Claims priority, application Sweden, June 4, 1975, 7506370
Int. Cl.² E21C 5/00
U.S. Cl. 173—43 17 Claims



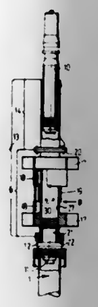
1. A ring drilling rig comprising:
a chassis (10),
a support (15) swingably mounted on the chassis (10) at one end thereof so as to be tiltable about a first horizontal axis (I) that is transverse to the chassis,
power means (16) coupled to said support (15) to tilt said support (15) relative to said chassis (10),
an arm (21) swingably mounted to said support (15) so as to be swingable about a second axis (II) that is perpendicular to said first axis (I),
power means (17) coupled to said arm (21) to swing said arm (21) about said second axis (II) through an arc of 360°, said arm (21) being always transverse to said second axis (II), and
a feed beam (24) swingably mounted on the distal end of said arm (21) and being transverse to said second axis (II), said feed beam (24) being swingable on said arm (21) about a third axis (III) parallel with said second axis (II), said third axis (III) being coupled to said support (15) via said second axis (II).

4,067,399

CYLINDER PIECE FOR A PILE DRIVING RAM

Hans Gunther Schnell, Hamburg, Germany, assignor to Van Kooten, B.V., Naarden, Netherlands

Filed Sept. 9, 1975, Ser. No. 611,791
Claims priority, application Netherlands, Sept. 9, 1974, 7411984
Int. Cl.² E02D 7/14
U.S. Cl. 173—134 22 Claims



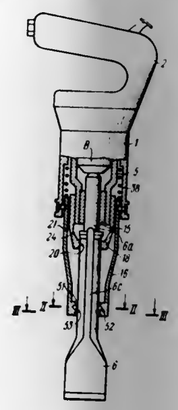
1. A cylinder piece for the cylinder of a pile driving ram, said cylinder being provided with inlet and outlet ports and at least two guide girdles for supporting guide members adapted to cooperate with at least one guide stay of a guide frame, wherein at least the core of the cylinder piece is made by forging and is forged with at least two substantially cylindrical guide girdle faces for guide girdles, with each guide girdle being mainly formed by a ring with a cylindrical bore shrunk around a guide girdle face.

4,067,400

PNEUMATIC HAMMER

Igor Vladimirovich Nikolaev, ulitsa Fadeeva, 5, kv. 37; Leonid Avrumovich Gornik, ulitsa Krasny Kazanets, 3, korpus 5, kv. 139; Anatoly Ivanovich Lednikov, Korovinskoe shosse, 9, korpus 2, kv. 51, all of Moscow, and Lidia Mikhailovna Dronova, ulitsa Kalarash, 5, kv. 68, Ljubertsy Moskovskoi oblasti, all of U.S.S.R.

Filed July 29, 1976, Ser. No. 709,730
Int. Cl.² B23B 5/34
U.S. Cl. 173—134 5 Claims



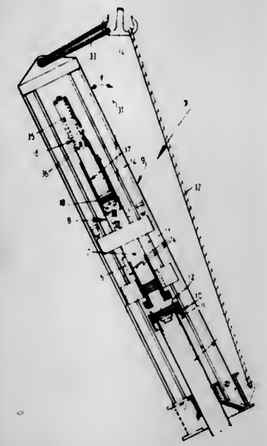
1. In a pneumatic hammer comprising: a housing; a barrel having a forward end portion and mounted in said housing for axial movement relative thereto; a tool having a working portion, a shank, and a collar, said working portion of the tool being of non-circular cross-section; an air-distribution device; a hammer piston cooperating with the shank of said tool for causing reciprocations of the tool; a guide sleeve secured in the forward end portion of said barrel; a hood mounted in said housing and having a forward end portion; means for holding said tool from falling out, said means comprising a lock rotatably mounted on the forward end portion of said barrel, said lock having a non-circular hole for passage of said tool; said hood being rotatably mounted in said housing and embracing said lock with an annular space therebetween; a non-circular hole in the forward end portion of said hood, the shape of the hole of said hood corresponding to the non-circular cross-sectional shape of the working portion of said tool; means for locking said tool in the hammer enabling the fixation of relative angular position of said hood and lock; an improvement wherein said hammer further comprises intermediate members disposed between the forward end portion of said hood and said tool, said members being in contact with the tool, and said members comprise bodies of revolution rotatably mounted in said hood defining said non-circular hole of the hood.

4,067,401

PILE-DRIVING HAMMER

Hans Günther Schnell, Hamburg, Germany, assignor to Van Kooten, B.V., Naarden, Netherlands

Filed Apr. 19, 1976, Ser. No. 677,925
Claims priority, application Netherlands, Apr. 11, 1975, 7504371
Int. Cl.² B25D 9/00
U.S. Cl. 173—135 9 Claims



1. A pile-driving hammer comprising a hammer cylinder having an inner sliding face, a piston received within said hammer cylinder in sealing relationship with said sliding face of the hammer cylinder and means for supplying a lubricant to said sliding face comprising a lining formed of wear-resistant material on said sliding face of the hammer cylinder having a plurality of recessed cavities formed therein distributed along the surface of said sliding face.

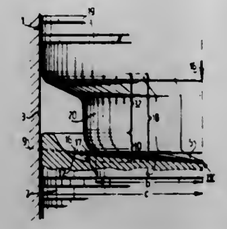
4,067,402

RAMMER

Hans Günther Schnell, Hamburg, Germany, assignor to Van Kooten, B.V., Naarden, Netherlands

Filed Dec. 5, 1975, Ser. No. 637,944
Claims priority, application Netherlands, Dec. 10, 1974, 7416084
Int. Cl.² E02D 7/12
U.S. Cl. 173—137 8 Claims

1. A rammer comprising at least one combustion cylinder, a striker extending into the combustion cylinder and being slidable therein and a piston arranged in the combustion cylinder for movement therein, said striker and piston having impact surfaces with the impact surface of the striker matching and being generally complementary to the impact surface of the piston which it engages, at least part of each of said impact surfaces being inclined with respect to the axial direction of the



combustion cylinder and the overall impact surfaces of the piston and the striker having each a shape different from a spherical plane, wherein each inclined part of said impact surfaces has the general shape of a tangent cone having an apex of less than 180° but of at least 160°.

4,067,403

WIRE DRIVER HANDPIECE

James W. Richmond, Comstock Township, Kalamazoo County, and Russell K. Eaton, Kalamazoo Township, Kalamazoo County, both of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Aug. 12, 1976, Ser. No. 713,921
Int. Cl.² H01B 17/16
U.S. Cl. 173—163 3 Claims



1. In a surgical instrument for rotatably driving an elongated rodlike tool, such as a wire, comprising:
a manually graspable hollow casing comprising a tool handle;
a shaft rotatably supported within said casing and arranged to be rotatably drive about its axis by a source of rotative power, said shaft having an enlarged shaft portion positioned adjacent and projecting axially outwardly from the front end of said casing, said enlarged shaft portion having an axially elongated interior opening formed therein and extending divergingly through the forward end of said shaft portion, said opening being bounded by a frusto conical surface positioned at a small angle with respect to the axis of said shaft;
a tool carrier positioned coaxially with and partially telescoped into said interior opening, said tool carrier having a central opening extending axially therethrough in substantially coaxial alignment with said shaft, said tool carrier also having three slots extending radially therethrough from said central opening to the exterior peripheral surface of said tool carrier, said three slots being circumferentially spaced apart and disposed with the radial center lines thereof within substantially a single plane which extends perpendicularly to said axis;
three clamping members positioned respectively within said slots and adjacent said conical surface for responding to axial movement of said tool carrier along and with respect to said conical surface for effecting movement of said clamping members radially of said tool carrier, said clamping members entering at least partially into said central opening in at least one axial position of said tool

carrier for clamping engagement with a rodlike tool positioned therein;

two of said clamping members comprising identical balls and the third clamping member comprising a disk which is so related relative to its respective slot that the axis of said disk is spaced from but substantially perpendicular to the axis of said tool carrier, said disk and said balls all being of the same diameter, and said disk having a peripheral surface adapted for engagement with the tool which is of a rounded convex configuration in the axial direction of the disk;

whereby upon rearward axial movement of said tool carrier into said interior opening, said clamping members will grip a tool positioned within said tool carrier and upon forward axial movement of said tool carrier, said clamping members will release said tool.

4,067,404

ANGLE ADJUSTMENT SUB

Gary M. Crase, Cypress, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed May 4, 1976, Ser. No. 683,193
Int. Cl.² E21B 7/08
U.S. Cl. 175—75 **22 Claims**



1. An angle adjustment sub for use in connection with deviated running strings, said sub comprising one section having a box at one end and pin at the other end, a second section having a pin at one end and a box at the other end, the pin of said one section threaded into the box of the section section, means to limit the longitudinal displacement of said threaded pin and box, said means permitting the relative rotation of said sections, and means to lock said sections against relative rotation of one section about the axis of the other section.

4,067,405

HYDRAULIC SHOCK ABSORBER

Grey Bassinger, San Antonio, Tex., assignor to Bassinger Tools, Inc., Midland, Tex.

Filed Oct. 4, 1976, Ser. No. 729,194
Int. Cl.² E21B 17/00
U.S. Cl. 175—321 **9 Claims**

1. A shock absorber for use with a rotary earth drill utilizing drilling fluid, said shock absorber comprising:

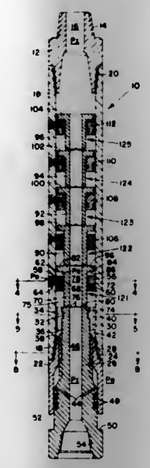
an upper sub for connection to a string of drilling pipes;

a casing connected to and extending downwardly from said upper sub:

a lower sub connected to the bottom of said casing, an anvil for connection to a drill bit slidably received in and sealing with said lower sub;

a plurality of vertically aligned independently operating hollow pistons slidably mounted inside said casing;

means for limiting the downward movement of said pistons, and



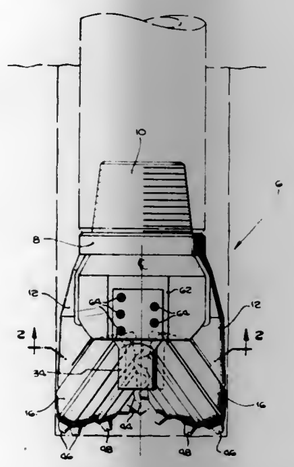
a fluid passage communicating with the outside of said casing below each of said pistons.

4,067,406

SOFT FORMATION DRILL BIT

Lloyd L. Garner, San Clemente, and Charles Richard Harris, Whittier, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed July 29, 1976, Ser. No. 709,797
Int. Cl.² E21B 9/10
U.S. Cl. 175—341 **10 Claims**



1. A drill bit for drilling holes in soft formations such as limestones, shales or the like, comprising:

a bit body of given diameter adapted for rotation about an axis within a cylindrical space and having an under side comprising a dome,

no more than a pair of journal leg means extending downwardly from said body and having journal means extending downwardly and inwardly within said cylindrical

space from the lower end portions of the journal legs beneath said dome,

rotary cone cutter body means on said journal means, the approximate slant height line of the surface of the rotary cone cutter body means intermediate the base and apex of the cone where the cutter means is nearest said axis of the bit, is approximately parallel to said axis,

hardened insert means imbedded in and extending from said rotary cone cutter body means,

said insert means being disposed about said rotary cone cutter body means,

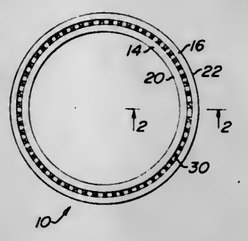
and said insert means being of such length that, when the rotary cone cutter body means is in drilling position, at least a portion of said insert means extends outwardly from said surface of the rotary cone cutter body means to intersect the axis of rotation of the bit body while the material of the cone cutter body per se is spaced laterally from said axis.

4,067,407

ANNULAR SEAL

Thorval L. Berg, Warminster, Pa., assignor to Greene, Tweed & Co., Inc., North Wales, Pa.

Filed June 8, 1976, Ser. No. 694,113
Int. Cl.² F16J 15/32, 9/06
U.S. Cl. 277—153 **6 Claims**



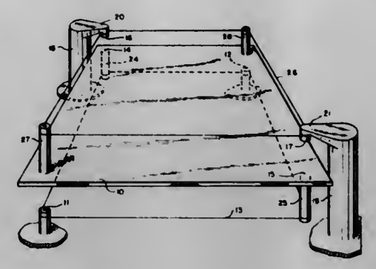
1. An annular seal of resilient elastomeric material having an open axially extending groove at one end between two interconnected body portions, said groove including oppositely disposed arcuate surfaces of approximately the same length and facing one another, each of said surfaces being on one of said body portions, one end of each of said arcuate surfaces merging into a groove bottom which has the shape of an end portion of an ellipse, an annular deformable biasing member generally circular in cross section located in said groove, said arcuate surfaces of the groove being in embracing contact with opposite surfaces of said biasing member at all times, said biasing member being spaced from said groove bottom when the seal is not under a compression load, at least one of said body portions having a sealing lip projecting in a radial direction at a location generally opposite from the longitudinal axis of said biasing member, the gap across the end of the groove remote from said groove bottom being substantially smaller than the diameter of said biasing member, said end portion of an ellipse at said groove bottom having embracing contact with a juxtaposed portion of said biasing member only when said sealing lip is under a compression load, said sealing lip being under a compression load only when the seal is mounted in an operative sealing position with a surface to be sealed.

4,067,408

BALANCE MECHANISM

Ralph Lee Dodds, Thousand Oaks; Leland William Green, Los Angeles, and Knight Llewellyn Harris, North Hollywood, all of Calif., assignors to Knight L. Harris, North Hollywood and Leland W. Green, Los Angeles, both of, Calif.

Filed Nov. 26, 1976, Ser. No. 745,421
Int. Cl.² G01G 3/14, 1/38, 1/18, 21/24
U.S. Cl. 177—210 C **18 Claims**



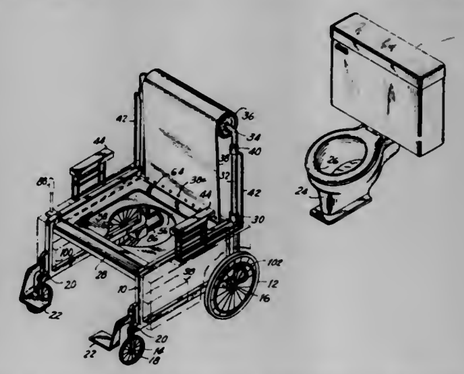
1. A system in an environment for suspending a plate adapted to be displaced in space within said environment in response to a force comprised of one pair of taut rectangular loop lines and a set of four elements stationary in space, said elements being disposed in positions at corners of said rectangular loop lines, opposite corners of one line being connected taut to diametrically opposite points on said plate and the remaining corners of said one line being connected taut to diametrically opposite stationary elements, and opposite corners of the other line being connected taut to diametrically opposite points on said plate in line with stationary elements to which said one line is connected and the remaining corners of said other line being connected taut to the remaining stationary elements of said set of elements whereby any small force applied to said plate at any point will displace said plate in linear proportion to said force without any rotation about any axis through said plate.

4,067,409

WHEEL CHAIR ARRANGEMENT

Paul DiMatteo, Huntington, and Henry V. Diaferia, Brentwood, both of N.Y., assignors to Dynell Electronics Corporation, Melville, N.Y.

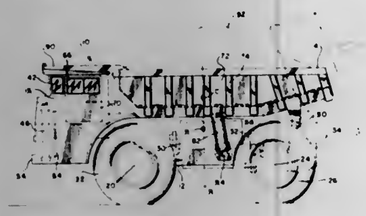
Filed May 24, 1976, Ser. No. 689,535
Int. Cl.² A47C 3/00; B62D 11/04
U.S. Cl. 180—6.5 **15 Claims**



15. A wheel chair arrangement comprising: a supporting frame; means on said frame for seating a person in the wheel chair; wheel means connected to said frame for moving said frame; a back rest carried by said frame; actuatable means

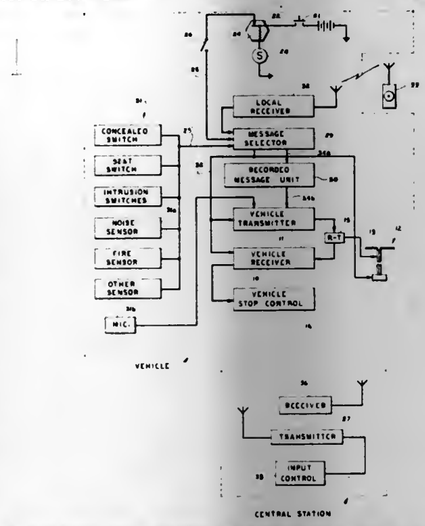
linked to said back rest for retracting said back rest when actuated to a retracted position from a support position in which said back rest can support the back of a person seated in the wheel chair; and means for returning said back rest from a retracted position to said support position; arm rest means connected to said back rest and movable with said back rest; said back rest comprising first roller means with strip sheet material wound thereon; movable bearing means supporting said first roller means, one end of said strip sheet material being connected to said frame; means for urging said first roller means in a predetermined direction of rotation for maintaining taut said strip sheet of material when in said support position; telescopic means for carring said first roller means, said telescopic means being retracted for retracting said back rest; first motor means connected to said telescopic means for moving said first roller means between said support position and said retracted position, said frame having a predetermined width and height for wheeling said wheel chair directly over a toilet bowl; a displaceable seat member on said seating means and having two adjacent portions, one portion having an opening therethrough, and the other portion being free of openings; second roller means for winding thereon said displaceable seat member, said displaceable seat member comprising strip sheet material; said second roller means comprising two rollers on opposite sides of said wheel chair, one of said rollers being urged in a predetermined direction of rotation for maintaining taut said displaceable seat member over the seating area of said wheel chair; second motor means connected to said roller means for displacing said seat member; third motor means connected to said wheel means for moving said wheel chair by turning said wheel means; means for selectively actuating said third motor means for turning said wheel chair in predetermined directions; and means for actuating selectively said first and second motor means.

4,067,410
LOAD TRANSPORTING VEHICLES
James C. Tamburino, Roselle; E. A. Domes, Carpentersville, and Lawrence A. Venere, Wood Dale, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Dec. 8, 1975, Ser. No. 638,791
Int. Cl.² B60K *5/02*
U.S. Cl. 180—64 R **2 Claims**



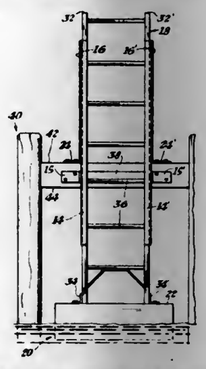
1. A vehicle having a driven rear axle and a driven steerable front axle each carrying a pair of wheels and tires comprising:
- a frame having a pair of longitudinal frame rails, each rail having an upper surface, said frame including a forward portion, an aft portion and a lowered center section where said upper surface of said frame rails along said lowered center section are substantially below the top elevation of said tires on said driven axles;
- a motor means carried on said lowered center section of said frame between said driven rear axle and said steerable driven front axle;
- a drive transmitting means communicating between said motor means and said axles;
- a load carrying body having direct contact with said frame at portions other than said lowered center section;
- a cab housing control means to direct the direction and velocity of said vehicle.

4,067,411
VEHICLE EMERGENCY ALARM AND STOP SYSTEM
Thomas R. Conley, Rte. 2, Watkinsville, Ga. 30677; Larry Dawson, 200 Dove Drive, Athens, Ga. 30601, and Troy Strickland, Danielsville Road, Danielsville, Ga. 30633
Filed May 27, 1976, Ser. No. 690,380
Int. Cl.² B60R *25/04, 25/08*
U.S. Cl. 180—114 **6 Claims**



1. An emergency disabling system for a vehicle having an operator actuated motion control means, said system comprising:
- first transmitting means mounted on said vehicle for transmitting an alarm signal;
- first receiving means at a location remote from said vehicle for receiving said alarm signal;
- second transmitting means at said second location for selectively transmitting a command signal;
- second receiving means mounted on said vehicle for receiving said command signal; and
- means mounted on said vehicle and responsive to said received command signal for conditioning said motion control means for retention in a motion retarding position brought about by said operator.

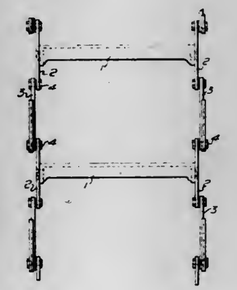
4,067,412
FLOATING LADDER
Earle B. Jackson, 2525 Mercedes Drive, Fort Lauderdale, Fla. 33316
Filed Dec. 23, 1976, Ser. No. 754,014
Int. Cl.² E06C *9/06*
U.S. Cl. 182—93 **5 Claims**



1. A floating ladder for use with a member of a stationary platform comprising:

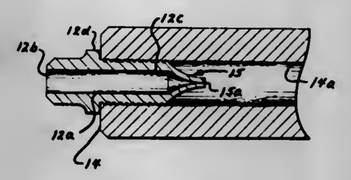
- a rigid guide assembly removably connectable to the stationary platform, said guide assembly including support means and guide means;
- said support means attached to said guide means and removably connectable to the member of the stationary platform;
- a generally vertical ladder secured to a floating base, said generally vertical ladder movably connected to said guide means whereby said generally vertical ladder and said floating base are restricted in lateral movement while allowing said generally vertical ladder to move up and down as said floating base moves with water level changes.

4,067,413
COLLAPSIBLE LADDERS
Herbert Olsen, Konitsis, Kallithea, Athens, Greece
Filed Aug. 4, 1975, Ser. No. 601,532
Int. Cl.² E06C *1/383, 7/08, 7/50*
U.S. Cl. 182—164 **5 Claims**



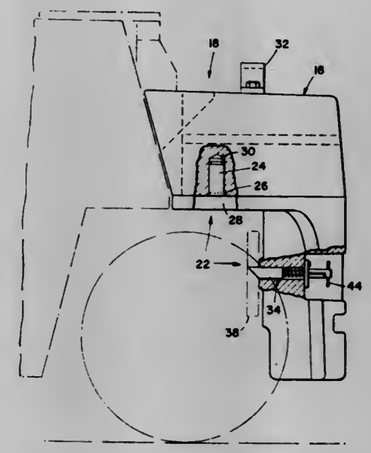
1. A side member for a collapsible ladder, comprised of a plurality of sections having an aperture at each end for pivoting to a further similar section, wherein adjacent ones of said sections are mounted on a pivot pin extending through their respective apertures, and their faces upon which the respective projections and recesses are provided are disposed so as to face one another, so that the projections on each face will engage on the recesses in the other face and wherein the said faces of the sections are biased into abutment by a spring mounted on each pivot pin.

4,067,414
LUBRICANT FITTING
Ludwig F. Funke, 7200 Newburgh Road, Evansville, Ind. 47715
Filed Aug. 18, 1976, Ser. No. 715,457
Int. Cl.² F16N *23/00*
U.S. Cl. 184—105 B **3 Claims**



1. A unitary semi-rigid lubricant fitting for a drilled hole comprising a body having a longitudinal passageway therethrough, said passageway defined by an inlet end and an outlet end, a check valve disposed at said outlet end, and said inlet end adapted to extend from said drilled hole when fitted therein and further adapted to receive pressurized lubricant from a lubricant gun, whereby the hydrostatic pressure of lubricant injected from said lubricant gun balloons said body into a gripping relationship within said drilled hole, locking said fitting against outward movement from said drilled hole.

4,067,415
LOCKING ARRANGEMENT FOR COUNTERWEIGHT
Frank R. Samide, Chardon, Ohio, assignor to Towmotor Corporation, Mentor, Ohio
Filed Dec. 1, 1976, Ser. No. 746,570
Int. Cl.² B66F *9/06*
U.S. Cl. 187—9 R **8 Claims**



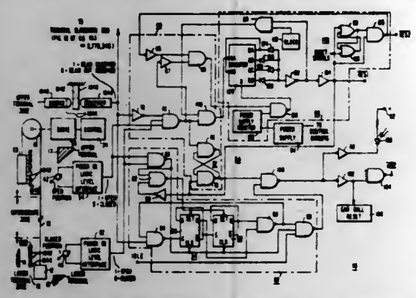
1. In a vehicle having load-lifting means at a first portion thereof and a removable counterweight at a second portion thereof on an opposite side of the center of gravity of said vehicle from said load-lifting means, an improved mounting and locking arrangement, comprising:
- pin means extending generally vertically upwardly from said second portion of said vehicle;
- bore means extending generally vertically upwardly into said counterweight for slidably receiving all portions of said pin means therein;
- generally horizontal rod means slidably positioned within a generally horizontal hole in said counterweight;
- a frame member of said vehicle as a part of said second portion thereof having a generally horizontal hole therein aligned with said generally horizontal counterweight hole to slidably receive a first end of said rod means; and
- means for slidably positioning said rod means in and out relative to said generally horizontal counterweight and frame member holes.

4,067,416
ELEVATOR SYSTEM
James Lowry, Hicksville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 7, 1976, Ser. No. 720,724
Int. Cl.² B66B *5/02*
U.S. Cl. 187—29 R **14 Claims**

1. An elevator system, comprising:
- a structure having a hatchway and a terminal floor,
- an elevator car mounted for movement in said hatchway,
- means for detecting overspeed of the elevator car as it approaches said terminal floor in a predetermined terminal zone adjacent thereto, said means including spaced marker means and detector means mounted for relative movement as the elevator car approaches said terminal floor in said terminal zone,
- said detector means including a source of electromagnetic radiation, and a receiver thereof, mounted such that electromagnetic radiation from the source continuously main-

tains the receiver in a first condition when the elevator car is outside said terminal zone, and with the spaced marker means disposed to operate said receiver between said first condition and a second condition in response to movement of said elevator car in said terminal zone,

and monitoring means responsive to the condition of said receiver, including first means which initiates a predeter-



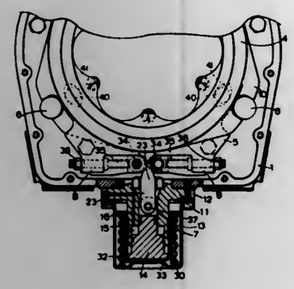
mined change in the operation of said elevator car when the elevator car is located outside said terminal zone and said receiver is in its second condition, and second means which initiates said predetermined change when said receiver fails to switch between its first and second conditions a predetermined number of times as the elevator car approaches said terminal in said terminal zone.

4,067,417

SELF-ENERGIZING APPLIED WEDGE ACTUATOR

Piotr Ostrowski, West Midlands, England, assignor to Girling Limited, Birmingham, England

Filed Dec. 11, 1975, Ser. No. 639,764
Claims priority, application United Kingdom, Dec. 27, 1974, 55913/74
Int. Cl.² F16D 55/16
U.S. Cl. 188—71.4 1 Claim



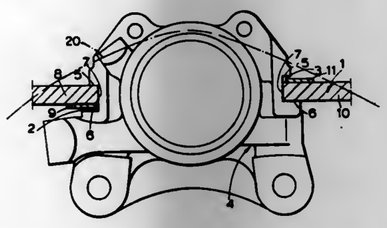
1. A self-energising disc brake for a vehicle comprising a first stationary housing, axially spaced radial surfaces in said housing, spaced rotatable friction discs in said housing, pilots on said housing, spreading pressure plates in said housing between said friction discs and centered by said pilots, an actuator for moving said pressure plates angularly in opposite directions, camming means for separating said plates axially to urge said friction discs axially and into engagement with said radial surfaces when said plates are initially moved angularly in said opposite directions by said actuator and thereafter carried round with said friction discs, a stop abutment in said housing, a stop lug on one of said pressure plates for engagement with said stop abutment to arrest movement of the said one plate so constructed and arranged so that continued angular movement of the other of said pressure plates provides a servo action, and radially projecting actuator lugs on said plates, said actuator comprising a second housing, transmission means movable into an operative advanced position to urged said radially projecting actuator lugs on said pressure plates away from each other, a compression spring surrounding said second housing for urging said transmission means into said advanced position, said second housing having a cylinder bore, and a piston working in said cylinder bore, said cylinder bore and said piston being both of stepped outline with the inner end of said piston being of smaller diameter, the outer end of said piston projecting from said bore, a chamber defined in said bore between the steps in diameter, said second housing having a passage through which said chamber may be pressurised, the smaller diameter inner end of said piston acting on said transmission means to urge it into a retracted position in opposition to the force in said spring when said chamber is pressurised, a thimble surrounding said second housing and acted upon by the projecting outer end of said piston, an abutment for one end of said compression spring rigid with said second housing and forming a stop for said piston when said chamber is pressurized, a radial flange on said thimble forming an abutment for the end of said spring remote from said stop, said transmission means comprising a pair of spaced tappets disposed between said actuator lugs, said tappets having outer ends acting on said actuator lugs and adjacent inner ends, a wedge acting on said inner ends and movable inwardly in a generally radial direction between said tappets to urge said actuator lugs away from each other, a pivoted connection pivotally connecting said wedge directly to the smaller end of said piston, and a pair of rollers mounted to said inner ends of said tappets between which said wedge is engageable.

4,067,418

NOISE REDUCING ASSEMBLIES FOR DISC BRAKES FOR VEHICLES

Heinrich Bernhard Rath, Vallendar (Rhine); Hans Georg Madzgalla, and Sigma Micke, both of Koblenz, all of Germany, assignors to Girling Limited, Birmingham, England

Filed July 27, 1976, Ser. No. 709,219
Claims priority, application United Kingdom, July 31, 1975, 31973/75
Int. Cl.² F16D 65/04
U.S. Cl. 188—72.4 12 Claims



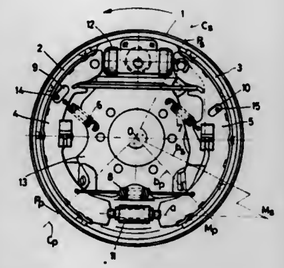
12. A disc brake for vehicles of the sliding yoke reaction type comprising a rotatable disc, friction pad assemblies adapted to be applied to opposite faces of said rotatable disc, a yoke in the form of a relatively thin plate extending over the peripheral edge of said disc, a stationary member on one side of the disc provided with guide means said yoke being guided by said guide means for movement in a direction parallel to the axis of said disc, actuating means for applying one of said pad assemblies directly to the face of said disc adjacent to said stationary member, the other of said friction pad assemblies being mounted in said yoke and being applied to the opposite face of said disc indirectly by the reaction on said yoke of said actuating means, resilient means biassing said yoke against the upper face of one of said grooves and against the lower face of the other of said grooves, and an abutment of stepped outline between the yoke and the indirectly applied friction pad assembly.

4,067,419

BRAKE

Kurt Rupprecht, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed May 25, 1976, Ser. No. 690,049
Claims priority, application Germany, June 4, 1975, 2524686
Int. Cl.² F16D 65/60
U.S. Cl. 188—79.5 GT 5 Claims



1. In a self-adjusting brake having a brake drum, two brake shoes having curved ends, said brake shoes being mounted interiorly of the brake drum and coacting therewith, brake cylinder means and stationary brake shoe support means for floatingly mounting said brake shoes, and return spring means for pressing one curved end of each respective brake shoe against said brake cylinder means and the other curved end of each respective brake shoe against said brake shoe support means and for lifting said brake shoes off the brake drum when the brake is in non-actuated condition, one of said brake shoes being, with respect to the normal direction of rotation of the brake drum, the primary brake shoe and the other being the secondary brake shoe, the primary brake shoe being the one the leading edge of which, during such normal rotation of the brake drum, contacts the brake cylinder, each of the brake shoes having a T-shaped cross section constituted by a flange forming the top of the T and a web forming the stem of the T, the flange of each brake shoe carrying a brake lining, there being associated with the web of each brake shoe means forming an inclined surface coacting with respective stationary pin means, the inclination of said surfaces being such that the amount of the play between the brake lining carried, said brake shoes and the brake drum, when the brake is in non-actuated condition, remains substantially constant during displacement of the brake shoes resulting from wear of the brake lining, the improvement that

a. said return spring means are configured and arranged such that the line of action of the resultant spring force acting on said primary brake shoe passes through the instantaneous axis M_p of said primary brake shoe and the line of action of the resultant spring force acting on said second brake shoe passes through the instantaneous axis M_s of said secondary brake shoe; and

b. said means forming said inclined surfaces are arranged in that half of each respective brake shoe which abuts said brake cylinder means, with each inclined surface being tangential to the instantaneous axis of the respective brake shoe.

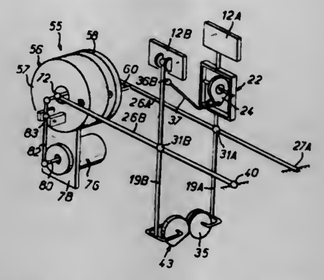
4,067,420

DISC BRAKE

Claude Robert Fabris, Champigny-sur-Marne, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Dec. 14, 1976, Ser. No. 750,378
Claims priority, application France, Dec. 19, 1975, 75.38972
Int. Cl.² B60T 13/74
U.S. Cl. 188—171 11 Claims

1. A disk brake, particularly for industrial purposes, comprising a frame, a rotatable disk for connection to the member which is to be braked, two brake shoes disposed respectively one on each side of the disk, braking levers to which the said shoes are pivotally connected, and which braking levers are operatively pivotally interconnected, an on/off control means acting on the said braking levers and comprising resilient gripping means adapted normally to urge one of the said brake levers in a direction corresponding to the gripping of the disk, electromagnetic release means operable to oppose the action of



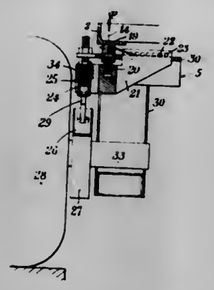
the said gripping means, and progressively acting control means adapted to act as one of the said braking levers in a direction corresponding to the gripping of the disk, the said progressively acting control means comprising an electromagnet whose movable element is adapted to act on the associated braking lever.

4,067,421

BRAKING BALANCE FOR VEHICLE MOVING ON CONVEYOR

Francois Louis Giraud, Maurepas, France, assignor to Savec, Societe Anonyme, Maurepas, France

Filed Sept. 22, 1975, Ser. No. 615,828
Claims priority, application France, Sept. 23, 1974, 74.31983
Int. Cl.² B60T 8/22
U.S. Cl. 188—195 6 Claims



1. An automatic brake clutch system for a vehicle supporting a load, guided on a track by a guiding rail and having a relative motion with track components parallel to said guiding rail, said system providing a braking force proportional to a first weight whatever said load and its distribution in the vehicle, comprising:

a load carrying platform of the vehicle, bearing on an underframe provided with supporting and guiding means, by a center of articulation and by vertically elastic coupling means at corners with stiffnesses in inverse ratio to their distances from the center of articulation, said load and said load carrying platform having together said first weight;

braing means, located in said underframe, coming into contact at suitable places along the track with said track components in order to brake the relative motion between the vehicle and said track components where said braking means come into contact thereto, with said braking force proportional to said first weight; and

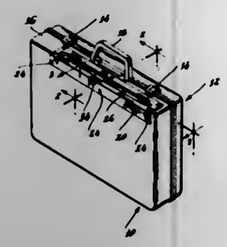
a first braking assembly, whereon the center of articulation of said load carrying platform is bearing, adapted to transmit said fist weight to said braking means.

4,067,422

ATTACHE CASE WITH AUXILIARY ACCESS OPENING

Robert A. Eberle, 5585 E. Pacific Coast Highway, Apt. 324, Long Beach, Calif. 90804

Filed May 16, 1977, Ser. No. 797,075
Int. Cl.² A45C 3/02
U.S. Cl. 190—41 R 6 Claims



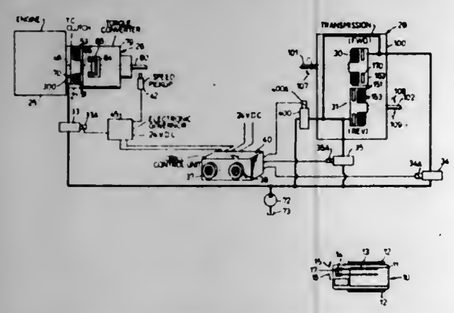
1. In a luggage case including a body portion, a hinged lid secured thereto, and a handle, the improvement which comprises: means defining a slot through said case from its exterior to its interior; closure means hingedly secured to the interior of said case for movement between slot-closing and slot-opening positions; and means for resiliently biasing said closure means into its slot-closing position.

4,067,423

CONTROL SYSTEM FOR ROTARY DRILL

Raymond C. Schneider, and Clairdel C. Cox, both of Rockford, Ill., assignors to Twin Disc, Incorporated, Racine, Wis.

Filed July 22, 1976, Ser. No. 707,632
Int. Cl.² G05G 5/10; F16H 57/06; F16D 25/10
U.S. Cl. 192—3.63 11 Claims



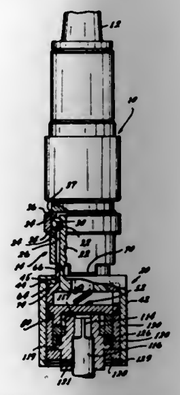
1. A drilling rig including a drill holder rotatable in forward and reverse directions from neutral; a prime mover; a modulatable power transmission system connected between said prime mover and said drill holder, said modulatable power transmission system comprising directional clutch means for driving said drill holder in either forward or reverse directions and modulatable speed clutch means for driving said drill holder at desired rotational speeds; and a control system for operating said clutch means of said power transmission system to control the direction and speed of rotation of said drill holder, said control system including a drill control unit comprising a selectively operable directional control dial for controlling said directional clutch means and rotatable between neutral, forward and reverse positions, a selectively operable speed control dial for controlling said speed clutch means and rotatable to any position between minimum and maximum speed positions, said drill control unit further comprising interlock means connected between both of said control dials to permit movement of said directional control dial from one position to another position to operate said directional clutch means only when said speed control dial is in minimum speed position, and to permit movement of said speed control dial between minimum and maximum positions to modulate said speed clutch means only when said directional control element is in forward position.

4,067,424

REMOVABLE TOOL HOLDER WITH IMPROVED BUILT IN TORQUE RELEASE CLUTCH

Allan S. Johnson, Newport Beach, Calif., assignor to Tapmatic Corporation, Irvine, Calif.

Filed Aug. 9, 1976, Ser. No. 712,595
Int. Cl.² F16D 43/20
U.S. Cl. 192—56 R 10 Claims



1. An adjustable torque clutch adapted for providing driving engagement between a driving shaft and a driven shaft, the clutch comprising a first element carried by one of said shafts and axially movable relative thereto, a second element carried by the other shaft and axially movable relative thereto, means axially biasing the said first element, the said elements being interengageable to transmit torque from one shaft to the other, the said elements having mutually engageable surfaces constructed whereby when torque is transmitted through the elements, the said first element tends to move axially in a direction to disengage the elements, the improvement comprising means whereby upon predetermined axial movement of the first element, it is in an axial position wherein said biasing means is held in a fixed position thereby, and means positioned to act on the second element to urge said element in a direction to provide for a limited amount of engagement between the first and second elements when they are disengaged for purposes of transmitting torque.

4,067,425

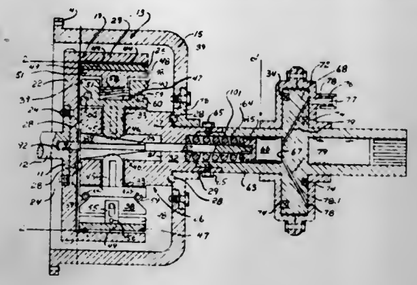
CLUTCH APPARATUS

Paul Joszef Soter, 2168 East 61 Avenue, Vancouver, British Columbia, Canada (V5P 2V3)

Filed July 26, 1976, Ser. No. 708,559
Int. Cl.² F16D 43/284
U.S. Cl. 192—91 A 2 Claims

1. A friction clutch assembly comprising:
a. a clutch drum having an interior cylindrical clutch face adapted to be secured to the crank shaft of an engine for rotation therewith,
b. a drive shaft rotatable within the clutch drum,
c. a plurality of radially movable clutch shoe carriers mounted on the drive shaft, each carrier having an inwardly extending radially aligned pintle,

d. tension spring means interconnecting the clutch carriers for yieldably maintaining the carriers in a normal contracted position against the drive shaft,
e. an axially movable cone-shaped wedge having grooves for slidably receiving inner ends of the pintles,
f. a clutch shoe mounted on each carrier for limited radial movement relative thereto being adapted to frictionally



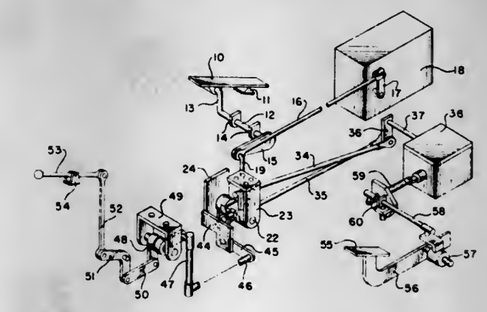
engage the clutch face of the drum when the carriers are spread by the wedge,
g. a compression spring between each shoe and its associated carrier urging each shoe to a normal extended position relative to its associated carrier being adapted to yield to enable radial movement of each shoe relative to its carrier when each shoe engages the clutching surface of the drum.

4,067,426

TORQUE CONTROL SYSTEM

George B. Murphy, Chesterland, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Jan. 13, 1976, Ser. No. 648,684
Int. Cl.² B60K 41/00
U.S. Cl. 192—.098 8 Claims



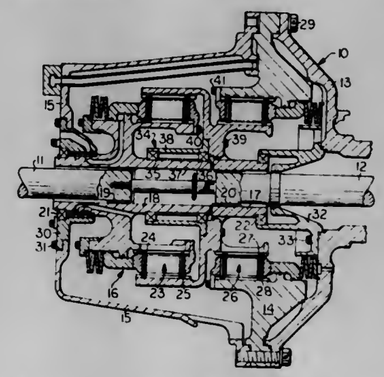
1. Control mechanism for coordinated control of the motor speed regulator and transmission of a vehicle for both forward and reverse direction by single directional movement of a single control pedal, comprising:
an operator's control pedal supported for forward rocking movement from a neutral position, said operator's control pedal being coupled to said motor speed regulator;
a shaft;
a shifting block supported on said shaft for axial movement therealong and being rotatable about the axis thereof, said shifting block having an arm extending therefrom for effecting rotational movement of said shifting block about said axis thereof;
link means connecting said operator's control pedal to said shifting block arm for forward rocking motion therewith;
a forward transmission control member mounted on said shaft to one side of said shifting block for transmitting a forward control motion to a transmission control member of a transmission upon being rotated in synchronism with said shifting block;
a reverse transmission control member mounted on said shaft on the opposite side of said shifting block for transmitting a reverse control motion to said transmission control member upon being rotated in synchronism with said shifting block; and
shifting means connected to said shifting block for shifting said block axially along said shaft to selected ones of a neutral position, a forward position at which said shifting block engages said forward control member and a reverse position at which said shifting block engages said reverse control member.

4,067,427

BEARING ARRANGEMENT FOR POWER DRIVE

George W. Cackley, Hanna City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 24, 1976, Ser. No. 689,285
Int. Cl.² F16D 67/06
U.S. Cl. 192—110 B 4 Claims



1. In a power drive having an input shaft, an output shaft coaxially of said input shaft, housing means defining a first stationary portion, a first drive component, first bearing means between said first drive component and said first housing portion directly rotatively carrying said first drive component in said first housing portion in driven association with said input shaft, said housing means further defining a second stationary portion, a second drive component, second bearing means between said second drive component and said second housing portion directly rotatively carrying said second drive component in said second housing portion in driving association with said output shaft, means for braking said second drive component, and means for selectively drivingly connecting said first drive component to said second drive component, the improvement comprising: coaxial radially spaced, axially elongated, overlapping wall means on said first and second drive components; and spread-bearing means extending between said first and second drive component wall means for maintaning mutually coaxial parallelism of said drive components.

4,067,428

MULTIPLE-ROLLER CONVEYOR

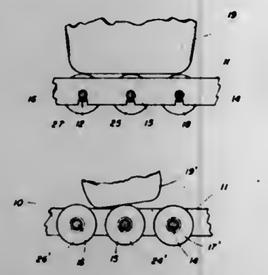
Howard P. Shuttleworth, Warren, Ind., assignor to Shuttleworth, Inc., Huntington, Ind.

Filed July 29, 1976, Ser. No. 709,654
Int. Cl.² B65G 13/00
U.S. Cl. 193—35 R 7 Claims

1. In a conveyor for moving objects, the conveyor including a shaft supported at first and second locations on said shaft, said shaft being unsupported between the first and second locations, a plurality of rollers mounted on said shaft between

said first and second locations in side-by-side relation, said rollers projecting upwardly from said shaft and being unobstructed to define a discontinuous surface area extending other than vertically between said first and second locations, said objects being held against said discontinuous surface area by gravity, the improvement comprising:

a resilient object support member associated with two of said rollers mounted upon said shaft, said support member being connected to and supported by said shaft between



said two associated rollers, said shaft being unsupported by said object support member, said support member projecting radially from said shaft further than said two associated rollers, said two associated rollers projecting upwardly further than said support member; and

connecting means for releasably connecting said support member to said shaft, said connecting means comprising a partial enclosure defined by said support member thereby providing a resilient snap fit over said shaft, said shaft being received within and held by the partial enclosure.

4,067,429

SELECTOR SYSTEM FOR A PRINTING HEAD FOR PRINTING OFFICE MACHINES

Rinaldo Salto, Ivrea (Turin), and Domenico Roano, Parella (Turin), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Mar. 4, 1976, Ser. No. 663,664
Claims priority, application Italy, Mar. 21, 1975, 67705/75
Int. Cl.² B41J 7/34
U.S. Cl. 197—18 **17 Claims**



1. A selector system for a printing head for use in printing machines and the like for selecting a character to be printed from the printing head, said system comprising:

at least two actuatable code bars;

means for effecting the positioning of the printing head with respect to a first coordinate comprising a first selector lever having a set of pivot elements thereon each defining a pivot axis about which the first selector lever pivots a preselected amount; and

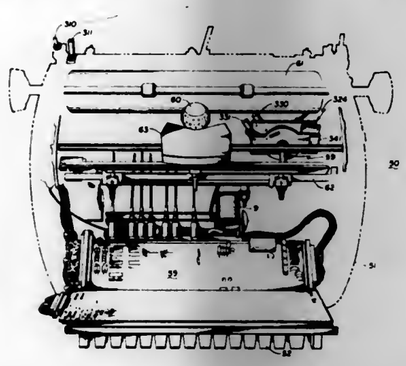
means responsive to the actuation of the code bars for selecting the pivot element about which the first selector lever pivots, comprising a first group of stop members each movable in response to the actuation of one of the code bars to engage one of a corresponding number of pivot elements, a second group of stop members each engaged with one of a corresponding number of pivot elements different from those associated with the first group and not movable in response to the actuation of any of the code bars and a third group of stop members each engageable with one of a corresponding number of pivot elements different from those associated with the first and second groups and pivotable in response to the actuation of either of at least two of the code bars.

4,067,430

TYPEWRITER CARRIAGE MOVEMENT MECHANISM

James L. Wienhold, Minnetonka, Minn., assignor to CPT Corporation, Hopkins, Minn.

Filed Mar. 8, 1976, Ser. No. 664,981
Int. Cl.² B41J 19/30
U.S. Cl. 197—82 **18 Claims**



1. Typewriter carriage control mechanism comprising:

a. carriage means carrying a single element print head constructed and arranged for transverse movement with respect to a print receiving medium;

b. first motor means connected to said carriage means providing motive power for movement of said carriage means in a first direction;

c. ratchet wheel means connected to said first motor means and having a predetermined number of teeth formed around the edge thereof;

d. sensor means disposed in ratchet wheel tooth confronting relationship providing signals representative of rotational movement of said ratchet wheel means;

e. pawl means disposed in ratchet wheel tooth engaging relationship producing circumferential displacement of said ratchet wheel means;

f. second motor means operatively connected to, and actuating, said pawl means in discrete movements, said second motor means having first solenoid means operably connected to said pawl means and said first timer means for initiating the movement of said carriage means in said first direction, and having second solenoid means operably connected to said pawl means and said first timer means for arresting the movement of said carriage means in a first direction;

g. electrical control means including power means adapted to receive signals representative of typewriter carriage print and operational function movements;

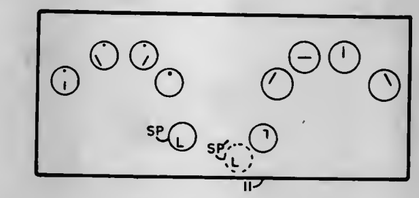
h. and first timer means connected to said electrical control means, said sensor means and said second motor means, said first timer means being actuated by said signals from said sensor means whereby said second motor means operates to carry out said carriage print and operational functions.

4,067,431

COMBINATIONAL KEYBOARD WITH MOVABLE KEYS AND ADAPTED FOR ONE-HANDED KEYING OF NUMERICAL INFORMATION

Ranald O. Whitaker, 4719 Squire Drive, Indianapolis, Ind. 46241

Filed Mar. 12, 1976, Ser. No. 666,480
Int. Cl.² B41J 5/08
U.S. Cl. 197—98 **5 Claims**



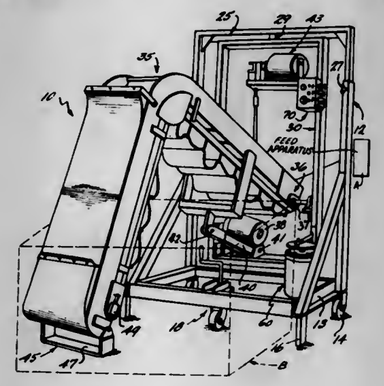
1. A combinational data keyboard adapted for operation by the fingers of a human operator and comprising: a magnetic base, a set of keys, means for permitting said operator to place each key at a selectable position on said base, said means comprising a set of magnets, each of said magnets being affixed to the base of a respective key, wherein the keys are moved on the base to positions corresponding to the natural hand configuration of the operator.

4,067,432

BIN FILLING MECHANISM

Harry C. Powell, Sr., Faber, Va. 22938

Filed July 2, 1974, Ser. No. 485,320
Int. Cl.² B65G 41/00, 65/32
U.S. Cl. 198—302 **7 Claims**



1. A bin filling mechanism comprising

a. a product conveying means for directly depositing bruisable product into a bin from a feed apparatus,

b. sensing means on said product conveying means for (i) sensing accumulated product in said bin and (ii) initiating adjustment of the vertical position of said product conveying means,

c. raising means for adjusting the vertical position of said product conveying means in response to said sensing means,

d. mounting means mounting said product conveying means for oscillation about a vertical axis, including an inner frame on which said product conveying means is mounted, and an intermediate frame upon which said inner frame is pivotally mounted, and

e. oscillating means for oscillating said product conveying means about said axis so that said bin is uniformly filled with product from said feed apparatus by continuous oscillation and intermitten vertical adjustment of said product conveying means, said oscillating means comprising a motor operated disc with a radial slot therein, and a rod operatively engaging a portion of said inner frame and having a portion thereof operatively received by said slot whereby rotary motion of said motor is converted to oscillating motion of said inner frame and said product conveying means mounted thereon.

4. A bin filling mechanism comprising

a. a product conveying means for directly depositing bruisable product from feed apparatus into a bin,

b. sensing means on said product conveying means for (i) sensing the accumulated product in said bin and (ii) initiating adjustment of the vertical position of said product conveying means,

c. means for uniformly filling said bin and minimizing product damage while allowing said bin to remain stationary during the filling operation wherein said means includes (i) raising means for adjusting the vertical position of said product conveying means in response to said sensing means, (ii) mounting means for mounting said conveying means for oscillation about a vertical axis, and (iii) oscillating means for oscillating said product conveying means about said vertical axis, and

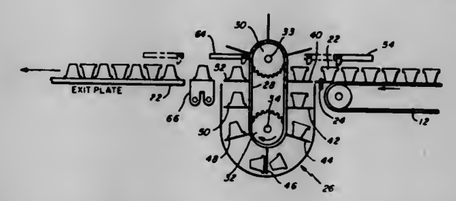
d. a main frame for supporting all components of said bin filling mechanism, said main frame having a bottom structure, two casters mounted on the bottom of said main frame and two legs mounted on said bottom structure, and a vertically adjustable caster mounted between said legs, said vertically adjustable caster when in one position thereof supporting said main frame and spacing said legs from the ground, and in another position thereof not supporting said main frame but allowing said legs to engage the ground and so support said main frame.

4,067,433

PACKAGING MACHINERY

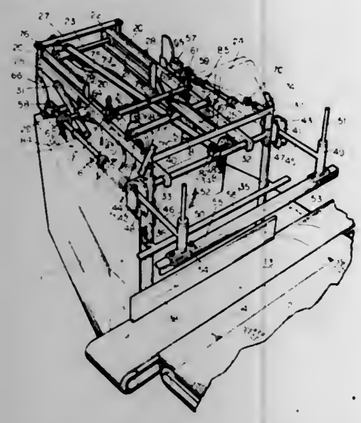
Robert E. Phippe, West Campton, N.H., assignor to Profile Associates Incorporated, West Campton, N.H.

Filed Dec. 5, 1975, Ser. No. 638,179
Int. Cl.² B65G 47/24
U.S. Cl. 198—374 **6 Claims**



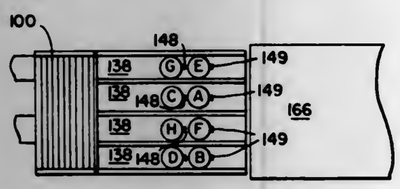
1. Packaging machinery for arranging tapered containers having lids in nested groups comprising means for moving said containers in upright positions along generally parallel lines to a delivery point, turnover unit disposed in at least one of said lines but not in others of said line for inverting containers moving in said one of said lines; said turnover unit including members depending downwardy from said one of said lines and defining a substantially enclosed radial path, a plurality of support plates disposed at right angles to said radial path, means for sequentially indexing said plates to predetermined positions along said path, means for moving individual ones of said tapered containers in upright positions from said one of said lines onto one of said support plates, whereby said individual tapered container is lowered along said radial path to rest upon said members adjacent the low point thereof, a following support plate contacting the lid of said container and raising it further along said radial path in inverted position to a point adjacent said delivery point.

4,067,434
LEHR LOADER
Eustace H. Mumford, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio.
Filed May 13, 1976, Ser. No. 685,855
Int. Cl.² B65G 47/32
U.S. Cl. 198—427 3 Claims



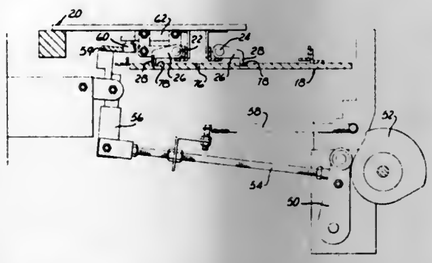
1. In apparatus for pushing a row of glassware from a transversely moving cross-conveyor onto the forward end of a lehr mat wherein a pusher bar is brought into contact with the ware at or below its center of mass and pushes the ware from the transversely moving conveyor over a dead plate onto the lehr mat and shifts upward and over the next developing row of ware on said conveyor and then down to a position behind the row of ware, the improvement comprising:
- a stabilizing bar positioned slightly in advance of the finishes of the row of ware for preventing the forward tipping of the ware while being pushed laterally from the conveyor onto the lehr mat;
- a pair of horizontal shafts, said stabilizing bar being mounted to the forward end of said horizontal shafts;
- cam means mounted on the pusher bar support;
- a roller on the rearward ends of said shafts;
- means biasing said rollers into contact with said cams when the pusher bar is in its retracted position; and
- means on said pusher bar moving apparatus for drivingly engaging stop means on said shafts after forward movement of said pusher bar of a preselected extent, whereby said stabilizing bar and pusher bar move together during movement of the ware from the conveyor onto the lehr mat.

4,067,435
APPARATUS FOR ALIGNING ROWS OF STACKED ARTICLES
Edward P. Toby, 785 Bowhill Road, Hillsborough, Calif. 94010
Division of Ser. No. 582,659, June 6, 1975, Pat. No. 3,994,386.
This application May 27, 1976, Ser. No. 690,666
Int. Cl.² B65G 47/26
U.S. Cl. 198—434 2 Claims



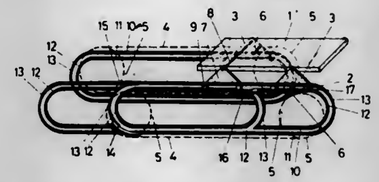
1. In a conveyor system for delivering groups of articles in a sequential manner, the conveyor system including a plurality of paired, laterally spaced belts driven uniformly and longitudinally, and each article being supported on a pair of adjacent belts; apparatus for arranging said groups of articles in exact row and column matrix alignment, said apparatus including a plurality of row alignment tabs, one for each of said articles in a row, each of said row alignment tabs disposed between the two belts of one of said pairs of belts, said row alignment tabs extending from a laterally disposed common pivot shaft, said pivot shaft being secured subjacently of the upper course of said belts, means for rotating said pivot shaft selectively to pivot said tabs into interference with each article of each row as it advances on said belts, whereby any leading articles will be momentarily halted and brough into alignment with lagging articles in the same row; a first plurality of column alignment tabs each disposed on one side of respective columns of articles, a second plurality of column alignment tabs each disposed on the other side of said respective columns of articles, each of said first plurality of column alignment tabs being paired with one of said second plurality of column alignment tabs in opposed relationship with one of said columns disposed therebetween, said first and second plurality of column tabs being disposed between said pairs of said plurality of belts and at the lateral extremities thereof, and shaft means for simultaneously rotating said first and second plurality of column alignment tabs into impingement with said sides of said articles.

4,067,436
APPARATUS FOR CONVEYING ARTICLES
Robert William Davies, and Leonard Thornton, both of London, England, assignors to Molins Limited, London, England
Filed Nov. 12, 1976, Ser. No. 741,431
Int. Cl.² B65G 25/00
U.S. Cl. 198—742 5 Claims



1. Apparatus for conveying articles such as packet blanks comprising a flat elongated surface along which in use articles are conveyed while certain operations are performed thereon, feed means selectively operable to feed a succession of articles on to one end of the surface, a member mounted adjacent the surface for reciprocation therealong, article engaging means carried by the member at regular intervals along the surface, and actuating means for actuating the article engaging means in timed relation with reciprocation of the member, whereby articles are successively engaged by the article engaging means during a forward stroke of the member and conveyed in steps away from said one end of the surface, said actuating means including control means operable to maintain the article engaging means disengaged, said control means comprising a driven member to actuate said article engaging means and coupling means through which the drive to said driven member passes and which is disengageable and reengageable during a return stroke of said reciprocating member, so that when operation of the feed means has been interrupted the conveying of articles along the surface is interruptible during continued reciprocation of the member.

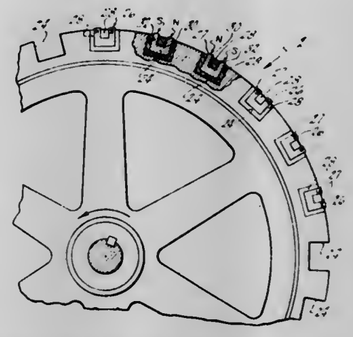
4,067,437
CHAIN CONVEYOR
Erich Frantl, Gablenzgasse 24, 1160 Vienna, and Peter Hofstatter, Taubergasse 5-7, 1170 Vienna, both of Austria
Filed Sept. 9, 1975, Ser. No. 611,604
Claims priority, application Austria, Sept. 9, 1974, 7223/74; Oct. 17, 1974, 8337/74
Int. Cl.² B65G 17/18
U.S. Cl. 198—800 4 Claims



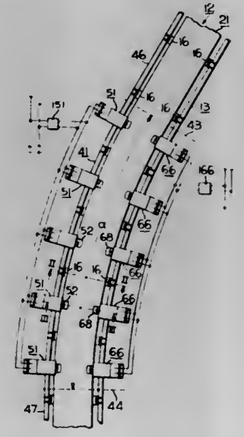
1. An endless conveyor, particularly for transporting motor vehicles, said conveyor comprising:
- two endless chains movably mounted to run in parallel and spaced vertical planes;
- a plurality of plates mounted for horizontal movement with said chains;
- each said plate having directly pivotally connected thereto a pair of main supports, said main supports being directly connected adjacent diagonally opposite corners of the respective said plate;
- means drivingly connecting said chains with the adjacent said main supports;
- each said plate having directly pivotally connected thereto a single auxiliary stabilizing support at a position laterally opposite one only of said main supports, the corner of said plate laterally opposite the other of said main supports being free of support;
- each of said main supports and said single auxiliary support having thereon spaced rollers;
- a pair of endless guide rails, one each positioned in a plane parallel with and adjacent to one of said chains, each of said guide rails having an upper run and a lower run joined by arcuate end transition runs, each said guide rail comprising a pair of rails spaced by a distance substantially equal to the diameter of said rollers, said rollers of said main supports and said single auxiliary support being guided between the pair of rails of the respective of said guide rails;
- the one said guide rail positioned adjacent the side of said plates having said auxiliary support having additional arcuate transition runs;
- the longitudinal distance between said auxiliary support and said main support on the same lateral side of each of said plates being equal to the spacing between respective of said arcuate end transition runs and said additional arcuate transition runs of said one guide rail; and
- connection means, joining said auxiliary support with the laterally opposite said main support, for causing turning of said auxiliary support around one of said arcuate transition runs to be contrained to and correspond with turning of said laterally opposite main support.

4,067,438
MAGNETIC DRIVE FOR CONVEYOR
Robert Spurr, West Hartford; Francis A. Dahms, Tariffville, and Francis A. Sarkozy, West Hartford, all of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.
Filed Sept. 4, 1973, Ser. No. 394,217
Int. Cl.² B65G 23/18
U.S. Cl. 198—805 10 Claims

1. A magnetic drive wheel for an endless woven magnetically attractable conveyor belt, comprising:
- a wheel having slots disposed in the outer periphery of said wheel;
- a permanent magnet disposed in each of said slots such that the outer surface of each of said magnets protrude radially outwardly of said wheel so that the magnets form driving cleats which engage said woven belt; and
- means for securing said magnets in said slots to said wheel, said means also magnetically isolating said magnets from said wheel.



4,067,439
CURVED-PATH BELT CONVEYOR
Anthony D. Janitsch, Belleville, Canada, assignor to Allis-Chalmers Canada, Limited, Milwaukee, Wis.
Continuation-in-part of Ser. No. 687,397, May 17, 1976, abandoned. This application Dec. 29, 1976, Ser. No. 755,154
Int. Cl.² B65G 23/12
U.S. Cl. 198—835 10 Claims



1. In an endless-belt conveyor having a belt with a carrying run and a return run supported by troughing idlers and support idlers, respectively, a curved path section including
- a support structure on which at least some of said troughing and support idlers are mounted at predetermined circumferentially spaced intervals,
- a first series of drive assemblies mounted on said support structure and spaced circumferentially from one another along the outside edge of said carrying run of said belt in said curved path section, each of said assemblies including a pair of pinch rolls with peripheries thereof drivingly engaging the upper and lower sides, respectively, of said outside edge of said carrying run of said belt,

a second series of drive assemblies mounted on said support structure and spaced circumferentially from one another along the inside edge of said carrying run of said belt in said curved path section, each of said assemblies including a pair of pinch rolls with peripheries engaging the upper and lower sides, respectively, of said inside edge of said carrying run of said belt, and

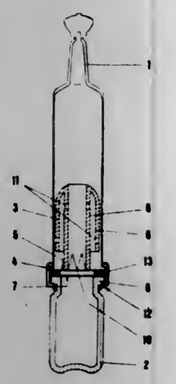
power means driving said rolls of said assemblies to effect a peripheral speed of said rolls of said first series of assemblies which is greater than the peripheral speed of said rolls of said second series of assemblies whereby the outer edge of the portion of the carrying run of said belt in said curved path section is stretched relative to said inside edge thereby causing said portion to curve about said path section.

4,067,440

PACKAGING CONTAINER FOR THE EXTEMPORANEOUS PREPARATION OF MULTI-COMPONENT SOLUTIONS

Gilbert Lataix, Ste Menehould, France, assignor to Tuboplast France, Paris, France

Filed Apr. 29, 1976, Ser. No. 681,734
Claims priority, application France, May 21, 1975, 75.16549; Mar. 17, 1976, 76.08580
Int. Cl.² B65D *25/08*
U.S. Cl. 206—222 8 Claims



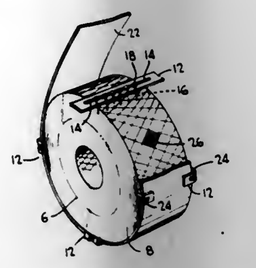
1. A package for the separate storage and mixing of different materials, said package comprising at least two independently formed compartments, each compartment receiving one of said materials therein and being separately sealed by a cap independently of the remaining compartments for an individual handling and processing of each compartment, said package further comprising an assembly of said compartments with the caps thereof in closely spaced direct alignment with each other, separate means both sealing said compartments to each other between the aligned caps and sealing the space between the aligned caps, and pusher means completely received and sealed within at least one compartment, said pusher means having a piercing end thereon for selective projection through the closely spaced aligned caps for a severing of said caps and a communication of the interiors of the compartments through the sealed space between the caps without affecting the means sealing said compartments to each other and without exposure of the pusher means outside of a sealed environment.

4,067,441

COIL OF FLEXIBLE MATERIAL WITH INSERTS IN OUTER WALL

James W. Newman, Scarsdale, and Ronald E. Zajac, Yonkers, both of N.Y., assignors to Windings, Inc., Goldens Bridge, N.Y.

Filed May 14, 1976, Ser. No. 686,568
Int. Cl.² B65H *55/02*
U.S. Cl. 206—398 9 Claims



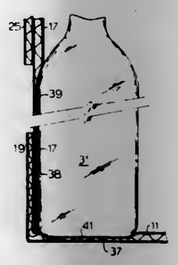
3. A coil of flexible material wound in a plurality of figure-8s having their cross-overs progressing around the coil in each layer and having a radial opening extending from the outside into an axial opening of the coil, the coil having a wall thickness substantially greater than the radius of said axial opening, and having a plurality of pins spaced from each other extending from the outer surface of the coil into the outer layers thereof, said pins being spaced in a direction substantially parallel to the axis of said axial opening.

4,067,442

PACKAGING GLASS BOTTLES AND OTHER RIGID CONTAINERS

William J. Howe, Los Altos, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Division of Ser. No. 628,129, Nov. 3, 1975, Pat. No. 3,979,882.
This application May 14, 1976, Ser. No. 686,515
Int. Cl.² B65D *75/04, 5/18*
U.S. Cl. 206—433 4 Claims



1. A package protecting breakable bottles from breakage without the use of inner partitions, comprising:

a plurality of breakable bottles bearing snugly on each other, and

an enclosing carton of corrugated or honeycomb paper having an outer sheet and an inner portion, with vertical walls, a bottom wall, and a top wall all bearing on said bottles, all said vertical walls of said inner portion being held in snug engagement with said bottles and being indented by them while said outer sheet remains unindented and undeformed by them,

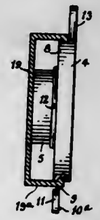
the indentations of said inner portion conforming precisely to the bottle portions in engagement therewith, said inner portion not being otherwise indented, said inner portion where indented being retained in compression by said bottles.

4,067,443

FECAL EXAMINATION DEVICE

Robert J. Greenwald, 4771 N. Federal Highway, Pompano Beach, Fla. 33064

Continuation of Ser. No. 601,723, Aug. 4, 1975, Pat. No. 4,007,012, which is a continuation of Ser. No. 455,017, March 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 150,357, June 7, 1971, abandoned, and Ser. No. 255,857, May 22, 1972, Pat. No. 3,819,045, which is a continuation-in-part of Ser. No. 150,357, June 7, 1971, abandoned. This application Jan. 26, 1977, Ser. No. 762,937
The portion of the term of this patent subsequent to Feb. 8, 1994, has been disclaimed.
Int. Cl.² B65D *43/10, 1/22*
U.S. Cl. 206—459 8 Claims



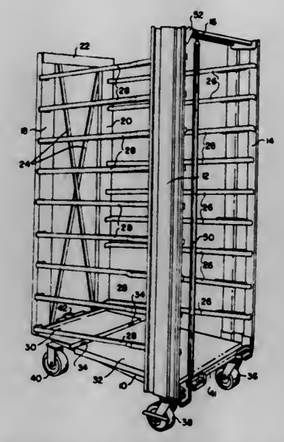
1. A fecal sample container for collecting and transporting a sample of feces and for serving as a base, for an open-ended tube subsequently fitted thereto, during the analysis of said sample by a method in which the sample of feces is mixed with flotation liquid in a receptacle formed by said tube and said base and ova in said sample are caused to rise upward through said liquid in said receptacle, said container consisting of two unitary bodies, both of molded plastic, one of which is a unitary cup body including an empty open-top cup adapted to receive and transport the sample of feces to be examined, said cup being adapted to be slid into and received in an open lower end of said tube to form said receptacle by closing the lower end of said tube with a liquid-tight press fit with the outer walls of said cup in close contact with the inner walls of said tube, said cup having an interior volume of about one half to 5 cc for receiving and retaining a corresponding volume of feces and a width of about 1 to 2 cm and said cup having an integral extension in the form of a flat-bottomed tray having an upstanding outer rim, said tray being constructed and arranged to serve as a supporting base for said tube when the latter is fitted to said cup and said rim being constructed and arranged to retain liquid overflowing from said tube, the top of said rim being below the top of said cup, the other of said unitary bodies being a closure cap for fitment over the open top of the cup, said closure cap engaging and spanning said spaced portions and extending over the top of said cup to confine fecal matter therein during the transport of said sample prior to the fitting of said receptacle on said cup, said closure cap having a downwardly extending circumferential wall surrounding said rim and having means for engaging said rim with a snap fit to hold said cap of said body with said cap fitting over the entire top of said tray, closing said cup and covering the space between said cup and said rim, said cup body having an extension outwardly of said rim serving as a finger piece for use in separating said cup body and said closure cap prior to the fitting of said receptacle on said cup.

4,067,444

RETAINER BAR ASSEMBLY FOR MAIL CARRYING RACK

James D. Wilson, Newport Beach, Calif., assignor to Bonser Metals Division of Intercole Automation, Inc., Compton, Calif.

Filed Nov. 15, 1976, Ser. No. 741,887
Int. Cl.² B62B *11/00*
U.S. Cl. 211—126 2 Claims



1. In a rack assembly which includes a lower frame member; and a pair of spaced and parallel upright posts attached to said lower frame member and defining an open end for the assembly for trays to be inserted through said open end, the combination of: a bracket attached to the upper end of one of the posts having a first generally horizontal planar section with an aperture therein, and having a second generally vertical planar section adjacent to said horizontal section; and a vertical locking bar member having a bent-over U-shaped upper end with its extremity extending downwardly through the aperture in the horizontal section of said bracket and having a generally U-shaped lower end with its extremity extending upwardly through an aperture in the forward end of said frame member aligned with the aperture in the horizontal planar section of said bracket, said locking bar being vertically slidable to a limited extent in the apertures between a lower position and an upper position, said second section of said bracket preventing pivotal movement of said bar when the bar is in said lower position, and said bar being pivotal about the vertical axis of the apertures in said bracket and in said frame member when the bar is in its upper position, the second section of said bracket extending upwardly beyond the first section to form a shoulder for maintaining the bar in its open position, when the bar is moved to is upper position and pivoted about the aforsaid vertical axis over the top edge of said second section and then dropped to its lower position.

4,067,445

ASSEMBLING DEVICE BETWEEN UPRIGHTS AND CROSS-MEMBERS FOR SETTING UP METAL STRUCTURES

Raymond A. Derclaye, Couillet, Belgium, assignor to Finimetal-Efel, Societe Anonyme, Frasnes-lez-Couvin, Belgium

Filed Oct. 12, 1976, Ser. No. 731,211
Claims priority, application Belgium, Nov. 19, 1975, 254661
Int. Cl.² A47F *5/10*
U.S. Cl. 211—191 1 Claim

1. In a metal structure having a plurality of upright post members and cross members extending between said post members, the improvement comprising:

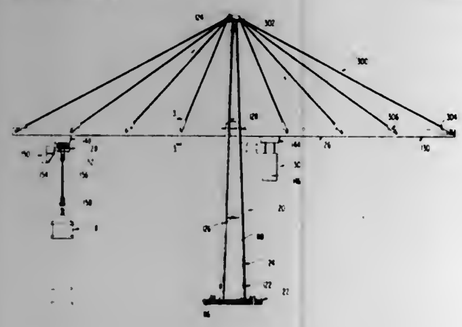
said post members each having spaced parallel side walls curved inwardly at their forward edges to define semi-

tubular front portions, then reversely bent to define channels adjacent said semi-tubular portions and a central planar front face between said channels;
a pair of vertical rows of first openings in said front face;
a vertical row of second openings in the bottom of each of said channels;
said cross members each having an end plate perpendicular thereto abutting a side wall of a post and having alternating portions extending across an adjacent channel into



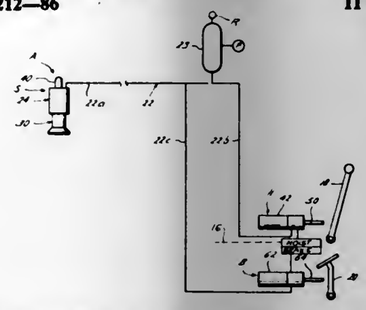
abutment with said front face with intermediate portions bent to closely embrace the adjacent semi-tubular portion and extend into said adjacent channel;
each of said intermediate portions having a downwardly hooked inner edge engaged in one of said second openings; and
said portions extending across said adjacent channel having upper edges generally coincident with lower edges of first openings of one of said rows.

4,067,446
CABLE STAY CRANE
Louis F. Ray, P.O. Box 14702, Baton Rouge, La. 70808
Filed Feb. 24, 1976, Ser. No. 661,063
Int. Cl.² B66C *23/72*
U.S. Cl. 212—48 **3 Claims**



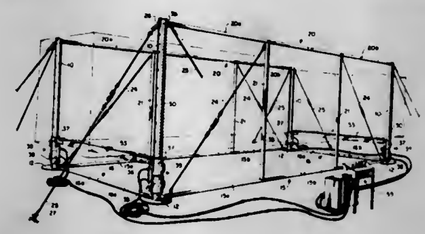
1. A hoist apparatus comprising:
a base;
a substantially vertical column secured to the base, said column having a top section;
an elongated substantially horizontal truss assembly secured to the vertical column at a location between the base and the top section;
a series of cables, each having a column end and a truss end, the column ends being anchored to the top section, and the truss ends being pivotally connected to the truss at spaced locations, said locations being positioned at intervals from first locations adjacent the column to outer locations remote from the column;
a lift assembly horizontally movably mounted on one side of the truss assembly, said assembly including a vertically movable hoist cable and means for raising and lowering the hoist cable;
a counterweight assembly movably mounted on the other side of the truss assembly, said counterweight assembly including a suspended weight and means for horizontal movement along the truss in either direction;
sensing means on said column to detect a tendency of the column to tip from its substantially vertical orientation as a result of the hoising of the load on the hoist cable; and
means interconnecting the sensing means and the means for horizontal movement of the counterweight assembly, whereby the counterweight assembly is positioned to stabilize and balance the apparatus;
the truss assembly comprising a pair of side walls, a top wall, and a base track; and
the lift assembly and the counterweight assembly each including a hanger arm disposed between the side walls and having roller means engaged on the base track; wherein
the hanger arm has a series of cross axles extending therethrough;
rollers on said cross axle;
the base track having a track secured to each side wall, and the rollers bearing on the tracks;
a continuous rack gear on one of said side walls;
a worm gear on the hanger arm; and
a motor driving said worm gear.

4,067,447
SAFETY DEVICE FOR CRANES
John B. Goss, 7627 Beech Cove Lane, and William D. Morrow, 10206 Amblewood, both of, Houston, Tex. 77072
Filed Dec. 29, 1975, Ser. No. 644,808
Int. Cl.² B66C *13/48*
U.S. Cl. 212—86 **11 Claims**



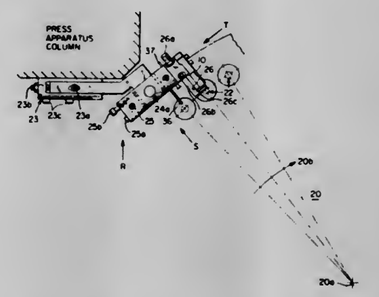
1. An anti-two block system adapted to be used with a crane, the crane having a boom with a boom point and adapted to lift loads with a lifting line having a travelling member therewith, the crane having hoisting and braking levers for controlling operations thereof, comprising:
sensor means mounted with the boom point of the crane for detecting the close proximity of the travelling member adjacent the boom point of the crane during lifting operations of the travelling member with the crane, said sensor means including:
a body member mounted with the boom point, said body member having a bore formed therethrough for receivably mounting the lifting line of the crane therein and a fluid cavity formed about said bore;
a sleeve having a first end and a second end, said first end adapted to be disposed in said fluid cavity in said body member and said second end adapted to be engaged by the travelling member, said fluid cavity between said first end of said sleeve and said body member forming a fluid chamber;
hoisting actuator means mounted adjacent the hoisting lever of the crane for co-action therewith; and,
means operatively connecting said hoisting actuator means and said fluid chamber of said sensor means, said fluid chamber providing a fluid output from said sensor means as a result of longitudinal movement of said sleeve with respect to said body member within said fluid cavity from a first unactivated position to a second engaged position wherein said hoisting actuator means, in communication with said fluid chamber, is activated by said fluid output for effecting movement of the hoisting lever to discontinue the lifting force exerted on the lifting line when the travelling member engages said sensor means.

4,067,448
LIFT AND SUPPORTING SYSTEM
Hervin Joseph Bergeron, Jr., Opelousas, La., assignor to Luke Bourgeois; Charles Bourgeois; John G. Bourgeois and Eddie Bourgeois, all of Lawtell, La., part interest to each
Filed May 19, 1975, Ser. No. 578,911
Int. Cl.² B66F *1/08*
U.S. Cl. 214—1 H **14 Claims**



1. A lift and supporting system for building structures or the like which comprises:
1. a plurality of columns adapted to be positioned in a suitable load-support plan about the structure to be lifted and supported, each column having a rack extending longitudinally along one side thereof;
2. structure carrying means adapted to be placed beneath the structure and to carry the same during the lifting operation;
3. guy means extendable downwardly and outwardly from the upper portions of the individual columns and adapted to maintain said columns in an upright position while the structure is supported on said structure carrying means;
4. base plate means at the base of each said column for distributing the load over an area sufficiently large to restrain the column against undue sinkage into the supporting terrain thereunder while the structure is supported on said structure carrying means;
5. a plurality of elongated members operatively connectable to extend between adjacent columns in the load-support plan thereby to form a frame restraining said columns against undue movement in any lateral direction while the structure is supported on said structure carrying means;
6. a jacking system adapted to be operatively mounted on each column, each jacking system including
a. a pair of individually moveable members encircling the column
b. pawl means mounted on each said member
c. double acting hydraulic fluid motor means connected to the pair of individually moveable members for effecting selective relative movement therebetween longitudinally along the column
said pawl means cooperating with the rack on said column whereby the pawl means of one of said pair of members is in load-supporting engagement with said rack as the other of said pair of members is being moved in a preselected direction longitudinally along the column by said motor means,
one member of each pair of said individually moveable members being operatively connectable to said structure carrying means to enable lifting and supporting of the structure to be effected; and
7. control means for selectively actuating each of said motor means so that the structure may be lifted and supported in the desired position.

4,067,449
APPARATUS FOR HIGH-SPEED ACCURATE COUNTING AND HANDLING OF DISCRETE OBJECTS SUCH AS TABLETS
Jim Mills Adams, West Caldwell, and Edward Francis deZabala, Pequannock, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 543,238, March 21, 1974, Pat. No. 3,997,063. This application Oct. 16, 1975, Ser. No. 623,527
Int. Cl.² G06M *9/00*
U.S. Cl. 214—1 C **17 Claims**

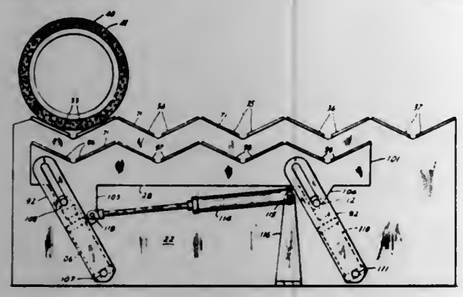


1. An ultra-accurate counting and handling system for use with high-speed apparatus making discrete, solid particular objects, comprising:
a. sensing means including a directional sensor arrangement predeterminably arranged relative to each station of the apparatus at which the formation of the objects is virtually completed, each said sensor arrangement including a retroreflective optical sensor arranged to have an operative face thereof proximate said respective station of the apparatus at a pre-established optimum sensing angle α relative to the virtually completed objects, said sensing means further including a spring-loaded mounting mechanism associated with each said sensing arrangement for housing the sensor and providing adjustable stationary mounting of the latter relative to the said respective station of the apparatus;
b. control counter means responsive to said sensing means for providing a continuous count of the objects sensed by each said sensor arrangement, said counter means including first means enabling a presetting of the maximum desired count of sensed objects for each said station of the apparatus;
c. gating and handling means including a gated dispensing arrangement associated with each said station of the apparatus and having a first portion thereof situated proximate the said respective station, each said gated dispensing arrangement being adapted to predeterminably control the procession of the objects from said respective station of the apparatus to a pre-established destination under the supervision of said first means.

4,067,450
PIPE HANDLING APPARATUS FOR PIPE LAYING BARGES

J. C. Birdwell, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Division of Ser. No. 592,170, July 1, 1975, Pat. No. 3,984,007.
This application June 10, 1976, Ser. No. 694,889
Int. Cl.² B65G 25/04
U.S. Cl. 214—1 P 8 Claims

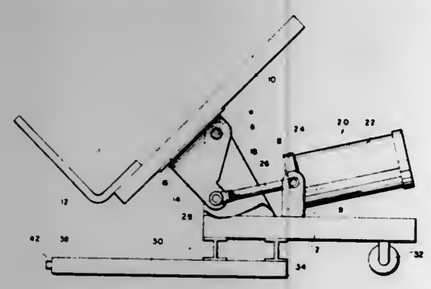


1. Pipe rack apparatus, comprising, in combination, a pipe rack having plural upwardly facing pipe seat means therealong; pipe lifter conveyor means comprising a pipe lift beam disposed adjacent said pipe rack and parallel thereto having plural upwardly facing pipe seat means therealong and having pivotal connection means adjacent each end thereof, plural downwardly disposed first drive cylinder means pivotally connected to said pivotal connection means of said lift beam at their upper ends and each pivotally supported at a fixed location at its lower end for moving said lift beam vertically with respect to said pipe rack, and a generally horizontally disposed second drive cylinder means pivotally connected generally parallely to said pipe lift beam at one of its ends and pivotally supported at a fixed location at its other end for moving said lift beam horizontally with respect to said pipe rack, and lift beam being movable vertically by said first drive cylinder means and horizontally by said second drive cylinder means with respect to said pipe rack whereby said lift beam may move a pipe from one pipe seat means of said pipe rack to any of plural adjacent pipe seat means of said pipe rack in either direction from said one pipe seat means.

4,067,451
ROLL FLIP MACHINE

William L. Winters, 2975 Haywood Ave., Chattanooga, Tenn. 37415

Filed Oct. 19, 1976, Ser. No. 733,791
Int. Cl.² B65G 7/00
U.S. Cl. 214—1 Q 11 Claims



1. Apparatus for upending a work piece having a relatively low center of gravity, comprising:

a base member having forward and rearward portions, supporting first and second horizontal pivot shafts, said first pivot shaft elevated with respect to the center of gravity of said work piece, said first shaft parallel to, elevated with respect to and spaced forward with respect to said second shaft;

a carriage member pivotally mounted on said first pivot shaft, having the first end of a lever arm mounted thereto and the second end located proximate to said second pivot shaft, said carriage having a base portion being substantially horizontal for supporting said work piece and a back portion being substantially vertical when said carriage is in a first position for loading said work piece, said lever oriented rearwardly at an angle of approximately 45° with respect to vertical when said carriage is in said first position for loading said work piece;

a linear driving means having a housing with a forward end proximate to said lever arm pivotally mounted on said second pivot shaft, said housing containing a linear driving member oriented substantially horizontally when said carriage is in said first position, having a force transmitting end pivotally connected to said second end of said lever arm, for applying a forwardly directed driving force;

said linear driving means forcing said second end of said lever forward, rotating said carriage into a second position where said base portion is substantially vertical and said back portion is substantially horizontal, lifting the center of gravity of said work piece above the elevation of said first pivot shaft, upending said work piece, said lever oriented forwardly at an angle of approximately 45° with respect to vertical when said carriage is in said second position, said second end of said lever describing an arc about said first pivot shaft during the motion of said carriage from said first to said second position, causing said housing to rotate about said second pivot shaft to enable said linear driving member to form an approximately tangential angle with respect to said arc described by said second end of said lever during the early portion of the actuation of said linear driving means;

whereby a greater driving torque may be applied to said carriage by said linear driving means during the early portion of the actuation thereof more closely matching the driving torque capacity of the linear driving means to the load torque requirements of upending a work piece with a center of gravity at an initial lesser elevation than said first pivot shaft.

4,067,452
CHARGING APPARATUS FOR RECEPTACLE

Andrejs Berzins, Parma, Ohio, assignor to Arthur G. McKee & Company, Cleveland, Ohio

Filed Mar. 10, 1976, Ser. No. 665,552
Int. Cl.² F27B 5/12
U.S. Cl. 214—2 18 Claims

1. Apparatus for charging particulate charge material into a receptacle comprising distributor means within the upper portion of the receptacle; gas lock means permitting entrance of charge material into said receptacle without harmful loss of gas pressure within said receptacle; temporary storage hopper means outside of and above said receptacle and adapted to receive charge material; receiving hopper means located above said temporary storage hopper means and adapted to receive charge material from a source, temporarily store said charge material and discharge said charge material directly into said temporary storage hopper means; means for causing said charge material to discharge from said receiving hopper means into said temporary storage hopper means when said temporary storage hopper means is empty of charge material to a predetermined degree; and means for discharging charge material from said temporary storage hopper means directly downward by gravity into said receptacle through said gas lock means after said charge material has been introduced into said

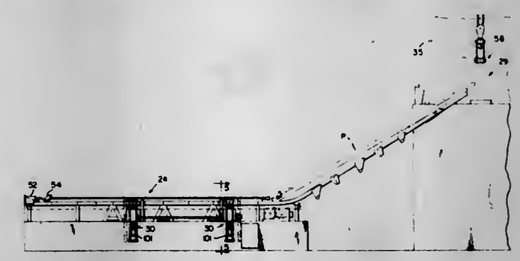


temporary storage means and after the need for additional charge material in said receptacle has been sensed.

4,067,453
PIPE DELIVERY SYSTEM

Walter H. Moller, Bellevue, Wash., assignor to Western Gear Corporation, Everett, Wash.

Filed Apr. 19, 1976, Ser. No. 678,159
Int. Cl.² E21B 19/14
U.S. Cl. 214—2.5 37 Claims



1. A pipe handling system comprising,

a pipe storage zone, pipe transfer zone, pipe rolling zone, and pipe transporting zone adjoining one another in the recited order;

said pipe storage zone having a bank of vertically spaced pipe storage areas with respective pipe storage stations exposed to said transfer zone,

said rolling zone having a pipe transfer station exposed to said transfer zone and having a pipe transporting station laterally spaced from said transfer station and exposed to said transporting zone, and

said transporting zone having a pipe using station spaced endwise from said transporting station and located at a level higher than the latter;

pipe transfer means in said transfer zone for transferring a length of pipe either way between a selected one of said storage stations and said transfer station;

pipe rolling means and indexing means in said rolling zone adapted, respectively, to selectively provide a gently sloped roll support either way for multiple lengths of side-by-side pipe between said transfer station and transporting station and to selectively receive or discharge such lengths one at a time at the transfer station or transporting station;

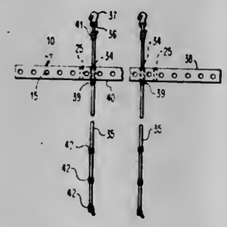
pipe transporting means in said transporting zone having an elongated carriage adapted to carry and transport an entire length of pipe lengthwise either way between a generally horizontal position at the transporting station and an upwardly sloped position at the pipe using station; and

pipe unloading means in said transporting zone including pipe unloading ejectors on said carriage for moving a length of pipe from the carriage to said transporting station and including actuating means located beneath and free of said carriage for selectively powering said ejectors when the carriage is situated at said transporting station.

4,067,454
SUPPORT RAIL FOR TOBACCO STICKS

Francis A. Heibling, Route 2, Maysville, Ky. 40156

Filed Sept. 16, 1975, Ser. No. 613,809
Int. Cl.² A24B 1/08; A47F 5/00
U.S. Cl. 214—5.5 10 Claims



1. An apparatus for harvesting tobacco including:

a support rail;

said support rail having a plurality of substantially parallel openings extending therethrough along its length, said openings being substantially equally spaced from each other;

each of said openings receiving therein one end of a tobacco stick with tobacco thereon for support by said support rail with the ends of adjacent sticks disposed on alternate sides of said support rail;

and said support rail having a pair of connecting means connected thereto, each of said connecting means including first and second means extending from opposite sides of said support rail in a direction substantially perpendicular to said openings, said first means extending from one of the opposite sides of said support rail and connecting to lifting means within a barn to maintain said support rail in vertically spaced relation thereto when said support rail is the uppermost support rail and connecting to the second means of the connecting means of a support rail disposed above said support rail to maintain said support rail in a vertically spaced relation to the support rail disposed thereabove when said support rail is not the uppermost support rail, and second means extending from the other of the opposite sides of said support rail and connecting to the first means of the connecting means of a support rail disposed beneath said support rail to maintain said support rail in vertically spaced relation to the support rail therebeneath, wherein each of said connecting means of each of said support rails has its first means aligned vertically with the second means of the connecting means on the support rail disposed above said support rail and has its second means aligned vertically with the first means of the connecting means on the support rail disposed beneath said support rail when the support rails are vertically disposed.

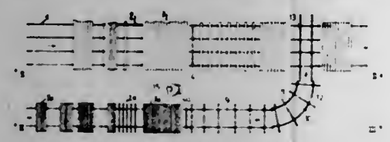
4,067,455
STACKING PLANT AND METHOD

Alpo Rysti, Frisansintie 22, 02240 Espoo 24, Finland

Filed May 21, 1976, Ser. No. 688,727
Claims priority, application Finland, Mar. 10, 1976, 760624
Int. Cl.² B65G 57/06
U.S. Cl. 214—6 H 12 Claims

1. In a method for arranging elongated bodies, such as tim-

ber bodies, in a stack wherein all of the bodies are substantially parallel to each other and respectively situated in several layers situated one above the other with at least two laths situated between each pair adjoining layers of said elongated bodies, extending crosswise thereof and maintaining a space between the adjoining layers, the steps of operating at a first elongated location a body-handling apparatus which has opposed ends and sequentially forms from said bodies a series of layers thereof situated one above the other, operating at a second elongated location which in part extends across a part of said first location a lath-handling apparatus which situates on each layer of said bodies formed by said body-handling apparatus



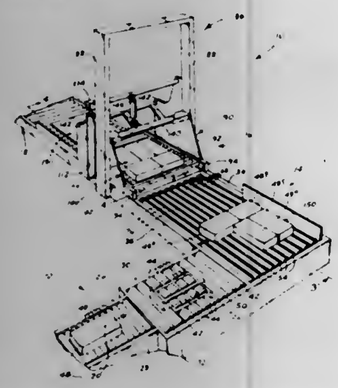
before the next layer is situated thereon, at least a pair of laths spaced from each other and extending across the bodies of each layer, the next layer of said bodies being deposited by said body-handling apparatus on the laths situated on the preceding layer of said bodies by the lath-handling apparatus, and controlling the operations of said body-handling apparatus and lath-handling apparatus by a single individual situated at a third location spaced at a substantial distance from the crossing parts of said first and second locations, situated substantially midway between said ends of said body handling apparatus and between said first and second locations, and from which said first and second locations are conveniently visible.

4,067,456

APPARATUS FOR ARRANGING AND STACKING NONRIGID ARTICLES

Robert A. Schmitt, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.

Filed Dec. 5, 1975, Ser. No. 637,940
Int. Cl.² B65G *57/24*
U.S. Cl. 214—6 P **5 Claims**



1. Apparatus for stacking layers of nonrigid articles one atop the other to form a stack comprising

layer arranging means operable to arrange a plurality of said articles in a selected pattern to form a layer,

conveyor means for supporting and carrying said arranged layer in one direction along a path toward the downstream end of said arranging means,

an elongate substantially horizontal carriage mounted for vertical shifting relative to said arranging means adjacent the downsteam end thereof, said carriage extending in said one direction away from the downstream end of said conveyor,

a roller bed including a plurality of rollers disposed with their upper surfaces occupying a substantially common horizontal plane for receiving and supporting said layer, said roller bed being mounted for vertical movement with said carriage and for horizontal movement longitudinally of the carriage, and said rollers being mounted for rotation about substantially horizontal axes extending transversely of said path,

roller drive means for rotating said rollers under power to move an article supporting thereon in said one direction,

article receiving means defining an article support surface underlying the end of said carriage opposite said layer arranging means,

powered means for shifting said carriage vertically between a first position at the elevation of said layer arranging means and various adjusted positions at other elevations,

powered means for shifting said roller bed horizontally on said carriage between a first position at the end of the carriage adjacent said layer arranging means and a second position adjacent the opposite end of the carriage, and

transmission means interposed between said rollers of said roller bed and said roller drive means operable to produce a driving interconnection therebetween when said roller bed is at the elevation of said layer arranging means and at the end of the carriage adjacent the layer arranging means, and disengaging said driving interconnection when said roller bed is shifted therefrom to permit free rotation of said rollers.

4,067,457

STACKING ARRANGEMENT FOR PLANK AND BOARD PIECE GOODS, PARTICULARLY PROFILE STRIPS

Heinz Schiepe, Berlin, Germany, assignor to Firma Heinz Schiepe, Holzbearbeitungs-Maschinen und Automaten, Berlin, Germany

Filed Nov. 24, 1976, Ser. No. 744,979
Claims priority, application Germany, Nov. 27, 1975, 2445536
Int. Cl.² B65G *57/26*
U.S. Cl. 214—6 M **17 Claims**

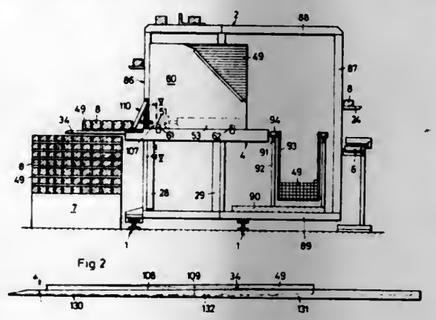


Fig 2

1. A stacking arrangement for lumber items in the form of planks and boards, particularly profile strips, comprising: at least two stacking units and a stacking element holding the stacked lumber items; means for moving said stacking units and stacking element vertically relative to one another; said stacking units each having a horizontally movable support arm and a transport device for, conveying the lumber and depositing it on the support arm, one cylinder piston unit, a pivoted pawl mounted on one end of said cyliner piston unit which operatively cooperates with the support arm and the transport device; said support arm having a groove open upwardly to accommodate intermediate sticker layers which separate layers of the lumber items and to permit the engagement of the free end of said pawl with the rear edge of the sticker layers;

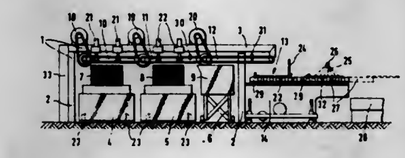
the bottom surface of said groove and the upper surface of said support arm being inclined downwardly and forwardly to form a predetermined angle with the horizontal in the direction of the forward free end of said support arm.

4,067,458

APPARATUS FOR THE UNSTACKING AND TRANSPORTATION OF BLANKS

Franz Schneider, Goppingen; Karl Maier, Kuchen, and Gerhard Tappen, Wangen, all of Germany, assignors to L. Schuler GmbH, Germany

Filed Aug. 5, 1976, Ser. No. 711,973
Claims priority, application Germany, Aug. 5, 1975, 2434819
Int. Cl.² B65G *59/04*
U.S. Cl. 214—8.5 D **10 Claims**



1. In an apparatus for the unstacking and transportation of blanks into the operating chamber of a processing machine, wherein the blanks are transferred from a stack of blanks, by means of hoisting devices to a suspended conveyor system, which conveys the blanks by way of a double blank control device to a centering station from which the blanks, centered in their position, are transferrable into said operating chamber by way of an intermediate station, the improvement comprising:

at least two elevator carts, movable at right angles to the direction of blank transport by said conveyor system, upon which respective stacks of blanks are disposed, said carts being arranged in series in the direction of blank transport by said conveyor system, each cart being associated with a respective separately operable suspended conveyor element and associated hoisting units,

said hoisting units being adjustable in position in accordance with the dimensions of the blanks to be unstacked and including a plurality of suction elements to which the blank to be unstacked adheres, and means, coupled to said suction elements, for activating those suction elements adjacent to the periphery of the blank prior to activating those suction elements adjacent the central portion of the blank, whereby a respective blank to be unstacked is separated from the stack upon which it is disposed starting with the outer portion of the blank.

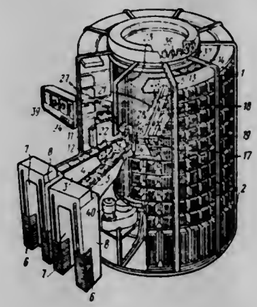
4,067,459

MACHINE FOR SORTING FLAT OBJECTS

Solomon Monuilovich Rozengauz, ulitsa Marshala Birjuzova 43, kv. 142; Vasily Fedorovich Tikhonov, ulitsa Narodnogo Opolchenia, 20, kv. 170, and Nikolai Klimtievich Mosolov, 3 Khoroshevskaya ulitsa, 5, korpus 1, kv. 50, all of Moscow, U.S.S.R.

Filed Mar. 8, 1976, Ser. No. 664,473
Claims priority, application U.S.S.R., Mar. 10, 1975, 2111486; Nov. 26, 1975, 2189517
Int. Cl.² B07C *3/10*
U.S. Cl. 214—16.4 R **6 Claims**

1. In a sorting machine, rotary cage means having a central vertical axis of rotation, upper and lower rings respectively situated in horizontal planes normal to said axis of rotation, and a plurality of rods extending between and fixed to said rings, said rods being parallel to said axis and distributed about the latter, a plurality of arm means respectively having portions surrounding said rods to be guided thereby for vertical movement, each arm means having an outer portion extending outwardly beyond said rotary cage means for supporting a structure such as an object-carrier means, and each arm means having an inner cam-follower portion situated inwardly beyond said rotary cage means, and stationary cylindrical cam means situated coaxially within and surrounded by said rotary cage means, said cam means having an outer surface provided with camming portions which engage said inner cam-follower portions of said plurality of arm means for controlling the elevation of the plurality of arm means respectively along said rods while said cage means turns about its central axis with respect to said stationary cam means, said camming portions of said cam means including circumferential camming portions respectively situated in planes normal to said central axis and distributed therealong so as to be situated at different elevations for cooperating with said cam-follower portions to determine the elevations of said arm means while they turn with said



cage means about said axis, and said cam means also having at its outer surface a pair of opposed oppositely inclined helical end camming portions which extend helically around said axis for changing the elevation of an arm means whose cam-follower portion engages one or the other of said inclined end camming portions, one of said circumferential camming portions being longer than the others and any pair of circumferential camming portions on one side of said longer circumferential camming portion defining with said end camming portions when said cam means is developed into a plane the configuration of a trapezoid, and switch means situated respectively at the junctions between said circumferential and helical camming portions for controlling the travel of said cam-follower portions along said circumferential and helical camming portions of said cam means.

4,067,460

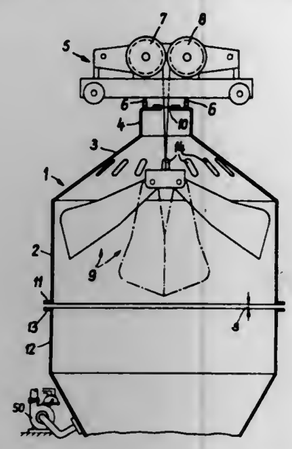
ARRANGEMENT FOR IMPROVING TRANSLOADING POURABLE MATERIALS BY MEANS OF A GRAB BUCKET

Wilhelm Schwarz, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 26, 1975, Ser. No. 562,233
Claims priority, application Germany, Apr. 5, 1974, 2416644
Int. Cl.² A01F *25/00*; B66C *17/00*
U.S. Cl. 214—17 B **3 Claims**

1. In combination with a movable crane part and a grab bucket suspended thereon including actuating means for opening and closing said grab bucket, a device which includes: hood means, means mounting said hood means to said movable crane part, said hood means having an opening adjacent the bottom portion thereof so as to permit said grab bucket to be selectively moved into and out of said hood means, flange means surrounding said opening, the interior of said hood means being so dimensioned as to allow said grab bucket to completely open within said hood means, lifting and lowering means supported by said crane part and extending through and into said hood means and being securely connected to said grab bucket, said lifting and lowering means being operable to pull

said grab bucket into its uppermost position within said hood means and to lower it out of said hood, material receiving means having at least an open top portion with flange means surrounding same, said movable crane part being operative to



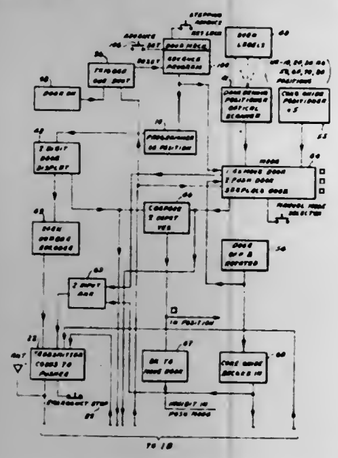
selectively place said hood means over said material receiving means with the respective one of said flange means being vertically and spacedly aligned to provide accurate transfer of material between said grab bucket and material receiving means.

4,067,461

SAFETY CONTROL APPARATUS FOR COKE OVEN BATTERIES

Anthony Sperduti, Hamburg, N.Y., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 15, 1976, Ser. No. 742,390
Int. Cl.² C10B *33/08*
U.S. Cl. 214—23 **8 Claims**



1. In a system for sequentially removing coke from a battery of sequentially numbered coke ovens, said system comprising a pusher machine having door-removing means and a ram mounted thereon, said pusher machine being adapted to traverse tracks disposed along one side of said ovens, a coke guide machine having door-removing means and a coke guide mounted thereon, the latter door-removing means and the coke guide being separated by an integral number of ovens, said coke guide machine being adapted to traverse tracks disposed on the other side of said ovens, and a hot car adapted to traverse tracks disposed parallel to said coke guide machine tracks and receive coke pushed out of said ovens by said ram, the improvement comprising:

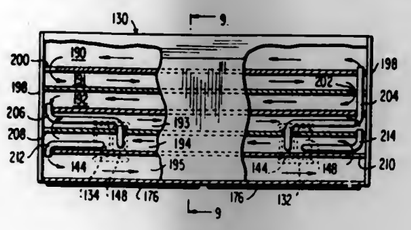
a. means programming said coke guide machine with a sequence of ovens to be pushed and producing a signal indicative of the number of the next oven in said sequence,
b. means disposed on the coke guide side of each of said ovens indicative of the number of that particular oven,
c. means on said coke guide machine for sensing the number of the oven with which the door-removing means of said coke guide machine is aligned and producing a signal indicative of said number,
d. means for preventing the removing of an interlock that prevents the coke guide machine door-removing means from operating if the signal produced by means (a) does not agree with the signal produced by means (c),
e. means on said coke guide machine for storing a door removed from any one of said ovens and producing a signal indicating such storage,
f. means interposed between means (c) and means (d) that, in response to the signal from means (e), adds said integral number to the number sensed by means (c) to obtain a signal indicative of a modified number,
g. means programming said pusher machine with a sequence of ovens to be pushed and producing a signal indicative of the number of the next oven in said sequence,
h. means for transmitting a signal from the pusher machine to the coke guide machine,
i. means on said coke guide machine for receiving a signal from said pusher machine,
j. means connecting means (h) to means (g), and
k. means on said coke guide machine for producing a signal, that removes an interlock that prevents said ram from operating, in response to agreement between:
1. the signal produced by means (a),
2. the signal produced by means (f), and
3. the signal produced by means (g) and transmitted from means (h) to means (i).

4,067,462

COKE OVEN PUSHING AND CHARGING MACHINE AND METHOD

Buster Ray Thompson, Rte. 1- Lowes Ferry Pike, Louisville, Tenn. 37777

Division of Ser. No. 431,804, Jan. 8, 1974, Pat. No. 3,912,091, which is a division of Ser. No. 240,937, April 2, 1972, Pat. No. 3,784,034. This application May 27, 1975, Ser. No. 581,406
Int. Cl.² C10B *33/10*
U.S. Cl. 214—23 **3 Claims**



1. In a machine for pushing hot coke from a coke oven of the type including a horizontal coking chamber having its open ends normally closed by removable doors, said machine including a rigid pusher head having a substantially vertical front face generally corresponding in size and configuration to the vertical cross section of the coking chamber and adapted to engage and push the hot coke therefrom, and an elongated pusher ram supporting the pusher head for movement through the oven from one end to the other end thereof, the improvement wherein said pusher head comprises a rigid steel assembly

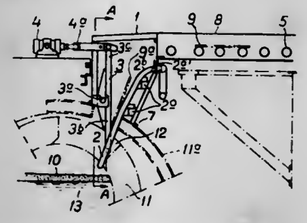
having a hollow central core and formed of a plurality of structural steel beams rigidly welded together, said beams having integrally formed web and flange portions with the flanges being welded together to define external walls of the pusher head and with the webs forming baffles dividing the interior of the pusher head into a plurality of parallel horizontal fluid channels extending substantially the full length of the pusher head throughout the full height thereof, and apertures formed in said webs to provide a continuous passage through which cooling liquid may be circulated to cool the pusher head throughout, and conduit means connected to said channels and providing a fluid circuit for circulating a cooling liquid through said hollow core to cool said pusher head.

4,067,463

APPARATUS FOR CHARGING METAL PLATES EDGEWISE INTO A METAL MELT

Stein Larsen, Grimstad, Norway, and Göran Mattsmyr, Vasteras, Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Jan. 7, 1976, Ser. No. 647,216
Claims priority, application Sweden, Jan. 13, 1975, 7500301
Int. Cl.² F27B *9/38*
U.S. Cl. 214—35 R **4 Claims**



1. An apparatus for charging a succession of metal plates edgewise and downwardly into a metal melt from a position spaced above the top level of the melt, said apparatus comprising a plate support forming a declining surface down which the plate can gravitationally fall edgewise, said surface extending from said position downwardly to a position adjacent to said level, and releasable means for releasably engaging each successive plate prior to it falling from said surface into the melt, and for thereafter releasing the plate so it can immerse edgewise into the melt through its top level more gently than if it fell freely down said surface from said position, said releasable means being formed by a lever pivoted above the bottom end of said surface, so that the lever has a depending arm that swings towards and from said surface so as to successively engage and release each plate falling down said surface, said lever being a two-arm lever and having an upstanding arm extending upwardly and having swinging means for swinging the two-arm lever via said upstanding arm, said lever being formed by a U-shaped pipe having a bottom end formed by a loop and with upstanding legs forming said two-arm lever, and said support being formed by two parts straddling said lever and each formed by generally corresponding U-shaped pipes, each U-shaped pipe having means for internally flowing a coolant therethrough.

4,067,464

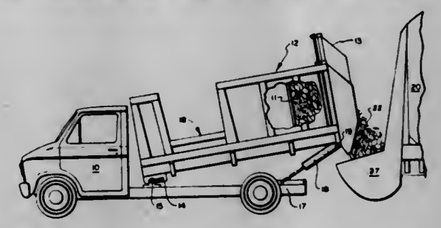
HEIGHT ADJUSTABLE REFUSE COMPACTION AND EJECTION SYSTEM

Melvin Hal Parks, 1079 S. 160 East, Orem, Utah 84057, and Melvin Ray Parks, P.O. Box 1037, Boise, Idaho 83701

Filed Mar. 25, 1977, Ser. No. 781,154
Int. Cl.² B65G *67/02*; B65F *3/00*
U.S. Cl. 214—38 BA **9 Claims**

1. In a material compaction and ejection system having a storage compartment with height adjustable rearward ejection means and being affixed to a supporting base, an improved body lift mechanism for displacing said compartment away from an obstructing object and adjusting said rearward ejection means to variable heights comprising:

a. guide means immovably attached to said support base and operable in combination with said affixing means to permit limited reciprocal movement of said storage compartment from a front limiting point to a rearward limiting point along a length of said support base;
b. power means for applying reciprocating force with respect to said storage compartment, said force including vertical and horiziontal components, said vertical component being applied at a rearward part of said storage com-



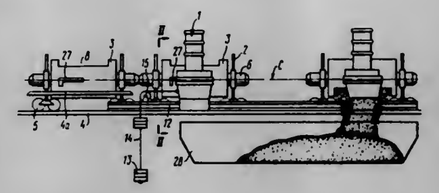
partment and operable to raise said ejection means to a desired height with respect to said support base; and
c. connecting means from a front portion of said storage compartment to said support base, said connecting means being operable in combination with said guide means to permit said limited reciprocating movement along said guide means, said connecting means further permitting angular vertical movement of said storage compartment about an axis normal to said reciprocating movement and forward of said rearward part of vertical force application.

4,067,465

UNLOADING STATION OF AN INSTALLATION FOR PNEUMATIC TRANSPORTATION OF GOODS IN A CONTAINERS

Vladimir Yakovlevich Tsernes, Kirovogradskaya ulitsa, 24, korpus 3, kv. 204; Alexandr Borisovich Shekhel, Snaiperskaya ulitsa, 5, kv. 161; Leonid Petrovich Kakoshkin, Vadkovsky pereulok, 16, korpus 1, kv. 15, all of, Moscow; Lev Nikolaevich Schukin, prospekt Koroleva 12, kv. 122, Moskovskaya oblast, Kaliningrad, and Boris Vladimirovich Sakharov, Ukrainsky bulvar 6, kv. 27, Moscow, all of U.S.S.R.

Filed Nov. 24, 1976, Ser. No. 744,741
Int. Cl.² B65G *67/34*
U.S. Cl. 214—62 A **4 Claims**



1. An unloading station for an installation for pneumatic transportation of goods in a container through a tube line, the container being mounted on its wheel bogies for rotation relative thereto, comprising: guideways for the wheel bogies of said container; a frame shaped as an arch, overlying said guideways for the wheel bogies of said container; guideways provided on said frame over the perimeter thereof; a profiled surface provided on said frame over the perimeter thereof, spaced from said guideways of said frame; a mechanism for rotating said container, including: a driven trolley accommodated in said guideways of said frame, a member mounted on said driven trolley for motion relative thereto in a direction transverse of that of the motion of said trolley, having one of

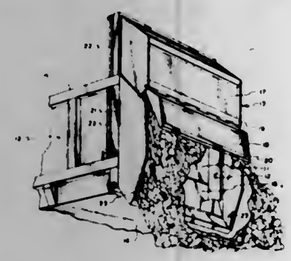
its extremities permanently urged toward said profiled surface, the latter being adapted to initiate the engagement of the other extremity of said member with an element provided on said container, to maintain this other extremity of said member in the engagement with the element of said container in the course of the latter being rotated, and to terminate this engagement, following the completion of the rotation of said container, said initiating, maintaining and terminating of engagement of the other extremity of said member with the element of said container occurring during the movement of said trolley in one direction along said guideways in said frame; and means for driving said driven trolley.

4,067,466

REFUSE EJECTION DOOR

Melvin Ray Parks, P.O. Box 1037, Boise, Idaho 83701, and Melvin Hal Parks, 1079 S. 160 East, Orem, Utah 84057

Filed Mar. 25, 1977, Ser. No. 781,155
Int. Cl.[2] B60P 1/26; B65F 3/00
U.S. Cl. 214—82 10 Claims



1. In a material compaction and ejection system having a storage compartment substantially defined by a forward, extendable discharge blade in nonextended position, two stationary side walls, a rearward ejection door, a supporting floor and top cover means, said storage compartment having means for receiving and compacting said material therein, an improved rearward ejection door system comprising:

a. an upwardly extendable ejection door having an upper member fixed in an approximate vertical orientation with respect to said storage compartment when extended and a lower member connected to said upper member by a hinge means at a horizontal line across the width of said upper member and operable when unimpeded to rotate in a rearward direction about said hinge means in response to an applied force;

b. guide means operable to maintain said upper member of the ejection door in a substantially fixed path of movement relative to said storage compartment during upward extension and retraction of said door, said guide means permitting free rearward movement of said lower member about said hinge axis when said lower section is otherwise unimpeded by a locking means;

c. means for extending and retracting said door along said fixed path of movement during refuse ejection operations; and

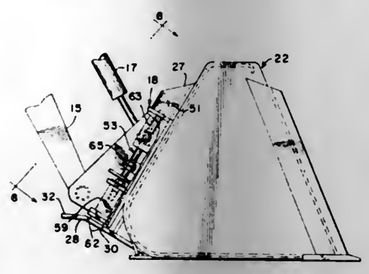
d. locking means operable to retain said lower hinged member in closed configuration with respect to said compartment when said ejection door is in the nonextended position.

4,067,467

QUICK COUPLER DEVICE

Arthur S. Datta, Willow Springs; David G. Owens, Clarendon Hills, and R. Dale Moore, Aurora, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Apr. 14, 1975, Ser. No. 567,915
Int. Cl.[2] E02F 3/81
U.S. Cl. 214—145 A 5 Claims



1. A quick coupling device for use in detachably mounting an implement on loader vehicles equipped with boom arms and implement link means comprising:

an implement having a plurality of sockets mounted to the upper rear surface of the implement and a projecting lug secured to the implement in the center of the rear surface of the implement and an apertured striker plate mounted to the lower rear surface of the implement;

a quick attach plate having means for pivotal attachment to the boom arms and the implement link means and having a plurality of posts secured to the upper portion of the quick attach plate for telescopically engaging the sockets of the implement and the quick attach plate further equipped with a centrally located aperture aligned to accept the passage of the projecting lug of the implement when the implement is engaged with the quick attach plate;

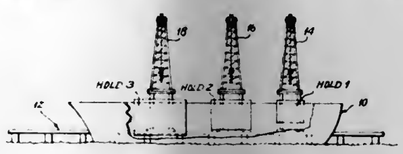
a latching means carried on the rear surface of the quick attach plate having a head portion engageable with the apertured striker plate of the implement further having a retainer plate integral with the latching means capable of engagement with the projecting lug of the implement.

4,067,468

METHOD OF DISTRIBUTING CARGO

Carl-Johan Garsten, Drottninggatan 176 B, Helsingborg, Sweden (S-252 33), and Jan V. Grewin, Bergvagen 29, Huddinge, Sweden (S-141 71)

Filed Sept. 26, 1975, Ser. No. 617,027
Claims priority, application Sweden, Oct. 11, 1974, 74128109
Int. Cl.[2] B65G 67/58
U.S. Cl. 214—152 1 Claim



1. A method for loading cargo into and discharging it from a plurality of mutually connected cargo spaces of unequal size, whereby to minimize the time required both for the loading operation(s) and the subsequent discharge operation(s), comprising the steps of:

dividing the cargo to be loaded at each loading place of a series of sequentially utilized loading places into a plurality of separate portions corresponding to said plurality of cargo spaces, the quantity of the cargo portion intended for the largest cargo space(s) being the same or larger than the quantity of the cargo portion intended for any of the smaller cargo space(s), and the quantity of the cargo loaded at each loading place in said series of sequentially utilized loading places and destined for the same discharging place in a series of sequentially utilized discharging places being distributed among said separate cargo portions so that the largest cargo space(s) will have the same or a larger quantity of the cargo destined for the same discharging place as any of the smaller cargo spaces;

loading the separate portions of cargo at each loading place of said series of sequentially utilized loading places into their respective cargo spaces, with the loading in the largest cargo space(s) at each loading place being carried out at the same time as loading one or more of the other cargo spaces; and subsequently

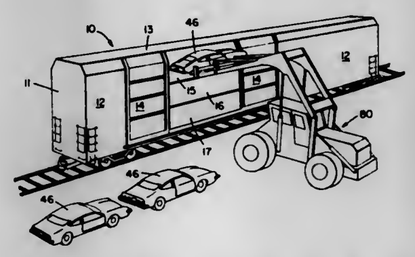
discharging the separate portions of cargo destined for each discharging place of said series of sequentially utilized discharging places at the respective discharging place(s), with the discharging of cargo from the largest cargo space(s) being carried out at each discharge place at the same time as the discharging of cargo from one or more of the other cargo spaces.

4,067,469

METHOD OF LOADING AUTOMOBILES THROUGH THE SIDE OPENING OF A RAIL CAR

Benjamin F. Biaggini, San Francisco; William M. Jaekle, Moraga; Paul V. Garin, San Francisco; Robert Byrne, San Carlos, and Armand Giovanelli, San Francisco, all of Calif., assignors to Southern Pacific Transportation Company, San Francisco, Calif.

Filed Jan. 6, 1976, Ser. No. 646,940
Int. Cl.[2] B60P 3/08
U.S. Cl. 214—152 11 Claims



1. A method of loading automobiles into a rail car wherein said rail car has a superstructure with a plurality of horizontal vertically spaced decks ad said automobiles each have a frame mounted by a spring suspension system on the wheels of the automobile, the method comprising:

a. positioning said automobile on one of said decks with the front of said automobile facing one end of said rail car,

b. raising the rear wheels of said automobile above said deck,

c. moving the automobile forwardly along said deck,

d. pulling the frame of said automobile downwardly on the wheels of said automobile as said automobile is moving forwardly along said deck,

e. securing the pulled-down frame against forward and rearward longitudinal movement and against vertical longitudinal movement relative to said deck in response to forward movement of said automobile along said deck,

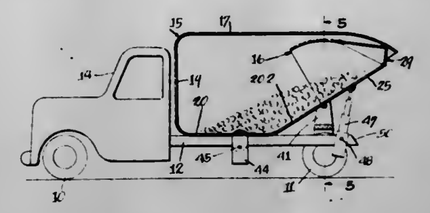
f. lowering the rear wheels of said automobile onto said deck.

4,067,470

SELF LOADING REFUSE VEHICLE WITH A DISCHARGE GATE IN THE LOADING MEANS

John Phil Felburn, P.O. Box 2344, Arlington, Va. 22202

Filed Dec. 2, 1975, Ser. No. 637,077
Int. Cl.[2] B65F 3/04, 3/26
U.S. Cl. 214—503 5 Claims



1. A self-loading vehicle having a chassis, the improvement comprising:

a large load-carrying body having a pivot connection between its lower rear portion and said chassis, the axis of the pivot being substantially horizontal and extending crosswise of said chassis at a rear portion thereof, whereby said body may be swung from a normal horizontal position in a vertical direction about said pivot to an upright position, said body having an opening at its rear end,

a hopper-type body having side walls and forward and rear walls, a top opening and an opening in its lower rear portion, the upper end of said forward wall being pivotally connected to said pivot whereby said hopper-type body may be swung from a normal upright position in a vertical direction about said pivot to move through said rear end opening of said load-carrying body in inverted relation to deposit its contents into said loading-carrying body,

means limiting swinging movement of said hopper-type body in a direction toward its normal upright position to maintain the bottom of such body well above the ground surface along which said chassis moves so that the latter may be freely moved forward and backward without any interference which otherwise might be caused by engagement of the bottom of said hopper-type body with undulations in the ground surface,

and a gate for closing said opening in the lower rear portion of said hopper-type body, said gate having a lower wall which provides the bottom of said hopper-type body and such wall having a horizontally disposed pivot connection with the lower end of the forward wall of said hopper-type body, said gate having side walls which form part of the side walls of said hopper-type body and said gate having a rear wall which forms part of the rear wall of said hopper-type body, said gate being swingable about its pivot connection from a normal position substantially closing the rear opening of said hopper-type body to a second position wherein said gate rear wall is disposed close to and substantially parallel to the ground surface so that said gate will act as a scoop when said chassis is moved rearwardly.

4,067,471

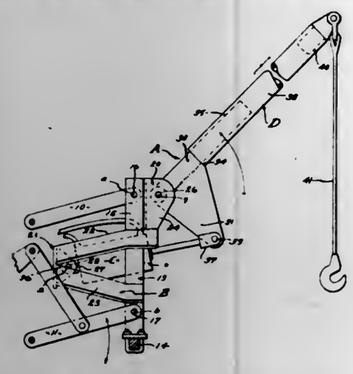
THREE POINT TRACTOR HITCH BOOM ATTACHMENT

Ralph M. Roatcap, 18540 E. Telegraph Road, Santa Paula, Calif. 93060

Filed Aug. 6, 1976, Ser. No. 712,163
Int. Cl.[2] E02F 3/62
U.S. Cl. 214—766 10 Claims

1. An attachment for the vertically moveable three point hitch of tractors and the like, and including; a base comprised of a hinge member secured to the moveable three points of said

hitch and with a hinge pin on a transverse horizontal axis and a header spaced forwardly from the hinge member and said hinge pin by means of struts converging from said three points and providing an anchor, a boom adapter rotatable on the hinge pin of the base and comprised of lever means to move



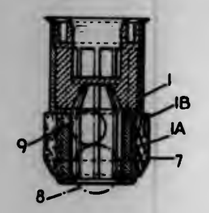
about said axis, an actuator means operable between the said anchor of the base and said lever means to move the boom adapter, and a lift boom projecting from the adapter to move vertically both by means of said actuator means and by means of said moveable three point hitch.

4,067,472

COMBINED ANTI-REFILLING AND POURING DEVICE FOR FITMENT TO A BOTTLE

Charles Burns Cruickshank, Glasgow, Scotland, assignor to Daniel Montgomery & Son Limited, Glasgow, Scotland

Filed Mar. 31, 1977, Ser. No. 783,404
Int. Cl.² B65D *49/06*
U.S. Cl. 215—22 2 Claims



1. A combined anti-refilling and pouring device incorporating a tubular casing formed with a main body portion and a tubular extension projecting from one end of the main body portion, said tubular extension being formed with inwardly directed radial fins of a radial dimension such as to leave a clear axial passage through the tubular extension, and at the end remote from the main body portion with an annular flange projecting inwardly beyond the fins, a ring member consisting of a ring and fins expanding axially from one end face of the ring, the fins being radially disposed with respect to the axis of the ring and the end portions of all the fins remote from the ring being connected to the periphery of a disc the diameter of which is less than the outside diameter of the ring, said ring member being located within the main body portion of the tubular casing with the fins on the ring member adjacent the fins in the tubular extension, at least one movable valve member located within the clear axial passage in the tubular extension and trapped between the fins on the ring member and the annular flange, and a ring of deformable material encircling the tubular casing, the maximum diameter of the ring of deformable material being greater than the internal diameter of the neck of a bottle into which the device is to be fitted.

4,067,473

NON CONTAMINATING MEANS FOR REMOVING STOPPERS

Erika Awer, 825 W. 187th St., New York, N.Y. 10033, and John J. McMorrow, 55 Florence Ave., Oyster Bay, N.Y. 11771

Filed May 4, 1977, Ser. No. 793,876
Int. Cl.² B65D *51/20, 51/22*
U.S. Cl. 215—226 4 Claims



1. Non-contaminating means for removing test tube stoppers of the type having a center portion extending into the test tube and an upper portion having a continuous edge extending over the edge of the test tube comprising,

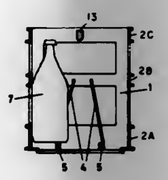
a hollow cylindrical member having an open end adapted to fit over a stopper inserted in a test tube so that the stopper may be removed by slipping the hollow member over the stopper and squeezing, pulling and bending the hollow member to the side, the hollow member being longer than the stopper so that when the stopper is removed any contamination on the stopper will not be able to touch anything.

4,067,474

PLASTIC BOTTLE CASE

Ulrich Prodel, Bad Salzuflen, Germany, assignor to Spumalit-Anstalt, Germany

Filed Jan. 7, 1977, Ser. No. 757,515
Claims priority, application Germany, Jan. 15, 1976, 2601422
Int. Cl.² B65D *1/24, 75/00, 85/00*
U.S. Cl. 220—21 13 Claims



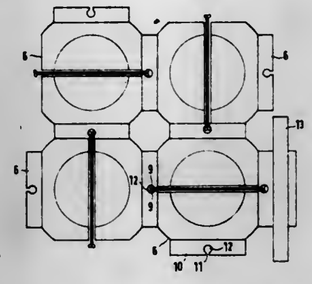
1. A one piece plastic bottle case in which bottles are arranged in two rows, said case comprising opposite sides and opposite ends, two inner walls which extend between opposite ends of the case and slope upwardly and inwardly at an acute angle to one another, lower edges of said inner walls being spaced inwardly from the respective sides of the case a distance less than the width of bottles to be received in the case, said inner walls having therein openings to receive bottles, said openings in horizontal projection conforming to the cross sectional shape of said bottles, and ledges at the bottoms of said openings to support bottles received in said openings, the bottom of said case being otherwise open.

4,067,475

CONTAINERS FOR FOODSTUFF

Wolfgang Pinkau, Heinr. Spath Strasse 6, 4018 Monheim, and Alfred Esser, Kolberger Strasse 12, 4005 Meerbusch 2, both of Germany

Filed Aug. 30, 1976, Ser. No. 718,550
Claims priority, application Germany, Aug. 30, 1975, 2538641
Int. Cl.² B65D *21/02, 11/18;* A63H *33/100*
U.S. Cl. 220—23.4 8 Claims



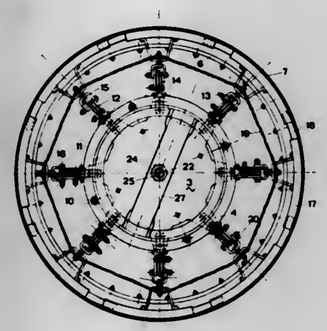
1. A container comprising a generally dish-shaped side wall being formed with a peripheral, laterally projecting free edge at the mouth thereof; recess means formed in said bottom wall means and being entirely within the confines of said bottom wall means, said recess means being sufficiently large that a pair of containers can be superposed mouth-to-mouth and the adjoining projecting edges of said pair of containers engaged into similar recess means in another container, whereby a plurality of such containers can be combined together on a building block principle to form a large structure.

4,067,476

AUTOMATIC SEALING DEVICE FOR CONTAINERS OF VOLATILE OR PERISHABLE LIQUIDS

Luigi Strozzi, Via Emiliana Piacentina n° 40, Castel S. Giovanni-Piacenza, Italy (29015)

Filed Dec. 29, 1976, Ser. No. 755,415
Claims priority, application Italy, Jan. 9, 1976, 19120/76; Oct. 14, 1976, 28298/76
Int. Cl.² B65D *87/18, 87/20*
U.S. Cl. 220—224 12 Claims



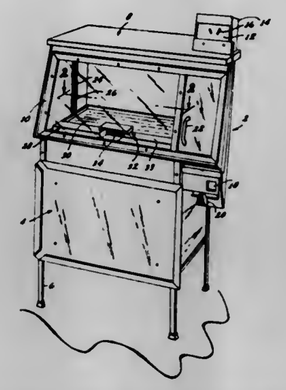
1. Automatic sealing device for containers intended to contain volatile or perishable liquids, characterized in that said device comprises substantially a cylindrical chamber having a flexible side wall to make a sealing engagement with the container wall, and said flexible side wall is secured to upper and lower circular closing members through a series of square-shaped links performing the double function of causing said device to follow the level variations of the liquid and holding said flexible side wall forced against said container wall.

4,067,477

SINGLE ARTICLE VENDING MACHINE

Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.

Filed June 21, 1976, Ser. No. 697,715
Int. Cl.² G07F *11/44*
U.S. Cl. 221—1 50 Claims



1. A single article vending machine comprising:

means for storing a plurality of articles in stacked relation;

means providing an adjustable opening in communication with said means for storing articles;

means to adjust said opening to a dimension which corresponds with the thickness of one of said articles, and

means to lock said opening including

a plurality of locking members;

said locking members being movable into said opening to block the opening such that the opening is locked;

means to move said locking members out of said opening such that the opening is unlocked to permit the withdrawal of one of said articles through said opening, and

means actuatable by the movement of one of said articles through said opening to move said locking members toward said opening for locking the opening after the one article is moved through the opening,

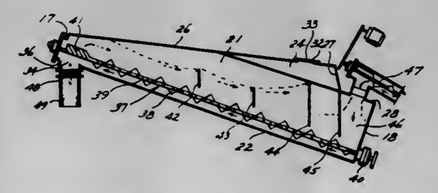
whereby, a single article may be dispensed through the opening with the locking members moved out of the opening with the passage of a single article through the opening moving the locking members into the opening to prevent the withdrawal of a second article through the opening.

4,067,478

CEMENT BATCHER

Robert C. Milek, 5502 N. 50 Ave., Omaha, Nebr. 68104

Filed June 11, 1976, Ser. No. 695,497
Int. Cl.² B67D *5/12*
U.S. Cl. 222—56 10 Claims



1. A cement batcher for selectively receiving, holdig, and delivering a predetermined amount of cement to a mixer, the batcher comprising:

inclined elongated hopper means having an inlet means at

the lower end thereof and an outlet means at the upper end thereof;

auger means disposed longitudinally in said hopper means for moving cement from said inlet means to said outlet means;

valve means disposed in said outlet means to control the flow of cement therethrough; and

a first vertical baffle disposed transversely in said hopper means above said auger to partially restrict the flow of cement from said hopper upper end to said hopper lower end when said valve restricts the flow of cement from said outlet means.

4,067,479

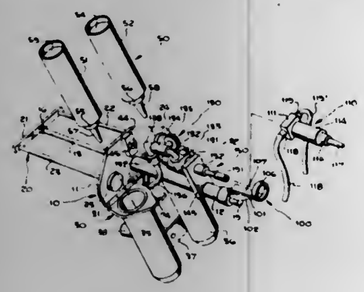
TWO PART MATERIAL METER-MIX DISPENSER APPARATUS

Clifford C. Moline, Malibu, Calif., assignor to Products Research & Chemical Corporation, Burbank, Calif.

Filed July 31, 1975, Ser. No. 600,579

Int. Cl.² B65D *35/22;* B67D *5/52;* G01F *11/06;* B29B *1/10*

U.S. Cl. 222—94 8 Claims



1. A hand held two part material dispenser apparatus comprising:

a hand held body including a base mounting a single air driven cylinder means and a double plunger assembly in operative relation for actuation of said plunger assembly by said single cylinder means;

a pair of cartridge receiving cylindrical barrels and means for hingedly mounting each of said barrels to said base, said barrels each being adopted to receive a separate material dispensing cartridge when in hinged open position and positioning two such cartridges relative to said plunger assembly when said pair of barrels are in hinged closed position for simultaneously exuding the materials of such two cartridges upon operation of said single cylinder means;

air driven mixing means mounted on said base and including a material receiving housing having two inlets and a single outlet for mixing materials received in two parts through said two inlets and dispensing a mixture thereof through said outlet;

flexible conduit means for connecting said two cartridges to said two housing inlets; and

air supply means including a single air line and means for selectively connecting said line to said air driven cylinder means and said air driven mixing means for air pressure operation of said plunger assemby and mixing means from a single air line power source.

4,067,480

PROCESS FOR DISPENSING PRESSURIZED FLUENT MATERIAL

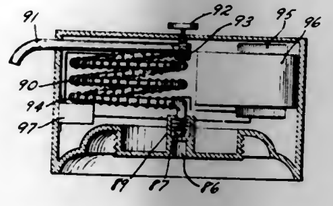
Edward Bruce Gasser, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 233,797, March 10, 1972, Pat. No. 3,990,612, which is a continuation of Ser. No. 769,470, Oct. 9, 1968, abandoned, which is a continuation of Ser. No. 477,655, July 29, 1965, abandoned, which is a continuation of Ser. No. 164,703, Jan. 8, 1962, abandoned. This application Oct. 29, 1975, Ser. No. 626,949

The portion of the term of this patent subsequent to Mar. 27, 1990, has been disclaimed.

Int. Cl.² B67D *5/62*

U.S. Cl. 222—146 HA 10 Claims



1. A process which comprises

a. withdrawing into a chamber a portion of expandable fluent material from a container containing a body of such material under pressure, while maintaining the withdrawn portion in said chamber under pressure and in substantially unexpanded state;

b. modifying the temperature of said withdrawn portion in said chamber while maintaining it under pressure and in substantially unexpanded state; and

c. discharging said material from said chamber in an expanded state.

4,067,481

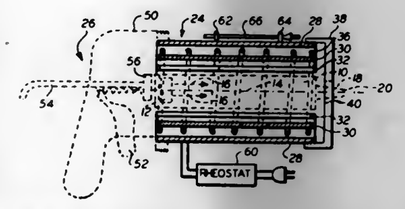
HAND-HOLDABLE GUN FOR LONGITUDINAL EXTRUSION OF A THERMOPLASTIC-TYPE MEDIUM THEREFROM AND REMOVABLE HEAT SLEEVE THEREFOR

Benjamin Feldman, 84 Choir Lane, Westbury, N.Y. 11590

Filed Apr. 27, 1976, Ser. No. 680,732

Int. Cl.² B65D *83/00;* B29F *3/08*

U.S. Cl. 222—146 HE 26 Claims



1. In a hand-holdable gun for longitudinally extruding a thermoplastic type medium from a removable self-contained storage container therefor in response to piston pressure along the longitudinal axis of said container wherein said gun contains a longitudinally movable piston means for applying said piston pressure along said container longitudinal axis and said cartridge container includes a plunger means movable along said longitudinal axis of said cartridge container in response to said piston pressure, and an outlet for enabling said piston pressure responsive extrusion therefrom, said thermoplastic medium longitudinal extrusion being dependent on the temperature of said thermoplastic medium during said piston pressure responsive extrusion; the improvement comprising a removable hollow heating sleeve having an internal diameter sufficient to surround said cartridge container for providing a controlled temperature to said heat sleeve surrounded thermoplastic type medium during said piston pressure responsive extrusion to enhance the flowability of said thermoplastic type medium from said cartridge container independently of the ambient temperature outside said heating sleeve, said heating sleeve comprising a first heat reflective sleeve surrounding said cartridge container for reflecting heat toward said hollow heating sleeve interior for providing said controlled temperature thereto, an electric heating coil surrounding said first heat reflective sleeve for heating said hollow heat sleeve interior to said controlled temperature in response to a voltage applied thereto, and a first heat transmissive removable burst shield sleeve within the interior of said first heat reflective sleeve and at least partially surrounding said heat sleeve surrounded cartridge container to provide at least a portion of a complete burst shield protective enclosure therefor for physically isolating said heat sleeve first reflective sleeve and heating coil from said cartridge container to prevent fouling thereof in the event of a burst of said cartridge container while enabling heating of said thermoplastic type medium within said cartridge container to said controlled temperature, said heating sleeve further comprising an end cap at one end thereof having an opening therein for receiving said extrusion outlet of said surrounded container therein, whereby said thermoplastic type piston pressure actuated extrusion may be readily accomplished independent of the outside ambient temperature of said storage container therefor.

4,067,482

DISPENSING AND ACTUATOR CAP FOR AEROSOL PACKAGES

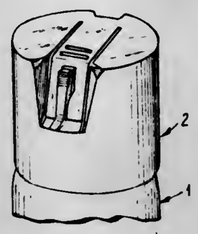
Gunter Vogel, and Herbert Schwarz, both of Nurnberg, Germany, assignors to Aerosol Inventions and Development S.A. Aid SA, Switzerland

Filed May 3, 1976, Ser. No. 682,669

Claims priority, application Germany, May 7, 1975, 7514807[U]

Int. Cl.² B65D *83/14*

U.S. Cl. 222—153 7 Claims



1. A dispensing cap for valves for aerosol containers comprising a stationary body with means for securing it to a container, a dispensing push button connectable to an actuating stem of a valve mounted on said container, an inwardly deformable strip for actuating said push button, said deformable strip comprising at least two resiliently deformable portions extending inwardly from a top wall and a side wall of said body respectively and hingedly connected together at their inward ends, and a rigid tear-off device for preventing inward deformation of said portions until first use of said cap, said tear-off device extending at least partly through windows provided through said two portions, said tear-off device being connected to said portions by frangible webs, and extending at least partly outwardly from said portions to form a manually engageable tab for tearing off said rigid device.

4,067,483

METERING DEVICE FOR PLASTIC RAW MATERIALS

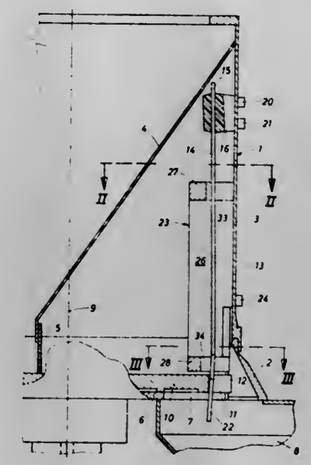
Walter Mucke, Hochberg, Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Dec. 22, 1975, Ser. No. 642,796

Claims priority, application Germany, Dec. 21, 1974, 2460996

Int. Cl.² G01F *11/24*

U.S. Cl. 222—222 19 Claims



1. A device for metering granulate, or pulverulent, or highly viscous materials, particularly plastic raw materials which are being fed to a plastic material processing machine, the device comprising in combination:

a receptacle having a bottom section and a side wall arranged to return therein a supply of raw material;

a metering disc rotatably arranged in the bottom section of the receptacle and having a substantially vertical rotational axis, said metering disc constituting at least a portion of a material retaining bottom wall of the receptacle;

drive means for rotating the metering disc about its axis;

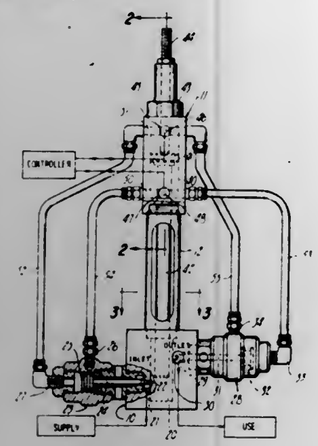
a series of metering pockets disposed on the periphery of the metering disc in the form of angularly evenly spaced radially and vertically open recesses having substantially vertical flanks;

a discharge opening in the receptacle bottom section, underneath the metering disc, at a location over which the metering pockets move and where the metering disc does not constitute a material retaining bottom wall of the receptacle;

a side wall portion in the receptacle bottom section cooperating with the periphery of the metering disc in such a way as to form a stationary radial closure for the moving metering pockets, and a bottom wall portion of the receptacle bottom section cooperating with the lower side of the metering disc in such a way as to form a stationary bottom closure of the moving metering pockets; said radial closure and bottom closure of the metering pockets being interrupted in the area of the discharge opening, thereby allowing raw material contained in the moving metering pockets to be discharged therefrom by gravity; and

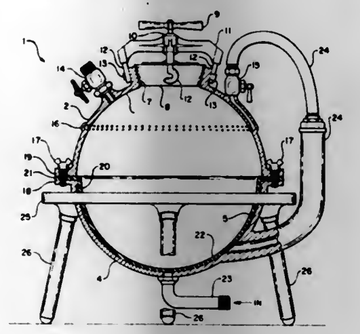
radially movable wiper means arranged in the area of the discharge opening and engaging the periphery of the rotating disc so as to cooperate therewith and with the metering pockets by sliding along the contour of the pocket flanks, as each metering pocket passes over said opening, thereby dislodging from said flanks any residual raw material adhering thereto.

4,067,484
VARIABLY ADJUSTABLE MEASURED INCREMENT POWER DISPENSING APPARATUS
Ronald E. Standlick, 4506 Sudbury St., Warren, Mich. 48092
Filed May 6, 1976, Ser. No. 683,725
Int. Cl.² G01F 11/06
U.S. Cl. 222—309 2 Claims



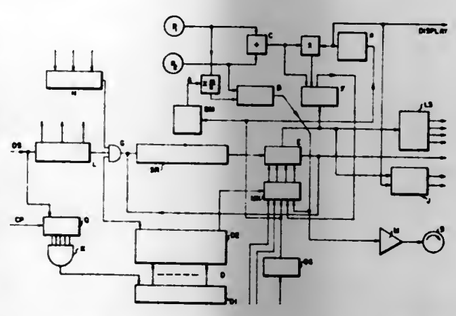
1. Measured increment dispensing apparatus for injecting material in industrial processes comprising,
a block having a displacement chamber;
a case having a cylinder, a piston and a rod; the cylinder having a lower aperture substantially equal to the diameter of the rod, said rod leading from said piston into the displacement chamber of said block by way of said aperture; first air socket means for supplying air pressure to one side of said piston to move said rod out of said displacement chamber; and second air socket means for supplying air pressure to the other side of said piston to move said rod into said displacement chamber;
support means between said case and said block and radially spaced from said rod, said support means spacing said case and said cylinder apart to avoid one leaking into the other and to insure accuracy by holding said case cylinder and said block chamber in axial alignment for reciprocation of said rod in both said case and said block;
said block having a material supply channel leading to and a material use channel leading from said displacement chamber;
a first supply valve on said block controlling said supply channel and a second use valve on said block controlling said use channel;
each said valve having a cylinder, a piston, a needle on said piston for sealing off and opening up said supply and use channels, and advance and retract air connectors for supplying air pressure to advance said pistons and needles into sealing relationship and to retract said needles out of sealing relationship, each said valve being separated from the other said valve to operate independently of each other;
tubes leading from said first air socket on said case to said retract connector on said supply valve and to said advance connector on said use valve to close said displacement chamber to use and open it to supply in conjunction with the retracting stroke of said rod; and
tubes leading from said second air socket on said case to said advance connector on said supply valve and to said retract connector on said use valve to close said displacement chamber to supply and to open it to use in conjunction with the advancing stroke of said rod;
application of air pressure at said first socket means on said case closing said use channel, opening said supply channel and retracting said rod to draw material into said displacement chamber;
application of air pressure at said second socket means on said case opening said use channel, closing said supply channel, and advancing said rod to force material out of said displacement chamber.

4,067,485
PAINT TANK UNIT
Nikolay Soin, 2570 Princeton Drive, San Bruno, Calif. 94066
Filed Dec. 27, 1976, Ser. No. 754,507
Int. Cl.² B43K 5/04
U.S. Cl. 222—386.5 7 Claims



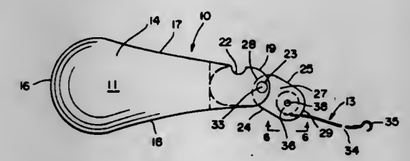
1. A paint container for dispensing paint through a hose to an application device comprising:
a. An upper chamber having at least one valve;
b. A lower chamber attached to said upper chamber;
c. A flexible diaphram attached between said upper and lower chamber;
d. Means for introducing water into said lower chamber, and
e. means for introducing water from said lower chamber about the upper surface of said chamber.

4,067,486
LIQUID FUEL DISPENSING SYSTEM
Peter John Hyde, Comberton; Peter Kendall Cripps, Cambridge; Donald George Buchanan, Bottisham, and Robert George Spalding, Bracknell, all of England, assignors to Dresser Europe, S.A., Brussels, Belgium
Continuation-in-part of Ser. No. 466,519, May 2, 1974, Pat. No. 3,984,302. This application Sept. 17, 1975, Ser. No. 614,041
Int. Cl.² B67D 5/26
U.S. Cl. 222—26 2 Claims



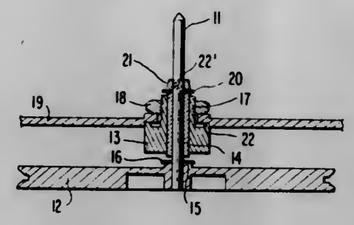
1. In a liquid fuel dispensing system having a plurality of liquid fuel dispensing pumps, means within said pumps to generate electrical pulses indicative of data which is functionally related to the fuel dispensed, a central control station and a data transmission link between said pumps and said central control station, the improvement comprising:
first and second storage means within said central control station for storing within each of said storage means the electrical pulses indicative of the same data from a given one of said fuel pumps; and
means to clear the first of said storage means while maintaining the pulses stored in said second storage means for subsequent retrieval.

4,067,487
COMBINATION ZIPPER AID AND SHOEHORN DEVICE
Edna J. Carr, 35 Miltenberger, Pittsburgh, Pa. 15219, and Savana J. Bowes, 434 Hazel Drive, Monroeville, Pa. 15146
Filed Jan. 28, 1976, Ser. No. 653,275
Int. Cl.² A47J 51/06
U.S. Cl. 223—111 1 Claim



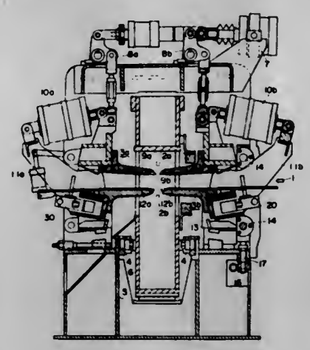
1. A combination zipper aid and shoehorn device which can be conveniently used by an individual for slipping on footwear or for closing or opening zippers provided in inconvenient areas on one's garments, the device comprising, in combination:
a shoehorn conventional in configuration havng a concave top surface and a convex bottom surface, a rounded bottom edge, two sloped side edges terminating at two smaller rounded top edges with an opening therebetween, a notch being further provided on one of said shoehorn edges and located centrally over said opening, and with a round through hole being provided near said rounded top edges so as to provide a round through hole axially therethrough; and
a zipper aid housing consisting of two parallel side walls, a flat bottom wall parallel to a flat top surface, a rounded end wall and an opposed split rounded end wall provided with a round slot therein, said zipper aid housing being further provided with a round through hole near said end wall and a smaller round through hole near said split rounded end wall and located centrally over said round slit, said zipper aid housing assembled within said opening in said small rounded edge of said shoehorn by axially locating the larger round through hole in said housing to the round through hole in said shoehorn and by assembling a pin therethrough; and
a spool consisting of opposed round discs spaced apart but connected together by means of a round ring located centrally on the flat surfaces of said discs, each of said discs being provided with a round through hole located centrally therein, with further the outside of said ring being provided at one point along its diameter with a tab, said spool being further positioned centrally within said round slit in said zipper aid housing and secured therein by means of a pin; and
a coil spring positioned within the inside of said ring so as to be disposed between said discs, said spring being provided on its inside end with a flat portion and on its outer end with a flat portion, said flat portion on the outer end being assembled within a through rectangular slot provided in said ring and said flat portion of said spring on its inside end assembled within a rectangular through slot disposed lengthwise along the length of said pin; and
a cord assembly consisting of a length of cord material with an open hook attached on one end of said cord in a conventional way and with the opposite end of said cord secured to said tab on said ring in a conventional way, with said cord assembly being thereby spring wound onto said spool on one end.

4,067,488
PACKAGE BUSHING-FLY WHEEL-CAPSTAN FOR PLAYBACK AND/OR RECORDING APPARATUS
Rodolfo Cicatelli, Gandria-Lugano, Switzerland, assignor to Autovox S.p.A., Rome, Italy
Filed Aug. 3, 1976, Ser. No. 711,214
Claims priority, application Italy, Aug. 5, 1975, 50837/75
Int. Cl.² B65H 17/20
U.S. Cl. 226—194 9 Claims



1. A sub-assembly package comprising a bushing, a flywheel, and a capstan for playback and/or recording apparatus said flywheel being locked to one end of the capstan, said bushing supporting said capstan, said flywheel provided with a shoulder adjacent said bushing, and a sliding washer between said bushing and said shoulder.

4,067,489
WELDING APPARATUS FOR JOINING COILS OF STRIP STEEL
Hiroyuki Ishioka, and Yasuo Ise, both of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 15, 1976, Ser. No. 723,479
Claims priority, application Japan, Sept. 26, 1975, 50-115559; Sept. 26, 1975, 50-115560
Int. Cl.² B23K 37/04
U.S. Cl. 228—5.7 6 Claims



1. In a coil strip steel joining welding machine wherein the trailing end of a preceeding coil of strip steel and the leading end of a following coil of strip steel are clamped and joined by welding to provide a continuous section of strip steel, an improvement comprising an automatic edge aligning arrangement comprising: a pair of clamping mechanisms respectively provided at the entry and exit sides of said welding machine, each clamping mechanism including upper and lower clamping members, supporting means supporting at least one of said clamping mechanisms for movement in the width direction of

the strip steel; means for moving said movable clamping mechanism to align the center lines of the width of said clamped coil ends with each other; strip width detecting means for detecting the center line position of the width of the strip steel for controlling the amount of movement of said movable clamping mechanism; means for opening and closing the clamping members of said one clamping mechanism including link means comprising a lifting rod and a supporting shaft slidably supporting said lifting rod thereon, said supporting shaft having ends spaced from one another by a predetermined distance and secured to the supporting means.

4,067,490

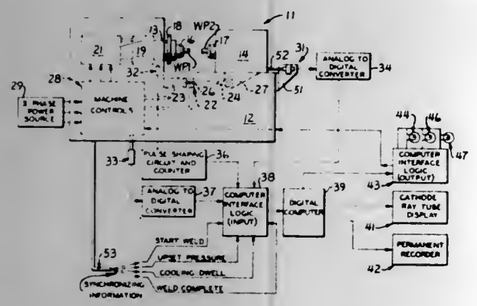
QUALITY CONTROL METHOD FOR INERTIAL WELDING

Thaddeus M. Jones, South Bend, Ind.; Jozef Kiwale, Moylan, Pa., and Ernest J. Ruder, Pekin, IL, assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 513,523, Oct. 10, 1974, abandoned, which is a division of Ser. No. 474,844, May 30, 1974, Pat. No. 3,888,405, which is a continuation-in-part of Ser. No. 286,312, Sept. 5, 1972, abandoned. This application Apr. 28, 1976, Ser. No. 680,941

Int. Cl.² B23K *19/02*

U.S. Cl. 228—102 **4 Claims**



1. In an inertial welding process of the type wherein, during each of the plurality of repetitive cycles, two workpieces are relatively rotated in rubbing contact at a common interface solely by means of a rotating inertial mass while being continuously pressed together, an improved method of maintaining quality control during repetitious cycles of said inertial welding process comprising the steps of:

Monitoring the amount of relative axial movement between the workpieces after initial engagement of the workpieces to determine axial upset during the welding process;

Comparing axial upset amount with an upset range predetermined as being representative of an effective bond between the workpieces.

Producing a substantially instantaneous signal indicating correlation between the axial upset amount and the predetermined upset range;

Monitoring the relative speed of rotation between the two workpieces and pressure under which the two workpieces are axially engaged, simultaneously with monitoring of axial movement between the parts;

Comparing the relative speed of rotation and the axial pressure with respect to predetermined ranges which are representative of an effective bond between the work pieces;

Producting substantially instantaneous signals indicating correlation of the monitored relative speed of rotation and axial pressure with the predetermined ranges for these conditions;

Conditioning repetition of the welding operation upon maintenance of axial upset amount, relative speed and axial engagement pressure within their respective predetermined ranges during each cycle;

Permanently recording axial upset amount, between the workpieces; and

Displaying a continuous signal for each weld operation to indicate when axial upset amount is within and outside the predetermined upset range.

4,067,491

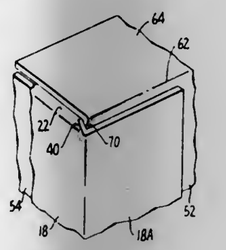
LEAK-PROOF BOX

Joseph W. Leakey, Danville, and Ray H. Stollberg, Antioch, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Apr. 27, 1977, Ser. No. 791,259

Int. Cl.² B65D *5/02*

U.S. Cl. 229—23 R **6 Claims**



1. A leak-proof box comprising:

a main body blank of unitary construction and including a front panel, a bottom panel connected to the front panel, a back panel connected to the bottom panel, a top closure panel connected to the back panel along a hinge line and a closure flap connected to said top closure panel and adapted to be brought into engagement with said front panel to close said box, and glue flaps attached along hinge lines to the ends of said bottom, front and back panels; and

a pair of end panels disposed in communication with said front, bottom and back panels at the ends thereof, said front, bottom and back panel glue flaps overlapping the end panels and secured to the outer surfaces of said end panels, glue flaps attached to said end panels along hinge lines and secured in engagement with the inner surfaces of said front and back panels, sealer flaps hingedly connected to said end panels and adapted to be folded inwardly over said top closure panel to form a leak-proof seal therewith when said closure flap is secured to the front panel, said sealer flaps being connected to their respective end panel glue flaps along lines of cut defining primary seal portions at the upper box corners when the closure flap is secured to the front panel.

4,067,492

SLOTTED DIVIDERS FOR SHIPPING CARTONS

Robert E. Gargan, Pinole, Calif., assignor to Continental Paper Co., Union City, Calif.

Filed Mar. 1, 1976, Ser. No. 662,714

Int. Cl.² B65D *5/48, 85/30*

U.S. Cl. 229—42 **3 Claims**

1. In a shipping carton divider:

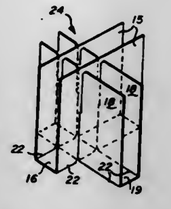
first and second carton divider means to be fitted together in interlocked relation for partitioning the shipping carton into a plurality of shipping compartments, each of said divider means including a pair of outer wing panels interconnected by an intermediate panel, each of said divider means to be folded so that the outer wing panels are folded toward each other along a fold line coincident with the juncture of the outer wing panels with said intermediate panel so that when the outer wing panel portions are foled

toward each other, each divider means takes a generally U-shape with the outer wing panels forming the opposed side walls of the U-shaped channel and with the intermediate panel portion forming the base of the U-shaped channel;

said first divider means including a pair of parallel slots formed therein running laterally of said intermediate panel and extending from said intermediate panel into and terminating within each of said outer wing panels;

said second divider means including a pair of parallel slots extending into each of said outer wing panels from the outer side edges thereof toward said intermediate panel; and

at least one of said divider means being relatively heavily scored over at least a portion of said fold line at the juncture of said intermediate panel and at least one of said outer wing panels, said relatively heavily scored portion of said fold line forming a parting line facilitating separation of said outer wing panel from said intermediate panel along said relatively heavily scored parting line region to allow folding over of a portion of said outer wing panel to enlarge the size of a compartment formed by interdigitated ones of said folded first and second divider means.



4,067,493

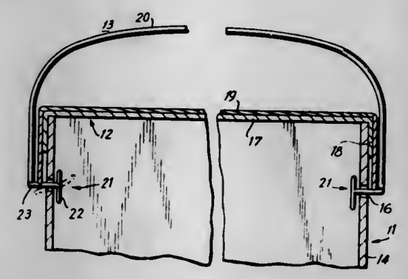
CARTON HANDLE AND TOP RETAINER

Irwin A. Stavin, Long Beach, N.Y., assignor to A & G Manufacturers, Inc., New York, N.Y.

Filed Aug. 30, 1976, Ser. No. 718,716

Int. Cl.² B65D *25/22, 5/46*

U.S. Cl. 229—52 AC **3 Claims**



1. A hand carried receptacle device comprising an open topped receptacle including a peripheral wall having formed in the upper border thereof a pair of opposite apertures, a cover member overlying said open topped receptacle and a combined cover retainer and bail including a bail defining elongated flexible member, a retainer defining elastic member of normally lesser length than said ball member and a pair of anchoring elements, each provided with a terminal portion having at least one dimension greater than the width of said aperture and another dimension of lesser width whereby said terminal portion is insertable through an aperture, said terminal portions being disposed along the inner face of said peripheral wall proximate said apertures, opposite pairs of ends of said bail and retainer being connected to respective anchoring elements and said retainer engaging said cover member and said bail extending above said retainer, each of said anchoring element terminal portions comprising an elongated arm of a width less than the width of said apertures and of a length greater than said aperture width, each of said elongated arms includes an elongated deformable channel, a pair of ends of said retainer and bail registering with a fraction of the length of said channel, the side walls of said channel member fraction being secured to engage said bail and retainer ends, said channel member extending along the inside face of said peripheral wall and said bail and retainer extending therefrom through a respective aperture.

4,067,494

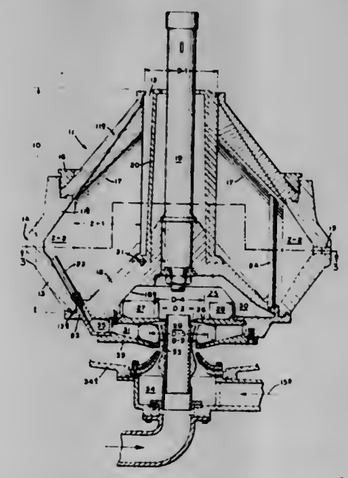
NOZZLE TYPE CENTRIFUGAL MACHINE WITH IMPROVED SLURRY PUMPING CHAMBERS

Charles Arthur Willus, Bethel, and Per Nyrop, Norwalk, both of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jan. 3, 1977, Ser. No. 756,492

Int. Cl.² B04B *1/12, 7/00*

U.S. Cl. 233—3 **21 Claims**



1. A nozzle type centrifugal machine adapted for a two phase separation of a feed slurry into a nozzle discharge slurry and an overflow of separated liquid,

which comprises a rotor having a rotor bowl of double-conical configuration wherein the upper conical portion has a top opening at the narrow end providing an overflow for said separated liquid, wherein the inverted frusto-conical portion has a relatively wide bottom opening, and wherein a peripheral intermediate portion connects the wide ends of said conical portions, provided with discharge nozzles for said nozzle discharge slurry,

a hub member of hollow frusto-conical configuration, closing the bottom end of the rotor bowl, a rotor shaft rising from said hub member through said overflow opening, a spider member concentrically surrounding said shaft, and extending from said hub portion upward substantially to the level of said overflow, and having radial ribs presenting outer vertical edges, a stack of separating discs fitted over said vertical edges of the spider member and representing an inner separating zone, said ribs thus forming vertical channels for the separated liquid from said zone to flow upwardly to said overflow, said stack of discs and said intermediate portion of the rotor bowl defining between them an outer separating zone wherein concentrated material collects for delivery through said nozzles,

a set of vertical slurry feed pipes rising from the peripheral portions of said hub member, for delivering feed slurry to

said stack of separating discs, said feed pipes being spaced evenly about the rotor axis,

a number of outwardly divergent return pipes equal to the number of said nozzles, and extending from the peripheral portion of said hub member into said outer separating zone for delivery of nozzle discharge slurry into said outer separating zone, said return pipes being spaced evenly about the rotor axis,

an upper annular partition member having a central feed opening coaxial with the rotor axis, and means for removably fastening said partition member to the underside of said hub member, surrounded by a peripheral portion of said hub member, said partition members thus constituting with the hollow of said hub member an upper pumping chamber,

an annular bottom closure plate having a central feed opening coaxial with the rotor axis, means for removably fastening the peripheral portion of said closure plate to said peripheral portion of said hub member, said closure plate being spaced downwardly from said partition member so as to constitute therewith and with said peripheral portion of the hub member a lower pumping chamber,

first conduit means for supplying one respective slurry to said upper pumping chamber,

second conduit means for supplying the other respective slurry to said lower pumping chamber,

one set of pumping vanes provided in one of said pumping chambers, said vanes being cooperatively associated with said vertical slurry feed pipes communicating with said one pumping chambers, and shaped so as to deviate in the direction of rotation of the rotor, and thus imparting to the incoming feed slurry outward acceleration, said vanes extending inwardly far enough to maintain delivery of separated liquid through the overflow,

complementary accelerator fins extending from the inner face of said hollow hub member radially inwardly, and in alignment with the outer ends of the pumping vanes, and constituting outward extension of said pumping vanes,

another set of pumping vanes provided in the other of said pumping chambers, said vanes being cooperatively associated with respective slurry return pipes communicating with said other pumping chamber, and shaped so as to deviate in the direction of rotation of the rotor, and thus imparting to the incoming return slurry outward acceleration, said vanes extending inwardly far enough to insure passage of said slurry through said divergent pipes, hydraulically balanced against the column of liquid reaching the top overflow,

and complementary accelerator fins extending from said peripheral portion of the hub member radially inwardly, and in alignment with respective outer ends of the pumping vanes.

4,067,495

UNITARY SPRING CLIP RAIL FASTENER

Khurshid Ahmed Qureshi, Bolingbrook, Ill., assignor to Portec Inc., Railway Products Div., Oak Brook, Ill.

Filed Aug. 28, 1975, Ser. No. 608,792
Int. Cl.² E01B 9/30, 29/24
U.S. Cl. 238—349 **18 Claims**



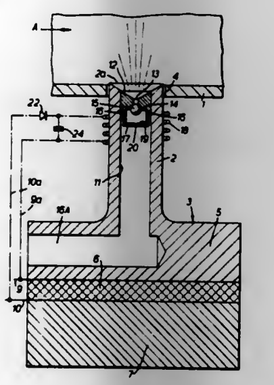
1. A fastener for securing a rail base flange to a crosstie including, anchor means secured atop said crosstie and having attachment means disposed adjacent said rail base flange, a spring clip of unitary metallic stock having a pair of adjacent and parallel mounting legs terminating in distal free end portions projecting in the same direction and engaging with said attachment means on said anchor means, said engaged mounting legs disposed parallel to the running length of said rail base flange, a single loop member joining said clip legs and including oppositely disposed rail bearing and tie anchor portions engaging said rail base flange and anchor means, respectively, said loop member including a curved cross-over arm extending in a direction perpendicular to the running length of said rail base flange and connected at opposite ends to said rail bearing and tie anchor portions respectively, an end connecting portion in turn joining each said rail bearing and tie anchor portions respectively to said mounting legs, and said curved cross-over arm extends vertically above the plane of all remaining structure of said clip both when applied to said anchor means and when removed therefrom.

4,067,496

FUEL INJECTION SYSTEM

Barrie James Martin, Sheffield, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Aug. 17, 1976, Ser. No. 715,006
Claims priority, application United Kingdom, Aug. 20, 1975, 34531/75
Int. Cl.² F02M 27/08, 45/10
U.S. Cl. 239—102 **12 Claims**



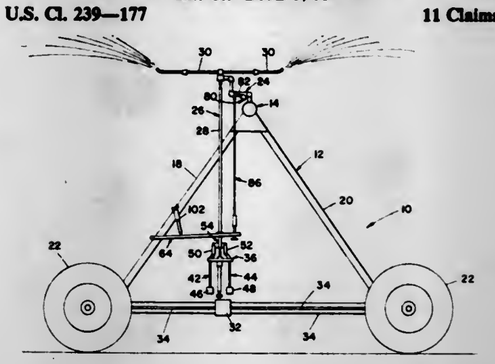
1. A fuel injection system comprising a fuel injection nozzle having a fuel injection orifice, and a vibrator for producing atomization of the fuel injected by the nozzle, the nozzle being equipped at the inlet side of the orifice with a fuel retaining valve means comprising a ball valve and a ball valve seat, the ball valve normally closing the orifice and thus preventing the injection of fuel by the nozzle and which is adapted to move away from the orifice when the vibrator is actuated and thus allow the injection of fuel by the nozzle, the nozzle being provided with means for limiting the maximum possible travel of the ball valve comprising a mechanical stop device so positioned at a distance from the orifice and in the path of the ball valve as to limit the maximum possible travel of the ball valve away from the orifice to not more than 0.75 millimeters for injecting a maximum predetermined amount of fuel by the system, and wherein the ball valve has a diameter of from 1 to 3 millimeters.

4,067,497

SPEED GOVERNOR FOR IRRIGATION SYSTEM

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed June 28, 1976, Ser. No. 700,226
Int. Cl.² B05B 3/00
U.S. Cl. 239—177 **11 Claims**



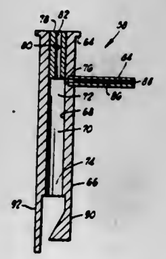
1. A drive apparatus for a pivot irrigation line comprising:
frame means on which an irrigation line is supported;
rotatable support means mounted to said frame means and on which the frame means are supported with the rotatable support means on the ground;
motor means operatively coupled with said rotatable support means to apply driving torque to said rotatable support means;
means for providing a motor drive torque to rotate said rotatable support means to drive said frame means over generally level ground; and
means for varying motor drive torque to maintain a generally constant speed of rotation of the rotatable support means as the frame means is driven over a variation in grade.

4,067,498

SPRAYING SYSTEM

James M. Holcomb, 6515 NW. 11th, Oklahoma City, Okla. 73127

Filed June 17, 1976, Ser. No. 697,062
Int. Cl.² B05B 1/26
U.S. Cl. 239—304 **2 Claims**



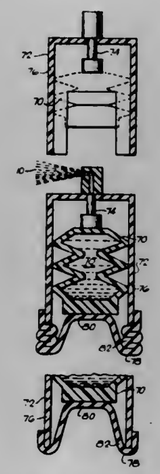
1. A spraying system for distributing a first fluid having a second fluid entrained therein, the system comprising:
a first fluid reservoir for holding the first fluid;
a second fluid reservoir for holding the second fluid;
a proportioning nozzle having an upper end and a notched lower end; a bore extending axially through the nozzle forming a mixing chamber having an inlet end and an outlet end, the mixing chamber having a length to diameter ratio of from 4:1 to 9:1; a first fluid inlet passage extending axially from the inlet end of the mixing chamber through the upper end of the nozzle, the ratio of the diameter of the first fluid inlet passage to the diameter of the mixing chamber being 1:1.25 to 1:3, the first fluid inlet passage being connected to the first fluid reservoir whereby a stream of the first fluid will flow through the first fluid passage into the inlet end of the mixing chamber; a second fluid inlet passage extending radially through the nozzle from the mixing chamber near the inlet end thereof, the second fluid inlet passage being connected to the second fluid reservoir whereby a stream of the second fluid is drawn into the mixing chamber by suction induced via passage of the stream of the first fluid into the mixing chamber, a mixture of the first and second fluids flowing turbulently through the mixing chamber and being ejected at the outlet end thereof; a deflector forming a portion of the notched lower end of the proportioning nozzle and a baffle forming another portion of the notched lower end of the proportioning nozzle, the deflector being axially spaced from and extending angularly away from and across at least half of the outlet end of the mixing chamber, and the baffle extending parallel to the axis of the mixing chamber and away from the outlet end thereof, the baffle being sized and positioned to extend across the angular projection of the deflector, whereby the stream of fluid ejected from the mixing chamber contacts the deflector, is directed toward the baffle and is further mixed and distributed therefrom in a fan-like spray.

4,067,499

NON-AEROSOL CONTINUOUS SPRAY DISPENSER

Milton J. Cohen, 9201 Persimmon Tree Road, Potomac, Md. 20854

Filed Feb. 17, 1976, Ser. No. 658,469
Int. Cl.² B05B 9/047
U.S. Cl. 239—323 **2 Claims**



1. A non-aerosol spray device comprising a housing consisting of an upper rigid tubular section open at the bottom and closed at the top with a top wall having an outlet opening, and a lower corrugated tubular section formed of a flexible material open at the top and closed at the bottom in which the upper open end portion of the lower tubular section is fixed to the lower open end portion of the upper tubular section to define the housing therebetween, a collapsible cartridge containing fluid to be dispensed dimensioned to be received within the enclosure and having an outlet at the upper end in communication with the outlet opening, the bottom wall of the lower flexible section having a rigid portion dimensioned to be less in cross-section than the interior of the upper tubular section by an amount greater than twice the thickness of the wall of the

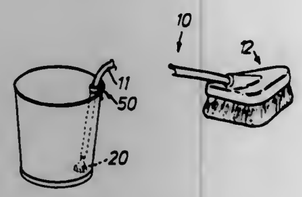
lower section to enable displacement of the rigid portion of the bottom wall therethrough, said lower section being dimensioned to have a length corresponding to the length of the upper section to enable the rigid portion of the bottom wall to be displaced axially through the interior of the upper section for substantially complete collapsing of the cartridge and a spray nozzle fixed to the top wall of the upper tubular section in communication with the outlet opening.

4,067,500

APPARATUS FOR CONVEYING FLUID FROM A LOWER LEVEL TO AN ELEVATED LEVEL

Richard Michiel Stevenson, Newark, England, assignor to Kendrick Stevens Limited, England

Filed July 6, 1976, Ser. No. 702,902
Int. Cl.² B05B *1/14*
U.S. Cl. 239—556 **9 Claims**



1. An apparatus for conveying a fluid from a lower level to an elevated level comprising a flexible tube, a one way valve located at one end of the tube, the one way valve comprising a one-piece housing, a cap releasable received on the housing, the cap having an aperture forming the inlet of the valve, and valve means located between the cap and the housing and being operable only to permit flow of fluid into the housing through the aperture, the housing being integrally formed with an end portion for receiving the tube, a dispensing device located at the other end of the tube, the arrangement being such that, on movement of the dispensing device relative to the opposite end of the tube when received in the fluid, fluid is drawn into the tube and emitted from the diepensing device and anchoring means for maintaining the valve means below the surface of the fluid to be conveyed, said anchoring means including a tube engaging portion which frictionally receives the tube and clip means for attachment to a receptacle or frame, the tube engaging portion being rotatably received in the clip means, and said tube engaging portion being annular in shape and having a bore for frictionally receiving the flexible tube, said tube engaging portion further having a radially outwardly extending projection for rotatable reception in an aperture formed in the clip means.

4,067,501

DRIVE MECHANISM FOR AGRICULTURAL IMPLEMENTS

Merle D. Tate, Rte. No. 1, Cannon Falls, Minn. 55009

Continuation of Ser. No. 561,275, March 24, 1975, abandoned. This application Sept. 30, 1975, Ser. No. 618,049
Int. Cl.² A01C *19/00*
U.S. Cl. 239—672 **6 Claims**

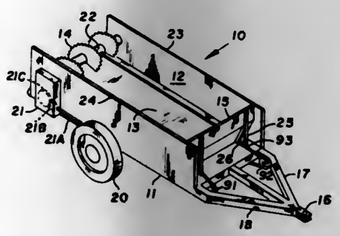
1. In combination with a manure spreader having a load supporting frame, a box with a load bearing bed mounted on said frame, a load distributing beater operatively disposed at the rear end of said load bearing bed, a transverse longitudinally movable load pushing gate disposed over said bed, and powered load pushing means for reciprocatorily moving said load pushing gate along said bed between the forward end thereof and the rear end thereof; said power meeans comprising:

a. a hydraulic cylinder with first and second opposed ends and being secured at said first end to said frame and including a ram arranged for reciprocatory powered movement within said hydraulic cylinder;

b. a stabilizer carriage mounted for reciprocatory movement within said frame and beneath said load bearing bed and being coupled operatively to the ram of said hydraulic cylinder;

c. first and second cable assemblies coupled to said load pushing gate and being arranged to move said gate reciprocatorily along said load bearing bed in rearwardly directed load pushing and forwardly directed gate return modes, said first cable assembly including first and second interconnected cable spans, each span having one free end coupled to one lateral end of said load pushing gate and the other ends thereof being interconnected and anchored to said frame between spaced cable snubbers;

d. a first pulley assembly including a pair of sheaves and being secured to said stabilizer carriage and being normally disposed forwardly of said cable snubbers with each of said first and second cable spans passing over one of said sheaves to provide each of said spans with a looped



segment with generally parallel span sections of controllably variable length;

e. cable engaging rollers adjacent said load distributing beater and having a surface for carrying said first and second cable spans between said pulley sheaves and said load pushing gate;

f. said second cable assembly including first and second cable spans, with each span of said second cable having an end coupled to one lateral end of said load pushing gate and with the other end coupled to said frame at a certain second anchor point adjacent the forward end of said bed, and having an intermediate segment therebetween, a second pulley assembly with a pair of sheaves secured to said stabilizer carriage and being normally disposed rearwardly of said second anchor point with each of said first and second cable spans of said second cable assembly passing over one of said second pulley sheaves to provide each span of said second cable assembly with a looped segment with generally parallel span sections of controllably variable length.

4,067,502

FLOTATION SEPARATION OF GLASS FROM A MIXTURE OF COMMINUTED INORGANIC MATERIALS

Booker W. Morey, Pasadena, and William R. White, Upland, both of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 467,854, May 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 172,888, Aug. 18, 1971, abandoned. This application Apr. 19, 1976, Ser. No. 678,080
Int. Cl.² B03B *1/04*
U.S. Cl. 241—20 **48 Claims**

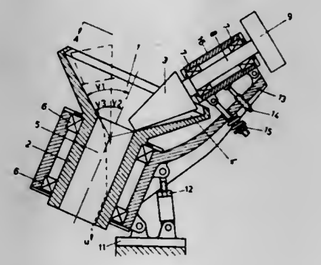
1. A process for separating glass from a particulate mixture of inorganic materials which comprises subjecting a particulate mixture of inorganic materials including particles of a size up to about 28 mesh and containing, as a portion thereof, a quantity of particulate glass particles comprising glasses having the composition of from about 70 to about 73 percent by weight SiO_2, from about 11 to about 18 percent by weight Na_2O, from about 7 to about 17 percent by weight CaO, the balance being essentially other metal oxides to froth flotation with a beneficiating amount of at least one functional amine glass collector reagent, said amine containing from about 8 to about 22 carbon atoms in at least one hydrocarbon group attached to a nitrogen atom to form a float fraction comprising predominantly particulate glass and an inorganic tailing substantially free of particulate glass, at least a portion of said particulate mixture of inorganic materials, exclusive of the particulate glass particles, being nonresponsive to the beneficiating action of said amine collector reagent to cause the particulate glass particles to concentrate in the float fraction.

4,067,503

METHOD OF GRINDING IN A MILL

John Samuel Broman, Bergslagsvagen 12, S-777 00 Smedjebacken, Sweden

Filed Apr. 12, 1976, Ser. No. 675,844
Int. Cl.² B02C *15/00*
U.S. Cl. 241—30 **1 Claim**



1. Method of influencing the degree of grinding of material fed into the peripheral portion of a rotatable grinding chamber of a mill whose inclined and upwardly diverging open bowl shaped grinding chamber has a central outlet for ground material, said mill having a rotary shaft inclined from the vertical and at least one roller cooperating with the grinding chamber, wherein the retention time of material in the grinding chamber, which corresponds to the degree of grinding, is controlled by adjusting the rpm of the grinding chamber and by adjusting the inclination of the rotary shaft, so that material in the section of the grinding chamber most inclined toward the horizontal plane slides downward toward the central outlet while being ground in accordance with the number of passes between the bowl shaped grinding chamber and the at least one roller to which the material is subjected corresponding to the desired degree of grinding.

4,067,504

COMPOST MACHINE

N. Grove Teates, 2707 Weisman Road, Wheaton, Md. 20902

Filed Oct. 29, 1976, Ser. No. 737,102
Int. Cl.² A01D *55/00*
U.S. Cl. 241—101.7 **27 Claims**

1. A compost machine comprising:

a frame having a first side, a second side, a front, a back and a top;

a first protective shield pivotally secured to said first side of said frame at said back of said frame;

a second protective shield pivotally secured to said second side of said frame at said back of said frame;

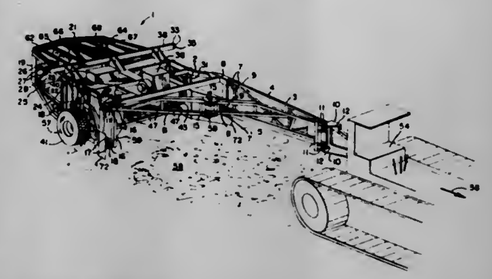
a third protective shield pivotally secured across said back of said frame, said first, second and third protective shields being pivotally secured to said first side, said second side and across said back of said frame, respectively, in such a manner that said first, second and third protective shields can be folded over said back of said frame to reduce the overall length of said frame;

first ground engaging and motion translating means;

means to secure said first ground engaging and motion translating means to said first side of said frame;

second ground engaging and motion translating means;

means to secure said second ground engaging and motion translating means to said second side of said frame;



a cylindrical member;

means to secure said cylindrical member between said first side and said second side of said frame;

means to provide rotary motion to said cylindrical member; and

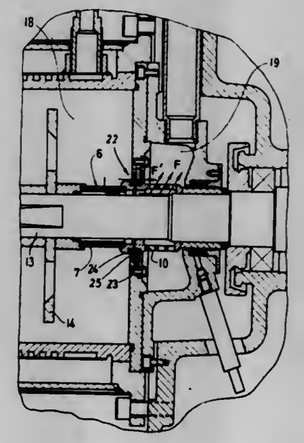
a plurality of spaced apart teeth secured to the outside of said cylindrical member.

4,067,505

HORIZONTAL-AXLE GRINDER WITH ROTATABLE SIEVE

Carlos Oliver Pujol, Marina Street No. 51, Badalona (Barcelona), Spain

Filed Feb. 7, 1977, Ser. No. 765,983
Claims priority, application Spain, Nov. 6, 1976, 453093
Int. Cl.² B02C *17/18*
U.S. Cl. 241—171 **1 Claim**



1. In a cooled horizontal-axle grinder, such as for the predispersion of solids in liquids, which grinder includes wall means defining therein a grinding chamber and a product extraction chamber;

grinding bodies such as balls positioned within said grinding chamber;

a rotatable agitator shaft extending through said grinding chamber and supported for rotation about a substantially horizontal axis, a plurality of agitator discs mounted on

said shaft for rotation therewith, said discs being axially spaced apart along said shaft and having an endmost disc positioned adjacent but axially spaced from a part of said wall means to define a substantially annular region therebetween which surrounds said shaft and comprises a part of said grinding chamber;

and a sieve structure associated with said region for straining the treated product which is withdrawn from the grinding chamber and supplied to said extraction chamber, said sieve structure including a first mounting structure fixed to said shaft and disposed adjacent the endmost disc, a second mounting structure fixed to said shaft in axially spaced relationship to said first mounting structure and positioned in the vicinity of said part, an elongated sleeve-like sieve fixedly mounted on and extending axially between said first and second mounting structures in concentric relation with said shaft, said extraction chamber communicating with said region of the grinding chamber through said sieve, said region also being free of obstructions except for the presence of said sieve, whereby the treated product can flow from said grinding chamber radially inwardly through said region and then radially inwardly through said sieve into said extraction chamber, from which the treated product is discharged;

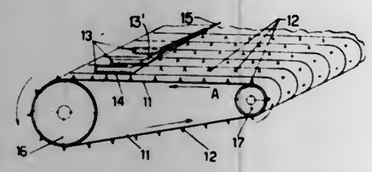
the improvement comprising separation means disposed between the grinding chamber and the product extraction chamber for permitting the flow of additional treated product into said extraction chamber, said separation means including an annular disc fixed with respect to said part and positioned in surrounding and concentric relationship to a ring which is coaxial with said shaft and is fixed to said second mounting structure for rotation therewith, said disc and ring having opposed annular peripheral surfaces which are positioned a fixed distance apart so as to define a narrow annular flow passage therebetween which provides communication between said grinding and extraction chambers, said distance being less than or equal to the pass diameter of the sieve.

4,067,506

MACHINE FOR TEARING WASTE BAGS AND SEPARATING OUT PLASTIC FILM BAG MATERIAL

Manlio Cerroni, Via Bruxelles 53, Rome, Italy

Filed Apr. 6, 1976, Ser. No. 674,157
Claims priority, application Italy, Apr. 16, 1975, 49141/75
Int. Cl.² B02C *23/02*
U.S. Cl. 241—200 **6 Claims**



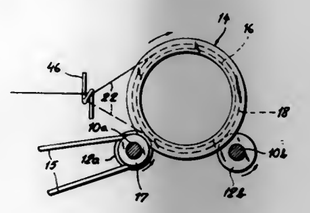
1. A machine for tearing open bags containing solid waste and for separating out plastic film material and rags, comprising an endless belt conveyor being driven so as to follow a path defined by a first rectilineal length in which said belt travels in a first direction, a second rectilineal length in which said belt travels in a direction opposite to that of said first rectilineal length, a first transition path located between said first and second rectilineal paths providing a relatively mild transition from said first rectilineal path to the second rectilineal path, a second transition path located between said second and first rectilineal paths providing a relatively sudden transition from said second to said first recilineal path, a plurality of projections carried on and extending from the outer surface of said belt conveyor for engaging bags of waste and other waste matter supported thereon, and means mounted in proximity to the surface of said belt conveyor supporting said waste material and bags along said first rectilineal path for selectively cooperating with said projections for tearing said bags of waste, and means cooperating with said projections for tearing said bags of waste comprising a plurality of blades having a serrated cutting edge directed toward said belt conveyor, said blades being mounted so as to be pivotally moved away from said conveyor belt when engaged by bulk material and matter having a hardness not tearable by said blades so that said blades may be pivoted away from said conveyor to allow passage of said non-tearable material avoiding damage to said blades and said conveyor.

4,067,507

FILAMENT-WINDING MECHANISM

Edmund Hamel, Romanshorn, Switzerland, assignor to Evolution S.A., Rorschach, Switzerland

Filed Feb. 23, 1976, Ser. No. 660,509
Claims priority, application Germany, Feb. 24, 1975, 2507891
Int. Cl.² B65H *54/42*
U.S. Cl. 242—18 DD **3 Claims**



1. In a mechanism for winding a filament onto a spool having a core, including a pair of parallel horizontal shafts and rollers on said shafts normally spaced apart by a distance less than the diameter of said core for supporting said spool during loading thereof by the winding of a filament on said core, at least one of said rollers being driven for rotatingly entraining the supported spool,

the improvement wherein one of said shafts is provided with a stationary mounting and the other of said shafts is provided with a swingable mounting enabling lateral separation of said rollers from each other under the weight of a loaded spool to let the spool drop between said rollers onto a receiving surface, further comprising detent means engageable with said swingable mounting in a normal position thereof for preventing premature separation of said rollers, release means for deactivating said detent means upon the winding of a predetermined amount of filament on said core, and spring means linked with said swingable mounting for restoring same to said normal position upon the dropping of a loaded spool from said rollers, said spring means acting upon said swingable mounting with a restoring force insufficient to prevent the separation of said rollers by a loaded spool upon the deactivation of said detent means.

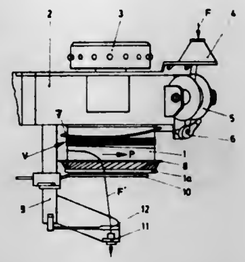
4,067,508

THREAD SUPPLY DEVICE FOR TEXTILE MACHINES

Kurt Arne Gunnar Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Nov. 8, 1976, Ser. No. 739,723
Claims priority, application Germany, Nov. 10, 1975, 2550411
Int. Cl.² B65H *51/00*
U.S. Cl. 242—47.01 **9 Claims**

1. A thread supply device for textile machines, comprising a drum on which the thread issuing from a supply bobbin can be wound tangentially and withdrawn over the end either by rotation of the drum or, in the case of a stationary drum, by means of a disc-shaped or ring-shaped winding element rotating adjacent a free front drum rim while forming at least one thread winding such that the thread is withdrawn over a removal edge of the drum in the case of a rotating drum and over a sliding edge of the winding element in the case of a stationary drum, and that a thread control element is provided which is arranged stationary adjacent the removal edge in the case of a rotating drum and which serves as a lateral stop for the unwinding thread opposite the direction of movement of the removal edge, and which is located on the winding element adjacent the sliding edge in the case of a stationary drum and which limits the peripheral velocity of the thread unwinding



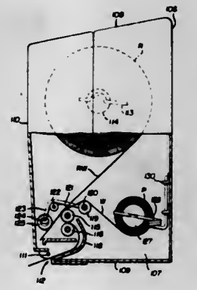
about the sliding edge to the peripheral speed thereof, characterized in that, in order to use the thread supply device in small jacquard machines, a brake means acting progressively on the unwinding thread in the peripheral directon of the same is disposed in front of the thread control element in the sense of the thread rotation about the removal or sliding edge during thread removal such that the braking effect is amplified as the thread approaches the thread control element and is decreased as the thread moves away from the thread control element.

4,067,509

PAPER TOWEL DISPENSER AND TRANSFER MECHANISM

Andrew Stuard Graham, Jr., Wyncote, and Coleman David Berg, Philadelphia, both of Pa., assignors to Fort Howard Paper Company, Greenbay, Wis.

Division of Ser. No. 391,655, Aug. 27, 1973, Pat. No. 3,917,191, which is a continuation-in-part of Ser. No. 243,230, April 12, 1972, abandoned. This application Sept. 25, 1975, Ser. No. 616,730
The portion of the term of this patent subsequent to Nov. 4, 1992, has been disclaimed.
Int. Cl.² A47K *10/38*
U.S. Cl. 242—55.3 **6 Claims**



1. A towel dispenser for sequentially dispensing toweling from rolls, permitting reloading of the dispenser without rethreading of the feed mechanism, comprising:

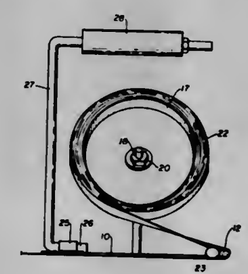
a cabinet having a dispensing opening, a primary roll station rotatably supporting a primary towel roll, a reserve roll station located above said primary roll station in spaced relation and rotatably supporting a reserve towel roll, an unobstructed path between said primary and reserve roll stations permitting manual shifting of a towel roll from the reserve to primary roll station, a feed mechanism located generally between said primary roll station and said dispensing opening sequentially receiving the web from the towel rolls in the primary and reserve roll stations in separate paths and dispensing toweling through said dispensing opening, and a transfer means having a movable sensing element in the path of the primary roll web spaced from the primary roll and normally engaging the web of the primary roll between said primary roll station and said feed mechanism and responsive to exhaustion of said primary towel roll to deliver the web of the reserve towel roll to said feed mechanism upon exhaustion of said primary towel roll, said feed mechanism and said transfer means being spaced during operation from said primary roll station a distance sufficient to permit a towel roll to be transferred from said reserve roll station to said primary roll station without breaking the web running to said feed mechanism, rethreading said feed mechanism or movement of said sensing element.

4,067,510

TAPE DISPENSER

Hugh K. McGonagle, 1081 Edgemere Lane, Hayward, Calif. 94545

Filed Oct. 14, 1976, Ser. No. 732,314
Int. Cl.² B65H *19/00*
U.S. Cl. 242—55.2 **5 Claims**



1. A dispenser for masking tape comprising:

A. a base plate having a top surface, a straight molding-contact edge, and a straight tape-positioning edge intersecting said contact edge and making an obtuse angle therewith,

B. a forward projection at the terminal end of said positioning edge, said projection lying in a plane that includes an extension of said contact edge, and

C. a circular rotating means including a circular plane, said rotating means connected to said top surface and adapted to hold a spool of tape so that the plane of the circumference of an edge of said rotating means closer to said contact edge is not perpendicular to the plane of said base plate and the contact edge lies in that plane.

4,067,511

EXPANSIBLE MANDREL FOR MOUNTING SPOOLS AND THE LIKE IN WINDING MACHINES

Peter Hermanns, Stommeln, Germany, assignor to FMN Schuster & Co., Hurth-Efferen, Germany

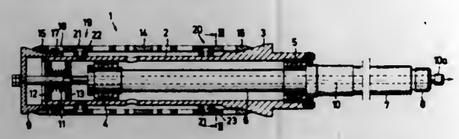
Filed Oct. 4, 1976, Ser. No. 728,893
Int. Cl.² B65H *75/18*
U.S. Cl. 242—72.1 **16 Claims**

1. An expansible mandrel for mounting spools and the like in winding machines, said mandrel comprising:

a. means for securing clamping elements on the periphery of the mandrel, and

b. cone means for causing the clamping elements to exert an outwardly directed radial pressure to hold a mounted spool thereon,

c. each said clamping element comprisng an elongated segment having the longitudinal axis disposed parallel to the longitudinal axis of the mandrel and having lines of momentum arising from the stress while the mandrel is operating at high rotary speeds,



d. each segment including a plurality of recesses distributed symmetrically with respect to the longitudinal center of the segment,

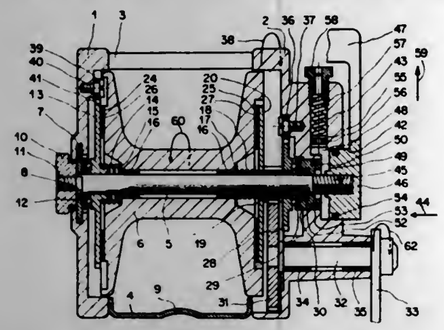
e. the size of the recesses being adapted to the approximate changing values of the momentum curve defined by said lines of momentum.

4,067,512

HYDRAULIC BRAKE FOR A FISHING REEL

Alain Népote, Cluses, France, assignor to The Farcia Corporation, Teaneck, N.J.

Filed Feb. 4, 1977, Ser. No. 765,581
Claims priority, application France, Feb. 9, 1976, 76.03799
Int. Cl.² A01K *89/02*
U.S. Cl. 242—84.5 R **10 Claims**



1. In a fishing reel comprising a housing rotatably supporting a line spool about a central shaft, a crank constructed and arranged to rotate said spool in a first line retrieval direction, said spool being freely rotatable in a second opposite direction, an improved brake mechanism for braking rotation of said spool in said second direction comprising:

a first hydraulic cylinder arranged in one side wall of said housing;

first and second pistons diametrically arranged in said first cylinder, said first piston being manually displaceable and said second piston being displaceable by fluid pressure applied by said first piston;

brake means constructed and arranged to apply frictional braking forces to said spool;

means operatively connecting said brake means to said second piston for application of said braking forces upon displacement of said second piston;

a second hydraulic cylinder arranged in said one side wall of said housing in fluid connection with said first cylinder;

a third piston arranged in said second cylinder; and

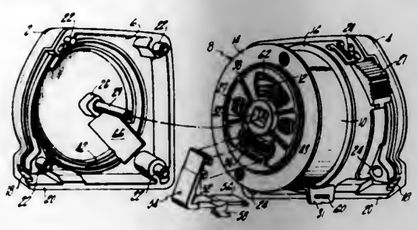
biasing means positioned within said second cylinder constantly urging said third piston to apply fluid pressure upon said first and second pistons and said braking forces may be gradually applied by displacement of said first piston.

4,067,513

COILABLE RULE AND REPLACEMENT CARTRIDGE THEREFOR

Edward Charles Rutty, Portland; Frank Gregory Czerwinski, New Britain; Henderik Van Zelderen, Avon, and Donald Robert Gavini, South Windsor, all of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Dec. 13, 1976, Ser. No. 750,112
Int. Cl.² B65H *75/48*
U.S. Cl. 242—107.3 **7 Claims**



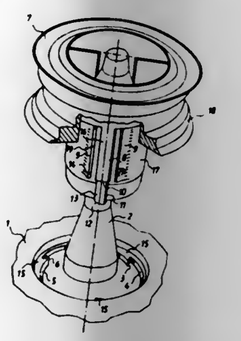
1. A replacement cartridge for a coilable rule having a housing providing a mouth for passing a resilient measuring blade therethrough, said replacement cartridge comprising a spool and a non-rotatable removable hub, said spool having an annular rim bounded by side walls for mounting the coiled portion of the measuring blade, one of said side walls extending toward the axis of rotation of said spool and providing a central aperture for journaling the spool on one end of the hub, said hub having an outwardly extending flange fixed to the other end of the hub substantially in alignment with the other side wall of the spool to define an annular chamber with said hub and said spool, a recoil spring within said chamber, one end of said recoil spring being secured to the non-rotatable hub and the other end being connected to the end of the measuring blade for recoiling the same, said annular rim of the spool being spaced from the spool to define an annular clearance sufficient to prevent frictional contact therebetween to provide a unitary bearing construction for the spool which is self-aligning with the mouth of the housing by the uncoiled portion of the measuring blade extending through the mouth.

4,067,514

FILM CASSETTE

Rudolf Blank, Cologne-Dunnwald, and Achim Kluczynski, Porz-Eil, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Aug. 18, 1976, Ser. No. 715,327
Claims priority, application Germany, Aug. 29, 1975, 2538425
Int. Cl.² G03B *17/26, 17/30*
U.S. Cl. 242—194 **10 Claims**



1. In a film cassette, a combination comprising a casing; a take-up core rotatable in opposite directions about an axis of

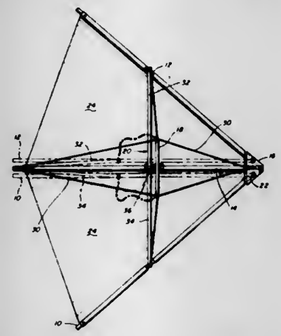
rotation; means for normally arresting said core against rotation in one of said direction, including at least one detent member on said casing and having a detent surface projecting into an annular path surrounding said axis of rotation, and a guide surface which is curved inwardly of said path; an arresting element on said core rotatable therewith and extending axially thereof, said arresting element being elastically biased in direction outwardly of said path so as to engage and slide over said guide surface when said core rotates in the opposite direction but to abut against said detent surface when said core rotates in said one direction; and means defining a predetermined break-away locus on said arresting element so that, when the latter abuts said detent surface and said core is thereafter subjected to a predetermined elevated torque, said arresting element will be sheared off at said locus by a force acting in direction transverse to the direction of elongation of said arresting element.

4,067,515

HANG GLIDER

Thomas C. Searle, 249 Parker St., Acton, Mass. 01720

Filed Mar. 29, 1976, Ser. No. 671,246
Int. Cl.² B64C *31/02*
U.S. Cl. 244—16 **22 Claims**



1. A hang glider comprising;

a pair of leading members,

a keel member,

means pivotally securing one end of each of said leading members and keel member together at a common place to form a V-shape between the keel member and respective leading members,

a control frame,

a cross member assembly,

means for securing the control frame in a hanging position from the keel member,

means for pivotally securing the ends of the cross member assembly to the respective leading members,

fabric means mounted to the leading members and keel member,

said cross member assembly having at least a folded position and an extended position and portions forming a toggle joint means,

and means associated with the keel member for receiving a predetermined point of the cross member assembly when in the extended position to thereby releasably retain the cross member assembly in the extended position,

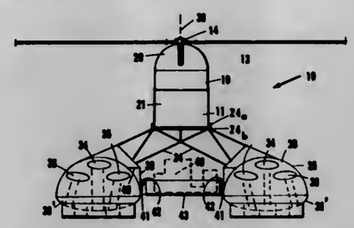
said cross member assembly adapted to fold and move away from the means for receiving with the ends of the cross member assembly secured to the leading members approaching each other as the leading members rotate about their secured ends toward the keel member.

4,067,516

AIR CUSHION PONTOON FREIGHT HELICOPTER

Herbert Leonard Dobb, 35 Gulfview Drive, Brampton, Ontario, Canada

Filed Dec. 20, 1974, Ser. No. 534,855
Claims priority, application Canada, Mar. 18, 1974, 195227
Int. Cl.² B64C *27/06*
U.S. Cl. 244—17.11 **6 Claims**



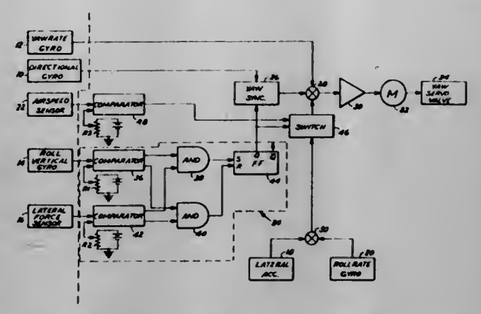
1. An air suspension freight vehicle comprising: a divided pontoon structure defined by two air cushion pontoons in parallel spaced apart relation; frame structure rigidly interconnecting said pontoons to define a cargo gap therebetween; air cushion skirt means on undersurfaces of said pontoons and defining multiple air chambers between said undersurfaces and a terrain surface; independent engine driven air induction fans located in said pontoons to induct air through outer surfaces thereof and to direct inducted air to said chambers thereby to develop lift in each pontoon relative to said surface; a cargo carrier mountable in said gap between said pontoons; guide means slidably supporting said cargo carrier for slidably adjusting the position of the centre of gravity of the cargo relative to the effective centre of gravity of said pontoon structures; means for adjustably positioning said cargo carrier on said guide means; and a helicopter fastened to said frame, said helicopter having a bladed rotor tipable forwardly and downwardly to provide forward propulsion for said vehicle.

4,067,517

AUTOMATIC HEADING SYNCHRONIZATION CONTROL SYSTEM

Ronald E. Barnum, Trumbull, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 3, 1976, Ser. No. 649,331
Int. Cl.² B64C *11/34*; G05D *1/08*
U.S. Cl. 244—17.13 **14 Claims**



1. A method for exercising control over the flight of a rotary wing aircraft, the aircraft having a flight control system with the capability of automatically holding the aircraft on a desired heading, said method including the steps of:

discontinuing the automatic heading hold mode of operation when a bank angle in excess of a predetermined minimum is experienced and an operator applies a force in excess of

a predetermined minimum to the aircraft cyclic pitch control stick;

exercising manual control over the flight of the aircraft upon discontinuance of the heading hold mode of operation; and

resuming the automatic heading hold mode of operation when the bank angle falls below the predetermined minimum and the force applied to the cyclic pitch stick also falls below the predetermined minimum force.

7. In a flight control system for a rotary wing aircraft, the flight control system having a yaw channel with the capability of automatically holding the aircraft on a desired heading, the yaw channel receiving signals commensurate with deviations from a desired heading and applying heading correction commands to an actuator coupled to a device for varying the heading of the aircraft, the improvement comprising:

means for sensing the actual bank angle of the aircraft and generating a signal commensurate therewith;

means for generating a bias signal commensurate with a preselected minimum bank angle;

first comparator means for comparing said signals commensurate with actual bank angle and preselected minimum bank angle and providing a first output signal when the actual bank angle exceeds the predetermined minimum bank angle;

means coupled to a pilot's bank angle selection control mechanism for sensing the force applied thereto and generating a signal commensurate therewith;

means for generating a bias signal commensurate with a predetermined minimum control mechanism applied force;

second comparator means for comparing said actual and preselected minimum control mechanism applied forces and providing a first output signal when the actual force exceeds the preselected minimum force; and

means responsive to the generation of first output signals by both of said first and second comparator means for isolating the yaw channel actuator from heading correction commands when said bank angle exceeds the predetermined minimum and the force applied to the control mechanism exceeds the predetermined minimum.

4,067,518

DRAG REDUCER FOR LIFT SURFACE OF AIRCRAFT

John Howard Paterson, Atlanta, and Francis Marion Wilson, Jr., Marietta, both of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed May 20, 1976, Ser. No. 688,135
Int. Cl.² B64C *1/38*
U.S. Cl. 244—130 **6 Claims**



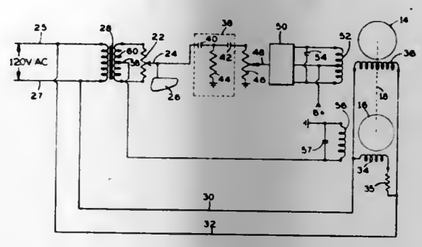
1. A drag reducer for a lift surface of an aircraft comprising at least one member secured to the under side of said lift surface with its long dimension disposed substantially chordwise of said lift surface to thereby lie parallel with the line of flight of said aircraft, each said member being substantially circular in cross-section at each point in its length and substantially pointed at its forward and rear ends with a gradually enlarged mid-section thereby defining an external surface which is streamlined, smooth and free of any discontinuity, the rear extremity of each said member extending aft of the trailing edge of said lift surface a distance equal to about three times the maximum transverse dimension of said member which is preselected to be between 0.08 and 0.10 of the length of the chord of said lift surface at that chordwise location and disposed substantially at the trailing edge of said lift surface.

4,067,519

AUTOMATIC DRIFT CORRECTOR

Clark E. Gibson, 19700 SW. 165th Ave., Perrine, Fla. 33187

Filed May 5, 1976, Ser. No. 683,043
Int. Cl.² B64C *13/18*
U.S. Cl. 244—175 **6 Claims**



1. In a vehicle having an automatic pilot system including a synchro generator means having a control for adjusting the heading of the vehicle, and vane means mounted rotatably outside the vehicle to follow the forward movement of the vehicle, an automatic drift corrector comprising:

two-field electric motor means coupled to said control of said synchro generator means by reduction gear means for causing said synchro generator means to adjust the heading of the vehicle in response to a drift signal;

variable voltage generating means for developing the drift signal;

said vane means being coupled to said variable voltage generating means to vary the same in response to rotation of said vane means by drift of the vehicle for generating said drift signal;

servo amplifier means coupled between said variable voltage generating means and said electric motor for amplifying said drift signal and applying the same to said motor for causing said motor to operate said synchro generator means to correct for said drift; and

power supply means for supplying electrical power to said motor means, said voltage generator means and said amplifier means.

4,067,520

METHOD AND APPARATUS FOR TERRAIN AVOIDANCE

Maynard L. Hill, Silver Springs, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

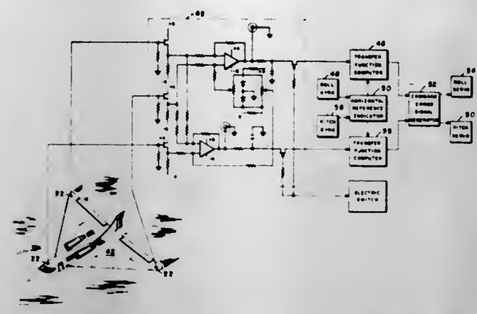
Filed Sept. 24, 1976, Ser. No. 726,319
Int. Cl.² G05D *1/10*
U.S. Cl. 244—177 **11 Claims**

1. A method for detecting the presence of an orographic protrusion extending from the surface of the earth, comprising the steps of:

locating at least two spaced points in the earth's atmosphere which lie along a line parallel to the nominal surface of the earth;

sensing the horizontal potential component of the electrostatic field existing in the earth's atmosphere at each of the two spaced points; and,

comparing the two sensed horizontal potential components, a difference in potential therebetween indicating the presence of an orographic protrusion extending from the surface of the earth.

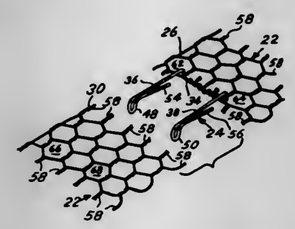


4,067,521

ATTACHING CLIP

L. George Byard, Bartonville, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Apr. 9, 1976, Ser. No. 675,333
Int. Cl.² A44B *13/00*; B65D *85/04*
U.S. Cl. 245—10 **6 Claims**



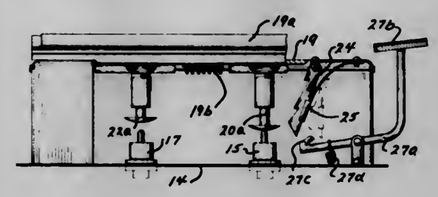
1. An improved attaching clip for initially connecting the leading end of a first roll of steel wire mesh reinforcing to the remaining portion of the first roll so as to prevent the unrolling of the fist roll during storage, handling and shipment to a place where the first roll is to be applied about pipes to form negative buoyancy coatings about the pipes and then for subsequently connecting the leading end of the first roll to the trailing end of a second, similar roll of steel wire mesh reinforcing so that the first and second rolls form a continuous strip of steel wire mesh reinforcing as they are applied about the pipes, the leading end of the first roll including a plurality of evenly spaced pairs of mesh defining wires, the improved attaching clip comprising: a body formed from wire and having a transverse portion whose longitudinal axis extends transversely to the longitudinal axis of the first roll of steel wire mesh reinforcing so that one end of the transverse portion is disposed adjacent to one side edge of the first roll and so that the other end of the transverse portion is disposed adjacent to the other side edge of the first roll and whose length is greater than the transverse distance between two adjacent pairs of mesh defining wires; means for securing the transverse portion to the first roll, adjacent to the leading end of the first roll, by wrapping two adjacent pairs of mesh defining wires about the transverse portion; the body also having first and second arm portions, each of these arm portions including a first end and a second end, with the first end of the first arm portion being connected with the one end of the transverse portion so that the longitudinal axis of the first arm portion is substantially perpendicular to the longitudinal axis of the transverse portion, with the first end of the second arm portion being connected with the other end of the transverse portion so that the longitudinal axis of the second arm portion is substantially perpendicular to the longitudinal axis of the transverse portion, and with the second ends of the first and second arm portions projecting forwardly beyond the leading end of the first roll; first and second curved crook portions which are connected at their one ends with the second ends of the first and second arm portions, respectively, and which generally define curved loops such that the other ends of the first and second crook portions are bent rearwardly toward the transverse portion and are disposed generally adjacent to the first and second arm portions, respectively, intermediate their first and second ends; and first and second distal end portions that are connected at their one ends to the other ends with the first and second crook portions, respectively, and that extend rearwardly toward the transverse portion, with each of the first and second distal end portions being disposed at an angle with the longitudinal axis of their respective adjacent arm portions and with the other, free ends of the first and second distal end portions being spaced from the first and second arm portions, respectively, and being adapted to engage the mesh defining wires of a roll of steel wire mesh reinforcing.

4,067,522

RAILROAD SAFETY AND WARNING ARRANGEMENT

Orie L. Williams, P.O. Box 482, Mount Pleasant Road, Evansville, Ind. 47711

Filed Mar. 30, 1977, Ser. No. 782,889
Int. Cl.² B61L *29/24*
U.S. Cl. 246—1 C **6 Claims**



1. A railroad safety and warning arrangement comprising a housing supporting a pivotal foot pedal, a first signaling mechanism and a second signaling mechanism operatively responsive to movement of said foot pedal, means maintaining the foot pedal at a first position for operation of said first signaling mechanism and maintaining the foot pedal at a second position for simultaneous operation of said first signaling mechanism and said second signaling mechanism.

4,067,523

LATERALLY ADJUSTABLE ADAPTER BRACKET FOR A GRADE CROSSING GATE AND SIGNAL ASSEMBLY

John M. Kenny, Pittsburgh, and Spiro J. Pappas, Verona, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Feb. 22, 1977, Ser. No. 770,675
Int. Cl.² B61L *29/04*
U.S. Cl. 246—130 **8 Claims**

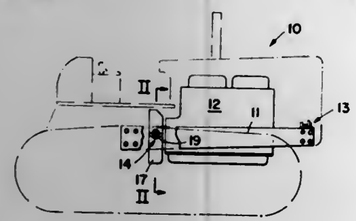
1. An adapter bracket for allowing an elongated gate arm to be adjustably positioned to permit the gate arm to clear the superstructure of a highway crossing gate and signal assembly comprising, a pair of strut members each having at least two rows of apertures, said pair of strut members connectable at their respective ends to a pair of gate supporting arms, spacer members positioned in alignment with selected ones of said rows of said apertures and securely fastened to said pair of said

strut members, and a gate arm connecting means selectively aligned with chosen ones of said rows of said apertures to



permit the gate arm to be securely mounted at various locations along the length of said pair of said strut members.

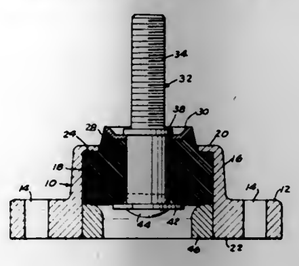
4,067,524
ENGINE MOUNT
Dale C. Brinkmann, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed July 12, 1976, Ser. No. 704,218
Int. Cl.² F16M *5/00*
U.S. Cl. 248—9 8 Claims



1. In an engine mount comprising a bushing assembly mounted between an engine and a support trunnion secured to a vehicle frame, wherein said bushing assembly comprises a cup-shaped outer housing having an end wall spaced inwardly from an adjacent wall of said engine, a cup-shaped inner housing having an end wall spaced inwardly from said outer housing end wall so as to define an included space, said inner housing being mounted on said trunnion, an annular elastomeric bushing compressed between a cylindrical side wall of said outer housing and a cylindrical side wall of said inner housing and an elastomeric pad abutting said outer housing end wall and positioned between said inner housing end wall for substantially absorbing impact loads imposed thereon by axial engagement with the end of said support trunnion, further including means defining an opening in a housing end wall of said bushing assembly intercommunicating said included space with atmosphere thereby facilitating assembly of said housings into said bushing assembly.

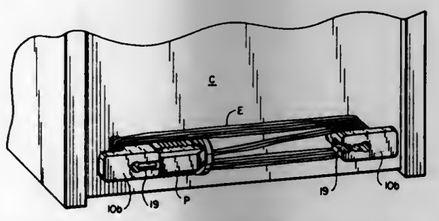
4,067,525
RESILIENT MOUNTING
Jack Allen, Oak Park, Mich., assignor to Bushings, Inc., Royal Oak, Mich.
Filed Nov. 18, 1976, Ser. No. 743,046
Int. Cl.² F16F *15/04*
U.S. Cl. 248—10 11 Claims

1. A resilient mounting comprising a base having a mounting face at its lower end and having means thereon for securing it to a support, said base having a vertically extending cylindrical socket therein which is open at the top and bottom of the base, said socket having a rigid radially inwardly extending, generally horizontal, peripheral flange at its upper end, a resiliently compressible bushing tightly retained within said socket, said bushing having a generally flat bottom face and an integral extension of reduced cross section at the upper end thereof projecting upwardly through the opening defined by said peripheral flange, the junction between said extension and the portion of the bushing within said socket being defined by a generally flat, horizontally extending, annular surface on the bushing compressingly engaging the underside of said peripheral flange, a stud extending vertically upwardly through said



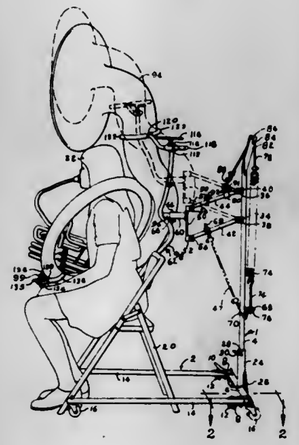
bushing, said stud having a radial flange at its lower end compressingly engaging said flat bottom face, a downwardly dished washer fixed on said stud and bearing downwardly on the upper end of the bushing throughout the extent of the upper end face thereof and means forming a rounded annular shoulder at the lower end of said socket bearing upwardly against said flat bottom face of said bushing around the outer peripheral portion thereof.

4,067,526
SUPPORT-FOOT AND CORD-RETAINER
Clyde K. Storer, Columbus, Ohio, assignor to The Buckeye Stamping Company, Columbus, Ohio
Filed Nov. 19, 1976, Ser. No. 743,509
Int. Cl.² B65H *75/36*
U.S. Cl. 248—65 6 Claims



1. A retainer member for an electrical cord or the like comprising a body having opposed ends, an outer face adapted to be exposed and an inner face adapted to be engaged with a support surface, and surfaces which extend between the respective faces and ends of the body which extends from one face to the other at opposite sides of a centerline of the body; a cord-retainer flange projecting from said body at the outer face thereof and from one end thereof, a prong-receiving socket formed in said body and opening outwardly at a prong-receiving end of said body opposite to the end where said cord-retainer flange is formed, and a pair of prong-receiving sockets formed in said body in cooperative relationship with said first socket and opening at the same prong-receiving end of said body; said first prong-receiving socket being formed by a slot having an end opening at the said prong-receiving end of said body and a side opening at said outer face of the body and having a centerline in a common plane with that of the body, said pair of prong-receiving sockets being formed by recesses in the respective side surfaces of the body that are parallel to each other and to the centerline of the body and which open to the said prong-receiving end and the said inner face of the body.

4,067,527
MUSICAL INSTRUMENT SUPPORT STAND WITH COUNTER-BALANCED, VERTICALLY MOVABLE HORN SUPPORT RACK
James L. Streit, Rte. 3, Box 364, Vernon, Tex. 76384
Filed Dec. 9, 1975, Ser. No. 639,184
Int. Cl.² F16M *13/00*
U.S. Cl. 248—125 6 Claims



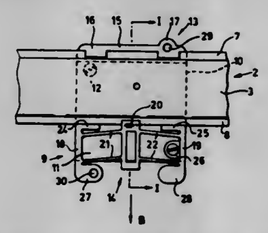
1. A musical instrument support stand, which stand comprises;
- a. a bifurcated base,
  - 1. a transverse member forming a portion of said bifurcated base,
  - 2. an outwardly extending member pivotally mounted on said transverse member near each outer end thereof for pivotal movement with respect thereto and forming the bifurcations of said base,
- b. an upright standard mounted on said base,
  - 1. said upright standard being detachably secured to said transverse member forming a portion of said base,
- c. a parallelogram mechanism pivotally mounted on said upright standard, the axes of which pivots are parallel,
  - 1. spaced apart parallel bars extending outwardly from said upright standard in the same direction, near the upper end thereof,
  - 2. an upright bar pivotally mounted on the opposite ends of said parallel bars, the pivotal axes of said bars being parallel with the pivotal axes on said upright standard,
  - 3. the axes of said upright bar being spaced apart a distance equal to the spacing of said first mentioned axes on said upright standard,
- d. an apertured member secured on said upright bar, which apertured member extends laterally outward away from said upright standard,
- e. a horn rack comprising a deformed tubular member to receive and support the horn thereon,
  - 1. a laterally extending, apertured member secured to said horn rack and extending outwardly to complementally engage said apertured member on said upright bar.

4,067,528
MOUNTING DEVICE FOR A FLAT STRUCTURAL PART PROJECTING FROM A VEHICLE BODY
Götz Mötting; Wilhelm Bauer, both of Sindelfingen, and Werner Kleisser, Ostelsheim, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany
Filed May 17, 1976, Ser. No. 686,688
Claims priority, application Germany, May 17, 1975, 2522121
Int. Cl.² B60R *27/00*
U.S. Cl. 248—204 69 Claims



1. A mounting support for a flat structural part projecting from an outer body panel of a motor vehicle body, which comprises a first joint means including bearing socket means and a joint member, said joint member being pivotal in the bearing socket means about several pivot axes intersecting at least approximately in a common point forming the pivot center, characterized in that a second joint means enabling only essentially a single degree of freedom of movement and forming a single pivotal connection is provided between the joint member of the first joint means and the structural part, the pivot axis of the second joint means being arranged approximately transversely to the driving direction and at least approximately parallel to the outer body panel.

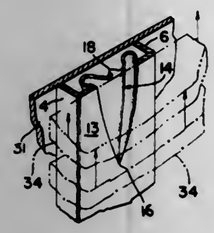
4,067,529
BASE MEMBER FOR ELECTRICAL COMPONENTS
Edgar Albert Philip Milcoy, South Milton, England, assignor to Arrow-Hart (Europe) Limited, Plymouth, England
Filed July 15, 1976, Ser. No. 705,574
Claims priority, application United Kingdom, July 17, 1975, 29999/75
Int. Cl.² A47F *5/00*
U.S. Cl. 248—221.4 4 Claims



1. A base member which is attachable to, or forms part of, an electrical component and which is securable to a support by fastening means engageable with a pair of spaced-apart projections on the support, the base member comprising a plate of synthetic plastic material and said fastening means comprising spaced-apart first and second hooking means moulded integrally with said plate and adapted to enter into hooking en-

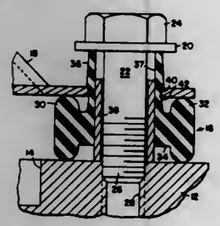
gagement with the spaced-apart projections on the support, said second hooking means comprising a hooking member flexibly joined to the plate via flexible connecting means moulded integrally with said plate so that said hooking member is capable of movement in a substantially linear direction towards and away from said first hooking means, said flexible connecting means comprising first and second pairs of resilient blades extending in substantially opposite directions from said hooking member transversely of said linear direction, the blades in each pair of blades being spaced apart in said linear direction.

4,067,530
SHELF SUPPORT STRIP
Sherman A. Overman, 17622 Orchard Lane, Salinas, Calif. 93901
Filed Sept. 16, 1976, Ser. No. 724,026
Int. Cl.² A47B 57/08
U.S. Cl. 248—235 6 Claims



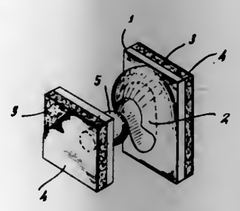
1. A shelf support strip comprising:
a. an elongated base member including a web formed from a synthetic resinous material; and
b. a series of longitudinally spaced shelf support members integral with said web and projecting therefrom to present a shelf support surface perpendicular to said web and a generally conical force transmitting portion formed as a vertical sectional portion of an inverted cone and connecting said perpendicular shelf support surface to said web, said shelf support surface constituting the base of the conical portion, said conical portion being integrtal with said web along the entire periphery thereof, said web being apertured at the occurrence of each said shelf support member, said shelf support member possessing the characteristic of flexibility and resilience whereby pressure exerted against said support member in a direction toward said web causes resilient collapse of the shelf support member through said associated aperture in the web.

4,067,531
VIBRATION ISOLATION AND SEALING GASKET
William John Sikula, Waterloo, Iowa, assignor to Derre & Company, Moline, Ill.
Filed July 22, 1976, Ser. No. 707,622
Int. Cl.² F16F 15/04
U.S. Cl. 248—358 R 11 Claims



1. A vibration isolation and sealing gasket comprising: a bead-shaped sealing portion having a pair of surfaces compressible to at least a predetermined minimum compression to form a pair of parallel sealing surfaces having a first spring rate therebetween, flange means connected adjacent to the sealing portion between a pair of parallel sealing surfaces and distal therefrom, a plurality of cylindrical protrusions extending from the flange means perpendicular to the pair of parallel sealing surfaces, each of said plurality of cylindrical protrusions having a through-hole provided therein concentric therewith and being axially deformable to form a plurality of compressed protrusions having a combined axial spring rate approximately equal to said first spring rate of the sealing portion between the pair of parallel sealing surfaces, and stabilizing means integral with the sealing portion for holding the sealing portion in a fixed position relative to the cylindrical protrusions.

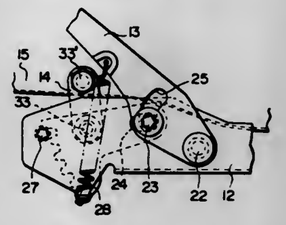
4,067,532
REMOVABLE TWO-PART FASTENING FOR TEMPORARILY HANGING AN OBJECT FROM A SURFACE
James F. Viteretto, 214 Sheephill Road, Riverside, Conn. 06878
Filed June 30, 1976, Ser. No. 701,305
Int. Cl.² A47G 29/00
U.S. Cl. 248—359 3 Claims



1. A removable two-part fastener for hanging an elongated element from an extended, substantially planar surface, comprising, in combination,
a. a male element including a base portion having a substantially planar surface rigidly connected to the male element,
b. a socket for female element mating with the male element but surrounding it only on some sides, having a portion of a side open, whereby the male element slides into the socket,
c. an elongated element and adhesive means for detachably fastening the base of the socket to the elongated element, the base portion of the male element having likewise adhesive fastening means, the base of the female element being attachable to the elongated element with the open side of the female element or socket pointing down, whereby when the elongated element to which the socket is fastened is hung, it can swing through a small arc sufficient for the lower end of the elongated element to contact the extended surface, thus preventing accidental jumping out of the male element, which is held firmly by the force of gravity.

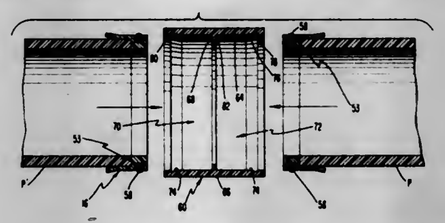
4,067,533
ADJUSTING SEAT SUPPORTING ASSEMBLIES FOR AUTOMOBILES
Kenichi Kazaoka, Nagoya, and Masayuki Hayashi, Toyohashi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Dec. 7, 1976, Ser. No. 748,213
Claims priority, application Japan, Dec. 11, 1975, 50-148236
Int. Cl.² F16M 11/24
U.S. Cl. 248—397 11 Claims

1. In an automobile seat assembly having a set swingably mounted on longitudinally extending brackets which are secured to an automobile floor in spaced relation with each other,
an adjustable seat-supporting assembly mounted on said brackets, comprising:
a shaft mounted at each end thereof on said brackets,
guide means for providing fore and aft movement of said shaft,
a latch member fixedly secured to said shaft adjacent one of said brackets, said member including notch means thereon, and said seat being operatively connected to said latch member for movement therewith,
detent means fixedly secured to said one of said brackets and positioned for selectable engagement by said notch means;



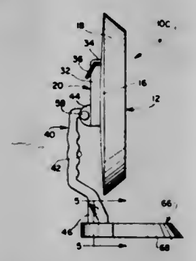
a manual lever mounted on said one of said brackets for pivotal movement between unactuated and actuated positions,
cam means on said lever cooperating with said guide means for moving said shaft with the latch member secured thereto; wherein the pivotal movement of said lever disengages and engages said notch means with said detent means; and
resilient means interconnecting said lever and said one bracket for urging said lever toward the unactuated position.

4,067,534
PIPE COUPLER ASSEMBLY
William J. Frey, Louisville, Ky., assignor to Celanese Corporation, New York, N.Y.
Filed Sept. 20, 1976, Ser. No. 724,899
Int. Cl.² F16L 47/00
U.S. Cl. 285—319 9 Claims



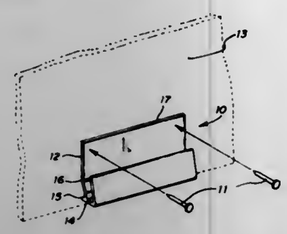
1. A coupling assembly for a pipe end, said assembly being of the type comprising a fitting securable to the pipe end and securable within the chamber of a coupler, the improvement wherein:
said coupler comprises:
a generally cylindrical internal surface portion;
an internal generally frustoconical surface portion extending outwardly of said cylindrical surface portion at an acute angle relative to the longitudinal axis of said coupler, said frustoconical surface portion forming a recess which terminates short of an outer end of said coupler, and
an abutment wall extending inwardly from the terminal end of said frustoconical surface portion to form the terminal end of said recess;
said fitting comprising:
a generally cylindrical socket portion for receiving the pipe end;
a pair of axially spaced flanges disposed forwardly of said socket portion and forming a radially outwardly open channel adapted to receive a resilient seal ring extending, when uncompressed, radially beyond the outer diameter of said socket portion for engagement with the generally cylindrical surface portion of said coupler;
the outer diameter of the rearwardmost one of said flanges being substantially the same as the outer diameter of said socket portion, with said channel extending radially inwardly beyond an inner diameter of said socket portion;
a rear surface of the rearwardmost one of said flanges forming a shoulder extending radially inwardly relative to the inner surface of said socket portion for limiting insertion of the fitting onto the pipe end; and
a plurality of circumferentially spaced tabs extending rearwardly and outwardly from said socket portion at an acute angle relative to the longitudinal axis of said fitting from its junction with said socket portion to an outer edge thereof corresponding substantially to the length of said recess of said coupler so that when said fitting is inserted into said coupler said tabs are initially flexed inwardly and then spring outwardly into said recess such that outer terminal edges of said tabs are disposed internally of said coupler and are engageable with said abutment wall of said coupler to prevent withdrawal of said fitting;
said socket portion, tabs, and flanges being of integral, one-piece construction formed of thermoplastic material.

4,067,535
MULTIPLE USE MIRROR CONSTRUCTION
Arnold Rose, Providence, R.I., assignor to Trina, Inc., Providence, R.I.
Filed Feb. 22, 1977, Ser. No. 770,985
Int. Cl.² A47F 7/14
U.S. Cl. 248—470 7 Claims



1. A multiple use mirror construction comprising frame, base and intermediate support members, said frame having a mirror mounted on the front surface thereof and a rear surface having mounting means including a first portion adapted to support said frame in a hanging position and a second portion adapted for the alternate support of said frame by said intermediate support member, said intermediate support member being of generally elongated configuration and having a central portion adapted for hand grasping, a first end adapted for receipt in said frame mounting means second portion, and a second end adapted for receipt in mounting means provided in said base, and said frame and base mounting means adapted to respectively receive said first and second ends of said intermediate support member in friction locking relationship, said mirror alternatively usable in a wall mounted position when said frame is independently suspended by said mounting means first portion, in a hand held position when said frame is connected to said first end of said intermediate support member, and in a table supported position when said second end of said intermediate member is connected to said base.

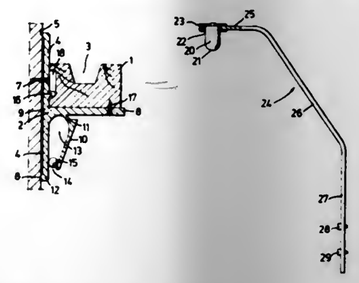
4,067,536
MOUNTING BRACKET FOR RECORD ALBUM COVERS
Charles R. McBeth, 200 Thompson, Richardson, Tex. 75080
Filed Aug. 11, 1976, Ser. No. 713,350
Int. Cl.² F16M 13/00
U.S. Cl. 248—475 R 7 Claims



1. A mounting bracket for displaying objects having a predetermined thickness on vertical surfaces comprising:
a rear member having a substantially planar upper portion adapted for engagement with the vertical surface;
the rear member having a lower portion extending angularly downwardly and outwardly to a lower end positioned substantially outwardly from the upper portion of the rear member;
a bottom member extending from the lower end of the rear member substantially perpendicularly to the upper portion of the rear member;
said bottom member having an inner end coincident with the lower end of the rear member and a substantially outwardly displaced outer end;
a front member extending angularly upwardly and inwardly from the outer end of the bottom member to an upper end normally positioned with the clearance between the vertical projections of the rearward extremity of the front member upper end and the forward extremity of the rear member lower end less than the predetermined thickness of the object and with the clearance between the rearward extremity of the front member upper end and the upper front surface of the rear member being greater than the thickness of the object; and
said bottom member for supporting an object between the rear member and the front member so that the flexure of the front member applies a moment to the object tending to pivot the upper end of the object toward the supporting wall.

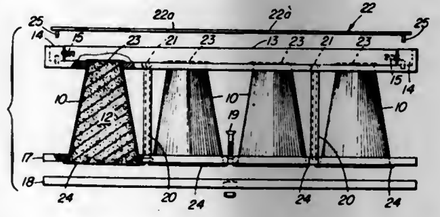
4,067,537
ARRANGEMENTS FOR MOVABLY SUPPORTING DISPLAY ELEMENTS
Lennart Erik Pejrud, Lennartsas, Farentuna, Sweden
Filed Apr. 28, 1976, Ser. No. 681,229
Claims priority, application Sweden, Apr. 28, 1975, 7504918
Int. Cl.² A47G 1/16
U.S. Cl. 248—476 8 Claims

1. An arrangement for slidably and pivotally supporting a display element and comprising:
a strip including an outwardly open groove along one side thereof, the groove including a wedge-shaped cross-section;
means for securing the strip to a supporting surface with the groove substantially horizontal and upwrdly open; and
at least one stirrup-like structure including a peg arranged to abut the groove so as to support the stirrup-like structure on the strip, the peg including an end portion of substantially part-spherical shape of such dimensions that the part-spherical surface abuts both the bottom wall of the groove and its side walls when subjected to the load of the



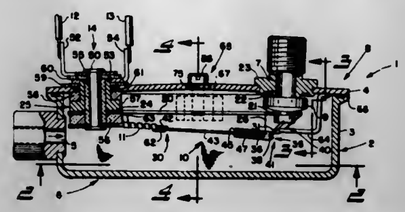
stirrup-like structure and a display element carried thereby.

4,067,538
MOLD FOR MAKING FRUSTO-CONICAL PLUGS
Walter G. Doherty, Rte. 52, Stormville, N.Y. 12582
Filed Sept. 23, 1976, Ser. No. 725,976
Int. Cl.² B28B 7/26
U.S. Cl. 249—119 2 Claims



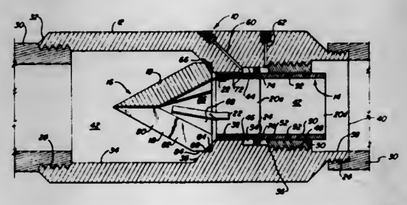
1. In a mold having at least one hollow truncated conical member having an upper open end with an outer rim and a bottom closed end adapted to be used to manufacture at least one plug of bituminous material for road repair, the improvement which comprises an upper, open end of each conical member, said upper end having a smaller cross-sectional area than the bottom end, said bottom end being closed with a smooth, readily detachable base plate and which is adapted to form a plug having a smooth upper end of larger cross-sectional area than the bottom end of said plug, said mold having a top plate with at least one opening of the same shape and area as the outer rim of the upper end of the truncated conical member, the said upper end of said conical member being secured to the said top plate adjacent the said rim so that the area of the upper open end of said truncated conical member is not diminished by said top plate, and the top plate is provided with a lip on the periphery of its upper surface so that when the hollow truncated conical member is slightly overfilled with molten bituminous material, said material will be contained on said top plate's upper surface, and said lip has a portion detachable therefrom to facilitate removal of excess bituminous material from the top plate by mechanical means, said mold being provided with a bottom plate spaced from, and connected to, said top plate by spacing and connecting means, having at least one openings conforming in position, area and shape with the bottom larger end of the hollow truncated conical member, said bottom plate being detachably secured to the smooth base plate.

4,067,539
GAS VALVE
Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio
Continuation-in-part of Ser. No. 653,477, Jan. 29, 1976. This application Apr. 5, 1976, Ser. No. 673,925
Int. Cl.² F16K 31/02; F03G 7/06
U.S. Cl. 251—11 25 Claims



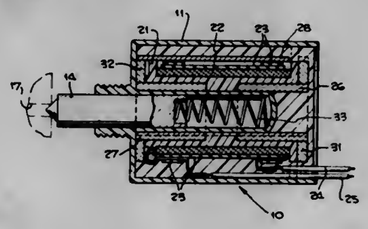
1. A fluid valve, comprising a fluid-tight enclosure having an inlet and an outlet; a valve element supported for movement to respective positions to open and to close said outlet; actuator means for moving said valve element from one of said positions to the other of said positions, said actuator means including a thermally responsive means for producing a mechanical displacement output, and over-center mechanical energy storage means for moving said valve element from one to the other of said positions in response to such mechanical displacement output within a predetermined normal range; and means for closing said outlet in response to such mechanical displacement output of said actuator means in a direction normally to effect opening of said outlet exceeding such predetermined normal range.

4,067,540
SEGMENTED PLUG VALVE
Edward C. Slade, 6791 S. Race, Littleton, Colo. 80122
Filed Apr. 7, 1976, Ser. No. 674,569
Int. Cl.² F16K 31/163
U.S. Cl. 251—63.4 14 Claims



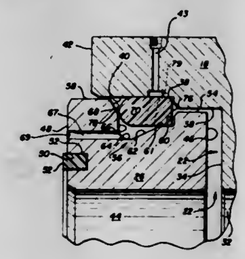
1. The segmented plug type valve which comprises: a body having a flow passage therethrough one end of which opens upstream while the other end opens downstream, an upstream-facing continuous annular right frustoconical seat positioned intermediate the ends of said passage, and a cylindrical section within said passage located downstream of said seat in coaxial relation thereto; a tubular slide mounted within the cylindrical section of said flow passage for axial movement; a segmented plug located within the flow passage upstream of the seat, said plug including two or more jaw-like segments having mating surfaces cooperating with one another in closed position to define a right conical surface facing upstream in coaxial relation to said seat, a pocket formed in the downstream end of the plug shaped to define a continuation of said flow passage when the segments of said plug are in open position, and downstream-facing right frustoconical surfaces on the downstream end of each plug segment operative to engage said seat upon downstream axial movement of the plug thereagainst and cam said plug segments into closed cone-forming relation; means comprising leaf springs independently connecting each plug segment to the slide for conjoint movement in an axial direction, said springs being operative to normally bias the segments associated therewith into open position upon axial movement of the plug upstream away from the seat; first gasket means interposed between the seat and frustoconical surfaces of the plug segments effective to produce a continuous annular fluid tight seal with said plug segments in closed cone-forming relation; second gasket means interposed between the mating faces of said plug segments effective in the closed cone-forming position of the latter to form a fluid-tight seal therebetween; and, externally accessible means connected to the slide operative upon actuation to shift the latter axially both upstream and downstream.

4,067,541
WATER VALVE OPERATING SOLENOID
Edwin J. Hunter, Rancho Sante Fe, Calif., assignor to The Toro Company, Minneapolis, Minn.
Filed Mar. 26, 1976, Ser. No. 670,983
Int. Cl.² F16K 31/06; H01F 7/08
U.S. Cl. 251—129 11 Claims



7. A solenoid having an armature and a coil bobbin having a central axial bore and an electrical conductor wound thereabout, comprising:
housing means formed of a non-magnetic material providing a cavity receiving said coil bobbin and including an inner tube portion of such non-magnetic material extending into said cavity and into said bobbin bore, said tube having an open end opening outwardly of said housing to receive said armature therein; and
means for providing a magnetic flux path within said non-magnetic housing and about said bobbin for concentrating magnetic flux of said electrical conductor to displace said armature within said non-magnetic material tube when electrical current is passed through said conductor.

4,067,542
VALVE SEAT CONSTRUCTION HAVING A RESILIENT MEMBER AROUND THE PERIMETER OF THE SEAT MEMBER
Bertram L. Morrison, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Jan. 10, 1977, Ser. No. 758,115
Int. Cl.² F16K 3/00
U.S. Cl. 251—328 9 Claims



1. A gate valve structure having a valve body defining a

valve chamber with a bore therethrough, a gate member mounted in said valve chamber for movement between open and closed positions relative to said bore, a pair of opposed annular recesses in said body facing the valve chamber and surrounding the bore, and upstream and downstream seat ring members loosely mounted in said pair of recesses for floating back and forth movement relative to the body;

each of said body recesses being defined by stepped inner and outer peripheral wall surfaces extending in a direction generally parallel to the longitudinal axis of the bore and said outer peripheral wall surface being of a larger diameter than said inner peripheral wall surface, an annular abutment joining said inner and outer peripheral wall surfaces and extending in a direction generally transverse to the wall surfaces;

each of said seat ring members having stepped inner and outer peripheral surfaces complementary and in generally parallel facing relation to the adjacent peripheral wall surfaces of the associated body recesses, an annular groove at the juncture of the inner and outer peripheral surfaces defined by opposed sides adjacent the inner and outer peripheral surfaces extending in a direction generally transverse to said peripheral surfaces, one side of the groove being positioned close to the annular abutment forming the body recess and the other side of the groove being spaced longitudinally from and facing said annular abutment, said groove and the adjacent body recess adjacent said abutment forming a pocket between the valve body and the seat ring member; and

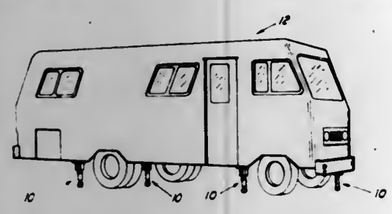
an annular resilient member mounted in said pocket between the body and the seat ring member adjacent said abutment and said other groove side, said resilient member being deformed between said abutment and said other groove side upon movement of said seat ring member relative to said body.

4,067,543

ELECTRICALLY OPERATED RETRACTABLE JACK

Joseph P. Orth, and Gerald F. Schmidt, both of P.O. Box 11344, Wichita, Kans. 67211

Filed May 5, 1977, Ser. No. 794,053
Int. Cl.² B60S *9/02*
U.S. Cl. 254—86 R **15 Claims**



1. A retractable jack for mounting on a vehicle and for supporting the vehicle on a ground plane, the jack comprising:

a mounting bracket attached to the vehicle;

an electric motor mounted in a housing, said housing pivotally attached to said bracket;

a clutch mounted in said housing, said clutch driven by said motor;

a jack screw threaded in a jack screw nut, one end of said jack screw attached to said clutch and driven thereby;

an inner jack tube slidably mounted inside an outer jack tube, said jack screw nut attached to said inner jack tube for telescoping said inner jack in said outer jack tube when said jack screw is rotated;

a jack pad attached to the lower end of said inner jack tube, said pad contacting the ground plane when said inner jack tube is extended;

an annular retraction sleeve disposed around said inner and outer jack tubes; and

a pair of elongated retraction links pivotally attached to said retraction sleeve and pivotally attached to said bracket;

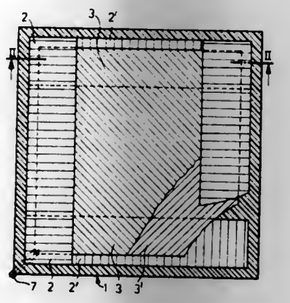
said jack pad contacting the lower portion of said retraction sleeve when said inner jack is retracted and said retraction sleeve and said retraction links pivoting the jack into a horizontal position on said bracket.

4,067,544

PNEUMATIC FLAT PADS

Manfred Vetter, Burg, Zulpich-Langendorf, Germany (D5352), and Hans Kempken, Frankfurter Str. 110, Troisdorf, Germany (D5210)

Filed Nov. 30, 1976, Ser. No. 746,126
Claims priority, application Germany, Dec. 1, 1975, 7538274[U]
Int. Cl.² B66F *3/24*
U.S. Cl. 254—93 HP **25 Claims**



1. A pneumatic flat pad with two opposed covers of flexible material spaced apart from each other and joined at their margins by a marginal joint so that the two covers and lateral marginal joint cooperate to form between them a hermetically sealed hollow space, a plurality of cord inserts embedded within said covers, each of said covers being reinforced by at least one embedded cord insert, an attachment connecting said hollow space to a source of compressed air, and at least one of the at least one cord inserts of one of the covers being embedded within and extending through the lateral marginal joint of the pad to the other cover in which it is also embedded and within which it overlaps a portion but less than all of the at least one cord insert of the other cover.

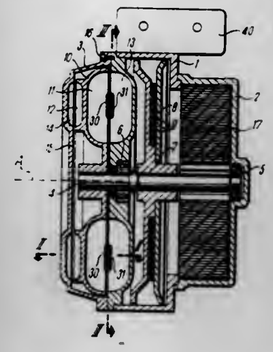
4,067,545

DEVICE FOR THE BRAKING OF TOWING CABLES IN TOW-TYPE SKI LIFTS

Hans Singer, Obere Dorfstro. 260 8101 Unterammergau, Germany, assignor to Joseph Reiter and Hans Singer, both of Schiegldorf, Germany

Filed May 7, 1975, Ser. No. 575,238
Claims priority, application Germany, May 8, 1974, 2422112
Int. Cl.² A62B *1/12*
U.S. Cl. 254—160 **5 Claims**

1. A device for the braking of a towing cable in a tow-type ski lift, comprising a rotatable drum for carrying the towing cable, means associated with said drum for rotatably biasing said drum in one direction, whereby the tow cable is withdrawable from said drum against the force of said biasing means and is retractable about said drum by virtue of said biasing force, and means for hydraulically braking the withdrawal and retraction of the tow cable, said hydraulic braking means comprising a braking fluid impeller means rotatable with said drum and including a first set of impeller blade members, and a first relatively stationary stator disc having a first set of stator blade members cooperatively arranged adjacent the first set of impeller blade members, said first set of impeller and stator blade members all being equally inclined a predetermined angle with respect to the axis of rotation of the impeller means, the predetermined angle being such that braking force is generated when the drum is rotated in the cable withdrawal direction and such braking force is not substantially generated when the drum is rotated in the cable retraction direction; a second set of impeller blade members on said impeller means; and a second set of relatively stationary stator blade members cooperatively arranged adjacent the second set of impeller blade members, said second set of impeller and stator blade members being also equally inclined a predetermined angle with respect to the axis of rotation of the impeller means, the second set of impeller and stator blade members having a smaller radial dimension than the first set of impeller and stator



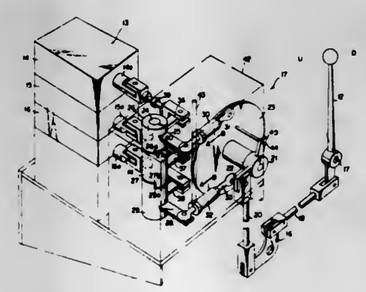
blade members, the latter of said predetermined angles being such that braking force is generated when the drum is rotated in the cable retraction direction, and such braking force is not substantially generated in the cable withdrawal direction, whereby the braking action generated by said first set of impeller and stator blade members is greater than that generated by the second of said impeller and stator blade members when both impellers are rotated at the same speed, and whereby substantial braking forces are not generated by each respective impeller and stator blade set when braking forces are generated by the other impeller and stator blade set.

4,067,546

OPERATING DEVICE FOR WINCH CONTROL VALVES

Kazuo Matsuda, Kyoto; Mitsuyoshi Wada, Yamatotakada, and Kazumori Nishida, Hirakata, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 22, 1975, Ser. No. 624,839
Claims priority, application Japan, Oct. 23, 1974, 49-127342[U]
Int. Cl.² B66D *1/00*
U.S. Cl. 254—187.4 **4 Claims**



1. An operating device for winch control valves, comprising an operating lever,

a rotator as is connected with the said operating lever, and is put to rotation by operating the said operating lever,

a primary lever means having a cylindrical boss section provided therefor,

a secondary lever means having a boss section mounted in place on the same shaft as said boss section of the primary lever means, an intermediate boss section positioned between the said boss section of the primary lever means and said boss section of the secondary lever means, mounted in place on the same shaft as said boss section of the primary lever means and said boss section of the secondary lever means,

a plurality of coupling means coupling said rotator with said primary lever means and said secondary lever means,

a primary valve means connected with said boss section the primary lever means,

a secondary valve means connected with said intermediate boss section,

a tertiary valve means connected with said boss section of the secondary lever means,

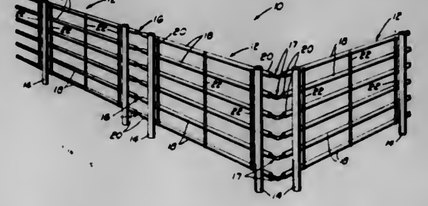
a primary engagement means for interlocking said boss section of the primary lever means and said intermediate boss section for rotation only at the time of their rotation in a first direction, and, a secondary engagement means for interlocking said boss section of the secondary lever means and said intermediate boss section for rotation only at the time of their rotation in said first direction.

4,067,547

FENCE FOR FEED LOTS OR THE LIKE

Emil Peters, P.O. Box 276, Linn, Kans. 66953

Filed July 19, 1976, Ser. No. 706,883
Int. Cl.² A01G *17/06*
U.S. Cl. 256—23 **7 Claims**



1. A portable fence for feed lots or the like, the fence comprising:

prefabricated fence panels, said panels including a plurality of parallel horizontal tubing, said tubing held in place by a plurality of parallel vertical bracing attached thereto;

vertical posts mounted in the ground surface and having means supporting said panels thereon, the ends of said parallel horizontal tubing extending across and axially beyond said posts; and

tubing connectors received in the ends of said horizontal tubing for connecting the ends of said adjacent fence panels to form a fence enclosure.

4,067,548

RAILING

John J. Murphy, c/o McKeon, Inc. 1523 N. 27th St., Philadelphia, Pa. 19121

Filed July 12, 1976, Ser. No. 704,477
Int. Cl.² E04H *17/16*
U.S. Cl. 256—24 **6 Claims**

1. A railing comprising

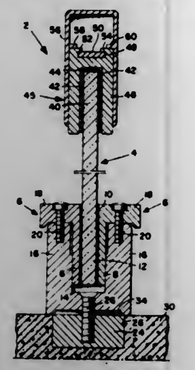
a plurality of aligned glass panels,

a pair of support members secured to opposite sides of the bottom of each glass panel with each member having a support cap and a depending plate secured to the glass panel,

a railing base having a groove removably receiving the bottom of each glass panel and the plates of said members

with the support caps of said members resting on top of the railing base, and

a handrail mounted on top of the glass panels,



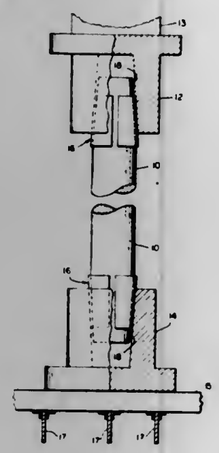
said handrail comprising a plurality of inverted channel members each receiving the top of at least one glass panel and locking means including a bar to lock adjacent channel members together.

4,067,549

CERAMIC RAPPER ROD ASSEMBLY

John Francis Konyak, Flemington; Edrol Ford Troxtel, Frenchtown, both of N.J.; George Mundy Schuman, Jr., Kintnersville, Pa.; Andrew Hugh Maguire, Flemington, and Elwin Arthur Guthrie, Lebanon, both of N.J., assignors to Plessey Incorporated, Melville, N.Y.

Filed Sept. 14, 1976, Ser. No. 723,138
Int. Cl.² B03C *3/76*
U.S. Cl. 74—579 R **6 Claims**



1. An assembly for transmitting vibratory motion from a source to a structure comprising:

a pair of coaxial mounting sleeves mounted on said respective source and structure and including tapered bores;

a ceramic rod having tapered end portions matching the taper of said bores and mounted therein, said rod being of insufficient length to bottom in either bore; and

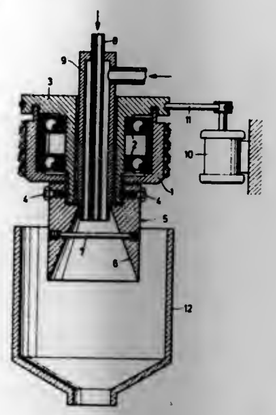
a pair of thin, malleable metal shims substantially but not entirely surrounding each said tapered end portion, between said end portion and said bore.

4,067,550

MIXING DEVICE

Christian Bosshard, Aesch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,947
Claims priority, application Switzerland, Aug. 29, 1975, 11248/75; June 30, 1976, 8393/76
Int. Cl.² B01F *9/00*
U.S. Cl. 366—228 **7 Claims**



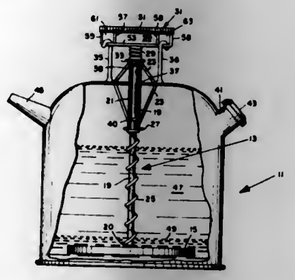
1. A mixing device comprising a hollow rotor having an axis of rotation and an inner wall defining a mixing surface, at least a portion of the wall surface being inclined relative to the rotational axis of the rotor, means adjacent that portion of the mixing surface closest to the axis of rotation to combine two or more ingredients and centrifuge the combined ingredients on to the mixing surface by rotation of said combining means.

4,067,551

GAS AND OIL MIXER

Edwin Reilly, 416 Lotz Ave., Altoona, Pa. 16602

Filed Sept. 2, 1976, Ser. No. 720,086
Int. Cl.² B01F *13/00, 5/12*
U.S. Cl. 366—332 **7 Claims**



1. A mixer for mixing oil and gasoline in a can comprising:

a mixer disc having a plurality of holes therein,

a plunger shaft having its bottom end rigidly connected to the mixer disc,

plunger guide means adapted to be mounted in a mixer opening in the can,

a lower spring mounted between the disc and a lower spring stop on the guide means and biasing the plunger shaft downwardly,

a handle mounted on the top of the plunger shaft,

and an upper spring mounted between the handle and an upper spring stop on the guide means for biasing the plunger shaft upwardly,

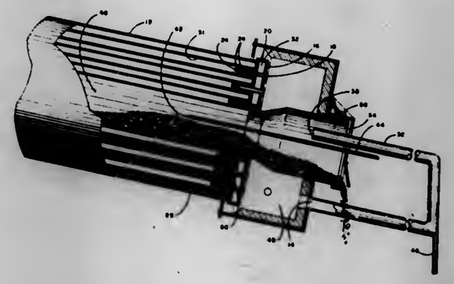
whereby the handle is pumped up and down, assisted by the springs, to mix oil and gasoline for use in a snowmobile and the like.

4,067,552

ASPHALT-AGGREGATE RECYCLE

Robert L. Mendenhall, 1770 Industrial Road, Las Vegas, Nev. 89102

Division of Ser. No. 488,518, July 15, 1974, Pat. No. 4,000,000, which is a continuation-in-part of Ser. No. 360,464, June 15, 1973, Pat. No. 3,845,941, and a continuation-in-part of Ser. No. 286,618, Sept. 5, 1972, abandoned. This application Aug. 30, 1976, Ser. No. 697,321
Int. Cl.² B28C *1/22*
U.S. Cl. 366—24 **3 Claims**



1. In an apparatus for producing asphalt-aggregate compositions comprising a heated cylindrical drum having a cavity therein for mixing said compositions, means for introducing asphalt and aggregate at an input end of the drum, means for removing composition at the output end of the drum and heating chamber adjacent to the output end for supplying hot gases for heating said drum cavity, the improvement comprising means for venting a gaseous mixture of hydrocarbon gases and moisture at the output end of said cavity, condensing and removing the moisture, and directing the hydrocarbon gases to the heating chamber.

3. In an apparatus for producing asphalt-aggregate compositions comprising an elongated rotatable cylindrical drum having a wall at each end thereof, a plurality of long spaced hollow tubes extending the length of said cavity interior between the walls, the interior of the tubes communicating exteriorly of said walls, means for introducing asphalt and aggregate at an input end of the drum and means for removing composition at an opposite output end, a heating chamber adjacent the output end of the drum, and burner means for supplying heat within the heating chamber, the improvement comrising:

a plurality of relatively short hollow open end pipes each one extending within a different one of said tubes, one pipe end communicating interiorly of said long tube and the other pipe end communicating with said heating chamber, and a plate spaced apart from said wall at the output end of said drum and exposed along said heating chamber, said pipes extending through said plate and communicating with said heating chamber.

4,067,553

CONTINUOUS KNEADER

Kishihiro Yamaoka, No. 1-33-104, Nakamiya-Kita, Hirakata, Osaka, Japan

Filed Nov. 17, 1976, Ser. No. 742,728
Claims priority, application Japan, Nov. 25, 1975, 50-141498
Int. Cl.² B29B *1/06*
U.S. Cl. 366—82 **8 Claims**

1. A continuous kneader for plasticizable materials comprising in combination:

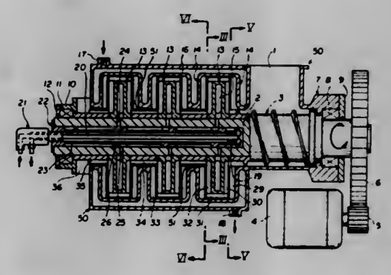
a housing having a feed inlet adjacent one end thereof for introduction of the material to be processed and an outlet adjacent the other end thereof for the discharge of processed material;

a drive shaft rotably mounted within said housing having screw means thereon for axially advancing the material towards the discharge end of said housing;

at least one rotatable disc fixedly carried by said drive shaft for rotation therewith;

a series of generally radially-extending alternating ridges and furroughs on at least one face of said rotatable disc;

at least one stationary disc depending from said housing in concentric relation to said drive shaft and in face-to-face spaced relation with one of said rotatable discs, said stationary disc terminating peripherally at the free end thereof in spaced relation to said drive shaft, the face of said stationary disc disposed adjacent the ridged and furroughed one face of the rotatable disc being provided with a series of generally radially-extending alternating ridges and furroughs, the boundaries between the ridges and furroughs on said rotatable disc being angularly displaced relative to the boundaries between the ridges and furroughs of said stationary disc;



said screw means on said drive shaft including a screw section adjacent the peripheral free end of said stationary disc;

and at least one generally axially extending groove formed in the peripheral free end of each said stationary disc;

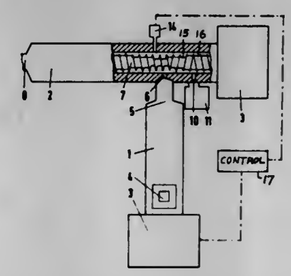
whereby material fed to the inlet of the kneader is advanced sequentially between corresponding faces of rotatable and stationary discs and is subjected alternately to compressive and shearing forces as it is urged circumferentially and radially therebetween.

4,067,554

METHOD AND APPARATUS FOR EXTRUDING PLASTIC AND SIMILAR MATERIAL

Klaus Koch, Gleidingen, Germany, assignor to Paul Troester Maschinenfabrik, Germany

Filed Sept. 29, 1976, Ser. No. 727,989
Claims priority, application Germany, Sept. 29, 1975, 2543329
Int. Cl.² A21C *1/06*
U.S. Cl. 366—84 **5 Claims**



1. Apparatus for extruding plastic material, rubber and other

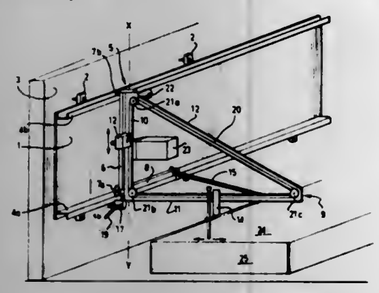
thermoplasts and elastomers, comprising first and second screw extruders each having a casing with a cylindrical bore and with a feed inlet and a discharge, an extruder screw rotatable in said cylindrical bore of said casing and having a screw channel, and drive means at the opposite end of said casing from said discharge for rotating said extruder screw, the discharge of said first extruder being connected to the feed inlet of said second extruder whereby material extruded by said first extruder is fed into said second extruder, means for applying a vacuum to the interior of the casing of said second extruder in a degassing zone in the vicinity of said inlet thereof to degas material received in said second extruder from said first extruder, means for sensing pressure pulses in the bore of said second extruder at a point slightly downstream from said inlet thereof but in the zone of application of said vacuum to determine the extent to which the channel of the extruder screw of said second extruder is filled with said material in said degassing zone, and means responsive to said sensing means for controlling the relative speeds of rotation of the screws of said first and second extruders so that the screw channel of the screw of said second extruder is the vicinity of the inlet thereof is not completely filled with said material, thereby leaving space in said channel through which said vacuum is applied to the material to effect a degassing thereof.

4,067,555

HEAT-SHAPING APPARATUS

Lucien Vignardet, Rosny-sous-Bois, and Francis Boulet, Parthenay, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jan. 21, 1976, Ser. No. 650,881
Claims priority, application France, Jan. 22, 1975, 75.01882
Int. Cl.² B23K *7/10*
U.S. Cl. 266—58 **4 Claims**



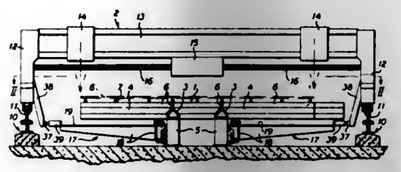
1. Apparatus for heat-shaping by copying the outline of a pattern onto material which is to be worked on, comprising a follower member movable in two mutually perpendicular directions for following said pattern, at least one heat-shaping tool movable in two mutually perpendicular directions, means for driving said follower member and said tool in their respective directions of movement, control means for receiving information from said follower member to actuate said driving means in accordance with said information, a copying panel disposed in one plane to receive said pattern, said panel being provided with two parallel rails, and support means movable along said rails, said follower member and said tool being mounted on said support means for movement in vertical and horizontal direction, respectively, said support means being foldable back against said copying panel.

4,067,556

DEVICE FOR CONTOUR CUTTING OF METAL PLATES

Ralph Georg Torbjorn Lagerwall, and Stanislaw Sarnik, both of Malmo, Sweden, assignors to Kockums Mekaniska Verkstads AB, Malmo, Sweden

Filed June 13, 1975, Ser. No. 586,779
Int. Cl.² B23K *37/00, 37/04*
U.S. Cl. 266—65 **14 Claims**



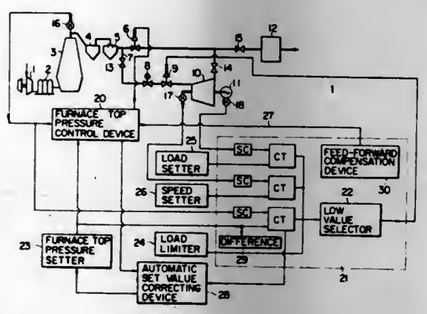
1. A device for contour cutting of metal plates comprising a cutting table for supporting horizontally plates to be contour cut, a contour cutting unit movable on a track along the cutting table and having cutting nozzles for contour cutting of the plates; a scrap-receiving carriage for receiving the cut scrap, disposed beneath the cutting table and providing a scrap-receiving surface having a surface area in a plane parallel to the supporting surface of the cutting table corresponding approximately and only to the area in the same plane of the fall zone of cut scrap below the contour cutting unit, said scrap-receiving carriage being movable on a track along the path of and directly beneath the contour cutting unit along the cutting table and remaining directly beneath the contour cutting unit substantially in parallel to the path and moving in the same direction thereof; a scrap-collecting container; drive means for driving said scrap-receiving carriage on the track to and from dumping position at said scrap-collecting container; and means for controlling said drive means to adjust the movement of the scrap-receiving carriage along the path of and in the moving direction of the contour cutting unit according to the movement of the contour cutting unit in order to maintain the scrap-receiving surface area of the carriage within the fall zone of the cut scrap during the entire contour cutting operation, so that cut scrap falls into the scrap-receiving carriage.

4,067,557

SYSTEM FOR CHANGING OVER OF BLAST FURNACE TOP PRESSURE CONTROL

Masanobu Inubushi; Hajime Yamamoto, and Toshiharu Ozaki, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed July 2, 1976, Ser. No. 702,128
Int. Cl.² C21B *7/00*
U.S. Cl. 266—89 **6 Claims**



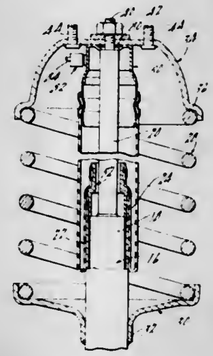
1. In a system for changing over control of the furnace top pressure in a blast furnace system, including a septum valve installed in a flowpath of exhaust gas from the furnace top and having a capability of controlling said top pressure, and a blast furnace gas energy recovery turbine installed in a flowpath bypassing the septum valve with a speed regulating valve installed therein upstream of said turbine, said turbine having a capability of controlling said top pressure by front pressure control, the improvement comprising furnace top pressure setter means which sets higher and lower top pressure preset values having a slight difference therebetween and wherein the higher preset value serves for control by the septum valve and the lower preset pressure valve serves for control by the turbine, and load setter means for varying the load on the turbine, whereby the predominance in controlling the furnace top pressure between said two control capabilities is automatically changed over from one capability to the other in accordance with the operation of varying the turbine load by the load setter means while the two control capabilities are maintained in operative state.

4,067,558

VEHICLE SUSPENSION STRUT

Johan H. Keijzer, Hasselt; Louis J. Jossa, Sint-Truiden, and Henri C. J. Vanhove, Gelmen, all of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium

Continuation of Ser. No. 501,978, Aug. 30, 1974. This application Dec. 22, 1975, Ser. No. 642,789
Int. Cl.² F16F *5/00*
U.S. Cl. 267—34 **40 Claims**



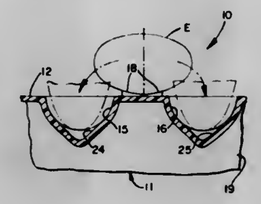
1. In combination in a suspension system for vehicles having sprung and unsprung portions comprising,
at least one suspension strut including a telescopic shock absorbing device having a cylinder with a reciprocal piston rod projecting from one end thereof,
means for securing one end of said cylinder to one of the vehicle portions and for securing one end of said piston rod to the other of said vehicle portions,
a conversion assembly for selectively converting said strut such that it is adjustable in response to pressurized fluid,
said assembly comprising an elongated generally tubular flexible diaphragm member in part defining a variable volume gas chamber and including first and second attachment means,
said first attachment means comprising a portion adapted to be detachably connected adjacent said one end of said cylinder of said shock absorbing device and said second attachment means being of a generally cup-shaped configuration and adapted to at least partially nestingly receive said first attachment means, said second attachment means comprising a portion adapted to be detachably connected adjacent said piston rod, whereby said diaphragm member may be removed and replaced without having to subject the strut to any significant disassembly or reconstruction operations, and
means for selectively communicating pressurized gas to and from said chamber to effect expansion and contraction thereof.

4,067,559

UTENSIL FOR HOLDING BOILED EGGS

John J. McGann, Jr., P.O. Box 991, New Smyrna Beach, Fla. 32069

Filed Dec. 21, 1976, Ser. No. 752,923
Int. Cl.² B25B *11/00*
U.S. Cl. 269—13 **6 Claims**



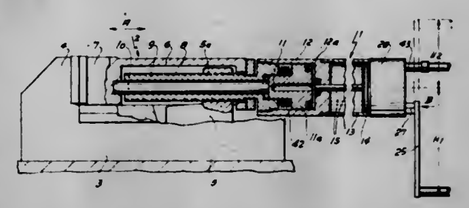
1. A utensil for holding boiled eggs while they are cut and eaten, comprises a base having an upper surface with at least one pair of adjacent depressions therein each having a size and shape to receive and hold therein one end half of an egg, egg supporting means on the upper surface between the depressions of the pair for supporting an egg while it is cut and wherein the portions of the cut egg will fall into the respective depressions, and a generally bowl-shaped depression in the upper surface adjacent the egg receiving depressions for catching any yolk which is spilled, whereby the yolk may be eaten, and whereby the egg yolk and egg white may be mixed with salt, pepper, butter or the like prior to eating.

4,067,560

CHUCK, IN PARTICULAR MACHINE VISE

Franz Arnold, Spatzenweg 20, 8960 Kempten, Germany, and Angel Lanas, C/Bidebarri, 19-3°, Algorta (Vizcaya), Spain

Filed May 25, 1977, Ser. No. 800,233
Claims priority, application Germany, June 14, 1976, 7618800[U]
Int. Cl.² B23Q *3/08*
U.S. Cl. 269—32 **10 Claims**



1. In a chuck, in particular a machine vise comprising a hollow spindle which is threadedly engaged with a stationary vise part, a pressure rod which is axially movably supported in said hollow spindle and which exerts the clamping pressure, a hydraulic or mechanical power amplifier which is arranged in a cylindrical housing which is connected to the hollow spindle, a secondary member of said power amplifier acting onto the pressure rod and the primary member of said power amplifier being under the power of an air-operated piston, which itself is arranged in an air cylinder which is connected to the power amplifier housing and is fixedly connected to same and the air cylinder has at its rear end not facing the hollow spindle a plate which seals off the cylinder chamber, at the rear face of which plate there sealingly abuts a rotary slide valve which can be rotated with respect to the plate between two end positions and which is coaxial to said plate, in the first end position of

which rotary slide valve an axial air-supply opening, which is constantly in connection with a compressed-air source, is in alignment with a first axial opening of the plate, which leads into the cylinder chamber, and in the second end position of which rotary slide valve an axial vent is connected to a corresponding axial opening of the plate and including engaging means for a handcrank are provided on the rotary slide valve and between the rotary slide valve and the plate there is provided a spring-loaded torque coupling which holds the rotary slide valve in the ventilating position, the improvement comprising wherein the rotary slide valve is arranged in a sleeve which concentrically surrounds said rotary slide valve, is connected to the air cylinder at its one end through a fine thread connection and is secured against rotation after axial adjustment, which sleeve has at its other end a radially inwardly directed flange or the like, wherein between said flange and the rotary slide valve there is provided an initially tensioned axial ball bearing.

4,067,561

ARRANGEMENT FOR PICKLING BUNDLED MATERIAL

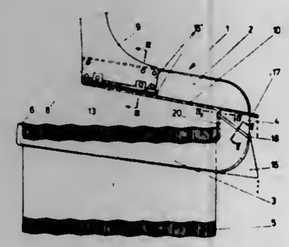
Ernst Fischlmayr, Kronstorf, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Dec. 16, 1976, Ser. No. 751,147

Claims priority, application Austria, Dec. 22, 1975, 9730/75; Aug. 17, 1976, 6100/76

Int. Cl.² B66D *3/00*

U.S. Cl. 269—46 **14 Claims**



1. In an arrangement for pickling bundled material with a U-shaped pickling hook having a first leg and a second leg and a suspension means for supporting the hook, the first leg being secured to the suspension means and the second leg being designed as a support for the bundled material, the improvement comprising:

at least said first leg being designed to be downwardly inclined so as to guide off liquid,

connection means for connecting the first leg with the suspension means, and

covering means provided on said connection means as well as on said first leg and designed to protrude beyond the cross section thereof to prevent liquid from dripping onto the bundled material by causing it to run-off the hook.

4,067,562

ENCAPSULATION AND IMPREGNATION OF WINDINGS FOR MOTOR STATORS AND THE LIKE

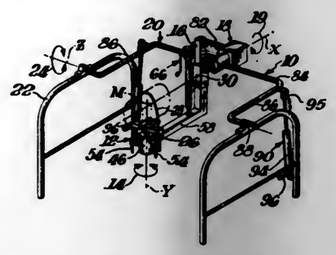
Jack E. Weber, San Diego, Calif., assignor to Motek, Inc., Newark, Del.

Filed May 12, 1975, Ser. No. 576,307

Int. Cl.² B23Q *1/04*

U.S. Cl. 269—71 **22 Claims**

1. Apparatus for treating machine components such as for encapsulating windings of motor stators and the like comprising a frame, mounting means connected to said frame for holding the machine component exposed for the application of an encapsulating material thereto, inverting means connected to said mounting means for selectively moving said mounting means and the machine component to be held thereby about a first axis to one of two positions 180° apart, tilting means for selectively moving said mounting means about a second generally horizontal axis to a predetermined angular position for optimizing the application of the encapsulating material, rotation means for continuously rotating said mounting means about a third axis while the encapsulating material is being applied and hardens, said first axis and said third axis being disposed in the same plane and generally perpendicular to each other, and said second axis being in a plane perpendicular to said plane of said first axis and said second axis.



4,067,563

TAPE SPLICER

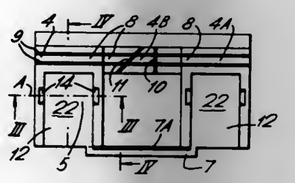
William Retzler, Norwich, England, assignor to Bib Hi-Fi Accessories Limited, Hemel Hempstead, England

Filed Oct. 21, 1976, Ser. No. 734,523

Claims priority, application United Kingdom, Mar. 18, 1976, 10838/76

Int. Cl.² B25B *1/24*

U.S. Cl. 269—254 R **11 Claims**



1. A tape splicer comprising

a base, comprising a one-piece moulding which includes a bearing surface and a clamping surface, and

at least one clamping member including a clamping portion and a bearing part, the clamping member being pivotally connected to the base for movement between a first position and a second position, in which first position the said bearing part bears against the bearing surface on one side of a plane normal to the bearing surface and containing the axis of the pivotal connection, and a part of the tape splicer is elastically deformed, the resilience of which part causes the clamping portion to be pressed towards the clamping surface, and in which second position the said bearing part bears against the bearing surface on the other side of the said plane and the said clamping portion is spaced from the clamping surface.

4,067,564

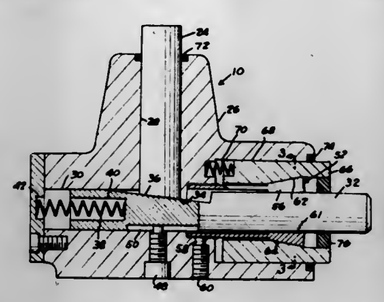
WORK SUPPORTING JACK

John Kobane, Jr., Livonia, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Filed May 27, 1977, Ser. No. 801,101

Int. Cl.² B23Q *3/02*

U.S. Cl. 269—310 **19 Claims**



1. A work supporting jack comprising a body having a bore therein, a work supporting plunger axially slideable in said bore and projecting out of said body at one end thereof for supporting engagement with a workpiece, a second bore in said body intersecting the first bore, a control plunger slideable axially in said second bore, said control plunger having an axially inclined surface thereon engaged by the work support plunger such that axial movement of the control plunger in one direction causes the work support plunger to be displaced axially outwardly of said body at said one end thereof, a plunger clamping member mounted in said body in a position fixed axially relative to said second bore, said clamping member having at least a portion thereof movable radially of said second bore into frictional clamping engagement with said control plunger to lock the control plunger against axial movement, a clamp actuating member mounted in said body for movement in a direction parallel to the axis of the second bore and having a surface thereon engageable with the movable portion of said clamping member to displace said portion of the clamping member radially into locking engagement with the control plunger when the clamp actuating member is displaced axially in one direction.

4,067,565

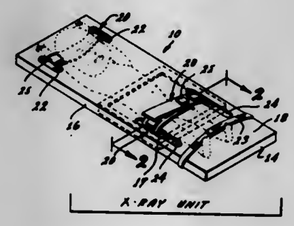
PREMATURE INFANT IMMOBILIZER AND HOLDING ASSEMBLY FOR THE NURSERY AND RADIOLOGICAL EXPOSURE

John E. Daniels, 3765 Herman, San Diego, Calif. 92104

Filed Mar. 28, 1977, Ser. No. 781,628

Int. Cl.² A61G *13/00*

U.S. Cl. 269—328 **15 Claims**



1. A premature infant immobilizer and holding assembly for a nursery and radiological exposure comprising:

an x-ray pervious body platform with downward extending walls forming a recess for receiving x-ray film therein, said recess being substantially the same height as said x-ray film;

x-ray pervious restraining straps secured to said body platform and having fastening means for securing said infant to said body platform, said straps being of sufficient width and flexibility to prevent injury to said infant while secured thereby; and

a base member for supporting said body platform and said x-ray film;

said base member comprises a flat portion and a channel member, said flat portion for supporting said body platform in a first position and said x-ray film in a first position and said channel member for supporting said body platform in a second position and said x-ray film in a second position.

4,067,566

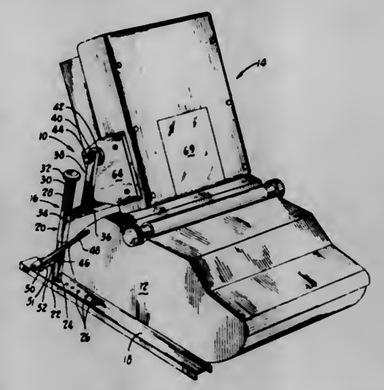
AUTOMATIC STATIONERY HANDLING METHOD AND APPARATUS

Malcolm J. Williams, Rocky River, Ohio, assignor to Feeder One, Inc., Cleveland, Ohio

Filed Apr. 12, 1976, Ser. No. 676,126

Int. Cl.² B65H *5/00*

U.S. Cl. 271—2 **13 Claims**



10. A method of handling discrete pieces of stationery being fed to and emitted from a printing machine comprising the steps of:

a. stacking the discrete pieces of stationery external of the printing machine;

b. moving one of the stacked discrete pieces of stationery to an advanced holding position for subsequent insertion into the printing machine in response to the sensing of the absence of a discrete piece of stationery at that holding position;

c. sensing the presence of a discrete piece of stationery being emitted by the printing machine; and in response to such sensing

d. simultaneously effecting transport of the emitted piece of stationery from the printing machine to the stationery stack and insertion of the piece of stationery at the advanced position therefrom into the printing machine.

4,067,567

SHEET ROLL ASSEMBLY FOR COPYING MACHINE

John McNeil, 1503 W. Windemere, Royal Oak, Mich. 48073

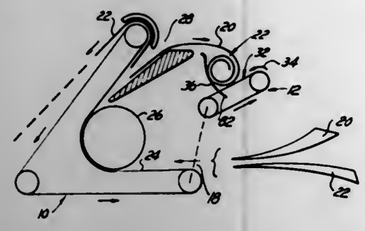
Filed Feb. 18, 1977, Ser. No. 769,895

Int. Cl.² B65H *29/64*

U.S. Cl. 271—172 **14 Claims**

1. In a copying machine for printing and processing a sheet reproduction of a sheet original wherein said sheet original is conveyed to the outside of the machine after printing of said sheet reproduction and said sheet reproduction is conveyed to the outside of said machine after processing of said sheet reproduction, a sheet roll assembly comprising a frame fastened to the exterior of said machine proximate to and below the level

at which one of said sheets emerges to the outside of said machine, a belt conveyor supported by said frame, said belt conveyor having an upper surface disposed in the path of the leading edge of said sheet and translated in a direction opposite



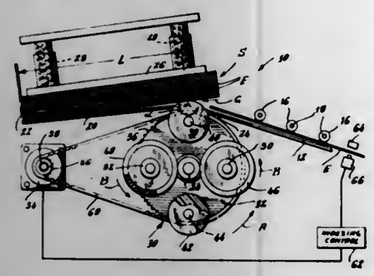
to the direction of displacement of said sheet, and a curved plate fixedly mounted on said frame at the end of said upper surface of said belt conveyor for engagement with said sheet for causing said sheet to be spirally rolled.

4,067,568

DOCUMENT FEEDING AND STACKING APPARATUS

Robert Irvine, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 706,634, July 19, 1976, abandoned. This application Jan. 21, 1977, Ser. No. 761,375
Int. Cl.² B65H *29/40*
U.S. Cl. 271—176 **10 Claims**



1. A document feeding and stacking apparatus for use with a document delivery system for producing a stack of documents, said apparatus comprising:

A. a document stack support platform for receiving individual documents delivered by the system and having an opening therein which is disposed adjacent to the location at which the individual documents are to be stacked; and

B. a planetary spider assembly including

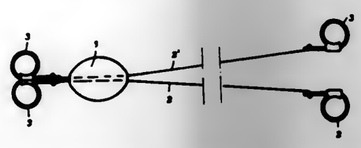
1. a rotatable spider member;
2. at least one pusher roll mounted for free rotation on said spider member to project through said opening in said support platform for pushing a document stack away from said support platform when said spider member is rotated;
3. at least one feed roll also mounted on said spider member to,
   a. project through the opening in said support platform,
   b. engage a document delivered from the system, and
   c. feed a document under the stack while the stack is extended from said supporting platform as a result of the push of said pusher roll, when said spider member is rotated; and
4. means for rotating said feel roll with a greater effective outer peripheral speed than the peripheral speed of said spider member.

4,067,569

SMALL BALL SLIDING IN BOTH DIRECTIONS ALONG TWO THREAD LENGTHS

Arnaldo Palumbo, Via Cristoforo Colombo, Trezzano s. Naviglio (Milan), Italy

Filed May 14, 1976, Ser. No. 686,517
Claims priority, application Italy, Sept. 22, 1975, 22333/75[U]
Int. Cl.² A63B *21/14, 67/10*
U.S. Cl. 272—67 **3 Claims**



1. An exercizing and recreational device comprising a pair of cords of equal length, four anchoring members each of which is fastened at each end of the cords and is adapted to be separately and securely engaged by a finger of the user, the two ends of the cords on the same side being held by two fingers of the same hand of the user, a ball of egg shape configuration having an axial orifice, the cords passing through said orifice and being freely slidable therethrough, the ball sliding towards the front hand when the fingers of the second hand are pulled apart and the ball sliding towards the second hand when the fingers of the second hand are joined together and the fingers of the first hand are pulled apart, the length of the cords being such that when said anchoring members are engaged by the fingers of the two hands of the user, the cords are under tension, each of said anchoring members consisting of a thin strip of flexible material carrying a loop at one end and having an arrow-shaped portion at the other end, said arrow-shaped portion fitting into said loop so as to impart to the strip an annular configuration, said arrow shaped portion having a central orifice for anchoring the ends of said cords.

4,067,570

FASTENING METHOD FOR FLEXIBLE MATERIAL

Thomas M. Camilleri, 277 Ave. W, Brooklyn, N.Y. 11226

Filed Apr. 2, 1976, Ser. No. 673,042
Int. Cl.² A63D *5/02*; A44G *17/00*
U.S. Cl. 273—47 **5 Claims**



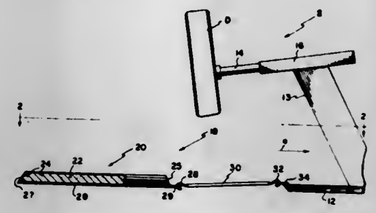
1. Means for fastening an edge of a strong, flexible material to the body of the material to form a loop at the edge comprising a first plurality of slits beginning at an edge and extending inwardly perpendicular thereto, the slits terminating in a plurality of substantially rectangular cut-out sections perpendicular and symmetrical thereto, a second plurality of slits located inwardly of the first plurality of slits, the second plurality of slits being substantially parallel to the first plurality of slits and terminating in a second plurality of substantially rectangular cut-out sections perpendicular and symmetrical thereto, the first and second plurality of cut-out sections facing each other with no slits between them, and the first and second plurality of slits and cut-out sections being equidistantly offset with respect to each other.

4,067,571

STANCE TRAINING APPARATUS

Orley David Rogers, Farwell, Mich., assignor to Rogers Athletic Company, Farwell, Mich.

Filed Sept. 29, 1975, Ser. No. 617,296
Int. Cl.² A63B *67/00*
U.S. Cl. 273—55 R **12 Claims**



1. In a movable, ground supported, football player training sled having front and rear sides and a portion impactable by a football player to propel the sled forwardly;

stance training apparatus for teaching football players a wide base stance comprising:

a stance training object disposable on the ground between the legs of a football player; and

yieldable coupling means for coupling said object to said sled in a predetermined position rearwardly adjacent said sled for movement with said sled when said portion is impacted but permitting said sled to move forwardly relative to said yieldable means to a position spaced from said object if a player inadvertently steps on said object;

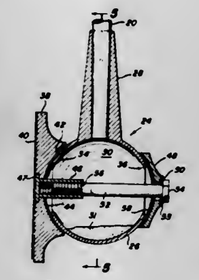
said yieldable means being of such length that a players feet will normally straddle said object when the player is in position to contact said portion with his shoulders.

4,067,572

GOLF CLUB

Marvin W. Coleman, 10607 Moore St., Fairfax, Va. 22030

Filed Aug. 5, 1976, Ser. No. 711,960
Int. Cl.² A63B *53/06*
U.S. Cl. 273—79 **18 Claims**



1. A golf club including:

a. a shaft,

b. a club head comprising a hollow main body portion secured to said shaft,

c. opposed end portions of said main body portion being cut away to provide a bore extending through said main body portion and the wall of said main body portion proximate the cut away portions being arcuate,

d. said club head further including a movable disc-like portion having a front face comprising a ball-engaging surface and a rear concave face which complements, and is in slidable engagement with, the arcuate wall portion of said main body portion proximate the bore,

e. a securing member extending from the rear face of said movable disc-like portion,

f. a clamping member engaged with said movable disc-like portion, and

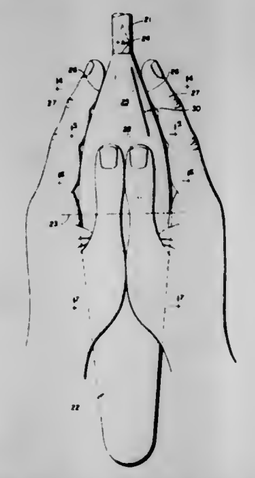
g. a bolt member extending through said clamping member, the bore of the stationary main body portion for operative engagement with said securing member for holding said movable disc-like portion in a predetermined position.

4,067,573

PUTTER HAND GRIP

Jack B. Key, Jr., P.O. Box 5625, Columbus, Ga. 31906

Filed Mar. 18, 1977, Ser. No. 778,946
Int. Cl.² A63B *53/14*
U.S. Cl. 273—81.4 **10 Claims**



1. A putter hand grip comprising a hand grip body of sufficient length to be placed between the two hands of a user and tapering forwardly from a median point of maximum hand grip girth between the forward and rear ends of said hand grip body, the hand grip body provided on its tapering portion with an upper side flat surface forming a rest for the two thumbs of a user and a pair of opposite side flat surfaces forming rests for the index fingers of a user and being substantially at right angles to said top side flat surface, and the under side of said hand grip body being transversely rounded to provide a conforming rest surface for the other fingers of a user.

4,067,574

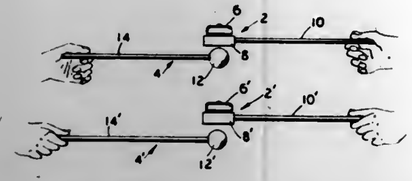
MANUAL DEXTERITY PERCUSSION GAME

Robert Osann, Fiddlers Green Drive, R.D. 3, Huntington, N.Y. 11743

Filed Sept. 13, 1976, Ser. No. 722,389
Int. Cl.² A63B *67/00*
U.S. Cl. 273—95 R **24 Claims**

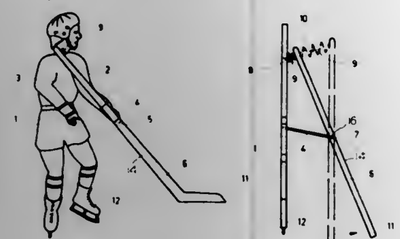
1. A manual dexterity percussion game apparatus comprising a pair of targets, each adapted to be manipulated by the hands of one contestant and to be struck by one or both of a pair of striking implements each manipulated by the hands of another contestant, said targets each comprising a base to which is affixed a handle for manipulating the target, a metallic body mounted above said base and adapted to emit an audible sound upon impact with a striking implement held by the other contestant upon contact with same, the outer dimensions of said base when viewed from above being at least equal to those of said metallic body mounted thereabove, such that said metallic body will emit a substantial audible sound upon contact

with a striking implement from above the base when the target is in a normal upright position with respect to the base thereof,



and in any other position to which the target is manipulated by the holder thereof.

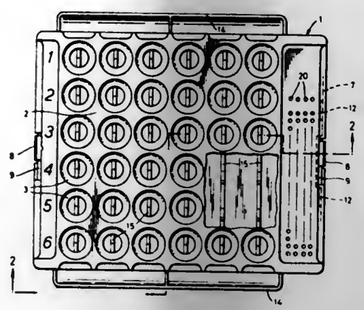
4,067,575
PLAYER FIGURE FOR A TABLETOP HOCKEY GAME
Jean Ayer, Baechlwies, 8184 Bachenbuelach, Switzerland
Filed June 24, 1976, Ser. No. 699,274
Claims priority, application Switzerland, June 30, 1975, 8504/75
Int. Cl.² A63B *71/00*
U.S. Cl. 273—129 HA **4 Claims**



1. A playing piece for a tabletop hockey game comprising:
a player figure including a body portion;
at least one arm portion connected to said body portion and oriented outwardly and downwardly from said body portion;
a hockey stick including a shaft portion and a blade portion;
a pivot means, said pivot means having one end thereof rigidly affixed to the lower end of said arm portion and the other end thereof pivotally connected to said hockey stick; and,
a spring means, said spring means being attached at one end thereof to the player figure and at the other end thereof to said hockey stick, said hockey stick being oriented in such a manner that the blade portion thereof is proximate to the foot portion of said player figure.

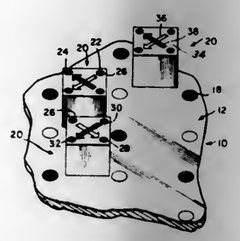
4,067,576
APPARATUS FOR PLAYING A GAME
Salman Heskel Balas, Little Linden, Montacute Gardens, Tunbridge Wells, Kent TN4 8HG, and Clifton Quinton Keiller, Little Brook House, Ragged Dog Lane, Waldron, Sussex, both of England
Filed May 4, 1976, Ser. No. 682,909
Claims priority, application United Kingdom, May 12, 1975, 19851/75; July 3, 1975, 28029/75; July 21, 1975, 30398/75
Int. Cl.² A63F *3/00*
U.S. Cl. 273—282 GA **24 Claims**

1. Apparatus for playing a game, comprising in combination a plurality of spherical playing pieces in the form of balls and a playing device, said playing device comprising an upper board having a plurality of spaced openings of a size through which a ball may pass, a lower board positioned vertically below said upper board, ball receiving positions for retaining at least one of said balls and corresponding to at least some of said openings in said upper board, said ball receiving positions being provided by means depending from said upper board co-acting with means upstanding on said lower board, means permitting a rejected ball which is a ball prevented from enter-



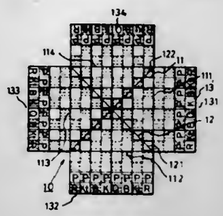
ing a ball receiving position by a ball which already occupies such position to pass from the vicinity of said ball receiving position, and means provided in the region of said ball receiving position to prevent said rejected ball from entering another ball receiving position.

4,067,577
APPARATUS FOR GAMES
George J. Minty, Jr., Bloomington, Ind.
Filed Aug. 9, 1976, Ser. No. 712,869
Int. Cl.² A63F *3/00*
U.S. Cl. 273—275 GA **7 Claims**



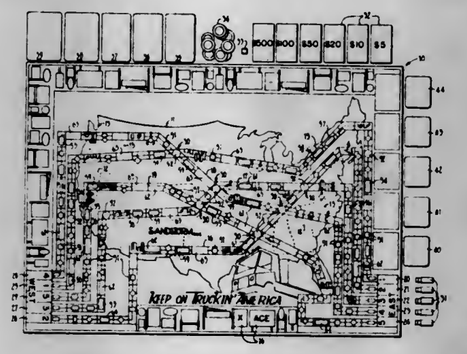
1. Apparatus for a game comprising a game board having a first array of points, the first array having dimensions n by $(n + 1)$ in first and second directions, respectively, where n is an integer, and a second array of points distinguishable from the first points, the second array having dimensions $(n + 1)$ in the first and second directions, respectively, the points of the second array being interpositioned with the points of the first, and a plurality of game pieces, each piece including a first pair of points and a first direction indicator, the first direction indicator indicating a direction between the points of the first pair and being identifiable with the points of the first array, a second pair of points, and a second direction indicator indicating a direction between the points of the second pair and being identifiable with the points of the second array.

4,067,578
CHESS BOARD AND PIECES
Chiu-Hua Chang, No. 50, Hsin I Road, Lu Chou, Taipei Hsien, China /Taiwan
Filed Aug. 26, 1976, Ser. No. 717,574
Int. Cl.² A63F *3/02*
U.S. Cl. 273—261 **2 Claims**



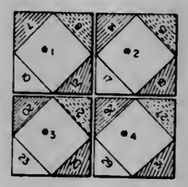
1. Chess board and pieces provided for playing by four persons comprising and characterized by:
a chess board having a "central field" of 8 × 8 squares, with 16 diagonally disposed squares in the central field designated as "combat bases," extending from each side of the central field an 8 × 4 square "domain" for each player, the squares being colored alternately light and dark,
sixty-four chess pieces for the four players representing four countries, each having 16 pieces comprising a king (K), a queen (Q), two bishops (B), two knights (Kt), two rooks (R) and eight pawns (P) with their initial position in the domain as in the conventional chess game,
each piece being of a cube shape having four out of its six faces painted with a different color for identification of each country, a symbol representing the said piece being marked on each of the color painted faces of the cube.

4,067,579
BOARD GAME AND ADVERTISING DISPLAY
George McCoy Boofer, Stockton, Calif., assignor to Sandstorm Enterprises Inc., Stockton, Calif.
Filed June 21, 1976, Ser. No. 698,400
Int. Cl.² A63F *3/04*
U.S. Cl. 273—254 GA **12 Claims**



1. A trucking game, imitative of the experiences of truck drivers, comprising in combination
a. a game board having a playing field comprising a plurality of routes between terminals on a map, each of said routes divided into a plurality of playing spaces, some of which bear the following types of instructional indicia:
i. indicia calling for payment of money;
ii. indicia calling for loss of turn;
iii. indicia calling for the player to move ahead by a designated number of spaces; and
iv. indicia calling for return to a prior space or to a terminal;
v. indicia calling for the player to draw a card;
b. a plurality of route cards bearing the following types of instructional indicia:
i. indicia calling for the player to cross the board on a particular route;
ii. indicia calling for the player to take on loads at particular locations along said route called for;
iii. indicia calling for the player to drop off all or part of a load at particular locations along said route called for;
iv. indicia calling for receipt of money upon dropping off all or part of load as called for; and
v. inidica calling for payment of money for specified purposes;
c. a plurality of chance cards bearing the following types of instructional indicia:
i. indicia instructing the player to move forward or backwards a designated number of spaces;
ii. indicia instructing the player to receive or pay money; and
iii. indicia instructing the player to miss a turn or turns; and
d. a plurality of time cards bearing the following types of instructional indicia:
i. pay penalty for late arrival; and
ii. receive bonus for early arrival; and
e. a plurality of playing pieces representing trucks suited for movement along said routes;
f. means for randomly designating the initial number of spaces to be moved by a player in a given turn; and
g. imitation money for carrying out transactions calling for payment and receipt of money.

4,067,580
MYSTIC NUMBERED GEOMETRICS
John Jenn Tzeng, 416 Boston Ave., Takoma Park, Md. 20012
Filed May 26, 1976, Ser. No. 690,179
Int. Cl.² A63F *9/08*
U.S. Cl. 273—156 **10 Claims**



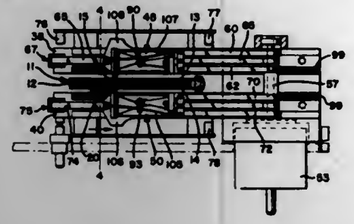
1. A device of the type described comprising a set of geometrically identical elements, each element including a plurality of indicia bearing surface portions, the number of elements in said set and the number of said surface portions being identical and at least four in number, the indicia on each said surface portion being in the form of a coding indicium and at least one numeral, said coding indicium being taken from a set of coding indicia equal in number to said number of elements and surface portions with each surface portion of each element bearing a different coding indicium, said numerals being so related to said coding indicia that if the elements are arrayed such that a differently coded surface portion of each of the elements is disposed for viewing, regardless of which coded surface portion of which element is so disposed, the sum of the numerals on the so disposed surface portions is a constant.

4,067,581

STEPPER FOR SLOW MOTION DISC RECORDER

Boyd Lehman Stratton, Woodside, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Nov. 4, 1976, Ser. No. 738,674
Int. Cl.² G11B 3/10
U.S. Cl. 274—23 A 4 Claims



1. In a disc recorder having a rotating recording disc; a transducer assembly including a transducer cooperable with said disc; carriage means for mounting said transducer assembly; an idler pulley and a drive pulley, one of said pulleys being inward from the periphery of said disc and the other pulley being positioned outward of said disc from said one pulley; carriage belt means attached to said carriage means and to said drive pulley and extending around said idler pulley, the portion of said belt means attached to said carriage means being supported along a path extending parallel to said disc; and stepping motor means connected to rotate said drive pulley such that said transducer is moved radially of said rotating disc; the improvement in which said carriage belt means comprises:

first and second carriage belts each attached at one end to said carriage means and attached at their other end to said drive pulley and,

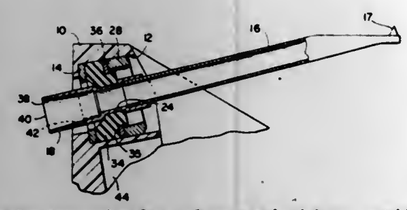
a third carriage belt attached to said carriage means, extending in the opposite direction from said first and second belts, and attached to said drive pulley intermediate said first and second carriage belts, whereby the axis of rotation of said idler pulley is parallel to the axis of rotation of said drive pulley and said carriage belt means is operable with reduced binding and friction.

4,067,582

STYLUS SUSPENSION

Peter E. Pritchard, New Milford, Conn., assignor to Sonic Research, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 611,214, Sept. 8, 1975, Pat. No. 4,009,885. This application June 30, 1976, Ser. No. 701,365
Int. Cl.² G11B 3/02; H04R 1/16, 11/08
U.S. Cl. 274—37 12 Claims



1. A stylus suspension for a phonograph pick-up cartridge comprising:

a plastic housing having an aperture;

a resilient suspension block retained against the inside wall of said aperture, and having a central, axial opening;

a stylus assembly comprising a stylus cantilever tube having a stylus at its distal end and attached to an armature tube at its opposed end, said armature tube being secured within said axial opening in said suspension block; and

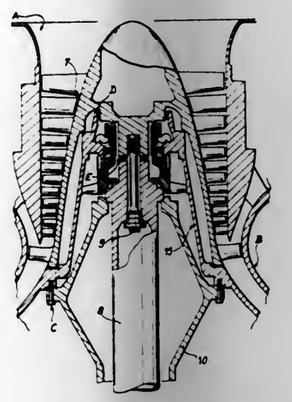
a separate clamping ring frictionally retained against the inside wall of said aperture and compressing said suspension block within said aperture, said plastic housing being sufficiently compliant to accept said ring.

4,067,583

SEALING DEVICE WITH CLOSURE SYSTEM FOR COMPRESSOR

Roger Louis Elysée Germain, Maisons Lafitte, and Claude Engéne Désiré Duquenne, La Garenne, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Evry, France

Filed Dec. 21, 1976, Ser. No. 752,891
Claims priority, application France, Dec. 24, 1975, 75.40387
Int. Cl.² F16J 15/16
U.S. Cl. 277—27 8 Claims



1. A sealing device with closure system for a rotary machine having a vertical axis of rotation, comprising a driving mechanism, disconnectable coupling means and a rotor in which a noxious fluid is conveyed, an annular seal in a plane at right angles to said axis of rotation and clamped between stationary knife-edges on an annular support unit moving along said axis, two closure control means operated successively, the first of said control means effecting the displacement of said annular support unit between an inactive position and an active position and conversely actuated externally of the machine and the second of said control means exerting a complementary effort on said annular support unit upon withdrawal of said driving mechanism, said second control means being a resilient member applied on one side against a ring retaining said annular support unit and applied on the other side against a ring rigidly fixed to said driving mechanism in an inactive position and against a stop integral with said rotor in an active position.

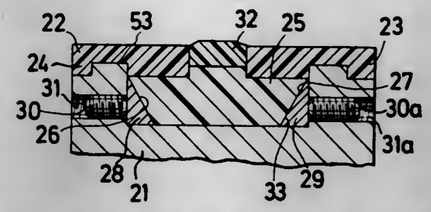
4,067,584

GUIDING AND SEALING ARRANGEMENTS FOR PISTONS, PISTON RODS AND THE LIKE

Walter Hunger, Rodenbacherstr. 50, 8770 Lohr am Main, Germany

Filed June 24, 1975, Ser. No. 589,883
Claims priority, application Germany, June 26, 1974, 2430573; Dec. 24, 1974, 2461455; Aug. 21, 1974, 282567
Int. Cl.² F16J 15/32
U.S. Cl. 277—165 15 Claims

1. An axially movable member such as a piston or piston rod in combination with a guide and sealing arrangement, comprising at least two guide rings positioned in series in the axial direction thereof and disposed in spaced relation, said guide rings being formed of a resilient material having a first radially facing surface an oppositely directed second radially facing surface and a pair of radially extending surfaces extending in the direction between said first and second radially facing surfaces, a ring seal positioned between and in engagement with one radially extending surface on each of said guide rings, said ring seal having an operative position for providing a sealing arrangement, said ring seal having a first radially facing surface facing in the same direction as the first radially facing surface of said guide rings an oppositely directed second radially facing surface and a pair of radially extending surfaces with each of said radially extending surfaces contacting a radially extending surface on one of said guide rings, means for biasing the first radially facing surface of said ring seal into the operative position, said means including a ring of resilient material having a first radially facing surface facing in the same direction as the first radially facing surface of said guide rings



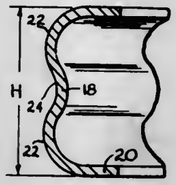
and ring seal, the first radially facing surface of said ring of resilient material disposed in contact with the second radially facing surfaces of said guide rings and ring seal and being spaced in the radial direction from the first radially facing surfaces of said guide rings and said ring seal, said ring of resilient material having side edges extending transversely of the first radially facing surface thereof and said side edges tapering inwardly toward one another as they extend away from the first radially facing surface thereof, and a separate biasing member in contact with each of said tapering side edges for transmitting a biasing action to and through said ring of resilient material to said ring seal for biasing the first radially facing surface of said ring seal into the operative position.

4,067,585

DEFORMABLE METALLIC ELEMENT

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

Continuation of Ser. No. 841,436, July 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 181,219, Sept. 16, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,571
Int. Cl.² F16J 9/20
U.S. Cl. 277—200 5 Claims



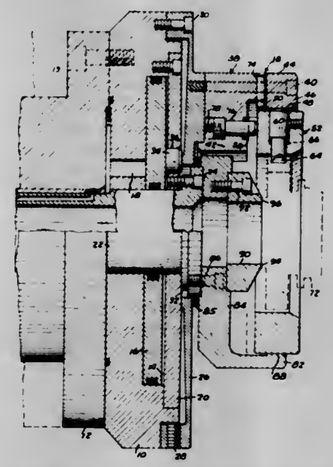
1. A deformable tubular metallic member compressible in the axial direction thereof from a predetermined free length to a substantially shorter length and comprising: a circumferentially continuous tubular metallic element having a relatively thin wall of substantially uniform thickness throughout, said element in longitudinal cross section comprising an odd number of at least three curved convolutions in end to end relation and adjacent ones of said convolutions being concave in respectively opposite radial directions, substantially radial circumferentially continuous flange means extending radially from the axially outermost ends of the axially outermost ones of said convolutions, each convolution when viewed in cross section in unstressed condition being in the form of a segment of a circle, said convolutions being joined together substantially directly and each convolution in cross section extending over a range of substantially less than 180 degrees, said tubular element being formed of a relatively hard and ductile material characterized in undergoing pronounced strain strengthening when progressively strained beyond the elastic limit thereof, said axial deformation causing said convolutions progressively to increase in radial thickness commencing at the peaks thereof, said increasing of radial thickness being in proportion to said strain strengthening of said material, whereby upon progressive reduction of the axial length of said tubular element from the free length thereof by the application of compressive forces to the flange means at the opposite ends thereof the tubular element will undergo first a period of substantially resilient deformation while the length thereof is reduced from said free length to a shorter length, followed by a second period of permanent plastic deformation during which the axial length of the tubular element is further reduced, said element progressively work hardening in the axial direction commencing with the peaks of the convolutions during the said second period of plastic deformation, the compressive forces acting on the tubular element increasing substantially linearly during the major portion of said first period and remaining substantially constant during said second period, said reduction of axial length of said tubular element during said second period being equal to a substantial portion of the axial length of said element, removal of said compressive forces acting on said tubular element prior to complete flattening of said tubular element resulting in a resilient increase in axial length of said tubular element, said resilient increase in axial length of said element remaining substantially constant throughout said second period of plastic deformation of said element.

4,067,586

DIAPHRAGM CHUCK

London T. Morawski, Mount Clemens, Mich., assignor to MP Tool & Engineering Company, Warren, Mich.

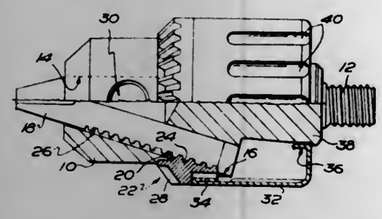
Filed Nov. 18, 1976, Ser. No. 743,045
Int. Cl.² B23B 31/32
U.S. Cl. 279—1 D 10 Claims



1. A diaphragm chuck comprising a support having a central axis, a generally circular, resiliently flexible diaphragm concentric with said central axis and having its outer periphery fixedly connected to said support, actuator means on said support engageable with the diaphragm for flexing it axially about its periphery as a fulcrum, a plurality of circumferentially spaced individual jaws fixedly mounted on the diaphragm around a circle concentric with said central axis, jaws being disposed radially inwardly from the outer periphery

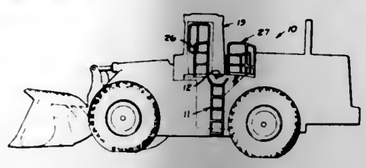
thereof and projecting axially outwardly from said diaphragm, the axially outer end portions of said jaws being displaced radially in an arcuate path in response to flexing of the diaphragm, a circumferentially continuous ring, means releasably mounting said ring on said jaws in a circumferentially fixed position, said ring having a plurality of radially movable pins thereon registering with said jaws, said jaws having axially extending shoulders thereon engaging one end of said pins, the opposite ends of said pins having means thereon for gripping a peripheral surface of a workpiece whereby, when the diaphragm is flexed axially in one direction, said pins are retracted sufficiently to receive a workpiece and, thereafter, when the diaphragm is flexed axially in the opposite direction, the axially extending shoulders on said jaws displace said pins radially to firmly clamp the workpiece and means on the outer end portion of each jaw forming a radially extending shoulder thereon, said ring being engaged behind said radially extending shoulders and means biasing said ring axially outwardly against said shoulders.

4,067,587
DRILL CHUCKS
George Cecil Derbyshire, Sheffield, England, assignor to The Jacobs Manufacturing Company, Limited, Sheffield, England
Filed Mar. 8, 1976, Ser. No. 664,946
Claims priority, application United Kingdom, Apr. 1, 1975, 13275/75
Int. Cl.² B23B *31/04*
U.S. Cl. 279—62 3 Claims



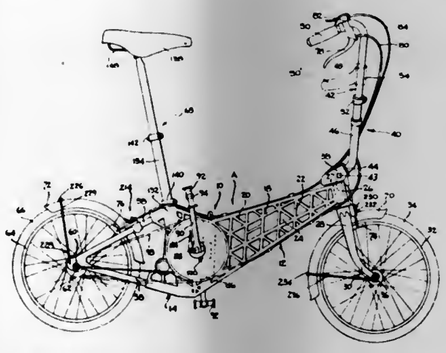
1. An improvement comprising a drill chuck provided with a body part having a formed portion in which jaws are slidably mounted for converging movement in respective bores and a cylindrical rear portions; a circumferential groove encircling said body part between said forward and rear portions, a nut member rotatably mounted on the body part and axially located in the circumferential groove, said nut member having screw threads for engagement with threads on said jaws for advancing said jaws through a forward portion of the body part to grip a drill shank, and for retracting said jaws; a gear element formed on the nut member with which the teeth of an extraneous chuck key may be engaged to rotate said nut member with respect to the body to tighten or slacken the jaws; and a cylindrical sleeve and partially encompassing connected to said nut member and extending rearwardly of the body part and having a radially internal flange portion to rotatably engage said cylindrical portion of the body part remote from the nut member, the improvement comprising abutment means on said cylindrical rear portion and acting between the cylindrical sleeve flange portion and the portion of the body part with which it is rotatably engaged, for holding said sleeve in its required position in relation to the nut member, said abutment means being formed by a shoulder means encircling the body part in the region supporting an end of the cylindrical sleeve, the internal diameter of said flange portion being less than the diameter of said abutment whereby the sleeve is press fitted over said abutment into engagement with said nut member.

4,067,588
LADDER ASSEMBLY FOR CONSTRUCTION VEHICLES
Michael P. Morge, Oswego, and Robert A. Shiffler, Geneva, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 9, 1976, Ser. No. 656,568
Int. Cl.² B60R *3/00*
U.S. Cl. 280—163 8 Claims



1. A construction vehicle comprising
a horizontally disposed platform mounted on a top of said vehicle,
an operator's station mounted on said platform, and
a vertically disposed ladder assembly rigidly mounted on a side of said vehicle and terminating at an upper end thereof closely adjacent to said platform, said ladder assembly comprising
a pair of vertically disposed and parallel hand rails, attachment means releasably attaching each of said hand rails to the side of said vehicle,
a plurality of horizontally disposed and vertically spaced steps secured between and to said hand rails, and
upper flared portions formed on said hand rails to terminate at lower ends thereof at an upper step of said ladder assembly and at upper ends thereof adjacent to said platform and diverging upwardly and outwardly away from each other to form guide means for guiding the feet of an operator descending from said platform directly onto said upper step of said ladder assembly, said steps thus terminating at the upper flared portions formed on said hand rails to provide an unobstructed area between said upper flared portions.

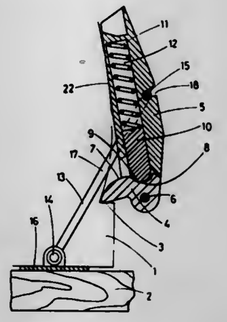
4,067,589
FOLDABLE BICYCLE
David T. Hon, 2522 Banyan Drive, Los Angeles, Calif. 90049
Filed May 21, 1976, Ser. No. 688,712
Int. Cl.² B62K *15/00*
U.S. Cl. 280—278 44 Claims



1. A foldable-type bicycle comprising:
a. a front frame section,
b. a rear frame section,
c. hinge means hingedly connecting said front frame section to said rear frame section through a hinge axis,
d. rear axle means for retaining a rear wheel on said rear frame section,

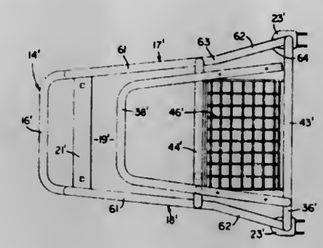
e. a column on said front frame section and being pivotal on a column axis with respect to said front frame section,
f. front axle means for retaining a front wheel on said front frame section,
g. said front axle means being spaced forwardly of said column axis and said front wheel capable of being rotated about said column axis so that said front axle means is spaced rearwardly of said column axis and being spaced from said hinge axis by a distance approximately equal to the distance from said hinge axis to said rear axle means,
h. said front frame section being pivotal about said hinge means so that said rear axle means is essentially colinear with said front axle means, and
i. cooperating locking means on said front axle means and rear axle means to releasably lock said front and rear axle means in their essentially colinear relationship.

4,067,590
SAFETY SKI BINDING
Alain Neau, Thyez, and Jean-Marie Begey, Cluse, both of France, assignors to Garcia Corporation, Teaneck, N.J.
Filed June 28, 1976, Ser. No. 700,153
Claims priority, application France, July 8, 1975, 75.21391
Int. Cl.² A63C *9/08*
U.S. Cl. 280—626 8 Claims



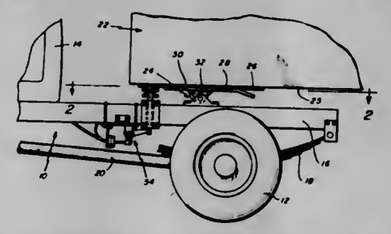
1. A safety ski binding for holding a ski boot to a support and permitting separation thereof upon a minimum predetermined separating force which comprises:
a generally U-shaped stirrup;
means pivotally mounting the free ends of said stirrup to said support, said stirrup adapted to be rotatable about a first axis transverse to said support and parallel to the upper face thereof, said stirrup being constructed and arranged to encircle an end of said ski boot when positioned on said support;
a toggle pivotally mounted to the closed end of said stirrup and adapted to be rotatable relative to said stirrup about a second axis parallel to said first axis;
a holding member movably mounted to said toggle between said first and second axes, said holding member having a boot-engaging section adapted to engage a portion of the sole of said ski boot to maintain said boot in position on said support;
biasing means housed within said toggle for urging said boot-engaging section of said holding member into a boot-engaging position, said boot-engaging section being movable in a direction toward said toggle and against the action of said biasing means to release said ski boot upon application of said minimum separating force; and
a cam section on said holding member operatively associating said biasing means and said boot-engaging section whereby the boot holding force of said binding is greater than the elastic force of said biasing means.

4,067,591
BASE FOR NESTABLE SHOPPING CART
Harry Celms, Battle Creek, Mich., assignor to Roblin Industries, Inc., Battle Creek, Mich.
Filed June 21, 1976, Ser. No. 698,149
Int. Cl.² B62B *3/02*
U.S. Cl. 280—33.99 S 18 Claims



1. In a nesting-type shopping cart having a wheel-supported base structure and a basket assembly mounted on said base structure, said base structure including a substantially horizontally extending U-shaped base member and upright means fixedly interconnected to said base member and projecting upwardly therefrom for supporting said basket assembly, said upright means maintaining the bottom wall of said basket assembly spaced upwardly a substantial distance above said base member, said U-shaped base member opening rearwardly of said cart and including a pair of opposed side rails which extend longitudinally of said cart throughout the length thereof, said side rails diverging outwardly relative to the rearward longitudinal direction of said cart, comprising the improvement wherein each side rail includes a first elongated rail portion which is straight and extends rearwardly of said cart from the forward end thereof over a major portion of the length of the cart, said first rail portion diverging outwardly at a small angle relative to the rearward longitudinal direction of said cart, each side rail including a second elongated rail portion which is straight and extends rearwardly from the rearward end of said first rail portion, said second rail portion terminating at the rearward end of said cart, said second rail portion diverging outwardly relative to the longitudinal direction of said first rail portion as said second rail portion projects toward the rearward end of said cart, whereby the second rail portions define a flared chutelike opening at the rearward end of said base member.

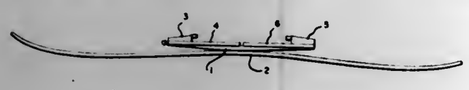
4,067,592
ANTI-JACKNIFE APPARATUS
Rodney Horton, 246 Essex St., Beverly, Mass. 01915
Filed Apr. 22, 1976, Ser. No. 679,205
Int. Cl.² B62D *53/06*
U.S. Cl. 280—432 14 Claims



1. An anti-jacknifing apparatus for use in association with a fifth wheel assembly of a tractor-trailer vehicle comprising;
contact means including rigid support means and resilient pad means mounted over the rigid support means,
said trailer having plate means with its lower surface positioned for contact by the contact means,

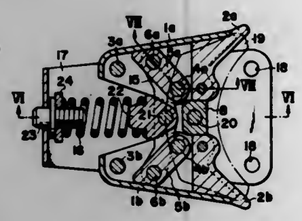
said fifth wheel assembly including a lower fifth wheel on the tractor,
means for supporting the contact means from the tractor with the rigid support means of the contact means being moveable in a generally vertical direction, and the resilient pad means being disposed outside of the outer periphery of the lower fifth wheel,
and means coupled to the rigid support means of the contact means for actuating the contact means to move the resilient pad means of the contact means to engage the plate means for restricting relative swinging motion between the tractor and trailer.

4,067,593
ADJUSTABLE PLATFORM SKI BINDING MOUNT
Arthur W. Earl, 451 Essex Ave., Bloomfield, N.J. 07003
Filed Apr. 27, 1976, Ser. No. 680,861
Int. Cl.² A63C 9/00
U.S. Cl. 280—617 **23 Claims**



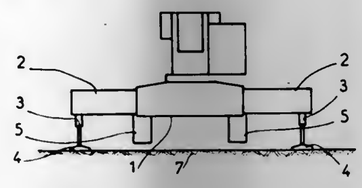
7. An adjustable platform ski binding mount for use with a ski which comprises:
a. platform base secured to said ski;
a pair of separate heel and toe platforms for supporting a respective ski binding thereon;
means mounting each of said heel and toe platforms directly on said platform base for movements relative to each other along said platform base;
means adjustably connecting together said heel and toe platforms for effecting said movements relative to each other; and
cooperating means on said platform base and on at least one of said heel and toe platforms for moving them together as a unit along with platform base.

4,067,594
SKI BOOT TOE BINDING
Toshikazu Kikuchi, Nagareyama, Japan, assignor to Hope Co., Ltd., Tokyo, Japan
Filed June 21, 1976, Ser. No. 698,720
Claims priority, application Japan, Apr. 5, 1976, 51-37120
Int. Cl.² A63C 9/085
U.S. Cl. 280—625 **4 Claims**



1. A ski boot toe binding comprising a base plate adapted to be attached on a ski, said plate having a forward end portion and a rear end portion, a pair of pivoted member each having a forward and rear end portion and pivotally connected at the rear end portion thereof to said plate by a first pivot pin, boot toe holding means on each of said pivoted members at the forward end thereof, a pair of links, one for each pivoted member, each link having an inner end pivotally connected to its associated pivoted member by a second pivot in and an outer end extending angularly outwardly and rearwardly from said inner end thereof to hold the associated pivoted member inwardly against the boot in a toe-holding position, lever means extending transversely of said plate and terminating in outer end portions pivotally connected to the said outer ends of said links by a third pivot pin to permit outward movement of said pivoted members and toe holding members away from the boot when a lateral shock is applied to the boot, the said first pivot pin being located rearwardly and outwardly of said second pivot pin, and yieldable means urging the said outer ends of said links toward the forward end portion of said plate.

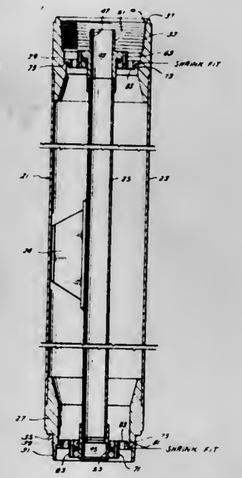
4,067,595
STABILIZER BEAM FOR STABILIZING A MACHINE FOR USE ON ROUGH GROUND
Robert Vigerie, Saint-Chamond, France, assignor to Creusot-Loire, Paris Cedex, France
Filed Dec. 15, 1976, Ser. No. 750,899
Int. Cl.² B60S 9/02
U.S. Cl. 280—766 **5 Claims**



1. A stabilizer beam for stabilizing a machine for use on rough ground for extending the frame of the machine laterally, the stabilizer beam comprising:
a supporting box girder to be integral with or rigidly attached to the frame of the machine;
a supporting beam slidable in the box girder;
a bearer jack carrying a bearer shoe;
means pivotally connecting the bearer jack to that one end of the beam to be remote from the machine frame such that the jack is movable from a rest position in which the jack is substantially horizontal and the bearer shoe is in contact with the end face of the beam, and an operative position in which the jack is substantially vertical;
means for supporting and guiding the jack in its movement relative to the beam;
means pivotally mounting the supporting and guiding means on the one end of the beam;
means for locking the jack in its vertical position and operable on relative movement between the beam and box girder;
means for pushing and pulling in the direction of the axis of the beam; and
means for pivotally connecting the pushing and pulling means to the jack;
the pushing and pulling means being operable to cause movement of the jack between its operative and inoperative position and extension and retraction of the beam relative to the box girder.

4,067,596
DUAL FLOW PASSAGE DRILL STEM
Jackson M. Kellner, and Vincent Hugo Vetter, both of Midland, Tex., assignors to Smith International, Inc., Midland, Tex.
Filed Aug. 25, 1976, Ser. No. 717,628
Int. Cl.² F16L 39/00
U.S. Cl. 285—133 A **25 Claims**

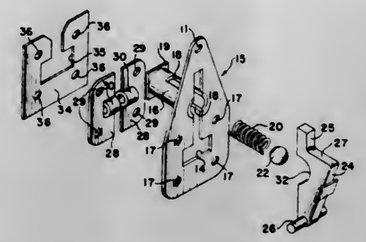
1. Dual tube drill stem comprising pipe means including connection means at each end thereof for making connection with other drill string members,
tubular means having ends adapted for making connection with other drill string members, said tubular means being disposed within the pipe means and extending longitudinally through the inside of the pipe means from one end of the pipe means to the other providing an imperforate wall fluid passage inside the tubular means from adjacent one end of the pipe means to the other and
support means within the pipe means positioning the tube means within the pipe means and placing the entire length of the tubular means in radially spaced relationship with respect to said pipe means, providing an imperforate wall fluid passage therebetween extending past said support means from said one end of the pipe means to the other,
said support means including elastomer sandwich means comprising a first annular surface on the interior of the pipe means, a second annular surface on the exterior of the tube means, and annularly disposed elastomer means disposed between said surfaces,



each of said surfaces when resolved into any components facing axially and radially including at least some axially facing component, whereby said elastomer means provides axial support for the tube means within the pipe means and said elastomer means is compressed upon relative axial movement of said pipe means and tube means in the direction bringing said surfaces closer together,
said drill stem being free of stop surfaces which would prevent limited relative axial movement of said tube means and pipe means in one axial direction and also free of stop surfaces which would prevent limited relative axial movement of said tubular means and pipe means in the opposite axial direction.

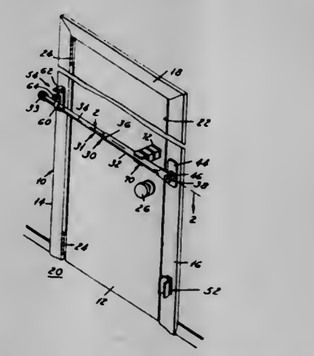
4,067,597
LATCH ASSEMBLY
Dean M. Lawrence, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed July 19, 1976, Ser. No. 706,709
Int. Cl.² E05C 3/04
U.S. Cl. 292—228 **13 Claims**

1. A multi-component latch assembly for selectively retaining a movable element, said latch assembly comprising:
main plate means;
pivotable latch member means for selectively engaging and retaining said movable element, said main plate means including a main slot, said latch member means being operatively received within said main slot of said main plate means;
biasing means retained by said main plate means for biasing said latch member means in a first predetermined direction;
bracket means having sleeve means for pivotally retaining said latch member means within said main slot;
retainer plate means for securing said latch assembly to a supporting structure during use; and



securing means for securing said bracket means and said main plate means to said retainer plate means such that said components of said latch assembly are thereby positioned in an operative orientation.

4,067,598
MECHANICAL SECURITY DEVICE FOR DOORS
Gerald J. Mansour, 1009 Detroit St., Flint, Mich. 48502
Continuation-in-part of Ser. No. 701,786, July 1, 1976, abandoned. This application Dec. 8, 1976, Ser. No. 748,589
Int. Cl.² E05C 17/30
U.S. Cl. 292—259 R **5 Claims**



1. A combination of a door frame defining a door opening, a door vertically swingable relative to said frame at one side thereof for opening and closing said door opening, and an elongated mechanical security device including an elongated latching member having operative and inoperative positions, said mechanical security device being carried by the frame, with said latching member when in an operative position maintaining the door in a closed position in said door opening, said frame comprising a pair of vertical members, said door being hingedly connected at one edge thereof to one of said vertical member, said elongated latching member having on one end thereof a formation provided with an opening, fastening means extending through the opening in said formation into said other of the vertical members and mounting said latching member for pivotal movement between said operative and inoperative positions, said elongated mechanical security device including a one piece elongated cradle clip secured to said one vertical member for receiving the other end of said elongated latching member, said cradle clip being of generally J-shaped configuration and having a generally flat base portion abutting and secured to said one vertical member and a generally U-shaped cradle portion for receiving said latching member, said base and cradle portions terminating in generally horizontal and parallel flanges which are spaced apart and which are provided with aligned openings for receiving a padlock for locking the

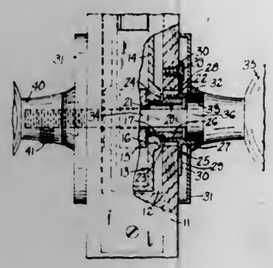
latching member when in its operative position, said latching member comprising a pair of telescopically arranged elongated tubular elements being closed and flattened on one end thereof to provide said formation, said mechanical security device including a storage clip secured on said other vertical member and spaced substantially below said fastening means, said storage clip being of part-circular configuration and including a pair of resilient finger which receive said other end of said latching member when in an inoperative position, said storage clip being made from plastic and is adhesively secured to said other vertical member.

4,067,599

TRIM ALIGNMENT FOR MORTISE LOCKS

Richard J. Ohno, Branford, Conn., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Apr. 9, 1976, Ser. No. 675,558
Int. Cl.² E05C *1/16*
U.S. Cl. 292—356 **9 Claims**



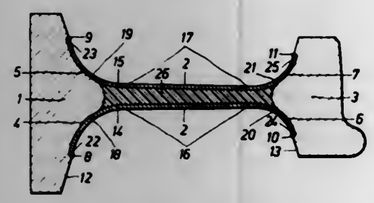
1. Lock trim alignment means for use with a mortise lock having a case and a latch hub and being installed in a door, comprising, a threaded opening in the lock case coaxial with the latch hub, a first bushing screwed into said threaded opening, a second bushing screwed onto the first bushing, a flange associated with the second bushing and projecting laterally in a position to engage a door surface adjacent said bushings, and a knob and spindle assembly journaled in said second bushing with the spindle aligned with the common axis of said bushings and hub.

4,067,600

TRACK WHEEL HAVING A LIGHTWEIGHT CONSTRUCTION

Walter Knorr; Helmut Licht, both of Bochum; Erwin Raquet, Sprockhovel, and Walter Spieker, Duisburg-Hamborn, all of Germany, assignors to Fried. Krupp Huttenwerke AG, Bochum, Germany

Filed July 29, 1975, Ser. No. 600,031
Claims priority, application Germany, Aug. 10, 1974, 2438550
Int. Cl.² B60B *17/00*
U.S. Cl. 295—23 **11 Claims**



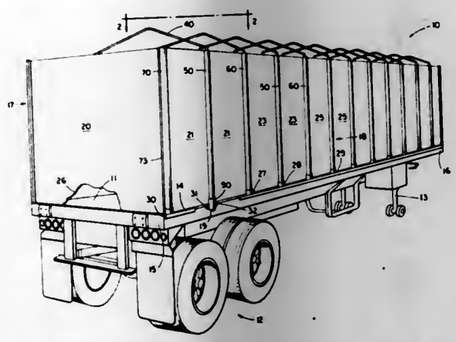
1. A wheel of lightweight construction useful as a railroad car wheel having a rigid hub portion and a rim portion, said hub portion connected to said rim portion by a pair of opposed spaced part concavely shaped wheel discs positioned back-to-back, each of which comprises a main portion running between said hub and said rim, which main portion has integral thereto at each end thereof an arcuately shaped transitional portion terminating in an edge, one of said transitional portions contiguously abutting and affixed to one of two oppositely inclined flanks of said hub, the other of said transitional portions contiguously abutting and affixed to one of two oppositely inclined flanks of said rim, the space between said opposed concavely shaped wheel discs being hollow, said hub and said rim each having facing parabolic contours on which said arcuately shaped transitional portions of said concavely shaped wheel discs are secured.

4,067,601

TRUCK STAKE ARRANGEMENT

Robert P. Tuerk, 7710 Candlewood Lane, Indianapolis, Ind. 46250

Continuation-in-part of Ser. No. 419,121, Nov. 26, 1973, abandoned. This application Sept. 29, 1975, Ser. No. 617,700
Int. Cl.² B62D *27/00*
U.S. Cl. 296—36 **12 Claims**



1. In a truck flat-bed arrangement having pocket brackets located around the periphery of the bed and providing a plurality of internally rectangular pockets, a plurality of hollow stakes, and a plurality of panels removably mounted on said bed and having vertically extending ends supported by said stakes, the improvement which comprises a plurality of jackets each being tapered in both depth and width from one end thereof to the other and each receiving a respective one of said stakes, said jackets with stakes therein being removably seated in said pockets.

4,067,602

GRIP ATTACHMENT FOR VEHICLES

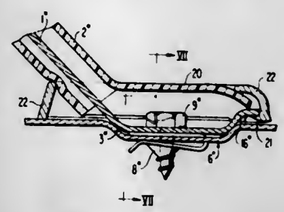
Hans-Dieter Ahlisch, Sindelfingen; Rolf Amann, Renningen; Franz Bald; Gerhard Dostal, both of Sindelfingen; Alfred Folster, Boblingen; Wolfgang Schleh, Sindelfingen; Gunther Kachele, Sindelfingen; Rolf Kowallek, Sindelfingen, and Helmut Schnaufer, Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed July 23, 1975, Ser. No. 598,228
Claims priority, application Germany, July 24, 1974, 2435544
Int. Cl.² B60N *3/02*
U.S. Cl. 296—71 **44 Claims**

1. In a fastening arrangement for a handle at an inner wall structure of a vehicle passenger space, wherein said handle includes a body portion and end portions, said fastening arrangement comprising

fastening means for securing at least one of said end portions of said handle to said inner wall structure, and

connecting means for preventing rotation of said handle with respect to said fastening means, said connecting means including recess means arranged within said inner wall structure and extending essentially in the longitudinal direction of said handle for receiving said at least one end



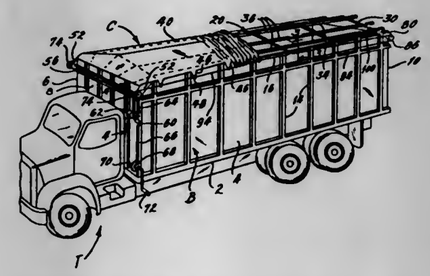
portion, said fastening means securing said end portions within said recess means.

4,067,603

COVER ASSEMBLY FOR OPEN TOP TRUCK BODIES

Russell R. Fenton, P.O. Box 151, Bucklin, Kans. 67834

Continuation-in-part of Ser. No. 475,950, June 3, 1974, Pat. No. 3,964,781. This application May 28, 1976, Ser. No. 690,960
Int. Cl.² B60P *7/04*
U.S. Cl. 296—100 **15 Claims**



1. In combination with an open top truck body having upstanding spaced apart sidewalls, a cover assembly for covering the open top of the truck body, said cover assembly comprising: a frame fastened to the truck body and bridging the open top thereof; aligned front and rear sheaves located adjacent each sidewall for rotation about spaced apart axes which are fixed in position with respect to the frame; endless cables extended around the front and rear sheaves and having upper and lower passes which extend along the sidewalls of the truck body; means for rotating the sheaves to drive the cables in unison and in both directions; a flexible cover extending over and supported on the frame, the cover having ends and sides with one of the ends being fixed in position with respect to the frame and the other end being attached to the two cables such that said other end will move with one of the cable passes, the sides of the cover being connected to the upper passes of the endless cables such that the cables can move relative to the sides of the cover but the sides of the cover cannot be pulled away from the upper passes, whereby when the cables move in one direction the cover will move to a folded position wherein it gathers together adjacent to its fixed end and when the cables move in the opposite direction the cover spreads out over the frame and covers the open top of the truck body; and connecting means interconnecting the upper and lower passes of each cable for preventing the upper passes from spreading away from their lower passes as a result of forces exerted by the cover, the connecting means being slidable with respect to the upper and lower passes.

6. In combination with an open top truck body having upstanding spaced apart sidewalls, a cover assembly for covering the open top of the truck body, said cover assembly comprising: a frame fastened to the truck body and bridging the open top thereof; aligned first and second sheaves located adjacent each sidewall for rotation about spaced apart axes which are fixed in position with respect to the frame and a removable portion which is detachable from the fixed portion, at least one of the bows being segmented into at least one portion fixed with respect to the frame and a removable portion which is detachable from the fixed portion of the bow, the removable portion of said one stringer being attached to the removable portion of said bow so as to form a removable frame section which may be detached and removed from the remainder of the frame as a unit, whereby the truck body at the location of the removable frame section is not fully traversed by a bow when the frame section is removed; aligned front and rear sheaves located adjacent each sidewall for rotation about spaced apart axes which are fixed in position with respect to the frame; endless cables extended around the front and rear sheaves and having upper and lower passes which extend along the sidewalls of the truck body; means for rotating the sheaves to drive the cables in unison and in both directions; and a flexible cover extending over and supported on the frame, the cover having ends and sides with one of the ends being fixed in position with respect to the frame and the other end being attached to the two cables such that said other end will move with one of the cable passes on each of the two cables, the sides of the cover being connected to the endless cables such that the cables can move relative to the sides of the cover but the sides of the cover cannot be pulled away from the cables, whereby when the cables move in one direction the cover will move to a folded position wherein it gathers together adjacent to its fixed end and when the cables move in the opposite direction the cover spreads out over the frame and covers the open top of the truck body.

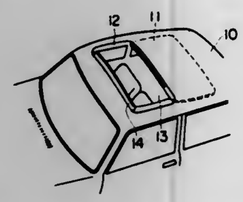
13. In combination with an open top truck body having upstanding spaced apart sidewalls, a cover assembly for covering the open top of the truck body, said cover assembly comprising: a frame fastened to the truck body and bridging the open top thereof, the frame including rigid bows extending transversely of the truck body between the sides thereof and rigid stringers extending longitudinally of the body between the sides thereof, the stringers being extended over and attached to the bows such that the stringers are elevated above the bows at the locations where they cross the bows, at least one of the stringers being segmented into a portion fixed with

4,067,604

VEHICLE ROOF

Keizi Mori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Oct. 5, 1976, Ser. No. 729,673
Claims priority, application Japan, Oct. 7, 1975, 50-137703
Int. Cl.[2] B60T 7/22
U.S. Cl. 296—137 J 2 Claims



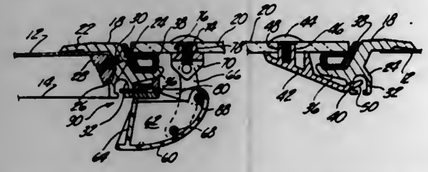
1. In a motor vehicle having a roof, an aperture in the roof and a sliding roof portion movable between retracted and extended positions for respectively opening and closing said aperture, the improvement comprising;
a frame along opening edges of the aperture for strengthening the aperture,
an air deflector mounted on the frame adjacent a front edge of the aperture for diverting the air stream with the roof portion retracted,
swingable arm means pivoted to the deflector at one end and at the other end carried by the frame in the path of the sliding roof portion in driven abutment engagement therewith, and
control means for controlling the deflector in shifting between the operative position and inoperative position, said control means including an arm fixed to said deflector and having a cam slot opened at one end and a hinge pin fast on the frame and having a sliding fit within the cam slot to thereby control movement of the deflector between operative and inoperative positions and attitude of the deflector in either position.

4,067,605

DETACHABLE SUN ROOF PANEL FOR AUTOMOBILES

Hal Green, Southfield, and Kenneth E. Hewson, Troy, both of Mich., assignors to Empire Automotive, Inc., Roseville, Mich.

Filed June 3, 1975, Ser. No. 583,260
Int. Cl.[2] B60J 7/18
U.S. Cl. 296—137 B 18 Claims



1. A sun roof for a vehicle having an opening in its roof, comprising: a frame extending about the edge of the opening and having a resilient supporting section lying substantially parallel to the vehicle roof; a panel adapted to be supported with its perimeter in abutment to the supporting section of the frame; an aperture formed through the frame in the direction toward the interior of the vehicle from said supporting section, below said resilient supporting section; a bayonet affixed to the unerside of the panel in proximity to the edge thereof, so that its free end projects in the direction of the edge, in spaced relation to the edge, the free end being adapted to be inserted into or removed from said aperture in the frame so than when the free end is inserted into the aperture the spaced edge of the panel abuts the resilient supporting section and a portion of the resilient section is engaged between the bayonet and the spaced panel edge; and cooperating fastener means affixed to the edge of the frame opposite the aperture and the edge of the panel opposite the bayonet, adapted to retain the panel with its entire perimeter abutting the resilient supporting section of the frame when the extending edge of the bayonet is inserted within the aperture in the frame.

11. A two-part separable fastener for joining one edge of a sun roof panel to a section of a frame extending about an opening in a vehicle roof, comprising: a handle member pivotably supported to the underside of the panel adjacent an edge thereof; an elongated tongue member having one end pivotably attached to the handle member; a lock member having a cavity therein adapted to receive the tongue; a retainer supported within the lock member for motion between a first position wherein it engages the tongue to prevent retraction of the tongue from the lock and a second position wherein it allows motion of the tongue out of the lock; means for urging the retainer member toward its first position; and manually actuable means for moving the retainer to its second position.

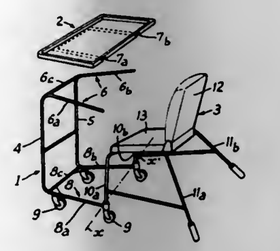
15. A sun roof for a vehicle having an opening in its roof, comprising: a rectangular frame extending about the edge of the opening and having a supporting surface lying substantially parallel to the vehicle roof; a rectangular panel curved about an axis extending parallel to two of its sides so than when the panel is brought into contact with the supporting surface of the frame, the two sides which extend parallel to this axis of curvature contact the frame before the other two sides; and cooperating separable fasteners formed on the two sides of th panel which extend normally to the axis of curvature and or two opposed edges of the frame, adapted to retain the panel with its entire perimeter abutting the supporting section of the frame.

4,067,606

TROLLEY TABLE AND SEAT

Pierrette Desmoulins nee Fouchereau, and Guy Desmoulins, both of 83 Boulevard du Redon - Super Rouviere, Batiment 9 - 13009 - Marseille, France

Filed Oct. 14, 1976, Ser. No. 732,414
Claims priority, application France, Oct. 21, 1975, 75.32977; Mar. 19, 1976, 76.08609
Int. Cl.[2] A47B 39/00
U.S. Cl. 297—141 16 Claims



1. A trolley table comprising, a chassis having front and rear ends and a longitudinal axis extending from said front end to said rear end, said chassis including
i. a pair of generally horizontal laterally extending side arms defining a base and diverging away from each other towards said rear end of the chassis and having free ends spaced from each other and defining an opening therebetween;
ii. a pair of generally vertically extending legs on said horizontal base at the front end of the chassis; and
iii. an upper support frame extending rearwardly from said legs;
a plurality of casters secured to said base for supporting said chassis; a surface element mounted on said support frame and having a substantially flat upper surface; and a seat including a pair of laterally spaced front legs and a pair of rear legs; said front legs of said seat being respectively pivotally mounted on the free rear ends of said side arms along a common horizontal axis extending transversely of said longitudinal axis whereby said seat is adapted to be pivoted to a folded position about said horizontal axis wherein the seat is located beneath said support frame and an identical trolley can be axially nested in said opening between said side arms inside the legs of the folded seat.

4,067,607

COMBINATION STOOL AND FISHING TACKLE BOX

Lee J. Battles, 123 Briarwood, Moore, Okla. 73060

Filed Dec. 27, 1976, Ser. No. 754,664
Int. Cl.[2] A47C 7/62
U.S. Cl. 297—192 2 Claims



1. A combination seat and tackle box, comprising:
an upright cylindrical side wall;
top and bottom end walls secured to the respective ends of said
side wall,
said side wall having an access opening between its ends extending circumferentially through substantially 180°;
circumferential track means including an annular flange secured to each said top and bottom end walls and spaced outwardly of the outer surface of the respective end portion of said side wall;
an arcuate door formed on a radius complemental with the outer surface of said side wall and slidably supported by said track means for opening and closing the access opening;
a plurality of circular horizontal vertically spaced partitions secured to said side wall,
said partitions each having a radial slot projecting toward the access opening;
a like plurality of circular trays coaxially supported by said partitions; and,
bolt means extending coaxially through the respective said tray and partition for horizontal rotative and sliding movement of each tray with respect to its supporting partition.

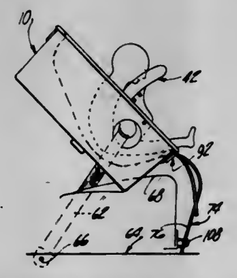
4,067,608

CHILD SAFETY RESTRAINT

Heinrich F. Von Wimmersperg, 15929 Grand River Ave., Detroit, Mich. 48227

Filed Nov. 26, 1975, Ser. No. 635,653
Int. Cl.[2] A62B 35/00
U.S. Cl. 297—216 21 Claims

1. In a vehicle of the type having a seat defined by a seat cushion and a backrest and also having a rigid floor structure, a child restraint device to protect the child in the event of an impact comprising a walled enclosure in which the child is adapted to be positioned in a supine position, said enclosure including a shape retaining shell, means on said enclosure for preventing the child therein from being thrown therefrom in the event of vehicle impact, said shell being disposed with a lower portion thereof supported on the seat cushion so that the spine of the child therein extends generally longitudinally of the vehicle and is inclined to the horizontal, a pair of support legs connected at their upper ends to the enclosure adjacent each side thereof and having a support position wherein they extend downwardly from the enclosure to engage the floor structure of the vehicle at their lower ends forwardly of the vehicle seat, restraining belt means anchored to the floor structure of the vehicle adjacent the rear of the vehicle seat and extending therefrom in an upward and forward direction and connected at its upper end with said enclosure rearwardly of the connection between said support legs and enclosure and means for preventing said legs from swinging in a direction forwardly and upwardly relative to the enclosure substantially beyond said support position, said restraining belt means when



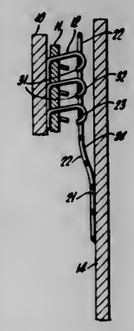
tightened cooperating with said legs to urge said enclosure downwardly against said seat cushion, said support legs and said belt restraining means being arranged relative to each other so that the plane extending through the connection points of the belt means with the vehicle floor structure and the enclosure and the plane extending through the lower ends of said legs and the connection between the legs and the enclosure are inclined towards each other and intersect at an axis which is disposed horizontally above the center of gravity of the enclosure with the child positioned therein whereby any tendency for the enclosure to tilt sidewise or for the upper end thereof to tilt downwardly and forwardly about the connection of the belt means and enclosure as a result of a collision is resisted by the joint effect of said legs and belt means.

4,067,609

HEADREST COVER FASTENING DEVICE

Irving Stanley Ness, Princeton Borough, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 608,364, Aug. 27, 1975, abandoned.
This application Nov. 22, 1976, Ser. No. 743,812
Int. Cl.[2] B62J 1/10; A44B 17/00
U.S. Cl. 297—220 9 Claims



1. In a headrest cover of the type for removable connection to a fastener containing hook-like elements mounted on a seat

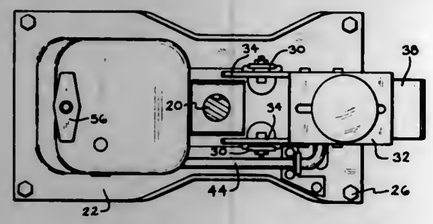
back, said cover having towel and separate means to attach the towel to said mounted fastener, the improved attaching means comprising: a flat planar plastic attachment strip having a first portion secured to a surface of said towel and having a second portion freely extending from the attachment made by the first portion, said second portion comprising a flat planar flexible plastic material having a network of filaments defining a pattern of discontinuous opening sufficient to engage said hook-like elements of the fastener.

4,067,610

CHAIR CONTROL MECHANISM

Wendel P. Doerr, Lexington, and William C. Rodgers, Stamping Ground, both of Ky., assignors to Hoover Ball and Bearing Co., Saline, Mich.

Filed May 10, 1976, Ser. No. 684,731
Int. Cl.² A47C *3/00*
U.S. Cl. 297—301 **13 Claims**



1. A control mechanism for a chair having two components which are pivotally movable relative to each other and wherein one of said components is a seat member having a rear end and a front end, said control mechanism comprising a first frame member mounted on one of said components, a second frame member pivotally connected to the first frame member and mounted on the other component, said frame members being connected for relative privotal movement about an axis, a torsion bar having a main body portion and end portions which are bent transversly of said body portion, said torsion bar being mounted on said frame members so that said body portion extends in a direction substantially perpendicular to said axis and front to rear relative to said seat member, said torsion bar end portions being engaged with said frame members such that on relative pivotal movement of said frame members in one direction of said end portions is moved in a direction tending to rotate said torsion bar body portion in one direction, the other one of said torsion bar end portions being engaged with one of said frame members so as to prevent said rotation and thus cause said torsion bar to twist between said end portions and thereby yieldably resist said relative pivotal movement of said frame members in said one direction and exert forces on said frame members urging said frame members in opposite relative directions.

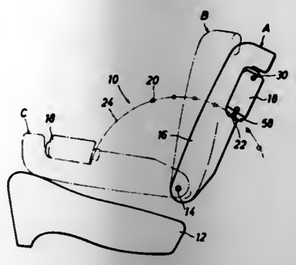
4,067,611

SEAT LOCK DEVICE

Toshio Kurozu, Chigasaki, and Norio Miyashita, Tokyo, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd. and Honda Motor Co., Ltd., both of Tokyo, Japan

Filed Feb. 28, 1977, Ser. No. 772,594
Claims priority, application Japan, Mar. 5, 1976, 51-23928
Int. Cl.² A47C *1/024*
U.S. Cl. 297—355 **6 Claims**

1. A seat lock device comprising a lock unit fitted on one member of an immovable member and a swingable back rest member of a seat, the back rest member being rotatably supported by a pivotal shaft mounted on the immovable member and at a point spaced from the pivotal shaft, and a plurality of strikers mounted on the other of said members along the circumference of a circle centered at the pivotal shaft for lockable engagement with the lock unit, wherein the lock unit comprises a case; an actuating unit pivotally supported on the case to be rotated into selective engagement with any of the strikers; a lock mechanism for locking the rotatable actuating unit when it is rotated through a prescribed angle to a lock position; a direction-setting unit for rotating the actuating unit to set it in



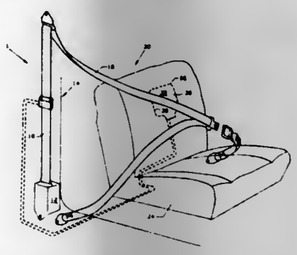
a free position ready for engagement with an approaching striker while the actuating unit remains disengaged from all the strikers; and a releasing mechanism for releasing the actuating unit locked by the lock mechanism.

4,067,612

SAFETY BELT TENSION RELIEVING APPARATUS

Per Olof Weman, Heverlee, Belgium, assignor to N.V. Klippan S.A., Haasrode, Belgium

Filed Mar. 1, 1976, Ser. No. 662,986
Int. Cl.² A62B *35/00*
U.S. Cl. 297—389 **9 Claims**



1. In a vehicle safety belt system adapted to restrain an occupant in a vehicle seat, the safety belt system including a shoulder belt and a retractor having a rewind mechanism biased to rewind the shoulder belt on a reel of the retractor, the improvement of a shoulder belt, tension-relieving apparatus adapted for relieving tension on the shoulder belt by the rewinding mechanism of the retractor, said safety shoulder belt tension-relieving apparatus comprising:

a. locking means disposed adjacent to said safety belt, having a locking position and an unlocking position and being adapted to be actuated from its unlocking to its locking position, said locking means in its locking position preventing further rewind of the shoulder belt into the retractor;

b. biasing means biasing said locking means in its unlocking position; and

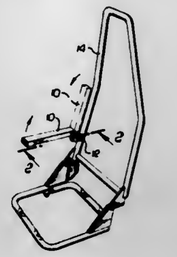
c. pneumatic actuating means having a first portion disposed in the back of said seat and a second portion connected to said locking means for moving said locking means to the locking position to relieve belt tension when said occupant leans against said back of said seat.

4,067,613

ARM REST AND MOUNTING BRACKET THEREFOR

James B. Pesiri, Dana Point, Calif., assignor to J. C. Sales & Mfg. Co., Inc., Irwindale, Calif.

Filed Mar. 21, 1977, Ser. No. 779,315
Int. Cl.² A47C *7/54*; B60N *3/02*
U.S. Cl. 297—416 **15 Claims**



1. An arm rest for a chair or the like comprising

a rectangular arm having a preselected length, a tubular element secured adjacent one end of the arm and protruding therefrom, a stop member secured adjacent the free end of the tubular member and arranged to be in a parallel longitudinal alignment with the rectangular arm, and

mounting means having an arm locking aperture for slidably receiving said tubular member and the stop member therein and rotatable therein, said mounting means including an integral stop member protruding a preselected distance into the locking aperture for engagment with said stop member of said tubular member to arrest the rotation of the stop member when the arm is rotated into engagement therewith to thereby support the arm in a substantially horizontal position for resting a human arm by means of said integral stop member.

4,067,614

FOOTSTOOL

Raymond C. Confer, Gasport, and Thomas F. Gosch, Amherst, both of N.Y., assignors to Raymond C. Confer; Thomas F. Gosch and John W. Gatke, all of Buffalo, N.Y., part interest to each

Filed Oct. 12, 1976, Ser. No. 731,638
Int. Cl.² A47C *9/12*
U.S. Cl. 297—438 **5 Claims**



1. A footstool, comprising:

a base member having upper and lower ends, at least one of said ends being adapted to rest on a floor;

a support member having one marginal end portion mounted on said base member at a position intermediate said upper and lower base member ends, said support member extending outwardly from said base member and adapted to support the leg of a user;

said base member having at least one opening therethrough, a first surface arranged to face toward said support member, and a second surface about said opening spaced from said first surface and arranged to face away from said support member;

said support member having at least one male member configured as an open-ended tube and extending outwardly from said support member and arranged to penetrate said base member opening, having a first surface arranged to abut said base member first surface, and having at least one catch means carried by said male member and arranged to operatively engage said base member second surface to prevent unintended separation of said support member from said base member; and

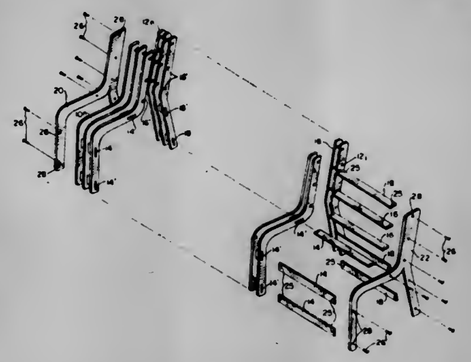
a plug member adpated to be inserted into said tubular male member to urge said catch means outwardly into such operative engagement with said base member second surface.

4,067,615

ARTICLE OF FURNITURE OR THE LIKE

Frank O. Gehry, 2807 Highland Ave., Apt. No. 6, Santa Monica, Calif. 90405

Continuation-in-part of Ser. No. 205,900, Dec. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 73,005, Sept. 17, 1970, abandoned. This application May 15, 1972, Ser. No. 253,192
Int. Cl.² A47C *1/12, 5/00, 7/00*
U.S. Cl. 297—445 **8 Claims**



1. An article of furniture comprising a plurality of flat pieces, each of said pieces including a multiplicity of parallel flutes, said pieces being cut to conform in shape to a cross section through the furniture, the flutes of each of said pieces extending in a preselected relationship with respect to the flutes of other ones of said pieces, with the edges of each piece being defined by sectional slices through said flutes, means for securing said pieces together to form a laminate, the width of said laminate comprising substantially the full width of the article of furniture, the surfaces of the article of further other than its ends being defined by the exposed edges of said flat pieces, at least one of the surfaces formed by the exposed edges of said corrugated pieces being curved.

4,067,616

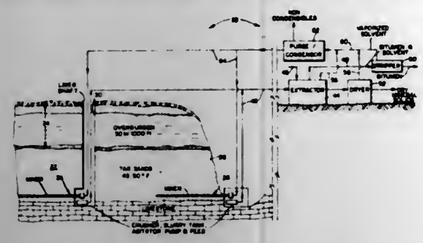
METHODS OF AND APPARATUS FOR MINING AND PROCESSING TAR SANDS AND THE LIKE

Clay D. Smith, and Douglas V. Keller, Jr., both of Lafayette, N.Y., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 460,558, April 12, 1974, Pat. No. 3,941,679. This application Mar. 1, 1976, Ser. No. 662,890
Int. Cl.² E21C *41/10*
U.S. Cl. 299—7 **13 Claims**

1. A method of recovering bitumen from a tar sand which comprises the steps of: mechanically dislodging the tar sand

from a deposit thereof; reducing the viscosity of the dislodged material by mixing a fluorochlorocarbon solvent therewith under ambient conditions; transferring the resulting mixture to a separation operation; and there recovering the bitumen by



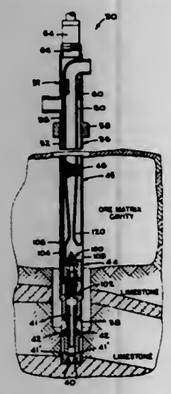
dissolving it in a fluorochlorocarbon solvent as aforesaid, mechanically separating the resulting solution from the insoluble components of the tar sand, and stripping the solvent from the bitumen to isolate the latter.

4,067,617

SUBTERRANEAN DRILLING AND SLURRY MINING

Philip R. Bunnelle, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 704,278, July 12, 1976. This application Apr. 4, 1977, Ser. No. 784,487
Int. Cl.² F21C *45/00*
U.S. Cl. 299—17 **30 Claims**



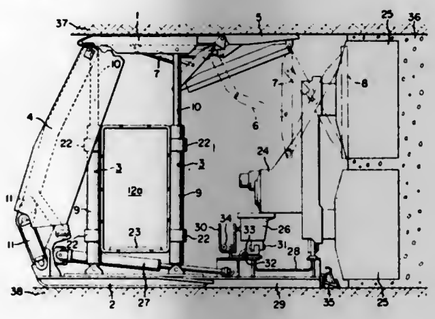
1. A method of drilling and slurry mining granular ore from a deep well cavity with an apparatus which includes one or more mining nozzles, an eductor nozzle, and a foot valve in a tool string having a liquid inlet passage and a slurry discharge passage therein, said tool string defining a system pressure zone above said foot valve and a cavity pressure zone below said foot valve whose pressure varies from slightly below system pressure to cavity pressure, depending upon the velocity of liquid flowing through the foot valve and the position of the foot valve: the method comprising the steps of directing system pressure against the mining nozzle and the eductor nozzle in a direction tending to open the nozzles and against the foot valve in a direction tending to close the foot valve, resiliently urging the mining nozzles and eductor nozzles toward their closed positions and the foot valve toward its open position, directing a liquid at a drilling system pressure and capacity into the tool string and through the foot valve to flush cuttings to the surface during drilling, increasing the system pressure and capacity above their drilling conditions at the start of mining for creating a sufficient change over pressure and pressure drop across the foot valve to close the foot valve thereby providing a low cavity pressure below the foot valve that is substantially less than said system pressure, restricting the rate of closure of the foot valve, venting a portion of the mining nozzle to a pressure below system pressure causing the opposing mining system pressure to exceed said resilient force plus said low pressure acting on the mining nozzle thereby opening the mining nozzle, and venting a portion of the eductor nozzle to allow the opposing mining system pressure to exceed said resilient force and said low pressure acting on the eductor nozzle thereby opening the eductor nozzle.

4,067,618

APPARATUS FOR PROTECTING OF COAL MINE WORKERS

Shigeo Nakajima; Ken Takahashi, both of Tokyo; Tsunetoshi Itoh, Yokohama, and Hajime Endo, Kushiro, all of Japan, assignors to Taiheiyo Engineering Inc., Tokyo, Japan

Filed Sept. 24, 1976, Ser. No. 726,406
Int. Cl.² E21C *35/20*
U.S. Cl. 299—31 **1 Claim**



1. An apparatus for protecting mine workers, comprising in combination:

a. an upper horizontal beam (1) with defined front and rear portions;

b. a lower horizontal skid (2) suitably separated from said upper beam (1) with front and rear ends, said rear end being connected to said beam rear portion by an arch frame (4) with telescoping props (3) between said beam (1) and said skid (2);

c. a tip end beam (5) at the front side of said upper beam (1), a vertical wall protector plate (8) and link members (6), and cylinders (7) connecting said wall protector plate (8) and said tip end beam (5), said plate (8) being disposed in front of said tip end beam (5) to hold against a working face, said plate (8) being moveable to and away from said tip end beam (5) so as to prevent mine debris from falling off the working face;

d. drum shearer means (24, 25, 26, 28, 30) disposed at the front end of said skid (2) jack means (27) coupled between said arch frame (4) and said drum shearer means to press said drum shearer means against the working face;

e. a plurality of isolated chambers (12*a*, 12*b*) each with a chamber top disposed between said skid (2) and beam (1) and fastened to said props (3); and,

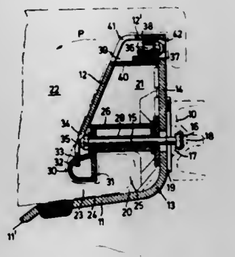
f. an accordion-type hood (21) including reinforcing means between the tops of said chambers to form a protected passage therebetween.

4,067,619

LONGWALL MACHINE GUIDE WITH DETACHABLE COVER PLATE

Wolfgang Peters, Selm; Alois Hauschopp, Werne, and Gerhard Merten, Lunen, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Germany

Filed Aug. 31, 1976, Ser. No. 719,232
Claims priority, application Germany, Sept. 10, 1975, 2540215
Int. Cl.² E21C *35/12*
U.S. Cl. 299—43 **16 Claims**



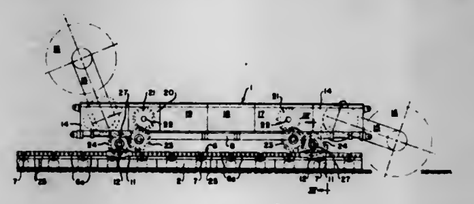
1. In a guide for a mineral mining machine; said guide being composed of interconnected parts at least partly defining upper and lower chain guide passages separated from one another by spacers with each guide part having a cover plate on the outer side of at least the upper chain guide passage and means for mounting the cover plate for pivoting to provide access to the interior of the guide; the improvement comprising constructing the mounting means for the cover plate as a detachable push-in hinge having tongues protruding downwardly from the lower edge of said cover plate into apertures in a mounting piece underlying said lower edge and carried by said spacers.

4,067,620

RACK-DRIVEN MINING MACHINE WITH PIVOTAL GUIDE SHOE

Willy Lanfermann, Bochum, Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Nov. 3, 1976, Ser. No. 738,573
Claims priority, application Germany, Nov. 20, 1975, 2552085
Int. Cl.² E21C *29/22*
U.S. Cl. 299—43 **7 Claims**



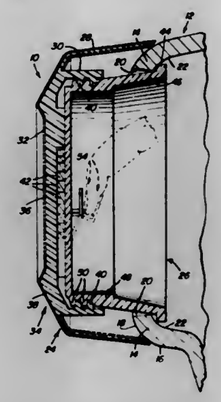
1. In a mining machine of the type which moves along a track provided with a gear rack and wherein a driven gear on the machine engages the rack to move the machine along the track, the improvement comprising a skid bearing upon and guided by said rack, the skid being pivotally connected to said mining machine intermediate the ends of the skid about an axis extending transverse to the path of travel of the machine, and a gearwheel fixedly mounted on said mining machine and meshing with said gear rack whereby rotation of the gearhweel will cause the machine to traverse the track, the axis of rotation of the gearwheel lying in a substantially vertical plane through which the pivotal axis of said skid extends whereby pivotal movement of the skid with respect to its pivotal connection to the mining machine will not affect the meshing engagement of the gearwheel with said gear rack.

4,067,621

PLASTIC HUB CAP

Merlyn Ralph Reppert, Torrance, Calif., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jan. 20, 1976, Ser. No. 650,810
Int. Cl.² B60B *7/06*
U.S. Cl. 301—108 A **24 Claims**



1. A hub cap device for attachment to a wheel formed with a central hub having an inturned lip defining a through opening, the combination comprising an inner cup having a portion sized to fit through said wheel hub and said central through opening, means on said inner cup cooperable with the inside of said inturned lip to prevent passage of said inner cup completely through said through opening, an outer cup having a portion cooperable with the outside of said wheel hub and to prevent said outer cup from passing through said through opening, attachment means between said inner and outer cups securing said inner and outer cups together when assembled, and lock means to prevent inadvertant disassembly of said cups, said lock means comprising an integral flexible lever having detent means at one end on one of said cups and an annular ring of radially disposed ratchet teeth on the other of said cups and cooperable with said detent means.

4,067,622

METHOD AND APPARATUS FOR THE PNEUMATIC CONVEYING OF BULK MATERIAL

Wolfgang Krambrock, Ravensburg; Dieter Heep, Bergatreute, and Norbert Eberhard, Ertingen, all of Germany, assignors to Waeschle Maschinenfabrik GmbH, Ravensburg, Germany

Filed Nov. 5, 1976, Ser. No. 739,103
Claims priority, application Germany, Nov. 7, 1975, 2550164
Int. Cl.² B65G *53/16*
U.S. Cl. 302—24 **6 Claims**

1. A method for the pneumatic conveying of bulk material comprising the steps of

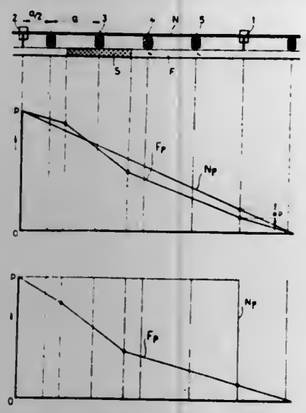
a. introducing a conveyor gas into a conveyor conduit;

b. introducing material to be conveyed into the conveyor conduit for conveying by the conveyor gas;

c. passing gas through a by-pass conduit which has communications with the conveyor at a plurality of spaced positions, the pressure distribution in the by-pass conduit being substantially adapted to the pressure distribution which occurs in normal operation in the conveyor conduit;

d. positioning a plurality of shut-off means in spaced relation along said by-pass conduit thereby to divide said by-pass conduit into a series of sections each of which is between adjacent shut-off means, said shut-off means serving only to permit or shut off flow through said by-pass conduit and not serving to communicate flow between said by-pass conduit and said conveyor conduit;

e. positioning a plurality of flow transfer valves in each section, each of said valves being adapted to permit the flow of gas from said by-pass conduit into said conveyor conduit when the pressure difference between the by-pass conduit and the conveyor conduit exceeds a preselected threshold value due to a pressure drop in the conveyor



conduit downstream of a gas flowimpeding accumulation of material in the conveyor conduit,

whereby gas is transferred from the by-pass conduit into the conveyor conduit simultaneously by way of all of said flow transfer valves in such sections which are disposed between said accumulation of material and the next following downstream shut-off means.

4,067,623

PNEUMATIC PRESSURE CONVEYOR FOR FINE MATERIAL

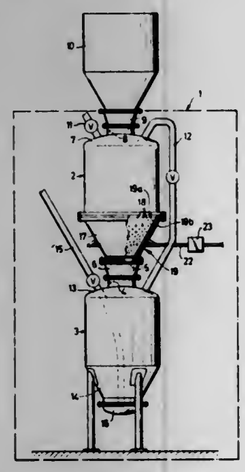
Hans Klein; Carlos Arbeletche, both of Beckum; Gerhard Balzan, and Manfred Steinman, both of Neubeckum, all of Germany, assignors to Polysius AG, Neubeckum, Germany

Continuation-in-part of Ser. No. 564,418, April 2, 1975, abandoned. This application June 30, 1976, Ser. No. 701,287

Claims priority, application Germany, Apr. 2, 1974, 7411476[U]

Int. Cl.² B65G *53/38*

U.S. Cl. 302—53 **3 Claims**



1. A pneumatic pressure conveyor for fine material comprising two superimposed pressure vessels, the upper of which has a closable material inlet connected to a source of fine material and has a lower end in the form of a cone with a bottom outlet, the lower vessel having a material inlet connected through a valve to the bottom outlet of said cone, and having a pneumatic feed outlet conduit connected to its lower portion, and a valved conduit connected to both vessels for equalizing the pressure therein to pressurize the upper vessel after the inlet of the upper vessel has been closed and before said valve is opened, wherein the improvement comprises means for breaking up a heavily compacted mass of fine material which has been compressed into said cone during pressurization of the upper vessel, to cause the contents of the upper vessel to be dumped into the lower vessel upon opening of said valve, said means comprising:

a. a plurality of nozzles uniformly distributed over the length and periphery of said cone, which have an internal diameter between 0.2 and 0.6 mm.,

b. said nozzles being connected to a source of gas under an absolute pressure at least 4 percent but not more than 89.3 percent greater than the absolute pressure in said vessels, to produce jets which penetrate deeply into the heavily compacted mass of fine material so as to break up bridges in the material,

c. the interior of said cone being unobstructed, and

d. control means for causing the gas to be supplied in pulsations at least 0.2 second in duration, with an interval of 0.25 to 30 seconds between pulses.

4,067,624

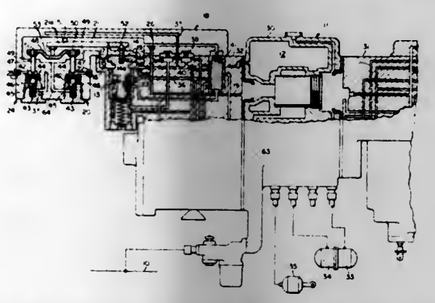
EMERGENCY VALVE COVER CONTAINING A QUICK SERVICE VALVE

Eugene Douglas McEathron, Watertown, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Continuation of Ser. No. 648,844, Jan. 14, 1976, abandoned. This application Jan. 26, 1977, Ser. No. 762,608

Int. Cl.² B60T *15/30*

U.S. Cl. 303—69 **16 Claims**



1. A fluid brake control system having a brake pipe, a control valve of the ABD type including a quick action chamber in a pipe bracket and an emergency portion housing secured to the pipe bracket, the housing containing an emergency slide valve means selectively operable axially for governing venting of the quick action chamber, the slide valve means being operable axially from a normal position to fully actuated and intermediate positions in accordance with the sensing respectively of emergency and service rates of pressure reduction in the brake pipe and the slide valve means having a fluid differential operated abutment disposed between a first pressure chamber within the emergency portion housing on one side of the abutment subject to pressure of the quick action chamber and a second pressure chamber contained in an emergency portion cover on the other side of the abutment connected by a passage to the brake pipe wherein an improved emergency portion cover on the other side of the abutment has secured thereto quick action control means for at least periodically venting fluid from the brake pipe as long as the brake pipe is vented at a service rate comprising;

a. normally closed quick action poppet type valve means operably connected to the abutment and opened when the emergency slide valve means is in the intermediate position in response to the service rate of reduction in the brake pipe, and

b. venting means permitting passage of fluid from the brake pipe through the quick action valve means in series with an exhaust choke for venting fluid from the brake pipe at a controlled rate in response to actuation of the emergency slide valve means to its intermediate position upon sensing a service rate of reduction in the brake pipe.

4,067,625

RESOLVING ROLLER

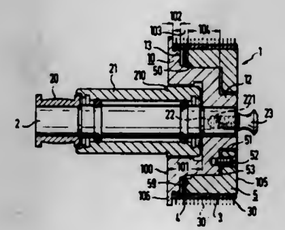
Georg Goldammer, Gaimersheim, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed June 17, 1976, Ser. No. 696,832

Claims priority, application Germany, June 26, 1975, 2528485

Int. Cl.² F16C *35/08*

U.S. Cl. 308—149 **17 Claims**



1. A resolving roller comprising:

a fittings sleeve;

a roller body for carrying said fittings sleeve which roller body has a generally radial riser portion;

drive means for rotating said roller body;

a clamping member connectible with said roller body for conjoint rotation therewith, said clamping member including a generally radial portion spaced from said roller body riser portion for forming therewith a resilient means-receiving cavity and an outer circumferential surface for receiving said fittings sleeve;

means for connecting said roller body and said clamping member and for effecting adjustment of the axial width of said resilient means-receiving cavity; and

resilient means in said resilient means-receiving cavity for effecting radial expansion by adjustment of the axial width of said cavity and for holding said fittings sleeve on said roller body for conjoint rotation therewith.

4,067,626

UNIVERSAL BEARING JOINT

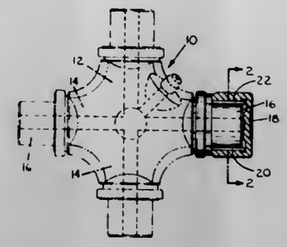
John Christee McElwain, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 19, 1976, Ser. No. 715,771

Int. Cl.² F16C *11/02*

U.S. Cl. 308—207 R **5 Claims**

1. A bearing for receiving a journal comprising: a bearing cup, a series of needle bearing elements interposed between the inner surface of said cup and said journal, means to form a slightly elliptical path for said needle bearing elements as they revolve around said journal thereby bringing said needle bearing elements into intimate rolling bearing contact with the outer bearing surface of said journal and the inner bearing surface of said cup, said journal is a trunnion formed on the ends of each of four equiangularly spaced arms of a cross in a cross and yoke type universal coupling, a bearing cup being mounted on each of said trunnions, said means to bias said needle bearing elements into intimate rolling contact with the outer bearing surface of said trunion and said inner bearing surface of said bearing cup is an insert member inserted within said bearing cup, said insert member having an outer cylindrical surface in contact with the complementary inner cylindrical surface of said bearing cup, the inner surface of said insert



member being slightly elliptical with respect to the cylindrical outer surface of said trunnions, said needle bearing elements interposed in a bearing relationship between the cylindrical outer surface of said trunnions and the inner elliptical surface of said insert member.

4,067,627

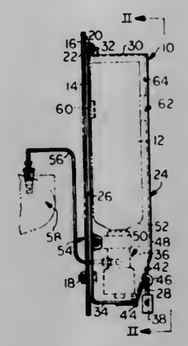
PROTECTIVE COVER AND CLAMP FOR ETHER START UNIT

Norman J. Hodge, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 19, 1976, Ser. No. 715,741

Int. Cl.² A47B *81/00*; A47K *1/08*

U.S. Cl. 312—100 **6 Claims**



1. A protective cover and clamping arrangement for a bottle, comprising:

a first wall;

hook means proceeding outwardly from said first wall adjacent a first end thereof;

a can open along a first side and at a first end thereof, said first side being fastenable against said first wall;

hook engaging means proceeding outwardly from a second closed end of said can for engagement with said hook means;

a second wall proceeding generally outwardly from said first wall a spaced distance from said hook means generally equal to the length of said can;

fastening means for fastening said first end of said can to said second wall to create a generally closed chamber about a bottle;

shape conforming first bottle engaging means extending from said first wall to contact said bottle; and

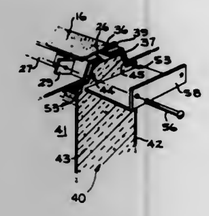
shock-absorbent second bottle engaging means extending from the interior of said can to contact said bottle.

4,067,628

FOAM-INSULATED SIDE-BY-SIDE REFRIGERATOR

Raymond Robert Sherburn, Montreal, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed June 8, 1976, Ser. No. 693,766
Claims priority, application Canada, June 13, 1975, 229457
Int. Cl.[2] A47B *81/00;* F25D *11/00;* B65D *25/18*
U.S. Cl. 312—214 6 Claims



1. In a combined refrigerating freezing appliance having two compartments with a common vertical partition wall, an improved means of reducing undesired thermal flow between said compartments, said means comprising:

a separate liner for each compartment, each of said liners having a top, bottom, rear, and outer side wall;

said liners being positioned in an encasing shell and spaced therefrom, with foam insulation material in the space between said liners and the shell, adjacent edges of said liners being spaced apart;

a separate partition wall including a pair of opposed, spaced apart sheet members havng spaced apart adjacent edges, with foam insulation material between said sheet members;

complimentary channel and tongue means along the spaced apart adjacent edges of said liner and said partition wall, said complimentary channel and tongue being in the form of a truncated V;

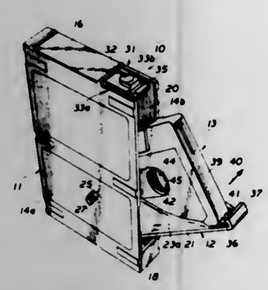
whereby said partition wall maybe slidably positioned to divide said appliance into the two compartments with neither of said partition wall sheet members or portions thereof being common to both compartments.

4,067,629

STORAGE RECEPTACLE FOR MAGNETIC TAPE CASSETTE

Hideo Amatsu, Yokohama; Kazumi Fujimoto, Hoya, and Kishio Ikeda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 5, 1976, Ser. No. 673,415
Claims priority, application Japan, Apr. 4, 1975, 50-44684[U]; Apr. 3, 1975, 50-44148[U]
Int. Cl.[2] A47B *81/06*
U.S. Cl. 312—319 7 Claims



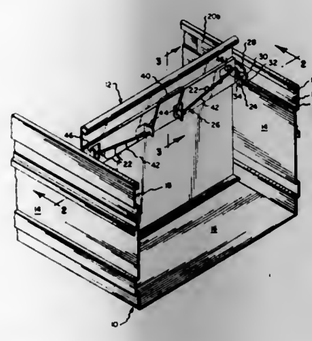
1. A storage receptacle for a magnetic tape cassette having a casing containing rotatable tape supply and takeup reels with reels hubs exposed at openings in the casing: said storage receptacle comprising a housing having spaced apart, parallel side walls which, between their forward edges, define an opening at the front of the housing; and a holder pivotally connected with the housing for swinging movement through said front opening of the housing between an opened position in which said holder projects forwardly from said housing and a closed position in which said holder closes said front opening of the housing and is substantially contained in the latter, said holder including side walls movable between said side walls of the housing and being spaced apart for slidable insertion and removal of a cassette between said side walls of the holder with the latter in said opened position, and flexibly resilient stop elements normally projecting inwardly from one of said side walls of the holder for engaging said reel hubs of the cassette when the latter is disposed in the holder for resisting turning of the supply and takeup reels, said flexibly resilient stop elements being deflectable by said casing of a cassette out of the path of movement of the latter between said side walls of the holder during said slidable insertion and removal of the cassette therebetween.

4,067,630

FILE DRAWER COMPRESSOR

Forest G. Stark, Jamestown, and Dennis J. Signore, Ellicottville, both of N.Y., assignors to AVM Corporation, Jamestown, N.Y.

Filed May 27, 1976, Ser. No. 690,740
Int. Cl.[2] A47B *88/00, 95/02*
U.S. Cl. 312—319 13 Claims



1. In the combination of a file drawer, a compressor mounted by side walls of said drawer for longitudinally directed movements and locking means for releasably locking said compressor against rearwardly directed movements within said drawer, said locking means including a manually manipulatable spring rod and a pair of latch devices, said spring rod having a centrally disposed operating portion, a pair of mounting portions having their relatively inner ends fixed to said operating portion and a pair of crank arms fixed to relatively outer ends of said mounting portions, said spring rod being mounted rearwardly of said compressor by a pair of end bearing means and a pair of central bearing means arranged in a relatively spaced relationship and horizontally intermediate said end bearing means, said mounting portions having said inner ends thereof supported one by each of said central bearing means and said outer ends thereof supported one by each of said end bearing means, and said latch devices including latching elements carried one by each of said crank arms for movement between compressor locked and unlocked positions incident to movement of said spring rod between operative and release positions, respectively, the improvement comprising:

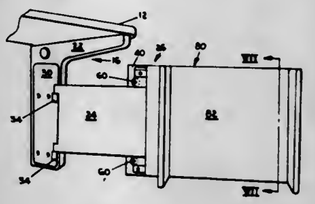
said end bearing means being disposed to lie essentially parallel to and vertically above said central bearing means, and said spring rod is characterized as having said mounting portions subject to resilient deformation incident to mounting of said mounting portions on said central and end bearing means for normally maintaining said spring rod in said operative position.

4,067,631

UNDER WORK SURFACE ORGANIZER

James O. Kelley, Spring Lake, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed July 16, 1976, Ser. No. 705,822
Int. Cl.[2] A47B *97/00*
U.S. Cl. 312—322 28 Claims



1. An organizer system adapted for use with a work surface having a vertical support member and said system being supported from said vertical support member, said system being pivotable and extensible from a closed position to an open, storage and retrieval position and comprising:

an elongated frame positioned in a vertical plane and adapted to be hingedly connected at one end to the vertical support member to thereby pivot about a vertical axis;

a storage module; and

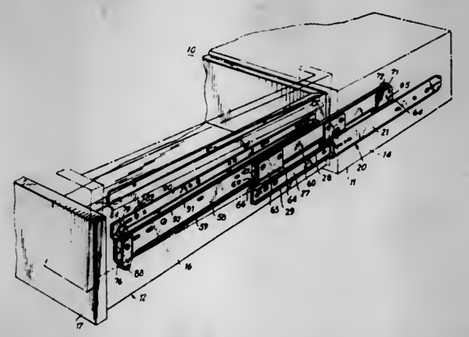
means telescopingly positioned on said frame and attached to said storage module for permitting extension and retraction of said module on said frame away from and towards said hinged end of said frame.

4,067,632

DRAWER SLIDE

Michael Sekerich, Spring Valley, N.Y., assignor to Buildex, Inc., West Nyack, N.Y.

Filed Oct. 21, 1976, Ser. No. 734,574
Int. Cl.[2] A47B *88/00;* F16C *21/00*
U.S. Cl. 312—341 R 11 Claims



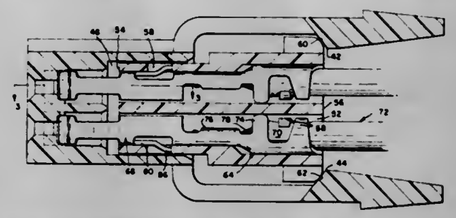
1. A slidable drawer structure comprising a support frame, an elongated first slide member carried by said support frame and movable between an extended and a retracted position, a drawer including a side wall, an elongated longitudinally extending bracket member including an elongated right angle member having a vertical web secured to said drawer side wall and a horizontal web resting on said first slide member and having a latch opening formed therein proximate its forward end and latching means disposed proximate the forward end of said first slide member for releasably interlocking said first slide member and said bracket member and including an upwardly directed resiliently flexible latch member mounted on said first slide member and projecting through said latch opening and having a downwardly facing shoulder normally registering with a border of said opening, said latch member being manually movable to a release position with said shoulder clearing said opening to permit the raising of the drawer carried bracket member out of engagement with said latch member.

4,067,633

CAM ACTUATED LOW INSERTION FORCE CONNECTOR

James Leon Groft, McSherrystown; William Jeffrey Hudson, Jr., Hershey, and Clifton Wesley Huffnagle, Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 20, 1976, Ser. No. 752,371
Int. Cl.[2] H01R *13/62*
U.S. Cl. 339—74 R 8 Claims



1. A connector assembly for zero on/zero off mating with a plurality of fixed post terminals, said connector assembly comprising:

a first housing member having a mating face on a front end, a cavity depending into an opposite rear end, a plurality of profiled terminal passages extending from said mating face to said cavity including at least one reaction surface facing said cavity, a pair of parallel spaced apart handles resiliently attached to said first housing member extending rearwardly on opposite sides of said cavity, and cam surfaces on the opposed surface of said handles;

a second housing member profiled to be received in said cavity, a plurality of profiled contact receiving passages in said second housing member each aligned with a respective terminal passage in said first housing member, and a pair of oppositely directed cam surfaces aligned to react with said cam surfaces on the handles of said first housing member to effect relative motion between said housing members; and

a plurality of spring contacts each having a first end profiled for engagement with a conductor and second mating end including at least one spring arm having a normal relaxed first position, said arm engaging said reaction surface of said first housing member upon relative closing movement of said housing members and being deflected to a second position allowing insertion of a terminal post into said assembly without application of force.

4,067,634

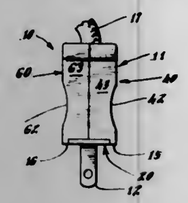
DEAD-FRONT ELECTRICAL HOUSING

Ernest Gerhard Hoffman, Middlefield, Conn., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

Continuation of Ser. No. 609,797, Sept. 2, 1975, Pat. No. 4,010,999. This application Feb. 28, 1977, Ser. No. 772,672
The portion of the term of this patent subsequent to Mar. 8, 1994, has been disclaimed.
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—107 14 Claims

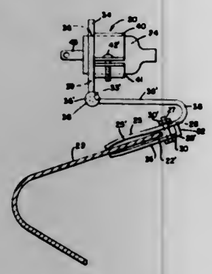
1. A housing for electrical terminals to which conductors of an electrical cord may be electrically wired, the housing having a longitudinal axis and comprising:

a base member constituting the front of the housing and being disposed transverse to the longitudinal axis,
said base member being composed of an electrical insulating material and containing apertures for passage of conductive contact members,
at least two longitudinally disposed side casings composed of an electrical insulating material and having respective first and second ends,
web hinge means joining the first end of each of said side casings to said base member to form a unitary structure and to permit pivoting of said casings, about respective axes transverse to said longitudinal axis, from an open



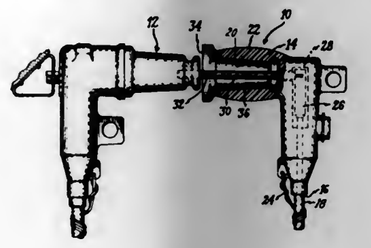
position to a closed position which is generally longitudinal,
means adjacent the second ends of said casings for maintaining said casings in a closed position and clamping the electrical cord to the housing,
terminal mounting means fixed to said base member and located within the casings when they are in a closed position, and
locking means adjacent the first end of each of the side casings, exclusive of the web hinge means, for locking the side casings to said base member against relative displacement both transverse to and parallel to said longitudinal axis when the casings are closed.

4,067,635
PLUG HOLDER FOR HEAD BOLT HEATERS
Dean C. Solberg, Box 74, Towner, N. Dak. 58788
Filed Mar. 11, 1977, Ser. No. 776,712
Int. Cl.² B60D *1/08*; B60L *1/02*; H01R *13/60*
U.S. Cl. 339—119 R **1 Claim**



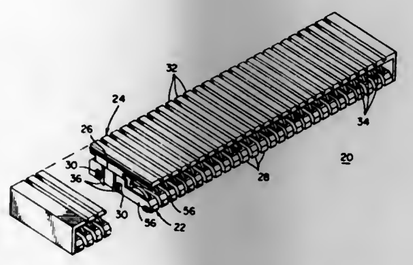
1. A holder for the outlet plug of an electric heater for an engine of a vehicle comprising a pair of parallel plates adapted to be locked on opposite sides of the surfaces of a front bumper of the vehicle, a pivotally mounted plate pivotally mounted at its lower end to one of the parallel plates, locking means to lock the pivoting mounted plate to said one of said parallel plates in an adjusted position, said pivotally mounted plate having a hole therethrough, clamping means on said pivotally mounted plate, whereby the outlet plug may be inserted between the clamping means with the prongs projecting through the hole in the pivotally mounted plate and the clamping means may be actuated to lock the plug to the plate to thereby lock the plug at a fixed position on the bumper of the vehicle, whereby an extension cord plugged in at one end to a source of electric current may be plugged in at its other end to the plug to provide current through the extension cord and through the plug to the heater for the engine of the vehicle.

4,067,636
ELECTRICAL SEPARABLE CONNECTOR WITH STRESS-GRADED INTERFACE
Vincent J. Boliver, Hackettstown, and Henry N. Tachick, Blairstown, both of N.J., assignors to General Electric Company, Philadelphia, Pa.
Filed Aug. 20, 1976, Ser. No. 716,131
Int. Cl.² H01B *17/76, 17/44*
U.S. Cl. 339—143 C **7 Claims**



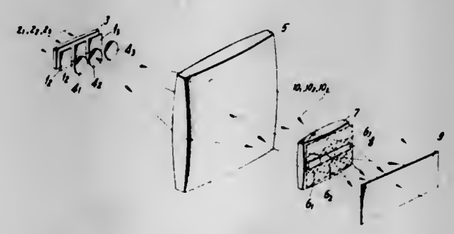
1. A rod connector module for separably connecting shielded electrical power cable, said module comprising:
an insulating housing containing a contact rod support;
a receiving cone in said housing extending from exterior to said housing toward said support, and
a conductive contact rod fixed at one end to said support and extending toward the exterior along the axis of said cone, wherein the improvement comprises a layer of electrically resistive voltage stress grading material on the inside surface of said cone and electrically connected to the supported end of said rod.

4,067,637
ELECTRICAL CONNECTOR
Ronald S. Narozny, Panorama City, Calif., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Dec. 9, 1976, Ser. No. 749,096
Int. Cl.² H01R *13/46*
U.S. Cl. 339—198 G **10 Claims**



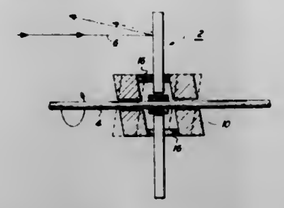
1. In an electrical connector of the type having a base member, a cover member, and contact elements contained within said base member, the improvement comprising: said base member and said cover member each comprising a series of connector elements interconnected to one another by frangible portions to facilitate parting said base member and said cover member at preselected locations, said connector further comprising latch means at each of said preselected locations for releasably interlocking each of said connector elements of said cover member to a corresponding one of said connector elements of said base member, said frangible portions interconnecting said connector elements of said base member comprising discrete protrusions located intermediate each pair of said connector elements, said latch means comprising deflectable elements each having a hooked end portion arranged to matingly interlock with a corresponding one of said discrete protrusions, said deflectable elements comprising elongate members extending from associated ones of said connector elements of said cover member.

4,067,638
MULTI-COLOR HOLOGRAPHIC STEREOGRAMS
Akio Yano, and Kazuya Matsumoto, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 450,212, March 11, 1974, abandoned, which is a continuation of Ser. No. 312,728, Dec. 6, 1972, abandoned. This application Aug. 29, 1975, Ser. No. 609,050
Claims priority, application Japan, Dec. 8, 1971, 46-99324
Int. Cl.² G03H *1/26*
U.S. Cl. 350—3.5 **6 Claims**



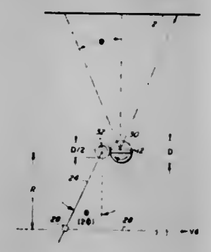
1. A method for recording and reconstructing a color focused image hologram, comprising a recording step and reconstructing step, said recording step including,
arranging a plurality of two-dimensional multi-color pictures along a predetermined line,
illuminating said plurality of two-dimensional multi-color pictures with coherent light beams having mutually different wavelengths,
projecting images of the pictures on a screen which focuses in a direction parallel to said predetermined line,
transferring a plurality of projection images formed on the screen to a holographic recording medium using an image-forming lens,
placing a masking member having an elongated aperture between the screen and the medium,
orienting the elongated dimension of the aperture parallel to the predetermined line,
and directing reference light beams having mutually different wavelengths to the medium so as to record the hologram and so that the plurality of two-dimensional multi-color pictures are recorded as focused image holographic recordings and the masking member is recorded as a Fresnel holographic recording, and so that the recordings produce color dispersion greater in a direction in the plane of the hologram transverse to the predetermined line than in the direction parallel thereto,
said reconstructing step including directing reconstruction beams having mutually different wavelengths onto the hologram so as to reconstruct both true color images and color cross modulation images of the plurality of two-dimensional pictures in the plane of the hologram, and at the same time, reconstruct both true color images and color cross modulation images of the masking member remote from the hologram,
and placing a light blocking member having an elongated aperture so as to block said color cross modulation images of the masking member.

4,067,639
HOLOGRAPHIC SCANNING SPINNER
Charles J. Kramer, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 27, 1976, Ser. No. 690,479
Int. Cl.² G02B *27/17, 27/00*
U.S. Cl. 350—6 **2 Claims**



2. A light spot scanning mechanism, including:
a rotatable shaft,
a hologram having a surface area bearing information for the holographic reconstruction of a spot of light when illuminated by a holographic reconstruction light beam,
said hologram being disposed for rotation with said shaft and constituting a holographic spinner,
an elastically deformable member resiliently connecting said holographic spinner, at the hub thereof, to said shaft,
whereby said spinner, under the influence of centrifugal force, straightens to a substantially perpendicular condition relative to its axis of rotation when rotating with said shaft.

4,067,640
APPARATUS FOR SYNCHRONOUSLY SCANNING A FLAT PLATEN WITH A ROTATING MIRROR
David K. Shogren, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 28, 1976, Ser. No. 691,069
Int. Cl.² G02B *27/17*; G03B *27/70*
U.S. Cl. 350—6 **1 Claim**



1. A system for scanning a flat object surface with a rotating mirror at a constant scan velocity V_o including:
a flat object surface,
a rotatable mirror disposed relative to said object surface to scan the same,
a mirror drive operatively connected to said mirror to impart a variable angular scan velocity w to said mirror according to the following relationship:

$$w = (V_o \cos^2 \theta / Y)$$

wherein:
w = Angular velocity of mirror
V_o = Velocity of scan along object surface (constant)
θ = Angle at any instant between principal ray and normal to object plane
Y = Normal distance from object surface to mirror axis (constant)
said mirror drive including a pivoted mirror drive arm oper-

atively connected to said rotatable mirror, a linear drive means acting at a constant moment arm R from the pivot axis of said drive arm and operatively connected to said drive arm and slidable relative thereto so that said moment arm R is constant during movement of said drive means, said drive means being movable at a constant linear velocity V_d and driving said mirror drive arm at an angular velocity $2w$ according to the following relationship:

$$2w = (V_d \cos^2 2\phi / R)$$

wherein:
- $2w$ = angular velocity of mirror drive arm
- V_d = linear velocity of drive means (constant)
- 2ϕ = angle at any instant between mirror drive arm and its position at center of scan
- R = moment arm - drive means to mirror axis (constant)

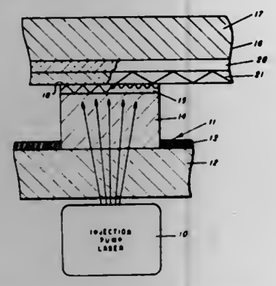
and reduction means operatively connecting said mirror drive arm to said mirror by which the angular displacement of said mirror is half that of said drive arm.

4,067,641

WAVEGUIDE FOR INTEGRATED OPTICAL CIRCUITS

William C. Holton, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 575,862, May 9, 1975, Pat. No. 4,007,978, which is a continuation of Ser. No. 434,469, Jan. 18, 1974, abandoned. This application June 11, 1976, Ser. No. 695,237
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 WG **2 Claims**



1. An planar optical waveguide comprising:
a substrate,
a first planar light-transmitting layer disposed on a surface of said substrate,
a second planar light-transmitting layer disposed on said first light-transmitting layer,
said first and second light-transmitting layers being made of materials having indices of refraction compatible with a semiconductor material taken from the group consisting of III-V semiconductor compounds are mixed ternary III-V semiconductor compositions, and
the index of refraction of said second light-transmitting layer being higher than the index of refraction of said first light-transmitting layer.

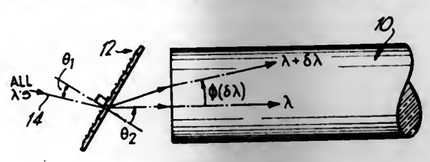
4,067,642

REDUCTION OF MODAL AND CHROMATIC MATERIAL DISPERSION IN A MULTIMODE OPTICAL FIBER

Frederick David King, Smiths Falls, and Felix Paul Kapron, Richmond, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 3, 1976, Ser. No. 711,419
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 WG **3 Claims**

1. A method of reducing modal and chromatic material dispersion in a multimode optical fiber, comprising feeding the rays of a light beam into an end of an optical fiber, the rays feed at an angle to the axis of the fiber which varies in accordance with the wavelength of a light ray, the shortest wavelength at



a zero angle and the longest wavelength at an angle of ϕ_{max} where

$$\phi_{max} = \sqrt{\frac{2}{N}\left|\frac{dN}{d\lambda}\right|\Delta\lambda},$$

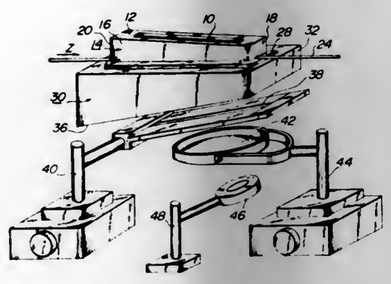
where N= group index of the fibre core, λ= wavelength of the ray and $\Delta\lambda$= width of source spectrum.

4,067,643

INPUT AND OUTPUT DEVICES FOR OPTICAL FIBER

Akira Sugimura, Kodaira; Naoya Uchida, Mito, and Tatsuya Kimura, Tokorozawa, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Sept. 28, 1976, Ser. No. 727,493
Claims priority, application Japan, Sept. 29, 1975, 50-117388
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 WG **14 Claims**



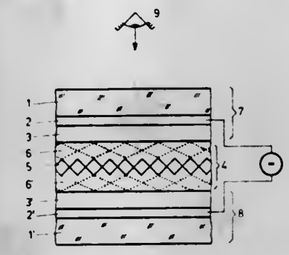
1. An acoustical output device for an optical, light conducting fiber, comprising: a quartz block having a semi-circular groove therein of a radius substantially equal to that of an elongated, circular optical fiber, said block having an inclined upper surface, an acoustic transducer secured to said upper surface, a glass block having a refractive index higher than that of the optical fiber and having a semi-circular groove therein of a radius substantially equal to that of the optical fiber, said glass block having an inclined bottom surface, the quartz block and the glass block being arranged to embrace the optical fiber within their respective grooves at a location where an output is desired, the inclined surfaces of the blocks being opposite each other with the narrower ends thereof together, an optically transparent sheet arranged between the groove of the glass block and the optical fiber, a liquid, such as water, provided between the optical fiber and the quartz block, such liquid having a low absorption loss for an acoustic wave and an acoustic impedance close to that of the quartz block to thereby cause a small reflection loss for an acoustic wave, the acoustic transducer being arranged to generate an acoustic wave having an inclined wave front with respect to the axis of the optical fiber along which light is propagated in guided modes to thereby cause light to be reflected by Bragg's condition to a radiation mode, and an optical output system aligned with a beam of output light emanated from the optical fiber, the optical output system being separably arranged from the glass block.

4,067,644

ELECTROCHROMIC DISPLAY DEVICE WITH A CONTRAST-ENHANCING ADJUVANT AND METHOD OF PRODUCING THE SAME

Jiri Dlouhy, Magenwil, and Hans-Rudolf Zeller, Birr, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 2, 1976, Ser. No. 673,159
Claims priority, application Switzerland, May 7, 1975, 5867/75
Int. Cl.² G02F 1/36
U.S. Cl. 350—160 R **3 Claims**



1. In an electrochromic display device of laminated construction including a liquid electrolyte, a solid electrochromic layer and means acting as a contrast enhancing adjuvant, the improvement comprising:
a. fabric means in the electrolyte for acting as a contrast enhancing adjuvant,
b. the fabric means comprising layers of a fabric with a mesh aperture of approx. 100 μ,
c. the layers comprising at least one layer incorporating a dye or being provided with a layer of electrolyte-resistant metal,
d. the layer incorporating a dye being of an electrically insulating material or being positioned on one side of a layer of a transparent and electrically insulating fabric and
e. the layer being provided with a layer of electrolyte-resistant metal comprising an electrically insulating layer disposed on the surface of the metal or being positioned on one side of a layer of a transparent and electrically insulating fabric and
f. the electrolyte being free of pigments.

4,067,645

MINIMUM MEAN-SQUARE ERROR LINEAR OPTICAL FILTER

F. Paul Carlson, Seattle, Wash., and Joseph E. Ward, III, St. Paul, Minn., assignors to The Board of Regents of the University of Washington, Seattle, Wash.

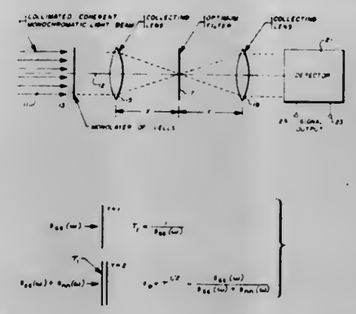
Division of Ser. No. 469,376, May 13, 1974, Pat. No. 3,947,123. This application Dec. 29, 1975, Ser. No. 644,894
Int. Cl.² G02B 5/20, 27/38
U.S. Cl. 350—162 SF **6 Claims**

1. A method of forming a minimum mean-square error linear optical filter having the following mathematical amplitude frequency response:

$$H(\omega) = \frac{S_{ss}(\omega)}{S_{ss}(\omega) + S_{nn}(\omega)}$$

where:
- $S_{ss}(\omega)$ is the power spectral density of the signal to be enhanced by the minimum mean-square linear optical filter; and,
- $S_{nn}(\omega)$ is the power spectral density of the signal to be suppressed by the minimum mean-square linear optical filter, said method comprising the steps of:

directing a beam of coherent monochromatic light toward a monolayer of particles having a high percentage of particles having the power spectral density $S_{ss}(\omega)$;
collecting the light scattered by said particles with a transforming lens;
making a first photographic negative of the scattered light collected by said transforming lens at the focal plane of said transforming lens;
developing said first photographic negative for a gamma of one;



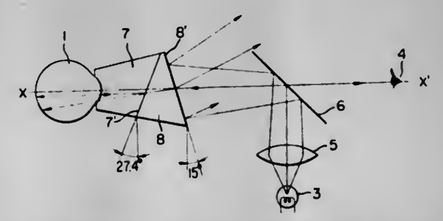
directing a beam of coherent monochromatic light toward a monolayer of particles having the power spectral density $S_{ss}(\omega) + S_{nn}(\omega)$;
collecting the light scattered by said monolayer with a transforming lens;
making a second photographic negative of the light collected by said transforming lens at the focal plane of said transforming lens using said first photographic negative as a filter; and,
developing said second photographic negative for a gamma of two.

4,067,646

EYEGROUND INSPECTING CONTACT LENS

Masao Nohda, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 12, 1976, Ser. No. 666,318
Claims priority, application Japan, Mar. 17, 1975, 50-35824[U]
Int. Cl.² A61B 3/10
U.S. Cl. 351—6 **9 Claims**



1. An eyeground inspecting contact lens adapted to be disposed in contact with the cornea of an eye to be inspected, in order that an illuminating light may be directed to the fundus of the eye so as effectively to illuminate the same for the observation of the eyeground, said contact lens comprising a plurality of glass bodies having the incidence surface thereof inclined with respect to the optical axis, the refractive indices of said glass bodies, the inclined angle of said incidence with respect to the optical axis and the inclined angle of the boundary surface of each of said glass bodies with respect to the optical axis being selected such that, of the illuminating light flux, the light beam coincident with the optical axis prior to incidence

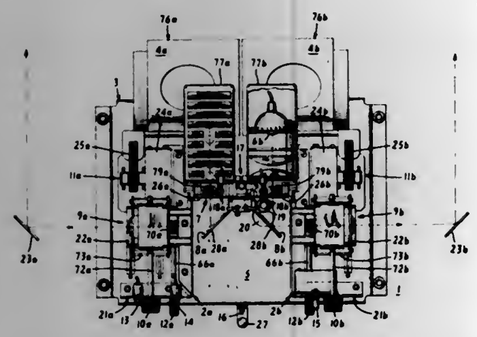
on the first glass body is made parallel to but spaced from the optical axis after passing through said glass bodies, and then impinges on the eyeground.

4,067,647

DUAL FILM STRIP PROJECTOR

Harold Gallina, Belleville, N.J., assignor to Developing Techniques Laboratory, Inc., Belleville, N.J.

Filed Aug. 14, 1975, Ser. No. 604,630
Int. Cl.² G03B *31/06, 21/26, 23/02;* G11B *31/00*
U.S. Cl. 353—19 **15 Claims**



1. A self-contained, automatic, dual film strip projector for projecting a plurality of images onto at least one screen, each of said images being projected from a corresponding frame of one of a pair of film strips which are operated in individually timed sequences independently of each other, comprising: (a) a housing; (b) light source means in the housing including a pair of lamps arranged side by side in spaced relation horizontally adjacent each other and casting parallel beams of light, each corresponding to a respective one of the pair of film strips; (c) a program module including: (1) a first cartridge element insertable in the housing containing a pair of reels arranged upright, parallel and in spaced relation horizontally adjacent each other, (2) the pair of film strips, including frames for forming visual images therefrom, respectively arranged on the reels and operatively disposed, each in front of a corresponding one of the pair of lamps, when the first cartridge element is positioned in the housing, (3) a second cartridge element insertable in the housing, and (4) a magnetic tape, including at least one track for recording control signals thereon, arranged in the second cartridge element; (d) means for directing light from the light source means through the film strips, out of the housing, and onto at least one screen, including a pair or mirrors arranged horizontally adjacent each other and in front of the corresponding lamps, said film strips being respectively interposed between the mirrors and the lamps when the first cartridge element is positioned in the housing, pivot means in the housing for pivoting the pair of mirrors in a manner permitting the unobstructed insertion or removal of the first cartridge element into or from the housing, and a lever arm connected to the pivot means and extending outside the housing for operating the pivot means; (e) a pair of film strip advancing means in the housing each engageable with a respective one of the film strips for advancing the film strip independently of the other; (f) means in the housing for driving the magnetic tape; and (g) means in the housing for sensing control signals recorded on the magnetic tape and operating the pair of film strip advancing means in response thereto,

wherein each of the pair of mirrors is operatively disposed facing away from the other and at an angle of about 45° to incident light from the corresponding lamp, said mirrors thereby receiving the parallel beams of incident light passing through the pair of film strips and reflecting them horizontally in opposite directions and generally normal to the direction of incident light, said light directing means further including a pair of focusing lenses each movably arranged with respect to an axis coinciding with the path of reflected light for focusing light reflected from the corresponding mirror, and

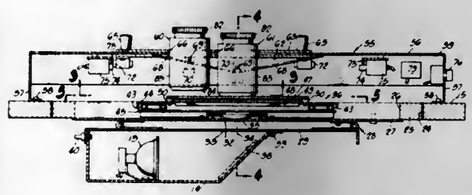
wherein said pivot means includes a shaft connected to the lever arm for axial rotational movement upon displacement of the lever arm, a first gear connected for rotation with the shaft, a second gear in mesh with the first gear, a first flange arm connecting one of the pair of mirrors with the first gear and a second flange arm connecting the other mirror with the second gear, said first and second flange arms pivoting the mirrors through an angle of about 45° toward each other to a position substantially adjacent and parallel each other when the lever arm is displaced to operate the pivot means, said pair of mirrors in the pivoted position being parallel to and accommodated in the space between the pair of reels of the first cartridge element, thereby permitting the unobstructed insertion or removal of the first cartridge element into or from the housing.

4,067,648

MICROFICHE READER

Francis F. Spreitzer, 4415 W. 62nd St., Los Angeles, Calif. 90043

Filed Aug. 23, 1976, Ser. No. 716,939
Int. Cl.² G02B *7/04;* G03B *23/08, 21/14*
U.S. Cl. 353—27 R **22 Claims**



1. In a dual-power microfiche reader of the type in which a microfiche is sandwiched between two transparent plates of an X–Y fiche transport movable transversely of an image projecting light beam, that improvement which comprises: lens shifting means operatively interconnecting a pair of projection lenses of different powers operable to shift said lenses crosswise of said light beam to bring either selected one of said lenses into alignment with the optical axis of said light beam and for automatically resting said selected lens flush against the adjacent one of said transport plates and for moving the non-selected lens to a position to one side of said light beam and out of contact with said one transparent plate.

4,067,649

METHOD AND APPARATUS FOR CONTROLLING THE DUPLEX COPY MODE IN AN ELECTROSTATIC COPYING DEVICE

James Henry Hubbard, Boulder; Ralph Joseph LeClere, Longmont, and Thomas Travis Underhill, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

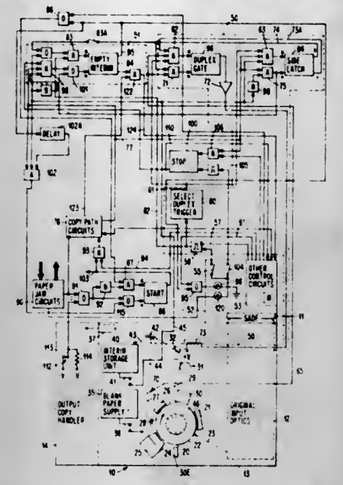
Filed Jan. 23, 1976, Ser. No. 651,883
Int. Cl.² G03G *15/00*
U.S. Cl. 355—14 **32 Claims**

1. A document reproduction machine having a duplex copy production mode, reproduction means having copy path means for transferring images to a copy sheet being transported therethrough, duplex copy interim storage means, duplex control means to direct single image duplex copies to said interim storage means and completed duplex copies to an output portion of said machine,

the improvement including in combination:

first means indicating end of duplex copy production run; and

duplex run terminating means being responsive to said first indicating means to transport said single image duplex



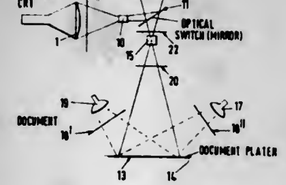
copies from said interim storage means to said output portion.

4,067,650

DATA RECORDING MICROFORM CAMERA

Spence-Bate, 1 Cheam Place, Morley, Australia

Filed Apr. 13, 1976, Ser. No. 676,633
Claims priority, application Australia, Jan. 12, 1976, 4504/76
Int. Cl.² G03B *27/76, 27/32, 27/70*
U.S. Cl. 355—20 **15 Claims**



1. A data recording microfilm apparatus comprising in combination:

a photographic microfilm holding means,

a camera cathode ray tube arranged to project an image through a first optical means onto a film held on said holding means, the face of said camera cathode ray tube completely coated with a tube coating having a spectral peak between 500 and 600 nm and said film being predominently sensitive to a light source of between 500 and 600 nm,

means for feeding data to said cathode ray tube to form said image,

optical switching means between said first optical means and film holding means, a document recording platen illuminated by a light source, said light source producing a spectral peak of an image on said platen of between 500 and 600 nm, and a second optical means between said switching means and said platen arranged to project an image on said platen through said switching means to a film held on said means,

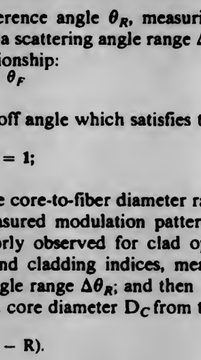
whereby images for recording on the microfilm may be selected from either the camera tube or a document on the document platen without changing the film.

4,067,651

METHOD FOR MEASURING THE PARAMETERS OF OPTICAL FIBERS

Laurence Shrapnell Watkins, Hopewell Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 482,707, June 21, 1974, Pat. No. 3,982,816.
This application July 6, 1976, Ser. No. 702,833
Int. Cl.² G01N *21/00;* G01B *9/02, 11/04*
U.S. Cl. 356—103 **8 Claims**



1. A method of measuring the diameter, D_C, of the core of a clad optical fiber, given the thickness of the cladding layer, t, and the refractive indices of the cladding and core, m_1 and m_2, respectively, which comprises:

directing a beam of spatially coherent, monochromatic radiation at said fiber thereby to generate a complex scattering pattern, at least a portion of said pattern including contributions from the diffraction, the reflection and the refraction of said beam by said fiber, said scattering pattern being spatially radially disposed about said fiber and having a fringe pattern intensity modulation superimposed thereon;

at a given reference angle θ_R, measuring the modulation pattern over a scattering angle range $\Delta\theta_R$, where θ_R satisfies the relationship:

$$\theta_R \times \tfrac{1}{2}\Delta\theta_R < \theta_F$$

and θ_F is the cut-off angle which satisfies the relation:

$$m_1 \cos(\theta_F/2) = 1;$$

determining the core-to-fiber diameter ratio, R, by comparing said measured modulation pattern with modulation patterns priorly observed for clad optical fibers of the same core and cladding indices, measured at the same scattering angle range $\Delta\theta_R$; and then

computing said core diameter D_C from the equation:

$$D_C = 2Rt/(1 - R).$$

4,067,652

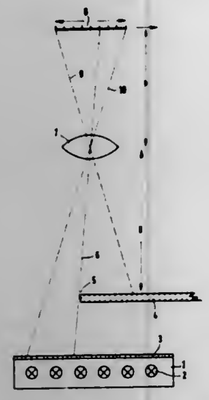
METHOD AND MEANS FOR THE DETERMINATION OF A PLANAR DIMENSION

Peter Bohlander, Dusseldorf, Germany, assignor to Institut fur Angewandte Forschung GmbH, Germany

Filed Apr. 13, 1976, Ser. No. 676,623
Claims priority, application Germany, Apr. 16, 1975, 2516756
Int. Cl.² G01B *11/04*
U.S. Cl. 356—160 **21 Claims**

1. Method of determining a planar dimension, for example determining the width of rolled stock, wherein an edge of the surface to be measured is projected on photo-sensitive diodes which are scanned by means of an electronic counter and whereof the individual diode signals are evaluated as a measure

of the planar dimension by using the number of counting steps executed between a starter pulse and a brightness break or "jump" as a measure of the dimension to be determined, characterised in that the measuring results of successive individual photo-sensitive diodes are stored in the course of one scanning pass up to the next successive scanning pass and their differ-



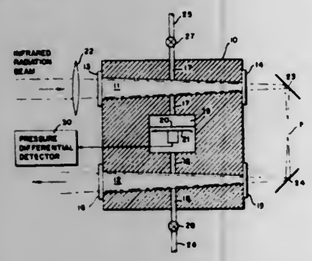
ences are formed and in that the maximum difference value is stored up to the next scanning of the diode line in order to release a trigger impulse on achieving a greater, or a slightly lower difference value in the course of the following scanning pass of the diode line which trigger pulse terminates the counting steps of the electronic counter.

4,067,653

DIFFERENTIAL OPTOACOUSTIC ABSORPTION DETECTOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Michael S. Shumate, Pasadena, Calif.

Filed Aug. 27, 1976, Ser. No. 718,266
Int. Cl.² G01J *3/42*
U.S. Cl. 356—204 **9 Claims**



1. In a differential absorption detector, the improvement comprising:

two tapered gas cells side by side, each cell having the same cross-sectional area at each point along its length as the other cell, said cells being disposed parallel to each other with one effectively a mirror image of the other,

means for producing monochromatic light;

means for directing said monochromatic light through said cells and for shaping said light passing through each of said cells into a beam conforming to the shape of said cells, whereby essentially all volume of gas in each of said cells is illuminated, said means for directing said monochromatic light through said cells being comprised of a lens at one end of one cell for focusing said light through said one cell as a converging beam in one direction, a first mirror at the other end of said one cell and a second mirror at the other end of said other cell, a second mirror at the other end of said cell, said first and second mirrors being disposed for directing said light passing, through said one cell into the other cell in the opposite direction as a diverging beam, and a single lens in front of said one cell for focusing said light into a beam conforming to the tapered shape of said one cell, and

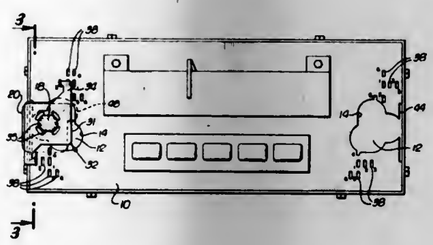
means for sensing the difference in pressure of gases in said cells while being illuminated by said cells for close coupling thereto, whereby gases in said cells are subjected to maximum illumination with a minimum of unilluminated gas.

4,067,654

APPARATUS FOR VARIABLY POSITIONING AND SECURING CAR RADIOS AND THE LIKE

Robert P. Maniaci, Downey, Calif., assignor to Boman Industries, Downey, Calif.

Filed Oct. 24, 1975, Ser. No. 625,706
Int. Cl.² F16B *43/00*
U.S. Cl. 403—4 **5 Claims**



1. An apparatus for variably positioning and securing an object having a first portion and a finger portion projecting therefrom comprising:

a frame having an inward and outward surface, a control opening into which the finger portion is inserted so that the first portion is on the inward side of the frame, and a plurality of alignment holes arranged into a plurality of groups, the holes of each group forming a pattern identical to every other group;

a plate having a centrally located opening into which the finger portion is inserted so that the plate abuts the first portion and the inward side of the frame;

an alignment member abutting the outward side of the frame, having an opening for receiving the finger portion and a plurality of leg portions, each leg portion having a tooth, the same distance from the center of the opening, projecting inwardy for engaging an alignment hole, each tooth equidistant from the center of the opening in the alignment member and having a complementary tooth lying on a straight line defined by the first tooth and the center of the opening; and wherein all teeth are equidistant from the center of the opening in the alignment member

compression means for forcing the plate and alignment member against the frame and the first portion against the plate.

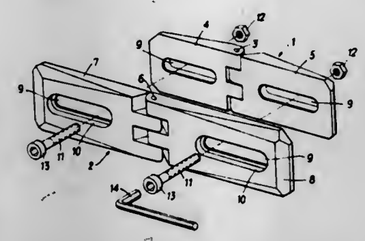
4,067,655

DEVICE FOR CONNECTING PLATE MEMBERS OR SIMILAR CONSTRUCTIONAL PARTS

Edvin Sven Mayerhofer, Andergasse 84, Vienna, Austria (1170)

Filed May 5, 1976, Ser. No. 683,350
Claims priority, application Austria, June 5, 1975, 3449/75
Int. Cl.² F16D *1/00*
U.S. Cl. 403—4 **15 Claims**

1. Apparatus for rigidly securing a plurality of plate members at variable relative angular positions with respect to each other, the apparatus comprising first and second connectors disposed on opposite sides of the plate members, each connector being defined by first and second hinge plates for placement against the first and second plate members, respectively, pivot means pivotally connecting the first and second hinge plates of each connector to each other; and fastening means for biasing the first and second hinge plates of the connectors



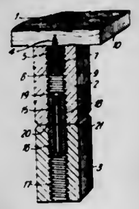
firmly against the plate members while the plate members are positioned in their desired angular orientation; whereby the relative angular orientation of the plate members can be adjusted as desired before the biasing means is applied, and whereby the application of the biasing means causes the formation of a rigid interconnection between the plate members at the chosen relative angular orientation.

4,067,656

JOINT MEMBER

Edward F. Dennis, P.O. Box 339, Danville, Quebec, Canada

Filed Oct. 20, 1975, Ser. No. 624,002
Int. Cl.² F16B *7/18*
U.S. Cl. 403—296 **4 Claims**



1. Elements for knock-down type furniture comprising a first element having an elongated body of symmetrical cross-section with planar side surfaces and two flat end surfaces, a second element having an elongated body with two flat end surfaces and a generally symmetrical cross-section adjacent at least one end thereof with planar side surfaces, the flat end surfaces of both elements being perpendicular to the axes of their respective elements;

means for interconnecting said elements in an end-to-end relationship so that the side planar surfaces of the first element are in a desired alignment with the side planar surfaces of the second element, said means comprising:

a. a bore extending through the medial portion of the first element, said bore having an unthreaded opening through one flat end surface thereof and a larger diameter opening through the other flat end surface thereof, the larger diameter opening having internal threads of truncated profile;

b. an opening in each flat end of the second element, each opening having internal threads of truncated profile;

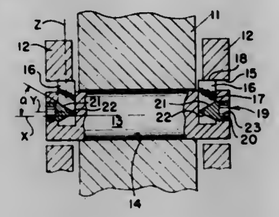
c. a coupling means between said first and second elements comprising a sleeve having external truncated threads of a diameter less than that of the internal truncated threads of the second element and loosely threaded into one end of the second element so as to have no diametrical interference fit, said sleeve having an internal machine-screw thread, a machine-screw extending through the small diameter unthreaded opening of the first element and threaded into the machine screw threads of the sleeve, the flat ends of the end-to-end connected elements being adapted to be held in tight frictionally abutted relationship by said coupling means while the side planar surfaces of both elements can be aligned in the desired fashion prior to final tightening of the machine screw.

4,067,657

CAM LOCK RETAINING MEANS FOR RIPPER TIPS

Willard O. Kaariela, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 17, 1976, Ser. No. 658,554
Int. Cl.² E02F *9/28*
U.S. Cl. 403—317 **16 Claims**



1. A work tool for construction vehicles comprising

a support member,

a tip mounted on said support member,

a pin having a longitudinal axis and disposed in aligned bores formed through said support member and said tip, the bores formed through said tip each having an oblong configuration defined by major and minor axes and

cam lock retaining means mounted on said pin for locking said support member, tip and pin together comprising

a single camming member movably mounted in said pin and having a first end thereof engaging said tip in bearing contact therewith, said camming member movable in the direction of the major axis of a respective one of the bores formed through said tip, and

camming means movably mounted in said pin and having an end thereof engaging a second end of said camming member for urging the first end of said camming member into its bearing contact with said tip and for simultaneously urging said pin in bearing contact with said support member on an opposite side of said pin from whereat the first end of said camming member engages said tip in bearing contact.

4,067,658

APPARATUS FOR HOLDING KNOBS

Yoshinobu Ueno, Kanagawa, and Tadayoshi Shibata, Fujisawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

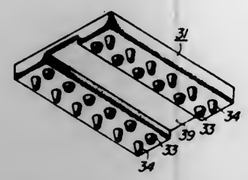
Filed Oct. 17, 1975, Ser. No. 623,505
Claims priority, application Japan, Oct. 30, 1974, 49-131888[U]
Int. Cl.² F16C *3/10*
U.S. Cl. 403—357 **4 Claims**

1. Apparatus for holding a knob to a shaft having a notched flat portion comprising:

a flat plate made of a synthetic resin material; and

a knob body receiving said shaft and said flat plate, said flat plate being positioned between said knob body and said

notched flat portion of said shaft, and having integrally therewith first and second groups of resilient projections



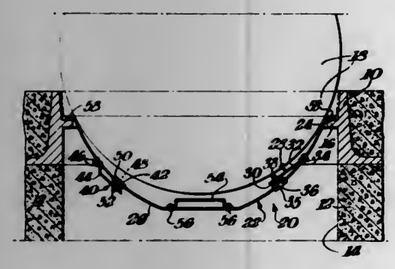
which are effective to press against said flat portion of said shaft and against said knob.

4,067,659

MANHOLE CLOSURE ASSEMBLY

Samuel A. Campagna, Jr., Deptford, N.J., and Benjamin J. Campagna, Newark, Del., assignors to BES, Ltd., Wilmington, Del.

Filed Nov. 11, 1976, Ser. No. 740,977
Int. Cl.² E02D 29/14
U.S. Cl. 404—25 10 Claims



1. A manhole closure assembly for preventing storm water from entering into a manhole opening in combination with an annular manhole frame and a manhole cover therefor, the closure assembly comprising a cover section including an outwardly extending circular mounting flange constructed and arranged to rest upon an inwardly directed manhole cover supporting flange of the annular manhole frame, the manhole cover normally resting upon the cover supporting flange of the annular manhole frame but having a path of spin into the manhole opening during manipulation of the cover, the cover section further including a downwardly depressed central portion extending into the manhole opening an amount that exceeds the path of spin of the manhole cover resting upon the supporting flange of the annular manhole frame whereby the depressed central portion is spaced from the path of cover spin at all locations along the surface thereof, and a first valve member secured to the cover section constructed and arranged to relieve pressure inside the manhole when the pressure therein exceeds a predetermined amount.

4,067,660

ELASTOMERIC EXPANSION SEAL

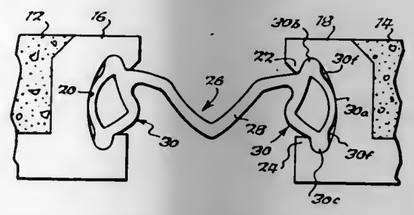
Guy S. Puccio, Snyder, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 629,517, Nov. 6, 1975, Pat. No. 3,994,609. This application July 2, 1976, Ser. No. 702,044
The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.
Int. Cl.² E01C 11/04
U.S. Cl. 404—69 16 Claims

1. An expansion joint seal for bridging the gap between a pair of structural slab members, said expansion joint seal comprising:

a pair of spaced-apart, elongated edge members being respectively disposed in said structural slabs to define a gap there between, each said edge member having in cross-section a generally C-shaped cavity with a preselected radius of curvature, each said cavity opening toward said gap defined between said edge members wherein each said cavity opening is defined between opposed projecting portions of said respective edge members spaced from each other a distance less than the maximum dimension within said cavity taken generally parallel to said opening,

an elongated resilient strip sealing said gap between said edge members, said strip including a web portion spanning said gap and a mounting bead portion extending along each longitudinal edge of said web portion wherein each of said mounting bead portions is received within said cavity of a respective edge member, and each mounting



bead having in cross-section an outer surface portion for matching engagement with said cavity with opposed portions of said mounting bead correspondingly abutting said opposed projecting portions of said edge member whereby relative lateral movement of said mounting bead with respect to said edge member is resisted, said mounting beads further having relief portions disposed in the outer surface thereof intermediate to the mid-portion and said opposed portions thereof, and the radius of curvature of said outer surface of said mounting bead in an unstressed, disassembled form being less than said preselected radius of curvature of said cavity so that upon assembly of said mounting bead within said edge member cavity said outer surface of said mounting bead is affirmatively urged to assume the greater radius of curvature of said cavity by the abutment of said opposed portions of said mounting bead with opposed projecting portions of said edge member.

4,067,661

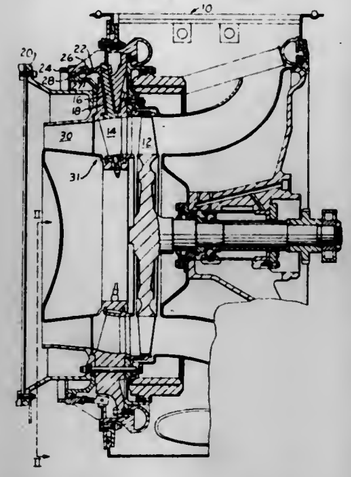
THERMALLY COMPENSATED VARIABLE TURBINE NOZZLE POSITION INDICATOR

Daniel E. Gebhart, East Peoria; Edward G. Meints, and Brace C. Smith, both of Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 1, 1976, Ser. No. 728,590
Int. Cl.² F01B 25/26; F01D 17/12
U.S. Cl. 415—118 5 Claims

1. In a movable vane assembly of the type used in a gas turbine engine or compressor for interaction with a gas stream comprising a plurality of radially aligned vanes circumferentially arranged within an annular passage formed by a housing, said vanes being supported for rotation about their radial axes to vary the effective cross-sectional area of said annular passage, a plurality of rotatable gear means connected for rotation with said plurality of aligned vanes, a ring gear having teeth means adapted for simultaneous engagement with teeth means of said plurality of rotatable gear means such that rotation of said ring gear causes rotation of said plurality of vanes, actuating means including first and second link means connected at first and second diametrically-opposed points on said ring gear and motor means for simultaneously actuating said first and second link means to rotate said ring gear, an improved temperature independent means for indicating the rotational position of said means, comprising:

a potentiometer having a body and a stem rotatable with respect to said body with the resistance of said potentiometer being a function of the relative rotation between said body and said stem:



means mounting said body to rotate a first distance in a first direction responsive to a first change in size of said first link means:

means mounting said stem to rotate said first distance in said first direction responsive to a second change in size of said second link means which is proportional to said first change in size of said first link means; and

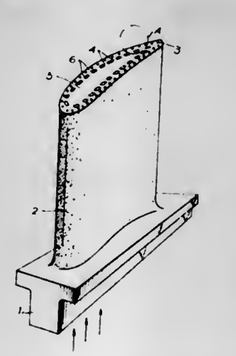
means indicating the resistance of said potentiometer and thereby the rotation of said vanes.

4,067,662

THERMALLY HIGH-STRESSED COOLED COMPONENT, PARTICULARLY A BLADE FOR TURBINE ENGINES

Axel Rossmann, Karlsfeld, Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Jan. 21, 1976, Ser. No. 651,147
Claims priority, application Germany, Jan. 28, 1975, 2503285
Int. Cl.² F01D 5/18
U.S. Cl. 416—97 A 2 Claims



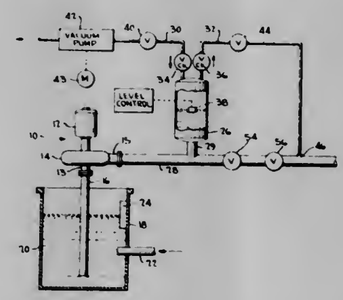
1. Thermally highly stressed, cooled component in form of an integral single-piece element, such as a turbine engine blade, comprising a centrally arranged supporting core of a solid material; plurality of short radially projecting ridges extending from said core; an outer shroud carried by said ridges concentrically enveloping the supporting core, said shroud being made of a foamed through-porous material, and said supporting core, ridges, and outer shroud comprised of ceramic material cast in a single piece.

4,067,663

SEWAGE PUMP PRIMING SYSTEM

Richard J. Brooks, and Frank O. Johnson, both of Seattle, Wash., assignors to The Chemithon Corporation, Seattle, Wash.

Continuation of Ser. No. 342,606, March 19, 1973, abandoned. This application Aug. 13, 1976, Ser. No. 714,129
Int. Cl.² F04D 9/04; F04B 49/04
U.S. Cl. 417—199 A 3 Claims



1. A system for pumping sewage from a sump containing solid, liquid and semi-liquid gas-evolving sewage, said system comprising:

a centrifugal pump actuable after it has been primed, said centrifugal pump having a pump volute lying in a horizontal disposition, an inlet at the bottom of said volute, and a discharge outlet extending horizontally from said horizontally disposed pump volute;

said pump being located above said sump;

an intake conduit communicating with said inlet and extending downwardly therefrom for positioning in said sewage-containing sump;

a discharge conduit extending downstream from said discharge outlet of the pump;

the tops of said pump volute and said discharge outlet lying at substantially the same elevation;

valve means on said discharge conduit for permitting fluid flow in a downstream direction only;

a vertically disposed priming chamber communicating with said discharge conduit at a location between said centrifugal pump and said valve means;

the top of said discharge conduit, between said discharge outlet and said priming chamber, being at least about as high as the top of said discharge outlet;

said priming chamber being disposed above said pump volute and at least that part of said discharge conduit between said pump and said valve means;

said system comprising means, including the capacity of said priming chamber, for accommodating in said chamber gas separating from the sewage in said system without displacing liquid from said centrifugal pump;

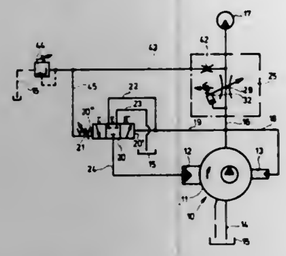
and means operable to pump gas out of the upper portion of said vertically disposed priming chamber at a predetermined time to reduce the pressure therein sufficiently to draw liquid from said sump, through said centrifugal pump and into said priming chamber, to prime the pump while it is inoperative.

4,067,664

CONTROL SYSTEM FOR A PUMP

Walter Robeller, Boblingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 6, 1975, Ser. No. 629,545
Claims priority, application Germany, Dec. 31, 1974, 2461897
Int. Cl.² F04B 1/26
U.S. Cl. 417—218 7 Claims



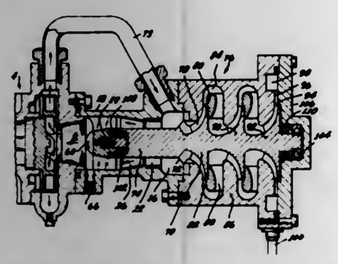
1. In a pumping system including an adjustable pump furnishing a pumping pressure and a flow at an output side and having a regulating element for adjusting said flow and first and second pressure controlled pistons for adjusting said regulating element, in which said second piston has a diameter larger than said first piston, a control system for maintaining the product of said pumping pressure times flow constant, comprising, in combination, throttle valve means having a throttle valve inlet connected to the output side of said pump, a throttle valve outlet, and a cross-sectional flow area varying as a function of said pump pressure, for creating a pressure difference between said throttle valve inlet and said throttle valve outlet, said pressure difference increasing with the decrease of said cross-sectional area; additional throttling means connected to said throttle valve means and having a constant cross-section; pressure limiting means connected to the output side of said additional throttling means; means for applying said pumping pressure to said first pressure controlled piston; control valve means for varying the pressure acting on said second pressure controlled piston as a function of a pressure difference applied to said control valve means; and means for applying said pressure difference created by said throttle valve means and said additional throttle means to said control valve means.

4,067,665

TURBINE BOOSTER PUMP SYSTEM

Everett H. Schwartzman, 724 Cloyden Road, Palos Verdes Estates, Calif. 90274

Filed June 16, 1975, Ser. No. 587,105
Int. Cl.² F04B 3/00; F04G 25/00
U.S. Cl. 417—245 36 Claims



1. A booster system for use with a primary fluid power source in the form of a pump having an inlet and an outlet and including an impeller of a predetermined diameter and means continuously rotating said impeller at a predetermined speed to produce an output at a high efficiency based upon horsepower comprising:

means forming a booster housing having an inlet port normally continuously receiving a major portion of the fluid from the outlet of said pump;

shaft means rotatably mounted in said housing and including turbine means on one end thereof;

inlet chamber means in said housing receiving said flow from said inlet port for driving said turbine means;

booster pump means including fluid inlet means and fluid outlet means mounted on one end of said housing;

said fluid outlet means of said booster pump means forming the principal fluid outlet of said booster system;

said shaft including a portion thereof extending out of said housing toward said booster pump means;

at least one booster pump impeller means mounted on the said portion of said shaft and driven by the fluid which passes through said turbine means;

said housing at the other end including means to mount said housing for fluid communication with the inlet of the pump;

means forming a low pressure section between said turbine and said pump mounting means,

fluid input means communicating with said low pressure section whereby fluid entering said section is pumped by said pump to the turbine to drive the impeller of the booster pump means;

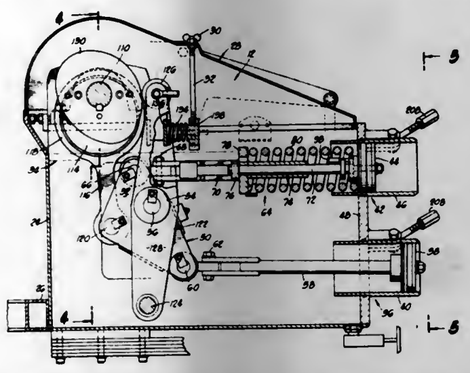
said turbine being of a specific speed higher than that of the primary fluid power source pump to effect a speed increase in said booster pump means.

4,067,666

CONCRETE PUMPING APPARATUS

John A. Richards, Santa Ana, Calif., assignor to Whiteman Manufacturing Company, Pacoima, Calif.

Filed July 19, 1976, Ser. No. 706,497
Int. Cl.² F04B 25/00; F16J 1/00
U.S. Cl. 417—265 18 Claims



1. Pumping apparatus for moist compressible material such as plastic, concrete, mortar, and the like, comprising:

a. a rotary driving shaft;

b. a primary pumping unit having a first cylinder and a first piston reciprocable therein;

c. a secondary pumping unit having a second cylinder and a second piston reciprocable therein, said cylinders respectively having correspondingly positioned open ends;

d. a driving connection with said shaft to actuate said pistons, including a rocker arm supported on a pivot for oscillatory movements by said shaft, said arm having one end operatively connected to said first piston and another end operatively connected to said second piston; and

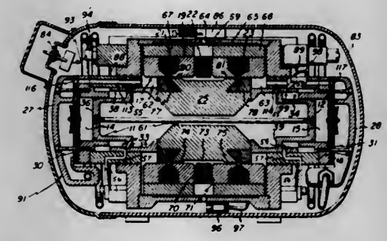
e. another driving connection with said shaft for overriding and modifying the piston driving action of said rocker arm and to effect overlapping discharge from said pumping units.

4,067,667

CONTROLLED STROKE ELECTRODYNAMIC OSCILLATING MOTOR COMPRESSOR

Harlan Vernon White, Scotia, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Continuation-in-part of Ser. No. 467,848, May 8, 1974, Pat. No. 3,937,600. This application Feb. 9, 1976, Ser. No. 656,575
Int. Cl.² F04B 35/04; F01B 11/02
U.S. Cl. 417—418 24 Claims



22. In a compressor wherein piston means coupled to and adapted to be driven within a selectively valved working cylinder by an electrodynamic oscillating motor substantially in synchronism with an A-C power source and oppositely disposed enclosed volumes of gas acting as resilient means coact with said piston means and with said motor to form a mechanical resonant system having a natural frequency approximately equal to the frequency of said A-C power source and including means responsive to the position of said piston for controlling the force output of said motor to provide stable operation over varying compressor load conditions by varying the natural frequency of said resonant system and which means includes first port means communicating said enclosed volumes of gas with each other at an intermediate stroke position of said piston to equalize the gas pressures in said enclosed volumes during operation and second port means communicating one of said enclosed volumes of gas with a source of gas at higher pressure whenever said piston exceeds a predetermined normal operating stroke position so that gas flows from said source into said enclosed volume increasing the gas pressure therein and effecting an increase in the stiffness of the resilient means and thereby increasing the resonant frequency of said mechanical resonant system, the combination with said compressor of:

said second port means shaped to effect an non-linear increase in gas flow from said source of fluid at higher pressure to said enclosed volume of gas as a function of increase in piston travel beyond said predetermined normal operating stroke position.

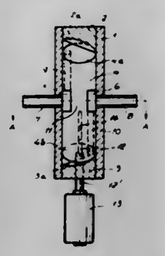
4,067,668

VALVELESS ROTARY-OSCILLATING DOUBLE-ACTING PISTON PUMP

Erik Arne Nimell, Bromma, Sweden, assignor to Medical Products Octagon AB, Uppsala, Sweden

Filed July 30, 1976, Ser. No. 710,082
Claims priority, application Sweden, July 31, 1975, 7508708
Int. Cl.² F04B 7/06, 39/10
U.S. Cl. 417—492 6 Claims

1. A pump which comprises a first member provided with a circularly cylindrical cavity in which cavity a circularly cylindrical piston-like second member is arranged with rotating fit, the end surfaces of said second member being inclined to the axis of said second member and said second member being provided with two substantially segment-shaped recesses arranged substantially opposite each other, which recesses are connected to one surface each of the two end surfaces of the second member by a channel or duct extending substantially in the axial direction, and said first member having closure portions with inclined surfaces, and means to rotate said second member with some axially reciprocating movement caused by cooperation of the inclined end surfaces with the inclined surfaces in said first member resulting in the transfer of a fluid from an inlet conduit to an outlet conduit arranged substantially on diametrically opposite sides of said first member and connected with the cavity via said recesses and channels or ducts, which pump is characterized in that the two end surfaces of the piston-like second member are convexly vaulted with parallel or coincident center normals for the curvature and that the inclined surfaces of the first member are convexly vaulted with at least substantially the same radius of curvature as that of said end surfaces.

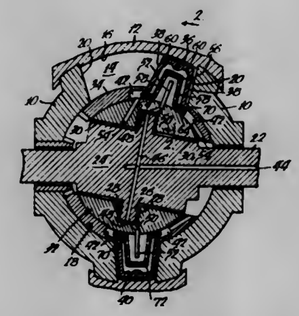


4,067,669

ROTARY MECHANISM WITH AGITATORS IN THE ROTOR COOLANT CAVITIES

Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 2, 1976, Ser. No. 702,169
Int. Cl.² F01C 1/02, 21/06; B01F 15/06
U.S. Cl. 418—53 10 Claims



1. In a rotary mechanism, the combination of:

a housing defining a chamber;

a shaft journalled in said housing to extend through the chamber and having an eccentric within the chamber;

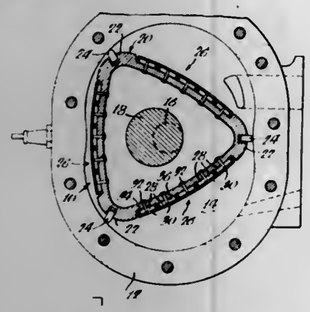
a rotor within the chamber and journalled on said eccentric, said rotor having surfaces cooperating with said housing to vary the volume of at least one portion of the chamber upon rotation of said shaft, said rotor and said housing relative to each other;

coolant receiving cavities in said rotor adjacent said surfaces;

means for directing coolant to said cavities; and

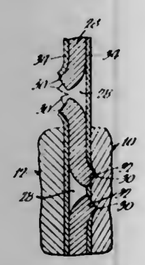
agitators loosely disposed within said cavities to be movable with the rotor and to be movable within the cavities for cyclically displacing the coolant to enhance heat transfer.

4,067,670
INTERNAL COMBUSTION ENGINE WITH INSULATED PISTON
Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 574,822, May 5, 1975, abandoned. This application Dec. 10, 1976, Ser. No. 749,531
Int. Cl.[2] F01B 31/08; F01C 21/06; F02B 23/00; F02F 3/14
U.S. Cl. 418—61 A 6 Claims



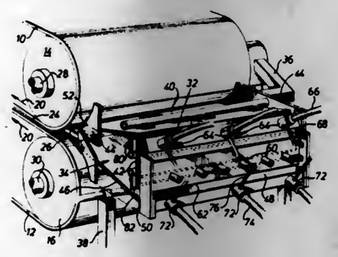
1. In an internal combustion engine having a relatively high surface to volume ratio, the combination of:
means defining a combustion chamber;
means movable within said chamber and having at least one surface disposed to be subject to gases of combustion;
means operatively associated with said movable means for converting movement thereof to a desired form of motion;
a plurality of pockets in each said surface;
heat insulation means within each of said pockets; and
a plurality of covers, one for each said pocket, secured to said movable means to tightly embrace the movable means and close the corresponding one of said pockets to minimize the entry of hot gases of combustion into said pockets, said covers defining a continuation of said surface and being exposed to said gases of combustion,
whereby heat loss to said movable means is retarded to increase engine efficiency.

4,067,671
MEANS FOR LOCKING HOUSING PARTS AGAINST RELATIVE MOVEMENT
Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 1, 1976, Ser. No. 691,948
Int. Cl.[2] F01C 19/00; F16J 15/02
U.S. Cl. 418—149 3 Claims



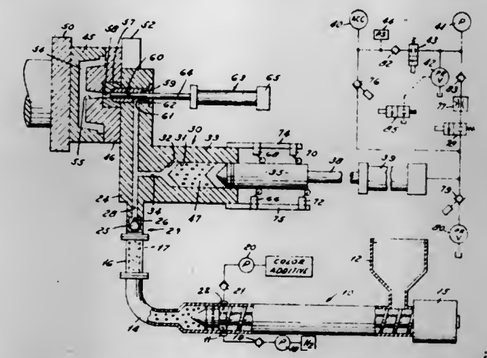
1. A rotary mechanism comprising at least two housing parts joined to define an operating chamber, said parts being at a substantial abutment of relatively slidable surfaces, one on each part; a shaft journalled by at least one of said parts and extending into said chamber; an eccentric on said shaft and within said chamber; a rotor within said chamber and journalled on said shaft; and means for preventing relative sliding movement between said surfaces to prevent fretting thereof and to seal said chamber, said preventing means including a thin metallic sheet disposed between said parts and engaging said surfaces, said sheet being perforated to provide a plurality of prongs extending from at least one side of said sheet to be embedded in the surface adjacent said sheet one side; means on the other side of said sheet affixing said sheet to the other of said surfaces and sealing said sheet thereto, and means carried by said sheet one side sealingly engaging said adjacent surface.

4,067,672
APPARATUS FOR PRODUCING A BODY OF POROUS THERMOPLASTIC MATERIAL
Heikki Korpela, Helsingborg; Lars Norrbede, Bjuv, and Ralf Wärna, Katrineholm, all of Sweden, assignors to Gullfiber AB, Billesholm, Sweden
Filed Nov. 20, 1975, Ser. No. 633,651
Claims priority, application Sweden, Nov. 20, 1974, 7414594
Int. Cl.[2] B29D 27/04
U.S. Cl. 425—4 C 3 Claims



1. Apparatus for manufacturing a body of porous thermoplastic material having the form of a continuously advancing strand made from granules containing an expanding agent, said apparatus comprising
means defining an elongate channel open at both ends, said means including two endless belts each having one reach thereof mounted to form one of two opposite sides, respectively, of said channel, and movable from an intake at one end of the channel to an outlet at its opposite end,
a casing connected to the intake end of said channel,
a plurality of spaced ejectors associated with said casing and having discharge ends opening on the interior thereof,
means operatively associated with said ejectors for connecting said ejectors to a source of compressed air and to a source of granules containing an expanding agent, and operable for feeding said granules by compressed air successively through said ejectors and casing and into said channel through the intake end thereof, and
a plurality of steam ducts extending through said casing and into said channel through the intake end thereof for supplying steam to the granules after entry thereof into said channel,
said ejectors having the discharge ends thereof spaced from and directed toward the intake end of said channel, and
said steam ducts having the discharge ends thereof opening in said channel inwardly of the intake end thereof, whereby steam is applied to the granules after entry thereof into said channel, said steam ducts being disposed in one row registering approximately with the center of the channel and pass through said casing and into the intake end of said channel, and said ejectors are connected to said casing with the discharge ends thereof positioned to direct granules toward the intake end of the channel from above and below, respectively, said steam ducts.

4,067,673
APPARATUS FOR INJECTION FOAM MOLDING
James W. Hendry, Holland, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed Sept. 2, 1975, Ser. No. 609,261
Int. Cl.[2] B29D 27/00
U.S. Cl. 425—4 R 15 Claims

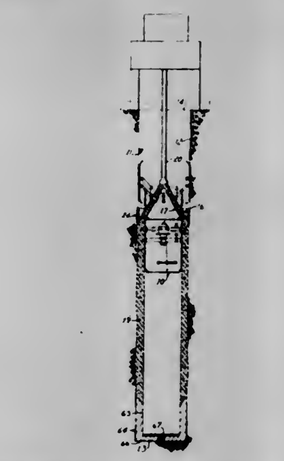


1. An injection foam molding apparatus comprising:
a. an extruder means with operatively associated drive means;
b. an injection chamber;
c. pipe means connecting said extruder means to said injection chamber;
d. a blowing agent source connected to said extruder means wherein blowing agent is metered into the plasticized resin melt stream;
e. means controlling said injection chamber wherein said plasticized resin foams and expands to a predetermined volume in said injection chamber;
f. a manifold means with passages connecting said injection chamber to nozzle means wherein said nozzle means is affixedly held to said manifold and in communication with mold means;
g. said nozzle means having a shut-off valve disposed therein;
h. means operatively associated with said injection chamber for rapidly forcing said foamed plasticized resin from said injection chamber to said mold means; and
i. said predetermined volume of said injection chamber is a function of the volume of the passages from said blowing agent source to said nozzle and the volume of said mold means.

4,067,674
FURNACE FOR THE PRODUCTION OF SPHERICAL PARTICLES
Jacques Devillard, Saint Ismier, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Nov. 30, 1976, Ser. No. 746,063
Claims priority, application France, Dec. 9, 1975, 75.37625
Int. Cl.[2] B22D 23/08
U.S. Cl. 425—8 9 Claims

1. A furnace for the production of spherical particles comprising a vacuum-tight chamber having a vertical axis, means for heating to the melting point an end zone on an ingot of fusible material supported by an adjustable spindle placed along the axis of the chamber and driven in rotation, a container attached to the chamber for the recovery and storage of particles ejected from the molten zone under the action of rotation of the spindle, and a rigid screen which is of revolution about the axis of the chamber and mounted within said chamber around the spindle in order to stop the particles derived from the molten zone prior to solidification of said particles, wherein the screen is formed of material having high thermal conductivity and is provided with a consumable coating in that surface which receives the impact of the particles, said coating being capable of producing around the point of impact a vapor atmosphere which modifies the interfacial surface tension of the particles on the screen by means of a localized process of calefaction.

4,067,675
APPARATUS FOR IN SITU LINING OF AN UPWARDLY OPEN SHAFT WITH MONOLITHIC CONCRETE
Raymond A. Hanson, c/o R.A. Hanson Co., P.O. Box 7400, Spokane, Wash. 99207
Filed June 9, 1976, Ser. No. 694,209
Int. Cl.[2] E21D 5/00
U.S. Cl. 425—59 8 Claims



1. Slipform apparatus for lining in situ an elongated upright open vertical walled shaft having a substantially circular cross section extending from a shaft bottom to an open top, said slipform apparatus comprising:
an outer slipform member having a conical shape extending downward and radially outward from an open apex to a peripheral edge adjacent the vertical wall of the shaft;
an inner core slipform member mounted in coaxial spaced relation to the outer conical slipform member;
said inner core slipform member having (1) a conical upper portion coaxial with and spaced from the outer conical slipform member forming a conical passageway extending between the open apex downward and radially outward to

the peripheral edge of the outer slipform member and (2) a depending lower cylindrical wall portion to form a cylindrical space between the wall portion and the shaft wall;

an elongated tremie tube means connected to the outer slipform member with a lower end in open communication with the open apex of the outer slipform member for directing concrete in a plastic state down the tremie tube through the open apex and through the conical passageway and into the cylindrical space between the cylindrical wall portion and the shaft wall to form the shaft lining;

seal means on the outer slipform member at the peripheral edge for preventing the escape of concrete from the cylindrical space to above the outer slipform member; and

concrete pressure supply means operatively connected to the tremie tube means for pumping concrete under sufficient pressure through the tremie tube means and the conical passageway to the cylindrical space between the cylindrical wall portion and the shaft wall to force the slipform apparatus upward within the shaft as the concrete is pumped through the tremie tube.

4,067,676

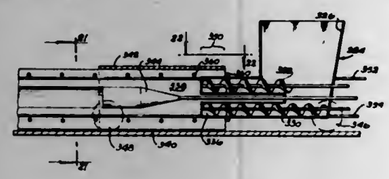
APPARATUS FOR EXTRUDING REINFORCED CONCRETE

Frederick M. Hewitt, 2913 N. Harrington, San Bernardino, Calif. 92402

Division of Ser. No. 534,263, Dec. 19, 1974, Pat. No. 3,994,639, which is a division of Ser. No. 322,811, Jan. 11, 1973, Pat. No. 3,926,541, which is a continuation-in-part of Ser. No. 50,491, June 29, 1970, abandoned. This application June 21, 1976, Ser. No. 698,242

Int. Cl.² B28B *1/08*

U.S. Cl. 425—64 **1 Claim**



1. Apparatus for forming concrete articles, comprising:

a molding station including form surfaces;

walls defining a conveyor station including at least one auger for conveying concrete mix into said molding station, said auger having flights for extruding said mix;

at least one core forming mandrel disposed in said molding station and formed by walls having external surfaces in the path of extrusion from said auger flights;

said auger being rotationally independent from said mandrel;

said auger and said mandrel being relatively disposed so that the longitudinal axis of said auger is lateral of the longitudinal axis of said mandrel;

means associated with said conveyor station for introducing concrete mix to said auger;

means associated with said auger for rotating said auger to convey said mix to the form surfaces of said molding station with sufficient force to form and extrude a consolidated mix relative to said form surfaces;

means associated with said form surfaces for vibrating said form surfaces at a frequency greater than 22,000 vibrations per minute, while extruding said consolidated mix, to reduce friction between said form surfaces and said consolidated mix;

said form surfaces overlapping said conveyor station walls, and including means at the region of overlap of said form surfaces and said conveyor station walls for inserting reinforcement members into and transverse of said concrete mix and for moving said reinforcement members at extrusion speed through at least an initial region of said molding station for consolidation with said mix.

4,067,677

WHEAT FLOUR BAND ROLLING APPARATUS

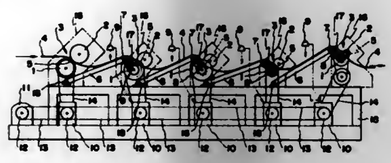
Hatuo Sakurazawa, 15 banchi, Sinozuka, Fujioka, Gunma, Japan

Filed July 19, 1976, Ser. No. 706,585

Claims priority, application Japan, July 19, 1975, 50-100370[U]

Int. Cl.² A21C *3/02*

U.S. Cl. 425—135 **6 Claims**



1. A wheat flour band rolling apparatus, comprising:

a. a plurality of rolling roller devices, each device comprising a driving roller opposed to it, the rollers cooperating to define a gap therebetween, the devices being linearly arranged in the direction of progressive movement of a wheat flour band,

b. means operable to drive the driving rollers of the rolling roller devices,

c. an endless belt conveyor disposed between adjacent rolling roller devices and extending from beneath the gap of one of the rolling roller devices to the front, as defined by the directing of movement of the band, of the gap of the other rolling roller devices,

d. means operable to detect the tension of the wheat flour band associated with each endless belt conveyor, the detecting means sensing the tension of the band when the band is above the associated conveyor, and

e. a plurality of means operable to adjust the speed of each rolling roller device in response to the detecting means, each one of the means being associated with one of the rolling roller devices, each adjusting means being fitted between the gap of the associated device and the conveyor associated therewith.

4,067,678

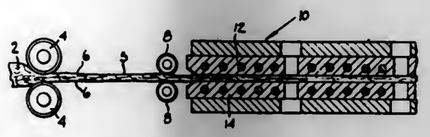
APPARATUS FOR MAKING A FIBROUS BOARD-LIKE PRODUCT HAVING A MALE EDGE AND A FEMALE EDGE

Robert Louis Beranek, Jr., and Donny Lee Timms, both of Johnson, Tex., assignors to Johns-Manville Corporation, Denver, Colo.

Division of Ser. No. 676,775, April 14, 1976, Pat. No. 4,038,356. This application Feb. 28, 1977, Ser. No. 772,801

Int. Cl.² B29C *3/00, 17/14*

U.S. Cl. 425—305.1 **4 Claims**



1. An apparatus for consolidating, shaping and curing a blanket formed of low density masses of fiber having a heat setable binder throughout, comprising:

a. a first means for compressing a moving body of a low density mass of fiber containing a heat setting binder throughout and for heating the compressed surfaces of said mass of fiber to cure the binder contained in the compressed surface portions,

b. a second means following said first means comprising a pair of spaced apart platens providing stationary skid plates for further compressing and shaping said moving mass of fibers containing binder throughout in sliding contact therewith to consolidate and conform the mass of fibers to the desired product density and configuration, for smoothing the compressed surfaces in contact therewith and heating the compressed surfaces to complete the cure of the binder throughout the compressed and shaped mass of fibers fixing the desired thickness and configuration, one of said platens having a forming shoe running lengthwise down its center portion for compressing said fibrous mass between the outer surface of said shoe and the surface of the opposite platen to a higher density than the fibrous mass adjacent either side of the shoe, and

c. a pulling assembly for applying a pulling force on the shaped and bonded product after it has passed through said second means to pull said fibrous mass through said first and second means; the improvement comprising:

d. means for maintaining at least one of said platens such that the space between the platens at their entry end is greater than the space between the platens at their exit end, and

e. a tapered shim located between said shoe and the platen to which said shoe is attached, said shim being tapered such that the distance between the outer surface of said shoe and the surface of the opposite platen remains substantially constant along the length of said shoe.

4,067,679

MACHINE FOR MAKING CONCRETE PIPES IN UPRIGHT POSITION

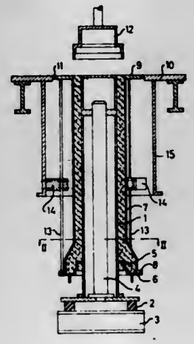
Jens Peter Nielsen, Brondersiev, Denmark, assignor to Pedershaab Maskinfabrik A/S, Brondersiev, Denmark

Filed Sept. 21, 1976, Ser. No. 725,199

Claims priority, application Denmark, Sept. 25, 1975, 4311/75

Int. Cl.² B28B *3/02, 21/50*

U.S. Cl. 425—421 **8 Claims**



1. A machine for making concrete pipes by moulding in upright position in a mould comprising a stationary frame, a rotationally vibrated mould core member, means yieldably supporting the core member on a stationary support, an outer mould, means associated with the core member supporting the outer mould yieldably about the core member, such that the outer mould and the core member are relatively movable horizontally with respect to one another, said outer mould having vibration forces from the mould core member transmitted to it mainly through a concrete mass poured into an annular mould cavity defined between the core member and the outer mould, said vibration forces from the rotationally vibrated mould core member tending to cause relative movement between the core member and the outer mould due to a vibrational phase delay between the core member and the outer mould as the vibration forces travel through the non-rigid unset concrete mass to the outer mould, a pressing head operating in the upper region of the cavity to exert a static pressure on the concrete mass which fills the cavity, and means operative to cause a moderate reduction of the relative movements between the upper portions of the core member and the outer mould, including means connected between the stationary frame and the outer mould for limiting relative movement between the upper portion of the outer mould and the upper portion of the core member and substantially preventing rocking motion of the outer mould with respect to the core member, whereby effective compacting of the upper portions of the concrete pipe is assured.

4,067,680

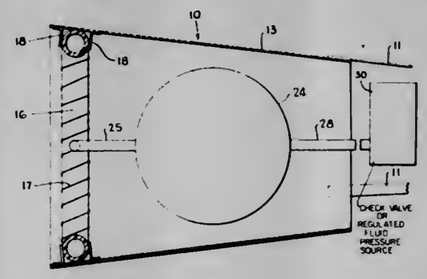
TROWEL FOR PIPE LINING MATERIAL

Alfred G. Perkins, 1000 Porterville Road, East Aurora, N.Y. 14052

Filed Dec. 17, 1976, Ser. No. 751,843

Int. Cl.² B28B *7/32*

U.S. Cl. 425—460 **8 Claims**



1. A trowel for smoothing a layer of plastic material against the interior of a generally cylindrical conduit, said trowel comprising one or more longitudinally extending plates forming a frustoconical trowel body having overlapping portions corresponding to the number of trowel plates, connecting means at the small end of the trowel body constraining the same to a relatively fixed diameter at such small end but permitting diametral expansion and contraction of the trowel body at the large end by relative intersliding movement of said overlapping portions, and resilient expansion means at the interior of the trowel body adjacent to the large end thereof for applying a resilient expanding force thereagainst in substantially all radial directions, said expansion means comprising a hollow torus of elastic material containing a fluid under pressure, and means constraining said hollow torus against substantial expansion of its transverse cross-sectional diameter whereby said pressure fluid exerts a resilient lengthening force within said torus in a circumferential direction to produce yieldable diametral expanding force against the interior of the large end of said trowel body.

4,067,681

GAS-FIRED SMOOTH TOP RANGE

Edward A. Reid, Jr., Westerville; George W. Myler, Upper Arlington, and James E. Payne, Columbus, all of Ohio, assignors to Columbia Gas System Service Corporation, Wilmington, Del.

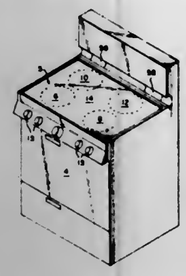
Division of Ser. No. 557,032, March 10, 1975, Pat. No. 4,024,839. This application Jan. 13, 1976, Ser. No. 648,818

Int. Cl.² F23L *9/00*

U.S. Cl. 431—10 **4 Claims**

1. In a method of producing heat from fuel gas, the steps of, delivering a controlled stream of fuel gas into a gas mixture passageway and simultaneously mixing with the fuel gas a stream of air which is less than that necessary to support combustion of the stream of fuel gas, passing the resulting gas mixture to an ignition zone, discharging said gas mixture at said

ignition zone into a closed ignition passageway while simultaneously mixing it with a controlled quantity of air to produce an ignitable gas mixture, igniting the resulting gas mixture, passing the ignited gas mixture through said ignition passageway and thence to a continuous spiral combustion zone which



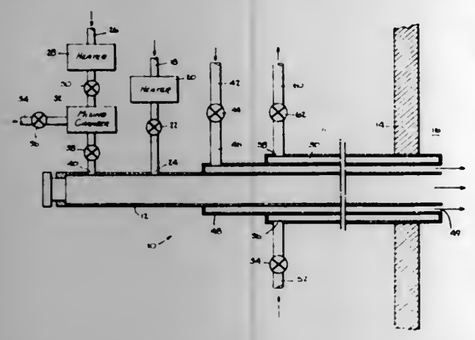
extends along a heat transfer surface to a discharge zone and simultaneously adding additional air to said ignited mixture as it passes from said ignition passageway to said combustion zone, and withdrawing the products of combustion from said discharge zone.

4,067,682

OIL BURNER SYSTEM

Ernest Andres Lado, Belle Mead, N.J., assignor to Nichols Engineering & Research Corporation, Belle Mead, N.J.

Filed Aug. 1, 1975, Ser. No. 601,051
Int. Cl.² F23D *11/44*
U.S. Cl. 431—11 **18 Claims**



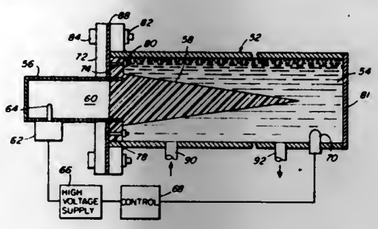
1. In an oil burner system for reducing the viscosity of Bunker C type fuel oil to a value of the order of about 100 SSU (Saybolt viscosity, seconds-Universal at 100° F.) and burning same in a high temperature combustion zone or chamber, a method of operating said system comprising the steps of preheating residual fuel oil and introducing it into an oil tube extending through a high temperature furnace wall from the outside to said high temperature combustion chamber, introducing a heated fluid into said oil tube for passage therethrough with said fuel oil, enclosing the outer periphery of said oil tube at a point therealong prior to the entry of said tube into said furnace wall to prevent the flow of gaseous fluid between the ambient atmosphere and said furnace, introducing a fluid under pressure into said enclosure and around the periphery of said oil tube thereby cooling the outer periphery of said oil tube where it passes through said high temperature furnace wall and into said high temperature combustion chamber.

4,067,683

METHOD AND APPARATUS FOR CONTROLLING FLUENCY OF HIGH VISCOSITY HYDROCARBON FLUIDS

William J. Klaila, Middleboro, Mass., assignor to Frank T. Sullivan, Inc., Lakeville, Mass.

Filed June 14, 1976, Ser. No. 696,063
Int. Cl.² F23D *11/44*
U.S. Cl. 431—11 **12 Claims**



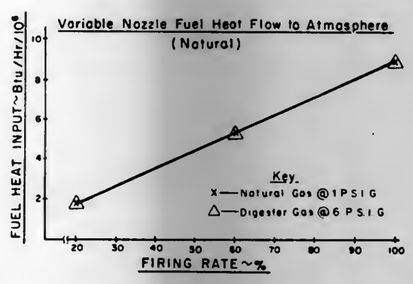
1. A heating apparatus comprising:
a. a source of electromagnetic energy;
b. container means in which a fluid is confined, said container means having an inlet port and an outlet port through which said fluid flows;
c. means for directing said electromagnetic energy towards said confined fluid, said means for directing including a horn which is disposed within said container means, said horn composed of a material that is impervious to said fluid and is permeable to said electromagnetic energy, said electromagnetic energy converted into thermal energy within said fluid; and
d. control means operatively connected to said source for regulating the electromagnetic energy and controlling the viscosity of said fluid by elevating its temperature.

4,067,684

APPARATUS FOR CONTROLLING FUEL FLOW FLUID HEATER BURNER

Michael J. McInerney, Highland Park, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed July 23, 1976, Ser. No. 708,279
Int. Cl.² F23N *1/02*
U.S. Cl. 431—90 **5 Claims**



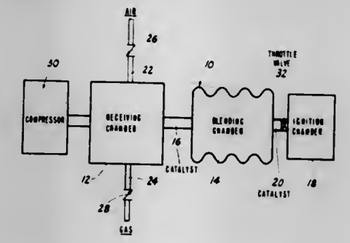
1. In a fluid heater having a heat exchanger, a combustion chamber for producing heat for the heat exchanger, a fuel burner for the combustion chamber, means for producing combustion air for the combustion chamber, means for regulating fuel flow to the burner, means for regulating combustion air, and control means responsive to the output demands of the heat exchanger for controlling the fuel flow and combustion air regulating means to control the output of the heater, the improvement in means for supplying a plurality of fuels to said fuel flow regulating means and compensating for the heat content of said fuels, said fuel supplying means including a plurality of fuel sources selectably connectable to said fuel flow regulating means, pressure responsive fuel flow regulating means for each fuel source, each said pressure responsive fuel flow regulating means having a valve and a pressure responsive device for controlling operation of the valve, and means for feeding the combined fuel/air pressure at the fuel burner to each said pressure responsive device, whereby operation of each said valve responds to the combined fuel/air pressure at the fuel burner.

4,067,685

FUEL INTRODUCTION SYSTEM

Frank E. Brown, Coweta, Okla., assignor to Ellis A. Creek and Richard W. Brown, both of Coweta, Okla., part interest to each

Continuation of Ser. No. 350,947, April 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 315,537, Dec. 15, 1972, abandoned. This application July 30, 1976, Ser. No. 710,345
Int. Cl.² F02M *27/02*
U.S. Cl. 431—2 **3 Claims**



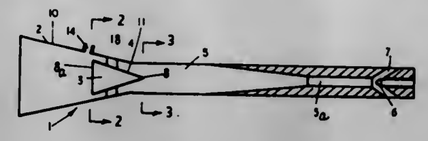
1. A fuel introduction method comprising the steps of introducing air and fuel into an initial receiving chamber, passing the air and fuel through a first conduit having a catalyst means, moving the combination of air and fuel into a blending chamber having an undulating inner surface and having a cross-sectional area several times that of said first conduit, completely blending the air and fuel in the blending chamber, moving the blended air and fuel through a second conduit having a catalyst means, and moving the blended combustible air-fuel mixture into a firing chamber.

4,067,686

NOZZLE

Ladislav Stephan Karpisek, 86 Woodfield Blvd., Caringbah, N.S.W., Australia (2229)

Filed Apr. 21, 1976, Ser. No. 678,876
Claims priority, application Australia, Apr. 22, 1975, 1327/75
Int. Cl.² A23F *1/00*
U.S. Cl. 431—353 **5 Claims**



1. A nozzle in which combustion of gaseous fuel is to take place, said nozzle comprising a truncated hollow pyramidal shroud part and an interiorly coaxially mounted restrictor part, the shroud at its smaller end adapted to be coupled to a supply of pressurized gaseous fuel, said restrictor being generally pyramidal in shape with the apex of the pyramid directed toward the smaller end of said shroud and the base of the pyramid directed toward the other end of the shroud, the shape of the base of the pyramid and the internal cross-sectional shape of the shroud being similar with a gap between the perimeter of the pyramid base and the adjacent interior surface of the shroud through which a generally tubular stream of gaseous fuel passes, the linear value of gap D being based on the use of fixed design criteria for the nozzle and calculated by the formula

$$D = ALF/V_o$$

where A is the area of gap of linear width D, L is the length of travel of the gaseous fuel in the nozzle from the point of ignition of the innermost layer of gaseous fuel in the stream to the point where the outermost layer of gaseous fuel ignites, F is the speed of flame propagation and V_o is the volume of gaseous fuel per unit time passing through A.

4,067,687

PHOSPHORUS, NITROGEN, BROMINE CONTAINING POLYMERS AND PROCESS FOR PRODUCING FLAME RETARDANT TEXTILES

Darrell J. Donaldson; George L. Drake, Jr., both of Metairie; John V. Beninate, Gretna; Wilson A. Reeves, Metairie, and Donald J. Daigle, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 499,810, Aug. 22, 1974, which is a continuation-in-part of Ser. No. 265,862, June 23, 1972, Pat. No. 3,915,915, which is a continuation of Ser. No. 141,357, May 7, 1971, abandoned. This application Jan. 23, 1976, Ser. No. 652,277

Int. Cl.[2] D06M *1/00*

U.S. Cl. 8—116 P 7 Claims

1. A process for preparing a flame retardant chemical formulation comprising mixing, at room temperature, in aqueous-ethanol solvent, a quantity of tris(hydroxymethyl)phosphine cyanamide 2:1 adduct with sufficient quantity of an organic bromine-containing compound selected from the group consisting of polyvinyl bromide, brominated triallyl phosphate, and tris(2,3-dibromopropyl)phosphate to yield a solution containing an adduct to brominated substance ratio of about 1 part by weight to 8 parts by weight.

4,067,688

DURABLE PRESS PROCESS FOR CELLULOSIC FIBER-CONTAINING FABRICS UTILIZING FORMALDEHYDE AND AN ARYL SULFONIC LIQUID OR ACID CATALYST

George Louis Payet, Cincinnati, Ohio, assignor to The Strike Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 486,168, July 5, 1974, Pat. No. 3,960,482, and a continuation-in-part of Ser. No. 524,770, Nov. 18, 1974, Pat. No. 3,960,483. This application Apr. 14, 1976, Ser. No. 676,815

The portion of the term of this patent subsequent to June 1, 1993, has been disclaimed.

Int. Cl.[2] D06B *1/00;* D06M *1/14*

U.S. Cl. 8—116.4 12 Claims

1. A durable press process for cellulosic fiber-containing fabrics, comprising: impregnating a cellulosic fiber-containing fabric with an aqueous solution containing a water soluble arylsulfonic acid which is capable of catalyzing the cross-linking reaction between formaldehyde and cellulose; to provide from 0.1% to about 10% of said catalyst in said fabric on a dry weight basis, then exposing said impregnated fabric, while said fabric has a moisture content of above 20% by weight where the cellulose fibers are substantially completely swollen, to formaldehyde vapors and curing under conditions at which formaldehyde reacts with cellulose in the presence of the catalyst to improve the wrinkle resistance of the fabric.

4,067,689

DIQUATERNARY AMMONIUM CELLULOSIC FABRICS WITH WRINKLE RESISTANT PROPERTIES

Dorothy M. Perrier, and Ruth R. Benerito, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 446,439, Feb. 27, 1974, abandoned. This application Sept. 30, 1976, Ser. No. 728,104

Int. Cl.[2] D06M *13/08, 5/14;* C08B *11/20, 11/145*

U.S. Cl. 8—129 11 Claims

1. A process for producing diquaternary ammonium partial cellulose fibrous ethers, the process comprising reacting tertiary DEAE-cotton ether having a nitrogen content of about from 3.5% to 4.0% and in which the tertiary amine nitrogens have unshared electrons and are thus in the Lewis base form with an alpha-omega dihaloalkane of chain length C_3 to C_{10} in organic solvent solution to yield a cotton derivative having substantially for every alkylene group added two amino groups of the original DEAE-cotton changed to diquaternary crosslinks.

4,067,690

BOILER WATER TREATMENT

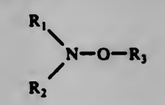
Dionisio G. Cuisia, Chicago; Chih M. Hwa, Arlington Heights; Jose T. Jacob, Lake Zurich, and Murrell L. Salutsky, Highland Park, all of Ill., assignors to Chemed Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 683,106, May 4, 1976, abandoned, which is a continuation of Ser. No. 559,184, March 17, 1975, abandoned. This application Feb. 9, 1977, Ser. No. 767,151

Int. Cl.[2] C23F *11/08*

U.S. Cl. 21—2.7 R 6 Claims

1. A method for control of corrosion of iron and steel surfaces in boiler apparatus caused by dissolved oxygen, in an aqueous boiler water system which consists essentially of boiler water containing dissolved oxygen, said boiler system being operated at a temperature of 298° to 637° F. and 50 to 2000 psi which comprises adding to the said system an effective amount, 0.001–500 parts per million parts of water, of an oxygen scavenger having the general formula:



where R_1, R_2, and R_3 are either the same or different and selected from the group consisting of hydrogen, lower alkyl and aryl, and the water-soluble salts thereof.

4,067,691

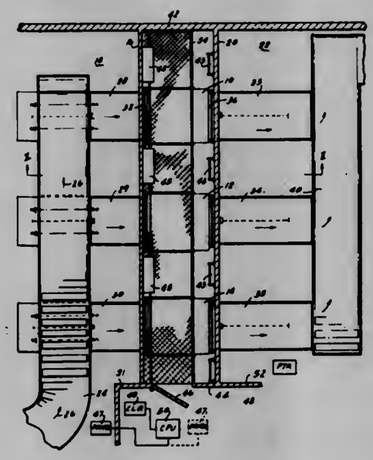
STERILIZING SYSTEM AND AUTOMATIC CONTROL THEREFOR

Donald L. McGady, Darien; Thomas M. Hooper, Lemont, and Joseph E. Wilczynski, Chicago, all of Ill., assignors to Mercy Hospital and Medical Center, Chicago, Ill.

Filed Apr. 16, 1976, Ser. No. 677,842

Int. Cl.[2] A61L *3/00*

U.S. Cl. 21—56 24 Claims



1. In a sterilizing system having sterilizing apparatus for sterilizing articles, said sterilizing apparatus having an inlet door opening into a contaminated area, an outlet door opening into a clean area, and means for opening and closing said doors one at a time; a neutral zone adjacent said sterilizing apparatus defined by a first wall aligned with said inlet door for separating a contaminated area from said neutral zone and a second

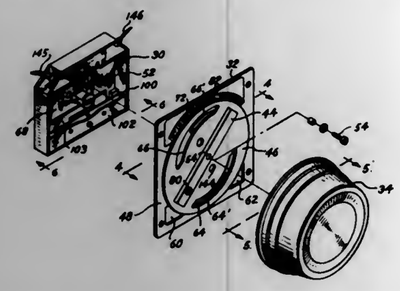
wall aligned with said outlet door for separating a clean area from said neutral zone, and including means for supporting controls for said sterilizing apparatus within said neutral zone.

4,067,692

ODOR CONTROL DEVICE

Richard W. Farris, 1508 Indiana Ave., La Porte, Ind. 46350

Filed June 10, 1976, Ser. No. 694,540
Int. Cl.² A61L *3/02, 9/01, 9/04;* F24F *3/12*
U.S. Cl. 21—74 R **11 Claims**



1. An odor control device for use with an air passage of a main system having a blower therein: comprising a body having a chamber, a panel secured to said body and having an air inlet port for admitting air to said chamber, a rotatable plate mounted on said panel, a container for odor conditioning material mounted over and rotatable with said rotatable plate, said panel and plate having a first pair of openings forming a variable air flow passage from said chamber to said container, and a second pair of openings forming a variable air flow passage from said container into the air passage of the system, the effective size of said first and second openings being varied by the rotation of said plate on said panel, a partition disposed between said first and second pairs of openings and between said plate and container for directing air flow into said container, and means for detachably securing said container over the first and second openings in said plate and panel.

4,067,693

METHOD FOR GEOCHEMICAL PROSPECTING

Jerry W. Wimberley, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Sept. 16, 1974, Ser. No. 506,361
Int. Cl.² G01N *33/24*
U.S. Cl. 23—230 EP **5 Claims**

1. A method for locating subterranean sulfide mineral ore deposits, said method consisting essentially of:

a. analyzing the soil at a plurality of locations in an area of interest to determine a ratio between mercury present in the soil as mercury sulfides and the total mercury present in the soil at said locations; and,

b. comparing said ratios to determine the location of sulfide mineral ore deposits in said area of interest.

4,067,694

LOADING AND UNLOADING MECHANISM FOR CONTINUOUSLY ROTATING CONTAINER

Robert Bruce Blakely, Rochester; Clyde Leroy Fetterman, Spencerport, and Horace Glynn Warren, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1976, Ser. No. 751,869
Int. Cl.² G01N *33/16, 1/28, 1/14*
U.S. Cl. 23—253 R **9 Claims**

1. In apparatus for analysis of a substrate, the apparatus including

supporting means disposed around a fixed axis for supporting a plurality of substrates;

means for sensing the state of the substrates supported by said supporting means;

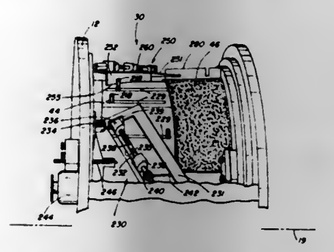
means for continuously rotating at a prescribed speed about said axis said supporting means and the substrates supported thereon;

and means for loading and unloading a substrate into and from engagement with said supporting means;

the improvement wherein said loading and unloading means include,

a. a stationary loading station;

b. holding means for mating with and holding said substrates, said holding means being disposed for continuous rotation about said axis and for linear movement into and out of positions aligned with said supporting means or with said loading station;



c. and moving means for individually and selectively moving any of said holding means from said supporting means to said loading station and back,

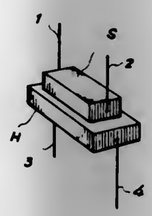
whereby said any holding means is brought into a mating position with a stationary substrate on said loading station while said any holding member is moving with respect to said loading station, without interrupting said continuous rotation.

4,067,695

GAS SENSING ELEMENT

Yōichiro Miyaguchi, Hachioji, Japan, assignor to Nittan Company, Limited, Japan

Filed Jan. 19, 1977, Ser. No. 760,529
Claims priority, application Japan, Jan. 29, 1976, 51-8784; Apr. 12, 1976, 51-40327
Int. Cl.² G01N *27/12, 31/06*
U.S. Cl. 23—254 E **7 Claims**



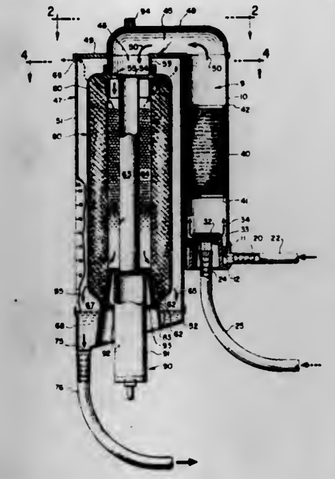
1. A gas sensing element comprising a semiconductor body having a pair of electrodes and changing its electric resistivity with ambient gas concentration, wherein said semiconductor body consists of a sintered body of a composition containing an oxyacid salt compound semiconductor material.

4,067,696

BLOOD OXYGENATOR

Robert Mark Curtis, Laguna Niguel, Calif., assignor to Swiley Laboratories, Inc., Santa Ana, Calif.

Filed Feb. 3, 1976, Ser. No. 655,039
Int. Cl.² A61M *1/03*
U.S. Cl. 23—258.5 B **24 Claims**



1. A blood oxygenator which requires a low volumetric ratio of oxygen to blood comprising:

an oxygenating chamber;

first means for introducing blood and oxygen into said oxygenating chamber comprising blood and oxygen inlet means therein;

second means coupled to said oxygen inlet means for introducing a plurality of bubbles of oxygen in the blood, said first means providing a site for oxygen bubble formation in the absence of and unimpeded by any means for mixing said blood and oxygen bubbles;

third means so located that said blood and oxygen bubbles flows therethrough downstream of and spaced from said site for bubble formation, said third means mixing and churning together said blood and oxygen bubbles to break down said oxygen bubbles and form blood foam comprising an open cellular mixing material means within said chamber, said mixing material means having a three dimensional body configuration for providing a plurality of tortuous paths so that oxygen bubbles are both broken down and caused to travel in a plurality of tortuous paths through said blood before escaping from said mixing material means, said three dimensional, open cellular mixing means having a void volume substantially larger than 50% so that said oxygenating chamber provides low impedence to the flow of blood therethrough and provides relatively low velocities of blood therein;

an outlet means in said oxygenating chamber through which the oxygenated foamed blood passes; and

defoamer means coupled to said outlet means for defoaming the oxygenated blood.

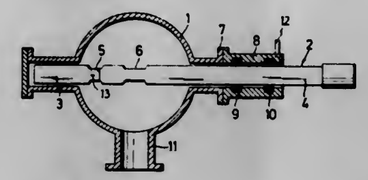
4,067,697

TEST BAR FOR A VACUUM CHAMBER

Hans-Dietrich Polaschegg, Bornheim-Walberberg, Germany, assignor to Leybold-Heraeus GmbH & Co. KG, Cologne, Germany

Filed Mar. 12, 1976, Ser. No. 666,498
Claims priority, application Germany, Mar. 12, 1975, 2510683
Int. Cl.² B01L *1/02*
U.S. Cl. 23—259 **7 Claims**

1. A device for introducing a specimen into and withdrawing the same from the interior of a chamber sealed from the environment external to the chamber; the device having means defining an opening in the chamber; a test bar projecting through the opening and being slidable with respect thereto; and specimen-receiving means provided on the test bar; the test bar having a first end position in which the specimen-receiving means is situated inside the chamber and a second end position in which the specimen-receiving means is situated externally of the chamber; the test bar being in sealing relationship with the opening in any position of the test bar between and including the two end positions for sealing the inside of the chamber from the environment external to the chamber; the improvement wherein said test bar has



a. a first length portion including said specimen-receiving means and including a part being in sealing relationship with said opening in said first end position of said test bar;

b. a second length portion including a part being in sealing relationship with said opening in said second end position of said test bar; said first and second length portions being constituted as separate members engaging one another in a parting zone; and

c. releasable coupling means for detachably attaching said second length portion to said first length portion and for transmitting to said second test bar portion any external displacement force exerted on said first test bar portion, whereby said first and second test bar portions are displaced as a unit by such forces.

4,067,698

BRIDGED PHENOL METAL SALT-HALO CARBOXYLIC ACID CONDENSATE ADDITIVES FOR FUELS

Thomas Frier Steckel, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Filed Aug. 27, 1975, Ser. No. 608,380
The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.
Int. Cl.² C10L *1/18, 1/32, 1/22;* C10M *1/54*
U.S. Cl. 44—66 **16 Claims**

1. A normally liquid fuel composition comprising a major amount of a normally liquid fuel and about 1-10,000 parts per million parts by weight of fuel of a product made by reacting (I) at least one phenoxide metal salt of a bridged phenol having (a) at least 2 and up to about 20 phenolic moieties or thiophenol analogs thereof and (b) at least 1 and up to about 19 bridging linkages independently selected from the group consisting of covalent carbon-to-carbon signel bonds, ether linkages, sulfide linkages, polysulfide linkages of two to six sulfur atoms, sulfinyl linkages, sulfonyl linkages, methylene linkages, alkylene linkages, di(lower alkyl)methylene linkages, lower alkylene ether linkages, lower alkylene sulfide linkages, lower alkylene polysulfide linkages of two to six sulfur atoms, amino linkages, polyamino linkages and mixtures of said divalent bridging linkages with (II) at least one carboxylic acid reagent having 1 to about 3 Cox groups and a halogen-substituted hydrocarbon aliphatic or alicyclic group the ratio of equivalents of acid reagent to equivalents of phenoxide ranging between about 1:5 to about 5:1, wherein each Cox independently represents a member selected from the group consisting of a carboxylate of a Group IA metal, a carboxylic ester of a lower alkanol, a carboxamide of lower alkyl monoamines or ammonia, and a carboxylate of a lower alkyl monoamine or ammonia.

4,067,699

FUEL COMPOSITION

Ronald J. Lukasiewicz, Irvine, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 17, 1976, Ser. No. 751,384
Int. Cl.[2] C10L *1/18*
U.S. Cl. 44—66 4 Claims

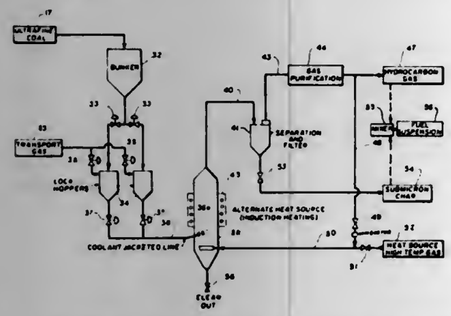
1. A gasoline composition suitable for use as a fuel for internal combustion engines comprising a major proportion of gasoline, methylcyclopentadienylmanganesetricarbonyl in a proportion at least sufficient to increase the octane rating of the gasoline, and 2-ethylhexanoic acid in a proportion at least sufficient to inhibit oxidation of said methylcyclopentadienylmanganesetricarbonyl.

4,067,700

METHOD FOR GASIFYING COAL

George W. Switzer, Midlothian, Va., assignor to Gilbert Associates Inc., Reading, Pa.

Division of Ser. No. 505,677, Sept. 13, 1974, Pat. No. 3,973,733, which is a continuation-in-part of Ser. No. 327,874, Jan. 29, 1973, abandoned. This application May 24, 1976, Ser. No. 689,116
Int. Cl.[2] C10J *3/46*
U.S. Cl. 48—210 2 Claims



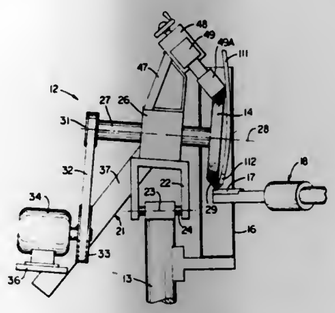
1. The method of gasifying porous particles of coal of ultrafine size of the order of about 1 to 10 microns, comprising introducing said particles into a vessel, subjecting the interior of the vessel to high pressure superheated steam which infuses into the pores of said particles and equalizes the pressure in the pores with that surrounding the particles within said vessel, suddenly reducing the pressure surrounding said particles in said vessel so as to effect higher pressure in the pores than in the vessel space surrounding said particles, resulting in bursting of the particles, and expanding said steam by opening a discharge outlet of said vessel to effect acceleration, turbulence and collision of said particles causing further breakage of said particles and further expanding broken particles in said discharge outlet through nozzle means leading to the interior of a housing against the blades of a paddle wheel driven therein but in a direction opposite to that in which said wheel is driven so as to effect further breakage of said particles from expansion and collision through said nozzle means as well as further breakage from collision with the blades of said paddle wheel to provide particles of ultra fine size which are discharged from said housing into a separator from which the broken particles are discharged and cooling said particles, after said further breakage, and introducing them through a nozzle into a heated reactor so as to burst to submicron size, and filtering the resulting gaseous products to produce separate sources of hydrocarbon gas and submicron char.

4,067,701

GRINDING MACHINE FOR CARBIDE CUTTING ELEMENTS

Frank P. Horvath, Owosso; J. Robert Appleby, Corunna, both of Mich., and William J. Morris, deceased, late of Flint Township, Genessee County, Mich. (by Charles F. Morris, administrator), assignors to Neway Manufacturing, Inc., Corunna, Mich.

Filed Dec. 3, 1975, Ser. No. 637,119
Int. Cl.[2] B24B *3/00*
U.S. Cl. 51—33 R 14 Claims



1. A grinding machine for cutting a plurality of substantially parallel teeth along one side of a workpiece, comprising:
- a frame;
- a carriage swingably mounted on said frame for oscillation through a predetermined angle about a pivot axis;
- drive means drivingly connected to said carriage for causing back-and-forth swinging of said carriage through said predetermined angle;
- a grinding wheel supported on said carriage for rotation about a rotational axis which is spaced from said pivot axis;
- a driving device drivingly connected to said grinding wheel for rotating same;
- a support device for releasably supporting thereon a workpiece which is to be ground, said support device having clamping means for releasably holding said workpiece;
- said frame including means supporting said support device for movement toward the grinding wheel so that said workpiece is positioned for engagement with said wheel at a location between said pivot and rotational axes, whereby oscillation of said carriage causes said grinding wheel to form a rounded convex surface on said workpiece;
- a power device for moving said support device toward the grinding wheel for permitting grinding of said workpiece; and
- control means for causing said support device to be moved toward said grinding wheel in an intermittent steplike manner in synchronization with the oscillation of said grinding wheel, whereby said grinding wheel will sequentially form a plurality of substantially parallel grooves across said workpiece, which grooves define cutting teeth therebetween.

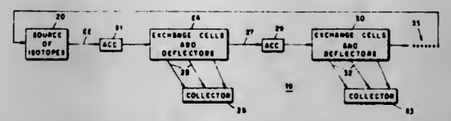
4,067,702

ISOTOPE SEPARATION BY SELECTIVE CHARGE CONVERSION AND FIELD DEFLECTION

Robert G. Hickman, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 405,973, Oct. 12, 1973, abandoned. This application July 22, 1976, Ser. No. 707,797
Int. Cl.[2] B01D *57/00*
U.S. Cl. 55—2 4 Claims

1. A method for separating first and second isotopes of the same element, said isotopes initially being in a first charge state of ionization, including the steps of:
- initially adding energy to said isotopes to accelerate said first isotope to a predetermined velocity, said second isotope being accelerated to a different velocity than said predetermined velocity;
- converting said accelerated first isotope to a charge state of ionization that is opposite to said first charge state, said conversion occuring in a first charge-exchange cell having a peak efficiency of conversion of said first isotope at said predetermined velocity to thereby leave said second isotope substantially in its first state of ionization;
- applying a first deflecting force to said first and second isotopes emerging from said charge-exchange cell to deflect said first and second isotopes in opposite directions, said isotopes thereby being separated;



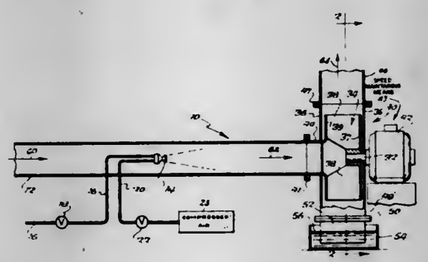
- adding energy to said second isotope after said application to said isotopes of said first deflecting force to accelerate said second isotope to said predetermined velocity;
- converting said second isotope at said predetermined velocity to a charge state of ionization that is opposite to said first charge state, said second conversion occuring in a second charge-exchange cell having a peak efficiency of conversion of said second isotope at said predetermined velocity; and
- applying a second deflecting force to said converted second isotope and any associated unconverted isotopes emerging from said second cell to deflect oppositely charged isotopes in opposite directions to separate said converted second isotope from the deflected unconverted isotopes.

4,067,703

GAS SCRUBBER AND METHOD OF OPERATION

Francis A. L. Dullien, R.R. No. 1, St. Agatha, and Donald R. Spink, 323 Grant Crescent, Waterloo, both of Ontario, Canada

Continuation of Ser. No. 354,638, April 26, 1973, abandoned. This application Dec. 9, 1974, Ser. No. 530,874
Int. Cl.[2] B01D *47/06*
U.S. Cl. 55—92 11 Claims



1. Apparatus for separating particulate matter from a gas stream comprising:
- a. conduit means having a dirty gas inlet at one end thereof;
- b. fan means having an inlet in communication with said conduit means adjacent the other end of said conduit means, said fan means including drive means for operating said fan means at a relatively low speed, means defining an exhaust passage for clean gas separated by said fan means and means for collecting particulate matter separated from the gas stream by said fan means, said fan drive means including means operative to maintain the speed of operation of said fan means in a low speed range sufficient to move the gas along said conduit means into said fan means up to about 1000 r.p.m.;
- c. means for discharging a liquid into said gas stream prior to separation of the particulate matter from the gas by said fan means, said liquid discharging means comprising nozzle means including means for producing a relatively fine liquid spray of droplets wherein the droplets range in size from about 10 microns to about 30 microns, said liquid discharging means being operative to cause said fine liquid spray to capture the particulate matter and the spray droplets to agglomerate to form relatively larger drops of liquid which absorb the particulate matter and some of said liquid spray droplets evaporate to form vapor in said conduit means, and
- d. said speed maintaining means establishing a fan means speed sufficient to favor condensation in said fan means of said vapor on said particulate matter thereby forming additional particle-containing liquid droplets, and sufficient to precipitate said relatively larger drops of liquid which absorb the particulate matter and said additional condensed particle-containing liquid droplets in said fan means.

8. A method of separating particulate matter from a gas stream comprising:
- a. moving dirty gas along a duct and into a fan operating at a relatively low speed in a low speed range sufficient to move the gas along the duct into the fan up to about 1000 r.p.m.;
- b. discharging a relatively fine liquid spray of droplets wherein the liquid droplets range in size from about 10 to about 30 microns into the dirty gas in a manner causing said fine liquid spray of droplets to capture the particulate matter and the spray droplets to agglomerate to form relatively larger drops of liquid which absorb the particulate matter and some of said liquid droplets evaporate to form vapor in said duct the speed of said fan being sufficient to favor condensation in said fan of said vapor on said particulate matter therby forming additional particle-containing liquid droplets, and sufficient to precipitate said relatively larger drops of liquid which absorb the particulate matter and said additional condensed particle-containing liquid droplets in said fan; and
- c. withdrawing clean gas separated from the particulate matter by said fan.

4,067,704

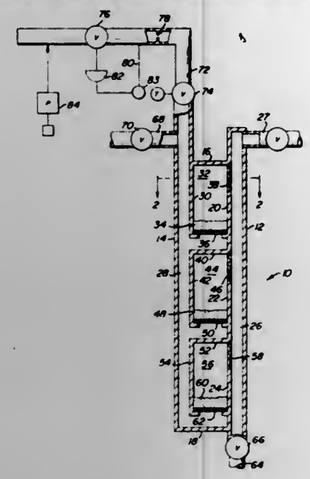
GRANULAR BED FILTER

Frederick A. Zenz, Garrison, N.Y., assignor to The Ducon Company, Inc., Mineola, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,650
Int. Cl.[2] B01D *46/04*
U.S. Cl. 55—96 10 Claims

7. A method of filtering dirty gas comprising filtering gas by passing the gas downwardly through a filter chamber containing a filter bed of granular material at the lower end thereof supported on a screen and wherein at least 60% of the space above the filter bed in said chamber is unoccupied, backwashing the filter bed for at least 5 seconds by fluidizing the granular material into said unoccupied space with a backwash gas

flowing through valved conduit means including flow orifice means at uniform pressure and the amount of the backwash gas



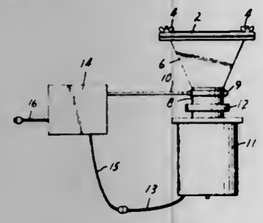
being 2 to 4 cubic feet per second square foot of filter bed surface.

4,067,705

APPARATUS FOR HIGH-VOLUME SAMPLING OF GASES AT CONSTANT MASS FLOW RATE

Jerome Leigh Kurz, P.O. Box 889, Carmel Valley, Calif. 93924

Continuation of Ser. No. 377,951, July 10, 1973, abandoned. This application Oct. 11, 1974, Ser. No. 514,197
Int. Cl.² B01D *46/00*
U.S. Cl. 55—210 **1 Claim**



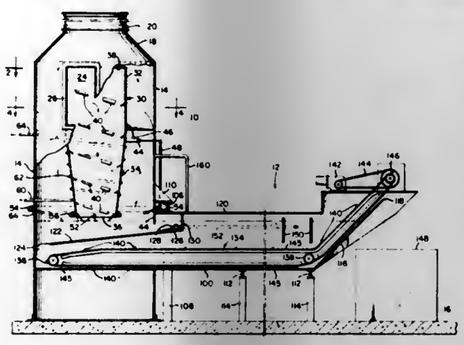
1. A device for high-volume sampling of gases comprising a filter, a filter holder holding said filter, a converging means attached to said filter holder, a sleeve attached to said converging means and a means for drawing said gas through said filter attached to said sleeve, said converging means converging away from said filter holder and reducing the area for the flow of said gas to that of said sleeve, said filter holder, converging means and sleeve forming a conduit for said gas from said filter to said means for drawing said gas through said filter, the improvement which comprises a mass flow rate sensing probe protruding into said sleeve in a location where the velocity profile of said gas crossing the area of gas flow where said probe is located is substantially flat and substantially invariant with respect to temperature and pressure changes in said gas, said probe being connected to means for converting a signal from said probe into changes in the rate at which said means for drawing said gas through said filter operates, said means for converting a signal being connected to said means for drawing said gas through said filter, whereby a substantially constant mass flow rate of gas flows through said device.

4,067,706

APPARATUS FOR GAS SCRUBBING AND PARTICULATE SOLIDS REMOVAL

Agis M. Georgopapadakos, 11820 NE. 158th, Bothell, Wash. 98011, and George S. Sigalas, 5413 NE. 200th Place, Seattle, Wash. 98155

Filed Aug. 30, 1976, Ser. No. 718,457
Int. Cl.² B01D *47/10*
U.S. Cl. 55—239 **8 Claims**



1. A scrubber unit for removing solid particulates and contaminants from air and gas, comprising:

a. a settling and clarifying tank for containing water including a scrubber section and a discharge section, said tank having bottom and side walls and being provided with conveyor means for moving sediment from the scrubber section to the discharge section,

b. a scrubber unit mounted on and supported by said tank, said scrubber unit including:

1. an outer generally vertically disposed cylindrical housing wall defining an outer column, said outer column having an upper end which is enclosed except for an exhaust stack through which cleaned gas and air are exited from said scrubber unit, and a lower end which opens into and forms a part of said tank,

2. a central column disposed generally concentrically inside said outer column having a generally cylindrical upper section and a generally inwardly and downwardly tapering frusto-conical section, the upper end of said central column being closed and the lower end being open and terminating a predetermined distance above the water in said tank, said upper section having an offcenter opening for tangential introduction of incoming gases thereto and said column having deflector means in a downwardly spiraling pattern on the inside surface thereof.

c. support means for said central column extending between the outside of said central column and the inside of said outer column, and

d. baffle means in said tank beneath said central column and below the water level and angling downwardly in a direction away from the discharge end and terminating above said conveyor.

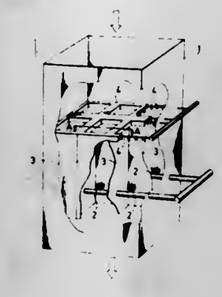
4,067,707

SPRAY TYPE WET SCRUBBER

Masumi Atsukawa, and Atsushi Tatani, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 7, 1976, Ser. No. 693,481
Claims priority, application Japan, June 12, 1975, 50-70206
Int. Cl.² B01D *46/04*
U.S. Cl. 55—242 **1 Claim**

1. In a spray type wet scrubber apparatus including an elongated vertical housing (1) with a top end, center section, and bottom end, a gas inlet at one of said ends, a gas outlet at the other of said ends, a plurality of parallel scrubbing liquid pipes (2_1) horizontally disposed across said center section and a plurality of spray nozzles (2) extending from said pipes (2_1), said housing having two sets of partition walls (3) each set having a plurality of parallel walls, the walls in the one set being at right angles to those in the other set so as to form a plurality of separate chambers with at least one nozzle (2) being allocated to each chamber, so that a dust laden gas stream flows across said chambers from said inlet to said outlet said spray nozzles (2) spraying a scrubbing liquid onto the



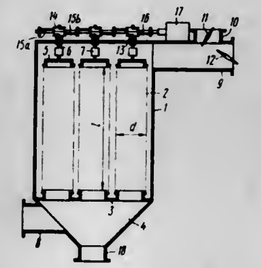
moving dust laden gas forming dust laden drops which inpinge on the surrounding surfaces of the partition walls; the improvement therein consisting of having said gas inlet at the top end, the gas outlet at the bottom end, said spray nozzles being so disposed as to spray upwards and a plurality of wash liquid feeders means (4) comprising a wall top flange cover (5) at the top of each partition wall with feeder pipes (4) within said cover flanges alongside the top of each wall with a plurality of spray orifices at the underside thereof to spray wash liquid down the walls.

4,067,708

BAG FILTER FOR CLEANING DUST-LADEN GASES

Leonid Nosonovich Bykhover, ulitsa Peschanaya, 15, kv. 58; Dmitry Alexandrovich Zhuravlev, Istrinskaya ulitsa, 10, korpus 1, kv. 184; Vladimir Alexeevich Kozhemyakin, ulitsa Ostrovityanova, 21, kv. 155; Vladimir Grigorievich Levin, ulitsa Udaltsova, 4, kv. 351; Felix Betsialovich Ljutin, Nagornaya ulitsa, 62/6, kv. 19; Nikolai Nikolaevich Kotin, Profsojuznaya ulitsa, 91, korpus 2, kv. 15; Viktor Leonidovich Mitnik, Leningradsky prospekt, 78, korpus 1a, kv. 89; Isaak Leibovich Peisakhov, ulitsa Udaltsova, 4, kv. 295, all of Moscow; Gennady Vasilievich Malakhov, ulitsa Vatutina, 50-a, kv. 4, Ordzhonikidze; Anatoly Sergeevich Mukhin, ulitsa Chernyakhovskogo, 26, korpus 4, kv. 24, Ordzhonikidze; Eduard Kazimirovich Penionshek, ulitsa Kotsoeva, 99, Ordzhonikidze, and Taimuraz Danilovich Santiev, ulitsa Butyrina, 10, kv. 85, Ordzhonikidze, all of U.S.S.R.

Filed Jan. 26, 1977, Ser. No. 762,481
Int. Cl.² B01D *46/04*
U.S. Cl. 55—304 **1 Claim**



1. A bag filter for cleaning gases from dust comprising: a casing; bags of filtering cloth accommodated in rows in said casing and extending substantially vertically; lower ends of said bags being fixed to the casing; upper ends of said bags; caps closing said upper ends of the bags; vertical rods secured to said caps; a mechanism for removing dust from the filtering cloth of said bags; pulleys of said mechanism for removing dust secured to said rods; flexible drawbars of said mechanism for removing dust each drawbar having one end secured to said pulleys, two flexible drawbars being secured to each pulley to run therefrom in opposite directions: horizontal bars of said mechanism for removing dust extending along the rows of said pulleys, the other ends of the flexible drawbars running from the pulleys of the row, along which said bar extends, being secured to the bar; a drive for causing longitudinal reciprocations of said bars for rotating the caps and twisting the bags secured thereto, the dimensional proportioning of said mechanism for removing dust being selected in such a manner that the caps are rotated at a twisting angle ϕ which is determined from the formula:

$$5 \leqq \phi : (l/d) \leqq 20,$$

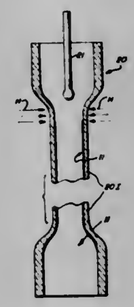
wherein l is length of the bag,
d is diameter of the bag;
a hopper for catched dust which is located in the bottom part of said casing, separated from the inner space thereof and communicates with said bags; a pipe for feeding dust-laden gas to said hopper; a pipe for removing cleaned gas from said casing.

4,067,709

OPTICAL TRANSMISSION LINE

Austin N. Stanton, 4240 Briar Creek Lane, Dallas, Tex. 75214

Filed May 3, 1976, Ser. No. 682,365
Int. Cl.² C03B *37/00*
U.S. Cl. 65—3 B **3 Claims**



1. A process of continuously drawing heated preform glass tube in encircling heat radiating relation to an internal source of light reflecting evaporable metal rod to produce a hollow tube having an internal surface coating of light reflecting material drawn simultaneously with the tube.

4,067,710

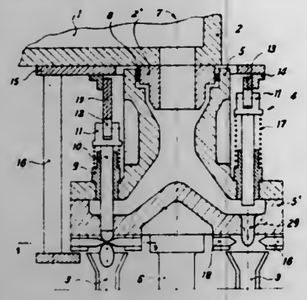
DEVICE FOR FEEDING AUTOMATIC CONTINUOUS PROCESS (KINEMATIC) MACHINES FOR THE MANUFACTURE OF GLASS OBJECTS

Gerard Bardet, Paris, France, assignor to Automatisme et Technique, Arcueil, France

Filed July 30, 1976, Ser. No. 701,153
Claims priority, application France, July 4, 1975, 75.21129
Int. Cl.² C03B *5/30*
U.S. Cl. 65—207 **7 Claims**

1. A device for feeding machines for the manufacture of glass objects and comprising a single rotary feeder supported for rotation about a predetermined axis, said feeder having a

single recess for receiving molten glass, a fixed feeder juxtaposed above said recess for distributing glass thereto, said rotary feeder supporting a plurality of glass pushing pistons whose axes are parallel to said predetermined axis, said rotary feeder recess being provided with a plurality of piston receiving openings coaxial with the pistons and arranged in spaced relation about the periphery of the recess each to accept a volume of glass to be pushed therefrom by a related piston, a fixed cam and cooperating means on the pistons for reciprocating the pistons during rotation of the rotary feeder, and a



plurality of receiving spouts positioned beneath said piston receiving openings for receiving molten glass delivered by the reciprocating pistons, the cam imparting an advance stroke to each piston which causes the piston to penetrate into a piston receiving opening to force a volume of glass through and out of the piston receiving opening into the receiving spout therebeneath, and the cam imparting a reverse stroke displacing each piston above the related piston receiving opening to allow molten glass to flow from the recess into a piston receiving opening.

4,067,711

GLASSWARE FORMING MACHINES

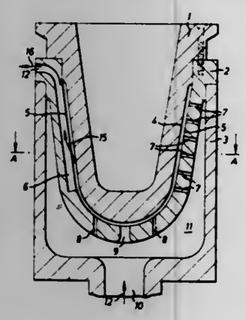
Stanley Peter Jones, Doncaster, England, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed May 19, 1976, Ser. No. 687,771

Claims priority, application United Kingdom, May 28, 1975, 23354/75

Int. Cl.² C03B *11/00*

U.S. Cl. 65—319 7 Claims



1. Glassware forming apparatus comprising an axially elongated blank mould for forming a parison from a gob of molten glass and annular means surrounding at least a part of the outer surface of the blank mould and defining therewith a circumferentially spaced series of first substantially axially extending regions in which the surrounding surface and the outer mould surface have substantially matching contours and are closely spaced radially from one another to form regions of gas confinement, the first substantially axial regions being separated from one another by a second series of substantially axial regions which constitute substantially axially extending exhaust channels, each channel cooperating with the mould surface to define a cross-sectional area which is large in relation to the cross-sectional area of the regions of gas confinement, said exhaust channels having a depth such that the inner walls thereof are spaced from said mould surface by a distance at least approximately 5 mm greater than the close radial spacing of said first axially extending regions, the internal surface of the annular means in the first series of substantially axially extending regions each defining a substantially vertical row of apertures for delivering cooling gas on to the closely spaced regions of the outer surface of the mould, the apertures being separated from the edges of the first axially extending regions on the surrounding surface by a distance significantly greater than the close radial spacing between the mould surface and said first axially extending region, and each of said apertures having a diameter comparable to said close radial spacing, which spacing is approximately 1 mm but less than 2 mm.

4,067,712

METHOD OF GROWING PLANTS IN SOIL

John Wesley Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.

Continuation-in-part of Ser. No. 593,712, July 7, 1975, which is a continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Dec. 10, 1976, Ser. No. 749,284

The portion of the term of this patent subsequent to July 8, 1992, has been disclaimed.

Int. Cl.² G05F *11/02*

U.S. Cl. 71—24 22 Claims

1. A method of growing plants in soil comprising growing the plants in soil which has been intimately contacted with water containing a catalytically effective amount of a catalyst, the said catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.01:1.0 and 1.0:2.0,

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles and surfactant to form said catalyst micelles.

19. The method of claim 1 wherein the said water intimately contacted with the soil also contains catalyst treated lignite, the lignite being pretreated with an aqueous medium containing the said catalyst defined in claim 1 until it is soluble in the said water.

4,067,713

METHOD OF IMPROVING THE FERTILITY OF SOIL AND THE SOIL THUS PREPARED

John Wesley Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.

Continuation-in-part of Ser. No. 593,712, July 7, 1975, which is a continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation-in-part of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Dec. 10, 1976, Ser. No. 749,285

The portion of the term of this patent subsequent to July 8, 1992, has been disclaimed.

Int. Cl.² C05F *11/02*

U.S. Cl. 71—24 24 Claims

1. A method of improving the fertility of soil comprising intimately contacting the soil with water containing a catalytically effective amount of a catalyst, the said catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles and surfactant to form said catalyst micelles.

20. The method of claim 1 wherein the said water intimately contacted with the soil also contains catalyst treated lignite, the lignite being pretreated with an aqueous medium containing the said catalyst defined in claim 1 until it is soluble in the said water.

4,067,714

METHOD OF WATERING PLANTS AND/OR FEEDING NUTRIENTS TO PLANTS

John Wesley Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.

Continuation-in-part of Ser. No. 593,712, July 7, 1975, which is a continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Dec. 13, 1976, Ser. No. 750,240

The portion of the term of this patent subsequent to July 8, 1992, has been disclaimed.

Int. Cl.² C05F *11/02*

U.S. Cl. 71—24 30 Claims

1. A method of watering plants comprising watering the plants with water containing a catalytically effective amount of a catalyst, the said catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles and surfactant to form said catalyst micelles.

19. The method of claim 1 wherein the water used in watering the said plants also contains catalyst treated lignite, the lignite being pretreated with an aqueous medium containing the said catalyst defined in claim 1 until it is soluble in the said water.

4,067,715

METHOD OF TRANSPLANTING PLANTS

John Wesley Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.

Continuation-in-part of Ser. No. 593,712, July 7, 1975, which is a continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Dec. 14, 1976, Ser. No. 750,394

The portion of the term of this patent subsequent to July 8, 1992, has been disclaimed.

Int. Cl.² C05F *11/02*

U.S. Cl. 71—24 22 Claims

1. A method of transplanting plants comprising intimately contacting the roots of plants being transplanted with water containing a catalytically effective amount of a catalyst, the said catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles and surfactant to form said catalyst micelles.

19. The method of claim 1 wherein the water intimately contacted with the roots of the said plants being transplanted also contains catalyst treated lignite, the lignite being pretreated with an aqueous medium containing the said catalyst defined in claim 1 until it is soluble in the said water.

4,067,716
GROWING MEDIUM CONTAINING COMBUSTED BARK PARTICLES

Robert Wendell Sterrett, Dunwoody, Ga., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 28, 1977, Ser. No. 772,813
Int. Cl.² C05F *11/00*
U.S. Cl. 71—24 25 Claims

1. A growing medium for seeds, cuttings, plants and the like comprising combusted bark particles in admixture with at least one additional horticultural material, the said bark particles being the product obtained by partially combusting essentially the bark, in particulate form, removed from logs in a furnace.

4,067,717
METHOD OF PROMOTING THE FLOWERING OF GRAPE VINES

Restituto L. Bugante, Makati, Philippines, assignor to Alfonso G. Puyat, Makati, Philippines

Filed Oct. 5, 1976, Ser. No. 729,732
Int. Cl.² C05D *3/02*
U.S. Cl. 71—63 5 Claims

1. A method for promoting flowering of grape vines which comprises applying to the vines (leaves and branches) or to the flower buds, an effective amount of a composition comprising:

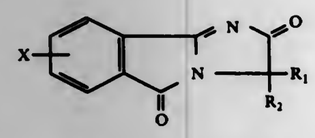
A. from about 7 to 15% by weight of a salt of calcium selected from the group consisting of calcium hydroxide and calcium carbonate;
B. from about 0.06 to 0.08% by weight potassium hydroxide;
C. from about 0.05 to 0.07% by weight phosphoric acid;
D. from about 15.00 to 25.00% by weight nitric acid;
E. from about 0.0005–0.0007% by weight ammonium hydroxide;
F. from about 0.001–0.006% by weight manganese sulfate;
G. from about 0.006–0.10% by weight ferrous sulfate;
H. from about 0.00002 to 0.003% by weight zinc sulfate;
I. from about 0.15 to 0.35% by weight magnesium sulfate; and
J. balance water.

4,067,718
METHOD FOR CONTROLLING THE RELATIVE STEM GROWTH OF PLANTS

Saleh Abdul-Kadir Ashkar, Lawrenceville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 12, 1975, Ser. No. 631,359
Int. Cl.² A01N *9/22*
U.S. Cl. 71—76 18 Claims

1. A method for controlling the relative stem growth of plants comprising treating the plants with a compound of the formula:



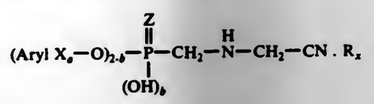
wherein X represents H, CH_3, Cl, OCH_3, SCH_3 or NO_2; R_1 and R_2 each represent alkyl C_1–C_4, provided that the sum of the carbon atoms in the groups represented by said R_1 and R_2 is 4 to 7, and when R_1 and R_2 are taken together with the carbon to which they are attached, they may represent cycloalkyl C_5–C_6 optionally substituted with CH_3; in an amount sufficient to increase or reduce the relative stem length of the treated plant.

4,067,719
O-ARYL N-PHOSPHONOMETHYLGLYCINONITRILES AND THE HERBICIDAL USE THEREOF

Gerard A. Dutra, Ladue, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 13, 1976, Ser. No. 750,327
Int. Cl.² A01N *9/36;* C07F *9/32*
U.S. Cl. 71—86 57 Claims

1. A compound of the formula



(I)

wherein Aryl is selected from phenyl, naphthyl or biphenylyl, each X is a substituent on said Aryl selected from halogen, alkyl of 1 to 4 carbons, alkoxy and alkylthio of 1 to 3 carbons, alkoxycarbonyl of 2 to 3 carbon atoms, methylenedioxy, cyano, trifluoromethyl or nitro, Z is oxygen or sulfur, *a* is an integer from zero to 3, *b* is an integer from zero to 1, R is a strong acid capable of forming a salt with the amino group, and *x* is zero or 1, provided that *x* must be zero when *b* is 1.

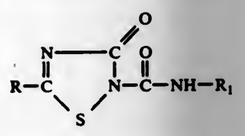
39. A herbicidal method which comprises contacting a plant or the plant growth medium with a herbicidally effective amount of a compound of claim 1.

4,067,720
CERTAIN 2-CARBAMOYL-1,2,4-THIADIAZOLE-3-ONE HERBICIDES

Jacques Perronnet, Paris; Laurent Taliani, Les Pavillons-sous-Bois, and Andre Teche, Nanterre, all of France, assignors to Roussel Uclaf, Paris, France

Filed Apr. 22, 1976, Ser. No. 679,334
Claims priority, application France, Apr. 24, 1975, 75.12787
Int. Cl.² C07D *285/08;* A01N *9/12*
U.S. Cl. 71—90 18 Claims

1. A compound of the formula



wherein R is selected from the group consisting of alkoxy of 1 to 8 carbon atoms, cycloalkyloxy of 3 to 7 carbon atoms, alkylthio of 1 to 8 carbon atoms optionally substituted with carbalkoxy of 2 to 5 carbon atoms, alkenylthio of 2 to 4 carbon atoms, and benzyloxy, benzylthio, benzyl and phenyl all aryl being optionally substituted with 1 to 2 members of the group consisting of chlorine, bromine, alkyl of 1 to 3 carbon atoms and alkoxy of 1 to 3 carbon atoms and R_1 is selected from the group consisting of alkyl of 1 to 6 carbon atoms optionally substituted with a member of the group consisting of chlorine, bromine and alkyloxy of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms optionally substituted with 1 to 3 chlorine atoms or alkoxy of 1 to 3 carbon atoms.

14. An herbicidal composition comprising an herbicially effective amount of a compound of formula I and an inert carrier.

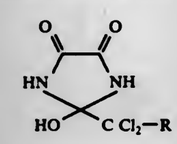
16. A method of killing plants comprising applying to plants an herbicidally effective amount of a compound of claim 1.

4,067,721
IMIDAZOLIDINEDIONE COMPOUNDS AND PLANT GROWTH INFLUENCING COMPOSITIONS

Gunther Beck; Helmut Heitzer, both of Leverkusen, and Klaus Llirssen, Berg. Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 20, 1976, Ser. No. 734,230
Claims priority, application Germany, Nov. 7, 1975, 2550157
Int. Cl.² A01N *9/22;* C07D *233/02*
U.S. Cl. 71—92 14 Claims

1. Imidazolidinedione compound of the formula



(I)

wherein

R is chlorine, alkyl of from 1 or 2 carbon atoms or chloroalkyl of from 1 or 2 carbon atoms and 1 to 5 chlorine atoms.

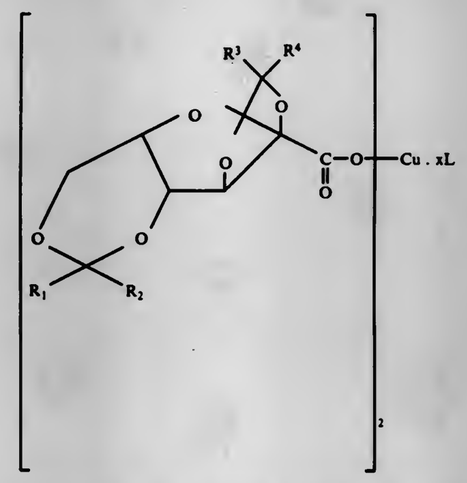
9. Method of influencing the growth of plant which method comprises applying to the plants or their habitat an effective amount of an imidazolidinedione compound as claimed in claim 1.

4,067,722
PLANT GROWTH REGULANT COMPOSITIONS

William Szkrybalo, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 497,994, Aug. 16, 1974, Pat. No. 3,931,149.
This application Dec. 22, 1975, Ser. No. 643,278
Int. Cl.² A01N *9/22*
U.S. Cl. 71—92 20 Claims

1. A plant growth regulating composition comprising inert adjuvant and, as the active ingredient, an effective amount of a compound of the formula



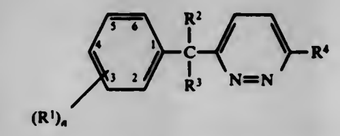
wherein, at least one of R_1 and R_2 is a member selected from the group of methyl, ethyl and trifluoromethyl and the other of R_1 and R_2 is a member selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl and trifluoromethyl; R_3 and R_4 are members selected from the group consisting of hydrogen, straight and branched chain alkyl of from 1 to 20 carbon atoms, straight or branched chain alkenyl of from 2 to 20 carbon atoms, straight or branched chain alkynyl of from 2 to 20 carbon atoms, phenyl, phenyl having one or more alkyl, alkenyl, alkynyl, alkoxy or halo-lower alkoxy substituents or R_3 and R_4 together are each a saturated ring containing from 3 to 8 carbon atoms; L is a ligand or group of ligands which are known to complex with copper and *x* is a number from 0 to 6, enantiomers and racemic mixtures.

4,067,723
PYRIDAZINE PESTICIDES

Ian Philip Garland, Angus, Scotland; Leslie Roy Hatton, Harold Wood, England; William George Leeds, London, England, and Edgar William Parnell, Hornchurch, England, assignors to May & Baker Limited, Essex, England

Filed Dec. 22, 1975, Ser. No. 643,164
Claims priority, application United Kingdom, Dec. 23, 1974, 55473/74; Sept. 5, 1975, 36743/75
Int. Cl.² C07D *237/08;* A01N *9/22*
U.S. Cl. 71—92 47 Claims

1. pyridazine of the formula:



wherein R^1 represents fluorine. chlorine, bromine or iodine, or an alkyl, alkoxy, alkylthio, alkylsulphonyl, nitro, trifluoromethyl, cyano, monoalkylamino or dialkylamino group, the said alkyl group and the alkyl moieties of said alkoxy, alkylthio, alkylsulphonyl, monoalkylamino and dialkylamino groups having from 1 to 6 carbon atoms, R^2 represents hydrogen or an alkyl group of 1 to 6 carbon atoms, R^3 represents hydrogen, fluorine, chlorine or bromine, or an alkyl group of 1 to 6 carbon atoms, or a methoxy, ethoxy or hydroxy group, R^4 represents hydrogen or an alkyl group of 1 to 6 carbon atoms, and *n* represents zero or an integer from 1 to 3 inclusive, the R^1 radicals being the same or different when *n* is greater than 1, and agriculturally-acceptable salts thereof.

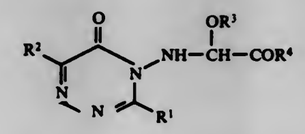
39. A pre-emergent or post-emergent method of controlling the growth of weeds at a locus which comprises applying to the locus a herbicidasl composition containing a herbicidally-effective amount of a pyridazine compound as claimed in claim 1.

4,067,724
N-(1,2,4-TRIAZIN-5-ON-4-YL)-GLYCINES AND HERBICIDAL COMPOSITIONS

Wilfried Draber, Wuppertal; Karlfried Dickore, Leverkusen; Helmut Timmler, Wuppertal; Ludwig Ese, Leverkusen, and Robert Rudolf Schmidt, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 25, 1976, Ser. No. 717,715
Claims priority, application Germany, Sept. 13, 1975, 2540958; May 8, 1976, 2620370
Int. Cl.² C07D *253/06;* A01N *9/22*
U.S. Cl. 71—93 26 Claims

22. Method of combating undesired vegetation which method comprises applying to such vegetation or its habitat a herbicidally effective amount of an N-(1,2,4-triazin-5-on-4-yl)-glycine compound of the formula:



in which

R^1 is alkyl, alkoxy, alkylthio or alkylamino of up to 4 carbon atoms,

R^2 is alkyl of from 1 to 6 carbon atoms, cycloalkyl of from 5

to 7 carbon atoms, phenyl or substituted phenyl, wherein the substituent are selected from halogen, alkyl and alkoxy of up to 2 carbon atoms, haloalkyl of up to 2 carbon atoms and up to 5 halogen atoms, cyano or nitro;

R^3 is hydrogen, alkyl of from 1 to 4 carbon atoms, alkenyl or alkynyl of from 2 to 4 carbon atoms; and

R^4 is hydroxyl, alkoxy or alkylthio of from 1 to 4 carbon atoms, amino or alkylamino or dialkylamino of up to 4 carbon atoms in each alkyl moiety.

4,067,725

3-PYRIDYL-OXY-ALKANECARBOXYLIC ACID AMIDES

Rolf Schurter, Binningen, Switzerland; Niels Clauson-Kaas, Farum, Denmark, and Hermann Rempfler, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

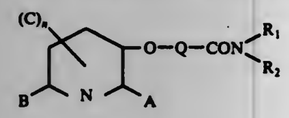
Filed Aug. 18, 1976, Ser. No. 715,351

Claims priority, application Switzerland, Aug. 25, 1975, 10963/75

Int. Cl.² A01N 9/22; C07D 213/56

U.S. Cl. 71—94 **19 Claims**

1. A composition for regulating plant growth and for antagonising the action of strong herbicides on crops, which composition contains as active substance an effective amount of a 3-pyridyl-oxy-alkanecarboxylic acid amide of formula I



(I)

wherein

A is a hydrogen or halogen atom, a C_1–C_4-alkyl group which can be substituted by halogen or hydroxy, the nitro or amino group, a C_1–C_4-alkoxy or C_1–C_4-alkylthio group,

B has the same meaning as A,

C is hydrogen, a halogen atom or the nitro group,

n is 1 or 2,

Q is an alkylene bridge member having 1–12 C atoms or an alkenylene bridge member having 2–12 C atoms which is branched or unbranched and which can be substituted by halogen, or phenyl,

R_1 and R_2 independently of one another are each hydrogen, a C_1–C_{12}-alkyl group which is optionally substituted by OH or C_1–C_4-alkoxy, a C_1–C_4-alkoxy group, a C_3–C_8-alkenyl group, a C_3–C_8-alkynyl group, phenyl or benzyl, whereby the phenyl rings can also be substituted by halogen, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkyl, or NO_2, together with a suitable inert carrier therefor.

2. A 3-pyridyl-oxy-alkanecarboxylic acid amide according to formula I, claim 1, wherein A, B, C, n, R_1 and R_2 have the meanings given in claim 1, and

Q is an alkylene bridge member or an alkenylene bridge member having 2 to 12 C atoms, which can be branched or unbranched and which can be substituted by halogen, or phenyl.

4,067,726

3-UREIDO PHENYLACETAMIDE HERBICIDES

Klaus Sasse, Schildgen, and Ludwig Eue, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

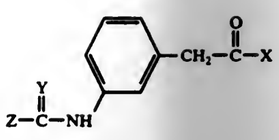
Filed Apr. 30, 1975, Ser. No. 573,205

Claims priority, application Germany, May 15, 1974, 2423536

Int. Cl.² A01N 9/12, 9/20; C07C 157/09, 127/19

U.S. Cl. 71—120 **22 Claims**

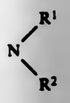
1. 3-Amino-phenylacetic acid compound of the formula:



(I)

in which

X represents the group



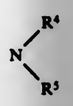
in which

R^1 is hydrogen, alkyl of from 1 to 4 carbon atoms or alkenyl of from 2 to 4 carbon atoms, and

R^2 is alkyl of from 1 to 15 carbon atoms, alkenyl of from 3 to 12 carbon atoms or alkynyl of from 3 to 12 carbon atoms, each of these alkyl, alkenyl and alkynyl radicals being optionally substituted by halogen, cyano, carboxylic acid ester groups, carboxylic acid amide groups, alkoxy, aryloxy, alkylmercapto, arylmercapto, alkylsulphonyl, or arylsulphonyl, or by aryl optionally substituted by halogen, alkyl, haloalkyl, alkoxy, alkylmercapto or nitro, or by optionally substituted cycloalkyl of from 3 to 6 carbon atoms where the substituents is C_{1-3} alkyl group, or R^2 is cycloalkyl of from 3 to 8 carbon atoms in the ring, optionally substituted by alkyl, halogen or alkoxy, or R^2 is aryl of from 6 to 10 carbon atoms optionally monosubstituted or polysubstituted by halogen, nitro, cyano, carboxylic acid ester or carboxylic acid amide, alkyl of from 1 to 6 carbon atoms, cycloalkyl of from 5 or 6 carbon atoms, alkoxy, haloalkoxy, aryloxy, alkylmercapto, arylmercapto, alkylsulphonyl, arylsulphonyl, haloalkyl or thiocyano,

Y is oxygen or sulphur, and

Z represents the group



in which

R^4 is hydrogen, alkyl of from 1 to 4 carbon atoms or alkenyl of from 2 to 4 carbon atoms, and

R^5 is alkyl of from 1 to 4 carbon atoms which is optionally substituted by halogen or alkoxy, alkenyl of from 2 to 4 carbon atoms, alkynyl of from 3 to 6 carbon atoms or optionally alkyl-substituted cycloalkyl of 5 to 6 carbon atoms.

20. A herbicidal composition comprising in an agriculturally acceptable carrier an effective herbicidal amount of a 3-amino-phenylacetic acid compound as claimed in claim 1.

4,067,727

SINTERING PROCESS

Fred Cappel, Sprendlingen, Germany, assignor to Dravo Corporation, Pittsburgh, Pa.

Division of Ser. No. 470,914, May 17, 1974, Pat. No. 3,973,762. This application Apr. 1, 1976, Ser. No. 672,748

Int. Cl.² C22B 1/08, 1/16

U.S. Cl. 75—5 **11 Claims**

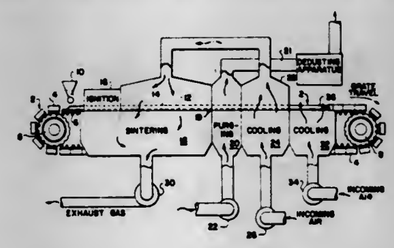
1. In a process for sintering of moist material on a travelling grate wherein the material passes successively through an ignition zone, a downdraft sintering zone extending from said ignition zone to the burn-through point of the material, and a cooling zone, the improvement comprising:

a. purging the previously sintered material by the passage of air upwardly at a first flow rate over a first area to agitate and remove dust particles from the material and partially cool the material while heating the air through contact with the material;

b. conducting the resultant dust-laden air from the purging zone to a dust collecting apparatus;

c. initially cooling the purged sintered material by the passage of air at a second flow rate less than the first flow rate in the purging zone and over a second area greater than the first area in the purging zone further to remove dust particles from the material, and further to cool the material while heating the air through contact with the material;

d. conducting the resultant heated dust-laden air from the initial cooling zone to the downdraft sintering zone and



through partially sintered material contained therein intermediate the ignition zone and the burn-through point, whereby the heated air provides heat for the sintering while the moist material undergoing sintering filters dust particles from the resultant heated dust-laden air;

e. withdrawing the heated air following passage through the moist material and removal of dust therefrom by the material, and exhausting the same from the sintering zone;

f. finally cooling the partially cooled sintered material while on the travelling grate, after said initial cooling, by the passage of air through the material, which material has had substantially all of the dust particles removed therefrom; and

g. exhausting the final cooling air to the atmosphere.

4,067,728

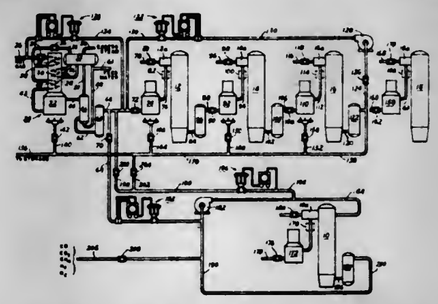
METHOD FOR GASEOUS REDUCTION OF METAL ORES

Patrick W. MacKay, Monterrey, Mexico, assignor to Fierro Esponja, S.A., Monterey, Mexico

Continuation of Ser. No. 516,095, Oct. 18, 1974, abandoned. This application Nov. 26, 1975, Ser. No. 635,655

Int. Cl.² C21B 13/02

U.S. Cl. 75—35 **21 Claims**



1. In a method for the batchwise gaseous reduction of metal oxides to metals in a multiple unit reactor system of the type in which separate fixed beds of metal-bearing material are simultaneously treated in a plurality of reactors including a cooling reactor and at least one reduction reactor, said reactors being functionally interchangeable, said system being of the type in which a reducing gas composed largely of carbon monoxide and hydrogen from a source of such gas is passed through the reduction reactor or successively through a plurality of reduction reactors and is also used to cool the metal-bearing material in the cooling reactor of said system, the improvement which comprises causing a predetermined portion of cooled reducing gas from said source to flow through the fixed bed of metal-bearing material in said cooling reactor to cool said material, heating the remainder of said reducing gas from said source to an elevated temperature, causing said heated reducing gas to flow through a fixed bed or beds of metal-bearing material in said reduction reactor or reactors, removing from said cooling reactor the reducing gas that has passed therethrough and cooling said reducing gas, recycling the cooled gas to said cooling reactor to form a closed cooling gas loop and removing gas from said loop at a rate approximately equal to the rate at which said gas is supplied to said loop.

4,067,729

DESULFURIZATION OF LIQUID IRON MELTS

Wolfgang Holzgruber, Westend 33, A-8600 Bruckan der Mur, Austria

Filed Sept. 1, 1976, Ser. No. 719,599

Int. Cl.² C21C 7/04

U.S. Cl. 75—55 **17 Claims**

1. A process for the desulfurization of pig iron melts having a temperature in the range of between about 1240° C. to 1400° C. comprising forming a desulfurizing liquid slag emulsion in the melt by injecting into the melt, by means of a carrier gas, an agglomerated desulfurizing agent said desulfurizing agent having a liquidus temperature of less than about 1400° C., a particle size of less than about 5.0 millimeters and comprising between about 10 and 60 percent by weight of calcium oxide with the balance comprising at least two other slag-forming constituents, selected from the group consisting of Al_2O_3, CaF_2, SiO_2, MgO, Na_2O and heavy metal oxides; and wherein Al_2O_3 may be present in an amount up to 40 percent by weight, CaF_2 up to 70 percent by weight, SiO_2 up to 20 percent by weight, MgO up to 10 percent by weight, Na_2O up to 40 percent by weight; and heavy metal oxides up to 20 percent by weight.

4,067,730

PROCESS FOR THE PRODUCTION OF STEEL WITH INCREASED DUCTILITY

Wilhelm Klapdar, Essen; Helmut Richter, Oberhausen; Heinrich-Wilhelm Rommerswinkel, Mulheim (Ruhr); Edgar Spetzler, and Jochen Wendorff, both of Oberhausen, all of Germany, assignors to Thyssen Niederrhein AG Hutten-und Walzwerke, Oberhausen, Germany

Continuation of Ser. No. 569,150, April 18, 1975, Pat. No. 3,992,195. This application Nov. 11, 1976, Ser. No. 742,363

Claims priority, application Germany, Apr. 20, 1974, 2419070

Int. Cl.² C21C 7/02

U.S. Cl. 75—58 **1 Claim**

1. A process for reducing the sulfur content of a steel melt which comprises the steps of:

a. deoxidizing a sulfur containing starting steel melt;

b. receiving the deoxidized steel melt in a ladle having a lining free from siliceous oxides;

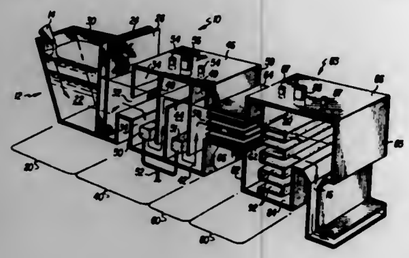
c. covering said steel melt with a synthetic slag subtantially free from siliceous oxides;

d. injecting calcium in fine grained particulate form into said melt in entrainment with argon at a depth of at least 2000 millimeters to desulfurize and purify said melt, the calcium being introduced into said melt over a period of at least five minutes in a total quantity of at least 0.6 kg of calcium per ton of steel and selected such that the sulfur content is reduced to a value below 0.015% by weight and by at least 60% of the sulfur content of the deoxidized melt; and

e. maintaining the rate of introduction of said calcium at

most equal to the rate at which said agent is able to react with said melt.

4,067,731
METHOD OF TREATING MOLTEN METAL
Enrique C. Chia, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.
Division of Ser. No. 597,312, July 19, 1975, Pat. No. 4,007,923.
This application June 7, 1976, Ser. No. 693,455
Int. Cl.² C22B *21/06*
U.S. Cl. 75—68 R 11 Claims



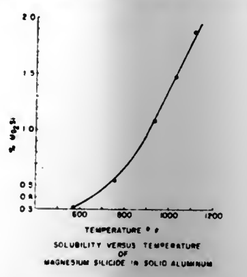
1. A method of continuously treating molten aluminum and aluminum alloys to remove impurities and gases therefrom comprising the steps of:
a. deslagging by filtering the molten aluminum to remove relatively large size solid impurities therefrom;
b. fluxing the molten aluminum to remove hydrogen gas therefrom;
c. adsorbing selected impurities by passing the molten aluminum over an adsorptive refractory material having an adsorptive affinity for said selected impurities in the molten aluminum; and
d. filtering the molten aluminum through a rigid porous refractory filter medium to remove impurities not removed in said deslagging and adsorbing steps.

4,067,732
AMORPHOUS ALLOYS WHICH INCLUDE IRON GROUP ELEMENTS AND BORON
Ranjan Ray, Morristown, N.J., assignor to Allied Chemical Corporation, Morris Township, N.J.
Filed June 26, 1975, Ser. No. 590,532
Int. Cl.² C22C *38/32, 19/05*
U.S. Cl. 75—126 P 13 Claims

1. An amorphous metal alloy that is at least 50% amorphous, has improved ultimate tensile strength and hardness and does not embrittle when heat treated, characterized in that the alloy consists essentially of the composition $M_aM'_bCr_cM''_dB_e$, where M is one element selected from the group consisting of iron, cobalt and nickel, M′ is one or two elements selected from the group consisting of iron, cobalt and nickel other than M, M″ is at least one element selected from the group consisting of vanadium, manganese, molybdenum, tungsten, niobium and tantalum, "*a*" ranges from about 40 to 85 atom percent, "*b*" ranges from 0 to about 45 atom percent, "*c*" and "*d*" each range from 0 to about 20 atom percent and "*e*" ranges from about 15 to 25 atom percent, with the proviso that "*b*", "*c*" and "*d*" cannot all be zero simultaneously.

4,067,733
HIGH STRENGTH ALUMINUM ALLOY
Myron G. Urdea, 1790 Pansy Circle, Costa Mesa, Calif. 92626
Filed Sept. 1, 1976, Ser. No. 719,537
Int. Cl.² C22C *21/02*
U.S. Cl. 75—147 3 Claims

1. An aluminum casting alloy having superior foundry characteristics and being heat treatable to ultra-high yield strength consisting essentially of from about 5.5 to about 7.5% silicon, about 0.85 to about 1.25% magnesium, about 0.10 to about 0.30% beryllium, about 0.05 to about 0.30% titanium and



containing less than 0.20% iron, 0.10% manganese, copper and zinc, 0.01% boron and 0.002% lithium, sodium and calcium, balance aluminum.

4,067,734
TITANIUM ALLOYS
Roland E. Curtis, Albany, Oreg., and Peter T. Finden, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.
Continuation of Ser. No. 337,647, March 2, 1973, abandoned.
This application Oct. 18, 1974, Ser. No. 515,891
Int. Cl.² C22C *14/00*
U.S. Cl. 75—175.5 8 Claims

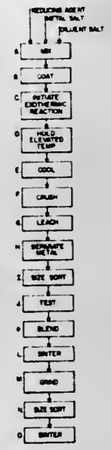
1. Alpha-beta phase titanium base alloys consisting essentially of from 3.9% to 4.7% aluminum, from 2.5% to 3.5% zirconium, from 2.5% to 3.5% molybdenum, from 2.5% to 3.5% vanadium and from 1.6% to 2.0% chromium, and containing no more than about 0.13% oxygen, 0.05% nitrogen and 0.08% carbon, oxygen, nitrogen and carbon being impurities, the balance being essentially titanium.

5. Titanium alloys consisting essentially of from 4.1% to 4.9% aluminum, from 2.5% to 3.5% zirconium, from 3.25% to 4.25% molybdenum, from 3.25% to 4.25% vanadium and from 0.4% to 0.8% nickel, and containing no more than about 0.13% oxygen, 0.05% nitrogen and 0.08% carbon, oxygen, nitrogen and carbon being impurities, the balance being essentially titanium.

4,067,735
METHOD OF MAKING BULK POROUS ANODES FOR ELECTROLYTIC CAPACITORS
Viktor Ivanovich Bezruk, Fontanka, 183, kv. 6; Mikhail Nikolaevich Dyakonov, Lesnoi prospekt, 37, korpus 6, kv. 63; Ivan Stepanovich Lavrov, Kirovsky prospekt, 25, kv. 37; Alexandr Nikolaevich Lazarev, Yaroslavsky prospekt, 6, korpus 1, kv. 6, and Iosif Vulfovich Netupsky, Zastavskaya ulitsa, 28, kv. 23, all of Leningrad, U.S.S.R.
Filed May 3, 1976, Ser. No. 682,315
Int. Cl.² B22F *3/00*
U.S. Cl. 75—211 3 Claims

1. A method of making bulk porous anodes for electrolytic capacitors, which comprises preparing a suspension consisting of a powdered valve metal selected from the group consisting of tantalum, niobium and titanium in an amount of 30–250 parts by weight, a binding material, being a charger of said powdered metal particles, constituting a 0.2–1.5% aqueous solution of a salt selected from the group consisting of sodium and ammonium salts of carboxymethyl cellulose or cellulose-glycolic acid in an amount of 10–35 parts by volume, and a dispersion medium selected from the group consisting of alcohol and acetone in an amount of 15–30 parts by volume; subjecting said suspension to the effect of an electric field established by a voltage applied to electrodes and causing deposition of said powdered metal on said electrodes, and the formation of a bulk porous body on said electrodes; sintering said bulk porous body at a temperature of 1600°–2000° C to produce a bulk porous anode.

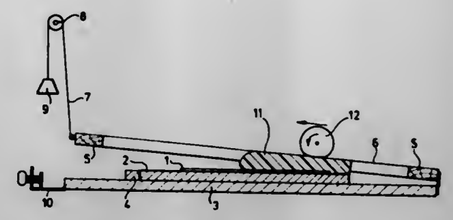
4,067,736
METAL POWDER PRODUCTION
Haig Vartanian, Newton, Mass., assignor to NRC, Inc., Newton, Mass.
Division of Ser. No. 484,780, July 1, 1976, Pat. No. 3,992,192.
This application June 4, 1976, Ser. No. 693,002
Int. Cl.² B22F *9/00*
U.S. Cl. 75—251 4 Claims



1. Metal powder as produced by mixing particles of a metal salt selected from the group consisting of tantalum and columbium with a molten reducing agent and stirring the salt and reducing agent to produce homogeneous admixture, the salt and reducing agent being selected as constituents of an exothermic reaction initiable at 100°–500° C, raising the temperature of the mixture to said reaction initiating temperature and stirring, continuing said stirring while the exothermic reaction proceeds, and thereafter maintaining melting temperature of all reaction products excepting the metal freed by addition of heat thereto for a period of at least 15 minutes, and continuing the stirring during the reaction period and for at least an initial portion of the whole period to cause large scale order of the reaction products to be essentially continually broken down and to produce homogeneous admixture of unconsumed reactives and products, then cooling the reaction products and freeing metal powder from the reaction products, having a spectrum of powder size distribution from 3 micron to 10 mesh (U.S. Standard) with bulk density and specific surface area of various fractions in this said spectrum being essentially constant.

4,067,737
PROCESS OF APPLYING PROTECTIVE COATING
Anthony Vincent Lewis, "Meres Vean", Laflouder Lane, Mullion, Cornwall, England
Filed Dec. 2, 1976, Ser. No. 746,746
Int. Cl.² B05C *11/02;* G03C *11/08*
U.S. Cl. 96—50 PL 6 Claims

1. Process for applying a protective coating to the surface of a picture comprising the steps of:
applying a clear synthetic resin in liquid state to the surface of the picture adjacent one edge thereof,
spreading the liquid resin evenly and without the formation of bubbles or occlusions over the said picture surface from the said edge by pressing a flexible spreader sheet under tension over the surface progressively from the said edge, the surface of the spreader sheet which contacts the resin being such that the resin does not adhere thereto,
curing the resin, and

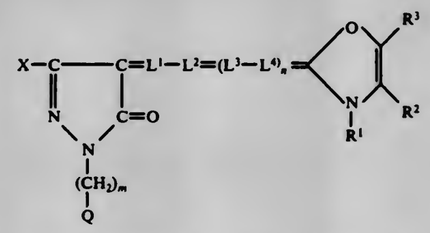


removing the sheet to leave a hard, clear protective layer of resin on the picture surface.

4,067,738
PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT HAVING A DYED LAYER
Masatoshi Sugiyama; Tadashi Ikeda; Akira Ogawa; Yasuharu Nakamura, and Fujio Kakimi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara
Filed Sept. 1, 1976, Ser. No. 719,536
Claims priority, application Japan, Sept. 2, 1975, 50-106135
Int. Cl.² G03C *1/84*
U.S. Cl. 96—84 R 16 Claims

1. A silver halide photographic light-sensitive element comprising a support having thereon at least one silver halide emulsion layer, said photographic light-sensitive element containing at least one dye represented by general formula (I) in at least one hydrophilic colloid layer:

(I)



wherein X represents an amino group, a hydroxy group or an alkoxy group; *m* represents 0 or 1; Q represents an aryl group substituted with at least one of the groups selected from a sulfo group, a sulfoalkyl group or a carboxy group; R^1 represents an aliphatic group; R^2 and R^3, which may be the same or different, each represents a halogen atom, an alkyl group, an alkoxycarbonyl group, an acyl group or a carboxy group; L^1, L^2, L^3 and L^4 each represents a methine group, an alkyl substituted methine group or a phenyl substituted methine group; and *n* represents 0 or 1, wherein said at least one hydrophilic colloid layer and said at least one silver halide emulsion layer are on the same side of said support.

4,067,739

METHOD OF PREPARING A MONOSIZE SILVER HALIDE EMULSION INVOLVING OSTWALD RIPENING FOLLOWED BY A CRYSTAL GROWTH STAGE

John Derek Lewis, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 4, 1975, Ser. No. 601,965
Claims priority, application United Kingdom, Aug. 7, 1974, 34769/74
Int. Cl.² G03C 1/02
U.S. Cl. 96—94 R 9 Claims



1. A method of preparing a monosize silver halide emulsion of which most of the silver halide crystals are of the twinned octahedral type which comprises

a. mixing an aqueous solution of a silver salt and an aqueous solution of an alkali metal or ammonium halide in an aqueous dispersing medium containing a protective colloid at such a concentration that the silver halide is nucleated,

b. causing the silver halide nuclei to increase in size in the presence of a silver halide solvent by Ostwald ripening to produce a population of twinned octahedral seed crystals,

c. determining the maximum rate of addition of silver salt and alkali metal or ammonium halide which is possible without renucleation occurring and determining the minimum rate of addition of silver salt and alkali metal or ammonium halide which is possible without Ostwald ripening occurring, said determination is carried out by taking samples of the crystals, adding an equal quantity of silver halide at increasing and decreasing rates, respectively, and observing on a microscope when renucleation and Ostwald ripening, respectively, occur,

d. causing the seed crystals to grow by adding to the aqueous dispersing medium aqueous silver salt solution and aqueous alkali metal or ammonium halide solution at a rate between the predetermined maximum and minimum rates and then at intervals re-determining the maximum and minimum addition rates and adjusting the addition rates of silver and halides to ensure that at all times during the crystal growth stage neither renucleation nor Ostwald ripening occurs, the p Br of the liquid phase being maintained above 0.15 during the whole crystal growth stage.

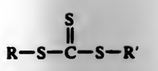
4,067,740

TRITHIOCARBONATES AS SENSITIZERS FOR SILVER HALIDE EMULSIONS

John Howard Bigelow, Rochester, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1976, Ser. No. 752,914
Int. Cl.² G03C 1/28
U.S. Cl. 96—107 7 Claims

1. A photographic element comprising a support bearing at least one layer of a photographic silver halide emulsion which is chemically sensitized by the addition thereto prior to or during digestion of at least one trithiocarbonate of the general formula:



wherein R is a tertiary alkyl radical having from 4 to 16 carbon atoms, and wherein R′ is R or an aryl or an alphyl radical containing 1 to 3 phenyl groups.

4,067,741

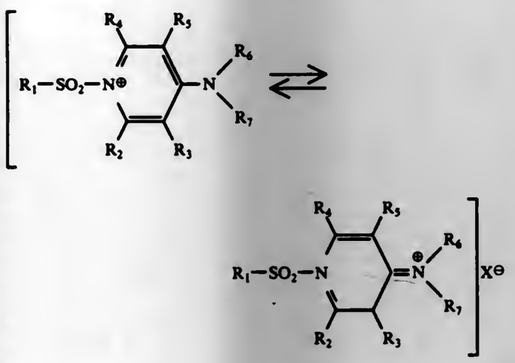
HARDENING PHOTOGRAPHIC LAYERS CONTAINING SILVER HALIDE WITH A 1-SULPHONYL-4-AMINO-PYRIDINIUM SALT

Peter Bergthaller, Cologne; Wolfgang Himmelmann, Leverkusen, and Lothar Rosenhahn, Cologne, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Oct. 19, 1976, Ser. No. 733,759
Claims priority, application Germany, Oct. 24, 1975, 2547589
Int. Cl.² G03C 1/30
U.S. Cl. 96—111 10 Claims

1. A process for providing a photographic material comprising at least one silver halide emulsion associated with at least one supported layer containing protein as a binder in which the protein-containing layer is contacted with an effective amount of hardener to harden the layer

wherein the improvement comprises the hardener is a 1-sulphonyl-4-amino-pyridinium salt of the following general formulae:



in which

R_1 represents alkyl with 1 to 4 carbon atoms, aryl optionally substituted by halogen, aralkyl, a sulphoalkyl or sulphoalkenyl group with 3 to 4 carbon atoms or a dialkylamino group in which the alkyl portion contains 1 to 3 carbon atoms,

R_2 represents hydrogen or alkyl,

R_3 has the same meaning as R_2 or it represents an aminocarbonoyl group or together with R_2 it represents the atoms required to complete a condensed benzene ring,

R_4 and R_5 represent hydrogen or alkyl,

R_6 represents hydrogen, alkyl with 1 to 3 carbon atoms, aralkyl or sulphoalkyl,

R_7 represents hydrogen or alkyl with 1 to 3 carbon atoms or together with R_6 and the nitrogen atom it represents the atoms required to complete a saturated heterocyclic 5-membered or 6-membered ring, and

X^- represents halogen $^+$, $R_1—SO_3^-$ or a hard anion from the group ClO_4', BF_4', PF_6' or Sbf_6', X^- being absent if R_1 or R_6 contains a sulpho group.

4,067,742

THERMAL SHOCK AND EROSION RESISTANT TANTALUM CARBIDE CERAMIC MATERIAL

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Leroy Honeycutt, III, Winston-Salem, and Charles R. Manning, Jr., Raleigh, both of N.C.

Filed Apr. 1, 1976, Ser. No. 672,695
Int. Cl.² C04B 35/52
U.S. Cl. 106—43 14 Claims

1. A ceramic artifact adaptable for use in throat areas of rocket nozzles and the like which consists of a hot-pressed composite of at least 80 to 85 percent of theoretical density of a tantalum carbide matrix and from one to five percent by weight, based on the weight of the article, of particles of a metal selected from the group consisting of tungsten and tungsten-rhenium alloy, and from one to three percent by weight based on the weight of the article, of carbon or graphite particles and wherein the tantalum carbide matrix is formed from the group consisting of reactor grade and commercial grade particles.

7. A method of making a ceramic article having high resistance to thermal shock comprising the steps of providing a mixture of particles of commercial grade tantalum carbide, from one to five percent by weight of a metal selected from the group consisting of tungsten and tungsten-rhenium alloy, and from one to three percent by weight of carbon or graphite particles and hot pressing the mixture in the temperature range of from 1700° C. to 2150° C. and at a pressure sufficient to produce an article of at least 80 to 85 percent of theoretical density.

4,067,743

HEAT-ABSORBING MATERIAL

Boris Georgievich Arabei, ulitsa 15 Parkovaya, 42, korpus 5, kv. 57; Mark Semenovich Zukher, ulitsa B. Khmelnitskogo, 13, kv. 12; Jury Mikhailovich Markov, Khoroshevskoe shosse, 39, korpus 1, kv. 58; Galina Nikolaevna Trokhina, ulitsa Sakhalinskaya, 4, kv. 127, all of Moscow; Viktor Alexandrovich Tjurin, Pervomaisky proezd, 2A, kv.6; Iosif Isaakovich Khazanov, ulitsa Krupskoi, 9, kv. 28, both of Balashikha Moskovskoi oblasti; Pavel Fedorovich Belmer, ulitsa Osipenko, 77, kv. 68, Moscow, and Ivan Ivanovich Zverev, prospekt Lenina, 8, kv. 2, Balashikha Moskovskoi oblasti, all of U.S.S.R.

Filed Sept. 2, 1976, Ser. No. 719,945
Int. Cl.² C04B 35/56, 35/52
U.S. Cl. 106—44 6 Claims

1. A heat absorbing material comprising from 12 to 51 wt % of boron carbide, from 7 to 22 wt % of silicon carbide, from 1 to 10 wt % of copper, from 1 to 12 wt % of titanium diboride and from 79 to 5 wt % of carbon.

4,067,744

ALKALI-RESISTANT GLASS COMPOSITION AND GLASS FIBERS MADE THEREFROM

Koichiro Ohtomo, Takatsuki, and Takuji Yoshimura, Osaka, both of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed July 16, 1976, Ser. No. 706,009
Claims priority, application Japan, Dec. 30, 1975, 50-158774
Int. Cl.² C03C 13/00, 3/08; C04B 31/06
U.S. Cl. 106—50 11 Claims

1. An alkali resistant glass composition consisting essentially of

SiO_2	61 - 69 mole%,
ZrO_2	11.5 - 12.5 mole%,
CaO	2 - 5 mole%,
R_2O	16 - 20 mole%,
K_2O	2 - 5 mole%,
B_2O_3	1 - 4 mole%,
P_2O_5	substantially O
TiO_2	0 - 0.3 mole%, and

-continued

M_xO_y	0 - 1 mole%

wherein R_2O represents the total amount of Na_2O and K_2O; M is at least one metal selected from the group consisting of V, Cr, Mn, Fe, Co, Cu, Zn, As, Y, Mo, Cd, Sn, Sb, Hf and Ce; x and y are positive integers with the proviso that the valence of m multiplied by x equals 2y; and the content of fluorides, calculated as F_2, is 0 to 1 mole%, and meeting the following conditions,

A. $R_2O + CaO \geqq 29$ mole%,

B. $ZrO_2 + CaO + B_2O_3 \leqq 18.5$ mole%, and

C. the molar ratio of $K_2O/CaO \geqq 0.5$.

4,067,745

CERAMIC MATERIALS

Ronald Charles Garvie, Beaumaris; Richard Henri Jan Hannink, Oakleigh, and Richard Terry Pascoe, Ashwood, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Oct. 24, 1975, Ser. No. 625,620
Claims priority, application Australia, Oct. 24, 1974, 9368/74
Int. Cl.² C04B 35/48
U.S. Cl. 106—57 17 Claims

1. A refractory ceramic consisting essentially of a calcia-partially-stabilised zirconia body, and characterised in that the calcia concentration lies in the range 3.3–4.7 percent by weight of the ceramic body, and in that said body has a fine-scale two-phase microstructure substantially consisting of metastable, tetragonal domains of a critical size within cubic matrix grains, which domains, in regions of high stress, irreversibly transform to normal monoclinic form upon stressing of the body.

4,067,746

AMORPHOUS PRECIPITATED SILICAS AND METHODS FOR THEIR PREPARATION

Satish K. Wason, and Robert K. Mays, both of Havre de Grace, Md., assignors to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 472,580, May 22, 1974, abandoned.
This application July 8, 1976, Ser. No. 703,496
Int. Cl.² C09C 1/28
U.S. Cl. 106—288 B 5 Claims

1. A method for producing a finely divided amorphous, low structure, precipitated silica by acidulating a solution of an alkali metal silicate with an acid which comprises:

1. forming an aqueous solution of an alkali metal silicate having a concentration of about 8 to 25% by weight and having a predetermined cumulative total of the said alkali metal silicate; said alkali metal silicate having the formula $M_2O(SiO_2)_X$, wherein M is an alkali metal selected from the group consisting of sodium and potassium, and X is from 2 to 4 inclusive; introducing a predetermined mol percentage of the said predetermined cumulative total of the said alkali metal silicate to a reaction vessel, said predetermined mol percentage comprising at least 8 mol percent and not more than 50 mol percent of said predetermined cumulative total of alkali metal silicate;

2. continuously agitating said aqueous solution of said predetermined mol percentage of said alkali metal silicate in said reaction vessel;

3. simultaneously adding the balance of said predetermined quantity of said alkali metal silicate to be employed in the reaction and an aqueous solution of a mineral acid selected from the group consisting of sulfuric acid, nitric acid and phosphoric acid, to the said agitated alkali metal silicate in the said reaction vessel at rates and concentrations so proportioned as to provide a controlled increase of effective alkalinity such that the maximum alkalinity produced upon the completion of the addition of the total quantity of said alkali metal silicate at the time of maximum alkalin-

ity t_m is from 20% to 500% higher than the initial alkalinity of the predetermined mol percentage of the cumulative total of the predetermined quantity of said alkali metal silicate to be employed in the reaction provided in the reaction vessel at the inception of the reaction;

4. continuing the addition of said mineral acid after stopping the addition of said alkali metal silicate to a reaction mass pH of less than 6.0, said resulting reaction mass after all additions have been made thereto containing from 3 to 12% by weight of SiO_2 at the time of the completion of the reaction t_f, where t_f is from 20 minutes to 4 hours, and the time to maximum alkalinity, t_m, is from 55% to 90% of t_f;
5. maintaining the reaction temperature of said alkali metal silicate reaction mass between 50° and 90° C. throughout the reaction;
6. filtering said reaction slurry; and
7. washing, drying, and milling said filtered mass, and recovering the resulting product, wherein provision and the mol percentage of the predetermined cumulative total of the said alkali metal silicate to be employed in the said reaction is from 8% to 14% inclusive when the product to be produced is to have a wet cake moisture of less than 66%, a structure index of less than 200, an oil absorption of less than 125 cc/100 grams, a void volume of from 1 to 2.55 cc Hg/gram of SiO_2 inclusive, and a BET surface area of from 65 to 375 square meters per gram; and from 14 to 50% when the product to be produced is to have a wet cake moisture of from 66% to 76% inclusive, a structure index of from 200 to 354, an oil absorption of from 125 to 180 cc/100 grams; a void volume of from 2.55 to 4.1 cc Hg/gram of SiO_2, and a BET surface area of from 80 to 375 square meters per gram.

4,067,747

PRODUCTION OF IMPROVED CHROMIUM OXIDE GREEN PIGMENT

Manfred Mansmann, and Wolfgang Rambold, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 6, 1976, Ser. No. 656,035
Claims priority, application Germany, Feb. 15, 1975, 2506443
Int. Cl.² C09C *1/34*
U.S. Cl. 106—302 **12 Claims**

1. A process for the production of chromium oxide green pigment comprising reacting aqueous solutions of sodium dichromate and ammonium sulfate in substantially stoichiometric amount and removing excess water by evaporation thereby to produce a mixture of ammonium dichromate with sodium sulfate, heating the mixture over a period of at most about 15 minutes to a pigment-forming temperature of about 800° to 1100° C in the presence of about 1 to 45% water based on the weight of the mixture, calcining the mixture at a temperature in the above-mentioned range, and separating the formed pigment from the salts.

4,067,748

PROCESS FOR THE HYDROLYSIS OF LACTOSE

Melvin Charles Rowe, Poole, England, assignor to Portals Water Treatment Limited, Whitchurch, England

Filed Sept. 29, 1976, Ser. No. 727,925
Claims priority, application United Kingdom, Oct. 2, 1975, 40418/75
Int. Cl.² C13K *5/00, 1/00*
U.S. Cl. 127—36 **9 Claims**

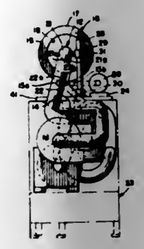
1. A process for hydrolyzing lactose comprising contacting an aqueous solution of lactose with a solid, insoluble, strongly acidic polystyrene ion exchange resin that is in free acid form and has a degree of cross-linking of from 0.5 to 5%.

4,067,749

APPARATUS AND METHOD FOR CLEANING AIR FILTER ELEMENTS

Lee R. McKinney, 2241 W. Carson Drive, Tempe, Ariz. 85282

Filed Jan. 14, 1977, Ser. No. 759,405
Int. Cl.² B08B *5/04*
U.S. Cl. 134—21 **17 Claims**



1. A method of cleaning a generally cylindrical air filter having a housing with concentric inner and outer perforate shell casings and a perforate filter element contained between the casings with an annular arrangement of longitudinally and radially extending folds, wherein the method comprises supporting the filter in position for rotation about the housing axis, forcing air through the filter and the element in a direction opposite the direction of air and dust entering the housing during use of the filter, the air being forced through narrow and elongated surface portions of one of the casings brought successively opposite the air as the housing is rotated, agitating the filter and the element for loosening dust which entered the housing during use of the filter as the housing is rotated, drawing air through the filter and the element in a direction opposite the direction of air and dust entering the housing during use of the filter, the air being drawn through narrow and elongated surface portions of the other of the casings brought successively opposite the air as the housing is rotated, and driving the filter for rotation about the housing axis whereby the forcing, agitating and drawing steps cooperate to loosen and remove dust accumulated in the folds of the perforate filter element during use for cleaning the generally cylindrical air filter.

3. An apparatus for cleaning a generally cylindrical air filter having a housing with concentric inner and outer perforate shell casings and a perforate filter element contained between the casings with an annular arrangement of longitudinally and radially extending folds, wherein the apparatus comprises a frame to support the filter in position for rotation about the housing axis, blower means for forcing air through the filter and the element in a direction opposite the direction of air and dust entering the housing during use of the filter, the blower means including a nozzle having a pair of elongated lips defining an elongated air outlet parallel to the axis and adjacent the path of rotation of the housing for direct proximate exposure to narrow and elongated surface portions of one of the casings brought successively opposite the outlet as the housing is rotated, one of the elongated lips comprising a flexible seal projecting into the path of rotation of the one casing at the side of the outlet toward which the casing rotates, the seal being adapted to be flexed by the one casing in the direction of rotation thereof and to remain in surface sealing engagement therewith and the lips at all times being spaced apart in the direction of casing rotation, agitation means operatively associated with the frame for loosening dust which entered the housing during use of the filter, suction means for drawing air through the filter and the element in a direction opposite the direction of air and dust entering the housing during use of the filter, the suction means including a nozzle having a pair of elongated lips defining an elongated air inlet parallel to the axis and adjacent the path of rotation of the housing for direct proximate exposure to narrow and elongated surface portions of the other of the casings brought successively opposite the inlet as the housing is rotated, one of the elongated lips comprising a flexible seal projecting into the path of rotation of the other casing at the side of the inlet toward which the casing rotates, the seal being adapted to be flexed by the other casing in the direction of rotation thereof and to remain in surface sealing engagement therewith and the lips at all times being spaced apart in the direction of casing rotation, and a pair of rollers engageable with one of the casings to drive the filter for rotation about the housing axis whereby the blower means, agitation means and suction means cooperate to loosen and remove dust accumulated in the folds of the perforate filter element during use for cleaning the generally cylindrical air filter with the apparatus.

4,067,750

METHOD OF PROCESSING COPPER BASE ALLOYS

Brian Mravic, North Haven; Stanley Shapiro, New Haven; W. Gary Watson, Cheshire, and Eugene Shapiro, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 28, 1976, Ser. No. 652,997
Int. Cl.² C22F *1/08; C22C 9/00*
U.S. Cl. 148—2 **7 Claims**

1. A process for improving both the strength and electrical conductivity properties of copper base alloys, which comprises:

A. casting a copper base alloy consisting essentially of 0.05–1.25 weight percent chromium, 0.01–1.0 weight percent zirconium and 0.01–1.0 weight percent vanadium, balance essentially copper;
B. hot rolling the alloy at a starting temperature of 850°–1000° C to effect the maximum solid solution of all alloying ingredients;
C. rapidly cooling the alloy to maintain said maximum solid solution;
D. cold rolling the alloy to a total reduction of at least 25 percent;
E. grain refining the alloy by annealing the cold rolled alloy at 800°–1000° C for 15 seconds to 5 minutes;
F. further cold rolling the alloy to a total reduction of at least 25 percent; and
G. aging the alloy at 350°–600° C for one-half to 48 hours.

4,067,751

AQUEOUS NACL TEST SOLUTION FOR ALUMINUM AND ITS ALLOYS

Wilhelm Pistulka, Burghausen, Germany, assignor to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft, Braunau am Inn, Ranshofen, Austria

Filed May 11, 1976, Ser. No. 685,147
Int. Cl.² C23F *1/02;* C20F *11/04;* C23G *1/12;* C09K *13/00;* G01N *33/20*
U.S. Cl. 148—6.27 **2 Claims**

1. A method of accelerating stress corrosion cracking of metallic workpieces of aluminum or its alloys for the detection of stress-corrosion cracks therein which comprises immersing said workpieces under stress in a solution consisting essentially of the following ingredients in water:

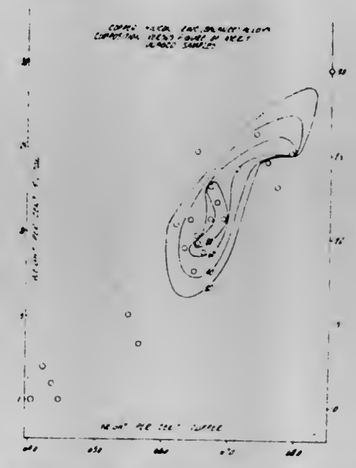
NaCl in a proportion ranging between substantially 0.5% and 5% by weight;
H_2O_2 in a proportion ranging between substantially 0.1% and 1% by weight; and
NaOH and CH_3COOH interreacting to produce sodium acetate, said NaOH being present in a concentration substantially exceeding that of the NaCL, said CH_3COOH being present in an amount such that the pH of the solution is maintained between 1 and 7.

4,067,752

AUSTENITIC AGING OF METALLIC COMPOSITIONS

Greville B. Brook, Bucks, England; Peter L. Brooks, Palo Alto, and Roger F. Iles, Foster City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 417,067, Nov. 19, 1973, abandoned. This application Feb. 18, 1975, Ser. No. 550,556
Int. Cl.² C22C *9/01, 9/04;* C22F *1/08*
U.S. Cl. 148—11.5 R **22 Claims**



1. A metallic composition having a substantially reduced tendency to lose reversibility between its martensitic and austenitic state as compared with its normal tendency to do so at a given temperature.

4,067,753

PROCESS FOR THE MANUFACTURE OF SHAPED PARTS FROM MULTI-COMPONENT SILVER-COPPER ALLOYS

Hans T. Steine, Chavannes, and Wolfgang Simm, Lausanne, both of Switzerland, assignors to Eutectic Corporation, Flushing, N.Y.

Filed May 11, 1977, Ser. No. 796,042
Claims priority, application Switzerland, July 16, 1976, 9129/76
Int. Cl.² C22F *1/14;* C22C *5/08*
U.S. Cl. 148—11.5 R **22 Claims**

1. A method for producing cold formed parts from billets of an alloy consisting essentially of about 10% to 45% copper, 0 to 35% zinc, an effective amount of at least one metal selected from the group consisting of tin and indium and about 35% to 55% of silver making up substantially the balance, the effective amount of said tin and/or indium being sufficient to provide an $\alpha + \delta$ region at an elevated heat treating temperature which comprises:

hot working said billet to reduce its cross section at least 50%;
subjecting said hot worked billet to a heat treatment to equilibrate the sample at an equilibrating temperature, T_E, in the $\alpha + \delta$ transformation range,
said equilibrating temperature being defined as follows:
$T_E = BT_s$,
where T_s = the lowest temperature in degrees absolute at which both a solid and a liquid phase of an alloy can exist in equilibrium (i.e., the solidus temperature)

and

B = the base temperature factor for the alloy ranging from 0.5 to 0.7 (which stated another way corresponds to 50% to 70%);
the time of said heat treatment being sufficient to assure substantial formation of said $\alpha + \delta$ phases; and

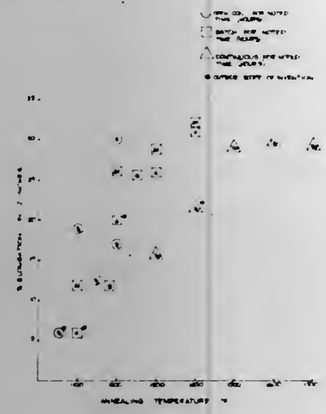
cold working said billet to the desired dimensions to produce a cold worked article.

4,067,754

COLD ROLLED, DUCTILE, HIGH STRENGTH STEEL STRIP AND SHEET AND METHOD THEREFOR

James A. Elias, deceased, late of Middletown, Ohio (by June G. Elias, executrix); John R. Newby, and Marvin B. Pierson, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 554,158, Feb. 28, 1975, Pat. No. 3,963,531.
This application Apr. 8, 1976, Ser. No. 674,862
Int. Cl.² C21D 7/02, 7/14
U.S. Cl. 148—12 F 7 Claims



1. A method of producing cold reduced low carbon steel strip and sheet stock having a 0.2% offset yield strength of at least 90 ksi and an elongation in two inches of greater than 10% in the annealed condition, comprising the steps of providing a vacuum degassed, fully killed low carbon steel casting consisting essentially of, by weight percent, from 0.02% to about 0.10% carbon, about 0.1% to 0.9% manganese, 0.02% to about 0.18% columbium, residual phosphorus, sulfur, silicon oxygen and nitrogen, about 0.01% to about 0.08% aluminum, and balance essentially iron except for incidental impurities, the columbium being substantially completely combined with carbon, hot rolling to intermediate gauge, coiling at a temperature not higher than about 1300° F, removing hot mill scale, cold reducing to final gauge with a reduction in thickness of 40% to 70%, and annealing at a temperature and for a time sufficient to recover ductility but not recrystallize whereby to obtain an elongation of greater than 10% with a yield strength of at least 90 ksi.

4,067,755

METHOD OF MAKING POWDERED MAGNETIC IRON OXIDE MATERIAL

Shinji Umeki, Saku; Kazuhide Aue, Chiba, and Yasumichi Tokuoka, Saku, all of Japan, assignors to TDK Electronics Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 483,031, June 25, 1974, abandoned, which is a division of Ser. No. 323,293, Jan. 12, 1973.
This application Sept. 23, 1975, Ser. No. 616,058
Int. Cl.² H01F 1/02; C22B 1/04; C01G 49/08
U.S. Cl. 148—105 9 Claims

1. A method for making a powdered magnetic material comprising the steps of:

slurrying acicular magnetic iron oxide particles, of a type selected from the group consisting of γ-Fe_2O_3 and Fe_3O_4, in an aqueous solution, having a pH in the range of 8 to 12.5, containing ions of cobalt and ions selected from at least one of the group consisting of Va, Mo, Cu, Mn, Ni, Zn and Fe;

reducing the ions to deposit a substantially uniform coating of an alloy on said iron oxide particles, said alloy comprising about 0.65 to 4 wt% of Co, based on the weight of said iron oxide, and about 0.15 to 3 wt%, of said at least one selected element based on the weight of said iron oxide;

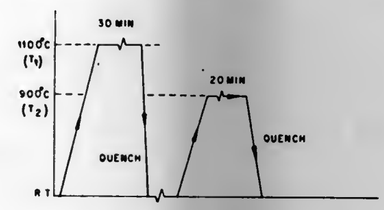
heat treating said coated iron oxide particles in an atmosphere consisting essentially of nitrogen gas at a temperature in a range of about 300° to 400° C to obtain said powdered magnetic material of high coercivity, high magnetic flux density and low electrical resistance.

4,067,756

HIGH STRENGTH, HIGH DUCTILITY LOW CARBON STEEL

Jayoung Koo, and Gareth Thomas, both of Berkeley, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 2, 1976, Ser. No. 737,753
Int. Cl.² C21D 1/78; C22C 38/02
U.S. Cl. 148—144 12 Claims



1. A method for producing a high strength, high ductility steel characterized by a duplex ferrite-martensite microstructure in a fibrous morphology which comprises:

heating a steel composition consisting essentially of iron, from about 0.05 to about 0.15 wt% carbon and from about 1 to about 3 wt% silicon at a temperature, T_1, above the critical temperature at which austenite forms for a period of time to substantially completely austenitize the steel;

quenching the resulting austenitic composition to substantially completely transform the austenite to martensite;

heating the resulting martensitic composition at a temperature, T_2, in the $(\alpha+\gamma)$ range for a period of time sufficient to transform the martensite to a mixture of ferrite and austenite; and

quenching the resulting ferritic-austenitic composition to transform the austenite to martensite;

thereby developing said duplex ferrite-martensite microstructure in a fibrous morphology.

4,067,757

EDGING FOR SYNTHETIC TURF MATERIAL

Bruce W. Layman, 2000 Greenwood Road, McKinney, Tex. 75069

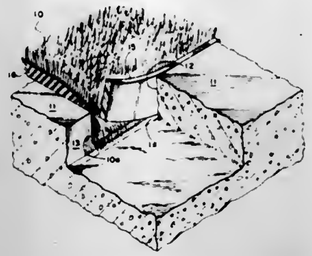
Filed Oct. 21, 1976, Ser. No. 734,409
Int. Cl.² A63B 67/00
U.S. Cl. 156—71 11 Claims

1. A method of securing the edges of a synthetic turf material which comprises:

a. forming an elongated slot in a base supporting said turf material, said elongated slot having a first side wall and a second side wall;

b. inserting the edge of said turf material to be secured into said slot; and

c. thereafter inserting an elongated retainer strip into said slot whereby one face of said retainer strip frictionally engages said first wall of said slot and the other face of said retainer strip bears against said synthetic turf material to urge it into frictional engagement with said second side wall of said slot.

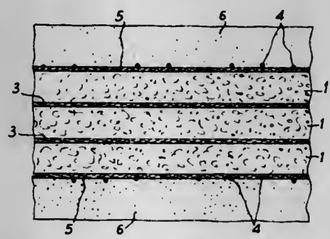


4,067,758

METHOD OF FORMING CONSTRUCTIONAL ELEMENTS

Charles Sommer, "Les Louvieres" , 50, route Nationale, 78.Colgnieres par le Mesnil St. Denis, France

Continuation of Ser. No. 426,634, Dec. 12, 1973, abandoned.
This application Dec. 22, 1975, Ser. No. 642,744
Claims priority, application France, Dec. 15, 1972, 72.44691; May 4, 1973, 73.1607
Int. Cl.² B32B 7/04
U.S. Cl. 156—91 8 Claims



1. A method of forming a construction member comprising first forming a plurality of elements, the formation of each of said elements comprising the steps of:

a. bonding together in a superimposed relationship a plurality of sheets of plastic foam material each being in the range of from about 10 mm to about 25 mm thick to form a laminate structure,

b. attaching a wire mesh type reinforcing means to one outer face of said laminate structure with a portion of the wire mesh extending over at least one of the edges of the laminate and leaving a portion of the mesh exposed,

placing a plurality of said elements adjacent one another with the said one faces thereof having the reinforcing means thereon being on the same side,

connecting the extending portions of the wire mesh of the adjacent elements, and

applying a continuous layer of mineral hydraulic mortar material to cover the said one faces of the adjacent elements and the mesh reinforcing means therein as well as the spaces therebetween to form the completed construction member.

4. A method as in claim 1 wherein the step of interconnecting the reinforcing means of adjacent elements comprises bending the extending portions of at least the means of one element over the extending portions of the other.

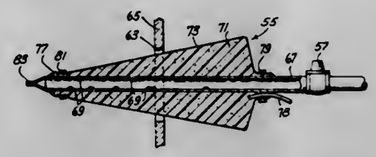
5. A method as in claim 1 wherein the extending portions of the reinforcing means comprise a plurality of loops and the connecting step comprises inserting one loop within the other and bending at least one of the loops over the other.

4,067,759

SYSTEM FOR SEALING AND REPAIRING LEAKS IN RUPTURED CONTAINERS

John J. Vrolyk, Simi, and Robert W. Melvold, Northridge, both of Calif., assignors to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.

Division of Ser. No. 582,049, May 25, 1975, Pat. No. 4,012,822.
This application Dec. 21, 1976, Ser. No. 753,076
Int. Cl.² B32B 35/00
U.S. Cl. 156—94 5 Claims



1. A method of sealing and repairing a rupture in the wall of a container for storing material comprising the steps of:

a. inserting an open-celled sponge body into the rupture so that the sponge body extends from either side of the container wall,

b. injecting a curable plastic foam composition into the sponge body to expand the sponge body against the periphery of the rupture, and

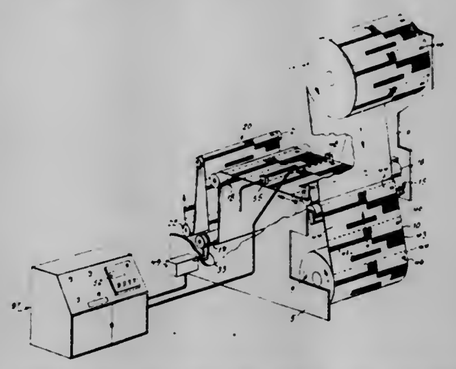
c. curing the foam in situ to form a foam composite with the sponge body for sealing the rupture.

4,067,760

GATE CONTROL FOR PRINTED WEB SCANNER

Fredolf O. Nelson, Battle Creek, Mich., assignor to General Foods Corporation, White Plains, N.Y.

Filed Mar. 24, 1976, Ser. No. 669,932
Int. Cl.² B65H 19/18, 69/06
U.S. Cl. 156—157 19 Claims



1. Apparatus for detecting register marks in clear portions of a track running through clear and unclear portions of repeat patterns on a moving web comprising:

a. a scanner positioned adjacent said web and operable for emitting a scanning pulse upon detection of a register mark in the track of the moving web;

b. an encoder driven in synchronism with the movement of said web for emitting pulses representing increments of web feed length; and

c. a reset digital counter connected to said encoder and said scanner and responsive to receipt of a predetermined number of pulses from said encoder to gate the operation

of said scanner to inhibit scanning of unclear track portions while counting up to said predetermined number and to enable scanning of clear track portions upon reaching said predetermined number, said counter being reset and said scanner being deactivated upon receipt of a scanning pulse.

12. A method for detecting register marks in clear portions of a track running through clear and unclear portions of repeat patterns on a moving web comprising the steps of:

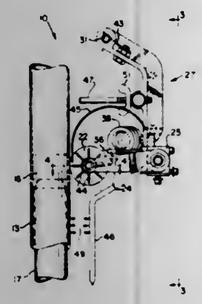
a. directing said web past a scanner aligned with said track and adapted to emit a scanning pulse upon detecting a register mark therein;
b. generating pulses synchronized with web movement whereby each pulse represents an increment of web feed length;
c. using a reset digital counter for counting said pulses up to a predetermined number which is less than the number of pulses representing the distance between successive register marks and greater than the number of pulses representing the distance from a register mark to the clear track portion containing the next register mark;
d. inhibiting said scanner during said counting;
e. enabling said scanner to scan clear portions after completing said counting; and
f. resetting said counter and deactivating said scanner upon receipt of a scanning pulse.

4,067,761

PLASTIC WEB SEALING APPARATUS USING HOT AIR HEATED SEALING ROLLER

Ronald Clyde Shirley, Bettendorf, Iowa, assignor to The Kartridg Pak Co., Davenport, Iowa

Filed Dec. 20, 1976, Ser. No. 752,136
Int. Cl.² B29D *23/10*
U.S. Cl. 156—218 **6 Claims**



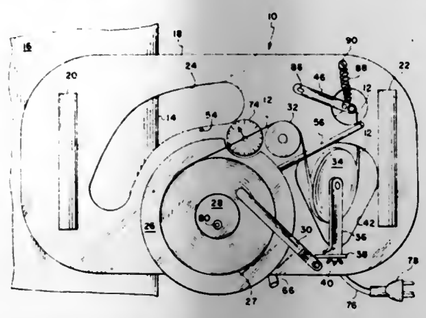
6. In the method of forming from a flat web of heat sealable film a tube with a wrinke-free seam wherein the web is continuously withdrawn from a supply roll, the lateral edges continuously brought into overlapping seam-forming relationship over a backup ring and the continuous tube is continuously pulled over the backup ring, the improvement which comprises, pressing the periphery of a free-turning roller having laterally extending fins against the overlapping lateral edges of film at a location opposite said backup ring, and directing a stream of heated air against said roller periphery and at least in part against said fins, said stream of heated air serving to heat said roller periphery to a predetermined temperature film-sealing temperature and to spin said roller at such times as said roller periphery is not in friction driving relationship with said overlapping lateral edges.

4,067,762

PORTABLE EDGE BANDER

Randall D. Rhoads, Lititz, Pa., assignor to Yerger Bros. Inc., Lititz, Pa.

Filed Feb. 15, 1977, Ser. No. 768,787
Int. Cl.² B32B *31/00*; B44C *7/00*
U.S. Cl. 156—250 **13 Claims**



1. A portable apparatus for bonding thermosetting trim tape to the intersecting outside edge of a surface formed by the thickness of the surface comprising:

mounting means including a section to rest upon a surface intersecting an outside edge to be covered by trim tape and capable of being moved along the surface and the intersecting outside edge by an individual operator while maintaining constant contact between the mounting means and the surface;

handle means attached to the mounting means permitting an operator to grasp the apparatus and to move the apparatus along the surface and intersecting outside edge to be covered;

tape storage means attached to the mounting means and holding a supply of the trim tape to be bonded to the edge of the surface;

tape heating means attached to the mounting means and heated to a temperature suitable for activating an adhesive coating on the trim tape;

bonding means attached to the mounting means so as to contact the intersecting outside edge while the mounting means rests upon the surface and positioned to permit the operator to accurately guide said bonding means along the edge to be covered while applying pressure to the edge with said bonding means; and

tape guide means attached to the mounting means, guiding the trim tape from the tape storage means, to and into contact with the tape heating means and to the bonding means.

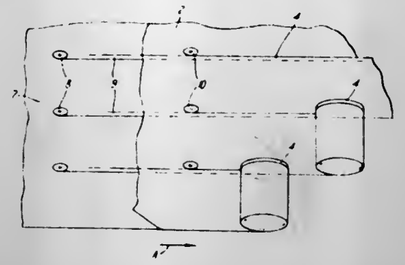
4,067,763

METHOD FOR THE MANUFACTURE OF LAMINATE WEBS WITH FIRM EDGE STRIP

Ragnar Mandersson, Lund, Sweden, assignor to AB Ziristor, Lund, Sweden

Continuation of Ser. No. 601,836, Aug. 4, 1975, abandoned. This application Dec. 10, 1976, Ser. No. 749,403
Int. Cl.² B32B *31/00*
U.S. Cl. 156—264 **1 Claim**

1. A method to manufacture a plurality of webs of laminated material each having one longitudinal edge of the outer layer overlapping one longitudinal edge of the other layer and having the other longitudinal edge of the outer layer inward of the other longitudinal edge of the other layer comprising the steps of: supplying a first web of material, cutting said first web of material into a plurality of webs of material, laminating a second layer of material onto the plurality of webs of material and leaving a portion of the second layer adjacent the same edge of each of said plurality of webs of material unlaminated to the web material and cutting longitudinally through the second layer inward of the edge of each of the web materials only through the unlaminated portions thereof to separate the plurality of webs of material once again to provide webs of laminated material each having one longitudinal edge of the second material projecting beyond one longitudinal edge of the first material and having the other longitudinal edge of the second material inward of the other longitudinal edge of the first material.

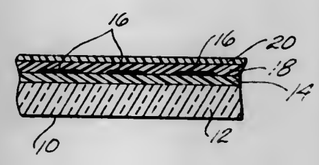


4,067,764

METHOD OF MANUFACTURE OF SOLAR CELL PANEL

Jack S. Walker, Sylmar, and Wilfred C. Kittler, Pasadena, both of Calif., assignors to Sierracin Corporation, Sylmar, Calif.

Filed Mar. 15, 1977, Ser. No. 777,762
Int. Cl.² H01L *31/04*
U.S. Cl. 156—267 **3 Claims**



1. The method of forming a solar cell panel comprising the steps of: laying a rigid transparent faceply on a supporting surface which extends beyond the margins of the faceply on all sides, laying a first layer of soft thermoplastic material on the top of the faceply, placing a network of solar cells on top of the first thermoplastic layer, adding a second thermoplastic layer over the solar cells and first thermoplastic layer, covering the laminated structure with a thin flexible layer of plastic film that is larger in area and extends beyond the margins of the faceply and is in contact with the flat supporting surface, sealing the edges of the film to the supporting surface, applying a vacuum to the space enclosed by the film and supporting surface to remove air and to apply pressure to the assembly and applying heat to the assembly while the vacuum is maintained to form a laminated structure.

4,067,765

SUSCEPTOR BASED BONDING TECHNIQUE FOR PLASTIC MATERIAL UTILIZING OLEAGINOUS SUBSTANCE AT THE BONDING INTERFACE

William C. Heller, Jr., Milwaukee, Wis., and Alfred F. Leatherman, Columbus, Ohio, assignors to William C. Heller, Jr., Milwaukee, Wis.

Filed Sept. 17, 1976, Ser. No. 724,101
Int. Cl.² B29C *19/02*; B32B *19/02*
U.S. Cl. 156—272 **21 Claims**

1. A method for the thermal bonding of first and second plastic elements over a joinder interface portion comprising:

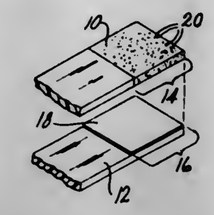
interposing between the joinder interface portions a film of an oleaginous substance;

juxtapositioning the elements so that the interface portions thereof to be joined are contiguous to form with the interposed film a joinder region including the film and the plastic material of such elements;

incorporating within the joinder region heat generating particles generating heat in the particles upon exposure to a high frequency energy field;

exposing the heat source particles to the high frequency energy field to heat the plastic material in the contiguous joinder interface portions to thermal bonding temperature; and

retaining the joinder interface portions in intimate contact until a thermal bond is formed.

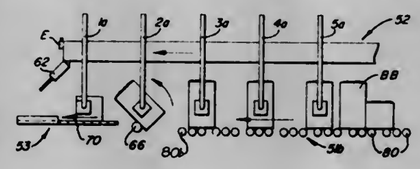


4,067,766

AUTOMATIC BUILDING BLOCK LAYING PANEL-FORMING MACHINE AND METHOD

George K. Larger, 3162 La Rosa, Grove City, Ohio 43123

Filed Feb. 23, 1976, Ser. No. 660,221
Int. Cl.² B32B *31/00*; E04D *15/00*
U.S. Cl. 156—297 **96 Claims**



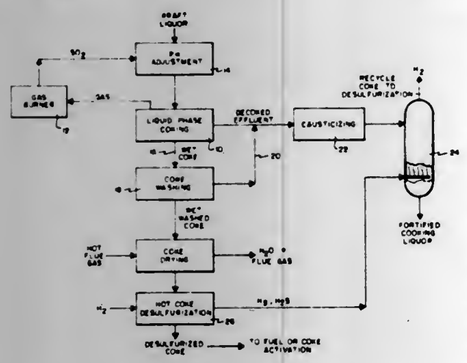
1. The method of automatically laying building blocks into a panel of superimposed courses which comprises positioning on a feeder conveyor successive rows of blocks with each block resting on end on the conveyor and with the successive rows consisting of a predetermined number and type of blocks to form a desired course, advancing the feeder conveyor towards a course-forming conveyor which moves at a right-angle thereto and which is provided with course-forming guides for receiving the advanced blocks, clamping the blocks of each row supported on the feeder conveyor while upright to suspend them for turning about a transverse axis and turning them 90° about said axis while they are advanced toward and into the guides and arranging them in end-to-end spaced relationship in the guides, pushing the blocks of the row in the guides together in end-to-end contact to form a course, and clamping the formed course and moving it over an elevator onto which the formed course is released and positioned for support by the elevator.

4,067,767

LIQUID PHASE COKING OF SPENT KRAFT PULPING LIQUORS

Howard Vincent Hess, Glenham; William Francis Franz, Gardiner, and Edward Lawrence Cole, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 295,330, Oct. 5, 1972, abandoned. This application Jan. 8, 1974, Ser. No. 431,653
Int. Cl.² D21C *11/14*
U.S. Cl. 162—31 4 Claims



1. In a proceess for treating spent alkaline Kraft pulping liquors, the steps of flowing said liquor to an absorbing zone and adding SO_2 to said liquors in said zone to lower the pH thereof to below 7; coking said liquors in the liquid phase under autogenous pressure of about 1000 to about 3000 psi at 450° F to 700° F for 0.5 minutes to 6 hours in a coking zone thereby forming coke, gases, and an aqueous effluent; separating in a separating zone said coke from said effluent; burning said gas to produce said sulfur dioxide; drying said coke with flue gas; the improvement comprising preheating hydrogen to 700° to 2000° F. passing said hydrogen over said coke to reduce the sulfur content of said coke and produce H_2S and adding lime and said H_2S to said effluent in an absorbing zone to form new Kraft cooking liquor.

4,067,768

ALKALINE PULPING OF LIGNOCELLULOSIC MATERIAL WITH AMINE AND SULFATE PRETREATMENT

David M. Mackie, Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Continuation-in-part of Ser. No. 658,868, Feb. 17, 1976, Pat. No. 4,045,280. This application June 15, 1977, Ser. No. 806,677
The portion of the term of this patent subsequent to Aug. 30, 1994, has been disclaimed.
Int. Cl.² D21C *1/06*
U.S. Cl. 162—65 10 Claims

1. In a process for pulping raw lignocellulosic material, the steps which comprise first pretreating the lignocellulosic material with an aqueous solution containing from about 0.1 to 10% by weight of a water-soluble, low molecular weight aliphatic amine selected from the group consisting of monoethanolamine and methylamine and from about 0.01 to 1% by weight of a water-soluble transition metal salt selected from the group consisting of copper sulfate and nickel sulfate at elevated pressure in a closed vessel and thereafter subjecting the pretreated lignocellulosic material to an alkaline pulping process in the absence of oxygen.

4,067,769

HEAT RESISTANT AND FLAME RESISTANT PAPERS

Koichiro Ohtomo, Takatsuki, and Tsuyoshi Nakamo, Osaka, both of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Continuation of Ser. No. 392,646, Aug. 29, 1973, abandoned. This application Aug. 8, 1975, Ser. No. 603,041
Claims priority, application Japan, Sept. 5, 1972, 47-88951; Sept. 5, 1972, 47-88952
Int. Cl.² D21H *5/12*
U.S. Cl. 162—157 R 12 Claims

1. A hot pressed, heat resistant and flame resistant paper containing from 60 to 99.5 percent by weight of infusible, non-flammable phenolic fibers having fiber lengths in the range of 0.3 to 100 mm and from 0.5 to 30 percent by weight of a hardened epoxy resin as a binder, said phenolic fibers having been prepared by either (1) immersing novolak fibers in a first aqueous solution containing 0.1 to 25 percent by weight of a strong acid and 0.5 to 35 percent by weight of an aldehyde at room temperature for zero to 2 hours, raising the temperature of the first solution to from 50° to 105° C in from 0.50 to 10 hours and then maintaining the first solution at from 50° to 105° C for from zero to 2 hours to harden the outer layer of the fibers, then immersing the fibers in a second aqueous solution containing 0.2 to 15 percent by weight of ammonia or amines and one to 35 percent by weight of an aldehyde at room temperature, then raising the temperature of said second solution to 70° to 95° C in from 0.5 to 1 hour and then maintaining the solution at 70° to 95° C for 0.5 to 10 hours until the weight of the starting novolak fibers are increased from 3 to 30 percent by weight as a result of cross-linking, or (2) immersing novolak fibers in said first solution at room temperature for zero to 2 hours, raising the temperature of said first solution to 50° to 105° C in from 0.05 to 10 hours and then maintaining said first solution at 50° to 105° C for zero to 20 hours until the weight of the starting novolak fibers has increased from 3 to 30 percent by weight as a result of cross-linking,

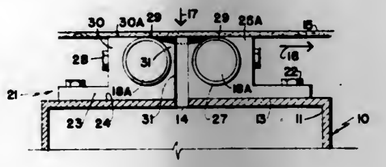
said epoxy resin being an addition product of a bisphenol or a halogenated bisphenol with epichlorohydrin.

4,067,770

CONDITIONER BOX GUIDES

John Blott; William Chegwin, and Walter Mann, all of Winnipeg, Canada, assignors to Plasma & Flame Coatings Ltd., Winnipeg, Canada

Continuation-in-part of Ser. No. 538,400, Jan. 3, 1975, abandoned. This application Feb. 20, 1976, Ser. No. 659,720
Int. Cl.² D21F *1/32, 1/40, 1/50*
U.S. Cl. 162—274 1 Claim



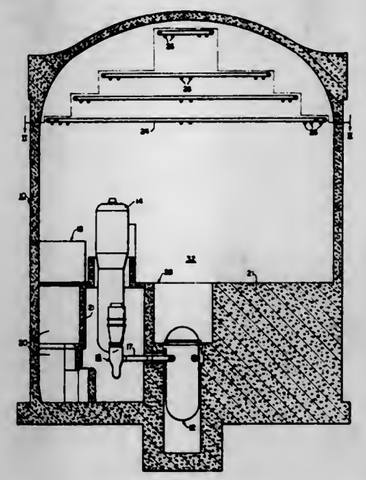
1. In a felt conditioner box used in the manufacture of paper, said box being connected to a vacuum means and having an elongated air entrance slot extending across one side thereof with a felt belt travelling across said slot; the improvement comprising a guide rod on each side of said slot with an upper portion of each rod supporting the belt passing thereacross, and guide rod support means detachably secured to said box on each side of said slot, said guide rod support means including a rod receiving pocket formed therein and means extending through said guide rod support means to detachably hold said guide rod in said pocket, said guide rod support means being composed of a synthetic thermo-plastic, said guide rod comprising a stainless steel rod and a relatively thin, hard, wear-resistant ceramic coating bonded to said rod by flame spray coating application, said guide rod being detachably held in said pocket selectively in one of two alternate positions, namely a first position and a second position end to end reversed from said first position, thereby presenting an alternate surface for supporting said belt, said guide rod support means including an arcuately curved base and an unstanding portion upon said base having an upper surface, said pocket being formed within said upstanding portion, thereby dividing said upstanding portion into an outer side and a slot bounding side, the upper portion of said rod extending above the upper surface of said upstanding portion but being sufficiently closely spaced relative to one another so that said belt, is supported by said upper portion of said rod and is drawn downwardly by said vacuum means into contact with said slot bounding side.

4,067,771

NUCLEAR REACTOR CONTAINMENT SPRAY TESTING SYSTEM

Kenneth Rubin, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 22, 1976, Ser. No. 679,293
Int. Cl.² G21C *17/00*
U.S. Cl. 176—19 R 1 Claim



1. A method for testing a containment spray system in a containment structure of a nuclear reactor plant, said containment structure having an internal containment atmosphere and said spray system comprising spray nozzles flow connected to flow conduits positioned within said atmosphere, said method comprising:

a. cooling said gas to a temperature at least 20 Fahrenheit degrees less than the temperature of said containment atmosphere;

b. injecting said cooled gas into said flow conduits such that said gas flows through said conduits to at least some of said nozzles, completely through said some nozzles, and is discharged from each of said some nozzles as a gas jet into said containment atmosphere, each said gas jet being cooler than said atmosphere; and

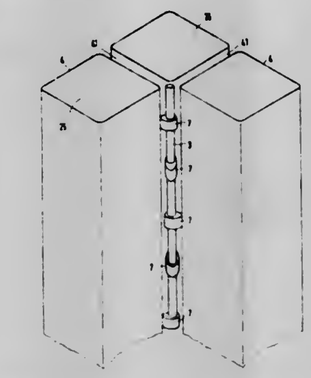
c. scanning each said gas jet with an infrared thermal detection device, said device including a real time thermal image producing monitor, whereby a real time thermal image discharge pattern of each said gas jet within said atmosphere is detected as a result of the difference in temperature between each said gas jet and said containment atmosphere.

4,067,772

ROD-SHAPED COMPONENTS BETWEEN FUEL ELEMENTS OF BOILING-WATER REACTORS

Jong-Dok Kim, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Sept. 22, 1976, Ser. No. 725,525
Claims priority, application Germany, Sept. 30, 1975, 2543626
Int. Cl.² G21C *17/00*
U.S. Cl. 176—54 6 Claims



1. In a reactor of a boiling water nuclear reactor having core cells respectively formed of fuel elements, a rod-shaped component disposed in a space between corners of encased fuel elements of four adjacent core cells, and sleeve-like spacer members disposed on the rod-shaped component and axially spaced from one another, said spacer members having a respective eccentric portion braced successively against at least respective different ones of the fuel elements of the core cells.

4,067,773

ENZYME-CONTAINING ARTICLE FOR REMOVING PAPER ADHERED TO A SURFACE

James W. Martin, Somerset, N.J., assignor to William Zinsser & Co., Somerset, N.J.

Filed Sept. 2, 1975, Ser. No. 609,332
Int. Cl.² C07G *7/02*
U.S. Cl. 195—63 3 Claims

1. An article useful for removing paper adhered to a surface with a starch-based adhesive which comprises:

A. a sealed moisture-proof first package containing an enzyme composition consisting essentially of a mixture of carbohydrase and a protease; and,

B. a second package adapted for use in conjunction with said first package and containing a liquid comprising (a) a calcium salt as an activator for said enzyme composition, (b) a nonionic surfactant as a wetting agent, and (c) a solvent for reducing the rate of evaporation of water from paper, said solvent being selected from the group consisting of diethylene glycol monomethyl ether, dipropylene glycol monomethyl ether and mixtures thereof, said solvent and said wetting agent being essentially inert to said enzyme composition.

4,067,774

COMPOUNDS FOR ENZYME AMPLIFICATION ASSAY

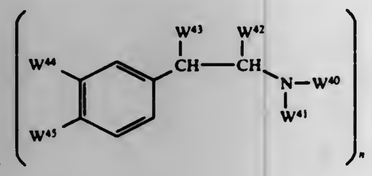
Kenneth E. Rubenstein, Palo Alto, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation of Ser. No. 481,022, June 20, 1974, abandoned, which is a division of Ser. No. 304,157, Nov. 6, 1972, Pat. No. 3,852,157, which is a continuation-in-part of Ser. No. 143,609, May 14, 1971, abandoned. This application Sept. 13, 1976, Ser. No. 722,964

Int. Cl.² C07G 7/02

U.S. Cl. 195—63 8 Claims

1. An enzyme-bound-ligand of the formula:



wherein:

any one of the W groups other than W^{44} and W^{45} can be -X* or an H of any of the W groups other than W^{44} or W^{45} may be replaced by -X*, wherein -X* is a bond or a linking group;

A* is an enzyme bonded at other than its reactive site, having *n* ligands, wherein *n* is in the range of 1 to the molecular weight of -A* divided by 2,000;

W^{40} and W^{41} are hydrogen or alkyl of from 1 to 3 carbon atoms;

W^{42} is hydrogen, alkyl of from 1 to 3 carbon atoms, or may be taken together with W^{40} to form a ring having 6 annular members with a nitrogen as the only heteroatom;

W^{43} is hydrogen, hydroxyl, carbomethoxy, or may be taken together with W^{40} to form a morpholine ring, with the proviso that W^{43} is carbomethoxy, when W^{40} and W^{42} are taken together; and

W^{44} and W^{45} are hydrogen, hydroxyl, or alkoxyl of from 1 to 3 carbon atoms.

4,067,775

PROCESS AND COMPOSITION FOR DETERMINING THE ACTIVITY OF CREATINEKINASE-MB

Uwe Wurzburg; Norbert Hennrich; Hans-Dieter Orth, and Hermann Lang, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Nov. 1, 1976, Ser. No. 737,587

Claims priority, application Germany, Nov. 3, 1975, 2548963

Int. Cl.² G01N 33/00, 31/14

U.S. Cl. 195—99 23 Claims

1. A method for determining the enzymatic activity of creatinekinase-MB in a biological liquid sample, which comprises the steps of:

a. incubating the creatinekinase-containing sample with antibodies which completely inhibit the enzymatic activity of the M subunit of creatinekinase (CK) isoenzymes MB and MM in solution without precipitation but which do not inhibit the enzymatic activity of the B subunit of any creatinekinase-MB which may be present in the sample to immunologically inhibit the M subunit thereof, wherein complete inhibition of said enzymatic activity of said M subunit leaves less than 5 U./l. of said enzymatic activity intact and non-inhibition of said enzymatic activity of said B subunit is less than 10 U./l.; and

b. determining the enzymatic activity of creatinekinase B subunit in the resultant sample.

4,067,776

METHOD FOR DIFFERENTIAL DIAGNOSIS OF MENINGITIS WITH A LIMULUS LYSATE TEST

Waheed N. Khan, Potomac, Md., assignor to Research Foundation of Children's Hospital, Washington, D.C.

Filed Nov. 25, 1975, Ser. No. 635,270

Int. Cl.² C12K 1/04

U.S. Cl. 195—103.5 M 19 Claims

1. A method for rapid bedside diagnostic differentiation between aseptic meningitis and Gram-negative bacterial meningitis comprising:

1. providing three transparent sterile, pyrogen- and endotoxin-free closable vessels, the three vessels being individually identifiable as a positive control vessel, a negative control vessel and a test vessel, wherein each vessel contains an equal amount of lyophilized Limulus lysate and the positive control vessel also contains an amount of lyophilized Gram-negative bacterial endotoxin, said lyophilized lysate and endotoxin being inactive and essentially unreacted but being capable of reactivation upon the addition of water and/or cerebo-spinal fluid thereto;
2. placing cerebro-spinal fluid in the test vessel and pyrogen- and endotoxin-free water into each of the positive control vessel and the negative control vessel;
3. placing the three vessels in an environment at a temperature of between 15° C and 45° C;
4. incubating the three vessels in an undistrubed manner in the environment for at least 15 minutes so as to reactivate the Limulus lysate for reaction with the endotoxin in the positive control vessel and with any endotoxin in the test vessel; and
5. inverting each vessel, whereby the degree of the resulting clotting and/or turbidity in the test vessel may be visually compared with that in the positive control vessel and negative control vessel and a test result can be concluded from the comparison, the amount of lyophilized Limulus lysate contained in the re-activated condition being such that will produce a firm clot when treated with from 0.02 to 0.08 ng of standard Klebsiella endotoxin per ml of re-activated Limulus lysate.

4,067,777

DETERMINATION OF HEPARIN IN THE BLOOD

Irving Innerfield, deceased, late of Tenafly, N.J., and by H. Jean Innerfield, executrix, 20 Knickerbocker Road, Tenafly, N.J. 07670

Filed May 13, 1976, Ser. No. 686,196

The portion of the term of this patent subsequent to Oct. 12, 1993, has been disclaimed.

Int. Cl.² G01N 31/14

U.S. Cl. 195—103.5 R 6 Claims

1. A method of determining the concentration of heparin in blood in heparinized patients, comprising the steps of equilibrating normal human plasma at a selected temperature, adding serum from said blood to standardized thrombin solution and incubating the resultant thrombin-serum mixture at said selected temperature and for a selected period, said period at said selected temperature being such as to be too brief for substantial reaction between said thrombin and any fibrin degradation products in said serum while sufficient for reaction of heparin with said thrombin, adding a standard portion of said incubated thrombin-serum mixture to said plasma under conditions such as to produce an essentially uniform thrombin-serum-plasma mixture, observing the clotting time thereof, said clotting time being an inverse function of the quantity of thrombin remaining after reaction with said heparin and thereby a direct function of the concentration of heparin in said blood, and comparing the thus-determined clotting time with a curve prepared by adding different quantities of heparin to serum specimens taken from healthy individuals to form heparin-serum solutions, adding each heparin-serum solution to thrombin solution and incubating for said selected period at said selected temperature, adding the incubated heparin-serum-thrombin solution to normal plasma incubated at said selected temperature and noting the clotting time, thereby determining clotting times as a function of heparin content of serum, thus making it possible to specify the heparin content of a patient's blood by measuring the clotting time of serum taken from the blood of said patient.

4,067,778

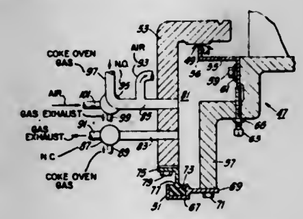
APPARATUS AND METHOD FOR SEALING COKE OVEN DOORS

Joseph Van Ackeren, and Linwood G. Tucker, both of Pittsburgh, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 514,304, Oct. 15, 1974, Pat. No. 4,016,046, which is a continuation-in-part of Ser. No. 397,708, Sept. 17, 1973, abandoned. This application Dec. 8, 1976, Ser. No. 748,513

Int. Cl.² C10B 25/06

U.S. Cl. 202—248 4 Claims



1. In a coke oven battery having a door, and a door jamb, and a door frame at one end of a coke oven chamber therein, the improvement comprising:

a. a plenum formed by said door jamb and primary sealing means extending around the periphery of said door adapted to coact with a sealing surface on said door jamb, and with

b. secondary resilient sealing means extending around the periphery of said door;

c. means on said door jamb that sealingly coacts with said secondary resilient sealing means when said door is installed in place on said coke oven battery; and

d. means for pressurizing said plenum.

4,067,779

PROCESS FOR THE PURIFICATION OF 1,10-DECANEDICARBOXYLIC ACID

Ferdinand List, Marl; Otto Rauhut, Hamm uber Marl; Peter Hegenberg, and Rudolf Strobele, both of Marl, all of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

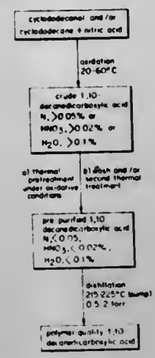
Filed Apr. 29, 1975, Ser. No. 572,857

Claims priority, application Germany, Apr. 29, 1974, 2420765

Int. Cl.² B01D 3/10; C07C 55/02

U.S. Cl. 203—28 12 Claims

1. A process for the production of 1,10-decanedicarboxylic acid with low melt color values from crude crystalline acid having an organically bound nitrogen content of 0.05% by weight or less and having a nitric acid content above 0.1% by weight and produced by oxidizing cyclododecanol, cyclododecanone or both with nitric acid at low temperature and under mild conditions and subjecting the thus-produced crude acid to a thermal treatment under oxidative conditions, at a temperature above the oxidation temperature, which reduces the organically bound nitrogen content of the crude acid to 0.05% by weight or less, which consists essentially of (a) reducing the nitric acid content of the starting crystalline crude acid to 0.02% by weight or less by a thermal treatment of the crude acid under vacuum at a temperature at which nitrous gases evolve from the crude acid and above the oxidation and thermal treatment temperatures employed to produce the starting crude crystalline acid; (b) distilling the thus pre-purified 1,10-decanedicarboxylic acid at a sump temperature of



215°–225° C. and at a pressure of 0.5 – 2 torr.; and (c) recovering the 1,10-decanedicarboxylic acid as the distillate.

4,067,780

IMAGE RECORDING MEMBER

Takutoshi Fujiwara, Tokyo, and Katsuhiko Nishide, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed July 23, 1975, Ser. No. 598,144

Claims priority, application Japan, July 27, 1974, 49-86380; Feb. 8, 1975, 50-16480

Int. Cl.² G01D 15/06, 15/10, 15/34

U.S. Cl. 204—2 26 Claims

1. An electrosensitive recording member comprising a support and a recording layer on the support, said recording layer including a image forming layer comprising a thin metal layer, and a second layer comprising a binding material and an ion conducting solid material said second layer does not deteriorate electrolytically, react or perforate upon disappearance of the thin metal layer upon recording, said ion conducting solid material being uniformly dispersed in said binding material.

4,067,781

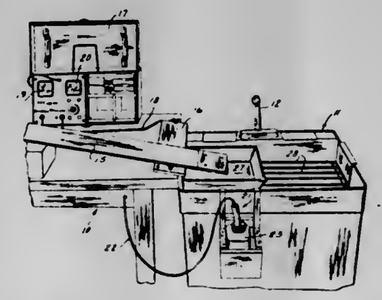
METHOD FOR ELECTROPLATING

Felix R. Rapids, 5050 SE. End Ave., Chicago, Ill. 60615

Filed Jan. 10, 1977, Ser. No. 758,197

Int. Cl.² C25D 5/06, 5/34, 17/14

U.S. Cl. 204—15 4 Claims



1. The method of plating a metal selected from the group consisting of tin, cadmium, lead, and indium onto a substrate which comprises providing an anode of said selected metal encased in a liquid absorbent sleeve, dipping said sleeve into an aqueous electrolyte containing dissolved free sulfamic acid in a concentration up to saturation and a non-ionic surface active agent to impregnate said sleeve with said electrolyte, said electrolyte being substantially devoid of ions of a plateable

metal, rubbing the impregnated sleeve onto said substrate without electroplating voltage being applied, and thereafter applying an electroplating voltage to said anode to cause deposition of said metal onto said substrate.

4,067,782

METHOD OF FORMING AN ELECTROFORMING MANDREL

Raymond E. Bailey, Chagrin Falls, Ohio, and William G. Herbert, Williamson, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 9, 1977, Ser. No. 795,060
Int. Cl.² C25D *5/12, 5/34, 5/44, 7/04*
U.S. Cl. 204—25 **45 Claims**



1. A process for making a nickel coated cylindrically shaped hollow core mandrel suitable for chromium coating for use in an electroforming process for the production of endless seamless nickel xerographic belts comprising:

a. providing a cylindrically shaped hollow core member consisting essentially of a material selected from the group consisting of aluminum and aluminum alloys;

b. establishing an anodizing zone comprising a metal cathode selected from the group consisting of lead and lead alloys and an anode comprising said core member, said cathode and said core member anode being separated by an anodizing bath maintained at a temperature of 78 to 80° F. and after said core member anode has been exposed to said bath from 1 to 3 minutes without any voltage applied then gradually applying a voltage of 15 to 17 volts over a period of about 10 to 20 minutes to said anodizing bath, while imparting sufficient agitation to said anodizing bath to continuously expose said core member anode to fresh anodizing bath, maintaining said anodizing bath within said zone at a stable equilibrium composition comprising: H_3PO_4 at 2.7 to 3.7 parts concentrated H_3PO_4 to 6.3 to 7.3 parts H_2O

c. removing said core member anode from said anodizing bath while said voltage of 15 to 17 volts is being applied to said anodizing bath and then rinsing said core member anode with water sufficiently to remove said anodizing bath solution from said core member anode; then

d. establishing a nickel electroforming zone comprising a metal anode selected from the group consisting of nickel and nickel alloys and a cathode comprising said core member, said core member cathode and said metal anode are separated by a nickel bath maintained at a temperature of 132° to 138° F. and having a ramp current when the core member cathode enters said nickel bath of from 10 to 20 amps per square foot and a voltage of 3 volts and increased within said nickel electroforming zone at a stable equilibrium composition comprising:
total nickel 9 to 11 oz/gal
halide as $NiX_2.6H_2O$ — 1.0 to 1.4 oz/gal wherein X is selected from the group consisting of chlorine, iodine and bromine,
H_3BO_3 at 4.8 to 5.2 oz/gal
continuously maintaining the surface tension of the nickel bath at 33 to 42 dynes per cm;

e. removing said core member cathode from said nickel bath while still imparting sufficient agitation to said nickel bath to continuously expose said core member cathode to fresh bath and then rinsing said core member cathode with water sufficiently to remove said nickel bath solution from said core member cathode.

4,067,783

GOLD ELECTROPLATING PROCESS

Yutaka Okinaka, Madison, and Catherine Wolowodiuk, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 21, 1977, Ser. No. 779,714
Int. Cl.² C25D *3/48, 3/62*
U.S. Cl. 204—43 G **11 Claims**

1. A process for electroplating gold on surfaces using: anode, surface to be plated as cathode, gold plating solution and an electrical source of energy comprising the step of activating the source of electrical energy so that current flows through the anode, the gold plating solution and the cathode; characterized in that the formation of gold III species is minimized by use of an anode structure which comprises a base made of titanium with metal oxide on the surface in which at least 25 percent by weight of the metal oxide is at least one oxide selected from the group consisting of ruthenium oxide, iridium oxide, rhodium oxide, and titanium oxide or mixtures thereof.

8. The process of claim 5 in which the gold plating solution contains a hardening ion to produce hard gold plating.

4,067,784

NON-CYANIDE ACIDIC SILVER ELECTROPLATING BATH AND ADDITIVE THEREFORE

Elizabeth P. Leahy, North Caldwell, and George A. Karustis, Westfield, both of N.J., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed June 9, 1976, Ser. No. 694,108
Int. Cl.² C25D *3/46*
U.S. Cl. 204—46 R **4 Claims**

1. An aqueous non-cyanide acidic silver electoplating bath, which comprises a water soluble silver salt in a concentration of about 5 to 50 grams of silver per liter of solution, sodium thiosulfate present in an amount of about two moles of thiosulfate for each mole of silver in said silver salt, a bisulphite buffer in the form of sodium bisulphite present in an amount of about 4 grams per liter to saturation, and a sulfate in the form of an alkaline metal sulfate present in an amount of about 4 grams per liter to saturation, said solution having a pH of about 3.5 to 7.0, said solution further including a brightener system which comprises at least one anionic sulfonic acid derivative surfactant, at least one amphoteric nitrogen containing carboxylic or sulfonic derivative surfactant, at least one cationic or non-ionic surfactant, at least one solution stable soluble aldehyde, and at least one C=S containing compound or tautomer thereof.

3. A brightener system especially adapted for use in aqueous non-cyanide acid silver electroplating solutions which comprises, in aqueous solution, at least one anionic sulfonic acid

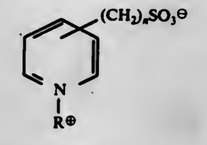
4,067,785

ELECTROPLATING ADDITIVES

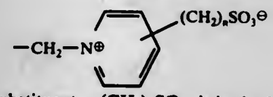
Kurt Pluss, and Bruno Romano De Martin, both of Schaffhausen, Switzerland, assignors to Cilag-Chemie A.G., Schaffhausen, Switzerland

Continuation-in-part of Ser. No. 666,525, March 12, 1976, abandoned. This application Jan. 27, 1977, Ser. No. 763,452
Int. Cl.² C25D *3/18*
U.S. Cl. 204—49 **4 Claims**

1. In a bath for electro-depositing leveled and lustrous nickel and comprising an aqueous acidic solution of at least one nickel salt, the improvement wherein said bath comprises an additive having the formula:



in which the substituent $-(CH_2)_nSO_3^-$ is in the 2- or 4- position of the pyridyl ring; *n* is the integer 1 or 2; and R is a member selected from the group consisting of methyl; methallyl; CH_2COOH; $CH_2(CH_2)_xCH_2SO_3Na$ wherein *x* is the integer 1 or 2; sodium 2-hydroxypropylsulfonate; sodium 2-hydroxybutylsulfonate; sodium 3-hydroxybutylsulfonate; benzyl; halobenzyl wherein said halo has an atomic weight less than 80; loweralkylbenzyl wherein said loweralkyl has from 1 to 4 carbons; and benzyl substituted with the group:



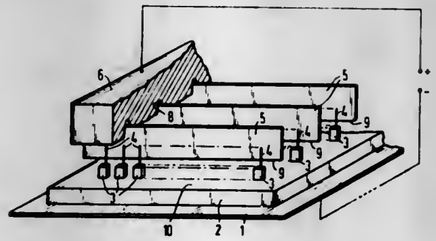
wherein the substituent $-(CH_2)_nSO_3^-$ is in the 2- or 4-position of the pyridyl ring and *n* is the integer 1 or 2, in a concentration of about 0.05 - 2.0 grams per liter.

4,067,786

METHOD AND APPARATUS FOR REFORMING SOLID ELECTROLYTIC CAPACITORS

Ferdinand Hilbert, Heidenheim, and Hans Wolscheck, Hermaringen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 12, 1976, Ser. No. 731,431
Claims priority, application Germany, Oct. 24, 1975, 2547734
Int. Cl.² C25D *11/02, 17/00*
U.S. Cl. 204—56 R **10 Claims**



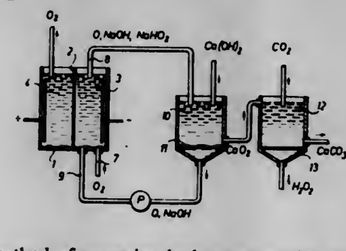
1. A method for the reforming of a plurality of solid electrolytic capacitors, said capacitors each being characterized by having a sintered anode which is covered with a dielectrically active oxide coating, and which is associated with an external plate, suspending said plate in a holding frame, mounting said frame over a metal base plate having thereagainst a layer of a conductive elastic plastic with each such capacitor being in electrical contact with said layer, and reforming said capacitors by applying a direct voltage across said base plate and each of said retaining plates with said base plate being connected as cathode.

4,067,787

METHOD OF MAKING HYDROGEN PEROXIDE

Bertel Kastening, Hamburg, and Heinrich Schmitz, Julich, both of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Nov. 12, 1975, Ser. No. 631,379
Claims priority, application Germany, Nov. 13, 1974, 2453739
Int. Cl.² C25B *1/30*
U.S. Cl. 204—84 **5 Claims**



1. A method of preparing hydrogen peroxide by forming peroxide by the reduction of oxygen, which includes the steps of: preparing an electrolyte solution containing in dissolved form an organic compound adapted to form a redox system, introducing oxygen into said electrolyte solution, passing current through said electrolyte solution by means of an anode and cathode to thereby reduce the oxidized form of the organic compound on acid cathode and form the reduced form of said organic compound, reducing the oxygen introduced into said electrolyte solution by reacting said last mentioned oxygen with the thus reduced form of said organic compound while at the same time re-generating the oxidized form of said organic compound and forming peroxide, subsequently for separating out said formed peroxide adding to said electrolyte solution such a quantity of an alkaline earth metal compound selected from the group consisting of alkaline earth metal hydroxide, alkaline earth metal oxide, and alkaline earth metal salt, that the peroxide is precipitated as alkaline earth metal peroxide, subsequently filtering off said precipitated alkaline earth metal peroxide and withdrawing the same from said electrolyte solution, suspending the thus obtained alkaline earth metal peroxide in water, introducing acid into the thus formed suspension to thereby by reaction of said alkaline earth metal peroxide with said acid form hydrogen peroxide, and subsequently separating said hydrogen peroxide from said solution.

4,067,788

ELECTROCHEMICAL PRODUCTION OF FINELY DIVIDED METAL OXIDES, METAL HYDROXIDES AND METALS

Frank Solomon, Great Neck, N.Y., assignor to Electromedia, Inc., Englewood, N.J.

Filed Sept. 20, 1976, Ser. No. 724,497
Int. Cl.² C25G *1/00*
U.S. Cl. 204—96 **12 Claims**

1. An electrochemical method of manufacturing metal oxide

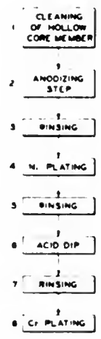
metal, rubbing the impregnated sleeve onto said substrate without electroplating voltage being applied, and thereafter applying an electroplating voltage to said anode to cause deposition of said metal onto said substrate.

4,067,782

METHOD OF FORMING AN ELECTROFORMING MANDREL

Raymond E. Bailey, Chagrin Falls, Ohio, and William G. Herbert, Williamson, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 9, 1977, Ser. No. 795,060
Int. Cl.² C25D *5/12, 5/34, 5/44, 7/04*
U.S. Cl. 204—25 **45 Claims**



1. A process for making a nickel coated cylindrically shaped hollow core mandrel suitable for chromium coating for use in an electroforming process for the production of endless seamless nickel xerographic belts comprising:

a. providing a cylindrically shaped hollow core member consisting essentially of a material selected from the group consisting of aluminum and aluminum alloys;

b. establishing an anodizing zone comprising a metal cathode selected from the group consisting of lead and lead alloys and an anode comprising said core member, said cathode and said core member anode being separated by an anodizing bath maintained at a temperature of 78 to 80° F. and after said core member anode has been exposed to said bath from 1 to 3 minutes without any voltage applied then gradually applying a voltage of 15 to 17 volts over a period of about 10 to 20 minutes to said anodizing bath, while imparting sufficient agitation to said anodizing bath to continuously expose said core member anode to fresh anodizing bath, maintaining said anodizing bath within said zone at a stable equilibrium composition comprising: H_3PO_4 at 2.7 to 3.7 parts concentrated H_3PO_4 to 6.3 to 7.3 parts H_2O

c. removing said core member anode from said anodizing bath while said voltage of 15 to 17 volts is being applied to said anodizing bath and then rinsing said core member anode with water sufficiently to remove said anodizing bath solution from said core member anode; then

d. establishing a nickel electroforming zone comprising a metal anode selected from the group consisting of nickel and nickel alloys and a cathode comprising said core member, said core member cathode and said metal anode are separated by a nickel bath maintained at a temperature of 132° to 138° F. and having a ramp current when the core member cathode enters said nickel bath of from 10 to 20 amps per square feet and a voltage of 3 volts and increasing said ramp current over a period of at least 5 seconds to a ramp current of from 75 to 150 amps per square feet while imparting sufficient agitation to said nickel bath to continuously expose said core member cathode to fresh nickel bath, maintaining said nickel bath within said nickel electroforming zone at a stable equilibrium composition comprising:

total nickel 9 to 11 oz/gal

halide as $NiX_2.6H_2O$ — 1.0 to 1.4 oz/gal wherein X is selected from the group consisting of chlorine, iodine and bromine,

H_3BO_3 at 4.8 to 5.2 oz/gal

continuously maintaining the surface tension of the nickel bath at 33 to 42 dynes per cm;

e. removing said core member cathode from said nickel bath while still imparting sufficient agitation to said nickel bath to continuously expose said core member cathode to fresh bath and then rinsing said core member cathode with water sufficiently to remove said nickel bath solution from said core member cathode.

4,067,783

GOLD ELECTROPLATING PROCESS

Yutaka Okinaka, Madison, and Catherine Wolowodiuk, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 21, 1977, Ser. No. 779,714
Int. Cl.² C25D *3/48, 3/62*
U.S. Cl. 204—43 G **11 Claims**

1. A process for electroplating gold on surfaces using: anode, surface to be plated as cathode, gold plating solution and an electrical source of energy comprising the step of activating the source of electrical energy so that current flows through the anode, the gold plating solution and the cathode; characterized in that the formation of gold III species is minimized by use of an anode structure which comprises a base made of titanium with metal oxide on the surface in which at least 25 percent by weight of the metal oxide is at least one oxide selected from the group consisting of ruthenium oxide, iridium oxide, rhodium oxide, and titanium oxide or mixtures thereof.

8. The process of claim 5 in which the gold plating solution contains a hardening ion to produce hard gold plating.

4,067,784

NON-CYANIDE ACIDIC SILVER ELECTROPLATING BATH AND ADDITIVE THEREFORE

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Filed June 9, 1976, Ser. No. 694,108
Int. Cl.² C25D *3/46*
U.S. Cl. 204—46 R **4 Claims**

1. An aqueous non-cyanide acidic silver electoplating bath, which comprises a water soluble silver salt in a concentration of about 5 to 50 grams of silver per liter of solution, sodium thiosulfate present in an amount of about two moles of thiosulfate for each mole of silver in said silver salt, a bisulphite buffer in the form of sodium bisulphite present in an amount of about 4 grams per liter to saturation, and a sulfate in the form of an alkaline metal sulfate present in an amount of about 4 grams per liter to saturation, said solution having a pH of about 3.5 to 7.0, said solution further including a brightener system which comprises at least one anionic sulfonic acid derivative surfactant, at least one amphoteric nitrogen containing carboxylic or sulfonic derivative surfactant, at least one cationic or non-ionic surfactant, at least one solution stable soluble aldehyde, and at least one C=S containing compound or tautomer thereof.

3. A brightener system especially adapted for use in aqueous non-cyanide acid silver electroplating solutions which comprises, in aqueous solution, at least one anionic sulfonic acid derivative surfactant, at least one amphoteric nitrogen containing carboxylic or sulfonic derivative surfactant, at least one cationic or non-ionic surfactant, at least one electrolysis stable soluble aldehyde, and at least one C=S containing compound or tautomer thereof.

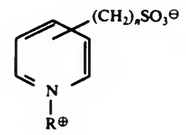
4,067,785

ELECTROPLATING ADDITIVES

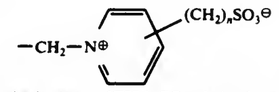
Kurt Pluss, and Bruno Romano De Martin, both of Schaffhausen, Switzerland, assignors to Ciag-Chemie A.G., Schaffhausen, Switzerland

Continuation-in-part of Ser. No. 666,525, March 12, 1976, abandoned. This application Jan. 27, 1977, Ser. No. 763,452
Int. Cl.² C25D *3/18*
U.S. Cl. 204—49 **4 Claims**

1. In a bath for electro-depositing leveled and lustrous nickel and comprising an aqueous acidic solution of at least one nickel salt, the improvement wherein said bath comprises an additive having the formula:



in which the substituent $-(CH_2)_nSO_3^-$ is in the 2- or 4- position of the pyridyl ring; *n* is the integer 1 or 2; and R is a member selected from the group consisting of methyl; methallyl; CH_2COOH; $CH_2(CH_2)_xCH_2SO_3Na$ wherein *x* is the integer 1 or 2; sodium 2-hydroxypropylsulfonate; sodium 2-hydroxybutylsulfonate; sodium 3-hydroxybutylsulfonate; benzyl; halobenzyl wherein said halo has an atomic weight less than 80; loweralkylbenzyl wherein said loweralkyl has from 1 to 4 carbons; and benzyl substituted with the group:



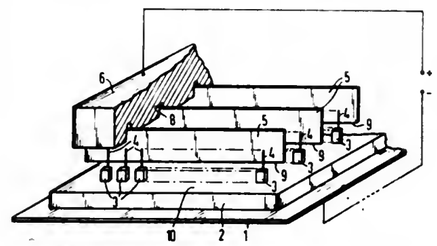
wherein the substituent $-(CH_2)_nSO_3^-$ is in the 2- or 4-position of the pyridyl ring and *n* is the integer 1 or 2, in a concentration of about 0.05 - 2.0 grams per liter.

4,067,786

METHOD AND APPARATUS FOR REFORMING SOLID ELECTROLYTIC CAPACITORS

Ferdinand Hilbert, Heidenheim, and Hans Wolscheck, Hermaringen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 12, 1976, Ser. No. 731,431
Claims priority, application Germany, Oct. 24, 1975, 2547734
Int. Cl.² C25D *11/02, 17/00*
U.S. Cl. 204—56 R **10 Claims**



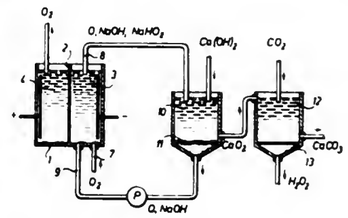
1. A method for the reforming of a plurality of solid electrolytic capacitors, said capacitors each being characterized by having a sintered anode which is covered with a dielectrically active oxide coating, and which is associated with an external anode conductor and by having as counter electrode a semiconducting electrolyte with a contact means thereon, said method comprising locating a plurality of such capacitors in generally spaced parallel relationship to one another with the anode conductor of each capacitor being contacted a retaining plate, suspending said plate in a holding frame, mounting said frame over a metal base plate having thereagainst a layer of a conductive elastic plastic with each such capacitor being in electrical contact with said layer, and reforming said capacitors by applying a direct voltage across said base plate and each of said retaining plates with said base plate being connected as cathode.

4,067,787

METHOD OF MAKING HYDROGEN PEROXIDE

Bertel Kastening, Hamburg, and Heinrich Schmitz, Julich, both of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Nov. 12, 1975, Ser. No. 631,379
Claims priority, application Germany, Nov. 13, 1974, 2453739
Int. Cl.² C25B *1/30*
U.S. Cl. 204—84 **5 Claims**



1. A method of preparing hydrogen peroxide by forming peroxide by the reduction of oxygen, which includes the steps of: preparing an electrolyte solution containing in dissolved form an organic compound adapted to form a redox system, introducing oxygen into said electrolyte solution, passing current through said electrolyte solution by means of an anode and cathode to thereby reduce the oxidized form of the organic compound on acid cathode and form the reduced form of said organic compound, reducing the oxygen introduced into said electrolyte solution by reacting said last mentioned oxygen with the thus reduced form of said organic compound while at the same time re-generating the oxidized form of said organic compound and forming peroxide, subsequently for separating out said formed peroxide adding to said electrolyte solution such a quantity of an alkaline earth metal compound selected from the group consisting of alkaline earth metal hydroxide, alkaline earth metal oxide, and alkaline earth metal salt, that the peroxide is precipitated as alkaline earth metal peroxide, subsequently filtering off said precipitated alkaline earth metal peroxide and withdrawing the same from said electrolyte solution, suspending the thus obtained alkaline earth metal peroxide in water, introducing acid into the thus formed suspension to thereby by reaction of said alkaline earth metal peroxide with said acid form hydrogen peroxide, and subsequently separating said hydrogen peroxide from said solution.

4,067,788

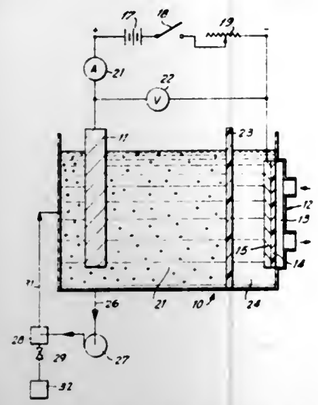
ELECTROCHEMICAL PRODUCTION OF FINELY DIVIDED METAL OXIDES, METAL HYDROXIDES AND METALS

Frank Solomon, Great Neck, N.Y., assignor to Electromedia, Inc., Englewood, N.J.

Filed Sept. 20, 1976, Ser. No. 724,497
Int. Cl.² C25G *1/00*
U.S. Cl. 204—96 **12 Claims**

1. An electrochemical method of manufacturing metal oxide and metal hydroxide particles in the size range from 0.5 μ to 10 μ, comprising the step of passing direct current in a cell between an anode of a selected metal and an air cathode, said anode and cathode being immersed in a weakly alkaline electrolyte, said electrolyte being free of anions which can form

insoluble salts with ions of said selected metal, said metal being such that on conversion to ionic form by passage of said current it forms an insoluble particulate oxide or insoluble particulate hydroxide on contact with hydroxyl ion.

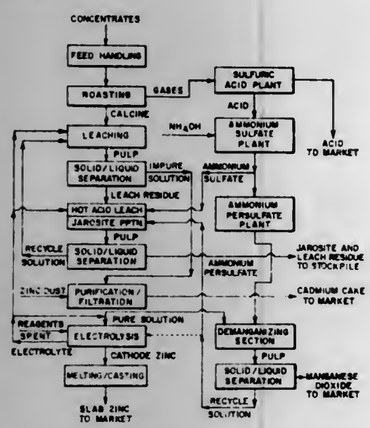


4,067,789

PROCESS FOR MANGANESE REMOVAL FROM ZINC METAL BEARING SOLUTIONS

Leonard Harris, Cos Cob, and Alfred K. Hanson, Jr., Danbury, both of Conn., assignors to Newmont Exploration Limited, Danbury, Conn.

Continuation-in-part of Ser. No. 594,278, July 9, 1975, abandoned. This application May 3, 1976, Ser. No. 682,442
Int. Cl.² C25C *1/16*; C01G *45/02, 49/14*
U.S. Cl. 204—119 **9 Claims**



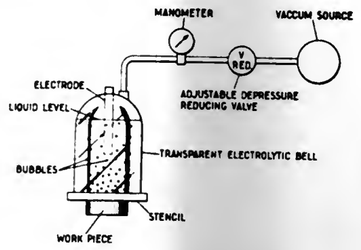
1. A process for removal of soluble manganous ions from a zinc sulfate bearing solution containing the same comprising the steps of treating said solution, or a portion of said solution, with an oxidant capable of oxidizing soluble manganous ion to insoluble and filterable gamma-manganese dioxide at a temperature and for a time sufficient to precipitate at least a portion of the manganous ion present in said solution as gamma-manganese dioxide, said oxidant being in an amount of from about 130% to 150% of the theoretical amount required for substantially total manganese removal from said solution, and separating said precipitate from said solution.

4,067,790

METHOD OF ELECTROLYTICALLY MARKING METALLIC ARTICLES

Guy Moulin, Vellzy-Villacoublay, France, assignor to SKF Compagnie d'Applications Mecaniques, Clamart, France

Filed Nov. 8, 1976, Ser. No. 740,065
Claims priority, application France, Dec. 12, 1975, 75.37951
Int. Cl.² C25F *3/00, 7/00*
U.S. Cl. 204—129.6 **7 Claims**



1. A method of electrolytically marking metallic articles comprising, the steps of, providing a chamber containing an electrolyte at a normal level therein and having a stencil closing its bottom, the stencil having a porous portion corresponding to the design to be marked on an article, creating a partial vacuum in the chamber in the region above the normal level of the electrolyte with a vacuum device, placing the article to be marked below and in engagement with the stencil, and applying an electric current between the electrolyte and the article.

4,067,791

ULTRAVIOLET LIGHT CURABLE COATING COMPOSITIONS

Ryozo Konno; Kiyoshi Goto, and Toru Matsubara, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Japan

Filed Jan. 10, 1977, Ser. No. 757,930
Claims priority, application Japan, Apr. 26, 1976, 51-46634
Int. Cl.² C08F *8/00, 2/46*
U.S. Cl. 204—159.15 **8 Claims**

1. An ultraviolet light curable coating composition comprising (1) at least a member selected from the group consisting of monomers and prepolymers containing at least one radically crosslinkable ethylenically unsaturated double bond and (2) a photopolymerization initiator containing (a) 4, 4'-bis(diethylamino) benzophenone and (b) a member selected from the group consisting of lower alkyl esters of p-and o-benzoylbenzoic acids and the derivatives thereof in a ratio by weight of (*a*) to (*b*) of 1 : 1 to 1 : 10.

4,067,792

SOLID METAL OXIDE ELECTROLYTE AND METHOD OF MAKING

Novella Vladimirovna Semkina, ulitsa Bljukhera, 71/1, kv. 38; Galina Alexandrovna Mamaeva, ulitsa Tekhnologicheskaya, both of Sverdlovsk; Evgeny Alexeevich Nechaev, Vologodskoi oblasti, ulitsa Gorkogo, 73, kv. 37, and Viktor Petrovich Vinogradov, Vologodskoi oblasti, ulitsa Metallurgoo 10, kv. 21, both of Cherepovets, all of U.S.S.R.

Continuation of Ser. No. 302,818, Nov. 1, 1972, abandoned. This application July 31, 1974, Ser. No. 493,725
Int. Cl.² G01N *27/42*
U.S. Cl. 204—195 S **5 Claims**

1. A method for producing a solid electrolyte suitable for use in determining oxidation of molten metals and consisting essentially of aluminum oxide, titanium dioxide and zirconium oxide comprising the steps of

mixing 85–95 weight % aluminum oxide, 1–5 weight % of titanium dioxide and 4–10 weight % of zirconium dioxide, the percentages of said oxides adding up to 100%;

adding a plasticizer to said mixture;
molding an article from the plasticized mixture;
drying the molded article; and
roasting the dried article.

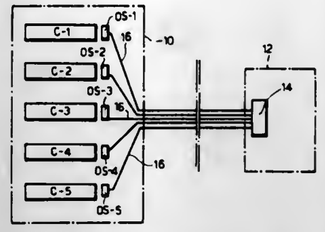
5. The product obtained by the method of claim 1 having an open porosity of 0–1%, an apparent density of 3.70–4.1 g/cm³, a heat resistance of 8–15 cycles from 1300 to 20° C. and an ion conductance of 93–98%.

4,067,793

AUTOMATIC REMOTE CONTROL SYSTEM FOR MERCURY CELLS FOR THE PRODUCTION OF CHLORINE AND CAUSTIC SODA

Giancarlo Piras, and Alberto Bicocchi, both of Milan, Italy, assignors to Euteco S.p.A., Milan, Italy

Filed Mar. 7, 1977, Ser. No. 775,359
Claims priority, application Italy, Mar. 11, 1976, 21065/76
Int. Cl.² C25B *15/02, 15/04*
U.S. Cl. 204—219 **3 Claims**



1. In a computer-controlled mercury cell plant comprising: a cell room, a mercury cell in the cell room, a control room remote from the cell room, a central control apparatus including a memorized program digital computer in the said control room, the said mercury cell comprising a plurality of vertically adjustable anode banks, each of the banks having a sensor associated therewith arranged to supply an electric analog signal representative of the electric current flow through at least one anode in the bank, electric cable means extending from the cell room to the control room to supply to the central control apparatus information on the anodic current flows based on the analog signals supplied by the sensors, and the said central control apparatus being arranged to vertically adjust each of the said banks in response to its received information to maintain the said flows at selected values, the improvement comprising:

a substation situated in the cell room comprising a multiplexer section, an analog-to-digital converter, an encoder and a serializing section;

said multiplexer section comprising a plurality of inputs connected to the respective sensors and an output connected to the input of the converter, and being connected for inquiry by the central control apparatus through a telephonic loop extending from the said substation to the central control apparatus;

the said converter being arranged to deliver to the encoder digital signals corresponding to its received analog signals; the said serializing section being arranged to receive from the encoder the encoded digital signals and to serialize the latter;

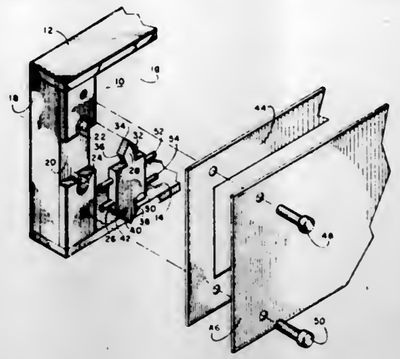
and a telephonic loop extending from the output of the serializing section to the central control apparatus; whereby the aforesaid information signals travelling from the cell room to the control room through said electric cable means are constituted by serialized coded digital signals travelling through the last-mentioned telephonic loop.

4,067,794

SEALING GASKET FOR CHAMBER WALL

Gary C. Ganzi, Lexington, and Anil D. Jha, Littleton, both of Mass., assignors to Ionics, Inc., Watertown, Mass.

Filed Jan. 14, 1977, Ser. No. 759,505
Int. Cl.² B01D *13/02*; B65D *53/00*; F16J *15/02*
U.S. Cl. 204—301 **13 Claims**



1. A gasket device for sealing an opening in a chamber wall to prevent the flow of liquid through said opening, said gasket comprising in combination:

a. a body portion arranged to substantially fill said opening; and

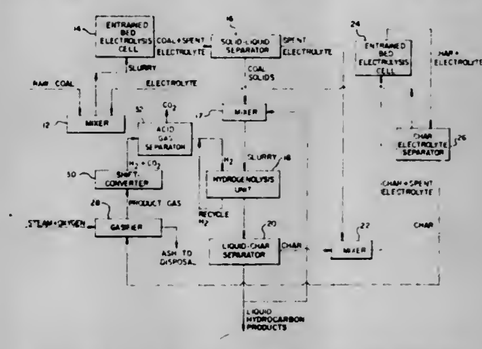
b. upper and lower tab members of elastic material joined to and extending from said body portion, at least a portion of the edges of said tab members adapted to lockingly cooperate with corresponding recesses in said chamber wall to prevent the flow of liquid past the interface of said edges and said recesses.

4,067,795

PROCESS FOR COAL LIQUEFACTION USING ELECTRODEPOSITED CATALYST

Raymond H. Moore, Richland, Wash., assignor to Battelle Memorial Institute, Columbus, Ohio

Filed June 14, 1976, Ser. No. 695,988
Int. Cl.² C10G *1/08*
U.S. Cl. 208—10 **10 Claims**



1. A process for converting solid hydrocarbonaceous material into liquid hydrocarbon products which comprises:

electrodepositing on a solid hydrocarbonaceous material a catalyst metal capable of promoting hydrogenolysis; and

contacting the catalyst coated material with hydrogen at an elevated temperature and pressure to produce said liquid products and a char containing the catalyst metal.

4,067,796

TAR SANDS RECOVERY PROCESS

Harvey E. Alford, Amherst, and James C. Saunders, Jr., Chesterland, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed May 27, 1975, Ser. No. 581,317
Int. Cl.[2] C10G *1/04*
U.S. Cl. 208—11 LE 6 Claims

1. In a process for the recovery of bitumen from tar sand, wherein the bitumen recovery is conducted in a single vessel containing immiscible liquids, the improvement of:

a. conducting the bitumen recovery in a vessel containing a top liquid phase and a bottom liquid phase, wherein the top liquid phase is an organic phase which consists of a water immiscible hydrocarbon solvent capable of dissolving the bitumen, and wherein the bottom liquid phase is an aqueous phase;

b. conditioning the tar sand with an aqueous medium having a pH of 6–10, at a temperature of 25° C to 100° C, using less than one part by weight water per part tar sand, such that the tar sand is broken into distinct particles of bitumen and sand, said tar sand being conditioned prior to its introduction into the vessel;

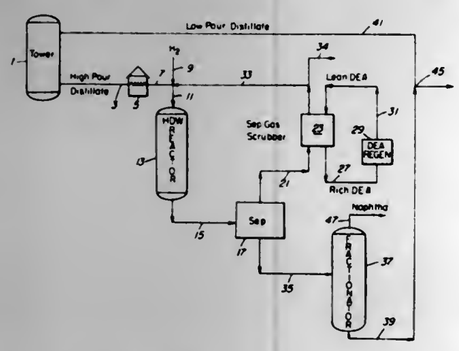
c. processing the tar sand of step (b) by introducing the tar sand into said hydrocarbon solvent, at a temperature of 110° C to 150° C, wherein the bitumen from the tar sand is dissolved, with the spent tar sand then proceeding to the aqueous phase.

4,067,797

HYDRODEWAXING

Nai Yuen Chen, Titusville; Bernard M. Gillespie, Pitman; Henry R. Ireland, Woodbury, and Thomas R. Stein, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 476,493, June 5, 1974, Pat. No. 3,956,102. This application Jan. 16, 1976, Ser. No. 649,619
Claims priority, application United Kingdom, May 22, 1975, 22258/75
Int. Cl.[2] C10L *1/04*
U.S. Cl. 208—15 5 Claims



1. A blended hydrocarbon fuel oil comprising an untreated distillate oil having a pour point of about −21° to 30° F combined with a hydrodewaxed oil produced by hydrodewaxing a high pour hydrocarbon distillate having a pour point greater than about 30° F with a ZSM-5 type catalyst under a hydrogen pressure of about 100 to 1500 p.s.i.g., at a space velocity of about 0.5 to 10 L.H.S.V., and at a temperature of about 500° F to about 850° F, said hydrodewaxed oil having a pour point higher than said untreated distillate oil.

4,067,798

CATALYTIC CRACKING PROCESS

Frank William Hauschildt, Naperville, Ill., and Ralph J. Bertolacini, Chesterton, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 26, 1976, Ser. No. 661,654
Int. Cl.[2] C10G *37/02*
U.S. Cl. 208—92 21 Claims

1. A process for converting an intermediate boiling-range hydrocarbon fraction to more valuable products by fluid catalytic cracking which comprises:

a. fractionating a catalytic cracking product to separate therefrom a hydrocarbon fraction consisting of at least 40 weight percent of mono-aromatic hydrocarbons and boiling in the range from about 230° F. to about 500° F.,

b. preparing an isolated feed, 80 to 100 volume percent of which is the fraction from step (a) and the remainder of which is a vaporizable hydrocarbon fraction;

c. catalytically cracking said isolated feed in a fluidized catalytic cracking zone under effective cracking conditions in the presence of a molecular sieve-type cracking catalyst having an equilibrium cracking activity of at least about 55 units on the Davision microactivity scale to produce an isolated hydrocarbon product; and

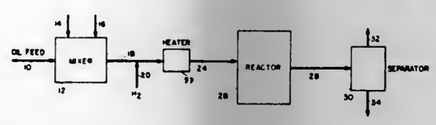
d. recovering said isolated hydrocarbon product from the cracking zone, said isolated hydrocarbon product having increased low molecular weight olefin and low molecular weight mono-aromatic contents, a substantially reduced sulfur content, and a high octane rating relative to said isolated feed.

4,067,799

HYDROCONVERSION PROCESS

Roby Bearden, Jr., and Clyde L. Aldridge, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed July 2, 1976, Ser. No. 702,238
Int. Cl.[2] C10G *13/06;* B01J *27/04*
U.S. Cl. 208—112 20 Claims



1. In a process for the hydroconversion of a heavy hydrocarbonaceous oil by contacting said oil under hydroconversion conditions with hydrogen and a catalyst comprising a metal phthalocyanine in a reaction zone, the improvement which comprises hydroconverting said heavy oil in the presence of an effective amount of dispersed iron component particles added to said reaction zone, said iron component being selected from the group consisting of elemental iron, iron oxides, iron sulfides, and mixtures thereof.

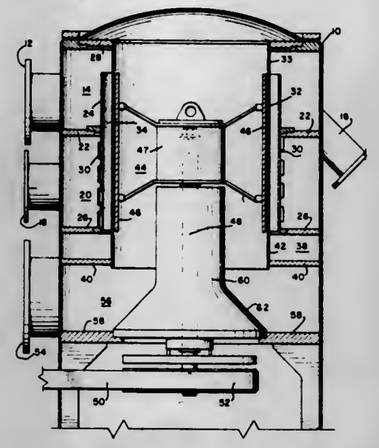
4,067,800

SCREENING APPARATUS

Douglas L. Young, Leanoxville, Canada, assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 6, 1976, Ser. No. 747,952
Int. Cl.[2] B07B *1/20*
U.S. Cl. 209—273 6 Claims

1. In a pressurized screening apparatus for screening a liquid suspension containing desirable fiber and undesirable contaminants comprising: a fixed enclosing screen having an axial perforated section extending around its periphery and forming an accepts chamber; an accepts outlet communicating with the accepts chamber; a fixed cylindrical wall surrounding the enclosing screen to form an axially extending channel defined by the outside of the screen and said wall, said axially extending channel having a radial dimension small enough so that the acceptable fiber content in the rejects is kept to a minimum and a reasonably low reject flow is maintained; means for flowing dilution liquid defined by said wall, having a tangential velocity component, into the axially extending channel, at at least one point transversely spaced from and opposite to perforations in the enclosing screen; means for flowing at least part of the liquid suspension into the axially extending channel at a point axially spaced from all the perforations in the enclosing screen; and a rejects outlet communicating with the axially extending channel for removing undesirable contaminants from the housing.

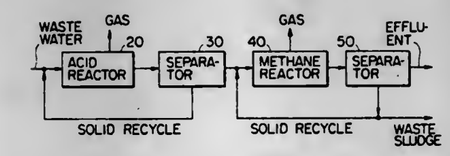


4,067,801

PROCESS AND SYSTEM FOR ANAEROBIC TREATMENT OF BIOCHEMICAL WASTE

Masahiko Ishida; Ryoichi Haga, and Youji Odawara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed May 12, 1976, Ser. No. 685,901
Claims priority, application Japan, May 14, 1975, 50-56151; May 19, 1975, 50-58522; July 4, 1975, 50-81808
Int. Cl.[2] C02C *1/14*
U.S. Cl. 210—5 22 Claims



13. A system for anaerobic digestion of waste containing relatively high molecular weight organic materials comprising;

an acid reactor in which the waste is anaerobically digested by bacterial acid formers to convert the high molecular weight organic materials and further to convert the low molecular weight organic materials into volatile organic acid,

a first separator in which the waste in said acid reactor is separated into a first portion containing volatile organic acids and a second portion containing undigested residues and cells of the acid formers,

a methane reactor separate from the acid reactor for anaerobically digesting the first portion by bacterial methane formers to generate methane and carbon dioxide gas,

a second separator in which the waste in said methane reactor is separated into a third portion containing digested sludge and effluent and a fourth portion containing cells of the methane formers, and

means for partially recycling the second portion separated in said first separator in order to digest the recycled second portion within the anaerobic digesting system.

4,067,802

ION EXCHANGE PROCESS FOR THE PURIFICATION OF BASE METAL ELECTROLYTE SOLUTIONS

Alvin D. Cronberg, Columbus; James A. Hartlage, Worthington, and Joe W. Cotton, Marysville, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 10, 1976, Ser. No. 684,645
Int. Cl.[2] B01D *11/04*
U.S. Cl. 210—21 7 Claims

1. A liquid-liquid ion exchange process for selectively removing ferric iron contaminants from an electrolyte solution of copper, cobalt, nickel or zinc sulfate which comprises first adjusting the acid content of said solution to provide from about 100 to 200 grams of H_2SO_4 per liter thereof and thereupon intimately contacting the acidified solution with a phase stabilized water-immiscible organic solvent solution of an extractant co-reagent consisting essentially of a mono- or dialkyl phosphoric acid and a metal chelation collector selected from the group consisting of an 8-hydroxyquinoline substituted in the No. 7 position with a long chain aliphatic hydrocarbon radical and an oil-soluble 2-hydroxy benzophenoneoxime wherein said metal chelation collector and said phosphoric acid are present in a molar ratio of from 1:1::1:4, respectively, and separating the organic phase from the aqueous phase to provide an aqueous phase containing a substantially reduced content of the ferric iron contaminants.

4,067,803

DIALYSIS

Jean Pierre Quentin, Lyon, France, assignor to Rhone Poulenc Industries, Paris, France

Filed June 2, 1975, Ser. No. 582,799
Claims priority, application France, June 4, 1974, 74.19166
Int. Cl.[2] B01D *31/00, 13/00*
U.S. Cl. 210—22 C 4 Claims

1. In a process for the fractionation of a mixture of an ionic species and a non-ionic species which consists of dialysing the mixture through a dialysis membrane with another solution where these species are present in zero concentration or at a lower concentration than in the mixture, the improvement wherein the dialysis membrane comprises:

a. an anion exchange polymer in the form of particles of diameter from about 5 to about 500 μ;

b. a cation exchange polymer in the form of particles of diameter from about 5 to about 500 μ; and

c. a non-ionic film-forming polymer binder, the percentage by weight of binder not exceeding 50%, the polymers (a), (b) and (c) being insoluble in water, the anion exchange and cation exchange polymers (a) and (b) being insoluble in at least one solvent for polymer (c), and each polymer having an ionic conductivity λ and a permeability U to non-electrolytes such that $\lambda/U > 20$, and the amounts of polymers (a) and (b) being such that the weight of one is at most equal to twice the weight of the other, said membrane being such as to allow ionic species to pass through preferentially in relation to non-ionic species.

4,067,804

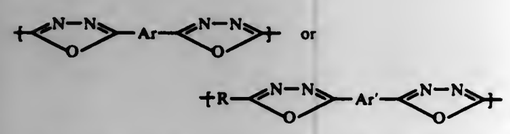
SOLUTE-SEPARATING MEMBRANE

Hideo Sekiguchi, Yokohama; Fumishi Sato, Tokyo; Kazuo Sadamitsu, and Kazuaki Yoshida, both of Yokohama, all of Japan, assignors to The Furukawa Electric Company, Limited, Tokyo, Japan

Filed Dec. 19, 1975, Ser. No. 642,593
Claims priority, application Japan, Dec. 19, 1974, 49-144946
Int. Cl.[2] B01D *13/00, 39/00, 39/14*
U.S. Cl. 210—23 H 15 Claims

1. In the process of separating a solute from an aqueous or non-aqueous solution containing the solute using a separation membrane, the improvement comprising using as the separation membrane a solute-separating membrane consisting of at least one polyoxadiazole series resin selected from the group consisting of

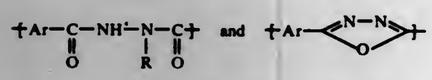
A. polyoxadiazole resin having a repeating structural unit of the general formula:



or

wherein Ar and Ar' are the same or different multivalent aromatic residues, and

B. oxadiazole-N-substituted hydrazide copolymeric resin insoluble in organic solvent having separating structural units of general formulae:



and

wherein Ar is a multivalent aromatic residue and R is an alkyl, cycloalkyl or aralkyl group having from 1 to 7 carbon atoms, and swollen to a swelling degree of 1.7–15 with a swelling agent selected from the group consisting of water, a solvent miscible with water, and a mixture of water and said solvent.

4,067,805

PROCESS FOR SEPARATING AQUEOUS FORMALDEHYDE MIXTURES

Robert Chiang, Ballwin, and Eli Perry, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 191,097, Oct. 20, 1971, Pat. No. 3,950,247, which is a continuation of Ser. No. 46,801, June 16, 1970, abandoned. This application Jan. 5, 1976, Ser. No. 646,461
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—23 R 4 Claims

1. Process for the separation of water from feed mixtures comprising water and formaldehyde which comprises contacting the aforesaid mixture against one side of a polyacetal membrane and withdrawing, at the second side, a vaporous mixture having a higher concentration of water than the aforesaid feed mixture, with the mixture at second side being maintained at a lower chemical potential than the feed side.

4,067,806

FORMULATION AND APPLICATION OF COMPOSITIONS FOR THE DETACKIFICATION OF PAINT SPRAY BOOTH WASTES

Frank A. Mauceri, Clarendon Hills, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Sept. 16, 1976, Ser. No. 723,864
The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.
Int. Cl.[2] C02B *1/20*
U.S. Cl. 210—52 6 Claims

1. A composition for the clarification and detackification of alkaline paint spray booth wastes which comprises:

A. 15–50% by weight of a water-soluble salt of an amphoteric metal;

B. 1.0–15% by weight of a water-soluble cationic terpolymer containing prior to polymerization:

1. 5–40% by weight of diallyl dimethyl ammonium chloride;
2. 5–75% by weight N-vinyl-2-pyrrolidone;
3. 10–60% acrylamide, said terpolymer having a molecular weight of from 5,000 to 300,000; and

C. 35–85% water.

4. A process for the clarification and detackification of alkaline paint spray booth wastes which comprises:

A. Adding to the paint spray booth wastes from 2.0–100,000 ppm of a composition consisting essentially of:

1. 15–50% by weight of a water-soluble salt of an amphoteric metal, said metallic salt being able to form an insoluble hydroxide at pH values greater than about 7;
2. 1.0–15% by weight of a water-soluble cationic terpolymer containing prior to polymerization:
   a. 5–40% by weight of diallyl dimethyl ammonium chloride;
   b. 5–75% by weight N-vinyl-2-pyrrolidone;
   c. 10–60% acrylamide, said terpolymer having a molecular weight of from 5,000 to 300,000;
3. 35–85% water;

B. Mixing the composition of Step A with the paint spray booth waste;

C. Allowing the composition to interact with the waste whereby the paint particles contained therein are coated by the hydroxide of the metallic salt and detackified;

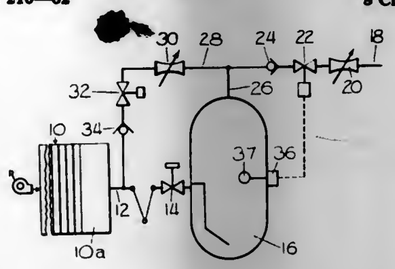
D. Recovering a metallic hydroxide coated detackification paint particles whereby the aqueous paint spray booth waste is clarified.

4,067,807

PROCESS AND APPARATUS FOR THE OPERATION OF A FILTER PRESS HAVING A PRESSURE TANK COMMUNICATING THEREWITH

Oswald Busse, and Hugo Klesper, both of Aarbergen, Germany, assignors to Passavant-Werke Michelbacher Hutte, Germany

Filed Oct. 12, 1976, Ser. No. 731,469
Claims priority, application Germany, Oct. 31, 1975, 2548842
Int. Cl.[2] B01D *25/12*
U.S. Cl. 210—82 8 Claims



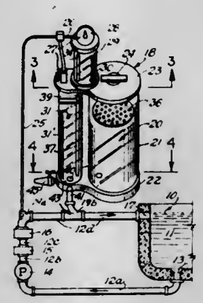
1. The method of operating a filter press having a pressure tank in communication therewith wherein during filtration sludge is introduced under pressure into one end of said filter press and a quantity of said sludge is withdrawn from the other end of said filter press and is transferred to and stored in said pressure tank under a cushion of compressed air which builds up inside said tank and wherein said sludge is introduced under pressure from said tank into said other end of said filter press during the next charging operation and the filter press is cleaned after each filtering cycle by injecting compressed air into the filter press at said other end thereof to transport any remaining sludge toward said one end of said filter press for removal thereat, the improvement comprising the step of deriving said compressed air injected into said other end of the filter press from said pressure tank.

4,067,808

CHLORINATOR FOR A SWIMMING POOL

Ash S. Phillips, 2944 Park Ave., No. 2, San Jose, Calif. 95126

Filed Mar. 15, 1976, Ser. No. 667,262
Int. Cl.[2] E04H *3/20*
U.S. Cl. 210—169 8 Claims



1. A chlorinator for a swimming pool having a pool water recirculating system in which a drain line at the base of the pool is connected to a pump and a return line leading back into the pool, a bypass system comprising:

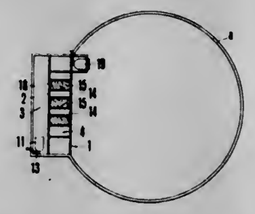
1. a vertically arranged container located above the return line for holding a supply of chlorine concentrate solution;
2. a layer of separating material having a specific gravity between that of the pool water and that of the chlorine concentrate solution and arranged upon the latter so as to float thereon within said container;
3. a pool water supply conduit having one end connected to an upstream zone of the return line and its opposite end disposed above said container;
4. a regulating valve in said pool water supply conduit for metering the flow of pool water therefrom and for discharging the pool water in a measured rate into the upper region of said container above said layer of separating material therein;
5. a chlorine concentrate supply tube arranged vertically adjacent said container with its upper end disposed above the level of the layer of separating material therein and having its lower end communicating with the lower end of said container for receiving chlorine concentrate solution therefrom;
6. a mixing chamber arranged vertically adjacent said container in a position to receive chlorine concentrate solution from the open upper end of said chlorine concentrate supply tube as its overflows therefrom due to the added weight of pool water at rest upon said separator therein, said mixing chamber being a tubular member parallel to and circumscribing said chlorine concentrate supply tube and having its lower end closed except for its communication with the downstream zone of the return line;
7. said vertically arranged container and said mixing chamber having their upper ends closed by a common top;
8. means for communicating the upper ends of said vertically arranged container and tubular member of the mixing chamber for equalizing the pressure therein to allow the chlorine concentrate solution transferred from the container to rise within said chlorine concentrate supply tube dependent upon the measured rate of discharge of pool water into the upper region of said container; and
9. a feeder member for communicating the lower end of said mixing chamber with a downstream zone of the return line for discharging a metered quantity of chlorine concentrate solution into the return line and the pool water therein as it returns to the swimming pool

4,067,809

FILTERING SYSTEM FOR FISH-FARMING WATER

Yukio Kato, No. 2-1, Hanegi 2-chome, Setagaya, Tokyo, Japan

Filed Apr. 28, 1976, Ser. No. 681,041
Claims priority, application Japan, June 12, 1975, 50-70225; June 16, 1975, 50-71965; Jan. 9, 1976, 51-627[U]
Int. Cl.[2] E04H *3/20*
U.S. Cl. 210—169 10 Claims



1. A filtering system for fish-farming water operatively associated with a water tank, comprising:

a filtration tank divided into a storage chamber, a filtration chamber, and a discharge chamber by means of partition plates;

the side length of said filtration tank is less than the width and height thereof;

the inside of said filtration tank is divided by means of said partition plates in the widthwise direction into said storage chamber and said filtration chamber, and is further divided in the length direction, at one end thereof, so as to provide said discharge chamber;

a lift pipe is provided within one end of said storage chamber so as to introduce said fish farming water upwardly from said water tank and into said storage chamber;

means for successively passing the fish-farming water through said storage chamber and said filtration chamber so as to purify said water includes a connecting passage which extends from said storage chamber to said filtration chamber at one lower end of said partition plate separating said storage chamber from said filtration chamber;

water passages from said filtration chamber to said discharge chamber are provided at the upper part of said partition plate separating said filtration chamber from said discharge chamber;

vertically disposed planar filters and vacancies allowing water to pass in the widthwise direction are alternately arranged in a parallel fashion in the widthwise direction within said filtration chamber;

an open space is defined solely above all of said filters and said vacancies within said filtration chamber by disposing the upper ends of all of said filters at a height less than the upper extent of the walls of said filtration tank and said partition plate separating said storage chamber from said filtration chamber so as to permit said water to successively overflow said filters when said filters become clogged in a successive manner in the widthwise direction of said filtration chamber;

the water level within said filtration chamber is normally maintained below the top of said filters, and

discharging means disposed within said discharge chamber for discharging said water along the surface of the fish-

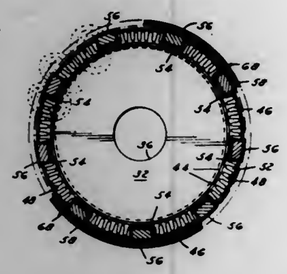
farming water within said water tank for circulating said water within said water tank.

4,067,810

FLUID FILTER MAGNET ASSEMBLY

Daniel W. Sullivan, Grosse Pointe, Mich., assignor to Ofco, Inc., Detroit, Mich.

Filed Feb. 9, 1976, Ser. No. 656,732
Int. Cl.² B01D *35/06*
U.S. Cl. 210—223 **22 Claims**



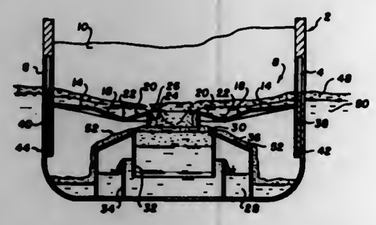
1. A fluid filter element assembly comprising, in combination:
- a plurality of elongated elastomer bonded barium ferrite permanent magnets having elongated opposed faces of opposite polarity and spaced apart opposite ends,
- a thin fluid impervious envelope surrounding each magnet and formed of a non-magnetic material resistant to decomposition in the fluid to be filtered,
- elongated stiffening means for each magnet for preventing distortion of the magnet under elevated temperatures of the fluid to be filtered,
- a cylindrical fluid filter structure defining openings through which the fluid to be filtered passes,
- said magnets arranged in spaced apart relation around said filter structure and extending axially thereof adjacent said openings to impress a magentic field across said openings, and
- means encircling the filter structure and overlying the magnets and located between the spaced apart opposite ends of the magnets to retain them in the aforesaid position whereby said stiffening means retains the magnet ends adjacent said openings.

4,067,811

APPARATUS FOR SEPARATING FLOATING POLLUTANTS

Larry Evan Dallamore, 6 Caragana Ave., Sherwood Park, Alberta, Canada

Filed Apr. 26, 1976, Ser. No. 680,189
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 S **6 Claims**



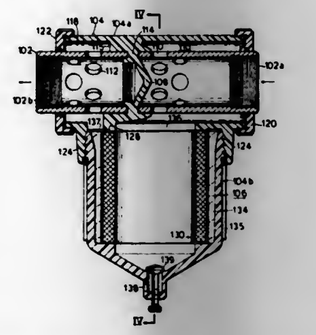
1. An apparatus for separating floating pollutants from a body of water comprising:
- a self propelled boat;
- a compartment in the boat having a base;
- an opening in at least one side of the boat to define an inlet for the pollutant and the top water layer into said compartment;
- a water tight door to closed the opening;
- a nozzle at about the centre of the compartment providing an outlet from the compartment downwardly;
- said base of the compartment being formed of a first surface inclined downwardly from the side of the compartment towards the nozzle and a second surface extending downwardly from the nozzle to meet the first surface;
- a channel defined where the first and second surfaces meet;
- projecting ribs formed on the first surface to impart unidirectional, whirlpool motion to the pollutants and water admitted to the compartment through the opening;
- a tank below the base of the compartment having an opening aligned with but spaced from the nozzle in the compartment;
- a first conduit leading from the opening towards the base of the tank but stopping short of the bottom of the tank to define a space to permit water in the conduit to pass from the conduit through the space and into the tank, the pollutant passing from the top of the conduit to a space other than that occupied by the water whereby water and the floating pollutant are separated.

4,067,812

FILTER CONSTRUCTION

Mordeki Drori, 89 Zahal Street, Kiron, Israel

Filed Aug. 18, 1976, Ser. No. 715,544
Claims priority, application Israel, June 23, 1976, 49874
Int. Cl.² B01D *27/08*
U.S. Cl. 210—310 **6 Claims**



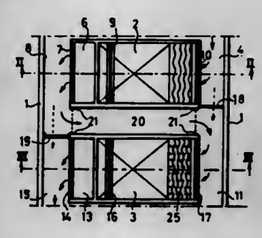
1. A filter connectable between two fluid pipes, one upstream and the other downstream of the filter, comprising: an inner rigid tube of great mechanical strength including first connecting means at one end for connecting same to the upstream fluid pipe, and second connecting means at its opposite end for connecting same to the downstream fluid pipe; said rigid tube being formed with first and second axially-spaced holes through its wall; an outer housing enclosing said inner rigid tube and radially spaced from said first and second holes thereof; first wall means sealing one end of the outer housing to said one end of the inner rigid tube; second wall means sealing the opposite end of the outer housing to said opposite end of the inner rigid tube; a deflector within said inner rigid tube between its first and second axially spaced holes for deflecting the fluid from the upstream pipe to flow through a path including said first hole in the inner rigid tube, the space between the inner rigid tube and the outer housing, and the second hole in the inner rigid tube to the downstream pipe; and a filter body disposed in said path between said first and second holes in the inner rigid tube to filter the fluid flowing through said path; said outer housing including a horizontal section enclosing and coaxial with the inner rigid tube, a partition between the inner surface of the latter housing section and the inner rigid tube between said first and second holes thereof, and a vertical section below and at right angles to the horizontal section and the inner rigid tube; said filter body being of cylindrical shape and disposed within said vertical housing section with its interior communicating with the first hole on one side of said deflector and its exterior communicating with the second hole on the other side of the deflector to filter the fluid flowing through said path between said first and second holes.

4,067,813

COMPOUND SEPARATION DEVICE

Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex B.V., Assendelft, Netherlands

Continuation of Ser. No. 412,726, Nov. 5, 1973, abandoned. This application Apr. 17, 1975, Ser. No. 568,847
Int. Cl.² B01D *21/02*; C02B *9/00*; C02C *1/26*
U.S. Cl. 210—322 **11 Claims**



1. In a compound separation device having a plurality of separators for removing suspended components from a liquid, including a basin and first and second separators which are arranged in said basin, said separators including corrugated plates defining separation passages therebetween, means mounting the separators at an inclined orientation relative to the horizontal, each separator including an inlet and an outlet and means to remove components which are separated, the basin including inlet means and outlet means and means forming compartments for collecting components separated from the liquid, said inlet means further comprising first and second supply ducts and said outlet means further comprising first and second discharge ducts, the inlet of said first separator being connected to said first supply duct and the outlet of said first separator being connected to said first discharge duct, the inlet of said second separator being connected to said second supply duct and the outlet of said second separator being connected to said second discharge duct, said first supply duct supplying the liquid to be treated, said second discharge duct providing a discharge for the treated liquid, common connecting means to provide a passage for liquid flow from the outlet of said first separator to the inlet of said second separator, the improvement comprising:
- flow switching means associated with said common connecting means and operable in a first position to effect series flow from the outlet of said first separator to the inlet of said second separator and operable in a second position to block the series flow and to effect parallel flow from said inlet means to the inlets of each of said first and second separators and to permit the flow from the outlet of the first separator to be merged with the flow from the outlet of the second separator, said flow switching means further comprising first closing means separating in said first position said first and second supply ducts from one another and second closing means separating in said first position said first and second discharge ducts from one another, such that said first discharge duct communicates with said second supply duct via said common connecting means to produce serial flow when said flow switching means are in said first position, said first closing means closing off in said second position said common connecting means from said second supply duct and joining said first and said second supply ducts, said second closing means closing off in said second position said common connecting means from said first discharge duct and joining said first and said second discharge ducts such that parallel flow is effected when said flow switching means are in said second position.

10. In a compound separation device having a plurality of separators for removing suspended components from a liquid, including a basin and first and second separators which are arranged in said basin, said separators including corrugated plates defining separation passages therebetween, means mounting the separators at an inclined orientation relative to the horizontal, each separator including an inlet and an outlet and means to remove components which are separated, the basin including first and second supply ducts and first and second discharge ducts, the ducts being open channels situated at substantially the same level, the inlet of said first separator being connected to said first supply duct and the outlet of said first separator being connected to said first discharge duct, the inlet of said second separator being connected to said second supply duct, and the outlet of said second separator being connected to said second discharge duct, said first supply duct supplying the liquid to be treated, said second discharge duct supplying a discharge for the treated liquid, a common connecting channel to provide a passage for liquid flow from the outlet of said first separator to the inlet of said second separator, and wherein the liquid to be treated is forced to flow successively through the separators, the improvement comprising first and second baffles, said first baffle separating in a first position said first and second supply ducts from one another, and said second baffle separating in a first position said first and second discharge ducts from one another such that said first discharge duct communicates with said second supply duct via said common connecting channel to produce serial flow when said first and second baffles are in said first position, said first baffle closing off in a second position said common connecting channel from said second supply duct merging said first and second supply ducts, said second baffle closing off in said second position said common connecting channel from said first discharge duct and merging said first and said second discharge ducts such that parallel flow is effected when said baffles are in said second position.

4,067,814

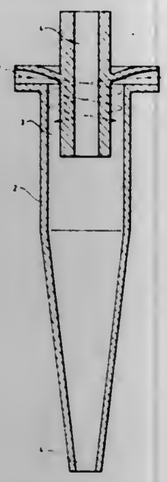
HYDROCYCLONE

Jorma Surakka, and Matti Lankinen, both of Savonlinna, Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Oct. 22, 1976, Ser. No. 735,094
Claims priority, application Finland, Oct. 30, 1975, 753027
Int. Cl.² B01D *21/26*
U.S. Cl. 210—512 R **8 Claims**

1. A hydrocylcone for the separation of a liquid suspension into accept and reject fractions, comprising a conically converging classification pipe having an apex and a base, with said apex including an outlet opening therein through which the reject fraction of the suspension is discharged and said base having an axial outlet pipe mounted therein in spaced axial alignment with said outlet opening through which the accept fraction of the suspension is discharged; said outlet pipe and classification pipe defining therebetween a circular space; and suspension distribution means on said classification pipe for distributing said suspension into the circular space, said suspension distribution means having at least two generally axially shaped channels formed therein for feeding the liquid suspension into said circular space between the classification pipe and the accept fraction outlet pipe, said feed channels having first and second end portions with said second end portions being located adjacent said accept fraction outlet pipe in arcuately spaced relation to each other on substantially the same plane; said channels being inclined in relation to each other from said first end portion thereof toward said second end portions, which second end portions are located closer to said apex than said first end portions, whereby liquid suspension spray from said feed channels is discharged into said circular space along

a separate spiral path from each of said channels respectively directed from said channels towards said apex whereby said spiral spray paths overlap and intermesh without intersecting



so that spray from one channel is discharged into and moves in said circular space over the spray from the next adjacent feed channel.

4,067,815

AQUEOUS SOLUTIONS OF ALKALI SILICATES AND HYDROGEN PHOSPHATES

Hans-Joachim Scholl; Peter Markush, both of Cologne, and Dieter Dieterich, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 4, 1977, Ser. No. 774,293
Claims priority, application Germany, Mar. 24, 1976, 2612415
Int. Cl.² C09K *3/28*
U.S. Cl. 252—8.1 **11 Claims**

1. Aqueous solutions of alkali silicates and alkali hydrogen phosphates comprising:
from about 4 to 18%, by weight, of K_2O
from about 2 to 11%, by weight, of Na_2O
from about 3 to 10%, by weight, of P_2O_5
from about 12 to 21%, by weight, of SiO_2 based on the sum total of the constituents including water, wherein the ratio of the sum totals of the parts by weight, of (K_2O+Na_2O) : $(P_2O_5+SiO_2)$ is from about 1:0.9 to about 1:1.7 and has a solids content of from about 30 to about 50%, by weight.

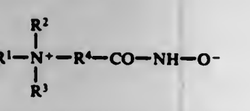
4,067,816

DETERGENT COMPOSITION

William Price Evans, Wirral, and Appayya Raghunath Naik, Birkenhead, both of England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 637,249, Dec. 3, 1975, Pat. No. 4,020,100, which is a continuation of Ser. No. 396,933, Sept. 13, 1973. This application Dec. 27, 1976, Ser. No. 754,721
Int. Cl.² D06M *13/40*
U.S. Cl. 252—8.8 **1 Claim**

1. A fabric softening composition containing a hydroxamic betaine of the general formula:



in which R^1 is a monovalent hydrocarbon having from 1 to 25 carbon atoms, R^2 and R^3 can be a hydroxyalkyl group having from 1 to 4 carbon atoms, or a monovalent hydrocarbon group having from 1 to 25 carbon atoms, or form together a bivalent hydrocarbon group having 4 to 5 carbon atoms, R^4 is a bivalent methylene, ethylene, propylene or butylene group having not more than 25 carbon atoms, with the proviso that the betaine contains not more than 45 carbon atoms and at least one carbon chain of at least 12 carbon atoms and a detergent wherein the proportion of the betaine is 0.5–15%.

4,067,817

MODIFIED TRIGLYCERIDE METAL WORKING LUBRICANTS

Robert J. Sturwold, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed Nov. 3, 1975, Ser. No. 627,852
Int. Cl.² C10M *1/06*
U.S. Cl. 252—49.3 **10 Claims**

1. A modified triglyceride exhibiting enhanced thermal stability and useful as a lubricant for both ferrous and non-ferrous metals and alloys comprising the reaction product of:
a. 50–84 parts triglyceride derived predominantly from C_{12} to C_{18} fatty acids,
b. 2–36 parts polyoxyalkylene glycol having an average molecular weight less than about 2000, and
c. 7–48 parts aliphatic or cycloaliphatic hydrocarbon dicarboxylic acid containing 18 to 54 carbon atoms; said tranesterification reaction conducted until at least 25% reduction in acid value, based on the initial charge, is obtained.

8. An aqueous lubricant composition containing a major proportion of water with about 0.1 to 25% by weight of a modified triglyceride obtained by transesterifying 50–84 parts triglyceride derived predominantly from C_{12}–C_{18} fatty acids, 2–36 parts polyoxyethylene glycol having an average molecular weight from about 200 to 1500 and 7–48 parts of an aliphatic or cycloaliphatic hydrocarbon dicarboxylic acid containing 18 to 54 carbon atoms until the acid value is reduced by at least 25%.

4,067,818

DUST LAYING

Pierre Dominique Marin, Rouen, France, assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Jan. 21, 1977, Ser. No. 760,832
Claims priority, application United Kingdom, Jan. 22, 1976, 2488/74
Int. Cl.² C09K *3/22*; E01H *3/00*; E21F *5/06, 5/18*
U.S. Cl. 252—88 **5 Claims**

1. A formulation for laying dust comprising water containing up to 2% by weight of a water-soluble salt of an alkyl orthoxylene sulphonic acid in which the alkyl group contains from 9 carbon atoms.

4. A process for laying dust comprising spraying the dusty area with a formulation according to claim 1.

4,067,819

SYNTHETIC TETRA-SILICIC MICA AND WATER SOL THEREOF

Nobutoshi Daimon, 195-112, Aza Kanda, Mikuriya, Kawanakajima-cho, Nagano, Nagano, and Kunio Kitajima, 1700-9-5, Wakasato, Nagano, Nagano, both of Japan

Filed Mar. 22, 1976, Ser. No. 669,421
Int. Cl.² B01J *13/00*; C01B *33/24*
U.S. Cl. 252—313 S **3 Claims**

1. Synthetic tetra-silicic mica having the formula $Na_{0.6-0.8}Mg_{2.6-2.7}(Si_4O_{10})F_2$ which is swellable and cleavable in water without heating, thus producing particles having a thickness of less than 50 A and an average diameter of the flat plane of between 500 A and 3000 A.

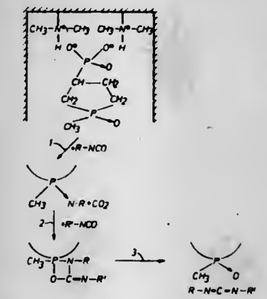
2. Water sol of flake-like ultra-fine particles of tetra-silicic mica having the formula $Na_{0.6-0.8}Mg_{2.6-2.7}(Si_4O_{10})F_2$, prepared by swelling and cleaving the tetra-silicic mica in water without heating and having a thickness of less than 50 A and an average diameter of the flat plane of between 500 A and 3000 A.

4,067,820

HIGH MOLECULAR WEIGHT, INSOLUBLE CARBODIIMIDIZATION CATALYSTS

Kuno Wagner, Leverkusen; Hans-Dieter Block, and Walter Schafer, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 30, 1976, Ser. No. 653,795
Claims priority, application Germany, Feb. 1, 1975, 2504334
Int. Cl.² C08G *18/16*; B01J *31/22*
U.S. Cl. 252—426 **5 Claims**



1. High molecular weight carbodiimidization catalysts which are insoluble in water and in polyisocyanates and which consist of a high molecular weight, insoluble, organic or inorganic matrix and low molecular weight carbodiimidization catalysts bound to this matrix via ionic bonds.

4,067,821

METHOD OF TREATING A BIOMASS

Vaclav Votapek; Eduard Marval, both of Usti nad Labem; Rudolf Jilek, Brno, and Karel Stamberg, Prague, all of Czechoslovakia, assignors to Ceskoslovenska komise pro atomovou energii, Prague, Czechoslovakia

Filed Mar. 22, 1976, Ser. No. 668,902
Claims priority, application Czechoslovakia, Mar. 20, 1975, 1867/75
Int. Cl.² C02B *1/32*
U.S. Cl. 252—427 **8 Claims**

1. A method for stiffening a biomass comprising fungi mycelia which comprises the steps of:
a. dispersing a dry mycelium strain in a non-polar organic dispersion medium by means of an agitator, the dry mycelium strain being present in an amount ranging up to 2 parts by weight of dispersion medium,
b. effecting agglomeration of the dispersed mycelium strain by adding thereto a solution comprising a stiffening component selected from the group consisting of formaldehyde, formaldehyde-resorcinol solutions, formaldehyde-urea solutions and polyvinyl acetate emulsions, and a polar surface active agent in a solvent which is immiscible in the dispersion medium, the stiffening component having a concentration ranging from 0.1% to saturation and the surface active agent being present in an amount ranging from 0.0001 to 0.1 parts by weight per part by weight of dry biomass, and
c. stiffening the agglomerated mixture by adding a polymerization catalyst thereto and heating the mixture to a temperature of at least 70° C.

4,067,822

HIGH EFFICIENCY COMPLEX CATALYST FOR POLYMERIZING OLEFINS

Donald Earl Gessell, Baton Rouge, La.; Gaylon Le Roy Dighton, and Luis Daniel Valenzuela-Bernal, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 23, 1976, Ser. No. 699,293
Int. Cl.² C08F *4/64, 4/62*
U.S. Cl. 252—429 B **11 Claims**

1. A catalytic mixture of (A) a hydrocarbon soluble complex of a halide of a transition metal (TM1) wherein the complex contains at least one coordinate covalent bond to molecular nitrogen or hydrogen and (B) a conventional Ziegler catalyst comprising a transition metal (TM2) compound selected from the group consisting of halides, oxyhalides, oxides, hydroxides, alcoholates, acetates, benzoates and acetylacetonates; and a non-transition metal (M) or a compound of a non-transition metal (M) as a reducing agent, the proportions of the foregoing components of said catalytic mixture being such that the atomic ratio of the transition metal (TM1) of the complex to the transition metal (TM2) of the Ziegler catalyst is within the range from about 0.001:1 to about 1000:1, and the atomic ratio of the metal (M) of the reducing agent to the transition metal of the complex is within the range from about 0.1:1 to about 100:1 and wherein (TM1) and (TM2) are independently selected from groups 4*b*, 6*b*, 7*b* or 8 of Mendeleev's Periodic Table of Elements and (M) is selected from groups 1*a*, 2*a*, 2*b* or 3*a* of said table.

4,067,823

THALLIUM(III) REAGENTS SUPPORTED ON MONTMORILLONITE CLAY MINERALS AND OXYTHALLATION PROCESSES FOR UTILIZING SAME

John F. White, Ridgewood; Edward C. Taylor, and Chih-Shu Chiang, both of Princeton, all of N.J., assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Aug. 26, 1976, Ser. No. 718,068
Int. Cl.² B01J *31/04, 27/24, 27/02, 27/10*
U.S. Cl. 252—431 C **6 Claims**

1. A supported thallium reagent consisting essentially of a thallium salt of a Bronsted acid and a support comprising an acidic montmorillonite clay mineral having a surface area greater than about 200 m^2/g, said reagent containing 0.5 to 50 weight percent thallium with at least 75% of the thallium in the +3 oxidation state.

3. The supported thallium reagent of claim 1 wherein the thallium salt is selected from the group consisting of thallium(III) trinitrate, thallium(III) sulfate, thallium(III) perchlorate, thallium(III) acetate, thallium(III) phosphate and thallium(III) trifluoroacetate.

4. The supported thallium reagent of claim 3 containing from 2 to 30 percent by weight thallium and wherein the thallium salt is thallium(III) trinitrate and the montmorillonite is acid-activated.

5. The supported thallium reagent of claim 1 obtained by contacting an acidic montmorillonite clay having a surface area greater than 200 m^2/gram with thallium(III) trinitrate trihydrate in a mixture of methanol and trimethyl orthoformate and removing solvent under reduced pressure until a free-flowing powder is obtained.

4,067,824

GELLED PERFUME

James Teng, St. Louis County; Marcella C. Stubits, St. Louis, both of Mo.; Abraham Minton, Rego Park, and James H. Baker, Jackson Heights, both of N.Y., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Sept. 27, 1976, Ser. No. 726,806
Int. Cl.² C11B *9/00*
U.S. Cl. 252—522 **14 Claims**

1. A perfume formulation consisting essentially of perfume

oil dispersed in a base selected from alcohol containing no more than about 15% water and no less than about 12 ounces of perfume oil per gallon of alcohol, oil, or mixtures thereof, and a gelling agent selected from the group consisting of hydroxypropyl cellulose esters, hydroxypropyl starch esters, and mixtures thereof, said esters having a degree of substitution of about 1.2 to about 3 and a degree of molar substitution of hydroxypropyl groups of about 2 to about 8.

4,067,825

METHOD FOR PREPARATION OF AMPHOTERIC ION-EXCHANGERS BY SUBSTITUTION OF HYDROPHILIC POLYMERS

Jiri Hradil; Jiri Stamberg, and Jiri Coupek, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed May 26, 1976, Ser. No. 689,963
Claims priority, application Czechoslovakia, June 5, 1975, 3938/75
Int. Cl.² C08F 8/40; C08L 23/32, 23/34, 23/36
U.S. Cl. 260—2.1 M 7 Claims

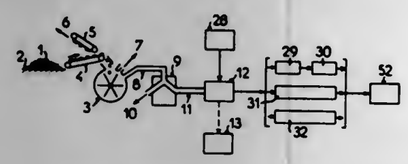
1. A method for preparation of cationactive ion-exchangers from macroporous hydrophilic polymers containing crosslinked copolymers having hydroxyl groups in their structure, said crosslinked copolymers being prepared by suspension copolymerization of monomers selected from the group consisting by hydroxyalkyl methacrylates, hydroxyalkyl acrylates, oligoglycol acrylates and oligoglycol methacrylates, with crosslinking divinyl monomers selected from the group consisting of divinylbenzene, ethylene dimethacrylate, butylenediol diacrylate, said copolymers being modified by treatment with a material selected from the group consisting of sulfuric acid, chlorosulfuric acid - pyridine complex and metaphosphoric acid - alcohol complexes at a temperature of 20° - 50° C. for 0.4 - 40 hours.

4,067,826

RECOVERY OF MIXED PLASTIC MATERIALS

Guy Emery, Radepont par Fleury-sur-Andelle 27380, France

Filed Aug. 5, 1975, Ser. No. 602,016
Int. Cl.² B29H 19/00
U.S. Cl. 260—2.3 8 Claims



1. In a method for recovering mixed plastic materials from refuse selected from the group consisting at least of polyvinyl chloride and polyethylene, comprising grinding the mixture of plastic materials into small particles, extruding the ground mixture and granulating or molding the extruded material, the improvement comprising ballistically sorting the ground mixture in order to adjust the composition of the mixture and adding to 100 parts of said ground mixture a regenerating master mix comprising:

-rongalite	0.1 to	5 parts
[-chlorinated polyethylene	0 to	20 parts]
-polyvinyl chloride stabilizer	0.1 to	5 parts
-lubricant	0 to	5 parts
-expanding agent	0 to	4 parts
-shock resistant ABS or MABS	0 to	12 parts
-ground polyvinyl chloride or polyethylene	0 to	30 parts
-filler	0 to	800 parts
-plasticizer or gelling agent	0 to	70 parts

and an amount of chlorinated polyethylene sufficient to bind the polyethylene to the polyvinyl chloride comprising up to 20 parts per 100 parts of the ground mixture, wherein the rongalite prevents the hot glueing effect due to the presence of milk or similar products in said refuse.

2. The product prepared by the method of claim 1.

4,067,827

PROCESS FOR PRODUCING EXPANDABLE BEADS OF POLYMETHYL METHACRYLATE

Yoshinari Takano, No. 265, Shiroko-cho, Suzuka, Mie; Keiji Fujita, No. 1-88, Hasedashi-cho, Yokkaichi, Mie; Yasuo Teraoka, No. 843-1, Oaza Kiwanami, Ube, Yamaguchi; Masahiro Nishida, No. 7-21, Kita Hamada-cho, Yokkaichi, Mie; Ryoichi Fujitani, No. 1290, Yamajo-cho, Yokkaichi, Mie, and Yaichi Kuratomo, No. 2273-1, Ikuwa-cho, Yokkaichi, Mie all of Japan

Continuation-in-part of Ser. No. 495,657, Aug. 9, 1974, abandoned. This application Nov. 19, 1976, Ser. No. 743,434
Claims priority, application Japan, Aug. 11, 1973, 48-89672
Int. Cl.² C08J 9/00
U.S. Cl. 260—2.5 B 9 Claims

1. In a process for the production of expandable beads of polymerized methacrylates and methacrylate-vinyl mixtures from monomers thereof, by the process of dissolving a foaming agent preservant in the selected monomer, adding a polymerization initiator, polymerization regulator and a foaming agent to the solution, and then adding the thus obtained mixture to an aqueous solution of a suspension agent; the improvement comprising the steps of heating the suspended reaction mixture to a temperature of from about 60–90° C in an autoclave to commence the polymerization reaction, thereafter pressurizing the reaction mixture with an inert gas to a pressure of at least 4 kg/cm².G when the conversion ratio reaches about 30–70%, and then continuing the polymerization reaction at a temperature of from about 65°–90° C for a period from about 4–10 hours.

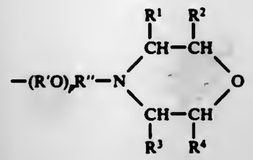
4,067,828

FORMATION OF HIGH-RESILIENCE URETHANE FOAM IN THE PRESENCE OF MORPHOLINO-BEARING POLYALKYLSILOXANES

Bernard Kanner, West Nyack, and Bela Prokai, Mahopac, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 592,076, June 30, 1975, Pat. No. 4,016,163. This application Mar. 10, 1977, Ser. No. 776,270
Int. Cl.² C08K 5/54; C08G 18/48
U.S. Cl. 260—2.5 AH 16 Claims

1. A method for producing polyurethane foam which comprises reacting and foaming a reaction mixture containing (1) an organic polyol reactant comprising a polyether polyol having an average hydroxyl functionality from 2.1 to about 5 and an average primary hydroxyl content from about 35 to about 90 mole percent, based on the total moles of hydroxyl groups contained in the polyether polyol, (2) an organic polyisocyanate, (3) a tertiary-amine catalyst, (4) a blowing agent, and (5) a surfactant component comprising a morpholino-bearing polyalkylsiloxane consisting essentially of (a) monofunctional siloxy units, M°, the respective silicon atoms of which have two alkyls bonded thereto, the third silicon-bonded organic group being alkyl or Q where Q is morpholinoalkyl or morpholinoalkoxyalkyl, (b) an average of from about 0.5 to about 8 moles of difunctional dialkylsiloxy units for every two moles of M°, and (c) from zero up to an average of about 8 moles, for every two moles of M°, of difunctional monoalkylsiloxy units in which the second organic group bonded to silicon is Q where Q is as aforesaid, provided the said siloxanes contain an average of at least about 0.5 and no more than about 8 moles of said silicon-bonded Q groups for every two moles of M°; and wherein the silicon-bonded alkyls have from one to four carbon atoms and the silicon-bonded Q groups have the formula,



where p is 0 or 1, Q being morpholinoalkyl when p is 0 and morpholinoalkoxyalkyl when p is 1, R' is bi-valent alkylene having from two or four carbon atoms, R'' is bivalent alkylene having from two to six carbon atoms, and R^1, R^2, R^3 and R^4 are independently hydrogen or alkyl having from one to four carbon atoms.

4,067,829

PREPARATION OF A CURED RESOLE RESIN

Walter L. Garrett, Freeland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 342,781, March 19, 1973, abandoned. This application Aug. 2, 1976, Ser. No. 710,985
Int. Cl.² C08J 9/32
U.S. Cl. 260—2.5 F 11 Claims

1. In a method for the preparation of thermoset synthetic resinous resole bodies, the steps of the method comprising providing in intimate admixture (a) a resole resin, (b) a catalyst for the resole resin, the catalyst comprising a strong inorganic or organic acid, curing the mixture until the mixture has hardened to a self-supporting mass, the improvement which comprises

including within said mixture a corrosion retarding agent consisting essentially of a particulate, inorganic, solid, acid-accepting material in at least a stoichiometric amount based on the catalyst, with the further limitation that when two parts by weight of the acid-accepting material are added with gentle stirring to 100 parts by weight of a solution of hydrochloric acid in deionized water, the solution having a pH of 1, at a temperature of 25° C, the pH of the solution increases from about 0.1 to about 1 pH unit in 60 minutes, the particulate material having an acid-accepting value of from about 0.08 to 0.3 grams of hydrochloric acid as determined by dispersing one gram of an acid acceptor in 100 milliliters of 0.1 normal aqueous hydrochloric acid, the dispersion is agitated for 24 hours at a temperature of 25° C and titrated with 0.1 normal aqueous sodium hydroxide to a pH of 7, the weight in grams of hydrochloric acid neutralized by the acid acceptor is then calculated and is the acid-accepting value, to thereby provide a cured resole resinous body having a reduced tendency to corrode steel.

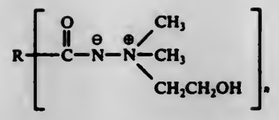
4,067,830

CATALYTIC TRIMERIZATION OF POLYISOCYANATES

Jiri E. Kresta, Detroit, Mich., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 29, 1976, Ser. No. 671,562
Int. Cl.² C08G 18/18
U.S. Cl. 260—2.5 AW 9 Claims

1. In a process for preparing rigid polyisocyanurate-polyurethane foam by the catalyzed reaction of a polyol with an excess of polyisocyanate; the improvement of effecting said reaction in the presence of a catalytic amount of an aminimide having the formula:



wherein n is the integer 1 or 2; R is C_2–C_8 alkylene when n is 2; and R is C_1–C_{18} alkyl, methoxymethylene or phenyl when n is 1.

4,067,831

PROCESS FOR THE PREPARATION OF POLYURETHANE FOAMS

George J. Wasilczyk, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 27, 1975, Ser. No. 581,174
Int. Cl.² C08G 18/20, 18/24
U.S. Cl. 260—2.5 AC 5 Claims

1. In a process for preparing flexible polyurethane foams by reacting a polyol with a polyisocyanate in the presence of a foaming agent, a cell control agent and catalysts, the improvement which comprises conducting the reaction additionally in the presence of (1) from about 0.001 to about 1.5 parts per 100 parts of polyol of a delayed action catalyst having a $T_{\Delta\eta 1000}/T_{\Delta\eta 10000}$ value of at least 0.7 as measured on a mixture of the polyol, polyisocyanate and delayed action catalyst components and when employed, crosslinker and water at an initial mixing temperature of about room temperature and (2) an inorganic filler having a pH of 5 to 10 and an average particle size of from about 2 microns to about 30 microns.

4,067,832

FLEXIBLE POLYURETHANE FOAM

Thomas Allen DesMarais, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 1, 1976, Ser. No. 662,304
Int. Cl.² C08G 18/24
U.S. Cl. 260—2.5 AB 8 Claims

1. A flexible polyurethane foam obtained from the reaction of an aliphatic diisocyanate and a polyether polyol while in addmixture with a polyfunctional cross-linking agent, stannous octoate catalyst, an inorganic hyroxide strong base catalyst and water wherein:

a. said polyether polyol has at least two primary hydroxyl groups and a hydroxyl number less than about 28;
b. said polyfunctional cross-linking agent has at least three primary hydroxyl groups and an equivalent weight of less than about 100;
c. the ratio of equivalents of said polyfunctional cross-linking agent to equivalents of water is equivalent to or greater than 1;
d. the Isocyanate Index of the reaction system is less than about 110;
e. water is present at from about one to about two parts per 100 parts polyether polyol;
f. the inorganic hydroxide strong base catalyst is present at from about 0.00038 to about 0.00125 equivalent per 100 parts polyether polyol;
g. the stannous octoate is present at a level of from 0.1 to 0.3 parts per 100 parts polyol; and
h. the maximum amount of cross-linking agent is about 0.35 equivalents of said cross-linking agent per 100 parts polyol.

4,067,833

URETHANE-MODIFIED POLYISOCYANURATE FOAMS FROM OXYALKYLATED ANILINE AND AROMATIC POLYISOCYANATES

Thomas H. Austin, and George P. Speranza, both of Austin, Tex., assignors to Texaco Development Corporation, New York, N.Y.

Filed Mar. 8, 1976, Ser. No. 664,465
Int. Cl.² C08G 18/28
U.S. Cl. 260—2.5 AQ 6 Claims

1. A urethane-modified polyisocyanurate rigid foam comprising the reaction product obtained by bringing together in the presence of a blowing agent an aromatic polyisocyanate, and an isocyanurate group formation catalyst and a polyol comprising an alkylene oxide adduct of aniline prepared by reacting 2.5–15 moles of alkylene oxide per mole of aniline, with the ratio of said polyol to said aromatic polyisocyanate being 0.1–0.8 equivalent: 1.0 equivalent.

4,067,834

RAPID SETTING POLYURETHANES FROM DIOLS AND POLYFUNCTIONAL ISOCYANATES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 358,245, May 7, 1973, Pat. No. 3,801,532, which is a continuation-in-part of Ser. No. 205,697, Dec. 7, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,803
The portion of the term of this patent subsequent to May 13, 1992, has been disclaimed.
Int. Cl.² C08G 18/06
U.S. Cl. 260—18 TN 16 Claims

1. A rigid, non-cellular composition having a density of at least about 1 gram/cc which is demoldable, without the application of an external source of heat, within about 5 minutes after admixture of the components of the composition which is the reaction product of a polyurethane-forming composition comprising

A. a dihydroxyl-containing compound having a hydroxyl equivalent weight of less than about 250;

B. an organic polyisocyanate having an NCO functionality of at least about 2.5;

C. a liquid modifier compound having a boiling point of at least about 150° C or mixture of such compounds and which moderates the reaction exotherm between components (A), (B), and (D) without substantial reaction therewith selected from the group consisting of fatty oils, fatty acids and mixtures thereof; and

D. and organotin catalyst;

wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1, component (C) is present in quantities of from about 10 to about 50 percent by weight of the combined weights of components (A), (B) and (C); and component (D) is present in quantities of from about 0.02 to about 5.0 percent by weight of the combined weight of components (A), (B) and (C).

4,067,835

GLASS FIBER SIZING AGENT

Shigeru Takamori, Osaka; Yoshinao Kono, and Hirotaka Takemoto, both of Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1976, Ser. No. 749,222
Claims priority, application Japan, Dec. 23, 1975, 50-153617
Int. Cl.² C08L 67/08, 67/06
U.S. Cl. 260—22 R 7 Claims

1. A composition useful for sizing glass fibers, comprising an oil-in-water emulsion obtained by emulsifying in water a saturated film-forming polyester prepared by reacting, under polyester-forming conditions, (a) an aromatic or saturated aliphatic dicarboxylic acid or lower alkyl ester thereof, (b) a diol component consisting of from 40 to 100 mole % of an adduct of 2 to 10 moles of an alkylene oxide to 2,2-bis(4-hydroxyphenyl)propane and from zero to 60 mole % of a different polyester-forming polyol, and (c) from 5 to 30 parts by weight, per 100 parts by weight of the sum of (a) and (b), of an emulsifier selected from the group consisting of an adduct of 10 to 200 moles of ethylene oxide to castor oil, an adduct of 10 to 200 moles of ethylene oxide to hardened castor oil and polyethylene glycol having an average molecular weight of from 1000 to 6000.

4,067,836

ENVIRONMENTALLY DEGRADABLE COMPOSITIONS EXPOSED TO ACTINIC OR IONIZING RADIATION AND PROCESS

James Edward Potts, Bernards Township, N.J.; Stephen Watson Cornell, Naperville, Ill., and Albert Martin Sracic, Gladstone, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 267,255, June 28, 1972, Pat. No. 3,935,141, which is a continuation-in-part of Ser. No. 184,206, Sept. 27, 1971, abandoned. This application Aug. 20, 1975, Ser. No. 606,062
Int. Cl.² C08J 3/20
U.S. Cl. 260—23 H 43 Claims

1. An environmentally degradable polymer based composition which has been subject to actinic or ionizing radiation and which comprises,

based on the total weight of said composition, a

major portion by weight of ethylene polymer as the base resin,

about 0.01 to about 40 percent by weight of at least one auto-oxidative susceptible additive having at least one hydrogen atom bonded to a carbon atom having an auto-oxidative susceptibility greater than that of a hydrogen atom bonded to a normal secondary carbon atom,

at least one salt of at least one polyvalent metal selected from the group consisting of titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc and cerium, in such amounts as to provide about 0.002 to about 2.0 percent by weight of the metal atom, and

about 0.0025 to about 1 percent by weight of antioxidant for said ethylene polymer,

said amount of radiation being such as to increase the rate of degradation of such composition, as compared to the rate of degradation of the non-irradiated composition, without interfering with the intended utility of such composition.

4,067,837

COATING COMPOSITIONS

Russell C. Miller, Chicago, Ill., assignor to J. M. Eltzroth & Associates, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 505,212, Sept. 12, 1974, abandoned. This application Mar. 1, 1976, Ser. No. 662,727
Int. Cl.² C08L 33/00
U.S. Cl. 260—29.6 NR 12 Claims

1. A process of preparing a hexavalent chromium containing emulsion coating composition containing in the discontinuous phase at least one water insoluble particulate film forming thermoplastic resin reactive with hexavalent chromium to cause coagulation of said emulsion, and water in the continuous phase, wich comprises agitating a body of said emulsion and gradually adding to said body a dilute aqueous solution of an inorganic ionizable water soluble hexavalent chromium compound having a concentration of 1% to 10% by weight, calculated as Cr, while cooling and maintaining a pH within the range of 2 to 10.5 and maintaining said body in a non-foaming state.

4,067,838

CHELATE-FORMING AQUEOUS RESIN COMPOSITION

Masaaki Hayashi, Kamakura; Kazuyoshi Tsuneta, Yokohama; Hiroharu Sasaki, Kamakura, and Hiroshi Takada, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Japan

Filed Feb. 12, 1976, Ser. No. 657,593
Claims priority, application Japan, Feb. 15, 1975, 50-19332; Oct. 22, 1975, 50-127203; Dec. 25, 1975, 50-155456
Int. Cl.² C08L 37/00, 63/02, 63/04, 63/08
U.S. Cl. 260—29.2 TN 15 Claims

1. A two-pack type aqueous resin composition having a chelate-forming capacity, which comprises

1. an aqueous dispersion of a resing having in the molecule at least two epoxy groups, and

2. a reaction product formed between an amino curing agent having in the molecule at least two nitrogen atoms and active hydrogen atoms bonded thereto and 5–30% by weight based on the curing agent of protocatechuic acid and/or gallic acid.

4,067,839

HYDROPHILIC COPOLYMER OF N,N-(C_1-C_2 ALKYL) ACRYLAMIDE

Herman S. Schultz, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 347,954, April 4, 1973, abandoned. This application Dec. 28, 1973, Ser. No. 429,455
Int. Cl.² C08L 33/26
U.S. Cl. 260—29.6 TA 31 Claims

1. A hydrogel comprising an aqueous solution gelled with a compolymer formed by reacting from about 20 to about 80 weight percent N,N-(C_1-C_2 alkyl) acrylamide with from about 80 to about 20 weight percent of at least one C_1-C_4 alkyl acrylate or methacrylate and a small amount of a cross-linking agent.

4,067,840

SIGNAL COATING SUITABLE FOR LEAD-BASED PAINT HAZARD ABATEMENT OR THE LIKE AND FORMULATIONS THEREFOR

Richard E. Wolf, Prospect Heights, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed May 24, 1976, Ser. No. 689,187
Int. Cl.² C08K 5/10; C08L 1/26, 31/04
U.S. Cl. 260—29.6 R 24 Claims

1. An aqueous latex coating composition comprising an aqueous continuous phase having stably suspended therein coalescable polymeric particles, a pigment, and signal means including a physiologically acceptable chromogen present in an amount sufficient to signal ingestion and in a form not visually discernible in said composition but capable of producing a contrasting color upon contacting an activator substance upon ingestion.

4,067,841

VINYL CHLORIDE INTERPOLYMER COATING COMPOSITION

Joseph A. Aurichio, Bronx, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 474,747, May 30, 1974, Pat. No. 3,997,704. This application Oct. 6, 1975, Ser. No. 619,717
Int. Cl.² C08K 5/07, 5/15; C08L 27/06
U.S. Cl. 260—30.4 R 10 Claims

1. A coating composition adapted to be used to coat a material which comprises (a) an organic solvent, and (b) an interpolymer formed by polymerizing an acrylate in the presence of a vinyl chloride containing polymer formed by suspension polymerization, said interpolymer containing from about 50% to 95%, by weight, vinyl chloride polymer and from about 5% to 50%, by weight, of an acrylate, said vinyl chloride containing polymer having a particle size of from about 5 to about 150 microns.

4,067,842

POLYSULPHIDE RUBBERS

Michael Braden, London, England, assignor to The London Hospital Medical College, London, England

Filed Mar. 17, 1976, Ser. No. 667,743
Claims priority, application United Kingdom, Mar. 17, 1975, 11057/75; Mar. 25, 1975, 12533/75
Int. Cl.² C08K 5/10
U.S. Cl. 260—31.6 19 Claims

1. A catalyst composition, suitable for the ambient temperature curing of polysulphide rubbers, comprising zinc carbonate, from 15 to 90% by weight, based on the weight of zinc carbonate, of an organic sulphur-containing accelerator containing two sulphur linkages and from 0.2 to 8% by weight, based on the weight of zinc carbonate, of a sulphur/amine complex.

4,067,843

GRANULAR PHENOLIC URETHANE MOLDING COMPOUNDS

Myron C. Annis, North Tonawanda; Donald W. Hoch, Tonawanda, and Herman J. Harrington, North Tonawanda, all of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

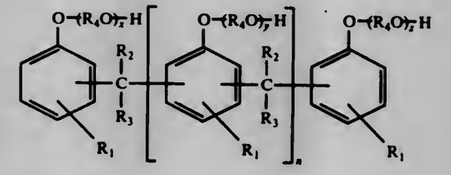
Filed June 7, 1976, Ser. No. 693,814
Int. Cl.² C08L 53/00, 61/14
U.S. Cl. 260—37 N 14 Claims

1. A thermosetting, reactive granular molding compound consisting essentially of a mixture of:

A. a polydienediol;

B. An organic polyisocyanate;

C. an hydroxyalkylated novolac of the formula:



wherein

n has an average value of about 0.2 to 6;

x, y and z are integers from 1 to 25;

R_1 is independently selected from the group consisting of hydrogen, fluorine, chlorine, bromine, and a hydrocarbon radical;

R_2 and R_3 are independently selected from the group consisting of hydrogen, a hydrocarbon radical, and a halogen substitued hydrocarbon radical; and

R_4 is a hydrocarbon radical; and

D. inert fillers.

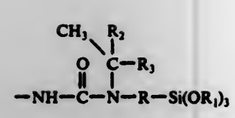
4,067,844

URETHANE POLYMERS AND SEALANT COMPOSITIONS CONTAINING THE SAME

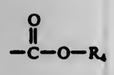
Larry R. Barron, Mentor, and Herbert M. Turk, Cleveland, both of Ohio, assignors to Tremco Incorporated, Cleveland, Ohio

Filed Dec. 22, 1976, Ser. No. 753,370
Int. Cl.² C08L 75/08, 75/04
U.S. Cl. 260—37 N 21 Claims

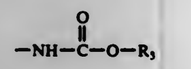
1. A curable organic polymeric material having an average molecular weight within the range of about 1000 to about 15,000 and having at least 2 functional groups per average molecular weight not more than 99% of which are NCO, and the balance being selected from the group consisting of



where
R is an alkylene of 2-18 carbon atoms
R_1 is a lower alkyl of 1-6 carbon atoms
R_2 is —H or —CH_3
R_3 is —C≡N or



and,
R_4 is an alkyl of 1-18 carbon atoms, an epoxyalkyl of 3-8 carbon atoms, an alkoxyalkyl of 2-12 carbon atoms, or —C≡N, and



where R_5 is the residual on reaction of a mercaptosilane with a monoepoxide or an epoxysilane with a secondary amine.

4,067,845

MATURATION OF POLYESTER COMPOSITIONS FOR VISCOSITY INDEX CONTROL

Joseph Norman Epel, Southfield; Vinod Chandulal Shah, Madison Heights, and Kenneth Alfred Iseler, Richmond, all of Mich., assignors to The Budd Company, Troy, Mich.

Filed Dec. 8, 1975, Ser. No. 638,701
Int. Cl.² C08K 3/22, 5/20
U.S. Cl. 260—40 R 33 Claims

1. A maturated moldable thermosetting resin-containing composition for molding under pressure having a filler selected from the group consisting of (a) reinforcing fiber, (b) inert filler, and (c) a combination of both (a) and (b), dispersed therein, in which the curable resin binder consists essentially of the reaction product, in intimate contact with said filler, of

A. an unsaturated polyester resin having (1) a ratio of hydroxyl groups to carboxyl groups between about 5.7 and 0.8 and (2) an acid number of at least 14 and (3) an average molecular weight between about 800 and 5,000, and

B. (1) an organic polyisocyanate in an amount sufficient to react with at least thirty percent but not more than one hundred five percent of the hydroxyl groups present, and

B. (2) a metallic oxide or hydroxide selected from the group consisting of calcium and magnesium oxides and hydroxides in an amount sufficient to react with at least thirty percent but not more than seventy-five percent of the carboxyl groups present,

said reaction product containing dispersed therein

C. an aliphatically-unsaturated monomer,

D. a free radical polymerization catalyst, and

E. an internal mold release agent,

said binder comprising at least about eight weight percent of said composition.

4,067,846

NON-OPAQUE FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Oct. 29, 1975, Ser. No. 626,933
The portion of the term of this patent subsequent to Sept. 30, 1992, has been disclaimed.
Int. Cl.² C08K 5/42
U.S. Cl. 260—45.9 KA 12 Claims

1. A non-opaque flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and from 0.001 to about 2.0 parts per hundred parts of the aromatic carbonate polymer of an additive selected from the group consisting of the metal salts of substituted and unsubstituted sulfonic acids of aromatic sulfides, and mixtures thereof, wherein said metal salts are selected from the group consisting of alkali metals and alkaline earth metals, and mixtures of these metal salts, and said substituent on the metal salt of the substituted sulfonic acids of aromatic sulfides is selected from the group consisting of electron withdrawing radicals and mixtures of electron withdrawing radicals; said aromatic carbonate polymer and additive having a refractive index in the range of 1.54 to 1.65.

4,067,847

SELF-EXTINGUISHING RESIN COMPOSITION

Hiroshi Yui; Saburo Moriwaki; Yukihiro Ichikawa, and Shigekazu Ohi, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1975, Ser. No. 623,491
Claims priority, application Japan, Oct. 18, 1974, 49-120083; Jan. 17, 1975, 50-7536
Int. Cl.² C08K 3/04, 3/22
U.S. Cl. 260—45.7 R 7 Claims

1. A self-extinguishing resin composition which prevents the formation of a silver-colored streak when extrusion-molded or injection-molded which comprises:

55 - 25 wt. % of a thermoplastic resin and 45 - 75 wt. % of magnesium hydroxide, wherein when said resin is extrusion-molded, the specific surface area of magnesium hydroxide is selected within the ranges of 38 - 45 m^2/g when said resin has a melt index of more than 8 g/10 minutes;

40 - 33 m^2/g when said resin has a melt index of 8 - 4 g/10 minutes;

36 - 28 m^2/g when said resin has a melt index of 4 - 1 g/10 minutes; and

35 - 25 m^2/g when said resin has a melt index of 1 - 0.1 g/10 minutes; and wherein,

when said resin is injection-molded, the specific surface area of magnesium hydroxide is selected from the ranges of 30 - 22 m^2/g when said resin has a melt index of more than 10 g/10 minutes;

25 - 18 m^2/g when said resin has a melt index of 10 - 6 g/10 minutes;

22 - 10 m^2/g when said resin has a melt index of 6 - 3 g/10 minutes; and

less than 20 m^2/g when said resin has a melt index of 3 - 1 g/10 minutes.

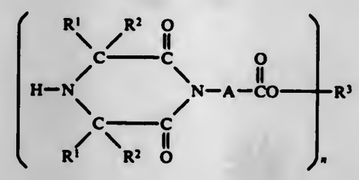
4,067,848

ALKYL ALKANOATE DERIVATIVES OF SUBSTITUTED PIPERAZINE-DIONES AND POLYMER COMPOSITIONS STABILIZED THEREBY

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 622,554, Oct. 15, 1975, Pat. No. 3,968,078, which is a division of Ser. No. 376,785, July 5, 1973, Pat. No. 3,920,659, which is a continuation-in-part of Ser. No. 239,795, March 30, 1972, abandoned. This application July 2, 1976, Ser. No. 701,767
Int. Cl.² C08K 5/34, 5/52, 5/13
U.S. Cl. 260—45.8 NE 13 Claims

1. A composition of matter stabilized against ultraviolet deterioration which comprises a synthetic organic polymer normally subject to ultraviolet deterioration and from 0.01 to 2% by weight of the polymer of a stabilizing compound of the formula



wherein
R^1 and R^2 are independently of each other methyl or ethyl or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group;
n is an integer of from 1 to 2;
when n is 1, R^3 is alkyl of from 1 to 20 carbon atoms;
when n is 2, R^3 is alkylene of from 2 to 8 carbon atoms; and
A is a straight or branched chained (lower) alkylene group having from 1 to 6 carbon atoms with the limitation that the terminals of said alkylene group bear only hydrogen or one (lower)alkyl group.

4,067,849

POLYESTER PREPARE FROM A MIXTURE OF ISOPHTHALIC ACID, AZELAIC ACID, TRIMETHYLPENTANEDIOL AND BISPHENOL A

Robert C. Chang, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed June 5, 1975, Ser. No. 583,944
Int. Cl.² C08G 63/18
U.S. Cl. 260—47 C 5 Claims

1. A composition comprising a polyester, the polyester comprising the reaction product of:

a. a mixture of acids consisting essentially of isophthalic acid and azelaic acid; and,

b. a mixture consisting essentially of trimethylpentanediol and bisphenol A.

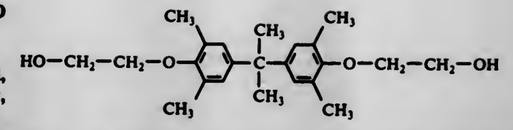
4,067,850

FILAMENTS AND FIBERS HAVING IMPROVED DYEABILITY PREPARED FROM BIS ETHOXYLATED TETRAMETHYL BISPHENOL A

Armin Kohler; Herbert Pelousek, both of Dormagen-Hackenbroich, and Ekkehard Frohberg, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 21, 1976, Ser. No. 651,049
Claims priority, application Germany, Jan. 23, 1975, 2502551
Int. Cl.² C08G 63/18, 63/66
U.S. Cl. 260—47 C 7 Claims

1. Carrier-free dyeable filaments or fibers comprising a condensation product of terephthalic acid and a mixture of at least two glycols, one of which corresponds to the formula



and is present in the amount of 4-15% by weight of the said condensation product.

4,067,851

PROCESS FOR PREPARING POLYPHENYLENE OXIDES

Tetsuo Tomita; Tadashi Yoshii, and Akira Ito, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 445,762, Feb. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 205,716, Dec. 7, 1971, abandoned. This application Dec. 9, 1975, Ser. No. 639,141
Claims priority, application Japan, Nov. 16, 1970, 45-100148; Dec. 7, 1970, 45-107637
Int. Cl.² C08G 65/44
U.S. Cl. 260—47 ET 7 Claims

1. A process for preparing polyphenylene oxides which comprises forming self-condensation products by oxidizing substituted phenols selected from the group consisting of 2,6-dimethylphenol, 2-methyl-6-ethylphenol, 2,6-diethylphenol, 2,6-dimethoxyphenol, 2-methoxy-6-methyl phenol, 2-methyl-6-phenylphenol, 2,6-diphenylphenol, and 2,6-dimethyl-3-chlorophenol with oxygen or oxygen-containing gas in the presence of a catalyst consisting of

a. copper compound other than cuprous chloride and cuprous bromide capable of forming a complex with an amine,

b. a primary amine, and

c. iodine or an iodine-containing compound selected from the group consisting of hydrogen iodide, alkali metal iodide and ethyl iodide.

4,067,852

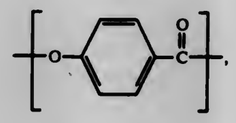
MELT PROCESSABLE THERMOTROPIC WHOLLY AROMATIC POLYESTER CONTAINING POLYBENZOYL UNITS

Gordon W. Calundann, North Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

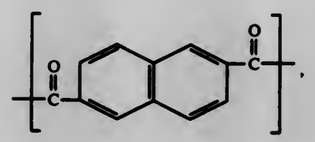
Filed May 13, 1976, Ser. No. 686,189
Int. Cl.² C08G 63/06, 63/18
U.S. Cl. 260—47 C 11 Claims

1. An improved melt processable wholly aromatic polyester capable of forming a thermoplastic melt phase at a temperature below approximately 350° C. consisting essentially of the recurring moieties I, II and III wherein:

I is



II is



and
III is



and wherein said polyester comprises approximately 35 to 80 mole percent of moiety I.

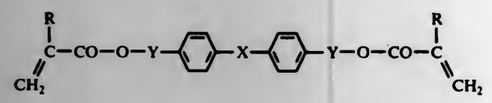
4,067,853

COMPOSITIONS OF BISHYDROXYSUBSTITUTEDARY DI ACRYLATES FOR PROSTHODONTIA

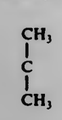
Werner Schmitt; Robert Purrmann, both of Starnberg; Peter Jochum, and Wolf Dieter Zahler, both of Hechendorf, all of Germany, assignors to ESPE Fabrik pharmazeutischer Praparate GmbH, Germany

Continuation-in-part of Ser. No. 276,334, July 31, 1972, Pat. No. 3,923,740, which is a continuation of Ser. No. 824,702, May 14, 1969, abandoned. This application Aug. 1, 1975, Ser. No. 601,689
The portion of the term of this patent subsequent to Dec. 2, 1992, has been disclaimed.
Int. Cl.² C08F *20/38, 20/30*
U.S. Cl. 260—47 UA 12 Claims

1. An artificial denture prepared by disposing in the configuration of said artificial denture and then polymerizing at least one essentially pure compound of the formula



wherein R is hydrogen of methyl, X is an



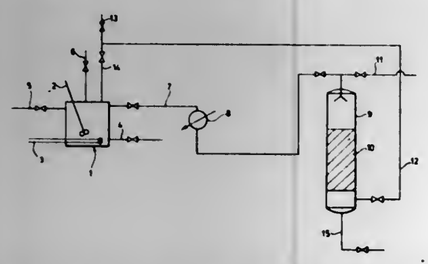
or the — SO_2 — group, Y is an oxyalkylene group of 2-5 carbon atoms or an alkylidene group of 2-3 carbon atoms.

4,067,854

ADSORPTION PROCESS

Elio Fiorentino, West Byfleet, England, assignor to Rohm and Haas Company, Philadephia, Pa.

Filed Aug. 29, 1975, Ser. No. 608,943
Int. Cl.² C08G *8/10*
U.S. Cl. 260—57 R 5 Claims



1. A process for recovery and reuse of an excess reactant from a reaction mixture discharged from a reaction vessel which comprises passing the reaction mixture containing the excess reactant through a bed of adsorbent resin capable of preferentially adsorbing the excess reactant wherein the excess reactant is adsorbed, thereafter eluting the excess reactant from the adsorbent bed with an eluant which will not react with the excess reactant in the bed under the conditions of elution, which eluant is itself a reactant, other than the excess reactant, used to form the reaction mixture, and finally, recycling the eluate to the reaction vessel.

4,067,855

FIBER AND FILM FORMING POLYESTER COMPOSITION

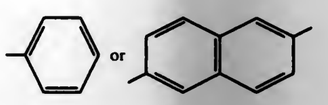
Tsuneyoshi Miwa, Otsu; Shinji Nakazawa, Shizuoka; Masaaki Itoga, Otsu; Keizo Sano, Shizuoka; Itaru Nakamura, Mishima; Taigi Watanabe, Mishima, and Yasuhiko Shingu, Mishima, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 489,163, July 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 309,993, Nov. 28, 1972, abandoned. This application Nov. 20, 1975, Ser. No. 633,657
Int. Cl.² C08G *63/18*
U.S. Cl. 260—75 R 5 Claims

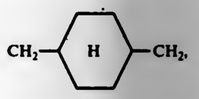
1. A polyester fiber or film comprising a synthetic linear polyester selected from the group consisting of polyethylene terephthalate, poly-4-cyclohexylene dimethylene terephthalate and polyethylene 2,6-naphthalene dicarboxylate, together with a multiplicity of particles distributed therein in an amount of about 0.2-3.0% by weight, of the total of said polyester and said particles, said particles being composed of lithium and phosphorus as a lithium salt of a phosphoric or phosphorous acid ester constituent of a short chain polyester having the formula

$$(LiO)_1PO\ O\ (R_2)_m—OOC\text{-}R_1—COO\ _n(R_2)_n—OH]_q$$

wherein n is an integer from 1 to 5; 1 and q are integers, the sum of which is 3, R_1 is



and R_2 is $—(CH_2)_m—$ wherein m is 2-10 or



wherein the lithium content is from 1.0-4.0% by weight, based on the weight of said particles, and wherein the phosphorus content of said particles is from 2.0-9.0% by weight, of said particles.

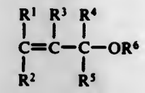
4,067,856

PROCESS FOR PREPARING POLYESTERS WITH A CATALYST SYSTEM COMPRISING AN ANTIMONY-CONTAINING POLY-CONDENSATION CATALYST AND AN ETHYLENICALLY UNSATURATED COMPOUND

Ronald L. Muntz, Bedford Hills, and Francis A. Via, Yorktown Heights, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed May 21, 1976, Ser. No. 688,797
Int. Cl.² C07C *69/76;* C08G *63/12*
U.S. Cl. 260—75 R 7 Claims

1. A process for preparing polyesters comprising condensing glycol terephthalate at a temperature of 150° C. to 350° C. in the presence of a catalyst system which comprises an antimony-containing polycondensation catalyst and an ethylenically unsaturated compound having the formula



wherein R^1, R^2, R^3, R^4 and R^5 are independently selected hydrogen, alkyl, aryl, substituted alkyl or substituted aryl; and R^6 is hydrogen, alkyl, aryl, acyl, allyl or epoxypropyl, the mole ratio of ethylenically unsaturated bond in said ethylenically unsaturated compound to said antimony-containing polycondensation catalyst being 1:1 to 30:1.

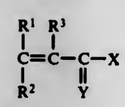
4,067,857

POLYESTER CATALYST SYSTEM COMPRISING AN ANTIMONY-CONTAINING POLYCONDENSATION CATALYST AND AN ETHYLENICALLY UNSATURATED COMPOUND AND PROCESS EMPLOYING SAME

Ronald Lee Muntz, Bedford Hills, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

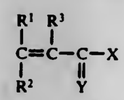
Filed May 21, 1976, Ser. No. 688,796
Int. Cl.² C08G *63/14*
U.S. Cl. 260—75 R 26 Claims

1. A polycondensation catalyst system comprising an antimony-containing polycondensation catalyst; and an ethylenically unsaturated compound having the formula



wherein X is hydrogen, —OR^4, —SR^4, amino, halogen, —O_2CR^5, —$NC(O)R^5$ or mercapto; Y is oxygen or sulfur; and R^1, R^2, R^3, R^4 and R^5 are independently selected hydrogen or substituted or unsubstituted alkyl, cycloalkyl, alkenyl, hetercyclic, aryl, aralkyl or alkaryl, the substituted groups in R^1, R^2, R^3 and R^5 being independently selected hydroxyl, mercapto, amino, amido, imino, oxime, halogen, aldehydo, alkoxy, alkylthio, keto, sulfinyl, sulfonyl, phosphato, phosphono or phosphino; the substituted groups in R^4 being hydroxyl, mercapto, amino, amido, imino, oxime, halogen, carboxyl, carboxylate, haloformyl, carboxylic anhydride, aldehydo, alkoxy, alkylthio, keto, sulfinyl, sulfonyl, phosphato, phosphono or phosphino; the mole ratio of the ethylenically unsaturated bond in said ethylenically unsaturated compound to said antimony-containing polycondensation catalysts being 1:1 to 20:1.

14. A process for preparing polyesters comprising condensing glycol terephthalate at a temperature of 150° to 350° C. in the presence of a catalyst system which comprises an antimony-containing polycondensation catalyst and an ethylenically unsaturated compound having the formula



wherein X is hydrogen, —OR^4,—SR^4, amino, halogen, —O_2CR^5,—$NC(O)R^5$ or mercapto; Y is oxygen or sulfur; and R^1, R^2, R^3, R^4 and R^5 are independently selected hydrogen or substituted or unsubstituted alkyl, cycloalkyl, alkenyl, heterocyclic, aryl, aralkyl or alkaryl, the substituted groups in R^1, R^2, R^3 and R^5 being independently selected hydroxyl, mercapto, amino, amido, imino, oximo, halogen, aldehydo, alkoxy, alkylthio, keto, sulfinyl, sulfonyl, phosphato, phosphono or phosphino; the substituted groups in R^4 being hydroxyl, mercapto, amino, amido, imino, oximo, halogen, carboxyl, carboxylate, haloformyl, carboxylic anhydride, aldehydo, alkoxy, alkylthio, keto, sulfinyl, sulfonyl, phosphato, phosphono or phosphino; the mole ratio of the ethylenically unsaturated bond in said ethylenically unsaturated compound to said antimony-containing polycondensation catalyst being 1:1 to 20:1.

4,067,858

ACID DERIVATIVE IMMOBILIZED CEPHALOSPORIN CARBOXYLIC CARRYING POLYMER

Derek Walker, Windermere, and Philip Howard Chapman, Ulverston, both of England, assignors to Glaxo Laboratories Limited, Greenford, England

Filed July 30, 1974, Ser. No. 493,149
Claims priority, application United Kingdom, July 31, 1973, 36386/73
Int. Cl.² C08G *69/10*
U.S. Cl. 260—78 A 12 Claims

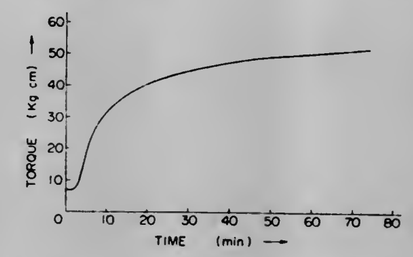
1. An immobilised cephalosporin carboxylic acid derivative consisting essentially of a polymer containing recurring aromatic units having aliphatic carbon atoms attached to said recurring aromatic units and to a second aryl group, the said polymer carrying a plurality of molecules of a cephalosporin carboxylic acid, the carboxyl groups of which are directly bonded to said aliphatic carbon atoms by the formation of carboxylic acid ester linkages.

4,067,859

CURABLE COMPOSITIONS CONTAINING CHLOROPRENE RUBBER

Masao Onizawa, Ohmiya, Japan, assignor to Sanyo Trading Co., Ltd., Tokyo, Japan

Division of Ser. No. 653,630, Jan. 29, 1976. This application Oct. 22, 1976, Ser. No. 734,808
Claims priority, application Japan, Feb. 3, 1975, 50-13329; June 24, 1975, 50-76807
Int. Cl.² C08F *8/32*
U.S. Cl. 260—78 A 4 Claims



1. A vulcanizable composition comprising a chloroprene rubber, at least one amino acid selected from the group consisting of arginine, lysine, hydroxylysine, ornithine, cystine, asparagine, glutamine and citrulline, and at least one metal oxide selected from the group consisting of magnesium oxide and zinc oxide.

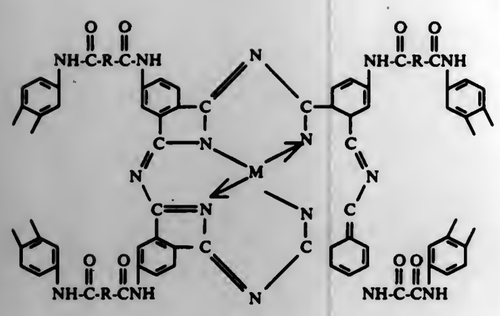
4,067,860

N,N'-BIS(3,4-DICYANOPHENYL) ALKANEDIAMIDE, POLYPHTHALOCYANINES, AND PREPARATION THEREOF

James R. Griffith, Riverdale Heights, and Jacques G. O'Rear, Temple Hills, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 500,209, Aug. 23, 1974, Pat. No. 3,993,631. This application July 23, 1976, Ser. No. 708,152
Int. Cl.² C08G *73/06, 73/08*
U.S. Cl. 260—78 TF 13 Claims

1. A polyphthalocyanine resin having recurring units of the general formula:



wherein R = (CH_2), $(CH_2)_x$ $CH(CH_3)$ $(CH_2)_y$; M is selected from the group consisting of copper, magnesium, zinc, iron cobalt, nickel, palladium, platinum, manganese, chromium molebdenum, vanadium, beryllium, silver, mercury, aluminum, tin, antimony, calcium, barium, cadmium, and mixtures thereof.

4,067,861

ANIONIC POLYMERIZATION OF LACTAMS IN AN EXTRUDER WITH CONTROLLED OUTPUT RATE

Michel Bienaan, and Philippe Potin, both of Billiere, France, assignors to Ato Chimie, Courbevoie, France

Filed Nov. 3, 1975, Ser. No. 627,948

Claims priority, application France, Nov. 12, 1974, 74.37242

Int. Cl.² C08G *69/18*

U.S. Cl. 260—78 L **4 Claims**

1. In a method for the anionic polymerization of lactams in an extruder wherein at least one lactam having 6 to 12 carbon atoms in the lactam ring, at least one catalyst and at least one activator are introduced into the extruder and wherein a polymer is formed in said extruder and said polymer is extruded through an extrusion die, the improvement which comprises passing the polymer through a flow control zone interposed between the extruder and the extrusion die wherein the flow of the polymer from the extruder to the extrusion die is controlled at a substantially constant rate.

4,067,862

PROCESS FOR MODIFICATION OF POLYMERIC MATERIALS WITH A NITRILE SULPHIDE

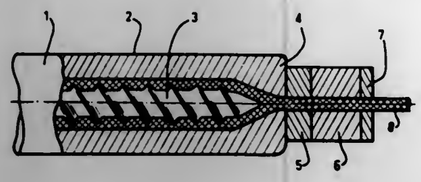
John Crosby, Runcorn, England, assignor to Imperial Chemical Industries Limited, United Kingdom

Filed Aug. 23, 1976, Ser. No. 716,454

Claims priority, application United Kingdom, Aug. 26, 1975, 35206/75; Sept. 19, 1975, 38551/75; Oct. 31, 1975, 45325/75

Int. Cl.² C08J *3/24*; C08K *5/35, 5/43, 5/47*

U.S. Cl. 260—79.5 P **6 Claims**



1. A process for the modification of a polymeric material containing at least one C=C unsaturated group in its molecule, in which the said polymeric material is reacted with a nitrile sulphide of formula

$(CNS)_2$ or R—$(CNS)_n$

where R represents an organic radical which is inert to the nitrile sulphide group and n is an integer $\geqq 1$.

4,067,863

BLOOD PLASMA FRACTIONATION

John G. Watt, Langlaw, Whitehill, Dalkeith, Midlothian, Scotland

Continuation-in-part of Ser. No. 303,761, Nov. 6, 1972, abandoned. This application Feb. 14, 1975, Ser. No. 550,147

Claims priority, application United Kingdom, Mar. 28, 1969, 16536/69

Int. Cl.² A23J *1/06*

U.S. Cl. 260—112 B **7 Claims**

1. A method for fractionating a solution containing a plurality of plasma proteins, which comprises: continuously converging a jet stream of a plasma containing a protein fraction to be precipitated, said fraction comprising globulin, and a jet stream of a liquid protein precipitant onto a temperature controlled surface such that admixture of said plasma and protein precipitant occurs substantially simultaneously upon impingement of said jet streams upon said temperature controlled surface so that precipitation of said protein fraction comprising globulin is initiated without significant foaming and turbulence of said mixture which denatures said protein fraction and such that when the precipitation reaction is exothermic, the resultant increase in temperature does not result in denaturation of said protein fraction; and collecting the protein fraction which precipitates from said plasma.

4,067,864

FIBER-REACTIVE 2-HYDROXY-PYRID-6-ON-(3)-YL AZO DYESTUFFS

Fritz Oesterlein, Basel; Gert Hegar, Schoenenbuch, and Karl Seitz, Oberwil, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

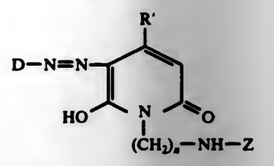
Continuation of Ser. No. 635,205, Nov. 25, 1975, abandoned, which is a continuation of Ser. No. 142,364, May 11, 1971, abandoned. This application Nov. 25, 1975, Ser. No. 635,205

Claims priority, application Switzerland, May 15, 1970, 7316/70; July 30, 1970, 11494/70

Int. Cl.² C09B *62/08, 62/24, 62/44*; D06P *1/38*

U.S. Cl. 260—153 **3 Claims**

1. An azo dyestuff of the formula



wherein

D is the radical of a sulfo substituted benzene or napthalene diazo component;

R' is alkyl of 1 to 4 carbon atoms;

Z is a fiber reactive radical capable of reacting with the hydroxyl groups of cellulose or with the amino groups of polyamides; and

n is an integer of 1 to 4.

4,067,865

WATER-SOLUBLE DIAZOTIZED AMINO AZO DYESTUFF COUPLED WITH AN AMINO-PHENYL OR -NAPHTHYL COMPONENT

Kevin Lawson Birkett; John Alexander Bone, and Denis Robert Annesley Ridyard, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

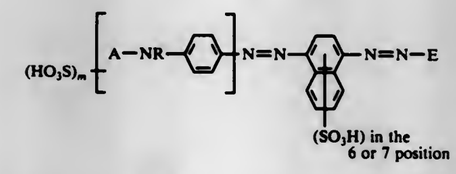
Continuation of Ser. No. 505,945, Sept. 13, 1974, abandoned. This application Dec. 3, 1976, Ser. No. 747,313

Claims priority, application United Kingdom, Sept. 26, 1973, 45087/73

Int. Cl.² C09B *31/04, 31/06, 31/08*

U.S. Cl. 260—187 **24 Claims**

1. A water-soluble disazo dye which, in the form of the free acid, has the formula



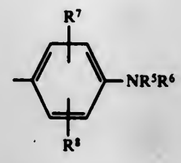
wherein

A represents lower alkyl, hydroxy lower alkyl, phenyl or phenyl substituted by nitro, lower alkyl or lower alkoxy,

R represents hydrogen, or lower alkyl when A is lower alkyl,

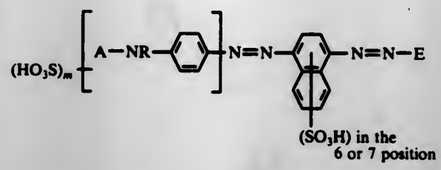
m has a value of 0, 1 or 2 and

E represents



wherein R^5 represents hydrogen, lower alkyl, hydroxy lower alkyl or benzyl, R^6 represents lower alkyl or hydroxy lower alkyl and R^7 and R^8 each independently represent hydrogen, lower alkyl, lower alkoxy or acylamino.

6. A water-soluble disazo dye which, in the form of the free acid, has the formula



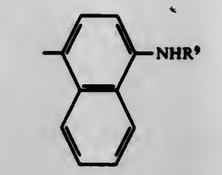
wherein

A represents lower alkyl, hydroxy lower alkyl, phenyl or phenyl substituted by nitro, lower alkyl or lower alkoxy,

R represents hydrogen, or lower alkyl when A is lower alkyl,

m has a value of 0, 1 or 2 and

E represents



wherein

R^9 represents lower alkyl, hydroxy lower alkyl, sulphato lower alkyl, phenyl or phenyl substituted by lower alkyl, lower alkoxy or hydroxy.

4,067,866

PROCESS FOR PREPARING CEPHALOSPORINS AND CERTAIN NOVEL 2β-THIOHYDRAZO-AZETIDINONES AS INTERMEDIATES

Maurizio Foglio; Giovanni Franceschi; Paolo Masi, and Antonino Suarato, all of Milan, Italy, assignors to Societa' Farmaceutici Italia, Italy

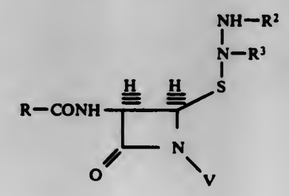
Division of Ser. No. 662,338, March 1, 1976, Pat. No. 4,036,835, which is a continuation-in-part of Ser. No. 578,875, May 19, 1975, abandoned. This application June 29, 1976, Ser. No. 700,972

Claims priority, application Italy, May 22, 1974, 23070/74

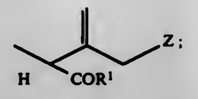
Int. Cl.² C07D *205/08, 409/12*

U.S. Cl. 260—239 A **3 Claims**

1. A 2β-thiohydrazoazetidinone of the formula:



where V is the residue:



where R is selected from the class consisting of alkyl having from 1 to 4 carbon atoms, thienyl-methyl-, phenyl-methyl-, phenoxy-methyl, and N-carbobenzoxyamino-benzyl;

R^1 is selected from the class consisting of alkoxy having from 1 to 4 carbon atoms, trichloroethoxy-, p-methoxy-benzyloxy-, p-nitrobenzyloxy-, phenacyloxy, p-chlorophenacyloxy, and p-bromophenacyloxy;

R^2 and R^3 are the same or different and represent the radicals -$COOR^4$

where R_4 is a lower alkyl having from 1 to 4 carbon atoms; and

Z is selected from the class consisting of hydrogen and -O-CO-alkyl wherein the alkyl has from 1 to 4 carbon atoms.

4,067,867

PROCESS FOR PREPARING PYRAZINE PRECURSOR OF METHOTREXATE OR AN N-SUBSTITUTED DERIVATIVE THEREOF AND/OR A DI(LOWER)ALKYL ESTER THEREOF

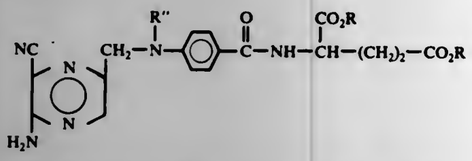
Jacek Wiecko, 7031 Ethel St., St. Louis, Mo. 63117

Division of Ser. No. 671,960, March 30, 1976, which is a continuation-in-part of Ser. No. 631,134, Nov. 11, 1975, abandoned. This application Oct. 8, 1976, Ser. No. 731,087

Int. Cl.[2] C07D *241/04*

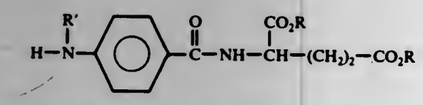
U.S. Cl. 260—250 BN 6 Claims

1. A process for the preparation of a compound having the formula:

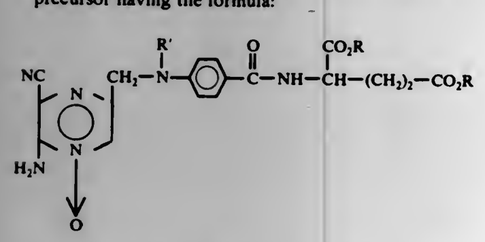


wherein R is a lower alkyl group or hydrogen and R′ is a methyl group or hydrogen which comprises:

a. reacting in one step the compounds (1) aminomalononitrile, (2) β-bromopyruvaldoxime or β-chloropyruvaldoxime and (3) a p-aminobenzoyl-L-glutamic acid or di(lower)alkyl ester thereof having the formula:



wherein R is a lower alkyl group or hydrogen and R′ is a methyl group or hydrogen to form the pyrazine oxide precursor having the formula:



wherein R is a lower alkyl group or hydrogen and R′ is a methyl group or hydrogen; and

b. treating said compound with either titanium trichloride or iodoformamidinium iodide to deoxygenate said compound.

4,067,868

PRODUCTION OF QUINAZOLINONE COMPOUNDS

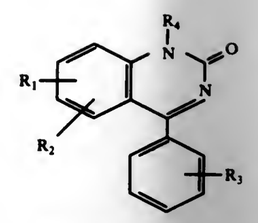
Kikuo Ishizumi, Ikeda; Kazuo Mori, Kobe; Michihiro Yamamoto, Nishinomiya; Masao Koshiba; Shigeho Inaba, both of Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 352,016, April 17, 1973, abandoned. This application Mar. 26, 1976, Ser. No. 670,952

Int. Cl.[2] C07D *239/82*

U.S. Cl. 260—251 QB 4 Claims

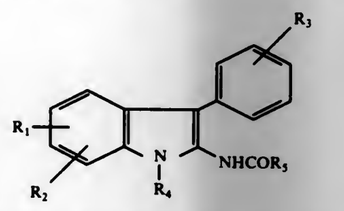
1. A process for preparing a quinazolinone of the formula,



(I)

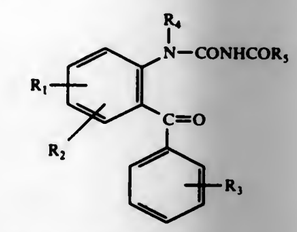
wherein R_1, R_2 and R_3 are independently a hydrogen atom, a halogen atom, trifluoromethyl, nitro, lower alkyl, or lower alkoxy; and R_4 is a hydrogen atom, lower alkyl, polyhalo C_1-C_3 alkyl or (C_3-C_6 cycloalkyl) C_1-C_4 alkyl, which comprises the steps of

a. reacting an indole derivative of the formula,



(III)

wherein R_1, R_2, R_3, and R_4 are as defined above; and R_5 is a lower alkoxy or benzyloxy, with chromic acid or chromic anhydride to form an acylurea of the formula



(IV)

R_1, R_2, R_3, R_4 and R_5 are as defined above; and

b. hydrolyzing or heating said acylurea of the formula (IV) to prepare said quinazolinone of the formula (I).

4,067,869

3-AMINO-2-AZA BENZOQUINONE DIIMINES

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 576,784, May 12, 1975, Pat. No. 3,997,546, which is a division of Ser. No. 387,612, Aug. 13, 1973, Pat. No. 3,893,802, which is a continuation-in-part of Ser. No. 131,458, April 5, 1971, abandoned. This application Sept. 28, 1976, Ser. No. 727,480

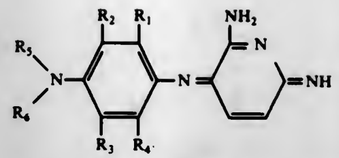
Claims priority, application Luxembourg, Apr. 10, 1970, 60702

Int. Cl.[2] C07D *213/74*

U.S. Cl. 260—270 PY 5 Claims

1. An indamine selected from the group consisting of

a. an indamine having the formula



wherein R_1, R_2, R_3 and R_4 each independently are selected from the group consisting of hydrogen, halogen, lower alkyl having 1–4 carbon atoms and lower alkoxy having 1–4 carbon atoms, and R_5 and R_6 are selected from the group consisting of hydrogen, lower alkyl having 1–4 carbon atoms and lower alkyl having 1–4 carbon atoms and substituted with a member selected from the group consisting of acetylamino and carbamyl with at least one of R_5 and R_6 being said lower alkyl substituted with acetylamino or carbamyl,

b. a human hair compatible water soluble acid salt of said indamine in (a), and

c. a double chloride of zinc and said indamine in (a).

4,067,870

8-BENZIMIDO SUBSTITUTED QUINAPHTHALONE DERIVATIVES

Keizo Shimada; Toshiaki Harada; Masahiro Koga, and Shizuo Nagahama, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

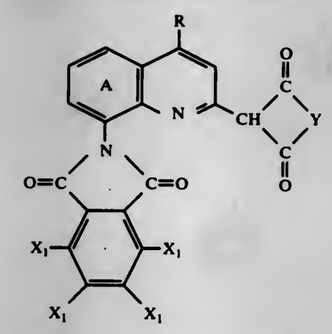
Filed Aug. 26, 1976, Ser. No. 718,198

Claims priority, application Japan, Sept. 1, 1975, 50-104938; Sept. 1, 1975, 50-104941; Apr. 16, 1976, 51-42327

Int. Cl.[2] C09B *25/00*

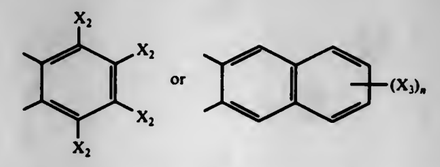
U.S. Cl. 260—287 F 10 Claims

1. A compound of the following formula



(I)

wherein R represents an alkyl group containing 1 to 4 carbon atoms; X_1 represents a chlorine or bromine atom; Y represents the group of the formula



wherein X_2 and X_3 each represent a chlorine or bromine atom, and n is an integer of 2 to 4; and ring A may be substituted by an alkyl group containing 1 to 4 carbon atoms, a halogen atom, or both.

4,067,871

1-NITROSO-1,2,3,4-TETRAHYDROQUINOLINE AND 1-NITROSO-INDOLINE COMPOUNDS

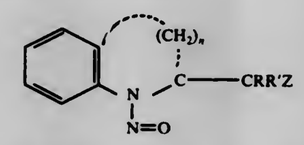
James R. Bartles-Keith, Lexington; Mary T. Burgess, Boston, and Jean B. Rogers, Carlisle, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 592,397, July 2, 1975, abandoned. This application Sept. 9, 1976, Ser. No. 721,858

Int. Cl.[2] C07D *215/58, 209/12*

U.S. Cl. 260—287 T 11 Claims

1. A compound of the formula



wherein R and R′ each are hydrogen or lower alkyl having 1 to 4 carbon atoms, n is a positive integer 1 or 2 and Z is —CN or —COOR″ wherein R″ is lower alkyl having 1 to 4 carbon atoms.

4,067,872

CYCLIC DERIVATIVES OF 1,2,3,4 TETRAHYDROQUINOLINE AND INDOLENE

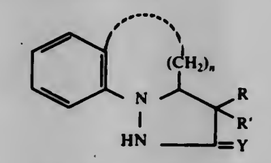
Stanley M. Bloom, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 592,396, July 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 451,740, March 18, 1974, abandoned. This application Sept. 9, 1976, Ser. No. 721,857

Int. Cl.[2] C07D *487/04, 471/04*

U.S. Cl. 260—288 CF 11 Claims

1. A compound of the formula:



wherein R and R′ each are hydrogen or lower alkyl having 1 to 4 carbon atoms, Y is =O or =NH and n is a positive integer 1 or 2.

4,067,873

CERTAIN 1-AMINO-3-(1-ISOQUINOLINYL)OXY-2-PROPANOL DERIVATIVES

Franz Troxler, and Erik Wiskott, both of Bottmingen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

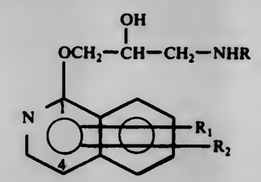
Filed Mar. 19, 1976, Ser. No. 668,597

Claims priority, application Switzerland, Mar. 26, 1975, 3877/75

Int. Cl.[2] C07D *217/24*

U.S. Cl. 260—288 D 4 Claims

1. A compound of the formula



wherein

R is alkyl of 3 to 7 carbon atoms; cycloalkyl of 3 to 7 carbon atoms; cycloalkyl of 3 to 7 carbon atoms monosubstituted with alkyl of 1 to 4 carbon atoms; α-dialkylpropinyl of 5 to 9 carbon atoms; α-dialkylallyl of 5 to 9 carbon atoms; hydroxyalkyl of 2 to 7 carbon atoms; the hydroxy group thereof being separated by at least two carbon atoms from the nitrogen atom to which R is bound; phenethyl; phenethyl mono- or disubstituted in the phenyl residue independently when di-substituted with fluoro, chloro or bromo, alkyl of 1 to 4 carbon atoms or unbranched alkoxy of 1 to 4 carbon atoms; or adamantyl; and

either R_1 is phenyl and R_2 is hydrogen;

or R_1 is alkyl of 1 to 4 carbon atoms or fluoro, chloro or bromo and R_2 is unbranched alkoxy of 1 to 4 carbon atoms or fluoro, chloro or bromo, with the general proviso that the 8-position of the isoquinoline is unsubstituted and any halogen substitutent which may be present in the 3- or 4-position is other than fluorine,

or a pharmaceutically acceptable acid addition salt form thereof, or an active enantiomer or racemic mixture thereof.

4,067,874

NOVEL PYRIDINE 1-OXIDES

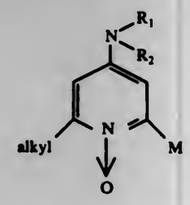
Joseph J. Ursprung, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 165,723, July 23, 1971, abandoned. This application June 20, 1975, Ser. No. 588,749

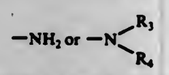
Int. Cl.[2] C07D *401/04*

U.S. Cl. 260—293.69 **10 Claims**

1. A compound of the formula



wherein alkyl is from one to six carbon atoms, inclusive; M is alkyl from one to six carbon atoms, inclusive;



wherein R_3 is hydrogen, alkyl of one to six carbon atoms, inclusive, or alkenyl of from three to six carbon atoms, inclusive, and R_4 is alkyl of one to six carbon atoms, inclusive or alkenyl of three to six carbon atoms, inclusive, and R_3 and R_4 taken together are alkylene of five to seven carbon atoms, inclusive, said alkylene unsubstituted or substituted with one or more alkyl groups having one to six carbon atoms, inclusive, the total number of carbon atoms in the ring and alkyl groups not to exceed fifteen, morpholino, thiamorpholino and N-alkyl piperazino, said alkyl having one to three carbon atoms, inclusive; R_1 and R_2 taken together with the nitrogen atom to which they are attached are pyrrolidino, piperidino or hexamethyleneimino; and an acid addition salt thereof.

3. A compound in accordance with claim 1 wherein M is NH_2.

4. A compound in accordance with claim 3 wherein alkyl is methyl.

6. 2-Amino-6-methyl-4-piperidinylpyridine-1-oxide according to claim 4.

4,067,875

CERTAIN N-PHENYL OR N-PYRIDYL AZA SULFONIUM SALTS

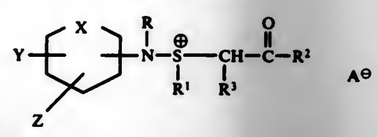
Paul G. Gassman, Columbus, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio

Division of Ser. No. 573,069, April 30, 1975, Pat. No. 3,992,392, which is a division of Ser. No. 355,198, April 27, 1973, Pat. No. 3,901,899. This application Aug. 9, 1976, Ser. No. 712,467

Int. Cl.[2] C07D *213/62*

U.S. Cl. 260—294.8 E **2 Claims**

1. A compound of the formula:



(IV)

wherein X is —CH= or —N=; each of Y and Z is hydrogen, fluorine, chlorine, bromine, iodine, nitro, cyano, N,N-di-lower alkylamino, lower alkyl, lower alkyloxy, lower acyloxy, carbonyloxy-lower alkyl or carbonyloxyphenyl and, except when both y and Z are hydrogen, not more than one of Y and Z is ortho to the amine nitrogen, R is hydrogen or a hydrocarbon radical free of aliphatic unsaturation and containing from 1 to 8 carbon atoms, R^1 is lower alkyl, phenyl, or benzyl, R^2 is hydrogen, lower alkyl, or phenyl, R^3 is hydrogen, lower alkyl, phenyl, or benzyl, or R^2 and R^3 are taken together with the carbons to which they are bonded to complete a ring containing 5 to 8 carbon atoms, and A is chlorine or bromine.

4,067,876

HIGH POLYMERS CONTAINING NICOTINIC ACID, PROCESS FOR THEIR PREPARATION AND THEIR USE

Paolo Ferruti, V.le Cassiodoro, 24, and Rodolfo Paoletti, V.le Regina Margherita, 43, both of Milan, Italy

Filed Oct. 14, 1975, Ser. No. 622,442

Claims priority, application Italy, Oct. 15, 1974, 28420/74

Int. Cl.[2] C08F *8/30*

U.S. Cl. 260—295.5 A **9 Claims**

1. Polymers having a molecular weight between 1,000 and 1,500,000 characterized in that they contain radicals of nicotinic acid bound to a polyvinylic macromolecular structure through hydroxyalkyl or aminoalkyl chains grafted thereon, with which it forms covalent bonds that are gradually hydrolized in biological environment by setting free nicotinic acid and non-toxic polymer residues, wherein the nicotinic acid radicals are bound to the chains grafted onto the macromolecular structure by means of amide or ester bonds, and wherein the polyvinylic macromolecular structure comprises polyacrylamide, poly-methacrylamide, poly-acrylic acid or polymethacrylic acid.

4,067,877

ω-SUBSTITUTED ALKANES AND 1-HYDROXYALKANES

Kailash Kumar Gauri, Lentfoehrden, Germany, assignor to Robugen GmbH, Germany

Continuation of Ser. No. 368,597, June 11, 1973, abandoned. This application Dec. 15, 1975, Ser. No. 640,961

Int. Cl.[2] C07D *213/46, 213/52*

U.S. Cl. 260—297 Z **2 Claims**

1. A compound selected from the group consisting of ω-(2'-ketopyridyl-1')-n-hexanol-1; ω-(2'-thiopyridyl-1')-n-octanol-1; and ω-(2'-ketopyridyl-5'-chloro-1')-n-octadecanol-1.

4,067,878

STABILIZATION OF SOLUTIONS OF 3-ISOTHIAZOLONES

George A. Miller, Glenside, and Ernest D. Weiler, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

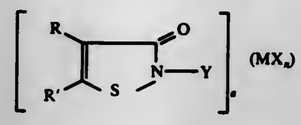
Filed Mar. 5, 1976, Ser. No. 664,137

The portion of the term of this patent subsequent to Mar. 11, 1992, has been disclaimed.

Int. Cl.[2] C07F *3/04, 3/02;* A01N *9/12*

U.S. Cl. 260—302 A **16 Claims**

1. A method of stabilizing a solution containing a 3-isothiazolone complex of the formula



wherein

Y is a hydrogen atom, an alkyl group of 1 to 18 carbon atoms, an alkenyl or alkynyl group of 2 to 18 carbon atoms, a cycloalkyl group of 3 to 12 carbon atoms, having a 3 to 8 carbon atom ring, an aralkyl group of up to 10 carbon atoms, or an aryl group of up to 10 carbon atoms;

R is a hydrogen atom, a halogen atom, or a (C_1-C_4)alkyl group;

R' is a hydrogen atom, a halogen atom, or a (C_1-C_4)alkyl group;

M is a cation of barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, silver, strontium, tin or zinc;

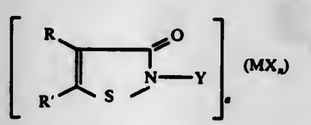
X is a chloride, bromide iodide, sulfate, nitrate, nitrite, acetate, chlorate, perchlorate, bisulfate, bicarbonate, oxalate, maleate, p-toluenesulfonate, carbonate, or phosphate anion;

a is the integer 1 or 2; and

n is an integer which for the anion X satisfies the valence of the cation M;

against decomposition of the complex, which comprises adding to the solution a stabilizing amount of a metal salt selected from the group consisting of nitrates and nitrites of sodium, potassium, calcium, magnesium, copper, iron, nickel, zinc, barium, manganese, silver, and cobalt, and mixtures thereof.

14. A stabilized solution which comprises a solvent, a 3-isothiazolone complex of the formula



wherein p1 Y is a hydrogen atom, an alkyl group of 1 to 18 carbon atoms, an alkenyl or alkynyl group of 2 to 18 carbon atoms, a cycloalkyl group of 3 to 12 carbon atoms, having a 3 to 8 carbon atoms ring, an aralkyl group of up to 10 carbon atoms, or an aryl group of up to 10 carbon atoms;

R is a hydrogen atom, a halogen atom, or a (C_1-C_4) alkyl group;

R' is a hydrogen atom, a halogen atom, or a (C_1-C_4)alkyl group;

M is a cation of barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, silver, strontium, tin or zinc;

X is a chloride, bromide, iodide, sulfate, nitrate, nitrite, acetate, chlorate, perchlorate, bisulfate, bicarbonate, oxalate, maleate, p-toluenesulfonate, carbonate, or phosphate anion;

a is the integer 1 or 2; and

n is an integer which for the anion X satisfies the valence of the cation M;

and a metal salt selected from the group consisting of nitrates and nitrites of sodium, potassium, calcium, magnesium, copper, iron, nickel, zinc, barium, manganese, silver, and cobalt, and mixtures thereof.

4,067,879

1,4-DITHIINO[2,3-C; 6,5-C']DIISOTHIAZOLE AND RELATED COMPOUNDS

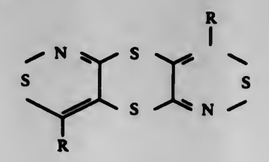
Susan Anne Vladuchick, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 625,132, Oct. 23, 1975, abandoned. This application Sept. 7, 1976, Ser. No. 719,833

Int. Cl.[2] C07D *513/14*

U.S. Cl. 260—302 F **10 Claims**

1. A diisothiazole of the formula



wherein both

R's are the same and are -H, -CN, -COCl, $-CO_2R^1$, $-CONR^2R^3$ or $-CO_2-(alkyl)_4N^+$,

R^1 is -H, alkyl of 1–5 carbon atoms, phenyl, -K or benzyl;

R^2 and R^3 are each selected from the group consisting of -H, alkyl of 1–5 carbon atoms, phenyl and phenyl substituted with alkyl, alkoxy, nitro, halo, or dialkylamino, in which the alkyl is from 1–5 carbon atoms.

4,067,880

INTERMEDIATES FOR PREPARING 7-ACYL-3-(SULFOALKYL SUBSTITUTED OXADIAZOLYLTHIOMETHYL)CEPHALOSPORINS

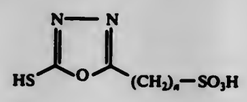
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 666,095, March 11, 1976, Pat. No. 4,041,162. This application Apr. 25, 1977, Ser. No. 790,716

Int. Cl.[2] C07D *271/10*

U.S. Cl. 260—307 A **2 Claims**

1. A compound of the formula:



in which:

n is 1 to 5.

4,067,881

MANUFACTURE OF POLYCHLORO-COPPER PHTHALOCYANINES

Hermann Geeren, Ruchheim, and Wolfgang Fabian, Wilhelmsfeld, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed July 12, 1976, Ser. No. 704,563

Int. Cl.[2] C09B *47/10*

U.S. Cl. 260—314.5 **10 Claims**

1. In a process for the manufacture of polychlorophthalocyanines by chlorinating copper phthalocyanine in an aluminum chloride/sodium chloride melt at from 110° to 190° C, the improvement which comprises rapidly introducing at a rate of not less than about 500 to 720 kg/hour from 0.20 to 0.33 part by weight of copper phthalocyanine, per part by weight of melt, into the melt at temperatures from the solidification point

of the melt to 120° C, and after this copper phthalocyanine has been introduced, carrying out the chlorination to give polychloro-copper phthalocyanine at from 120° to 160° C whilst passing in, per hour, from 7 to 12% of the total amount of chlorine gas required.

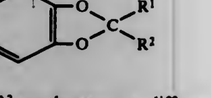
4,067,882

PROCESS FOR THE PREPARATION OF 2-DIALKOXY PHOSPHINYLIMINO-1,3-DITHIETANE

David William Reger, Trenton; Murray Garber, and Don Wesley Long, both of Lawrenceville, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 14, 1976, Ser. No. 695,691
Int. Cl.² C07D *339/00*
U.S. Cl. 260—327 M 12 Claims

1. The process for the preparation of a dithietane having the formula:



wherein R is a C_1-C_4 alkyl radical comprising: reacting one molar equivalent of a compound of formula:



wherein R is as defined above; M is a cation selected from the group consisting of sodium, potassium and ammonium in the presence of water, with a one to two molar equivalent of a methylene halide selected from the group consisting of methylene bromide and methylene iodide in the presence of 0.1% to 5%, by weight, of the reaction mixture of a phase transfer catalyst selected from the group consisting of a tri-(C_3-C_{12})alkylamine, a tri-(C_3-C_{12})alkylmethylammonium salt, a benzyltri-(C_2-C_3)alkylammonium salt, a 1,2-dialkyl-3,5-diarylpyrazolium salt, a C_2-C_4 alkyltriphenylphosphonium salt and a C_1-C_3 alkylpyridinium salt at a temperature ranging from 25° C to 45° C and a pH of 5 to 8 for a period of time sufficient to essentially complete the reaction, and recovering said dithietane compound.

4,067,883

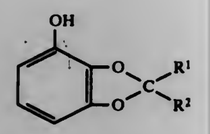
PROCESS FOR PREPARING A 4-HYDROXY-BENZODIOXOLE

Harold George Haynes, Royston, England, assignor to Fisons Limited, London, England

Continuation of Ser. No. 249,899, May 3, 1972, abandoned. This application Oct. 9, 1975, Ser. No. 621,213
Claims priority, application United Kingdom, May 4, 1971, 12870/71
Int. Cl.² C07D *317/44*
U.S. Cl. 260—340.5 R 14 Claims

1. Process for preparing a 4-hydroxy-benzodioxole of the formula

(II)



in which R^1 and R^2 are the same or different and each represents alkyl of 1 to 4 carbon atoms or together represent alkylene of 5 to 7 carbon atoms,

which process comprises the step of reacting pyrogallol with a ketal of the formula

(III)



in which R^1 and R^2 are as defined above and R^3 and R^4 are the same or different and each represents alkyl of 1 to 4 carbon atoms, at a temperature of at least 90° C in the absence of any material which is not pyrogallol, the ketal, a reaction product of the process claimed herein or an inert diluent.

4,067,884

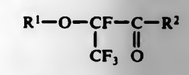
FLUORINE CONTAINING KETONES

Thomas Martini, Neuenhain, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 13, 1976, Ser. No. 686,832
Claims priority, application Germany, May 15, 1975, 2521594
Int. Cl.² C07D *319/10*
U.S. Cl. 260—340.6 13 Claims

1. Perfluorinated ketones of the formula

I



wherein R^1 and R^2 may be the same or different and each is a perfluorinated alkyl group that may contain one or more ether oxygen linkages, R^1 and R^2 having a total of 10 to 80 carbon atoms, and at least one of said perfluorinated alkyl groups being a cyclic alkyl group having a 6-membered ring with oxygen atoms in the 1 and 4 position thereof.

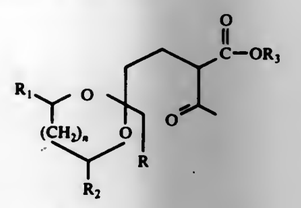
4,067,885

INTERMEDIATE IN THE PREPARATION OF 6,6-ALKYLENEDIOXYALKAN-2-ONES

Urs Oskar Hengartner, Roseland, and Pius Anton Wehrli, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 560,062, March 20, 1975, Pat. No. 3,972,898. This application May 3, 1976, Ser. No. 682,553
Int. Cl.² C07D *319/06*
U.S. Cl. 260—340.7 1 Claim

1. A compound of the formula



wherein R, R_1, and R_2 are hydrogen or lower alkyl, R_3 is lower alkyl and *n* is 1.

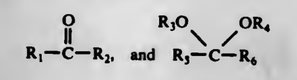
4,067,886

PROCESS FOR THE PREPARATION OF SELECTIVELY AND SYMMETRICALLY DI-HALOGENATED KETALS

Robert C. Reardon, Jr., Tenafly, and Eddie N. Gutierrez, Fort Lee, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 426,854, Dec. 20, 1973, abandoned. This application Sept. 8, 1975, Ser. No. 611,364
Int. Cl.² C07B *9/00*; C07C *41/00*
U.S. Cl. 260—340.7 9 Claims

1. A method of preparing selectively and symmetrically dihalogenated ketals consisting essentially of treating with a halogen selected from the group consisting of chlorine and bromine, compounds of the formula:



wherein each of R_1, R_2, R_5, and R_6 is a non-sterically hindered straight or branched chain alkyl group of from 1 to 20 carbon atoms; each of R_3 and R_4 is a straight or branched chain alkyl group of from 1 to 20 carbon atoms, or R_3 and R_4 may further be taken together to form a ring having from 2 to 4 carbon atoms; said halogenation occurring at the carbon atoms alpha to the ketal or carbonyl group; said treatment being in an organic solvent selected from the group consisting of monohydric and polyhydric alcohols wherein each C-H group of said alcohol has an hydroxyl group attached thereto and the ratio of said solvent to ketone or ketal is from about 5:1 to about 20:1; the molar ratio of said halogen to ketone or ketal is from about 2:1 to about 5:1; and at a temperature of from about 0° to about 80° C.

4,067,887

METHOD OF PREPARING DICHLOROMALEIC ANHYDRIDE

Vadim Dmitrievich Simonov, ulitsa Bljukhera, 18, kv. 38; Raif Timergalievich Gazizov, ulitsa Mira, 23, kv. 36; Vladimir Vadimovich Simonov, ulitsa Bljukhera, 18, kv. 38; Boris Ivanovich Voronenko, ulitsa Bljukhera, 48, kv. 9, and Vera Vladimirovna Karpova, ulitsa Koltsevaya, 112, all of Ufa, U.S.S.R.

Filed Aug. 12, 1976, Ser. No. 713,967
Int. Cl.² C07D *307/60*
U.S. Cl. 260—346.74 5 Claims

1. A method of preparing dichloromaleic anhydride comprising oxidizing hexachlorobutadiene with sulfur trioxide at a temperature ranging from 10° to 110° C in the presence of iodine or an iodine-containing compound forming iodide ions under the reaction conditions, followed by separating dichloromaleic anhydride from the reaction mass.

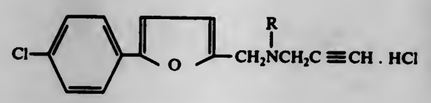
4,067,888

5-(4-CHLOROPHENYL)-N-(2-PROPYNYL)FURFURYLAMINES

Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Feb. 17, 1977, Ser. No. 769,319
Int. Cl.² C07D *307/52*
U.S. Cl. 260—347.7 3 Claims

1. A compound of the formula:



wherein R represents hydrogen or methyl.

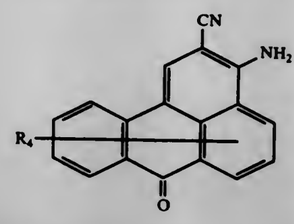
4,067,889

DISPERSE DYESTUFFS

Siegfried Dengler, Choex; Peter Loew, Munchenstein; Christian Zickendraht, Binningen, and Hansrudolf Schwander, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 480,085, June 17, 1974, Pat. No. 3,970,675. This application Mar. 22, 1976, Ser. No. 669,011
Int. Cl.² C09B *3/02*
U.S. Cl. 260—364 2 Claims

1. 2-Cyano-3-amino-benzanthrones of the formula



wherein R_4 represents a halogen atom, a lower alkyl group or a hydrogen atom.

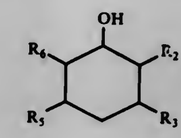
4,067,890

OXIDATIVE COUPLING OF ALKYLPHENOLS, ALKOXYPHENOLS AND NAPHTHOLS CATALYZED BY METAL COMPLEXES OF AMINO CARBOXYLIC AND AMINO SULFONIC ACIDS

Thomas F. Rutledge, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 550,860, Feb. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 500,210, Aug. 23, 1974, abandoned. This application Mar. 12, 1976, Ser. No. 666,228
Int. Cl.² C07C *37/00*, *39/12*, *39/16*, *45/16*, *49/62*, *49/72*
U.S. Cl. 260—396 N 17 Claims

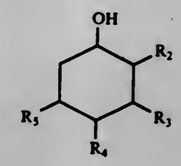
1. A method of preparing a condensation product of an alkylphenol, an alkoxyphenol or a 1-naphthol, having one of the following formulas



wherein

R_2 and R_6 are alkyl groups containing from 1 to about 12 carbon atoms, provided that only one of said alkyl groups may be a tertiary alkyl, and

R_3 and R_5 are hydrogen or alkyl groups containing from 1 to 12 carbon atoms provided that if both R_3 and R_5 are alkyl only one of said alkyl groups may be a tertiary alkyl;



wherein

R_2 and R_4 are alkyl groups containing from 1 to about 12 carbon atoms, provided that at least one of said alkyl groups is a tertiary alkyl, and

R_3 and R_5 are hydrogen or alkyl;

R_3 and R_5 are hydrogen or alkyl;

4,067,891

2A,2B-DIHOMO-16,16-DIMETHYL-PGF$_2$ANALOGS

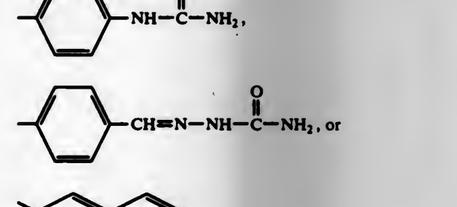
Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 550,368, Feb. 18, 1975, abandoned. This application Sept. 24, 1976, Ser. No. 726,447

Int. Cl.[2] C07C *177/00*

U.S. Cl. 260—410.9 R 7 Claims

1. An optically active compound of the formula:



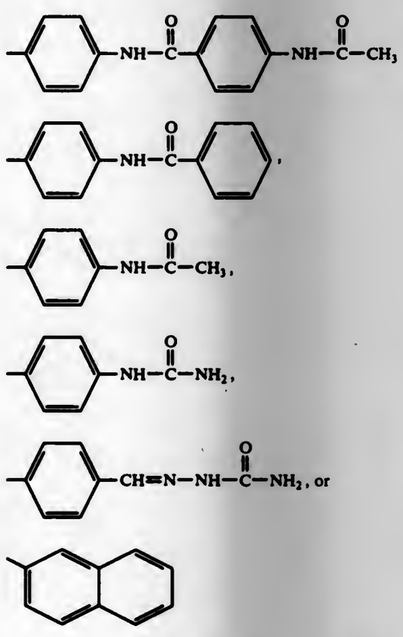
wherein Z is



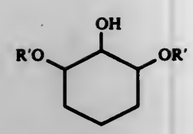
or



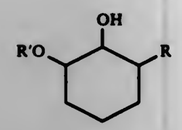
and wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive,



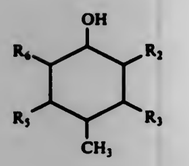
or pharmacologically acceptable salts thereof when R_1 is hydrogen.



wherein OR' is an alkoxy group containing from 1 to about 6 carbon atoms;



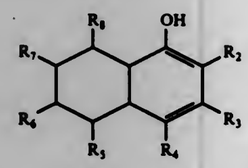
wherein R is an alkyl group containing from 1 to about 12 carbon atoms and OR' is an alkoxy group containing from 1 to about 6 carbon atoms;



wherein

R_3 and R_5 are hydrogen, alkyl groups containing from 1 to about 5 carbon atoms, or alkoxy groups containing from 1 to about 6 carbon atoms provided that if both R_3 and R_5 are alkyl or alkoxy groups only one of said groups may be a tertiary alkyl or alkoxy; and

R_2 and R_6 are alkyl groups containing from 1 to about 12 carbon atoms or alkoxy groups containing from 1 to about 6 carbon atoms provided that only one of said substituents may be a tertiary alkyl or alkoxy; and



wherein

R_2, R_3 and R_4 are hydrogen, alkyl containing from 1 to 5 carbon atoms, or alkoxy containing from 1 to 6 carbon atoms, provided that either R_2 or R_4 is hydrogen and R_5, R_6, R_7 and R_8 are hydrogen, alkyl containing from 1 to 5 carbon atoms or alkoxy containing from 1 to 6 carbon atoms provided that tertiary alkyl or alkoxy groups are not attached to adjacent carbon atoms of the naphthalene molecule, said method comprising contacting an aqueous mixture of the phenol or naphthol with oxygen in the presence of a catalyst consisting essentially of a metal complex of an aminocarboxylic acid or an aminosulfonic acid wherein the metal is selected from the group consisting of cupric, cobaltous, manganous and nickelous ions, said metal complex being the product obtained by reacting a source of the metal ion with an aminocarboxylic or an aminosulfonic acid.

4,067,892

SUBSTITUTED (4-CARBOXYPHENOXY) PHENYL ALKANE COMPOUNDS

David Edward Thorne, Cranleigh; Keith Howard Baggaley, Redhill, and Brian Morgan, Reigate, all of England, assignors to Beecham Group Limited, Great Britain

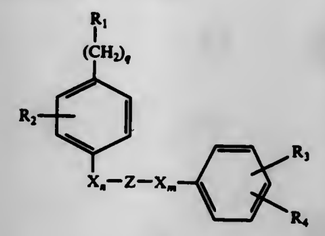
Division of Ser. No. 495,119, Aug. 5, 1974, Pat. No. 3,983,164. This application Jan. 9, 1976, Ser. No. 647,727

Claims priority, application United Kingdom, Mar. 26, 1974, 13911/74; Sept. 11, 1973, 42654/73; Aug. 23, 1973, 39902/73

Int. Cl.[2] C11C *3/02;* C09F *5/08*

U.S. Cl. 260—410.9 R 7 Claims

1. A compound of the formula:



wherein

R_1 is a C_1 to C_7 alkyl carbonyl unsubstituted or substituted with carboxyl or C_1 to C_6 alkoxy carbonyl group converted in the human body to a carboxylic acid group;

R_2 is hydrogen, lower alkyl or lower alkoxyl;

R_3 is hydrogen, halogen lower alkyl or lower alkoxyl;

R_4 is hydrogen, halogen, phenyl, lower alkyl, lower alkoxyl, halo-lower alkyl, nitro, or a carboxylic ester group; or R_3 and R_4 together form the residue of a benzene ring;

Z is oxygen or sulphur;

X is straight or branched chain lower alkylene or lower-alkylene-oxy;

q is zero or an integer from 1 to 12; and

one of *m* and *n* is zero and the other is one.

7. The compound according to claim 1 which is 4-(7-methoxycarbonyl-(n)-heptyl-carbonyl)-phenoxy-(4'-methyl-phenyl) methane.

4,067,893

AQUEOUS UREA METAL COMPLEX COMPOSITION

Harry L. Lander, Trenton, N.J., assignor to Poly-Chem Industries, Inc., Saddle Brook, N.J.

Continuation of Ser. No. 422,857, Dec. 7, 1973, abandoned, which is a division of Ser. No. 169,092, Aug. 4, 1971, Pat. No. 3,787,368, which is a continuation-in-part of Ser. No. 100,805, Dec. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 9,076, Feb. 7, 1970, abandoned. This application Mar. 17, 1975, Ser. No. 558,918

Int. Cl.[2] C07F *7/28, 7/00;* C08L *61/24*

U.S. Cl. 260—429.3 2 Claims

1. An aqueous urea-metal complex composition comprising:

a. a urea-metal complex consisting a metal selected from the group consisting of zirconium, hafnium or titanium is a mole ratio of 0.01 to 0.5 moles of metal to one mole of urea; and

b. water, in a ratio of 0.3 to 10.0 moles of water per mole of urea; said composition having an acid value of less than one.

4,067,894

PROCESS FOR THE PRODUCTION OF GRANULAR METAL-CAPTURING AGENTS FOR TREATING WASTE EFFLUENTS CONTAINING HEAVY METALS

Nakaji Yuki, Kawaguchi, and Akio Yauchi, Tokyo, both of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 11, 1976, Ser. No. 666,054

Claims priority, application Japan, May 6, 1975, 50-54371

Int. Cl.[2] B01J *21/16*

U.S. Cl. 252—446 5 Claims

1. A process for the production of granular metal-capturing agents for treating waste effluents containing heavy metals, characterized by subjecting a waste clay from an oil purification treatment to a preliminary dry distillation treatment to reduce the oil content thereof to less than 10%, mixing 100 parts by weight of said treated waste clay with 25–40 parts by weight of an organic carbonaceous binding agent, pelletizing 100 parts by weight of this mixture together with 8–15 parts by weight of an organic pelletizing agent, and thereafter subjecting the resultant granules to a dry distillation treatment conducted at 450°–900° C for a time of at least 1 hour.

4,067,895

N-(PARA-HYDROXYBIPHENYL)AMIDES

Kurt Hofer, Basel; Rudolf Moesch, and Guenther Tscheulin, both of Aargua, all of Switzerland, and Anton Voykowitsch, Enzerfdorf-Sudstadt, Austria, assignors to Sandoz Ltd., Basel, Switzerland

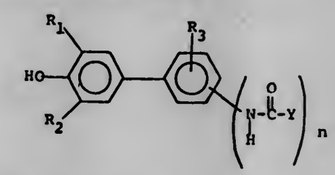
Continuation-in-part of Ser. No. 418,709, Nov. 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 354,238, Apr. 25, 1973, abandoned. This application Sept. 12, 1975, Ser. No. 612,812

Claims priority, application Switzerland, Apr. 28, 1972, 6443; Nov. 29, 1974, 14474

Int Cl.[2] C07C *103/38*

U.S. Cl. 260—404 5 Claims

1. A compound of the formula

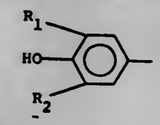


in which:

R_1 is tertiary alkyl of 4 to 9 carbon atoms,

R_2 is an alkyl, cycloalkyl or cycloalkylalkyl radical of up to 18 carbon atoms or aralkyl of up to 18 carbon atoms,

R_3 is hydrogen, an alkyl, cycloalkyl or cycloalkylalkyl radical of up to 9 carbon atoms, halogen, cyano, trifluoromethyl or a radical of formula



, COOM OR CONHZ

in which:

R_1 and R_2 are as defined above, M is hydrogen or an alkyl radical of 1 to 9 carbon atoms, and

Z is alkyl of 1 to 9 carbon atoms,

Y is an aliphatic hydrocarbon radical which is saturated or unsaturated with one or two double or triple bonds with a total of up to 22 carbon atoms and is unsubstituted or substituted by halogen, OH, CN or COOH, and *n* is 1 or 2.

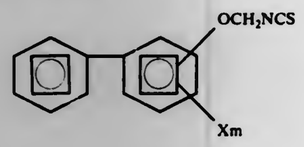
4,067,896

(ISOTHIOCYANATO-METHOXY) BIPHENYLS

James K. Pierce, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 15, 1976, Ser. No. 742,038
Int. Cl.² A01N 9/18; C07C 161/04
U.S. Cl. 260—454 15 Claims

1. (Isothiocyanatomethoxy)-1,1'-biphenyl compounds corresponding to the formula



wherein

X represents, at each and every occurrence, Cl, Br, F, OCH_3, NO_2 or an alkyl group having from one to four carbon atoms, and

m is an integer having a value of 0, 1, 2, 3 or 4.

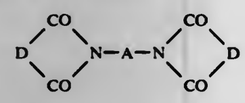
4,067,897

HEAT-RESISTANT FLAMEPROOF COMPOSITIONS

Maurice Ducloux, Lyon, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Mar. 3, 1976, Ser. No. 663,357
Claims priority, application France, Mar. 13, 1975, 75 07897
Int. Cl.² C08K 3/02
U.S. Cl. 260—45.7 P 6 Claims

1. A heat-curable composition based on a prepolymer obtained by reacting (a) an N,N'-bis-imide of an unsaturated dicarboxylic acid of the formula



in which D represents a divalent radical containing a carbon-carbon double bond and A is a divalent radical which possesses at least 2 carbon atoms, and (b) a di-primary diamine of the general formula $NH_2 — B — NH_2$, in which B represents a divalent radical which does not have more than 30 carbon atoms, in a ratio of number of mols of bis-imide/number of mols of diamine of between 1.2 and 5, wherein the composition contains up to 15% by weight, relative to the weight of the prepolymer, of red phosphorus in the form of a powder having a mean particle size of less than 200μ.

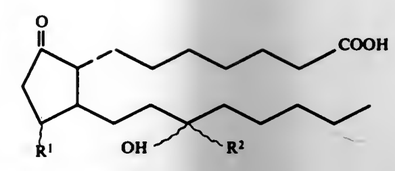
4,067,898

PROSTAGLANDIN DERIVATIVES

Donald P. Strike, St. Davids, and Wen-Ling Kao, Devon, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 494,118, Aug. 2, 1974, which is a division of Ser. No. 384,769, Aug. 1, 1973, Pat. No. 3,845,042, which is a continuation-in-part of Ser. No. 282,200, Aug. 21, 1972, abandoned. This application June 11, 1976, Ser. No. 695,228
Int. Cl.² C07C 121/46
U.S. Cl. 260—464 2 Claims

1. A compound of the formula



wherein R^1 is cyano and R^2 is methyl.

4,067,899

TERPENOPHENOLS

Jean Mardiguian, Paris, France, assignor to Societe Anonyme dite: MAR-PHA, Societe d'Etude et d'Exploitation de Marques, France

Filed Apr. 9, 1975, Ser. No. 566,364
Claims priority, application United Kingdom, Apr. 11, 1974, 16142/74
Int. Cl.² A61K 31/275; C07C 121/75
U.S. Cl. 260—465 F 2 Claims

1. 2-isobornyl-4-cyano-5-methylphenol.
2. 2-isobornyl-4-cyanophenol.

4,067,900

HYDROGENOLYSIS OF ALCOHOLS, KETONES, ALDEHYDES, ESTERS AND ETHERS

George M. Intille, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 25, 1975, Ser. No. 607,308
Int. Cl.² C07C 67/08
U.S. Cl. 560—138 29 Claims

1. A process for the hydrogenolysis of alcohols, ethers having oxygen attached to aliphatic carbon, ketones, aldehydes and carboxylic esters which comprises contacting at least one of such compounds with hydrogen and a catalyst having as essential an iridium or rhodium component and a halogen component, in which halogen is selected from the group consisting of iodine, bromine, and chlorine, in amount sufficient to catalyze the hydrogenolysis and with the hydrogen being present in sufficient excess over other gaseous components to cause hydrogenolysis in which oxygen cleaved from a carbon atom in the said compounds is replaced by hydrogen under conditions to obtain a high yield and recovery of products of such hydrogenolysis.

4,067,901

METHOD FOR PREPARING MERCAPTO PROPIONIC ACID ESTERS AND POLYTHIO DIPROPIONIC ACID ESTERS

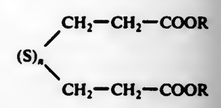
Shaul Gladstone, Arden, Del.; Srinivasa R. Rao, Ridgewood, N.J., and C. Joseph Rosshirt, Luling, La., assignors to Witco Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 614,828, Sept. 19, 1975, which is a continuation-in-part of Ser. No. 380,006, July 17, 1973, abandoned. This application May 11, 1977, Ser. No. 795,677
Int. Cl.² C07C 148/00, 149/20
U.S. Cl. 560—147 25 Claims

1. A process for the preparation of at least one reaction product selected from the group consisting of mercaptopropionic acid esters of the formula:

$$HS — CH_2 — CH_2 — COOR$$

and polythiodipropionic acid esters of the formula:



wherein *n* is a number from 2 to 10 and R is selected from the group consisting of alkyl, cycloalkyl, and alkyl cycloalkyl having from one to about eight carbon atoms which comprises reacting hydrogen sulfide and an acrylic acid ester of the formula:

$$CH_2=CH — COOR$$

wherein R is selected from the group consisting of alkyl, cycloalkyl, and alkyl cycloalkyl having from one to about eight carbons atoms, and elemental sulfur in an amount within the range from about 0.01 to about 5 moles per mole of acrylic acid ester in an essentially nonaqueous system containing less than 5% water and in the presence of a reactive solvent comprising polythiodipropionic acid ester of the formula above; the polythiodipropionic acid ester being present in an amount of at least 30% by weight of the total of any monothiodipropionic acid ester and of the polythiodipropionic acid ester present; a weakly basic amine catalyst selected from the group consisting of ammonia, primary, secondary, and tertiary amines and quaternary amines; the weakly basic amine catalyst being present in an amount within the range from about 0.1 to about 10% by weight of the reaction mixture; the reaction being carried out at a temperature within the range from about 0 to about 150° C and an H_2S concentration within the range from about 0.1% to saturation in the reactive solvent under the reaction conditions; and recovering at least one reaction product selected from the group consisting of mercaptopropionic acid ester and polythiodipropionic acid ester from the resulting reaction mixture.

4,067,902

MIXING TWO IMMISCIBLE FLUIDS OF DIFFERING DENSITY

Darrell L. Werges, Park Forest, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 428,064, Dec. 26, 1973, Pat. No. 3,929,421.
This application May 5, 1974, Ser. No. 574,379
The portion of the term of this patent subsequent to Aug. 26, 1992, has been disclaimed.
Int. Cl.² C07C 103/08
U.S. Cl. 260—561 N 13 Claims

1. A process for mixing and reacting two at least partially immiscible fluids of differing density, one of which is substantially always in a liquid phase, under conditions of substantially equal distribution of said liquids comprising the steps of simultaneously and continuously, but in a sequential manner

A. charging the more dense fluid to a first portion of a feed distribution zone, said first portion being located remotely relative to substantially all of the respective end entrance openings of each of a plurality of tubular reaction zones, in a manner such that a substantially uniform velocity profile of each of said plurality of tubular reaction zones in a common chamber, and

G. removing said resulting so collected mixture from said chamber.

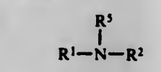
4,067,903

MANUFACTURE OF ARYLAMINES

Helmut Hoch, Wachenheim, and Horst Scheuermann, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

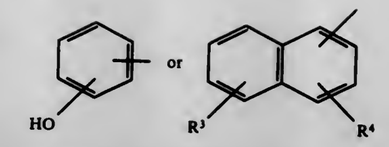
Filed Sept. 22, 1976, Ser. No. 725,395
Claims priority, application Germany, Oct. 4, 1975, 2544504; Nov. 4, 1975, 2549305; Nov. 7, 1975, 2549957; Feb. 18, 1976, 2606363
Int. Cl.² C07C 93/02, 93/06, 87/28, 87/60
U.S. Cl. 260—570.6 12 Claims

1. A process for the manufacture of arylamines of the formula

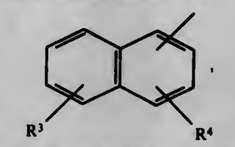


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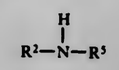
where R^1 is



or is an aliphatic, cycloaliphatic or araliphatic radical, R^2 is an aromatic radical and, if R^1 is



may also be an aliphatic, cycloaliphatic or araliphatic radical, R^3 and R^4 may be identical or different and each is hydrogen, an aliphatic radical or alkoxy and R^5 is hydrogen or, if R^1 is an aliphatic, cycloaliphatic or araliphatic radical, may also be an aliphatic, cycloaliphatic or araliphatic radical, wherein amines of the formula

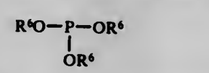


II

where R^2 and R^5 have the above meanings, are reacted with alcohols of the formula

$$R^1 — OH$$ III

where R^1 has the above meanings, in the presence of a phosphorus-III compound of the formula



IV

where the individual R^6 radicals may be identical or different and each is hydrogen or an aliphatic, araliphatic or aromatic radical, as the catalyst.

4,067,904

ALKYLSULFONYLPHENOXYPROPANOLAMINE DERIVATIVES

William T. Comer, and William E. Kreighbaum, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 642,638, Dec. 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 455,099, March 27, 1974, abandoned. This application Sept. 10, 1976, Ser. No. 722,853
Int. Cl.² C07C 93/06
U.S. Cl. 260—570.7 4 Claims

1. A compound selected from the group consisting of 1-(phenoxyisopropylamino)-3-[4-(methylsulfonyl)-m-tolyloxy]-2-propanol or a pharmaceutically acceptable non-toxic acid addition salt thereof.

4,067,905

PREPARATION OF 2-AMINO-N-BUTANOL

Guy Adrian, Lille; Marcel-Xavier Sion, Douai, and Andre' Benattar, Lille, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Paris, France

Filed Jan. 20, 1976, Ser. No. 650,695
Claims priority, application France, Feb. 4, 1975, 75.03431; Nov. 13, 1975, 75.34567
Int. Cl.² C07C 91/04
U.S. Cl. 260—584 R 11 Claims

1. In a process for the production of 2-amino-n-butanol by the formylation of 1-nitropropane and reductive hydrogena-

tion of the resulting 2-nitro-n-butanol, the improvement comprising the steps of:

contacting 1-nitropropane with formaldehyde, in a molar ratio within the range of 1.1:1.0 to 1.0:1.0, in a stirred aqueous medium which is free from organic solvents and in the presence of a minor proportion of a basic agent which acts both as a catalyst for the formylation reaction and as a surfactant, said basic agent being selected from the group consisting of quaternary ammonium hydroxides and tertiary amines;

allowing the stirred reaction medium to settle;

separating the lower phase comprising 2-nitro-n-butanol free from 2-nitro-2-ethylpropane; and

reductively hydrogenating the separated 2-nitro-n-butanol.

4,067,906

NOVEL PROCESS FOR THE SYNTHESIS OF TRICYCLO[6.2.2.0^{3,8}]DODECANE DERIVATIVES

Robert F. Tavares, Cedar Grove, N.J., and Elliot Katten, New York, N.Y., assignors to Givaudan Corporation, Clifton, N.J.

Filed Aug. 3, 1976, Ser. No. 711,321

Int. Cl.^{2} C07C *43/00, 49/48*

U.S. Cl. 260—586 G **6 Claims**

1. The process for the preparation of 1,7,7-trimethyltricyclo[6.2.2.0^{3,8}]dodec-9-en-4-one from 4-methyl-4-p-tolylpentanoic acid which comprises:

a. 1,4-hydrogenating the aromatic ring of the 4-methyl-4-p-tolylpentanoic acid via a Birch reduction to 4-methyl-4(4-methyl-1,4-cyclohexadien-1-yl)pentanoic acid;

b. isomerizing the 4-methyl-4(4-methyl-1,4-cyclohexadien-1-yl)pentanoic acid to 4-methyl-4(4-methyl-1,3-cyclohexadien-1-yl)pentanoic acid in the presence of a base;

c. reacting the 4-methyl-4(4-methyl-1,3-cyclohexadien-1-yl)pentanoic acid with vinyl lithium to form the intermediate 6-methyl-6(4-methyl-1,3-cyclohexadien-1-yl)hepten-3-one which is converted via an internal Diels-Alder reaction to form the 1,7,7-trimethyltricyclo[6.2.2.0^{3,8}]dodec-9-en-4-one.

4. 1,7,7-Trimethyltricyclo[6.2.2.0^{3,8}]dodec-9-en-4-one, an intermediate of claim 1.

4,067,907

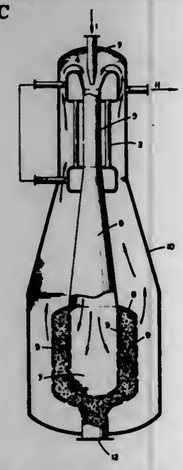
2-DECARBOXY-2-HYDROXYMETHYL-3,7-INTER-M-PHENYLENE-PGD, COMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

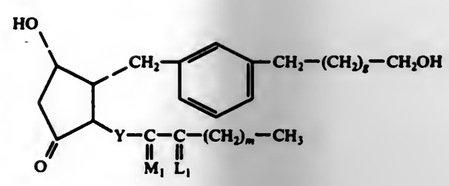
Division of Ser. No. 647,363, Jan. 8, 1976, Pat. No. 4,028,419. This application Mar. 17, 1977, Ser. No. 778,759

Int. Cl.^{2} C07C *49/82*

U.S. Cl. 260—590 C **22 Claims**

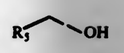


1. A prostaglandin analog of the formula

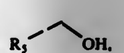


wherein Y is trans-CH=CH—;

wherein M_1 is

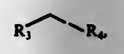


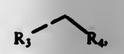
or



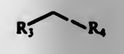
wherein R_5 is hydrogen or methyl;

wherein L_1 is





or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;

wherein *g* is one, 2, or 3; and

wherein *m* is one to 5, inclusive.

4,067,908

PROCESS FOR THE PRODUCTION OF FORMALDEHYDE

Amilcare Collina; Emanuele Malfatti, and Antonio Cappelli, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 359,356, May 11, 1973, abandoned. This application May 19, 1975, Ser. No. 578,873

Claims priority, application Italy, May 15, 1972, 24339

Int. Cl.^{2} C07C *45/16*

U.S. Cl. 260—603 C **5 Claims**

1. In a process for oxidizing methanol to formaldehyde wherein a gaseous feed stream containing a mixture of methanol and air is heated to from 200° C. to 400° C. and passed over a metal oxide catalyst bed which promotes substantially complete oxidation of the methanol to formaldehyde and the resulting formaldehyde is separated from the gaseous oxidation product, the improvement which comprises recycling only a cooled portion of said oxidation product to the feed stream before any formaldehyde has been separated therefrom in an amount which provides a molar ratio of formaldehyde to methanol of between 0.3 and 5 in the mixture of the recycled portion of the oxidation product with the feed stream and passing this mixture over the said catalyst bed.

4,067,909

NOVEL DI(ARYL)METHYL ALKYL SULFONES

George G. Ecke, Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 578,598, May 19, 1975, abandoned. This application July 7, 1976, Ser. No. 703,168

Int. Cl.^{2} C07C *147/06;* A01N *9/14*

U.S. Cl. 260—607 AR **7 Claims**

1. A compound represented by the general formula



wherein:

Ar is 4-chlorophenyl,

Ar' is an aryl selected from the group consisting of 4-chlorophenyl, and 2-chlorophenyl, and

R is an alkyl of from one to four carbon atoms.

4,067,910

PROCESS FOR MAKING ALLYLMERCAPTAN

Georg Fritter, Greifensee; Trudi Sigg-Gritter, Winterthur, and Jost Wild, Porrentruy, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

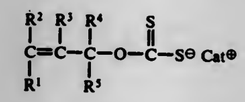
Division of Ser. No. 675,002, April 8, 1976, abandoned. This application Nov. 3, 1976, Ser. No. 738,209

Claims priority, application Switzerland, Apr. 14, 1975, 4645/75; Feb. 25, 1976, 2318/76

Int. Cl.^{2} C07C *149/08, 149/26*

U.S. Cl. 260—609 R **3 Claims**

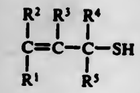
1. A process for the manufacture of allylmercaptans, which process comprises heating an allyl xanthogenate of the formula:



(II)

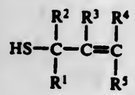
wherein R^1, R^2, R^3, R^4 and R^5 each independently represent a hydrogen atom or a lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl or lower cycloalkenyl group which may carry an oxygen-containing substituent, or R^2 and R^3 or R^2 and R^4 or R^3 and R^4 can be joined together to form a ring, and Cat+ denotes the cation of a base selected from the group consisting of alkali metal hydroxides, alkaline earth metal hydroxides, alcoholates, alkali metal hydrides, alkaline earth metal hydrides, metal alkyls and metal aryls,

in an aqueous liquid medium to give a mixture of an allylmercaptan of the general formula



(Ia)

wherein R^1, R^2, R^3, R^4 and R^5 have the significance given earlier in this claim, and an allylic rearrangement product thereof of the general formula



(Ib)

wherein R^1, R^2, R^3, R^4 and R^5 have the significance given earlier in this claim, the ratio of allyl xanthogenate to liquid being from about 1:10 to 1:50.

4,067,911

HALOGENATED POLYETHER-POLYOLS AND POLYURETHANE FOAMS MANUFACTURED FROM THE LATTER

Rene Walraevens, Brussels, and Andre Collin, Ligny, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

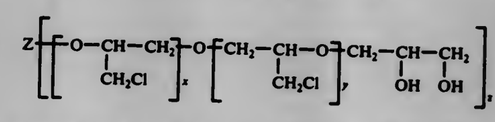
Division of Ser. No. 517,396, Oct. 23, 1974, Pat. No. 4,020,024. This application Jan. 24, 1977, Ser. No. 761,661

Claims priority, application France, Oct. 24, 1973, 73.38186

Int. Cl.^{2} C07C *43/02, 43/12;* C08J *9/00*

U.S. Cl. 260—615 B **10 Claims**

1. A polyether-polyol of the general formula:



in which *z* represents a number from 2 to 6; *x* and *y* represent numbers from 0 to 7 such that the average value $x + y$ per chain is from 0 to 7; $z(x + y)$, wherein $x + y$ represents the average value of $x + y$ throughout the entire molecule, is from 1 to 42; Z represents a C_2 to C_6 aliphatic radical of valency *z*; and R represents a C_1 to C_3 monovalent aliphatic radical.

4,067,912

PRODUCTION OF PHENOLS

Peter Graham Spencer Field, Poulton-cum-Spital, and Ronald Bennett, Chester, both of England, assignors to Burmah Oil Trading Limited, Cheshire, England

Filed July 10, 1975, Ser. No. 594,681

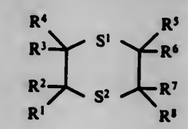
Claims priority, application United Kingdom, July 19, 1975, 32153/75

Int. Cl.^{2} C07C *37/08, 39/06*

U.S. Cl. 260—621 C **21 Claims**

1. In a process comprising decomposing an aralkyl hydroperoxide, in which the aryl nucleus is substituted by at least one alkylhydroperoxide group containing from 2 to 24 carbon atoms and said aryl nucleus may be further substituted by one or more substituents selected from halogen atoms and alkyl, alkoxy and nitro groups, to produce a correspondingly substituted or unsubstituted mono- or polyhydric phenol, the improvement comprising:

effecting the decomposition at a temperature of from ambient temperature to 180° C in the presence of a catalyst comprising a compound of the formula



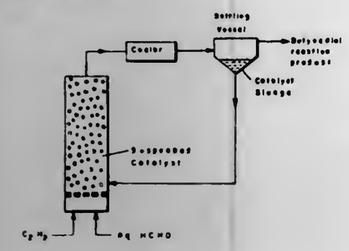
wherein R_1, R_4, R_5 and R_8 each independently represents a hydrogen atom or an unsubstituted hydrocarbyl group containing up to 24 carbon atoms, R_2 and R_3 each independently represents a hydrogen atom, an unsubstituted hydrocarbyl group containing up to 24 carbon atoms, or together represent an additional bond linking the carbon atoms to which they are attached, R_6 and R_7 each independently represents a hydrogen atom, an unsubstituted hydrocarbyl group containing up to 24 carbon atoms, or together represent an additional bond linking the carbon atoms to which they are attached, and S_1 and S_2 each independently represents a sulphur atom or a sulphoxide or sulphone group.

4,067,913

PROCESS FOR THE PRODUCTION OF 2,5-DICHLORO-4-BROMOPHENOL

John Michniak, Bellwood, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 236,452, March 20, 1972, abandoned. This application Nov. 4, 1974, Ser. No. 520,326
Int. Cl.[2] C07C *39/30*
U.S. Cl. 260—623 H 17 Claims



1. A process for the preparation of 2,5-dichloro-4-bromophenol which comprises reacting a mixture of 2,5-dichlorophenol and 2,4-dichlorophenol with about 0.9 to about 1.2 molar amounts of bromine per mole of 2,5-dichlorophenol in a glacial acetic acid reaction medium at a temperature between about 0° C. and about 40° C., thereafter recovering the 2,5-dichloro-4-bromophenol.

15. A process for the preparation of 4-bromo-2,5-dichlorophenol which comprises reacting a mixture of 2,5-dichlorophenol and 2,4-dichlorophenol, said mixture having at least 55 percent 2,5-dichlorophenol, with an equimolar amount of bromine in a glacial acetic acid reaction medium at a temperature of about 30° C. and thereafter recovering the 4-bromo-2,5-dichlorophenol.

4,067,914

MANUFACTURE OF BUTYNEDIOL

Wolfgang Reiss, Ludwigshafen; Siegfried Winderl, Heidelberg-Wieblingen; Wolfgang Schroeder, Bad Durkheim, and Herwig Hoffmann, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 29, 1976, Ser. No. 671,384
Claims priority, application Germany, Apr. 5, 1975, 2514990
Int. Cl.[2] C07C *29/00*
U.S. Cl. 260—635 Y 3 Claims

1. In a process for the continuous manufacture of butynediol by reaction of acetylene with formaldehyde in aqueous solution at a temperature of from about 60° to 100° C in a reaction chamber in contact with a copper acetylide-containing catalyst suspended in the reaction mixture, withdrawing a portion of the reaction mixture, said withdrawn portion being essentially free from acetylene and comprising an aqueous solution of aqueous formaldehyde, butynediol and suspended copper acetylide-containing catalyst, and separating said suspended catalyst from said withdrawn portion, the improvement comprising separating said copper acetylide-containing catalyst which is suspended in said withdrawn portion under conditions wherein said catalyst remains in contact with the substantially acetylene-free withdrawn portion of said reaction mixture for a period of not more than five minutes at temperatures above 60° C.

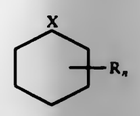
4,067,915

METHOD FOR PRODUCING CYCLOHEXANE DERIVATIVES DIRECTLY FROM AROMATIC HYDROCARBONS

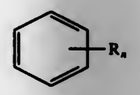
Yutaka Yasuhara; Masaki Nishino, and Seikichi Matsuhisa, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 29, 1975, Ser. No. 581,788
Claims priority, application Japan, June 5, 1974, 49-62844; Nov. 7, 1974, 49-127523
Int. Cl.[2] C07C *23/10*
U.S. Cl. 260—648 R 20 Claims

1. A process for producing a cyclohexane derivative having the general formula



wherein X is selected from the group consisting of chlorine, bromine and iodine R is a lower alkyl group having 1 to 3 carbon atoms, and *n* is an integer of from 0 to 2, which process comprises reacting an aromatic hydrocarbon having the general formula



wherein R and *n* are the same as above, with hydrogen and a compound having the general formula HX, wherein X is the same as above, in the presence of a strong acid and a hydrogenation catalyst that contains at least one noble metal of Group VIII metals at a pressure of 0.01 - 500 Kg/cm² and at a temperature of 0°–300° C.

4,067,916

PROCESS FOR THE MANUFACTURE OF PERFLUORALKYL IODIDES

Horst Jaeger, Bettingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 351,118, April 13, 1973, abandoned, which is a continuation of Ser. No. 2,655, Jan. 13, 1970, abandoned. This application May 8, 1975, Ser. No. 575,564
The portion of the term of this patent subsequent to Jan. 19, 1988, has been disclaimed.
Int. Cl.[2] C07C *19/07, 19/09*
U.S. Cl. 260—653.1 T 10 Claims

1. A process for the manufacture of fluoralkyliodides of higher molecular weight from the corresponding perfluoralkyliodides of lower molecular weight, which comprises telomerizing

a. a perfluoralkyliodide selected from the group consisting of a branched perfluoralkyl mono- or di-iodide containing 1 to 10 carbon atoms and a linear perfluoralkyl mono- or di-iodide containing 1 to 10 carbon atoms,

b. a member selected from the group consisting of tetrafluorethylene, hexafluorpropylene, trifluorethylene, trifluorochlorethylene and pentafluorchloropropylene, and

c. a member selected from the group consisting of N-ethylethanalamine aminoethylisopropanolamine, diethylethanolamine, N-(2, hydroxyethyl)-ethylenediamine, isopropanolamine, tri-isopropanolamine, N-ethylethanalamine, N-methylethanolamine, diethanolamine, triethanolamine, monoethanolamine, N-hydroxy-ethylmorpholine, morpholine, N-hydroxyethylpiperazine, 3-diethyl-aminophenol, glycine and diethylamine, in the presence of

d. a metal salt wherein said salt is a halide, phosphate, carbonate, nitrate, sulphate, cyanide, hydride or ethylate, of a metal of groups IIIa, IIIb to VIb and VIII of the 4th to 6th period or of groups Ia or IIa of the Periodic Table as the catalyst,

at 0° to 350° C and under a pressure from 0 to 200 atmospheres (gauge).

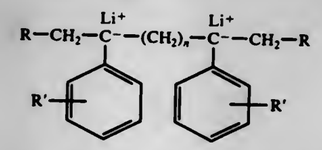
4,067,917

ORGANO-LITHIUM COMPOUNDS AND A PROCESS FOR THEIR PREPARATION

Pierre Sigwalt, Saint Michel sur Orge; Patrick Guyot, Paris; Michel Fontanille, Montmorency, and Jean-Pierre Vairon, Paris, all of France, assignors to Societe Chimique des Charbonnages-Cdf Chimie, Paris and Agence Nationale de Valorisation de la Recherche, Neully sur Seine, both of, France

Filed June 7, 1976, Ser. No. 693,730
Claims priority, application France, June 6, 1975, 75.17716
Int. Cl.[2] C08F *4/48*
U.S. Cl. 260—665 R 10 Claims

1. Organo-lithium compounds of the formula:



wherein *n* is an integer from 2 to 10, R′ is either hydrogen or an alkyl group having up to 5 carbon atoms, and R is an alkyl group having up to 5 carbons atoms, the optimal ultraviolet absorption being characterized by a wave-length of 335 nm and by a molar extinction coefficient of 1.5×10^4 mole $^{-1}$/l/cm^{-1}.

4,067,918

3-BUTEN-1-YL (3) AND 3 BUTEN-2-YL (1) CYCLOOCTADIENE (1,5)

Gunther Wilke, and Paul Heimbach, both of Mulheim, Rhur, Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim, Ruhr, Germany

Division of Ser. No. 585,287, June 9, 1975, Pat. No. 4,032,585, which is a continuation of Ser. No. 463,087, April 22, 1974, Pat. No. 3,929,921, which is a division of Ser. No. 109,949, Jan. 26, 1971, Pat. No. 3,849,506, which is a division of Ser. No. 843,220, July 18, 1969, Pat. No. 3,586,727, and Ser. No. 845,901, July 29, 1969, Pat. No. 3,629,347, and Ser. No. 845,904, July 29, 1969, abandoned, each is a continuation-in-part of Ser. No. 582,775, Sept. 27, 1966, abandoned. This application Nov. 1, 1976, Ser. No. 737,764
Claims priority, application Germany, Sept. 29, 1965, 1493221
Int. Cl.[2] C07C *3/035*
U.S. Cl. 260—666 A 2 Claims

1. 3-Buten-1-yl(3)cyclooctadiene(1,5).

4,067,919

SELECTIVE CONVERSION OF CYCLOPARAFFINS TO FORM PARA-XYLENE USING AN ANTIMONY ZEOLITE CATALYST

Stephen A. Butter, East Windsor, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 634,992, Nov. 24, 1975, Pat. No. 4,007,231. This application Aug. 31, 1976, Ser. No. 719,296
Int. Cl.[2] C07C *15/08*
U.S. Cl. 260—668 D 8 Claims

1. A process for the production of para-xylene which comprises contacting a charge stock consisting essentially of cyclohexane, cyclopentane or an alkyl cyclopentane having alkyl groups of from 1 to 5 carbon atoms, under conversion conditions, including a temperature between about 400° and about 700° C., a pressure between about atmospheric and about 1000 psig and a weight hourly space velocity of between about 0.1 and about 100, with a catalyst consisting essentially of a composite of a crystalline aluminosilicate zeolite and antimony oxide, said zeolite having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, collecting the resulting product and separating para-xylene therefrom.

4,067,920

SELECTIVE PRODUCTION OF PARA-XYLENE

Warren W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 638,864, Dec. 8, 1975, Pat. No. 4,029,716. This application Mar. 18, 1977, Ser. No. 779,204
Int. Cl.[2] C07C *3/52, 15/08*
U.S. Cl. 260—671 M 13 Claims

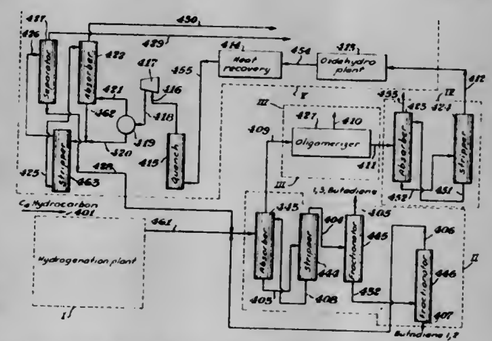
1. A process for the selective production of para-xylene which comprises contacting toluene, under methylation conditions, with a methylating agent in the presence of a catalyst consisting essentially of a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, said zeolite having combined therewith boron in an amount of at least about 0.2 percent by weight as a result of reaction of said zeolite with a boron-containing compound selected from the group consisting of boric acid, trimethylborate, boron hydride, boron oxide, boron sulfide, butylboron dimethoxide, butylboronic acid, dimethylboric anhydride, hexamethylborazine, phenylboric acid, triethylborane, tetramethylammonium borohydride, triphenyl boron and allylborate; cooling the resulting product and separating para-xylene therefrom.

4,067,921

PRIMARY ADJUNCT, CONTINUOUS DIENE PROCESS

Gunnar I. Helberg, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 6, 1976, Ser. No. 747,584
Int. Cl.[2] C07C *11/16, 7/00*
U.S. Cl. 260—680 R 10 Claims



1. A process for separating and producing C_n dienes from a C_n hydrocarbon feed stream comprising C_n alkynes, C_n n- and isoalkenes, C_n n- and isoalkanes and C_n dienes, wherein n is between 4 and 8 inclusive, the process comprising:

a. hydrogenating the C_n hydrocarbon feed stream to produce a substantially C_n alkyne-free stream comprising C_n n- and isoalkenes, C_n n- and isoalkanes, C_n dienes and heavy residues;

b. removing the heavy residues from the C_n alkyne-free stream to produce a purified C_n stream;

c. separating the purified C_n stream in a first separation zone to produce an extract stream comprising the C_n dienes and a raffinate stream comprising the C_n n- and isoalkenes and the C_n n- and isoalkanes;

d. removing the C_n isoalkenes from the raffinate stream and passing a remaining raffinate stream comprising C_n n-alkenes and isoalkanes to a second separation zone;

e. separating the remaining raffinate stream in the second separation zone to produce a C_n alkane stream comprising C_n n- and isoalkanes and a C_n alkene stream comprising C_n n-alkenes; and

f. converting the C_n alkene stream into a C_n diene stream and recycling said C_n stream to the first separation zone.

4,067,922

LITHIUM FERRITE CATALYSED OXIDATIVE DEHYDROGENATION PROCESS

Alan W. Foster, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Division of Ser. No. 578,538, May 19, 1975, Pat. No. 3,998,757. This application June 28, 1976, Ser. No. 700,575

Int. Cl.² C07C *11/12*

U.S. Cl. 260—680 E 11 Claims

1. A process for oxidative dehydrogenation comprising contacting oxygen and organic compounds having 2 to 20 carbon atoms, at least one



grouping and boiling point below about 350° C, in vapor phase at a temperature of at least about 250° C in the presence of a catalyst composition containing a lithium ferrite consisting essentially of lithium, iron and oxygen; lithium, iron oxygen and aluminum or chromium; or lithium, iron, oxygen, aluminum and chromium the mole ratio of lithium to iron being in the range between 2:5 to 1:7, said catalyst composition having a surface area of at least 8.1 m^2/gram.

4,067,923

PROCESS FOR PRODUCING ISOPRENE

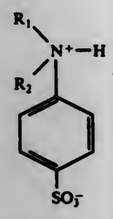
Vladimir Alexandrovich Belyaev, prospekt Oktyabrya, 41, kv. 20, Yaroslavl, and Vladimir Leontievich Rudkovsky, ulitsa Karbysheva, 17, kv. 21, Volzhsky Volgogradskoi Oblasti, both of U.S.S.R.

Filed Jan. 21, 1976, Ser. No. 651,142

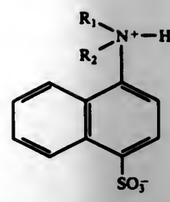
Int. Cl.² C07C *11/18*

U.S. Cl. 260—681 16 Claims

1. A process for producing isoprene comprising reacting formaldehyde with isobutylene and trimethylcarbinol in a liquid phase upon heating to a temperature of about 200° C in the presence of a catalyst selected from the group consisting of sulphamic acid, an aromatic ammonium compound containing a sulpho group in ortho- meta- or para-position and having the formula:



where R_1 and R_2 are selected from the group consisting of hydrogen, an alkyl, aryl, alkylaryl, aralkyl; hydrogen atoms in the benzene ring may be substituted by radicals of the group consisting of a methyl, halide, and sulpho group; as well as a catalyst selected from the group of ammonium condensed compounds of the naphthalene series containing a sulpho group and having the formula:



where R_1 and R_2 are selected from the group consisting of hydrogen, an alkyl, aryl, alkylaryl, aralkyl, and a reaction product of said ammonium compounds with formaldehyde, followed by isolation of the desired product.

4,067,924

DEHYDROGENATION PROCESS

Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Division of Ser. No. 540,334, Jan. 13, 1975, abandoned, which is a division of Ser. No. 475,608, June 3, 1974, Pat. No. 3,960,975. This application Aug. 10, 1976, Ser. No. 713,160

The portion of the term of this patent subsequent to Dec. 25, 1990, has been disclaimed.

Int. Cl.² C07C *3/28, 5/18, 5/32, 5/42*

U.S. Cl. 260—683.3 3 Claims

1. In the cyclic process for the non-oxidative dehydrogenation of alkyl aromatic hydrocarbon compounds to produce corresponding aromatic compounds with unsaturated side chains comprising contacting alkyl aromatic hydrocarbon compounds having 8 to 12 carbon atoms including one or two alkyl chains of 2 to 3 carbon atoms with the active surface of a catalyst to remove hydrogen from said organic compound and producing a compound having a higher degree of unsaturation than said organic compound, terminating said dehydrogenation and regenerating said catalyst by contacting said catalyst with molecular oxygen wherein the improvement comprises employing a dehydrogenation catalyst consisting essentially of magnesium chromite of the formula $MeAl_xCr_{2-x}O_4$, having spinel structure, wherein Me is Mg or Mg and one or more of the divalent ions of Ca, Sr, Ba, Fe, Mn, Co, Ni, Cu, Zn or Cd, provided that Mg comprises at least 50 atomic percent of said Me ions and x is a number of from more than 0 up to less than 1, Me and Al being incorporated into the spinel structure, and a promoting amount of aluminum oxide intimately admixed with said magnesium chromite of the structure $MeAl_xCr_{2-x}O_4$, said active surface in contact with the gaseous reactants having aluminum in all forms, and chromium in an Al:Cr atomic ratio of from 0.0004 to 1.2:1.

4,067,925

ELECTRIC INSULATOR

Hansruedi Zahner, Oberentfelden, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

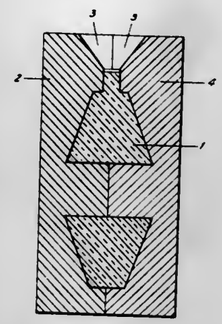
Filed June 11, 1976, Ser. No. 695,086

Claims priority, application Switzerland, Jan. 20, 1976, 609/76

Int. Cl.² C08L *63/00*

U.S. Cl. 260—830 TW 3 Claims

1. An electric insulator adapted for use in the interior of an encapsulated electric device in which electric discharges or arcs or both occur at least at times and which is filled with an electronegative gas, said insulator comprising the polymerization hardened product of a mixture consisting essentially of a polymerization hardenable cycloaliphatic epoxy resin, a hexahydrophthalic acid anhydride hardener and a filler, wherein said filler is a finely divided, ground, cured bisphenol A epoxy



resin in an amount up to 150 parts per 100 parts of said cycloaliphatic epoxy resin.

4,067,926

POWDER COATING MATERIALS

Philip Michael Cadman, Dudley, and Brian York Downing, Kingswinford, both of England, assignors to British Industrial Plastics Limited, Manchester, England

Filed Jan. 14, 1975, Ser. No. 540,878

Claims priority, application United Kingdom, Jan. 31, 1974, 4626/74

Int. Cl.² C08L *33/08, 63/02*

U.S. Cl. 260—836 7 Claims

1. A powder coating material, consisting essentially of (i) a terpolymer of a mixture of ethylenically unsaturated esters and an α,β-unsaturated carboxylic acid and (ii) a polyepoxide resin cross-linking agent, characterized in that the α,β-unsaturated carboxylic acid is present in an amount of from 11% by weight to 15% by weight of the terpolymer.

4,067,927

COPOLYCONDENSED VINYLPHOSPHONATES AND THEIR USE AS FLAME RETARDANTS

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 505,122, Sept. 11, 1974, abandoned, which is a division of Ser. No. 187,575, Oct. 7, 1971, Pat. No. 3,855,359, which is a continuation-in-part of Ser. No. 153,075, June 14, 1971, Pat. No. 3,822,327. This application June 30, 1976, Ser. No. 701,332

Int. Cl.² C08L *63/00, 67/06;* C08F *14/02*

U.S. Cl. 260—836 11 Claims

1. A flame retardant polymeric resin composition containing at least one copolycondensed vinylphosphonate said copolycondensed vinylphosphonate comprising the product resulting from the reaction in stoichiometric ratio of from about 1:10 to 10:1 between a bis-(2-haloalkyl) vinylphosphonate and at least one pentavalent phosphorus ester of the structure ROP(=O)XY where R is selected from the class consisting of C_1-C_{20} alkyl, C_2 - C_{20} alkenyl, and C_1 - C_{20} haloalkyl groups and X and Y are groups selected from the class consisting of RO -, C_1-C_{20} alkyl, C_2-C_{20} alkenyl, phenyl, phenoxy, amino, C_1-C_{20} alkyl substituted amino, phenyl substituted amino, C_2-C_{20} alkylene bonded to the same or to another ROP(=O) moiety and C_2-C_{20} alkylenoxy and C_2-C_{20} alkylenedioxy bonded to the same or to another ROP(=O) moiety, wherein said reaction is carried out at an elevated temperature for a period of time which is sufficient to evolve R-halide as a by-product and to form a P(O) — O— alkylene-O-P(O) linkage with the proviso that said product is not the homopolycondensed product of said bis-(2-haloalkyl) vinyl phosphonate.

4,067,928

METHOD OF PREPARING VINYL HALIDE POLYMERS AND COPOLYMERS WITH POLYOLEFINS

Leigh E. Walker, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 541,163, Jan. 15, 1975, Pat. No. 4,007,235. This application Nov. 30, 1976, Ser. No. 746,048

The portion of the term of this patent subsequent to Feb. 8, 1994, has been disclaimed.

Int. Cl.² C08F *255/02, 255/04, 255/06, 255/08*

U.S. Cl. 260—878 R 58 Claims

1. In the process for the preparation of a vinyl halide polymer which comprises polymerizing in bulk a vinyl halide monomer, in the liquid phase, either alone or in combination with up to about 50% by weight of another ethylenically unsaturated monomer copolymerizable therewith, in the initial presence of more than about 1.8% by weight based on said vinyl halide monomer of a polyolefin or mixture of polyolefins having a weight average molecular weight of at least about 50,000, the improvement which comprises removing from the polymerization mass during the thick paste state thereof from about 2% to less than about 50% by weight of the vinyl halide charged to the polymerization mass, the effective concentration of said polyolefin or mixture of polyolefins after said vinyl halide removal being above about 3.5 weight percent based on vinyl halide remaining in said polymerization mass after said removal of vinyl halide whereby a more finely divided particulate product of high impact strength is obtained.

4,067,929

PROMOTERS IN THE POLYMERIZATION OF MONOVINYL-AROMATIC COMPOUNDS WITH PRIMARY LITHIUM INITIATORS

Daniel H. Willis, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

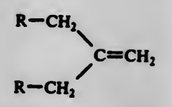
Division of Ser. No. 616,534, Sept. 25, 1975, Pat. No. 3,992,483. This application June 14, 1976, Ser. No. 695,618

Int. Cl.² C08F *293/00, 297/04*

U.S. Cl. 260—879 21 Claims

1. A process for the preparation of a block copolymer which comprises the steps of

polymerizing under solution polymerization conditions a first monomer charge selected from monovinyl-substituted aromatic hydrocarbons of 8 to 12 carbon atoms per molecule employing a primary hydrocarbyl lithium initiator and a 1,1-dialkylethylene promoter of the formula



wherein each R is hydrogen, methyl, or ethyl, effective to promote the polymerization of said first monomer with said primary hydrocarbyl lithium initiator, employing a ratio of said promoter:primary hydrocarbyl lithium initiator in the range of about 50:1 to 7500:1,

thereafter, after substantially complete polymerization of said first monovinyl-substituted aromatic hydrocarbon and prior to termination adding to the polymerization admixture a second monomer charge selected from conjugated dienes of 4 to 12 carbon atoms per molecule, and polymerizing said so added conjugated diene monomer,

thereafter, prior to termination, adding to the polymerization admixture a polyfunctional treating agent in an amount in the range of about 0.1–1.5 equivalents per equivalent of lithium, thereby preparing a coupled branched polymer, wherein the weight ratio of polymerization first monomer:second monomer is in the range of about 10-50:90-50.

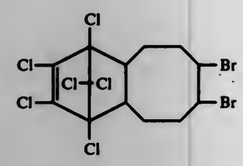
4,067,930

FLAME-RETARDANT COMPOSITION

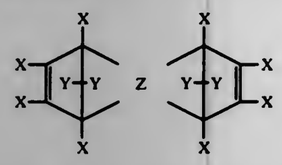
John Versnel, Plainsboro, and Joseph Green, East Brunswick, both of N.J., assignors to Cities Service Company, Tulsa, Okla.

Filed Nov. 26, 1976, Ser. No. 745,029
Int. Cl.[2] C08K 5/02
U.S. Cl. 260—880 R 12 Claims

1. A composition comprising (A) a rubber-modified polystyrene and (B) a flame-retarding amount of a mixture of about 55–95% by weight of a first flame retardant corresponding to the formula:



and about 45–5% by weight of a second flame retardant corresponding to the formula:



wherein X is bromo or chloro, Y is halo, hydrogen, or an alkyl, haloalkyl, alkoxy, or haloalkoxy group, and Z is a tetravalent hydrocarbon group containing 4–20 carbon atoms.

4,067,931

FLAME RETARDANT POLYOXYMETHYLENE DIPHOSPHONATES

Wadim Batorewicz, New Haven, Conn., assignor to Uniroyal, Inc., New York, N.Y.

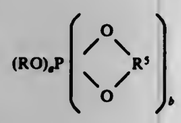
Filed May 19, 1976, Ser. No. 687,714
Int. Cl.[2] C07F 9/02
U.S. Cl. 260—927 R 12 Claims

1. A polyoxymethylene diphosphonate of the formula



wherein R^1, R^2, R^3 and R^4 are the same or different and are selected from the group consisting of alkyl having 1 to 6 carbon atoms, haloalkyl having 2 to 6 carbon atoms with the halogen being chlorine or bromine, hydroxyalkyl having 2 to 5 carbon atoms, R^1 and R^2, and R^3 and R^4 are respectively joined together to form ring structures having 2 to 3 carbon atoms said ring structures being optionally substituted with up to two methyl or chloromethyl groups, and wherein n is an integer from 1 to 3.

6. A process for preparing polyoxymethylene phosphonates comprising reacting paraformaldehyde at a temperature of from 50° to 150° C. with a phosphite having the formula



wherein R is selected from alkyl having 1 to 6 carbon atoms and haloalkyl having 2 to 6 carbon atoms with the halogen being chlorine or bromine, R^5 is alkylene having 2 to 3 carbon atoms optionally substituted with alkyl and haloalkyl groups having up to 3 carbon atoms with the halogen being chlorine or bromine, "a" has a value of 1 or 3, and "b" correspondingly has a value of 1 or 0.

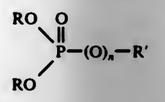
4,067,932

DERIVATIVES OF PHOSPHORUS-CONTAINING ALDEHYDES AND KETONES

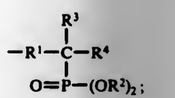
Ronald L. Muntz, Bedford Hills, and Edward N. Walsh, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed June 2, 1976, Ser. No. 692,158
Int. Cl.[2] C07F 9/09, 9/40
U.S. Cl. 260—927 R 2 Claims

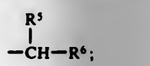
1. A flame retardant compound having the structure:



wherein n is 0 or 1; R′ has a structure selected from the group consisting of

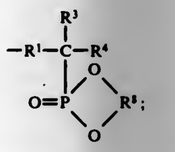


(1)



(2)

and



(3)

R and R^2 are the same or different and are selected from the group consisting of C_1-C_6 straight, branched and cyclic alkyl, aryl, aryl substituted C_1-C_6 alkyl, C_1-C_6 alkyl substituted aryl, and the hydroxylated derivatives thereof; R^1 is selected from the group consisting of straight and branched C_1-C_6 alkylene and C_1-C_6 alkenylene; R^3 is selected from the group consisting of hydrogen and C_1-C_4 straight and branched alkyl R^4 is selected from the group consisting of hydroxyl, and $-N(R^9)_2$ where R^9 is selected from the group consisting of C_1-C_4 alkyl and C_1-C_4 hydroxy alkyl; R^5 is selected from the group consisting of hydrogen and C_1-C_6 straight and branched alkyl; R^6 is selected from the group consisting of $-C(CH_2OH)_3$ and $-CH_2CH[N(R^9)_2]_2$ where R^9 is as defined above; and R^7 and R^8 are the same or different and are the difunctional analogs of R.

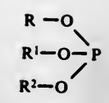
4,067,933

PHENOLIC PHOSPHITES AS STABILIZERS FOR POLYMERS

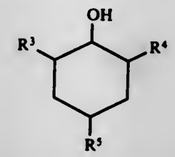
Farris H. Wilson, Jr., Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 405,247, Oct. 10, 1973, Pat. No. 3,959,221.
This application Jan. 19, 1976, Ser. No. 650,588
Int. Cl.[2] C07F 9/145
U.S. Cl. 260—930 8 Claims

1. A composition prepared by reacting a combination comprising (A) a triaryl phosphite having the following structural formula



wherein R, R^1 and R^2 are selected from the group consisting of phenyl and substituted phenyl wherein the substituted phenyl contains one or two substituents selected from the group consisting of alkyl radicals containing 1 to 20 carbon atoms, alkylthio radicals containing 1 to 20 carbon atoms, chloro and aralkyl radicals having 7 to 20 carbon atoms, and (B) a hydroxy alkyl phenol having the following structural formula



wherein R^3, R^4 and R^5 are selected from the group consisting of hydrogen, alkyl radicals having 1 to 12 carbon atoms, cycloalkyl radicals having 5 to 12 carbon atoms, aralkyl radicals having 6 to 12 carbon atoms and



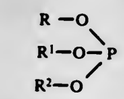
with at least one of R^3, R^4 and R^5 being



and wherein at least one of R^3 and R^4 is a tertiary alkyl radical having 4 to 8 carbon atoms, wherein R^6 is selected from the group consisting of hydrogen and alkyl radicals having 1 to 5 carbon atoms, wherein the molar ratio of the phosphite reactant to the phenolic reactant is from 1:1 to 1:9.

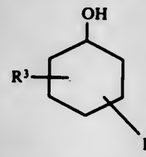
6. A composition prepared by reacting a combination comprising

A. a triaryl phosphite having the following structural formula



wherein R, R^1 and R^2 are selected from the group consisting of phenyl and substituted phenyl wherein the substituted phenyl contains one or two substituents selected from the group consisting of alkyl radicals containing 1 to 20 carbon atoms, alkylthio radicals containing 1 to 20 carbon atoms, chloro and aralkyl radicals having 7 to 20 carbon atoms,

B. a phenol selected from the group consisting of phenols having the following structural formulae



wherein R^3 and R^4 are selected from the group consisting of hydrogen, alkyl radicals having 1 to 12 carbon atoms, cycloalkyl radicals having 5 to 12 carbon atoms and aralkyl radicals having 6 to 12 carbon atoms and wherein at least one of R^3 and R^4 is a tertiary alkyl radical having 4 to 8 carbon atoms and is in a position ortho to the phenolic hydroxy group, and

C. an aldehyde having the following structural formula

R — CHO

where R is selected from the group consisting of hydrogen and alkyl radicals having 1 to 10 carbon atoms, wherein the molar ratio of phosphite/aldehyde/phenolic reactant is from 1:1:1 to 1:9:9.

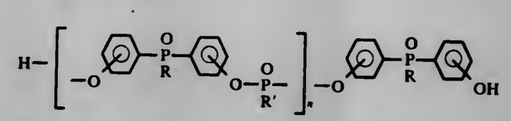
4,067,934

CONDENSATION PRODUCTS OF PHOSPHINE OXIDES

Kurt Moedritzer, Webster Groves, Mo., and Eugene L. Ringwald, Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 574,657, May 5, 1975, Pat. No. 3,993,623.
This application May 20, 1976, Ser. No. 688,514
Int. Cl.[2] C07F 9/40
U.S. Cl. 260—931 3 Claims

1. The composition



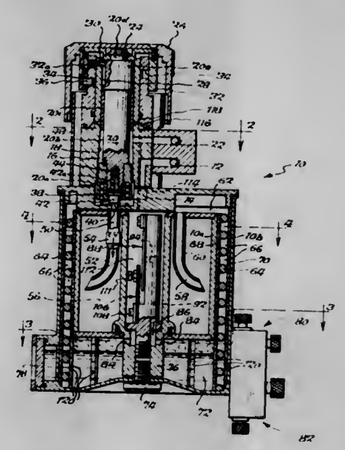
where R and R′ are alkyl groups of 1 to 10 carbon atoms or aryl groups of 6 to 20 carbon atoms and n is 1 to 100.

4,067,935

VOLATILE ANESTHETIC VAPORIZING APPARATUS

Wilfred Jones, Keighley, England; Keith W. Jones, Lancaster, N.Y., and Travers Fraser Sweatman, Toronto, Canada, assignors to Cyprane North America, Inc., Tonawanda, N.Y.

Filed Jan. 2, 1976, Ser. No. 646,007
Int. Cl.[2] B01F 3/04; A61M 15/00
U.S. Cl. 261—63 1 Claim



1. Vaporizing apparatus for a volatile anesthetic including:
a body forming a container for liquid anesthetic wherein such liquid can be vaporized by the flow thereby of a gas, said container having a gas inlet thereto and a gas-anesthetic vapor outlet therefrom,
a bypass chamber for gas not passing through said container

and a main inlet to and a main outlet from said bypass chamber,

passage means connecting said main inlet to said container gas inlet,

passage means connecting said container gas-anesthetic vapor outlet to said main outlet of said bypass chamber from mixing of gas-anesthetic vapor with gas passing through said bypass chamber,

valve means for selectively controlling the relative flow of gas into said bypass chamber and said container so as to vary the anesthetic concentration of the recombined, mixed flow through said main outlet of said bypass chamber which passes outwardly from the vaporizing apparatus, said valve means comprising:

an elongated valve element disposed within said main inlet to said bypass chamber and being axially movable therein and said valve element and surrounding wall surface of said main inlet being so formed that an opening is defined therebetween, said opening varying in cross-section in a non-linear manner with respect to corresponding axial movement of said valve element,

a rotatable valve element actuator in operable connection with said valve element for adjusting the axial position of said valve element within said main inlet whereby gas flow through said main inlet to said bypass chamber and to said container can be varied to vary the anesthetic concentration of the recombined, mixed flow through said main outlet, and

connection means rotatably connecting said actuator to said valve element for adjusting the axial position of the latter, whereby the size of said valve element opening and the gas flow associated therewith are linearly proportional to the operable rotational movements of said actuator, said connection means including a spiral groove of varying, non-linear pitch and drive means on said actuator engaging said groove to effect movement of said valve element upon rotation of said actuator wherein said non-linear pitch of said groove offsets the non-linear nature of said valve element opening so that gas flow through said bypass chamber and the anesthetic concentration of the recombined, mixed flow through said main outlet varies linearly and uniformly with respect to proportionate degrees of rotation of said actuator over substantially the entire operational range of said actuator.

4,067,936

FLUID-FLUID CONTACT APPARATUS

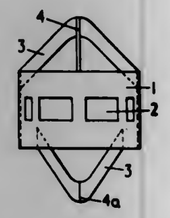
Stephen Robert Mercer Ellis; Ronald Priestley, both of Birmingham, and Kevin Joseph McKeown, Newcastle, all of England, assignors to Mass Transfer Limited, Newcastle, England

Division of Ser. No. 445,961, Feb. 26, 1974, Pat. No. 3,957,931, which is a continuation of Ser. No. 209,969, Dec. 20, 1971, abandoned. This application May 17, 1976, Ser. No. 687,092

Claims priority, application United Kingdom, Dec. 18, 1970, 60280/70; Oct. 4, 1971, 46165/71

Int. Cl.² B01F *3/04*

U.S. Cl. 261—98 **12 Claims**



1. A packing element of a given overall length comprising an open-ended tubular member of given width and having a diameter to width ratio greater than unity, the overall length of said packing element being at least as great as the diameter of said tubular member, a plurality of protuberances extending inwardly from the inside wall of said tubular member, none of said protuberances extending the whole length of said packing element, and wherein said protuberances include a plurality of arms extending outwardly beyond each end of said tubular member and meeting only at a region disposed outwardly from the respective end thereof, thereby defining flow-through paths extending generally perpendicular to the longitudinal axis of the packing element and between the respective end of said tubular member and said arms.

4,067,937

METHOD FOR FORMING A LIGHT TRANSMISSION GLASS FIBER EQUIPPED WITH AN OPTICAL LENS

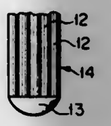
Yoichi Unno, Kamakura; Naoto Motegi, Yokohama, and Takao Ito, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed July 7, 1976, Ser. No. 703,191

Claims priority, application Japan, July 7, 1975, 50-82780

Int. Cl.² B01D *47/00*; C03B *11/08*; C03C *25/02*

U.S. Cl. 264—1 **11 Claims**



1. A method for manufacturing a light transmission glass fiber, comprising a first step of bringing at least one end of a glass fiber body into contact with an optical lens forming hardenable adhesive liquid-like organic compound material; and a second step of withdrawing the one end of the glass fiber body to cause the liquid-like material to adhere to the one end of the glass fiber body with a curvature due to its surface tension before hardening, thereby forming an optical lens on the one end of the glass fiber body.

4,067,938

PROCESS FOR PRODUCING MULTICELLULAR ARTICLES

James Jack, Mistley, England, assignor to Bakelite Xylonite Limited, London, England

Division of Ser. No. 459,762, March 25, 1974, abandoned. This application July 12, 1976, Ser. No. 704,576

Claims priority, application United Kingdom, Oct. 31, 1973, 50654/73

Int. Cl.² B29D *27/00*

U.S. Cl. 264—41 **19 Claims**



1. A process for the production of a multicellular stretched article, which comprises forming a blend of an orientable thermoplastics material and at least one additive, the additive comprising from more than 2 to about 50% by weight, calculated on the weight of the blend, forming a shaped article from the blend and stretching the article uniaxially or biaxially to produce a multicellular stretched article, wherein the additive is selected from metal resinates and modified or unmodified rosin esters which are at least partially incompatible with the thermoplastics material at least so that they form separate phases at the temperature at which the article is to be stretched, the thermoplastics material, when the additive is a metal resinate, being other than a crystalline polyolefin, the blend is formed by blending the thermoplastics material with the additive at a temperature at which both the additive and the thermoplastics material are molten or at least soft, and stretching is effected at a temperature within the normal orientation temperature range for the thermoplastics material, which temperature is below the softening point of the additive.

4,067,939

CASTING OF ARTICLES CONTAINING CALCINED GYPSUM

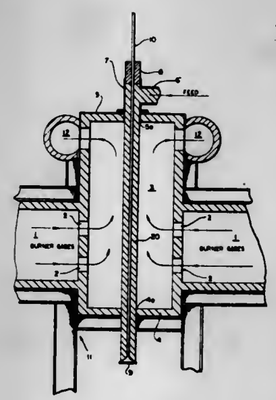
James N. Lowe, Quarry Hill House, 48 Gatton Road, Reigate, Surrey, England, and Byron C. Grebe, 3981 Glendale Drive, Memphis, Tenn. 38128

Filed June 27, 1975, Ser. No. 591,004

Claims priority, application United Kingdom, Aug. 7, 1974, 34831/74

Int. Cl.² B28B *1/14*

U.S. Cl. 264—42 **27 Claims**



1. A method of making a cast article comprising the steps of:

a. mixing water with a composition comprising a binding agent containing, by weight, from 90% to 10% calcined gypsum and from 10 to 90% Portland cement, to produce a fluid mixture, at least one of said composition and said water being heated whereby said mixture has a temperature of from 70° to 130° F;

b. pouring said fluid mixture into a supporting device;

c. allowing a reaction between said calcined gypsum and said water in said mixture to cause said mixture to set in said supporting device, said reaction producing heat which causes the temperature of said mixture to begin to rise;

d. removing said mixture from said supporting device after said mixture has set sufficiently to be self supporting and thus form said cast article;

e. controlling the dissipation of both heat and moisture from said set mixture forming said cast article whereby the temperature of said set mixture rises to from 90° to 180° F; and,

f. maintaining the temperature and moisture content of said set mixture for a period of at least two hours to cure said cement.

4,067,940

METHOD OF CONTINUOUSLY HEATING LIMESTONE-MUD

Peter van Boxtel, 250 Briar Hill Ave., Toronto, Ontario, Canada

Filed Apr. 25, 1974, Ser. No. 463,971

Int. Cl.² B28B *11/16*

U.S. Cl. 264—67 **6 Claims**

1. A method for heating limestone-mud consisting of the steps of: extruding a column of limestone-mud having a solid content of from 60 to 70% with the remaining content water, about a tubular member disposed within an extrusion tube and through an opening in one wall of a refractory chamber; continuing the extrusion of said limestone-mud about said tubular member with the simultaneous advancement of the limestone-mud and tubular member through the interior of said chamber with said limestone-mud forming a self-sustaining column about said tubular member within said chamber interior; admitting heated gases into said chamber in contact with said advancing column to heat said limestone-mud; further continuing the extrusion of said limestone-mud and advancement of said tubular member to pass said tubular member and its surrounding self-sustaining column through an opening in an opposite wall of said chamber and to a position external of said chamber, and removing said column from said tubular member external of said chamber.

4,067,941

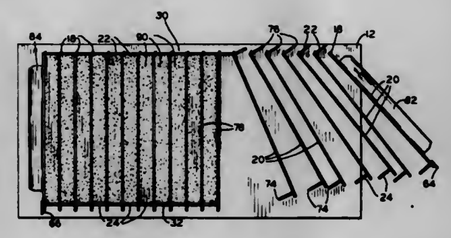
PROCESS FOR PRODUCING SLABS FROM POURED CONCRETE

Edmond N. Gaudelli, 2438 Hayson Ave., Pittsburgh, Pa. 15220, and Edward E. Shepler, 1733 Potomac Ave., Dormont, Pa. 15216

Filed Aug. 28, 1975, Ser. No. 608,469

Int. Cl.² B28B *1/08*

U.S. Cl. 264—69 **3 Claims**



1. A process for producing slabs comprising the steps of hingedly mounting on vertical axes a plurality of spaced apart vertical plates forming side walls with each side wall having at opposite edges and opposite sides an integrally related lateral wall elements with lateral edges adapted to engage confronting surfaces of the respectively adjoining side walls, said hinged mounting being located at the intersection of the lateral wall elements and vertical plates along one side only of such plates, enclosing the spaces between the lateral edges of each of said plates by hingedly swinging the respective side walls into parallel relation and simultaneously bringing the opposite lateral edges at the opposite sides of said respective side walls into confronting contact with the opposing surfaces of adjacent side plates and thereby defining a plurality of spaces between the lateral edges of said plates to form a series of side-by-side compartments, clamping said vertical plates together to maintain the enclosure between the sides of said plates, filling the compartments with concrete substantially hardened therein to form slabs, and then releasing said slabs by serially swinging the vertical plates apart to release the completed slabs by separating such vertical plates.

4,067,942

HEAT TREATMENT OF RESINOUS BLOCK COPOLYMER TO IMPROVE CLARITY

Newton R. Wilson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 23, 1976, Ser. No. 660,071
Int. Cl.[2] B29C *25/00*; B29F *5/00*
U.S. Cl. 264—80 16 Claims

1. A process for producing a transparent extrudate comprising:

forming a molten extrudate of a resinous transparent monovinyl-substituted aromatic compound/conjugated diene block copolymer having terminal blocks of said monovinyl-substituted aromatic compound, such extrudate being at least about 10 mils thick;

cooling said extrudate to a solid state; and then

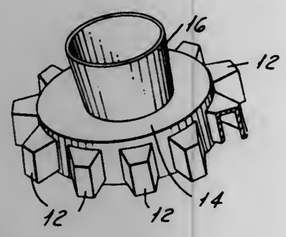
applying heat to a surface of the thus-solidified extrudate for a short time so as to melt only a thin surface layer, thereby increasing clarity without visible distortion of the extrudate.

4,067,943

METHOD OF MANUFACTURING A SLIP CAST ARTICLE

Andre Ezis, Grosse Ile, and John M. Nicholson, Wayne, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 597,264, July 18, 1975, abandoned. This application Dec. 22, 1976, Ser. No. 753,344
Int. Cl.[2] B28B *1/26*
U.S. Cl. 264—86 3 Claims



1. A method of forming a slip cast article which comprises the following steps:

forming a first mold portion which will form at least a portion of the surface area of the article from a dissolvable organic material which (a) is readily formable to the negative of the surface area of the article to be formed thereby, (b) is nonreactive with the material contained in and the vehicle of the casting slip, and (c) is a material which can bind together individual particles of the material contained in the casting slip;

forming other mold portions required to define other surfaces of the article to be slip cast;

assembling said first mold portion and any other required mold portions with a slip vehicle drawing mold portion so that said first mold portion, said other required mold portions and said slip vehicle drawing mold portion define a casting volume which has at least one surface formed by said slip vehicle drawing mold portion;

pouring a slip which includes a vehicle and a casting material into said casting volume;

disassembling said first mold and any of said other required mold portions from said slip vehicle drawing mold portions when said vehicle of said slip has been reduced to a level which provides for a consolidated casting of said casting material in said casting volume and also provides sufficient vehicle in said consolidated casting that said consolidated casting is resistant to shrinkage;

disassembling any of said other required mold portions which are disassembable from said consolidated casting containing said sufficient vehicle;

treating said consolidated casting containing said sufficient vehicle with a solvent for said first mold portion, said solvent being miscible with said vehicle of said casting slip;

maintaining said consolidated casting in said solvent after first mold portion has been dissolved so that said organic material forming said first mold portion can penetrate into the pore structure of said consolidated casting;

removing said consolidated casting from said solvent; and

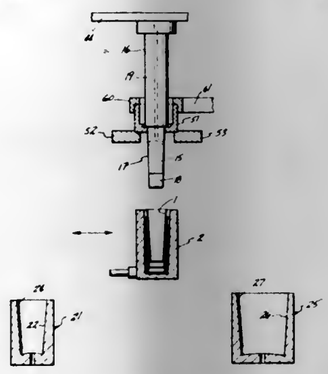
drying said consolidated casting whereby removal of said vehicle and said solvent therefrom causes deposition of said organic material of said first mold member in said pore structure of said consolidated casting thereby to increase the green strength of said consolidated casting but not reduce the green density achievable therein by consolidation of a casting slip which contains no binder materials.

4,067,944

METHOD FOR OBTAINING MULTILAYERED HOLLOW PLASTIC ARTICLE

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Division of Ser. No. 519,834, Nov. 1, 1974, which is a continuation-in-part of Ser. No. 338,362, March 5, 1973, abandoned. This application Oct. 29, 1975, Ser. No. 627,001
Int. Cl.[2] B29C *17/07*
U.S. Cl. 264—89 9 Claims



1. In the method of making a hollow plastic article wherein a parison is formed on a core in a parison mold by molding the plastic material around the core in the parison mold cavity and wherein the parison is subsequently expanded in a blow mold, the improvement which comprises: providing a preformed, drawn inner liner of organic plastic material; bringing said liner and core into axial alignment with each other; engaging said core and liner by relative axial movement between the core and liner to transfer said liner to said core; engaging said liner covered core and parison mold by relative axial movement between the core and parison mold; pressure molding an outer layer of organic plastic material around said liner in said parison mold to form a composite parison; providing a second mold; bringing the second mold and composite parison covered core into axial alignment with each other; engaging said second mold and composite parison covered core by relative axial movement between the second mold and core; freeing said composite parison from surface contact with said core in said second mold; bringing said freed parison on said core and said blow mold into axial alignment with each other; engaging said freed parison covered core and said blow mold by relative axial movement between the blow mold and core; axially extending said freed parison; and finally expanding said freed parison in said blow mold to form a multilayered, oriented, composite, hollow article, wherein the parison mold and core are maintained in axial alignment with each other, and wherein the liner, second mold, and blow mold are moved between said parison mold and core for axial alignment with said core.

4,067,945

METHOD OF MAKING A MULTI-CIRCUIT ELECTRICAL INTERCONNECTOR

Gideon A. DuRocher, Mount Clemens, Mich., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed Mar. 24, 1976, Ser. No. 669,998
Int. Cl.[2] H01H *3/00*
U.S. Cl. 264—104 24 Claims



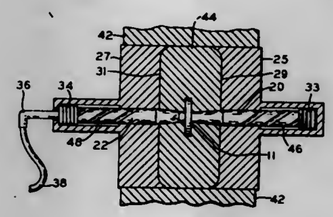
1. A method of forming at least one electrically conductive path through a non-conductive member having at least one cavity therein, said method comprising filling said cavity with a mixture of uncured elastomeric resin and a plurality of electrically conductive particles; curing said resin to produce an elastomeric module; and exercising said module following curing thereof to dissipate substantially its physical hysteresis by successively applying and releasing compressive force repeatedly to and from said module.

4,067,946

METHOD OF FORMING BAR SOAP WITH AN INSERT EMBEDDED IN THE BAR

Glenn E. Rickert, R.R. No. 9, Huntington, Ind. 46750

Filed Mar. 22, 1976, Ser. No. 669,281
Int. Cl.[2] B29D *3/00*; B29F *3/00*
U.S. Cl. 264—150 8 Claims



1. The method of embedding a body in a cake of soap-like material comprising the steps of:

forming a billet of the soap-like material;

providing an opening at least part way through the billet;

inserting the body into the billet through the opening by supporting the body on a shaft and passing the shaft into the opening;

compressing the billet to about said shaft and said body and removing said shaft after the billet has been compressed leaving an opening in said billet.

4,067,947

METHOD OF FABRICATING A DECORATIVE KNIFE HANDLE

Nilo M. Miori, Solvay, N.Y., assignor to Camillus Cutlery Co., Camillus, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,347
Int. Cl.[2] B29C *5/00*; B29D *3/00*
U.S. Cl. 264—154 10 Claims

1. A method of fabricating a decorative knife handle comprising the steps of:

a. forming a handle member of plastic containing a coloring agent with a cavity extending into an exterior surface thereof, said cavity having bottom and side surfaces and an open top;

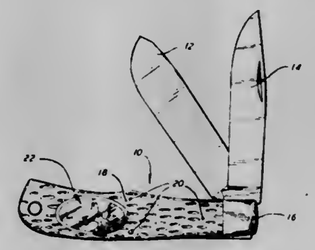
b. forming at least one undercut into said side surface adjacent said bottom surface;

c. pouring into said cavity a first quantity of plastic material, initially in liquid form and hardenable to solid form, covering said bottom and side surfaces and filling said undercuts, leaving a substantial portion of said cavity open;

d. allowing said first quantity of material to at least partially harden, thereby forming a first layer within said cavity;

e. pouring into said cavity a second quantity of opaque plastic material, of a color different from that of said handle member, initially in liquid form and hardenable to solid form, covering fully said first layer while leaving a substantial portion of said cavity open;

f. allowng said second quantity of material to at least partially harden, thereby forming a second layer within said cavity concealing said first layer and entirely isolated



thereby from contact with the material of said handle member, preventing any bleed through of said coloring agent from said handle member into said second layer;

g. placing a preformed, decorative embedment upon said second layer;

h. pouring into said cavity a third quantity of transparent plastic material, initially in liquid form and hardenable to solid form, sufficient to cover said second layer and said embedment, substantially filling said cavity; and

i. allowing said third quantity of material to harden, thereby forming a third layer through which said embedment said second layer are visible.

4,067,948

PROCESS FOR THE PRODUCTION OF HIGH-SHRINKAGE WET-SPUN ACRYLIC FIBRES OR FILAMENTS

Ulrich Reinehr; Alfred Nogaj, and Toni Herbertz, all of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 16, 1976, Ser. No. 705,886
Claims priority, application Germany, July 18, 1975, 2532120
Int. Cl.[2] D01F *6/18*
U.S. Cl. 264—182 5 Claims

1. A process for the production of high-shrinkage filaments and fibres of an acrylonitrile polymer or copolymer containing at least 50% by weight of polymerised acrylonitrile and the balance of one or more monomers copolymerizable therewith which comprises fixing the undrawn wet-spun material with saturated steam at a temperature of from 110° to 180° C for at least one minute and then drawing in a ratio of from 1:3.5 to 1:5.0.

4,067,949

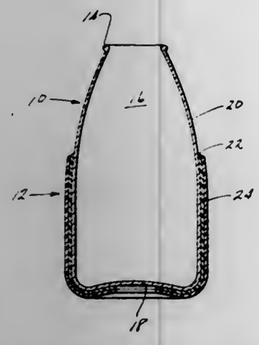
CONTAINER WITH IMPROVED HEAT-SHRUNK CELLULAR SLEEVE

James A. Karabedian, Garden City, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 555,507, March 5, 1975, Pat. No. 3,979,000, which is a continuation-in-part of Ser. No. 505,646, Sept. 13, 1974, abandoned. This application Mar. 12, 1976, Ser. No. 666,293
Int. Cl.[2] B65D *11/00*
U.S. Cl. 264—230 11 Claims

1. In a method wherein a heat-shrinkable, polymeric sleeve, having a major orientation circumferentially of said sleeve is

telescopically located about the sidewall of a container and heat-shrunk into snug engagement with said sidewall, the improvement wherein said polymeric sleeve is a composite structure of a closed cellular polymeric layer preponderantly of polystyrene having incorporated therein, in an amount from zero weight percent up to compatible amounts, a copolymer of ethylene and vinyl acetate, or a copolymer of ethylene and vinyl acetate, or a copolymer of ethylene and an alkyl ester of an alpha-beta monoethylenically unsaturated carboxylic acid, or a copolymer of ethylene and an alpha-beta monoethylenically unsaturated carboxylic acid, or mixtures thereof, and a



non-cellular polymeric layer in adhered engagement with said closed cellular layer, said non-cellular layer having preponderantly ethylene moieties and incorporated therein moieties of vinyl acetate, or an alkyl ester of an alpha-beta monoethylenically unsaturated carboxylic acid, or an alpha-beta monoethylenically unsaturated carboxylic acid, or mixtures thereof, the amount of said incorporated moieties in said non-cellular layer being sufficient to promote the adhesion of said layers to the extent that a portion of said cellular layer cohesively fails when said layers are peeled apart, said cellular layer being disposed outwardly of said non-cellular layer and said non-cellular layer being disposed intermediate said cellular layer and said wall.

4,067,950

PROCESS FOR MAKING RADOMES

Holger Baruschke, and Gerhard Wulf, both of Flensburg, Germany, assignors to Eltro GmbH Gesellschaft fur Strahlungstechnik, Heidelberg, Germany

Filed Dec. 17, 1976, Ser. No. 751,975
Claims priority, application Germany, Dec. 22, 1975, 2557815
Int. Cl.² B29H *9/02*
U.S. Cl. 264—257 **8 Claims**



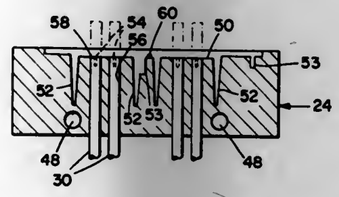
1. A process for making radomes for the aircraft industry which include adjoining wider and narrower portions, by the use of a two-part mold that can be clamped and heated for hardening purposes, comprising the steps of inserting in one of the mold halves a substantially stocking-shaped webbing that constitutes therein an outer radome layer, and then inserting a molding material into the thus equipped mold half, the material, to be deformed under pressure and heat when the mold halves are subsequently closed with the application of pressure and heat, wherein the molding material is constituted by at least two components, one component being a resin which permeates the webbing during the subsequent processing to form a smooth outer surface and another component being fiber clippings which do not permeate the webbing during processing and which serve as a rear lining on the inner surface of the webbing and closing the mold under heat and pressure such that the resin permeates the stocking.

4,067,951

PROCESS FOR MAKING IMPEDANCE MEASURING MODULE

James H. Fleming, Palo Alto, and Melvin Rudin, Los Altos, both of Calif., assignors to Bactomatic Inc., Palo Alto, Calif.

Filed Nov. 19, 1975, Ser. No. 633,213
Int. Cl.² B29D *3/02*
U.S. Cl. 264—272 **5 Claims**



1. An injection molding process for making a plastic impedance module having a generally flat metal grid imbedded therein with a plurality of pairs of electrodes upstanding generally perpendicularly from said grid, one pair into each of a plurality of chambers, said electrodes being uncoated by plastic, comprising:

placing said grid adjacent a first mold half of an injection mold with said electrodes inserted each within a respective one of a plurality of slots, each of said slots being within a top end of a rod movable within a hole generally perpendicularly to a first generally flat portion defining a top of a base of said module, said first mold half having a plurality of channels extending from said first portion into said first mold half defining said plurality of chambers;

propelling together said first mold half and a second mold half having a second generally flat portion for forming said injection mold, pin means extending from said first and second generally flat portions of said first and second mold halves supportingly contacting said grid on both sides thereof;

injecting plastic into said mold to form said module with all of said grid other than the points of contact of said pins on both sides of said grid and said electrodes thereby forming said module; and

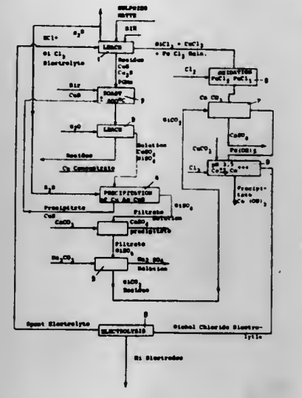
removing said module from said mold.

4,067,952

LEACHING OF COPPER-NICKEL CONCENTRATES

Willem H. Pittie, Roodepoort, and Kingsley F. Doig, Hillbrow, both of South Africa, assignors to Anglo-Transvaal Consolidated Investment Company Limited, Johannesburg, South Africa

Filed Sept. 2, 1975, Ser. No. 609,813
Claims priority, application South Africa, Sept. 6, 1974, 745691
Int. Cl.² C01G *3/00, 53/08;* C25C *1/08*
U.S. Cl. 423—37 **8 Claims**



1. A process for the treatment of concentrated nickel-copper sulphide matte comprising the successive step of:

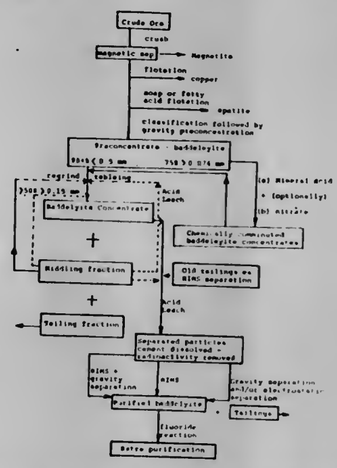
1. leaching nickel with a dilute solution of hydrochloric acid, the hydrochloric acid solution containing about 20 to about 50 grams per liter of hydrogen chloride therein, the dilute hydrochloric acid solution containing the stoichiometric quantity of free HCl therein relative to the nickel content of said matte to dissolve all the nickel present in said matte;
2. separating the leach solution containing all of the thus-dissolved nickel therein from the residue;
3. roasting the residue separated in step (2) is an excess of air at a temperature of about 300 to 600° C for a time sufficient to convert all the nickel present in said residue to nickel sulphate;
4. leaching the roasted residue of step (3) with water to dissolve soluble sulphates contained in the roasted residue;
5. separating the aqueous leach liquor containing the sulphates therein from the residue;
6. treating the thus separated aqueous leach liquor with hydrogen sulphide from the dilute hydrochloric acid leach step (1) to precipitate any dissolved copper contained in the aqueous leach liquor;
7. neutralizing the sulphuric acid contained in the thus separated aqueous leach liquor of step (6) with calcium carbonate, thereby forming solid calcium sulphate and a nickel-containing aqueous solution;
8. treating the nickel-containg aqueous solution of step (7) with sodium carbonate thereby converting the nickel sulphate dissolved therein to a precipitate of nickel carbonate;
9. combining the leach solution of step (2), after preliminary treatment with chlorine to raise the oxidation state of iron dissolved therein to +3, with the nickel carbonate of step (8) in the presence of lime or calcium carbonate thereby:
   a. precipitating the iron and sulphate contained therein as $Fe(OH)_3$ and $CaSO_4$, and
   b. converting the nickel carbonate to a solution of nickel chloride;
10. separating the precipitate (a) and chlorinating the nickel chloride solution in the presence of calcium carbonate to precipitate any cobalt present as cobaltic hydroxide; and
11. removing the cobaltic hydroxide precipitate and passing the resulting nickel chloride solution to an electrolytic cell.

4,067,953

PROCESS FOR UPGRADING ORES CONTAINING BADDELEYITE

Etienne Roux, 36 Jansen Singel; James Golden Goodey, 29 Alwyn Str., both of Phalaborwa, South Africa; Antoine M. Gaudin, deceased, late of Newtonville, Mass., and by Anna B. Gaudin, executrix, 32 Leonard Ave., Newtonville, Mass. 02160

Continuation-in-part of Ser. No. 226,539, Feb. 15, 1972, abandoned. This application Nov. 4, 1975, Ser. No. 628,718
Int. Cl.² C01G *25/00, 27/00*
U.S. Cl. 423—80 **22 Claims**



1. A process for upgrading of ore containing baddeleyite in the form of crystals from the composite ore particles of the ore comprising the steps of

i. leaching said composite ore particles, the major portion of said composite particles having a diameter of between 0.1 and 0.5 mm as determined by screen analysis, the composite particles in said portion comprising of:

A. baddeleyite crystals

B. other mineral materials selected from the group consisting of paramagnetic and ferromagnetic minerals of iron, of titanium comprising ilmenite, and of radioactive minerals comprising those of thorium and uranium, and

C. a carbonatitic or siliceous or carbonatitic and siliceous cement bonding said baddeleyite to said other mineral materials, with mineral acid at elevated temperature not exceeding acid reflux temperature to dissolve said cement until said baddeleyite is separated from said other mineral materials and the size composition of the mineral material between 0.2 and 0.15 millimeters is reduced to less than half its original value and material in the size range of 0.15 millimeters to 0.074 millimeters in diameter is corresponding increased,

ii. magnetically treating the acid leached product of (i) by high intensity magnetic separation

iii. and recovering non-magnetic purified particulate baddeleyite.

4,067,954

PROCESS FOR THE PRODUCTION OF FINELY DIVIDED SILICON DIOXIDE HAVING A LARGE SPECIFIC SURFACE

Axel Völling, Rheinfelden, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation of Ser. No. 497,001, Aug. 12, 1974, abandoned, which is a continuation of Ser. No. 251,877, May 10, 1972, abandoned. This application Jan. 26, 1976, Ser. No. 652,459
Claims priority, application Germany, May 11, 1971, 2123233
Int. Cl.² C01B *33/18*
U.S. Cl. 423—336 11 Claims

1. In a process for the production of finely divided silicon dioxide having a surface area of more than about 380 m^2/g BET which comprises converting a volatile halogen-containing inorganic silicon compound in an inert gas vehicle with a hydrogen-containing gas capable of forming water upon combustion and oxygen gas or air in a flame, whereby the quantity of oxygen is sufficient for the complete combustion of the water-forming gas, and whereby the quantities of oxygen or air and water-forming gas are sufficient to produce a quantity of water which will at least suffice for the hydrolysis of the silicon compound, said inert gas vehicle selected from the group consisting of nitrogen, carbon dioxide or noble gases, the improvement wherein said inorganic silicon compound is trichlorosilane vapor in an amount of about 410–565 g trichlorosilane vapor per Nm^3/hr total gas the molar ratio of trichlorosilane vapor to inert gas vehicle being about 0.5:1-5:1, the molar ratio of hydrogen in the combustible gas to the oxygen being about 0.5 : 1 – 1.3 : 1, and separating the resulting silicone dioxide from other reaction products, said silicone dioxide having an enhanced thickening effect in organic media.

4,067,955

METHOD OF FORMING A SILICON CARBIDE ARTICLE

Jack E. Noakes, Plymouth Township, Mich.; Hiroshi Sato, West Lafayette, Ind., and Leslie L. Terner, West Bloomfield Township, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1975, Ser. No. 619,428
Int. Cl.² C01B *31/36*
U.S. Cl. 423—345 4 Claims

1. In a method of forming a silicon carbide article: (a) wherein 60–80% by weight of silicon carbide particles having an average particle size in the range from about 40 microns to less than 1 micron are mixed together with 40–20% by weight of a thermosetting binder which produces a flowable liquid phase when melted and which produces carbon upon nonoxidative pyrolysis, said silicon carbide particles also having oxides of silicon present therein as an impurity; (b) wherein the mixture is heated to a temperature whereat the thermosetting binder is in a liquid phase; (c) wherein the mixture is injection molded by an injection molding technique to form an article, the injection molding technique operating on the basis that the flowable thermosetting binder forms a continuous phase about the silicon carbide particles supported therein; (d) wherein the thermosetting binder is stiffened to lend strength to the molded article so that it may be removed from its mold; (e) wherein the molded article is pyrolized in the absence of oxygen so that the thermosetting binder undergoes a volumetric reduction while breaking down to form a vitreous carbon phase which serves to bond silicon carbide particles together, this action also developing pores throughout the article; and (f) wherein the article is silicided at an elevated temperature by permitting the penetration of the article through its pores with silicon which reacts with the vitreous carbon to form silicon carbide; the improvement which comprises by addition of a new step between steps (e) and (f), a step which comprises:

treating the article after it has been pyrolized and prior to the siliciding thereof by maintaining the article once it has been heated to a temperature of at least 2800° F for a period of time in a gaseous environment consisting of a nitrogen-hydrogen atmosphere in a range of from 3% by volume to 7% by volume hydrogen whereby the hydrogen reacts with some of the vitreous carbon phase in the article to remove a portion of the carbon in the article and insure that volume is available in the article to accommodate conversion of the article's remaining carbon to silicon carbide, and whereby the nitrogen reacts with oxides of silicon present in the article to transform the oxides to silicon nitride.

4,067,956

RETICULATED ANISOTROPIC POROUS VITREOUS CARBON

Charles H. Franklin; Clarence S. Vinton, both of Ann Arbor, and Henry C. Geen, Brooklyn, all of Mich., assignors to Chemotronics International, Inc., Ann Arbor, Mich.

Filed Oct. 8, 1976, Ser. No. 730,830
Int. Cl.² C01B *31/00, 31/02*
U.S. Cl. 423—445 14 Claims



1. The carbon structure which comprises:

a crack-free, reticulated porous anisotropic carbon structure of interconnected and continuous strands which is derived from and which reproduces upon carbonization the isomorphic form of a compressed reticulated flexible polyurethane structure without cell membranes which has been infused with a liquid thermosetting resin or resin precursor or resin solution which alloys with the polyurethane and wherein the structure is substantially free of a non-alloyed surface coating of the resin or resin precursor or resin solution prior to carbonization and wherein the carbonization has been achieved with the infused polyurethane structure maintained in a compressed condition of at least fifty percent of its original dimension before or after infusion in at least one plane.

4,067,957

PROCESS FOR PRODUCING HYDROGEN FLUORIDE FROM AN AQUEOUS HYDROFLUOROSILICIC ACID SOLUTION

Ralph Eric Worthington, Blackrock, and Padraic Seamus O'Neill, Dublin, both of Ireland, assignors to Fitzwilton Limited, Dublin, Ireland

Filed July 8, 1976, Ser. No. 703,519
Claims priority, application Ireland, July 18, 1975, 1611/75
Int. Cl.² C01B *7/22*
U.S. Cl. 423—484 8 Claims

1. A process for producing hydrogen fluoride from an aqueous hydrofluorosilicic solution which comprises

i. reacting potassium fluoride and silica with said aqueous hydrofluorosilicic acid solution according to the equation:

$$3KF + H_2SiF_6 + 0.5SiO_2 \rightarrow 1.5K_2SiF_6 + H_2O$$

to form potassium fluorosilicate;

ii. reacting said potassium fluorosilicate with ammonia in water according to the equation:

$$1.5K_2SiF_6 + 6NH_3 + 3H_2O \xrightarrow{H_2O} 6NH_4F + 3KF + 1.5SiO_2$$

to form an aqueous mixture of ammonium fluoride, potassium fluoride; and silica

iii. heating said ammonium fluoride in aqueous solution in the presence of potassium fluoride according to the equation:

$$6NH_4F + 6KF \xrightarrow[H_2O]{\text{excess KF}} 6NH_3 + 6KHF_2$$

to release ammonia and to form potassium bifluoride;

iv. recovering said potassium bifluoride as a solid from solution and

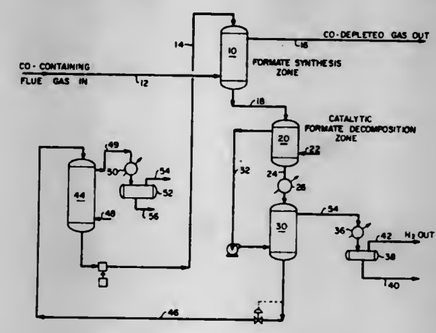
v. heating said potassium bifluoride to release hydrogen fluoride and form potassium fluoride.

4,067,958

PRODUCTION OF A HYDROGEN-RICH GAS FROM A CO-CONTAINING FUEL GAS

Everett Gorin, Pittsburgh, Pa., assignor to Continental Oil Company, Ponca City, Okla.

Filed Mar. 10, 1976, Ser. No. 665,596
Int. Cl.² C01B *1/02, 1/13*
U.S. Cl. 423—657 2 Claims



1. A process for the production of a hydrogen-rich gas from a fuel gas containing carbon monoxide and nitrogen or methane or both, which comprises:

a. contacting said fuel gas with an aqueous absorbing solution which contains sodium or potassium carbonate under formate synthesis conditions of a temperature in the range of 400°-600° F., and a pressure in the range of 20 to 150 atm., whereby an aqueous solution which contains principally formate is produced,

b. heating the aqueous formate-containing solution that is produced in step (a) in contact with a catalyst composite containing a metallic component selected from Group VI and Group VIII metals, their oxides and sulfides supported on an alkali resistant base at formate decomposition conditions of temperature in the range of 400°-600° F., and a pressure in the range of 30–200 atm., whereby the formate in the aqueous formate-containing solution decomposes to produce a hydrogen-rich gas while regenerating said aqueous absorbing solution,

c. cooling said aqueous absorbing solution from step (b), and

d. contacting said hydrogen-rich gas from step (b) with said cooled aqueous absorbing solution from step (c) to absorb any CO_2 in the hydrogen-rich gas in said solution, whereby a gas is produced which consists essentially of hydrogen, after removal of water.

4,067,959

INDIRECT SOLID SURFACE TEST FOR ANTIGENS OR ANTIBODIES

Gunner Bolz, Santa Clara, Calif., assignor to International Diagnostic Technology, Inc., Santa Clara, Calif.

Filed May 10, 1976, Ser. No. 684,775
Int. Cl.² G01N *33/00;* A61K *43/00*
U.S. Cl. 424—1 28 Claims

1. In an indirect method for the quantitation of antigen in a liquid sample, the steps of

a. sorbing antigen of the same immunological type as said sample antigen onto a sorptive solid support surface,

b. immunologically reacting a known quantity of specific labelled antibody in solution with said sample antigen in said solution and with said sorbed antigen, said labelled antibody being in excess of said sample antigen, so that a portion of said labelled antibody is bound in said solution to said sample antigen and excess labelled antibody immunologically reacts with the sorbed antigen on said surface,

c. washing said surface, and

d. measuring the quantity of reacted labelled antibody on said surface.

4,067,960

PHARMACEUTICAL COMPOSITIONS CONTAINING CARDIAC GLYCOSIDE

Carlo Fadda, Rome, Italy, assignor to R. P. Scherer Limited, England

Continuation of Ser. No. 588,684, June 20, 1975, abandoned. This application Dec. 1, 1976, Ser. No. 746,599
Int. Cl.² A61K *9/48, 31/705*
U.S. Cl. 424—14 6 Claims

1. A cardiotonic dosage unit form comprising a soft elastic gelatin capsule containing a solution of (a) about 50 – 300 micrograms of a digitalis cardiac glycoside including digoxin, digitoxin, digitalin, lanatoside C, acetyl digitoxin, acetyl digoxin or methyl digoxin, (b) dimethyl formamide or dimethyl acetamide, the weight ratio of dimethyl acetamide or dimethyl formamide to said cardiac glycoside being at least 5:1 and (c) liquid polyethylene glycol comprising at least 75% by weight of the total solution contained in said gelatin capsule, the total solution having a weight of about 100 – 300 milligrams.

4,067,961

CONTROLLED RELEASE ARTICLE

Robert Gene Laughlin, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 560,020, March 19, 1975, abandoned. This application Aug. 16, 1976, Ser. No. 714,540
Int. Cl.² A61K *9/02;* A61L *15/03*
U.S. Cl. 424—15 8 Claims

1. A controlled release article especially adapted to maintaining a useful concentration of a spermicidal surfactant compound in the vagina, comprising:

a. a solution consisting essentially of:

i. a micelle-forming nonionic spermicidal surfactant compound, and

ii. water, said solution having a concentration above the critical micelle concentration of the spermicidal surfactant compound, said solution being releasably enclosed in;

b. a stable, insoluble container, at least part of the wall of said container comprising a microporous cellulose membrane.

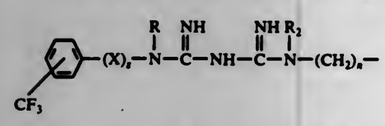
4,067,962

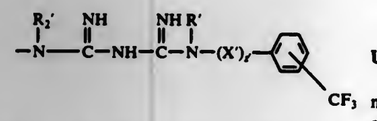
ORAL COMPOSITIONS CONTAINING TRIFLUOROMETHYL PHENYL BIS-BIGUANIDES AS ANTIPLAQUE AGENTS

Prem Segar Juneja, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 601,244, Aug. 1, 1975, abandoned. This application Mar. 24, 1976, Ser. No. 669,930
Int. Cl.[2] A61K *7/18, 7/22;* C07C *129/16*
U.S. Cl. 424—52 20 Claims

1. A bis-biguanide compound having the generic formula:





wherein *n* is from 2 to 4 inclusive; wherein X and X′ each represent an alkylene radical containing from 1 to 3 carbon atoms; wherein *z* and *z′* are selected from the group consisting of 0 to 1; wherein R and R′ are each selected from the group consisting of hydrogen, alkyl radicals containing from 1 to about 12 carbon atoms and aralkyl radicals containing from 7 to about 12 carbon atoms; and wherein R_2 and R_2' are each selected from the group consisting of hydrogen and alkyl radicals of 1 to 2 carbon atoms; and the pharmaceutically acceptable salts thereof.

4,067,963

SUBSTANCE ACTING TO PREVENT AND IMPROVE CEREBRAL FUNCTION DISORDER AND PROCESS FOR PREPARING THE SAME

Shozo Ishii, Tokyo, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed July 1, 1975, Ser. No. 592,346
Claims priority, application Japan, Jan. 7, 1974, 49-74303
Int. Cl.[2] A61K *35/12;* C12D *13/06;* C12B *1/00*
U.S. Cl. 424—95 7 Claims

1. A process for manufacturing a preparation for normalizing electroencephalogram abnormalities and consciousness disturbance induced by anoxia, having the following properties:

Appearance and Properties: colorless and odorless
Solubility: easily soluble in water, hardly soluble in alcohol, acetone and ether
Stability: stable at room temperature, stable under freezing and defrosting
Ultraviolet Absorption Spectrum: maximum absorption at 280 nm
Molecular Weight: 1000 ~ 3000
Color reaction: positive in ninhydrin
Thin layer Chromatography:
RF = 0.355 ± 0.075
Plate: microcrystalline cellulose
Developing Solvent: n-butanol:acetic acid:water = 3:1:1
Conditions for Developing: room temperature
Color Reaction: ninhydrin,

comprising the steps of:

1. adding a fatty acid of 16–20 carbon atoms to an aqueous albumin solution in an amount sufficient to cause conjugation, said albumin being selected from the group consisting of egg albumin and bovine serum albumin, thereby reacting the albumin with the fatty acid to form modified albumin;
2. collecting the modified albumin, dissolving the modified albumin in a small amount of water to form an aqueous modified albumin solution, and adding pronase thereto, thereby hydrolyzing the modified albumin; and
3. carrying out a column chromatography using dextran gel or sulfonic acid type ion exchange resin having a molecular weight fractionation range of 1,000 – 5,000 and collecting the fraction acting to inhibit deactivation of DNP-ATPase.

7. The product prepared by the process of claim 1.

4,067,964

ANTIHEMOPHILIC AGENT AND PROCESS FOR ITS MANUFACTURE

Horst Schwinn, and Norbert Heimburger, both of Marburg an der Lahn, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany

Filed Nov. 5, 1976, Ser. No. 739,278
Claims priority, application Germany, Nov. 7, 1975, 2550011
Int. Cl.[2] A61K *35/50*
U.S. Cl. 424—105 16 Claims

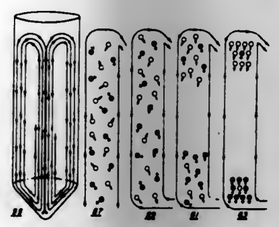
1. A method for making an antihemophilic agent, which method comprises comminuting placental tissue, washing the comminuted tissue with an aqueous hypotonic medium at a slightly acid to alkaline pH until the tissue is free of blood, extracting the washed tissue at a pH above 4.5 with an aqueous solution having an osmolarity below 330 nanomoles per liter, removing residual tissue from the extract, adding an inert water-soluble compound to the extract, whereby its density is increased, until separation and the flotation of a supernatant layer occur, and then isolating the supernatant layer, which contains said antihemophilic agent.

4,067,965

THERMAL CONVECTION COUNTER STREAMING SEDIMENTATION METHOD FOR CONTROLLING THE SEX OF MAMMALIAN OFFSPRING

Bhairab C. Bhattacharya, 5016 S. 87th St., Omaha, Nebr. 68127

Division of Ser. No. 526,378, Nov. 22, 1974, Pat. No. 3,976,197. This application Dec. 17, 1975, Ser. No. 641,501
Int. Cl.[2] A61K *35/52*
U.S. Cl. 424—105 10 Claims



STAGES OF DISTRIBUTION OF MALE AND FEMALE SPERM

1. A method of controlling the sex of mammalian offspring comprising the steps of:

mixing fresh sperm with a liquid suspending medium;
providing a temperature differential between two portions of the liquid suspending medium to create, by thermal convection, counterflowing streams of medium in which sperm of different densities are carried at different rates whereby a fraction predominating in sperm having X-chromosomes separates from a fraction predominating in sperm having Y chromosomes, the temperature of the medium being sufficiently low that the motility of the sperm does not substantially interfere with the separation process; and
introducing a selected fraction into a female according to the desired sex of the anticipated offspring.

4,067,966

METHOD OF TREATING HYPERCHOLESTEROLEMIA WITH ANTIBIOTIC SCH-16656

Harry W. Gordon, Bronx, N.Y., and Carl P. Schaffner, Trenton, N.J., assignors to Schmid Laboratories, Inc., Little Falls, N.J.

Continuation-in-part of Ser. No. 521,289, Nov. 6, 1974, Pat. No. 4,039,659, which is a continuation of Ser. No. 221,062, Jan. 26, 1972, Pat. No. 3,966,910, which is a continuation of Ser. No. 24,797, April 1, 1970, abandoned, which is a continuation of Ser. No. 627,313, March 31, 1967, Pat. No. 3,627,829. This application Dec. 5, 1975, Ser. No. 638,102
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—119 3 Claims

1. A process for treating hypercholesterolemia in a large mammal in need of said treatment which comprises orally administering an effective dose for treating hypercholesterolemia of antibiotic SCH-16656 to said mammal.

4,067,967

COMPOSITION FOR TOPICAL APPLICATION TO HUMANS AND ANIMALS

Emanuel C. Prince, Jacksonville, Fla., assignor to Southeastern Laboratories, Inc., Jacksonville, Fla.

Continuation of Ser. No. 438,365, Jan. 31, 1974, Pat. No. 3,950,554, which is a continuation of Ser. No. 234,341, March 13, 1972, abandoned. This application Apr. 13, 1976, Ser. No. 676,528
The portion of the term of this patent subsequent to Apr. 13, 1993, has been disclaimed.
Int. Cl.[2] A61K *33/20, 31/415, 31/23*
U.S. Cl. 424—149 7 Claims

1. A composition for topical application to humans which consists essentially of an effective amount of an edible semi-drying oil and a fatty acid ester of an alcohol selected from the group consisting of low molecular weight monohydric alcohols, glycerol, propylene glycol, ethylene glycol and polyethylene glycol.

4,067,968

DAUNOSAMINE NUCLEOSIDES

Ettore Lazzari; Federico Arcamone, and Aurelio di Marco, all of Milan, Italy, assignors to Societa Farmaceutici Italia S.p.A., Milan, Italy

Filed Dec. 2, 1976, Ser. No. 746,851
Claims priority, application United Kingdom, Dec. 18, 1975, 51967/75
Int. Cl.[2] A61K *31/70;* C07H *19/06, 19/16*
U.S. Cl. 424—180 7 Claims

7. A method of inhibiting the growth of ascites sarcoma 180 which comprises intraperitoneally administering to a host afflicted with said tumor an amount of a compound selected from the group consisting of 9-(β-daunosaminyl)-adenine, 6-dimethyl-9-(β-daunosaminyl)-adenine, 1-(β-daunosaminyl)-cytosine and 1-(β-daunosaminyl)-thymine sufficient to inhibit the growth of said tumor, in combination with a therapeutically effective amount of daunomycin or adriamycin.

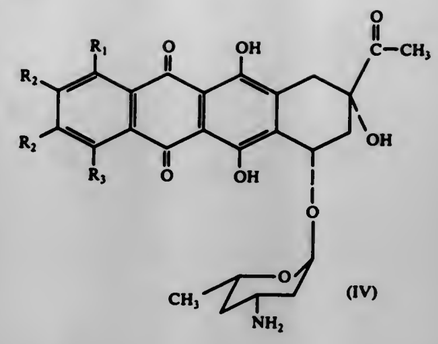
4,067,969

ANTHRACYCLINE GLYCOSIDES, THEIR PREPARATION AND USE

Sergio Penco; Federico Arcamone, and Aurelio di Marco, all of Milan, Italy, assignors to Societa Farmaceutici Italia S.p.A., Milan, Italy

Filed Sept. 13, 1976, Ser. No. 722,689
Claims priority, application United Kingdom, Sept. 26, 1975, 39471/75
Int. Cl.[2] A61K *31/70;* C07H *15/24*
U.S. Cl. 424—180 22 Claims

1. A compound of the formula



(IV)

wherein when

a. R_1 and R_2 are hydrogen, R_3 is a lower alkoxy group having from 1 to 4 carbon atoms; when
b. R_2 is hydrogen; R_1 and R_3 are both hydrogen, methyl, methoxy, chlorine or bromine; and when
c. R_1 and R_3 are hydrogen, R_2 is methyl, methoxy, chlorine or bromine.

17. A method of inhibiting the growth of a tumor selected from the group consisting of L_{1210} leukemia, transplated gross leukemia, lymphocytic P_{388} leukemia and solid sarcoma 180 which comprises administering to a host afflicted with said tumor an amount of a compound according to claim 1 sufficient to inhibit the growth of said tumor.

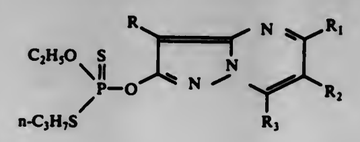
4,067,970

PESTICIDAL O-ETHYL-S-n-PROPYL-O[PYRAZOLO(1,5-a)-PYRIMIDIN-(2) YL]-THIONOTHIOLPHOSPHORIC ACID ESTERS

Reimer Colla; Hans-Jochem Riebel, both of Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 27, 1976, Ser. No. 727,203
Claims priority, application Germany, Oct. 14, 1975, 2545881
Int. Cl.[2] A01N *9/36;* C07D *239/00*
U.S. Cl. 424—200 10 Claims

1. An O-ethyl-S-n-propyl-O-[pyrazolo(1,5-a)pyrimidin(2-)yl]-thionothiolphosphoric acid ester of the formula



in which

R is hydrogen or halogen,
R_1 is hydrogen or alkyl with 1 to 5 carbon atoms,
R_2 is hydrogen, halogen or acetyl, and
R_3 is hydrogen, alkyl with 1 to 4 carbon atoms or carbalkoxy with 1 to 4 carbon atoms in the alkyl radical.

9. A method of combating nematodes or arthropods which comprises applying to the nematodes or arthropods, or to a habitat thereof, a nematicidally or arthropodicidally effective amount of a compound according to claim 1.

4,067,971

THERAPEUTIC COMPOSITION

Marion D. Francis, and Irwin Y. Rosenblum, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 13, 1976, Ser. No. 685,969
Int. Cl.[2] A61K *31/66*
U.S. Cl. 424—204 15 Claims

1. A process for treating tissue or organ damage in a human or lower animal caused by ischemia of that tissue or organ, comprising administering to said human or lower animal in need of such treatment sufficient organophosphonate compound characterized by more than one phosphonate moiety to alleviate said tissue or organ damage.

4,067,972

O-(METHYL OR ETHYL)-S-(PROPYL OR BUTYL)-O-ALKYL-(THIO/SULFINYL/SULFONYL)-METHYLPHENYL-THIOPHOSPHATES

Alexis A. Oswald, Mountainside, and Paul L. Valint, Woodbridge, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 489,281, July 17, 1974, abandoned, which is a continuation of Ser. No. 326,731, Jan. 26, 1973, abandoned.
This application Sept. 4, 1975, Ser. No. 610,208
Claims priority, application Switzerland, Jan. 26, 1972, 1226/72; Oct. 5, 1972, 14600/72; Dec. 20, 1972, 18528/72
Int. Cl.[2] A01N *9/36*; C07F *9/165*
U.S. Cl. 424—216 10 Claims

1. The compound O-ethyl-S-n-propyl-O-(2-methylthiomethylphenyl)-thiophosphate.

5. A pesticidal composition for combatting insects, acarids and nematodes which comprises (1) the compound of claim 1 and (2) a carrier.

7. A method for combatting pests selected from the group consisting of insects, acarids and nematodes which comprises applying thereto a pesticidally effective amount of the compound of claim 1.

4,067,973

2-((2-CHLOROPHENYL)AZO)IMIDAZOLES AND THEIR USE AS AN ANTHELMINTIC

Paul B. Budde, and Robert D. Vatne, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 27, 1976, Ser. No. 754,729
Int. Cl.[2] A61K *31/655*
U.S. Cl. 424—226 9 Claims

1. A composition useful for the control of *Haemonchus* in ruminant animals which comprises an inert carrier and from 1 to 95 percent by weight of 2-((2-chlorophenyl)azo)-1,3-dimethyl imidazole iodide.

2. A method for the control of *Haemonchus* in ruminant animals which comprises orally administering to said animals, an anthelmintically effective amount of a compound selected from the group consisting of 2-((2-chlorophenyl-)azo)imidazole, 2-((2-chlorophenyl)azo)imidazole:hydrochloride and 2-((2-chlorophenyl)azo)-1,3-dimethyl imidazole iodide.

4,067,974

STABILIZED SOLID FORM CHOLINE SALICYLATE COMPOSITIONS

Ernest J. Sasmor, Yonkers, N.Y., assignor to The Purdue Frederick Company, Norwalk, Conn.

Continuation-in-part of Ser. No. 651,110, Jan. 21, 1976, abandoned. This application July 14, 1976, Ser. No. 705,056
Int. Cl.[2] A61K *31/60, 31/615, 31/61*
U.S. Cl. 424—231 20 Claims

1. Solid composition comprising choline salicylate and a stabilizing amount of the salicylate of at least one physiologically compatible metal having a valence of at least 2.

13. Choline salicylate-carboxy lower alkyl cellulosemetal complex wherein said metal is a physiologically compatible metal having a valence of at least 2.

4,067,975

TREATMENT OF PSORIASIS WITH 6-AMINONICOTINAMIDE AND THIONICOTINAMIDE

Ruey J. Yu, 4400 Dexter St., Philadelphia, Pa. 19128, and Eugene J. Van Scott, 1138 Sewell Lane, Rydal, Pa. 19046

Filed Aug. 4, 1975, Ser. No. 601,411
Int. Cl.[2] A61K *31/455, 31/57*
U.S. Cl. 424—240 38 Claims

1. A method for alleviating the symptoms of psoriasis in a human suffering therefrom comprising:

applying, topically, to involved areas of the human body an effective amount of a composition of 6-aminonicotinamide in a concentration of from 0.01 to 5 percent by weight of the total composition, in a pharmaceutically acceptable carrier.

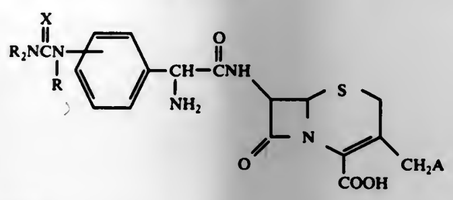
4,067,976

ALPHA-AMINO-ALPHA-(UREIDOPHENYL-)ACETAMIDOCEPHALOSPORINS AND THEIR PHARMACEUTICAL COMPOSITIONS

John Russel Eugene Hoover, Glenside, Pa., and Jerry Arnold Weisbach, Cherry Hill, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 357,763, May 7, 1973, Pat. No. 4,007,173.
This application Oct. 1, 1976, Ser. No. 728,580
Int. Cl.[2] A61K *31/545*; C07D *501/22, 501/32*
U.S. Cl. 424—246 15 Claims

1. A compound of the formula



wherein:

the R_2NCXNR group is at the para or meta position;
R is hydrogen or lower alkyl of 1–4 carbon atoms;
X is oxygen or sulfur; and
A is hydrogen, or acetoxy;
or a non-toxic pharmaceutically acceptable salt thereof.

15. An antibacterially effective pharmaceutical composition comprising a compound as claimed in claim 1 and a pharmaceutically acceptable carrier therefore.

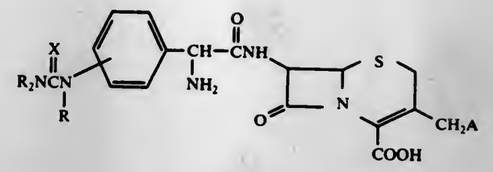
4,067,977

α-AMINO-α-(UREIDOPHENYL)ACETAMIDOCEPHALOSPORINS AND THEIR PHARMACEUTICAL COMPOSITIONS

John Russel Eugene Hoover, Glenside, Pa., and Jerry Arnold Weisbach, Cherry Hill, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 357,763, May 7, 1973, Pat. No. 4,007,173.
This application Oct. 1, 1976, Ser. No. 728,583
Int. Cl.[2] A61K *31/545*; C07D *501/36, 501/32, 501/44*
U.S. Cl. 424—246 11 Claims

1. A compound of the formula



wherein:

the R_2NCXNR group is at the para or meta position;
R is hydrogen or lower alkyl of 1–4 carbon atoms;
X is oxygen or sulfur; and
A is methylthio, methoxy, or azido
or a non-toxic pharmaceutically acceptable salt thereof.

11. A pharmaceutical composition effective for treating bacterial infections comprising a compound as claimed in claim 1 and a pharmaceutically acceptable carrier therefor.

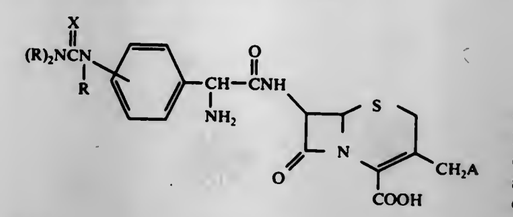
4,067,978

PHARMACEUTICAL COMPOSITIONS OF α-AMINO-α-(UREIDOPHENYL)ACETAMIDOCEPHALOSPORINS

John Russel Eugene Hoover, Glenside, Pa., and Jerry Arnold Weisbach, Cherry Hill, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 357,763, May 7, 1973, Pat. No. 4,007,173.
This application Oct. 1, 1976, Ser. No. 728,582
Int. Cl.[2] A61K *31/545*
U.S. Cl. 424—246 12 Claims

1. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and an antibacterial effective amount of a compound of the formula



wherein:

the $(R)_2NCXNR$ group is at the para or meta position;
R is hydrogen or lower alkyl of 1–4 carbon atoms;
X is oxygen or sulfur;
A is SHet; and
Het is tetrazolyl, triazolyl, thiadiazolyl, oxadiazolyl, diazolyl, pyridyl, pyrimidyl or pyrazinyl, unsubstituted or substituted with one or two substituents selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, allyloxy, oxide, halogen, carboxamido, carboxyl, carbalkoxy of C_1–C_6, mercapto, methylthio, trifluoromethyl, hydroxy, amino, alkylamino, dialkylamino, each undefined alkyl having 1–6 carbon atoms
or a non-toxic pharmaceutically acceptable salt thereof.

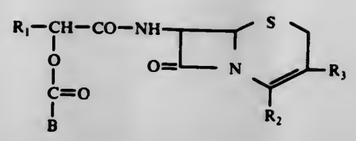
4,067,979

CEPHALOSPORINS HAVING AN α-ACYLOXYACETIC ACID SIDE CHAIN

Hans Bickel, Binningen; Karoly Kocsis, Basel, and Heinrich Peter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

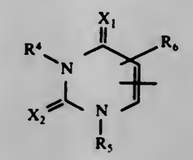
Filed Apr. 7, 1975, Ser. No. 565,327
Claims priority, application Switzerland, Apr. 11, 1974, 5179/74
Int. Cl.[2] A61K *31/545*; C07D *501/36*
U.S. Cl. 424—246 7 Claims

1. A compound of the formula



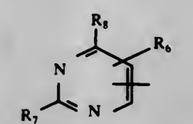
(I)

wherein R_1 denotes phenyl, thienyl, furyl, 1,4-cyclohexadienyl, or phenyl substituted by methyl, lower alkoxy, hydroxy, halogen or nitro, R_2 represents a free carboxyl group or a pivaloyloxymethoxycarbonyl group, R_3 represents a heterocyclylthiomethyl group wherein the heterocyclyl radical is 1-oxidized pyridyl, pyrimidyl, pyridazinyl, pyrazinyl, imidazolyl, imidazolidyl, purinyl, triazolyl, tetrazolyl or such radicals substituted by lower alkyl, lower alkoxy, hydroxy or halogen, and B represents the formula (B_1)



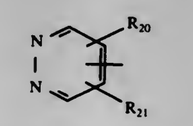
(B_1)

wherein X_1 and X_2 independently of one another denote oxygen, sulphur or the imino group =NH, R_4 and R_5 independently of one another denote hydrogen or methyl, and R_6 denotes hydrogen, halogen, methyl or phenyl, or represents the formula (B_2)



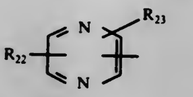
(B_2)

wherein R_6 denotes hydrogen, halogen, methyl or phenyl, and R_7 and R_8 independently of one another denote a free hydroxyl or mercapto group, lower alkoxy, lower alkyl mercapto, lower alkanoyloxy or lower alkanoyl mercapto, halogen or a mono- or di-lower alkylated or lower alkanoylated amino group, and one of the radicals R_7 or R_8 can also be hydrogen, or represents the formula (B_5)



(B_5)

wherein R_{20} denotes a free hydroxyl or mercapto group, lower alkoxy, lower alkyl mercapto, lower alkanoyloxy or lower alkanoyl mercapto, and R_{21} denotes hydrogen, hydroxyl, halogen or methyl, or represents the formula (B_6)



(B_6)

wherein R_{22} denotes a free hydroxyl or mercapto group, lower alkoxy, lower alkyl mercapto, lower alkanoyloxy, or lower alkanoyl mercapto, and R_{23} denotes hydrogen, hydroxyl, halogen or methyl, or represents, where appropriate, a formula tautomeric thereto, or a pharmaceutically acceptable salt thereof.

6. An antibacterial composition comprising an antibacterially effective amount of a compound of claim 1 together with a pharmaceutically usable excipient.

7. A method for the treatment of infections caused by microorganisms which comprises administering to a host suffering such infection an antibacterially effective amount of a compound of claim 1.

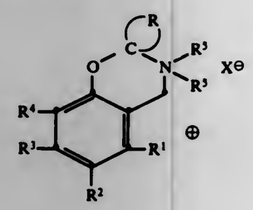
4,067,980

SPIROBENZOXAZINIUM SALTS, METHOD OF USE AND COMPOSITIONS THEREOF AS ANTIHYPERTENSIVE AGENTS

Edward J. Cragoe, Jr., Lansdale; Gerald E. Stokker, Gwynedd Valley, and Everett M. Schultz, Ambler, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 16, 1976, Ser. No. 714,465
Int. Cl.² A61K *31/535*; C07D *265/12, 498/10*
U.S. Cl. 424—248.4 **10 Claims**

1. A compound of the formula:

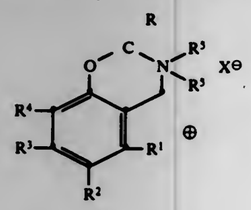


wherein
R^1 is hydrogen, methyl or methoxy;
R^2 is halo or lower alkyl;
R^3 is hydrogen, lower alkyl or lower alkoxy;
R^4 is halo, lower alkyl or trifluoromethyl;
R^5 is lower alkyl;



is spiro-cyclohexane, spiro-cyclopentane spiro-4'-piperidine or spiro-4'-piperidine wherein the nitrogen heteroatom is substituted by lower alkanoyl and
X is halo or lower alkanoyloxy.

9. A method of treating hypertension which comprises administration to a patient in need of such treatment a therapeutically effective amount of a compound of the formula:

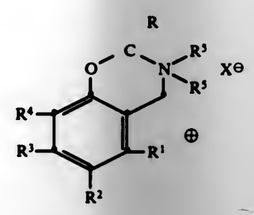


wherein
R^1 is hydrogen, methyl or methoxy,
R^2 is halo or lower alkyl;
R^3 is hydrogen, lower alkyl or lower alkoxy;
R^4 is halo, lower alkyl or trifluoromethyl;
R^5 is lower alkyl;



is spiro-cyclohexane, spiro-cyclopentane spiro-4'piperidine or spiro-4'-piperidine wherein the nitrogen heteroatom is substituted by lower alkanoyl and
X is halo or lower alkanoyloxy.

10. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound of the formula for use in treating hypertension:



wherein
R^1 is hydrogen, methyl or methoxy;
R^2 is halo or lower alkyl;
R^3 is hydrogen, lower alkyl or lower alkoxy;
R^4 is halo, lower alkyl or trifluoromethyl;
R^5 is lower alkyl;



is spiro-cyclohexane, spiro-cyclopentane spiro-4'-piperidine or spiro-4'-piperidine wherein the nitrogen heteroatom is substituted by lower alkanoyl; and
X is halo or lower alkanoyloxy.

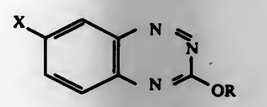
4,067,981

7-SUBSTITUTED-BENZO-1,2,4-TRIAZINE-3-ETHERS

Klaus Sasse, Schildgen; Paul-Ernst Frohberger, and Hans Scheinpflug, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 26, 1976, Ser. No. 717,969
Claims priority, application Germany, Aug. 27, 1975, 2538179
Int. Cl.² C07D *253/08*; A01N *9/22*
U.S. Cl. 424—249 **10 Claims**

1. A benzo-1,2,4-triazine-3-ether of the formula



in which
R is alkyl with up to 8 carbon atoms optionally substituted by halogen or lower alkoxy, or alkenyl with 3 to 6 carbon atoms, and
X is halogen, trifluoromethyl or alkoxy with up to 4 carbon atoms.

8. A fungicidal, bactericidal, insecticial or acaricidal composition containing as active ingredient a fungicidally, bactericidally, insecticidally or acaricidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,067,982

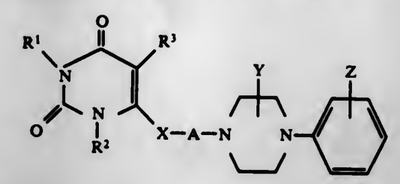
ARYL-SUBSTITUTED PIPERAZINYL-ALKYLAMINO-URACILS, -URACIL ETHERS AND -URACIL THIOETHERS AS THERAPEUTICS

Kurt Klemm, Allensbach; Wolfgang Schoetensack, Constance, and Wolfgang Prusse, Hegne, all of Germany, assignors to Byk Gulden, Constance, Germany

Division of Ser. No. 65,445, Aug. 20, 1970, Pat. No. 3,957,786. This application Apr. 8, 1976, Ser. No. 675,122
Int. Cl.² A61K *31/495*
U.S. Cl. 424—250 **20 Claims**

1. The method of causing a lowering of the blood pressure, causing an analgesic effect, antihistiminic effect or a sedative

effect in a warm-blooded animal which comprises administering in a therapeutically effective dose, a pharmaceutical composition comprising a compound of the formula:



wherein
R^1 and R^2 each is hydrogen, alkyl or alkenyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, or phenyl;
R^3 is hydrogen, alkyl or alkenyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, chlorine or bromine, phenyl, aralkyl, wherein the alkyl is of 1 to 3 carbon atoms, nitro, nitroso, amino, alkylamino of 1 to 3 carbon atoms, dialkylamino wherein each of the alkyl groups contain 1 to 3 carbon atoms, alkanoylamino of 1 to 4 carbon atoms, formyl, ethoxycarbonylamino, thiocyanato, $COCH_3$ or $CONHC_6H_5$;
X is —NH—, $-NC_2H_5-$, —O— or —S—;
A is $-CH_2-CH_2CH_2-$, $-CH(CH_3)-CH_2-$ or $-CH_2-CH(CH_3)$;
Z is hydrogen, a methyl group, one or two methoxy groups or an ethoxy group, a chlorine atom and
Y is hydrogen, and the pharmaceutically acceptable salts of these compounds, in mixture with a pharmaceutically acceptable carrier.

4,067,983

PHARMACEUTICAL COMPOSITIONS AND METHODS

Bruno P. H. Poschel, and Donald E. Butler, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Dec. 17, 1976, Ser. No. 751,830
Int. Cl.² A61K *31/44*
U.S. Cl. 424—263 **12 Claims**

1. A method for inducing psychostimulation in a mammal which comprises administering an effective amount of 3-phenoxypyridine or a pharmaceutically acceptable acid-addition salt thereof to a mammal requiring psychostimulation.

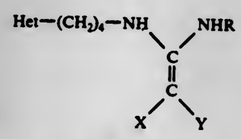
4,067,984

PYRIDYLBUTYLAMINO ETHYLENE COMPOUNDS

Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote; Charon Robin Ganellin, Welwyn Garden City, and Hunter Douglas Prain, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 629,193, Nov. 5, 1975, Pat. No. 4,002,759, which is a continuation-in-part of Ser. No. 468,617, May 9, 1974, Pat. No. 3,953,460. This application Oct. 4, 1976, Ser. No. 729,567
Int. Cl.² A61K *31/395*; C07D *213/84*
U.S. Cl. 424—263 **7 Claims**

1. A compound of the formula:



wherein X and Y, which may be the same or different, are hydrogen, nitro, cyano or SO_2Ar but are not both hydrogen; Het is a pyridine ring which ring is unsubstituted or substituted by lower alkyl, hydroxyl, halogen or amino; R is $Het(CH_2)_mZ(CH_2)_n$; Z is sulphur or methylene; m is 0, 1 or 2 and n is 2 or 3 provided that the sum of m and n is 3 or 4, and Ar is phenyl which is unsubstituted or substituted by halogen, methyl or amino, or a pharmaceutically acceptable acid addition salt thereof.

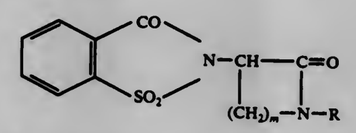
4,067,985

LACTUM DRUG COMPOSITIONS

Ivars Graudums, Stolberg, Rhineland; Heinrich Muckter, Aachen, and Ernst Frankus, Stolberg-Busbach, all of Germany, assignors to Chemie Grunenthal GmbH, Stolberg, Germany

Division of Ser. No. 336,313, Feb. 27, 1973, Pat. No. 3,951,985. This application Dec. 12, 1975, Ser. No. 640,288
Claims priority, application Germany, Mar. 3, 1972, 2210166
Int. Cl.² A61K *31/33, 31/40, 31/425, 31/445*
U.S. Cl. 424—267 **28 Claims**

16. The method of inducing sedation in warm-blooded animals which comprises administering to said warm-blooded animals a pharmaceutical composition comprising a compound of the general formula



wherein R is a hydrogen atom or an alkyl radical with 1 to 3 carbon atoms and m is 2, 3 or 4 in a controlled dosage effective to induce sedation.

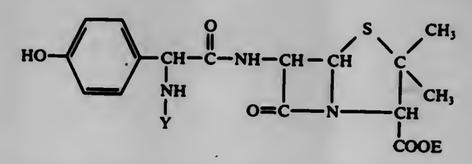
4,067,986

NOVEL PENICILLANIC ACID

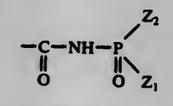
Cornelis Adrianus Bruynes, Koudekerk an den Rijn, and Johannes Karel Van der Drift, Delft, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Oct. 20, 1975, Ser. No. 624,276
Claims priority, application United Kingdom, Oct. 21, 1974, 45480/74
Int. Cl.² A61K *31/43*; C07D *499/68*
U.S. Cl. 424—271 **11 Claims**

1. A compound of the formula



wherein E is selected from the group consisting of hydrogen, a conventional penicillin salt forming cation, and a conventional penicillin ester forming residue which is known to improve the absorption characteristics of penicillanic compounds after oral administration to humans or animals, and Y is a group of the formula



wherein Z_1 and Z_2 are individually selected from the group consisting of lower alkoxy, optionally substituted phenoxy, optionally substituted benzyl and benzyloxy group, optionally substituted lower alkyl, optionally substituted phenyl, hydroxy and -OM wherein M represents a conventional penicillin salt forming cation, and hydrates of the said salts.

4,067,987

STABILIZED OXADIAZOLE ANTHELMINTIC COMPOSITIONS

Michael H. Fisher, Somerville; George B. Smith, Edison, and Dale R. Hoff, Basking Ridge, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 524,010, Nov. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 234,655, March 14, 1972, Pat. No. 3,863,012. This application Jan. 9, 1976, Ser. No. 647,848

Int. Cl.² A61K *31/42*

U.S. Cl. 424—272 16 Claims

1. A stabilized 3-loweralkyl-1,2,4-oxadiazole anthelmintic composition comprising an anthelmintically effective quantity of a 3-loweralkyl-1,2,4-oxadiazole in homogeneous mixture with a stabilizing agent selected from the group consisting of methanol, ethanol, ethylene glycol, propylene glycol, glycerol, aniline, N-methlaniline or N,N-dimethylaniline, said mixture containing from 0.1 to 2.0 moles of stabilizing agent per mole of oxadiazole.

4,067,988

3-PHENYL-1,2,4-OXADIAZOLE DERIVATIVES AS ANTIINFLAMMATORY-ANTITUSSIVE AGENTS

Jean-Pierre Buret, Osny; Bernard Hercelin, Clermont; Jean-Francois Hamon, Saint-Ouen L'Aumone, and Trajan Balea, Paris, all of France, assignors to Laboratoires Cassenne, Paris, France

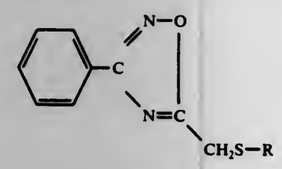
Filed Apr. 8, 1976, Ser. No. 674,754

Claims priority, application France, Apr. 16, 1975, 75.11785

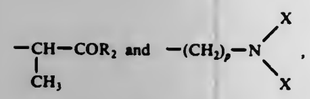
Int. Cl.² A61K *31/42*; C07D *271/06*

U.S. Cl. 424—272 23 Claims

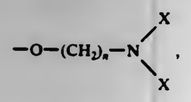
1. A compound selected from the group consisting of a compound of the formula



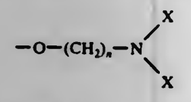
wherein R is selected from the group consisting of $-(CH_2)_m-COR_1$,



m is 2,3 or 4, R_1 is selected from the group consisting of hydroxy, alkoxy of 1 to 4 carbon atoms and



n is 1 or 2, X is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R_2 is selected from the group consisting of hydroxy, alkoxy of 1 to 4 carbon atoms,



and $-NH-(CH_2)_n-COR_1$ and *p* is 1,2,3 or 4 and the non-toxic, pharmaceutically acceptable salts thereof.

4,067,989

1,3-DIAZOLE HETEROCYCLIC COMPOUNDS AND THEIR USE AS PESTICIDES

Margaret Claire Shephard, and Paul Anthony Worthington, both of Maidenhead, England, assignors to Imperial Chemical Industries Limited, London, England

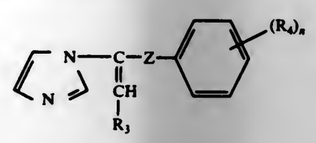
Filed Oct. 5, 1976, Ser. No. 729,865

Claims priority, application United Kingdom, May 7, 1976, 18972/76

Int. Cl.² A61K *31/415*; C07D *233/06, 307/28, 333/46*

U.S. Cl. 424—273 R 9 Claims

1. A compound of formula:



wherein R_3 is alkyl or R_3 is furyl, thienyl or phenyl optionally substituted with halogen, acyloxy, cyano, hydroxy, nitro, alkoxy or unsubstituted or halosubstituted alkyl; R_4 is hydrogen, halogen, nitro, phenyl, alkoxy or unsubstituted or halosubstituted alkyl; *n* is 1, 2 or 3; and Z is C=O or a fungicidal salt of such a compound.

7. A method of combating fungal diseases in a plant, the method consisting essentially of the step of applying to the plant, to seed of the plant or to the locus of the plant or seed, a fungicidally effective amount of a compound or salt as claimed in claim 1.

4,067,990

PROCESS FOR THE PREPARATION OF INSECTICIDAL COMPOSITIONS BASED ON CARBAMIC ESTERS

Marcel Louis Dulat, Poitiers, and Claude Heanart, Seraincourt, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

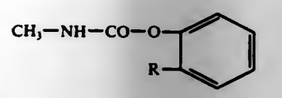
Continuation-in-part of Ser. No. 298,158, Oct. 16, 1972, abandoned. This application May 20, 1975, Ser. No. 579,101

Claims priority, application Luxembourg, Oct. 18, 1971, 64108

Int. Cl.² A01N *9/20, 9/28*

U.S. Cl. 424—278 7 Claims

1. An insecticidal composition in the form of a liquid organic homogeneous solution comprising as essential components (A) from about 0.01 to 10%, based on the weight of the composition, of an ortho-substituted phenyl N-methyl-carbamate of the following formula:



wherein R is an unsubstituted 1,3-dioxolan-2-yl radical or substituted by one or two methyl groups; and as sole solvent carrier for said component (A) a homogeneous mixture essentially consisting of

B. from about 0.01 to 10%, based on the weight of the composition of an organic diluent which is selected from the group consisting of vaseline oil, paraffin oil, hexadecane, 1-chlorohexadecane, 1-bromotetradecane, tetrachlorodiphenyl, isopropylmyristate, di(2-ethylhexyl) adipate, dibutylphthalate, dioctylphthalate, 5-(3,6,9-trioxaundecyl-2-oxy)-1,3-benzodioxole, glycerol, 5,8,11-trioxapentadecane, 2-amino-2-ethyl-1,3-propanediol, ter.-dodecanethiol, oleone, octanoic acid, oleic acid, 2-dodecylsuccinic acid anhydride, olive oil, line oil and mixtures thereof, the weight proportion between component B and component A ranging between 0.2 and 10,

with component B having a maximum dissolving capacity for component A of 5%, by weight, at 20° C. and

C. from about 25 to 99%, based on the weight of the composition, of an organic solvent, which is selected from the group consisting of dichloromethane, trichloromethane, methylacetate, ethylacetate, propylacetate, isopropylacetate, butylacetate, isobutylacetate, sec. butylacetate, methylpropionate, ethylpropionate, methylbutyrate, ethylbutyrate, 2-methoxyethyl acetate, tetrahydrofuran, dioxan, 2-methoxy-ethanol, methanol, ethanol, isopropanol, acetone, methyl-ethyl-ketone, nitromethane and acetonitrile, with component C having a dissolving capacity for component A of at least 5%, by weight, at 20° C. and

D. from 0 to about 75%, based on the weight of the composition of an organic diluent which is selected from the group consisting of pentane, hexane, heptane, 1-chlorobutane, 1,1,1-trichloroethane, trichloroethylene, benzene, isopropanol, amyl alcohol and light petroleum fractions having a distillation range between about 70° and 250° C. and which are soluble in A + B + C liquid at 25° C, have a vapour pressure at 25° C between 0.01 and 150 Torr and are able to dissolve at 20° C between 0 and 5%, by weight, of component A.

4,067,991

PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE FOR PROSTAGLANDIN 1,11- AND 1,15-LACTONES

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 589,724, June 23, 1975, abandoned. This application June 3, 1976, Ser. No. 692,439

Int. Cl.² A61K *31/365*

U.S. Cl. 424—279 38 Claims

1. A pharmaceutical composition comprising an effective amount of a lactone which is the 1,11-lactone or the 1,15-lactone of prostaglandin or prostaglandin analog in combination with a pharamceutical carrier formulated to deliver said prostaglandin or prostaglandin analog to an esterase-containing tissue area of a mammal.

38. An improved method of administering an effective amount of a prostaglandin or a prostaglandin analog to esterase-containing tissues of a mammal which comprises administering to said mammal a lactone which is the 1,11-lactone or the 1,15-lactone of said prostaglandin or prostaglandin analog in combination with a pharmaceutical carrier.

4,067,992

METHOD OF TREATING A PSYCHIATRIC CONDITION

Patrick John Kingsley, Loughborough, and Thomas Samuel Campbell Orr, Melton Mowbray, both of England, assignors to Fisons Limited, London, England

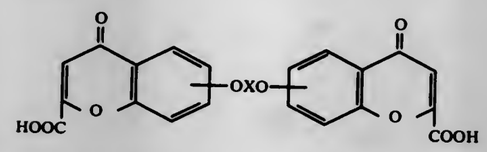
Filed Aug. 26, 1976, Ser. No. 717,875

Claims priority, application United Kingdom, Sept. 10, 1975, 37183/75; Sept. 10, 1975, 37185/75

Int. Cl.² A61K *31/35, 31/335*

U.S. Cl. 424—283 10 Claims

1. A method of treatment of a psychiatric condition, which method comprises per os administrtion of a compound of formula I,



I

wherein X is a polymethylene chain containing 3 to 7 carbon atoms inclusive, which chain may be substituted by an —OH group,

or a therapeutically acceptable salt, alkyl C 1 to 10 ester, mono-alkyl C 1 to 10 amide, di-alklyl C 1 to 10 amide or an unsubstituted amide thereof,

to a patient suffering from such a condition.

4,067,993

ANTIMICROBIAL 2-NITRO-3-PHENYLBENZOFURANCARBOXYLIC ACIDS

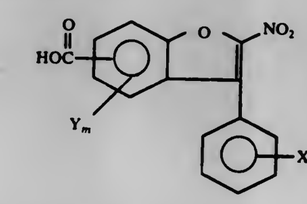
Robert A. Scherrer, White Bear Lake, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 616,274, Sept. 24, 1975, abandoned. This application Sept. 20, 1976, Ser. No. 724,572

Int. Cl.² C07D *307/82*; A61K *31/345*

U.S. Cl. 424—285 12 Claims

1. A compound of the formula



wherein X is fluorine, chlorine, lower alkyl or lower alkoxy, Y is methyl, methoxy, fluorine or chlorine and *m* and *n* are independently zero, one or two, or a lower alkyl ester, hydroxyloweralkyl ester, N,N-diloweralkylaminoloweralkyl ester, N-unsubstituted amide, diloweralkylaminoloweralkylamide, quaternary lower alkyl ammonium loweralkylamide, bis (2-hydroxyethyl)amide, glycine amide, carboxyphenylamide, piperazinyl amide, penicilloyl amide, sulfoethylamide, sulfamoylphenylamide, 5-tetrazolylamide, or an acid halide or a pharmaceutically acceptable salt thereof.

10. A method for inhibiting or arresting the growth of microorganisms which comprises contacting said microorganisms with an effective amount of a compound of claim 1.

4,067,994

IRON METHIONINE COMPLEX SALTS

Dean R. Anderson, Excelsior, and Mahmoud M. Abdel-Monem, St. Paul, both of Minn., assignors to Zinpro Corporation, Chaska, Minn.

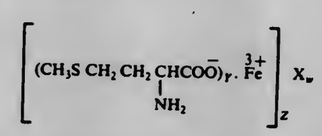
Filed Mar. 26, 1976, Ser. No. 670,746

Int. Cl.² A61K *31/295*

U.S. Cl. 424—295 11 Claims

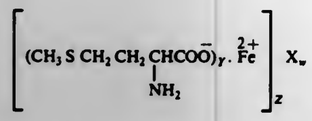
1. A feed supplement having the capability of enhancing the nutrition and health of animals by effectively increasing the absorption, distribution and utilization of iron and methionine within the body system of said animals, comprising in solid form a water soluble iron methionine complex salt having an anion selected from the group consisting of halide, phosphate and sulfate, the amount of said salt being sufficient to provide a dietary intake of iron of at least from about 50 parts per million to about 500 parts per million.

3. A water soluble methionine ferric ion complex salt in solid form, of the formula



wherein Y is a whole integer and is 1 or 2, X is an inorganic anion selected from the group consisting of halide, sulfate and phosphate, and Z and W are whole integers selected to electrostatically balance the cationic and anionic charges of the complex salt.

6. A water soluble methionine ferrous ion complex salt, in solid form, of the formula



wherein Y is a whole integer and is 1 or 2, X is an inorganic anion selected from the group consisting of halide, sulfate, and phosphate, and Z and W are whole integers selected to electrostatically balance the cationic and anionic charges of the complex salt.

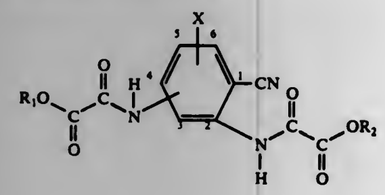
4,067,995

COMPOUNDS, COMPOSITIONS AND METHODS OF USE

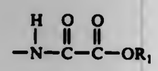
John B. Wright, and Anthony A. Sinkula, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 477,817, June 10, 1974, abandoned.
This application Nov. 28, 1975, Ser. No. 635,808
The portion of the term of this patent subsequent to Dec. 3, 1991, has been disclaimed.
Int. Cl.[2] A61K *31/275;* C07C *121/78*
U.S. Cl. 424—304 **15 Claims**

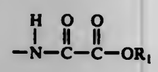
1. A compound of the formula



wherein



is at one of the positions 4, 5 and 6 with the proviso that where



is at 4, then when X is at the 3 position, X is selected from the group consisting of hydrogen and alkyl from one to three carbon atoms, inclusive;

when X is at the 5 position, X is selected from the group consisting of hydrogen, halogen, alkoxy from one to three carbon atoms, inclusive, and cyano; and

when X is at the 6 position, X is selected from the group consisting of hydrogen and halogen;

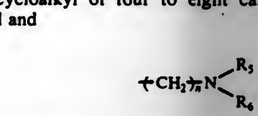
5, then when X is at the 3 or 6 position, X is hydrogen, and

X is at the 4 position, X is selected from the group consisting of hydrogen, halogen, alkyl from one to three carbon atoms, inclusive; and alkoxy from one to three carbon atoms, inclusive;

6, when X is at the 3 or 5 position, X is selected from the group consisting of hydrogen and alkyl from one to three carbon atoms, inclusive; and

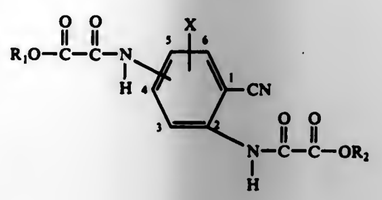
X is at the 4 position, X is selected from the group consisting of hydrogen, alkyl from one to three carbon atoms, inclusive, and cyano;

and R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen; a physiologically acceptable metal or amine cation; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of four to eight carbon atoms, inclusive, phenyl and

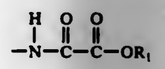


wherein *n* is an integer of 3 to 4 carbon atoms, inclusive, and R_5 and R_6 are the same or different and are selected from the group consisting of hydrogen and alkyl of one to four carbon atoms, inclusive, with the proviso that when one of R_1 and R_2 is hydrogen or a physiologically acceptable metal or amine cation, the other variable is not hydrogen or a physiologically acceptable metal or amine cation.

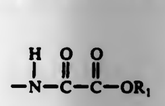
10. A therapeutic composition comprising a compound of the formula



wherein



is at one of the positions 4, 5 and 6 with the proviso that where



is at 4, then when X is at the 3 position, X is selected from the group consisting of hydrogen and alkyl from one to three carbon atoms, inclusive;

when X is at the 5 position, X is selected from the group consisting of hydrogen, halogen, alkoxy from one to three carbon atoms, inclusive, and cyano; and

when X is at the 6 position, X is selected from the group consisting of hydrogen and halogen;

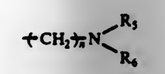
5, then when X is at the 3 or 6 position, X is hydrogen, and

X is at the 4 position, X is selected from the group consisting of hydrogen, halogen, alkyl from one to three carbon atoms, inclusive; and alkoxy from one to three carbon atoms, inclusive;

6, when X is at the 3 or 5 position, X is selected from the group consisting of hydrogen and alkyl from one to three carbon atoms, inclusive; an

X is at the 4 position, X is selected from the group consisting of hydrogen, alkyl from one to three carbon atoms, inclusive, and cyano;

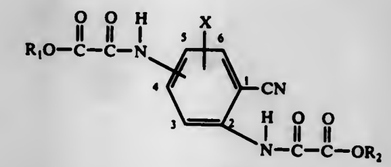
and R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen; a physiologically acceptable metal or amine cation; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of four to eight carbon atoms, inclusive, phenyl and



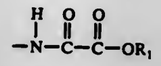
wherein *n* is an integer of three to four carbon atoms, inclusive, and R_5 and R_6 are the same or different and are selected from the group consisting of hydrogen and alkyl of one to four carbon atoms, inclusive, with the proviso that when one of R_1 and R_2 is hydrogen or a physiologically acceptable metal or

amine cation, the other variable is not hydrogen or a physiologically acceptable metal or amine cation, in association with a pharmaceutical carrier.

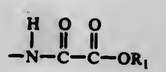
13. A process for the prophylactic treatment of allergy of a reagin or non-reagin mediated nature in a mammal which comprises administering a compound of the formula



wherein



is at one of the positions 4, 5 and 6, with the proviso that where



is at 4, then when X is at the 3 position, X is selected from the group consisting of hydrogen and alkyl from one to three carbon atoms, inclusive;

when X is at the 5 position, X is selected from the group consisting of hydrogen, halogen, alkoxy from one to three carbon atoms, inclusive, and cyano; and

when X is at the 6 position, X is selected from the group consisting of hydrogen and halogen;

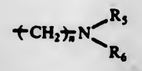
5, then when X is at the 3 or 6 position, X is hydrogen, and

X is at the 4 position, X is selected from the group consisting of hydrogen, halogen, alkyl from one to three carbon atoms, inclusive; and alkoxy from one to three carbon atoms, inclusive;

6, when X is at the 3 or 5 position, X is selected from the group consisting of hydrogen and alkyl from one to three carbon atoms, inclusive; and

X is at the 4 position, X is selected from the group consisting of hydrogen, alkyl from one to three carbon atoms, inclusive, and cyano;

and R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen; a physiologically acceptable metal or amine cation; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of four to eight carbon atoms, inclusive, phenyl and



wherein *n* is an integer of three to four carbon atoms, inclusive, and R_5 and R_6 are the same or different and are selected from the group consisting of hydrogen and alkyl of one to four carbon atoms, inclusive, with the proviso that when one of R_1 and R_2 is hydrogen or a physiologically acceptable metal or amine cation, the other variable is not hydrogen or a physiologically acceptable metal or amine cation, in association with a pharmaceutical carrier.

4,067,996

PHENYLACETIC ACID DERIVATIVES

Henry Najer, Paris; Don Pierre René Lucien Giudicelli, Fontenay-sous-Bois; Philippe Michel Jacques Manoury, L'Hay-les-Roses, and Jean-Marie Louis Eugéne Roger, Fontenay-aux-Roses, all of France, assignors to Synthelabo, Paris, France

Filed Dec. 30, 1975, Ser. No. 645,351
Claims priority, application France, Dec. 30, 1974, 74.43223; Sept. 26, 1975, 75.29474
Int. Cl.[2] C07C *69/76;* A61K *31/215*
U.S. Cl. 424—308 **4 Claims**

1. 1-Acetylamino-ethyl 2-(4-chloro-phenyl)-2-(4-fluoro-3-trifluoromethyl-phenoxy)-acetate.

2. A pharmaceutical composition having a hypolipaemic and hypocholesterolaemic effect comprising, in association with a compatible pharmaceutically acceptable carrier, an effective amount of a compound as claimed in claim 1 to provide said hypolipaemic and hypocholesterolaemic effect.

3. 2-Acetylamino-ethyl 2-4(chloro-phenyl)-2-(4-chloro-3-trifluoromethyl-phenoxy)-acetate.

4. A pharmaceutical composition having a hypolipaemic and hypocholesterolaemic effect comprising, in association with a compatible pharmaceutically acceptable carrier, an effective amount of a compound as claimed in claim 3 to provide said hypolipaemic and hypocholesterolaemic effect.

4,067,997

SYNERGISTIC MICROBECIDAL COMPOSITION AND METHOD

Jon J. Kabara, Okemos, Mich., assignor to Med-Chem Laboratories, Okemos, Mich.

Continuation-in-part of Ser. No. 579,687, May 21, 1975, Pat. No. 4,002,775, which is a continuation-in-part of Ser. No. 377,187, July 9, 1973, abandoned. This application Dec. 9, 1976, Ser. No. 749,110
Int. Cl.[2] A61K *31/23, 31/22, 31/05*
U.S. Cl. 424—312 **34 Claims**

1. A microbecidal or microbiostatic composition having included therein effective amounts of the combination active ingredients of:

1. at least one microbecidal surface-active mono-ester of a twelve carbon atom aliphatic acid and a polyol; and
2. at least one active phenolic microbecide.

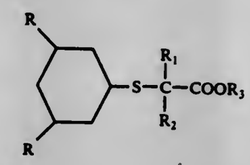
4,067,998

2-((3,5-DI-TERT-BUTYLPHENYL)THIO) ALKANOIC ACIDS AND DERIVATIVES

Eugene R. Wagner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 441,617, Feb. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 332,322, Feb. 14, 1973, abandoned. This application Feb. 13, 1975, Ser. No. 549,613
Int. Cl.[2] A61K *31/19;* C08H *3/00;* C07C *149/40*
U.S. Cl. 424—317 **35 Claims**

1. A compound of the formula:



wherein

each R represents a 1,1-dimethylethyl group;

R_1 is hydrogen or methyl;

R_2 represents an alkyl group containing from 1 to about 6 carbon atoms; and

R_3 represents hydrogen or an alkyl group containing from 1

to about 3 carbon atoms; and the salts thereof formed with pharmaceutically-acceptable bases.

4,067,999
CONTROL OF HEMORRHAGIC ENTERITIS IN TURKEYS

Elmer F. Glabe, Northbrook, Ill., and Herbert J. Rebhan, New Richmond, Wis., assignors to Food Technology Products, Chicago, Ill.

Continuation-in-part of Ser. No. 750,844, Dec. 15, 1976, abandoned. This application May 2, 1977, Ser. No. 792,695
Int. Cl.² A61K *31/19*
U.S. Cl. 424—317 3 Claims

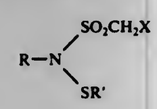
1. A method of controlling hemorrhagic enteritis in turkeys which comprises adding to the drinking water an effective dosage of sodium diacetate.

4,068,000
METHOD FOR CONTROLLING MITES

Laroy H. Edwards, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 16, 1976, Ser. No. 714,462
Int. Cl.² A01N *9/16*; C07C *143/72, 143/84*
U.S. Cl. 424—321 10 Claims

1. A compound of the formula



wherein R is alkyl of 1 to 8 carbon atoms, cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 3 carbon atoms, or phenyl substituted with up to 2 fluoro, chloro, bromo, iodo or alkyl of 1 to 4 carbon atoms; X is fluoro, chloro, bromo or iodo and R' is tetrachloroethyl.

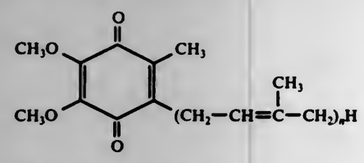
8. A method of killing mite eggs which comprises applying thereto an ovicidally effective amount of the compound defined in claim 1.

4,068,001
METHOD OF MEDICAL TREATMENT OF PANCREATIC INSUFFICIENCY

Tomio Kanno, Sapporo, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1977, Ser. No. 767,170
Claims priority, application Japan, Feb. 14, 1976, 51-14415
Int. Cl.² A61K *31/12, 37/48*
U.S. Cl. 424—331 5 Claims

1. A method for the treatment of pancreatic insufficiency which comprises administering to a human suffering from pancreatic insufficiency a therapeutically effective amount of Coenzyme Q having the formula:



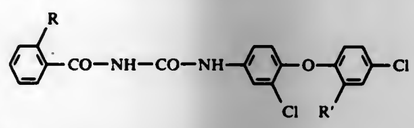
wherein *n* is an integer from 0 to 10.

4,068,002
2,4-DICHLORO-4-BENZOYLUREIDO-DIPHENYL ETHERS

Wilhelm Sirrenberg, Sprockhoevel; Jürgen Schramm, Dormagen; Erich Klauke, Odenthal-Hahnenberg; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 24, 1976, Ser. No. 699,541
Claims priority, application Germany, July 12, 1975, 2531202
Int. Cl.² A01N *9/20*; C07C *127/22*
U.S. Cl. 424—322 9 Claims

1. A 2',4-dichloro-4'-benzoylureidodiphenyl ether of the formula



in which
R is chlorine, fluorine, bromine or methyl, and
R' is hydrogen or chlorine.

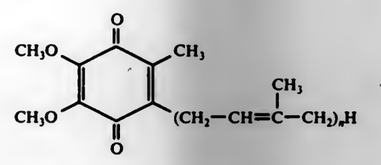
7. An insecticidal composition containing as active ingredient an insecticidally effective amount of a compound according to claim 1 in admixture with a solid or liquefied gaseous diluent.

4,068,003
METHOD OF MEDICAL TREATMENT OF MYASTHENIA

Makoto Miyata, Sapporo, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1977, Ser. No. 767,059
Claims priority, application Japan, Feb. 14, 1976, 51-14416
Int. Cl.² A61K *31/12, 37/48*
U.S. Cl. 424—331 5 Claims

1. A method for the treatment of myasthenia which comprises administering to a human suffering from myasthenia a therapeutically effective amount of Coenzyme Q having the formula:



wherein *n* is an integer from 7 to 10.

4,068,004
SYSTEM AND METHOD FOR COOLING OF GUM BASE

Owen Carlin; John E. Beam, both of Norwalk, Conn., and Robert Vermesh, Yonkers, N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed June 30, 1976, Ser. No. 701,483
Int. Cl.² A23G *3/30*
U.S. Cl. 426—3 4 Claims

1. A method for rapidly cooling hot gum base, which comprises disposing hot gum base at a temperature of over 150° F in a plastic tray formed of high heat resistant, high impact strength self-releasing polycarbonate polymer or copolymer and substantially free of release agent or partitioning agent so that direct heat transfer may be effected from the hot gum base through the polycarbonate tray to facilitate cooling, and contacting the hot gum base with forced chilled air at a temperature of below 70° F flowing at a velocity of from 200 to 2000 ft/min, for a period of at least 1 hour and less than 3 hours, and after the gum base has cooled ejecting the cooled gum base slab from the plastic tray by relatively gentle mechanical working.

4,068,005
ACCELERATED FERMENTATION OF LAGER BEER

Etzer Chicoye, Milwaukee, Wis.; J. Raymond Helbert, Waukegan, Ill., and James F. Rice, Milwaukee, Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 622,001, Oct. 14, 1975, abandoned. This application Dec. 14, 1976, Ser. No. 750,509
Int. Cl.² C12C *11/04*
U.S. Cl. 426—16 4 Claims

1. The method of reducing the length of time required for a bottom fermentation to produce a lager beer which comprises placing beer wort in a fermentation vessel and fermenting the wort in said vessel with yeast for about 50 to about 175 hours at an elevated temperature of 60° F to about 85° F while maintaining the dissolved CO_2 concentration in the fermenting wort at about 1.5 to about 2.0 cc per cc of the fermenting wart by use of a CO_2 overpressure in the vessel of about 2 to about 20 psig.

4,068,006
SALT SEASONING MIXTURE

George Jordan Moritz, Clarks Summit, Pa., assignor to Akzona Incorporated, Asheville, N.C.

Filed Oct. 7, 1976, Ser. No. 730,418
Int. Cl.² A23L *1/237*
U.S. Cl. 426—99 8 Claims

1. A salt seasoning mixture consisting essentially of sodium chloride, potassium chloride, and citric acid granules, said citric acid granules being encapsulated with a non-toxic substance selected from the group consisting of gelation, cellulose-wax, and hydrogenated vegetable oil dissolvable in the mouth in from 1 to 10 seconds.

4,068,007
FOOD PRODUCT CONTAINING EXPANDED CELLULAR MATERIAL AND METHOD OF MANUFACTURE

John H. Forkner, 2116 Mayfair Drive, West, Fresno, Calif. 93703

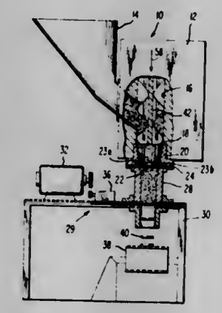
Continuation of Ser. No. 524,448, Nov. 18, 1974, abandoned. This application Mar. 22, 1976, Ser. No. 669,025
Int. Cl.² A23G *3/00*
U.S. Cl. 426—106 6 Claims

1. A method for the manufacture of edible products using a container, comprising assembling pieces of confection material into the form of wafers of predetermined uniform thickness and configuration, the pieces being sugar based confection material having expandable properties, heating the pieces to make the surfaces soft and sticky and to cause the same to adhere together, cooling the wafers, assembling a group comprising a multiplicity of such wafers in a container in parallel relationship with void spaces between parallel opposing side surfaces of adjacent wafers, inserting non-edible separating elements in the form of thin sheets or films between and across the opposed side faces of the wafers and in the void spaces before expansion, and then expanding the wafers by heating to soften the same and by subjecting the wafers to a partial vacuum, the expansion serving to cause the wafers to expand in thickness to substantially eliminate the void spaces between the same and to bring opposing side surfaces of adjacent expanded wafers into juxtaposition with formation of bonds between adjacent expanded wafers, and then permitting the expanded group of wafers to cool to form a final product consisting of a self-supporting group or stack of expanded wafers.

4,068,008
FOOD PRODUCT EXTRUSION APPARATUS AND METHOD

Lewis Preole Orchard, Berlin, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 598,580, July 24, 1975, abandoned, which is a continuation of Ser. No. 454,159, March 25, 1974, abandoned. This application May 28, 1976, Ser. No. 690,903
Claims priority, application United Kingdom, Jan. 28, 1974, 03802/74
Int. Cl.² A22C *18/00, 7/00*
U.S. Cl. 426—272 12 Claims



1. A method of forming a cohesive mass of raw chopped meat having a naturally adherent surface comprising the steps of,

grinding the meat into a plurality of strands of circular cross section, each strand having a naturally adherent surface,

flowing the strands-together wherein said flowing includes directing said strands radially inwardly, to form a naturally cohesive mass wherein all meat in the mass is raw, while retaining the circular cross section of the individual strands including a plurality of air pockets formed by the geometry of said strands disposed between adjacent ones of said strands within said mass and periodically severing said cohesive meat mass.

4,068,009
BREAD CRUMB COATING COMPOSITION AND PROCESS

Joseph M. Rispoli, Massapequa Park; Morris A. Rogers, Mt. Vernon; Janice Raiford Shaw, Yonkers, and Joseph J. Russo, New Windsor, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sept. 15, 1976, Ser. No. 723,417
Int. Cl.² A23L *1/176*
U.S. Cl. 426—291 18 Claims

1. Process for preparing a baked coated comestible with the taste, texture and appearance of a fried coated comestible comprising:

coating a comestible with a batter;

coating the batter-coated comestible with a bread crumb coating composition, said composition comprising bread crumbs consisting essentially of wheat flour, yeast and salt, having an elongated, porous and striated shape and structure, and a particle size wherein at least a majority of the crumbs by weight are retained on a USS 20 mesh screen after passing a USS 5 mesh screen and wherein not more than 10% of the crumbs by weight are retained on a USS 5 mesh screen, said bread crumbs being uniformly browned, and having 1.5 to 40%, by weight of the bread crumbs, of an edible oil applied to the surface of the bread crumbs; and

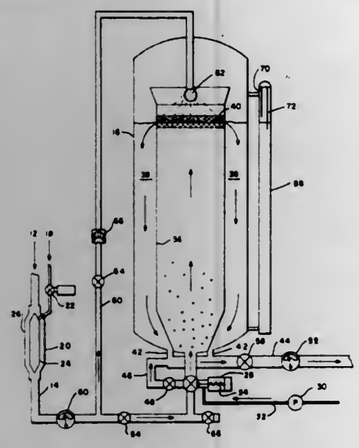
then baking said comestible.

4,068,010

LIQUID CARBON DIOXIDE CARBONATION METHOD

Fred A. Karr, Redwood City, Calif., assignor to Shasta Beverages, Division of Consolidated Foods Corporation, Hayward, Calif.

Division of Ser. No. 643,096, Dec. 22, 1975, Pat. No. 4,022,119.
This application Sept. 2, 1976, Ser. No. 719,735
Int. Cl.² C02D 1/02
U.S. Cl. 426—477 7 Claims



1. In a method for simultaneously carbonating and cooling an aqueous liquid, the steps of

a. containing a body of aqueous liquid in an upright carbonating column having a heat conductive wall,

b. supplying aqueous liquid from a stream of aqueous liquid to be carbonated into the bottom region of said carbonating column,

c. injecting liquid carbon dioxide into the bottom region of said carbonating column and thus carbonating and cooling the liquid from said stream,

d. overflowing cooled carbonated liquid from the top region of said carbonating column,

e. passing said overflowing carbonated aqueous liquid downwardly through a channel around said carbonating column extending downwardly to the level of the bottom of said heat conductive wall, to further cool the carbonated aqueous liquid in said channel by heat transfer across said heat conductive wall.

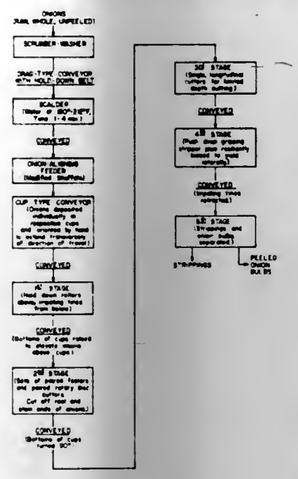
4,068,011

METHOD OF PEELING ONIONS BY SCALDING AND CUTTING

Glen R. Green, and Joseph L. Hodges, both of Ontario, Oreg., assignors to Ore-Ida Foods, Inc., Boise, Idaho

Filed Sept. 29, 1975, Ser. No. 617,821
Int. Cl.² A23L 1/212; A23N 7/00
U.S. Cl. 426—482 5 Claims

1. A method of peeling onions on an industrial, mass production basis, comprising cleaning the onions as harvested; scalding the onions sufficiently to slicken the membrane interface of each cleaned onion between the outermost layer of flesh and the next inner layer without appreciably affecting the interfaces between subsequent layers of flesh; mechanically cutting off root and stem ends; mechanically cutting through said outermost layer of flesh of each onion and any skin adherent thereto longitudinally along the root-stem axis of the onion bulb, without cutting completely through any subsequent layers of flesh, to provide a slit therealong; mechanically stripping said outermost layer of flesh and any skin adherent thereto from each onion bulb along the slickened interface by gripping the said outermost layer of flesh and any skin adherent thereto of the so-slit onion bulb at opposite sides of the slit



and pushing downwardly against the onion; and separating the peeled onion bulbs and the strippings, one from the other.

4,068,012

USE OF 1-(2-PROPENYL)-3-(4-METHYL-3-PENTENYL)-Δ³-CYCLOHEXENE-1-CARBOXALDEHYDE AND 1-(2-PROPENYL)-4-(4-METHYL-3-PENTENYL)-Δ³-CYCLOHEXENE-1-CARBOXALDEHYDE

John B. Hall, Rumson; Mark A. Sprecker, Sea Bright; Manfred Hugo Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, and Robert M. Novak, Fords, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Nov. 11, 1976, Ser. No. 741,088
Int. Cl.² A23L 1/226
U.S. Cl. 426—538 2 Claims

1. A process for augmenting or enhancing the flavor of a foodstuff comprising the steps of adding to a foodstuff from 0.5ppm up to about 100ppm of a flavorant mixture of 1(2-propenyl)-3-(4-methyl-3-pentenyl)-Δ³-cyclohexene-1-carboxaldehyde and 1-(2-propenyl(-4-(4-methyl-3-pentenyl)-Δ³-cyclohexene-1-carboxaldehyde.

4,068,013

FROZEN SWEET SOUFFLÉS AND METHOD OF PREPARING SAME

Rene Brule, 125, rue Louise Michele, Sartrouville, Yvelines 78500, France

Filed Oct. 29, 1976, Ser. No. 737,179
Claims priority, application Canada, Apr. 5, 1976, 249567
Int. Cl.² A23G 9/00
U.S. Cl. 426—565 34 Claims

1. A freezable culinary preparation for sweet soufflés, comprising a homogeneous mixture of a cooked pastry cream, an uncooked chou paste and stiffy beaten egg whites in a volume ratio of about 1.5 : 1 : 1.5, based upon the volume of basic liquid of each ingredient.

4,068,014

DEMOLDING AND BRINING OF CHEESE

Howard H. Heimbruch, Sierra Madre, Calif., assignor to Foremost-McKesson, Inc., San Francisco, Calif.

Filed Feb. 23, 1976, Ser. No. 660,188
Int. Cl.² A23C 19/02, 19/14
U.S. Cl. 426—582 10 Claims

1. In a cheese processing method in which blocks of cheese after being removed from molds are soaked in brine solution in a brine soaking tank, the steps of introducing a first row of cheese blocks into one end of the tank by sequentially introducing single blocks into the tank at one corner of the same and moving successive blocks laterally of the tank to form a free floating horizontal row extending laterally across the tank, moving the row after it is completed toward the other end of the tank for a distance comparable to the width of the row, introducing a second free floating horizontal row of cheese blocks into said one end of the tank at said one corner, moving both the first and second rows toward the other end of the tank for a distance comparable to the width of each row after the second row is completed, and then repeating successive introduction of rows of cheese blocks into the tank at said one corner and causing movement of the same toward the other end of the tank whereby the first row of cheese blocks eventually reaches the other end of the tank, and then removing said first row from the tank.

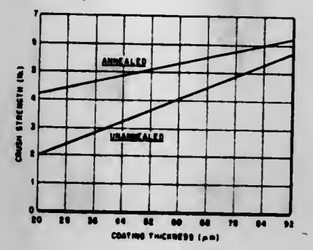
5. In apparatus for the processing of cheese, a brine soaking tank having a receiving end, an opposite discharge end, and a corner extension at the receiving end, means for successively introducing cheese blocks into the corner extension, means at the corner extension for successively moving the blocks from the same into the receiving end of the tank to form free floating horizontal rows of blocks extending laterally of the tank, reciprocating pusher means for moving each row of cheese blocks after it is formed toward the discharge end of the tank for a distance comparable to the width of each row whereby a space is formed for receiving a next row of blocks from said corner extension.

4,068,015

PROCESS TO MINIMIZE CRACKING OF PYROLYTIC CARBON COATINGS

Walter J. Lackey, Jr., Oak Ridge, and John D. Sease, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation-in-part of Ser. No. 625,228, Oct. 23, 1975, abandoned. This application Nov. 4, 1976, Ser. No. 738,939
Int. Cl.² G21C 3/06
U.S. Cl. 427—6 4 Claims



1. In a process for producing nuclear fuel comprising microspheroidal particles of a fissile or fertile nuclear material coated with a carbon buffer layer and a dense pyrolytic carbon layer, said process comprising the steps of coating said microspheroidal particles with said buffer layer and said pyrolytic carbon layer; the improvement comprising the step of annealing at a temperature within the range of 1600°-2000° C. for a time at least 1-60 minutes yet insufficient to graphitize said pyrolytic carbon layer, said annealing step being carried out immediately after coating said dense pyrolytic carbon layer without cooling prior to said step of annealing.

4,068,016

METHOD FOR REGULATING EVAPORATING RATE AND LAYER BUILD UP IN THE PRODUCTION OF THIN LAYERS

Ingo G. Wilmanns, Bonner Strasse 37, 5481 Gelsdorf, Germany

Filed Mar. 11, 1975, Ser. No. 557,283
Claims priority, application Germany, Mar. 16, 1974, 2412729
Int. Cl.² G05D 5/03; G05F 1/66; B05D 1/00
U.S. Cl. 427—10 3 Claims

1. A method for regulating the evaporation rate and layer buildup in the production of optically effective thin layer comprising the steps of: inserting a substrate of which thin layers are to be produced into a vacuum chamber; applying evaporating power for deposition of a layer on said substrate and controlling said evaporation power, said evaporating power corresponding to power applied to an evaporating device for evaporating the material of said layer prior to deposition; measuring the optical characteristics of the deposited layer; starting the evaporation with a predetermined power; forming the time derivative of the measurement resulting from measuring the optical characteristics of the deposited layer after the optical characteristics of the layer start to change; generating a predefined sinusoidal signal corresponding to the time rate of change of the optical characteristics of the layer during the layer buildup under predetermined optimum conditions and being independent from the optical characteristics of the layer being deposited; comparing continuously the time derivative of said measured result with said generated signal; generating a difference signal from said comparison step for regulating said power in accordance with the layer buildup so that the power is increased when layer buildup lags and power is reduced when layer buildup is too rapid; said layer being substantially constant as a function of time.

4,068,017

COATED CARRIER PARTICLES FOR USE IN ELECTROPHOTOGRAPHIC PROCESS

Virgil William Westdale, Chagrin Falls, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed July 30, 1976, Ser. No. 709,964
Int. Cl.² G03G 9/14, 9/10; B32B 27/14
U.S. Cl. 427—18 10 Claims

1. A carrier for use in electrophotographic development of latent electrostatic images capable of inducing an electrostatic charge in a toner mixed therewith which comprises a member selected from the group consisting of metallic particles and siliceous particles to the surface of which is adhered a mixture of polyvinylidene fluoride and a member selected from the group consisting of perfluorinated and substantially perfluorinated carboxylic acids containing from 3 to 18 carbon atoms and esters and amides thereof, said polyvinylidene fluoride and acid being present in a ratio by weight of about 0.2:1 to 8:1.

4,068,018

PROCESS FOR PREPARING A MASK FOR USE IN MANUFACTURING A SEMICONDUCTOR DEVICE

Tadahiro Hashimoto; Yasushi Okuyama; Toshio Koguchi; Koji Wada; Mitsuru Sakamoto; Takayuki Yanagawa, and Kyoji Yamamoto, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sept. 15, 1975, Ser. No. 613,427
Claims priority, application Japan, Sept. 19, 1974, 49-108064; Oct. 5, 1974, 49-115407; Feb. 26, 1975, 50-23747; Mar. 20, 1975, 50-34691; Mar. 26, 1975, 50-37080; June 13, 1975, 50-71754; June 13, 1975, 50-71764
Int. Cl.² B05D 3/06
U.S. Cl. 427—38 9 Claims

1. A process for preparing a photo- mask comprising the steps of:

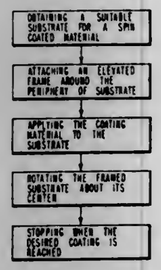
forming a substantially transparent organic film on a transparent substrate to a thickness of 300A to 10 μm and in a predetermined pattern, said organic film being comprised of at least one material selected from the group consisting of a photo-resist, polymethyl acrylate, rubber, novolak, polyethylene, polyimide, and epoxy, and implanting in said organic film ions accelerated at an acceleration voltage of at least 50 KeV, to a dose level of at least $10^{14}/cm^2$ to such an extent that said organic film has an optical density that is sufficient to shield visible light and/or ultraviolet rays, thereby providing a photo-mask which selectively shields visible light and/or ultraviolet rays in said predetermined pattern.

4,068,019

SPIN COATING PROCESS FOR PREVENTION OF EDGE BUILDUP

Richard Stefan Boeckl, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1976, Ser. No. 739,756
Int. Cl.² B05D 5/12; B05C 13/02
U.S. Cl. 427—82 **8 Claims**



1. In a spin coating process, the steps for minimizing the edge buildup of a coating material to be coated onto a substrate comprising:

attaching a frame boundary immediate to the periphery of the substrate with a surface of the he frame boundary elevated above the planar surface of the substrate that is to be coated;

depositing the coating material onto the framed substrate; and

rotating the framed substrate in a horizontal upright position with the deposited material about its approximate center, said frame boundary elevated surface becoming an auxiliary surface extension to the substrate for the deposited coating material during the step of rotating the framed substrate.

4,068,020

METHOD OF DEPOSITING ELEMENTAL AMORPHOUS SILICON

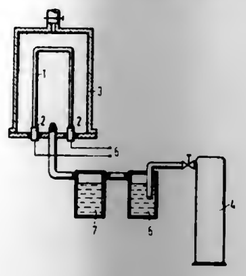
Konrad Reuschel, Vaterstetten, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Dec. 29, 1975, Ser. No. 644,963
Claims priority, application Germany, Feb. 28, 1975, 2508802
Int. Cl.² C23C 13/00; C01B 33/02; C23C 11/02
U.S. Cl. 427—85 **5 Claims**

1. A method of producing silicon semiconductor devices composed of amorphous silicon and having at least one pn-junction therein, comprising:

pyrolytically depositing elemental silicon and a second element selected from the group consisting of, Cr, Fe, Mo, Mn, Ni, Sn, Ti, V and W from a gaseous reaction mixture containing thermally decomposable compounds of silicon and said second element onto a heated carrier member composed of a relatively inert material;

controlling the deposition temperature and the amount of the second element compound within the gaseous reaction mixture in such a way that the deposited silicon is in an amorphous state and includes therein an amount of said second element which exceeds the solid state solubility of said second element in monocrystalline silicon by at least



5% but which amount is insufficient for formations of the silicides and insufficient to form conductive inclusions within the deposited silicon; and

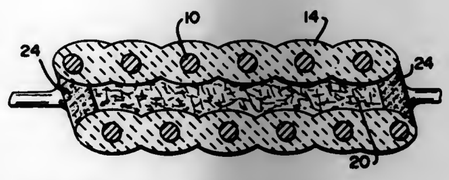
diffusing a dopant material into the deposited silicon to produce at least one pn-junction therein.

4,068,021

METHOD OF MAKING GAS ANALYZING ELEMENT

Charles E. Allman, San Jose, Calif., assignor to Dictaphone Corporation, Rye, N.Y.

Division of Ser. No. 513,418, Oct. 9, 1974, Pat. No. 3,959,764.
This application Mar. 8, 1976, Ser. No. 664,955
Int. Cl.² H01C 13/00
U.S. Cl. 427—116 **11 Claims**



1. A method of making a resistive element for a catalytic combustion type gas analyzer comprising the steps of:

forming a filament of electrically conductive material, whose resistance varies with temperature, into a helical coil,

coating the coiled filament with a refractory material, the coating being at least 94% by weight alumina mixed with other refractory oxides, including substantially equal proportions by weight of manganese dioxide and titanium dioxide which together are within the range of 1% to 6% by weight of the total composition of the coating material after maturation, the coating having a maturation temperature range of 1200° C to 1400° C, and

heating the coated filament at a temperature in the range of 1200° C to 1400° C until the coating matures to form a dense, gas-tight sheath, in tight engagement with the filament, which is integral between adjacent loops of the helical coil.

4,068,022

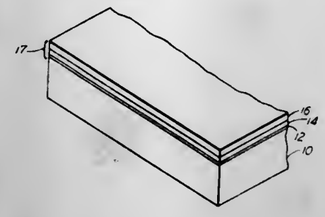
METHODS OF STRENGTHENING BONDS

William F. Glick, Coplay, Pa., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 10, 1974, Ser. No. 531,430
Int. Cl.² B05D 5/12
U.S. Cl. 427—125 **8 Claims**

1. A method of strengthening the bond between a thin-film conductor and an alumina substrate on which the conductor is formed, which comprises the sequential steps of:

depositing at least two metal layers, the first of which is titanium and the second is palladium, on said substrate to form a thin film of conductive material thereon;



removing a portion of the conductive material to form at least one thin-film conductor from said material, said conductor having exposed edges; and

heating the substrate and conductor for a predetermined period in an oxidizing atmosphere to improve the strength of the bond between the conductor and the substrate.

4,068,023

RUBBERIZED ASPHALT PAVING COMPOSITION AND USE THEREOF

Donald L. Nielsen, and James R. Bagley, both of Phoenix, Ariz., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed May 20, 1976, Ser. No. 688,166
Int. Cl.² C08J 3/20; C08K 5/01; C08L 17/00, 95/00
U.S. Cl. 427—138 **11 Claims**

1. A paving composition comprising a heat-blended, substantially homogeneous composite of (1) from about 50–89 weight-percent of an asphaltic component selected from the class consisting of paving grade asphalts, slow curing liquid asphalts and road oils, (2) between about 10% and 30% by weight of a reclaimed rubber component, about 10–60 weight-percent of said reclaimed rubber component being ground vulcanized natural rubber, and about 15–70 weight-percent thereof being ground devulcanized rubber, and (3) between about 1% and 20% by weight of a mineral oil solvent having a flash point above about 300° F, and containing more than about 50 weight-percent aromatics, at least about 50% of said solvent boiling above 700° F, and at least about 90% thereof boiling above 600° F.

4,068,024

PROCESS FOR PREPARING FINELY DIVIDED HYDROPHOBIC OXIDE PARTICLES

Siegmar Laufer, Rheinfelden (Baden), Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Germany

Continuation of Ser. No. 201,320, Nov. 23, 1971, abandoned.
This application Aug. 12, 1974, Ser. No. 496,676
Claims priority, application Germany, Nov. 24, 1970, 2057750
Int. Cl.² B23K 31/02, 35/38
U.S. Cl. 427—220 **14 Claims**

1. A process for preparing hydrophobic finely divided oxide particles consisting essentially of pyrogenic or precipitated silicic acid particles by chemically bonding hydrocarbon radicals to the surface of said particles, said process comprising rendering said particles hydrophobic by intensively mixing said particles with a hydrolysable metal or metalloid compound containing OR groups, wherein said compound is an ester of the formula:

$$Me(OR)_4$$

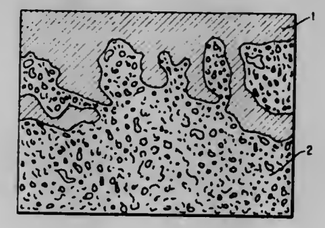
wherein Me is an element from group IV of the Periodic Table, and each R is independently selected from C_1–C_8 alkyl radicals, an aryl radical or an alkaryl radical; wherein prior to mixing, during mixing, or after mixing of the oxides and ester, said particles are contacted with anhydrous NH_3 gas; and further wherein said particles have a water content less than about 1% by weight.

4,068,025

METHOD OF APPLYING A PROTECTIVE COATING TO A BODY

Peter Sahm, Nussbaumen, Switzerland, assignor to Brown, Boveri & Company Limited, Baden, Switzerland

Division of Ser. No. 235,244, March 16, 1972, Pat. No. 3,978,253. This application July 6, 1976, Ser. No. 702,474
Claims priority, application Switzerland, Mar. 22, 1971, 4179/71
Int. Cl.² B05D 3/04, 3/10
U.S. Cl. 427—309 **4 Claims**



1. A method of applying a protective coating to a eutectic or near eutectic alloy which contains a continuously multi-ply connected crystalline phase, and at least one other non-continuous phase, which comprises completely removing from the surface of said alloy, one or more of said non-continuous phases such that a roughened alloy surface, having the continuous phase remain and thereafter coating said roughened surface, wherein the crystalline phase is a carbide phase, characterized in that the carbide is removed by a light oil water gas at 700° - 100° C, over a period of 100 - 1000 hours, the speed of flow of the light oil waste gas being 50 - 100 meters per second.

4,068,026

PROCESS FOR FLAME RETARDING CELLULOSICS

George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 493,815, Aug. 1, 1974, Pat. No. 3,933,122, which is a division of Ser. No. 244,574, April 17, 1972, Pat. No. 3,846,155. This application Nov. 3, 1975, Ser. No. 628,678
Int. Cl.² C09K 3/28; B05D 3/04
U.S. Cl. 427—341 **28 Claims**

1. A process for rendering cellulosic-containing materials durably flame retardant comprising:

a. Impregnating a cellulose-containing material with a flame retarding solution comprising poly(hydroxymethyl) phosphonium cation having a pH of from about 2 to about 9, and containing from about 10 to about 40 percent by weight of poly(hydroxymethyl) phosphonium cation;

b. Drying the impregnated material to a moisture content of from about 0 to about 8 percent by weight;

c. Aerating the dried material by directing a current of air through the dried material for about 0.5 seconds or more;

d. Exposing the aerated material in an enclosed chamber for a period of at least about 5 seconds but less than about 60 seconds to an atmosphere containing at least about 50 percent by volume of gaseous ammonia to cure the phosphorus containing impregnant in and on the material;

e. Contacting the material with water to provide a wet pick-up of from about 10 to about 40 percent by weight of water to render the material durably flame retardant; and

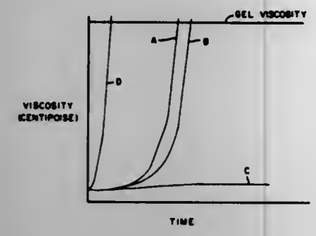
f. Further exposing the water contacted material for a period of from 1 to about 10 seconds to an atmosphere containing at least about 50 percent by volume of gaseous ammonia.

4,068,027

SEALANT APPLICATION METHOD

Joel V. Van Ornum, King County, Wash., assignor to Rocket Research Corporation, Redmond, Wash.

Filed Jan. 7, 1976, Ser. No. 647,095
Int. Cl.[2] C08J 3/24; C08K 5/08
U.S. Cl. 428—35 39 Claims



1. A method of compounding a sealant composition, which sealant composition comprises the reaction product, in the presence of finely divided carbon, of (a) a copolymer comprising a major proportion of an isoolefin having 4 to 7 carbon atoms with a minor proportion of an open chain conjugated diolefin having 4 to 8 carbon atoms, (b) a quinoid curing agent, and (c) a free radical cross-linking activator, capable of initiating a cross-linking reaction between the copolymer and the curing agent, in an amount sufficient to at least partially cross-link the copolymer, said method comprising the steps of:

providing an essentially uncross-linked base component comprising the copolymer, the curing agent, the carbon and a portion of the activator;

providing a second component comprising the remainder of the activator; and

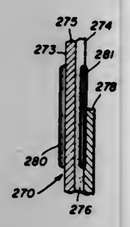
mixing the base component and the second component.

4,068,028

APPARATUS AND METHOD OF PRODUCING TRANSPARENT LABELS WITH PRINTING ON THE ADHESIVE AND PRODUCT PRODUCED THEREBY

John Samoulides, Streamwood, Ill., assignor to Unical Corporation, Chicago, Ill.

Filed June 9, 1971, Ser. No. 151,422
Int. Cl.[2] E06B 9/26
U.S. Cl. 428—40 7 Claims



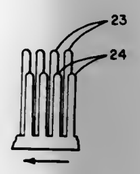
1. A sheet material for use in forming labels, said sheet material comprising a continuous opaque face sheet having a front surface and a rear surface, a coating of adhesive on the rear surface of said face sheet for mounting said face sheet on an associated support surface, first printing material impressed on the front surface of said face sheet to form first printed indicia thereon visible only from the front side thereof, second printing material impressed on said adhesive coating and out of contact with said face sheet to form second printed indicia on said adhesive coating visible only from the rear side thereof, a continuous backing sheet releasably attached to the rear surface of said face sheet by said adhesive and completely covering said adhesive along the entire length of said face sheet, said adhesive adhering more firmly to the rear surface of said face sheet than to said backing sheet for facilitating removal of said backing sheet to expose said adhesive, whereby on removal of said backing sheet from said adhesive said face sheet provides label material bearing printed indicia on both sides thereof.

4,068,029

MOLDED RESILIENT ELEMENT FOR VIBRATORY FEEDER

Jack W. Armstrong, Baldwinsville, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 671,559, March 29, 1976, abandoned. This application Jan. 3, 1977, Ser. No. 756,395
Int. Cl.[2] B32B 3/06
U.S. Cl. 428—89 20 Claims



11. Molded resilient element material for a vibratory feeder extending in a direction of feed, said material comprising:

a. molded resilient resin material having a base extending in said direction of feed;

b. generally upright elements molded integrally with said base to extend upward from said base;

c. said elements having upper ends cooperating to support objects being fed vibrationally;

d. a portion of said molded resin material being formed relative to said elements for bracing said elements against bending in a direction opposite to said feed direction; and

e. said elements being resilient enough to bend in said direction of feed under the weight of said objects during vibrations.

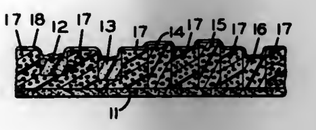
13. The material of claim 11 wherein said bracing portion of said resin material comprises upright projections shorter than said elements and closely adjacent said elements on the side of said elements opposite said direction of feed.

4,068,030

MULTILEVEL EMBOSSING BY PRINTING WITH A REACTIVE MONOMER

Jack H. Witman, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Continuation-in-part of Ser. No. 272,851, July 18, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,144
Int. Cl.[2] B32B 3/12, 3/26; B05D 5/00
U.S. Cl. 428—159 17 Claims



1. A decorative surface covering comprising a base layer of fused, dryblend containing polymerized monomer therein, a plurality of fused ink-containing regions at least one of which extends upwardly from within said base layer to a point of elevation above the surface thereof, at least one of said ink-containing regions containing said monomer in cross-linked condition in both the ink and the dryblend, and at least one of the remainder of said plurality of ink-containing regions being free of said cross-linked monomer, whereby embossed wear surface areas are achieved which differ in elevation and surface texture.

5. In the process for producing a decorative surface covering having a multilevel embossed wear surface comprising

forming a dryblend composition comprising vinyl chloride resin particles, plasticizer, and a polymerizable monomer having at least two olefinically unsaturated sites,

forming a layer of said dryblend having a thickness in the range of about 0.005–0.080 inch,

heating said layer to sinter the dryblend without fusion and to form a porous, open layer,

forming design areas on at least a portion of said dryblend layer by applying thermoplastic resinous ink thereto in an amount sufficient to cause penetration thereof into the dryblend to a depth of at least 2 mils at the points of application, and finally heating to fuse all thermoplastic resins,

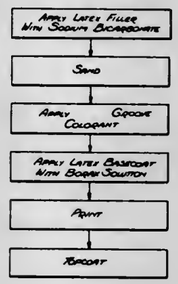
the improvement comprising forming said design areas by applying a plurality of thermoplastic resinous inks of different compositions, at least one of said thermoplastic inks containing a polymerizable monomer having at least two olefinically unsaturated sites, and a polymerization catalyst therefor, and at least one ink having a composition free of both monomer and catalyst, said final heating step causing polymerization and cross-linking of the monomer in the monomer-containing ink and in the dryblend in the areas to which it was applied, whereby embossed design areas are achieved on the final product which produce different embossed effects.

4,068,031

LAUAN PANEL WITH REDUCED FLAME SPREAD RATING

James Cooley; Ozzie Fogle, and Hildred Barnes, all of Orangeburg, S.C., assignors to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 492,138, July 26, 1974, abandoned. This application Dec. 8, 1975, Ser. No. 638,943
Int. Cl.[2] B32B 3/00; B27K 3/16
U.S. Cl. 428—163 10 Claims



1. In the method of finishing the surface of Lauan plywood panels by applying in sequence to said surface a water base filler, a groove colorant, a water base basecoat, at least one printing ink, and a topcoat, the improvement of adding just before use to said water base filler about from 30 to 40 percent by weight of sodium bicarbonate in dry powder form or slurry and to said water base basecoat about from 10 to 15 percent by weight of a saturated aqueous solution of sodium tetraborate.

4. In a plywood panel comprising a plywood substrate having a first filler layer and a second basecoat layer thereon, the improvement which comprises from about 38 to 51 percent of sodium bicarbonate by weight of cured water-base filler material dispersed in said first layer and from about 1 to 3 percent of borax by weight of cured water-base basecoat material dispersed in said second layer.

4,068,032

METHOD OF TREATING CONDUCTIVE ELASTOMERS

Oscar Alonso, Westminster, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 17, 1976, Ser. No. 742,675
Int. Cl.[2] B01J 1/12
U.S. Cl. 428—195 6 Claims

1. A method of making a selected region of a metal particle-filled elastomer relatively nonconductive comprising the steps of:

subjecting said selected region to ultrasonic vibration and pressure; and

maintaining said region subjected to said ultrasonic vibration and pressure for a sufficient time until the electrical conductivity of said region is substantially reduced.

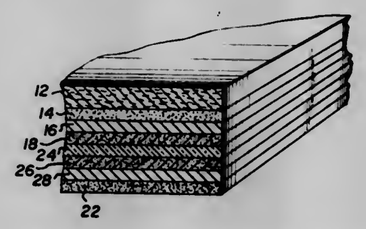
6. A conductor filled elastomer which has been treated by the process of claim 1.

4,068,033

HEAT-RELEASABLE DECALCOMANIAS AND ADHESIVE COMPOSITION THEREFOR

Hazel Meade, Pleasantville, N.Y., assignor to Commercial Decal, Inc., Mount Vernon, N.Y.

Continuation-in-part of Ser. No. 555,071, March 3, 1975, abandoned. This application Nov. 17, 1976, Ser. No. 742,417
Int. Cl.[2] B32B 3/00; C08L 1/28
U.S. Cl. 428—201 30 Claims



1. A heat release ceramic decalcomania comprising a backing sheet, a wax layer disposed on said backing sheet, a design layer disposed on said wax layer, and a heat-activatable adhesive layer disposed on said design layer, said adhesive layer comprising from about 10 to about 40% of an acrylic resin as an adhesive base component, said acrylic resin comprising the polymers and copolymers of the acrylates and methacrylates, from about 1 to about 25% of a tackifier for said acrylic resin, said tackifier being selected from the group consisting of polyethylene glycols and solid polyoxyalkylene derivatives of propylene glycol and ethylene diamine, said tackifier being capable of providing an adhesive which softens when subjected to heat and remains tacky at a temperature substantially below its melting point, and an organic solvent therefor, said adhesive compositon being capable of burning upon the firing of said decalcomania substantially without the deposition of a residue.

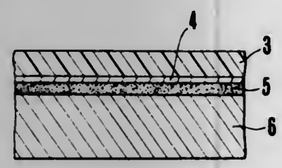
29. A method for decorating a ceramic ware with the heat-release ceramic decalcomania as defined in claim 1 which comprises heating the adhesive layer thereof to activate the same, applying said decalcomania to said ware so that said heat-activatable adhesive contacts said ware and temporarily adheres said decalcomania to said ware and said wax layer simultaneously melts releasing said backing sheet from the remainder of said decalcomania, and firing said ware to fuse the vitrifiable components of said design layer to said ware.

4,068,034

HEAT-INSULATION LAMINATE OF POLYVINYLIDENE FLUORIDE, METAL AND PLASTIC

Masahiro Segawa; Mitsuru Ota, and Yoshiyuki Hada, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1975, Ser. No. 549,818
Claims priority, application Japan, Feb. 20, 1974, 49-16361
Int. Cl.² B32B 7/00
U.S. Cl. 428—263 7 Claims



1. A heat-insulating laminate comprising a layer of transparent biaxially oriented film of vinylidene fluoride homopolymer or a vinylidene fluoride copolymer which contains at at least 95 mole percent of vinylidene fluoride, an intermediate layer of a metal 0.01 to 0.5 microns in thickness and a substrate layer of plastic, foamed plastic or steel.

4,068,035

HYDROPHILIC POLYURETHANES AND TEXTILES TREATED THEREWITH

Robert Violland, Lyon; Alain Lagasse, Villeurbanne; Bernard Papillon, La Mulatiere; Jean Neel, Lyon, and Maurice Coudurier, Meyzieu, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 20, 1976, Ser. No. 678,650
Claims priority, application France, Apr. 23, 1975, 75.13487
Int. Cl.² B32B 27/40; C11D 3/37; C08L 75/12; C08G 18/65
U.S. Cl. 428—279 23 Claims

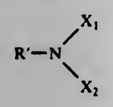
1. A hydrophilic polyurethane selected from the group consisting of a polyurethane reaction product resulting from the simultaneous reaction among:

1. 10 to 45% by weight of an organic diisocyanate (A),
2. 35 to 89% by weight of a mixture (B) containing: 75 to 100% by weight of a compound (B_1) having the formula

$$R - C_2H_4)_n - OH \quad (I)$$

wherein R is hydrogen or a hydrocarbon radical containing 1 to 20 carbon atoms and n is a number to indicate that the molecular weight is between 300 and 10,000, and 0 to 25% by weight of a diol (B_2), and

3. 1 to 20% by weight of a nitrogen-containing compound (C) having the formula



(II)

wherein

R_1 is an alkyl radical containing 1 to 5 carbon atoms,
X_1 and X_2 are hydroxyalkyl or aminoalkyl radicals, with the proviso that the overall ratio of NCO/active hydrogen is from about 0.7 to about 1;
and quaternary ammonium salts thereof.

22. An article of manufacture which comprises a textile material having deposited thereon an amount of a polyurethane as defined in claim 1, which is at least about 0.25% by weight of the dry material and is sufficient to impart anti-soil redeposition and soil-release characteristics to said material.

4,068,036

FIBROUS PRODUCT

Harold Peter Stanistreet, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 5, 1976, Ser. No. 673,547
Claims priority, application United Kingdom, Apr. 11, 1975, 14962/75
Int. Cl.² D04H 1/04
U.S. Cl. 428—296 7 Claims

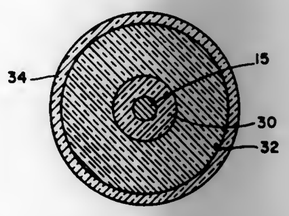
1. In a method for the production of a low-density, high porosity, resilient, thermally bonded, non-woven fibrous batt having a substantially uniform density across its thickness by the steps of forming a lofty fibrous batt from at least 20% by weight of conjugated staple fibres having a length of 0.5 to 6 inches and being selected from the group consisting of crimped and potentially crimpable fibres, the conjugate fibres being composed of at least two fibre forming polymeric components arranged in distinct zones across the cross-section of the fibre and substantially continuous along the length thereof, one of the components having a softening temperature significantly lower than the softening temperature of a second component and being located so as to form at least a portion of the peripheral surface of the fibre, subjecting said batt to a heat treatment to heat the batt to a temperature in excess of the softening temperature of the component having the lower softening temperature but below the softening temperature of the second component to effect inter-fibre bonding, and then causing or permitting the batt to cool, the improvement comprising heating the batt by passing a heated gas upwardly through the batt, the gas having a temperature sufficient to effect thermal bonding of the conjugate fibres and having a velocity such that the batt is supported by the gas in a high-porosity condition without disintegrating the batt therein whereby the resulting batt has substantially uniform density across its thickness.

4,068,037

SILICON CARBIDE FILAMENTS AND METHOD

Harold E. Debolt, Andover, and Thomas W. Henze, Lawrence, both of Mass., assignors to Avco Corporation, Wilmington, Mass.

Filed Jan. 2, 1976, Ser. No. 646,029
Int. Cl.² B32B 9/00; D02G 3/00
U.S. Cl. 428—368 6 Claims



1. A high-strength, high-modulus silicon carbide filament comprising a carbonaceous core, inner surface layer of carbon rich silicon carbide on said core and coating of silicon carbide on said carbon rich silicon carbide layer.

4,068,038

STABILIZED CHROMIUM DIOXIDE COMPOSITIONS

Ugo Montiglio; Pierfrancesco Aspes, both of Alessandria; Carlo Scotti, Voghera, and Giampiero Basile, Alessandria, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Division of Ser. No. 359,961, May 15, 1973. This application Sept. 2, 1975, Ser. No. 609,542
Claims priority, application Italy, May 24, 1972, 24773/72; Mar. 9, 1973, 21398/73
Int. Cl.² C01G 37/02
U.S. Cl. 428—404 9 Claims

1. A stabilized composition consisting essentially of ferromagnetic chromium dioxide particles having deposited on the surface thereof a coating consisting of at least one compound selected from the group consisting of hydrated and anhydrous oxides of silicon, said compound being present in an amount of from about 0.1 to 25 percent by weight based on the chromium dioxide.

4. A stabilized composition consisting essentially of ferromagnetic chromium dioxide particles having deposited on the surface thereof a coating consisting essentially of at least one compound selected from the group consisting of hydrated and anhydrous oxides of titanium, said compound being present in an amount of from about 0.1 to 25 percent by weight based on the chromium dioxide.

4,068,039

FLOW CONTROL AGENT FOR ULTRA THIN EPOXY RESIN POWDER COATINGS

Donald Wayne Larsen, Marriottsville, and Jerrold Bain Billmyer, Sykesville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 611,019, Sept. 8, 1975, Pat. No. 4,017,447. This application Oct. 21, 1976, Ser. No. 734,581
Int. Cl.² B05D 3/06
U.S. Cl. 428—418 3 Claims

1. The process of coating a metal substrate which comprises electrostatically depositing on said substrate in an amount sufficient to attain a cured coating having a thickness in the range of 0.3–1.0 mil a particulate thermosetting resin composition consisting essentially of a solid epoxy resin formed from the reaction of bisphenol A and epichlorohydrin and having a molecular weight in the range 1,000–4,000, 1–15% by weight of the epoxy resin of a curing agent therefor and 0.5–3.0% by weight of the composition of a flow control agent consisting essentially of liquid poly(ethyl acrylate) having a number average molecular weight in the range 5,000–15,000, the particles of said composition having an average size diameter of 2–20 microns and thereafter heating said coated substrate to form a continuous coating thereon.

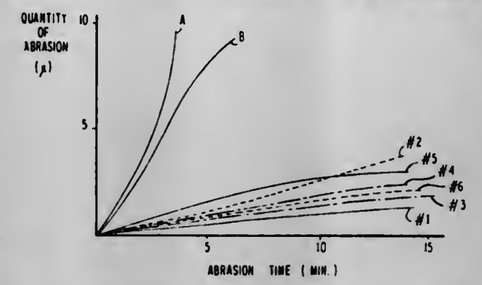
4,068,040

MAGNETIC RECORDING MEMBERS

Yasuyuki Yamada; Kazuhiko Morita, and Goro Akashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 282,093, Aug. 21, 1972, abandoned. This application June 20, 1975, Ser. No. 588,936
Claims priority, application Japan, Aug. 21, 1971, 46-63927
Int. Cl.² H01F 10/02
U.S. Cl. 428—425 5 Claims

1. A magnetic recording member comprising a support and a coating of a dispersion of a ferromagnetic powder in a binder comprising (1) a copolymer consisting essentially of a vinyl chloride-vinyl acetate copolymer wherein the weight ratio of vinyl chloride to vinyl acetate in the copolymer ranges from 70:30 to 98:2, (2) an organic polyisocyanate compound and (3) a reactive acrylic resin, said resin having a carboxyl group content of from 1 to 30% by weight which is cured through reaction with said organic polyisocyanate compound; and wherein said binder comprises said vinyl chloride-vinyl acetate copolymer in a weight ratio to said reactive acrylic resin of



70:30 to 15:85 and said polyisocyanate in an amount from 10 to 40% by weight based on the reactive acrylic.

4,068,041

METHOD FOR RUBBERIZING STEEL CORDS

John M. Swarts, Akron, and Zion S. Lee, Munroe Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sept. 18, 1975, Ser. No. 614,661
Int. Cl.² B60C 9/16; B05D 3/02, 7/14; B32B 3/22
U.S. Cl. 428—625 6 Claims

1. A method of bonding rubber to brass plated steel, which comprises vulcanizing a rubber composition in contact with the brass plated steel, the rubber composition comprising:

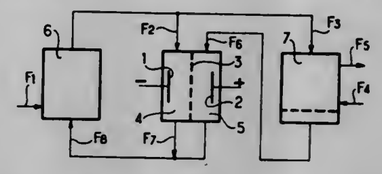
a. a sulfur-vulcanizable rubber,
b. at least one reinforcing pigment,
c. sufficient sulfur for vulcanization of the rubber, together with a non-scorching vulcanization accelerator, and zinc oxide for activation of the accelerator,
d. about one-fifth part to ten parts of litharge for each hundred parts by weight of rubber, and
e. about one-half part to fifteen parts of a cobalt salt which is dispersable in rubber for each hundred parts by weight of rubber.

4,068,042

ELECTRIC CELL HAVING PEROXIDIZED INTERMEDIATE FORMS

Nicole Chillier-Duchatel, Sevres, and Bernard Verger, Chevreuse, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques "Alsthom et Cie", Paris Cedex, France

Filed Nov. 6, 1975, Ser. No. 629,528
Claims priority, application France, Nov. 22, 1974, 74.38447
Int. Cl.² H01M 8/18
U.S. Cl. 429—19 1 Claim



1. An electric cell for producing electric current comprising
a cathode compartment containing a cathode,
an anode compartment containing an anode,
a membrane separating said compartments,
a peroxidation vessel containing an oxygen feed inlet and adapted to react oxygen with sodium anthraquinone-2-7-disulfonate to form the anthraquinone peroxide of said sodium anthraquinone disulfonate,
means for containing anthraquinone peroxide formed in said peroxidation vessel while it decomposes into a mixture of hydrogen peroxide and the anthraquinone oxide,

means for feeding said mixture of hydrogen peroxide and anthraquinone oxide to said cathode compartment wherein hydrogen peroxide is reduced,

conduit means coupling an outlet of said cathode compartment to a reduction vessel which contains a fuel inlet and adapted to reduce said anthraquinone oxide to the reduced form by reaction with said fuel,

conduit means coupling an anode outlet with said reduction vessel, and

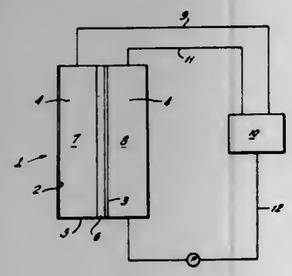
means for conveying a portion of the reduced anthraquinone oxide from said reduction vessel to said anode compartment and the remainder of said reduced anthraquinone oxide to said peroxidation vessel.

4,068,043

PUMP BATTERY SYSTEM

Peter Carr, Utica, Mich., assignor to Energy Development Associates, Madison Heights, Mich.

Filed Mar. 11, 1977, Ser. No. 776,511
Int. Cl.[2] H01M *8/04*
U.S. Cl. 429—22 **10 Claims**



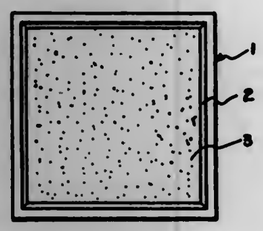
1. An adjustable flow battery system comprising a cell containing two electrodes and a porous separator therebetween so as to define first and second compartments, an electrolyte reservoir, a first conduit interconnecting said first compartment to said reservoir, a second conduit interconnecting said second compartment to said reservoir, said first conduit having a greater resistance to flow of electrolyte than said second conduit, a third conduit interconnecting said reservoir and said cell, and a variable speed pumping means associated with said third conduit, whereby said system is adapted to separate anode and cathode products on charge while permitting distinct flow through said porous separator on discharge.

4,068,044

METHOD FOR MECHANICALLY RECHARGING, REFUELING A METAL HALIDE ENERGY SYSTEM

Edward A. Romanowski, Troy, Mich., assignor to Energy Development Associates, Madison Heights, Mich.

Filed Nov. 18, 1971, Ser. No. 200,072
Int. Cl.[2] H01M *4/62, 8/00*
U.S. Cl. 429—27 **6 Claims**



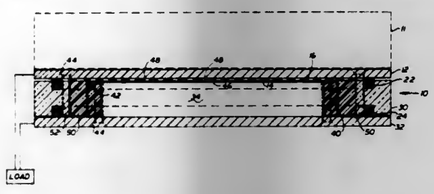
1. An electrical energy storage device containing an electrode area with at least one negative electrode and one positive electrode with an aqueous metal halide electrolyte there between, means for passing a halogen into the electrode area whereby the halogen during discharge will be converted to halide ion, wherein the negative electrode comprises a surface containing an electrolyte soluble binder with zinc particles contained therein, so that during discharge the metal will be exposed as the binder dissolves in the aqueous metal halide electrolyte, thereby allowing the metal to participate in the electrochemical reaction by converting the metal to metal ion.

4,068,045

FUSED SALT THERMAL DEVICE

Howard Abrams, 18701 S. Park Blvd., Shaker Heights, Ohio 44122

Filed Nov. 3, 1976, Ser. No. 738,454
Int. Cl.[2] H01M *6/36*
U.S. Cl. 429—81 **6 Claims**



1. A fused salt thermal device comprising:

a first electrode;

an electrically conductive porous electrode spaced from said first electrode to define an active thermal cell space therebetween, said porous electrode comprising a flexible material maintained under tension by a retainer near the periphery thereof;

a reservoir in fluid communication with said active thermal cell space through said porous electrode; and

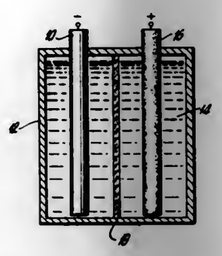
an inorganic fusible salt electrolyte disposed within said reservoir and being solid at a temperature below a predetermined activation temperature and being molten at or above said activation temperature where said molten salt circulates between said active thermal cell space and said reservoir through said porous electrode during the generation of electricity in order to replenish electrolyte.

4,068,046

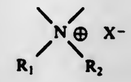
METAL HALOGEN ELECTROCHEMICAL CELL

Daniel J. Eustace, Chatham, and Paul A. Malachesky, Berkeley Heights, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 674,585, April 7, 1976, abandoned. This application Apr. 29, 1977, Ser. No. 792,247
Int. Cl.[2] H01M *4/36*
U.S. Cl. 429—105 **20 Claims**



1. In an electrochemical cell having a metal anode selected from the group consisting of zinc and cadmium; a bromine cathode; and, an aqueous electrolyte containing a metal bromide, the metal bromide having the same metal as the metal of the anode, the improvement comprising: a bromine complexing agent in said aqueous metal bromide electrolyte consisting solely of a tetraorgano substituted ammonium salt, which salt is soluble in water and forms a substantially water immiscible liquid bromine complex at temperatures in the range of about 10° C to about 60° C and wherein the tetraorgano substituted ammonium salt is selected from asymmetric quaternary ammonium compounds having the formula:



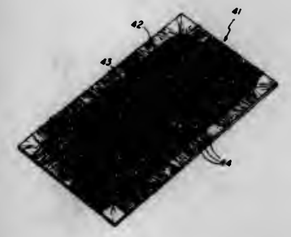
wherein the dangling valences of nitrogen indicates that the nitrogen is an endocyclic nitrogen atom connected to carbon atoms, thereby forming a ring structure selected from saturated five-membered ring structure and a saturated six-membered ring structure including an additional heteroatom and wherein X^- is a halide selected from chloride and bromide, and R_1 and R_2 are selected from alkyl groups and haloalkyl groups of from 1 to 8 carbon atoms.

4,068,047

FLAT-PACK BATTERY SEPARATOR

Phoenix Nathan Dangel, West Roxbury, and Preston Fairfax Marshall, Walpole, both of Mass., assignors to The Kendall Company, Boston, Mass.

Filed Dec. 10, 1976, Ser. No. 749,567
Int. Cl.[2] H01M *2/18*
U.S. Cl. 429—142 **8 Claims**



1. A battery separator for planar batteries comprising:

a generally rectangular supporting grid of a hot melt material, said grid having a generally rectangular opening therein;

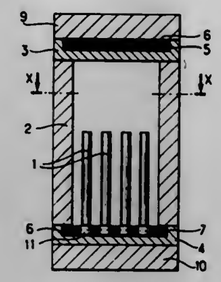
a nonwoven fabric disposed across said grid and said opening, a majority of the fibers in said fabric are located within said opening, said fibers disposed therein that are directly adjacent said grid are oriented in a direction substantially parallel to said axis of said adjacent grid, the remaining fibers in said opening are in substantially random orientation, a minority of said fibers in said fabric being disposed on said grid and being oriented thereon in a direction substantially normal to the axis of said grid.

4,068,048

METHOD FOR PREPARING ALKALINE BETA ALUMINA PARTS

Gérard Desplanches, Villejust; Yvon Lazennec, St Michel sur Orge, and Jacques Leboucq, Ste Genevieve des Bois, all of France, assignors to Compagnie Generale d'Electricite S.A., Paris, France

Filed Mar. 22, 1976, Ser. No. 668,998
Claims priority, application France, Mar. 20, 1975, 75.08766; July 24, 1975, 75.23165
Int. Cl.[2] C04B *35/10, 35/44;* F27B *9/14*
U.S. Cl. 429—193 **8 Claims**



1. Method for preparing beta sodium alumina parts, suitable for use as solid electrolytes, in which the following successive steps are carried out:

A. an intimate mixture of alumina powder and sodium carbonate powder is formed in respective quantities such that a predetermined ratio of Al_2O_3/Na_2O of between 5 and 11 is obtained;

B. the said intimate mixture is heated in an open crucible at 1150° to 1300° C for 1 to 5 hours;

C. the said mixture is allowed to cool freely;

D. The beta sodium alumina powder thus obtained is crushed;

E. the shaping of said powder into the said parts is effected;

F. the sintering of said parts is effected by arranging the said parts in a sintering enclosure, suitable for creating, during the sintering operation and in the immediate vicinity of the parts, an atmosphere which is rich in sodium, the said enclosure being heated to a temperature comprised between 160° and 1700° C, maintained for 30 minutes to 4 hours, then being cooled freely down to ambient temperature, wherein said sintering enclosure comprises a body suitable for accomodating the said parts, said body being closed at its ends by means of a top plate and a bottom plate, each of said plates comprising a hollowed out portion filled with sodium carbonate, the said bottom plate resting on a bottom, the said top plate being covered by means of a cover, and wherein at least one of said hollowed out portions is in communication with the interior of said body, and wherein the body of the sintering enclosure is made entirely of beta sodium alumina or said parts are arranged inside the body on chocks made of beta sodium alumina.

4,068,049

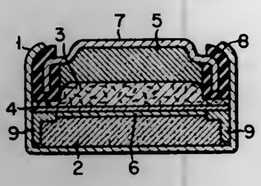
ALKALINE DRY CELL

Tadayuki Naruishi, Tokyo; Youichi Kataoka, Yokohama, and Kazutaka Sue, Kawasaki, all of Japan, assignors to Toshiba Ray-O-Vac Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1976, Ser. No. 732,338
Claims priority, application Japan, Oct. 14, 1975, 50-123537; Feb. 20, 1976, 51-17555; Apr. 15, 1976, 51-42794; Apr. 23, 1976, 51-46300
Int. Cl.[2] H01M *6/06*
U.S. Cl. 429—206 **5 Claims**

1. An alkaline dry cell comprising an anode containing zinc as an active ingredient; a cathode containing monovalent silver

oxide as an active ingredient; an immobilized body of an alkaline electrolyte interposed between said anode and said cathode; and a metallic silver layer formed at least on the anode



side surface of said cathode by reduction of silver oxide, the reduction being effected by causing a reducing agent to contact with the cathode.

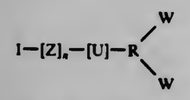
4,068,050

DIFUNCTIONAL TERMINATED MACROMOLECULAR MONOMERS AND CONDENSATION COPOLYMERS PRODUCED THEREFROM

Morris J. Danzig, Skokie, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed May 17, 1976, Ser. No. 686,776
Int. Cl.² C08F *8/08, 8/18, 8/34*
U.S. Cl. 526—21 **10 Claims**

1. Copolymerizable macromolecular monomers comprising linear polymers or copolymers having a substantially uniform molecular weight distribution such that the ratio of Mw/Mn is less than about 1.1, said macromolecular monomers being further characterized as having no more than one terminal moiety per linear polymer or copolymer chain, said terminal moiety having two identical functional groups of substantially equivalent reactivity in a condensation copolymerization, the macromolecular monomers being represented by the formula:



wherein I is the residue of an alkali metal alkyl or alkali metal alkoxide monofunctional anionic initiator; Z represents a polymerized unit of at least one anionically polymerizable monomer; U is a capping agent which is the reaction product of a compound that is capable of reacting with the carbanion of a living polymer to produce another anion of sufficiently lower basicity than the carbanion of the original living polymer so as not to substantially react with the difunctional groups, W, of a halogen-containing terminating agent, from which the terminal moiety is formed, but sufficiently reactive to react with the halogen of the terminating agent; R is an aliphatic, aryl or aralkyl group; W is a member selected from the group consisting of CO_2H, COCl, CO_2R', NCO, SO_2Cl, OCOCl, OH, NH_2 or SH, wherein R' is an alkyl group; and *n* is a positive integer such that the molecular weight of the macromolecular monomers is in the range of from about 2,000 to about 50,000.

4,068,051

PROCESS FOR PREPARING CONJUGATED DIENE BUTYL

Francis P. Baldwin, Summit, and James A. Rae, Cranford, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 507,243, Sept. 18, 1974, abandoned. This application Nov. 13, 1975, Ser. No. 631,483
Int. Cl.² C08F *8/26*
U.S. Cl. 526—47 **1 Claim**

1. In a process for preparing a copolymer comprising an isoolefin containing from 4 to 7 carbon atoms and a conjugated multi-olefin containing from 4 to 14 carbon atoms, wherein a major portion of said conjugated multiolefin has conjugated diene unsaturation, said process comprising contacting a solution of halogenated butyl rubber, in a reaction zone, with from about 0.05 to 0.5 moles of a soluble metal carboxylate per gram atom of halogen present in the halogenated butyl rubber, said metal being selected from the metals of Groups I*b*, II*b*, IV*a* and VIII of the Periodic Table, from about 0 to 2 moles of a carboxylic acid per gram atom of halogen in said halogenated butyl rubber present in said reaction zone, and an oxide, hydroxide or carboxylate of a metal selected from the metals of Groups I*a* and II*a* of the Periodic Table per gram atom of halogen in the halogenated butyl rubber present in said reaction zone, the improvement which comprises maintaining said reaction zone substantially free of water by continuously purging said reaction zone with a drying gas, the drying gas being nitrogen, or by adding to said reaction zone, in addition to said dehydrohalogenation reagent, 2 to 10 moles of a hydrophilic agent per gram atom of halogen present in said halogenated butyl rubber, said hydrophilic agent being calcium oxide, such that the quantity of water maintained in said reaction zone is less than about 2 moles of water per mole of dehydrohalogenation reagent, said copolymer having a residual halogen content below 1.1×10^{-2} gram atoms of halogen per 100 grams of polymer, said process being carried out between 0.2 to 4 hours.

4,068,052

REDUCING PVC POLYMER BUILDUP IN POLYMERIZATION REACTORS WITH DITHIOXAMIDES AND ALUMINA

Dean Raymond Weimer, and Albert M. Durr, Jr., both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed June 23, 1976, Ser. No. 699,100
Int. Cl.² C08F *114/06, 14/06*
U.S. Cl. 526—62 **9 Claims**

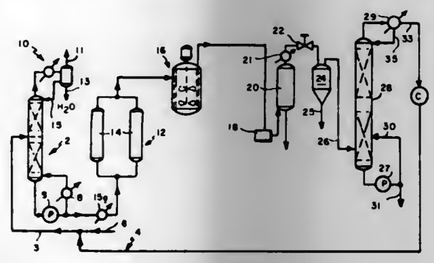
1. A method for preventing polymer buildup in a polymerization reactor during the suspension polymerization of vinyl chloride monomer to form polyvinyl chloride polymer and copolymer, the method comprising coating reactor surfaces in contact with the reaction medium with a material selected from the group consisting of a mixture of alumina and dithiooxamide prior to carrying out the polymerization, wherein said coating contains from about 1 to about 20 weight percent alumina and from about 0.05 to about 5 weight percent dithiooxamide, based on the total weight of the coating.

4,068,053

METHOD OF REMOVING WATER FROM LIQUID OLEFIN IN THE POLYMERIZATION OF OLEFINS

Constantine D. Miserlis, Arlington, and Peter J. Lewis, Andover, both of Mass., assignors to The Badger Company, Inc., Cambridge, Mass.

Filed Sept. 30, 1976, Ser. No. 728,154
Int. Cl.² C08F *6/04, 6/10, 10/06*
U.S. Cl. 526—68 **5 Claims**



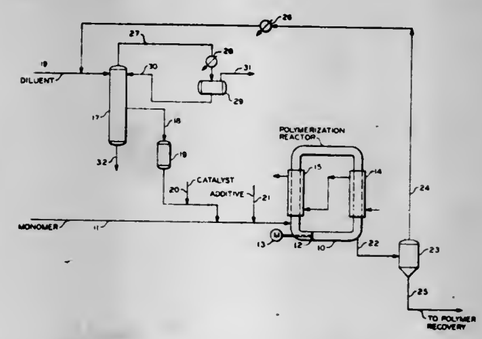
1. In a method of catalytically polymerizing olefins to polyolefins from liquid olefin monomer under positive pressure in which the reaction mass comprises polyolefin dissolved in liquid monomer and in which the liquid monomer is recovered from the reaction mass and is admixed with fresh liquid monomer feed and recycled through the reactor and in which water is stripped from the recycle and fresh monomer feed, the improvement comprising stripping said water from said recycle and fresh feed liquid monomer by passing them through a mass transfer plate tower with reboiler and reflux condenser, removing as a vapor from the condenser light ends, refluxing the lighter condensed liquid monomer fraction back to the top of the column and removing as a second heavier fraction condensed water.

4,068,054

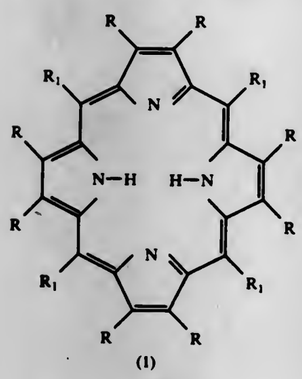
PREVENTION OF FOULING IN POLYMERIZATION REACTORS AND ANTISTATIC AGENTS

Kenneth W. Willcox, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 2, 1976, Ser. No. 711,028
Int. Cl.² C08F *4/24, 10/00, 2/14*
U.S. Cl. 526—74 **15 Claims**

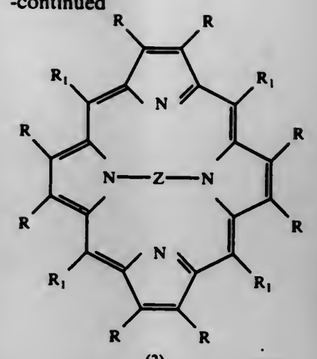


1. In a process in which at least one olefin is polymerized in a hydrocarbon diluent in a turbulent reaction zone to produce particles of polymer which are substantially insoluble in the diluent; the method of reducing adherence of polymer particles to the walls of the reaction zone which comprises adding to the reaction medium at least one compound selected from the group consisting of



(1)

-continued



(2)

and (3) a compound of either of the foregoing structures having the hydrogen-free nitrogen atoms protonated, where each R is hydrogen, an alkyl group of 1 to 8 carbon atoms or a carboxy group, each R_1 is hydrogen, an alkyl group of 1 to 4 carbon atoms, an aromatic hydrocarbyl group of 6 to 10 carbon atoms or such an aromatic group substituted with an alkyl group of 1 to 12 carbon atoms, and Z is M or M=O, where M is copper, zinc, chromium, iron, nickel, cobalt or vanadium.

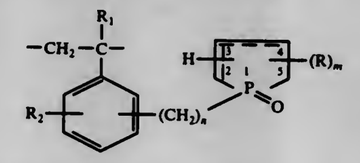
4,068,055

COMPOUNDS AND PROCESS

Curtis P. Smith, Cheshire, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 31, 1977, Ser. No. 764,375
Int. Cl.² C08F *12/32, 8/18, 8/24, 8/40*
U.S. Cl. 526—21 **3 Claims**

1. A polymer characterized by the presence therein of a recurring unit having the formula:



wherein the broken lines in the phospholene nucleus indicate a double bond located between the carbon atom at position 3 and one of the carbon atoms at positions 2 and 4, the H atom is attached to whichever carbon atom at positions 2 and 4 is not part of said double bond, R is a substituent selected from the class consisting of halogen, alkoxy from 1 to 6 carbon atoms, inclusive, phenoxy, hydrocarbyl from 1 to 18 carbon atoms, inclusive, and halohydrocarbyl from 1 to 18 carbon atoms, inclusive, *m* is a whole number from 0 to 3, *n* is 0 or 1 and R_1 is selected from the class consisting of hydrogen and methyl and R_2 represents hydrocarbyl said hydrocarbyl being free of substituents which are reactive with isocyanate.

4,068,056

AMINATED POLYMERIC ADDITIVES FOR FUEL AND LUBRICANTS

Lawrence J. Engel, Green Brook, and John B. Gardiner, Mountainside, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 5, 1975, Ser. No. 555,398
Int. Cl.² C10M *1/32*
U.S. Cl. 526—49 **4 Claims**

1. In a process for aminating a degraded-oxygenated copolymer by reaction with a primary or secondary amine or polyamine to form an oil-soluble sludge dispersing, viscosity-index improving additive for normally liquid hydrocarbon fuels and

lubricating oils, the improvement which comprises concurrently reacting a Ziegler-Natta catalyzed polymer with a hydrocarbyl polyamine having from 2 to 60 total carbon atoms and from 2 to 6 nitrogen atoms in the presence of an oxygen-containing gas and at an elevated temperature of from about 130° C. to about 300° C. for from 0.5 to about 12 hours and at a pressure ranging from 0.1 to 20 atmospheres, said polymer being a copolymer of ethylene and one or more C_3 to C_{28} alpha-olefins, and characterized by: an ethylene content in the range of about 2 to 98 weight percent; a degree of crystallinity of less than about 25 wt. %; and, a weight average molecular weight of from about 2,000 to 800,000 wherein said improvement provides means for introducing from about 0.01 to 0.8 wt. % nitrogen into said polymer enhancing its dispersancy activity.

4,068,057

AMINATED POLYMERIC ADDITIVES FOR FUEL AND LUBRICANTS

Lawrence J. Engel, Green Brook, and John B. Gardiner, Mountainside, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 5, 1975, Ser. No. 555,574
Int. Cl.² C10M 1/32
U.S. Cl. 526—49 **4 Claims**

1. In a process for aminating an olefin copolymer to form an oil-soluble aminated copolymer useful as a sludge dispersing-viscosity index improving, additive for lubricating oil, the improvement which comprises carrying out said amination without substantial molecular weight degradation of said copolymer by mechanically working a mixture consisting essentially of amine and said copolymer, at a temperature of about 130° to 260° C., under an inert gas atmosphere, for about 0.5 to 12 hours to thereby incorporate about 0.01 to 0.5 weight percent nitrogen into said copolymer, wherein said copolymer is a copolymer having a number average molecular weight in the range of about 10,000 to 500,000 and consists essentially of ethylene in an amount in the range of 2 to 98 wt. %, and one or more C_3 to C_{28} alpha-olefins, and wherein said amine is a saturated, aliphatic hydrocarbyl polyamine of 3 to 20 carbon atoms and 2 to 6 nitrogen atoms.

4,068,058

AMINATED POLYMERIC ADDITIVES FOR FUEL AND LUBRICANTS

Lawrence J. Engel, Green Brook, and John B. Gardiner, Mountainside, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 5, 1975, Ser. No. 555,575
Int. Cl.² C10M 1/32
U.S. Cl. 526—49 **5 Claims**

1. In a process for aminating and thereafter decreasing the molecular weight of an olefin copolymer to form an oil-soluble aminated copolymer useful as a sludge dispersing-viscosity index improving, additive for lubricating oil, the improvement which comprises: (a) carrying out said amination without substantial molecular weight degradation of said copolymer by mechanically working a mixture consisting essentially of amine and said copolymer at a temperature of about 130° to 260° C., under an inert gas atmosphere, for about 0.5 to 12 hours to thereby incorporate about 0.01 to 0.5 weight percent nitrogen into said copolymer, wherein said copolymer is a copolymer having a number average molecular weight in the range of about 700 to 250,00 and consists essentially of ethylene in an amount in the range of 2 to 98 wt. %, and one or more C_3 to C_{28} alpha-olefins, and wherein said amine is a saturated, aliphatic hydrocarbyl polyamine of 3 to 20 carbon atoms and 2 to 6 nitrogen atoms; and, (b) thereafter, mechanically-oxidatively degrading said copolymer product in the presence of an oxygen-containing gas and at an elevated temperature in the range of about 95° C. to 260° C. for a period of from about 0.25 to 20 hours whereby the number average molecular weight of said copolymer is reduced.

4,068,059

INTERNALLY COATED REACTION VESSEL FOR USE IN OLEFINIC POLYMERIZATION

Donald Edward Witenhafer, North Olmstead, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 17, 1977, Ser. No. 769,499
Int. Cl.² C08F 2/18, 2/20, 14/06
U.S. Cl. 526—62 **12 Claims**

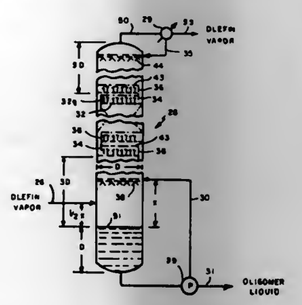
1. A process for substantially eliminating the build-up of polymers on the internal surfaces of polymerization reaction vessel which comprises applying to said surfaces a coating solution comprised of a dye dissolved in an aqueous alkali metal hydroxide or ammonium hydroxide solution, said dye being selected from the group consisting of acridines, azines, oxazines, thiazines, and alkali soluble dyes having in their chemical structure one or more radicals selected from the group consisting of —OH, —COOH, $-SO_3H$, and $-SO_3Na$, and wherein said radicals may be the same or different on any one dye structure.

4,068,060

METHOD OF REMOVING OLIGOMERS FROM OLEFIN MONOMER VAPOR IN THE POLYMERIZATION OF OLEFINS

Constantine D. Miserlis, Arlington, and Peter J. Lewis, Andover, both of Mass., assignors to The Badger Company, Inc., Cambridge, Mass.

Filed Sept. 30, 1976, Ser. No. 728,066
Int. Cl.² C08F 6/00, 10/00
U.S. Cl. 526—68 **8 Claims**



1. In a method of catalytically polymerizing olefins from liquid olefin monomer under positive pressure, in which the reaction mass comprises polyolefin dissolved in liquid monomer, in which the liquid monomer is recovered from the reaction mass as a vapor and in which the vapor is quenched to remove oligomers therefrom and is subsequently recycled back to the reactor as a liquid, the improvement comprising quenching said vapor to condense said oligomers out of it as a liquid by passing it through a mass transfer plate tower.

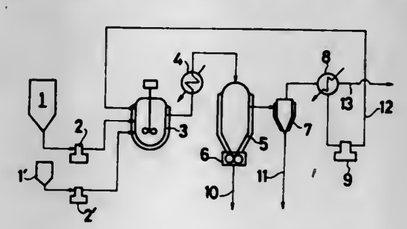
4,068,061

PROCESS FOR THE CONTINUOUS PREPARATION OF REACTIVE COPOLYMERS

Toshimi Nakagawa; Takanobu Numata, both of Kamakura, and Noribumi Ito, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

Filed Mar. 16, 1976, Ser. No. 667,413
Claims priority, application Japan, Mar. 20, 1975, 50-33011
Int. Cl.² C08F 220/32
U.S. Cl. 526—68 **1 Claim**

1. In the process for the preparation of reactive copolymers by bulk- or solution-polymerizing a material composed of a monomeric mixture consisting of at least one monomer selected from the group consisting of glycidyl acrylate, glycidyl methacrylate, β-methylglycidyl acrylate, β-methyl glycidyl methacrylate and allyl glycidyl ether and at least one monomer copolymerizable therewith selected from the group consisting of acrylic ester monomers, methacrylic ester monomers, vinyl monomers containing phenyl groups and vinyl monomers containing nitrile groups, and a chain transfer agent selected from the group consisting of aliphatic mercaptans and aromatic mercaptans, in a stirred tank reactor whereinto the reac-



tants are continuously fed and wherefrom a reaction liquid containing said reactive copolymer is continuously withdrawn in an amount substantially equal to the material fed into said reactor, the improvement which comprises recovering said reactive copolymer from said reaction liquid by volatilizing a volatile matter contained in said reaction liquid, said volatile matter containing an adduct formed by the reaction of said chain transfer agent with said monomers; removing said adduct from said volatile matter; liquefying the removed residue; and directly recycling said liquefied residue to the reactor to be used in the polymerization.

4,068,062

POLYMERIZING C_5 AND C_6 OLEFINS AND DIOLEFINS WITH 3° HYDROCARBYL HALIDE TO PRODUCE NARROW MOLECULAR WEIGHT PETROLEUM RESINS HAVING LOW SOFTENING POINTS

André Lepert, Rhode-Saint-Genese, Belgium, assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed July 16, 1976, Ser. No. 706,018
Claims priority, application United Kingdom, July 30, 1975, 31878/75
Int. Cl.² C08F 2/00, 10/00, 12/00
U.S. Cl. 526—76 **13 Claims**

1. In the process of preparing a low softening point petroleum resin which comprises polymerising using a Friedel-Crafts catalyst

a. a petroleum resin feed comprising C_5 olefins and C_5 diolefins, C_6 olefins and C_6 diolefins or a mixture of C_5 and C_6 olefins and diolefins, said feed being obtained from the cracking of a petroleum feedstock the improvement which comprises including therewith

b. at least 0.5 wt.% based on the petroleum resin feed of a tertiary hydrocarbyl halide to obtain a resin of narrowed molecular weight distribution having tackifying properties for natural and synthetic rubbers.

4,068,063

CATALYST COMPOSITION FOR RING-OPENING POLYMERIZATION OF NORBORNENE DERIVATIVES AND PROCESS FOR POLYMERIZING SAME

Hiroharu Ikeda; Shuichi Matsumoto, and Kenya Makino, all of Yokohama, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1974, Ser. No. 512,790
Claims priority, application Japan, Oct. 9, 1973, 48-113585; Oct. 9, 1973, 48-113586; Oct. 9, 1973, 48-113587
Int. Cl.² C08F 4/78
U.S. Cl. 526—97 **22 Claims**

1. A process for producing a polymer or copolymer of a norbornene derivative, which comprises contacting at a temperature in the range from −30° to +200° C in an inert atmosphere at least one norbornene derivative having at least one nitrile group, or a monomer mixture of at least one of said norbornene derivative and at least one cycloolefin other than cyclohexene, with a catalyst composition consisting essentially of a reaction mixture of (A) at least one member selected from the group consisting of halides, oxyhalides, alkoxyhalides and phenoxyhalides of W and Mo, (B) at least one member selected from the group consisting of organometallic compounds of elements of Groups IA, IIA, IIB and IIIA of the Deming Periodic Table, and (C) at least one member selected from the group consisting of oxides, hydroxides, nitrates, sulfates, phosphates, formates, acetates, acetylacetone complexes, alkoxides, alkenoxides, phenoxides and ammine complexes of V, Cr and Mn, oxides, sulfates, phosphates, alkoxides, alkenoxides, phenoxides, acetylacetone complexes, cyclopentadienyl complexes, hydride complexes and silicides of elements of Group IVB of the Deming Periodic Table and oxides, peroxides, hydroxides, sulfates, phosphates, formates, acetates, acetylacetone complexes, alkoxides, alkenoxides, phenoxides and ammine complexes of elements of Group VIII of the Deming Periodic Table; the metal atom ratio of the component (C) to the component (A) being 0.001 to 50, and the proportion of the component (B) being 1 to 10 moles per mole of the component (A).

4,068,064

METHOD FOR PREPARING MONOVINYL AROMATIC MONOMER-ACRYLONITRILE COPOLYMER

Alan E. Platt, and Robert J. Russell, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 643,586, Dec. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 575,892, May 8, 1975, abandoned. This application June 4, 1976, Ser. No. 693,067
Int. Cl.² C08F 4/00, 2/00, 4/32, 220/44
U.S. Cl. 526—194 **4 Claims**

1. A method for the preparation of a monovinyl aromatic monomer-acrylonitrile copolymer, steps of the method comprising providing a polymerizable stream, the stream comprising from 5 to 75 parts by weight of acrylonitrile and from 95 to 25 parts by weight of a monovinyl aromatic monomer, the stream containing from about 5×10^{-5} to 1×10^{-2} parts by weight per part by weight of the polymerizable stream of a free radical initiating catalyst, the catalyst having a half-life of about 1 hour at a temperature in the range of 80° C to 180° C, maintaining the stream at a polymerization temperature in excess of 80° C sufficient to cause at least from 20 to 200 percent conversion of the monomer to polymer per hour wherein the copolymer contains not more than 7.5×10^{-5} parts by weight per part of copolymer of free acrylonitrile and not more than 7×10^{-3} parts by weight, per part of copolymer, of co-oligomers of stryene and acrylonitrile.

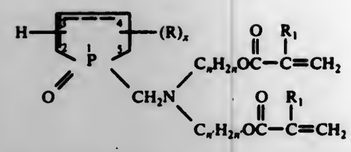
4,068,065

COMPOUNDS AND PROCESS

Curtis P. Smith, Cheshire, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 31, 1977, Ser. No. 764,374
Int. Cl.² C08F 18/22
U.S. Cl. 526—275 **2 Claims**

1. A polymeric carbodiimide-forming catalyst which comprises a polymer selected from the class consisting of (i) homopolymers of compounds of the formula



wherein the broken lines in the phospholene nucleus indicate a double bond located between the carbon atom at position 3 and one of the carbon atoms at positions 2 and 4, the H atom is attached to whichever carbon atom at positions 2 and 4 is not part of said double bond, R is selected from the group consisting of halogen, lower-alkoxy, phenoxy, hydrocarbyl from 1 to 18 carbon atoms, inclusive, and halohydrocarbyl from 1 to 18 carbon atoms, inclusive, x is 0 to 3, C_nH_{2n} and C_nH_{2n}, are each independently alkylene from 2 to 6 carbon atoms, and R_1 is selected from the class consisting of hydrogen, methyl, halo and cyano and (ii) copolymers of the compounds of the above formula with at least one acrylate selected from the class consisting of the lower-alkyl esters of acrylic, methacrylic, 2-haloacrylic and 2-cyanoacrylic acids.

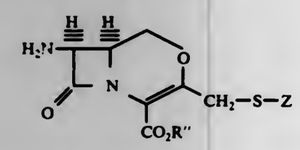
4,068,066

O-2-ISOCEPHEM-4-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS

Donald E. Horning, Candiac; Leeson R. Morris, St. Lambert, and James L. Douglas, Montreal, all of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 598,461, July 23, 1975, Pat. No. 4,013,648.
This application Sept. 23, 1976, Ser. No. 726,071
Int. Cl.² C07D *265/34*
U.S. Cl. 544—105 **3 Claims**

1. A compound having the formula



wherein R″ is hydrogen or an easily cleavable ester carboxyl-protecting group from selected from the group consisting of benzhydryl, p-nitrobenzyl, p-methoxybenzyl, trichloroethyl, trimethylsilyl, phenacyl, acetonyl, (lower)alkyl, triphenylmethyl, methoxymethyl, indanyl, phthalidyl, pivaloylaxymethyl and acetoxymethyl and Z represents C_1–C_6alkyl optionally substituted by one or more hydroxy, halo, amino, nitro, di(C_1–C_4 alkyl)amino, carboxy, sulfo or cyano substituent, or a pharmaceutically acceptable salt thereof

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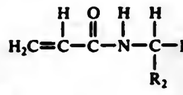
4,068,067

PROCESS FOR THE PRODUCTION OF WATER-ADSORBING CELLULOSE ETHERS

Arno Holst; Helmut Lask, and Michael Kostrzewa, all of Wiesbaden, Germany, assignors to Hoechst Aktiengesellschaft, Germany

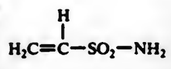
Filed May 6, 1976, Ser. No. 683,968
Claims priority, application Germany, May 7, 1975, 2520336
Int. Cl.² C08B *11/00, 11/20, 11/193, 15/10*
U.S. Cl. 536—87 **3 Claims**

1. In the process for the production of water-adsorbing, but at least partially water-insoluble cellulose ethers in which cellulose is alkalized in a liquid reaction medium and etherified in a manner such that by etherification only an at least largely water-soluble carboxymethyl cellulose, carboxymethyl hydroxyethyl cellulose, hydroxyethyl cellulose or methyl hydroxyethyl cellulose is produced, and in which the cellulose is reacted in an alkaline reaction medium before, during, or after the etherification with a modification agent reactive with the still free hydroxyl groups of the cellulose anhydro glucose groups, said modification agent having one of the formulae



I

and



II

in which R_1 is hydroxyl, an acylamino or esterified carbamino group, and R_2 is hydrogen, or a carboxyl group,

the improvement comprising effecting alkalization, etherification, and modification in a liquid reaction medium selected from the group consisting of the organic solvents dioxane, methyl ethyl ketone, ethanol, acetone and tertiary butyl alcohol, and the solvent water.

4,068,068

PROCESS FOR THE MANUFACTURE OF WATER-ABSORBING CELLULOSE ETHERS

Arno Holst; Helmut Lask, and Michael Kostrzewa, all of Wiesbaden, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed May 3, 1976, Ser. No. 682,326
Claims priority, application Germany, May 5, 1975, 2519927
The portion of the term of this patent subsequent to Feb. 3, 1993, has been disclaimed.
Int. Cl.² C08B *11/00, 11/20, 15/10*
U.S. Cl. 536—88 **4 Claims**

1. In the process for the manufacture of water-adsorbing but at least partially water-insoluble cellulose ethers in which cellulose is alkalized in a liquid reaction medium and reacted with an etherification agent in a manner such that an at least preponderantly water-soluble celluose ether would be obtained in the case of a mere etherification process and in which, prior to, simultaneously with, or after the etherification process, a reaction is effected with a crosslinking agent which is polyfunctional towards cellulose in an alkaline reaction medium,

the improvement which comprises employing bis(a-crylamido)-acetic acid as the crosslinking agent.

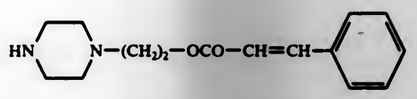
4,068,069

NOVEL PIPERAZINE- AND HOMOPIPERAZINE-MONOALKANOL ESTERS AND A PROCESS OF PRODUCTION THEREOF

Hideo Kato; Takaaki Mouri, and Tomoyasu Nishikawa, all of Katsuyamashi, Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Fukui, Japan

Division of Ser. No. 430,925, Jan. 4, 1974, Pat. No. 3,980,643.
This application July 13, 1976, Ser. No. 704,814
Int. Cl.² C07D *295/04, 243/08*
U.S. Cl. 542—427 **6 Claims**

1. A compound represented by the formula



and the hydrochloride thereof.

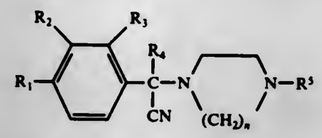
4,068,070

α-CYANOAMINE COMPOUNDS AND A PROCESS FOR PRODUCING THE SAME

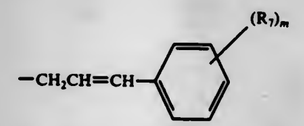
Katsumi Sakai, Kamiichi; Yukio Onogawa, Komae; Yoshitaka Inamoto, Namerikawa; Hiroshi Nakajima, Toyama; Yasuo Fujimoto, Tokyo; Kunichiro Ohno, Kodaira; Masashi Yoshida, Souka, and Shigehito Araki, Tokyo, all of Japan, assignors to Fuji Chemical Industry Co., Ltd. and Nippon Chemiphar Co., Ltd., Tokyo, both of, Japan

Division of Ser. No. 495,138, Aug. 6, 1974, Pat. No. 3,962,247.
This application Jan. 12, 1976, Ser. No. 648,493
Claims priority, application Japan, July 16, 1974, 49-80727; July 16, 1974, 49-80728; July 16, 1974, 49-80729
Int. Cl.² C07D *295/08, 295/04*
U.S. Cl. 542—470 **4 Claims**

1. An α-cyanoamine compound represented by the formula,



wherein R_1 is halogen or lower alkoxy; R_2 and R_3 are each hydrogen or lower alkoxy; R_4 is hydrogen or lower alkyl and R_5 is



wherein R_7 is lower alkoxy and m is a numeral from 0–3.

4,068,071

PROCESS FOR PRODUCING 6-AMINOPENICILLANIC ACID OR 7-AMINOCEPHALOSPORANIC ACID DERIVATIVES

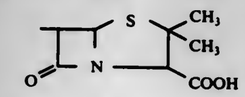
Susumu Tsushima; Norichika Matsumoto, and Mitsuo Numata, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 536,916, Dec. 27, 1974, abandoned.
This application June 23, 1976, Ser. No. 699,053
Claims priority, application Japan, Dec. 28, 1973, 48-3181
Int. Cl.² C07D *501/02, 499/42*
U.S. Cl. 544—19 **55 Claims**

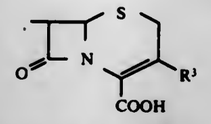
1. A process for preparing a compound of the formula

H_2N-A

wherein A is a penicillin moiety represented by the formula



wherein the carboxy group is unprotected or protected by a conventional protecting group, or A is a cephalosporin moiety represented by the formula



wherein the carboxy group is unprotected or protected by a conventional protecting group and R^3 is a group which does not take part in the reaction described below and is a member selected from the group consisting of

1. lower alkyl,
2. lower alkoxymethyl,
3. lower alkanoyloxymethyl,
4. a group represented by the formula

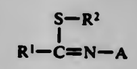
$-CH_2SR^4$

wherein R^4 is lower alkyl or a 5 or 6 membered nitrogen-containing heterocyclic group having 1 to 4 hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, the nitrogen being in the oxide or non-oxide form, which nitrogen-containing heterocyclic group is unsubstituted or substituted by (a) lower alkyl, (b) trifluoromethyl, (c) lower alkoxy, (d) halogen, (e) amino, (f) mercapto, (g) hydroxy, (h) carbamoyl, (i) carboxy, (j) lower alkyl substituted by hydroxy, mercapto, amino, morpholino, carboxy, sulfo, carbamoyl, alkoxycarbonyl having 2 to 13 carbon atoms, mono- or di- lower alkyl carbamoyl, alkoxy having 1 to 12 carbon atoms, alkylthio having 1 to 3 carbon atoms, alkylsulfonyl having 1 to 3 carbon atoms, acyloxy selected from the group consisting of acetoxy, propionyloxy, valeryloxy, caproyloxy, benzoyloxy and phenylacetoxy, morpholinocarbonyl or N-lower alkylamino, (k) mercapto substituted by lower alkyl wherein the lower alkyl is unsubstituted or substituted by hydroxy, mercapto, amino, morpholino, carboxy, sulfo, carbamoyl, alkoxycarbonyl having 2 to 13 carbon atoms, mono- or di- lower alkyl carbamoyl, alkoxy having 1 to 12 carbon atoms, alkylthio having 1 to 3 carbon atoms, alkylsulfonyl having 1 to 3 carbon atoms, acyloxy selected from the group consisting of acetoxy, propionyloxy, valeryloxy, caproyloxy, benzoyloxy and phenylacetoxy, morpholinocarbonyl or N-lower alkylamino, or (l) amino mono- or di- substituted by carboxy, carbamoyl, lower alkyl, alkoxycarbonyl having 2 to 13 carbon atoms, lower alkyl carbamoyl, or lower alkyl substituted by hydroxy, mercapto, amino, morpholino, carboxy, sulfo, carbamoyl, alkoxycarbonyl having 2 to 13 carbon atoms, mono- or di-lower alkyl carbamoyl, alkoxy having 1 to 12 carbon atoms, alkylthio having 1 to 3 carbon atoms, alkylsulfonyl having 1 to 3 carbon atoms, acyloxy selected from the group consisting of acetoxy, propionyloxy, valeryloxy, caproyloxy, benzoyloxy and phenylacetoxy, morpholinocarbonyl or N-lower alkylamino, and

5. an iminomethyl group of the formula

$-CH{=}NOR^5$

wherein R^5 is alkyl having 1 to 6 carbon atoms or cycloalkyl having up to 6 carbon atoms, which alkyl and cycloalkyl groups are unsubstituted or substituted by (a) allyl, (b) phenyl, (c) an unsubstituted 5 or 6 membered heterocyclic group having 1 or 2 hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, (d) carboxy or (e) pyridinium, which comprises reacting a compound of the formula



wherein A has the same meaning as above, R^1 is an organic residue derived from an acylamido group in the 6-position of a penicillin or the 7- position of a cephalosporin by eliminating the -CONH- moiety of the acylamido group, which organic residue is capable of combination with a thiocarbonyl group to form a thioacyl group, and R^2 is a member selected from the group consisting of (1) lower alkoxycarbonylthio, (2) halocarbonylthio wherein the halo is chloro or bromo, (3) lower alkylthio, (4) mono-, di- or tri-halo lower alkylthio wherein the halo is chloro or bromo, (5) mono- or di- lower alkylaminothio, (6) mercapto substituted by an unsubstituted nitrogen-containing 5 or 6 membered heterocyclic group, (7) halothio wherein the halo is chloro or bromo and (8) halodithio wherein the halo is chloro or bromo,

with a solvolysis solvent selected from the group consisting of aliphatic alcohols having 1 to 4 carbon atoms, glycols having 2 to 4 carbon atoms, glycerine, acetic acid, propionic acid, methylmercaptan, ethylmercaptan and water.

4,068,072

PROCESS FOR PRODUCTION OF 6-AMINOPENICILLANIC ACID OR 7-AMINOCEPHALOSPORANIC ACID DERIVATIVES

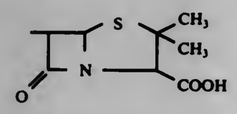
Susumu Tsushima; Norichika Matsumoto, and Mitsuo Numata, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 536,917, Dec. 27, 1974, abandoned. This application June 30, 1976, Ser. No. 701,731
Claims priority, application Japan, Dec. 27, 1973, 48-1171
Int. Cl.² C07D *501/02, 499/42*
U.S. Cl. 544—19 42 Claims

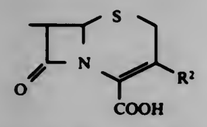
1. A process for preparing a compound of the formula

$H_2N—A$

wherein A is a penicillin moiety represented by the formula



wherein the carboxy group is unprotected or protected by a conventional protecting group, or A is a cephalosporin moiety represented by the formula



wherein the carboxy group is unprotected or protected by a conventional protecting group and R^2 is a group which does not take part in the reaction described below and is a member selected from the group consisting of

1. lower alkyl,
2. lower alkoxymethyl,
3. lower alkanoyloxymethyl,
4. a group represented by the formula

$—CH_2SR^3$

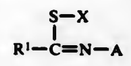
wherein R^3 is lower alkyl or a 5 or 6 membered nitrogen-containing heterocyclic group having 1 to 4 hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, the nitrogen being in the oxide or non-oxide form, which nitrogen-containing heterocyclic group is unsubstituted or substituted by (a) lower alkyl, (b) trifluoromethyl, (c) lower alkoxy, (d) halogen, (e) amino, (f) mercapto, (g) hydroxy, (h) carbamoyl, (i) carboxy, (j) lower alkyl substituted by hydroxy, mercapto, amino, morpholino, carboxy, sulfo, carbamoyl, alkoxycarbonyl having 2 to 13 carbon atoms, mono- or di- lower alkyl carbamoyl, alkoxy having 1 to 12 carbon atoms, alkylthio having 1 to 3 carbon atoms, alkylsulfonyl having 1 to 3 carbon atoms, acyloxy selected from the group consisting of acetoxy, propionyloxy, valeryloxy, caproyloxy, benzoyloxy and phenylacetoxy, morpholinocarbonyl or N-lower alkylamino, or (l) amino mono- or di- substituted by carboxy, carbamoyl, lower alkyl, alkoxycarbonyl having 2 to 13 carbon atoms, lower alkyl carbamoyl, or lower alkyl substituted by hydroxy, mercapto, amino, morpholino, carboxy, sulfo, carbamoyl, alkoxycarbonyl having 2 to 13 carbon atoms, mono- or di- lower alkyl carbamoyl, alkoxy having 1 to 12 carbon atoms, alkylthio having 1 to 3 carbon atoms, alkylsulfonyl having 1 to 3 carbon atoms, acyloxy selected from the group consisting of acetoxy, propionyloxy, valeryloxy, caproyloxy, benzoyloxy and phenylacetoxy, morpholinocarbonyl or N-lower alkylamino, and

5. an iminomethyl group of the formula

$—CH=NOR^4$

wherein R^4 is alkyl having 1 to 6 carbon atoms or cycloalkyl having up to 6 carbon atoms, which alkyl and cycloalkyl groups are unsubstituted or substituted by (a) allyl, (b) phenyl, (c) an unsubstituted 5 or 6 membered heterocyclic group having 1 or 2 hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, (d) carboxy or (e) pyridinium,

which comprises reacting a compound of the forumla



wherein A has the same meaning as above, R^1 is an organic residue derived from an acylamido group in the 6-position of a penicillin or the 7- position of a cephalosporin by eliminating the —CONH— moiety of the acylamido group, which organic residue is capable of combination with a thiocarbonyl group to form a thioacyl group, and X is chlorine or bromine,

with a solvolysis solvent selected from the group consisting of aliphatic alcohols having 1 to 4 carbon atoms, glycols having 2 to 4 carbon atoms, glycerine, acetic acid, propionic acid, methylmercaptan, ethylmercaptan and water

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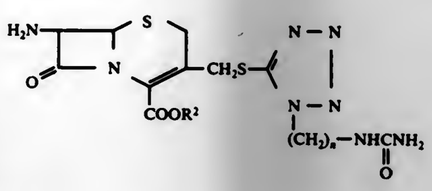
4,068,073

7-AMINO INTERMEDIATES FOR PREPARING 7-ACYL-3-(UREIDOALKYL SUBSTITUTED TETRAZOLYLTHIOMETHYL)-CEPHALOSPORINS

David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 639,033, Dec. 9, 1975, Pat. No. 4,025,626. This application Dec. 22, 1976, Ser. No. 753,259
Int. Cl.² A61K *31/545*; C07D *501/18, 501/36*
U.S. Cl. 544—26 4 Claims

1. A compound of the formula:



in which:

n is two to five; and

R^2 is hydrogen or a protecting ester group.

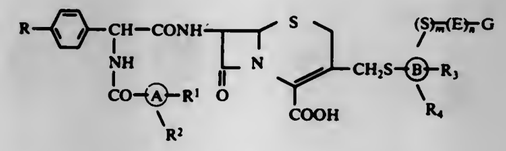
4,068,074

CEPHALOSPORIN DERIVATIVES HAVING AT THE 3-POSITION OF THE CEPHEM RING A HETEROCYCLIC THIOMETHYL GROUP WITH A CARBOXY OR SULFO GROUP AND AT THE 7-POSITION OF THE CEPHEM RING AN α-HETEROCYLIC ACYLAMINOPHENYL-ACETAMIDE GROUP

Masuo Murakami, Tokyo; Ichiro Isaka, Hoya; Norio Kawahara, Ageo; Masaru Iwanami, Yokohama; Masaharu Fujimoto, Tokyo; Tetsuya Maeda, Urawa; Tadao Shibanuma, Asaki, and Yoshinobu Nagano, Niiza, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 562,884, March 28, 1975, abandoned. This application June 11, 1976, Ser. No. 695,085
Claims priority, application Japan, Apr. 5, 1974, 49-38545; Apr. 15, 1974, 49-41884
Int. Cl.² C07D *501/36*
U.S. Cl. 544—27 15 Claims

1. Cephalosporin compounds of the formula:



wherein R is hydrogen or hydroxy;

Ⓐ is an aromatic heterocyclic ring selected from the group consisting of pyridine, pyrimidine, pyridazine, pyrazine, and thiopyran; R^1 and R^2 which may be the same or different are each hydrogen, hydroxy, lower alkyl, lower alkoxy, lower alkylthio, or oxo;

Ⓑ is thiazole, thiadiazole, tetrazole, pyrimidine, pyridazine or 1,2,4-triazolo (3,4-b)-1,3,4-thiadiazole;

R^3 and R^4 when they are present which may be the same or different are hydrogen, amino, oxo, or lower alkyl;

E. is alkylene; G is carboxy or sulfo;

n is 0 or 1 when *m* is 0; and *n* is 1 when *m* is 1 and the pharmaceutically acceptable salts thereof.

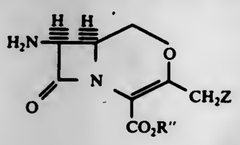
4,068,075

O-2-ISOCEPHEM-4-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS

Marcel Menard; Gary M. F. Lim, both of Candiac, and Terry T. Conway, Brossard, all of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 567,323, April 11, 1975, Pat. No. 4,011,216. This application Aug. 19, 1976, Ser. No. 715,820
Int. Cl.² C07D *265/34*
U.S. Cl. 544—105 5 Claims

1. A compound having the formula



wherein Z is esterified hydroxyl of the formula

$—OSO_2R_2'$

in which R_2' is (lower)alkyl, trifluoromethyl or p-tolyl and R'' is hydrogen or an esily cleavable ester carboxyl-protecting group selected from the group consisting of benzhydryl, benzyl, p-nitrobenzyl, p-methoxybenzyl, trichloroethyl, trimethylsilyl, phenacyl, acetonyl, (lower)alkyl, triphenylmethyl, methoxymethyl, indanyl, phthalidyl, pivaloyloxymethyl and acetoxymethyl, or a pharmaceutically acceptable salt thereof.

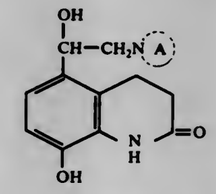
4,068,076

5-(1-HYDROXY-2-(HETEROCYCLIC AMINO))ETHYL-8-HYDROXY-3,4-DIHYDROCARBOSTYRIL DERIVATIVES

Kazuyuki Nakagawa, Tokushima; Shiro Yoshizaki, Naruto; Kaoru Tanimura, Tokushima, and Shigeharu Tamada, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 536,704, Dec. 26, 1974, Pat. No. 3,975,391. This application June 30, 1976, Ser. No. 701,268
Claims priority, application Japan, Dec. 26, 1973, 49-4192; May 22, 1974, 49-58316; May 27, 1974, 49-60003; May 27, 1974, 49-60004; May 27, 1974, 49-60005; May 27, 1974, 49-60006
Int. Cl.² C07D *413/06, 401/06*
U.S. Cl. 544—128 4 Claims

1. A 5-[1-hydroxy-2-(heterocyclic amino)]ethyl-8-hydroxy-3,4-dihydrocarbostyril compound represented by the formula (I)



(I)

wherein A, when taken together with the nitrogen atom to which it is attached, forms a 6-membered heterocyclic ring selected from the group consisting of piperazino and morpholino, said heterocyclic ring being unsubstituted or substituted with an alkyl group having one to four carbon atoms.

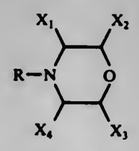
4,068,077

MANUFACTURE OF N-SUBSTITUTED TETRAHYDRO-1,4-OXAZINES

Norbert Goetz, Worms; Bernd Zeeh; Martin Decker, both of Ludwigshafen; Leopold Hupfer, Friedelsheim, and Herbert Toussaint, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

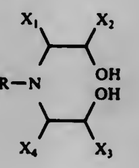
Filed July 22, 1976, Ser. No. 707,864
Claims priority, application Germany, Sept. 27, 1975, 2543279
Int. Cl.² C07D *265/30, 295/02*
U.S. Cl. 544—178 5 Claims

1. A process for the manufacture of an N-substituted morpholine substantially free from impurities of the general formula I



I

where R is an aliphatic radical of 1 to 20 carbon atoms, a cycloaliphatic radical of 6 to 12 carbon atoms, an araliphatic radical of 7 to 15 carbon atoms or an aryl radical of 6 to 10 carbon atoms, and X_1, X_2, X_3 and X_4 are identical or different and each is hydrogen or methyl, by cyclizing a compound of the general formula II



II

where R, X_1, X_2, X_3 and X_4 have the above meaning, wherein the cyclizing is carried out in the presence of a dehydration catalyst and a hydrogenation is carried out in the presence of hydrogen and a hydrogenation catalyst respectively at from 100° to 300° C and at pressures of from atmospheric pressure to 250 atmospheres.

4,068,078

O-2-ISOCEPHEM-4-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS

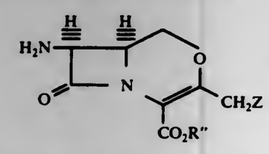
Marcel Menard; Gary M. F. Lim, both of Candiac, and Terry T. Conway, Brossard, all of Canada, assignors to Bristol-Myers Corporation, New York, N.Y.

Division of Ser. No. 567,323, April 11, 1975, Pat. No. 4,011,216. This application Aug. 19, 1976, Ser. No. 715,819

Int. Cl.² C07D *265/34*

U.S. Cl. 544—105 **5 Claims**

1. A compound having the formula



wherein Z is halo and R″ is hydrogen or an easily cleavable ester carboxyl-protecting group selected from the group consisting of benzhydryl, benzyl, p-nitrobenzyl, p-methoxybenzyl, trichloroethyl, trimethylsilyl, phenacyl, acetonyl, (lower)alkyl, triphenylmethyl, methoxymethyl, indanyl, phthalidyl, pivaloyloxymethyl and acetoxymethyl, or a pharmaceutically acceptable salt thereof.

4,068,079

N-CARBAMOYL ETHYL OXANILATES

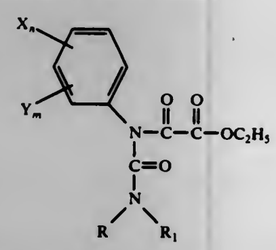
Edmund J. Gaughan, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 638,491, Dec. 8, 1975, Pat. No. 4,018,813, which is a continuation-in-part of Ser. No. 559,104, March 17, 1975, abandoned. This application Jan. 13, 1977, Ser. No. 759,206

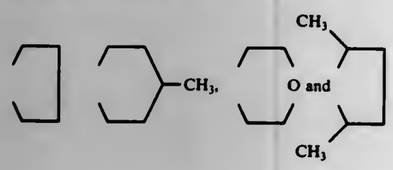
Int. Cl.² C07D *295/18*

U.S. Cl. 544—165 **8 Claims**

1. The compound having the formula



wherein X and Y are independently selected from the group consisting of chloro, bromo and trifluoromethyl; *n* is either 0 or 1; *m* is either 0 or 1; and R and R_1 taken together is selected from the group consisting of



4,068,080

O-2-ISOCEPHEM-4-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS

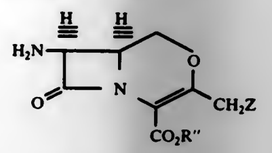
Marcel Ménard; Gary M. F. Lim, both of Candiac, and Terry T. Conway, Brossard, all of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 567,323, April 11, 1975, Pat. No. 4,011,216. This application Aug. 19, 1976, Ser. No. 715,956

Int. Cl.² C07D *265/34, 413/12, 417/12*

U.S. Cl. 544—105 **9 Claims**

1. A compound having the formula



wherein Z is etherified hydroxyl of the formula $-OR_3$ in which R^3 is benzyl or a 5- or 6-membered heterocyclic radical containing 1–4 atoms selected from N, O and S, said heterocyclic radical being optionally substituted by one or more substituents selected from halogen, amino, nitro, C_1–C_4 alkyl, C_3–C_4 cycloalkyl, C_1–C_4 alkoxy, C_2–C_4 alkenyl, trifluoromethyl, phenyl, benzyl, C_1–C_4 alkylthio, C_1–C_4 alkylamino, di C_1–C_4 alkylamino or alkoxyalkyl of up to 4 carbon atoms and R″ is hydrogen or an easily cleavable ester carboxyl-protecting group selected from benzhydryl, benzyl, p-nitrobenzyl, p-methoxybenzyl, trichloroethyl, trimethylsilyl, phenacyl, acetonyl, (lower)alkyl, triphenylmethyl, methoxymethyl, indanyl, phthalidyl, pivaloyloxymethyl or acetoxymethyl, or a pharmaceutically acceptable salt thereof.

4,068,081

Δ-TRIAZINE-2,6-DIONE

Ian Trevor Kay, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 546,318, Feb. 3, 1975, Pat. No. 3,959,469. This application Mar. 5, 1976, Ser. No. 664,172

Claims priority, application United Kingdom, Feb. 15, 1974, 43514/74

Int. Cl.² C07D *251/46*

U.S. Cl. 544—212 **1 Claim**

1. 1-Butyl-4-pyrrolidino-s-triazine-2,6-(1H,3H) dione.

4,068,082

PROCESS FOR PREPARING ESTERS

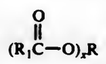
Donald G. Stoffey, Hacienda Heights, and Jan Alexander Orlowski, Altadena, both of Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

Continuation of Ser. No. 120,340, March 2, 1971, abandoned. This application Sept. 19, 1973, Ser. No. 398,877

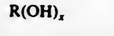
Int. Cl.² C07C *67/14, 69/54, 69/80, 69/82*

U.S. Cl. 560—90 **2 Claims**

1. In a process for making esters of the formula



by the reaction of a compound of the formula



with a compound of the formula



wherein R and R_1 are each independently alkyl, substituted alkyl, alkenyl, substituted alkenyl, aryl, or substituted aryl, and X is halogen, and x is a positive integer, in the presence of sufficient tertiary amine as an acceptor for the hydrogen halide generated by the reaction, the improvement which comprises conducting said reaction in a polar aprotonic solvent as the reaction medium, wherein the solvent is comprised of acetone.

4,068,083

2,2-DIFLUORO-13,14-DIHYDRO-PGE$_1$ ANALOGS

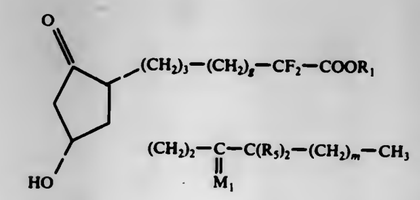
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 552,708, Feb. 25, 1975, Pat. No. 4,001,300. This application Sept. 17, 1976, Ser. No. 724,156

Int. Cl.² C07C *177/00*

U.S. Cl. 560—121 **18 Claims**

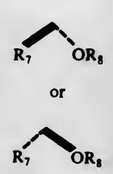
1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof,

wherein *g* is 2 to 4, inclusive;

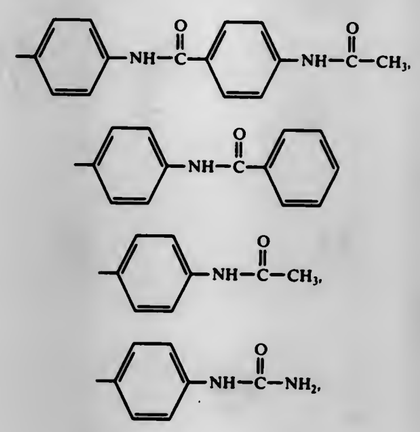
wherein M_1 is



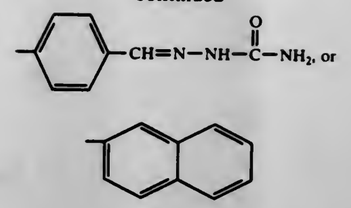
wherein R_7 and R_8 are hydrogen or methyl, with the proviso that one of R_7 or R_8 is methyl only when the other is hydrogen;

wherein *m* is 2 to 4, inclusive;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro, alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation,



-continued



wherein R_5 is hydrogen, methyl, or fluoro with the proviso that R_5 is fluoro only when R_7 and R_8 are both hydrogen, with the proviso that R_5 is methyl only when R_7 and R_8 are both hydrogen, and with the proviso that R_5 is hydrogen only when either one of R_7 and R_8 is methyl.

4,068,084

ISOPROPYL- AND ISOPROPENYL CYCLOPENTENE CARBOXYLIC ESTERS

Peter Naegeli, Wettingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

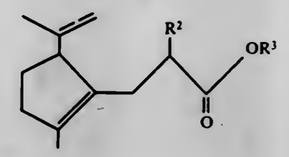
Division of Ser. No. 490,166, July 19, 1974, Pat. No. 3,963,675, which is a division of Ser. No. 338,730, March 7, 1973, abandoned. This application Sept. 23, 1975, Ser. No. 615,966

Int. Cl.² C07C *69/74*

U.S. Cl. 560—122 **3 Claims**

1. A cyclopentene of the general formula

(Ic)



wherein R^2 represents a hydrogen atom or a lower alkyl, R^3 represents a lower alkyl group and the broken line denotes an optional bond.

4,068,085

3-NITRO-5-AZOPYRIDINE DYESTUFFS

Visvanathan Ramanathan, Basel, Switzerland; Ulrich Schlesinger, Maulburg, Baden, Germany, and René De Montmollin, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

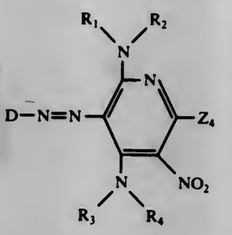
Filed Dec. 1, 1975, Ser. No. 636,487

Claims priority, application Switzerland, Dec. 6, 1974, 16253/74

Int. Cl.² C09B *29/36, 62/08, 62/24*; D06P *3/52*

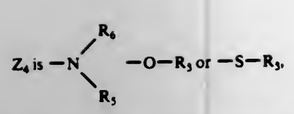
U.S. Cl. 260—156 **16 Claims**

1. An azo dyestuff, free from sulfo groups, of the formula



wherein

D is the radical of an aromatic or heterocyclic diazo component,



R_1, R_2, R_3, R_4, R_5 and R_6 are independently hydrogen; alkyl of up to 10 carbon atoms, alkoxyalkyl of up to 10 carbon atoms, alkoxyalkoyalkyl of up to 10 carbon atoms, or said alkyl, alkoxyalkyl or alkoxyalkoxyalkyl which are further substituted by hydroxy, carboxy, cyano, phenoxy, cyclohexyloxy, benzyloxy, phenethoxy, C_2-C_{10}-alkanoyloxy, formyloxy, C_1-C_5-alkylaminocarbonyloxy, benzoyloxy, phenoxyacetoxy, phenylacetoxy, phenylcarbamyloxy, C_1-C_5-alkoxycarbonyloxy, phenyloxycarbonyloxy, phenyl or phenyl substituted by chloro, bromo, fluoro, C_1-C_4-alkyl, C_1-C_4-alkoxy, hydroxyethyl, cyano, nitro, C_2-C_5-alkanoylamino, or C_2-C_5 carboalkoxy;

cyclohexyl or cyclopentyl; or

phenyl or phenyl substituted by bromo, chloro, fluoro, cyano, nitro, hydroxy, C_1-C_4-alkylcarbonylamino, hydroxy, C_1-C_4-alkoxy, C_1-C_4-alkyl or C_1-C_4-alkoxy; or

R_1 and R_2, and R_3 and R_4, and R_5 and R_6 independently represent, together with the nitrogen to which they are attached, piperidino, morpholino or pyrrolidino;

and wherein said aromatic or heterocyclic diazo component is phenyl or phenyl substituted by halo, hydroxy, cyano, thiocyano, nitro, lower alkyl, trifluoromethyl, lower alkoxy, formyl, lower alkylcarbonyl, benzoyl, methylbenzoyl, lower alkoxycarbonyl, benzyloxycarbonyl, cyclohexylcarbonyl, phenoxycarbonyl, lower alkozycarbonyloxy, benzyloxycarbonyloxy, lower alkylcarbonyloxy, benzoyloxy, lower alkylcarbonylamino, benzoylamino, lower alkylsulfonyl, chloroethylsulphonyl, hydroxyethylsulphonyl, aminosulphonyl, di-(hydroxyethyl)-aminosulphonyl, phenylaminosulphonyl, chlorophenylaminosulphonyl, methoxyphenylaminosulphonyl, benzylaminosulphonyl, N-piperidylsulphonyl, N-morpholinosulphonyl, lower alkylsulphonyloxy, cyclohexylsulphonyloxy, chloromethyl-sulphonyloxy, cyanoethylsulphonyloxy, phenylsulphonyloxy, aminosulphonyloxy, chlorophenylsulphonyloxy, methoxyphenylsulphonyloxy, N-morpholinosulphonyloxy, ethyleneiminosulphonyloxy, lower monoalkyl- or dialkyl-aminosulphonyloxy, phenylaminosulphonyloxy, N-phenyl-N(lower alkyl)-aminosulphonyloxy, N-(methoxy- or chloro-) phenylaminosulphonyloxy, phenylamino, nitrophenylamino, dinitrophenylamino, phenyl, phenoxy or acetylaminophenyl;

phenylazophenyl which is unsubstituted or substituted by chloro, bromo, hydroxy, cyano, nitro, lower alkyl, trifluoromethyl lower alkoxy or phenoxy;

napthyl which is unsubstituted or substituted by methoxy, ethoxy, phenylazo or dimethylaminosulphonyl;

thiazolyl which is unsubstituted or substituted by chloro, bromo, nitro, cyano, thiocyano, lower alkyl, lower alkoxy, lower alkylmercapto, phenyl, benzyl, phenethyl, lower alkoxycarbonyl, trifluoromethyl, lower alkylcarbonyl or lower alkylsulphonyl;

benzthiazolyl which is unsubstituted or substituted by chloro, bromo, cyano, thiocyano, nitro, lower alkyl, lower alkoxy, benzyl, phenylethyl, lower alkylsulphonyl, phenyl, lower alkylmercapto, lower alkoxycarbonyl, lower alkylcarbonyl, trifluoromethyl, cyanoethylsulphonyl, aminosulphonyl, or lower mono- or dialkylaminosulphonyl;

pyrazolyl which is unsubstituted or substituted by cyano, lower alkyl, lower alkoxy, lower alkoxycarbonyl or phenyl;

thiadiazolyl which is unsubstituted or substituted by lower alkoxy, lower alkyl, phenyl, lower alkylsulphonyl, or lower alkylmercapto;

imidazolyl which is unsubstituted or substituted by nitro or lower alkyl;

thienyl which is unsubstituted or substituted by nitro, lower alkyl, lower alkylsulphonyl, lower alkoxycarbonyl or acetyl;

isothiazolyl which is unsubstituted or substituted by lower alkyl, nitro, lower alkylsulphonyl, lower alkoxycarbonyl, cyano or phenyl; or

benzisothiazolyl which is unsubstituted or substituted by lower alkyl, nitro or halo.

4,068,086

BLOCKED POLYISOCYANATES OBTAINED FROM 2,2,4-TRIMETHYLHEXAMETHYLENE-DIISOCYANATE AND ACETOACETIC ACID ALKYL ESTERS

Horst Dalibor, Hamburg, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

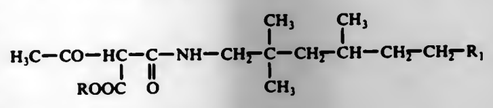
Filed Mar. 24, 1976, Ser. No. 669,813

Claims priority, application Switzerland, Mar. 25, 1975, 3769/75; Dec. 1, 1975, 15537/75; Mar. 3, 1976, 2628/75

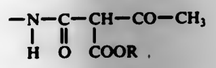
Int. Cl.² C07C *101/24, 101/26*

U.S. Cl. 560—169 **2 Claims**

1. A compound of the formula



wherein R_1 denotes -NCO or the radical



and each R denotes a radical selected from the group consisting of methyl, ethyl, propyl, isopropyl, n-butyl, tert-butyl, isobutyl, sec-butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, and dodecyl radical.

4,068,087

PREFABRICATED SHIELDED CABIN

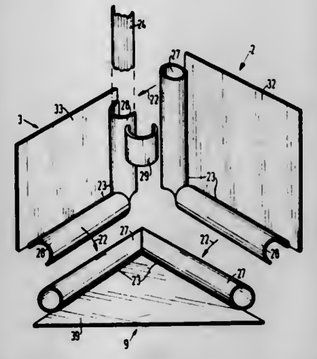
Eberhard Ristig, Etterzhausen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 6, 1976, Ser. No. 702,572

Claims priority, application Germany, July 14, 1975, 2531452

Int. Cl.² H05K *9/00*

U.S. Cl. 174—35 MS **11 Claims**



1. A disassembleable, shielded cabin which is impermeable to high frequency radiation comprising:

a. individual prefabricated wall, ceiling, and bottom panels, a majority of said panels having substantially uniform peripheral dimensions, each panel having a sheet metal portion and a load bearing frame attached thereto in a manner impermeable to high frequency radiation;

b. some of said load bearing frames comprising circular solid tubes and other load bearing frames comprising cut away half tubes, said half tubes engaging the circular tubes of adjacent panels;

c. contact spring elements located in contact with and between said half tubes and said circular tubes;

d. tubular clamps disposed over said cut away half tubes and engaging said circular tubes to maintain the engagement to fix in place assembled panels; and

e. said sheet metal portions being attached to said load-bearing frame at the outside of the shielded cabin.

4,068,088

UNDERGROUND MINE EQUIPMENT

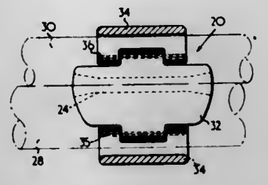
Job Frederick Smith, Derby, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Feb. 24, 1976, Ser. No. 660,815

Claims priority, application United Kingdom, Mar. 20, 1975, 11619/75

Int. Cl.² H01B *7/24*

U.S. Cl. 174—136 **5 Claims**



1. Underground mine equipment for protecting supply cable and/or hose components to a mining machine adapted to traverse to and fro along a longwall face, comprising at least one flexible elongated member adapted at one end for connection to the machine so as to be hauled behind the machine as the machine traverses to and fro along the longwall face, and a plurality of elements threaded on and retainable in series along the elongated member to provide a corridor for at least one supply component, the corridor extending along the elongated member which in use, when the equipment is being hauled behind the machine, carries the resulting hauling forces, the elements including at least one aperture for receiving said flexible elongated member when said elements are threaded thereon, said at least one aperture formed in a wall of said element and having an unbroken interior wall structure, and means separate from said elongated member, which when the equipment is being hauled behind the machine retain the corridor closed to retain the supply component in position within the corridor but which when the equipment is not being hauled can be pivotally released to open the corridor to expose and permit access to the supply component.

4,068,089

DATA INDICATOR UNIT

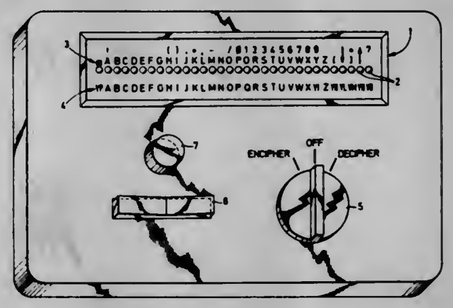
Werner Kuhnlein, Oberengstringen; Heinrich Eggenberger, Dielsdorf, and Heinz Walter Minet, Buchs, all of Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Feb. 19, 1976, Ser. No. 659,252

Claims priority, application Switzerland, Feb. 24, 1975, 2310/75; Nov. 12, 1975, 14651/75

Int. Cl.² H04L *9/02*

U.S. Cl. 178—22 **11 Claims**



1. A combined data input/output unit for generating outgoing output data representing electrically encoded teletype characters and displaying incoming input data representing teletype characters, comprising

a data input for input data to be displayed,

a data output for generated output data,

a display means includes indicator means and a support with a number of character fields, each character field having an individual indicator means associated therewith and having at least one teletype character thereon, the totality of the characters forming a substantially complete set of teletype characters,

an input keyboard having not more than ten setting keys,

a switching unit provided with a number of different possible switching states corresponding to the number of character fields of the support and having an output connected to said data output, said output data being constituted by said switching states,

a decoding means responsive to the switching unit and selectively activating the individual indicator means in response to the switching states of the switching unit,

a setting stage controlled via the setting keys of the input keyboard and connected in series with the switching unit and selectively setting the various switching states of the switching unit, and

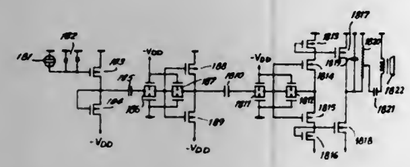
a means connected to said data input and to said indicator means and being responsive to incoming encoded teletype input data and selectively activating said indicator means in response to said input data.

4,068,090

HEARING AID

Hidetoshi Komatsu; Mutsuto Tezuka, and Shinji Morozumi, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 1, 1976, Ser. No. 701,843
Claims priority, application Japan, July 1, 1975, 50-81559
Int. Cl.² H04R 3/00, 25/00; H03F 3/16
U.S. Cl. 179—1 A 22 Claims



1. In a hearing aid including first transducer means for producing a signal representative of sound, amplifier means for producing an amplified signal in response to said signal produced by said first transducer means and second transducer means for producing sound representative of the sound sensed by said first transducer means at an amplified level, the improvement comprising said amplifier means being formed of at least one first pair of complementary coupled P-channel and N-channel MOS field-effect transistors, the respective gate electrodes and drain electrodes of said pair of P-channel and N-channel transistors being commonly coupled to respectively define an input of said amplifier and an output of said amplifier, a first input impedance means coupled intermediate said first transducer means and said gate input of said amplifier means, and first feedback impedance means for feeding back said drain output of said amplifier means to said gate input of said amplifier means to provide a closed loop gain proportional to the ratio of said second impedance means to said first impedance means.

8. In a hearing aid including first transducer means for producing a signal representative of sound, amplifier means for amplifying the signal produced by said first transducer means and second transducer means for producing sounds representative of the sound sensed by said first transducer means at an amplified level in response to said amplified signal produced by said amplifier means, the improvement comprising said first transducer means including microphone means for producing sound signals in response to the sound sensed thereby and microphone input circuit means coupled to said microphone means for applying signals representative of the sound sensed by said microphone means to said amplifier means, said microphone input circuit means including at least one pair of MOS field-effect transistors having a commonly coupled drain terminal defining an output to be coupled to said amplifier means, and a gate electrode of one of said transistors being coupled to said microphone means to receive said sound signals therefrom in response to the sound sensed thereby the gate electrode of said MOS transistor not coupled to said microphone means being coupled to the commonly coupled drain output of the microphone input circuit means to thereby stabilize the operation thereof, a further microphone means for producing a sound signal representative of the sound sensed thereby, and additional input circuit means for receiving said sound signals produced by said further microphone means, said additional input circuit means including a second pair of MOS transistors, said first and second pairs of transistors having their respective gate electrodes coupled together to define first and second inputs to be respectively coupled to said first mentioned microphone means and further microphone means to receive the sound signal produced thereby, the drain terminal of each of said transistors in said first and second pairs of transistors being coupled together to define an output to be coupled to said amplifier means for producing a signal representative of the sound sensed by said first mentioned microphone means and said additional microphone means.

9. In a hearing aid including first transducer means for producing a signal representative of sound, amplifier means for amplifying the signal produced by said first transducer means and second transducer means for producing sounds representative of the sound sensed by said first transducer means at an amplified level in response to said amplified signal produced by said amplifier means, the improvement comprising said first transducer means including microphone means for producing sound signals in response to the sound sensed thereby and microphone input circuit means coupled to said microphone means for applying signals representative of the sound sensed by said microphone means to said amplifier means, said microphone input circuit means including at least one pair of MOS field-effect transistors having a commonly coupled drain terminal defining an output to be coupled to said amplifier means, and a gate electrode of one of said transistors being coupled to said microphone means to receive said sound signals therefrom in response to the sound sensed thereby the gate electrode of said MOS transistor not coupled to said microphone means being coupled to the commonly coupled drain output of the microphone input circuit means to thereby stabilize the operation thereof.

15. In a hearing aid including first microphone means for producing signals representative of sound sensed thereby and earphone means for reproducing sound sensed by said microphone means at an amplified level, the improvement comprising microphone circuit means for transmitting the signals representative of sound produced by said microphone means, amplifier means coupled to said microphone circuit means for amplifying the signals representative of sound transmitted thereto by said microphone circuit means, and earphone amplifier-drive circuit means for receiving said amplifier signal produced by said amplifier means and in response thereto being adapted to apply drive signals to said earphone means to drive same, said microphone circuit means, amplifier means and drive circuit means each including at least one pair of MOS field-effect transistor means having commonly coupled drain electrodes defining the output thereof.

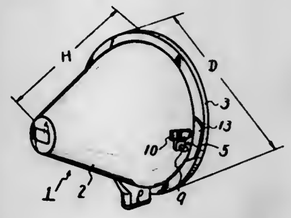
19. A hearing aid including first transistor means for producing a signal representative of sound, amplifier means for producing an amplified signal in response to the signal produced by said first transducer means, and second transducer means for producing sounds representative of the sound sensed by said first transducer means at an amplified level in response to said amplified signal produced by said amplifier means, the improvement comprising said second transducer means including earphone means for producing sound in response to a driving signal applied thereto, and amplifier-drive circuit means coupled to said amplifier means for receiving said amplified signal produced thereby and applying an amplified drive signal to said earphone means, said amplifier-drive circuit means including a first P-channel field-effect MOS drive transistor and a second N-channel MOS field-effect drive transistor having commonly coupled drain electrodes for defining a drive output for applying a drive signal to said earphone means, and including at least one pair of coupled first MOS transistor means defining an input for said amplifier-drive circuit means for receiving the amplified signal produced by said amplifier means, and a second P-channel transistor coupled in series with one of said first MOS transistor means, the junction between said second P-channel MOS transistor means and said first-transistor means of said pair being coupled to said P-channel drive transistor means, and a second N-channel transistor means coupled to the other first transistor means of said pair of transistor means defining said input, the junction therebetween being coupled to the gate electrode of said N-channel drive transistor.

4,068,091

BINAURAL SOUND PICKUP

Toshitada Doi, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 9, 1976, Ser. No. 703,791
Claims priority, application Japan, July 30, 1975, 50-92899
Int. Cl.² H04R 5/00
U.S. Cl. 179—1 G 14 Claims



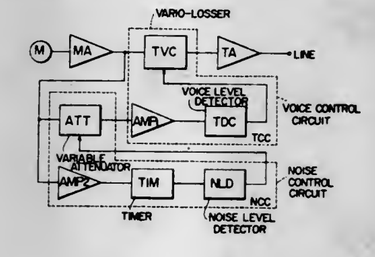
1. A binaural sound pickup assembly comprising:
a first member formed of a conical member having a large-diameter portion and a small-diameter portion, said large- and small-diameter portions being coupled with a continuous surface;
a second member projecting from the large-diameter portion of said first member toward its outer peripheral direction; and
microphone mounting means for supporting a pair of microphones which are located at both sides of said first member opposing to said second member.

4,068,092

VOICE CONTROL CIRCUIT

Kazuo Ikoma; Hidetomo Takeda; Tadashi Kudou, and Shigeya Kuriki, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sept. 22, 1975, Ser. No. 615,705
Claims priority, application Japan, Nov. 8, 1974, 49-128104
Int. Cl.² H03G 3/30
U.S. Cl. 179—1 VL 1 Claim



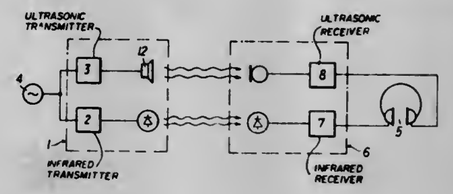
1. In a voice control circuit of the type comprising a variolosser circuit connected in series with a signal line, and a voice level detecting circuit responsive to the presence of a voice signal having a level above a predetermined threshold value for operating said variolosser circuit, the improvement which comprises a noise control circuit connected on the input side of said voice level detecting circuit, said noise control circuit including a timer which determines as noise the input signal having a constant amplitude and persisting for greater than a predetermined interval thereby detecting the presence of the noise applied to said signal line concurrently with the voice signal, a noise level detector connected to the output of said timer, and a variable attenuator connected on the input side of said voice level detecting circuit and constituted by a plurality of transistor switches controlled by the output from said noise level detector thereby attenuating a signal to said voice level detecting circuit at a value proportional to the level of the input signal, said noise control circuit further comprising a plurality of sets of a timer and a noise level detector, said sets having different operating points and being respectively connected to said plurality of transistor switches, thus producing stepwisely varying attenuation.

4,068,093

DEVICE FOR TRANSMITTING AUDIO-FREQUENCY SIGNALS

Werner Fidi, Baden, Austria, assignor to AKG Akustische U. Kino-Gerate Gesellschaft m.b.H., Austria

Filed Sept. 27, 1976, Ser. No. 727,252
Claims priority, application Austria, Sept. 30, 1975, 7472/75
Int. Cl.² H04R 5/00
U.S. Cl. 179—1 GP 9 Claims



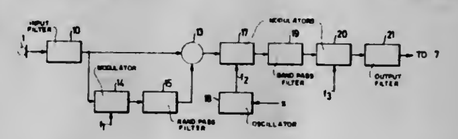
1. An arrangement for transforming acoustic events, in the form of single-channel audio-frequency signals, into at least two-channel audio information, and in which arrangement the monophonic audio-frequency signals are supplied to a reproducing device, with unequal delays, through the at least two channels, said arrangement comprising, in combination, a transmitting device operating on the wireless principle and including at least one infrared transmitter, at least one ultrasonic transmitter, and means operable to simultaneously modulate the transmitters with the same monophonic audio-frequency signals; and a reproducing device operating on the wireless principle and including at least one infrared receiver and at least one ultrasonic receiver; whereby, due to the unequal respective velocities of propagation of infrared energy and ultrasonic energy in free air, the signals transmitted as modulated ultrasonic energy are received and reproduced with a delay relative to the signals transmitted by modulated infrared energy.

4,068,094

METHOD AND APPARATUS FOR THE SCRAMBLED TRANSMISSION OF SPOKEN INFORMATION VIA A TELEPHONY CHANNEL

Pierre Schmid, Oberweningen; Eduard Brunner, Oberengstringen, and Walter Stofer, Buchs, all of Switzerland, assignors to Gretag Aktiengesellschaft, Basel, Switzerland

Continuation of Ser. No. 441,865, Feb. 12, 1974, abandoned.
This application Feb. 24, 1976, Ser. No. 660,925
Claims priority, application Switzerland, Feb. 13, 1973, 2026/73
Int. Cl.² H04K 1/00, 1/04
U.S. Cl. 179—1.5 R 32 Claims



1. A method for scrambling, transmitting, receiving and unscrambling speech information, comprising scrambling the speech information with respect to frequency so as to produce an intermediate signal by selecting a given band of frequencies from the speech information, generating a first control signal,

dividing said given band into two complementary subbands having a band width ratio which varies as a function of the first control signal and exchanging the subbands within said given frequency band;

scrambling the thus produced intermediate signal with respect to time so as to produce a further scrambled signal by deducing at least one echo signal from the intermediate signal and adding it to the intermediate signal with time lags;

transmitting the further scrambled signal via a telephony channel and receiving it;

unscrambling the received signal with respect to time so as to recover the intermediate signal by providing time lags so as to recover the echo signal from the received signal and subtracting the echo signal from the latter; and

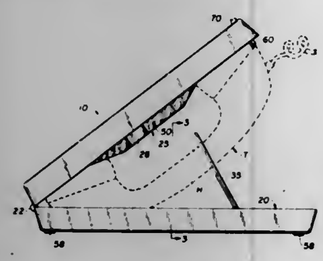
unscrambling the thus recovered intermediate signal with respect to frequency so as to recover the speech information by generating a second control signal identical to the first control signal and submitting the intermediate signal to the same steps as the speech information was submitted to when scrambled to produce the intermediate signal, thereby using said second control signal instead of said first control signal.

4,068,095

PORTABLE TERMINAL WITH SELF-CONTAINED COLLAPSIBLE STAND

Kristine D. Ghormley, Menlo Park, and Mark H. Georgia, Oakland, both of Calif., assignors to Spencer Cleveland, San Francisco, Calif.

Filed Apr. 4, 1977, Ser. No. 784,195
Int. Cl.² H04M *11/00*
U.S. Cl. 179—2 DP **12 Claims**



1. A portable terminal for use with a telephone handset, said terminal comprising:

first housing means having a top portion incorporating a manually operable keyboard and a visible character generator, and a bottom portion incorporating an acoustical coupler means for removably receiving a telephone handset;

second housing means having a top portion incorporating a spring-loaded telephone handset cradle means for supporting a telephone handset received by said coupler means when said cradle means is in a operative position; and

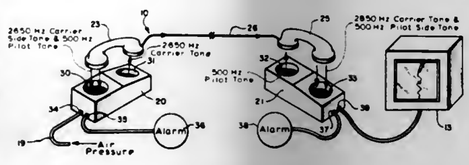
means for pivotally intercoupling said first and second housing means to enable said portable terminal to be manipulated between a closed position in which said cradle means is retracted and an open position in which said cradle means is extended to said operative position.

4,068,096

PRESSURE MONITORING SYSTEM

Christen C. Rattenborg, Chicago, and Raymond J. Mikula, Evanston, both of Ill., assignors to Continental IL National Bank and Trust Co., Chicago, Ill.

Filed June 16, 1976, Ser. No. 696,579
Int. Cl.² H04M *11/04*
U.S. Cl. 179—2 A **4 Claims**



1. A system for monitoring over an audio transmission channel at a first location a pressure-variable condition existing at a second location, said system comprising, in combination:

means including a transducer at said second location responsive to said pressure condition for generating within a predetermined frequency band a frequency-modulated output signal indicative of said pressure-variable condition;

first output coupling means at said second location for applying said frequency-modulated output signal to said transmission channel;

pilot tone generating means at said first location for generating a continuous pilot signal outside of said predetermined frequency range;

second output coupling means at said first location for applying said pilot signal to said transmission channel;

first input coupling means at said first location for deriving said frequency-modulated output signal and said pilot tone signal from said transmission channel;

demodulating means at said first location for developing from said derived output signal an analog output signal indicative of said pressure-variable condition;

first alarm means at said first location responsive to said derived pilot tone signal for generating an alarm in the absence of said pilot tone signal;

second input coupling means at said second location for deriving said pilot tone from said transmission channel; and

second alarm means at said second location responsive to said derived pilot tone signal for generating an alarm at said second location in the absence of said pilot tone.

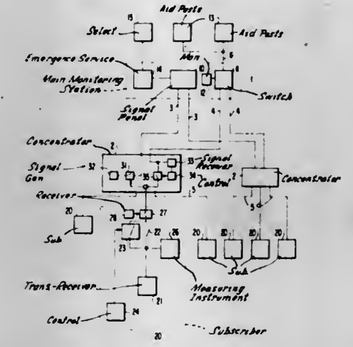
4,068,097

REMOTE MONITORING SYSTEM

Albert H. L. Verriest, 33 rue de l'Orient, 1040 Brussels, Belgium

Filed July 22, 1976, Ser. No. 707,587
Claims priority, application France, July 22, 1975, 75.22815; July 16, 1976, 76.21860
Int. Cl.² H04M *11/00*
U.S. Cl. 179—2 A **5 Claims**

1. A remote monitoring system comprising: a monitoring station, a plurality of subscriber telephone sets each having transmit-receive means and a hook-switch for connecting said transmit-receive means to an individual telephone line, at least one concentrator to which said telephone lines from the subscriber telephone sets are connected, said concentrator being connected to the monitoring station through a signalling line and a conversation line, said concentrator comprising, for each of said telephone lines connected thereto, a signal generator means for generating a respective identification signal, first switching means arranged for connecting the signal generator means to the signalling line in response to an alarm signal from the subscriber telephone set, and second switching means arranged for connecting the respective telephone line to the conversation line in response to a control signal from the monitoring station; and each subscriber telephone set further comprising third switching means connected in parallel with said hook-switch, control device means responsive to external excitation for actuating said second switching means to short circuit the hook-switch and thereby put the telephone set in the off-hook condition without the hook-switch having been manually actuated, fourth switching means connected in series



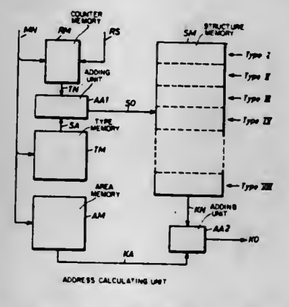
between the hook-switch and the telephone line, said fourth switching means normally closed, and signal receiver means adapted to produce a control signal for actuating said fourth switching means in response to an excitation signal from a remote sender unit, thereby to disconnect the subscriber telephone set from the telephone during a short time and transmit an alarm signal.

4,068,098

METHOD OF AND ARRANGEMENT FOR ADDRESSING A SWITCH MEMORY IN A TRANSIT EXCHANGE FOR SYNCHRONOUS DATA SIGNALS

Per-Olof Thyselius, Tyreso, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 30, 1976, Ser. No. 654,021
Claims priority, application Sweden, Feb. 14, 1975, 7501678
Int. Cl.² H04J *3/16, 11/04*
U.S. Cl. 179—15 BV **2 Claims**



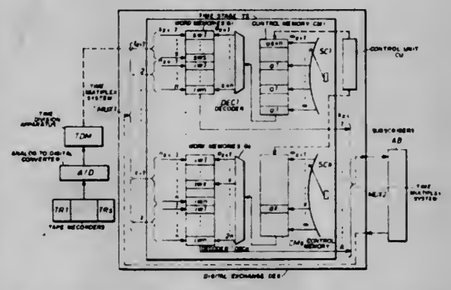
1. A method of economically addressing memory positions in a switch memory of a transit exchange for the transfer of synchronous data signals in incoming data channels received by incoming TDM-links to outgoing data channels transmitted on outgoing TDM-links which transfer data having several data rates that are multiples of a basic rate derived from the number of time slots in a TDM frame, the transit exchange including a switch memory for storage of incoming data signals in memory positions, each of which is assigned to one of the incoming data channels in the incoming TDM-links, and a buffer memory to which the data signals are transferred from said switch memory and stored in memory positions assigned to the time slots belonging to the respective outgoing data channels on the outgoing TDM-links before they are sent via these links, the writing as well as the reading occurring at a repetition rate determined by the data rate of the respective channels, said method comprising the steps of identifying the incoming TDM-link, deriving from the identification of the incoming TDM-link a data rate-type designation, the type designation being common to several links, deriving structure information in correspondence with said type designation, the structure information indicating the allocation of time slots to the various data channels of the respective link, and storing the incoming data signals in said memory positions of said switch memory in accordance with said structure information.

4,068,099

METHOD OF AND APPARATUS FOR SWITCHING SERVICE INFORMATION UNITS IN A TDM SYSTEM

Osmo Arvid Ilmari Mikkola, Tyreso, and Staffan Anders Emil Braugenhardt, Skarholmen, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed May 21, 1976, Ser. No. 688,923
Claims priority, application Sweden, June 13, 1975, 7506811
Int. Cl.² H04M *3/42;* H04J *3/02*
U.S. Cl. 179—15 AT **9 Claims**



1. In a telecommunication system a method for switching at least one service information referring to a special service to a number of subscribers whose telephone sets are connectible to a time division multiplex system in order to transfer during allotted time slots digital words, including digital information words, which previously have been stored periodically and by groups, said method comprising the steps of converting the service information periodically into digital service words, the form of which corresponds to the form of said information words, storing the service words in the same way as the information words, allotting an idle one of said time slots to each of the subscriber who calls the special service, and accessing during said time slot an address by means of which a stored service word is read and transferred to said time division multiplex system.

4,068,100

METHOD AND APPARATUS FOR TRANSMITTING AND RECEIVING AMPLITUDE MODULATED STEREO

Thomas F. Thompson, Eugene, Oreg., assignor to Pacific Northwest Broadcasting Corporation, Eugene, Oreg.

Continuation of Ser. No. 564,805, April 3, 1975, abandoned, which is a continuation of Ser. No. 437,012, Jan. 28, 1974, abandoned, which is a continuation of Ser. No. 266,513, June 22, 1972, abandoned, which is a continuation of Ser. No. 879,079, Nov. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 618,373, Feb. 24, 1967, abandoned. This application Dec. 13, 1976, Ser. No. 749,907
Int. Cl.² H04H *5/00*
U.S. Cl. 179—15 BT **6 Claims**

1. The method of transmitting amplitude modulated stereo, comprising:

a. generating a radio frequency carrier signal,

b. amplifying said carrier signal,

c. coupling said amplified carrier signal to a transmitting

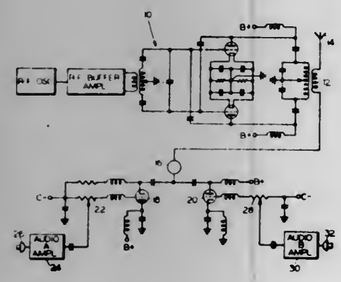
antenna to produce radio frequency current flow between said antenna and its ground.

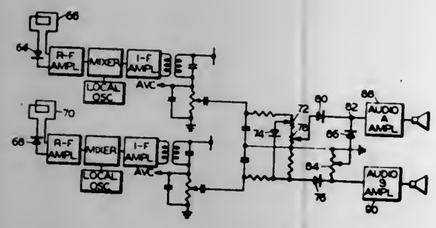
d. utilizing the positive half cycles only said radio frequency antenna current to activate a first modulator connected to a source of first audio frequency intelligence signals, thereby amplitude modulating the positive half cycles of said antenna current with a first audio frequency intelligence signal, and

e. utilizing the negative half cycles only of said radio frequency antenna current to activate a second modulator connected to a source of second audio frequency intelligence signals, thereby amplitude modulating the negative half cycles of said antenna current with a second audio frequency intelligence signal,

f. thereby transmitting the modulated carrier signal.

2. The method of receiving a transmitted amplitude modulated radio frequency carrier signal produced by modulating the positive and negative half cycles of a transmitting antenna





radio frequency current each with different audio frequency intelligence signals, the method comprising:

a. providing a first amplitude modulated receiving antenna circuit including a corresponding first receiving antenna with means in said first receiving antenna for allowing radio frequency current to flow in one direction only, whereby to be responsive only to one of the audio frequency intelligence signals,

b. providing a second amplitude modulated receiving antenna circuit including a corresponding second receiving antenna with means in said second receiving antenna for allowing the radio frequency current to flow in the opposite direction only, whereby to be responsive only to the other of said audio frequency intelligence signals,

c. amplifying the two audio frequency intelligence signals separately, and

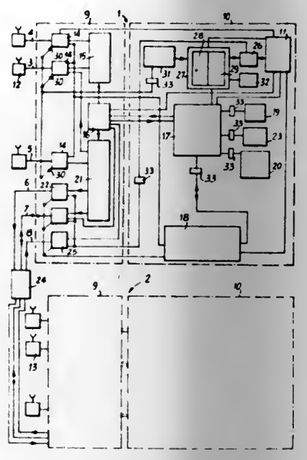
d. applying the two amplified audio frequency intelligence signals to separate audio speakers.

4,068,101

METHOD AND APPARATUS FOR THE AUTOMATIC COMMUNICATION OF TWO TELEPHONE SUBSCRIBERS

Auguste Marie Chemarin, 10, rue de Mezieres, Paris 6eme, France

Filed Apr. 7, 1976, Ser. No. 674,330
Claims priority, application France, Apr. 10, 1975, 75.11155
Int. Cl.² H04M *3/48*
U.S. Cl. 179—18 BG **7 Claims**



1. A method for the automatic communication of two telephone subscribers whose respective telephones are connected to different exchanges, wherein a caller subscriber calls a called subscriber, including the steps of: first testing whether the called is engaged; transferring the identities of the caller and the called from the caller's exchange to the called's exchange responsive to said first testing indicating the called is engaged, said transferring permiting the disconnection of the two exchanges; second testing by the called's exchange for indicating line freedom of the called's line; calling back the caller by the called's exchange responsive to said second testing indicating that the called's line is free; and repeating said first testing step responsive to the step of calling back the caller by the called's exchange, said repeating occurring with the "called" changing status to that of the "caller," and the "caller" changing status to that of the "called. "

4,068,102

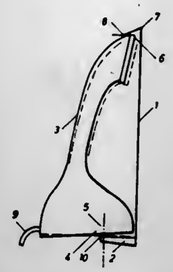
WALL-STAND FOR TELEPHONE SETS OF STANDING HANDSET TYPE

Knut Hugo Blomberg, Bromma, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Nov. 8, 1976, Ser. No. 739,720
Claims priority, application Sweden, Nov. 28, 1975, 7513460
Int. Cl.² H04M *1/11*
U.S. Cl. 179—146 R **3 Claims**

1. A wall bracket for a one-piece telephone having a flat base with a transmitter in the base and a receiver at the end of an upright portion extending upward from the base, said wall bracket comprising a casing suitable for fastening to a wall a shelf in one end of said casing for supporting a portion of the flat base of the telephone, the shelf having a depth such that when the base of the telephone is on the shelf the center of gravity of the telephone is located outwards beyond the shelf whereby the telephone if further unsupported will rotate about an axis defined by an edge of the shelf, and a roof member in the other end of said casing which extends outwardly and downwardly toward said shelf, the spacing between said shelf and said roof member being such that when said telephone is upright the telephone can freely pass between said shelf and

said roof member, but when after the base telephone is on said shelf and the receiver under said roof member and the telephone begins to rotate about said axis away from said casing



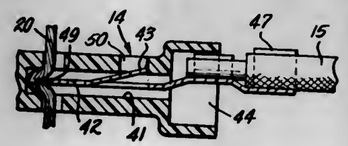
the receiver end of said upright portion abuts the roof member to prevent further rotation of the telephone whereby the telephone is fixedly supported between said shelf and said roof member.

4,068,103

LOUDSPEAKER SOLDERLESS CONNECTOR SYSTEM AND METHOD OF SETTING CORRECT PIGTAIL LENGTH

John A. King, Mentor, Ohio, and Gerald Elloit Murphy, II, Kalamazoo, Mich., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed June 5, 1975, Ser. No. 583,909
Int. Cl.² H04R *9/02, 31/00*
U.S. Cl. 179—115.5 VC **7 Claims**





1. A moving coil loudspeaker having a solderless electrical connector assembly, wherein said connector comprises:

nonconductive terminal receptacles having a cavity to allow insertion of a blade;

a blade connector for each receptacle with each connector having a front end and a back end and being fastened at its back end to a lead going to the signal power source for said coil;

a detent in each of said receptacles;

a detent projection on each terminal blade to provide a lock fit of the terminal blades in the receptacles; and

slots in the terminal receptacle suitably positioned to accept and align flexible moving leads which join the moving coil with the connector assembly so that upon insertion of each terminal blade, the flexible moving leads will be mechanically secured in the transverse direction in the terminal receptacle in a compressed state, each lead being pinched between the front end of a blade connector and its cooperating terminal receptacle thereby insuring a low electrical resistance contact between the flexible moving leads and the terminal blades without a need for solder or other mechanical connecting means.

7. A method for adjusting the length and for securing the flexible moving electrical input leads of a moving coil loudspeaker which are joined at one end to fixed locations on the diaphragm of the speaker in order to be connected to a signal power source for energizing the voice coil comprising:

providing a solderless connector in secured relation to the back of the loudspeaker;

said solderless connector comprising terminal receptacles having a cavity to allow insertion of a blade at each end, a blade connector for each receptacle and each connector fastened at its back end to a lead going to the signal power source plus a voice coil, a detent in each of said receptacles, a detent projection on each terminal blade to provide a locked fit of the terminal blades in the receptacles;

lacing said moving leads into said cavity;

inserting a dressing fixture having a suitable size and secured relationship to the back of the loudspeaker;

pulling said flexible leads taut while inserting the blade of each connector so that detent on the blade locks into solderless terminal blocks; and

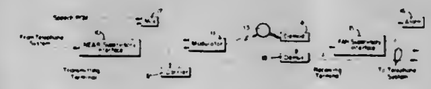
removing said dressing fixture.

4,068,104

INTERFACE FOR IN BAND SCPC SUPERVISORY AND SIGNALLING SYSTEM

Andrew Werth, Silver Spring, and Harold Lieberman, Jefferson, both of Md., assignors to Digital Communications Corporation, Gaithersburg, Md.

Filed May 14, 1976, Ser. No. 686,968
Int. Cl.² H04B *3/46*
U.S. Cl. 179—175.3 R **23 Claims**



1. In band supervisory and signaling interface for a single channel per carrier communication system including at least a pair of geographically separated stations communicating through a single communication link including a single modulator-demodulator pair coupled through a remote relay comprising, at a one of said stations,

a terminal for connection to a conventional telephone line,

detecting means connected to said terminal for detecting on-hook or off-hook status of said line,

timing means responsive to said detecting means for producing a timing signal at the termination of a timing period in which said line status remains on-hook,

first means connected to said timing means and to said detecting means for producing a unique signal in response to said timing means indicative of line status,

the output of said first means coupled to said modulator for transmission of said unique signal.

4,068,105

CENTRAL STATION SYSTEM TRANSMISSION APPARATUS

Prem Prakash Jain, Merrifield, Va., and James John Bernitt, Stamford, Conn., assignors to American District Telegraph Company, Jersey City, N.J.

Filed May 28, 1976, Ser. No. 690,992
Int. Cl.² H04B *3/46*
U.S. Cl. 179—175.3 R **39 Claims**

1. In a central station system for operation under normal

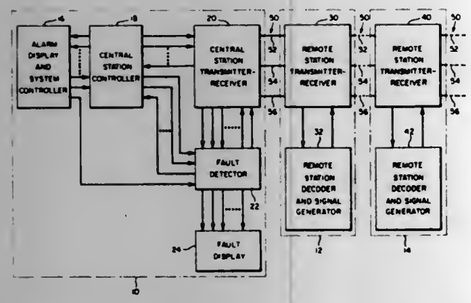
transmission line conditions in which there are no disabling transmission line faults, said system including a central station and at least one remote station, apparatus for transmitting information between the central and remote stations comprising:

first and second signal conductors connected in parallel between the central and remote stations;

first and second central station transmitter means for respectively applying first and second signals to said first and second conductors when information is to be transmitted from the central station to the remote station, each of said first and second signals being representative of the information to be transmitted, said first and second signals being respectively characterized by first and opposite second polarities with respect to a reference potential;

first and second remote station receiver means for respectively detecting signals of said first and second polarities respectively applied to said first and second conductors and for producing an output signal representative of either of said signals;

first and second remote station transmitter means for respectively applying third and fourth signals to said first and second conductors when information is to be transmitted from the remote station to the central station, each of said third and fourth signals being representative of the information to be transmitted, said third and fourth signals being respectively characterized by said second and first polarities; and



first and second central station receiver means for respectively detecting signals of said second and first polarities respectively applied to said first and second conductors and for producing an output signal representative of either of said signals.

13. In a central station system including a central station and at least one remote station, apparatus for transmitting information from the remote station to the central station comprising:

a reference potential source associated with the central station;

first and second potential sources associated with the central station respectively characterized by positive and negative polarities with respect to said reference potential;

first, second, and third conductors connected in parallel between the central and remote stations, said conductors being respectively connected to said first, second, and reference potential sources at the central station;

transmitter means associated with the remote station for selectively connecting said first and second conductors to said third conductor to cause substantially equal and opposite currents to flow in said first and second conductors when information is to be transmitted from the remote station to the central station, the currents in each of said conductors being representative of the information to be transmitted, and

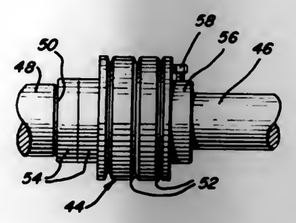
receiver means associated with the central station for detecting the currents flowing in either of said first and second conductors to produce an output signal representative of the information transmitted from the remote station.

4,068,106

WELDING APPARATUS

John Shaputis, Rte. 1, 115 Muskie Trail, Morris, Ill. 60450

Filed Oct. 15, 1976, Ser. No. 732,586
Int. Cl.² B23K 9/12
U.S. Cl. 219—137.2 5 Claims



1. In a welding apparatus for utilizing a consumable filler wire to produce a weld on a workpiece, a drive feed roller assembly for advancing the consumable filler wire to a nozzle, comprising:

a rotatable drive shaft;

a plurality of individual roller segments mounted axially on said drive shaft in a side-by-side abutting arrangement and generally concentric with the axis of rotation thereof for rotation therewith, each roller segment having a generally concentric peripheral groove for engaging and advancing the consumable filler wire for advancement to said nozzle, and each roller segment being removable from the drive shaft for selectively interchanging the roller segments in different side-by-side arrangements on the drive shaft to permit placement of any one of the roller segments in position for engaging the filler wire;

an enlarged portion on said drive shaft defining a shoulder against which an end one of said side-by-side roller segments abuts;

means for holding the roller segments axially on the drive shaft in any side-by-side arrangement; and

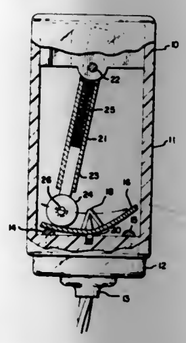
back-up roller means for engaging the filler wire on a side thereof opposite said roller segments to maintain the filler wire in engagement with the groove of a properly positioned one of said roller segments.

4,068,107

SWITCH HAVING ENERGY-EFFICIENT STRUCTURAL CONFIGURATION

Edward H. Key, 910 E. Illinois St., Wheaton, Ill. 60187

Filed Feb. 17, 1976, Ser. No. 658,616
Int. Cl.² H01H 13/28
U.S. Cl. 200—67 G 2 Claims



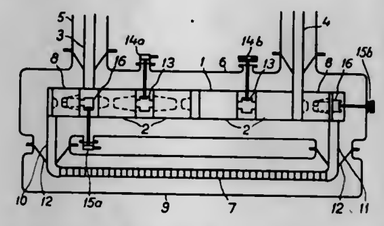
1. An improvement to an electrical switch comprising a support, a pair of fixed contacts thereon, a switch actuating rocker platen pivotally mounted on said support for laternate pivotal movement into and out of engagement with said fixed contacts, actuator means for pivoting the platen into and out of engagement, said actuator means comprising a pivoted lever, spring-biased plunger means on said lever and engaging said switch actuating rocker platen for movement thereon, whereby said platen rocks around the axis of its pivotal mounting to alternately engage with one of each of said fixed contacts, wherein the spring-biased plunger means comprises a roller, bearing on and adapted to ride over said platen, and rotatably attached to said pivoted lever at the roller's center of rotation; the improvement wherein said platen is pivotally mounted at a point above the surface on which said roller rides and further wherein the radius of said roller equals the vertical distance from said platen to said point of pivitol mounting so that the center of rotation of said roller passes through the axis of the pivot point of said platen.

4,068,108

ENCLOSED HIGH VOLTAGE CIRCUIT BREAKER

Sten Berneryd, and Per-Olof Grune, both of Ludvika, Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Sept. 4, 1975, Ser. No. 610,434
Claims priority, application Sweden, Oct. 1, 1974, 7412320
Int. Cl.² H01H 33/22, 33/16
U.S. Cl. 200—148 B 5 Claims



1. An enclosed high voltage circuit breaker of the two-pressure type having means for controlling breaking and closing operations, comprising:

a high pressure chamber and a low pressure chamber;

said high pressure chamber containing a gaseous insulating and arc-extinguishing medium comprising a fluorine containing compound, and including main breaking gaps mounted therein;

at least one blast valve for interconnecting said high pressure chamber with said low pressure chamber during breaking operation;

a tank isolated from said low pressure chamber and said high pressure chamber, and including a closing resistor mounted therein; and

said high pressure chamber further including contact means for connecting said closing resistor in parallel with said main breaking gaps during closing operation.

4,068,109

MANUAL OPERATOR FOR A PUSHBUTTON CONTROL DEVICE

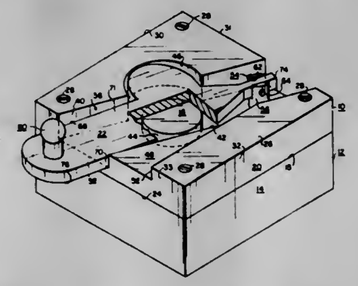
Donald S. B. Hall, Clarksville, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 2, 1976, Ser. No. 702,256
Int. Cl.² H01H 3/20
U.S. Cl. 200—332 5 Claims

1. A control device including a reciprocally movable pushbutton extending through a front face thereof, said pushbutton normally having an extended deactivating position and being depressable to assume an activating position, said control device further including a manual operator for selectively engaging and depressing said pushbutton wherein said manual operator comprises:

a cover including a front and a rear, said rear being mounted over said front face of said control device, said front including a predetermined shaped bottom surface terminating at one side at a sidewall and defining a protected space thereabove and surrounding a hole through the cover rear receiving said pushbutton, said side wall extending to a predetermined height above the activating position of said pushbutton and terminating at a stop surface extending away from said pushbutton at said predetermined height adjacent said bottom surface; and

an actuator having a shape complementary to said bottom surface so as to be receivable within said protected space surrounding said pushbutton, said actuator including first and second ends, said first end being rotationally and pivotally connected to said cover so that said second end has free-swinging lateral movement over said bottom



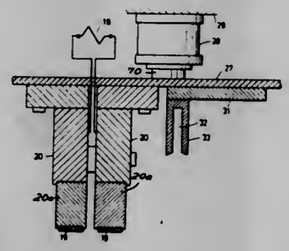
surface and pivotal movement toward and away from said bottom surface when moving between arcuately displaced operating and nonoperating positions, said nonoperating position of said actuator concurrently extending over said stop surface and covering said protected space when said pushbutton is in the normally extended position, and said operating position of said actuator being laterally spaced from said stop surface and pivotally extending into said protected space in a depressing engaged relationship with said pushbutton to effect the activating position thereof, whereby said actuator covers said pushbutton in depressed engagement when in said operating position and further covers said pushbutton in a protecting relationship when in said nonoperating position.

4,068,110

METHOD AND APPARATUS FOR THE MANUFACTURE OF WELDED GRATINGS

Rolf Gösta Larsson, Laxa, Sweden, assignor to Elektriska Svetsningsaktiebolaget, Goteborg, Sweden

Filed Mar. 23, 1976, Ser. No. 669,624
Claims priority, application Sweden, Mar. 25, 1975, 7503487
Int. Cl.² B23K 11/10
U.S. Cl. 219—56 3 Claims



1. In the method of making welded gratings, steel mats and the like composed of longitudinal members and crossbars

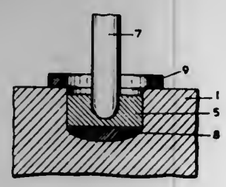
welded to said longitudinal members, in which the longitudinal members are advanced longitudinally as a plane horizontal array and the crossbars are successively applied across said array and welded two at a time to the longitudinal members in a welding station by the series spot welding process, the improved method of handling, applying and welding the crossbars which comprises:

a. providing a store of crossbars;
b. removing a first crossbar from said store to a first predetermined position at right angles to the longitudinal members of said array and located above a part of said array which is to enter the welding station, and holding said first crossbar in said predetermined position;
c. removing a second crossbar from said store to a second predetermined position above a part of the array which is to enter the welding station, said first and second positions being on a level with and parallel to each other and spaced by a predetermined spacing;
d. shifting said first and second crossbars simultaneously from said predetermined positions to the welding station along said array while maintaining said predetermined spacing between said crossbars;
e. simultaneously welding said first and said second crossbars to the longitudinal members; and
f. repeating said steps (b) to (e) for each of the successive pairs of crossbars to be included in the grating, mat or the like, said steps (b) and (c) in the handling of one pair of crossbars being carried out during the time occupied by said steps (d) and (e) in the handling of the next preceding pair of crossbars.

4,068,111
PROCESS OF WORKING IMPERFECTIONS OR DEFECTS ON GENERALLY THICKWALLED METAL WORKED-PIECES

Haas Klumpes, Klaaswaal, Netherlands, assignor to De Rotterdamsche Droogdok Maatschappij B.V., Rotterdam, Netherlands

Filed Aug. 20, 1975, Ser. No. 606,210
Int. Cl.² B23K *25/00*
U.S. Cl. 219—73.11 **2 Claims**

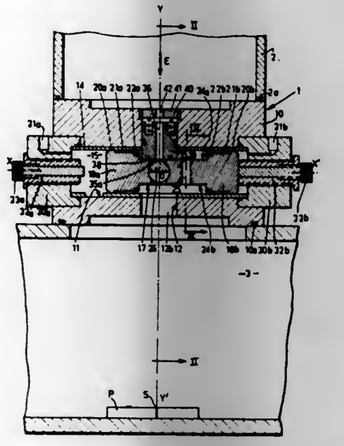


1. A process of repairing imperfections or defects forming cavities in generally thick-walled, metal work-pieces comprising the steps of, machining the surface of the work-piece to remove therefrom metal contiguous to the defect cavity and thereby form a cavity having a smooth, continuous, rounded-off wall surface, introducing a selected quantity of slag powder in said cavity, resistance heating the slag powder in said cavity by the passage of an electric current from an electrode of non-consumable material extending partially into said slag powder to form a molten slag in said cavity having a depth of 30–50mm, maintaining said molten slag in the heated condition at a temperature above the melting temperature of the metal work-piece to permit the material of said cavity wall surface to reach its melting temperature and to preheat the metal of the work-piece in the vicinity of the cavity, quickly replacing the non-consumable electrode with an electrode of consumable material having the same composition as that of the work-piece, partially immersing said consumable electrode centrally within said molten slag and passing a current through said consumable electrode and said molten slag to said work-piece of an intensity for melting said consumable electrode so that the molten metal from said consumable electrode is deposited into said cavity through said molten slag to fill said cavity with a continuous, metallically equivalent transition between the molten metal deposited in said cavity and the cavity wall surface.

4,068,112
VALVE FOR AN ELECTRON BOMBARDMENT WELDING MACHINE AND MACHINE FITTED WITH SUCH VALVE

Gerard Marhic, Chaumont-en-Vexin, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 9, 1976, Ser. No. 712,895
Claims priority, application France, Aug. 26, 1975, 75.26205
Int. Cl.² B23K *15/00*
U.S. Cl. 219—121 EB **13 Claims**

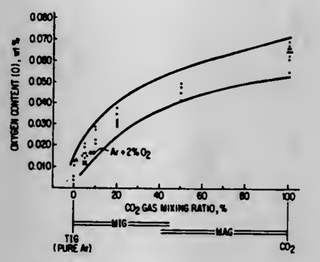


1. A vacuum isolating valve for an electron-bombardment welding machine which is of the kind comprising a welding enclosure to receive parts to be welded, a gun to emit an electron beam and focus it on said parts, a gun housing to house said gun, and means for generating a vacuum in both said enclosure and said gun housing, said valve being adapted to occupy an open, welding position in which it establishes communication between said enclosure and said gun housing to allow electrons to pass to said parts to be welded, and a closed position in which it terminates said communication to permit said vacuum in said enclosure to be interrupted, said valve comprising a valve body provided with a chamber which communicates, via opposing orifices co-axial with the electron beam when established, with said gun housing and with said enclosure, a slidable member which slides in said chamber perpendicularly to the electron beam and which is provided with a contact face which rests in sealed relation against one of said orifices, said slidable member having a straight passage therethrough perpendicular to the direction of the sliding movement of said slidable member, said passage opening onto said contact face and coming into line with said orifices when said valve occupies said open position, first and second heads disposed at opposite ends of said slidable member interconnected by a rod containing said contact face, an end portion of each said head being in direct contact with the wall of said chamber, the remaining portion of each head disposed between said end portion thereof and said rod being of smaller diameter than said end portion, sealing means disposed on said remaining portion of each head in contact with said wall of said chamber and located a distance from said end portion, which distance is greater than the distance through which said slidable member moves between open and closed valve positions, and means employing fluid to move said slidable member between said open and closed position.

4,068,113
BARE ELECTRODE FOR WELDING OF LOW TEMPERATURE STEEL

Tomokazu Godai, Kamakura; Isao Aida, Fujisawa, and Masatoshi Nakagaki, Yokohama, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Nov. 26, 1975, Ser. No. 635,321
Claims priority, application Japan, Nov. 27, 1974, 49-135522
Int. Cl.² B23K *35/30*
U.S. Cl. 219—146.23 **8 Claims**



1. A bare welding electrode of a diameter of at least 3.0 mm for use in a large current gas shielded arc welding process in which steel for low temperature use is welded by a welding current of at least 500 amps in shielding gas composed mainly of an inert gas, said electrode consisting essentially of 0.04 to 0.07 wt. % C, up to 0.8 wt. % Si, up to 3.0 wt. % Mn, up to 0.19 wt. % Ti, 0.04 – 1.34 wt. % of at least one member selected from the group consisting of Ni, Cr, and Mo, and the balance iron and impurities, and wherein the carbon equivalent (Ceq) of said electrode ranges from 0.44 to 0.55 wt. % and is represented by the formula:

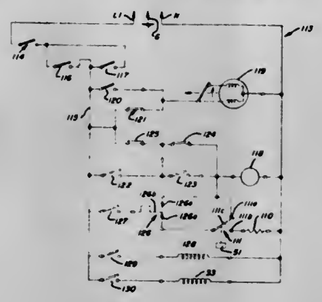
$$Ceq = C + 1/6\,Mn + 1/24\,Si + 1/40\,Ni + 1/5\,Cr + 1/4\,Mo.$$

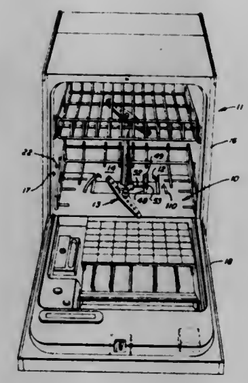
4,068,114
HEATER SAFETY CONTROL

Philip P. Johnson, St. Joseph, and Clifford L. DeSchaaf, Stevensville, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 6, 1976, Ser. No. 683,951
Int. Cl.² F24H *1/00*
U.S. Cl. 219—333 **19 Claims**

1. In an apparatus having a liquid holder receptacle, fill means for delivering liquid to the receptacle from a pressurized supply, and heater means for heating liquid in the receptacle, improved control means for controlling the operation of the fill means and the heater means, comprising: level sensing means for sensing the volume of liquid in said receptacle; timer means for controlling the fill means to provide a preselected filling of the receptacle to a preselected level above a full level and cyclically energizing said heater means; means responsive to said level sensing means for preventing delivery of liquid to said receptacle whenever said sensed liquid volume is above said full level; and switch means further responsive to said level sensing means for preventing energization of said heater means by said timer means whenever said sensed liquid volume is below a preselected minimum below said full level.





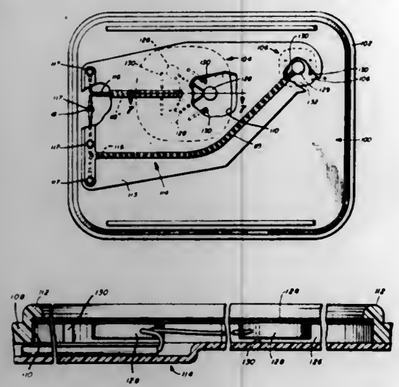
4,068,115
FOOD SERVING TRAY

Anthony C. Mack, North Reading, and George K. Shumrak, Natick, both of Mass., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Continuation-in-part of Ser. No. 468,404, May 9, 1974, Pat. No. 3,924,100. This application July 17, 1975, Ser. No. 596,969
Int. Cl.² F27D *11/02*
U.S. Cl. 219—386 **18 Claims**

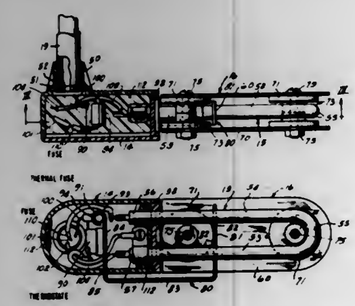
1. A food serving tray comprising
a horizontal support comprising a thermally and electrically insulating material and an upturned edge portion,
an opening in the support generally corresponding in size to the bottom surface of a food container,
a circuit assembly base secured to the bottom of the support and aligned with the opening,
a disc on the tray made of good heat conductive material and generally conforming in shape to the opening and aligned with the opening, said disc and base forming a closed cavity in the tray with the disc forming a portion of a top surface of said tray and being secured to the tray,
an electric heating element secured to the tray in the cavity and in contact with the bottom surface of the heat conductive disc and with its bottom spaced from the base and lying in the cavity,

and electrical contacts in the tray and electrically connected to the electric heating element by conductors in the cavity



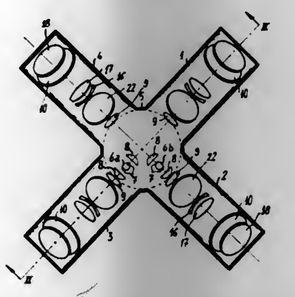
for carrying energy to the electric heating element to energize it.

4,068,116
THERMOSTATICALLY PROTECTED ELECTRIC IMMERSION WATER HEATER
James E. McKinstry, Cedar Rapids, Iowa, assignor to Nelson Manufacturing Company, Cedar Rapids, Iowa
Filed Dec. 9, 1975, Ser. No. 639,180
Int. Cl.² H05B 1/02, 3/80; A01K 7/00
U.S. Cl. 219—523 **1 Claim**



1. A water heater device comprising an elongated hollow conduit having an end journaled in a housing member, an immersion heating loop having ends journaled in said housing member with a looped portion projecting exteriorly of said housing member, electrical circuitry in said housing member operatively connected to said immersion heater loop and to electrical wiring entering said housing member through said conduit, said circuitry including a thermostat and a thermofuse each effective to break a circuit to said immersion loop in response to sensing of increased temperatures, a temperature conductive sensing member having a first end portion in said housing, an intermediate portion exterior of said housing and a second end portion in engagement with said immersion heating loop exterior of said housing, said thermostat and said thermofuse sensing temperatures being in heat exchange relation to said first end portion of said temperature sensing member interior of said housing, the thermostat and thermofuse being in thermally isolated relation to the loop ends, an attachment device adjustably mounted on said conduit positionable selectively along the length of said conduit, said attachment device including attachment means selectively actuatable to attach said attachment device to a top of a wall of a container with the housing and heating loop immersed in said container adjacent a bottom thereof, a guard member attached to said looped portion exterior of the said housing, the guard member including a shield having a first portion positioned above said looped portion and a second portion positioned below said looped portion, the looped portion having a bight section spaced from the housing and two substantially parallel leg portions extending from said housing to said bight section, said leg members spaced apart from one another, spool-shaped insulators received between said legs having top and bottom ends with an outer diameter greater than the distance between the legs and a central section having an outer diameter less than the distance between said legs, said shields attached to said insulators, the sensing member second end portion being in contact with both leg members.

4,068,117
LIGHTING PROJECTOR
André A. Masson, Saint-Heand, France, assignor to Etablissements Pierre Angenieux, Paris, France
Filed Jan. 14, 1977, Ser. No. 759,401
Claims priority, application France, Jan. 21, 1976, 76.01538; June 22, 1976, 76.18912
Int. Cl.² A61B 1/06
U.S. Cl. 362—33 **1 Claim**



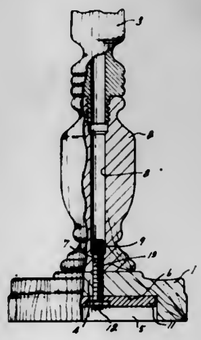
1. Lighting projector comprising a star-shaped arrangement including a plurality of basic elements of elongated configuration, rigid with a casing disposed in the central portion of said projector and extending radially from said central portion, said basic elements being distributed by pairs and in relative alignment in each pair but on either side of said central casing, a common light source being provided for the two elements of a same pair and disposed on the side of one of the two elements involved, a pair of frosted zones being disposed on either side, and in close vicinity, of said common light source, each basic element comprising a reflection mirror located at its outer end opposite said central casing and inclined towards the surface to be illuminated, and also an optical system adapted to form the image of said light source on the field to be illuminated after reflecting said image on said inclined reflection mirror.

4,068,118
ILLUMINATED OPTICAL FIBER DISPLAY SYSTEM
Lewis R. Carrington, 40 Walnut St., Berrien Springs, Mich. 49103
Filed Sept. 29, 1976, Ser. No. 727,892
Int. Cl.² A47G 33/16
U.S. Cl. 362—123 **10 Claims**

1. An illuminated optical fiber display system comprising a column having an external wall defining an elongated hollow interior, optical fiber elements each including a plurality of fibers enclosed in a sheath having an inner end extending into said wall and being supported thereby, an elongated illumination means disposed in the hollow interior of said column and having a movable translucent member through which light passes to the inner ends of said elements, said illumination means including a fluorescent light tube extending lengthwise of said hollow interior, and power means for moving said translucent member for varying the lighting characteristics emitted from the outer ends of the fibers of said elements.

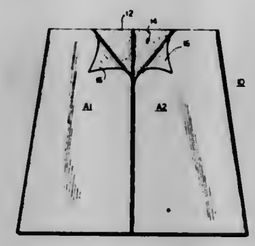


4,068,119
ELECTRICAL LAMP STAND
Germain Audet, 229, rue Lafrance, Albestos, Quebec, Canada
Filed May 11, 1976, Ser. No. 685,354
Int. Cl.² F21S 1/12, 3/10
U.S. Cl. 362—414 **3 Claims**



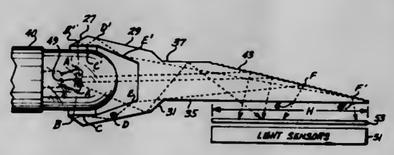
1. An electric lamp stand comprising, in combination, a first and a second lamp stand members made of wood turnings, each having a cylindrical bore extending therethrough, said first and second lamp stand members operatively abutting each other with said bores in endwise alignment and in communication with each other, the bore of said first lamp stand member having a first cylindrical portion of uniform diameter adjacent said second lamp stand member and a longer counterbore portion remote from the second lamp stand member and cooperatively forming an internal annular abutment shoulder at the junction with said first portion, a cylindrical metal nut having a knurled outer surface of a diameter slightly larger than that of said counterbore portion and pressed through said counterbore portion in frictional engagement with said counterbore portion and in abutment against said internal annular abutment shoulder, so as to be retained against rotation and against axial displacement within said counterbore portion, an externally threaded metal tube freely extending through said first bore portion and freely through the bore of said second lamp stand member and screwed at one end in said cylindrical nut, abutment means including a flat sided metal nut screwed on the other end of said metal tube with said abutment means abutting axially against said second lamp stand member, and electric wires extending through said metal tube and through said counterbore.

4,068,120
LAMP SHADE STRUCTURE AND METHOD FOR ASSEMBLING SAME
Elbert S. Throckmorton, and Norajane R. Throckmorton, both of P.O. Box 813, Sumter, S.C. 29150
Filed Oct. 22, 1976, Ser. No. 734,966
Int. Cl.² F21V 1/22
U.S. Cl. 362—351 **16 Claims**



1. A lamp shade construction comprising:
a frame having a top peripheral band, a bottom peripheral band and vertically oriented strut members extending between said bands in a predetermined shade configuration;
a sheet of flexible base material wrapped coterminously about said frame having a single lapped side seam therein;
said base material having its obverse face coated with a contact adhesive layer to provide a self-adhering side seam;
said vertically oriented strut members defining a plurality of discrete obverse surface panels therebetween;
a like plurality of conformally shaped discrete applied panels of decorative material adhered to said surface panels by said contact adhesive, adjacent pairs of said applied panels defining vertically oriented seams;
elongated seaming ribbon means adhesively secured to said applied panels coterminous with and overlying said seams to mask the latter; and
elongated border ribbon means extending around the top and bottom periphery of said shade forming top and bottom borders on said obverse surface and overlying said peripheral bands to mask the latter;
said border ribbon means being adhesively secured to said shade.

4,068,121
LIGHT COLLECTOR AND PRISM LIGHT SOURCE FOR PHOTOELECTRIC READERS
Edward D. Bringhurst, Seattle, and John L. Marshall, Renton, both of Wash., assignors to Tally Corporation, Kent, Wash.
Filed May 17, 1976, Ser. No. 686,881
Int. Cl.² G02B 5/14
U.S. Cl. 250—227 **32 Claims**



1. In a photoelectric reader including a light source, mounted such that light rays are directed toward a region whereat an apertured information medium is positioned or

passes, and light sensors, located on the side of the apertured information medium remote from the light receiving side, for receiving light passing through the apertures in the apertured information medium, the improvement comprising a light source for producing a continuous, narrow strip light beam, said light source including:

A. an elongate, integral light collector and prism having a central longitudinal axis, comprising:

1. a cone shaped collector section formed at one end of said light collector and prism, said collector section including an aperture located along said central longitudinal axis suitable for receiving a point source light emitting element, the internal surfaces of said aperture and the external surfaces of said light collector section being formed so as to collect light rays emitted by a point source light emitting element positioned in said aperture, imperfectly collimate said light rays and direct said imperfectly collimated light rays in a predetermined direction generally, but not entirely, parallel to said central longitudinal axis of said light collector and prism; and,

2. a prism section formed at the other end of said elongate, integral light collector and prism, said prism section being positioned along said central longitudinal axis so as to receive said imperfectly collimated light rays directed in a direction generally, but not entirely, parallel to said central longitudinal axis of said light collector and prism by said collector section, said prism section being elongated and including opposed stepped and narrow edges, said stepped edge including tread regions lying parallel to said central longitudinal axis and riser regions lying transverse to said central longitudinal axis, said riser regions positioned so as to receive light rays directed in a direction parallel to said central axis by said collector section and redirect said light rays outwardly through said narrow edge, said tread regions positioned so as to receive light rays directed in a direction not entirely parallel to said central longitudinal axis by said collector section and redirect said light rays outwardly through said narrow edge; and,

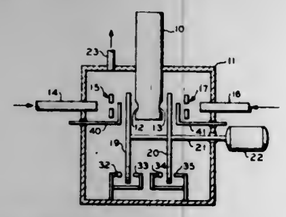
B. a point source light emitting element mounted in said aperture in said collector section of said elongate, integral light collector and prism.

4,068,122

ISOTOPE ANALYSIS

Thomas W. Schmidt, and Charles F. Cook, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 9, 1976, Ser. No. 713,001
Int. Cl.² H01J *39/34*
U.S. Cl. 250—281 **4 Claims**



1. Analysis apparatus comprising:

a mass spectrometer having an inlet adapted to receive samples of materials to be analyzed, said mass spectrometer being adapted to provide output signals representative of selected masses of constituents of samples supplied to said inlet;

means to direct a first beam of a first sample material toward said inlet;

means to direct a second beam of a second sample material toward said inlet;

first shtter means positioned in said first beam to pass said first beam to said inlet at a first predetermined frequency;

second shutter means positioned in said second beam to pass said second beam to said inlet at a second predetermined frequency which is different from said first frequency;

first and second phase sensitive detectors;

means to apply reference signals to said first and second detectors representative of passage of said first and second beams, respectively, to said inlet;

means to apply the output signal from said mass spectrometer to said first and second detectors; and

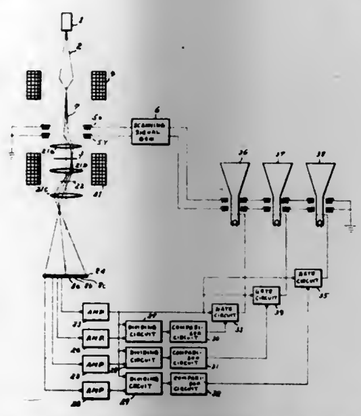
means to compare the output signals from said detectors.

4,068,123

SCANNING ELECTRON MICROSCOPE

Yasushi Kokubo, Akishima, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed July 25, 1974, Ser. No. 491,835
Claims priority, application Japan, July 27, 1973, 48-84662; Dec. 17, 1973, 48-141620
Int. Cl.² H01J *37/26*
U.S. Cl. 250—311 **3 Claims**



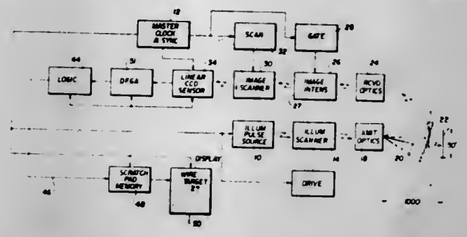
1. In a scanning electron microscope for displaying a transmitted electron image comprising an electron optical system for focusing and scanning an electron beam generated by an electron gun over a thin film specimen and a means for displaying a scanning image on a cathode-ray tube synchronized with said electron beam scanning by modulating the cathode-ray tube brightness according to the detection signal of the electrons transmitted through the specimen, the improvement comprising a plurality of annular shaped detectors whose common center coincides with the optical axis of said electron optical system for producing a plurality of output signals according to the scattering angle of the elastically scattered electrons transmitted through the specimen and a signal processing means which comprises a comparison circuit for comparing the signal ratio of two output signals of said annular detectors with a constant signal indicative of some component of the specimen and a means for controlling a gate circuit arranged between the cathode-ray tube and said annular detectors according to the output of said comparison circuit.

4,068,124

WIRE OBSTACLE WARNING SYSTEM

Alfred Kleider, Ocean, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 28, 1977, Ser. No. 763,439
Int. Cl.² G01T *1/24*
U.S. Cl. 250—332 **13 Claims**



1. A detection, location and recognition system for wire type obstacles, comprising in combination:

a pulsed source of electromagnetic energy of a frequency/-wavelength capable of being transmitted to and reflected from a wire type obstacle;

means coupled to said pulsed source and providing a scanned beam of pulsed electromagnetic energy from said source to said obstacle and receiving reflected energy therefrom;

image forming means including output means coupled to said reflected energy for generating an image of the returned energy of each beam of pulse energy on said photo output means;

a detector comprised of a linear charge coupled device (CCD) image sensor having N photosites which are adapted to be responsive to photo energy and being adapted to be serially read out to logic signal processor means;

scanning means located between said image forming means and said detector and being adapted to provide M sequential scans of said image on said photo output means to couple photo energy thereat to said linear CCD image sensor;

logic signal processor means coupled to said detector and being responsive to each sequential serial output from said linear CCD sensor to determine the presence of a charge signal at least one photosite with an absence of charge signals at photosites on either side of said at least one photosite and providing a digital output signal indicative of said charge signal;

a digital memory coupled to and synchronously operated with said processor means and being operable to store said digital output signal and the location thereof relative to said N photosites for said linear CCD sensor; and

means coupled to said memory for providing a composite output of said digital signals in said memory to provide an indication of a substantial linear arrangement of said digital signals to indicate the presence of a wire type object.

4,068,125

LASER ABSORPTION SPECTROSCOPY EMPLOYING VARYING ABSORPTION CONDITIONS

William E. Bell, Mountain View, Calif., assignor to Diax Corporation, Los Altos Hills, Calif.

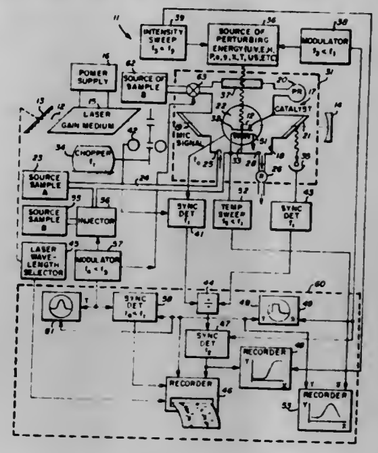
Filed Feb. 18, 1975, Ser. No. 550,519
Int. Cl.² G01J *1/00, 3/30*
U.S. Cl. 250—340 **10 Claims**

1. In a method of laser absorption spectroscopy, the steps of:

irradiating a fluid sample medium with a beam of coherent infrared optical radiation;

coupling a detector in energy exchanging relation with the fluid sample medium to detect the absorption of energy by the fluid medium from the beam of coherent infrared optical radiation;

changing an electrical field in the fluid medium to effect a corresponding change in the absorption of energy by the fluid medium from the beam of infrared radiation; and



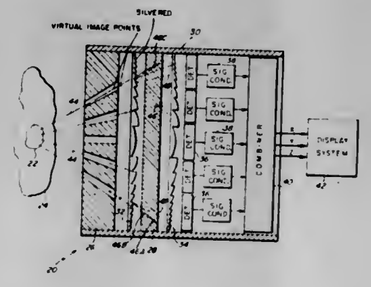
detecting resultant changes in the absorption of the infrared radiation by the fluid medium occasioned by the change in the electric field.

4,068,126

FOCUSSED RADIOGRAPHIC CAMERA

David T. Wilson, Billerica, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 22, 1976, Ser. No. 743,994
Int. Cl.² G01T *1/20*
U.S. Cl. 250—363 S **10 Claims**



1. A radiographic camera comprising:

a scintillator for producing optical photons in response to incident radiation;

means for detecting said optical photons, said detecting means signaling the positions of sources of optical photons in said scintillator; and

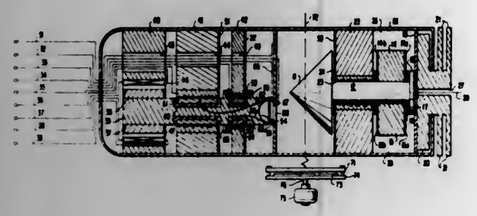
reflecting means having a series of reflecting surfaces angled relative to said collimator for directing said optical photons to said detecting means, each of said reflecting surfaces being bounded by concentric arcs.

4,068,127

X-RAY GENERATING APPARATUS COMPRISING MEANS FOR ROTATING THE FILAMENT

David J. Goodenough, Buckeystown, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed July 8, 1976, Ser. No. 703,378
Int. Cl.² A61B 6/00; H05G 1/00, 1/70
U.S. Cl. 250—402 19 Claims



11. An X-ray apparatus comprising:
an envelope;
an anode positioned within said envelope;
a cathode positioned within said envelope, said cathode being a filament having two ends to which filament current supplying connections are made and a central point midway between said ends, and being positioned in a given plane; and
means for providing a rotationally symmetric, Gaussian-like focal spot distribution, said means including means for rotating said filament, relative to said envelope, in said given plane about said central point.

4,068,128

$(Hf_{1-x}Zr_x)_3P_2O_{11}$ LUMINESCENT MATERIAL, METHOD OF PREPARATION AND X-RAY INTENSIFYING SCREEN CONTAINING SAME

Charles Frederic Chenot, Towanda; James Evan Mathers, Ulster, and Francis Nathan Shaffer, Towanda, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 30, 1976, Ser. No. 755,742
Int. Cl.² C09K 11/42
U.S. Cl. 250—483 13 Claims

1. A luminescent material having the oxide composition of 3:1 molar proportions of $(Hf_{1-x}Zr_x)O_2$: P_2O_5 and the empirical formula $(Hf_{1-x}Zr_x)_3P_2O_{11}$, where x is within the range of 0 to 0.5, said luminescent material exhibiting a peak emission at about 350 nanometers with a band width of about 70 nanometers when excited by x-rays.

4,068,129

BISMUTH ACTIVATED RARE EARTH OXYBROMIDE PHOSPHORS AND X-RAY IMAGE CONVERTERS UTILIZING SAID PHOSPHORS

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 13, 1976, Ser. No. 749,930
Int. Cl.² G01J 1/58
U.S. Cl. 250—483 7 Claims

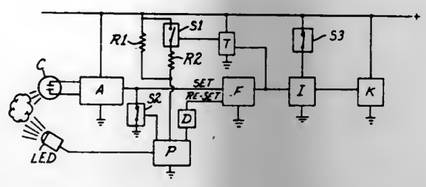
1. An X-ray image converter comprising well-formed crystals of a phosphor material having the general formula of LnOBr:Bi^{3+}wherein Ln is one or more of La and Gd, with Bi being present as an activator at a concentration level in the approximate range 0.0005 – 0.15 mole per mole of phosphor.

4,068,130

SMOKE DETECTOR WITH MEANS FOR CHANGING LIGHT PULSE FREQUENCY

William J. Malinowski, Pembroke, Mass., assignor to Chloride Incorporated, Tampa, Fla.

Filed Nov. 16, 1976, Ser. No. 742,225
Int. Cl.² G01N 21/26
U.S. Cl. 250—574 6 Claims



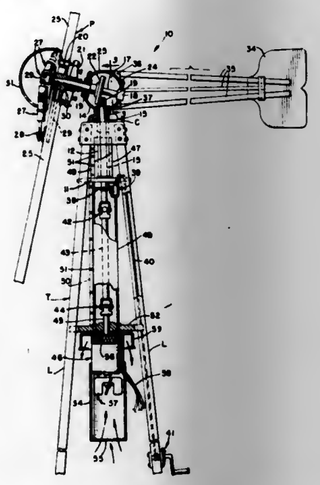
1. A detector, comprising a radiant energy-producing device pulsing at a predetermined standby rate, means for producing a signal pulse in response to the pulsed radiant energy under predetermined conditions, means responsive to a predetermined number greater than one of produced signal pulses to provide an output signal, and means responsive to a first signal pulse to substantially increase the pulsing rate for a predetermined time sufficient to produce at the increased rate at least said predetermined number of signal pulses less one.

4,068,131

WIND ELECTRIC PLANT

Marcellus L. Jacobs, and Paul R. Jacobs, both of Rte. 13, Box 722, Fort Myers, Fla. 33901

Continuation-in-part of Ser. No. 624,281, Oct. 20, 1975, abandoned. This application Dec. 31, 1975, Ser. No. 645,832
Int. Cl.² F03D 9/00
U.S. Cl. 290—55 23 Claims



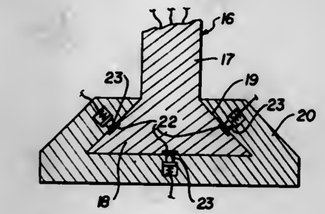
1. A wind electric plant of the type including a support tower and a multiblade, variable pitch propeller supported thereon, the improvement comprising: gear means supported on top of the tower; a propeller shaft connected to the gear means and extending forwardly therefrom at an upwardly inclined angle to horizontal and thus angularly inclined relative to the axis of the tower; multiblade, variable pitch propeller means carried on the propeller shaft upwind of the support tower for rotation in a plane angularly disposed relative to the axis of the tower and disposed substantially perpendicularly to the direction of the wind, thereby obtaining clearance between the propeller and tower and also disposing the propeller at a favorable angle of attack relative to wind direction; and a drive shaft connected at an upper end thereof to the gear means to be driven thereby and extending downwardly in the tower, said gear means connected said propeller shaft with said drive shaft such that said propeller shaft axis is laterally offset from the axis of the drive shaft, whereby said propeller is eccentrically located relative to the tower axis such that torque forces created in the gear means are offset by wind forces acting on the propeller, to prevent precession of the propeller about the tower axis.

4,068,132

WIND POWERED ELECTRICAL GENERATING PLANT

Abraham Bardekoff, 2965 Marion Ave., Bronx, N.Y. 10458

Filed Apr. 7, 1976, Ser. No. 674,629
Int. Cl.² F03D 11/04
U.S. Cl. 290—55 4 Claims



1. In a wind powered electrical generating plant, supporting means having power distributing electrical conductor means, a mounting base fixed on the supporting means and having a dovetail socket, spring urged contacts on the mounting base electrically coupled with said electrical conductor means and being in communication with said dovetail socket, a pedestal having a dovetail base engageable removably in said dovetail socket, electrical contact elements in spaced relation on faces of said dovetail base and abutting said spring urged contacts of said mounting base when the dovetail base is disposed in said dovetail socket of the mounting base, at least one wind driven electrical generator rotatably mounted on said pedestal and having a connected rudder causing said generator to face into the wind, and conductor means in said pedestal electrically coupled with terminals of said generator and with said electrical contact elements.

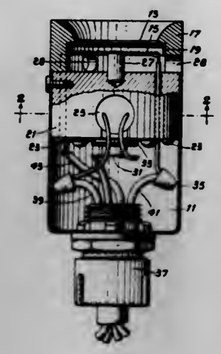
4,068,133

SNOW AND SLEET DETECTOR

Garwood N. Burwell, Madison, N.J., assignor to The Rails Company, Maplewood, N.J.

Filed Sept. 24, 1976, Ser. No. 726,172
Int. Cl.² H01H 83/00
U.S. Cl. 307—116 10 Claims

1. An improved snow and sleet detector having a pair of substantially parallel detector screens spaced one below the other, the upper screen being open to the ambient, comprising:
a highly thermally conductive rim encompassing said upper screen proximate the edge thereof;
heating means mounted at least partially internally in said detector in intimate thermal contact with said rim and spaced below said screens; and



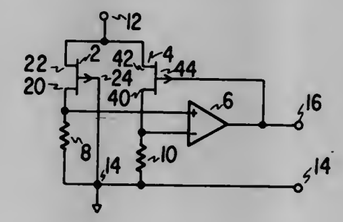
means for making electrical contact with said heating means and said screens.

4,068,134

BARRIER HEIGHT VOLTAGE REFERENCE

Morley C. Tobey, Jr., Sunnyvale; David J. Giuliani, San Carlos, and Peter B. Ashkin, San Jose, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 587,188, June 16, 1975, Pat. No. 3,975,648. This application Apr. 7, 1976, Ser. No. 674,453
The portion of the term of this patent subsequent to Aug. 17, 1993, has been disclaimed.
Int. Cl.² H03K 1/12, 3/353; H01L 29/80, 27/02
U.S. Cl. 307—297 51 Claims



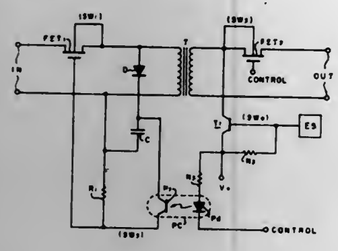
1. A voltage reference comprising:
first and second field effect devices, each having a source, a drain and a gate, and each device having a different gate-to-channel potential barrier characteristic from the other;
means coupled to the first and second field-effect devices for producing substantially identical current flow to the drains of the first and second field-effect devices;
means coupled to the first and second field-effect devices for sensing the voltage difference between the gate-to-source voltage of the first field-effect device and the gate-to-source voltage of the second field-effect device; and
means coupled to each of said field-effect devices for producing substantially identical drain-to-source voltages for said first and second field-effect devices.

4,068,135

SIGNAL ISOLATING AND SAMPLING CIRCUIT

Tadashi Sonobe, and Seiji Onoki, both of Kanagawa, Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 16, 1976, Ser. No. 742,513
Claims priority, application Japan, Dec. 30, 1975, 50-158341
Int. Cl.² H03K *17/78*
U.S. Cl. 307—352 **5 Claims**



1. A signal isolating and sampling circuit comprising
an input terminal
an output terminal,
a transformer means having primary and secondary sides,
an input circuit sampling switch means connected between said primary of said transformer means and said input terminal,
an output circuit sampling switch means connected between said secondary of said transformer means and said output terminal,
a supply source switch means,
a pulse supply means for supplying a switch energizing pulse to the secondary side of said transformer means through said supply source switch,
a rectifying circuit means connected to the primary side of said transformer means for rectifying and storing said energizing pulse induced on said primary side of said transformer means,
a photocoupler circuit means having an input and having an output connecting said input circuit sampling switch means to said rectifying circuit means and
control means for connecting said input of said photocoupler means to a source of a switch selecting control signal for periodically driving said photocoupler circuit means to apply the stored energizing pulse to said input circuit sampling switch means whereby said input circuit sampling switch means is driven by the stored energizing pulse from said rectifying circuit means to connect said input terminal to said primary side of said transformer means and to apply a switch control signal to said supply source switch means to operate said supply source switch means to connect said pulse supply means to said secondary side of said transformer means between the driving of said photocoupler circuit by said switch selecting control signal.

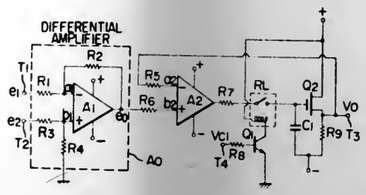
4,068,136

ANALOG VOLTAGE MEMORY DEVICE

Shunji Minami, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 13, 1976, Ser. No. 732,121
Claims priority, application Japan, Oct. 13, 1975, 50-123556; Dec. 26, 1975, 50-159389
Int. Cl.² G11C *27/02*
U.S. Cl. 307—353 **7 Claims**

1. An analog voltage memory device, comprising:
a differential amplifier for deriving the difference between two analog inputs;
an operational amplifier having a noninverting input end connected to the output of said differential amplifier;
analog switching means having one end connected to the output circuit of said operational amplifier;
a MOS type field-effect transistor having the gate connected to the other end of said analog switching means and the source connected to the inverting input end of said operational amplifier;



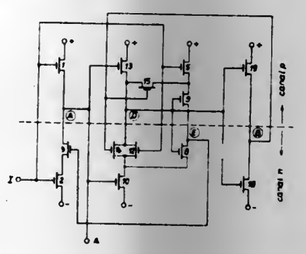
means for connecting the source and drain electrodes of said transistor to respective negative and positive terminals of a source of potential difference;
a nonpolarized capacitor interconnected between the gate of said MOS field-effect transistor and said negative terminal; and
an output resistor interconnected between the source of said MOS field-effect transistor and said negative terminal.

4,068,137

BINARY FREQUENCY DIVIDER

Eric André Vittoz, Cernier, Switzerland, assignor to Centre Electronique Horloger S.A., Switzerland

Filed Sept. 8, 1976, Ser. No. 721,228
Claims priority, application Switzerland, Sept. 17, 1975, 12040/75
Int. Cl.² H03K *23/30, 21/00*
U.S. Cl. 307—225 C **9 Claims**



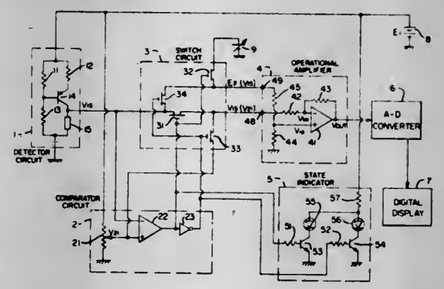
1. In a binary frequency divider stage circuit with complementary insulated gate field effect transistors (MOST) powered by a constant voltage source, comprising an input for introducing an input signal and at least three logical nodes, at least one output (A) connected to one of said three nodes, each logical node being an interconnection between the drains of at least one n-channel MOST and at last one p-channel MOST, each logical node being connected to at least one of said p- and n-channel MOST of at least one other node the source of one of the p- and n-channel MOST (1) of at least one of the nodes being connected to one terminal of the voltage source and the source of the p- and n-channel MOST (4) of the same node being connected to the drain of a third MOST (2), the source of which is connected to the other terminal of the voltage source, said p- and n-channel MOST and said third MOST of said one node arranged such that said one node is controlled by two variables, one being the input signal (I) and the other being the signal from another logical node (E), in such a way that one variable drives the gate(s) of the third MOST and the gate of the one of said p- and n-channel MOST having a channel type opposed to that of said third MOST and the other variable drives the gate of the other p- and n-channel MOST, allowing the corresponding node to float when said p-channel MOST as well as said n-channel MOST of said one node are both blocked, the improvement comprising means for connecting each node, for one only of the two logical states of said input, by at least one conducting MOST, to either terminal of said constant voltage source, whereby said nodes do not float for said one logical state of said input.

4,068,138

SIGNAL CONVERTER

Nobuaki Miyakawa, Hitachi, and Osamu Igarashi, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 17, 1976, Ser. No. 687,108
Claims priority, application Japan, May 16, 1975, 50-57311
Int. Cl.² H03K *1/12;* G08B *5/38;* H03K *5/00*
U.S. Cl. 307—262 **13 Claims**



1. A signal converter for converting a varying input signal into an output signal of absolute value comprising
reference voltage producing means for generating a predetermined reference voltage value;
comparing means responsive to said input signal and said predetermined reference voltage value for generating a control signal having first and second values indicating whether said input signal is greater or less than said reference voltage value, respectively;
an operational amplifier circuit having first and second input terminals; and
switching means responsive to said control signal for applying said input signal and said reference voltage value to said first and second input terminals of said operational amplifier, respectively, when said control signal has said first value, and for applying said input signal and said reference voltage value to said second and first input terminals of said operational amplifier, respectively, when said control signal has said second value.

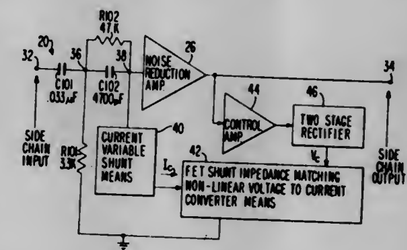
4,068,139

IC COMPATIBLE VARIABLE SHUNT IMPEDANCE FOR DOLBY B SYSTEM

Derek Bray, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Aug. 9, 1976, Ser. No. 710,958
Int. Cl.² H04B *1/64;* H03G *7/06;* H03K *1/14*
U.S. Cl. 307—264 **5 Claims**

1. In a signal processing system of the Dolby B noise reduction type including a variable frequency high pass filter having a control terminal, a current variable shunt impedance with a non-linear control characteristics operable as a variable impedance shunt resistor at the output terminal of said variable frequency high pass filter comprising: variable shunt means including:
a source of selected input bias voltage,
a first transistor possessing a first emitter, a first collector and a first base, said first collector and said first base both connected to said output terminal of said variable frequency high pass filter; a second transistor possessing a second emitter, a second collector and a second base, said second base connected to said source of selected input bias voltage; first and second diode chains each formed from equal pluralities of series connected diodes, said first diode chain possessing a first end anode connected to said first emitter and a first end cathode, said second diode chain possessing a second end anode connected to said second emitter and a second end cathode connected to said first end cathode to form said control terminal:
current balancing means connected to said first and second collectors for providing currents equal one half and selected control current in each of said first and said second diode chains; and non-linear voltage-to-current converter means responsive to control voltage at a system control terminal for providing system control current in response to voltage from virable shunt means including:
maximum impedance current leakage means connected to said control terminal for providing a constant initial biasing current at said control terminal for providing a constant initial biasing current at said control terminal such that said selected impedance provided by said variable shunt means does not exceed 700K ohms;
low current compensated voltage-to-current converter means coupled to said control voltage for providing in



initially restricted and progressively more linear response to increases in said control voltage a first partial control current such that the sum of said initial biasing current and said first partial control current equals the value of said selected control current required by said variable shunt means to provide values of said selected impedance approximating the source drain impedance of said replaced field-effect transistor over a range of control voltage values corresponding to source-drain impedances in the range of 700K to 1K ohms; and
high current compensation means connected to said low current compensated voltage-to-current converter means for providing a non-linear second partial control current above a predetermined control voltage value such that the sum of said initial biasing current, said first partial control current sand said second partial control current equals the value of said selected control current required by said variable shunt means to provide values of said selected impedance approximating the source-drain impedance of said replaced field-effect transistor over a range of control voltage values corresponding to source-drain impedances in the range of 1K to 70 ohms.

4,068,140

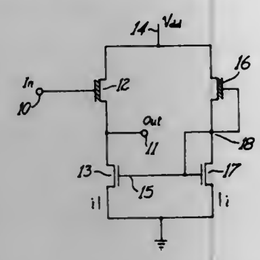
MOS SOURCE FOLLOWER CIRCUIT

Perry W. Lou, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 27, 1976, Ser. No. 754,377
Int. Cl.² H03K *3/26;* H03F *3/16*
U.S. Cl. 307—304 **11 Claims**

1. A source follower circuit comprising: first and second depletion mode MOS transistors; first and second enhancement mode MOS transistors; each transistor having a source, a drain and a gate; the ratios of channel width to length of the first enhancement and first depletion mode transistors being the

same; the ratios of channel width to length of the second enhancement and second depletion mode transistors being the same; means connecting the source to drain paths of the first depletion mode and first enhancement mode transistors in series with one another to form a first series circuit; means connecting the first series circuit between a voltage supply and a reference potential; means connecting the source to drain paths of the second depletion mode and second enhancement mode transistors in series with one another to form a second



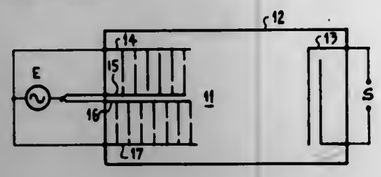
series circuit; means connecting the second series circuit between said voltage supply and reference potential; means shorting the gate of the second depletion mode transistor to its source, means shorting the gate of the second enhancement mode transistor to its drain; means connecting the gates of first and second enhancement mode transistors; means for applying an input voltage to the gate of the first depletion mode transistor; the source of the first depletion mode transistor being the output of the circuit.

4,068,141

TRANSDUCER FOR SURFACE WAVE FILTERS WITH AN ASYMMETRICAL TRANSFER FUNCTION

Jean Michel Autran, and Bernard Epaztein, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed July 20, 1976, Ser. No. 707,137
Claims priority, application France, July 24, 1975, 75.23139
Int. Cl.² H01L *41/04*
U.S. Cl. 310—366 **4 Claims**



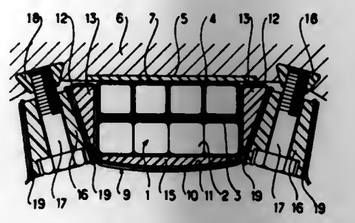
1. A transducer for a surface wave filter having an asymmetrical transfer function comprising two pairs of interdigital combs or electrodes disposed side by side on the same piezoelectric substrate to transmit acoustic waves along two parallel channels, these two pairs of combs having transfer functions which are symmetrical (T*s*) and antisymmetrical (T*a*), respectively, in relation to a common central frequency (F*o*); said combs being staggered by one quarter of the acoustic wavelength in the direction of propagation of the waves so that the acoustic waves transmitted by the pair of combs with the antisymmetrical transfer function are advanced by $\pi/2$ relative to the waves transmitted by the other pair of combs.

4,068,142

DEVICE FOR FIXING WINDING BARS ON A STATOR OF AN ELECTRIC ROTATING MACHINE

Roger Gillet, and Jacques Carlier, both of Belfort, France, assignors to Societe Generale de Constructions Electriques et Mecaniques Alsthom, Paris Cedex, France

Filed Oct. 7, 1975, Ser. No. 620,455
Claims priority, application France, Oct. 8, 1974, 74.33785
Int. Cl.² H02K *3/48*
U.S. Cl. 310—214 **6 Claims**



1. Device for fixing groups of winding bars on the generally cylindrical internal surface of the magnetic circuit of the stator of an electric rotating machine having an axis of rotation, these groups of bars extending parallel to said axis with the external face of each group being against said internal surface of the stator, said device comprising:

straps stretched in a direction transverse to said axis, a middle portion of each of these straps bearing against the internal face of a group of bars, so that the external face of that group is clamped against said internal surface of the stator;

fastening elements fixed to said surface of the stator on each side of each group of bars; and

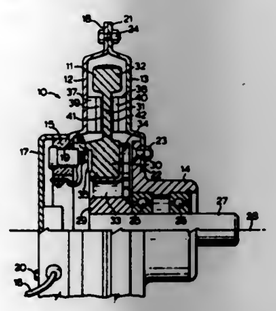
chocks clamping the two end portions of each strap against the fastening elements and urging these end portions radially towards said stator surface to stretch said straps and urge said group toward said stator surface; the thickness of these chocks, measured in the circumferential direction, increasing in the direction from said axis to said stator surface.

4,068,143

DISCOIDAL WINDING FOR DYNAMOELECTRIC MACHINES

Eric Whiteley, Peterborough, Canada, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 18, 1974, Ser. No. 534,058
Claims priority, application Canada, Dec. 19, 1973, 188535
Int. Cl.² H02K *1/22*
U.S. Cl. 310—268 **16 Claims**



1. A coil for a discoidal winding structure for use in an axial gap dynamoelectric machine; said winding structure consisting essentially of a plurality of said coils overlapped in a circular array, interconnected electrically and bonded together with a

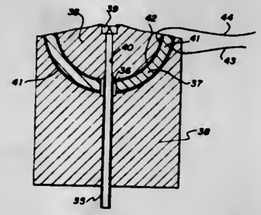
bonding medium to provide a unitary structure having an annular disc portion containing the coil sides and ring portions on the inner and outer edges of the disc containing the coil end-heads and coil end conductors; said coil having a pair of sides disposed radially at approximately one pole pitch, at least one end-head joining one of the corresponding ends of the coil sides, and conductors on the other corresponding ends of said coil sides completing the coil circuit; said coil characterized by one coil side and a significant length of the end-head thereon lying on one side of a plane, the other coil side and a significant length of the end-head thereon lying on the other side of said plane, and a cranked end-head portion traversing said plane and interconnecting said lengths of end-head.

4,068,144

LIQUID JET MODULATOR WITH PIEZOELECTRIC HEMISPHERAL TRANSDUCER

Larimore F. Toye, Irving, Tex., assignor to Recognition Equipment Incorporated, Dallas, Tex.

Filed Sept. 20, 1976, Ser. No. 724,786
Int. Cl.² H01L *41/04*
U.S. Cl. 310—327 **10 Claims**



1. A liquid jet modulator, which comprises:

a. a hemispherical piezoelectric transducer, said transducer having a central bore;

b. a backing enveloping said transducer and having a throughbore aligned with said central bore;

c. a fluid feed tube in sealed relation with said throughbore and depending through said central bore in spaced apart relation with said transducer; and

d. nozzle means captured within said backing adjacent the concave inner surface of said transducer, and in fluid communication with said throughbore and said feed tube for expelling liquid droplets.

4,068,145

INSULATED ELASTIC SUPPORT AND CLAMPING MEANS FOR RESISTANCE HEATERS AND EMITTER TIP OF ELECTRON GUN

Seiichi Nakagawa, and Youichi Shibuki, both of Akishima, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1976, Ser. No. 752,235
Claims priority, application Japan, Dec. 24, 1975, 50-154355
Int. Cl.² H01J *1/16, 19/08*
U.S. Cl. 313—237 **5 Claims**

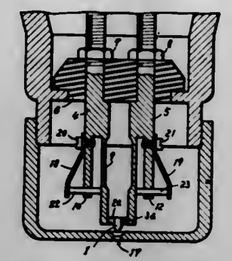
1. A thermal emission type electron gun comprising:

a. an emitter tip (1) being a material capable of electron emission when heated;

b. electrical resistance means (2*a*,3*a*) abutting said emitter tip for heating said emitter tip;

c. means for clamping said heating means (9,11) against said emitter tip and supporting said heating means and tip within the gun; and,

d. elastic support means for pressing said clamping means against the heating means and emitter tip comprising elastic biasing means (18, 19) fixed to the clamping means at a location spaced from the emitter tip where the temperature of the clamping means is substantially lower than near the tip and an insulating means (22,23) wedged between the elastic biasing means and the clamping means applying pressure to the clamping means near the emitter



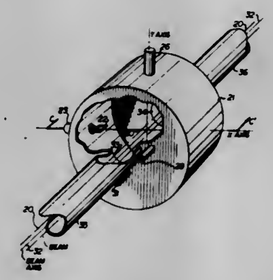
tip whereby heat expansion of the clamping means is absorbed by the elastic biasing means.

4,068,146

CHARGED PARTICLE BEAM DEFLECTOR

Joseph McKeown; John S. Fraser, and Stanley O. Schriber, all of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Nov. 30, 1976, Ser. No. 746,136
Claims priority, application Canada, May 17, 1976, 252696
Int. Cl.² H01J *25/22*
U.S. Cl. 315—5.26 **9 Claims**



1. A charged particle beam deflector comprising:

bimodal resonant cavity means having beam holes concentric with the cavity axis to allow the passage of the particle beam through the cavity means;

first feed means mounted on the side of the cavity means to feed a first rf signal into the cavity means to excite the cavity means in a first mode or deflecting the particle beam along a first diametric axis passing through the cavity axis and feed means location;

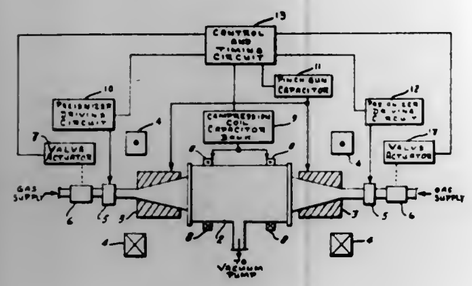
second feed means mounted on the side of the cavity and located at an angle of approximately 90° from the first feed means, to feed a second rf signal into the cavity means to excite the cavity means in a second mode orthogonal to the first mode for deflecting the particle beam along a second diametric axis which is substantially perpendicular to the first diametric axis; and tuning means mounted on the cavity means for tuning the orthogonal modes to the same frequency.

4,068,147

METHOD AND APPARATUS FOR HEATING AND COMPRESSING PLASMA

Daniel R. Wells, 6950 S.W. 62nd St. Miami Fla.

Filed Nov. 6, 1975, Ser. No. 629,465
Int. Cl.² G21B *1/00*
U.S. Cl. 315—111.4 7 Claims



5. Apparatus for heating and compressing plasma comprising

a vacuum chamber,

a plasma source for generating and simultaneously injecting plasmoids into opposite ends of said vacuum chamber,

means for generating a primary steady state magnetic mirror field within said vacuum chamber, said mirror field being oriented to confine and direct injected plasmoids to collision approximately at the center of said vacuum chamber, and

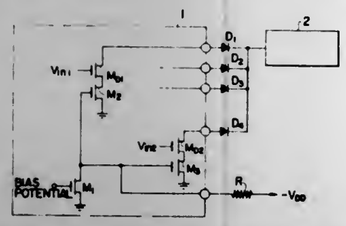
means for compressing plasma in the vicinity of the center of said vacuum chamber for a discrete period of time beginning with each plasmoid collision event.

4,068,148

CONSTANT CURRENT DRIVING CIRCUIT

Kosei Nomiya, Tokyo, and Takao Tsuiki, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 14, 1975, Ser. No. 621,841
Int. Cl.² H05B *43/00*
U.S. Cl. 315—169 R 16 Claims



13. A circuit for driving at least one light emitting diode comprising:

a first field effect transistor, to the gate electrode of which a fixed bias voltage only is applied;

a resistor connected in series with said first field effect transistor between first and second sources of respectively different reference potentials; and

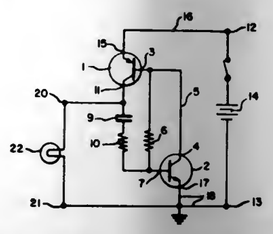
first means for controlling the value of the driving current of said light emitting diode in response to the voltage drop across said resistor.

4,068,149

FLASHER CIRCUIT WITH LOW POWER DRAIN

David G. Wuchinich, New York, N.Y., assignor to Arthur M. Master, Jr., New York, N.Y.

Filed Oct. 28, 1975, Ser. No. 625,852
Int. Cl.² H05B *37/00, 39/00, 41/14*
U.S. Cl. 315—200 A 5 Claims



1. An electronic flasher circuit consisting essentially of

a. a first transistor and a second transistor, one transistor being a PNP transistor and the other being an NPN transistor;

b. conductive means having substantially no resistance connecting a base of the first transistor to a collector of the second transistor;

c. resistive means connecting the base of the first transistor to a base of the second transistor;

d. means connecting the base of the second transistor to a collector of the first transistor, said means comprising capacitive means and resistive means connected in series;

e. a positive power-source terminal and a negative power-source terminal, said power-source terminals being adapted to connect to a direct-current electrical power source;

f. conductive means having substantially no resistance connecting the positive power-source terminal to an emitter of the PNP transistor;

g. conductive means having substantially no resistance connecting the negative power-source terminal to an emitter of the NPN transistor; and

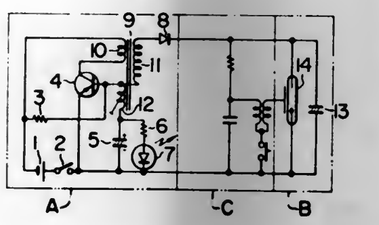
h. a first lamp terminal connected to the collector of the first transistor and a second lamp terminal connected to the emitter of the second transistor, said lamp terminals being adapted to connect to an electric lamp.

4,068,150

VOLTAGE INDICATION MEANS FOR AN ELECTRONIC FLASHING DEVICE

Hiroshi Iwata, Osaka, and Tetsuo Yamaoka, Suita, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Mar. 9, 1976, Ser. No. 665,243
Claims priority, application Japan, Mar. 14, 1975, 50-31672; Mar. 14, 1975, 50-31673; Dec. 19, 1975, 50-152652
Int. Cl.² H05B *41/32*
U.S. Cl. 315—241 P 24 Claims



1. In an electronic flashing device having

a flashing discharge tube;

a main discharging capacitor for firing said discharge tube by means of energy stored in said discharging capacitor; and

a DC-DC converter including a transistor coupled to a D.C. power supply, a transformer having primary, secondary and auxiliary windings coupled to said D.C. power supply and said transistor to form an oscillatory circuit, a sub-capacitor coupled between the auxiliary winding of said transformer and said transistor, and a rectifier element interposed between the secondary winding of said transformer and said main discharging capacitor for rectifying the voltage generated across said secondary winding to allow charging of said main discharging capacitor;

a voltage indication device for indicating when the voltage across said discharging capacitor has been charged to a predetermined charged value, comprising

light emitting indication means coupled to the auxiliary winding of said transformer, said light emitting indication means having a definite threshold voltage above which light is emitted and said auxiliary winding having a number of turns N_b given by the relation

$$N_b = \frac{N_2 V_D}{E_2},$$

where

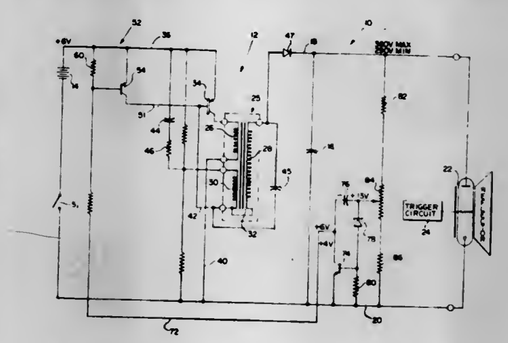
N_2 designates the number of turns on said secondary winding, V_D said definite threshold voltage and E_2' the predetermined charged voltage of said main discharging capacitor.

4,068,151

REGULATED STROBE WITH HYSTERESIS

George C. Harrison, Chelmsford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 19, 1976, Ser. No. 743,115
Int. Cl.² H05B *41/32*
U.S. Cl. 315—241 P 15 Claims



1. A control circuit for effectively terminating the operation of a d-c to d-c converter oscillator when the output voltage thereof increases to a predetermined maximum value and for restarting the operation of the oscillator when the output voltage thereafter decays to a predetermined minimum value, said control circuit comprising:

a first transistor having a collector terminal, an emitter terminal and a base terminal;

a circuit element connected to become conductive upon the application thereof of a voltage at least equal to a predetermined potential proportional to the predetermined maximum value and connected to render said transistor at least partially conductive in response to the output voltage of the oscillator reaching the predetermined maximum value, said circuit element also being connected to be thereafter substantially non-conductive in response to the output voltage of the oscillator decaying below the predetermined maximum value to render said transistor substantially non-conductive;

a capacitor connected with respect to said transistor so as to charge to a first select potential in response to the rendering of said transistor at least partially conductive, said charging of said capacitor occurring before the output voltage of the oscillator can decay below a value at which said circuit element again becomes substantially non-conductive; and

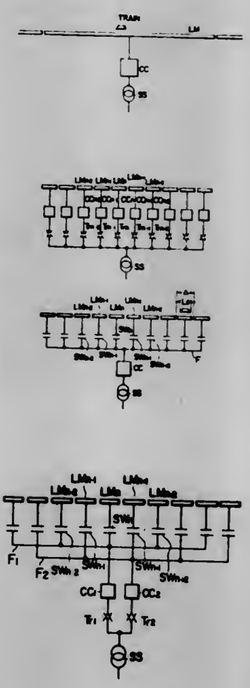
circuit means connected between said transistor and oscillator for terminating the operation of the oscillator in response to the rendering of said transistor at least partially conductive, said circuit means also operating in response to the discharge of said capacitor from said first select potential to second select potential subsequent to the rendering of said transistor substantially non-conductive, thereby maintaining the termination of the operation of the oscillator, said circuit means operating thereafter to restart the operation of the oscillator in response to the voltage of said capacitor reaching said second select potential, said second select potential being determined so as to occur at a time generally corresponding to the time at which the output voltage from the oscillator decays to the predetermined minimum value.

4,068,152

POWER SUPPLY SYSTEM FOR A LINEAR MOTOR

Kiyoshi Nakamura, Katsuta; Takashi Tsuboi, and Nobuaki Otazawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 7, 1973, Ser. No. 338,943
Claims priority, application Japan, Mar. 8, 1972, 47-24970; Mar. 8, 1972, 47-24971
Int. Cl.² H02K *41/00*
U.S. Cl. 318—135 11 Claims



1. A power supply system for a linear motor having a series of driving coils disposed along a track for producing a moving magnetic field to drive a carriage; said system comprising means for dividing said series of driving coils into a number of coil units successively disposed along the track, a plurality of feeders disposed along said track, the number of the feeders being less than the number of said coil units, power supply

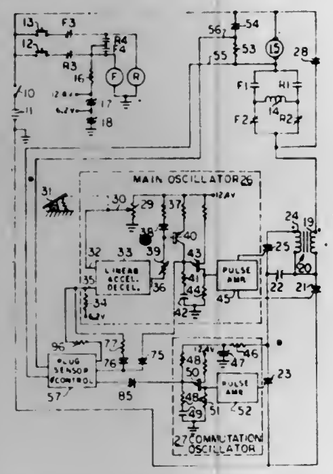
means connected to said feeders, and a number of switch means connected between respective ones of said feeders and each of said coil units so as to distribute said coil units among said feeders in regular cyclic sequence with respect to the positional order of said coil units, wherein the number of said power supply means is equal to that of said feeders so that each feeder is connected to a respective power supply means.

4,068,153

PLUGGING CONTROL

Robert W. Artrip, Northfield, and Robert G. Klimo, Parma, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Oct. 28, 1975, Ser. No. 626,503
Int. Cl.² H02P 3/10
U.S. Cl. 318—373 **21 Claims**



1. In a system for controlling the power delivered from a source of direct current to a motor having a field and armature connected in series including a main silicon controlled rectifier connected between the motor and said source, a main pulse generator for repeatedly gating the main silicon controlled rectifier into conduction at a controlled rate normally dependent upon the position of an operator-actuated accelerator control, a commutating capacitor, silicon controlled rectifier which when gated into conduction will connect the commutating capacitor across the main silicon controlled rectifier, a commutation pulse generator for normally gating said commutating silicon controlled rectifier into conduction a predetermined time after the main silicon controlled rectifier is gated into conduction, a forward relay having a relay coil and main contacts for connecting the field in one direction to the armature when said forward relay coil is energized to enable said armature to be driven in a forward direction by power from said battery and to enable said motor to function as a generator and produce plug current when said armature is being rotated in a reverse direction, a reverse relay having a relay coil and main contacts for connecting the field in the opposite direction to the armature when said reverse relay coil is energized to enable said armature to be driven in a reverse direction by power from said battery and to enable said motor to function as a generator and produce plug current when said armature is being rotated in a forward direction, means for de-energizing and energizing said relays to effect a reverse-to-forward reversal of the connection of the field during forward rotation of the armature and to effect a forward-to-reverse reversal of the connection of the field to the armature during reverse rotation of said armature, the improvement comprising:

a. timing means having a time period,

b. means responsive to a reverse-to-forward reversal of the connection of the field to the armature during forward rotation of the armature and responsive to a forward-to-reverse reversal of the connection of the field to the armature during reverse rotation of the armature for starting said timing means into operation,

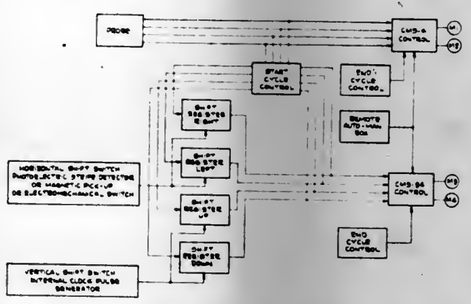
c. means responsive to operation of said timing means and operable during said time period for preventing said main pulse generator from responding normally to the position of said accelerator control during said time period.

4,068,154

AUTOMATIC GUIDANCE SYSTEM FOR WELDING TORCHES AND THE LIKE

Shelby Cecil, Medina, and Abraham Zeewy, University Heights, both of Ohio, assignors to Cecil Equipment Co., Inc., Medina, Ohio

Filed Mar. 3, 1975, Ser. No. 554,667
Int. Cl.² G05B 19/42
U.S. Cl. 318—568 **9 Claims**



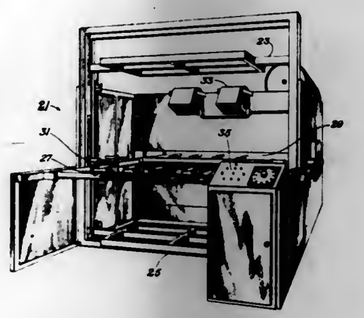
1. A system for guiding a slave over the length of a predetermined path, comprising means for detecting spatial elevations and changes thereof in the predetermined path, said spatial elevations and changes thereof having digital values defining the same, means for moving said detecting means and slave independently over the length of the path, means for recording the digital values of the instantaneous magnitude and direction of the spatial elevations and changes thereof detected by said detecting means as it is moved over the length of the path, and means for positioning the slave in accordance with the recorded spatial elevations and changes thereof as it is subsequently moved over the length of the path.

4,068,155

CONTROL SYSTEM FOR OPERATING MACHINE

Roscoe S. Robbins, Rte. 1, Box 764, Burleson, Tex. 76028, and Donald R. Zuccaro, 4029 Walnut St., Garland, Tex. 75042

Filed Jan. 31, 1977, Ser. No. 763,885
Int. Cl.² G05B 19/04
U.S. Cl. 318—568 **3 Claims**



1. A control system for controlling on operating system for performing a sequence of operating steps, said operating system having a plurality of power means each being adapted to be actuated or de-actuated for controlling said operating steps, said control system comprising:

a plurality of manually controllable switch means,

each switch means being associated with one of said power means,

each switch means being adapted to be moved to a control position and to a clear position creating a program mode and to an automatic position creating an automatic mode.

storage means coupled to each switch means and adapted to be coupled to the power means associated with each switch means for sequentially recording data representative of the positions of each switch means as it is moved to its control and clear positions,

each power means being adapted to be actuated or de-actuated in accordance with the data stored in its associated storage means,

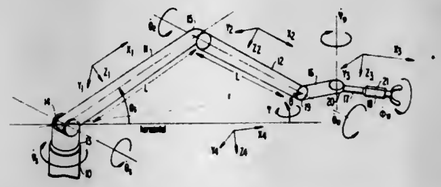
each storage means when its associated switch means is in its automatic mode position being adapted to have the switch position data previously recorded therein during the program mode, sequentially read out whereby each storage means will automatically cause its associated power means to be actuated or de-actuated in the same time relationship as occured when its associated switch means was moved to its control and clear positions during the program mode.

4,068,156

RATE CONTROL SYSTEM FOR MANIPULATOR ARMS

Charles H. Johnson, Honolulu, Hawaii, and Robert A. Booker, Evergreen, Colo., assignors to Martin Marietta Corporation, Rockville, Md.

Filed Mar. 1, 1977, Ser. No. 773,368
Int. Cl.² B25J 01/02
U.S. Cl. 318—575 **7 Claims**



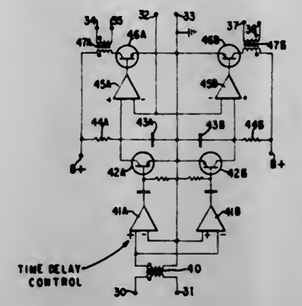
1. In a manipulator system of the type having a master control console and a slave manipulator arm controlled by signals from said master control console, said master control console including a translation controller and a rotation controller, and said slave manipulator arm including pivoted arm segments moved by translational servo means in response to signals generated by said translation controller and pivoted wrist units moved by rotational servo means in response to signals generated by said rotation controller, the improvement wherein the signals generated by each of said translation controller and said rotation controller are rate command signals, said translational servo means includes rate sensor means for generating signals proportional to pivot rates of said pivoted arm segments and force computer means responsive to the rate command signals from said translation controller and the signals proportional to pivot rates of said pivoted arm segments for computing translation forces, said rotational servo means includes sensor means for generating signals proportional to pivot rates of said pivoted wrist units and torque computer means responsive to the rate command signals from said rotation controller and the signals proportional to pivot rates of said pivoted wrist units for computing rotation torques, and display means on said master control console responsive to said force computer means and said torque computer means for displaying translation forces and rotation torques.

4,068,157

REGULATED MULTIPLE TRANSFORMER SYSTEM

John A. Bassett, Westford, Mass., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Continuation of Ser. No. 528,426, Nov. 29, 1974, abandoned. This application June 14, 1976, Ser. No. 695,969
Int. Cl.² G05F 1/64
U.S. Cl. 363—75 **2 Claims**



1. A polyphase ferroresonant rectifier system for deriving a regulated d.c. output voltage from an unregulated polyphase a.c. source comprising

a plurality of transformers, each of said transformers comprising a primary winding,

said polyphase a.c. source being connected in Scott T relation with the primary windings of said transformers,

each of said transformers including two secondary winding means loosely coupled to the primary winding thereof,

the first of said secondary winding means producing a load current and the second of said secondary winding means being shunted by a capacitor to produce a ferroresonant system,

a circuit in shunt to each of said capacitors comprising a reactor in series with a switch means,

means for gating said switch means comprising timing means including means responsive to the zero voltage crossover of its respective phase, and single delay time controlling means responsive to the voltage level of said d.c. output for controlling the delay time of each of said timing means,

said delay time being identical but time displaced by the angular displacement of the phases as evinced by their respective zero voltage crossover times,

whereby the load current in the several secondaries are accurately balanced,

said delay time controlling means including,

a sampling transformer for sampling the voltage across said primary winding,

a first differential amplifier, means for applying said sampled voltage to the input of said first differential amplifier, a first transistor in circuit with the output of said first differential amplifier, the output of said first differential amplifier being driven positive when said sampled voltage crosses zero in a positive direction, said positive output of said first differential amplifier activating said first transistor into a conducting state,

a control capacitor shunted across said first transistor, said control capacitor being discharged when said first transistor is in said conducting state,

means for charging said control capacitor,

a second differential amplifier, the positive input of said second differential amplifier being the voltage across said control capacitor,

means for generating a control signal which is equivalent to the difference between said d.c. output voltage and a predetermined reference voltage, means for applying said control signal to the negative input of said second differential amplifier,

a second transistor in circuit with the output of said second differential amplifier, said second transistor being activated into its conducting state when the output of said second differential amplifier is positive,

a pulse transformer in circuit with said second transistor for generating a pulse when said second transistor is in its conducting state and for supplying said pulse to said means for gating said switching means,

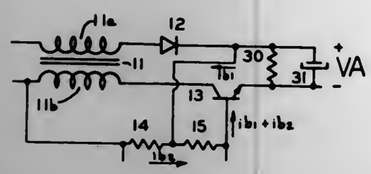
whereby the delay time is determined by the time it takes for the voltage of said control capacitor to rise to the value of said control signal and the delay time can be adjusted by adjusting the value of the control signal.

4,068,158

HIGH EFFICIENCY D.C. VOLTAGE REGULATOR

James E. Hicks, Garrett; Joseph G. Zahnen, and Werner F. Wedam, both of Fort Wayne, all of Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed July 23, 1976, Ser. No. 707,987
Int. Cl.² G05F *1/56*
U.S. Cl. 323—17 **5 Claims**



1. An improved switch mode regulator for supplying a regulated voltage from a source of unregulated voltage to an external load impedance of the type having a transformer with a primary and secondary winding, said primary winding being connected in series with said source of unregulated voltage; a transistor having a collector, emitter and a base, said collector and emitter being serially connected with said primary winding and said load impedance; means for coupling energy induced in said secondary winding to said external load impedance; and means for periodically foward biasing the base-emitter junction of said transistor in response to variations of said regulated voltage with respect to a reference voltage, wherein the improvement comprises:

a. means for storing a portion of the energy supplied by said secondary winding during periods when said transistor is nonconducting; and

b. means for supplying a portion of said stored energy in the form of electrical current to the base of said transistor when said transistor is conducting.

4,068,159

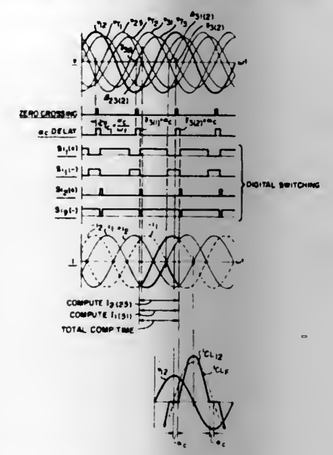
FAST CURRENT MEASUREMENT APPARATUS FOR STATIC VAR GENERATOR COMPENSATOR CONTROL CIRCUIT AND METHOD FOR USING SAME

Laszlo Gyugyi, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1976, Ser. No. 677,203
Int. Cl.² H02J *3/18*
U.S, Cl. 323—119 **32 Claims**

1. Apparatus for providing reactive power to an alternating current electrical system which includes three electrical conductors, where there is a first alternating voltage of predetermined frequency present between a first and a second of the conductors, a second alternating voltage of said frequency present between the second and a third of said conductors, and a third alternating voltage of said frequency present between the third and the first of said conductors, first, second and third terminal voltages each of which is present respectively between said first, second and third conductors and a common electrical reference point, said electrical system also including a primary source of alternating electrical power connected to the three conductors, said electrical system also including an electrical load connected to the three conductors, the first, second and third terminal voltages having first, second and third peak magnitudes respectively and a given phase relationship relative to each other for a given period of time, comprising:

a. a reactive power generator having a first output terminal thereof electrically connected to a place on said first conductor between said load and said primary source and having a second output terminal thereof electrically connected to a place on said second conductor between said load and said primary source, a first alternating load current of said frequency flowing in said first conductor between said place thereon and said load, a second alternating load current of said frequency flowing in said second conductor between said place thereon and said load, said reactive power generator providing a compensating current of said frequency at said first output terminal during a switch controlled portion of a given half cycle of said first alternating voltage, said compensating current being vectorially added to said first alternating load current, a first alternating primary source current of said frequency which flows in said first conductor between said primary source and said place where said first output terminal is connected to said first conductor thus



being in predetermined fixed phase relationship with said first terminal voltage for said given half cycle of said first alternating voltage, said switch controlled portion being related to a predetermined fixed switch delay angle and a calculated representative value for said compensating current; and

b. calculator and sensor means for sensing values of said load currents and said voltages and calculating said representative current value as a function thereof, said calculator and sensor means being connected to said reactive power generator for switching said reactive power generator to thus provide said compensating current according to the following relationship:

said representative value for said compensating current being related to the integration of said second load current over the interval starting at a point which is some predetermined time related to said switch delay angle later than when said third terminal voltage crosses zero going positive and ending at a point when said second voltage next crosses zero going negative, plus the integration of the negative of said second load current over the interval starting at the last named point and ending at a point which is said predetermined time later than when said third terminal voltage next crosses zero going negative, and the integration of said first loaded current over an

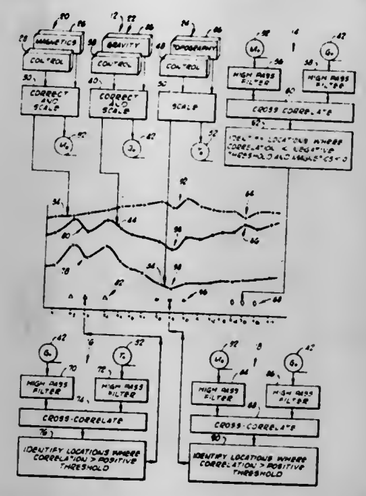
interval starting at said point which is said predetermined time later than when said third terminal voltage first crosses zero going positive and ending at a point when said third voltage next crosses zero going negative, plus the integration of the negative of said first load current over an interval starting at said last named point and ending at said point which is said predetermined time later than when said third terminal voltage crosses zero going negative, said predetermined fixed switch delay angle starting before the end of said last interval, all integrations being made with respect to said frequency times time.

4,068,160

METHOD FOR DETECTING SUBSURFACE MINERAL BODIES USING GRAVITY MAGNETIC AND TOPOGRAPHIC SURVEYS

Hubert B. Hunt, Edmond, Okla., assignor to Texas Pacific Oil Company, Inc., Dallas, Tex.

Filed May 3, 1976, Ser. No. 682,410
Int. Cl.² G01V *3/08, 7/06, 11/00*
U.S. Cl. 324—1 **4 Claims**



1. A method for determining a set of surface locations lying along a predetermined line of survey beneath which there is a relatively high probability of existing subsurface mineral bodies having relatively high density and relatively low magnetic susceptibility, the method comprising the steps of:

determining the relative magnetic field intensity and relative gravitational field intensity at each of a plurality of predetermined surface locations selected along the predetermined line of survey; and,

selecting for membership in said set a first subset of surface locations at which a local minimum of the magnetic field intensities substantially directly correlates to a local maximum of the gravitational field intensities, wherein the step of selecting the first subset is further defined as comprising the steps of:

filtering the set consisting of the magnetic field intensity at each of the predetermined surface locations;

filtering the set consisting of the gravitional field intensity at each of the predetermined surface locations;

correlating the set consisting of the filtered magnetic field intensities with the set consisting of the filtered gravitional field intensities to produce a set consisting of the first correlation value for each of the predetermined surface locations; and,

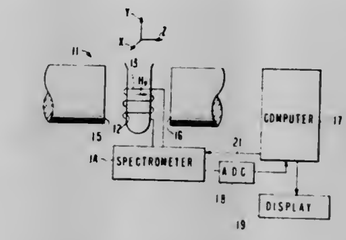
identifing for membership in said first subset those surface locations at each of which the first correlation value is less than a predetermined negative threshold and the filtered magnetic field intensity is greater than zero.

4,068,161

GYROMAGNETIC RESONANCE SPECTROSCOPY EMPLOYING SPIN ECHO SPIN-SPIN DECOUPLING AND TWO-DIMENSIONAL SPREADING

Richard R. Ernst, Winterthur, Switzerland, assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 13, 1976, Ser. No. 685,962
Int. Cl.² G01R *33/08*
U.S. Cl. 324—.5 A **14 Claims**



1. In a method of gyromagnetic resonance spectroscopy, operative upon an assembly of first and second groups of gyromagnetic resonators immersed in a polarizing magnetic field wherein the magnetization vectors of said gyromagnetic resonators precess about said polarizing magnetic field, said first and second groups being coupled through spin-spin interaction, said spin-spin interaction causing a defocusing effect whereby the phase coherence of precession among said resonators is progressively lost, the steps of:

periodically tipping the magnetization vectors of said spin-spin coupled first and second groups of gyromagnetic resonators with respect to said polarizing magnetic field;

periodically flipping the magnetization vectors of said precessing resonators relative to the direction of the polarizing magnetic field for reversing the defocusing effect of the precession effect of the precession of said resonators about the polarizing magnetic field to obtain spin echo resonance of said resonators;

periodically detecting the spin echo resonance of said resonators; and

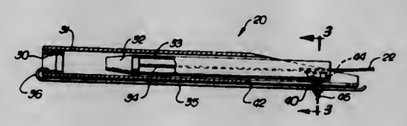
changing the period of time t between tipping of said magnetization vectors and detection of the spin echo resonance for a series of said periodically detected spin echo resonances to obtain detected gyromagnetic resonance data about said first and second spin-spin coupled groups of resonators from which to derive simplified gyromagnetic resonance spectral data.

4,068,162

RINSE TANK CONTROL SYSTEM

Myron L. Robinson, Solana Beach, Calif., assignor to Simekus, Inc., Vista, Calif.

Filed Aug. 2, 1976, Ser. No. 710,627
Int. Cl.² G01N *27/42*
U.S. Cl. 324—30 B **20 Claims**

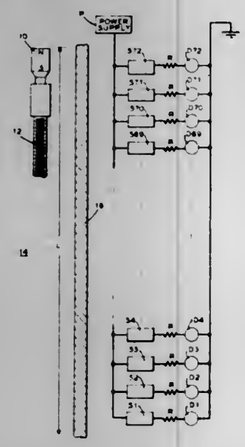


1. A conductivity cell for use in a control system for a rinse tank and the like having a tank for water, a water inlet line, flow control means for controlling flow in said inlet line and circuit means for operating said flow control means in response to the conductivity cell, the cell comprising in combination:

first and second electrodes;

means for mounting said electrodes in spaced relation for immersion in the tank; and
means for moving one of said electrodes relative to the other,
with said first electrode being a sleeve and said second electrode being a plug mounted coaxial with said first electrode for movement along the axis.

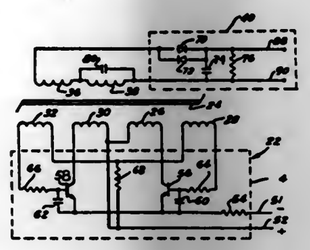
4,068,163
REED SWITCH OSCILLATOR ASSEMBLY FOR A POSITION INDICATING SYSTEM
Milton Kearney Foxworthy, Lancaster, Ohio, assignor to Diamond Power Specialty Corporation, Lancaster, Ohio
Filed July 2, 1976, Ser. No. 701,772
Int. Cl.² G01R *33/00*
U.S. Cl. 324—207 **4 Claims**



1. A reed switch position indicating system for indicating the position of a movable member inside a sealed container by establishing an oscillating signal only when the movable member is proximate to the reed switch comprising:
a magnetic flux producing member mounted to the movable member to be movable therewith;
a reed switch having a pair of contacts that close in response to a first magnetic flux level and open in response to a second lower magnetic flux level mounted externally of the sealed container along the length of the sealed container to be actuated by the flux producing member as the movable member moves within the sealed container to indicate the position of the movable member thereby;
a coil capable of conducting electric current therethrough wrapped around said reed switch;
a source of electric current connected to said coil to establish a flux field in response to current passing through said coil lower than the second magnetic flux level;
short circuit means connected to said reed switch for bypassing the current to said coil whenever said reed switch is actuated to close.

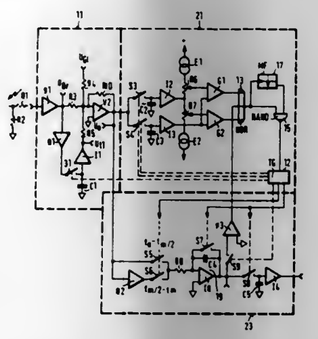
4,068,164
HARMOIC FLUX GATE MAGNETOMETERS AND GRADIMETERS AND WINDINGS
Malcolm M. Schwartz, and James R. Jaquet, both of Wilmington, Del., assignors to Infinetics, Inc., Wilmington, Del.
Filed Jan. 26, 1970, Ser. No. 5,751
Int. Cl.² G01R *33/04*
U.S. Cl. 324—226 **9 Claims**

1. In an elongated hand weapon of the night stick type, a first portion of said elongated hand weapon being provided with a handle near one end and a second portion of said elongated hand weapon being adapted to be used for at least one of the functions of clubbing and prodding, said elongated hand weapon being provided with gradiometer means mounted within said elongated hand weapon for detecting the presence of ferromagnetic objects, said gradiometer means comprising a first ring core flux gate magnetometer mounted within said elongated hand weapon and a second ring core flux gate magnetometer mounted at some fixed distance from said first mag-



netometer within said elongated hand weapon, said first and second magnetometers having a ring core and a plurality of discrete unifilar windings on said core, and said elongated hand weapon being provided with means for indicating the presence of ferromagnetic material when one of said magnetometers is closer to said ferromagnetic material than the other of said magnetometers.

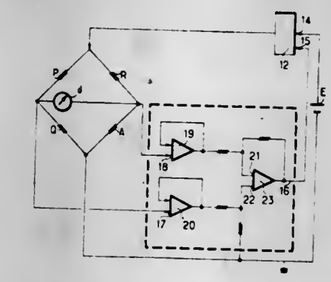
4,068,165
CIRCUIT FOR DETERMINING THE SLOPE OF A SIGNAL
Michael Labinsky, and Michael Vetter, both of Karlsruhe, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed June 9, 1976, Ser. No. 694,443
Claims priority, application Germany, June 16, 1975, 2526852
Int. Cl.² G01R *27/02*
U.S. Cl. 324—62 **10 Claims**



1. A circuit for determining the slope of a signal of predetermined minimum duration and limited slope, the signal containing transients thereon, said circuit carrying out a measurement only on a relatively undisturbed portion of said signal comprising:
an integrator having said signal as in input for integrating said signal over a predetermined time period;
a logic circuit for controlling the beginning and ending of the integration time period; and
means, having said signal as an input, for causing said logic circuit to terminate an integration and re-start the integration upon detection of a transient during the measurement cycle comprising:

1. first and second limit indicators having their outputs connected to said logic circuit;
2. sampling means for periodical sampling the signal being measured and providing the value of said signal sampled at one time as a reference input to said limit indicators and the value of the signal sampled at a subsequent time as a second input to said limit indicators, said limit indicators providing an output to said logic circuits to terminate integration if the difference between said reference signal and said other signal is greater than a predetermined amount.

4,068,166
METHOD AND APPARATUS FOR MEASURING PERCENT ERROR OF AN IMPEDANCE
Michel Pichon, Fontenay-sous-Bois, France, assignor to Compagnie Internationale pour l'Informatique and Cie Honeywell Bull, both of aris, France
Filed Dec. 28, 1976, Ser. No. 755,058
Claims priority, application France, Dec. 31, 1975, 75.40364
Int. Cl.² G01R *27/02*
U.S. Cl. 324—62 **15 Claims**



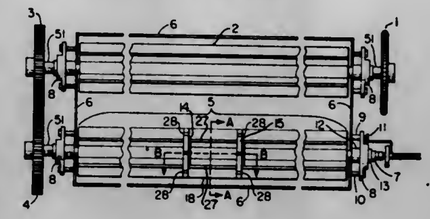
1. Apparatus for automatically determining the percent error in the value R of an impedance from a nominal value R_n of the impedance comprising a Wheatstone bridge including: first and second branches energized by a voltage source, said first branch including first and second series connected impedances respectively having values P and Q, said second branch including third and fourth series connected impedances respectively having values R and A, the third impedance being the impedance having the value R, a diagonal including a voltage detector connected across a common terminal of the first and second impedances and a common terminal of the third and fourth impedances, a voltage source for driving the first and second branches in parallel, said source having a value

$$E = \frac{(k+1)^2}{k} \cdot 10^m + (k+1)u,$$

where:
$k = P/Q$,
u = the voltage across the diagonal, and
m = an integer,
whereby the value of u is directly proportional to the percent error of R from R_n.

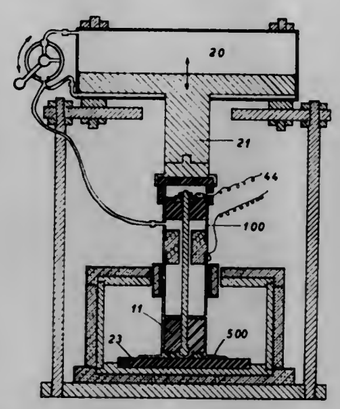
4,068,167
RADIAL ELECTRODE FOR DETERMINING THE AMOUNT OF MOISTURE IN SEED COTTON
Gino J. Mangialardi, Jr., Greenville, and Anselm C. Griffin, Jr., Leland, both of Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Sept. 1, 1976, Ser. No. 719,870
Int. Cl.² G01R *27/02*
U.S. Cl. 324—65 P **16 Claims**

1. An apparatus for continuously measuring the moisture content in seed cotton being processed through a cotton gin comprising in combination:
a. a means of initiating an electrical current substantially forming a signal, said signal means comprising in combination the following:
1. a rotating radial electrode configurated to the same configuration as a conventional feed roller in a cotton gin and comprising in combination:
a. a hollow cylindrical conduit;



b. a plurality of channel bars affixed equidistantly around the circumference of said conduit; and
c. a shielded cable affixed to the inside of the conduit;
d. a means of affixing said shielded cable to the inside of said conduit;
b. a receiving means communicating with said signal, said receiving means substantially forming a ground;
c. a means of insulating said signal means from said ground.

4,068,168
ELECTRICAL RESISTIVITY PROBE MEANS
Bram Bernard Boonstra, 145 Maskwonicut St., Sharon, Mass. 02067
Filed Oct. 4, 1976, Ser. No. 729,256
Int. Cl.² G01R *27/02*
U.S. Cl. 324—65 R **10 Claims**



1. An electrical resistivity probe means comprising, in combination:
a tubular member having a rim adapted to cut into a compliant test material, said tubular member comprising a first electrode;
a solid electrically insulative roof member bridging the bore of said tubular member and being displaced upwardly from the rim thereof, thereby to define a sample receiving chamber thereunder;
a second electrode spaced from said first electrode;
a solid electrically insulative floor member fixedly spaced under the rim of said tubular member and being adapted to support a sample of compliant test material thereon; and
means to traverse the rim of said tubular member down-

wardly through a compliant test material stationed on said floor member.

4,068,169

METHOD AND APPARATUS FOR DETERMINING HEMATOCRIT

Henry Robert Angel, and Bernard Otto Bachenheimer, both of Fairfield, Conn., assignors to Hycel, Inc., Houston, Tex.

Filed Sept. 21, 1976, Ser. No. 725,268
Int. Cl.² G01N *27/00*
U.S. Cl. 324—71 CP **14 Claims**



1. Apparatus for measuring hematocrit comprising: peak detection means for connection to a sensor providing sensor pulses in response to blood cells in a sample, the sensor pulses each having a peak amplitude respectively corresponding to the size of a cell in response to which the sensor pulse is produced; storage means connected to said peak detecting means for generating and storing a signal having a level indicative of the peak value sensed by said peak detecting means for each pulse; accumulation means; controlled switching means coupling said storage means to said accumulation means, timing means responsive to said sensor pulses for initiating a first time period in response to each sensor pulse in excess of a threshold level and providing an output for enabling said storage means to respond to the sensor pulse, said timing means further including means for establishing a second time period in response to the completion of each first time period and providing an output for closing said controlled switching means for a fixed time period during said second time period, whereby said accumulation means is incremented by an amount in correspondence with the level of the stored signal in said storage means.

4,068,170

METHOD AND APPARATUS FOR CONTACTING THE LEAD OF AN ARTICLE

George A. Chayka, Northampton County; Joel J. Koehler, Lehigh County, and Livio R. Melatti, Northampton County, all of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 15, 1975, Ser. No. 640,594
Int. Cl.² G01R *31/02*
U.S. Cl. 324—72.5 **10 Claims**

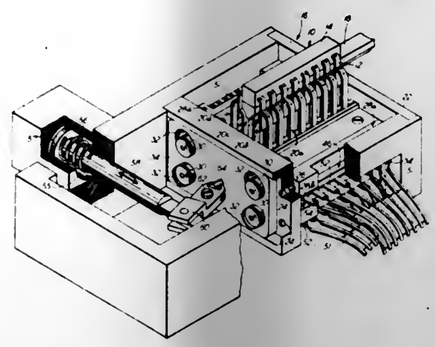
1. Apparatus for contacting a lead of an article, which comprises:

at least one pair of contact elements, each element being insulated from the other and having a contact tip;

means for supporting the elements;

means for connecting the elements resiliently to circuit conductors; and

means for moving the elements to engage the tips on opposite sides of the leads with oppositely directed balanced



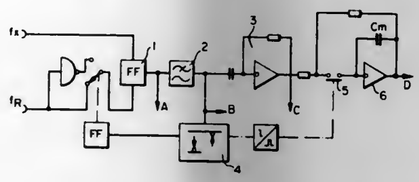
forces, one tip being offset with respect to the other at engagement.

4,068,171

FREQUENCY COMPARATOR

Raymond Huguenin, Port; Hubert Matthey, Brugg, and Jean Engdahl, Bienne, all of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Sept. 9, 1976, Ser. No. 721,723
Claims priority, application Switzerland, Sept. 12, 1975, 11890/75
Int. Cl.² G01R *23/14*
U.S. Cl. 324—79 R **2 Claims**



1. Electronic apparatus for comparing in magnitude and sign the frequency of first a signal of unknown frequency to a second signal having a reference frequency, said apparatus comprising:

a two input flip-flop, each input receiving one of said first and second signals to be compared, the output of the flip-flop being a signal of which the cyclic relation varies proportionally to the phase difference between said first and second signals in the interval of their period;

a low pass filter having a cut-off frequency below the frequency of said first and second signals, said filter being coupled to the output of said flip-flop and producing at its output a signal having an amplitude proportional to the phase difference between said first and second signals;

a differentiating circuit coupled to the output of said low pass filter, said differentiating circuit producing at its output a differentiated signal having an amplitude proportional to the variation of the phase difference between said first and second signals relative to time and representing in magnitude and in sign the difference in frequency between the two compared frequencies; and,

an output circuit switchably connected to said differentiating circuit and responsive to said differentiated signal, said output circuit including means for storing the last value of said differentiated signal received from said differentiating circuit if said output circuit should be disconnected therefrom; and,

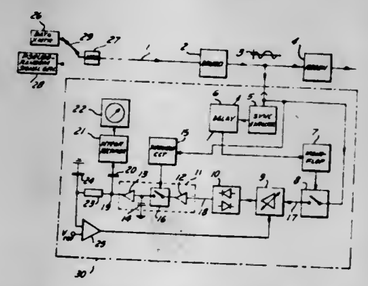
switching circuit means connected to said filter and responsive to said filter output signal for disconnecting said output circuit from said differentiator circuit and switching by 180° the phase of one of said first and second signals when the value of said filter output signal represents a predetermined phase difference between said first and second signals.

4,068,172

METHOD OF AND MEANS FOR MEASURING DISTORTION OF BINARY AND TERNARY SIGNALS

Eberhard Schuon, Eningen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany

Filed May 27, 1976, Ser. No. 690,524
Claims priority, application Germany, May 27, 1975, 2523320
Int. Cl.² G01R *27/28, 29/02*
U.S. Cl. 324—102 **10 Claims**



1. A method of measuring the distortion of bipolar pulses of nominally constant amplitude in a data train arriving over a transmission path with a fixed bit frequency, comprising the steps of extracting said bit frequency from said data train, sampling said data train a said bit frequency substantially midway of said pulses, capacitively storing the resulting voltage samples, detecting variations in the stored voltage displaying the detected variations on an indicator, integrating the stored voltage to obtain its means value, and deriving corrective signals from changes in the integrated voltage to maintain said mean value substantially constant whereby the amplitude of said variations is kept proportional to said means value.

4,068,173

FREQUENCY STABILIZED MICROWAVE SIGNAL SOURCE

Volker B. Weise, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 3, 1977, Ser. No. 756,317
Int. Cl.² H03B *3/04*
U.S. Cl. 325—184 **10 Claims**

1. A stabilized microwave signal source comprising:

a first oscillator which is a microwave oscillator for operating at a radio frequency (RF) f_o which may have a frequency drift Δf therefrom;

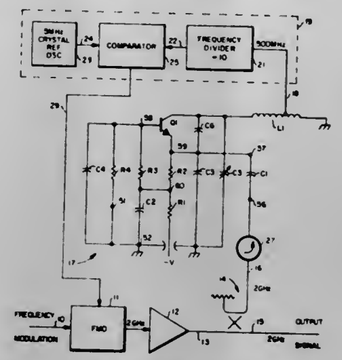
a second oscillator which is a stable crystal oscillator producing a reference signal having a stable low frequency reference frequency f_R;

a third oscillator for operating at a frequency f_S which is a sub-multiple of the microwave frequency f_o, said third oscillator producing a harmonic signal at the RF frequency f_o, the frequency f_S being less than the microwave frequency f_o;

first means for coupling a portion of the RF signal from said first oscillator to said third oscillator for causing the operation of these oscillators to be locked together such that the operating frequency of said third oscillator remains the same sub-multiple of the operating frequency of said first oscillator and follows any frequency drift Δf in the latter;

second means for dividing the frequency f_S of a signal down to the frequency f_R;

third means coupling the output signal of said third oscillator to said second/dividing means;



fourth means for comparing the frequency of the divided down signal from said second means with the stable reference frequency f_R for producing a DC control voltage that is proportional to the difference therebetween; and

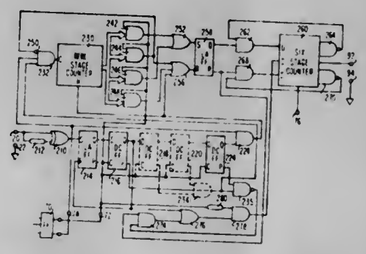
fifth means coupling the control voltage to said first oscillator for causing the operating frequency thereof to remain more nearly equal to the frequency f_o to compensate for frequency drift Δf in said first oscillator.

4,068,174

DIGITAL CARRIER WAVE DETECT CIRCUITRY

Lawrence Eugene Svelund, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 663,403, March 3, 1976, abandoned. This application Feb. 28, 1977, Ser. No. 772,613
Int. Cl.² H04L *25/00*
U.S. Cl. 325—325 **15 Claims**



1. Digital carrier wave detect circuitry for digital data communications receiving circuitry, comprising

input terminals at which at least the train of transitions of a digital data modulated carrier wave signal is applied,

output terminals at which a signal level indicative of said carrier wave detected is presented,

inputting terminals at which a clock pulse train is applied having a number of impulses greater than the number of said transitions of said wave for a given period of time,

a counting circuit having reset, input and output terminals,

AND gating circuitry connected to said output terminals of said counting circuit and having output terminals at which electric levels are delivered for a plurality of predetermined counts corresponding to the appearance of said transitions in said modulated wave with respect to said impulses of said clock pulse train,

control circuitry connected to said input terminals, to said

inputting terminals and to said reset and input terminals of said counting circuit for gating said clock impulses to said counting circuit for counting clock impulses between transitions of said modulated wave, and

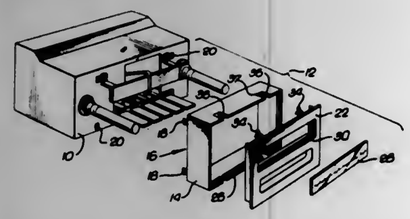
output circuitry coupled between said AND gating circuitry output terminals and said signal level output terminals and responsive to a predetermined count for indicating properly spaced transitions.

4,068,175

DETACHABLE COVER MEMBER FOR CAR RADIOS AND THE LIKE

Robert P. Maniaci, Downey, Calif., assignor to Boman Industries, Downey, Calif.

Filed Oct. 24, 1975, Ser. No. 625,707
Int. Cl.² H04B 1/08
U.S. Cl. 325—352 **6 Claims**



1. In connection with a car radio unit having operational elements on the front plate of the chasis, the improvement comprising:

a mounting frame for certain of the operational elements, having a forward portion and a rearward portion, the rearward portion abutting the chassis plate;

a front plate having a forward surface and a rearward surface, a portion of the rearward surface abutting the forward portion of the mounting frame;

ledge means interior of the mounting frame and displaced from the forward portion thereof which may be flexed from a closed to an open position for removably engaging a portion of the front plate;

latch means integral with the front plate and located on the rearward surface thereof for removalbly engaging the ledge means; and

guide means associated with the front plate and the mounting frame for positioning the front plate relative to the mounting frame during engagement of the front plate with the mounting frame.

4,068,176

DIRECT READING SINAD METER

James Everett McTaggart, Malibu, Calif., assignor to The Singer Company, New York, N.Y.

Filed Aug. 17, 1976, Ser. No. 715,028
Int. Cl.² G01R 27/00
U.S. Cl. 325—363 **10 Claims**

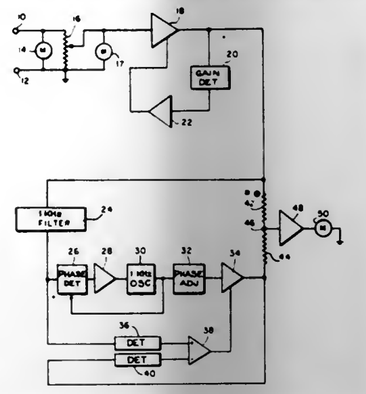
1. A noise and distortion meter comprising:

input circuitry adapted for coupling to the output terminal of a radio receiver under test for receiving an output signal including noise and distortion from said receiver;

circuit means coupled to said input circuit for leveling the output of said receiver under test to a constant level;

signal generating means coupled to the output of said circuit means for generating a signal corresponding in frequency, phase, and amplitude to the signal portion of said receiver output; and

means coupled to said circuit means and to said signal generating means for subtracting said generated signal from said



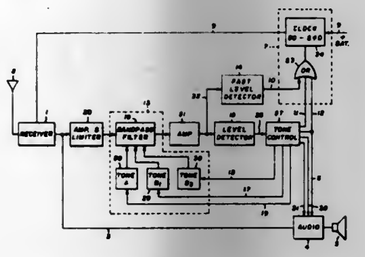
receiver output to produce an output signal comprising said receiver noise and distortion.

4,068,177

ELECTRONIC CONTROL CIRCUIT

James A. Gillis, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 17, 1975, Ser. No. 632,538
Int. Cl.² H04B 1/06
U.S. Cl. 325—492 **15 Claims**



1. A communication receiver for receiving carrier signals modulated by a series of control tones, said receiver comprising a processing circuit for receiving the modulated carrier signals and detecting the series of modulated control tones therein, a pulser circuit coupled to said processing circuit and operative to normally provide a series of recurrent voltage pulses to said processing circuit for intermittently rendering said processing circuit operative at a predetermined rate, a decoder circuit coupled to said processing circuit and responsive to the first control tone in said series of control tones for generating a first control signal having a duration which is a function of the duration of the first control tone and a second control signal which occurs substantially upon the termination of said first control tone and continues for a predetermined time interval thereafter, said decoder circuit responsive to a subsequent control tone for generating a third control signal, said pulser circuit responsive to said first control signal to furnish a continuous supply voltage to said processing circuit for the duration of said first control tone, said pulser circuit responsive to said second control signal to furnish a continuous supply voltage to said processing circuit for at least said predetermined time interval, said predetermined time interval having a duration sufficient to permit the decoder to decode said subsequent tone, an electronic circuit responsive to said third control signal to provide an enabling signal, and a utilization

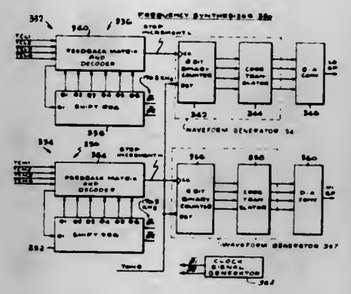
circuit responsive to said enabling signal for utilizing said enabling signal.

4,068,178

VARIABLE FREQUENCY WAVEFORM SYNTHESIZER

Burton Ralph Tunzi, Santa Clara, Calif., assignor to Telenetics, Inc., Newport Beach, Calif.

Filed Oct. 1, 1976, Ser. No. 728,745
Int. Cl.² H03B 19/00
U.S. Cl. 328—14 **18 Claims**



1. A digital waveform synthesizer repetitively generating a waveform at a desired frequency with each cycle of the waveform being generated as N discrete steps, the synthesizer comprising:

a clock generator generating a reference signal at a known frequency;

a frequency divider circuit coupled to repetitively cycle by counting M cycles of the reference signal where M is an integral number that remains constant for a given desired frequency;

a decoder coupled to define discrete parts by dividing each cycle of the frequency divider into an integral number of discrete parts and generate a step increment signal for each discrete part, each discrete part corresponding to one of N steps of the synthesized waveform with at least one of the discrete parts having a time duration different than at least one other discrete part during each cycle of the frequency divider; and

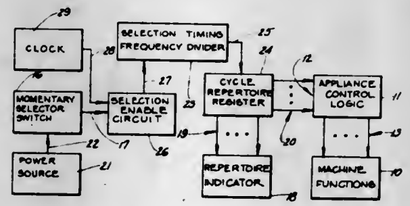
a waveform generator providing a sequence of N discrete waveform signals defining the synthesized waveform; the waveform generator being coupled to be incremented in response to the step increment signal for each discrete part provided by the decoder.

4,068,179

ELECTRONIC CYCLE-SELECT SWITCHING SYSTEM

Steven B. Sample, Lincoln, Nebr.; Paul R. Scheuer, West Lafayette, and Karmen D. Cox, Lafayette, both of Ind., assignors to Design and Manufacturing Corporation, Connersville, Ind.

Filed May 17, 1976, Ser. No. 686,811
Int. Cl.² H03K 17/00; G01R 29/02; H03K 5/00
U.S. Cl. 328—72 **11 Claims**



1. In a machine of the type having an electronic digital control system including a control logic circuit capable of carrying on a plurality of operating cycles, each cycle comprising a plurality of events performed by a number of machine devices, each of said operating cycles being selectable by energizing a corresponding cycle-select input of said control logic, the improved switching system for selecting any desired operating cycle in combination therewith comprising:

a. generating means for producing a control signal;

b. a momentary contact switch having an input connected to said control signal and having an output; and

c. selection means having an input connected to said output of said momentary contact switch and having a plurality of outputs, each of said outputs of said selection means being connected to a corresponding cycle-select input, said outputs repeatedly energizing sequentially each of said cycle-select inputs for a predetermined period shorter than the duration of the corresponding operating cycle as long as said control signal remains connected to said input of said selection means through said momentary contact switch.

9. A cycle-select switching system comprising:

a. generating means for producing a control signal;

b. a momentary contact switch having an input connected to said control signal and having an output; and

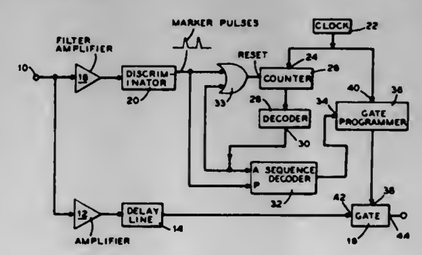
c. selection means having an input connected to said output of said momentary contact switch and having a plurality of outputs which are repeatedly energized sequentially as long as said control signals remains connected to said selection means through said momentary contact switch.

4,068,180

METHODS AND APPARATUS FOR ENHANCING RESOLUTION IN PULSE ANALYSIS

William B. Nelligan, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 22, 1976, Ser. No. 734,784
Int. Cl.² H03K 5/153, 5/18
U.S. Cl. 328—109 **28 Claims**



1. A method for selecting, among input signals, those which are spaced from each other by at least a predetermined time interval, comprising the steps of:

driving a timing means from a reset condition toward a predetermined final condition;

generating a minimum interval signal upon each occurrence of the predetermined final condition;

resetting the timing means to its reset condition upon each occurrence of either an input signal or a minimum interval signal; and

selecting only those input signals which are directly preceded and followed by minimum interval signals.

4,068,181

DIGITAL PHASE COMPARATOR

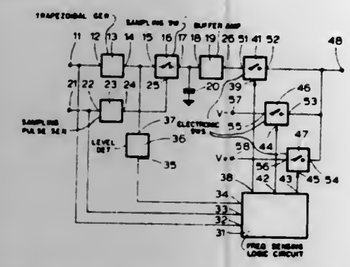
Michael A. G. Clark, and Michael J. Underhill, both of Crawley, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 12, 1976, Ser. No. 731,337

Claims priority, application United Kingdom, Oct. 14, 1975, 42033/75

Int. Cl.² H03B *3/04*

U.S. Cl. 328—133 **5 Claims**



1. A digital phase comparator for comparing the phase difference between first and second binary input signals, said comparator comprising

a trapezoidal waveform generator having an input means for receiving said second signal, and an output means for producing in synchronism with said second input signal a third signal having a ramped leading edge of predetermined slope occupying less than one hundred eighty degrees of said third signal and a given duration upon each occurrence of a given edge of said second input signal;

a sampling switch having a control input means for receiving a signal in accordance with said first input signal and for operating said switch for a period less than said given duration upon each occurrence of a corresponding given edge of said first input signal, a signal input coupled to said generator output means, and an output means for providing sampled values of said third signal upon each operation of said switch;

a comparator output;

a sample holding circuit means coupled to said sampling switch and said comparator output for storing said sampled values between sampling instants and for providing an analog signal to said comparator output indicative of said sampled values; and

a detector means having an input coupled to receive a signal in accordance with one of said input signals, and an output means for preventing said sample holding circuit for providing said analog signal to said comparator output and for providing to said comparator output a direct current signal having one of two different predetermined constant levels in accordance with whether the phase difference between said two input signals is increasing or decreasing respectively upon said sampling switch being operated during other than said ramped leading edge.

4,068,182

DIRECT-COUPLED CASCADE AMPLIFIER WITH AUTOMATICALLY ADJUSTED QUIESCENT OUTPUT SIGNAL LEVEL

Andrew Gordon Francis Dingwall, Somerville, and Bruce David Rosenthal, Randolph, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1977, Ser. No. 761,374

Int. Cl.² H03F *1/02, 3/185, 3/45*

U.S. Cl. 330—9 **1 Claim**

1. Direct-coupled cascade amplifier with automatically adjusted quiescent output potential comprising:

inverting and non-inverting input signal terminals;

an output signal terminal;

a reference terminal for application of reference potential;

first and second transistors of a first conductivity type, and third and fourth and fifth and sixth transistors of a second conductivity type complementary to said first conductivity type, each of said transistors having first and second electrodes with a principal controlled-conduction path therebetween and having a control electrode, the potential of which respective to its first electrode determines the conductivity of its principal controlled-conduction path;

means connecting said first and said second transistors in long-tailed pair configuration, including means applying a quiescent current to an interconnection between the first electrodes of said first and said second transistors;

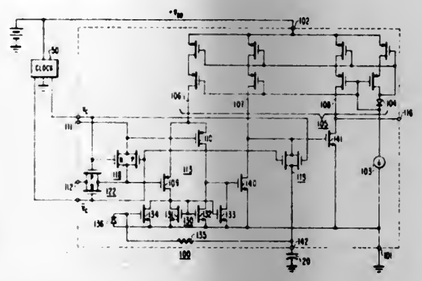
means connecting said third and fourth transistors in a differential current combining circuit, including

means connecting the first electrodes of each of said third and said fourth transistors to said reference terminal, including

a first node to which the second electrodes of said first and said third transistors are direct-current conductively connected,

including a second node to which the second electrodes of said second and said fourth transistors are direct-current conductively connected and from which differentially combined current is available, and including

means for applying substantially the same potential to the control electrodes of said third and said fourth transistors including means direct coupling said first node to the



control electrode of said third transistor to complete a degenerative feedback connection between the second and control electrodes of said third transistor;

means connecting said fifth transistor for amplifier operation, including direct coupling of said second node to the control electrode of said fifth transistor, including means connecting the first electrode of said fifth transistor to said reference terminal, including means for supplying quiescent current to the second electrode of said fifth transistor direct coupled to said output signal terminal;

a capacitor having a first end connected to a point of fixed potential relative to said reference potential and having a second end direct coupled to the control electrode of said sixth transistor;

means connecting the first electrode of said sixth transistor to said reference terminal;

means direct current conductively connecting the second electrode of said sixth transistor to said first node;

means for applying the potentials appearing at said inverting and said non-inverting input signal terminals respectively to the control electrode of said first transistor and to the control electrode of said second transistor during a normal mode of operation;

means for applying the same potential to the control electrodes of each of said first and said second transistors during a zero-adjust mode of operation interspersed with said normal mode of operation; and

means for direct coupling the potential at the second electrode of said fifth transistor to the second end of said capacitor only during said zero-adjust mode of operation.

4,068,183

TRANSISTORIZED SINGLE ENDED PUSH-PULL AMPLIFIER HAVING NO CROSS-OVER DISTORTION

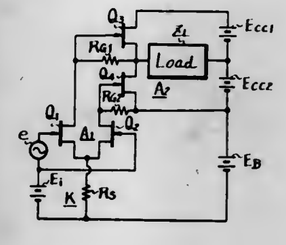
Hiroshi Horinaga, Hatano, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 3, 1975, Ser. No. 554,550

Claims priority, application Japan, Mar. 16, 1974, 49-30299

Int. Cl.² H03F *3/26, 3/16*

U.S. Cl. 330—253 **19 Claims**



19. An amplifier circuit comprising:

a field effect transistor having a source electrode, a gate electrode and a drain electrode;

a first voltage supply connected to said drain electrode;

a second voltage supply;

a resistor connected between said source electrode and said gate electrode;

a constant-current supplying circuitry connected between said gate electrode and said second voltage supply;

an input terminal connected to said gate electrode;

and an output terminal connected to said source electrode.

4,068,184

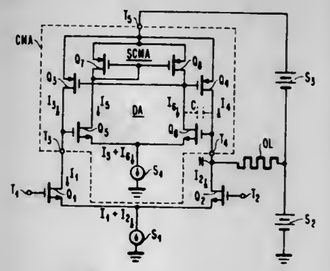
CURRENT MIRROR AMPLIFIER

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 14, 1977, Ser. No. 768,593

Int. Cl.² H03F *3/45*

U.S. Cl. 330—257 **3 Claims**



1. A current mirror amplifier comprising:

an input terminal;

an output terminal;

a common terminal;

first and second transistors of a first conductivity type, having respective input electrodes, having respective common electrodes connected to said common terminal, and having respective output electrodes connected respectively to said input terminal and to said output terminal; and

a differential-input single-ended-output amplifier having non-inverting and inverting input connections respectively at said input terminal and at said output terminal and having an output connection connected to an interconnection between the input electrodes of said first and said second transistors, said amplifier applying a signal to said interconnection having positive polarity when the potential at said non-inverting input connection is positive relative to the potential at said inverting input connection and having negative polarity when the potential at said non-inverting input connection is negative relative to the potential at said inverting input connection.

4,068,185

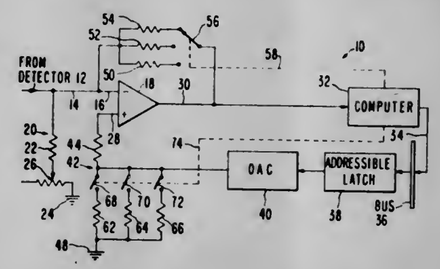
CURRENT BALANCING CIRCUIT FOR USE WITH CHROMATOGRAPHIC SYSTEM DETECTOR

Urs Christen, and Richard M. Commins, both of Walnut Creek, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 1, 1976, Ser. No. 662,768

Int. Cl.² H03F *1/34*

U.S. Cl. 330—86 **5 Claims**



1. In a chromatographic system of the type including detector means providing a detector output signal indicative of the level of a component sought to be determined; detector output amplifier means for receiving said signal; and an error signal balancing loop being connected to said amplifier output to provide a balancing signal in feedback relationship to said amplifier and means for adjusting the sensitivity range of said amplifier; the improvement for adjusting the error signal through said feedback loop, comprising:

control means connected in said feedback loop for varying the sensitivity range of said amplifier in accordance with a desired mode of system operation;

said control means providing a bit correction pattern for feeding into said feedback loop in accordance with the output signal of said amplifier:

digital-to-analog conversion means in said loop for converting said bit stream pattern to a first resolution level; and

resistor network and switching means in the feedback loop for further resolving the error signal output from said digital-to-analog conversion means, and providing said further resolved signal in feedback relationship to said amplifier to effect balancing of same.

4,068,186

CIRCUIT FOR COMPENSATING FOR NONLINEAR CHARACTERISTICS IN HIGH-FREQUENCY AMPLIFIERS

Gunkichi Sato, Tanashi, and Masahisa Yamaguchi, Tokyo, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed June 17, 1976, Ser. No. 697,118

Claims priority, application Japan, June 24, 1975, 50-77826

Int. Cl.² H03F *1/26*

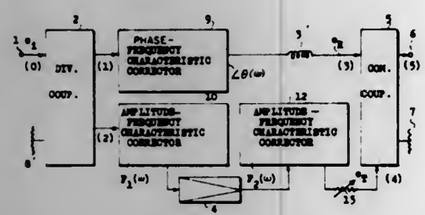
U.S. Cl. 330—149 **11 Claims**

1. A circuit, compensating for nonlinearity in a high-frequency amplifier, comprising:

input terminal means for receiving an input signal;

dividing coupler means connected to said input terminal means for dividing the input signal into two signal parts;

a first transmission line comprising a delay line and a phase-frequency characteristic corrector for developing nonlinear phase-frequency characteristics to compensate for a nonlinear characteristic of a high-frequency amplifier requiring compensation, connected to said dividing coupler means for compensation; one of said two signal parts;
a second transmission line comprising a nonlinear distortion generating high-frequency amplifier for receiving the other of said two signal parts and for developing nonlinear amplitude-frequency characteristics to compensate for the nonlinear characteristic of the high-frequency amplifier requiring compensation:



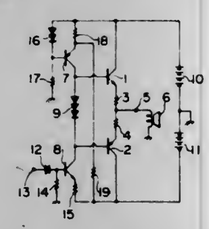
combining coupler means connected to said first transmission line and said second transmission line for obtaining the vector sum of respective outputs of said first transmission line and said second transmission line; and
output terminal means connected to said combining coupler means for sending out said vector sum to the highfrequency amplifier connected in cascade to said output terminal means for compensating for the amplitude and phase nonlinear characteristics in the high-frequency amplifier requiring compensation.

4,068,187

AUDIO-FREQUENCY POWER AMPLIFIERS

Nobutaka Amada; Tohru Sampei, and Akinori Maeda, all of Toyokawa, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 16, 1977, Ser. No. 778,087
Claims priority, application Japan, Mar. 19, 1976, 51-29244; Aug. 3, 1976, 51-92014
Int. Cl.² H03F 3/26
U.S. Cl. 330—268 **8 Claims**



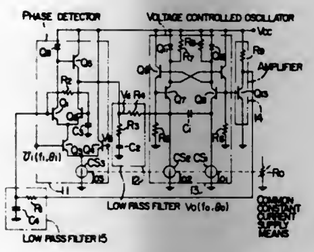
1. A low-frequency power amplifier comprising:
first and second transistors which are opposite in a conduction type to each other, each having an input electrode, an output electrode and a common electrode,
a load connected between said output electrodes of said first and second transistors and a reference potential point,
a first d.c. supply source connected between said common electrode of said first transistor and said reference potential point,
a second d.c. supply source connected between the common electrode of said second transistor and said reference potential point,
means for supplying an input signal to said first and second transistors at the respective input electrodes,
an impedance element connected between the input electrodes of said first and second transistors,
a third transistor having an input electrode, an output electrode and a common electrode,
means for supplying a bias voltage between the input and the common electrodes of said third transistor,
means for supplying an output current from said third transistor to said impedance element,
a first resistor means connected between the common electrode of said third transistor and said first d.c. supply source, and
a second resistor means connected between the common electrode of said third transistor and said second d.c. supply source.

4,068,188

PHASE LOCKED LOOP CIRCUIT

Takao Yokoyama, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 15, 1977, Ser. No. 768,840
Claims priority, application Japan, Feb. 16, 1976, 51-14895
Int. Cl.² H03B 3/04
U.S. Cl. 331—8 **9 Claims**



1. A phase locked loop circuit comprising a phase detector including an analog multiplier formed of a transistor differential amplifier for detecting the phase difference of two input signals through a constant current source connected to said differential amplifier, a low pass filter for integrating the phase difference output of said phase detector and converting it into a D.C. voltage, and a voltage-controlled oscillator generating an oscillation frequency determined by the capacitance of a timing capacitor and currents flowing through constant current sources connected respectively to both ends of said timing capacitor and controlled by said D.C. voltage output of said low pass filter and feeding back the oscillation output as one of said two input signals, said phase locked loop circuit comprising: p1 common constant current determining means including resistive means for correlatively adjusting and maintaining the currents flowing through said constant current source connected to said differential amplifier and through said constant current sources connected to the timing capacitor of said oscillator to be equal or at a predetermined ratio.

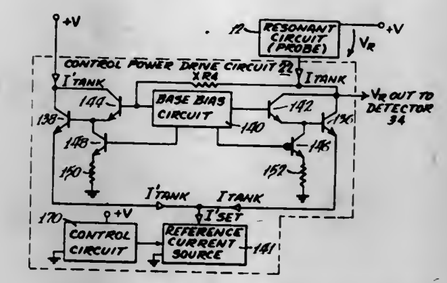
4,068,189

LINEAR OSCILLATOR FOR PROXIMITY SENSOR

Michael A. Wilson, Sarasota, Fla., assignor to Electro Corporation, Sarasota, Fla.

Continuation-in-part of Ser. No. 576,897, May 12, 1975, Pat. No. 4,001,718. This application Oct. 7, 1976, Ser. No. 730,532
Int. Cl.² G01R 33/12; G08C 21/00
U.S. Cl. 331—65 **7 Claims**

1. A linear oscillator circuit comprising:
a resonant circuit having an input and an output, the input coupled to a voltage V+, said resonant circuit being capable of developing an oscillating voltage V_R having a peak amplitude which is directly proportional to a distance between the resonant circuit and a conducting body;
a control power drive circuit coupled to the output of the resonant circuit for switching a current through the resonant circuit during each period of oscillation of the voltage V_R;
a constant current source coupled to said control power drive circuit for drawing the current through said control power drive circuit and said resonant circuit wherein the



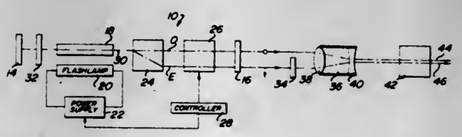
magnitude of the current is equal to the magnitude of an independently established reference current; and
a current control circuit coupled to the constant current source for establishing the independently established reference current.

4,068,190

LASER SYSTEM HAVING FREQUENCY DOUBLING

Gerald D. Ferguson, Yardley, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1976, Ser. No. 656,775
Int. Cl.² H01S 3/10
U.S. Cl. 331—94.5 C **4 Claims**



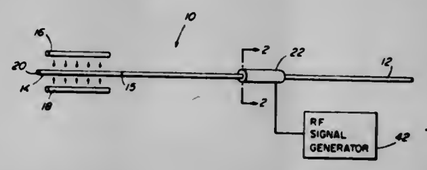
1. A laser system, comprising, in combination:
first and second mirrors spatially positioned to form an optically resonant chamber, said first and second mirrors being partially and fully reflective, respectively;
solid-state laser means positioned in said chamber to radiate laser energy along a first optical axis extending through said mirrors;
polarizer means positioned along the first axis for directing the radiation of one polarity along the first axis to said first mirror and radiation of another polarity along a second optical axis extending through said first mirror and parallel to the first axis, for maintaining radiation of the one polarity returning along the first axis on the first axis and for directing the radiation of the other polarity out of said chamber, and for directing the radiation of the other polarity returning along the second axis into the first axis and for directing the radiation of the one polarity along the second axis out of said chamber;
a Pockels cell positioned along the first and second axes for changing the respective polarities of the returning radiation;
a quarter-wave plate positioned on the first axis for changing the polarities of the radiation returning from said second mirror;
a half-wave plate positioned on the second axis for changing the radiation passed through said first mirror from the other to the one polarity; and
frequency doubling crystal positioned on said first and second axes to receive the radiation of the one polarity from said first mirror and from said half-wave plate for doubling the frequency of the radiation.

4,068,191

ACOUSTOOPTIC MODULATOR FOR OPTICAL FIBER WAVEGUIDES

Stanley A. Zemon, Boston, and Mark L. Dakss, Waltham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 606,910, Aug. 22, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 763,847
Int. Cl.² H01S 3/10
U.S. Cl. 331—94.5 M **10 Claims**



1. An acousto-optic modulator integrated into an optical fiber waveguide comprising:
a length of optical fiber waveguide adapted to guide only a small number of discrete modes of light and having an index of refraction profile which confines light modes propagating therethrough to the portion of the waveguide adjacent to its axis;
an acoustic transducer in intimate contact with the optical fiber waveguide around at least a portion of its circumference and along at least a portion of its length, the acoustic transducer including
a first electrode in intimate contact with the optical fiber waveguide,
a second electrode uniformly spaced from the first electrode, and
a layer of piezoelectric material interposed between the first and second electrodes; and
means for generating and applying an rf signal voltage across the first and second electrodes to generate acoustic waves of the same frequency as the applied rf signal voltage in the optical fiber waveguide, the acoustic waves being focussed into said axially adjacent waveguide portion to couple at least a portion of the light propagating within one of the guided modes into other modes and thereby intensity modulate the light propagating within that guided mode.

4,068,192

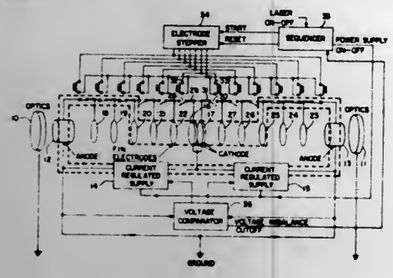
GAS LASER STARTING

Robert T. Hintz, and Fred T. Rogers, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 15, 1976, Ser. No. 677,198
Int. Cl.² H01S 3/097
U.S. Cl. 331—94.5 G **5 Claims**

1. In a cross flow gas laser;
a laser cavity;
electrode means at either end of the laser cavity at a first potential;
plasma guides at spaced intervals between said electrodes;
other electrode means at a second potential positioned intermediate said electrode means at either end of said laser cavity;
switching means serially and electrically interconnecting each of said plasma guides and said electrode means to said other electrode means;
supply voltage means connected to provide said first and second potentials to said electrode means and said other electrode means thereby creating a potential difference

between said electrode means and said other electrode means;



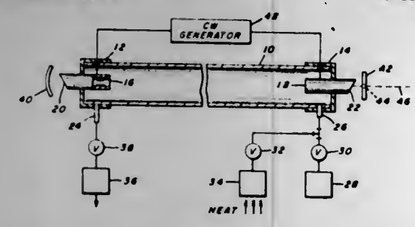
and stepping means for operating said switching means sequentially to cause said plasma guides to become effective as electrode means with respect to said other electrode means.

4,068,193

GAS LASER SYSTEM

Edward C. Malarkey, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 26, 1976, Ser. No. 680,252
Int. Cl.² H01S 3/22
U.S. Cl. 331—94.5 G **6 Claims**



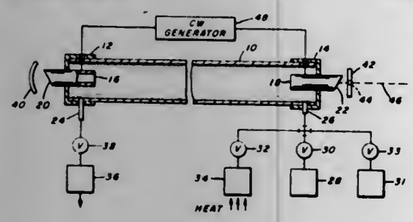
1. A laser for producing coherent radiation comprising a pair of spaced-apart reflectors forming a resonant cavity for reflecting coherent radiation, an envelope disposed between the mirrors and having transparent end windows adjacent the mirrors, a gaseous mixture of water vapor and hydrogen deuteride within the envelope, and means for exciting the gas mixture by electrical energy to raise the hydrogen deuteride to its first metastable state, whereby laser emission is induced by vibrationally exciting the water vapor molecules.

4,068,194

LASER SYSTEM

Edward C. Malarkey, Severna Park, and Robert P. Pautienus, Laurel, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 26, 1976, Ser. No. 680,253
Int. Cl.² H01S 3/22
U.S. Cl. 331—94.5 G **4 Claims**



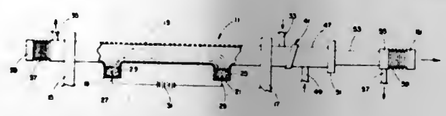
1. A laser for producing coherent radiation comprising a pair of spaced-apart reflectors forming a resonant cavity for reflecting coherent radiation, an envelope disposed between the mirrors and having transparent end windows adjacent the mirrors, a gaseous mixture within the envelope, said gaseous mixture comprising water vapor, nitrogen and a gas selected from the group consisting of hydrogen and hydrogen deuteride, and means for exciting the gas mixture by electrical energy to raise the gas selected from hydrogen and hydrogen deuteride to its first metastable state, whereby laser emission in a range of about 3 to 5 microns is induced by vibrationally exciting the water vapor molecules.

4,068,195

LASER MULTILINE SELECTION METHOD AND MEANS

Mani L. Bhaumik, Malibu, and Gerard Hasserjian, Palos Verdes Peninsula, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Continuation of Ser. No. 150,873, June 4, 1971, abandoned. This application June 26, 1975, Ser. No. 590,630
Int. Cl.² H01S 3/10
U.S. Cl. 331—94.5 G **7 Claims**



1. A gas laser comprising:

means for forming a resonant optical path including a pair of oppositely positioned mirrors, one of said mirrors being a partial reflector adapted to pass therethrough a portion of the light incident thereon to provide a laser output,

a first chamber positioned in said optical path,

a lasing gas comprising carbon monoxide in said chamber,

means for exciting said gas to effect lasing thereof whereby a laser beam is formed in said optical path,

a second chamber positioned in said optical path, said second chamber being separate from said first chamber and having no fluid communications therewith, and

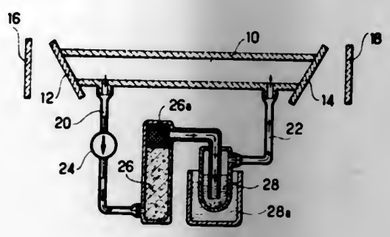
a gaseous mixture in said second chamber comprising water vapor of sufficient concentration to remove lines from the laser beam which are significantly attenuated by the earth's atmosphere.

4,068,196

IODINE GAS LASER DEVICE

Kristian Hohla, Garching, and Werner Fuss, Munich, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany

Filed July 22, 1976, Ser. No. 707,929
Claims priority, application Germany, July 31, 1975, 2534322
Int. Cl.² H01S 3/00
U.S. Cl. 331—94.5 G **11 Claims**



1. An iodine laser comprising a tubular receptacle containing a gaseous laser medium containing an iodine compound, and a device capable of effecting a population reversal in the laser medium and a gas circulation circuit means for said receptacle, said receptacle being placed in said circuit means and wherein said gas circulation circuit means comprises:

a purifying device for removing the elementary iodine which forms in said receptacle during the operation of the laser;

a reconstituting device for replacing the consumed iodine compound; and

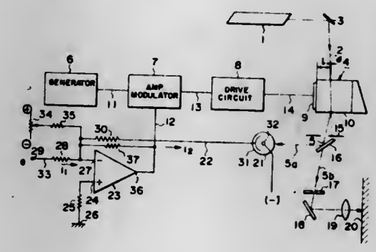
a device for circulating of the laser medium through said circuit means including said tubular receptacle.

4,068,197

APPARATUS FOR STABILIZING BEAM FOR EXPOSURE

Taro Yamazaki; Kazuhiko Ohnishi, both of Himeji, and Kiyoshi Maeda, Takatsuiki, all of Japan, assignors to Dainippon Screen Seizo Kabushiki-Kaisha, Kyoto and Ushio Electric Inc., Tokyo, both of, Japan

Filed June 23, 1976, Ser. No. 699,068
Claims priority, application Japan, June 26, 1975, 50-79567
Int. Cl.² H01S 3/00
U.S. Cl. 331—94.5 S **4 Claims**



1. An apparatus for stabilizing beam to be used for exposure in an image-reproducing apparatus wherein said beam is controlled by image signals obtained from the scanning of a color original, said apparatus comprising;

a. a laser beam source,

b. an ultrasonic light modulator adapted to modulate laser beam emitted from said laser beam source,

c. a half mirror adapted to branch out said beam modulated by said ultrasonic light modulator into two modulated beams,

d. a photoelectric transducer adapted to photoelectrically transduce one of said two modulated beams,

e. a comparison amplifier adapted to compare output signals from said photoelectric transducer with said image signals,

f. an amplitude modulator adapted to modulate the amplitude of a sine wave of required frequency by means of output signals from said comparison amplifier, and

g. a drive circuit adapted to drive an ultrasonic vibrator attached to said ultrasonic light modulator by means of output signals from said amplitude modulator.

4,068,198

PHASE-LOCKED LOOP FREQUENCY SHIFT KEY MODULATOR

Jeffrey C. Otto, Framingham, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 23, 1976, Ser. No. 753,797
Int. Cl.² H03C 3/00; H04L 27/12
U.S. Cl. 332—19 **3 Claims**

1. Frequency shift key modulating apparatus including in combination

means for producing a reference frequency signal;

a voltage controlled oscillator;

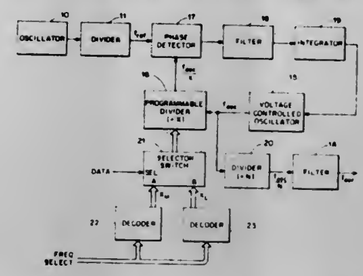
programmable dividing means coupled to the output of the voltage controlled oscillator for dividing the frequency of the output signal from the voltage controlled oscillator by a preset value;

phase detector means having a first input coupled to said means for providing a reference frequency signal, a second input coupled to the output of said programmable dividing means, and an output coupled to the input of the voltage controlled oscillator to produce a phase-locked loop, in which the frequency of the output signal from the voltage controlled oscillator is equal to the frequency of the reference frequency signal multiplied by the preset value;

first means for producing a first signal designating a first preset value;

second means for producing a second signal designating a second preset value; and

selection means coupled to said programmable dividing means and to said first and second means and being operable to receive data signals at a first level and data signals



at a second level, said selection means being operable in response to receiving a data signal at the first level to apply said first signal designating a first preset value to said programmable dividing means and being operable in response to receiving a data signal at the second level to apply said second signal designating a second preset value to said programmable dividing means; whereby the output signal from the voltage controlled oscillator is at a first frequency when a data signal at the first level is being received by the selection means and the output signal from the voltage controlled oscillator is at a second frequency when a data signal at the second level is being received by the selection means;

said selection means receiving continuous data signals, each data signal being present during a predetermined time interval, a data signal at said first level for said predetermined time interval representing a first binary digit and a data signal at said second level for said predetermined time interval representing a second binary digit.

4,068,199

DIGITAL PHASE-LOCKED LOOP FREQUENCY MODULATOR

Herbert S. Madoff, Sudbury, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 23, 1976, Ser. No. 753,799
Int. Cl.² H03C 3/00
U.S. Cl. 332—19 **4 Claims**

1. Frequency modulating apparatus including in combination

means for producing a reference frequency signal;

a voltage controlled oscillator;

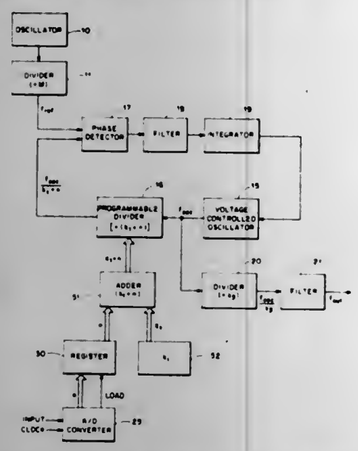
programmable dividing means coupled to the output of the voltage controlled oscillator for dividing the frequency of the output signal from the voltage controlled oscillator by a divisor;

phase detector means having a first input coupled to said means for producing a reference frequency signal, a second input coupled to the output of said programmable dividing means, and an output coupled to the input of the

voltage controlled oscillator to produce a phase-locked loop in which the frequency of the output signal from the voltage controlled oscillator is equal to the frequency of the reference frequency signal multiplied by said divisor;

signal converting means for receiving an input signal and for converting the input signal to digital signals;

storage means coupled to said signal converting means for holding a digital signal therefrom; and



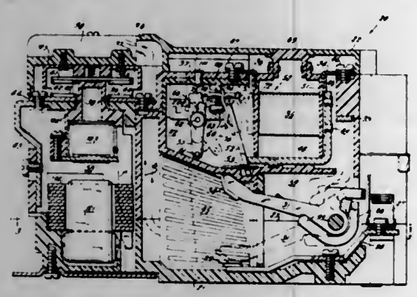
divisor means coupled to said storage means and to said programmable dividing means for applying to said programmable dividing means a divisor representing the digital signal held by said storage means, whereby the frequency of the output signal from the voltage controlled oscillator is modulated by the input signal being received.

4,068,200

COMBINATION COVER INTERLOCK AND TRIP ACTUATOR

Keith T. Krueger, Bellefontaine, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Apr. 28, 1976, Ser. No. 681,244
Int. Cl.² H01H 9/22
U.S. Cl. 335—172 **6 Claims**



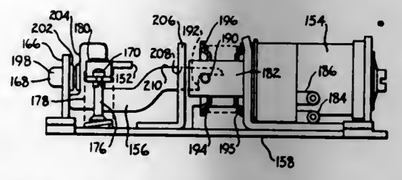
1. A multipole switching device including a set of cooperating contacts for each pole of said device, an operating mechanism for normally opening and closing said contacts, automatic trip means for operating said mechanism to open said contacts upon the occurrence of predetermined overload conditions; said mechanism including a latch means which when latched permits said mechanism to open and close said contacts; said latch means when unlatched releasing a portion of said mechanism to open said contacts; said automatic trip means including a common trip means for all poles of said device; a housing wherein said contacts, said mechanism and said trip means are disposed; said housing including an openable front cover; a trip actuator; biasing means urging said actuator forward; said actuator being maintained by said cover in a first position when the latter is closed; with said cover open said biasing means operating said actuator forward to a second position; said actuator in moving from said first to said second position operatively engaging said trip means for operation thereof to unlatch said latch means whereby said mechanism opens said contacts; with said cover closed, said actuator being accessible from outside of said housing to operatively engage said trip means for operation thereof to unlatch said latch means whereby said mechanism opens said contacts; said actuator being provided with a first formation that operatively engages the trip means to unlatch the latch when the actuator moves from said first to said second position; said actuator being provided with a second formation which operatively engages the trip means to unlatch the latch when the actuator is operated from outside of said housing when the cover thereof is closed.

4,068,201

MANUAL STARTER WITH LOW VOLTAGE RELEASE

Walter C. Karch, Grafton, and Joseph J. Gribble, Milwaukee, both of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed June 28, 1976, Ser. No. 700,658
Int. Cl.² H01H 9/00
U.S. Cl. 335—173 **10 Claims**



1. In an electric switch, the combination comprising: an insulating base having a rear wall, a cavity extending forwardly in the rear wall, a plurality of pairs of spaced stationary contacts mounted on a front wall of the base with one of the contacts of each pair connected through a terminal member to a voltage source, a movable contact assembly including a movable contact carrier and a plurality of movable contacts positioned by the carrier so each of the movable contacts bridgedly engages a pair of stationary contacts when the carrier is at an actuated position and is separated from the stationary contacts when the carrier is at a de-activated position, a toggle mechanism including an operating lever, a toggle lever and a trip lever pivotally mounted so the carrier is moved by the toggle lever to its actuated position when the trip lever is at a RESET position and the operating lever is moved from an OFF position to an ON position and the carrier moves to its de-activated position when the trip lever is at a tripped position, a spring constantly biasing the trip lever toward its tripped position and means including a releasable latch for releasably maintaining the trip lever against the bias of said spring at the reset position, and means including a solenoid, a spring biased lever, and a latch member positioned within the cavity for causing the latch to release the trip lever and the carrier to move to the de-activated position in event of power failure of the source.

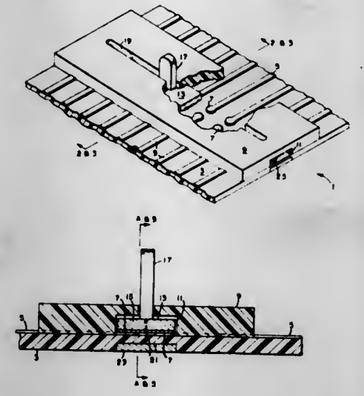
4,068,202

RECIPROCABLE MAGNET SWITCH

Michael J. Lyons, III, Loudonville, N.Y., assignor to Walter F. Wessendorf, Jr., Guilderland, N.Y.

Filed June 7, 1976, Ser. No. 693,713
Int. Cl.² H01H 9/00
U.S. Cl. 335—207 **9 Claims**

1. A switch for use with a circuit board of dielectric material adapted for such use and wherein said circuit board has conductive strips having circuit-terminal elements; said switch comprising a switch cover and switch member, said switch cover being of dielectric material, said switch cover mounting said switch member for translatory movement therein in circuit closing or opening, said switch member having an electrically non-conductive strip magnet having consecutive, alternating polarities and at least one contact element, said circuit board carrying an electrically non-conductive strip magnet having consecutive, alternating polarities, said switch having respective closed and open positions of engagement of said



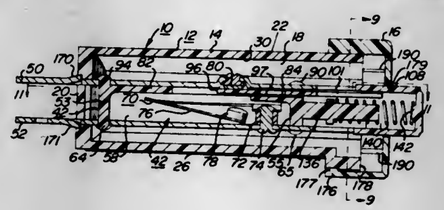
contact and circuit-terminal elements for circuit closing and of disengagement of said contact and circuit-terminal elements for circuit opening, said contact and circuit-terminal elements remaining always in parallel relationship, said contact and circuit-terminal elements closing square in circuit closing, and said strip magnets being arranged and disposed respecting said respective switch closed and open positions such that said strip magnets have opposite attracting polarities for circuit closing and said strip magnets having the same and repelling polarities for circuit opening.

4,068,203

BIMETALLIC CIRCUIT BREAKER

Robert P. Unger, East Windsor, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed June 15, 1976, Ser. No. 696,302
Int. Cl.² H01H 71/58
U.S. Cl. 337—56 **19 Claims**



1. A bimetallic circuit breaker comprising

a housing,

a sub-assembly received by said housing and comprising

a frame defining a space,

first and second terminals secured to said frame,

said first terminal including a stationary contact,

said second terminal including a snap acting bimetallic blade having a movable contact,

said bimetallic blade being disposed in said space and movable on predetermined conditions from a contacts closed position to a contacts tripped position and thereafter to a contacts open position,

an actuator slidably trapped to said frame and interposed between said first terminal and said frame,

said actuator having an opening through which said movable contact extends to abut said stationary contact to restrain movement of said actuator by engagement of said movable contact with said actuator, and

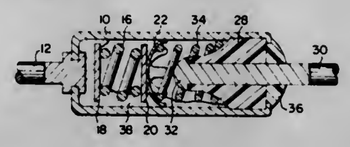
a spring trapped between portions of said frame and said actuator and biasing said actuator to the contacts open position.

4,068,204

THERMAL FUSE EMPLOYING A SLIDABLE RESILIENT CONTACT MEMBER IN A CONDUCTIVE HOUSING

Sadayoshi Iwanari, Kusatsu, and Osamu Umene, Otsu, both of Japan, assignors to New Nippon Electric Company, Ltd., Osaka, Japan

Filed Dec. 21, 1976, Ser. No. 752,725
Claims priority, application Japan, Dec. 26, 1975, 50-178425[U]
Int. Cl.² H01H 37/76
U.S. Cl. 337—408 **5 Claims**



1. A temperature responsive electric switch comprising:

a. a cylindrical, electrically and thermally conductive housing having an open-ended portion;

b. a first lead wire fixedly secured to said housing;

c. switch parts housed in said housing in a certain order, said switch parts including a temperature-sensitive pellet fusible at a predetermined temperature, a first metallic retaining plate, a first compression spring, a second metallic retaining plate, a slidable resilient contact member, and a second compression spring, said slidable resilient contact member having a curved shape with a convex bottom portion in the absence of an external force;

d. an insulator closing the open-ended portion of said housing;

e. a second lead wire passing through said insulator and having a contact portion at the inner end thereof; and

f. hermetical sealing means of insulating material integrally secured to said housing, to said insulator and to said second lead wire so as to electrically couple said first lead wire and said second lead wire through said contact member, and wherein the contact member is provided with a center contact portion and a peripheral contact portion, said peripheral contact portion being electrically connected to the inner surface of said housing with a contact force corresponding to the biasing force of said second spring on said contact member.

4,068,205

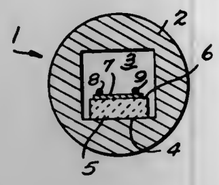
RESISTANCE ELEMENT FOR A RESISTANCE THERMOMETER

Walter Diehl, Hanau, and Wolfgang Koehler, Alzenau-Horstein, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Dec. 9, 1976, Ser. No. 749,108
Claims priority, application Germany, Dec. 24, 1975, 7541295
Int. Cl.² H01C 3/04
U.S. Cl. 338—25 **2 Claims**

1. A resistance element comprising a cylindrical carrier body, a generally rectangular bore therein, a ceramic plate within said bore having one surface secured to a flat wall of said carrier body, a thin layer platinum resistor path with a temperature dependent electrical resistance firmly adhered to the opposite surface of said ceramic plate, electrical lead wires

connected to said resistance path, an electrically non-conducting sealing composition securing said lead wires to at least one



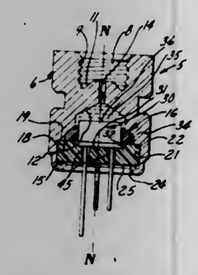
end of said carrier body, said lead wires extending through said sealing composition to outside said carrier body.

4,068,206

PRESSURE-SENSING SEMICONDUCTOR TRANSDUCER

Roger C. Popp, Chesaning, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed June 25, 1976, Ser. No. 699,897
Int. Cl.² H01L *10/10*
U.S. Cl. 338—36 **7 Claims**



1. A pressure-sensing transducer comprising:

a housing providing duct-connecting means and defining a chamber having one larger open end adjacent an end of the housing and its other smaller end interiorly of the housing, said housing generally concentric of an axis, and a passageway of relatively small diameter connecting the small end of the chamber and said duct-connecting means;

a cup member of non-conducting material having an outer peripheral surface conforming to a substantial surface portion of the chamber adjacent its large end and defining a central cup-shaped cavity extending inwardly of the member away from said small end of the chamber to the bottom of the cavity;

a generally cylindrical transducer unit containing a semiconductor element seated with one end on a seating surface provided at the bottom of said cavity and extending outwardly thereof into said chamber at clearance with any side surfaces thereof;

a ring of resilient non-conductive material encircling said unit with its inner surface in sealed frictional engagement with the outer cylindrical surface of the element, and an outer annular surface portion of the ring being in resilient engagement with annular surface portions of said cavity and said chamber to confine the ring in a fixed axial position;

circuit connectors for said element extending through said member from said open end into an electrical connection with said element; and

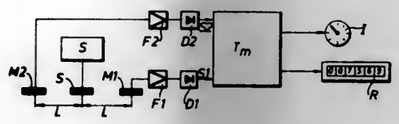
said housing having means for securing said member in fixed position within said chamber.

4,068,207

ACOUSTIC LOG

Nils Ingvar Andermo, Taby, and Karl-Gustav Masreliez, Stockholm, both of Sweden, assignors to Jungner Instrument AB, Solna, Sweden

Continuation of Ser. No. 473,726, May 28, 1974. This application May 10, 1976, Ser. No. 685,068
Claims priority, application Sweden, June 1, 1973, 7307805
The portion of the term of this patent subsequent to Nov. 9, 1993, has been disclaimed.
Int. Cl.² G01S *9/66*
U.S. Cl. 340—3 R **5 Claims**



1. Apparatus for measuring a vessel's velocity relative to a reference location, comprising:

transmitter means on board a vessel and including at least one transmitter and at least one transmitting transducer coupled to said at least one transmitter for transmitting a coherent signal toward the reference location from where the coherent signal is reflected;

receiver means on board the vessel and comprising at least two spaced-apart receiver transducers coupled to at least one receiver, said at least two spaced-apart receiver transducers having an elongated sensing area having a predetermined longitudinal curvature, and being oriented such that the long sides of said sensing area are substantially at right angles to the direction of velocity measurement;

said coherent signal transmitted by said transmitter means being within a lobe range that is substantially common to said at least two spaced-apart receiver transducers, the signals reflected by said reference location and received by said receiver means comprising at least two acoustic signals that are similar in character but different in timing from each other, the difference in timing between said at least two acoustic signals being a function of the distance in the direction os measurement between said spaced-apart receiver transducers and further being a function of the vessel's velocity, said received signals comprising reflections from every point on the reference location within said lobe range;

each of said reflected acoustic signals received by said receiver means being representative of the instantaneous position of each of said receiver transducers relative to said reference location, said received signals being modulated as a function of the vessel's movement relative to said reference location; and

operating means coupled to said receiver means for comparing said reflected acoustic signals with each other and for generating an output signal which is a function of the timing difference between said two signals, said output signal further being indicative of the vessel's velocity relative to the reference location.

4,068,208

MARINE STREAMER POSITION DETERMINATION SYSTEM

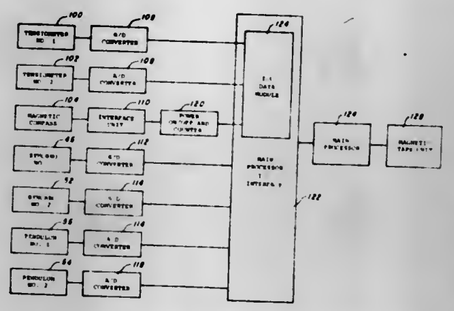
Joseph A. Rice, Jr., McKinney; Larry W. Moore, Plano, and Robert C. Donald, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 14, 1975, Ser. No. 595,937
Int. Cl.² G01V *1/38*
U.S. Cl. 340—7 R **7 Claims**

1. In marine seismic exploration wherein a streamer is drawn by a tow vessel, apparatus for determining the orientation of the portion of said streamer adjacent said vessel, said apparatus comprising:

a. first angle indicator means for providing a first signal representative of the yaw of said streamer relative to a coordinate system of said vessel,

b. second angle indicator means for providing a second signal representative of the pitch of said streamer relative to said coordinate system,



c. means for providing a third signal representative of the roll of said tow vessel in an earth relative coordinate system,

d. means for providing a fourth signal representative of the pitch of said tow vessel in said earth relative coordinate system, and

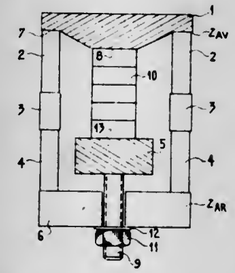
e. signal processing means responsive to said first, second, third, and fourth signals to provide signals representative of the yaw of said streamer in said earth relative coordinate system.

4,068,209

ELECTROACOUSTIC TRANSDUCER FOR DEEP SUBMERSION

Michel Lagier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 4, 1975, Ser. No. 628,838
Claims priority, application France, Nov. 8, 1974, 74.37073
Int. Cl.² H04B *13/00*
U.S. Cl. 340—10 **5 Claims**



1. An axial electroacoustic transducer, for deep submergence and which operates in a longitudinal wave mode, is of the sandwich type comprising:

a member having an active front radiating face;

a counter-mass disposed rearwardly of said member; and

an active part, provided with front and rear electrical connections (8, 13) and which is formed by means of a plurality of coaxially stacked piezoelectric wafers, arranged between said member and said rear counter-mass,

said active part and said rear counter-mass are enclosed in a cylindrical housing one base of which is formed by said active radiating face while the other base of which comprises an inertia loading mass (6) and the side of which is formed by decoupling means operatively associated with said active radiating face (1) and said inertia loading mass, such that the decoupling properties are maintained even for high pressure operations whereby the electroacoustic transducer thus obtained is able to operate over a wide frequency band,

said decoupling means also forming an acoustic filter formed by means of axially stacked annular members, at least three in number, alternately of a compliant type and of an inertial type within the operating frequency range,

whereby the resultant properties include high compliance, in the axial direction of the decoupling means, and high resistance, in both the radial and tangential directions, to compression of the decoupling means.

4,068,210

SEISMIC VIBRATOR PHASE DETECTOR

David P. Corkhill, St. Albans, England, assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 7, 1976, Ser. No. 674,699
Int. Cl.² G01V *1/16*
U.S. Cl. 340—17 R **9 Claims**



1. A phase detector for detecting the phase of a driven apparatus relative to the phase of an electrical pilot signal comprising the combination of:

delay means for receiving said pilot signal and providing an output signal having a 90° phase shift relative to said input,

a motion detector coupled to said driven apparatus for providing an electrical output proportional to the physical movement of said apparatus,

a first amplifier coupled to said motion detector and said pilot signal for providing an output proportional to the product of said pilot signal and the motion detector output,

a second multiplier coupled to said motion detector and to said delay means for providing an output proportional to the product of said delay means output and the motion detector output,

first and second integrators coupled to said first and second multipliers, respectively, and to said pilot signal for integrating the outputs of said multipliers during one full cycle of the pilot signal and for providing outputs proportional to the integrals of said multiplier outputs, and

a divider coupled to said integrators and to said input signal for providing an output proportional to the quotient of the integrals after one full cycle of input signal.

4,068,211

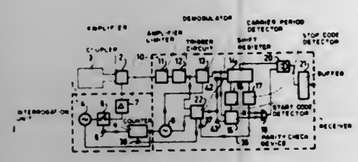
VEHICLE IDENTIFICATION SYSTEM HAVING ERROR DETECTION MEANS

Nicolaas Van Tol, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 23, 1975, Ser. No. 616,043
Claims priority, application Netherlands, Oct. 1, 1974, 7412919
Int. Cl.² G08G *1/00*
U.S. Cl. 340—32 **10 Claims**

1. A vehicle identification system for interrogating vehicles of the type having a response unit including means for transmitting a characteristic identification signal modulated on a carrier signal, said system comprising, an interrogation unit including means for the wireless transmission of an interroga-

tion signal to a vehicle response unit, and a signal receiver having an initial state and means for detecting said identification signal transmitted by wireless from the response unit in reply to an interrogation signal from the interrogation unit, said receiver further comprising a carrier period detector with means for detecting, during the reception of an identification



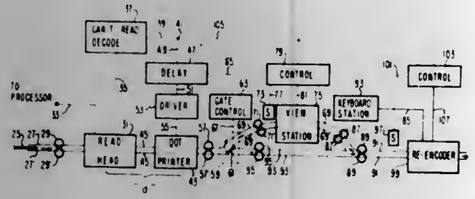
signal, the absence of the carrier signal for a given small number of periods, and switching means connected to and controlled by the carrier period detector for resetting the receiver to the initial state in response to a control signal supplied by the carrier period detector upon detection of said absence of the carrier signal.

4,068,212

METHOD AND APPARATUS FOR IDENTIFYING CHARACTERS PRINTED ON A DOCUMENT WHICH CANNOT BE MACHINE READ

William B. Templeton, Howell, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 1, 1975, Ser. No. 573,787
Int. Cl.² G06K 9/00
U.S. Cl. 340—146.3 ED 1 Claim



1. A document handling system for processing documents having characters encoded thereon comprising:

read station means for machine reading the characters encoded on each of said documents as said documents travel in a serial flow therethrough;

first transporting means for transporting said documents to said read station means in said serial flow;

means responsive to said read station means for generating a "can't read" signal when an encoded character on one of said documents cannot be machine read by said read station means;

marking station means for printing a mark on said one of said documents in a predetermined position with respect to said encoded character that could not be machine read by said read station means, without interruption in said serial flow;

second transporting means for transporting said documents from said read station means to said marking station means in said serial flow;

means responsive to said "can't read" signal for controlling said marking station means in time correlation with the passage of said one of said documents from said read station means to said marking station means for ensuring that said printed mark uniquely identifies said encoded character that could not be machine read by said read station means;

viewing station means for positioning said one of said documents having at least one printed mark thereon such that both the printed mark and the uniquely identified character associated therewith are visible to an operator; and

third transporting means for transporting said documents from said marking station to said viewing station, said third means comprising,

a first transport path feeding said viewing station means;

a second transport path bypassing said viewing station means;

gating means including a gating element positionable to a first position for diverting said documents into said first transport path and positionable to a second position for diverting said documents into said second transport path; and

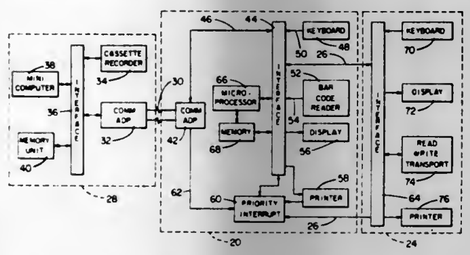
means for controlling said gating means and responsive to the presence of at least one of said "can't read" signals for positioning said gating element in said first position and responsive to the absence of said "can't read" signal for positioning said gating element in said second position.

4,068,213

CHECKOUT SYSTEM

Yasushi Nakamura, Oiso, and Hirotomo Terada, Tokyo, both of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 23, 1976, Ser. No. 754,052
Int. Cl.² H04Q 5/00; G06K 5/00
U.S. Cl. 340—149 A 8 Claims



1. A system adapted for use in a checkout operation to check out merchandise items purchased by a customer, comprising:

a. an identification means having recorded thereon an available balance for use by the customer;

b. means operative by the customer for reading the available balance on the identification means and outputting signals representative of said available balance;

c. a data input device operated by a checkout operator simultaneously with the operation of said reading means for receiving data representing the amount of each item purchased during a sales transaction and totaling the amount of the sales transaction;

d. means operatively interconnecting said input device and said reading means and responsive to said signals to effectively transfer the available balance to said input device;

e. means for comparing the available balance with respect to the total amount of the sales transaction;

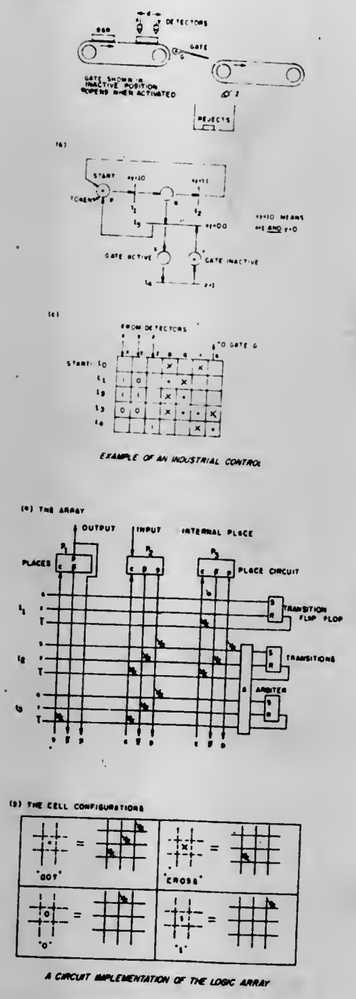
f. and means for indicating the difference between the total amount of the sales transaction and the available balance on the identification means.

4,068,214

ASYNCHRONOUS LOGIC ARRAY

Suhas S. Patil, Salt Lake City, Utah, assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 654,943, Feb. 3, 1976, abandoned. This application Dec. 16, 1976, Ser. No. 751,519
Int. Cl.² H04Q 5/14
U.S. Cl. 340—166 R 1 Claim



1. A logic array comprising a plurality of groups of column conductors and plurality of groups of row conductors arranged in a substantially orthogonal relationship, each group of column conductors being called a column, each group of row conductors being called a row, and each row and each column is connected by one of at least five types of connections which are characterized as a "dot" connection, a "cross" connection, a "1" connection, a "0" connection and a "null" connection;

each column and row being in one of two states, an "ON" state and an "OFF" state;

a row "firing" when every column connected to that row by a "dot" or a "1" connection is "ON" and every column connected to that row by a "0" connection is on "OFF";

means to change the state of the columns in response to "firings" of rows, the said means turning "OFF" columns connected to a "firing" row by a "dot" connection, and said means changing the state of the columns connected to a "firing" row by a "cross" connection;

a plurality of arbiters,

each arbiter being connected to plurality of selected rows, the rows which are not connected to an arbiter firing independently of another where as those rows connected to an arbiter "fire" in succession and not at the same time;

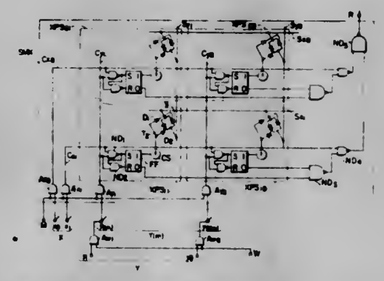
means for connecting inputs to selected columns to cause the states of the selected columns to be altered in accordance with changes in the state of inputs, means for connecting selected columns to provide outputs where the state of the output is determined by the state of the selected columns.

4,068,215

CROSS-POINT SWITCH MATRIX AND MULTISTAGE SWITCHING NETWORK USING THE SAME

Takuji Mukaemachi, Yokohama, and Shiro Enami, Hiratsuka, both of Japan, assignors to Hitachi, Ltd., Japan

Filed June 15, 1976, Ser. No. 696,186
Claims priority, application Japan, June 16, 1975, 50-71928
Int. Cl.² H04Q 3/00
U.S. Cl. 340—166 R 8 Claims



1. A cross-point switch matrix comprising:

a plurality of bistable holding circuits respectively associated with a plurality of cross-points defined by rows and columns of a matrix;

a plurality of cross-point elements being opened or closed in response to the state of their associated holding circuits;

control means for selectively placing each respective bistable holding circuit in one of the bistable states thereof independently of the state of each other holding circuit;

read means, provided in each row or column of said matrix, for reading out the state of at least one of the holding circuits associated with the cross-points arranged in said row or column and thereby identify whether a cross-point is open or closed; and

logic OR means having inputs connected to the outputs of all of the read means provided in the respective rows or columns of said matrix; and

wherein said control means is capable of simultaneously controlling the selective placing of plural ones of said holding circuits in one of the bistable states thereof.

4,068,216

BULB OUTAGE WARNING SYSTEM

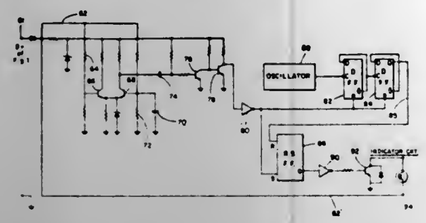
Frans Brouwer, Glencoe, and Francis E. Ferrari, La Grange Park, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Division of Ser. No. 462,632, April 22, 1974, Pat. No. 3,987,424. This application July 21, 1976, Ser. No. 707,306
Int. Cl.² H04Q 1/20; H03K 21/36
U.S. Cl. 340—168 R 5 Claims

1. A receiving circuit for producing an output in response to a signal pulse train imposed on a voltage supply line comprising:

a. means for detecting the presence of pulses on said supply line,

b. indicating means,
c. control means responsive to said pulses for initiating operation of said indicating means, and



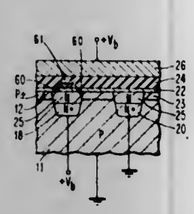
d. digital filter means for discriminating between no pulses, random pulses, and said train of pulses for inhibiting said control means when no pulses or random pulses are detected.

4,068,217

ULTIMATE DENSITY NON-VOLATILE CROSS-POINT SEMICONDUCTOR MEMORY ARRAY

Patrick Clinton Arnett, Putnam Valley, and Joseph Juifu Chang, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 592,002
Int. Cl.² G11C *11/40*
U.S. Cl. 365—182 **9 Claims**



1. A non-volatile semiconductor memory storage device comprising a body of semiconductor material of a first conductivity type,

a conductive line defined within a surface of said body of an opposite conductivity type from said body, said conductive line being composed of two distinct layers one more highly doped than the other, the more highly doped layer being the most remote from the surface of said body,

a thin layer at the surface of said body defining a more highly doped region than the remainder of said body and of the same conductivity type as said body,

an insulative layer disposed over the surface of said body containing said conductive line,

a metallic line located on the surface of said insulative layer intersecting with said conductive line, said insulative layer lying between said intersecting lines and defining a charge storage area,

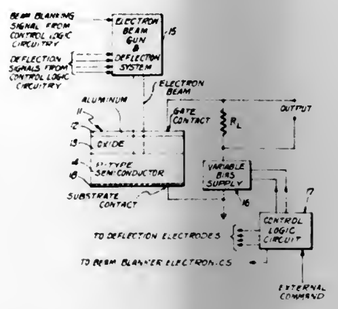
a rectifying junction defined by the interface between said highly doped layer at the surface of said body and the lightly doped layer at the surface of said conductive line, said rectifying junction comprising the means through which charge carriers may be injected into said charge storage area.

4,068,218

METHOD AND APPARATUS FOR DEEP DEPLETION READ-OUT OF MOS ELECTRON BEAM ADDRESSABLE MEMORIES

Robert K. Likuski, Castro Valley, Calif., assignor to Micro-Bit Corporation, Lexington, Mass.

Filed Oct. 4, 1976, Ser. No. 729,274
Int. Cl.² G11C *11/26, 13/00*
U.S. Cl. 365—237 **14 Claims**



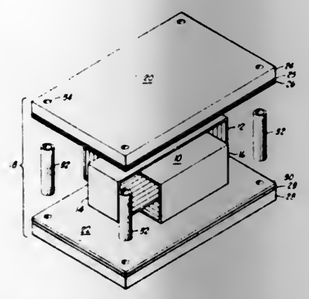
1. A method of deep depletion read-out of data stored in a metal-insulator-semiconductor capacitor memory element wherein a predetermined read-out potential is established across the memory capacitor while discrete storage sites are interrogated by an electron beam probe and the magnitude of the resultant electron-hole memory capacitor discharge current obtained from probing a particular site with the electron beam is indicative of the character of data stored at the site; the improvement comprising applying a voltage step across the capacitor memory element just prior to read-out with the electron beam, the voltage step applied to the gate relative to the substrate corresponding in polarity to the polarity of the majority carriers in the underlying semiconductor substrate.

4,068,219

MAGNETIC DOMAIN BIAS FIELD ASSEMBLY

Ling George Chow, Oklahoma City, Okla., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Feb. 18, 1975, Ser. No. 550,783
Int. Cl.² G11C *19/08*
U.S. Cl. 365—27 **13 Claims**



11. For use in a magnetic domain memory device including domain material wafers mounted on substrates and a high frequency orthogonal drive coil assembly surrounding the substrates, an improved bias field apparatus for reducing power losses comprising:

a. a first bar magnet on one side of said drive coil assembly;
b. a second bar magnet on the opposite side of said drive coil assembly;

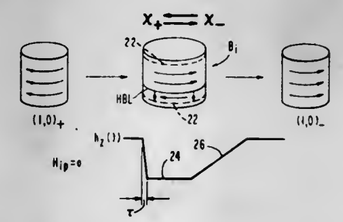
c. a first highly permeable plate bridging said first and second bar magnets above said drive coil assembly;
d. a second highly permeable plate bridging said first and second bar magnets below said drive coil assembly;
e. a first highly resistive, relatively impermeable shield located between said first highly permeable plate and the upper surface of said drive coil assembly in such a manner as to minimize hysteresis and eddy current losses resulting in a reduction of the effective resistance of said high frequency orthogonal drive coils; and
f. a second highly resistive, relatively impermeable shield located between said second highly permeable plate and the lower surface of said drive coil assembly in such a manner as to minimize hysteresis and eddy current losses resulting in a reduction of the effective resistance of said high frequency orthogonal drive coils.

4,068,220

CONTROLLABLE STATE CONVERSIONS FOR S=1 BUBBLE DOMAINS

Bernell Edwin Argyle, Putnam Valley, N.Y.; Pieter Dekker, Venlo, Netherlands, and John Casimir Slonczewski, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 17, 1976, Ser. No. 697,170
Int. Cl.² G11C *11/14*
U.S. Cl. 365—30 **23 Claims**



12. A method for converting a first unichiral domain having wall magnetization of a first sense to a second unichiral domain having wall magnetization of a second sense, comprising the steps of:

applying a spatially uniform, time varying magnetic field to said first unichiral domain, said magnetic field having a magnitude and rate of change with time sufficient to generate a circular Bloch line in said first unichiral domain, and

moving said circular Bloch line along the height of said first unichiral domain to change the sense of chirality of said first domain to that of said unichiral domain.

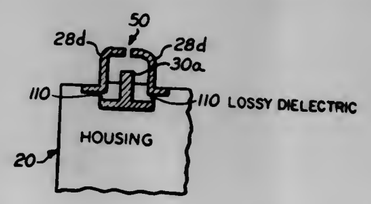
4,068,221

IMMERSION RESPONSIVE SENSOR

Richard D. McClintock, Woodbury, Conn., assignor to McClintock Manufacturing Corporation, Hauppague, N.Y.

Continuation-in-part of Ser. No. 398,776, Sept. 9, 1974, Pat. No. 3,942,167. This application Nov. 10, 1975, Ser. No. 630,737
The portion of the term of this patent subsequent to Mar. 2, 1993, has been disclaimed.
Int. Cl.² G08B *21/00*
U.S. Cl. 340—244 C **16 Claims**

1. Apparatus responsive to immersion in water in an open environment to complete an electrical circuit through which a signalling means is energized from an electrical energy source, said immersion responsive apparatus comprising latchable means responsive to completion of said circuit for latching said signalling means in an energized condition, a housing for said signalling means, a first inner electrically conductive element protruding from said housing and a second outer element protruding from said housing and substantially peripherally surrounding said first inner element to form a circumferential electrical shield for said first inner element against at least transient electromagnetic and RF interference to prevent said latchable means from latching in response to said interference transients, said electrical shield having an opening at an end thereof opposite from said housing for enabling water to enter therethrough upon immersion, said outer electrical shield comprising an electrically conductive element which comprises a ground element for said circuit, said water completing said circuit between said electrically conductive elements in response to said immersion, said first and second electrically conductive elements being coextensive with said first inner electrically conductive element extent being recessed below the surface of said second outer surrounding conductive element by a sufficient amount to prevent inadvertent electrically conductive contact with said first element prior to said immersion, said outer circumferential electrical shield having an air



passageway in said peripherally surrounding portion for enabling the venting of air from within the interior of said outer electrical shield element at substantially any depth of immersion of said first and second elements in water less than total immersion while preventing the inadvertent entry of splash water prior to said immersion, said passageway extending substantially the full longitudinal extent of said outer electrical shield, said recessed amount of said first inner electrically conductive element further being sufficient to enable said interference to only propogate through said passageway and said opening in said outer electrical shield in at least the transverse magnetic mode, whereby water may enter within said outer electrical shield element interior to contact said first element and complete said electrical circuit at immersion depths where the water pressure is normally insufficient to cause said entry without venting of said air and false signalling due to interference transients is minimized.

4,068,222

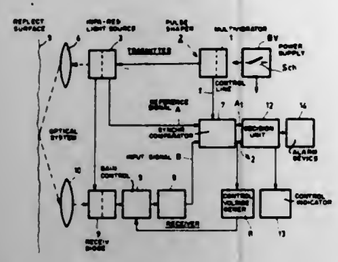
CIRCUIT ARRANGEMENT FOR AUTOMATIC LEVEL CONTROL FOR OPTICAL SENSORS WITH PULSED RADIATION, FOR EXAMPLE FOR SURVEILLANCE EQUIPMENT

Ulrich Treviranus, Bremen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 4, 1975, Ser. No. 628,596
Claims priority, application Germany, Nov. 7, 1974, 2452794
Int. Cl.² G08B *13/18*
U.S. Cl. 340—258 R **3 Claims**

1. A circuit arrangement for automatic output level control for optical sensors, comprising a pulsed IR-transmitter, an IR receiver, optical means for defining the angle of transmission of the pulsed infra-red radiation and for directing reflected radiation to the receiver, means for providing automatic gain adjustment of said IR receiver in response to a control voltage, means for comparing a receiver output signal with a reference signal derived from the transmitter in synchronism with the transmitted pulses, means for generating said control voltage proportional to an output signal from said comparing means and for applying the control voltage to said receiver gain adjusting means, a decision unit including means for producing an integrated value from the output signal from said comparing

means and for comparing the integrated value to a predetermined threshold value, and means for producing an alarm



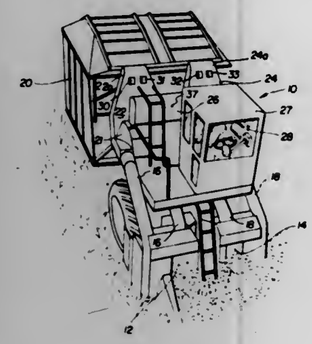
signal, after a predetermined waiting period when the integrated value exceeds said threshold value.

4,068,223

MONITOR SYSTEM FOR AGRICULTURAL HARVESTING APPARATUS

Ronald W. Steffen, Chatham, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed July 10, 1975, Ser. No. 594,757
Int. Cl.[2] G08B 21/00; A01D 45/18
U.S. Cl. 340—267 R **19 Claims**



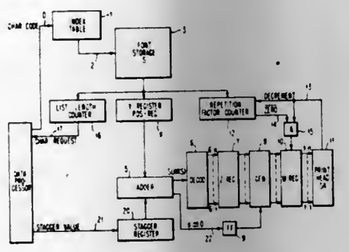
1. In a monitor system for use in an agricultural harvesting apparatus such as a cotton picker having a picker head, a receptacle end, and a duct means through which a stream of air passes for conveying harvested crop therewith from said head to said end, said monitor system operable to detect a blockage anywhere in said duct means, the combination comprising: pressure-insensitive static sensing means responsive to changes in air flow anywhere in said duct means and mounted in communication with said duct means, said sensing means providing a first signal condition in response to the flow of air above a predetermined minimum level and a second signal condition in response to the flow of air below said predetermined minimum level, switching circuit means coupled to said air flow sensing means for providing a first switching state in response to said first signal condition and a second switching state in response to said second signal condition, and indicator means coupled to said switching circuit means for providing a first indication, when said switching circuit is in said first switching state, that the stream of air passing through said duct means is above said predetermined minimum level, and for providing a second indication, when said switching circuit is in said second switching state, that the stream of air passing through said duct means is below said predetermined minimum level, said air flow sensing means including a heated element energized by a source of electrical power, said heating element including means for mounting in communication with the interior of said duct means and out of the flow path of said duct means to be cooled by the flow of air passing therethrough, said heated element reaching a first temperature for providing said first signal condition when the flow of air is above said predetermined minimum level and a second temperature for providing said second signal condition when the flow of air is below said predetermined minimum level.

4,068,224

COMPRESSED INFORMATION STORAGE FOR CHARACTERS CONSISTING OF BLACK AND WHITE AREAS WHICH ARE TO BE DISPLAYED OR PRINTED

Bastian Bechtle, Stuttgart-Degerloch; Hartmut J. Bleher, Nurtingen; Helmut Hasselmeier, Aidlingen; Wilhelm G. Spruth; Peter Stucki, both of Boeblingen, and Helmut Weis, Waldenbuch, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1975, Ser. No. 632,336
Claims priority, application Germany, Dec. 19, 1974, 2460147
Int. Cl.[2] G06F 3/14
U.S. Cl. 340—324 AD **5 Claims**



1. A symbol generating apparatus for generating symbols from data stored in a storage wherein symbols represented by black and white areas are stored in compressed form by the symbol being divided into columns and rows, row positional values in each column for white/black and black/white transitions being stored for each column, the positional values being referred to a coordinate common to all columns, said apparatus comprising:

registering means associated with the storage for registering the row positional values of white/black and black/white transitions;

decoder means having a number of outputs corresponding to a predetermined number of positional values, said decoder means being responsive to the registered row positional values for energizing the outputs associated with each transition value;

control means having a number of control outputs corresponding to the predetermined number of positional values, said control means responsive to the energized outputs of said decoder means for generating control signals corresponding to all positional values between each white/black transition and black/white transition;

means for coupling said control signals to energize a utilization device; and

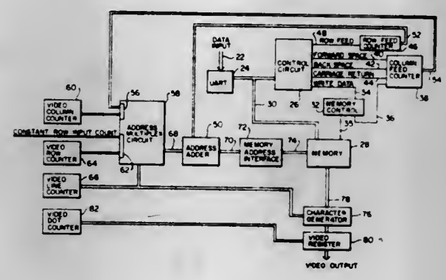
means for generating a control signal operable to register subsequent row positional values of white/black and black/white transitions whereby the utilization device is operable to reconstruct a symbol column-by-column.

4,068,225

APPARATUS FOR DISPLAYING NEW INFORMATION ON A CATHODE RAY TUBE DISPLAY AND ROLLING OVER PREVIOUSLY DISPLAYED LINES

Ernest Paul Lee, Acton, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Oct. 4, 1976, Ser. No. 729,338
Int. Cl.[2] G06F 3/14
U.S. Cl. 340—324 AD **26 Claims**



1. A communications terminal having a video output which displays characters in locations defined by row and columnar positions, said terminal comprising:

means for producing video row and column counts defining the location on the video output that is to display signals representative of a character;

memory means having a plurality of addressable storage locations, for storing a number of rows of characters which are subsequently to be displayed;

means for generating signals representative of a row feed count and a column feed count;

means for generating a row input count indicative of where a new character is to be stored in said memory ; and

addressing means coupled to said memory, said means for generating a row input count, and means for generating video row and column counts, for accessing locations within said memory during a display operation when a character stored in an addressable location is to be displayed, and during a storage operation when a character is to be stored in an addressable location, said addressing means comprising:

input means for selectively gating the signals representative of said video row and row input counts during a display and a storage operation respectively;

means for combining coupled to said input means, said row feed means with said memory means, said means combining said input row count with the row feed count during said storage operation so as to generate a resultant row address for storing in a last row of locations of said memory means the characters of a first row, and said means for combining including means for combining said video row count with the row feed count to generate a video row address for addressing said memory means for displaying said first row of characters along a bottom row of said video output; and

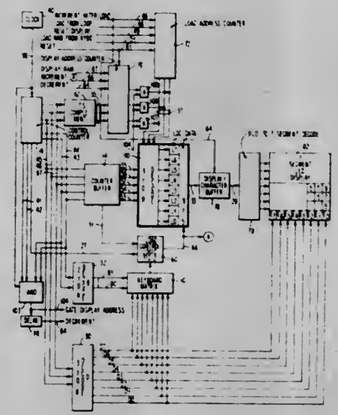
means for incrementing coupled to said row feed counter means, said incrementing means being operative in response to a control signal to increment the row count by one and said incremented resultant video row address for addressing said memory means to display said first row of characters along a row next to said bottom row and during a storage operation for conditioning said memory to write a second row of characters into a first row of memory locations for display along said bottom row of video output thereby enabling storage and display of a number of most recently entered rows of characters.

4,068,226

APPARATUS AND METHOD FOR DATA ENTRY AND DISPLAY

Robert A. Bowman, and Mark M. Burd, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 10, 1975, Ser. No. 585,640
Int. Cl.[2] G06K 15/18
U.S. Cl. 340—336 **9 Claims**



1. Keyboard entry and display apparatus, comprising:

clock means for generating timing pulses;

a plurality of refreshable display means, each for displaying a data character;

display character buffer means for storing a representation of a character to be displayed;

storage means, having an addressable storage location for each display means, for storing a plurality of data characters;

display address counter means synchronously stepped responsive to said clock means for sequentially loading data characters from said storage means into said display character buffer means;

control counter means responsive to said clock for generating a plurality of sequential control states;

first decode means responsive to said control counter means for gating the display character buffer to said display means in a predetermined sequence;

second decode means for synchronizing said control counter means and said display address counter means;

keyboard means selectively operable for entering data;

means including said first decode means for generating from the keyboard entered data a data character for storing in said storage means;

load address counter means for addressing the keyboard entered data character into a next sequential storage location;

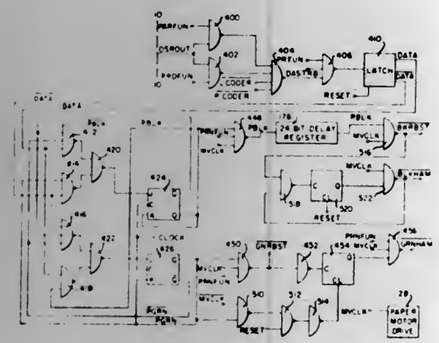
means responsive to the loading of a data character into said storage means for stepping said load address counter means and for asynchronously stepping said display address counter means.

4,068,227

CONTROL MEANS FOR AN OPTICAL BAR CODE SERIAL PRINTER

Richard E. Graham, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Division of Ser. No. 51,149, June 30, 1970, Pat. No. 3,678,465.
This application Mar. 17, 1972, Ser. No. 235,809
Int. Cl.[2] H03K *13/24*
U.S. Cl. 340—347 DD 6 Claims



1. A code converting logic circuit for converting a binary signal manifesting a series of logic "1" and logic "0" bits to a transition code manifested by at least two signals having at least three different coding arrangements, a given order of said coding arrangements being defined, transitions from one coding arrangement to another coding arrangement in said defined order representing a logic "1" bit and transitions from one coding arrangement to another coding arrangement in an order opposite to said defined order representing a logic "0" bit, said code converting logic circuit comprising:

gating means for providing first and second output signals in response to said binary signal;

first bistable means having a first input terminal and set and reset output terminals, said first input terminal being coupled to said gating means whereby said first bistable means is capable of being changed from a set to a reset state in response to said first output signal; and

second bistable means having a first input terminal and set and reset output terminals, said first input terminal being coupled to said gating means whereby said second bistable means is capable of being changed from a set state to a reset state in response to said second output signal;

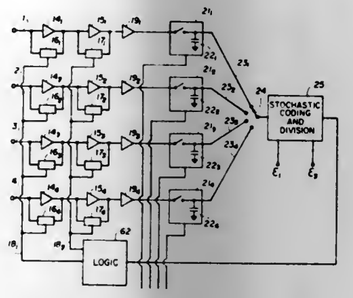
said set and reset output terminals of said first and second bistable means being coupled to input terminals of said gating means whereby said first output signal occurs when said binary signal manifests a logic "1" bit and both of said first and second bistable means are in said reset state, said first output signal occurs when said binary signal manifests a logic "0" bit and said second bistable means is in said set state, said second output signal occurs when said binary signal manifests a logic "0" bit and said first and second bistable means are in said reset state, and said second output signal occurs when said binary signal manifests a logic "0" bit and said first bistable means is in said set state.

4,068,228

MULTIPLE CHANNEL AMPLIFIER

Gilbert Vallas, Croissy Sur Seine, France, assignor to Electronique Marcel Dassault, Paris, France

Continuation-in-part of Ser. No. 539,244, Jan. 7, 1975, abandoned. This application Apr. 9, 1976, Ser. No. 675,450
Claims priority, application France, Jan. 8, 1974, 74 00584
Int. Cl.[2] H03K *13/02;* H03F *3/68;* G03T *1/00*
U.S. Cl. 340—347 AD 9 Claims



6. A combined multi-channel amplifier and computer system wherein the output signals of said channels are applied to said computer, said computer comprising means for coding analog values into stochastic values, said means for coding comprising an analog comparator having first and second input terminals and an output terminal, said first input terminal being coupled to one of said output signals of said channels which has an analog value to be coded, an up-down counter having input and output terminals, a first clock pulse generator having a first clock output signal, means for providing the said first clock signal to said input terminals of said up-down counter in response to the signal at the output terminal of said analog comparator, a second clock pulse generator operating in synchronism with said first clock, a pseudo-random register having input and output terminals, the input terminal of said pseudo-random register being connected to said second clock pulse generator, a digital comparator having a first and a second row of inputs and an output, said first row of inputs being connected to said output terminals of said pseudo-random register and said second row of inputs being connected to said output terminals of said up-down counter, the output of said digital comparator having said stochastic value, said computer also comprising stochastic-analog conversion means having input and output terminals, said input of said conversion means being connected to the output of said digital comparator, and said output of said conversion means being connected to said second input terminal of said analog comparator.

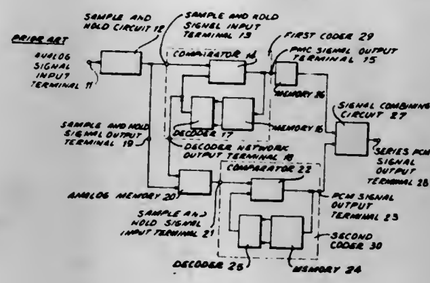
9. A diviser means for dividing a signal having a first analog value by a signal having a second analog value, comprising means for comparing said first analog value with a computed analog value, means for changing the state of an up-down counter as a result of said comparison, means for comparing said counter state with a signal having a pseudo-random value thereby forming a signal having a stochastic digital value, switching means controlled by said signal having said stochastic value for selectively applying said second analog value to a filter means, the output signal of said filter being said computed analog value, means for feeding back said computed analog value to said comparing means in order to modify said counter state until said computed analog value is equal to said first analog value, the output of said comparing means being representative of the dividend of said first and second analog values.

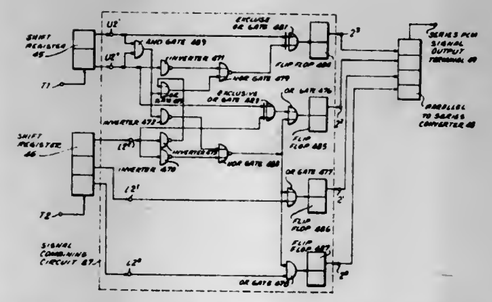
4,068,229

HIGH SPEED CODING SYSTEM FOR PCM SIGNALS WITH COARSE AND FINE CODING IN AN OVERLAPPING RANGE

Yukihiko Minejima; Masahiro Yamashita, both of Kawasaki, and Haruo Tsuda, Tokyo, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Continuation of Ser. No. 442,073, Jan. 13, 1974, abandoned. This application Sept. 25, 1975, Ser. No. 616,868
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 AD 6 Claims





1. A high speed coding system for coding an input signal into a PCM signal during first and second coding stages, said coding system comprising

input means for supplying an input signal to be coded;

sample and hold means connected to the input means for sampling and holding the input signal;

first coding means for coding bits from a most significant bit to an mth bit corresponding to the sampled and held input signal of the sample and hold means during the first coding stage, the first coding means having an output;

analog memory means connected to the sample and hold means for holding the sampled and held input signal during the second coding stage;

second coding means having a feedback loop including a decoder, said decoder providing an initial reference voltage corresponding to the output of the first coding means for the first bit to be coded of the second coding stage for coding bits from an m'^{th} bit to a least significant bit corresponding to the held signal of the analog memory means during the second coding stage, *m' being equal to or less than m* magnitude, the second coding means having an output;

combining means connected to the outputs of the first and second coding means for adding the coded signals produced by the first coding means to the coded signals produced by the second coding means to provide a digital output signal representative of the sampled and held input signal; and

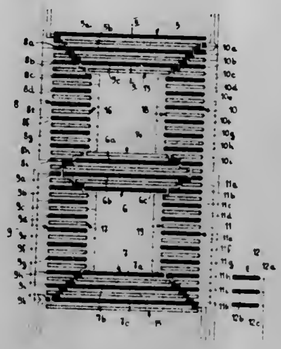
output means connected to the combining means for providing the digital output signal of the combining means in series.

4,068,230

PASSIVE ELECTRO-OPTIC DISPLAY DEVICE

Ali Schneiter, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Oct. 21, 1976, Ser. No. 734,552
Claims priority, application Switzerland, Oct. 28, 1975, 13973/75
Int. Cl.[2] G08B *5/00*
U.S. Cl. 340—378 R 4 Claims



1. Passive electro-optic display device including an activable surface adapted to be observed through a reticulated transparent screen including a net having parallel lines permitting observation of different areas according to the incidence of observation of said screen, said device comprising:

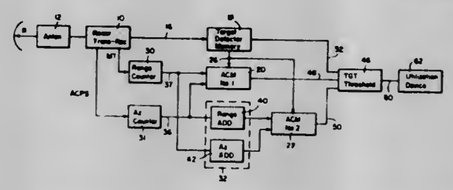
means for simultaneously displaying at least two different imbricated patterns on said activable surface, said means including said surface having several separately activable zones, each zone including at least two separate sets of discrete elements, the elements of each set alternating with those of the other set, each set of elements also being separately activable, and each element being parallel with one another.

4,068,231

AUTOMATIC CLUTTER-MAPPER

Richard D. Wilmot, Buena Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 2, 1976, Ser. No. 721,628
Int. Cl.[2] G01S *9/02*
U.S. Cl. 343—5 CM 10 Claims



1. A system for determining the presence of clutter over an area responsive to a target detector comprising

first area mapping means for defining a first group of mapping cells over said area in range and azimuth,

second area mapping means for defining a second group of mapping cells over said area, offset from said first group in both range and azimuth, and

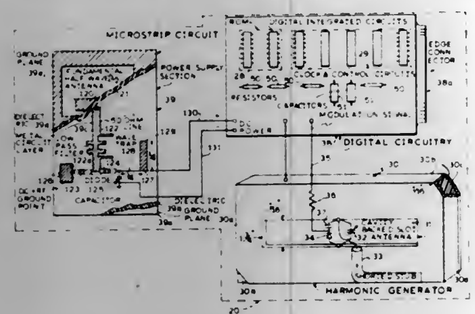
target threshold means coupled to said first and second mapping means and to said target detector for controlling the passing of targets.

4,068,232

PASSIVE ENCODING MICROWAVE TRANSPONDER

Thomas D. Meyers, New Windsor, and Ashley P. Leigh, Gaithersburg, both of Md., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed Feb. 12, 1976, Ser. No. 657,467
Int. Cl.[2] H01R 39/00
U.S. Cl. 343—6.8 R 20 Claims



1. A passive transponder for use with an interrogator, said transponder comprising receiving means for receiving a first frequency signal from said interrogator, signal generating means associated with said receiving means for converting said first frequency signal to a second frequency signal to be transmitted to said interrogator, transmitting means associated with said signal generating means for transmitting the second frequency signal to said interrogator, control means associated with said signal generating means for modulating said second frequency signal, said control means including a clock adapted to operate at a variable frequency and means for varying the frequency at which said clock operates as a function of the distance between said transponder and said interrogator, power receiving means for receiving the first frequency signal from said interrogator and power supply means associated with said receiving means and said control means for providing operating power to said control means.

5. A passive transponder for use with an interrogator, said transponder comprising receiving means for receiving a first frequency signal from said interrogator, signal generating means associated with said receiving means for converting said first frequency signal to a second frequency signal to be transmitted to said interrogator, transmitting means associated with said signal generating means for transmitting the second frequency signal to said interrogator, control means associated with said signal generating means for modulating said second frequency signal, power receiving means for receiving the first frequency signal from said interrogator and power supply means associated with said receiving means and said control means for providing operating power to said control means, said power supply means comprising a stripline structure including a plurality of layers.

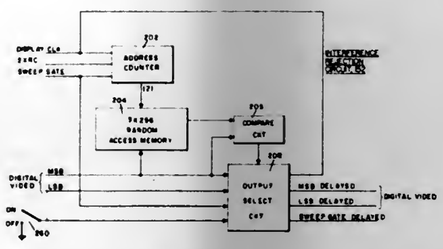
10. A passive transponder for use with an interrogator, said transponder comprising receiving means for receiving a first frequency signal from said interrogator, signal generating means associated with said receiving means for converting said first frequency signal to a second frequency signal to be transmitted to said interrogator, transmitting means associated with said signal generating means for transmitting the second frequency signal to said interrogator, control means associated with said signal generating means for modulating said second frequency signal, power generating means for receiving the first frequency signal from said interrogator and power supply means associated with said receiving means and said control means for providing operating power to said control means, said power supply means comprising a voltage doubler.

4,068,233

RADAR SYSTEM HAVING INTERFERENCE REJECTION

William M. Pease, Weston, Mass.; Bernard Bussiere, Londonderry, N.H., and Carl E. Battles, Ashland, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 13, 1976, Ser. No. 714,171
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—7 A 10 Claims



5. Apparatus for eliminating interference in a PPI radar system caused by signals received directly from other radar transmitters operating in the same frequency band as said radar system comprising in combination:

means for storing at least portions of digital representations of a radar return signal;

means for reading said representations out of said storing means, the time period for reading said representations out of said storing means being greater than the time period for reading said representations into said storing means for at least some settings of a radar range scale setting;

means for comparing outputs from said storing means with at least portions of input digital representations of said radar return signal;

means for producing a video signal in response to said input digital representations; and

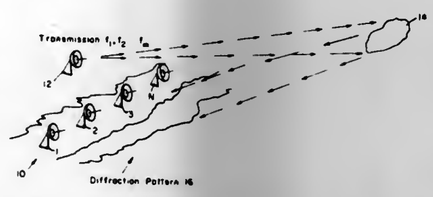
means for inhibiting said video signal in response to said comparing means.

4,068,234

FREQUENCY SCANNED ILLUMINATION IMAGING ARRAY

Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 16, 1975, Ser. No. 641,395
Int. Cl.[2] G01S 7/04
U.S. Cl. 343—17 4 Claims



1. A system for providing a set of N × M samples of a two-dimensional segment of the diffraction pattern from a target, said system comprising:

transmitter means for transmitting energy at M discrete frequencies towards the target; and

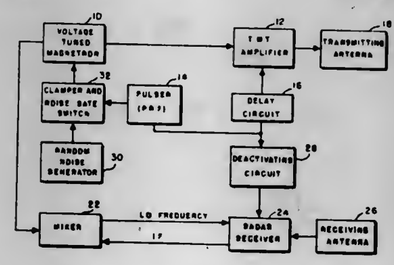
a linear array of N receivers disposed relative to said transmitter and said target such that for each of the M frequencies said receiver array intercepts a different line segment of the diffraction pattern from the target; and wherein each of said receivers includes means for processing the energy at the M frequencies so as to provide M samples of the diffraction pattern; and each of said receivers includes means for obtaining a reference signal from the energy of the received diffraction pattern, and means for frequency translating said received diffraction pattern energy by means of said reference signal so as to substantially remove effects of the carrier frequency from the samples.

4,068,235

FREQUENCY DIVERSITY RADAR SYSTEM

Philip H. Peters, Jr., Schenectady, and Donald A. Wilbur, Albany, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 25, 1955, Ser. No. 490,702
Int. Cl.[2] G01S 9/23
U.S. Cl. 343—17.2 R 9 Claims



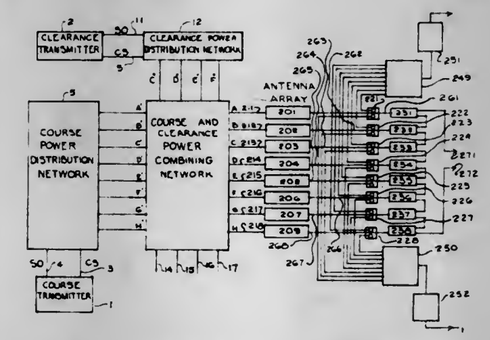
1. A frequency diversity radar transmission system comprising a source of recurring periodic pulses, a magnetron type oscillator adapted to be voltage tuned for generating continuous waves of radio-frequency energy, means responsive to said pulses for voltage tuning said magnetron whereby the continuous wave output frequency of the magnetron is instantaneously shifted to successive discrete frequencies by successive pulses and the respective discrete frequencies are maintained constant for the period between any two successive pulses, a transmitting antenna, wideband amplifier means driven by the output of said magnetron and having its output coupled to said antenna, and means for periodically energizing said amplifier immediately after each of said successive shifts in frequency whereby radio-frequency pulse energy is coupled through said amplifier to said transmitting antenna only for a relatively small fraction of the period of said recurring pulses, each of the transmitted pulses comprising discrete frequencies.

4,068,236

MONITOR FOR TWO FREQUENCY LOCALIZER GUIDANCE SYSTEM

Andrew Alford, 120 Cross St., Winchester, Mass. 01890

Filed June 24, 1976, Ser. No. 699,237
Int. Cl.[2] G01S 1/16
U.S. Cl. 343—108 R 5 Claims



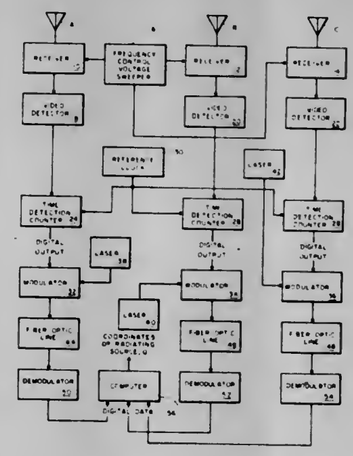
1. A monitor system for a two frequency localizer system comprising a clearance signal transmitter, a clearance signal distribution network, a course signal transmitter, a course signal distribution network, means for combining the signals from said distribution networks for energizing elements of a common antenna array, means for monitoring the performance of the system comprising means for sampling said clearance and course signals at points in the system where the magnitude of one of said signals is substantially greater than the magnitude of the other.

4,068,237

SYSTEM FOR LOCATING A RADAR TRANSMITTER

James R. Jones, Jr., 3452 Mercer Lane, San Diego, Calif. 92122

Filed June 29, 1976, Ser. No. 700,991
Int. Cl.[2] G01S 3/02
U.S. Cl. 343—112 C 2 Claims



1. A system for detecting the location of an unknown radar transmission the combination including:

a. at least three radar receiving means positioned on a straight line and at a known distance from each other to receive radar transmission from radar transmitters having an unknown location,

b. signal processing circuit means for processing at least one radar pulse signal received by each of said radar receiving means to provide at least three signals representing the respective distances each of said radar receiving means is located from said radar transmitter,

c. a laser beam source,

d. said signal processing circuit means including a reference clock pulse source, a time detection counter coupled to receive said radar pulse signal and to said reference clock source for measuring the time duration following the arrival of a reference clock pulse to the arrival of an incoming radar pulse and providing a digital output signal for modulating the output of said laser beam source,

e. computer means coupled to said signal processing means for computing the location of said radar transmitter.

4,068,238

ELASTIC STRAIN ENERGY DEPLOYABLE HELICAL ANTENNA

Roy M. Acker, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 13, 1976, Ser. No. 685,950
Int. Cl.[2] H01Q 1/36
U.S. Cl. 343—895 8 Claims

1. An elastic strain energy deployable helical antenna comprising:

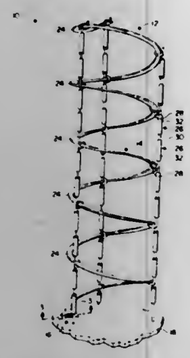
a resiliently flexible antenna element in the form of a helix

which is yieldably biassed to extend axially by elastic strain energy to a given fully extended length and is compressible axially to a contracted length;

said antenna element comprising an electrically conductive tube of relatively flat oval cross-section in transverse planes containing the longitudinal axis of said helix;

the major axis of said oval cross-section in any transverse plane being substantially normal to said longitudinal axis;

a plurality of flexible tension members extending axially of



and spaced circumferentially about said helix and secured to helical turns of said antenna element; and

said tension members having relatively rigid portions between said turns and an overall length less than said fully extended length, whereby said members limit elastic strain energy extension of said antenna element to an operating length less than said fully extended length and said members are stressed in tension by said element at said operating length to reinforce said element against deflection laterally of said longitudinal axis.

4,068,239

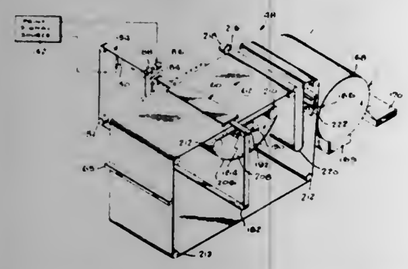
LATENT MAGNETIC IMAGE TRANSFER METHOD AND APPARATUS

Alfred M. Nelson, Redondo Beach, Calif., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Division of Ser. No. 490,398, July 22, 1974, Pat. No. 3,987,491. This application Jan. 30, 1976, Ser. No. 653,664

Int. Cl.² G03G *19/00*; G11B *5/02, 5/86*

U.S. Cl. 346—74.1 **8 Claims**



1. A process for forming a composite magnetic image comprising:

substantially uniformly magnetizing a second record medium;

applying light in a predetermined optical image pattern to said second record medium in an intensity which raises the temperature of areas of said second medium corresponding to the image, above the Curie temperature, to thereby erase the magnetization in said areas; and

allowing said second record medium to cool while holding a first record medium with a first magnetic image thereon adjacent to said second record medium, to thereby remagnetize the second record medium so that the resulting magnetic image thereon represents the combination of the optical image and first magnetic image.

4,068,240

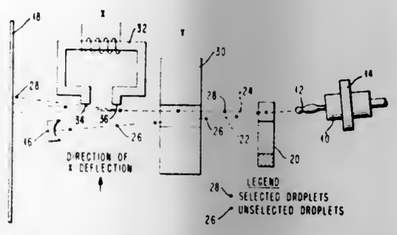
VECTOR MAGNETIC INK JET PRINTER WITH STABILIZED JET STREAM

George Jee Fan, Ossining; David Chan-Wai Lo, W. Hurley, and Joseph William Mitchell, Montrose, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,948

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 **5 Claims**



1. In a vector magnetic ink jet printing apparatus wherein droplets of ferrofluid ink are directed alternatively to a recording surface or to an intercepting catcher, the combination comprising:

means for producing a stream of ink droplets substantially all of which are initially directed along a first course toward said catcher,

an electromagnetic selector operable to divert selected ones of the droplets in said stream from said first course to a second course which enables the selected droplets to avoid said catcher and impinge said surface while permitting the unselected droplets to continue traveling along said first course toward said catcher,

a first electromagnetic deflector which is operable to deflect at least some of the droplets in said stream selectively along a first one of two axes orthogonal to said stream, thereby to place such deflected droplets into selected trajectories according to the respective deflections imparted to them along said first axis, and

a second electromagnetic deflector positioned between said first deflector and said catcher which is operable to impart selected deflections along the second of said orthogonal axes to at least some of those selected droplets that previously were directed along said second course, whereby the final trajectory of each such droplet is determined by the respective deflections imparted to it along said two axes by said first and second deflectors, said second deflector having a pole structure so arranged that its magnetic field is unable to prevent unselected droplets that were not diverted out of said first course from reaching said catcher.

4,068,241

INK-JET RECORDING DEVICE WITH ALTERNATE SMALL AND LARGE DROPS

Takahiro Yamada, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 30, 1976, Ser. No. 746,157

Claims priority, application Japan, Dec. 8, 1975, 50-145090

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 **8 Claims**

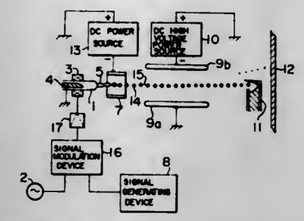
1. An ink jet recording device characterized in that it comprises;

a nozzle ejecting pressurized ink toward a surface to be recorded,

vibration exciting means for giving to said ink mechanical vibration with such magnitude as to make an ink column ejected from said nozzle to be separated alternately into large and small ink droplets at a tip part thereof,

means for generating recording electric signals,

controlling means for uniting, during flight, said small diameter ink droplets unnecessary to recording with said large diameter ink droplets by controlling the relative flight



velocity between said large diameter ink droplets and said small diameter ink droplet by varying vibration exciting strength of said vibration exciting means in accordance with said recording electric signals,

deflecting means for acting on the ink droplet flight path to make the deflection amounts of said large diameter ink droplets and small diameter ink droplets become different, and

catcher means for intercepting the flight path of said large diameter ink droplets and the ink droplets formed by the unification of the large and small droplets.

4,068,242

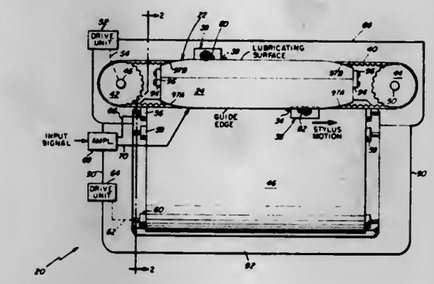
RECORDER WITH LUBRICATED STYLUS

John P. Urciuoli, Providence, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 4, 1977, Ser. No. 756,671

Int. Cl.² G01D *15/16*

U.S. Cl. 346—139 A **2 Claims**



1. A recorder comprising:

a recording medium and a stylus assembly;

a stylus transport for transporting said stylus assembly along said recording medium and in contact therewith, said transport including a guide and means for slidably securing said stylus assembly to said guide for urging said stylus assembly along a predetermined path of travel;

lubricating means coupled to said transport for providing lubricity between said stylus transport and said guide, said lubricating means including means for contacting said stylus assembly during a movement thereof, said lubricating means comprising a block of rigid porous material containing a lubricant in the pores thereof, said stylus assembly contacting said porous material, said stylus transport including means for urging said stylus assembly against said porous material; and wherein

said lubricant forms a film on a portion of said stylus assembly, said film being sufficiently thin to permit the conduction of electrical signals therethrough between said guide and said stylus assembly.

4,068,243

PHOTOGRAPHIC CAMERA WITH AN EXTRINSIC COORDINATING SYSTEM

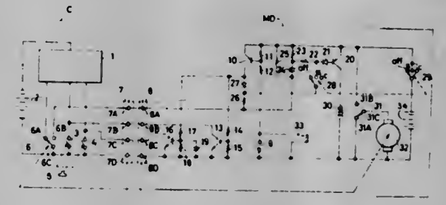
Susumu Kozuki, Yokohama; Toshikazu Ichiyanagi, Tokyo; Yoshiaki Watanabe, Fujisawa; Takashi Uchiyama, Yokohama, and Akio Sunouchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 9, 1976, Ser. No. 721,757

Claims priority, application Japan, Sept. 16, 1975, 50-11965

Int. Cl.² G03B *7/08*

U.S. Cl. 354—60 R **1 Claim**



1. In a camera having a light metering circuit and an exposure controlling circuit responsive to the output of said light metering circuit for controlling actuation of means for determining exposure of photographic film, a coordinating system for those portions of said camera comprises;

a. first electronic switch means connected in a power supply circuit for said light metering circuit,

b. second electronic switch means connected in a power supply circuit for said exposure controlling circuit,

c. electrical delay means connected between said first and said second electronic switch means, and

d. an operating switch accessible from the outside of the housing of said camera and arranged upon closure to actuate said first electronic switch,

whereby the actuation of said exposure controlling circuit is controlled in predetermined time-displaced relation to that of said light-metering circuit.

4,068,244

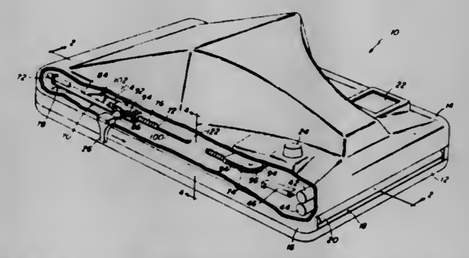
FILM ADVANCE MECHANISM

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 2, 1976, Ser. No. 720,007

Int. Cl.² G03B *17/50*

U.S. Cl. 354—85 **30 Claims**



30. In a photographic camera of the self-developing type for use with, and adapted to seatingly receive, a film assemblage having a casing that contains at least one self-developing film unit, said film unit having a photosensitive surface and being disposed within said casing with said surface located for photographic exposure through a casing exposure opening, the cas-

ing further having (i) a frontal film unit exit passage, (ii) a wall portion extending between a frontal location and a back location and contiguous with said exposure aperture, and (iii) an access opening in said wall portion in communication with said exposure aperture and extending for a limited selected length in front to back direction, said access opening being located for providing access from outside said cassette to engage the trailing edge of said one film unit therein to advance it out of said casing in a back to front direction through the casing exit opening, the improvement comprising

A. processing means for applying a compressive force to said one film unit as it is advanced therepast, said processing means being located a distance in front of said frontal film unit exit substantially greater than said limited selected length of said access opening, and

B. means for advancing said one film unit from said casing with its leading edge passing through said frontal film unit exit passage and into operative relationship with said processing means, said advancing means including a slide member mounted for reciprocal movement in a back to front direction and a pick arm located to at least initially extend along and into said access opening to engage with the trailing edge of said one film unit, said pick arm being responsive to the actuation of said slide member to exert a force on the trailing edge of said one film unit at a point in alignment with the lengthwise extension of said access opening to initiate the movement of the leading edge of said one film unit through said frontal film unit exit passage.

4,068,245

EXPOSURE CONTROL SYSTEM FOR FLASH PHOTOGRAPHY

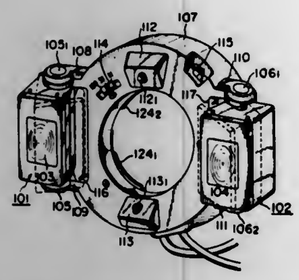
Shohei Ohtaki, Machida; Zenzo Nakamura, Urawa, and Susumu Kozuki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 375,033, June 29, 1973, abandoned. This application Aug. 19, 1974, Ser. No. 498,618

Claims priority, application Japan, July 3, 1972, 47-66488; July 17, 1972, 47-71438

Int. Cl.² G03B *15/03, 7/16*

U.S. Cl. 354—149 **10 Claims**



1. A flash exposure control system for use with a photographic camera comprising:

flash lighting means;

circuit means connected electrically to said flash lighting means to energize said flash lighting means;

angle changing means engageable with said flash lighting means to change the flash angle of said flash lighting means on the basis of distance to an object, said changing means being operative for changing the flash angle of said flash lighting means over a first set of angles corresponding to distances from the object greater than a given distance, said changing means being operative for changing the flash angle of said flash lighting means over a second set of angles corresponding to distances less than the given distance; light energy control means coupled to said flash lighting means and coupleable with said angle changing means for controlling the light energy level of the flash lighting means in a first range when the flash angle varies within the first set of angles, said light energy controlling means being operative for controlling the level of the light energy in a second range when the flash angle varies within the second set of angles, the light energy level in the first range being dependent upon the flash angle, the light energy level in the second range being less dependent on the flash angle than in the first range.

4,068,246

MIRROR AND ASSOCIATED STRUCTURE FOR SINGLE LENS REFLEX CAMERAS

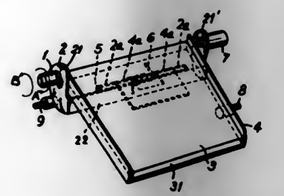
Akihiro Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed June 18, 1976, Ser. No. 697,635

Claims priority, application Japan, July 3, 1975, 50-82398

Int. Cl.² G03B *19/12*

U.S. Cl. 354—156 **15 Claims**



1. In a single lens reflex camera, mirror means having a viewing position, where said mirror means is inclined downwardly across an optical axis of a camera objective for directing an image of an object which is to be photographed upwardly to a viewfinder of the camera, and an exposure position, where said mirror means is situated above the optical axis while being substantially parallel thereto, said mirror means when in said viewing position thereof having a lower front edge situated beneath the optical axis and an upper rear edge situated above the optical axis rearwardly of said front edge, and moving means for moving said mirror means between said positions thereof, said moving means being operatively connected with said mirror means for first retracting said mirror means rearwardly while turning said mirror means in one angular direction and for then turning said mirror means in an opposite angular direction upwardly when displacing said mirror means from said viewing position to said exposure position and for turning said mirror means downwardly and then displacing said mirror means fowardly when moving said mirror means from said exposure position to said viewing position.

4,068,247

LIGHT-TIGHT CASSETTE

Alfons August Bouwen, Ranst, and Edward Buelens, Kontich, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Apr. 26, 1976, Ser. No. 680,597

Claims priority, application United Kingdom, Apr. 29, 1975, 17787/75

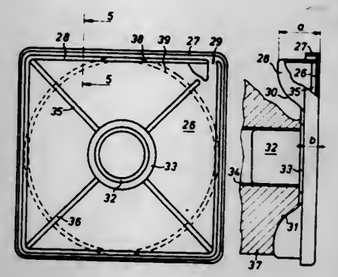
Int. Cl.² G03B *17/26*

U.S. Cl. 354—275 **8 Claims**

1. A light-tight cassette for holding a roll of light-sensitive photographic material comprising:

an extruded generally square tubular body portion, which is of resilient material, said body being open at both of its ends and having adjacent one corner a slit extending the entire axial dimension thereof, the edges of said slit having integral tongues projecting in generally parallel relation inwardly of said corner, to define a narrow egress opening for passage of said material out of the cassette,

a shaped end cap for closing each such open end of said body portion, said cap having uniformly spaced outer and interior flanges extending around its periphery to form a channel engaging the end margins of said body portion periphery to compress the same to render said cassette light-tight at said open end when the cap is in position, said interior flange having inwardly projecting extensions along at least the corner portions thereof substantially past the interior limits of the outer flange, one of said corner extensions being interrupted to receive the end portion of said inwardly projecting tongues therebetween, said cap having an inwardly projecting hub for rotatably supporting the roll of photographic material, the axial dimension of said hub exceeding the axial dimension of said channel, and



strips of compressible material which are fitted to the mutually facing surfaces of said tongues which form said egress opening, thereby to render said cassette light-tight also over its length when said cap is in position.

4,068,248

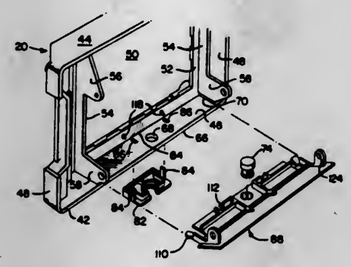
PHOTOGRAPHIC CAMERA BODY AND TRIPOD MOUNTING ARRANGEMENT

Donato F. Pizzuti, Saugus, and Charles W. Triggs, Marshfield, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 2, 1976, Ser. No. 719,843

Int. Cl.² G03B *17/02, 17/04, 17/00*

U.S. Cl. 354—288 **12 Claims**



1. A photographic camera comprising:

a body having a bottom wall portion extending between a pair of spaced flange formations joining with said bottom wall portion, said bottom wall portion having inner and outer surfaces joined at a front edge in a plane defining the front face of the body and having an aperture therein spaced rearwardly from said front edge; and

means for mounting said body on a support, said means comprising a socket member having an open end and a sill member having a base portion of generally rectangular configuration to establish inner and outer faces extending between front, rear and opposite end edges, an annular boss projecting from said outer face to receive said socket member with said open end thereof presented in the direction of said outer face, said outer face complementing the inner surface of said bottom wall between said flange formations and receivable against the inner surface of said bottom wall with said boss in said wall aperture and with the outer edge of said base portion essentially overlying the outer edge of said bottom wall, and an integral flange extending from the front edge of said base portion at an angle to said inner and outer faces thereby to reinforce said base portion against bending along the length thereof between said opposite ends.

4,068,249

DEVELOPING APPARATUS

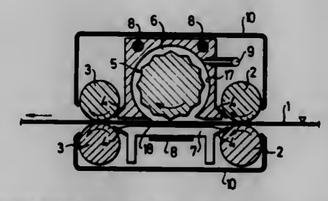
Karl-Heinz Degenhardt, Bad Schwalbach; Hermann Frank, Sulzbach, and Gerhard Marx, Hahn, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Feb. 15, 1974, Ser. No. 442,868

Claims priority, application Germany, Feb. 19, 1973, 2308129

Int. Cl.² G03D *7/00*

U.S. Cl. 354—300 **26 Claims**



1. An apparatus for developing photo-sensitive material with a gaseous medium comprising housing means having developing chamber means therein,

at least one rotor means in said developing chamber means, said rotor means extending over substantially the entire width of material to be developed and being mounted at a distance of about 0.05 to 20 mm from the material to be developed,

the peripheral speed of the rotor means being at least twice as great as the speed at which the material to be developed passes through the apparatus when a point on the surface of the rotor and on that face presented to the material to be developed moves in the same direction as the material,

means for introducing gaseous developer medium between said rotor means and the interior walls of said chamber means,

and means for passing material to be developed through said apparatus, whereby it contacts said gaseous developer medium.

4,068,250

LEADER BELT STABILIZER

Conrad V. Anderson, and William B. Kellett, both of Minneapolis, MN, assignors to Pako Corporation, Minneapolis, Minn.

Filed Sept. 8, 1976, Ser. No. 721,199

Int. Cl.² G03D *17/00*

U.S. Cl. 354—316 **7 Claims**

1. A leader belt stabilizer for use with a photographic processor of the type including:

a plurality of processing tanks,

a plurality of spaced apart belt engaging rollers in said tanks positioned to define a predetermined belt path through said tanks,

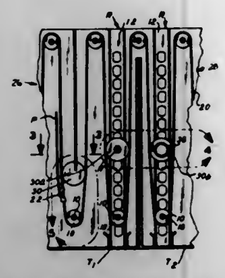
a leader belt passing successively around said rollers and following said path,

a cantilevered attachment arm removably connected at one end to a selected portion of the belt to transport a strip of photographic material through said tanks,

said stabilizer comprising:

a belt engaging stabilizer member immediately ahead of

selected belt engaging rollers and aligned with the defined belt path to engage the belt portions located



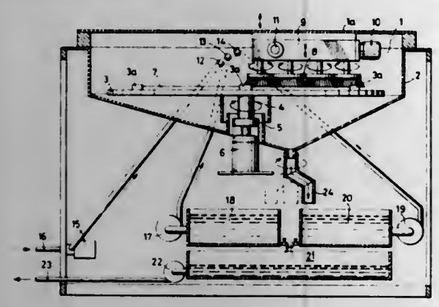
immediately ahead of the selected rollers and align said engaged belt portions with the rollers and substantially remove the twist in the belt ahead of said rollers.

4,068,251

DEVELOPING DEVICE FOR PRINTING PLATES

Herbert Schroter, Taunusstein, and Alexander Planz, Daxweiler, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Feb. 12, 1976, Ser. No. 657,587
Claims priority, application Germany, Feb. 17, 1975, 7504728[U]
Int. Cl.² G03D *3/02*
U.S. Cl. 354—325 **4 Claims**



1. A developing device for printing plates comprising a developing chamber, rotatable printing plate support means in said chamber, vertically reciprocatable rotatable brush means mounted above said printing plate support means, spray nozzle means directed at said printing plate support means, means for supplying fluid to said spray nozzle means,

said brush means being adapted to be lowered onto a surface of a printing plate fixed on the support means for treating said printing plate with fluid from spray nozzle means and said brush means being adapted to be lifted from said surface for centrifuging the fluid from the brushes,

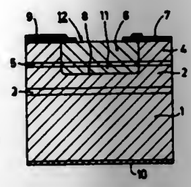
and at least one variable-speed electric motor means for actuating said printing plate support means and said brush means, said electric motor means being actuated at a relatively high speed when said brush means is lifted from said surface of said printing plate.

4,068,252

REVERSIBLE OPTOELECTRONIC SEMICONDUCTOR DEVICE

Jacques Lebailly, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 8, 1976, Ser. No. 703,550
Claims priority, application France, July 28, 1975, 75.23457
Int. Cl.² H01L *33/00, 29/161*
U.S. Cl. 357—17 **15 Claims**



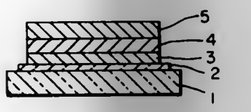
1. A reversible optoelectronic device for use in a narrow range of light wavelength, comprising a semiconductor body comprising at least one transparent surface region of a first conductivity type and an assembly of two active regions, one of said active regions having a first conductivity type and another said active region having the opposite conductivity type and determining a semiconductor junction having electroluminescent and photosensitive properties, said assembly of said two active regions consisting of a material having a smaller forbidden bandwidth that the material of said surface region, said surface region being a strongly doped and localized in a deposited layer that is of the same composition and that has a low doping, the depth of said junction with respect to the boundary between said layer and said assembly of active regions being between one-half and one-quarter of the diffusion length of the minority carriers in said active region of the first type, and said material of said assembly being selected such that the sum of one-third of said diffusion length of minority carrier in said first conductivity type active region and of the diffusion length of said minority carriers in the active region of said opposite conductivity type is between one and three absorption lengths of light rays of said wavelength range.

4,068,253

PHOTOCONDUCTOR ELEMENT AND METHOD OF MAKING THE ELEMENT

Shinji Fujiwara, Minoo, and Takuo Shibata, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 6, 1976, Ser. No. 712,368
Claims priority, application Japan, Aug. 20, 1975, 50-101400
Int. Cl.² H01L *27/14, 31/00*
U.S. Cl. 357—31 **18 Claims**



1. A photoconductor element, which comprises:

a first layer of a suubstance hving a wider band gap encrgy then CdTe;

a second layer of a substance primarily consisting of CdTe and deposited on said first layer; and

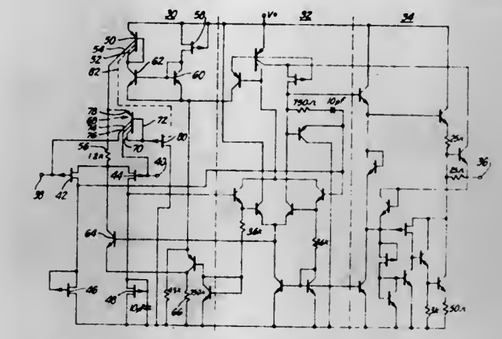
a third layer of a substance primarily consisting of ZnTe containing indium therein and deposited on said second layer.

4,068,254

INTEGRATED FET CIRCUIT WITH INPUT CURRENT CANCELLATION

George Erdi, Palo Alto, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Dec. 13, 1976, Ser. No. 750,136
Int. Cl.² H01L *27/02*
U.S. Cl. 357—43 **19 Claims**



1. A leakage compensated FET integrated circuit assembly, comprising:

an integrated circuit chip having a substrate and an epitaxial region,

a primary FET on said chip comprising a source, a drain, a channel, and a gate, said source and drain comprising mutually spaced means formed on a portion of said epitaxial region and connected by said channel, and said gate comprising said epitaxial portion,

an isolation pocket for said FET having a boundary region which comprises the portion of the substrate adjacent said epitaxial portion together with isolation means extending into said epitaxial region to isolate the FET portion thereof, said substrate and isolation means being of opposite conductivity type material from said epitaxial region and drawing a gate leakage current therefrom when said epitaxial region is reverse biased with respect to said substrate and isolation means, and

a leakage analog to said FET, comprising means on said chip to establish a reference current the magnitude of which is a substantially fixed proportion of the gate leakage current from said FET to said first pocket over a given operating range, and proportional current mirror means tracking said reference current to provide a current substantially equal to said FET leakage current,

said proportional current mirror means being connected to the FET epitaxial region to supply the gate leakage current thereof and thereby substantially cancel the FET input current that would otherwise be required to supply said leakage current.

4,068,255

MESA-TYPE HIGH VOLTAGE SWITCHING INTEGRATED CIRCUIT

Bernard L. Kravitz, Forest Hills, and George R. Seaton, Northport, both of N.Y., assignors to Dionics, Inc., Westbury, N.Y.

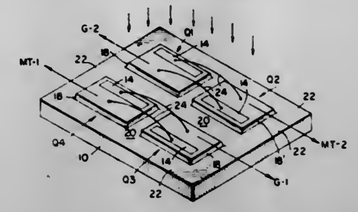
Continuation-in-part of Ser. No. 622,966, Oct. 16, 1975, Pat. No. 4,001,866, which is a continuation-in-part of Ser. No. 499,534, Aug. 22, 1974, Pat. No. 3,918,083. This application Dec. 23, 1976, Ser. No. 753,776
Int. Cl.² H01L *29/06*
U.S. Cl. 357—56 **9 Claims**

1. A mesa-photrac comprising:

a body of semiconductive material of a first conductivity type having two major surfaces;

four mesas in one said surface, each said mesa having an upper layer forming a base zone of opposite conductivity type material, and forming a PN junction with said body, said junction extending to the sides of said mesa;

an emitter zone of said first conductivity type material located entirely within each said base zone and forming a PN junction reaching said one surface;



said respective base and emitter zones forming with said body four mesa-type transistors sharing a common collector; and

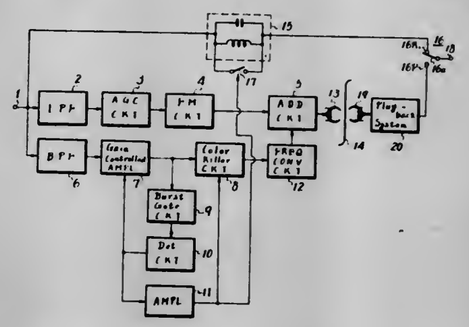
four conductive leads connecting base and emitter zones between adjacent pairs of said transistors.

4,068,256

VIDEO RECORDING APPARATUS WITH COLOR KILLER

Takao Tsuchiya, Fujisawa, and Hisaaki Narahara, Musashino, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1976, Ser. No. 675,631
Claims priority, application Japan, Apr. 14, 1975, 50-44927
Int. Cl.² H04N *5/76, 9/49*
U.S. Cl. 358—4 **3 Claims**



1. A video recording apparatus comprising:

a video signal recording system which is operable in both a color mode and in a monochrome mode,

a video signal reproducing system,

said video signal recording system having a video signal input terminal and a detecting circuit for detecting a chrominance level of an input signal applied to said input terminal,

a color killer circuit controlled by an output of said detecting circuit for switching the operating mode of said video signal recording system between the color mode and the monochrome mode,

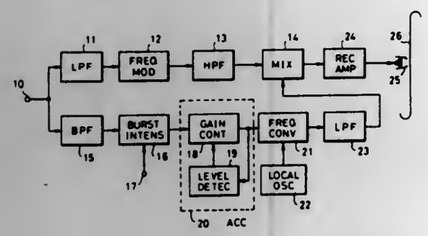
a video signal monitoring line for coupling a video signal from said video signal input terminal to a video signal output terminal to a monitor from said output terminal, and

a chrominance signal trap circuit, controlled by an output of said detecting circuit, provided in said video signal monitoring line for rejecting a chrominance component of said input video signal when said video recording system is working in the monochrome mode.

4,068,257
COLOR VIDEO SIGNAL RECORDING AND/OR REPRODUCING SYSTEM

Akira Hirota, Chigasaki; Yoshihiko Ota, Yokohama, and Yoshiteru Kosaka, Kamakura, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 12, 1976, Ser. No. 731,424
Claims priority, application Japan, Oct. 13, 1975, 50-123069
Int. Cl.² H04N 5/79
U.S. Cl. 358—4 **8 Claims**



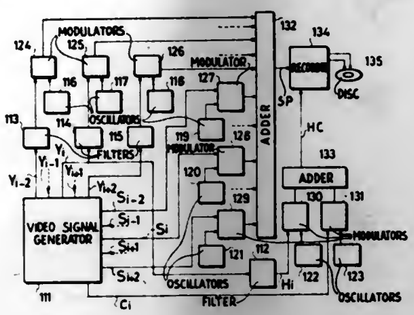
1. A color video signal recording system comprising:
first separation means for separating a luminance signal from an input color video signal;
means for frequency modulating said separating luminance signal;
second separation means for separating a color burst signal and a carrier chrominance signal from said input color video signal;
means for intensifying the amplitude of said separated color burst signal with respect to the amplitude of said carrier chrominance signal;
automatic gain control means for controlling the levels of the intensified color burst signal and the non-intensified carrier chrominance signal so that a specific level is not exceeded;
first frequency conversion means for frequency converting the output signal of said automatic gain control means into a band which is lower than the band of said frequency-modulated luminance signal; and
means for mixing and multiplexing said frequency-modulated luminance signal with the output signal of said first frequency conversion means and for recording the resulting mixed and multiplexed signal on a recording medium.

4,068,258
METHOD FOR COMPRESSING THEN EXPANDING A TELEVISION SIGNAL

Philippe Bied-Charreton, and Francois Le Carvennec, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Mar. 23, 1976, Ser. No. 669,471
Claims priority, application France, Mar. 28, 1975, 75.09916
Int. Cl.² H04N 5/79
U.S. Cl. 358—4 **8 Claims**

1. A method for compressing a colour and sound television signal comprising a succession of signals V_i and S_i, said signal V_i representing a succession of pictures marked by the index i, and said signal S_i representing sounds corresponding to said pictures, said method comprising the steps of:
splitting n successive signals V_{i+1} to V_{i+n} into respectively low-frequency signals B_{i+1} to B_{i+n}, high frequency signals H_{i+1} to H_{i+n}, and chrominance signals C_{i+1} to C_{i+n};
eliminating $n-1$ of said high frequency signals and $n-1$ of said chrominance signals for keeping respectively a remaining high frequency signal H_{i+j} and a remaining chrominance signal C_{i+j};
frequency multiplexing said signals H_{i+j} and C_{i+j} for providing a first multiplexed signal, and said signals B_{i+1} to B_{i+n} and S_{i+1} to S_{i+n} for providing a second multiplexed signal; and

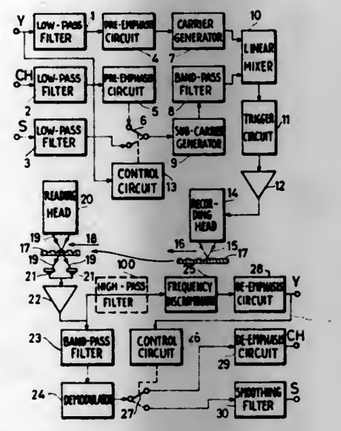


recording said first and second multiplexed signals onto a recording presenting a first and second paths, said first and second multiplexed signals being respectively recorded on said first and second paths.

4,068,259
CODER AND DECODER FOR A SYSTEM DESIGNED TO DISSEMINATE COLOR TELEVISION AUDIO VIDEO SIGNALS

Claude Tinet; Jean Paul Peltier; Pierre Oprandi, and René Romeas, all of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed May 16, 1975, Ser. No. 578,314
Claims priority, application France, May 21, 1974, 74.17591
Int. Cl.² H04N 5/76, 9/32
U.S. Cl. 358—13 **10 Claims**



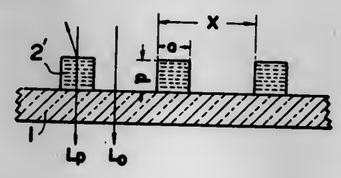
1. A Coder having a multiple input provided for receiving colour television audio-video signals formed by a luminance video signal, a chrominance video signal of the sequential kind comprising horizontal blanking intervals and an audio signal accompanying said video signals, said coder comprising:
time multiplexing means for delivering a modulation signal formed by said chrominance signal and by samples of said accompanying audio signal inserted in said chrominance signal during said horizontal blanking intervals;
a first generator having a modulation input for receiving said modulation signal and an output for delivering a sub-carrier wave modulated by said modulation signal, said sub-carrier wave having a fixed frequency at least equal to the upper limiting frequency of the band occupied by said luminance signal;

a second generator having a modulation input for receiving said luminance signal and an output for delivering a carrier wave frequency modulated by said luminance signal, said carrier wave having an instantaneous frequency higher than the frequency of said subcarrier;
a linear mixed with two inputs respectively connected to the outputs of said first and second generators and an output;
and a triggered wave form generator having an input connected to the output of said linear mixer which triggers the output signal of said linear mixer producing multiplex wave in the form of a train of pulses length modulated.

4,068,260
COMBINATION OPTICAL LOW PASS FILTER CAPABLE OF PHASE AND AMPLITUDE MODULATION

Shoichi Ohneda, Wakayama, and Yukio Okano, Mimamikawachi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 15, 1977, Ser. No. 768,861
Claims priority, application Japan, Feb. 20, 1976, 51-16978
Int. Cl.² H04N 9/22; G02B 5/28
U.S. Cl. 358—44 **21 Claims**

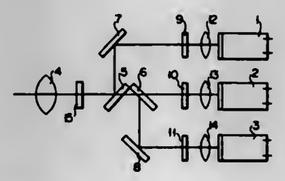


1. In an optical low pass filter for use in a single or double tube color television camera having a transparent substrate and a plurality of optical elements disposed on the substrate for introducing phase retardation in the light transmitted there through, the improvment comprising;
the optical elements being formed of material whose transmissivity varies with the spectral band of incident light.

4,068,261
IMAGE PICKUP DEVICES AND IMAGE PICKUP TUBES UTILIZED THEREIN

Setsuya Yoshizaki, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sept. 8, 1976, Ser. No. 721,504
Claims priority, application Japan, Sept. 8, 1975, 50-108045; Oct. 6, 1975, 50-119704
Int. Cl.² H04N 9/04
U.S. Cl. 358—55 **16 Claims**

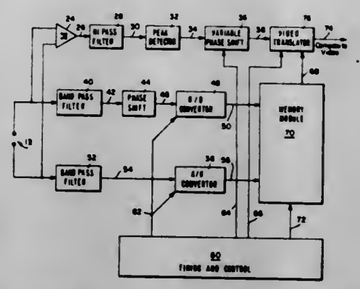


1. An imagge pickup device comprising at least one image pickup tube including a photoelectric converting section, an optical system for projecting the light beam containing the image information of an object upon said image pickup tube and at least one transparent bias light source arranged between the photoelectric converting section of said image pickup tube and said object on the optical axis of said optical system and said image pickup tube for transmitting said light beam and for superposing thereon uniform bias light.
11. An image pickup device according to claim 1 wherein said optical system comprises at least one light beam spliter for splitting said light beam containing the image information of the object into a plurality of different light components and said image pickup tubes are provided at a number associated with the number of said light components and a single bias light source is disposed in front of said light beam spliter on the optical axis thereof.

4,068,262
AUXILIARY VARIABLE COORDINATE SONIC DISPLAY SYSTEM

Michael E. Sandler, and Jeffrey C. Rodman, both of 20218 Gresham St., Canoga Park, Calif. 91306

Filed Dec. 30, 1976, Ser. No. 755,781
Int. Cl.² H04N 9/02
U.S. Cl. 358—82 **8 Claims**



1. A digital auxiliary variable coordinate sonic display system comprising in combination:
at least two input filters for receiving and filtering an audio input signal;
a first phase shifter for receiving the filtered audio input signals and shifting the phase of at least one of the filtered audio signals;
a pair of analog-to-digital converters for receiving the filtered and phase shifted audio signals and converting them to digital form;
a digital memory for receiving the digital audio signals and providing storage therefor;
timing and control means for providing timing and control signals to said analog-to-digital converters and to said digital memory;
a function amplifier for receiving and forming a function derived from an audio input signal;
a high pass filter for receiving the derived function from said function amplifier;
a peak detector for receiving the output signal from said high pass filter;
a second phase shifter receiving the output of the peak detector and shifting the phase of the peak detected signal; and
a video translator for receiving the output signal from said second phase shifter and combining said output signal with an output signal from said digital memory to form a composite video signal.

4,068,263

IMAGE ANALYSIS METHODS

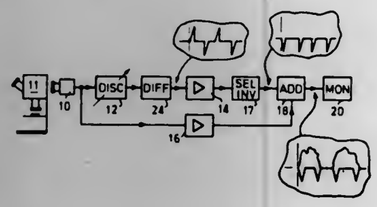
Michael Richard Soames, Fulbourn, England, assignor to Image Analysing Computers Limited, Royston, England

Continuation of Ser. No. 144,974, May 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 852,972, Aug. 18, 1969, Pat. No. 3,617,631, which is a continuation of Ser. No. 523,725, Jan. 28, 1966, abandoned. This application Oct. 30, 1975, Ser. No. 627,395

Claims priority, application United Kingdom, Feb. 6, 1965, 5256/65

Int. Cl.² H04N *7/18*

U.S. Cl. 358—107 **3 Claims**



1. A method of quantitatively measuring a specific part of a specimen having areas of distinctly different light-reflective optical properties comprising the steps of

scanning an image of the specimen and producing an electrical video signal corresponding to the complete image and containing signal content both of the specific part and the remainder of the image,

modifying the video signal with a discriminator which is adjustable to remove signal content of the remainder of the image and provide an output signal of enhanced contrast and definition corresponding to the specific part of the complete picture,

differentiating the output signal to provide an edge signal corresponding to the boundary of the specific part,

providing a visual display on a picture display monitor of the video signal and the edge signal,

comparing the display corresponding to the video signal and the edge signal,

adjusting the discrimination level of said discriminator in direct response to the result of the comparison of the two signals to minimize any differences between the boundaries of the specific parts arising from the two signals,

and making measurements on the discriminator output signal corresponding to the specific part of the complete picture.

4,068,264

PAY TELEVISION SYSTEM UTILIZING BINARY CODING

H. George Pires, Parlin, N.J., assignor to Teleglobe Pay-TV System, Inc.

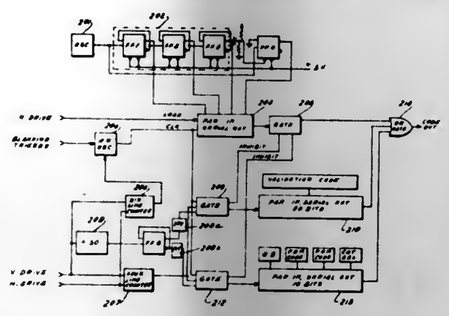
Filed July 19, 1976, Ser. No. 706,929

Int. Cl.² H04N *1/44*

U.S. Cl. 358—122 **11 Claims**

1. Subscription television system comprising, in combination, at the transmitting end: means for encoding the television signals together constituting a given program in accordance with a selected one of a plurality of encoder modes; means for inserting a program identification number signifying said program into said television signal at predetermined time instants thereof; and transmitting means for transmitting the so-encoded television signals with the so-inserted program identification number to all subscribers;

for each of said subscribers: receiving means for receiving the so-transmitted television signal; detecting means for detecting said program identification number and furnishing corresponding detected program identification signals; accept signal furnishing means for furnishing an accept signal indicative of acceptance of said program by said subscriber upon activation by said subscriber; main storage means having a plurality of billing storage locations for storing program identification numbers for subsequent billing; and recording means connected to said detecting means and said accept signal furnishing means, for recording said detected program identification signals in said billing storage locations only upon receipt of said accept signal, whereby only program identification numbers signifying programs accepted by said subscriber are stored in said billing storage locations of said main storage means.



4,068,265

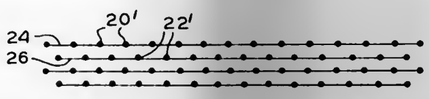
METHOD AND APPARATUS FOR SAMPLING AND REPRODUCING TELEVISION INFORMATION

James T. Russell, Richland, Wash., assignor to Eli S. Jacobs, New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,453

Int. Cl.² H04N *7/12*

U.S. Cl. 358—133 **9 Claims**



1. The method of sampling and reproducing raster information comprising a plurality of horizontal lines, said method comprising:

sampling said raster information at many points along each horizontal line wherein the sample points are separated by a predetermined spacing, including shifting the sampling points back and forth at a rate substantially imperceptible to the eye wherein the size of the shifts is less than the spacing between sampling points,

digitally encoding said samples,

digitally providing code information for association with said samples indicative of whether particular information pertains to a shifted or non-shifted sampled line,

and reproducing the sampled information to reconstruct a raster by locating the shifted and non-shifted information at the same relative locations in a raster as the locations where the original sampling took place.

4,068,266

STATISTICAL RESOLUTION CONVERSION TECHNIQUE

Henry H. J. Liao, Carrollton, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed June 3, 1976, Ser. No. 692,420

Int. Cl.² H04N *5/02*

U.S. Cl. 358—280 **25 Claims**

1. In a raster scanned imaging system, the improvement comprising a resolution converter for interfacing input and output terminals having different, predetermined vertical resolution characteristics;

said input terminal including means for supplying a digital input signal containing a series of video data elements from successive input scan lines;

said output terminal including means for responding to a digital output signal containing another series of video data elements for successive output scan lines;

said resolution converter including

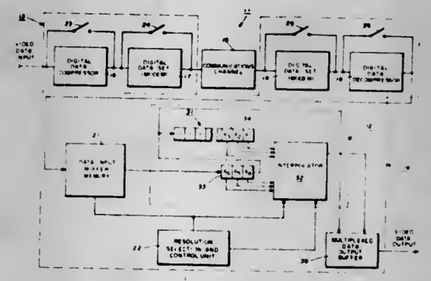
multi-stage register means having a plurality of parallel outputs and a series output, said parallel outputs being taken from preselected stages of said register means to define a prediction matrix containing a plurality of input data elements from at least a pair of input scan lines,

means for serially shifting the input data elements through said register means, thereby providing a series flow of raw input data elements at said series output while sequentially entering successive patterns of input data elements into said prediction matrix,

interpolation means coupled to the parallel outputs of said register means for sequentially predicting statistically likely output data elements in response to said prediction matrix patterns,

buffer means having one input coupled to receive said raw input data elements and a second input coupled to receive said predicted output data elements, and

means for multiplexing the inputs of said buffer means at a rate determined by the ratio of the vertical resolutions of said input and output terminals, whereby said output signal is assembled by accepting raw data elements for certain of said output scan lines and predicted data elements for the other of said output scan lines.



4,068,267

MAGNETIC DISK STORAGE APPARATUS IN WHICH SERVO TRACK ZONE PROVIDES SIGNALS FOR BOTH MOVING SPEED AND POSITION OF TRANSDUCER

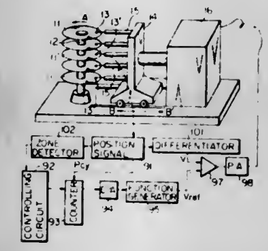
Yuji Inouye, Kawasaki, Japan, assignor to Fujitsu Ltd., Kawasaki, Japan

Filed Oct. 7, 1976, Ser. No. 730,583

Claims priority, application Japan, Oct. 9, 1975, 50-122336

Int. Cl.² G11B *21/10, 5/012*

U.S. Cl. 360—75 **18 Claims**



1. A magnetic disk storage apparatus comprising a plurality of data storage disks and a servo disk which are all rotated at a constant high speed, a plurality of data transducers, each of which electromagnetically cooperates with a respective one of said data storage disks, and a servo transducer which electromagnetically cooperates with said servo disk, a linear motor which moves said data transducers and said servo transducer with respect to said storage disks and said servo disk, respectively, and a controlling circuit which controls said linear motor so as to move said servo transducer, together with said data transducers, to a desired position relative to said servo disk in accordance with a command, wherein said servo disk is provided with, on its surface, an inner guard zone which can provide inner guard information to said controlling circuit when said servo transducer is located thereabove, an outer guard zone which can provide outer guard information to said controlling circuit when said servo transducer is located thereabove, and a servo track zone which can provide both moving speed information concerning the moving speed of said servo transducer and positioning information concerning the positioning of said servo transducer to said controlling circuit when the servo transducer is located above said servo track zone, characterized in that at least one of said inner guard zone and said outer guard zone can further provide moving speed information of said servo transducer to said controlling circuit when said servo transducer is located thereabove.

4,068,268

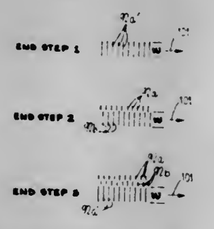
METHOD AND APPARATUS FOR WRITING SERVO-TRACKS ON ROTATING MAGNETIC MEMORY SURFACES

Tom Y. Idemoto, 6857 Elwood Road, San Jose, Calif. 95120, and C. Norman Dion, 1637 Tiffany Way, San Jose, Calif. 95121

Filed Jan. 8, 1976, Ser. No. 647,310

Int. Cl.² G11B *21/12, 21/08*

U.S. Cl. 360—78 **14 Claims**



1. A method of writing substantially concentric servo-tracks having a pre-determined width on the servo surface of a moveable magnetic storage device, said method comprising the steps of:

a. translating said servo surface in a first direction past a write transducer having a gap width greater than said pre-determined width;

b. recording a substantially circular preliminary track with said write transducer having a width greater than said predetermined servo-track width;

c. translating said write transducer in a direction substantially normal to said first direction by an amount equal to said pre-determined servo track width;

d. erasing overlapping portions of said preliminary track to form a substantially circular servo-track having said predetermined width; and

e. repeating steps (b) – (d) until the desired number of substantially concentric tracks has been recorded.

4,068,269

POSITIONING SYSTEM FOR DATA STORAGE APPARATUS AND RECORD MEDIUM FOR USE THEREWITH

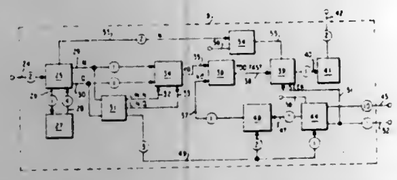
Robert Duncan Commander, and John Richard Taylor, both of Eastleigh, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1976, Ser. No. 681,656

Claims priority, application United Kingdom, May 12, 1975, 20490/75

Int. Cl.² G11B *21/08, 21/10, 5/82*

U.S. Cl. 360—78 **46 Claims**



1. A positioning system for positioning a positionable member transversely with respect to a moving record medium, comprising:

a positionable member; a position transducer mounted on said positionable member;

actuator means coupled to said positionable member for positioning said positionable member in response to actuator control signals supplied to said actuator means;

a record medium;

and means defining a predetermined path of movement for said record medium;

said record medium having a plurality of contiguous position reference tracks of equal width recorded thereon, extending in the direction of movement of said record medium;

said position reference tracks being divided longitudinally into a plurality of interleaved sections, each section being laterally displaced with respect to its immediately adjacent sections by a distance of less than one track width, and each sectional portion of each track having recorded thereon at least one position reference signal, detectable by said position transducer, which signal is not contiguous with any other transducer detectable signal on said record medium;

said system further comprising control circuit means connected to receive signals detected by said transducer from said position reference tracks, said control circuit means being responsive to said detected signals to derive at least one actuator control signal therefrom and being connected to apply said at least one actuator control signal to said actuator means.

4,068,270

DEVICE TO SUPPORT AND POSITION A MAGNETIC TRANSDUCER

Charles Duane Hurd, Boulder, and Robert Paul Loomis, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1975, Ser. No. 617,872

Int. Cl.² G11B *5/54, 5/48, 21/16*

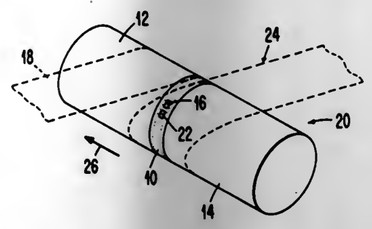
U.S. Cl. 360—84 **14 Claims**

1. A support device for a transducer in a media transport comprising in combination:

a support means for moving and positioning the transducer relative to the media;

an elongated strip of thin foil; and

fastening pins with metallurgical characteristics substantially equivalent to said foil, said fastening means operably con-



nected to said support means, for bonding the elongated strip to said support means.

4,068,271

INTERCHANGEABLE MAGNETIC STORAGE ELEMENT

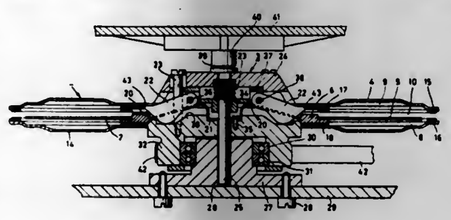
Cornelis Hendrik Kok, Wassenaar, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1975, Ser. No. 630,989

Claims priority, application Netherlands, Nov. 22, 1974, 7415238

Int. Cl.² G11B *25/04, 23/02*

U.S. Cl. 360—97 **7 Claims**



1. An interchangeable random-access magnetic storage element adapted to be fitted onto a drive spindle of a drive means for driving said storage element and comprising:

a. a substantially cylindrical dust-proof enclosure with a lower and an upper surface disposed at some distance from each other,

b. a single magnetic disk accommodated in the enclosure, which disk is rotatably drivable by the drive means,

c. means for positioning the storage element on the drive means,

d. a passage through which electromagnetic recording and read means can be passed,

e. means for automatically closing the passage each time that the storage element is removed from the drive means,

f. means for preventing a rotation of the magnetic disk relative to the enclosure each time that the storage element is removed from the drive means,

g. the enclosure comprising lower and upper covers which are axially movable relative to each other,

h. the passage for the magnetic recording and read means having an annular slot which is formed upon a relative axial movement between the lower and upper cover, and

i. means for preventing a rotation of the magnetic disk relative to the enclosure each time that the storage element is fitted onto the drive means so that the enclosure and the magnetic disk are jointly drivable in a rotatable fashion by the drive means.

4,068,272

HIGH SENSITIVITY MAGNETIC HEAD USING MAGNETO-RESISTIVE EFFECT ELEMENT

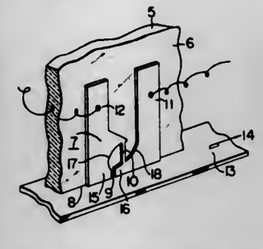
Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi; Norimoto Nouchi, Katano, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 17, 1975, Ser. No. 632,761

Claims priority, application Japan, Nov. 19, 1974, 49-133975; Nov. 20, 1974, 49-134019; Nov. 20, 1974, 49-134103

Int. Cl.² G11B *5/12, 5/30*

U.S. Cl. 360—113 **8 Claims**



1. A magnetic head comprising a base having a surface and an end face; first and second flux converging cores, at least one of said cores defining a magnetic gap; a detecting portion having a cross-sectional area smaller than that of either of said first and second flux converging cores connecting said cores and extending at right angles to the end face of said base, said detecting portion having one end located in the neighborhood of said magnetic gap and being in parallel magnetically with said gap; and detecting electrodes coupled to the oposite ends of said detecting portion, said detecting portion and at least one of said first and second cores being of a ferromagnetic conductive material and integrally formed on the surface of said base.

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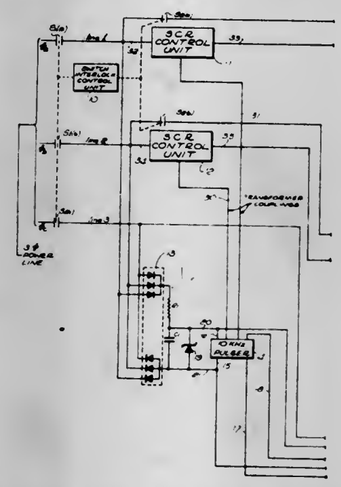
HYBRID POWER SWITCH

Albert Metzler, San Jose, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 8, 1976, Ser. No. 647,451

Int. Cl.² H02H *7/22*

U.S. Cl. 361—3 **7 Claims**



1. An AC electric power switching device for automatically energizing and deenergizing a three-phase power circuit in response to a corresponding single manual action for each of said energizing and deenergizing functions, comprising:

first and second switch banks in series between a power source and a load with said first switch bank being nearest said power source, said first switch bank comprising three pairs of switch contacts, one to each phase line, said second switch bank comprising two pairs of switch contacts with one pair to each of a predetermined two of said three phase lines;

electronically controllable means comprising a pair of solid state devices of the thyristor family, one of which is connected in parallel with each of said second contact pairs in said two predetermined phase lines, the phase line other than said predetermined two being connected directly from a corresponding contact of said first switch bank to said load;

first means activated by closing of said first switch bank for initiating current conduction in each of the current-carrying paths provided by said electronically controllable means when the instantaneous phase voltage is zero within a predetermined ignition tolerance in the corresponding phase line of said sources, said first means also including circuits for closing said second switch bank after a predetermined delay time to bypass current around said electronically controllable means in each of said current-carrying paths, said first means further including circuits for causing interruption of current in each of said paths as said electronically controlled means senses zero instantaneous current within a predetermined tolerances after said second switch bank has been opened to begin the disconnect process;

and second means for opening said first switch bank after a second predetermined delay time after all of said current-carrying paths through said electronically controlled means have interrupted at said zero instantaneous currents.

4,068,274

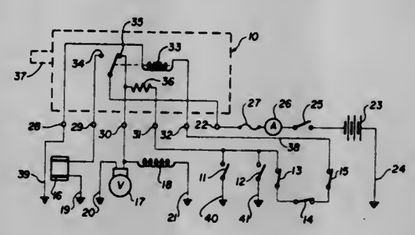
MAGNETIC SWITCH AND CIRCUITRY FOR SAFETY SHUT DOWN OF POWER EQUIPMENT

Frank W. Murphy, Jr., Bixby, and Buddy G. Sparks, Tulsa, both of Okla., assignors to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.

Filed Oct. 13, 1976, Ser. No. 731,648

Int. Cl.² H02H *3/04*

U.S. Cl. 361—23 **5 Claims**



1. In a fault-sensitive safety monitoring and shut down system for power equipment having electrically controlled operating components whose individual functions are essential to safe operation of said equipment, an electromagnetic switch having a coil and having normally closed and normally open contacts, a power terminal for the switch which is electrically coupled with said normally closed contact, an external grounding terminal which is electrically coupled with said coil, a first switch terminal, a resistance element coupled between the first switch terminal and said normally closed contact, a second switch terminal electrically coupled with said coil, and additional switch terminals electrically coupled with said operating components, said last-named switch terminals coupled one each with said normally closed and normally open contacts,

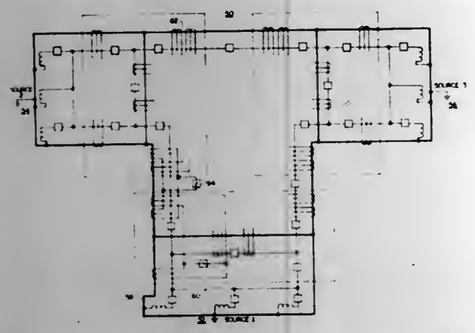
the improvement comprising a plurality of normally open and grounded safety switches electrically coupled with said first switch terminal, and a second plurality of normally closed switches coupled between said first and second switch terminals, said first-named plurality and second plurality of switches being electrical fault-sensing switches.

4,068,275

GROUND FAULT PROTECTIVE APPARATUS AND METHOD

Billy E. Teel, and Samuel L. Magruder, both of Ballwin, Mo., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 9, 1976, Ser. No. 694,427
Int. Cl.² H02H *3/28*
U.S. Cl. 361—44 **5 Claims**



1. Apparatus for detecting ground faults on an associated alternating current network, comprising:

a plurality of groups of zero sequence current monitors, the monitors of each group being electrically isolated from every other group and surrounding conductors of the associated network which define a portion of the associated network as a zone of protection, the monitors of each group being connected to produce a current output signal whenever current flow through the conductors of the associated network into the zone of protection differs from current flow through the conductors of the associated network out of the zone of protection by more than a predetermined amount; and

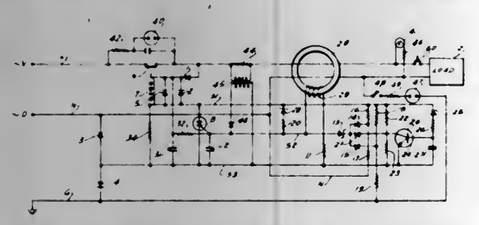
a plurality of current-sensitive ground fault sensors, each sensor being connected to the output of a current monitor group and being adapted to actuate an associated circuit interrupter device upon receipt of an output current signal from its connected current monitor group.

4,068,276

PROTECTIVE SYSTEM FOR ELECTRICAL APPLIANCES

Robert H. Pintell, New City, N.Y., assignor to Interelectronics Corporation, Congers, N.Y.

Filed July 14, 1976, Ser. No. 705,107
Int. Cl.² H02H *3/28*
U.S. Cl. 361—46 **10 Claims**



1. In a power supply for energizing a load with alternating current, including a line wire, a return wire and a ground wire, the combination therewith of a protective system comprising:

a shunt circuit connected to said line wire, said return wire and said ground wire;

electronic switchover means in said shunt circuit provided with triggering means;

a safety device provided with an operating element energizable through said switchover means and with a normally closed contact in said line wire; and

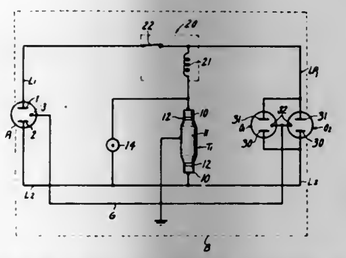
a control circuit for operating said safety device to open said contact in the event of a malfunction, said control circuit comprising a first voltage divider inserted in series with a first diode between said line wire and said return wire, a second voltage divider inserted in series with a second diode between said line wire and said ground wire, and a connection with a pair of rectifying branches between said triggering means and respective taps of said voltage dividers, said connection including at least one electronic breakdown element.

4,068,277

OVERVOLTAGE PROTECTOR

Frank L. Simokat, Babylon, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.

Filed July 19, 1976, Ser. No. 706,934
Int. Cl.² H02H *3/22*
U.S. Cl. 361—55 **9 Claims**



1. A protector circuit for protecting equipment protectors from both short term and long term overvoltage surges comprising:

1. input terminals adapted to be energized from a source of power;

2. output terminals adapted to supply power to the equipment to be protected;

3. a protection branch connected in shunt relationship with said output terminals and including:

a. a gas tube overvoltage protector for protection against short term overvoltage surges, and

b. actuating means thermally responsive to the current flow in said gas tube;

4. switching means coupled to said actuating means to be directly driven thereby, and connected between one of said input terminals and said protection branch to permit isolation of said protection branch and said output terminals from said input terminals in the event of a sustained overvoltage condition, and to restore operative connections in the event of cessation of said condition.

4,068,278

OVERLOAD PROTECTION CIRCUIT FOR AMPLIFIERS

Bruce T. Williams, 86 Park Lane Circle, Lockport, N.Y. 14094

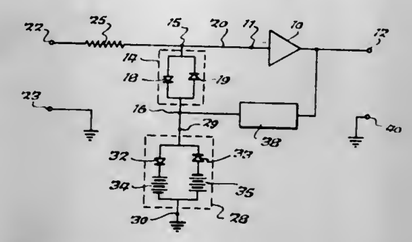
Filed May 27, 1976, Ser. No. 690,787
Int. Cl.² H02H *7/20*
U.S. Cl. 361—56 **7 Claims**

1. An overload protection circuit for an amplifier having an input and an output comprising:

a. first voltage responsive protection means having a pair of ports and normally providing a relatively high resistance path between said ports and operative to provide a relatively low resistance path between said ports when a voltage of predetermined magnitude is applied across said ports;

b. means for connecting one of said ports of said first protection means to said input of said amplifier;

c. second voltage responsive protection means connected to said other port of said first protection means and normally



providing a relatively high resistance path and operative to provide a relatively low resistance path when a voltage of predetermined magnitude is applied thereacross; and

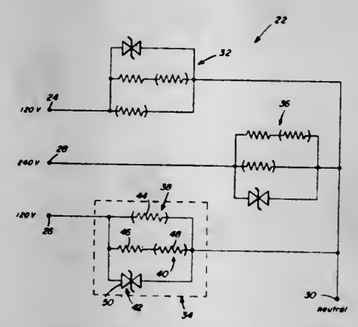
d. means including frequency responsive means defining a feedback path from said output of said amplifier to said other port of said first protection means for driving said port to a potential equal in magnitude and polarity to the potential applied to said amplifier input during non-overload conditions.

4,068,279

POWER MONITOR

Gerald J. Byrnes, 1545 Overton Park Ave., Memphis, Tenn. 38112

Filed Oct. 28, 1976, Ser. No. 736,720
Int. Cl.² H02H *3/20*
U.S. Cl. 361—56 **8 Claims**



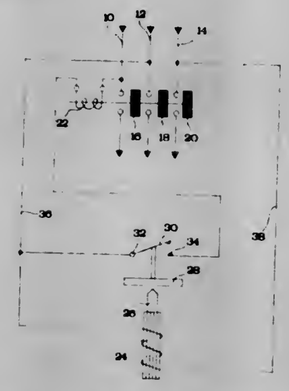
1. A current shunting protection circuit connected to a source of line voltage including a plurality of parallel connected branches, voltage clamping means in a first of said branches for conducting current therethrough in response to line voltage exceeding a predetermined voltage breakdown value, non-linear impedance devices respectively connected in each of the other of the branches for establishing shunt paths therein under transient voltage conditions to clip peak voltages at different levels, and fixed impedance means connected in series with at least one of said non-linear impedance devices in a second of the branches for developing a volt drop across said second of the branches under normal peak voltage conditions that is less than said voltage breakdown value of the clamping means to prevent conduction of current therethrough, said non-linear impedance devices having impedances which decrease sharply when the line voltage exceeds said predetermined voltage breakdown value to share transient loads amongst said branches under transient voltage conditions.

4,068,280

AUTOMATIC CIRCUIT RESTORATION DEVICE FOR POLYPHASE FEED LINES

Pietro Basile, deceased, late of San Giovanni in Fiore (Cosenza), Italy, and Maria Caligiuri, administrator, Via Gramsci 146, San Giovanni in Fiore (Cosenza), Italy

Filed May 17, 1976, Ser. No. 687,042
Int. Cl.² H02H *3/24*
U.S. Cl. 361—92 **1 Claim**



1. An automatic circuit breaker apparatus for polyphase electric systems having a plurality of feed lines associated with respective electric phases, which apparatus comprises a set of normally open main switching contacts connected in series to the respective feed lines and controlled in unison by one coil, and an auxiliary set of switching contacts controlled by means of responsive to the presence of voltage on one or more of the feed lines, said coil for controlling the set of main switching contacts, and said auxiliary switching contacts being connected in series between a first and a second one of said plurality of feed lines, said voltage responsive means including a coil having a movable core, with the terminals of said voltage responsive means coil being connected between one of said first and second feed lines and a third feed line, said movable core being adapted to maintain in a first position a movable plate that keeps said auxilliary set of switching contacts open said movable core retracting when said coil of voltage responsive means is energized to permit said movable plate to move by gravity to a second position for closing said auxiliary set of switching contacts.

4,068,281

THERMALLY RESPONSIVE METAL OXIDE VARISTOR TRANSIENT SUPPRESSION CIRCUIT

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

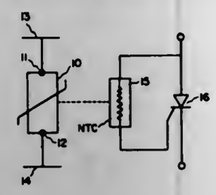
Filed Sept. 15, 1976, Ser. No. 723,567
Int. Cl.² H02H *5/04*
U.S. Cl. 361—106 **9 Claims**

1. An electrical circuit comprising in combination:

a body of metal oxide varistor material having at least two electrodes affixed thereto, and

temperature responsive means thermally connected to said body of varistor material which means function to actuate

an electrical switch, connected as a crowbar in shunt with two of said electrodes on said body of varistor material, at



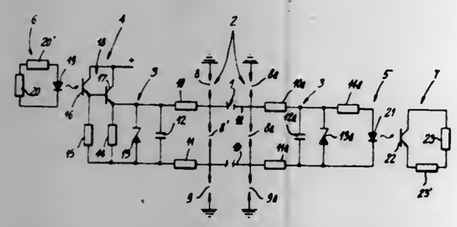
such times as the temperature of said body exceeds a predetermined level.

4,068,282

PROTECTIVE DEVICE FOR LOW CURRENT TRANSMISSION CIRCUITS

Francisco Diaz Rigollet, Bagneres-de-Bigorre, France, assignor to Etablissements Industriels C. Soule, Bagneres-de-Bigorre, France

Continuation-in-part of Ser. No. 483,532, June 27, 1974, abandoned. This application Sept. 10, 1976, Ser. No. 722,167
Claims priority, application France, July 17, 1973, 73.26131
Int. Cl.² H02H *9/06*
U.S. Cl. 361—119 **7 Claims**



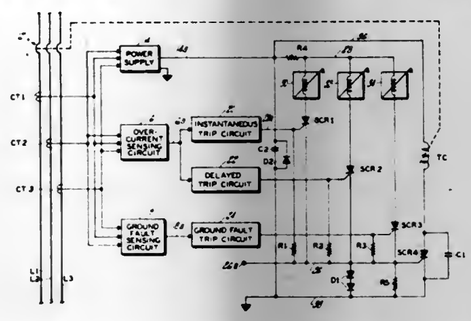
1. A protective device for low current transmission lines, comprising a transmitting unit connected to one end of said transmission line and a receiving unit connected to the other end of said line, said transmitting unit comprising at least one lightning protector connected to said one end of said line, a filter network across said one end of said line, a transducer for applying signal to said one end of said line, and an emitter for communicating with said transducer through an electrically and magnetically insulated medium, whereby low current signals produced by said transmitting unit can traverse said medium between said emitter and said transducer, and signals produced by energy containing disturbances cannot; said receiving unit comprising at least one second lightning protector connected to said other end of said line, a second filter network across said other end of said line, a second transducer for receiving signals on said line, and a receiver for communicating with said second transducer through an electrically and magnetically insulated medium, whereby low current signals on said line can traverse said medium between said transducer and said receiver, and signals produced by energy containing disturbances cannot, the device further comprising means to check the ability of the line to transmit signals.

4,068,283

CIRCUIT BREAKER SOLID STATE TRIP UNIT INCORPORATING TRIP INDICATING CIRCUIT

Ronald R. Russell, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Oct. 1, 1976, Ser. No. 728,616
Int. Cl.² H02H *7/00*
U.S. Cl. 361—205 **1 Claim**



1. A solid state trip unit for an electric circuit breaker having circuit interrupting contacts whose separation is initiated by energization of a trip coil, said trip unit comprising, in combination:

A. a power supply having one side electrically connected to one terminal of the trip coil;

B. means monitoring the current flowing in an electric distribution circuit;

C. a first trip circuit electrically connected to said current monitoring means and operative to issue on a first output lead a first trip signal in response to a first abnormal condition;

D. a second trip circuit electrically connected to said current monitoring means and operative to issue on a second output lead, a second trip signal in response to a second abnormal condition;

E. first, second and third electrical busses,

1. said first bus electrically connected to said one side of said power supply, and

2. said second bus electrically connected to the other side of said power supply;

F. a first target circuit including a first target and a first thyristor connected in series between said first and third busses, said first thyristor having a gate terminal continuously electrically connected to said first output lead;

G. a second target circuit including a second target and a second thyristor connected in series between said first and third busses, said second thyristor having a gate terminal continuously electrically connected to said second output lead;

H. a third thyristor electrically connecting the other terminal of the trip coil to said second bus, said third thyristor having a gate terminal continuously electrically connected to said third bus;

I. a first triggering circuit consisting of a first resistor electrically connected between the junction of said first output lead and said first thyristor gate terminal and said third bus, said first trip signal directly developing across said first resistor a gate triggering voltage rendering said first electronic switch conductor for energization of said first target;

J. a second triggering circuit consisting of a second resistor continuously electrically connected between the junction of said second output lead and said second thyristor gate terminal and said third bus, said second trip signal directly developing across said second resistor a gate triggering voltage rendering said second thyristor conductor for energization of said second target;

K. a third triggering circuit consisting of a third resistor electrically connected between the junction of said third bus and third thyristor gate terminal and said second bus, either of said first or second trip signals directly developing across said third resistor a gate triggering voltage rendering said third thyristor conductor for energization of the trip coil from said power supply; and

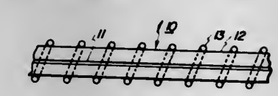
L. an externally accessible accessory trip signal input terminal electrically connected to said third bus, the application of an accessory trip signal to said input terminal serving to develop a gate triggering voltage exclusively across said third resistor, thereby rendering said third thyristor conductive for energization of the trip coil independently of said first and second triggering circuits and said first and second trip signal output leads.

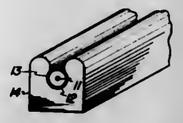
4,068,284

CORONA DISCHARGE DEVICE

Stanley C. Wheeler, Ross-on-Wye, and Peter M. Thorp, Lydbrook, both of England, assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 494,648, Aug. 5, 1974, abandoned. This application July 2, 1976, Ser. No. 702,375
Claims priority, application United Kingdom, Sept. 28, 1973, 45431/73
Int. Cl.² H05F *3/06*
U.S. Cl. 361—230 **1 Claim**





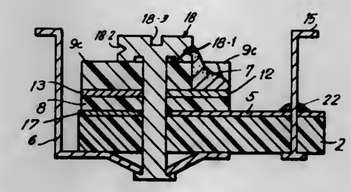
1. An electrical discharge device comprising an insulated conductor adapted to carry a high alternating voltage, an uninsulated conductor encircling said insulated conductor, an insulating support for said conductors, the support being formed with a channel along which the insulated conductor is laid and whose walls retain the uninsulated conductor on the insulated conductor.

4,068,285

VARIABLE CAPACITOR

Kuniharu Yamada, Suwa; Yukio Morozumi, Chino, and Keiichi Iuchi, Okaya, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 501,387, Aug. 28, 1974, abandoned. This application May 5, 1976, Ser. No. 683,456
Claims priority, application Japan, Aug. 28, 1973, 48-96456
Int. Cl.² H01G *5/06*
U.S. Cl. 361—293 **10 Claims**



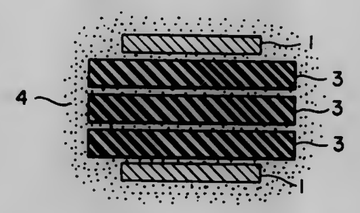
1. A variable capacitor comprising stator means including a supporting plate, first capacitor electrode, and an adhesive means for securing said first capacitor electrode to said stator supporting plate, rotor means including a positioning member rotatably mounted on said stator plate, said positioning member rotatably supporting a rotor assembly of uniform thickness for rotation therewith in friction contact with said stator means, said rotor assembly including a dielectric layer in friction engagement with said first electrode, a second capacitor electrode, and a reinforcing plate on the side of the dielectric having an opening therein for receiving said positioning member and a second electrode spaced from the first electrode for supporting said dielectric layer, said reinforcing plate having a lower dielectric constant than said dielectric layer, and an adhesive means for securing said dielectric layer. second capacitor electrode and reinforcing plate together, and electrically conductive securing means coupled to said posisitioning member and said second capacitor electrode, said positioning member including a top portion having a circular notch in the surface portion thereof in contact with the rotor assembly to thereby prevent breakage of the reinforcing plate at the portion thereof defining the position member receiving opening.

4,068,286

OIL-IMPREGNATED POLYPROPYLENE CAPACITOR

Yasuo Iijima, Kobe, and Tokihiko Shimizu, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 562,414, March 27, 1975, abandoned, which is a continuation of Ser. No. 427,731, Dec. 26, 1973, abandoned. This application Aug. 25, 1976, Ser. No. 717,743
Claims priority, application Japan, Dec. 27, 1972, 47-3420
Int. Cl.² H01G *4/22*
U.S. Cl. 361—315 **2 Claims**



1. An oil-impregnated capacitor comprising at least a pair of electrodes, at least one thin insulator sheet solely consisting of a polypropylene plastic film wound between said electrodes and impregnated with an insulating oil, said oil consisting essentially of an insulating oil having a physical property which allows the impregnated film to expand at 80° C by an amount no greater than 0.5 per cent over the unimpregnated film at room temperature and a physical property which allows said insulating oil to be present in the film at 80° C in an amount no greater than 10 per cent by weight of the film.

4,068,287

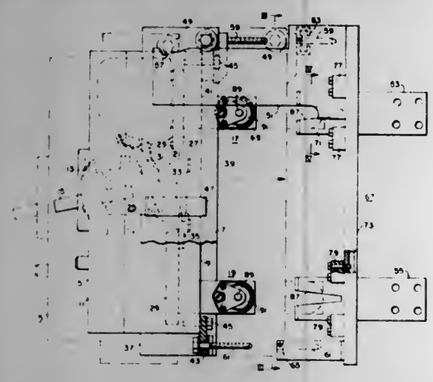
CIRCUIT BREAKER WITH IMPROVED TERMINAL CONNECTION MEANS

Zelko J. Kruzic, New Brighton, and James O. Rexroad, Beaver, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 620,607, Oct. 8, 1975, abandoned, which is a continuation of Ser. No. 473,964, May 28, 1974, abandoned, which is a continuation-in-part of Ser. No. 316,636, Dec. 19, 1972, abandoned. This application Feb. 20, 1976, Ser. No. 659,870
Int. Cl.² H02B *1/20*
U.S. Cl. 361—341 **8 Claims**

1. A circuit breaker structure comprising a multi-pole circuit breaker and spaced bus conductors, said circuit breaker comprising a stationary contact and a movable contact for each pole, manually operable handle means for opening and closing

the contacts, an insulating housing comprising front and rear end walls and opposite side walls, each pole for the circuit breaker comprising at least two vertically spaced incoming and outgoing terminals at the rear end wall, each terminal comprising at least one terminal finger, the spaced bus conductors comprising spaced incoming and outgoing conductor members each comprising at least one conductor finger interengageable with the at least one terminal finger of a corresponding terminal, the incoming terminal for all poles being horizontally spaced and aligned on one horizontal axis, the outgoing terminals for all poles being horizontally spaced and aligned on another horizontal axis and vertically spaced from that of the incoming terminals, first conductor means leading from each stationary contact to the corresponding incoming terminal, second conductor means leading from each movable contact to the corresponding outgoing terminal, the conductor means for



each of the incoming and outgoing terminals of each pole being spaced apart, first releasable clamping means for holding the incoming terminal fingers in tight electrical surface-to-surface contact with corresponding conductor fingers, second releasable clamping means for holding outgoing terminal fingers in tight electrical surface-to-surface contact with the corresponding conductor fingers, the first clamping means comprising an elongated bolt and nut assembly for all poles, the second clamping means comprising another elongated bolt and nut assembly for all poles, dielectric spacer means on each bolt and between the terminals, and at least one of the nut and bolt end portions of each of said clamping means being disposed externally of the side walls and front elevational-view dimensions of the housing so that at least one of the nut and bolt end portions is accessible from the front end wall of said circuit breaker to receive a securing member that may be used to removably secure or release said assembly.

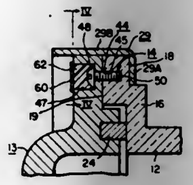
4,068,288

TAMPER PROOF WATTHOUR METER ENCLOSURE HAVING A PERMANENT LOCKING ARRANGEMENT

Gerald W. Finnen, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 12, 1976, Ser. No. 685,464
Int. Cl.² H02B 9/00
U.S. Cl. 361—369 **3 Claims**

1. A tamper proof watthour meter enclosure comprising:
a base assembly supporting a watthour meter movement, said assembly including plural arcuate attachment lugs extending radially at the outer periphery thereof in spaced apart relationship, said attachment lugs having forward and rear side radial surfaces thereon;
a plastic cup-shaped cover including a closed forward end and an open end, said cover further including a circular mounting flange extending radially outward at said rear open end, a rear radial side surface of said mounting flange mating with said front radial side surfaces of said attachment lugs, said cover further including a locking rim having a forward inturned flange extending around said mounting flange and further having a cylindrical body portion carrying tab members rotationally attaching said cover to said attachment lugs to enclose said watthour meter movement within a protective chamber;
a permanent locking arrangement including a hole extending into the rear side surface of the cover mounting flange at a radial position behind said inturned flange so as to have a concealed location thereunder, an aperture in said base assembly aligned with said hole of said cover flange, an



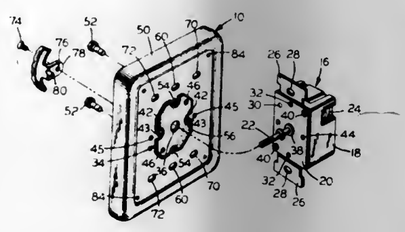
irremovable fastener means having a threaded shank portion applied through said base assembly aperture and threadedly attached to said cover flange around said flange hole, said fastener means further having a one-way head portion including a partial screwdriver slot terminating at opposite camming surfaces with said head portion being recessed within said base assembly aperture, and covering means applied to said base assembly over said aperture to conceal said fastener and said base assembly aperture.

4,068,289

DIMMER WITH INCREASED SWITCHING CAPACITY

William L. Ferrigno, Peacedale, R.I., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 491,982, July 25, 1974, abandoned. This application Mar. 29, 1976, Ser. No. 671,516
Int. Cl.² H05K 7/20
U.S. Cl. 361—389 **4 Claims**



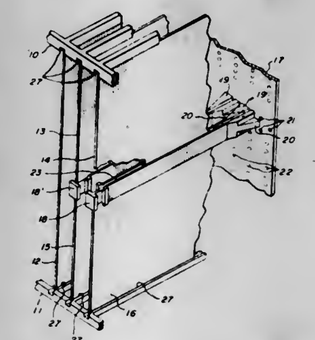
1. A dimmer article comprising:
a. an insulating housing of a conventional dimmer having a top access opening and having side openings with electric supply means extending through said side openings,
b. a metal closure plate of a conventional dimmer having forward and rear surfaces and mounted to said housing closing said top access opening,
c. the forward surface of the portion of said closure plate closing said top access opening being flat,
d. a solid state device mounted in electrically insulated heat transfer relation to the rear surface of said metal plate and electrically connected to said electric supply means,
e. phase control circuitry in said housing controlling flow of electric power through said solid state device,
f. a metal heat sink plate of a mass substantially greater than the mass of the closure plate,
g. said heat sink plate having a rear flat surface portion physically bearing against most of the flat forward surface of the closure plate forward surface of the closure plate, of said conventional dimmer
h. and said heat sink plate being mounted in close conforming and heat receiving contact with said closure plate to constitute said dimmer article.

4,068,290

CANTILEVER CIRCUIT CARD GUIDE

Daryl Clifford Wetherbee, Roseville, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 4, 1977, Ser. No. 784,104
Int. Cl.² H02B 1/02
U.S. Cl. 361—415 **5 Claims**



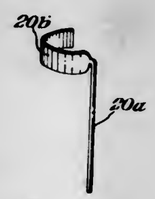
1. An improved cantilevered circuit card guide of the type to be attached at its base to a connector block, and having a pair of oppositely facing parallel slots each adapted to receive an edge of a circuit card and permit it to slide therein toward the connector block, wherein the improvement comprises a) a tongue on the base end projecting approximately transverse to the directions faced by the slots and contacting the connector block when attached thereto, and b) a pair of projections on the base end, defining between them a groove oppositely facing from the tongue, and contacting the connector block when attached thereto, and allowing the tongue on an identical circuit card guide attached adjacent the groove with its tongue facing it, to project into the groove.

4,068,291

SOLID ELECTROLYTE CAPACITOR WITH IMPROVED CATHODE LEAD

Ralph Erskine Pierpont, Kennebunk, Maine, assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 12, 1976, Ser. No. 675,833
Int. Cl.² H01G 9/00
U.S. Cl. 361—433 **6 Claims**



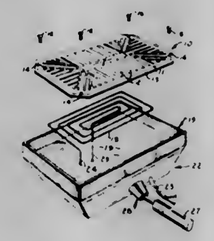
1. A solid electrolytic capacitor including a cylindrical valve-metal anode with an attached anode lead wire extending from a flat end face thereof, a dielectric oxide film being on the surface of said anode, a solid electrolyte disposed over said dielectric oxide film and a layer of graphite overlying said solid electrolyte wherein the improvement comprises a unitary metal cathode lead capable of being made by a cold forming process having a thin flattened strip portion formed in the shape of a "c" and having a wire portion being joined at an end of said "c" shaped strip portion, said "c" shaped strip portion being positioned concentrically and extending about 160 and less than 180° of arc about said cylindrical anode, and a conformal layer of solder being formed over and soldered to said strip portion and having a connection to said graphite layer, said cathode wire lead portion extending away from said anode in a direction that is essentially parallel to that of said extending anode lead wire.

4,068,292

ELECTROSTATIC SHIELD FOR DIATHERMY TREATMENT HEAD

Fred M. Berry, Leawood, and James N. Shirley, Kansas City, both of Kans., assignors to International Medical Electronics, Inc., Kansas City, Kans.

Continuation-in-part of Ser. No. 562,568, March 27, 1975, abandoned. This application July 22, 1976, Ser. No. 707,529
Int. Cl.² A61N 1/06
U.S. Cl. 361—437 **20 Claims**



1. An electrostatic shield for use with shortwave diathermy apparatus having a diathermy applicator head, said shield adapted to be located between the diathermy applicator head having current carrying coils therein and the body of the patient being treated, said shield comprising:
means for attenuating electrostatic energy emanating from said head reaching said patient, said attenuating means comprising electrically conductive strips located between said current carrying coils in said head and said patient; and
means for grounding and attenuating means.

4,068,293

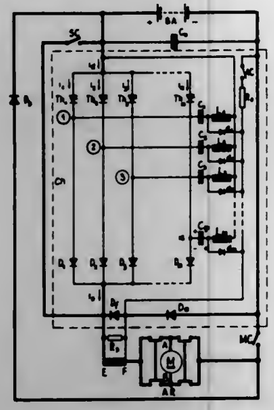
SCR D.C. INTERRUPTER

Stanislaw Staruch; Bogdan Fijalkowski, both of Krakow, and Janusz Zawilinski, Wieliczka, all of Poland, assignors to Politechnika Krakowska, Warsaw, Poland

Filed June 21, 1976, Ser. No. 698,203
Claims priority, application Poland, June 24, 1975, 181561
Int. Cl.² H02M 3/315
U.S. Cl. 363—27 **8 Claims**

1. A semi-conductor controlled rectifier d.c. interrupter comprising: a plurality of identical self-contained and parallel connected phases; each phase having a series connection of a semi-conductor controlled rectifier and a diode; Y-connected resonant arms including series-connected capacitors and reactors; a d.c. power source; the vertices of the Y-connection being connected to said rectifiers, and the anodes of said diodes, the neutral junction of the Y-connection being connected

to one terminal of said power source, said phases operating as modulators of pulse repetition frequency with phase shift given



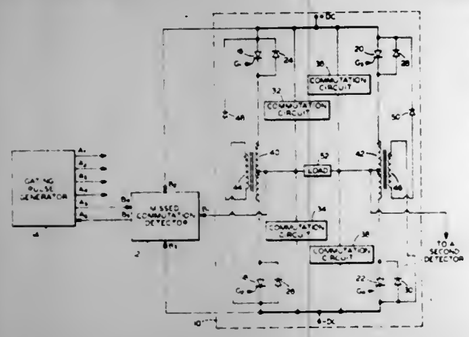
by the ratio of 2 π to the number of said parallel connected phases.

4,068,294

CIRCUIT FOR DETECTING A MISSED COMMUTATION IN AN INVERTER

Thomas E. Anderson; Steven C. Peak, both of Normal, and Ole N. Ibsen, Bloomington, all of Ill., assignors to General Electric Company, New York, N.Y.

Filed Sept. 20, 1976, Ser. No. 724,817
Int. Cl.[2] H02M *1/18, 7/515*
U.S. Cl. 363—58 5 Claims



1. A circuit for detecting a missed commutation in a self-commutating inverter including a series combination of at least first and second gate controlled rectifiers and a commutating interval current limiting center tapped reactor connected in series with and interposed between said rectifiers, and commutating means connected to the center tap of said reactor, said series combination being connected across a direct current source of potential, comprising:

a. means coupled to the center tap of said reactor for generating a first signal upon detecting and for the duration of an interval when both of said rectifiers are ON;

b. means, responsive to a first pulse used to initiate the interval when either of said first and second recitifiers is to be ON, for generating a second signal the duration of which is longer than the time necessary to ensure that both of said rectifiers would normally have turned ON but shorter than the final time when both of said rectifiers would still have remained ON; and

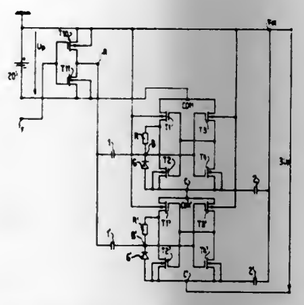
c. means responsive to said first and second signals for generating a control signal to cause cessation in the operating of said inverter if said first signal fails to occur during the total occurrence of said second signal.

4,068,295

VOLTAGE MULTIPLIER FOR AN ELECTRONIC TIME APPARATUS

Hubert Portmann, Colombier, Switzerland, assignor to Ebauches S.A., Neuchagel, Switzerland

Filed July 6, 1976, Ser. No. 702,490
Claims priority, application Switzerland, Aug. 14, 1975, 10575/75
Int. Cl.[2] H02M *7/25;* G04C *3/00*
U.S. Cl. 363—60 5 Claims



1. A voltage multiplier for an electronic time apparatus comprising, at least one cell, including two complimentary field effect transistors, a first capacitor, said first capacitor transmitting an input signal to said two complimentary field effect transistors, said transistors transmitting the input signal alternatively to a common point of the cell and to an output terminal of the cell, a reverser, said transistors being controlled by said reverser, said reverser also being controlled by the signal transmitted to the transistors by said first capacitor and fed by voltages appearing at the common point and at the output terminal of the cell, a second capacitor being connected between the output terminal and a stable voltage point of the cell.

4,068,296

CONTROL FOR REMOTE CONTROL WIRING SYSTEM

William L. Ferrigno, Jr., Peacedale, R.I., assignor to General Electric Company, New York, N.Y.

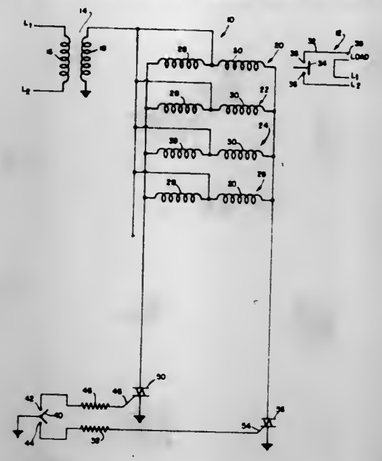
Filed June 30, 1976, Ser. No. 701,063
Int. Cl.[2] H01H *47/32*
U.S. Cl. 361—190 5 Claims

1. In a remote control wiring system which includes a low voltage wiring subsystem incorporating a plurality of relays for controlling higher voltage load circuits, the improvement wherein said low voltage subsystem includes:

a. a first circuit including one of said relays and a first solid state switching device in series therewith;

b. a second circuit including said one of said relays and a second solid state switching device in series therewith; and

c. a switch movable to a first position for causing said first solid state switching device to be placed in a conducting state to energize said one of said relays to close the load circuit controlled by said one of said relays and movable to a second position for causing said second solid state



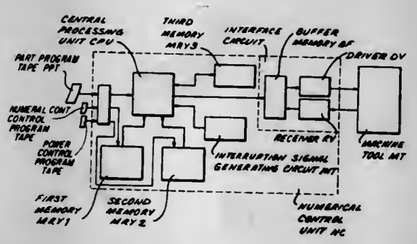
switching device to be placed in a conducting state to energize said one of said relays to open said load circuit.

4,068,297

NUMERICAL CONTROL SYSTEM

Hidetsugu Komiya, Hino, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed June 16, 1976, Ser. No. 696,649
Claims priority, application Japan, June 21, 1975, 50-77284
Int. Cl.[2] G05B *19/18*
U.S. Cl. 364—107 4 Claims



1. A numerical control system for controlling a machine tool, said numerical control system comprising

a central processing unit;

a first memory for storing a first control program, said first memory being connected to the central processing unit;

a second memory for storing a second control program, said second memory being connected to the central processing unit;

a third memory for temporarily storing data, said third memory being connected to the central processing unit; and

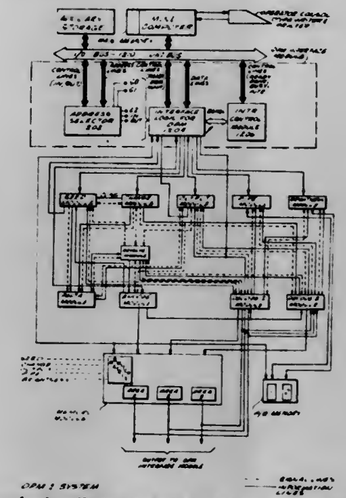
an interface circuit coupling a machine tool to the central processing unit, said interface circuit sending signals to and receiving signals from the machine tool, said first control program sending signals to and receiving signals from the third memory based on a standard interface which is suitable for a standard machine tool, said second control program sending signals to and receiving signals from the machine tool via said interface circuit based on an interface corresponding to the machine tool, and said second control program setting a signal from said machine tool in the third memory after converting it to a signal based on a standard interface.

4,068,298

INFORMATION STORAGE AND RETRIEVAL SYSTEM

Thomas Edward Dechant, Burton; Edward Lewis Glaser, Cleveland Heights, both of Ohio; Paul Eldred Pitt, Malibu, Calif., and Frederick Way, III, Cleveland Heights, Ohio, assignors to Systems Development Corporation, Santa Monica, Calif.

Filed Dec. 3, 1975, Ser. No. 637,511
Int. Cl.[2] G06F *7/00, 15/40, 9/06;* H03K *13/00*
U.S. Cl. 364—200 393 Claims



1. A method, utilizing a digital data processing system having a memory system, for creating a digital coded multiple layer data base in such memory system comprising the steps of:

a. forming, in a desired order of occurrence, and as input, a plurality of coded event signals, at least some event signals representing the same event and at least one event signal representing an event which is different from another one, said event signals, together, representing a sequence of entries, some of said entries being the same and at least one being different;

b. forming a first and second event-time indication, respectively, for each said event signal and for each said entry, representing the order of occurrence thereof; and

c. entering in the memory system a stored multi layered data base representing said input comprising the steps of

1. forming a first data base layer comprising the step of storing in said memory system retrievable first layer event-time signals representing the first event-time indications and which represent the order of occurrence of the event signals; and

2. forming a second data base layer comprising the step of storing in said memory system retrievable second layer event-time signals which represent the second event-time indications and which represent the order of occurrence of the corresponding entries.

4,068,299

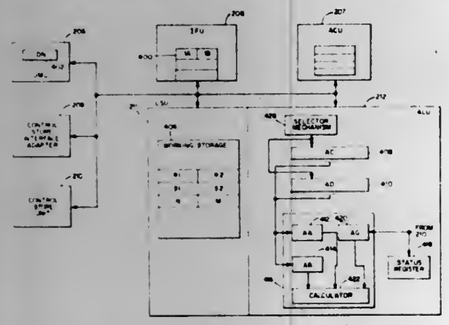
DATA PROCESSING SYSTEM INCORPORATING A LOGICAL COMPARE INSTRUCTION

Charles W. Bachman, Lexington, Mass., assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed Dec. 13, 1973, Ser. No. 424,406
Int. Cl.[2] G06F *3/00*
U.S. Cl. 364—200 13 Claims

1. An apparatus for comparing data fields having a plurality of different data structures, said apparatus comprising:

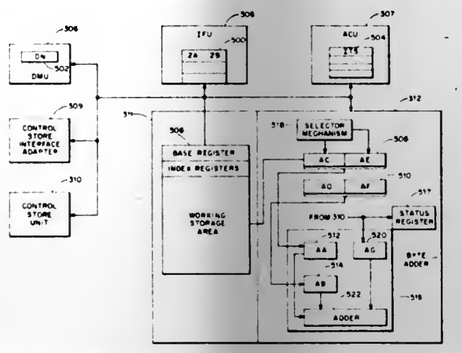
memory means for storing signals which represent a compare instruction, said signals including a first, second, and third group;
first means responsive to said first group for providing a first data field descriptor associated with a first data field, said first data field descriptor describing at least the data type and length of said first data field;
second means responsive to said second group for providing a second data field descriptor associated with a second data field, said second data field descriptor describing at least the data type and length of said second data field;
third means coupled to said first and said second means and responsive to said third group for comparing said first data field to said second data field, said third means including:



fourth means responsive to said first means for determining the data type of said first data field;
fifth means responsive to said second and said fourth means for comparing the data types of said first and second said data fields and for providing an indicating signal when they are different;
sixth means responsive to said indicating signal for reformatting the data types of said first and said second data fields such that they are the same data type;
seventh means responsive to said fifth and said sixth means for comparing said data fields and providing an output signal which indicates the relationship between said data fields.

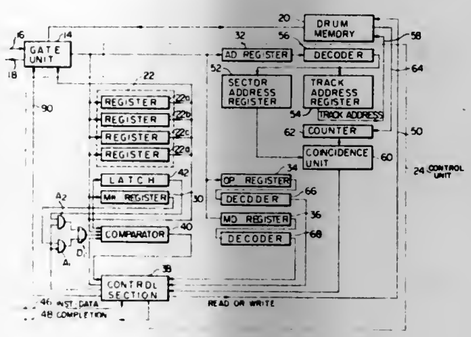
4,068,300
DATA PROCESSING SYSTEM UTILIZING DATA FIELD DESCRIPTORS FOR PROCESSING DATA FILES
Charles W. Bachman, Lexington, Mass., assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.
Filed Dec. 13, 1973, Ser. No. 424,259
Int. Cl.² G06F 7/00
U.S. Cl. 364—200 **9 Claims**

1. An apparatus for processing data fields having a plurality of different data structures, said apparatus comprising:
first memory means for storing said data fields and data field descriptors, said data field descriptors having a plurality of fields describing attributes of said associated data fields,
second memory means for storing signals which represent a logical instruction,
addressing means coupled to said first and said second memory means for indirectly accessing said data fields by first accessing said associated data field descriptors,
means responsive to said addressing means for testing said fields of said associated data field descriptors, said testing means identifying the attributes of said associated data fields, and
first means responsive to said testing means and said second memory means including:
second means coupled to said first memory means for altering said associated data fields accessed by said addressing means so that they are compatible, and
third means coupled to said first memory means for changing said attributes of said associated data field descriptors,



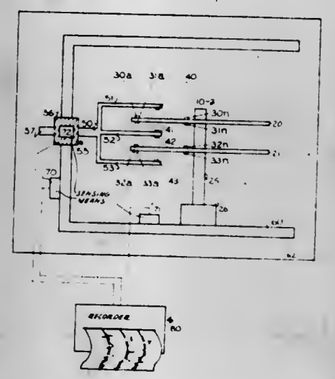
said first means operating on said altered associated data fields in accordance with said logical instruction.

4,068,301
DATA STORAGE DEVICE COMPRISING SEARCH MEANS
Yoshiaki Ishino, and Yoshiaki Kondo, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 14, 1975, Ser. No. 621,900
Claims priority, application Japan, Oct. 15, 1974, 49-118416
Int. Cl.² G11C 7/00
U.S. Cl. 364—200 **8 Claims**



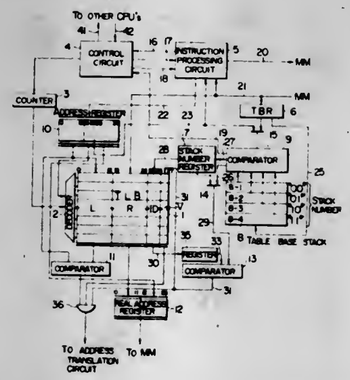
1. A data storage device, comprising:
a main storage means operative to store data items therein;
an auxiliary storage means;
a gate means operatively connected to the main storage means and the auxiliary storage means;
a comparator means operative to store therein a data search item and having an input connected to the auxiliary storage means, the comparator means being operative to compare the data search item with the data items in the auxiliary storage means; and
a control means operatively connected to said gate means, said control means having an input connected to the comparator means and being operative to control the gate means in such a manner as to sequentially gate the data items from the main storage means into the auxiliary storage means and to retain only a data item in the auxiliary storage means which corresponds to the data search item, the control means further comprising means to store an instruction designating a search area in the main storage means, the control means being operative to control the gate means to gate the data items from the main storage means into the auxiliary storage means only from the search area in the main storage means.

4,068,302
COMPUTER PERFORMANCE MEASUREMENT
Edward Allen Olmstead, Federal Way, Wash., assignor to Black Bocs, Ltd., Des Moines, Wash.
Filed Feb. 27, 1976, Ser. No. 662,013
Int. Cl.² G06F 11/00
U.S. Cl. 364—200 **24 Claims**



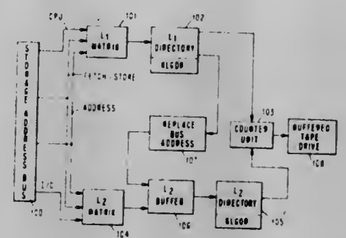
1. In a computer information storage system comprising
an information storage disc having a number of information storage cylinders thereon,
means for transferring information to and from said cylinders,
means for moving said transfer means among said cylinders,
the improvement comprising
means attached to said information storage system for sensing the movement of said transfer means, and
means responsive to said sensing means for recording said movement.

4,068,303
ADDRESS TRANSLATION MANAGING SYSTEM WITH TRANSLATION PAIR PURGING
Hiroshi Morita, Isehara, Japan, assignor to Hitachi, Ltd., Japan
Filed Mar. 22, 1976, Ser. No. 668,836
Claims priority, application Japan, Mar. 24, 1975, 50-34457
Int. Cl.² G06F 9/20, 13/00
U.S. Cl. 364—200 **9 Claims**



1. An address translation system in which a real space is shared by a plurality of logical spaces, comprising:
a table base stack having a plurality of storage units, each storage unit storing a base address characteristic of a different virtual space, and each of said storage units having an identification flag characteristic thereof;
a translation lookaside buffer for registering address translation pairs each consisting of a virtual address and a real address, which buffer has with respect to said translation pairs the identification parts in which the identification flags characteristic of said storage units of said table base stack are set;
an output means for searching said storage units of said table base stack by using as a key a base address of a virtual space to be invalidated when an instruction is issued for invalidating an address translation pair in said translation lookaside buffer and for delivering the identification flag of the storage unit in which the desired base address is stored;
a comparison means for sequentially reading said identification flags out of said identification parts of said translation lookaside buffer and comparing the read-out flags with signals from said output means; and
means for purging the address translation pair corresponding to the identification part when the identification flag thereof produces a coincidence in the comparison performed by said comparison means.

4,068,304
STORAGE HIERARCHY PERFORMANCE MONITOR
William F. Beausoleil, Hopewell Junction, and Klim Maling, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 2, 1973, Ser. No. 320,222
Int. Cl.² G06F 1/00
U.S. Cl. 364—200 **6 Claims**



1. For use with an address stream derived from the operation of a computer with single level storage, an emulation machine for use in determining the average time for completing memory reference operations in a multi-level storage by emulating the operation of said multi-level storage and thereby obtaining data from which said time can be determined, said machine comprising
multiple directories for receiving and storing addresses from said address stream, one of said directories provided for each level of said multi-level storage other than the main storage level, each of said directories of a size capable of holding all addresses which the corresponding level in said multi-level storage could contain,
comparator means connected to each of said directories for comparing the existing address contents of said directories with successive addresses from said address stream,
updating means connected to said directories for updating the existing addresses in said directories as new addresses are received from said address stream, and
counting means connected to said comparator means to provide a record of hits (compares) and misses (no compares) for fetch and store memory reference from said address stream at each of said directories
whereby data is obtained from which the average time for completing memory references in said multi-level storage can be computed.

4,068,305

ASSOCIATIVE PROCESSORS

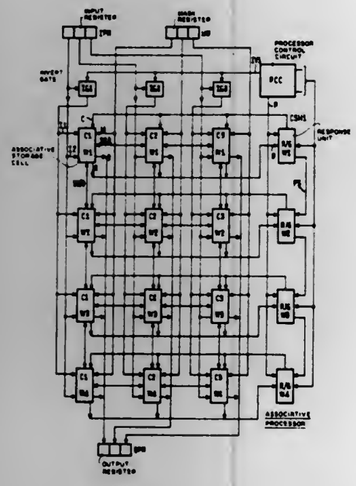
Ronald Michael Cutler, Reading, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed May 12, 1976, Ser. No. 685,926

Claims priority, application United Kingdom, May 12, 1975, 19930/75

Int. Cl.² G06F *13/00*

U.S. Cl. 364—200 **6 Claims**



1. An associative processor comprising in combination an associative store and a program store, the associative store including,

an array of associative memory cells arranged in equal multi-bit memory words each cell having input, output and match paths,

a plurality of response circuits one for each memory word in said array and connected to the match path of all the cells in a memory word,

a multi-bit input register, for use in the content addressing operations, each bit of which is connected to the input path of the corresponding bit of all the memory words, and

a multi-bit output register, for use in reading information from the store, and each bit of the output register is connected to the output path of the corresponding bit of all the memory words,

the improvement comprising a command signal highway connecting the program store to all the response circuits, said highway being arranged to carry logic manipulative operation control signals, and the associative memory cells each include logic manipulative means for conditioning the cell to assume a state indicative of,

i. the logic AND of an input data bit with the data bit stored in the memory cells,

ii. the logic OR of an input data bit with the data bit stored in the memory cell, or

iii. the inverse of the state of the data bit stored in the memory,

the actual operation performed being defined by the command signals passed to the cells of a word by the activation of a response circuit following an associative store match operation.

4,068,306

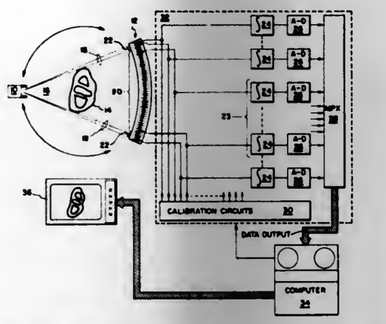
X-RAY DATA ACQUISITION SYSTEM AND METHOD FOR CALIBRATION

Arthur C. M. Chen, Schenectady; William D. Barber, Ballston Lake; Walter H. Berninger, Schenectady; Gerald J. Carlson, Scotia; Norman C. Gittinger, Schenectady, and James R. Whitten, Scotia, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed July 12, 1976, Ser. No. 704,415

Int. Cl.² H03K *13/02*; G01N *23/00*

U.S. Cl. 364—414 **37 Claims**



28. In a computerized tomography system of the type which includes a plurality of radiation detector elements and one or more analog data acquisition channels connected to transmit signals from said detector elements to a digital computer, the improvement comprising:

calibration signal generator means connected to inject at least two distinct calibration signal values into each of said data acquisition channels, and

digital computer means connected to receive signals which are transmitted from said calibration signal generator means through each of said data acquisition channels and to compute therefrom factors representative of the gain and offset of each of said data acquisition channels.

4,068,307

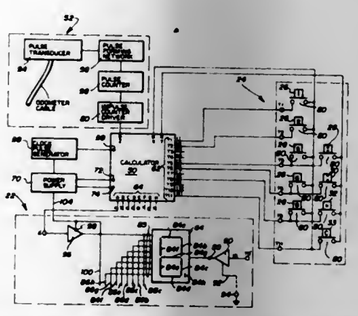
MILE POST LOCATION DISPLAY SYSTEM

Robert D. Floyd, Dallas, and Lee V. Gorman, Garland, both of Tex., assignors to David Floyd, Dallas, Tex.

Filed May 6, 1976, Ser. No. 683,759

Int. Cl.² G06F *15/20*; G01C *22/00*

U.S. Cl. 364—424 **10 Claims**



1. A mile post location system for a vehicle having citizens band radio comprising:

input means having switches representative of a number of digits to enable the vehicle operator to selectively input any one of a plurality of initial mile post designationss indicative of an initial loction of the vehicle,

said input means further including a switch to enable incrementing or decrementing instructions to be input by the vehicle operator,

distance determining means responsive to the distance traveled by the vehicle, and

a display responsive to said switches and said distance determining means for displaying to the vehicle operator the number of the last mile post passed by the vehicle to enable the vehicle operator to broadcast his present location on the citizens band radio.

4,068,308

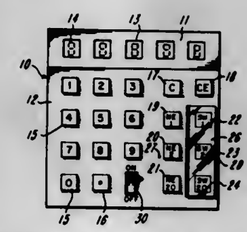
CALCULATOR-LIKE DEVICE ESPECIALLY USEFUL AS AN ADJUNCT TO A CB RADIO

Lincoln I. Opper, 39 Silk Oaks Drive, Ormond Beach, Fla. 32074

Filed July 19, 1976, Ser. No. 706,437

Int. Cl.² G06F *15/02*

U.S. Cl. 364—449 **12 Claims**



1. A calculator-like device useful in a vehicle to locate the position of the vehicle relative to a point of reference on a given highway along which the vehicle is traveling comprising numerical key controlled means for input to said device of numerical information respectively and individually identifying a point of reference along said given highway and mileage readings referenced to spaced locations along said highway, and sequentially operated function keys operable to store said numerical information following the entry thereof, the last to operate of said function keys having in association therewith means to interrelate the total of said numerical information and to transmit an output signal from said device which accurately locates the position of said vehicle along said highway.

4,068,309

METHOD AND DEVICE FOR DETECTING TWO DIFFERENT FREQUENCY AMPLITUDE AND PHASE SIGNALS IN A COMBINED DIGITAL SIGNAL

Chaim Zalman Drukarch, Amsterdam, Netherlands, assignor to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

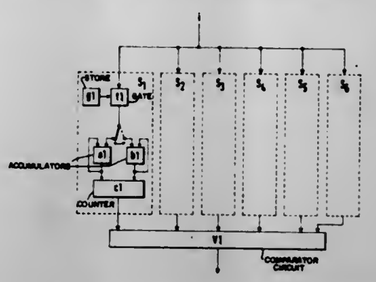
Filed Nov. 15, 1976, Ser. No. 741,706

Claims priority, application Netherlands, Nov. 18, 1975, 7513456

Int. Cl.² G06F *15/20*; G01R *23/14*

U.S. Cl. 364—484 **5 Claims**

1. A method for detecting, in a combined digital signal, the presence of two signals differing in frequency, amplitude, and phase and having frequencies occurring in a known series, said method comprising: multiplying samples of the combined signal by samples of at least one derivative of always one of the frequencies of the known series; storing the resulting products in accumulators, and then after a certain time deducing the presence of certain frequencies from the sum of the products in the accumulators by means of comparison; wherein: said samples of the combined signal are multiplied by the samples of only one derivative per frequency; wherein said derivative is formed by the product of a modulating factor formed by the samples of a frequency which is the algebraic sum of a fixed frequency of 2000 Hz and the frequency to be detected in the known series; wherein the sine of said fixed frequency is shifted



by 45°; and further wherein said fixed frequency is filtered out by said comparison.

4,068,310

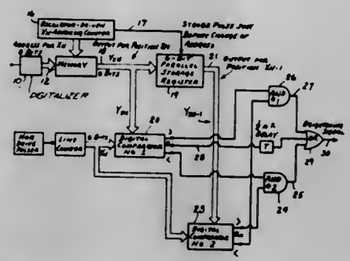
DISPLAY ENHANCEMENT TECHNIQUE FOR VIDEO MOVING TRACE DISPLAY

Walter S. Friauf, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed July 22, 1976, Ser. No. 707,759

Int. Cl.² G06F *15/20*; H01J *29/52*

U.S. Cl. 364—521 **6 Claims**



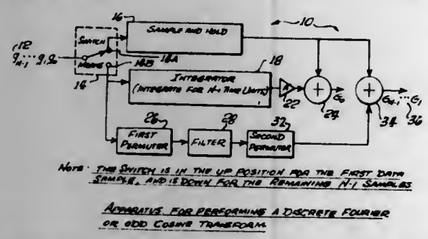
1. In combination with a television screen employing raster lines, an apparatus for displaying an input analog signal as a function of time, means to digitize the input signal so that each level of quantization corresponds to one of the raster lines, a memory device, means to sequence the digitized input signal to said memory device through predetermined sampling interval positions for each raster line, first comparator means, counter means to derive digitized raster line numbers, means connecting outputs of said memory device and said counter means to said first comparator means, said first comparator means having respective "greater than", "equal" and "less than" outputs, storage register means, means to insert the output of said memory device into said storage register means just before each change of address of the input signal to said memory device, whereby said storage register means contains the previous digitized input signal while said memory device contains a current digitized input signal, second comparator means having respective "greater than" and "less than" outputs, means connecting the outputs of said storage register means and said raster line counter means to said second comparator means, spot-brightening means, and means to activate said spot-brightening means responsive respectively to concurrent "greater than" and "less than" outputs from the first and second comparator means, to concurrent "less than" and "greater than" outputs from said first and second comparator means, or an "equal" output from said first comparator means.

4,068,311

DISCRETE TRANSFORM SYSTEMS USING PERMUTER MEMORIES

Harper J. Whitehouse, and Jeffrey M. Speiser, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1976, Ser. No. 747,148
Int. Cl.[2] G06G 7/12, 7/19
U.S. Cl. 364—827 **7 Claims**



APPARATUS FOR PERFORMING A DISCRETE FOURIER OR ODD COSINE TRANSFORM

1. Apparatus for taking the discrete transform of a sampled analog input signal, consisting of N data samples, $g_0, g_1, \ldots,$ comprising:

means, connected to the input signal, for connecting the input signal to either of two connections;

means, connected to one of the connections of the connecting means, for sampling the first data sample, g_0, and holding it for 3N time units,

means, connected to the other connection of the connecting means, for integrating the input signal, excluding the g_0 sample, for N-1 time units;

means, whose input is connected to the output of the integrating means, for amplifying the integrated signal;

a first summing means, whose two inputs are connected to the outputs of the means for sampling and holding and of the amplifying means, for summing its two input signals, the output signal being G_0, the zero frequency term of the transform;

a first permuting means, connected to the said other connection of the connecting means, for performing a permutation on its input signal;

means, whose input is connected to the output of the first permuting means, for filtering the permuted signals; and

second means, having inputs connected to the outputs of the sampling and holding means and of the filtering means, for summing its input signals, and whose output comprises the transformed terms $G_1, \ldots, G_{N-1}$.

DESIGNS

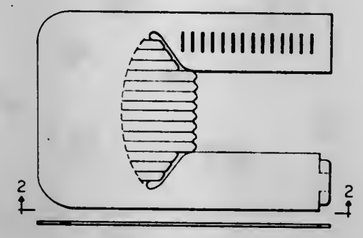
JANUARY 10, 1978

246,876

BROW CONTOURING SUN VISOR

Melvin S. Warenback, 595 Las Colindas Road, San Rafael, Calif. 94903

Filed Sept. 24, 1976, Ser. No. 726,245
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—247

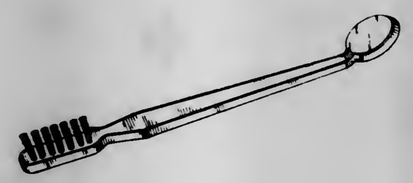


246,877

COMBINED TOOTHBRUSH AND MIRROR

Stanley Kitzis, 156 Plainview Road, Woodbury, N.Y. 11797

Filed June 21, 1976, Ser. No. 697,971
Term of patent 14 years
Int. Cl. D4—*02*; D24—*02*
U.S. Cl. D4—18

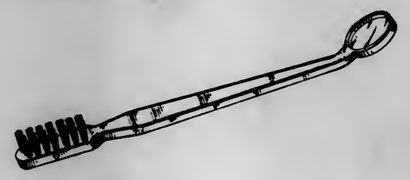


246,878

COMBINED TOOTHBRUSH TONGUE, SCRAPER AND MIRROR

Stanley Kitzis, 156 Plainview Road, Woodbury, N.Y. 11797

Filed June 21, 1976, Ser. No. 698,015
Term of patent 14 years
Int. Cl. D4—*02*; D24—*02*
U.S. Cl. D4—18

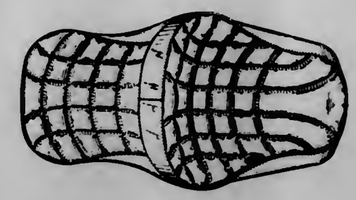


246,879

MOTORCYCLE SEAT

Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry, Inc., Somersville, Conn.

Filed May 20, 1976, Ser. No. 688,341
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D6—48.1





246,880

TABLE FOR USE IN GAMMA RAY INSPECTION

Pat Miola, 118 Laurel Drive, New Hyde Park, N.Y. 11040

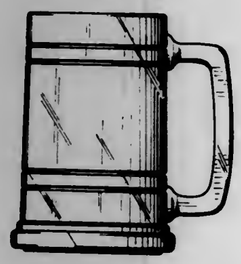
Filed Mar. 15, 1976, Ser. No. 666,755
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—175

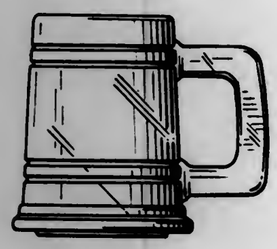


246,881
TABLE
Marion Imber, Stamford, Coan., and Seymour Wezenter, Fair Lawn, N.J., assignors to Ray Control Corp., New York, N.Y.
Filed June 18, 1976, Ser. No. 697,592
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

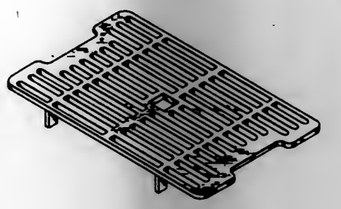


246,882
MUG OR SIMILAR ARTICLE
James Lloyd Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Sept. 4, 1975, Ser. No. 610,095
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9

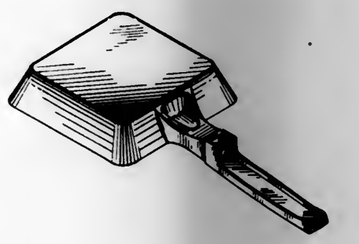




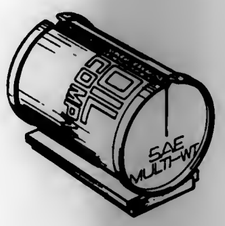
246,883
TRIVET
Richard V. Di Ruscio, 113 E. Middlefield Road, Mountain View, Calif. 94040
Filed Apr. 26, 1976, Ser. No. 679,910
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—130



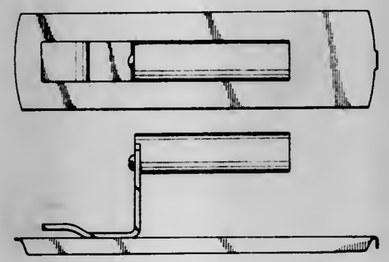
246,884
FRYING PAN OR THE LIKE
Theodore R. Finke, Euclid, Ohio, assignor to The Euclid Products Co., Inc., Willoughby, Ohio
Filed May 20, 1976, Ser. No. 688,162
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



246,885
DIP STICK WIPER
Terry M. Haber, 3050 S. Bristol, No. 8C, Santa Ana, Calif. 92707
Filed Oct. 4, 1976, Ser. No. 729,407
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—181



246,886
COMBINATION DAMPER AND GRATE LIFTER FOR AN HIBACHI TYPE-GRILL
Dannie O. Malafouris, Portland, Oreg., assignor to Newco Fireplace Equipment Limited, Inc.
Filed Nov. 22, 1976, Ser. No. 743,847
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—129



246,887
ROOM DIVIDER CONNECTOR OR SIMILAR DEVICE
Austin Eckerline, Ladysmith, Wis., assignor to Conwed Corporation, St. Paul, Minn.
Filed July 16, 1976, Ser. No. 706,007
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



246,888
CARPET TOE TOOL
Roger W. Krause, 1205 S. 31 St., Milwaukee, Wis. 53215
Filed July 19, 1976, Ser. No. 706,882
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—15



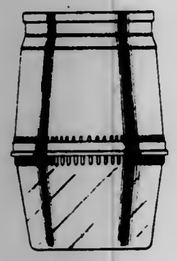
246,889
ROOM DIVIDER CONNECTOR OR SIMILAR DEVICE
Austin Eckerline, Ladysmith, Wis., assignor to Conwed Corporation, St. Paul, Minn.
Filed July 16, 1976, Ser. No. 706,008
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



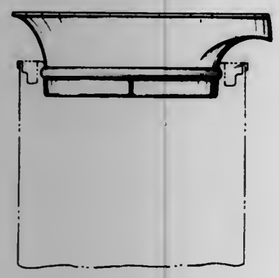
246,890
KNOB FACE PLATE FOR A DOOR KNOB
Jim Yu, Garden Grove, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed Nov. 16, 1976, Ser. No. 742,276
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—322



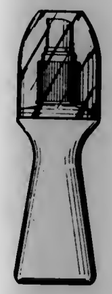
246,891
PLASTIC CONTAINER FOR LIQUIDS OR THE LIKE
Marianne C. Green, Midland, Mich., assignor to Koehring Company, Milwaukee, Wis.
Filed Feb. 24, 1975, Ser. No. 552,702
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—125



246,892
POUR SPOUT ATTACHMENT FOR A PAINT CAN OR THE LIKE
Gregory M. East, 9951 Grosalia Way, La Mesa, Calif. 92041
Filed Dec. 19, 1975, Ser. No. 642,420
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—290



246,893
COMBINED DISPENSING CONTAINER AND CAP THEREFOR
Theodore Eron, Cresskill, N.J., assignor to Bristol-Myers Company, New York, N.Y.
Filed Dec. 22, 1975, Ser. No. 643,587
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—9



246,894
COMBINED STORAGE AND DISPENSING UNIT FOR LOOSE FILL MATERIAL
James R. Green, 5550 Emerywood Drive, Buena Park, Calif. 90621
Filed May 12, 1975, Ser. No. 576,841
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—249



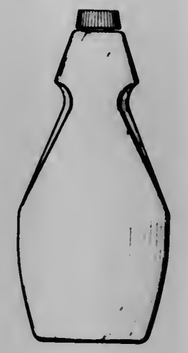
246,895
COMBINED ACTUATOR AND DISPENSING CAP FOR A PRESSURIZED CONTAINER
Johannes van der Heijden, Nieuwkoop, Netherlands, assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jan. 29, 1976, Ser. No. 653,339
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



246,896
BOTTLE
James Edmund Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 10, 1976, Ser. No. 694,735
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100



246,897
BOTTLE OR SIMILAR ARTICLE
David A. Jones, Dayton, Ohio, and John Pardo, Yonkers, N.Y., assignors to Drackett Co.
Filed Aug. 18, 1976, Ser. No. 715,251
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—118



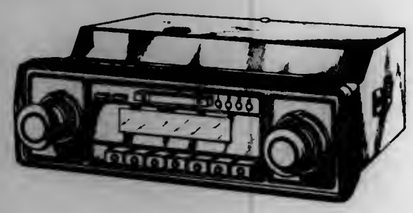
246,898
HOUSING FOR A CIRCUIT BREAKER
Albert D. Lisnay, Sarasota, Fla., assignor to Heinemann Electric Company, Trenton, N.J.
Continuation of Ser. No. 534,851, Dec. 20, 1974, abandoned.
This application Jan. 21, 1976, Ser. No. 651,216
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—34



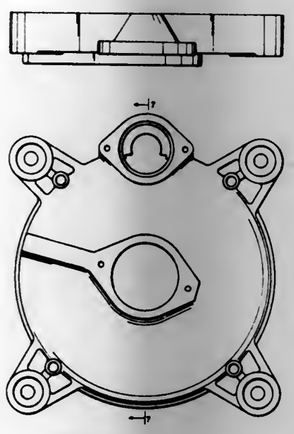
246,899
COMBINED MICROPHONE GOOSENECK ADAPTER AND SWITCH THEREFOR
Elmer M. Bruce, Cedar Rapids, Iowa, assignor to Conrac Corporation
Filed Apr. 1, 1977, Ser. No. 783,854
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—13



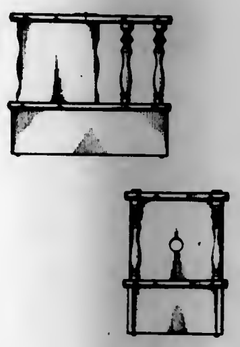
246,900
COMBINED AUTOMOBILE RADIO RECEIVER TAPE PLAYER AND DIGITAL TIME AND FREQUENCY DISPLAYER
Junji Yasuoka, Tottori, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan
Filed Jan. 26, 1976, Ser. No. 652,461
Claims priority, application Japan, Sept. 29, 1975, 50-39460
Term of patent 14 years
Int. Cl. D14—*03, 01*
U.S. Cl. D14—68



246,901
COMBINED ACCESSORY CARRIER AND ENGINE MOUNT FOR AIRCRAFT
Gilbert J. Duty, Jr., Rte. 3, Sanford, N.C. 28211
Filed Jan. 22, 1975, Ser. No. 543,004
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



246,902
GRAIN GRINDER HOUSING
Johnnie Kuest, P.O. Box 110, Filer, Idaho 83328
Filed Jan. 29, 1976, Ser. No. 653,459
Term of patent 14 years
Int. Cl. D15—*08*; D7—*04*
U.S. Cl. D15—98



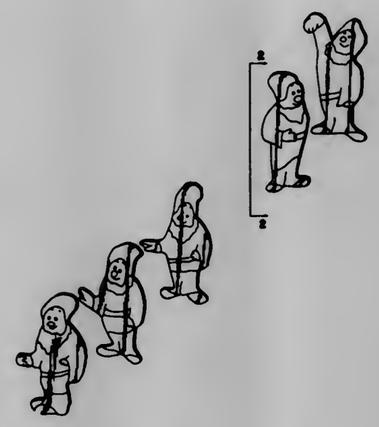
246,903
SPECTACLES FRAME FRONT
Richard W. Canavan, III, P.O. Box 6, South Woodstock, Conn. 06267
Filed Mar. 21, 1977, Ser. No. 779,880
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—65



246,904
FINGER BALLPOINT PEN
John J. MacIntosh, 10269 Cholceana Drive, Hesperia, Calif. 92345
Filed June 11, 1976, Ser. No. 695,243
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—41



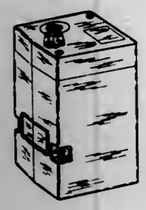
246,905
SET OF MOVEABLE NOTATIONAL FIGURES FOR MUSICAL SCALE
Helga Szabo, Budapest, Hungary, assignor to Carroll R. Brownlee, Sudbury, Mass.
Filed Nov. 17, 1975, Ser. No. 632,315
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



246,906
PAPER DISPENSER
Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill. 60611
Filed Dec. 29, 1975, Ser. No. 644,556
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92



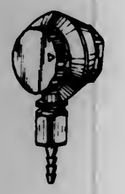
246,907
SOLENOID VALVE OPERATOR
Daniel H. Fialkowski, and Russell J. Cameron, both of Rochester, Mich., assignors to Ross Operating Valve Company, Detroit, Mich.
Filed July 21, 1975, Ser. No. 597,832
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



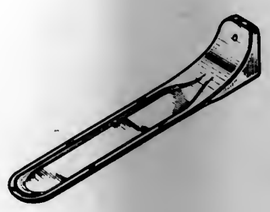
246,908
SOLENOID OPERATED PILOT VALVE
Harold D. Fetty, Birmingham, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed Sept. 18, 1975, Ser. No. 614,541
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



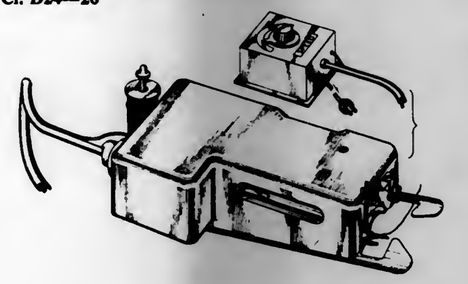
246,909
CONSTANT FLOW SELECTOR VALVE
Dean R. Dennis, Cypress, Calif., assignor to Robertshaw Controls Co.
Filed Feb. 5, 1976, Ser. No. 655,605
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—21



246,910
COMBINED INCENSE HOLDER AND ASH TRAY
Nanoo Patel, 1217 S. Carson Ave., Los Angeles, Calif. 90019
Filed Nov. 29, 1976, Ser. No. 745,847
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D23—78



246,911
AUTOMATIC BLIND SUTURING MACHINE
Kenneth B. Bess, Jr., 1400 Coral Way, Coral Gables, Fla. 32250, and Benjamin D. Alleman, 17600 NW. 82nd Court, Hialeah, Fla. 33024
Filed Feb. 27, 1976, Ser. No. 661,954
Term of patent 14 years
Int. Cl. D24—*02*; D15—*06*
U.S. Cl. D24—26

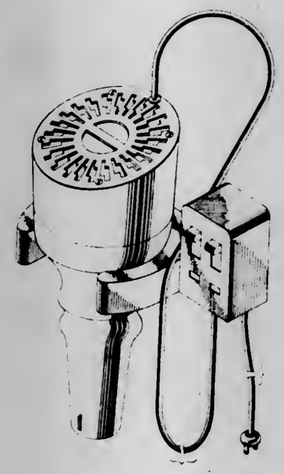




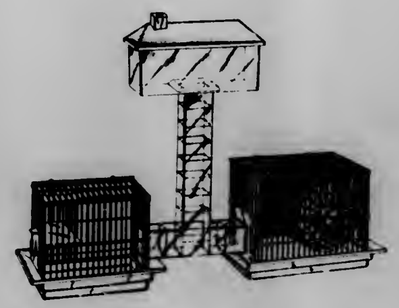
246,912
RETAINER FOR AN ELONGATED LIGHTER
William Marinus Adelhardt, Bakkegaardsalle 10,, DK-1804, Copenhagen K., Denmark
Filed Mar. 30, 1976, Ser. No. 671,990
Claims priority, application Denmark, Oct. 2, 1975, 772/75; Dec. 8, 1975, 944/75; Dec. 8, 1975, 943/75
Term of patent 14 years
Int. Cl. D27—*06*
U.S. Cl. D27—51



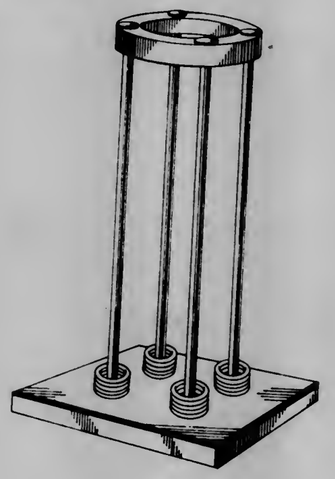
246,913
HAIR DRYER AND HOLDER
Evan R. Kahn, and Eugene B. Berman, both of N. Miami Beach, Fla., assignors to Ming Dynasty, Inc., N. Miami Beach, Fla.
Filed Mar. 15, 1976, Ser. No. 667,152
Term of patent 3½ years
Int. Cl. D28—*03*
U.S. Cl. D28—13



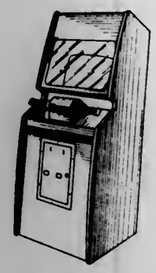
246,914
MODULAR PET HABITAT
Albert J. Dinnerstein, Brooklyn; Mervin A. Savitt, Great Neck, and Ralph Sena, Glen Oaks, all of N.Y., assignors to Reliance Pet Products Corporation
Filed Sept. 25, 1975, Ser. No. 616,545
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



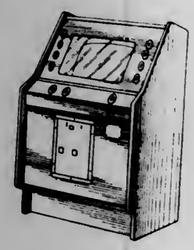
246,915
RACK FOR A BALL GAME OR THE LIKE
Marjorie L. Henthorne, 107 S. Lawn, Kansas City, Mo., 64123 assignor to Marjorie L. Henthorne, Kansas City, Mo.
Filed June 17, 1976, Ser. No. 697,214
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 R



246,916
GAME CABINET
Regan L. Cheng, San Jose, Calif., assignor to ATARI, Inc., Sunnyvale, Calif.
Filed July 29, 1976, Ser. No. 709,881
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 J



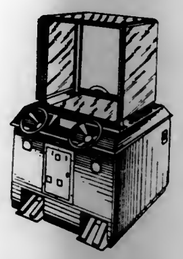
246,917
GAME CABINET
Kenneth W. Sauter, Campbell, Calif., assignor to ATARI, Inc., Sunnyvale, Calif.
Filed July 29, 1976, Ser. No. 709,883
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 J



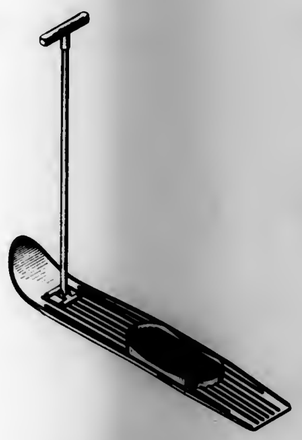
246,918
GAME CABINET
Kenneth W. Sauter, Campbell, Calif., assignor to ATARI, Inc., Sunnyvale, Calif.
Filed Sept. 7, 1976, Ser. No. 720,946
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 J



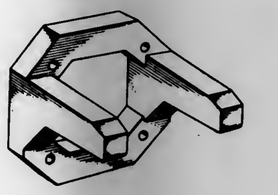
246,919
GAME CABINET
Barney H. Huang, San Jose, Calif.
Filed Sept. 7, 1976, Ser. No. 720,947
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 J



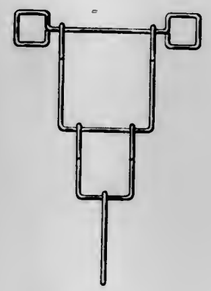
246,920
SNOW SCOOTER
Jeffrey Koblick, Hopkins, Minn., assignor to K-tel International, Inc., Minnetonka, Minn.
Filed Dec. 12, 1975, Ser. No. 640,188
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 D



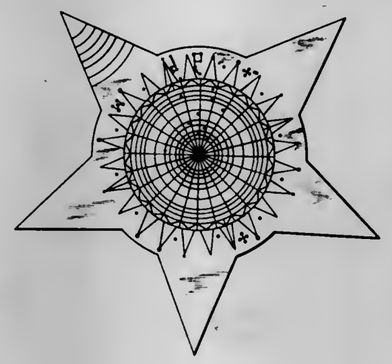
246,921
MOTOR MOUNT FOR MODEL AEROPLANES
Gary D. Moline, 1258 Shady Oak Drive, La Verne, Calif. 91750
Filed Jan. 9, 1976, Ser. No. 638,693
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



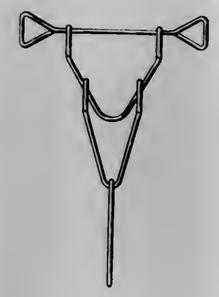
246,922
WIRE PUZZLE
Robert Wellington Heign, Rte. No. 3, Howe, Ind. 46746
Filed Nov. 20, 1975, Ser. No. 633,664
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



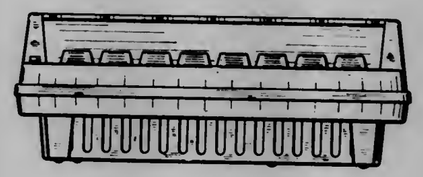
246,923
SOLAR SYSTEM GAME BOARD, OR SIMILAR ARTICLE
Lea-Claire Massari Mascio, 11 Carriage Way, Montclair, N.J. 07042
Filed May 28, 1976, Ser. No. 691,096
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



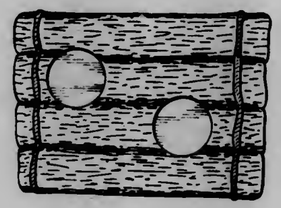
246,924
WIRE PUZZLE
Robert Wellington Heign, Rte. No. 3, Howe, Ind. 46746
Filed Nov. 20, 1975, Ser. No. 633,665
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



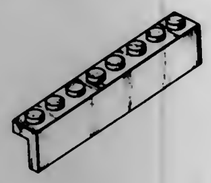
246,925
TOY PIANO
Michael I. Satten, 245-20 Grand Central Parkway, Bellerose, N.Y. 11426
Filed Jan. 29, 1976, Ser. No. 653,547
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C

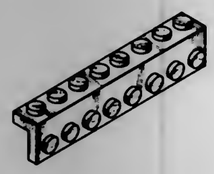


246,926
TOY RAFT
Richard E. Cone, 249 Bowman Drive, Kent, Ohio 44266
Filed May 26, 1976, Ser. No. 690,088
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ

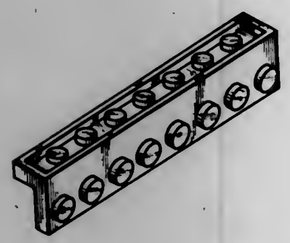


246,927
TOY CONSTRUCTION PIECE
Godtfred Christiansen, Billund, Denmark, assignor to Interlego A.G., Switzerland
Division of Ser. No. 613,743, Sept. 16, 1975. This application Nov. 19, 1976, Ser. No. 743,391
Claims priority, application Denmark, Mar. 25, 1975, 253
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



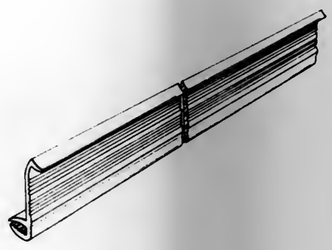


246,928
CEILING LIGHT FIXTURE SIDE PANEL
Murray M. Win, 1223 S. Roxbury Drive, Los Angeles, Calif. 90035
Filed Oct. 27, 1976, Ser. No. 736,137
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 A

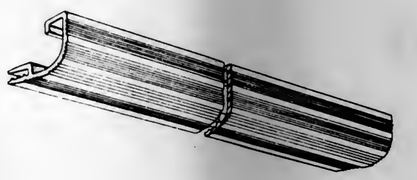




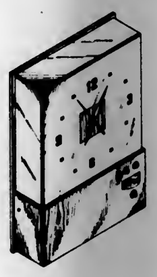
246,929
SHALLOWSIDE PANEL FOR CEILING LIGHTS
Murray M. Win, 1223 S. Roxbury Drive, Los Angeles, Calif. 90035
Filed Nov. 4, 1976, Ser. No. 738,661
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 A



246,930
NARROW SIDE PANEL FOR LIGHT FIXTURE
Murray M. Win, 1223 S. Roxbury Drive, Los Angeles, Calif. 90035
Filed Nov. 4, 1976, Ser. No. 738,662
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 A



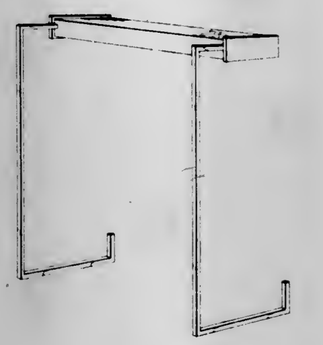
246,931
COMBINED EMERGENCY LIGHT AND CLOCK
Don G. Cecala, and James L. Gwilliam, Jr., both of Salt Lake City, Utah, assignors to Dynatone Corporation, Salt Lake City, Utah
Filed July 14, 1976, Ser. No. 705,065
Term of patent 14 years
Int. Cl. D26—*05*; D10—*01*
U.S. Cl. D48—20 D



246,932
MINIATURE HURRICANE LAMP FOR DOLLHOUSES AND THE LIKE
Norman Nelson, Southington, Conn., assignor to Nelson Tool & Machine Company, Inc., Southington, Conn.
Filed July 12, 1976, Ser. No. 704,288
Term of patent 14 years
Int. Cl. D26—*05*; D21—*01*
U.S. Cl. D48—20 R



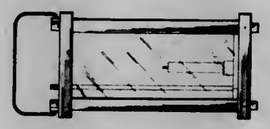
246,933
FREE STANDING LIGHT FIXTURE
William C. Fabbri, Billerica, Mass., assignor to Keene Corporation
Filed Sept. 10, 1976, Ser. No. 722,020
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 A



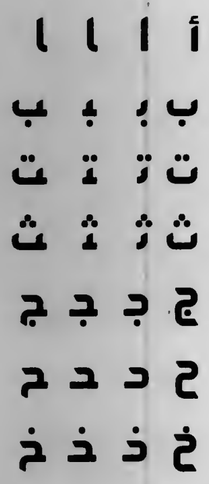
246,934
HANGING LAMP
Jerry E. Keller, 134 Crescent St., Elkhart, Ind. 46514
Filed July 26, 1976, Ser. No. 708,892
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R



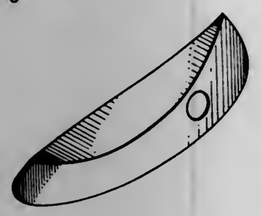
246,935
LANTERN
Wesley G. Sjodahl, Rte. No. 1, Sandstone, Minn. 55072, and Stanley G. Sjodahl, Box 42, Isanti, Minn. 55040
Filed Mar. 3, 1975, Ser. No. 554,919
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



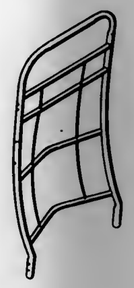
246,936
ARABIC TYPEFACE
Philip L. Mitchell, 100 N. Broadway, St. Louis, Mo. 63102
Filed Nov. 15, 1976, Ser. No. 741,775
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



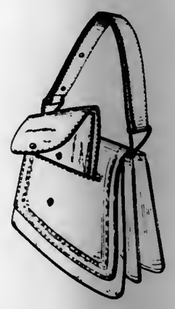
246,937
SOCK DISPLAY FORM
Neil Smith, East Northport, N.J., assignor to Kayser-Roth Corporation
Filed Dec. 3, 1975, Ser. No. 637,352
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D80—8



246,938
BACK PACK FRAME
Tom Eugene Marquart, Leslie, Mo., assignor to Kellwood Company, St. Louis, Mo.
Filed June 16, 1976, Ser. No. 696,751
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



246,939
COMBINED HANDBAG AND DETACHABLE FITTED CLUTCH
Constantine Casser, Port Washington, N.Y., assignor to AMBA Marketing Systems, Inc., Greenwich, Conn.
Filed Apr. 14, 1975, Ser. No. 567,709
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



246,940
CARRYING BAG WITH TENNIS RACKET HOLDING RING
Alma J. Sabol, 38121 Lansing Court, Fremont, Calif. 94536
Filed Apr. 8, 1976, Ser. No. 674,813
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 10TH DAY OF JANUARY, 1978

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Basile, Pietro, deceased; and Caligiuri, Maria, administrator. Automatic circuit restoration device for polyphase feed lines. 4,068,280, Cl. 361-92.000.

Bassett, John A., to Sola Basic Industries, Inc. Regulated multiple transformer system. 4,068,157, Cl. 363-75.000.

Bassinger, Grey, to Bassinger Tools, Inc. Hydraulic shock absorber. 4,067,405, Cl. 175-321.000.

Bassinger Tools, Inc.: *See*—
Bassinger, Grey, 4,067,405, Cl. 175-321.000.

Bata Shoe Company, Inc.: *See*—
Rys-Sikora, John; and Abraham, Reuben, 4,067,124, Cl. 36-45.000.

Batorewicz, Wadim, to Uniroyal, Inc. Flame retardant polyoxymethylene diphosphonates. 4,067,931, Cl. 260-927.00R.

Battelle Memorial Institute: *See*—
Moore, Raymond H., 4,067,795, Cl. 208-10.000.

Battles, Carl E.: *See*—
Pease, William M.; Bussiere, Bernard; and Battles, Carl E., 4,068,233, Cl. 343-7.00A.

Battles, Lee J. Combination stool and fishing tackle box. 4,067,607, Cl. 297-192.000.

Bauer, Wilhelm: *See*—
Motting, Gotz; Bauer, Wilhelm; and Kleisser, Werner, 4,067,528, Cl. 248-204.000.

Baugh, Benton F., to Vetco Offshore Industries, Inc. Hydraulic set tubing hanger. 4,067,062, Cl. 166-125.000.

Baumers, Hans, to Losenhausen Maschinenbau AG. Self-propelled vibratory plate. 4,067,244, Cl. 74-61.000.

Bayer Aktiengesellschaft: *See*—
Beck, Gunther; Heitzer, Helmut; and Lurssen, Klaus, 4,067,721, Cl. 71-92.000.
Colln, Reimer; Riebel, Hans-Jochem; Hammann, Ingeborg; and Homeyer, Bernhard, 4,067,970, Cl. 424-200.000.
Draber, Wilfried; Dickore, Karlfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert Rudolf, 4,067,724, Cl. 71-93.000.
Kohler, Armin; Pelousek, Herbert; and Frohberg, Ekkehard, 4,067,850, Cl. 260-47.00C.
Mansmann, Manfred; and Rambold, Wolfgang, 4,067,747, Cl. 106-302.000.
Reinehr, Ulrich; Nogaj, Alfred; and Herbertz, Toni, 4,067,948, Cl. 264-182.000.
Sasse, Klaus; and Eue, Ludwig, 4,067,726, Cl. 71-120.000.
Sasse, Klaus; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,067,981, Cl. 424-249.000.
Scholl, Hans-Joachim; Markush, Peter; and Dieterich, Dieter, 4,067,815, Cl. 252-8.100.
Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,068,002, Cl. 424-322.000.
Wagner, Kuno; Block, Hans-Dieter; and Schafer, Walter, 4,067,820, Cl. 252-426.000.

BBC Brown Boveri & Company Limited: *See*—
Dlouhy, Jiri; and Zeller, Hans-Rudolf, 4,067,644, Cl. 350-160.00R.

Beam, John E.: *See*—
Carlin, Owen; Beam, John E.; and Vermesh, Robert, 4,068,004, Cl. 426-3.000.

Bearden, Roby, Jr.; and Aldridge, Clyde L., to Exxon Research and Engineering Company. Hydroconversion process. 4,067,799, Cl. 208-112.000.

Beaton, Gerald V., to British Steel Corporation. Rolling mill equipment. 4,067,115, Cl. 33-182.000.

Beausoleil, William F.; and Maling, Klim, to International Business Machines Corporation. Storage hierarchy performance monitor. 4,068,304, Cl. 364-200.000.

Bechtle, Bastian; Bleher, Hartmut J.; Hasselmeier, Helmut; Spruth, Wilhelm G.; Stucki, Peter; and Weis, Helmut, to International Business Machines Corporation. Compressed information storage for characters consisting of black and white areas which are to be displayed or printed. 4,068,224, Cl. 340-324.0AD.

Beck, Gunther; Heitzer, Helmut; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Imidazolidinedione compounds and plant growth influencing compositions. 4,067,721, Cl. 71-92.000.

Beecham Group Limited: *See*—
Thorne, David Edward; Baggaley, Keith Howard; and Morgan, Brian, 4,067,892, Cl. 260-410.90R.

Beecroft, William K. Cabin log shaper. 4,067,368, Cl. 144-3.00R.

Begey, Jean-Marie: *See*—
Neau, Alain; and Begey, Jean-Marie, 4,067,590, Cl. 280-626.000.

Behr, Joseph L., to Emerson Electric Co. Control system for maximizing the efficiency of an evaporator coil. 4,067,203, Cl. 62-208.000.

Behringwerke Aktiengesellschaft: *See*—
Schwinn, Horst; and Heimburger, Norbert, 4,067,964, Cl. 424-105.000.

Bell Telephone Laboratories, Incorporated: *See*—
Okinaka, Yutaka; and Wolowodiuk, Catherine, 4,067,783, Cl. 204-43.00G.

Bell, William E., to Diax Corporation. Laser absorption spectroscopy employing varying absorption conditions. 4,068,125, Cl. 250-340.000.

Belmer, Pavel Fedorovich: *See*—
Arabei, Boris Georgievich; Zukher, Mark Semenovich; Markov, Jury Mikhailovich; Trokhina, Galina Nikolaevna; Tjurin, Viktor Alexandrovich; Khazanov, Iosif Isaakovich; Belmer, Pavel Fedorovich; and Zverev, Ivan Ivanovich, 4,067,743, Cl. 106-44.000.

Belyaev, Vladimir Alexandrovich; and Rudkovsky, Vladimir Leontievich. Process for producing isoprene. 4,067,923, Cl. 260-681.000.

Benattar, Andre: *See*—
Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, 4,067,905, Cl. 260-584.00R.

Benerito, Ruth R.: *See*—
Perrier, Dorothy M.; and Benerito, Ruth R., 4,067,689, Cl. 8-129.000.

Benetello, Giorgio. Method for sawing hard material. 4,067,311, Cl. 125-13.00R.

Beninate, John V.: *See*—
Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., 4,067,687, Cl. 8-116.00P.

Bennett, Ronald: *See*—
Field, Peter Graham Spencer; and Bennett, Ronald, 4,067,912, Cl. 260-621.00C.

Beranek, Robert Louis, Jr.; and Timms, Donny Lee, to Johns-Manville Corporation. Apparatus for making a fibrous board-like product having a male edge and a female edge. 4,067,678, Cl. 425-305.100.

Berg, Coleman David: *See*—
Graham, Andrew Stuard, Jr.; and Berg, Coleman David, 4,067,509, Cl. 242-55.300.

Berg, Thorval L., to Greene, Tweed & Co., Inc. Annular seal. 4,067,407, Cl. 277-153.000.

Bergeron, Hervin Joseph, Jr., to Bourgeois, Luke; Bourgeois, Charles; Bourgeois, John G.; and Bourgeois, Eddie, part interest to each. Lift and supporting system. 4,067,448, Cl. 214-1.00H.

Bergeron, Normand A.; and Villeneuve, Claude E., to Les Chaussures de Randonnai Shoes, Inc. Cross-country type ski boots. 4,067,126, Cl. 36-117.000.

Berges, David A., to SmithKline Corporation. Intermediates for preparing 7-acyl-3-(sulfoalkyl substituted oxadiazolylthiomethyl)cephalosporins. 4,067,880, Cl. 260-307.00A.

Berges, David A., to SmithKline Corporation. 7-Amino intermediates for preparing 7-acyl-3-(ureidoalkyl substituted tetrazolylthiomethyl)-cephalosporins. 4,068,073, Cl. 544-26.000.

Bergthaller, Peter; Himmelmann, Wolfgang; and Rosenhahn, Lothar, to AGFA-Gevaert, A.G. Hardening photographic layers containing silver halide with a 1-sulphonyl-4-amino-pyridinium salt. 4,067,741, Cl. 96-111.000.

Berich, John J.; Krein, John H.; Augstin, Mervin L.; and Szwargulski,

Jesse L., to ACF Industries, Incorporated. Solenoid operated device to control curb idle position of throttle valve. 4,067,306, Cl. 123-198.00D.
Berman, Robert A. Intubating pharyngeal airway. 4,067,331, Cl. 128-208.000.
Bernard, Ray A. Grade checking tool. 4,067,117, Cl. 33-375.000.
Berneryd, Sten; and Grune, Per-Olof, to ASEA Aktiebolag. Enclosed high voltage circuit breaker. 4,068,108, Cl. 200-148.00B.
Bernhardt, Siegfried; and Kutscher, Gerhard, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for processing staple fibers on a roller card unit. 4,067,086, Cl. 19-101.000.
Berninger, Walter H.: *See*—
Chen, Arthur C. M.; Barber, William D.; Berninger, Walter H.; Carlson, Gerald J.; Gittinger, Norman C.; and Whitten, James R., 4,068,306, Cl. 364-414.000.
Bernitt, James John: *See*—
Jain, Prem Prakash; and Bernitt, James John, 4,068,105, Cl. 179-175.30R.
Berry, Edward A.: *See*—
Johns, Theron; and Berry, Edward A., 4,067,227, Cl. 73-23.100.
Berry, Fred M.; and Shirley, James N., to International Medical Electronics, Inc. Electrostatic shield for diathermy treatment head. 4,068,292, Cl. 361-437.000.
Bertolacini, Ralph J.: *See*—
Hauschildt, Frank William; and Bertolacini, Ralph J., 4,067,798, Cl. 208-92.000.
Berzins, Andrejs, to Arthur G. McKee & Company. Charging apparatus for receptacle. 4,067,452, Cl. 214-2.000.
BES, Ltd.: *See*—
Campagna, Samuel A., Jr.; and Campagna, Benjamin J., 4,067,659, Cl. 404-25.000.
Bethlehem Steel Corporation: *See*—
Sperduti, Anthony, 4,067,461, Cl. 214-23.000.
Bezruk, Viktor Ivanovich; Dyakonov, Mikhail Nikolaevich; Lavrov, Ivan Stepanovich; Lazarev, Alexandr Nikolaevich; and Netupsky, Iosif Vulfovich. Method of making bulk porous anodes for electrolytic capacitors. 4,067,735, Cl. 75-211.000.
Bhattacharya, Bhairab C. Thermal convection counter streaming sedimentation method for controlling the sex of mammalian offspring. 4,067,965, Cl. 424-105.000.
Bhaumik, Mani L.; and Hasserjian, Gerard, to Northrop Corporation. Laser multiline selection method and means. 4,068,195, Cl. 331-94.50G.
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, to Southern Pacific Transportation Company. Method of loading automobiles through the side opening of a rail car. 4,067,469, Cl. 214-152.000.
Bianchi, Sabatino A., to Wallis, Bernard J. Heat exchanger fin roll. 4,067,219, Cl. 72-186.000.
Bib Hi-Fi Accessories Limited: *See*—
Retzler, William, 4,067,563, Cl. 269-254.00R.
Bibbens, William H. Apparatus and method and means for removing surface defects from a workpiece. 4,067,218, Cl. 72-107.000.
Bickel, Hans; Kocsis, Karoly; and Peter, Heinrich, to Ciba-Geigy Corporation. Cephalosporins having an α-acyloxyacetic acid side chain. 4,067,979, Cl. 424-246.000.
Bicocchi, Alberto: *See*—
Piras, Giancarlo; and Bicocchi, Alberto, 4,067,793, Cl. 204-219.000.
Bied-Charreton, Philippe; and Le Carvennec, Francois, to Thomson-Brandt. Method for compressing then expanding a television signal. 4,068,258, Cl. 358-4.000.
Biensan, Michel; and Potin, Philippe, to Ato Chimie. Anionic polymerization of lactams in an extruder with controlled output rate. 4,067,861, Cl. 260-78.00L.
Bigelow, John Howard, to Du Pont de Nemours, E. I., and Company. Trithiocarbonates as sensitizers for silver halide emulsions. 4,067,740, Cl. 96-107.000.
Billings, Maurice A. Fishing line holder. 4,067,134, Cl. 43-25.200.
Billmyer, Jerrold Bain: *See*—
Larsen, Donald Wayne; and Billmyer, Jerrold Bain, 4,068,039, Cl. 428-418.000.
Birat, Jean-Pierre: *See*—
Alberny, Robert; Birat, Jean-Pierre; and Ventavoli, Roger, 4,067,378, Cl. 164-49.000.
Birdwell, J. C., to Midcon Pipeline Equipment Co. Pipe handling apparatus for pipe laying barges. 4,067,450, Cl. 214-1.00P.
Birkett, Kevin Lawson; Bone, John Alexander; and Ridyard, Denis Robert Annesley, to Imperial Chemical Industries Limited. Water-soluble diazotized amino azo dyestuff coupled with an amino-phenyl or -naphthyl component. 4,067,865, Cl. 260-187.000.
Birks, Cedric Gwilliam. Swaging dies. 4,067,224, Cl. 72-416.000.
Bisaillon, Gerard; and Bisaillon, Gilles. Apparatus for forming a wheel rim. 4,067,217, Cl. 72-91.000.
Bisaillon, Gilles: *See*—
Bisaillon, Gerard; and Bisaillon, Gilles, 4,067,217, Cl. 72-91.000.
Black Bocs, Ltd.: *See*—
Olmstead, Edward Allen, 4,068,302, Cl. 364-200.000.
Blair, James W., Jr., to Kelsey-Hayes Company. Method of manufacturing brake drums. 4,067,098, Cl. 29-558.000.
Blakely, Robert Bruce; Fetterman, Clyde Leroy; and Warren, Horace Glynn, to Eastman Kodak Company. Loading and unloading mechanism for continuously rotating container. 4,067,694, Cl. 23-253.00R.
Blank, Rudolf; and Kluczynski, Achim, to AGFA-Gevaert, A.G. Film cassette. 4,067,514, Cl. 242-194.000.
Bleeck, Heinz, to Saurer-Allma GmbH, Allgauer Maschinenbau. Bobbin holder arrangement for a double twist thread twisting spindle. 4,067,180, Cl. 57-58.520.
Bleher, Hartmut J.: *See*—
Bechtle, Bastian; Bleher, Hartmut J.; Hasselmeier, Helmut; Spruth, Wilhelm G.; Stucki, Peter; and Weis, Helmut, 4,068,224, Cl. 340-324.0AD.
Block, Hans-Dieter: *See*—
Wagner, Kuno; Block, Hans-Dieter; and Schafer, Walter, 4,067,820, Cl. 252-426.000.
Blomberg, Knut Hugo, to Telefonaktiebolaget L M Ericsson. Wall-stand for telephone sets of standing handset type. 4,068,102, Cl. 179-146.00R.
Bloom, Stanley M., to Polaroid Corporation. Cyclic derivatives of 1,2,3,4 tetrahydroquinoline and indolene. 4,067,872, Cl. 260-288.0CF.
Blott, John; Chegwin, William; and Mann, Walter, to Plasma & Flame Coatings Ltd. Conditioner box guides. 4,067,770, Cl. 162-274.000.
Board of Trustees of Leland Stanford Junior University, The: *See*—
Hottinger, Charles F., 4,067,236, Cl. 73-194A.
Boeckl, Richard Stefan, to International Business Machines Corporation. Spin coating process for prevention of edge buildup. 4,068,019, Cl. 427-82.000.
Boeing Company, The: *See*—
Curtis, Roland E.; and Finden, Peter T., 4,067,734, Cl. 75-175.500.
Bohlander, Peter, to Institut fur Angewandte Forschung GmbH. Method and means for the determination of a planar dimension. 4,067,652, Cl. 356-160.000.
Bohm, Heinz-Dieter; Darenberg, Dietwald; Ernst, Lothar; and Ruggen, Werner. Flexible coupling and torque-transmitting element therefor. 4,067,207, Cl. 64-26.000.
Boliver, Vincent J.; and Tachick, Henry N., to General Electric Company. Electrical separable connector with stress-graded interface. 4,067,636, Cl. 339-143.00C.
Bollefer, Dwight L., to Bollefer, Dwight L. Solar energy collector system. 4,067,314, Cl. 126-270.000.
Bolz, Gunner, to International Diagnostic Technology, Inc. Indirect solid surface test for antigens or antibodies. 4,067,959, Cl. 424-1.000.
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Maniaci, Robert P., 4,067,654, Cl. 403-4.000.
Maniaci, Robert P., 4,068,175, Cl. 325-352.000.
Bone, John Alexander: *See*—
Birkett, Kevin Lawson; Bone, John Alexander; and Ridyard, Denis Robert Annesley, 4,067,865, Cl. 260-187.000.
Boofer, George McCoy, to Sandstorm Enterprises Inc. Board game and advertising display. 4,067,579, Cl. 273-254.0GA.
Booker, Robert A.: *See*—
Johnson, Charles H.; and Booker, Robert A., 4,068,156, Cl. 318-575.000.
Boonstra, Bram Bernard. Electrical resistivity probe means. 4,068,168, Cl. 324-65.00R.
Borrello, Denis, to Foodways National, Inc. Packaging machine. 4,067,173, Cl. 53-180.00M.
Bosshard, Christian, to Ciba-Geigy Corporation. Mixing device. 4,067,550, Cl. 366-228.000.
Botner, T. J.: *See*—
Leathers, Kenneth L.; and Botner, T. J., 4,067,075, Cl. 5-82.00R.
Boulet, Francis: *See*—
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Bourgeois, Charles: *See*—
Bergeron, Hervin Joseph, Jr., 4,067,448, Cl. 214-1.00H.
Bourgeois, Eddie: *See*—
Bergeron, Hervin Joseph, Jr., 4,067,448, Cl. 214-1.00H.
Bourgeois, John G.: *See*—
Bergeron, Hervin Joseph, Jr., 4,067,448, Cl. 214-1.00H.
Bourgeois, Luke: *See*—
Bergeron, Hervin Joseph, Jr., 4,067,448, Cl. 214-1.00H.
Bouwen, Alfons August; and Buelens, Edward, to AGFA-GEVAERT N.V. Light-tight cassette. 4,068,247, Cl. 354-275.000.
Bowes, Savana J.: *See*—
Carr, Edna J.; and Bowes, Savana J., 4,067,487, Cl. 223-111.000.
Bowman, Robert A.; and Burd, Mark M., to International Business Machines Corporation. Apparatus and method for data entry and display. 4,068,226, Cl. 340-336.000.
Braden, Michael, to London Hospital Medical College, The. Polysulphide rubbers. 4,067,842, Cl. 260-31.600.
Bradford, John O., to M & W Gear Company. Grain dryer with air recycling ducts. 4,067,120, Cl. 34-65.000.
Braugenhardt, Staffan Anders Emil: *See*—
Mikkola, Osmo Arvid Ilmari; and Braugenhardt, Staffan Anders Emil, 4,068,099, Cl. 179-15.0AT.
Bray, Derek, to Fairchild Camera and Instrument Corporation. IC compatible variable shunt impedance for Dolby B system. 4,068,139, Cl. 307-264.000.
Bregstein, Henry; and Bregstein, Holly. Panty. 4,067,068, Cl. 2-406.000.
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Bregstein, Henry; and Bregstein, Holly, 4,067,068, Cl. 2-406.000.
Bridgestone Tire Company Limited: *See*—
Saito, Shigeru; Suzuki, Masahiko; and Sato, Takeshi, 4,067,288, Cl. 116-34.00R.
Brin, Raymond L.; and Pace, Thomas L., to United States of America, Energy. Solar energy collector. 4,067,316, Cl. 126-271.000.
Bringhurst, Edward D.; and Marshall, John L., to Tally Corporation. Light collector and prism light source for photoelectric readers. 4,068,121, Cl. 250-227.000.
Brinkmann, Dale C., to Caterpillar Tractor Co. Engine mount. 4,067,524, Cl. 248-9.000.
Bristol-Myers Company: *See*—
Horning, Donald E.; Morris, Leeson R.; and Douglas, James L., 4,068,066, Cl. 544-105.000.

Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,068,075, Cl. 544-105.000.
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,068,080, Cl. 544-105.000.
Bristol-Myers Corporation: *See*—
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,068,078, Cl. 544-105.000.
British Cast Iron Research Association: *See*—
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British Industrial Plastics Limited: *See*—
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British Steel Corporation: *See*—
Beaton, Gerald V., 4,067,115, Cl. 33-182.000.
Broman, John Samuel. Method of grinding in a mill. 4,067,503, Cl. 241-30.000.
Brook, Greville B.; Brooks, Peter L.; and Iles, Roger F., to Raychem Corporation. Austenitic aging of metallic compositions. 4,067,752, Cl. 148-11.50R.
Brooks & Perkins, Incorporated: *See*—
Naffa, Faisal A.; and Messerschmidt, Rudolph (said Faisal A. Naffa assors. to), 4,067,263, Cl. 105-499.000.
Brooks, Peter L.: *See*—
Brook, Greville B.; Brooks, Peter L.; and Iles, Roger F., 4,067,752, Cl. 148-11.50R.
Brooks, Richard J.; and Johnson, Frank O., to Chemithon Corporation, The. Sewage pump priming system. 4,067,663, Cl. 417-199.00A.
Brouwer, Frans; and Ferrari, Francis E., to Stewart-Warner Corporation. Bulb outage warning system. 4,068,216, Cl. 340-168.00R.
Brown, Boveri & Company Limited: *See*—
Sahm, Peter, 4,068,025, Cl. 427-309.000.
Brown, Frank E., to Creek, Ellis A.; and Brown, Richard W., part interest to each. Fuel introduction system. 4,067,685, Cl. 431-2.000.
Brown, Richard W.: *See*—
Brown, Frank E., 4,067,685, Cl. 431-2.000.
Brown, Ronald H.; and Bale, Richard W., to General Electric Company. Apparatus for placing insulators. 4,067,106, Cl. 29-734.000.
Brown, Thomas Desmond: *See*—
Kucera, Frank Joseph; and Brown, Thomas Desmond, 4,067,209, Cl. 66-195.000.
Brozkova, Marie: *See*—
Jaros, Frantisek; Kotrba, Zdenek; Ripka, Josef; Vobornik, Vaclav; Junek, Jan; Ohlidal, Vladimir; Hortlik, Frantisek; Brozkova, Marie; and Zukovska, Vera, 4,067,182, Cl. 57-58.950.
Brule, Rene. Frozen sweet souffles and method of preparing same. 4,068,013, Cl. 426-565.000.
Brunner, Eduard: *See*—
Schmid, Pierre; Brunner, Eduard; and Stofer, Walter, 4,068,094, Cl. 179-1.50R.
Bruno, Wilfred. Combined body garment and tote bag construction. 4,067,066, Cl. 2-105.000.
Bruynes, Cornelis Adrianus; and Van der Drift, Johannes Karel, to Gist-Brocades N.V. Novel penicillanic acid. 4,067,986, Cl. 424-271.000.
Bryant, Paul Max: *See*—
Markland, Richard Donald; Stucki, Frank Fred; and Bryant, Paul Max, 4,067,235, Cl. 73-146.500.
Bryner, Alex M.; and Laird, Richard P., to Caterpillar Tractor Co. Geometric pitch determining device. 4,067,116, Cl. 33-343.000.
BTR Industries Limited: *See*—
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Buchanan, Donald George: *See*—
Hyde, Peter John; Cripps, Peter Kendall; Buchanan, Donald George; and Spalding, Robert George, 4,067,486, Cl. 222-26.000.
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Epel, Joseph Norman; Shah, Vinod Chandulal; and Iseler, Kenneth Alfred, 4,067,845, Cl. 260-40.00R.
Budde, Paul B.; and Vatne, Robert D., to Dow Chemical Company, The. 2-((2-chlorophenyl)azo)imidazoles and their use as an anthelmintic. 4,067,973, Cl. 424-226.000.
Buelens, Edward: *See*—
Bouwen, Alfons August; and Buelens, Edward, 4,068,247, Cl. 354-275.000.
Bugante, Restituto L., to Puyat, Alfonso G. Method of promoting the flowering of grape vines. 4,067,717, Cl. 71-63.000.
Bugaut, Andree: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,067,869, Cl. 260-270.0PY.
Buildex, Inc.: *See*—
Sekerich, Michael, 4,067,632, Cl. 312-341.00R.
Bundy, Gordon L., to Upjohn Company, The. Pharmaceutical compositions and method of use for prostaglandin 1,11- and 1,15-lactones. 4,067,991, Cl. 424-279.000.
Bunnelle, Philip R., to FMC Corporation. Subterranean drilling and slurry mining. 4,067,617, Cl. 299-17.000.
Burd, Mark M.: *See*—
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Buret, Jean-Pierre; Hercelin, Bernard; Hamon, Jean-Francois; and Balea, Trajan, to Laboratoires Cassenne. 3-Phenyl-1,2,4-oxadiazole derivatives as antiinflammatory-antitussive agents. 4,067,988, Cl. 424-272.000.
Burgess, Mary T.: *See*—
Bartles-Keith, James R.; Burgess, Mary T.; and Rogers, Jean B., 4,067,871, Cl. 260-287.00T.
Burkhardt, Joseph A.: *See*—
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Burlington Industries, Inc.: *See*—
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Burmah Oil Trading Limited: *See*—
Field, Peter Graham Spencer; and Bennett, Ronald, 4,067,912, Cl. 260-621.00C.
Burroughs Corporation: *See*—
Templeton, William B., 4,068,212, Cl. 340-146.3ED.
Burton, Charles V., to Medtronic, Inc. Tape electrode. 4,067,342, Cl. 128-418.000.
Burwell, Garwood N., to Rails Company, The. Snow and sleet detector. 4,068,133, Cl. 307-116.000.
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Bushings, Inc.: *See*—
Allen, Jack, 4,067,525, Cl. 248-10.000.
Busse, Oswald; and Klesper, Hugo, to Passavant-Werke Michelbacher Hutte. Process and apparatus for the operation of a filter press having a pressure tank communicating therewith. 4,067,807, Cl. 210-82.000.
Bussiere, Bernard: *See*—
Pease, William M.; Bussiere, Bernard; and Battles, Carl E., 4,068,233, Cl. 343-7.00A.
Butler, Donald E.: *See*—
Poschel, Bruno P. H.; and Butler, Donald E., 4,067,983, Cl. 424-263.000.
Butter, Stephen A., to Mobil Oil Corporation. Selective conversion of cycloparaffins to form para-xylene using an antimony zeolite catalyst. 4,067,919, Cl. 260-668.00D.
Byard, L. George, to Keystone Consolidated Industries, Inc. Attaching clip. 4,067,521, Cl. 245-10.000.
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich. Bag filter for cleaning dust-laden gases. 4,067,708, Cl. 55-304.000.
Byrne, Robert: *See*—
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, 4,067,469, Cl. 214-152.000.
Byrnes, Gerald J. Power monitor. 4,068,279, Cl. 361-56.000.
Cackley, George W., to Caterpillar Tractor Co. Bearing arrangement for power drive. 4,067,427, Cl. 192-110.00B.
Cadman, Philip Michael; and Downing, Brian York, to British Industrial Plastics Limited. Powder coating materials. 4,067,926, Cl. 260-836.000.
Caligiuri, Maria, administrator: *See*—
Basile, Pietro, deceased; and Caligiuri, Maria, administrator, 4,068,280, Cl. 361-92.000.
Calundann, Gordon W., to Celanese Corporation. Melt processable thermotropic wholly aromatic polyester containing polybenzoyl units. 4,067,852, Cl. 260-47.00C.
Camacho, Salvador Lujan; and Circeo, Louis Joseph, Jr., to Technology Application Services Corporation. Apparatus and method for the recovery of fuel products from subterranean deposits of carbonaceous matter using a plasma arc. 4,067,390, Cl. 166-302.000.
Camaioni, Ron. Retractable guitar pick. 4,067,255, Cl. 84-322.000.
Cameron, Albert Rea, to Singer Company, The. Closing spring assembly for slam-shut valves. 4,067,095, Cl. 29-157.10R.
Camilleri, Thomas M. Fastening method for flexible material. 4,067,570, Cl. 273-47.000.
Camillus Cutlery Co.: *See*—
Miori, Nilo M., 4,067,947, Cl. 264-154.000.
Campagna, Benjamin J.: *See*—
Campagna, Samuel A., Jr.; and Campagna, Benjamin J., 4,067,659, Cl. 404-25.000.
Campagna, Samuel A., Jr.; and Campagna, Benjamin J., to BES, Ltd. Manhole closure assembly. 4,067,659, Cl. 404-25.000.
Canadian General Electric Company Limited: *See*—
Sherburn, Raymond Robert, 4,067,628, Cl. 312-214.000.
Canon Kabushiki Kaisha: *See*—
Fujiwara, Takutoshi; and Nishide, Katsuhiko, 4,067,780, Cl. 204-2.000.
Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, 4,068,243, Cl. 354-60.00R.
Ohtaki, Shohei; Nakamura, Zenzo; and Kozuki, Susumu, 4,068,245, Cl. 354-149.000.
Yano, Akio; and Matsumoto, Kazuya, 4,067,638, Cl. 350-3.500.
Cappel, Fred, to Dravo Corporation. Sintering process. 4,067,727, Cl. 75-5.000.
Cappelli, Antonio: *See*—
Collina, Amilcare; Malfatti, Emanuele; and Cappelli, Antonio, 4,067,908, Cl. 260-603.00C.
Carle Instruments, Inc.: *See*—
Johns, Theron; and Berry, Edward A., 4,067,227, Cl. 73-23.100.
Carlier, Jacques: *See*—
Gillet, Roger; and Carlier, Jacques, 4,068,142, Cl. 310-214.000.
Carlin, Owen; Beam, John E.; and Vermesh, Robert, to Life Savers,

Inc. System and method for cooling of gum base. 4,068,004, Cl. 426-3.000.

Carlson, F. Paul; and Ward, Joseph E., III, to University of Washington, The Board of Regents of the. Minimum mean-square error linear optical filter. 4,067,645, Cl. 350-162.0SF.

Carlson, Gerald J.: *See—*
Chen, Arthur C. M.; Barber, William D.; Berninger, Walter H.; Carlson, Gerald J.; Gittinger, Norman C.; and Whitten, James R., 4,068,306, Cl. 364-414.000.

Carr, Edna J.; and Bowes, Savana J. Combination zipper aid and shoehorn device. 4,067,487, Cl. 223-111.000.

Carr, Peter, to Energy Development Associates. Pump battery system. 4,068,043, Cl. 429-22.000.

Carrington, Lewis R. Illuminated optical fiber display system. 4,068,118, Cl. 362-123.000.

Castor, Rolf: *See—*
Olsson, Sven-Gunnar; Castor, Rolf; and Tchang, Gabriel, 4,067,320, Cl. 128-2.00C.

Caterpillar Tractor Co.: *See—*
Brinkmann, Dale C., 4,067,524, Cl. 248-9.000.
Bryner, Alex M.; and Laird, Richard P., 4,067,116, Cl. 33-343.000.
Cackley, George W., 4,067,427, Cl. 192-110.00B.
Deucher, Conrad R., 4,067,249, Cl. 297-330.000.
Gebhart, Daniel E.; Meints, Edward G.; and Smith, Brace C., 4,067,661, Cl. 415-118.000.
Goloff, Alexander, 4,067,669, Cl. 418-53.000.
Goloff, Alexander, 4,067,670, Cl. 418-61.00A.
Goloff, Alexander, 4,067,671, Cl. 418-149.000.
Hodge, Norman J., 4,067,145, Cl. 49-386.000.
Hodge, Norman J., 4,067,627, Cl. 312-100.000.
Jones, Thaddeus M.; Kiwale, Jozef; and Rufer, Ernest J., 4,067,490, Cl. 228-102.000.
Kaarlela, Willard O., 4,067,657, Cl. 403-317.000.
Lawrence, Dean M., 4,067,597, Cl. 292-228.000.
Malecha, Richard J., 4,067,195, Cl. 60-469.000.
Morge, Michael P.; and Shiffler, Robert A., 4,067,588, Cl. 280-163.000.
Norick, William B., 4,067,193, Cl. 60-445.000.

Catnic Components Limited: *See—*
Robinson, Brian, 4,067,157, Cl. 52-127.000.

Causey, Lynn R., to Ethyl Corporation. Hydraulic vent valve. 4,067,351, Cl. 137-254.000.

CAW Industries, Inc.: *See—*
Willard, John Wesley, Sr., 4,067,712, Cl. 71-24.000.
Willard, John Wesley, Sr., 4,067,713, Cl. 71-24.000.
Willard, John Wesley, Sr., 4,067,714, Cl. 71-24.000.
Willard, John Wesley, Sr., 4,067,715, Cl. 71-24.000.

Cecil Equipment Co., Inc.: *See—*
Cecil, Shelby; and Zeewy, Abraham, 4,068,154, Cl. 318-568.000.

Cecil, Shelby; and Zeewy, Abraham, to Cecil Equipment Co., Inc. Automatic guidance system for welding torches and the like. 4,068,154, Cl. 318-568.000.

Cederholm, Carl; and Hudson, Robert H., to Hasbro Development Corporation. Pneumatically actuated walking doll. 4,067,138, Cl. 46-44.000.

Celanese Corporation: *See—*
Calundann, Gordon W., 4,067,852, Cl. 260-47.00C.
Frey, William J., 4,067,534, Cl. 285-319.000.

Celms, Harry, to Roblin Industries, Inc. Base for nestable shopping cart. 4,067,591, Cl. 280-33.99S.

Centre Electronique Horloger S.A.: *See—*
Vittoz, Eric Andre, 4,068,137, Cl. 307-225.00C.

CERCA, Compagnie pour l'Etude et la Realisation de Combustibles Atomiques: *See—*
Morin, Claude, 4,067,118, Cl. 34-10.000.

Cerniway, Leon A.; and Marx, Bruce C., to U.S. Divers Co. Diving suit. 4,067,064, Cl. 2-2.10R.

Cerroni, Manlio. Machine for tearing waste bags and separating out plastic film bag material. 4,067,506, Cl. 241-200.000.

Ceskoslovenska akademie ved: *See—*
Hradil, Jiri; Stamberg, Jiri; and Coupek, Jiri, 4,067,825, Cl. 260-2.10M.

Ceskoslovenska komise pro atomovou energii: *See—*
Votapek, Vaclav; Marval, Eduard; Jilek, Rudolf; and Stamberg, Karel, 4,067,821, Cl. 252-427.000.

Chalabian, Jack S., to K-Jack Engineering Company, Inc. Single article vending machine. 4,067,477, Cl. 221-1.000.

Champion International Corporation: *See—*
Cooley, James; Fogle, Ozzie; and Barnes, Hildred, 4,068,031, Cl. 428-163.000.

Chang, Chen-Wan. Automatic plank planing machine. 4,067,370, Cl. 144-117.00R.

Chang, Chiu-Hua. Chess board and pieces. 4,067,578, Cl. 273-261.000.

Chang, Joseph Juifu: *See—*
Arnett, Patrick Clinton; and Chang, Joseph Juifu, 4,068,217, Cl. 365-182.000.

Chang, Robert C., to Owens-Corning Fiberglas Corporation. Polyester prepare from a mixture of isophthalic acid, azelaic acid, trimethylpentanediol and bisphenol A. 4,067,849, Cl. 260-47.00C.

Chapman, Philip Howard: *See—*
Walker, Derek; and Chapman, Philip Howard, 4,067,858, Cl. 260-78.00A.

Chayka, George A.; Koehler, Joel J.; and [illegible]otti, Livio R., to Western Electric Company, Inc. Method and apparatus for contacting the lead of an article. 4,068,170, Cl. 324-72.500.

Chegwin, William: *See—*
Blott, John; Chegwin, William; and Mann, Walter, 4,067,770, Cl. 162-274.000.

Chemarin, Auguste Marie. Method and apparatus for the automatic communication of two telephone subscribers. 4,068,101, Cl. 179-18.0BG.

Chemed Corporation: *See—*
Cuisia, Dionisio G.; Hwa, Chih M.; Jacob, Jose T.; and Salutsky, Murrell L., 4,067,690, Cl. 21-2.70R.

Chemie Grunenthal GmbH: *See—*
Graudums, Ivars; Muckter, Heinrich; and Frankus, Ernst, 4,067,985, Cl. 424-267.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
List, Ferdinand; Rauhut, Otto; Hegenberg, Peter; and Strobele, Rudolf, 4,067,779, Cl. 203-28.000.

Chemithon Corporation, The: *See—*
Brooks, Richard J.; and Johnson, Frank O., 4,067,663, Cl. 417-199.00A.

Chemotronics International, Inc.: *See—*
Franklin, Charles H.; Vinton, Clarence S.; and Geen, Henry C., 4,067,956, Cl. 423-445.000.

Chen, Arthur C. M.; Barber, William D.; Berninger, Walter H.; Carlson, Gerald J.; Gittinger, Norman C.; and Whitten, James R., to General Electric Co. X-ray data acquisition system and method for calibration. 4,068,306, Cl. 364-414.000.

Chen, Nai Yuen; Gillespie, Bernard M.; Ireland, Henry R.; and Stein, Thomas R., to Mobil Oil Corporation. Hydrodewaxing. 4,067,797, Cl. 208-15.000.

Chenot, Charles Frederic; Mathers, James Evan; and Shaffer, Francis Nathan, to GTE Sylvania Incorporated. $(Hf_{1-x}Zr_x)_3P_3O_{11}$ luminescent material, method of preparation and X-ray intensifying screen containing same. 4,068,128, Cl. 250-483.000.

Chevron Research Company: *See—*
Edwards, Laroy H., 4,068,000, Cl. 424-321.000.

Chia, Enrique C., to Southwire Company. Method of treating molten metal. 4,067,731, Cl. 75-68.00R.

Chiang, Chih-Shu: *See—*
White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, 4,067,823, Cl. 252-431.00C.

Chiang, Mutong T.: *See—*
Danzig, Morris J.; and Chiang, Mutong T., 4,068,050, Cl. 526-21.000.

Chiang, Robert; and Perry, Eli, to Monsanto Company. Process for separating aqueous formaldehyde mixtures. 4,067,805, Cl. 210-23.00R.

Chicoye, Etzer; Helbert, J. Raymond; and Rice, James F., to Miller Brewing Company. Accelerated fermentation of lager beer. 4,068,005, Cl. 426-16.000.

Chillier-Duchatel, Nicole; and Verger, Bernard, to Societe Generale de Constructions Electriques et Mecaniques "Alsthom et Cie". Electric cell having peroxidized intermediate forms. 4,068,042, Cl. 429-19.000.

Chiulli, Robert D., to Medico Developments, Inc. Enterostomy retainer. 4,067,339, Cl. 128-303.00R.

Chloride Incorporated: *See—*
Malinowski, William J., 4,068,130, Cl. 250-574.000.

Chow, Ling George, to Honeywell Information Systems, Inc. Magnetic domain bias field assembly. 4,068,219, Cl. 365-27.000.

Christen, Urs; and Commins, Richard M., to Varian Associates, Inc. Current balancing circuit for use with chromatographic system detector. 4,068,185, Cl. 330-86.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Ishii, Shozo, 4,067,963, Cl. 424-95.000.

Ciba-Geigy AG: *See—*
Jaeger, Horst, 4,067,916, Cl. 260-653.10T.
Lewis, John Derek, 4,067,739, Cl. 96-94.00R.
Oesterlein, Fritz; Hegar, Gert; and Seitz, Karl, 4,067,864, Cl. 260-153.000.

Ciba-Geigy Corporation: *See—*
Bickel, Hans; Kocsis, Karoly; and Peter, Heinrich, 4,067,979, Cl. 424-246.000.
Bosshard, Christian, 4,067,550, Cl. 366-228.000.
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, 4,067,889, Cl. 260-364.000.
Oswald, Alexis A.; and Valint, Paul L., 4,067,972, Cl. 424-216.000.
Ramanathan, Visvanathan; Schlesinger, Ulrich; and De Montmollin, Rene, 4,068,085, Cl. 260-156.000.
Ramey, Chester E.; and Luzzi, John J., 4,067,848, Cl. 260-45.8NE.
Schurter, Rolf; Clauson-Kaas, Niels; and Rempfler, Hermann, 4,067,725, Cl. 71-94.000.

Cicatelli, Rodolfo, to Autovox S.p.A. Package bushing-fly wheel-capstan for playback and/or recording apparatus. 4,067,488, Cl. 226-194.000.

Cie Honeywell Bull: *See—*
Pichon, Michel, 4,068,166, Cl. 324-62.000.

Ciesmier, Allen L., to Littelfuse, Inc. Method of making a plug-in fuse. 4,067,103, Cl. 29-623.000.

Cilag-Chemie A.G.: *See—*
Pluss, Kurt; and De Martin, Bruno Romano, 4,067,785, Cl. 204-49.000.

Cincinnati Milacron Inc.: *See—*
Kelly, Ralph; and Ritter, Edmond Jean, 4,067,345, Cl. 132-7.000.

Circeo, Louis Joseph, Jr.: *See—*
Camacho, Salvador Lujan; and Circeo, Louis Joseph, Jr., 4,067,390, Cl. 166-302.000.

Cities Service Company: *See—*
Versnel, John; and Green, Joseph, 4,067,930, Cl. 260-880.00R.

Citizen Watch Co., Ltd.: *See—*
Sekiya, Fukuo; Morokawa, Shigeru; and Nomura, Yasushi, 4,067,187, Cl. 58-23.00R.

Clark, Michael A. G.; and Underhill, Michael J., to U.S. Philips Corporation. Digital phase comparator. 4,068,181, Cl. 328-133.000.

Clauson-Kaas, Niels: *See—*
Schurter, Rolf; Clauson-Kaas, Niels; and Rempfler, Hermann, 4,067,725, Cl. 71-94.000.

Clayson N. V.: *See—*
Muijs, Cornelis G. M.; and Decoene, Frans J. G. C., 4,067,343, Cl. 130-27.00R.

Coal Industry (Patents) Limited: *See—*
Smith, Job Frederick, 4,068,088, Cl. 174-136.000.

Coats & Clark, Inc.: *See—*
Johnson, Joseph John, Jr., 4,067,184, Cl. 57-135.000.

Coffin, Laurance G.: *See—*
Arons, Gilbert N.; Coffin, Laurance G.; and Macnair, Richard N., 4,067,210, Cl. 66-202.000.

Cohen, Milton J. Non-aerosol continuous spray dispenser. 4,067,499, Cl. 239-323.000.

Cole, Edward Lawrence: *See—*
Hess, Howard Vincent; Franz, William Francis; and Cole, Edward Lawrence, 4,067,767, Cl. 162-31.000.

Coleman, Marvin W. Golf club. 4,067,572, Cl. 273-79.000.

Colgate-Palmolive Company: *See—*
Gasser, Edward Bruce, 4,067,480, Cl. 222-146.0HA.

Collin, Andre: *See—*
Walraevens, Rene; and Collin, Andre, 4,067,911, Cl. 260-615.00B.

Collina, Amilcare; Malfatti, Emanuele; and Cappelli, Antonio, to Montedison S.p.A. Process for the production of formaldehyde. 4,067,908, Cl. 260-603.00C.

Colln, Reimer; Riebel, Hans-Jochem; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Pesticidal O-ethyl-S-n-propyl-O[pyrazolo(1,5-a)-pyrimidin-(2) yl]-thionothiolphosphoric acid esters. 4,067,970, Cl. 424-200.000.

Colorlux a-s: *See—*
Rasmussen, Poul, 4,067,130, Cl. 40-563.000.

Columbia Gas System Service Corporation: *See—*
Reid, Edward A., Jr.; Myler, George W.; and Payne, James E., 4,067,681, Cl. 431-10.000.

Columbia Machine, Inc.: *See—*
Schmitt, Robert A., 4,067,456, Cl. 214-6.00P.

Comer, William T.; and Kreighbaum, William E., to Mead Johnson & Company. Alkylsulfonylphenoxypropanolamine derivatives. 4,067,904, Cl. 260-570.700.

Commander, Robert Duncan; and Taylor, John Richard, to International Business Machines Corporation. Positioning system for data storage apparatus and record medium for use therewith. 4,068,269, Cl. 360-78.000.

Commercial Decal, Inc.: *See—*
Meade, Hazel, 4,068,033, Cl. 428-201.000.

Commins, Richard M.: *See—*
Christen, Urs; and Commins, Richard M., 4,068,185, Cl. 330-86.000.

Commissariat a l'Energie Atomique: *See—*
Devillard, Jacques, 4,067,674, Cl. 425-8.000.
Marhic, Gerard, 4,068,112, Cl. 219-121.0EB.

Commonwealth Scientific and Industrial Research Organization: *See—*
Garvie, Ronald Charles; Hannink, Richard Henri Jan; and Pascoe, Richard Terry, 4,067,745, Cl. 106-57.000.

Compagnie Francaise des Petroles: *See—*
Jegousse, Michel J., 4,067,199, Cl. 61-63.000.

Compagnie Generale d'Electricite S.A.: *See—*
Desplanches, Gerard; Lazennec, Yvon; and Leboucq, Jacques, 4,068,048, Cl. 429-193.000.

Compagnie Generale des Etablissements Michelin: *See—*
Lejeune, Daniel, 4,067,375, Cl. 152-362.00R.

Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (Doris), Societe Anonyme: *See—*
Jegousse, Michel J., 4,067,199, Cl. 61-63.000.

Compagnie Internationale pour l'Informatique: *See—*
Pichon, Michel, 4,068,166, Cl. 324-62.000.

Compagnie Maritime d'Expertises, Societe Anonyme: *See—*
Jegousse, Michel J., 4,067,199, Cl. 61-63.000.

Concept Inc.: *See—*
Troutner, Vernon H.; and Simmons, Raymond W., 4,067,323, Cl. 128-18.000.

Confer, Raymond C.; and Gosch, Thomas F., to Confer, Raymond C.; Gosch, Thomas F.; and Gatke, John W., part interest to each. Footstool. 4,067,614, Cl. 297-438.000.

Conley, Thomas R.; Dawson, Larry; and Strickland, Troy. Vehicle emergency alarm and stop system. 4,067,411, Cl. 180-114.000.

Consolidated Freightways, Inc.: *See—*
Markland, Richard Donald; Stucki, Frank Fred; and Bryant, Paul Max, 4,067,235, Cl. 73-146.500.

Continental IL National Bank and Trust Co.: *See—*
Rattenborg, Christen C.; and Mikula, Raymond J., 4,068,096, Cl. 179-2.00A.

Continental Oil Company: *See—*
Gorin, Everett, 4,067,958, Cl. 423-657.000.
Weimer, Dean Raymond; and Durr, Albert M., Jr., 4,068,052, Cl. 526-62.000.
Wimberley, Jerry W., 4,067,693, Cl. 23-230.0EP.

Continental Paper Co.: *See—*
Gargan, Robert E., 4,067,492, Cl. 229-42.000.

Control Data Corporation: *See—*
Wetherbee, Daryl Clifford, 4,068,290, Cl. 361-415.000.

Control Logic (Proprietary) Limited: *See—*
Murray, Alan B., 4,067,232, Cl. 73-115.000.

Conway, Frank Horton; and Myles, Innis Raymond, to United States of America, Army. Apparatus for filling containers with liquid. 4,067,366, Cl. 141-59.000.

Conway, Terry T.: *See—*
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,068,075, Cl. 544-105.000.
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,068,078, Cl. 544-105.000.
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,068,080, Cl. 544-105.000.

Cook, Charles F.: *See—*
Schmidt, Thomas W.; and Cook, Charles F., 4,068,122, Cl. 250-281.000.

Cooley, James; Fogle, Ozzie; and Barnes, Hildred, to Champion International Corporation. Lauan panel with reduced flame spread rating. 4,068,031, Cl. 428-163.000.

Corbett, James Patrick. Improvements in or relating to oscillating crystal transducer systems. 4,067,241, Cl. 73-717.000.

Corkhill, David P., to Standard Oil Company (Indiana). Seismic vibrator phase detector. 4,068,210, Cl. 340-17.00R.

Cornelius, Gail, to R. M. Wade & Co. Speed governor for irrigation system. 4,067,497, Cl. 239-177.000.

Cornell, Stephen Watson: *See—*
Potts, James Edward; Cornell, Stephen Watson; and Sracic, Albert Martin, 4,067,836, Cl. 260-23.00H.

Corning Glass Works: *See—*
Fehlner, Francis P.; and Ortabasi, Ugur, 4,067,315, Cl. 126-271.000.

Cotton, Joe W.: *See—*
Cronberg, Alvin D.; Hartlage, James A.; and Cotton, Joe W., 4,067,802, Cl. 210-21.000.

Coudurier, Maurice: *See—*
Violland, Robert; Lagasse, Alain; Papillon, Bernard; Neel, Jean; and Coudurier, Maurice, 4,068,035, Cl. 428-279.000.

Coupek, Jiri: *See—*
Hradil, Jiri; Stamberg, Jiri; and Coupek, Jiri, 4,067,825, Cl. 260-2.10M.

Cox, Clairdel C.: *See—*
Schneider, Raymond C.; and Cox, Clairdel C., 4,067,423, Cl. 192-3.630.

Cox, Karmen D.: *See—*
Sample, Steven B.; Scheuer, Paul R.; and Cox, Karmen D., 4,068,179, Cl. 328-72.000.

Cox, Melvin L. Cutting guide for custom mats. 4,067,112, Cl. 33-76.00R.

CPC International Inc.: *See—*
Danzig, Morris J.; and Chiang, Mutong T., 4,068,050, Cl. 526-21.000.

CPT Corporation: *See—*
Wienhold, James L., 4,067,430, Cl. 197-82.000.

Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Schultz, Everett M., to Merck & Co., Inc. Spirobenzoxazinium salts, method of use and compositions thereof as antihypertensive agents. 4,067,980, Cl. 424-248.400.

Crase, Gary M., to Smith International, Inc. Angle adjustment sub. 4,067,404, Cl. 175-75.000.

Crawford, William B.: *See—*
Solomon, Anthony T.; and Crawford, William B., 4,067,277, Cl. 112-262.000.

Creek, Ellis A.: *See—*
Brown, Frank E., 4,067,685, Cl. 431-2.000.

Creusot-Loire: *See—*
Vigerie, Robert, 4,067,595, Cl. 280-766.000.

Cripps, Peter Kendall: *See—*
Hyde, Peter John; Cripps, Peter Kendall; Buchanan, Donald George; and Spalding, Robert George, 4,067,486, Cl. 222-26.000.

Cromelin, John F.: *See—*
Lester, Steven W.; Cromelin, John F.; and Davenport, James M., 4,067,279, Cl. 113-1.00D.

Cronberg, Alvin D.; Hartlage, James A.; and Cotton, Joe W., to Ashland Oil, Inc. Ion exchange process for the purification of base metal electrolyte solutions. 4,067,802, Cl. 210-21.000.

Crosby, John, to Imperial Chemical Industries Limited. Process for modification of polymeric materials with a nitrile sulphide. 4,067,862, Cl. 260-79.50P.

Crown Zellerbach Corporation: *See—*
Leakey, Joseph W.; and Stollberg, Ray H., 4,067,491, Cl. 229-23.00R.

Cruickshank, Charles Burns, to Daniel Montgomery & Son Limited. Combined anti-refilling and pouring device for fitment to a bottle. 4,067,472, Cl. 215-22.000.

Cuisia, Dionisio G.; Hwa, Chih M.; Jacob, Jose T.; and Salutsky, Murrell L., to Chemed Corporation. Boiler water treatment. 4,067,690, Cl. 21-2.70R.

Cunningham, Richard L., to Parker Manufacturing Company. Rivet setting tool. 4,067,223, Cl. 72-391.000.

Curtis, Robert Mark, to Swiley Laboratories, Inc. Blood oxygenator. 4,067,696, Cl. 23-258.50B.

Curtis, Roland E.; and Finden, Peter T., to Boeing Company, The. Titanium alloys. 4,067,734, Cl. 75-175.500.

Cutler, Ronald Michael, to Plessey Handel und Investments AG. Associative processors. 4,068,305, Cl. 364-200.000.

Cyprane North America, Inc.: *See—*
Jones, Wilfred; Jones, Keith W.; and Sweatman, Travers Fraser, 4,067,935, Cl. 261-63.000.

Czerwinski, Frank Gregory: *See—*
Rutty, Edward Charles; Czerwinski, Frank Gregory; Van Zelderen, Henderik; and Gavini, Donald Robert, 4,067,513, Cl. 242-107.300.

Dahms, Francis A.: *See—*
Spurr, Robert; Dahms, Francis A.; and Sarkozy, Francis A., 4,067,438, Cl. 198-805.000.

Dai Nippon Toryo Co., Ltd.: *See—*
Hayashi, Masaaki; Tsuneta, Kazuyoshi; Sasaki, Hiroharu; and Takada, Hiroshi, 4,067,838, Cl. 260-29.2TN.

Daigle, Donald J.: *See—*
Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., 4,067,687, Cl. 8-116.00P.

Daimler-Benz Aktiengesellschaft: *See—*
Ahlisch, Hans-Dieter; Amann, Rolf; Bald, Franz; Dostal, Gerhard; Folster, Alfred; Schleh, Wolfgang; Kachele, Gunther; Kowallek, Rolf; and Schnaufer, Helmut, 4,067,602, Cl. 296-71.000.
Lindenmaier, Klaus, 4,067,299, Cl. 123-3.000.
Motting, Gotz; Bauer, Wilhelm; and Kleisser, Werner, 4,067,528, Cl. 248-204.000.
Niemann, Klaus; and Wulf, Helmut, 4,067,247, Cl. 74-499.000.

Daimon, Nobutoshi; and Kitajima, Kunio. Synthetic tetra-silicic mica and water sol thereof. 4,067,819, Cl. 252-313.00S.

Dainippon Screen Seizo Kabushiki-Kaisha: *See—*
Yamazaki, Taro; Ohnishi, Kazuhiko; and Maeda, Kiyoshi, 4,068,197, Cl. 331-94.50S.

Dakss, Mark L.: *See—*
Zemon, Stanley A.; and Dakss, Mark L., 4,068,191, Cl. 331-94.50M.

Dalibor, Horst, to Hoechst Aktiengesellschaft. Blocked polyisocyanates obtained from 2,2,4-trimethylhexamethylene-diisocyanate and acetoacetic acid alkyl esters. 4,068,086, Cl. 560-169.000.

Dallamore, Larry Evan. Apparatus for separating floating pollutants. 4,067,811, Cl. 210-242.00S.

Dangel, Phoenix Nathan; and Marshall, Preston Fairfax, to Kendall Company, The. Flat-pack battery separator. 4,068,047, Cl. 429-142.000.

Daniel Montgomery & Son Limited: *See—*
Cruickshank, Charles Burns, 4,067,472, Cl. 215-22.000.

Daniels, John E. Premature infant immobilizer and holding assembly for the nursery and radiological exposure. 4,067,565, Cl. 269-328.000.

Danzig, Morris J.; and Chiang, Mutong T., to CPC International Inc. Difunctional terminated macromolecular monomers and condensation copolymers produced therefrom. 4,068,050, Cl. 526-21.000.

Darenberg, Dietwald: *See—*
Bohm, Heinz-Dieter; Darenberg, Dietwald; Ernst, Lothar; and Ruggen, Werner, 4,067,207, Cl. 64-26.000.

Datta, Arthur S.; Owens, David G.; and Moore, R. Dale, to International Harvester Company. Quick coupler device. 4,067,467, Cl. 214-145.00A.

Davenport, James M.: *See—*
Lester, Steven W.; Cromelin, John F.; and Davenport, James M., 4,067,279, Cl. 113-1.00D.

Davies, Robert William; and Thornton, Leonard, to Molins Limited. Apparatus for conveying articles. 4,067,436, Cl. 198-742.000.

Davis, Bill G., to Jetco, Inc. Fuel shut-off valve. 4,067,348, Cl. 137-87.000.

Davis, Eugene B. Method of decorating a fabric and the decorated fabric. 4,067,278, Cl. 112-262.000.

Davis, Richard Phillip. Dome structure. 4,067,153, Cl. 52-80.000.

Dawson, Larry: *See—*
Conley, Thomas R.; Dawson, Larry; and Strickland, Troy, 4,067,411, Cl. 180-114.000.

De Rotterdamsche Droogdok Maatschappij B.V.: *See—*
Klumpes, Hans, 4,068,111, Cl. 219-73.110.

De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See—*
Drukarch, Chaim Zalman, 4,068,309, Cl. 364-484.000.

Debolt, Harold E.; and Henze, Thomas W., to Avco Corporation. Silicon carbide filaments and method. 4,068,037, Cl. 428-368.000.

Dechant, Thomas Edward; Glaser, Edward Lewis; Pitt, Paul Eldred; and Way, Frederick, III, to Systems Development Corporation. Information storage and retrieval system. 4,068,298, Cl. 364-200.000.

Decker, Martin: *See—*
Goetz, Norbert; Zeeh, Bernd; Decker, Martin; Hupfer, Leopold; and Toussaint, Herbert, 4,068,077, Cl. 544-178.000.

Deckler, Harry C., to White Farm Equipment Company. Implement with automatic sequencing valve and system. 4,067,394, Cl. 172-2.000.

Decoene, Frans J. G. C.: *See—*
Muijs, Cornelis G. M.; and Decoene, Frans J. G. C., 4,067,343, Cl. 130-27.00R.

Degenhardt, Karl-Heinz; Frank, Hermann; and Marx, Gerhard, to Hoechst Aktiengesellschaft. Developing apparatus. 4,068,249, Cl. 354-300.000.

Degtyarev, Evgeny Nikolaevich: *See—*
Khimenko, Lev Timofeevich; Degtyarev, Evgeny Nikolaevich; Baranov, Mikhail Ivanovich; Legeza, Anatoly Vasilievich; and Mezhuev, Alexandr Tikhonovich, 4,067,216, Cl. 72-56.000.

DeHoff, Robert Eugene, to AMP Incorporated. Pipeline tap and connecting device. 4,067,353, Cl. 137-318.000.

Dekker, Pieter: *See—*
Argyle, Bernell Edwin; Dekker, Pieter; and Slonczewski, John Casimir, 4,068,220, Cl. 365-30.000.

Delobelle, Emile-Jean; and Madec, Francois, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Tires. 4,067,373, Cl. 152-354.00R.

De Martin, Bruno Romano: *See—*
Pluss, Kurt; and De Martin, Bruno Romano, 4,067,785, Cl. 204-49.000.

De Montmollin, Rene: *See—*
Ramanathan, Visvanathan; Schlesinger, Ulrich; and De Montmollin, Rene, 4,068,085, Cl. 260-156.000.

Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, to Ciba-Geigy Corporation. Disperse dyestuffs. 4,067,889, Cl. 260-364.000.

Dennis, Edward F. Joint member. 4,067,656, Cl. 403-296.000.

Derbyshire, George Cecil, to Jacobs Manufacturing Company, Limited, The. Drill chucks. 4,067,587, Cl. 279-62.000.

Derclaye, Raymond A., to Finimetal-Efel, Societe Anonyme. Assembling device between uprights and cross-members for setting up metal structures. 4,067,445, Cl. 211-191.000.

Derre & Company: *See—*
Sikula, William John, 4,067,531, Cl. 248-358.00R.

DeSchaaf, Clifford L.: *See—*
Johnson, Philip P.; and DeSchaaf, Clifford L., 4,068,114, Cl. 219-333.000.

Design and Manufacturing Corporation: *See—*
Sample, Steven B.; Scheuer, Paul R.; and Cox, Karmen D., 4,068,179, Cl. 328-72.000.

DesMarais, Thomas Allen, to Procter & Gamble Company, The. Flexible polyurethane foam. 4,067,832, Cl. 260-2.5AB.

Desmoulins, Guy: *See—*
Desmoulins nee Fouchereau, Pierrette; and Desmoulins, Guy, 4,067,606, Cl. 297-141.000.

Desmoulins nee Fouchereau, Pierrette; and Desmoulins, Guy. Trolley table and seat. 4,067,606, Cl. 297-141.000.

DeSoto, Inc.: *See—*
Wolf, Richard E., 4,067,840, Cl. 260-29.60R.

Desplanches, Gerard; Lazennec, Yvon; and Leboucq, Jacques, to Compagnie Generale d'Electricite S.A. Method for preparing alkaline beta alumina parts. 4,068,048, Cl. 429-193.000.

Deucher, Conrad R., to Caterpillar Tractor Co. Raising chair. 4,067,249, Cl. 297-330.000.

Deutsch, Leslie Joseph: *See—*
Deutsch, Ralph; and Deutsch, Leslie Joseph, 4,067,254, Cl. 84-101.000.

Deutsch, Ralph; and Deutsch, Leslie Joseph, to Deutsch Research Laboratories, Ltd. Frequency number controlled clocks. 4,067,254, Cl. 84-101.000.

Deutsch Research Laboratories, Ltd.: *See—*
Deutsch, Ralph; and Deutsch, Leslie Joseph, 4,067,254, Cl. 84-101.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Diehl, Walter; and Koehler, Wolfgang, 4,068,205, Cl. 338-25.000.
Laufer, Siegmar, 4,068,024, Cl. 427-220.000.
Volling, Axel, 4,067,954, Cl. 423-336.000.

Developing Techniques Laboratory, Inc.: *See—*
Gallina, Harold, 4,067,647, Cl. 353-19.000.

Devillard, Jacques, to Commissariat a l'Energie Atomique. Furnace for the production of spherical particles. 4,067,674, Cl. 425-8.000.

Dewees, John G.: *See—*
Abramson, Allan P.; Dewees, John G.; and Lasky, Richard J., 4,067,129, Cl. 40-563.000.

Dewell, Robert R. In-situ extraction of asphaltic sands by counter-current hydrocarbon vapors. 4,067,391, Cl. 166-303.000.

deZabala, Edward Francis: *See—*
Adams, Jim Mills; and deZabala, Edward Francis, 4,067,449, Cl. 214-1.00C.

Diaferia, Henry V.: *See—*
DiMatteo, Paul; and Diaferia, Henry V., 4,067,409, Cl. 180-6.500.

Diamond Power Specialty Corporation: *See—*
Foxworthy, Milton Kearney, 4,068,163, Cl. 324-207.000.

Diax Corporation: *See—*
Bell, William E., 4,068,125, Cl. 250-340.000.

Dickey-john Corporation: *See—*
Steffen, Ronald W., 4,068,223, Cl. 340-267.00R.

Dickore, Karlfried: *See—*
Draber, Wilfried; Dickore, Karlfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert Rudolf, 4,067,724, Cl. 71-93.000.

Dictaphone Corporation: *See—*
Allman, Charles E., 4,068,021, Cl. 427-116.000.

Diehl, Walter; and Koehler, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Resistance element for a resistance thermometer. 4,068,205, Cl. 338-25.000.

Diesel Kiki Co., Ltd.: *See—*
Aoki, Hachiro, 4,067,303, Cl. 123-140.00R.

Dieterich, Dieter: *See—*
Scholl, Hans-Joachim; Markush, Peter; and Dieterich, Dieter, 4,067,815, Cl. 252-8.100.

Dighton, Gaylon Le Roy: *See—*
Gessell, Donald Earl; Dighton, Gaylon Le Roy; and Valenzuela-Bernal, Luis Daniel, 4,067,822, Cl. 252-429.00B.

Digital Communications Corporation: *See—*
Werth, Andrew; and Lieberman, Harold, 4,068,104, Cl. 179-175.30R.

di Marco, Aurelio: *See—*
Lazzari, Ettore; Arcamone, Federico; and di Marco, Aurelio, 4,067,968, Cl. 424-180.000.
Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, 4,067,969, Cl. 424-180.000.

DiMatteo, Paul; and Diaferia, Henry V., to Dynell Electronics Corporation. Wheel chair arrangement. 4,067,409, Cl. 180-6.500.

Dingwall, Andrew Gordon Francis; and Rosenthal, Bruce David, to RCA Corporation. Direct-coupled cascade amplifier with automatically adjusted quiescent output signal level. 4,068,182, Cl. 330-9.000.

Dion, C. Norman: *See—*
Idemoto, Tom Y.; and Dion, C. Norman, 4,068,268, Cl. 360-78.000.

Dionics, Inc.: *See—*
Kravitz, Bernard L.; and Seaton, George R., 4,068,255, Cl. 357-56.000.

Director-General of the Agency of Industrial Science and Technology: *See—*
Yuki, Nakaji; and Yauchi, Akio, 4,067,894, Cl. 252-446.000.

Dlouhy, Jiri; and Zeller, Hans-Rudolf, to BBC Brown Boveri & Company Limited. Electrochromic display device with a contrast-enhancing adjuvant and method of producing the same. 4,067,644, Cl. 350-160.00R.

Dobb, Herbert Leonard. Air cushion pontoon freight helicopter. 4,067,516, Cl. 244-17.110.

Dobroborsky, Samuil Iosifovich. Hand-operated device for drilling blast-holes. 4,067,397, Cl. 173-32.000.

Docutel Corporation: *See—*
McLaughlin, Richard S.; Plaski, Walter; and Swartzendruber, Robert F., 4,067,267, Cl. 109-24.100.

Dodds, Ralph Lee; Green, Leland William; and Harris, Knight Llewellyn, to Harris, Knight L.; and Green, Leland W. Balance mechanism. 4,067,408, Cl. 177-210.00C.

Doerr, Wendel P.; and Rodgers, William C., to Hoover Ball and Bearing Co. Chair control mechanism. 4,067,610, Cl. 297-301.000.

Doherty, Walter G. Mold for making frusto-conical plugs. 4,067,538, Cl. 249-119.000.

Doi, Toshitada, to Sony Corporation. Binaural sound pickup. 4,068,091, Cl. 179-1.00G.

Doig, Kingsley F.: *See—*
Pittie, Willem H.; and Doig, Kingsley F., 4,067,952, Cl. 423-37.000.

Domes, E. A.: *See—*
Tamburino, James C.; Domes, E. A.; and Venere, Lawrence A., 4,067,410, Cl. 180-64.00R.

Donald, Robert C.: *See—*
Rice, Joseph A., Jr.; Moore, Larry W.; and Donald, Robert C., 4,068,208, Cl. 340-7.00R.

Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., to United States of America, Agriculture. Phosphorus, nitrogen, bromine containing polymers and process for producing flame retardant textiles. 4,067,687, Cl. 8-116.00P.

Donn Products, Inc.: *See—*
Downing, Lucien R., Jr., 4,067,156, Cl. 52-126.000.

Donnelly, William R., to Readi Temp, Inc. Exothermic composition and hot pack. 4,067,313, Cl. 126-263.000.

Dorma-Baubeschlag G.m.b.H. & Co. K. G.: *See—*
Tillmann, Horst, 4,067,084, Cl. 16-80.000.

Dorman, Richard A.; Kissinger, Curtis D.; and Lagace, Lawrence J., Jr., to Mechanical Technology Incorporated. Capacitance type non-contact displacement and vibration measuring device and method of maintaining calibration. 4,067,225, Cl. 73-1.0DV.

Dorr-Oliver Incorporated: *See—*
Willus, Charles Arthur; and Nyrop, Per, 4,067,494, Cl. 233-3.000.

Dostal, Gerhard: *See—*
Ahlisch, Hans-Dieter; Amann, Rolf; Bald, Franz; Dostal, Gerhard; Folster, Alfred; Schleh, Wolfgang; Kachele, Gunther; Kowallek, Rolf; and Schnaufer, Helmut, 4,067,602, Cl. 296-71.000.

Douglas, James L.: *See—*
Horning, Donald E.; Morris, Leeson R.; and Douglas, James L., 4,068,066, Cl. 544-105.000.

Douglas, Lawrence M., to Polaroid Corporation. Film advance mechanism. 4,068,244, Cl. 354-85.000.

Dow Chemical Company, The: *See—*
Budde, Paul B.; and Vatne, Robert D., 4,067,973, Cl. 424-226.000.
Garrett, Walter L., 4,067,829, Cl. 260-2.50F.
Gessell, Donald Earl; Dighton, Gaylon Le Roy; and Valenzuela-Bernal, Luis Daniel, 4,067,822, Cl. 252-429.00B.
Helberg, Gunnar I., 4,067,921, Cl. 260-680.00R.
McMillan, William J., 4,067,164, Cl. 52-309.120.
Olstowski, Franciszek, 4,067,834, Cl. 260-18.0TN.
Pierce, James K., 4,067,896, Cl. 260-454.000.
Platt, Alan E.; and Russell, Robert J., 4,068,064, Cl. 526-194.000.
Wagner, Eugene R., 4,067,998, Cl. 424-317.000.
Wasilczyk, George J., 4,067,831, Cl. 260-2.5AC.

Downing, Brian York: *See—*
Cadman, Philip Michael; and Downing, Brian York, 4,067,926, Cl. 260-836.000.

Downing, Lucien R., Jr., to Donn Products, Inc. Computer floor structure. 4,067,156, Cl. 52-126.000.

Draber, Wilfried; Dickore, Karlfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert Rudolf, to Bayer Aktiengesellschaft. N-(1,2,4-Triazin-5-on-4-yl)-glycines and herbicidal compositions. 4,067,724, Cl. 71-93.000.

Drake, George L., Jr.: *See—*
Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., 4,067,687, Cl. 8-116.00P.

Drakulic, Melvin. Curtain rod support. 4,067,151, Cl. 52-27.000.

Dravo Corporation: *See—*
Cappel, Fred, 4,067,727, Cl. 75-5.000.

Drescher, Gary Clyde. Swimmer's glove. 4,067,081, Cl. 9-308.000.

Dresser Europe, S.A.: *See—*
Hyde, Peter John; Cripps, Peter Kendall; Buchanan, Donald George; and Spalding, Robert George, 4,067,486, Cl. 222-26.000.

Dresser Industries, Inc.: *See—*
Weise, Stanley Allan, 4,067,386, Cl. 166-64.000.

Dronova, Lidia Mikhailovna: *See—*
Nikolaev, Igor Vladimirovich; Gornik, Leonid Avrumovich; Lednikov, Anatoly Ivanovich; and Dronova, Lidia Mikhailovna, 4,067,400, Cl. 173-134.000.

Drori, Mordeki. Filter construction. 4,067,812, Cl. 210-310.000.

Drukarch, Chaim Zalman, to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Method and device for detecting two different frequency amplitude and phase signals in a combined digital signal. 4,068,309, Cl. 364-484.000.

Ducloux, Maurice, to Rhone-Poulenc Industries. Heat-resistant flameproof compositions. 4,067,897, Cl. 260-45.70P.

Ducon Company, Inc., The: *See—*
Zenz, Frederick A., 4,067,704, Cl. 55-96.000.

Dulat, Marcel Louis; and Hennart, Claude, to Airwick Industries, Inc. Process for the preparation of insecticidal compositions based on carbamic esters. 4,067,990, Cl. 424-278.000.

Dullien, Francis A. L.; and Spink, Donald R. Gas scrubber and method of operation. 4,067,703, Cl. 55-92.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bigelow, John Howard, 4,067,740, Cl. 96-107.000.
Seney, John Seymour, 4,067,234, Cl. 73-144.000.
Vladuchick, Susan Anne, 4,067,879, Cl. 260-302.00F.

Duquenne, Claude Eugene Desire: *See—*
Germain, Roger Louis Elysee; and Duquenne, Claude Eugene Desire, 4,067,583, Cl. 277-27.000.

Durant, Graham John; Emmett, John Colin; Ganellin, Charon Robin; and Prain, Hunter Douglas, to Smith Kline & French Laboratories Limited. Pyridylbutylamino ethylene compounds. 4,067,984, Cl. 424-263.000.

DuRocher, Daniel J.: *See—*
DuRocher, Gideon A.; and DuRocher, Daniel J., 4,067,102, Cl. 29-622.000.

DuRocher, Gideon A.; and DuRocher, Daniel J., to Essex International, Inc. Methods of manufacturing tactile switch for keyboards and the like. 4,067,102, Cl. 29-622.000.

DuRocher, Gideon A., to Essex International, Inc. Method of making a multi-circuit electrical interconnector. 4,067,945, Cl. 264-104.000.

Durr, Albert M., Jr.: *See—*
Weimer, Dean Raymond; and Durr, Albert M., Jr., 4,068,052, Cl. 526-62.000.

Dutra, Gerard A., to Monsanto Company. O-Aryl N-phosphonomethylglycinonitriles and the herbicidal use thereof. 4,067,719, Cl. 71-86.000.

Dyakonov, Mikhail Nikolaevich: *See—*
Bezruk, Viktor Ivanovich; Dyakonov, Mikhail Nikolaevich; Lavrov, Ivan Stepanovich; Lazarev, Alexandr Nikolaevich; and Netupsky, Iosif Vulfovich, 4,067,735, Cl. 75-211.000.

Dynamic Seals Incorporated: *See—*
Schumacher, Roger R.; and Olson, William, 4,067,093, Cl. 29-156.50R.

Dynell Electronics Corporation: *See—*
DiMatteo, Paul; and Diaferia, Henry V., 4,067,409, Cl. 180-6.500.

Dzus Fastener Co., Inc.: *See—*
Schenk, Peter, 4,067,090, Cl. 24-221.00K.

Earl, Arthur W. Adjustable platform ski binding mount. 4,067,593, Cl. 280-617.000.

Earnest, Ernest R., to Hydragon Corporation, The. Multicycle turbine engine. 4,067,189, Cl. 60-39.18B.

Earrs, Inc.: *See—*
Ivey, Mary C., 4,067,341, Cl. 128-330.000.

Eastman Kodak Company: *See—*
Blakely, Robert Bruce; Fetterman, Clyde Leroy; and Warren, Horace Glynn, 4,067,694, Cl. 23-253.00R.

Eaton, Russell K.: *See—*
Richmond, James W.; and Eaton, Russell K., 4,067,403, Cl. 173-163.000.

Ebauches S.A.: *See—*
Huguenin, Freddy, 4,067,185, Cl. 58-50.00R.
Portmann, Hubert, 4,068,295, Cl. 363-60.000.
Schneiter, Ali, 4,068,230, Cl. 340-378.00R.

Eberhard, Norbert: *See—*
Krambrock, Wolfgang; Heep, Dieter; and Eberhard, Norbert, 4,067,622, Cl. 302-24.000.

Eberle, Robert A. Attache case with auxiliary access opening. 4,067,422, Cl. 190-41.00R.

Eck, Leonard F., to Kansas Jack, Inc. Vehicle axle straightening system. 4,067,222, Cl. 72-389.000.

Ecke, George G., to PPG Industries, Inc. Novel di(aryl)methyl alkyl sulfones. 4,067,909, Cl. 260-607.0AR.

Eckle, Otto; and Winger, Paul, to Komet Stahlhalter-und Werkzeugfabrik Robert Breuning GmbH. Facing and inside-turning head. 4,067,251, Cl. 82-1.200.

Edwards, Laroy H., to Chevron Research Company. Method for controlling mites. 4,068,000, Cl. 424-321.000.

Egami, Tsuneyuki: *See—*
Obayashi, Hideki; Kohama, Tokio; Kawai, Hisasi; and Egami, Tsuneyuki, 4,067,233, Cl. 73-116.000.

Eggenberger, Heinrich: *See—*
Kuhnlein, Werner; Eggenberger, Heinrich; and Minet, Heinz Walter, 4,068,089, Cl. 178-22.000.

Ehrlich, Josef, to Outboard Marine Corporation. Two-stroke internal combustion engine and method of operation thereof. 4,067,302, Cl. 123-73.0AA.
Eisai Co., Ltd.: *See—*
Kanno, Tomio, 4,068,001, Cl. 424-331.000.
Miyata, Makoto, 4,068,003, Cl. 424-331.000.
Ekeborg, Bo Gunnar: *See—*
Lofgren, Stig-Gunnar; and Ekeborg, Bo Gunnar, 4,067,268, Cl. 111-2.000.
Elberton Granite Association, Inc.: *See—*
Tessner, Roy Lynnard, 4,067,312, Cl. 125-21.000.
Electro Corporation: *See—*
Wilson, Michael A., 4,068,189, Cl. 331-65.000.
Electromedia, Inc.: *See—*
Solomon, Frank, 4,067,788, Cl. 204-96.000.
Electronique Marcel Dassault: *See—*
Vallas, Gilbert, 4,068,228, Cl. 340-347.0AD.
Elektriska Svetsningsaktiebolaget: *See—*
Larsson, Rolf Gosta, 4,068,110, Cl. 219-56.000.
Elias, James A., deceased (by Elias, June G., executrix); Newby, John R.; and Pierson, Marvin B., to Armco Steel Corporation. Cold rolled, ductile, high strength steel strip and sheet and method therefor. 4,067,754, Cl. 148-12.00F.
Elias, June G., executrix: *See—*
Elias, James A., deceased; Newby, John R.; and Pierson, Marvin B., 4,067,754, Cl. 148-12.00F.
Elle, Ralph C.; and Walker, Jerry L., to Northwest Pipe & Casing Co. Pipe testing apparatus. 4,067,228, Cl. 73-49.100.
Ellis, Stephen Robert Mercer; Priestley, Ronald; and McKeown, Kevin Joseph, to Mass Transfer Limited. Fluid-fluid contact apparatus. 4,067,936, Cl. 261-98.000.
Eltro GmbH Gesellschaft fur Strahlungstechnik: *See—*
Baruschke, Holger; and Wulf, Gerhard, 4,067,950, Cl. 264-257.000.
Emerson Electric Co.: *See—*
Behr, Joseph L., 4,067,203, Cl. 62-208.000.
Emery, Guy. Recovery of mixed plastic materials. 4,067,826, Cl. 260-2.300.
Emery Industries, Inc.: *See—*
Sturwold, Robert J., 4,067,817, Cl. 252-49.300.
White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, 4,067,823, Cl. 252-431.00C.
Emhart Industries, Inc.: *See—*
Jones, Stanley Peter, 4,067,711, Cl. 65-319.000.
Spurr, Robert; Dahms, Francis A.; and Sarkozy, Francis A., 4,067,438, Cl. 198-805.000.
Emmett, John Colin: *See—*
Durant, Graham John; Emmett, John Colin; Ganellin, Charon Robin; and Prain, Hunter Douglas, 4,067,984, Cl. 424-263.000.
Empire Automotive, Inc.: *See—*
Green, Hal; and Hewson, Kenneth E., 4,067,605, Cl. 296-137.00B.
Enami, Shiro: *See—*
Mukaemachi, Takuji; and Enami, Shiro, 4,068,215, Cl. 340-166.00R.
Endo, Hajime: *See—*
Nakajima, Shigeo; Takahashi, Ken; Itoh, Tsunetoshi; and Endo, Hajime, 4,067,618, Cl. 299-31.000.
Endo, Shiro: *See—*
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Jegousse, Michel J., 4,067,199, Cl. 61-63.000.
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Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,067,799, Cl. 208-112.000.
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Ezis, Andre; and Nicholson, John M., to Ford Motor Company. Method of manufacturing a slip cast article. 4,067,943, Cl. 264-86.000.
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Fan, George Jee; Lo, David Chan-Wai; and Mitchell, Joseph William, to International Business Machines Corporation. Vector magnetic ink jet printer with stabilized jet stream. 4,068,240, Cl. 346-75.000.
Fanghanel, Peter Frederick Walter, to P. Fanghanel & Co. Ltd. Tape edge closing machine. 4,067,269, Cl. 112-3.00R.
Farris, Richard W. Odor control device. 4,067,692, Cl. 21-74.00R.
Feeder One, Inc.: *See—*
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Fehlner, Francis P.; and Ortabasi, Ugur, to Corning Glass Works. Solar heat pipe. 4,067,315, Cl. 126-271.000.
Fehrer, Ernst. Fiber-disintegrating unit for a spinning machine. 4,067,181, Cl. 57-58.910.
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Felburn, John Phil. Self loading refuse vehicle with a discharge gate in the loading means. 4,067,470, Cl. 214-503.000.
Feldman, Benjamin. Hand-holdable gun for longitudinal extrusion of a thermoplastic-type medium therefrom and removable heat sleeve therefor. 4,067,481, Cl. 222-146.0HE.
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Klaus, Gerald R., 4,067,127, Cl. 40-16.400.
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Fenton, Russell R. Cover assembly for open top truck bodies. 4,067,603, Cl. 296-100.000.
Feretto, Fredrick R. Circular waterbed. 4,067,077, Cl. 5-365.000.
Ferguson, Gerald D., to United States of America, Navy. Laser system having frequency doubling. 4,068,190, Cl. 331-94.50C.
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Ferrigno, William L., to General Electric Company. Dimmer with increased switching capacity. 4,068,289, Cl. 361-389.000.
Ferrigno, William L., Jr., to General Electric Company. Control for remote control wiring system. 4,068,296, Cl. 361-190.000.
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Field, Peter Graham Spencer; and Bennett, Ronald, to Burmah Oil Trading Limited. Production of phenols. 4,067,912, Cl. 260-621.00C.
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Fike, Lester Lyman, Jr., 4,067,154, Cl. 52-99.000.
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Finnen, Gerald W., to Westinghouse Electric Corporation. Tamper proof watthour meter enclosure having a permanent locking arrangement. 4,068,288, Cl. 361-369.000.
Finsterwald, Emil, to Schweizerische Lokomotiv-und Maschinenfabrik. Rack and pinion and adhesion drive locomotive. 4,067,260, Cl. 105-29.00R.
Fiorentino, Elio, to Rohm and Haas Company. Adsorption process. 4,067,854, Cl. 260-57.00R.
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Fisher, Michael H.; Smith, George B.; and Hoff, Dale R., to Merck & Co., Inc. Stabilized oxadiazole anthelmintic compositions. 4,067,987, Cl. 424-272.000.
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Forkner, John H. Food product containing expanded cellular material and method of manufacture. 4,068,007, Cl. 426-106.000.
Forno, Lorenzo. Interconnectible prefabrication elements. 4,067,089, Cl. 24-205.13R.
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Foxworthy, Milton Kearney, to Diamond Power Specialty Corporation. Reed switch oscillator assembly for a position indicating system. 4,068,163, Cl. 324-207.000.
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Franklin, Charles H.; Vinton, Clarence S.; and Geen, Henry C., to Chemotronics International, Inc. Reticulated anisotropic porous vitreous carbon. 4,067,956, Cl. 423-445.000.
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Frey, William J., to Celanese Corporation. Pipe coupler assembly. 4,067,534, Cl. 285-319.000.
Friauf, Walter S., to United States of America, Health, Education and Welfare. Display enhancement technique for video moving trace display. 4,068,310, Cl. 364-521.000.
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Fujiwara, Shinji; and Shibata, Takuo, to Matsushita Electric Industrial Co., Ltd. Photoconductor element and method of making the element. 4,068,253, Cl. 357-31.000.
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Furuya, Tsutomu; Ayabe, Shinichi; Kobayashi, Miyuki; and Tanimoto, Tadao, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Echinatin glycosides and their preparation. 4,067,142, Cl. 47-58.000.
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Garland, Ian Philip; Hatton, Leslie Roy; Leeds, William George; and Parnell, Edgar William, to May & Baker Limited. Pyridazine pesticides. 4,067,723, Cl. 71-92.000.
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Garsten, Carl-Johan; and Grewin, Jan V. Method of distributing cargo. 4,067,468, Cl. 214-152.000.
Garvie, Ronald Charles; Hannink, Richard Henri Jan; and Pascoe, Richard Terry, to Commonwealth Scientific and Industrial Research Organization. Ceramic materials. 4,067,745, Cl. 106-57.000.
Gasbarro, Geno N. Automatic poultry cutting apparatus. 4,067,085, Cl. 17-11.000.
Gasser, Edward Bruce, to Colgate-Palmolive Company. Process for dispensing pressurized fluent material. 4,067,480, Cl. 222-146.0HA.
Gassman, Paul G., to Ohio State University Research Foundation, The. Certain N-phenyl or N-pyridyl aza sulfonium salts. 4,067,875, Cl. 260-294.80E.
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Roux, Etienne; Goodey, James Golden; Gaudin, Antoine M., deceased; and Gaudin, Anna B., executrix, 4,067,953, Cl. 423-80.000.
Gaughan, Edmund J., to Stauffer Chemical Company. N-Carbamoyl ethyl oxanilates. 4,068,079, Cl. 544-165.000.
Gauri, Kailash Kumar, to Robugen GmbH. ω-Substituted alkanes and 1-hydroxyalkanes. 4,067,877, Cl. 260-297.00Z.
Gavini, Donald Robert: *See—*
Rutty, Edward Charles; Czerwinski, Frank Gregory; Van Zelderen, Henderik; and Gavini, Donald Robert, 4,067,513, Cl. 242-107.300.
Gazizov, Raif Timergalievich: *See—*
Simonov, Vadim Dmitrievich; Gazizov, Raif Timergalievich; Simonov, Vladimir Vadimovich; Voronenko, Boris Ivanovich; and Karpova, Vera Vladimirovna, 4,067,887, Cl. 260-346.740.
Gebhart, Daniel E.; Meints, Edward G.; and Smith, Brace C., to Caterpillar Tractor Co. Thermally compensated variable turbine nozzle position indicator. 4,067,661, Cl. 415-118.000.
Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Lanfermann, Willy, 4,067,620, Cl. 299-43.000.
Gebruder Buhler AG: *See—*
Oetiker, Hans, 4,067,238, Cl. 73-228.000.
Geen, Henry C.: *See—*
Franklin, Charles H.; Vinton, Clarence S.; and Geen, Henry C., 4,067,956, Cl. 423-445.000.
Geeren, Hermann; and Fabian, Wolfgang, to BASF Aktiengesellschaft. Manufacture of polychloro-copper phthalocyanines. 4,067,881, Cl. 260-314.500.
Gehry, Frank O. Article of furniture or the like. 4,067,615, Cl. 297-445.000.
General Electric Company: *See—*
Anderson, Thomas E.; Peak, Steven C.; and Ibsen, Ole N., 4,068,294, Cl. 363-58.000.
Boliver, Vincent J.; and Tachick, Henry N., 4,067,636, Cl. 339-143.00C.
Brown, Ronald H.; and Bale, Richard W., 4,067,106, Cl. 29-734.000.
Chen, Arthur C. M.; Barber, William D.; Berninger, Walter H.; Carlson, Gerald J.; Gittinger, Norman C.; and Whitten, James R., 4,068,306, Cl. 364-414.000.
Ferrigno, William L., 4,068,289, Cl. 361-389.000.
Ferrigno, William L., Jr., 4,068,296, Cl. 361-190.000.
Gillis, James A., 4,068,177, Cl. 325-492.000.
Harnden, John D., Jr., 4,068,281, Cl. 361-106.000.
Mark, Victor, 4,067,846, Cl. 260-45.9KA.
Owen, William S., Jr.; and Lovejoy, George C., 4,067,250, Cl. 81-9.510.
Rabatin, Jacob G., 4,068,129, Cl. 250-483.000.
Russell, Ronald R., 4,068,283, Cl. 361-205.000.
Turner, Roger C., 4,067,256, Cl. 85-32.00V.
Whiteley, Eric, 4,068,143, Cl. 310-268.000.
Zampini, Louis, Jr.; and Stefani, Joseph P., 4,067,169, Cl. 53-3.000.
General Foods Corporation: *See—*
Nelson, Fredolf O., 4,067,760, Cl. 156-157.000.
Rispoli, Joseph M.; Rogers, Morris A.; Shaw, Janice Raiford; and Russo, Joseph J., 4,068,009, Cl. 426-291.000.
General Signal Corporation: *See—*
McEathron, Eugene Douglas, 4,067,624, Cl. 303-69.000.
General Staple Co., Inc.: *See—*
Zahn, Irwin; Meisinger, Wilhelm R.; and Fischer, Edward M., 4,067,105, Cl. 29-628.000.
George, K. A.: *See—*
Flaith, George Donald; and George, K. A., 4,067,318, Cl. 34-208.000.
Georgia, Mark H.: *See—*
Ghormley, Kristine D.; and Georgia, Mark H., 4,068,095, Cl. 179-2.0DP.
Georgia-Pacific Corporation: *See—*
Howe, William J., 4,067,442, Cl. 206-433.000.
Georgopapadakos, Agis M.; and Sigalas, George S. Apparatus for gas scrubbing and particulate solids removal. 4,067,706, Cl. 55-239.000.
Germain, Roger Louis Elysee; and Duquenne, Claude Eugene Desire, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Sealing device with closure system for compressor. 4,067,583, Cl. 277-27.000.

Gessell, Donald Earl; Dighton, Gaylon Le Roy; and Valenzuela-Bernal, Luis Daniel, to Dow Chemical Company, The. High efficiency complex catalyst for polymerizing olefins. 4,067,822, Cl. 252-429.00B.
Gewerkschaft Eisenhutte Westfalia: *See—*
Peters, Wolfgang; Hauschopp, Alois; and Merten, Gerhard, 4,067,619, Cl. 299-43.000.
Ghormley, Kristine D.; and Georgia, Mark H., to Spencer Cleveland. Portable terminal with self-contained collapsible stand. 4,068,095, Cl. 179-2.0DP.
Gibson, Clark E. Automatic drift corrector. 4,067,519, Cl. 244-175.000.
Gilbert Associates Inc.: *See—*
Switzer, George W., 4,067,700, Cl. 48-210.000.
Gillespie, Bernard M.: *See—*
Chen, Nai Yuen; Gillespie, Bernard M.; Ireland, Henry R.; and Stein, Thomas R., 4,067,797, Cl. 208-15.000.
Gillet, Roger; and Carlier, Jacques, to Societe Generale de Constructions Electriques et Mecaniques Alsthom. Device for fixing winding bars on a stator of an electric rotating machine. 4,068,142, Cl. 310-214.000.
Gillis, James A., to General Electric Company. Electronic control circuit. 4,068,177, Cl. 325-492.000.
Giovanelli, Armand: *See—*
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, 4,067,469, Cl. 214-152.000.
Giraud, Francois Louis, to Savec, Societe Anonyme. Braking balance for vehicle moving on conveyor. 4,067,421, Cl. 188-195.000.
Girling Limited: *See—*
Ostrowski, Piotr, 4,067,417, Cl. 188-71.400.
Rath, Heinrich Bernhard; Madzgalla, Hans Georg; and Micke, Sigma, 4,067,418, Cl. 188-72.400.
Gist-Brocades N.V.: *See—*
Bruynes, Cornelis Adrianus; and Van der Drift, Johannes Karel, 4,067,986, Cl. 424-271.000.
Gittinger, Norman C.: *See—*
Chen, Arthur C. M.; Barber, William D.; Berninger, Walter H.; Carlson, Gerald J.; Gittinger, Norman C.; and Whitten, James R., 4,068,306, Cl. 364-414.000.
Giudicelli, Don Pierre Rene Lucien: *See—*
Najer, Henry; Giudicelli, Don Pierre Rene Lucien; Manoury, Philippe Michel Jacques; and Roger, Jean-Marie Louis Eugene, 4,067,996, Cl. 424-308.000.
Giuliani, David J.: *See—*
Tobey, Morley C., Jr.; Giuliani, David J.; and Ashkin, Peter B., 4,068,134, Cl. 307-297.000.
Givaudan Corporation: *See—*
Frater, Georg; Sigg-Grutter, Trudi; and Wild, Jost, 4,067,910, Cl. 260-609.00R.
Naegeli, Peter, 4,068,084, Cl. 560-122.000.
Tavares, Robert F.; and Katten, Elliot, 4,067,906, Cl. 260-586.00G.
Glabe, Elmer F.; and Rebhan, Herbert J., to Food Technology Products. Control of hemorrhagic enteritis in turkeys. 4,067,999, Cl. 424-317.000.
Gladstone, Shaul; Rao, Srinivasa R.; and Rosshirt, C. Joseph, to Witco Chemical Corporation. Method for preparing mercapto propionic acid esters and polythio dipropionic acid esters. 4,067,901, Cl. 560-147.000.
Glaser, Edward Lewis: *See—*
Dechant, Thomas Edward; Glaser, Edward Lewis; Pitt, Paul Eldred; and Way, Frederick, III, 4,068,298, Cl. 364-200.000.
Glaxo Laboratories Limited: *See—*
Walker, Derek; and Chapman, Philip Howard, 4,067,858, Cl. 260-78.00A.
Glick, William F., to Western Electric Company, Inc. Methods of strengthening bonds. 4,068,022, Cl. 427-125.000.
Godai, Tomokazu; Aida, Isao; and Nakagaki, Masatoshi, to Kobe Steel, Ltd. Bare electrode for welding of low temperature steel. 4,068,113, Cl. 219-146.230.
Goetz, Norbert; Zeeh, Bernd; Decker, Martin; Hupfer, Leopold; and Toussaint, Herbert, to BASF Aktiengesellschaft. Manufacture of N-substituted tetrahydro-1,4-oxazines. 4,068,077, Cl. 544-178.000.
Goldammer, Georg, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Resolving roller. 4,067,625, Cl. 308-149.000.
Goldstein, Joseph. Stretch wrap machine. 4,067,174, Cl. 53-184.00R.
Goloff, Alexander, to Caterpillar Tractor Co. Rotary mechanism with agitators in the rotor coolant cavities. 4,067,669, Cl. 418-53.000.
Goloff, Alexander, to Caterpillar Tractor Co. Internal combustion engine with insulated piston. 4,067,670, Cl. 418-61.00A.
Goloff, Alexander, to Caterpillar Tractor Co. Means for locking housing parts against relative movement. 4,067,671, Cl. 418-149.000.
Goodenough, David J., to United States of America, Health, Education and Welfare. X-ray generating apparatus comprising means for rotating the filament. 4,068,127, Cl. 250-402.000.
Goodey, James Golden: *See—*
Roux, Etienne; Goodey, James Golden; Gaudin, Antoine M., deceased; and Gaudin, Anna B., executrix, 4,067,953, Cl. 423-80.000.
Goodfellow, Andrew Culross: *See—*
Juriss, Ivan Bertram; Hay, Roger Douglas; Goodfellow, Andrew Culross; Townson, Thomas; and Hay, Keith Eric, 4,067,159, Cl. 52-234.000.
Goodyear Tire & Rubber Company, The: *See—*
Wilson, Farris H., Jr., 4,067,933, Cl. 260-930.000.
Gordon, Harry W.; and Schaffner, Carl P., to Schmid Laboratories, Inc. Method of treating hypercholesterolemia with antibiotic SCH-16656. 4,067,966, Cl. 424-119.000.
Gorin, Everett, to Continental Oil Company. Production of a hydrogen-rich gas from a co-containing fuel gas. 4,067,958, Cl. 423-657.000.
Gorman, Lee V.: *See—*
Floyd, Robert D.; and Gorman, Lee V., 4,068,307, Cl. 364-424.000.
Gornik, Leonid Avrumovich: *See—*
Nikolaev, Igor Vladimirovich; Gornik, Leonid Avrumovich; Lednikov, Anatoly Ivanovich; and Dronova, Lidia Mikhailovna, 4,067,400, Cl. 173-134.000.
Gosch, Thomas F.: *See—*
Confer, Raymond C.; and Gosch, Thomas F., 4,067,614, Cl. 297-438.000.
Goss, John B.; and Morrow, William D. Safety device for cranes. 4,067,447, Cl. 212-86.000.
Goto, Kiyoshi: *See—*
Konno, Ryozo; Goto, Kiyoshi; and Matsubara, Toru, 4,067,791, Cl. 204-159.150.
Gotoh, Miyuki. Apparatus of stopping operation of a weaving loom. 4,067,365, Cl. 139-370.100.
Gould Inc.: *See—*
Krueger, Keith T., 4,068,200, Cl. 335-172.000.
Governor of Tokyo Metropolis: *See—*
Oda, Jun; Koga, Einosuke; Endo, Shiro; Aizawa, Ichiro; and Nishihara, Kyoko, 4,067,321, Cl. 128-2.10E.
Graham, Andrew Stuard, Jr.; and Berg, Coleman David, to Fort Howard Paper Company. Paper towel dispenser and transfer mechanism. 4,067,509, Cl. 242-55.300.
Graham, Richard E., to NCR Corporation. Control means for an optical bar code serial printer. 4,068,227, Cl. 340-347.0DD.
Graudums, Ivars; Muckter, Heinrich; and Frankus, Ernst, to Chemie Grunenthal GmbH. Lactum drug compositions. 4,067,985, Cl. 424-267.000.
Grebe, Byron C.: *See—*
Lowe, James N.; and Grebe, Byron C., 4,067,939, Cl. 264-42.000.
Grechinsky, Dmitry Alexeevich: *See—*
Yakshin, Alexandr Sergeevich; Novikov, Oleg Nikolaevich; Grechinsky, Dmitry Alexeevich; Klochko, Viktor Alexandrovich; and Rygalin, Viktor Georgievich, 4,067,231, Cl. 73-658.000.
Green, Andrew J. Animal trap. 4,067,136, Cl. 43-93.000.
Green, Glen R.; and Hodges, Joseph L., to Ore-Ida Foods, Inc. Method of peeling onions by scalding and cutting. 4,068,011, Cl. 426-482.000.
Green, Hal; and Hewson, Kenneth E., to Empire Automotive, Inc. Detachable sun roof panel for automobiles. 4,067,605, Cl. 296-137.00B.
Green, Joseph: *See—*
Versnel, John; and Green, Joseph, 4,067,930, Cl. 260-880.00R.
Green, Leland W.: *See—*
Dodds, Ralph Lee; Green, Leland William; and Harris, Knight Llewellyn, 4,067,408, Cl. 177-210.00C.
Green, Leland William: *See—*
Dodds, Ralph Lee; Green, Leland William; and Harris, Knight Llewellyn, 4,067,408, Cl. 177-210.00C.
Greenawalt, Monte H. Therapeutic apparatus for stimulation of acupuncture meridians. 4,067,324, Cl. 128-57.000.
Greene, Frederick C., to Shepherd Products U.S. Inc. Composite caster. 4,067,083, Cl. 16-45.000.
Greene, Hilliard Frank, Sr. Resilient footwear heel. 4,067,125, Cl. 36-35.00R.
Greene, Tweed & Co., Inc.: *See—*
Berg, Thorval L., 4,067,407, Cl. 277-153.000.
Greenwald, Robert J. Fecal examination device. 4,067,443, Cl. 206-459.000.
Grefco, Inc.: *See—*
Ruff, David L.; Stewart, Sherman A.; and Tarbell, Harlan E., 4,067,155, Cl. 52-105.000.
Gretag Aktiengesellschaft: *See—*
Kuhnlein, Werner; Eggenberger, Heinrich; and Minet, Heinz Walter, 4,068,089, Cl. 178-22.000.
Schmid, Pierre; Brunner, Eduard; and Stofer, Walter, 4,068,094, Cl. 179-1.50R.
Grewin, Jan V.: *See—*
Garsten, Carl-Johan; and Grewin, Jan V., 4,067,468, Cl. 214-152.000.
Gribble, Joseph J.: *See—*
Karch, Walter C.; and Gribble, Joseph J., 4,068,201, Cl. 335-173.000.
Griffin, Anselm C., Jr.: *See—*
Mangialardi, Gino J., Jr.; and Griffin, Anselm C., Jr., 4,068,167, Cl. 324-65.00P.
Griffith, James R.; and O'Rear, Jacques G., to United States of America, Navy. N,N'-bis(3,4-dicyanophenyl) alkanediamide, polyphthalocyanines, and preparation thereof. 4,067,860, Cl. 260-78.0TF.
Groft, James Leon; Hudson, William Jeffrey, Jr.; and Huffnagle, Clifton Wesley, to AMP Incorporated. Cam actuated low insertion force connector. 4,067,633, Cl. 339-74.00R.
Grohoski, Raymond J.; and Thompson, Harwell B., to Timex Corporation. Rotatable crystal and bezel assembly for achieving special visual effects in a timepiece. 4,067,186, Cl. 58-91.000.
Gronvall, Karl Olof Ragnar; and Nystrom, Per Henrik Gosta, to Forenade Fabriksverken. System for supplying fuel and combustion air to an external combustion engine. 4,067,191, Cl. 60-39.270.
Grosse Webereimaschinen GmbH, Firma: *See—*
Keim, Walter, 4,067,363, Cl. 139-59.000.
Grune, Per-Olof: *See—*
Berneryd, Sten; and Grune, Per-Olof, 4,068,108, Cl. 200-148.00B.
GTE Automatic Electric Laboratories Incorporated: *See—*
Weise, Volker B., 4,068,173, Cl. 325-184.000.

GTE Laboratories Incorporated: *See—*
Zemon, Stanley A.; and Dakss, Mark L., 4,068,191, Cl. 331-94.50M.
GTE Sylvania Incorporated: *See—*
Chenot, Charles Frederic; Mathers, James Evan; and Shaffer, Francis Nathan, 4,068,128, Cl. 250-483.000.
Madoff, Herbert S., 4,068,199, Cl. 332-19.000.
Otto, Jeffrey C., 4,068,198, Cl. 332-19.000.
Guinn, David C.; Haggard, Archie K.; and Thomas, John P. Releasable and retrievable mooring system. 4,067,282, Cl. 114-230.000.
Gulden, Byk: *See—*
Klemm, Kurt; Schoetensack, Wolfgang; and Prusse, Wolfgang, 4,067,982, Cl. 424-250.000.
Gullfiber AB: *See—*
Korpela, Heikki; Norrhede, Lars; and Warna, Ralf, 4,067,672, Cl. 425-4.00C.
Guthrie, Elwin Arthur: *See—*
Konyak, John Francis; Troxtel, Edrol Ford; Schuman, George Mundy, Jr.; Maguire, Andrew Hugh; and Guthrie, Elwin Arthur, 4,067,549, Cl. 74-579.00R.
Gutierrez, Eddie N.: *See—*
Reardon, Robert C., Jr.; and Gutierrez, Eddie N., 4,067,886, Cl. 260-340.700.
Guyot, Patrick: *See—*
Sigwalt, Pierre; Guyot, Patrick; Fontanille, Michel; and Vairon, Jean-Pierre, 4,067,917, Cl. 260-665.00R.
Gyugyi, Laszlo, to Westinghouse Electric Corporation. Fast current measurement apparatus for static VAR generator compensator control circuit and method for using same. 4,068,159, Cl. 323-119.000.
H. B. Zachry Company: *See—*
Park, John Allen, 4,067,291, Cl. 118-7.000.
Hada, Yoshiyuki: *See—*
Segawa, Masahiro; Ota, Mitsuru; and Hada, Yoshiyuki, 4,068,034, Cl. 428-263.000.
Haga, Ryooichi: *See—*
Ishida, Masahiko; Haga, Ryooichi; and Odawara, Youji, 4,067,801, Cl. 210-5.000.
Hage, Jacobus J.: *See—*
Reijnders, Arnoldus J.; Hage, Jacobus J.; and Segers, Peter J., 4,067,160, Cl. 52-245.000.
Haggard, Archie K.: *See—*
Guinn, David C.; Haggard, Archie K.; and Thomas, John P., 4,067,282, Cl. 114-230.000.
Haines, Walter E.; and Richardson, Mason E., to Estan Manufacturing Company. Dipstick with pressure relief valve. 4,067,113, Cl. 33-126.70R.
Hall, Donald S. B., to Westinghouse Electric Corporation. Manual operator for a pushbutton control device. 4,068,109, Cl. 200-332.000.
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., to International Flavors & Fragrances Inc. Use of 1-(2-propenyl)-3-(4-methyl-3-pentenyl)-Δ^3-cyclohexene-1-carboxaldehyde and 1-(2-propenyl)-4-(4-methyl-3-pentenyl)-Δ^3-cyclohexene-1-carboxaldehyde. 4,068,012, Cl. 426-538.000.
Haller, J. Gilbert. Self-injecting hypodermic syringe device. 4,067,334, Cl. 128-218.00A.
Halliburton Company: *See—*
Austin, Carl E.; Hamilton, Ramon K.; and Qualls, W. L., 4,067,349, Cl. 138-97.000.
Streich, Steven G., 4,067,358, Cl. 137-624.130.
Halpine, Joseph Charles. Valve having integrity assurance means. 4,067,352, Cl. 137-312.000.
Hamel, Edmund, to Evolution S.A. Filament-winding mechanism. 4,067,507, Cl. 242-18.0DD.
Hamilton, Ramon K.: *See—*
Austin, Carl E.; Hamilton, Ramon K.; and Qualls, W. L., 4,067,349, Cl. 138-97.000.
Hamm, James R.; and Singh, Prith P., to Westinghouse Electric Corporation. Catalytic gas turbine combustor with a fuel-air premix chamber. 4,067,190, Cl. 60-39.69A.
Hammann, Ingeborg: *See—*
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Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,068,002, Cl. 424-322.000.
Hamon, Jean-Francois: *See—*
Buret, Jean-Pierre; Hercelin, Bernard; Hamon, Jean-Francois; and Balea, Trajan, 4,067,988, Cl. 424-272.000.
Hanna Mining Company, The: *See—*
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Hannink, Richard Henri Jan: *See—*
Garvie, Ronald Charles; Hannink, Richard Henri Jan; and Pascoe, Richard Terry, 4,067,745, Cl. 106-57.000.
Hanson, Alfred K., Jr.: *See—*
Harris, Leonard; and Hanson, Alfred K., Jr., 4,067,789, Cl. 204-119.000.
Hanson, Raymond A. Apparatus for in situ lining of an upwardly open shaft with monolithic concrete. 4,067,675, Cl. 425-59.000.
Harada, Toshiaki: *See—*
Shimada, Keizo; Harada, Toshiaki; Koga, Masahiro; and Nagahama, Shizuo, 4,067,870, Cl. 260-287.00F.
Harmon, Grady R., to Weyerhaeuser Company. Whole tree extraction device. 4,067,369, Cl. 144-34.00R.
Harnden, John D., Jr., to General Electric Company. Thermally responsive metal oxide varistor transient suppression circuit. 4,068,281, Cl. 361-106.000.
Harrington, Herman J.: *See—*
Annis, Myron C.; Hoch, Donald W.; and Harrington, Herman J., 4,067,843, Cl. 260-37.00N.
Harris, Charles Richard: *See—*
Garner, Lloyd L.; and Harris, Charles Richard, 4,067,406, Cl. 175-341.000.
Harris, Knight L.: *See—*
Dodds, Ralph Lee; Green, Leland William; and Harris, Knight Llewellyn, 4,067,408, Cl. 177-210.00C.
Harris, Knight Llewellyn: *See—*
Dodds, Ralph Lee; Green, Leland William; and Harris, Knight Llewellyn, 4,067,408, Cl. 177-210.00C.
Harris, Leonard; and Hanson, Alfred K., Jr., to Newmont Exploration Limited. Process for manganese removal from zinc metal bearing solutions. 4,067,789, Cl. 204-119.000.
Harrison, George C., to Polaroid Corporation. Regulated strobe with hysteresis. 4,068,151, Cl. 315-241.00P.
Harrison, Stanley. Water saver flush valve mechanism. 4,067,074, Cl. 4-324.000.
Harry Feick Co., Inc.: *See—*
Ittner, Nelson Carl, 4,067,094, Cl. 29-156.80R.
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Ames, Victor H.; and Hartelius, Marshall V., 4,067,259, Cl. 105-26.00R.
Hartlage, James A.: *See—*
Cronberg, Alvin D.; Hartlage, James A.; and Cotton, Joe W., 4,067,802, Cl. 210-21.000.
Hartley, Allen W. Purse theft alarm. 4,067,290, Cl. 116-99.000.
Harvey Hubbell, Incorporated: *See—*
Hoffman, Ernest Gerhard, 4,067,634, Cl. 339-107.000.
Hasbro Development Corporation: *See—*
Cederholm, Carl; and Hudson, Robert H., 4,067,138, Cl. 46-44.000.
Hashimoto, Tadahiro; Okuyama, Yasushi; Koguchi, Toshio; Wada, Koji; Sakamoto, Mitsuru; Yanagawa, Takayuki; and Yamamoto, Kyoji, to Nippon Electric Co., Ltd. Process for preparing a mask for use in manufacturing a semiconductor device. 4,068,018, Cl. 427-38.000.
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Bechtle, Bastian; Bleher, Hartmut J.; Hasselmeier, Helmut; Spruth, Wilhelm G.; Stucki, Peter; and Weis, Helmut, 4,068,224, Cl. 340-324.0AD.
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Bhaumik, Mani L.; and Hasserjian, Gerard, 4,068,195, Cl. 331-94.50G.
Hassler, Heinrich; and Kippenberg, Horst, to Siemens Aktiengesellschaft. Method for the manufacture of multilayered contacts for medium-voltage vacuum power circuit breakers. 4,067,379, Cl. 164-69.000.
Hatton, Leslie Roy: *See—*
Garland, Ian Philip; Hatton, Leslie Roy; Leeds, William George; and Parnell, Edgar William, 4,067,723, Cl. 71-92.000.
Hauschildt, Frank William; and Bertolacini, Ralph J., to Standard Oil Company (Indiana). Catalytic cracking process. 4,067,798, Cl. 208-92.000.
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Peters, Wolfgang; Hauschopp, Alois; and Merten, Gerhard, 4,067,619, Cl. 299-43.000.
Hay, Keith Eric: *See—*
Juriss, Ivan Bertram; Hay, Roger Douglas; Goodfellow, Andrew Culross; Townson, Thomas; and Hay, Keith Eric, 4,067,159, Cl. 52-234.000.
Hay, Roger Douglas: *See—*
Juriss, Ivan Bertram; Hay, Roger Douglas; Goodfellow, Andrew Culross; Townson, Thomas; and Hay, Keith Eric, 4,067,159, Cl. 52-234.000.
Hayashi, Masaaki; Tsuneta, Kazuyoshi; Sasaki, Hiroharu; and Takada, Hiroshi, to Dai Nippon Toryo Co., Ltd. Chelate-forming aqueous resin composition. 4,067,838, Cl. 260-29.2TN.
Hayashi, Masayuki: *See—*
Kazaoka, Kenichi; and Hayashi, Masayuki, 4,067,533, Cl. 248-397.000.
Hayashibara Biochemical Laboratories, Incorporated: *See—*
Matsunaga, Hiroomi; Tsuji, Kozo; and Watanabe, Masashi, 4,067,141, Cl. 47-57.600.
Haynes, Harold George, to Fisons Limited. Process for preparing a 4-hydroxy-benzodioxol. 4,067,883, Cl. 260-340.50R.
Heep, Dieter: *See—*
Krambrock, Wolfgang; Heep, Dieter; and Eberhard, Norbert, 4,067,622, Cl. 302-24.000.
Hegar, Gert: *See—*
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Hegenberg, Peter: *See—*
List, Ferdinand; Rauhut, Otto; Hegenberg, Peter; and Strobele, Rudolf, 4,067,779, Cl. 203-28.000.
Heimbach, Paul: *See—*
Wilke, Gunther; and Heimbach, Paul, 4,067,918, Cl. 260-666.00A.
Heimberger, Helmut, to Optilon W. Erich Heilmann GmbH. Warp-knit slide-fastener support tape and method of making same. 4,067,208, Cl. 66-193.000.
Heimbruch, Howard H., to Foremost-McKesson, Inc. Demolding and brining of cheese. 4,068,014, Cl. 426-582.000.
Heimburger, Norbert: *See—*
Schwinn, Horst; and Heimburger, Norbert, 4,067,964, Cl. 424-105.000.

Heinemann Electric Company: *See—*
Unger, Robert P., 4,068,203, Cl. 337-56.000.
Heinz Schiepe, Holzbearbeitungs-Maschinen und Automaten, Firma: *See—*
Schiepe, Heinz, 4,067,457, Cl. 214-6.00M.
Heitzer, Helmut: *See—*
Beck, Gunther; Heitzer, Helmut; and Lurssen, Klaus, 4,067,721, Cl. 71-92.000.
Helberg, Gunnar I., to Dow Chemical Company, The. Primary adjunct, continuous diene process. 4,067,921, Cl. 260-680.00R.
Helbert, J. Raymond: *See—*
Chicoye, Etzer; Helbert, J. Raymond; and Rice, James F., 4,068,005, Cl. 426-16.000.
Helbling, Francis A. Support rail for tobacco sticks. 4,067,454, Cl. 214-5.500.
Heller, William C., Jr.; and Leatherman, Alfred F., to Heller, William C., Jr. Susceptor based bonding technique for plastic material utilizing oleaginous substance at the bonding interface. 4,067,765, Cl. 156-272.000.
Hendry, James W., to Ex-Cell-O Corporation. Apparatus for injection foam molding. 4,067,673, Cl. 425-4.00R.
Hengartner, Urs Oskar; and Wehrli, Pius Anton, to Hoffmann-La Roche Inc. Intermediate in the preparation of 6,6-alkylenedioxyalkan-2-ones. 4,067,885, Cl. 260-340.700.
Hennart, Claude: *See—*
Dulat, Marcel Louis; and Hennart, Claude, 4,067,990, Cl. 424-278.000.
Hennrich, Norbert: *See—*
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,067,775, Cl. 195-99.000.
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Herbert, Everett H.; Lyon, Randolph S., Jr.; Volk, Kurt E., Jr.; and Wassmer, Robert W., to Kurt H. Volk, Inc. Method of making multiple enclosure mailer. 4,067,171, Cl. 53-31.000.
Herbert, William G.: *See—*
Bailey, Raymond E.; and Herbert, William G., 4,067,782, Cl. 204-25.000.
Herbertz, Toni: *See—*
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Hercelin, Bernard: *See—*
Buret, Jean-Pierre; Hercelin, Bernard; Hamon, Jean-Francois; and Balea, Trajan, 4,067,988, Cl. 424-272.000.
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Ruchser, Erich, 4,067,357, Cl. 137-596.160.
Herman Miller, Inc.: *See—*
Kelley, James O., 4,067,631, Cl. 312-322.000.
Hermanns, Peter, to FMN Schuster & Co. Expansible mandrel for mounting spools and the like in winding machines. 4,067,511, Cl. 242-72.100.
Hess, Howard Vincent; Franz, William Francis; and Cole, Edward Lawrence, to Texaco Inc. Liquid phase coking of spent kraft pulping liquors. 4,067,767, Cl. 162-31.000.
Hetman, Frank W. Thermally insulated and connected window frame members and the method of making the same. 4,067,163, Cl. 52-403.000.
Hewitt, Frederick M. Apparatus for extruding reinforced concrete. 4,067,676, Cl. 425-64.000.
Hewlett-Packard Company: *See—*
Tobey, Morley C., Jr.; Giuliani, David J.; and Ashkin, Peter B., 4,068,134, Cl. 307-297.000.
Hewson, Kenneth E.: *See—*
Green, Hal; and Hewson, Kenneth E., 4,067,605, Cl. 296-137.00B.
Hickman, Robert G., to United States of America, Energy. Isotope separation by selective charge conversion and field deflection. 4,067,702, Cl. 55-2.000.
Hicks, James E.; Zahnen, Joseph G.; and Wedam, Werner F., to Magnavox Company, The. High efficiency d.c. voltage regulator. 4,068,158, Cl. 323-17.000.
Hiebert, Inc.: *See—*
Timmons, Jay, 4,067,165, Cl. 52-585.000.
Hilbert, Ferdinand; and Wolscheck, Hans, to Siemens Aktiengesellschaft. Method and apparatus for reforming solid electrolytic capacitors. 4,067,786, Cl. 204-56.00R.
Hill, Maynard L., to United States of America, Navy. Method and apparatus for terrain avoidance. 4,067,520, Cl. 244-177.000.
Hilti Aktiengesellschaft: *See—*
Thurner, Elmar, 4,067,168, Cl. 52-733.000.
Himmelmann, Wolfgang: *See—*
Bergthaller, Peter; Himmelmann, Wolfgang; and Rosenhahn, Lothar, 4,067,741, Cl. 96-111.000.
Hintz, Robert T.; and Rogers, Fred T., to United States of America, Navy. Gas laser starting. 4,068,192, Cl. 331-94.50G.
Hirota, Akira; Ota, Yoshihiko; and Kosaka, Yoshiteru, to Victor Company of Japan, Ltd. Color video signal recording and/or reproducing system. 4,068,257, Cl. 358-4.000.
Hitachi, Ltd.: *See—*
Amada, Nobutaka; Sampei, Tohru; and Maeda, Akinori, 4,068,187, Cl. 330-268.000.
Ishida, Masahiko; Haga, Ryooichi; and Odawara, Youji, 4,067,801, Cl. 210-5.000.
Ito, Satoru; Ota, Masataka; and Sugawara, Katsuro, 4,067,099, Cl. 29-571.000.
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Morita, Hiroshi, 4,068,303, Cl. 364-200.000.
Mukaemachi, Takuji; and Enami, Shiro, 4,068,215, Cl. 340-166.00R.
Nakamura, Kiyoshi; Tsuboi, Takashi; and Otazawa, Nobuaki, 4,068,152, Cl. 318-135.000.
Nomiya, Kosei; and Tsuiki, Takao, 4,068,148, Cl. 315-169.00R.
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Hoch, Donald W.: *See—*
Annis, Myron C.; Hoch, Donald W.; and Harrington, Herman J., 4,067,843, Cl. 260-37.00N.
Hoch, Helmut; and Scheuermann, Horst, to BASF Aktiengesellschaft. Manufacture of arylamines. 4,067,903, Cl. 260-570.600.
Hoch, Manfried L.; Fritz, Edward A.; and Sammarco, Peter, to International Harvester Company. Gathering unit attaching apparatus. 4,067,176, Cl. 56-15.600.
Hodge, Norman J., to Caterpillar Tractor Co. Spring loaded access door. 4,067,145, Cl. 49-386.000.
Hodge, Norman J., to Caterpillar Tractor Co. Protective cover and clamp for ether start unit. 4,067,627, Cl. 312-100.000.
Hodges, Joseph L.: *See—*
Green, Glen R.; and Hodges, Joseph L., 4,068,011, Cl. 426-482.000.
Hoechst Aktiengesellschaft: *See—*
Dalibor, Horst, 4,068,086, Cl. 560-169.000.
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Holst, Arno; Lask, Helmut; and Kostrzewa, Michael, 4,068,068, Cl. 536-88.000.
Martini, Thomas, 4,067,884, Cl. 260-340.600.
Schroter, Herbert; and Planz, Alexander, 4,068,251, Cl. 354-325.000.
Hofer, Kurt; Moesch, Rudolf; Tscheulin, Guenther; and Voykowitsch, Anton, to Sandoz Ltd. N-(para-hydroxybiphenyl)amides. 4,067,895, Cl. 260-404.
Hoff, Dale R.: *See—*
Fisher, Michael H.; Smith, George B.; and Hoff, Dale R., 4,067,987, Cl. 424-272.000.
Hoffman, Ernest Gerhard, to Harvey Hubbell, Incorporated. Deadfront electrical housing. 4,067,634, Cl. 339-107.000.
Hoffmann, Herwig: *See—*
Reiss, Wolfgang; Winderl, Siegfried; Schroeder, Wolfgang; and Hoffmann, Herwig, 4,067,914, Cl. 260-635.00Y.
Hoffmann-La Roche Inc.: *See—*
Adams, Jim Mills; and deZabala, Edward Francis, 4,067,449, Cl. 214-1.00C.
Hengartner, Urs Oskar; and Wehrli, Pius Anton, 4,067,885, Cl. 260-340.700.
Szkrybalo, William, 4,067,722, Cl. 71-92.000.
Hoffmann, Rudolf, to Maschinenfabrik Sack GmbH. Rolling of billets. 4,067,220, Cl. 72-201.000.
Hofle, Hubert; and Flesch, Erwin, to Motoren- und Turbinen Union Friedrichshafen GmbH. Free-jet-nozzle. 4,067,307, Cl. 123-41.350.
Hofstatter, Peter: *See—*
Frantl, Erich; and Hofstatter, Peter, 4,067,437, Cl. 198-800.000.
Hohla, Kristian; and Fuss, Werner, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Iodine gas laser device. 4,068,196, Cl. 331-94.50G.
Hokuriku Pharmaceutical Co., Ltd.: *See—*
Kato, Hideo; Mouri, Takaaki; and Nishikawa, Tomoyasu, 4,068,069, Cl. 542-427.000.
Holcomb, James M. Spraying system. 4,067,498, Cl. 239-304.000.
Hollister, James F.; McGill, James E.; and Stoddard, William H., to United States of America, Navy. Silent self-controlled orificial restrictor. 4,067,361, Cl. 138-42.000.
Holst, Arno; Lask, Helmut; and Kostrzewa, Michael, to Hoechst Aktiengesellschaft. Process for the production of water-adsorbing cellulose ethers. 4,068,067, Cl. 536-87.000.
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Holton, William C., to Texas Instruments Incorporated. Waveguide for integrated optical circuits. 4,067,641, Cl. 350-96.0WG.
Holzgruber, Wolfgang. Desulfurization of liquid iron melts. 4,067,729, Cl. 75-55.000.
Homeyer, Bernhard: *See—*
Colln, Reimer; Riebel, Hans-Jochem; Hammann, Ingeborg; and Homeyer, Bernhard, 4,067,970, Cl. 424-200.000.
Hon, David T. Foldable bicycle. 4,067,589, Cl. 280-278.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kurata, Noboru; Wakatsuki, Goroei; and Koyama, Mikihiro, 4,067,243, Cl. 74-6.000.
Yamazaki, Shuichi; and Kajitani, Ikuo, 4,067,192, Cl. 60-282.000.
Honda Motor Co., Ltd.: *See—*
Kurozu, Toshio; and Miyashita, Norio, 4,067,611, Cl. 297-355.000.
Honeycutt, Leroy, III: *See—*
United States of America, National Aeronautics and Space Administration; Honeycutt, Leroy, III; and Manning, Charles R., Jr., 4,067,742, Cl. 106-43.000.
Honeywell Inc.: *See—*
Sonobe, Tadashi; and Onoki, Seiji, 4,068,135, Cl. 307-352.000.
Honeywell Information Systems, Inc.: *See—*
Bachman, Charles W., 4,068,299, Cl. 364-200.000.
Bachman, Charles W., 4,068,300, Cl. 364-200.000.
Chow, Ling George, 4,068,219, Cl. 365-27.000.
Lee, Ernest Paul, 4,068,225, Cl. 340-324.0AD.

Hoogovens Ijmuiden B.V.: *See—*
Ensink, Tom, 4,067,264, Cl. 105-456.000.
Hooker Chemicals & Plastics Corporation: *See—*
Annis, Myron C.; Hoch, Donald W.; and Harrington, Herman J., 4,067,843, Cl. 260-37.00N.
Wagner, George M., 4,068,026, Cl. 427-341.000.
Walker, Leigh E., 4,067,928, Cl. 260-878.00R.
Hooper, Thomas M.: *See—*
McGady, Donald L.; Hooper, Thomas M.; and Wilczynski, Joseph E., 4,067,691, Cl. 21-56.000.
Hoover Ball and Bearing Co.: *See—*
Doerr, Wendel P.; and Rodgers, William C., 4,067,610, Cl. 297-301.000.
Hoover, John Russel Eugene; and Weisbach, Jerry Arnold, to Smith-Kline Corporation. Alpha-amino-alpha-(ureidophenyl-)acetamidocephalosporins and their pharmaceutical compositions. 4,067,976, Cl. 424-246.000.
Hoover, John Russel Eugene; and Weisbach, Jerry Arnold, to Smith-Kline Corporation. α-amino-α-(ureidophenyl)acetamidocephalosporins and their pharmaceutical compositions. 4,067,977, Cl. 424-246.000.
Hoover, John Russel Eugene; and Weisbach, Jerry Arnold, to Smith-Kline Corporation. Pharmaceutical compositions of α-amino-α-(ureidophenyl)acetamidocephalosporins. 4,067,978, Cl. 424-246.000.
Hope Co., Ltd.: *See—*
Kikuchi, Toshikazu, 4,067,594, Cl. 280-625.000.
Horinaga, Hiroshi, to Sony Corporation. Transistorized single ended push-pull amplifier having no cross-over distortion. 4,068,183, Cl. 330-253.000.
Horning, Donald E.; Morris, Leeson R.; and Douglas, James L., to Bristol-Myers Company. O-2-isocephem-4-carboxylic acid derivatives as antibacterial agents. 4,068,066, Cl. 544-105.000.
Hortlik, Frantisek: *See—*
Jaros, Frantisek; Kotrba, Zdenek; Ripka, Josef; Vobornik, Vaclav; Junek, Jan; Ohlidal, Vladimir; Hortlik, Frantisek; Brozkova, Marie; and Zukovska, Vera, 4,067,182, Cl. 57-58.950.
Horton, Rodney. Anti-jacknife apparatus. 4,067,592, Cl. 280-432.000.
Horvath, Frank P.; Appleby, J. Robert; and Morris, William J., deceased (by Morris, Charles F., administrator), to Neway Manufacturing, Inc. Grinding machine for carbide cutting elements. 4,067,701, Cl. 51-33.00R.
Hottinger, Charles F., to the Board of Trustees of Leland Stanford Junior University. Method and system for unambiguous measurement of volume flow. 4,067,236, Cl. 73-194A.
Howe, William J., to Georgia-Pacific Corporation. Packaging glass bottles and other rigid containers. 4,067,442, Cl. 206-433.000.
Howorth, Ronald, to BTR Industries Limited. Building construction. 4,067,162, Cl. 52-393.000.
Hradil, Jiri; Stamberg, Jiri; and Coupek, Jiri, to Ceskoslovenska akademie ved. Method for preparation of amphoteric ion-exchangers by substitution of hydrophilic polymers. 4,067,825, Cl. 260-2.10M.
Hubbard, James Henry; LeClere, Ralph Joseph; and Underhill, Thomas Travis, to International Business Machines Corporation. Method and apparatus for controlling the duplex copy mode in an electrostatic copying device. 4,067,649, Cl. 355-14.000.
Hubbard, S. Eugene, to Kawneer Company, Inc. Solar energy collector panel. 4,067,317, Cl. 126-271.000.
Hudson, Robert H.: *See—*
Cederholm, Carl; and Hudson, Robert H., 4,067,138, Cl. 46-44.000.
Hudson, William Jeffrey, Jr.: *See—*
Groft, James Leon; Hudson, William Jeffrey, Jr.; and Huffnagle, Clifton Wesley, 4,067,633, Cl. 339-74.00R.
Huffnagle, Clifton Wesley: *See—*
Groft, James Leon; Hudson, William Jeffrey, Jr.; and Huffnagle, Clifton Wesley, 4,067,633, Cl. 339-74.00R.
Hughes Aircraft Company: *See—*
O'Meara, Thomas R., 4,068,234, Cl. 343-17.000.
Wilmot, Richard D., 4,068,231, Cl. 343-5.0CM.
Huguenin, Freddy, to Ebauches S.A. Timepiece. 4,067,185, Cl. 58-50.00R.
Huguenin, Raymond; Matthey, Hubert; and Engdahl, Jean, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Frequency comparator. 4,068,171, Cl. 324-79.00R.
Hunger, Walter. Guiding and sealing arrangements for pistons, piston rods and the like. 4,067,584, Cl. 277-165.000.
Hunt, Hubert B., to Texas Pacific Oil Company, Inc. Method for detecting subsurface mineral bodies using gravity magnetic and topographic surveys. 4,068,160, Cl. 324-1.000.
Hunter, Edwin J., to Toro Company, The. Water valve operating solenoid. 4,067,541, Cl. 251-129.000.
Hupfer, Leopold: *See—*
Goetz, Norbert; Zeeh, Bernd; Decker, Martin; Hupfer, Leopold; and Toussaint, Herbert, 4,068,077, Cl. 544-178.000.
Hurd, Charles Duane; and Loomis, Robert Paul, to International Business Machines Corporation. Device to support and position a magnetic transducer. 4,068,270, Cl. 360-84.000.
Husted, Guy L. Collapsible hunting blind. 4,067,346, Cl. 135-4.00R.
Hwa, Chih M.: *See—*
Cuisia, Dionisio G.; Hwa, Chih M.; Jacob, Jose T.; and Salutsky, Murrell L., 4,067,690, Cl. 21-2.70R.
Hycel, Inc.: *See—*
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Hyde Athletic Industries, Inc.: *See—*
Minihane, Robert P., 4,067,123, Cl. 36-32.00R.
Hyde, Peter John; Cripps, Peter Kendall; Buchanan, Donald George; and Spalding, Robert George, to Dresser Europe, S.A. Liquid fuel dispensing system. 4,067,486, Cl. 222-26.000.
Hydragon Corporation, The: *See—*
Earnest, Ernest R., 4,067,189, Cl. 60-39.18B.
Hydril Company: *See—*
Mott, James D., 4,067,387, Cl. 166-156.000.
Ibsen, Ole N.: *See—*
Anderson, Thomas E.; Peak, Steven C.; and Ibsen, Ole N., 4,068,294, Cl. 363-58.000.
Ichikawa, Yukihiro: *See—*
Yui, Hiroshi; Moriwaki, Saburo; Ichikawa, Yukihiro; and Ohi, Shigekazu, 4,067,847, Cl. 260-45.70R.
Ichiyanagi, Toshikazu: *See—*
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ICI America Inc.: *See—*
Rutledge, Thomas F., 4,067,890, Cl. 260-396.00N.
Idemoto, Tom Y.; and Dion, C. Norman. Method and apparatus for writing servo-tracks on rotating magnetic memory surfaces. 4,068,268, Cl. 360-78.000.
Igarashi, Osamu: *See—*
Miyakawa, Nobuaki; and Igarashi, Osamu, 4,068,138, Cl. 307-262.000.
Iijima, Yasuo; and Shimizu, Tokihiko, to Matsushita Electric Industrial Co., Ltd. Oil-impregnated polypropylene capacitor. 4,068,286, Cl. 361-315.000.
Ikeda, Hiroharu; Matsumoto, Shuichi; and Makino, Kenya, to Japan Synthetic Rubber Co., Ltd. Catalyst composition for ring-opening polymerization of norbornene derivatives and process for polymerizing same. 4,068,063, Cl. 526-97.000.
Ikeda, Kishio: *See—*
Amatsu, Hideo; Fujimoto, Kazumi; and Ikeda, Kishio, 4,067,629, Cl. 312-319.000.
Ikeda, Tadashi: *See—*
Sugiyama, Masatoshi; Ikeda, Tadashi; Ogawa, Akira; Nakamura, Yasuharu; and Kakimi, Fujio, 4,067,738, Cl. 96-84.00R.
Ikoma, Kazuo; Takeda, Hidetomo; Kudou, Tadashi; and Kuriki, Shigeya, to Oki Electric Industry Co., Ltd. Voice control circuit. 4,068,092, Cl. 179-1.0VL.
Iles, Roger F.: *See—*
Brook, Greville B.; Brooks, Peter L.; and Iles, Roger F., 4,067,752, Cl. 148-11.5OR.
Image Analysing Computers Limited: *See—*
Soames, Michael Richard, 4,068,263, Cl. 358-107.000.
IMMUNO Aktiengesellschaft fur chemisch-medizinische Produkte: *See—*
Reinhardt, Ferdinand; and Simonich, Walter, 4,067,333, Cl. 128-218.00R.
Imperial Chemical Industries Limited: *See—*
Birkett, Kevin Lawson; Bone, John Alexander; and Ridyard, Denis Robert Annesley, 4,067,865, Cl. 260-187.000.
Crosby, John, 4,067,862, Cl. 260-79.50P.
Kay, Ian Trevor, 4,068,081, Cl. 544-212.000.
Shephard, Margaret Claire; and Worthington, Paul Anthony, 4,067,989, Cl. 424-273.00R.
Stanistreet, Harold Peter, 4,068,036, Cl. 428-296.000.
Inaba, Shigeho: *See—*
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Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, 4,068,070, Cl. 542-470.000.
Industrial Engineering, Inc.: *See—*
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Industrialised Building Systems Limited: *See—*
Juriss, Ivan Bertram; Hay, Roger Douglas; Goodfellow, Andrew Culross; Townson, Thomas; and Hay, Keith Eric, 4,067,159, Cl. 52-234.000.
Infinetics, Inc.: *See—*
Schwartz, Malcolm M.; and Jaquet, James R., 4,068,164, Cl. 324-226.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Salto, Rinaldo; and Roano, Domenico. 4.067.429. Cl. 197-18.000.
Ingersoll-Rand Company: *See—*
Young, Douglas L., 4,067,800, Cl. 209-273.000.
Innerfield, H. Jean, executrix: *See—*
Innerfield, Irving, deceased; and Innerfield, H. Jean, executrix, 4,067,777, Cl. 195-103.50R.
Innerfield, Irving, deceased; and by Innerfield, H. Jean, executrix. Determination of heparin in the blood. 4,067,777, Cl. 195-103.50R.
Inouye, Yuji, to Fujitsu Ltd. Magnetic disk storage apparatus in which servo track zone provides signals for both moving speed and position of transducer. 4,068,267, Cl. 360-75.000.
Institut de Recherches de la Siderurgie Francaise (IRSID): *See—*
Alberny, Robert; Birat, Jean-Pierre; and Ventavoli, Roger, 4,067,378, Cl. 164-49.000.
Institut fur Angewandte Forschung GmbH: *See—*
Bohlander, Peter, 4,067,652, Cl. 356-160.000.
Interelectronics Corporation: *See—*
Pintell, Robert H., 4,068,276, Cl. 361-46.000.
International Business Machines Corporation: *See—*
Argyle, Bernell Edwin; Dekker, Pieter; and Slonczewski, John Casimir, 4,068,220, Cl. 365-30.000.
Arnett, Patrick Clinton; and Chang, Joseph Juifu, 4,068,217, Cl. 365-182.000.

Beausoleil, William F.; and Maling, Klim, 4,068,304, Cl. 364-200.000.
Bechtle, Bastian; Bleher, Hartmut J.; Hasselmeier, Helmut; Spruth, Wilhelm G.; Stucki, Peter; and Weis, Helmut, 4,068,224, Cl. 340-324.0AD.
Boeckl, Richard Stefan, 4,068,019, Cl. 427-82.000.
Bowman, Robert A.; and Burd, Mark M., 4,068,226, Cl. 340-336.000.
Commander, Robert Duncan; and Taylor, John Richard, 4,068,269, Cl. 360-78.000.
Fan, George Jee; Lo, David Chan-Wai; and Mitchell, Joseph William, 4,068,240, Cl. 346-75.000.
Hubbard, James Henry; LeClere, Ralph Joseph; and Underhill, Thomas Travis, 4,067,649, Cl. 355-14.000.
Hurd, Charles Duane; and Loomis, Robert Paul, 4,068,270, Cl. 360-84.000.
Svelund, Lawrence Eugene, 4,068,174, Cl. 325-325.000.
International Diagnostic Technology, Inc.: *See—*
Bolz, Gunner, 4,067,959, Cl. 424-1.000.
International Flavors & Fragrances Inc.: *See—*
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., 4,068,012, Cl. 426-538.000.
Vinals, Joaquin F.; Kiwala, Jacob; Withycombe, Donald Arthur; Mookherjee, Braja Dulal; and Mussinan, Cynthia J., 4,067,344, Cl. 131-17.00R.
International Harvester Company: *See—*
Datta, Arthur S.; Owens, David G.; and Moore, R. Dale, 4,067,467, Cl. 214-145.00A.
Hoch, Manfried L.; Fritz, Edward A.; and Sammarco, Peter, 4,067,176, Cl. 56-15.600.
Tamburino, James C.; Domes, E. A.; and Venere, Lawrence A., 4,067,410, Cl. 180-64.00R.
International Medical Electronics, Inc.: *See—*
Berry, Fred M.; and Shirley, James N., 4,068,292, Cl. 361-437.000.
International Telephone and Telegraph Corporation: *See—*
Alonso, Oscar, 4,068,032, Cl. 428-195.000.
Metzler, Albert, 4,068,273, Cl. 361-3.000.
Intille, George M., to Monsanto Company. Hydrogenolysis of alcohols, ketones, aldehydes, esters and ethers. 4,067,900, Cl. 560-138.000.
Inubushi, Masanobu; Yamamoto, Hajime; and Ozaki, Toshiharu, to Kawasaki Jukogyo Kabushiki Kaisha. System for changing over of blast furnace top pressure control. 4,067,557, Cl. 266-89.000.
Ionics, Inc.: *See—*
Ganzi, Gary C.; and Jha, Anil D., 4,067,794, Cl. 204-301.000.
Irathane Systems Incorporated: *See—*
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Ireland, Henry R.: *See—*
Chen, Nai Yuen; Gillespie, Bernard M.; Ireland, Henry R.; and Stein, Thomas R., 4,067,797, Cl. 208-15.000.
Irvine, Robert, to Pitney-Bowes, Inc. Document feeding and stacking apparatus. 4,067,568, Cl. 271-176.000.
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Ise, Yasuo: *See—*
Ishioka, Hiroyuki; and Ise, Yasuo, 4,067,489, Cl. 228-5.700.
Iseler, Kenneth Alfred: *See—*
Epel, Joseph Norman; Shah, Vinod Chandulal; and Iseler, Kenneth Alfred, 4,067,845, Cl. 260-40.00R.
Ishida, Masahiko; Haga, Ryooichi; and Odawara, Youji, to Hitachi, Ltd. Process and system for anaerobic treatment of biochemical waste. 4,067,801, Cl. 210-5.000.
Ishii, Shozo, to Chugai Seiyaku Kabushiki Kaisha. Substance acting to prevent and improve cerebral function disorder and process for preparing the same. 4,067,963, Cl. 424-95.000.
Ishino, Yoshiaki; and Kondo, Yoshiaki, to Ricoh Company, Ltd. Data storage device comprising search means. 4,068,301, Cl. 364-200.000.
Ishioka, Hiroyuki; and Ise, Yasuo, to Nippon Kokan Kabushiki Kaisha. Welding apparatus for joining coils of strip steel. 4,067,489, Cl. 228-5.700.
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Production of quinazolinone compounds. 4,067,868, Cl. 260-251.0QB.
Itek Corporation: *See—*
Schultz, Herman S., 4,067,839, Cl. 260-29.6TA.
Ito, Akira: *See—*
Tomita, Tetsuo; Yoshii, Tadashi; and Ito, Akira, 4,067,851, Cl. 260-47.0ET.
Ito, Noribumi: *See—*
Nakagawa, Toshimi; Numata, Takanobu; and Ito, Noribumi, 4,068,061, Cl. 526-68.000.
Ito, Satoru; Ota, Masataka; and Sugawara, Katsuro, to Hitachi, Ltd. Method of forming passivation film. 4,067,099, Cl. 29-571.000.
Ito, Takao: *See—*
Unno, Yoichi; Motegi, Naoto; and Ito, Takao, 4,067,937, Cl. 264-1.000.
Itoga, Masaaki: *See—*
Miwa, Tsuneyoshi; Nakazawa, Shinji; Itoga, Masaaki; Sano, Keizo; Nakamura, Itaru; Watanabe, Taigi; and Shingu, Yasuhiko, 4,067,855, Cl. 260-75.00R.
Itoh, Tsunetoshi: *See—*
Nakajima, Shigeo; Takahashi, Ken; Itoh, Tsunetoshi; and Endo, Hajime, 4,067,618, Cl. 299-31.000.
Ittner, Nelson Carl, to Harry Feick Co., Inc.; and JRS Mfg. Inc., a part interest to each. Load bearing vane structure for thrust reversal. 4,067,094, Cl. 29-156.80R.
Iuchi, Keiichi: *See—*
Yamada, Kuniharu; Morozumi, Yukio; and Iuchi, Keiichi, 4,068,285, Cl. 361-293.000.
IVAC Corporation: *See—*
O'Leary, Stephen H., 4,067,332, Cl. 128-214.00F.
Ivey, Mary C., to Bailey, David S.; Pope, Richard J.; and Earrs, Inc. Pierced earlobe protector. 4,067,341, Cl. 128-330.000.
Iwanami, Masaru: *See—*
Murakami, Masuo; Isaka, Ichiro; Kawahara, Norio; Iwanami, Masaru; Fujimoto, Masaharu; Maeda, Tetsuya; Shibanuma, Tadao; and Nagano, Yoshinobu, 4,068,074, Cl. 544-27.000.
Iwanari, Sadayoshi; and Umene, Osamu, to New Nippon Electric Company, Ltd. Thermal fuse employing a slidable resilient contact member in a conductive housing. 4,068,204, Cl. 337-408.000.
Iwata, Hiroshi; and Yamaoka, Tetsuo, to West Electric Co., Ltd. Voltage indication means for an electronic flashing device. 4,068,150, Cl. 315-241.00P.
IWS Nominee Company Limited: *See—*
Kucera, Frank Joseph; and Brown, Thomas Desmond, 4,067,209, Cl. 66-195.000.
Izzi, Lewis B. Plastic drain assembly. 4,067,072, Cl. 4-288.000.
J. C. Sales & Mfg. Co., Inc.: *See—*
Pesiri, James B., 4,067,613, Cl. 297-416.000.
J. M. Eltzroth & Associates, Inc.: *See—*
Miller, Russell C., 4,067,837, Cl. 260-29.6NR.
J. M. Huber Corporation: *See—*
Wason, Satish K.; and Mays, Robert K., 4,067,746, Cl. 106-288.00B.
Jack, James, to Bakelite Xylonite Limited. Process for producing multicellular articles. 4,067,938, Cl. 264-41.000.
Jackman, Robert M., to A. O. Smith-Inland, Inc. Reinforced ribbed tubular structure and method of making same. 4,067,362, Cl. 138-173.000.
Jackson, Earle B. Floating ladder. 4,067,412, Cl. 182-93.000.
Jackson, Maurus E. Converter kit for driving an engine distributor from the front end of the engine camshaft. 4,067,305, Cl. 123-195.00A.
Jacob, Jose T.: *See—*
Cuisia, Dionisio G.; Hwa, Chih M.; Jacob, Jose T.; and Salutsky, Murrell L., 4,067,690, Cl. 21-2.70R.
Jacobs, Eli S.: *See—*
Russell, James T., 4,068,265, Cl. 358-133.000.
Jacobs Manufacturing Company, Limited, The: *See—*
Derbyshire, George Cecil, 4,067,587, Cl. 279-62.000.
Jacobs, Marcellus L.; and Jacobs, Paul R. Wind electric plant. 4,068,131, Cl. 290-55.000.
Jacobs, Paul R.: *See—*
Jacobs, Marcellus L.; and Jacobs, Paul R., 4,068,131, Cl. 290-55.000.
Jacobsson, Kurt Arne Gunnar, to Aktiebolaget IRO. Thread supply device for textile machines. 4,067,508, Cl. 242-47.010.
Jaeger, Horst, to Ciba-Geigy AG. Process for the manufacture of perfluoralkyl iodides. 4,067,916, Cl. 260-653.10T.
Jaekle, William M.: *See—*
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, 4,067,469, Cl. 214-152.000.
Jain, Prem Prakash; and Bernitt, James John, to American District Telegraph Company. Central station system transmission apparatus. 4,068,105, Cl. 179-175.30R.
Janitsch, Anthony D., to Allis-Chalmers Canada, Limited. Curved-path belt conveyor. 4,067,439, Cl. 198-835.000.
Japan Synthetic Rubber Co., Ltd.: *See—*
Ikeda, Hiroharu; Matsumoto, Shuichi; and Makino, Kenya, 4,068,063, Cl. 526-97.000.
Jaquet, James R.: *See—*
Schwartz, Malcolm M.; and Jaquet, James R., 4,068,164, Cl. 324-226.000.
Jaros, Frantisek; Kotrba, Zdenek; Ripka, Josef; Vobornik, Vaclav; Junek, Jan; Ohlidal, Vladimir; Hortlik, Frantisek; Brozkova, Marie; and Zukovska, Vera, to Vyzkumny ustav bavlnarsky. Method of and apparatus for separating staple fibers from a fibrous sliver. 4,067,182, Cl. 57-58.950.
Jarry, Philippe, to Le Moteur Moderne. Two-stroke engine. 4,067,301, Cl. 123-26.000.
Jegousse, Michel J., to Compagnie Francaise des Petroles; Etudes Petrolieres Marines, Societe Responsabilite Limitee; Ateliers et Chantiers de Bretagne, A.C.B., Societe Anonyme; Compagnie Maritime d'Expertises, Societe Anonyme; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (Doris), Societe Anonyme; and Entreprise de Recherches et d'Activites Petrolieres (E.R.A.P.) Etablissement public. Method and apparatus of launching floats to lighten underwater conduits. 4,067,199, Cl. 61-63.000.
Jetco, Inc.: *See—*
Davis, Bill G., 4,067,348, Cl. 137-87.000.
Jha, Anil D.: *See—*
Ganzi, Gary C.; and Jha, Anil D., 4,067,794, Cl. 204-301.000.
Jilek, Rudolf: *See—*
Votapek, Vaclav; Marval, Eduard; Jilek, Rudolf; and Stamberg, Karel, 4,067,821, Cl. 252-427.000.
Jochum, Peter: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf Dieter, 4,067,853, Cl. 260-47.0UA.
Johns-Manville Corporation: *See—*
Beranek, Robert Louis, Jr.; and Timms, Donny Lee, 4,067,678, Cl. 425-305.100.

Johns, Theron; and Berry, Edward A., to Carle Instruments, Inc. Hydrogen transfer system for gas chromatograph. 4,067,227, Cl. 73-23.100.

Johnson, Allan S., to Tapmatic Corporation. Removable tool holder with improved built in torque release clutch. 4,067,424, Cl. 192-56.00R.

Johnson, Charles H.; and Booker, Robert A., to Martin Marietta Corporation. Rate control system for manipulator arms. 4,068,156, Cl. 318-575.000.

Johnson, Don E.: *See—*
Jones, Robert M.; and Johnson, Don E., 4,067,285, Cl. 114-266.000.

Johnson, Frank O.: *See—*
Brooks, Richard J.; and Johnson, Frank O., 4,067,663, Cl. 417-199.00A.

Johnson & Johnson: *See—*
Ness, Irving Stanley, 4,067,337, Cl. 128-287.000.
Ness, Irving Stanley, 4,067,609, Cl. 297-220.000.

Johnson, Joseph H. Disposable, pre-gel body electrodes. 4,067,322, Cl. 128-2.06E.

Johnson, Joseph John, Jr., to Coats & Clark, Inc. Noise reducing spindle washers. 4,067,184, Cl. 57-135.000.

Johnson, Philip L.: *See—*
Wolma, Rodney J., 4,067,152, Cl. 52-60.000.

Johnson, Philip P.; and DeSchaaf, Clifford L., to Whirlpool Corporation. Heater safety control. 4,068,114, Cl. 219-333.000.

Johnson, Russell L., to Kimberly-Clark Corporation. Perineal shield and discharge containment device. 4,067,336, Cl. 128-284.000.

Johnson, Terry D. Swine finishing barn. 4,067,297, Cl. 119-16.000.

Jones, James R., Jr. System for locating a radar transmitter. 4,068,237, Cl. 343-112.00C.

Jones, John B.; and Upton, Robert W., to Four Star, Inc. Hay bale hauler and feeder. 4,067,298, Cl. 119-60.000.

Jones, Keith W.: *See—*
Jones, Wilfred; Jones, Keith W.; and Sweatman, Travers Fraser, 4,067,935, Cl. 261-63.000.

Jones, Robert M.; and Johnson, Don E. Modular floating structure. 4,067,285, Cl. 114-266.000.

Jones, Stanley Peter, to Emhart Industries, Inc. Glassware forming machines. 4,067,711, Cl. 65-319.000.

Jones, Thaddeus M.; Kiwale, Jozef; and Rufer, Ernest J., to Caterpillar Tractor Co. Quality control method for inertial welding. 4,067,490, Cl. 228-102.000.

Jones, Wilfred; Jones, Keith W.; and Sweatman, Travers Fraser, to Cyprane North America, Inc. Volatile anesthetic vaporizing apparatus. 4,067,935, Cl. 261-63.000.

Jossa, Louis J.: *See—*
Keijzer, Johan H.; Jossa, Louis J.; and Vanhove, Henri C. J., 4,067,558, Cl. 267-34.000.

Joyner, Curtis B., Jr. Portable mechanical alarm for doors, windows and the like. 4,067,289, Cl. 116-77.000.

JRS Mfg. Inc.: *See—*
Ittner, Nelson Carl, 4,067,094, Cl. 29-156.80R.

Judge, James R., to National Steel Corporation. Molten metal sampling device and method. 4,067,242, Cl. 73-425.600.

Juneja, Prem Sagar, to Procter & Gamble Company, The. Oral compositions containing trifluoromethyl phenyl bis-biguanides as antiplaque agents. 4,067,962, Cl. 424-52.000.

Junek, Jan: *See—*
Jaros, Frantisek; Kotrba, Zdenek; Ripka, Josef; Vobornik, Vaclav; Junek, Jan; Ohlidal, Vladimir; Hortlik, Frantisek; Brozkova, Marie; and Zukovska, Vera, 4,067,182, Cl. 57-58.950.

Jungner Instrument AB: *See—*
Andermo, Ingvar; and Masreliez, Karl-Gustav, 4,068,207, Cl. 340-3.00R.

Juriss, Ivan Bertram; Hay, Roger Douglas; Goodfellow, Andrew Culross; Townson, Thomas; and Hay, Keith Eric, to Industrialised Building Systems Limited. Building cluster of a plurality of building units. 4,067,159, Cl. 52-234.000.

K-Jack Engineering Company, Inc.: *See—*
Chalabian, Jack S., 4,067,477, Cl. 221-1.000.

Kaarlela, Willard O., to Caterpillar Tractor Co. Cam lock retaining means for ripper tips. 4,067,657, Cl. 403-317.000.

Kabara, Jon J., to Med-Chem Laboratories. Synergistic microbecidal composition and method. 4,067,997, Cl. 424-312.000.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Furuya, Tsutomu; Ayabe, Shinichi; Kobayashi, Miyuki; and Tanimoto, Tadao, 4,067,142, Cl. 47-58.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Matsuda, Kazuo; Wada, Mitsuyoshi; and Nishida, Kazumori, 4,067,546, Cl. 254-187.400.

Kabushiki Kaisha Suwa Seikosha: *See—*
Komatsu, Hidetoshi; Tezuka, Mutsuto; and Morozumi, Shinji, 4,068,090, Cl. 179-1.00A.
Ono, Yoshikazu, 4,067,101, Cl. 29-598.000.
Yamada, Kuniharu; Morozumi, Yukio; and Iuchi, Keiichi, 4,068,285, Cl. 361-293.000.

Kachele, Gunther: *See—*
Ahlisch, Hans-Dieter; Amann, Rolf; Bald, Franz; Dostal, Gerhard; Folster, Alfred; Schleh, Wolfgang; Kachele, Gunther; Kowallek, Rolf; and Schnaufer, Helmut, 4,067,602, Cl. 296-71.000.

Kaeding, Warren W., to Mobil Oil Corporation. Selective production of para-xylene. 4,067,920, Cl. 260-671.00M.

Kajitani, Ikuo: *See—*
Yamazaki, Shuichi; and Kajitani, Ikuo, 4,067,192, Cl. 60-282.000.

Kakimi, Fujio: *See—*
Sugiyama, Masatoshi; Ikeda, Tadashi; Ogawa, Akira; Nakamura, Yasuharu; and Kakimi, Fujio, 4,067,738, Cl. 96-84.00R.

Kakoshkin, Leonid Petrovich: *See—*
Tsernes, Vladimir Yakovlevich; Shekhel, Alexandr Borisovich; Kakoshkin, Leonid Petrovich; Schukin, Lev Nikolaevich; and Sakharov, Boris Vladimirovich, 4,067,465, Cl. 214-62.00A.

Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to L'Oreal. 3-Amino-2-aza benzoquinone diimines. 4,067,869, Cl. 260-270.0PY.

Kaltenbach & Voigt: *See—*
Engeser, Rudolf, 4,067,109, Cl. 32-71.000.

Kaminaka, Nobuyuki: *See—*
Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, 4,068,272, Cl. 360-113.000.

Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. High sensitivity magnetic head using magneto-resistive effect element. 4,068,272, Cl. 360-113.000.

Kanebo, Ltd.: *See—*
Ohtomo, Koichiro; and Yoshimura, Takuji, 4,067,744, Cl. 106-50.000.
Ohtomo, Koichiro; and Nakamo, Tsuyoshi, 4,067,769, Cl. 162-157.00R.

Kanner, Bernard; and Prokai, Bela, to Union Carbide Corporation. Formation of high-resilience urethane foam in the presence of morpholino-bearing polyalkylsiloxanes. 4,067,828, Cl. 260-2.5AH.

Kanno, Tomio, to Eisai Co., Ltd. Method of medical treatment of pancreatic insufficiency. 4,068,001, Cl. 424-331.000.

Kansas Jack, Inc.: *See—*
Eck, Leonard F., 4,067,222, Cl. 72-389.000.

Kao Soap Co., Ltd.: *See—*
Takamori, Shigeru; Kono, Yoshinao; and Takemoto, Hirotaka, 4,067,835, Cl. 260-22.00R.

Kao, Wen-Ling: *See—*
Strike, Donald P.; and Kao, Wen-Ling, 4,067,898, Cl. 260-464.000.

Kapron, Felix Paul: *See—*
King, Frederick David; and Kapron, Felix Paul, 4,067,642, Cl. 350-96.0WG.

Karabedian, James A., to Owens-Illinois, Inc. Container with improved heat-shrunk cellular sleeve. 4,067,949, Cl. 264-230.000.

Karch, Walter C.; and Gribble, Joseph J., to Square D Company. Manual starter with low voltage release. 4,068,201, Cl. 335-173.000.

Karl Mengele & Sohne: *See—*
Santic, Blaz; and Volz, Otto, 4,067,245, Cl. 74-96.000.

Karpisek, Ladislav Stephan. Nozzle. 4,067,686, Cl. 431-353.000.

Karpova, Vera Vladimirovna: *See—*
Simonov, Vadim Dmitrievich; Gazizov, Raif Timergalievich; Simonov, Vladimir Vadimovich; Voronenko, Boris Ivanovich; and Karpova, Vera Vladimirovna, 4,067,887, Cl. 260-346.740.

Karr, Fred A., to Shasta Beverages, Division of Consolidated Foods Corporation. Liquid carbon dioxide carbonation method. 4,068,010, Cl. 426-477.000.

Kartridg Pak Co., The: *See—*
Shirley, Ronald Clyde, 4,067,761, Cl. 156-218.000.

Karustis, George A.: *See—*
Leahy, Elizabeth P.; and Karustis, George A., 4,067,784, Cl. 204-46.00R.

Kastening, Bertel; and Schmitz, Heinrich, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of making hydrogen peroxide. 4,067,787, Cl. 204-84.000.

Kataoka, Youichi: *See—*
Naruishi, Tadayuki; Kataoka, Youichi; and Sue, Kazutaka, 4,068,049, Cl. 429-206.000.

Kato, Hideo; Mouri, Takaaki; and Nishikawa, Tomoyasu, to Hokuriku Pharmaceutical Co., Ltd. Novel piperazine- and homopiperazine-monoalkanol esters and a process of production thereof. 4,068,069, Cl. 542-427.000.

Kato, Yukio. Filtering system for fish-farming water. 4,067,809, Cl. 210-169.000.

Katten, Elliot: *See—*
Tavares, Robert F.; and Katten, Elliot, 4,067,906, Cl. 260-586.00G.

Kawahara, Norio: *See—*
Murakami, Masuo; Isaka, Ichiro; Kawahara, Norio; Iwanami, Masaru; Fujimoto, Masaharu; Maeda, Tetsuya; Shibanuma, Tadao; and Nagano, Yoshinobu, 4,068,074, Cl. 544-27.000.

Kawai, Hisasi: *See—*
Obayashi, Hideki; Kohama, Tokio; Kawai, Hisasi; and Egami, Tsuneyuki, 4,067,233, Cl. 73-116.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Inubushi, Masanobu; Yamamoto, Hajime; and Ozaki, Toshiharu, 4,067,557, Cl. 266-89.000.

Kawneer Company, Inc.: *See—*
Hubbard, S. Eugene, 4,067,317, Cl. 126-271.000.

Kay, Ian Trevor, to Imperial Chemical Industries Limited. Δ-Triazine-2,6-dione. 4,068,081, Cl. 544-212.000.

Kazaoka, Kenichi; and Hayashi, Masayuki, to Aisin Seiki Kabushiki Kaisha. Adjusting seat supporting assemblies for automobiles. 4,067,533, Cl. 248-397.000.

Keijzer, Johan H.; Jossa, Louis J.; and Vanhove, Henri C. J., to Monroe Belgium N.V. Vehicle suspension strut. 4,067,558, Cl. 267-34.000.

Keiller, Clifton Quinton: *See—*
Balas, Salman Heskel; and Keiller, Clifton Quinton, 4,067,576, Cl. 273-282.0GA.

Keim, Walter, to Grosse Webereimaschinen GmbH, Firma. Shedding device for weaving looms, in particular for double-lift open-shed jacquard machines. 4,067,363, Cl. 139-59.000.

Keller, Douglas V., Jr.: *See—*
Smith, Clay D.; and Keller, Douglas V., Jr., 4,067,616, Cl. 299-7.000.

Kellett, William B.: *See—*
Anderson, Conrad V.; and Kellett, William B., 4,068,250, Cl. 354-316.000.

Kelley, James O., to Herman Miller, Inc. Under work surface organizer. 4,067,631, Cl. 312-322.000.

Kellner, Jackson M.; and Vetter, Vincent Hugo, to Smith International, Inc. Dual flow passage drill stem. 4,067,596, Cl. 285-133.00A.

Kelly, Ralph; and Ritter, Edmond Jean, to Cincinnati Milacron Inc. Method and compositions for retarding chemical damage to hair with treating agents containing two or more polar groups. 4,067,345, Cl. 132-7.000.

Kelsey-Hayes Company: *See—*
Blair, James W., Jr., 4,067,098, Cl. 29-558.000.

Kempken, Hans: *See—*
Vetter, Manfred; and Kempken, Hans, 4,067,544, Cl. 254-93.0HP.

Kempster, Breier B. Taxi indicator. 4,067,128, Cl. 40-473.000.

Ken, Iwai: *See—*
Yasushi, Nishino; Saburo, Adachi; Koji, Karashima; and Ken, Iwai, 4,067,284, Cl. 114-260.000.

Kendall Company, The: *See—*
Dangel, Phoenix Nathan; and Marshall, Preston Fairfax, 4,068,047, Cl. 429-142.000.

Kendrick Stevens Limited: *See—*
Stevenson, Richard Michiel, 4,067,500, Cl. 239-556.000.

Kenny, John M.; and Pappas, Spiro J., to Westinghouse Air Brake Company. Laterally adjustable adapter bracket for a grade crossing gate and signal assembly. 4,067,523, Cl. 246-130.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Kastening, Bertel; and Schmitz, Heinrich, 4,067,787, Cl. 204-84.000.

Kessler, Karl H.: *See—*
Mohilo, Oskar; Kessler, Karl H.; and Stumpf, Friedrich Wilhelm, 4,067,276, Cl. 112-220.000.

Key, Edward H. Switch having energy-efficient structural configuration. 4,068,107, Cl. 200-67.00G.

Key, Jack B., Jr. Putter hand grip. 4,067,573, Cl. 273-81.400.

Keystone Consolidated Industries, Inc.: *See—*
Byard, L. George, 4,067,521, Cl. 245-10.000.

Khan, Waheed N., to Research Foundation of Children's Hospital. Method for differential diagnosis of meningitis with a limulus lysate test. 4,067,776, Cl. 195-103.50M.

Khazanov, Iosif Isaakovich: *See—*
Arabei, Boris Georgievich; Zukher, Mark Semenovich; Markov, Jury Mikhailovich; Trokhina, Galina Nikolaevna; Tjurin, Viktor Alexandrovich; Khazanov, Iosif Isaakovich; Belmer, Pavel Fedorovich; and Zverev, Ivan Ivanovich, 4,067,743, Cl. 106-44.000.

Khimenko, Lev Timofeevich; Degtyarev, Evgeny Nikolaevich; Baranov, Mikhail Ivanovich; Legeza, Anatoly Vasilievich; and Mezhuev, Alexandr Tikhonovich. Inductor for magnetic pulse shaping of metals. 4,067,216, Cl. 72-56.000.

Kikuchi, Makoto, to Toyoda Koki Kabushiki-Kaisha. Feed apparatus for grinding machine. 4,067,148, Cl. 51-165.770.

Kikuchi, Toshikazu, to Hope Co., Ltd. Ski boot toe binding. 4,067,594, Cl. 280-625.000.

Kim, Jong-Dok, to Kraftwerk Union Aktiengesellschaft. Rod-shaped components between fuel elements of boiling-water reactors. 4,067,772, Cl. 176-54.000.

Kimberly-Clark Corporation: *See—*
Johnson, Russell L., 4,067,336, Cl. 128-284.000.

Kimura, Tatsuya: *See—*
Sugimura, Akira; Uchida, Naoya; and Kimura, Tatsuya, 4,067,643, Cl. 350-96.0WG.

Kindley, Robert J.: *See—*
Andersen, John A.; Flanigan, John J.; and Kindley, Robert J., 4,067,308, Cl. 124-16.000.

King, Frederick David; and Kapron, Felix Paul, to Northern Telecom Limited. Reduction of modal and chromatic material dispersion in a multimode optical fiber. 4,067,642, Cl. 350-96.0WG.

King, John A.; and Murphy, Gerald Elloit, II, to Essex Group, Inc. Loudspeaker solderless connector system and method of setting correct pigtail length. 4,068,103, Cl. 179-115.5VC.

Kingsley, Patrick John; and Orr, Thomas Samuel Campbell, to Fisons Limited. Method of treating a psychiatric condition. 4,067,992, Cl. 424-283.000.

Kippenberg, Horst: *See—*
Hassler, Heinrich; and Kippenberg, Horst, 4,067,379, Cl. 164-69.000.

Kiraly, Franz. Safety lock. 4,067,214, Cl. 70-366.000.

Kissinger, Curtis D.: *See—*
Dorman, Richard A.; Kissinger, Curtis D.; and Lagace, Lawrence J., Jr., 4,067,225, Cl. 73-1.0DV.

Kitajima, Kunio: *See—*
Daimon, Nobutoshi; and Kitajima, Kunio, 4,067,819, Cl. 252-313.00S.

Kittler, Wilfred C.: *See—*
Walker, Jack S.; and Kittler, Wilfred C., 4,067,764, Cl. 156-267.000.

Kiwala, Jacob: *See—*
Vinals, Joaquin F.; Kiwala, Jacob; Withycombe, Donald Arthur; Mookherjee, Braja Dulal; and Mussinan, Cynthia J., 4,067,344, Cl. 131-17.00R.

Kiwale, Jozef: *See—*
Jones, Thaddeus M.; Kiwale, Jozef; and Rufer, Ernest J., 4,067,490, Cl. 228-102.000.

Klaila, William J., to Frank T. Sullivan, Inc. Method and apparatus for controlling fluency of high viscosity hydrocarbon fluids. 4,067,683, Cl. 431-11.000.

Klapdar, Wilhelm; Richter, Helmut; Rommerswinkel, Heinrich-Wilhelm; Spetzler, Edgar; and Wendorff, Jochen, to Thyssen Niederrhein AG Hutten-und Walzwerke. Process for the production of steel with increased ductility. 4,067,730, Cl. 75-58.000.

Klauke, Erich: *See—*
Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,068,002, Cl. 424-322.000.

Klaus, Gerald R., to Fellowes Manufacturing Company. Detachable label holder. 4,067,127, Cl. 40-16.400.

Kleider, Alfred, to United States of America, Army. Wire obstacle warning system. 4,068,124, Cl. 250-332.000.

Klein, Hans; Arbeletche, Carlos; Balzau, Gerhard; and Steinman, Manfred, to Polysius AG. Pneumatic pressure conveyor for fine material. 4,067,623, Cl. 302-53.000.

Kleisser, Werner: *See—*
Motting, Gotz; Bauer, Wilhelm; and Kleisser, Werner, 4,067,528, Cl. 248-204.000.

Klemm, Kurt; Schoetensack, Wolfgang; and Prusse, Wolfgang, to Gulden, Byk. Aryl-substituted piperazinyl-alkylamino-uracils, -uracil ethers and -uracil thioethers as therapeutics. 4,067,982, Cl. 424-250.000.

Klesper, Hugo: *See—*
Busse, Oswald; and Klesper, Hugo, 4,067,807, Cl. 210-82.000.

Klimo, Robert G.: *See—*
Artrip, Robert W.; and Klimo, Robert G., 4,068,153, Cl. 318-373.000.

Klochko, Viktor Alexandrovich: *See—*
Yakshin, Alexandr Sergeevich; Novikov, Oleg Nikolaevich; Grechinsky, Dmitry Alexeevich; Klochko, Viktor Alexandrovich; and Rygalin, Viktor Georgievich, 4,067,231, Cl. 73-658.000.

Klose, Walter, to Saurer-Allma GmbH, Allgauer Maschinenbau. Thread guide for the production of cord twists. 4,067,183, Cl. 57-106.000.

Kluczynski, Achim: *See—*
Blank, Rudolf; and Kluczynski, Achim, 4,067,514, Cl. 242-194.000.

Klumpes, Hans, to De Rotterdamsche Droogdok Maatschappij B.V. Process of working imperfections or defects on generally thickwalled metal worked-pieces. 4,068,111, Cl. 219-73.110.

Knorr, Walter; Licht, Helmut; Raquet, Erwin; and Spieker, Walter, to Fried. Krupp Huttenwerke AG. Track wheel having a lightweight construction. 4,067,600, Cl. 295-23.000.

Kobanc, John, Jr., to F. Jos. Lamb Company. Work supporting jack. 4,067,564, Cl. 269-310.000.

Kobayashi, Miyuki: *See—*
Furuya, Tsutomu; Ayabe, Shinichi; Kobayashi, Miyuki; and Tanimoto, Tadao, 4,067,142, Cl. 47-58.000.

Kobe Steel, Ltd.: *See—*
Godai, Tomokazu; Aida, Isao; and Nakagaki, Masatoshi, 4,068,113, Cl. 219-146.230.

Koch, Klaus, to Paul Troester Maschinenfabrik. Method and apparatus for extruding plastic and similar material. 4,067,554, Cl. 366-84.000.

Kockums Mekaniska Verkstads AB: *See—*
Lagerwall, Ralph Georg Torbjorn; and Sarnik, Stanislaw, 4,067,556, Cl. 266-65.000.

Kocsis, Karoly: *See—*
Bickel, Hans; Kocsis, Karoly; and Peter, Heinrich, 4,067,979, Cl. 424-246.000.

Koehler, Joel J.: *See—*
Chayka, George A.; Koehler, Joel J.; and Melatti, Livio R., 4,068,170, Cl. 324-72.500.

Koehler, Wolfgang: *See—*
Diehl, Walter; and Koehler, Wolfgang, 4,068,205, Cl. 338-25.000.

Koga, Einosuke: *See—*
Oda, Jun; Koga, Einosuke; Endo, Shiro; Aizawa, Ichiro; and Nishihara, Kyoko, 4,067,321, Cl. 128-2.10E.

Koga, Masahiro: *See—*
Shimada, Keizo; Harada, Toshiaki; Koga, Masahiro; and Nagahama, Shizuo, 4,067,870, Cl. 260-287.00F.

Koguchi, Toshio: *See—*
Hashimoto, Tadahiro; Okuyama, Yasushi; Koguchi, Toshio; Wada, Koji; Sakamoto, Mitsuru; Yanagawa, Takayuki; and Yamamoto, Kyoji, 4,068,018, Cl. 427-38.000.

Kohama, Tokio: *See—*
Obayashi, Hideki; Kohama, Tokio; Kawai, Hisasi; and Egami, Tsuneyuki, 4,067,233, Cl. 73-116.000.

Kohler, Armin; Pelousek, Herbert; and Frohberg, Ekkehard, to Bayer Aktiengesellschaft. Filaments and fibers having improved dyeability prepared from bis ethoxylated tetramethyl bisphenol A. 4,067,850, Cl. 260-47.00C.

Koji, Karashima: *See—*
Yasushi, Nishino; Saburo, Adachi; Koji, Karashima; and Ken, Iwai, 4,067,284, Cl. 114-260.000.

Kojima, Akira; Aoki, Teruaki; and Suzuki, Norio. Method of making a semiconductor device. 4,067,100, Cl. 29-578.000.

Kok, Cornelis Hendrik, to U.S. Philips Corporation. Interchangeable magnetic storage element. 4,068,271, Cl. 360-97.000.

Kokubo, Yasushi, to Nihon Denshi Kabushiki Kaisha. Scanning electron microscope. 4,068,123, Cl. 250-311.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Sato, Gunkichi; and Yamaguchi, Masahisa, 4,068,186, Cl. 330-149.000.

Komarov, Anatoli N. Convertible sofa and method for assembling and disassembling same. 4,067,073, Cl. 5-13.000.

Komatsu, Hidetoshi; Tezuka, Mutsuto; and Morozumi, Shinji, to Kabushiki Kaisha Suwa Seikosha. Hearing aid. 4,068,090, Cl. 179-1.00A.

Komet Stahlhalter-und Werkzeugfabrik Robert Breuning GmbH: *See—*
Eckle, Otto; and Winger, Paul, 4,067,251, Cl. 82-1.200.

Komiya, Hidetsugu, to Fujitsu Fanuc Limited. Numerical control system. 4,068,297, Cl. 364-107.000.

Kondo, Yoshiaki: *See—*
Ishino, Yoshiaki; and Kondo, Yoshiaki, 4,068,301, Cl. 364-200.000.

Konno, Ryozo; Goto, Kiyoshi; and Matsubara, Toru, to Toyo Ink Manufacturing Co., Ltd. Ultraviolet light curable coating compositions. 4,067,791, Cl. 204-159.150.

Kono, Toshiyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary piston engine. 4,067,300, Cl. 123-8.130.

Kono, Yoshinao: *See—*
Takamori, Shigeru; Kono, Yoshinao; and Takemoto, Hirotaka, 4,067,835, Cl. 260-22.00R.

Konyak, John Francis; Troxtel, Edrol Ford; Schuman, George Mundy, Jr.; Maguire, Andrew Hugh; and Guthrie, Elwin Arthur, to Plessey Incorporated. Ceramic rapper rod assembly. 4,067,549, Cl. 74-579.00R.

Koo, Jayoung; and Thomas, Gareth, to United States of America, Energy. High strength, high ductility low carbon steel. 4,067,756, Cl. 148-144.000.

Koppers Company, Inc.: *See—*
Van Ackeren, Joseph; and Tucker, Linwood G., 4,067,778, Cl. 202-248.000.

Korpela, Heikki; Norrhede, Lars; and Warna, Ralf, to Gullfiber AB. Apparatus for producing a body of porous thermoplastic material. 4,067,672, Cl. 425-4.00C.

Korthase, Craig F. Collapsible doll house. 4,067,137, Cl. 46-12.000.

Kosaka, Yoshiteru: *See—*
Hirota, Akira; Ota, Yoshihiko; and Kosaka, Yoshiteru, 4,068,257, Cl. 358-4.000.

Koshiba, Masao: *See—*
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 4,067,868, Cl. 260-251.0QB.

Kostrzewa, Michael: *See—*
Holst, Arno; Lask, Helmut; and Kostrzewa, Michael, 4,068,067, Cl. 536-87.000.
Holst, Arno; Lask, Helmut; and Kostrzewa, Michael, 4,068,068, Cl. 536-88.000.

Kotin, Nikolai Nikolaevich: *See—*
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.

Kotrba, Zdenek: *See—*
Jaros, Frantisek; Kotrba, Zdenek; Ripka, Josef; Vobornik, Vaclav; Junek, Jan; Ohlidal, Vladimir; Hortlik, Frantisek; Brozkova, Marie; and Zukovska, Vera, 4,067,182, Cl. 57-58.950.

Kowallek, Rolf: *See—*
Ahlisch, Hans-Dieter; Amann, Rolf; Bald, Franz; Dostal, Gerhard; Folster, Alfred; Schleh, Wolfgang; Kachele, Gunther; Kowallek, Rolf; and Schnaufer, Helmut, 4,067,602, Cl. 296-71.000.

Koyama, Mikihiro: *See—*
Kurata, Noboru; Wakatsuki, Goroei; and Koyama, Mikihiro, 4,067,243, Cl. 74-6.000.

Kozhemyakin, Vladimir Alexeevich: *See—*
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.

Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, to Canon Kabushiki Kaisha. Photographic camera with an extrinsic coordinating system. 4,068,243, Cl. 354-60.00R.

Kozuki, Susumu: *See—*
Ohtaki, Shohei; Nakamura, Zenzo; and Kozuki, Susumu, 4,068,245, Cl. 354-149.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Kim, Jong-Dok, 4,067,772, Cl. 176-54.000.

Krambrock, Wolfgang; Heep, Dieter; and Eberhard, Norbert, to Waeschle Maschinenfabrik GmbH. Method and apparatus for the pneumatic conveying of bulk material. 4,067,622, Cl. 302-24.000.

Kramer, Charles J., to Xerox Corporation. Holographic scanning spinner. 4,067,639, Cl. 350-6.000.

Kravitz, Bernard L.; and Seaton, George R., to Dionics, Inc. Mesa-type high voltage switching integrated circuit. 4,068,255, Cl. 357-56.000.

Kreighbaum, William E.: *See—*
Comer, William T.; and Kreighbaum, William E., 4,067,904, Cl. 260-570.700.

Krein, John H.: *See—*
Berich, John J.; Krein, John H.; Augstin, Mervin L.; and Szwargulski, Jesse L., 4,067,306, Cl. 123-198.00D.

Kresta, Jiri E., to Ashland Oil, Inc. Catalytic trimerization of polyisocyanates. 4,067,830, Cl. 260-2.5AW.

Kreuz, Alfred. Check valve for large conduits. 4,067,356, Cl. 137-527.000.

Krier, Philipp, to Mirabed AG. Upholstered body. 4,067,076, Cl. 5-351.000.

Krueger, Keith T., to Gould Inc. Combination cover interlock and trip actuator. 4,068,200, Cl. 335-172.000.

Kruzic, Zelko J.; and Rexroad, James O., to Westinghouse Electric Corporation. Circuit breaker with improved terminal connection means. 4,068,287, Cl. 361-341.000.

Krygier, Edward Z., to Lear Siegler, Inc. Wheel trimmer. 4,067,310, Cl. 125-11.0TP.

Kucera, Frank Joseph; and Brown, Thomas Desmond, to IWS Nominee Company Limited. Warp knit upholstery fabrics. 4,067,209, Cl. 66-195.000.

Kudou, Tadashi: *See—*
Ikoma, Kazuo; Takeda, Hidetomo; Kudou, Tadashi; and Kuriki, Shigeya, 4,068,092, Cl. 179-1.0VL.

Kuhnlein, Werner; Eggenberger, Heinrich; and Minet, Heinz Walter, to Gretag Aktiengesellschaft. Data indicator unit. 4,068,089, Cl. 178-22.000.

Kurata, Noboru; Wakatsuki, Goroei; and Koyama, Mikihiro, to Honda Giken Kogyo Kabushiki Kaisha. Engine starting device for a motorcycle. 4,067,243, Cl. 74-6.000.

Kuratomo, Yaichi: *See—*
Takano, Yoshinari; Fujita, Keiji; Teraoka, Yasuo; Nishida, Masahiro; Fujitani, Ryoichi; and Kuratomo, Yaichi, 4,067,827, Cl. 260-2.50B.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Segawa, Masahiro; Ota, Mitsuru; and Hada, Yoshiyuki, 4,068,034, Cl. 428-263.000.

Kuriki, Shigeya: *See—*
Ikoma, Kazuo; Takeda, Hidetomo; Kudou, Tadashi; and Kuriki, Shigeya, 4,068,092, Cl. 179-1.0VL.

Kurozu, Toshio; and Miyashita, Norio, to Mitsui Mining & Smelting Co., Ltd.; and Honda Motor Co., Ltd. Seat lock device. 4,067,611, Cl. 297-355.000.

Kurt H. Volk, Inc.: *See—*
Herbert, Everett H.; Lyon, Randolph S., Jr.; Volk, Kurt E., Jr.; and Wassmer, Robert W., 4,067,171, Cl. 53-31.000.

Kurz, Jerome Leigh. Apparatus for high-volume sampling of gases at constant mass flow rate. 4,067,705, Cl. 55-210.000.

Kutscher, Gerhard: *See—*
Bernhardt, Siegfried; and Kutscher, Gerhard, 4,067,086, Cl. 19-101.000.

Kwast, Theodore Emil, to Singer Company, The. Reset assembly for slam-shut valves. 4,067,359, Cl. 137-630.140.

Kyuroku Kabushiki-Kaisha: *See—*
Takahashi, Soroku, 4,067,188, Cl. 59-35.0CP.

L. M. Cox Manufacturing Co., Inc.: *See—*
Pinkerton, Kenneth R.; and Malewicki, Douglas J., 4,067,139, Cl. 46-249.000.

L. Schuler GmbH: *See—*
Schneider, Franz; Maier, Karl; and Tappen, Gerhard, 4,067,458, Cl. 214-8.50D.

Labinsky, Michael; and Vetter, Michael, to Siemens Aktiengesellschaft. Circuit for determining the slope of a signal. 4,068,165, Cl. 324-62.000.

Laboratoires Cassenne: *See—*
Buret, Jean-Pierre; Hercelin, Bernard; Hamon, Jean-Francois; and Balea, Trajan, 4,067,988, Cl. 424-272.000.

Lackey, Walter J., Jr.; and Sease, John D., to United States of America, Energy Research and Development Administration. Process to minimize cracking of pyrolytic carbon coatings. 4,068,015, Cl. 427-6.000.

Lado, Ernest Andres, to Nichols Engineering & Research Corporation. Oil burner system. 4,067,682, Cl. 431-11.000.

Lafargue, Jean. Folding table. 4,067,266, Cl. 108-112.000.

Lagace, Lawrence J., Jr.: *See—*
Dorman, Richard A.; Kissinger, Curtis D.; and Lagace, Lawrence J., Jr., 4,067,225, Cl. 73-1.0DV.

Lagasse, Alain: *See—*
Violland, Robert; Lagasse, Alain; Papillon, Bernard; Neel, Jean; and Coudurier, Maurice, 4,068,035, Cl. 428-279.000.

Lagerwall, Ralph Georg Torbjorn; and Sarnik, Stanislaw, to Kockums Mekaniska Verkstads AB. Device for contour cutting of metal plates. 4,067,556, Cl. 266-65.000.

Lagier, Michel, to Thomson-CSF. Electroacoustic transducer for deep submersion. 4,068,209, Cl. 340-10.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Vignardet, Lucien; and Boulet, Francis, 4,067,555, Cl. 266-58.000.

Laird, Richard P.: *See—*
Bryner, Alex M.; and Laird, Richard P., 4,067,116, Cl. 33-343.000.

Lanas, Angel: *See—*
Arnold, Franz; and Lanas, Angel, 4,067,560, Cl. 269-32.000.

Lander, Harry L., to Poly-Chem Industries, Inc. Aqueous urea metal complex composition. 4,067,893, Cl. 260-429.300.

Lanfermann, Willy, to Gebr. Eickhoff, Maschinenfabrik und Eisengieserei m.b.H. Rack-driven mining machine with pivotal guide shoe. 4,067,620, Cl. 299-43.000.

Lang, Hermann: *See—*
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,067,775, Cl. 195-99.000.

Lankinen, Matti: *See—*
Surakka, Jorma; and Lankinen, Matti, 4,067,814, Cl. 210-512.00R.

Larger, George K. Automatic building block laying panel-forming machine and method. 4,067,766, Cl. 156-297.000.

Larsen, Donald Wayne; and Billmyer, Jerrold Bain, to W. R. Grace & Co. Flow control agent for ultra thin epoxy resin powder coatings. 4,068,039, Cl. 428-418.000.

Larsen, Stein; and Mattsmyr, Goran, to ASEA Aktiebolag. Apparatus for charging metal plates edgewise into a metal melt. 4,067,463, Cl. 214-35.00R.

Larsson, Rolf Gosta, to Elektriska Svetsningsaktiebolaget. Method and apparatus for the manufacture of welded gratings. 4,068,110, Cl. 219-56.000.

Lask, Helmut: *See—*
Holst, Arno; Lask, Helmut; and Kostrzewa, Michael, 4,068,067, Cl. 536-87.000.
Holst, Arno; Lask, Helmut; and Kostrzewa, Michael, 4,068,068, Cl. 536-88.000.

Lasky, Richard J.: *See—*
Abramson, Allan P.; Dewees, John G.; and Lasky, Richard J., 4,067,129, Cl. 40-563.000.

Lataix, Gilbert, to Tuboplast France. Packaging container for the extemporaneous preparation of multi-component solutions. 4,067,440, Cl. 206-222.000.

Laufer, Siegmar, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roesaler. Process for preparing finely divided hydrophobic oxide particles. 4,068,024, Cl. 427-220.000.

Laughlin, Robert Gene, to Procter & Gamble Company, The. Controlled release article. 4,067,961, Cl. 424-15.000.

Lavagetto, Lawrence J. Cable rotator. 4,067,248, Cl. 74-501.00R.

Lavrov, Ivan Stepanovich: *See—*
Bezruk, Viktor Ivanovich; Dyakonov, Mikhail Nikolaevich; Lavrov, Ivan Stepanovich; Lazarev, Alexandr Nikolaevich; and Netupsky, Iosif Vulfovich, 4,067,735, Cl. 75-211.000.

Lawrence, Dean M., to Caterpillar Tractor Co. Latch assembly. 4,067,597, Cl. 292-228.000.

Lawrence, Robert Raymond. Towing A-frame structure for prefabricated building. 4,067,158, Cl. 52-143.000.

Lay, Kenneth George. Posture supporting apparatus. 4,067,326, Cl. 128-69.000.

Layman, Bruce W. Edging for synthetic turf material. 4,067,757, Cl. 156-71.000.

Lazarev, Alexandr Nikolaevich: *See—*
Bezruk, Viktor Ivanovich; Dyakonov, Mikhail Nikolaevich; Lavrov, Ivan Stepanovich; Lazarev, Alexandr Nikolaevich; and Netupsky, Iosif Vulfovich, 4,067,735, Cl. 75-211.000.

Lazennec, Yvon: *See—*
Desplanches, Gerard; Lazennec, Yvon; and Leboucq, Jacques, 4,068,048, Cl. 429-193.000.

Lazzari, Ettore; Arcamone, Federico; and di Marco, Aurelio, to Societa Farmaceutici Italia S.p.A. Daunosamine nucleosides. 4,067,968, Cl. 424-180.000.

Le Moteur Moderne: *See—*
Jarry, Philippe, 4,067,301, Cl. 123-26.000.

Leahy, Elizabeth P.; and Karustis, George A., to Oxy Metal Industries Corporation. Non-cyanide acidic silver electroplating bath and additive therefore. 4,067,784, Cl. 204-46.00R.

Leakey, Joseph W.; and Stollberg, Ray H., to Crown Zellerbach Corporation. Leak-proof box. 4,067,491, Cl. 229-23.00R.

Lear Siegler, Inc.: *See—*
Krygier, Edward Z., 4,067,310, Cl. 125-11.0TP.

Leatherman, Alfred F.: *See—*
Heller, William C., Jr.; and Leatherman, Alfred F., 4,067,765, Cl. 156-272.000.

Leathers, Kenneth L.; and Botner, T. J. Inflatable stretcher. 4,067,075, Cl. 5-82.00R.

Lebailly, Jacques, to U.S. Philips Corporation. Reversible optoelectronic semiconductor device. 4,068,252, Cl. 357-17.000.

Leboucq, Jacques: *See—*
Desplanches, Gerard; Lazennec, Yvon; and Leboucq, Jacques, 4,068,048, Cl. 429-193.000.

Le Carvennec, Francois: *See—*
Bied-Charreton, Philippe; and Le Carvennec, Francois, 4,068,258, Cl. 358-4.000.

LeClere, Ralph Joseph: *See—*
Hubbard, James Henry; LeClere, Ralph Joseph; and Underhill, Thomas Travis, 4,067,649, Cl. 355-14.000.

Lednikov, Anatoly Ivanovich: *See—*
Nikolaev, Igor Vladimirovich; Gornik, Leonid Avrumovich; Lednikov, Anatoly Ivanovich; and Dronova, Lidia Mikhailovna, 4,067,400, Cl. 173-134.000.

Lee, Ernest Paul, to Honeywell Information Systems, Inc. Apparatus for displaying new information on a cathode ray tube display and rolling over previously displayed lines. 4,068,225, Cl. 340-324.0AD.

Lee Pharmaceuticals: *See—*
Stoffey, Donald G.; and Orlowski, Jan Alexander, 4,068,082, Cl. 560-90.000.

Lee, Zion S.: *See—*
Swarts, John M.; and Lee, Zion S., 4,068,041, Cl. 428-625.000.

Leeds, William George: *See—*
Garland, Ian Philip; Hatton, Leslie Roy; Leeds, William George; and Parnell, Edgar William, 4,067,723, Cl. 71-92.000.

Legeza, Anatoly Vasilievich: *See—*
Khimenko, Lev Timofeevich; Degtyarev, Evgeny Nikolaevich; Baranov, Mikhail Ivanovich; Legeza, Anatoly Vasilievich; and Mezhuev, Alexandr Tikhonovich, 4,067,216, Cl. 72-56.000.

Leigh, Ashley P.: *See—*
Meyers, Thomas D.; and Leigh, Ashley P., 4,068,232, Cl. 343-6.80R.

Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin. Bead core having oppositely twisted bead rings. 4,067,375, Cl. 152-362.00R.

Leliaert, Raymond M., to Wheelabrator-Frye, Inc. Method and apparatus for bowl type vibratory finishing. 4,067,147, Cl. 51-163.200.

Le Noir, James L. Surgical instrument for meniscectomy and method of using the same. 4,067,340, Cl. 128-305.000.

Leorat, Francois, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Automatic change-speed transmission mechanism. 4,067,246, Cl. 74-329.000.

Lepert, Andre, to Exxon Research and Engineering Company. Polymerizing C_3 and C_4 olefins and diolefins with 3° hydrocarbyl halide to produce narrow molecular weight petroleum resins having low softening points. 4,068,062, Cl. 526-76.000.

Les Chaussures de Randonnai Shoes, Inc.: *See—*
Bergeron, Normand A.; and Villeneuve, Claude E., 4,067,126, Cl. 36-117.000.

Lester, Steven W.; Cromelin, John F.; and Davenport, James M., to American Hospital Supply Corporation. Crimper for bottle closures. 4,067,279, Cl. 113-1.00D.

Lever Brothers Company: *See—*
Evans, William Price; and Naik, Appayya Raghunath, 4,067,816, Cl. 252-8.800.
Reardon, Robert C., Jr.; and Gutierrez, Eddie N., 4,067,886, Cl. 260-340.700.

Levin, Vladimir Grigorievich: *See—*
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.

Lewis, Anthony Vincent. Process of applying protective coating. 4,067,737, Cl. 96-50.0PL.

Lewis, John Derek, to Ciba-Geigy AG. Method of preparing a monosize silver halide emulsion involving Ostwald ripening followed by a crystal growth stage. 4,067,739, Cl. 96-94.00R.

Lewis, Peter J.: *See—*
Miserlis, Constantine D.; and Lewis, Peter J., 4,068,053, Cl. 526-68.000.
Miserlis, Constantine D.; and Lewis, Peter J., 4,068,060, Cl. 526-68.000.

Leybold-Heraeus GmbH & Co. KG: *See—*
Polaschegg, Hans-Dietrich, 4,067,697, Cl. 23-259.000.

Liao, Henry H. J., to Xerox Corporation. Statistical resolution conversion technique. 4,068,266, Cl. 358-280.000.

Licht, Helmut: *See—*
Knorr, Walter; Licht, Helmut; Raquet, Erwin; and Spieker, Walter, 4,067,600, Cl. 295-23.000.

Lieberman, Harold: *See—*
Werth, Andrew; and Lieberman, Harold, 4,068,104, Cl. 179-175.30R.

Life Savers, Inc.: *See—*
Carlin, Owen; Beam, John E.; and Vermesh, Robert, 4,068,004, Cl. 426-3.000.

Likuski, Robert K., to Micro-Bit Corporation. Method and apparatus for deep depletion read-out of MOS electron beam addressable memories. 4,068,218, Cl. 365-237.000.

Lim, Gary M. F.: *See—*
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,068,075, Cl. 544-105.000.
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,068,078, Cl. 544-105.000.
Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., 4,068,080, Cl. 544-105.000.

Lindenmaier, Klaus, to Daimler-Benz Aktiengesellschaft. Split-gas production for internal combustion engine. 4,067,299, Cl. 123-3.000.

Lipe Rollway Corporation: *See—*
Armstrong, Jack W., 4,068,029, Cl. 428-89.000.

Lipinski, Vincent B. Solar heated shelter with moveable secondary roof. 4,067,347, Cl. 135-4.00R.

List, Ferdinand; Rauhut, Otto; Hegenberg, Peter; and Strobele, Rudolf, to Chemische Werke Huls Aktiengesellschaft. Process for the purification of 1,10-decanedicarboxylic acid. 4,067,779, Cl. 203-28.000.

Littelfuse, Inc.: *See—*
Ciesmier, Allen L., 4,067,103, Cl. 29-623.000.

Little, Oney M., to Raymond Lee Organization, Inc., The, a part interest. Truck trailer fifth wheel pin lock. 4,067,213, Cl. 70-232.000.

Livingston, Cecil E. Fishing pole adaptor kit. 4,067,133, Cl. 43-18.00R.

Ljutin, Felix Betsialovich: *See—*
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.

Lo, David Chan-Wai: *See—*
Fan, George Jee; Lo, David Chan-Wai; and Mitchell, Joseph William, 4,068,240, Cl. 346-75.000.

Lockheed Aircraft Corporation: *See—*
Stout, Ernest G.; and Thornburg, Francis L., 4,067,286, Cl. 114-283.000.

Lockheed Corporation: *See—*
Paterson, John Howard; and Wilson, Francis Marion, Jr., 4,067,518, Cl. 244-130.000.

Loew, Peter: *See—*
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, 4,067,889, Cl. 260-364.000.

Lofgren, Stig-Gunnar; and Ekeborg, Bo Gunnar, to Mooch Domsjo Aktiebolag. Digging and planting machine. 4,067,268, Cl. 111-2.000.

London Hospital Medical College, The: *See—*
Braden, Michael, 4,067,842, Cl. 260-31.600.

Long, Don Wesley: *See—*
Reger, David William; Garber, Murray; and Long, Don Wesley, 4,067,882, Cl. 260-327.00M.

Long, Erwin L. Method and structural support for increasing load carrying capacity in permafrost. 4,067,198, Cl. 61-36.00A.

Loomis, Robert Paul: *See—*
Hurd, Charles Duane; and Loomis, Robert Paul, 4,068,270, Cl. 360-84.000.

Lord, Thomas J., to United Aircraft Products, Inc. Temperature compensated quantity indicator. 4,067,381, Cl. 165-11.000.

L'Oreal: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,067,869, Cl. 260-270.0PY.

Losenhausen Maschinenbau AG: *See—*
Baumers, Hans, 4,067,244, Cl. 74-61.000.

Lou, Perry W., to Texas Instruments Incorporated. MOS source follower circuit. 4,068,140, Cl. 307-304.000.

Lovat, Richard. Device for erecting a segmented tunnel wall lining. 4,067,201, Cl. 61-84.000.

Lovejoy, George C.: *See—*
Owen, William S., Jr.; and Lovejoy, George C., 4,067,250, Cl. 81-9.510.

Loveless, John H.: *See—*
Seamone, Woodrow; and Loveless, John H., 4,067,070, Cl. 3-1.100.

Lowe, James N.; and Grebe, Byron C. Casting of articles containing calcined gypsum. 4,067,939, Cl. 264-42.000.

Lowry, James, to Westinghouse Electric Corporation. Elevator system. 4,067,416, Cl. 187-29.00R.

Lubrizol Corporation, The: *See—*
Steckel, Thomas Frier, 4,067,698, Cl. 44-66.000.

Lucas Industries Limited: *See—*
Potter, James Charles, 4,067,304, Cl. 123-140.0MP.

Lukasiewicz, Ronald J., to Union Oil Company of California. Fuel composition. 4,067,699, Cl. 44-66.000.

Lurssen, Klaus: *See—*
Beck, Gunther; Heitzer, Helmut; and Lurssen, Klaus, 4,067,721, Cl. 71-92.000.

Luzzi, John J.: *See—*
Ramey, Chester E.; and Luzzi, John J., 4,067,848, Cl. 260-45.8NE.

Lyon, Randolph S., Jr.: *See—*
Herbert, Everett H.; Lyon, Randolph S., Jr.; Volk, Kurt E., Jr.; and Wassmer, Robert W., 4,067,171, Cl. 53-31.000.

Lyons, Michael J., III, to Wessendorf, Walter F., Jr. Reciprocable magnet switch. 4,068,202, Cl. 335-207.000.

M & W Gear Company: *See—*
Bradford, John O., 4,067,120, Cl. 34-65.000.

Mack, Anthony C.; and Shumrak, George K., to Sweetheart Plastics, Inc. Food serving tray. 4,068,115, Cl. 219-386.000.

MacKay, Patrick W., to Fierro Esponja, S.A. Method for gaseous reduction of metal ores. 4,067,728, Cl. 75-35.000.

Mackie, David M., to MacMillan Bloedel Limited. Alkaline pulping of lignocellulosic material with amine and sulfate pretreatment. 4,067,768, Cl. 162-65.000.

MacMillan Bloedel Limited: *See—*
Mackie, David M., 4,067,768, Cl. 162-65.000.

Macnair, Richard N.: *See—*
Arons, Gilbert N.; Coffin, Laurance G.; and Macnair, Richard N., 4,067,210, Cl. 66-202.000.

Madec, Francois: *See—*
Delobelle, Emile-Jean; and Madec, Francois, 4,067,373, Cl. 152-354.00R.

Madoff, Herbert S., to GTE Sylvania Incorporated. Digital phase-locked loop frequency modulator. 4,068,199, Cl. 332-19.000.

Madzgalla, Hans Georg: *See—*
Rath, Heinrich Bernhard; Madzgalla, Hans Georg; and Micke, Sigma, 4,067,418, Cl. 188-72.400.

Maeda, Akinori: *See—*
Amada, Nobutaka; Sampei, Tohru; and Maeda, Akinori, 4,068,187, Cl. 330-268.000.

Maeda, Kiyoshi: *See—*
Yamazaki, Taro; Ohnishi, Kazuhiko; and Maeda, Kiyoshi, 4,068,197, Cl. 331-94.50S.

Maeda, Tetsuya: *See—*
Murakami, Masuo; Isaka, Ichiro; Kawahara, Norio; Iwanami, Masaru; Fujimoto, Masaharu; Maeda, Tetsuya; Shibanuma, Tadao; and Nagano, Yoshinobu, 4,068,074, Cl. 544-27.000.

Magnavox Company, The: *See—*
Hicks, James E.; Zahnen, Joseph G.; and Wedam, Werner F., 4,068,158, Cl. 323-17.000.

Magruder, Samuel L.: *See—*
Teel, Billy E.; and Magruder, Samuel L., 4,068,275, Cl. 361-44.000.

Maguire, Andrew Hugh: *See—*
Konyak, John Francis; Troxtel, Edrol Ford; Schuman, George Mundy, Jr.; Maguire, Andrew Hugh; and Guthrie, Elwin Arthur, 4,067,549, Cl. 74-579.00R.

Maier, Karl: *See—*
Schneider, Franz; Maier, Karl; and Tappen, Gerhard, 4,067,458, Cl. 214-8.50D.

Makino, Kenya: *See—*
Ikeda, Hiroharu; Matsumoto, Shuichi; and Makino, Kenya, 4,068,063, Cl. 526-97.000.

Malachesky, Paul A.: *See—*
Eustace, Daniel J.; and Malachesky, Paul A., 4,068,046, Cl. 429-105.000.

Malakhov, Gennady Vasilievich: *See—*
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.

Malarkey, Edward C., to Westinghouse Electric Corporation. Gas laser system. 4,068,193, Cl. 331-94.50G.

Malarkey, Edward C.; and Pautienus, Robert P., to Westinghouse Electric Corporation. Laser system. 4,068,194, Cl. 331-94.50G.

Malecha, Richard J., to Caterpillar Tractor Co. Fluid-borne noise-suppressor for hydraulic pump. 4,067,195, Cl. 60-469.000.

Malewicki, Douglas J.: *See—*
Pinkerton, Kenneth R.; and Malewicki, Douglas J., 4,067,139, Cl. 46-249.000.

Malfatti, Emanuele: *See—*
Collina, Amilcare; Malfatti, Emanuele; and Cappelli, Antonio, 4,067,908, Cl. 260-603.00C.

Maling, Klim: *See—*
Beausoleil, William F.; and Maling, Klim, 4,068,304, Cl. 364-200.000.

Malinowski, William J., to Chloride Incorporated. Smoke detector with means for changing light pulse frequency. 4,068,130, Cl. 250-574.000.

Mamaeva, Galina Alexandrovna: *See—*
Semkina, Novella Vladimirovna; Mamaeva, Galina Alexandrovna; Nechaev, Evgeny Alexeevich; and Vinogradov, Viktor Petrovich, 4,067,792, Cl. 204-195.00S.

Mandersson, Ragnar, to AB Ziristor. Method for the manufacture of laminate webs with firm edge strip. 4,067,763, Cl. 156-264.000.

Mangialardi, Gino J., Jr.; and Griffin, Anselm C., Jr., to United States of America, Agriculture. Radial electrode for determining the amount of moisture in seed cotton. 4,068,167, Cl. 324-65.00P.

Maniaci, Robert P., to Boman Industries. Apparatus for variably positioning and securing car radios and the like. 4,067,654, Cl. 403-4.000.

Maniaci, Robert P., to Boman Industries. Detachable cover member for car radios and the like. 4,068,175, Cl. 325-352.000.

Manley, Roger Edward Wentworth, to Medishield Corporation Limited, The. Lung ventilator. 4,067,328, Cl. 128-145.600.

Mann, Walter: *See—*
Blott, John; Chegwin, William; and Mann, Walter, 4,067,770, Cl. 162-274.000.

Manning, Charles R., Jr.: *See—*
United States of America, National Aeronautics and Space Administration; Honeycutt, Leroy, III; and Manning, Charles R., Jr., 4,067,742, Cl. 106-43.000.

Manning, Harold E., to Petro-Tex Chemical Corporation. Dehydrogenation process. 4,067,924, Cl. 260-683.300.

Manoury, Philippe Michel Jacques: *See—*
Najer, Henry; Giudicelli, Don Pierre Rene Lucien; Manoury, Philippe Michel Jacques; and Roger, Jean-Marie Louis Eugene, 4,067,996, Cl. 424-308.000.

Mansmann, Manfred; and Rambold, Wolfgang, to Bayer Aktiengesellschaft. Production of improved chromium oxide green pigment. 4,067,747, Cl. 106-302.000.

Mansour, Gerald J. Mechanical security device for doors. 4,067,598, Cl. 292-259.00R.

Mardiguian, Jean, to Societe Anonyme dite: MAR-PHA, Societe d'Etude et d'Exploitation de Marques. Terpenophenols. 4,067,899, Cl. 260-465.00F.

Marforio, Nerino, to Rockwell-Rimoldi S.p.A. Device for stacking articles of clothing in a sewing unit. 4,067,272, Cl. 112-121.290.

Marforio, Nerino, to Rockwell-Rimoldi S.p.A. Device for cutting and inserting a strip beneath the presser foot of a sewing machine. 4,067,273, Cl. 112-130.000.

Marforio, Nerino, to Rockwell-Rimoldi S.p.A. Feed adjusting device for sewing machines. 4,067,274, Cl. 112-209.000.

Marhic, Gerard, to Commissariat a l'Energie Atomique. Valve for an electron bombardment welding machine and machine fitted with such valve. 4,068,112, Cl. 219-121.0EB.

Marin, Pierre Dominique, to Exxon Research and Engineering Company. Dust laying. 4,067,818, Cl. 252-88.000.

Mark, Victor, to General Electric Company. Non-opaque flame retardant polycarbonate composition. 4,067,846, Cl. 260-45.9KA.

Markland, Richard Donald; Stucki, Frank Fred; and Bryant, Paul Max, to Consolidated Freightways, Inc. Method and apparatus for measuring air pressure in pneumatic tires. 4,067,235, Cl. 73-146.500.

Markov, Jury Mikhailovich: *See—*
Arabei, Boris Georgievich; Zukher, Mark Semenovich; Markov, Jury Mikhailovich; Trokhina, Galina Nikolaevna; Tjurin, Viktor Alexandrovich; Khazanov, Iosif Isaakovich; Belmer, Pavel Fedorovich; and Zverev, Ivan Ivanovich, 4,067,743, Cl. 106-44.000.

Markush, Peter: *See—*
Scholl, Hans-Joachim; Markush, Peter; and Dieterich, Dieter, 4,067,815, Cl. 252-8.100.

Marshall, John L.: *See—*
Bringhurst, Edward D.; and Marshall, John L., 4,068,121, Cl. 250-227.000.

Marshall, Preston Fairfax: *See—*
Dangel, Phoenix Nathan; and Marshall, Preston Fairfax, 4,068,047, Cl. 429-142.000.

Martin, Barrie James, to Plessey Handel und Investments AG. Fuel injection system. 4,067,496, Cl. 239-102.000.

Martin, James W., to William Zinsser & Co. Enzyme-containing article for removing paper adhered to a surface. 4,067,773, Cl. 195-63.000.

Martin Marietta Corporation: *See—*
Johnson, Charles H.; and Booker, Robert A., 4,068,156, Cl. 318-575.000.

Martin, Raymond W. Fishing lure and bait therefor. 4,067,135, Cl. 43-43.140.

Martini, Thomas, to Hoechst Aktiengesellschaft. Fluorine containing ketones. 4,067,884, Cl. 260-340.600.

Marval, Eduard: *See—*
Votapek, Vaclav; Marval, Eduard; Jilek, Rudolf; and Stamberg, Karel, 4,067,821, Cl. 252-427.000.

Marx, Bruce C.: *See—*
Cerniway, Leon A.; and Marx, Bruce C., 4,067,064, Cl. 2-2.10R.

Marx, Gerhard: *See—*
Degenhardt, Karl-Heinz; Frank, Hermann; and Marx, Gerhard, 4,068,249, Cl. 354-300.000.

Maschinenfabrik Sack GmbH: *See—*
Hoffmann, Rudolf, 4,067,220, Cl. 72-201.000.

Masi, Paolo: *See—*
Foglio, Maurizio; Franceschi, Giovanni; Masi, Paolo; and Suarato, Antonino, 4,067,866, Cl. 260-239.00A.

Masreliez, Karl-Gustav: *See—*
Andermo, Ingvar; and Masreliez, Karl-Gustav, 4,068,207, Cl. 340-3.00R.

Mass Transfer Limited: *See—*
Ellis, Stephen Robert Mercer; Priestley, Ronald; and McKeown, Kevin Joseph, 4,067,936, Cl. 261-98.000.

Massachusetts Institute of Technology: *See—*
Patil, Suhas S., 4,068,214, Cl. 340-166.00R.

Masson, Andre A., to Etablissements Pierre Angenieux. Lighting projector. 4,068,117, Cl. 362-33.000.

Masson, Yves, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Radial tire having sidewalls reinforced with a rubbery mixture having a high modulus. 4,067,372, Cl. 152-354.00R.

Mast, John George, Jr., to Procter & Gamble Company, The. Method of forming tampons and assembling same in inserters. 4,067,087, Cl. 28-118.000.

Master, Arthur M., Jr.: *See—*
Wuchinich, David G., 4,068,149, Cl. 315-200.00A.

Matechuk, Edward. Dry wall adhesive tape applicator. 4,067,294, Cl. 118-415.000.

Mathers, James Evan: *See—*
Chenot, Charles Frederic; Mathers, James Evan; and Shaffer, Francis Nathan, 4,068,128, Cl. 250-483.000.

Matsubara, Toru: *See—*
Konno, Ryozo; Goto, Kiyoshi; and Matsubara, Toru, 4,067,791, Cl. 204-159.150.

Matsuda, Kazuo; Wada, Mitsuyoshi; and Nishida, Kazumori, to Kabushiki Kaisha Komatsu Seisakusho. Operating device for winch control valves. 4,067,546, Cl. 254-187.400.

Matsuhisa, Seikichi: *See—*
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhisa, Seikichi, 4,067,915, Cl. 260-648.00R.

Matsumoto, Kazuya: *See—*
Yano, Akio; and Matsumoto, Kazuya, 4,067,638, Cl. 350-3.500.

Matsumoto, Norichika: *See—*
Tsushima, Susumu; Matsumoto, Norichika; and Numata, Mitsuo, 4,068,071, Cl. 544-19.000.
Tsushima, Susumu; Matsumoto, Norichika; and Numata, Mitsuo, 4,068,072, Cl. 544-19.000.

Matsumoto, Shuichi: *See—*
Ikeda, Hiroharu; Matsumoto, Shuichi; and Makino, Kenya, 4,068,063, Cl. 526-97.000.

Matsunaga, Hiroomi; Tsuji, Kozo; and Watanabe, Masashi, to Sumitomo Chemical Company, Limited; and Hayashibara Biochemical Laboratories, Incorporated. Coated seed containing pullulan-based resin used as binder. 4,067,141, Cl. 47-57.600.

Matsushita Electric Industrial Co., Ltd.: *See—*
Fujiwara, Shinji; and Shibata, Takuo, 4,068,253, Cl. 357-31.000.
Iijima, Yasuo; and Shimizu, Tokihiko, 4,068,286, Cl. 361-315.000.
Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, 4,068,272, Cl. 360-113.000.
Minami, Shunji, 4,068,136, Cl. 307-353.000.
Ueno, Yoshinobu; and Shibata, Tadayoshi, 4,067,658, Cl. 403-357.000.

Matthey, Hubert: *See—*
Huguenin, Raymond; Matthey, Hubert; and Engdahl, Jean, 4,068,171, Cl. 324-79.00R.

Mattsmyr, Goran: *See—*
Larsen, Stein; and Mattsmyr, Goran, 4,067,463, Cl. 214-35.00R.

Mauceri, Frank A., to Nalco Chemical Company. Formulation and application of compositions for the detackification of paint spray booth wastes. 4,067,806, Cl. 210-52.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Hohla, Kristian; and Fuss, Werner, 4,068,196, Cl. 331-94.50G.

May & Baker Limited: *See—*
Garland, Ian Philip; Hatton, Leslie Roy; Leeds, William George; and Parnell, Edgar William, 4,067,723, Cl. 71-92.000.

Mayerhofer, Edvin Sven. Device for connecting plate members or similar constructional parts. 4,067,655, Cl. 403-4.000.

Mayhue, Jack. Super cooler for an air conditioning system. 4,067,205, Cl. 62-279.000.

Mays, Robert K.: *See—*
Wason, Satish K.; and Mays, Robert K., 4,067,746, Cl. 106-288.00B.

McBeth, Charles R. Mounting bracket for record album covers. 4,067,536, Cl. 248-475.00R.

McClintock Manufacturing Corporation: *See—*
McClintock, Richard D., 4,068,221, Cl. 340-244.00C.

McClintock, Richard D., to McClintock Manufacturing Corporation. Immersion responsive sensor. 4,068,221, Cl. 340-244.00C.

McCormack, William, to British Cast Iron Research Association. Making foundry moulds. 4,067,380, Cl. 164-166.000.

McEathron, Eugene Douglas, to General Signal Corporation. Emergency valve cover containing a quick service valve. 4,067,624, Cl. 303-69.000.

McElwain, John Christee, to Rockwell International Corporation. Universal bearing joint. 4,067,626, Cl. 308-207.00R.

McGady, Donald L.; Hooper, Thomas M.; and Wilczynski, Joseph E., to Mercy Hospital and Medical Center. Sterilizing system and automatic control therefor. 4,067,691, Cl. 21-56.000.

McGann, John J., Jr. Utensil for holding boiled eggs. 4,067,559, Cl. 269-13.000.

McGary, Willard Graydon. Solder recovery system. 4,067,221, Cl. 72-263.000.

McGill, James E.: *See—*
Hollister, James F.; McGill, James E.; and Stoddard, William H., 4,067,361, Cl. 138-42.000.

McGonagle, Hugh K. Tape dispenser. 4,067,510, Cl. 242-55.200.

McInerney, Michael J., to Vapor Corporation. Apparatus for controlling fuel flow fluid heater burner. 4,067,684, Cl. 431-90.000.

McKeown, Joseph; Fraser, John S.; and Schriber, Stanley O., to Atomic Energy of Canada Limited. Charged particle beam deflector. 4,068,146, Cl. 315-5.260.

McKeown, Kevin Joseph: *See—*
Ellis, Stephen Robert Mercer; Priestley, Ronald; and McKeown, Kevin Joseph, 4,067,936, Cl. 261-98.000.

McKinney, Lee R. Apparatus and method for cleaning air filter elements. 4,067,749, Cl. 134-21.000.

McKinstry, James E., to Nelson Manufacturing Company. Thermostatically protected electric immersion water heater. 4,068,116, Cl. 219-523.000.

McLaughlin, Richard S.; Plaski, Walter; and Swartzendruber, Robert F., to Docutel Corporation. Depository system. 4,067,267, Cl. 109-24.100.

McMillan, William J., to Dow Chemical Company, The. Composite panels for building constructions. 4,067,164, Cl. 52-309.120.

McMorrow, John J.: *See—*
Awer, Erika; and McMorrow, John J., 4,067,473, Cl. 215-226.000.

McNeil, John. Sheet roll assembly for copying machine. 4,067,567, Cl. 271-172.000.

McTaggart, James Everett, to Singer Company, The. Direct reading sinad meter. 4,068,176, Cl. 325-363.000.

Mead Johnson & Company: *See—*
Comer, William T.; and Kreighbaum, William E., 4,067,904, Cl. 260-570.700.

Meade, Hazel, to Commercial Decal, Inc. Heat-releasable decalcomanias and adhesive composition therefor. 4,068,033, Cl. 428-201.000.

Mechanical Technology Incorporated: *See—*
Dorman, Richard A.; Kissinger, Curtis D.; and Lagace, Lawrence J., Jr., 4,067,225, Cl. 73-1.0DV.
White, Harlan Vernon, 4,067,667, Cl. 417-418.000.

Med-Chem Laboratories: *See—*
Kabara, Jon J., 4,067,997, Cl. 424-312.000.

Medical Products Octagon AB: *See—*
Nimell, Erik Arne, 4,067,668, Cl. 417-492.000.

Medico Developments, Inc.: *See—*
Chiulli, Robert D., 4,067,339, Cl. 128-303.00R.

Medishield Corporation Limited, The: *See—*
Manley, Roger Edward Wentworth, 4,067,328, Cl. 128-145.600.

Medtronic, Inc.: *See—*
Burton, Charles V., 4,067,342, Cl. 128-418.000.

Meints, Edward G.: *See—*
Gebhart, Daniel E.; Meints, Edward G.; and Smith, Brace C., 4,067,661, Cl. 415-118.000.

Meisinger, Wilhelm R.: *See—*
Zahn, Irwin; Meisinger, Wilhelm R.; and Fischer, Edward M., 4,067,105, Cl. 29-628.000.

Melatti, Livio R.: *See—*
Chayka, George A.; Koehler, Joel J.; and Melatti, Livio R., 4,068,170, Cl. 324-72.500.

Melvold, Robert W.: *See—*
Vrolyk, John J.; and Melvold, Robert W., 4,067,759, Cl. 156-94.000.

Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., to Bristol-Myers Company. O-2-isocephem-4-carboxylic acid derivatives as antibacterial agents. 4,068,075, Cl. 544-105.000.

Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., to Bristol-Myers Corporation. O-2-Isocephem-4-carboxylic acid derivatives as antibacterial agents. 4,068,078, Cl. 544-105.000.

Menard, Marcel; Lim, Gary M. F.; and Conway, Terry T., to Bristol-Myers Company. O-2-Isocephem-4-carboxylic acid derivatives as antibacterial agents. 4,068,080, Cl. 544-105.000.

Mendenhall, Robert L. Asphalt-aggregate recycle. 4,067,552, Cl. 366-24.000.

Merck & Co., Inc.: *See*—
Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Schultz, Everett M., 4,067,980, Cl. 424-248.400.
Fisher, Michael H.; Smith, George B.; and Hoff, Dale R., 4,067,987, Cl. 424-272.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,067,775, Cl. 195-99.000.

Mercy Hospital and Medical Center: *See*—
McGady, Donald L.; Hooper, Thomas M.; and Wilczynski, Joseph E., 4,067,691, Cl. 21-56.000.

Merrigan, James P., to Argonite, Inc. Sandblast abrading apparatus. 4,067,150, Cl. 51-436.000.

Merten, Gerhard: *See*—
Peters, Wolfgang; Hauschopp, Alois; and Merten, Gerhard, 4,067,619, Cl. 299-43.000.

Mesnel, Francois; and Mesnel, Gerard. Sealing joints for automobile body and an extrusion head for extruding such joints. 4,067,146, Cl. 49-490.000.

Mesnel, Gerard: *See*—
Mesnel, Francois; and Mesnel, Gerard, 4,067,146, Cl. 49-490.000.

Messerschmidt, Rudolph: *See*—
Naffa, Faisal A.; and Messerschmidt, Rudolph, 4,067,263, Cl. 105-499.000.

Metzler, Albert, to International Telephone and Telegraph Corporation. Hybrid power switch. 4,068,273, Cl. 361-3.000.

Meyer, Franklin, Jr. Variable amplification expanding plug gage. 4,067,114, Cl. 33-178.00R.

Meyers, Thomas D.; and Leigh, Ashley P., to Fairchild Industries, Inc. Passive encoding microwave transponder. 4,068,232, Cl. 343-6.80R.

Mezhuev, Alexandr Tikhonovich: *See*—
Khimenko, Lev Timofeevich; Degtyarev, Evgeny Nikolaevich; Baranov, Mikhail Ivanovich; Legeza, Anatoly Vasilievich; and Mezhuev, Alexandr Tikhonovich, 4,067,216, Cl. 72-56.000.

Michniak, John, to Velsicol Chemical Corporation. Process for the production of 2,5-dichloro-4-bromophenol. 4,067,913, Cl. 260-623.00H.

Micke, Sigma: *See*—
Rath, Heinrich Bernhard; Madzgalla, Hans Georg; and Micke, Sigma, 4,067,418, Cl. 188-72.400.

Micro-Bit Corporation: *See*—
Likuski, Robert K., 4,068,218, Cl. 365-237.000.

Midcon Pipeline Equipment Co.: *See*—
Birdwell, J. C., 4,067,450, Cl. 214-1.00P.

Midland-Ross Corporation: *See*—
Popp, Roger C., 4,068,206, Cl. 338-36.000.

Mikkola, Osmo Arvid Ilmari; and Braugenhardt, Staffan Anders Emil, to Telefonaktiebolaget L M Ericsson. Method of and apparatus for switching service information units in a TDM system. 4,068,099, Cl. 179-15.0AT.

Mikula, Raymond J.: *See*—
Rattenborg, Christen C.; and Mikula, Raymond J., 4,068,096, Cl. 179-2.00A.

Milcoy, Edgar Albert Philip, to Arrow-Hart (Europe) Limited. Base member for electrical components. 4,067,529, Cl. 248-221.400.

Milek, Robert C. Cement batcher. 4,067,478, Cl. 222-56.000.

Miller Brewing Company: *See*—
Chicoye, Etzer; Helbert, J. Raymond; and Rice, James F., 4,068,005, Cl. 426-16.000.

Miller, Charles Dale, to A. Duda and Sons. Combined hedger-topper. 4,067,178, Cl. 56-235.000.

Miller, George A.; and Weiler, Ernest D., to Rohm and Haas Company. Stabilization of solutions of 3-isothiazolones. 4,067,878, Cl. 260-302.00A.

Miller, Michael Grant: *See*—
Alden, John Todd; Miller, Michael Grant; and Sabo, Stephen Charles, 4,067,374, Cl. 152-354.00R.

Miller, Russell C., to J. M. Eltzroth & Associates, Inc. Coating compositions. 4,067,837, Cl. 260-29.6NR.

Milliken Research Corporation: *See*—
Yates, Robert V., Jr., 4,067,170, Cl. 53-28.000.

Minami, Shunji, to Matsushita Electric Industrial Co., Ltd. Analog voltage memory device. 4,068,136, Cl. 307-353.000.

Minejima, Yukihiko; Yamashita, Masahiro; and Tsuda, Haruo, to Fujitsu Ltd. High speed coding system for PCM signals with coarse and fine coding in an overlapping range. 4,068,229, Cl. 340-347.0AD.

Minet, Heinz Walter: *See*—
Kuhnlein, Werner; Eggenberger, Heinrich; and Minet, Heinz Walter, 4,068,089, Cl. 178-22.000.

Minihane, Robert P., to Hyde Athletic Industries, Inc. Sole construction. 4,067,123, Cl. 36-32.00R.

Minolta Camera Kabushiki Kaisha: *See*—
Ohneda, Shoichi; and Okano, Yukio, 4,068,260, Cl. 358-44.000.

Minton, Abraham: *See*—
Teng, James; Stubits, Marcella C.; Minton, Abraham; and Baker, James H., 4,067,824, Cl. 252-522.000.

Minty, George J., Jr. Apparatus for games. 4,067,577, Cl. 273-275.0GA.

Miori, Nilo M., to Camillus Cutlery Co. Method of fabricating a decorative knife handle. 4,067,947, Cl. 264-154.000.

Mirabed AG: *See*—
Krier, Philipp, 4,067,076, Cl. 5-351.000.

Miserlis, Constantine D.; and Lewis, Peter J., to Badger Company, Inc., The. Method of removing water from liquid olefin in the polymerization of olefins. 4,068,053, Cl. 526-68.000.

Miserlis, Constantine D.; and Lewis, Peter J., to Badger Company, Inc., The. Method of removing oligomers from olefin monomer vapor in the polymerization of olefins. 4,068,060, Cl. 526-68.000.

Mitchell, Joseph William: *See*—
Fan, George Jee; Lo, David Chan-Wai; and Mitchell, Joseph William, 4,068,240, Cl. 346-75.000.

Mitnik, Viktor Leonidovich: *See*—
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Tomita, Tetsuo; Yoshii, Tadashi; and Ito, Akira, 4,067,851, Cl. 260-47.0ET.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Atsukawa, Masumi; and Tatani, Atsushi, 4,067,707, Cl. 55-242.000.
Yasushi, Nishino; Saburo, Adachi; Koji, Karashima; and Ken, Iwai, 4,067,284, Cl. 114-260.000.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Yui, Hiroshi; Moriwaki, Saburo; Ichikawa, Yukihiro; and Ohi, Shigekazu, 4,067,847, Cl. 260-45.70R.

Mitsui Mining & Smelting Co., Ltd.: *See*—
Kurozu, Toshio; and Miyashita, Norio, 4,067,611, Cl. 297-355.000.

Mitsui Toatsu Chemicals Inc.: *See*—
Nakagawa, Toshimi; Numata, Takanobu; and Ito, Noribumi, 4,068,061, Cl. 526-68.000.

Miwa, Tsuneyoshi; Nakazawa, Shinji; Itoga, Masaaki; Sano, Keizo; Nakamura, Itaru; Watanabe, Taigi; and Shingu, Yasuhiko, to Toray Industries, Inc. Fiber and film forming polyester composition. 4,067,855, Cl. 260-75.00R.

Miyaguchi, Yoichiro, to Nittan Company, Limited. Gas sensing element. 4,067,695, Cl. 23-254.00E.

Miyakawa, Gene K. Heat exchanger core assembly for engine cooling system. 4,067,384, Cl. 165-151.000.

Miyakawa, Nobuaki; and Igarashi, Osamu, to Hitachi, Ltd. Signal converter. 4,068,138, Cl. 307-262.000.

Miyashita, Norio: *See*—
Kurozu, Toshio; and Miyashita, Norio, 4,067,611, Cl. 297-355.000.

Miyata, Makoto, to Eisai Co., Ltd. Method of medical treatment of myasthenia. 4,068,003, Cl. 424-331.000.

Mobil Oil Corporation: *See*—
Butter, Stephen A., 4,067,919, Cl. 260-668.00D.
Chen, Nai Yuen; Gilleapie, Bernard M.; Ireland, Henry R.; and Stein, Thomas R., 4,067,797, Cl. 208-15.000.
Kaeding, Warren W., 4,067,920, Cl. 260-671.00M.
Savins, Joseph George, 4,067,389, Cl. 166-246.000.

Moedritzer, Kurt; and Ringwald, Eugene L., to Monsanto Company. Condensation products of phosphine oxides. 4,067,934, Cl. 260-931.000.

Moesch, Rudolf: *See*—
Hofer, Kurt; Moesch, Rudolf; Tscheulin, Guenther; and Voykowitsch, Anton, 4,067,895 Cl. 260-404.

Mohilo, Oskar; Kessler, Karl H.; and Stumpf, Friedrich Wilhelm, to Pfaff Industriemaschinen GmbH; Mohilo, Oskar; and Kessler, Karl H. Control device for a sewing machine. 4,067,276, Cl. 112-220.000.

Moline, Clifford C., to Products Research & Chemical Corporation. Two part material meter-mix dispenser apparatus. 4,067,479, Cl. 222-94.000.

Molins Limited: *See*—
Davies, Robert William; and Thornton, Leonard, 4,067,436, Cl. 198-742.000.

Moller, Walter H., to Western Gear Corporation. Pipe delivery system. 4,067,453, Cl. 214-2.500.

Monroe Belgium N.V.: *See*—
Keijzer, Johan H.; Jossa, Louis J.; and Vanhove, Henri C. J., 4,067,558, Cl. 267-34.000.

Monsanto Company: *See*—
Chiang, Robert; and Perry, Eli, 4,067,805, Cl. 210-23.00R.
Dutra, Gerard A., 4,067,719, Cl. 71-86.000.
Intille, George M., 4,067,900, Cl. 560-138.000.
Moedritzer, Kurt; and Ringwald, Eugene L., 4,067,934, Cl. 260-931.000.

Montecatini Edison S.p.A.: *See*—
Montiglio, Ugo; Aspes, Pierfrancesco; Scotti, Carlo; and Basile, Giampiero, 4,068,038, Cl. 428-404.000.

Montedison S.p.A.: *See*—
Collina, Amilcare; Malfatti, Emanuele; and Cappelli, Antonio, 4,067,908, Cl. 260-603.00C.

Montiglio, Ugo; Aspes, Pierfrancesco; Scotti, Carlo; and Basile, Giampiero, to Montecatini Edison S.p.A. Stabilized chromium dioxide compositions. 4,068,038, Cl. 428-404.000.

Mooch Domsjo Aktiebolag: *See*—
Lofgren, Stig-Gunnar; and Ekeborg, Bo Gunnar, 4,067,268, Cl. 111-2.000.

Mookherjee, Braja Dulal: *See*—
Vinals, Joaquin F.; Kiwala, Jacob; Withycombe, Donald Arthur; Mookherjee, Braja Dulal; and Mussinan, Cynthia J., 4,067,344, Cl. 131-17.00R.

Moore, Larry W.: *See*—
Rice, Joseph A., Jr.; Moore, Larry W.; and Donald, Robert C., 4,068,208, Cl. 340-7.00R.

Moore, R. Dale: *See*—
Datta, Arthur S.; Owens, David G.; and Moore, R. Dale, 4,067,467, Cl. 214-145.00A.

Moore, Raymond H., to Battelle Memorial Institute. Process for coal liquefaction using electrodeposited catalyst. 4,067,795, Cl. 208-10.000.

Morawski, London T., to MP Tool & Engineering Company. Diaphragm chuck. 4,067,586, Cl. 279-1.00D.

Morey, Booker W.; and White, William R., to Occidental Petroleum Corporation. Flotation separation of glass from a mixture of comminuted inorganic materials. 4,067,502, Cl. 241-20.000.

Morgan, Brian: *See*—
Thorne, David Edward; Baggaley, Keith Howard; and Morgan, Brian, 4,067,892, Cl. 260-410.90R.

Morge, Michael P.; and Shiffler, Robert A., to Caterpillar Tractor Co. Ladder assembly for construction vehicles. 4,067,588, Cl. 280-163.000.

Mori, Kazuo: *See*—
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 4,067,868, Cl. 260-251.0QB.

Mori, Keizi, to Aisin Seiki Kabushiki Kaisha. Vehicle roof. 4,067,604, Cl. 296-137.00J.

Morin, Claude, to CERCA, Compagnie pour l'Etude et la Realisation de Combustibles Atomiques. Fluidized bed reactor. 4,067,118, Cl. 34-10.000.

Morita, Hiroshi, to Hitachi, Ltd. Address translation managing system with translation pair purging. 4,068,303, Cl. 364-200.000.

Morita, Kazuhiko: *See*—
Yamada, Yasuyuki; Morita, Kazuhiko; and Akashi, Goro, 4,068,040, Cl. 428-425.000.

Moritz, George Jordan, to Akzona Incorporated. Salt seasoning mixture. 4,068,006, Cl. 426-99.000.

Moriwaki, Saburo: *See*—
Yui, Hiroshi; Moriwaki, Saburo; Ichikawa, Yukihiro; and Ohi, Shigekazu, 4,067,847, Cl. 260-45.70R.

Morokawa, Shigeru: *See*—
Sekiya, Fukuo; Morokawa, Shigeru; and Nomura, Yasushi, 4,067,187, Cl. 58-23.00R.

Morozumi, Shinji: *See*—
Komatsu, Hidetoshi; Tezuka, Mutsuto; and Morozumi, Shinji, 4,068,090, Cl. 179-1.00A.

Morozumi, Yukio: *See*—
Yamada, Kuniharu; Morozumi, Yukio; and Iuchi, Keiichi, 4,068,285, Cl. 361-293.000.

Morris, Charles F., administrator: *See*—
Horvath, Frank P.; Appleby, J. Robert; and Morris, William J., deceased, 4,067,701, Cl. 51-33.00R.

Morris, Leeson R.: *See*—
Horning, Donald E.; Morris, Leeson R.; and Douglas, James L., 4,068,066, Cl. 544-105.000.

Morris, William J., deceased: *See*—
Horvath, Frank P.; Appleby, J. Robert; and Morris, William J., deceased, 4,067,701, Cl. 51-33.00R.

Morrison, Bertram L., to ACF Industries, Incorporated. Valve seat construction having a resilient member around the perimeter of the seat member. 4,067,542, Cl. 251-328.000.

Morrow, William D.: *See*—
Goss, John B.; and Morrow, William D., 4,067,447, Cl. 212-86.000.

Morton-Norwich Products, Inc.: *See*—
Pelosi, Stanford S., Jr., 4,067,888, Cl. 260-347.700.

Mosolov, Nikolai Kliontievich: *See*—
Rozengauz, Solomon Monuilovich; Tikhonov, Vasily Fedorovich; and Mosolov, Nikolai Kliontievich, 4,067,459, Cl. 214-16.40R.

Motegi, Naoto: *See*—
Unno, Yoichi; Motegi, Naoto; and Ito, Takao, 4,067,937, Cl. 264-1.000.

Motek, Inc.: *See*—
Weber, Jack E., 4,067,562, Cl. 269-71.000.

Motoren- und Turbinen Union Friedrichshafen GmbH: *See*—
Hofle, Hubert; and Flesch, Erwin, 4,067,307, Cl. 123-41.350.

Motoren- und Turbinen-Union Munchen GmbH: *See*—
Rossmann, Axel, 4,067,662, Cl. 416-97.00A.

Mott, James D., to Hydril Company. Subsurface well apparatus having flexing means and method of using same. 4,067,387, Cl. 166-156.000.

Motting, Gotz; Bauer, Wilhelm; and Kleisser, Werner, to Daimler-Benz Aktiengesellschaft. Mounting device for a flat structural part projecting from a vehicle body. 4,067,528, Cl. 248-204.000.

Moulin, Guy, to SKF Compagnie d'Applications Mecaniques. Method of electrolytically marking metallic articles. 4,067,790, Cl. 204-129.600.

Mouret, Edmund M.; and Garrett, Michael R., to FMC Corporation. Hydraulic operated casing hanger running tool. 4,067,388, Cl. 166-208.000.

Mouri, Takaaki: *See*—
Kato, Hideo; Mouri, Takaaki; and Nishikawa, Tomoyasu, 4,068,069, Cl. 542-427.000.

MP Tool & Engineering Company: *See*—
Morawski, London T., 4,067,586, Cl. 279-1.00D.

Mravic, Brian; Shapiro, Stanley; Watson, W. Gary; and Shapiro, Eugene, to Olin Corporation. Method of processing copper base alloys. 4,067,750, Cl. 148-2.000.

Mucke, Walter, to Filterwerk Mann & Hummel GmbH. Metering device for plastic raw materials. 4,067,483, Cl. 222-222.000.

Muckter, Heinrich: *See*—
Graudums, Ivars; Muckter, Heinrich; and Frankus, Ernst, 4,067,985, Cl. 424-267.000.

Muijs, Cornelis G. M.; and Decoene, Frans J. G. C., to Clayson N. V. Grain conveyor means. 4,067,343, Cl. 130-27.00R.

Mukaemachi, Takuji; and Enami, Shiro, to Hitachi, Ltd. Cross-point switch matrix and multistage switching network using the same. 4,068,215, Cl. 340-166.00R.

Mukhin, Anatoly Sergeevich: *See*—
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.

Mumford, Eustace H., to Owens-Illinois, Inc. Lehr loader. 4,067,434, Cl. 198-427.000.

Muntz, Ronald L.; and Via, Francis A., to Stauffer Chemical Company. Process for preparing polyesters with a catalyst system comprising an antimony-containing poly-condensation catalyst and an ethylenically unsaturated compound. 4,067,856, Cl. 260-75.00R.

Muntz, Ronald L.; and Walsh, Edward N., to Stauffer Chemical Company. Derivatives of phosphorus-containing aldehydes and ketones. 4,067,932, Cl. 260-927.00R.

Muntz, Ronald Lee, to Stauffer Chemical Company. Polyester catalyst system comprising an antimony-containing polycondensation catalyst and an ethylenically unsaturated compound and process employing same. 4,067,857, Cl. 260-75.00R.

Murakami, Masuo; Isaka, Ichiro; Kawahara, Norio; Iwanami, Masaru; Fujimoto; Masaharu; Maeda, Tetsuya; Shibanuma, Tadao; and Nagano, Yoshinobu, to Yamanouchi Pharmaceutical Co., Ltd. Cephalosporin derivatives having at the 3-position of the cephem ring a heterocyclic thiomethyl group with a carboxy or sulfo group and at the 7-position of the cephem ring an α-heterocylic acylaminophenylacetamide group. 4,068,074, Cl. 544-27.000.

Murphy, Frank W., Jr.; and Sparks, Buddy G., to Frank W. Murphy Manufacturer, Inc. Magnetic switch and circuitry for safety shut down of power equipment. 4,068,274, Cl. 361-23.000.

Murphy, George B., to Towmotor Corporation. Torque control system. 4,067,426, Cl. 192-.098.

Murphy, Gerald Elloit, II: *See*—
King, John A.; and Murphy, Gerald Elloit, II, 4,068,103, Cl. 179-115.5VC.

Murphy, John J. Railing. 4,067,548, Cl. 256-24.000.

Murray, Alan B., to Control Logic (Proprietary) Limited. Indication of rates of fuel consumption. 4,067,232, Cl. 73-115.000.

Mussinan, Cynthia J.: *See*—
Vinals, Joaquin F.; Kiwala, Jacob; Withycombe, Donald Arthur; Mookherjee, Braja Dulal; and Mussinan, Cynthia J., 4,067,344, Cl. 131-17.00R.

Myler, George W.: *See*—
Reid, Edward A., Jr.; Myler, George W.; and Payne, James E., 4,067,681, Cl. 431-10.000.

Myles, Innis Raymond: *See*—
Conway, Frank Horton; and Myles, Innis Raymond, 4,067,366, Cl. 141-59.000.

Naegeli, Peter, to Givaudan Corporation. Isopropyl- and isopropenyl cyclopentene carboxylic esters. 4,068,084, Cl. 560-122.000.

Naffa, Faisal A.; and Messerschmidt, Rudolph, to Brooks & Perkins, Incorporated, by said Faisal A. Naffa; and United States of America, Army, by said Rudolph Messerschmidt. Cargo system with restraint bar. 4,067,263, Cl. 105-499.000.

Nagahama, Shizuo: *See*—
Shimada, Keizo; Harada, Toshiaki; Koga, Masahiro; and Nagahama, Shizuo, 4,067,870, Cl. 260-287.00F.

Nagano, Yoshinobu: *See*—
Murakami, Masuo; Isaka, Ichiro; Kawahara, Norio; Iwanami, Masaru; Fujimoto, Masaharu; Maeda, Tetsuya; Shibanuma, Tadao; and Nagano, Yoshinobu, 4,068,074, Cl. 544-27.000.

Naik, Appayya Raghunath: *See*—
Evans, William Price; and Naik, Appayya Raghunath, 4,067,816, Cl. 252-8.800.

Najer, Henry; Giudicelli, Don Pierre Rene Lucien; Manoury, Philippe Michel Jacques; and Roger, Jean-Marie Louis Eugene, to Synthelabo. Phenylacetic acid derivatives. 4,067,996, Cl. 424-308.000.

Nakagaki, Masatoshi: *See*—
Godai, Tomokazu; Aida, Isao; and Nakagaki, Masatoshi, 4,068,113, Cl. 219-146.230.

Nakagawa, Kazuyuki; Yoshizaki, Shiro; Tanimura, Kaoru; and Tamada, Shigeharu, to Otsuka Pharmaceutical Co., Ltd. 5-(1-Hydroxy-2-(heterocyclic amino))ethyl-8-hydroxy-3,4-dihydrocarbostyril derivatives. 4,068,076, Cl. 544-128.000.

Nakagawa, Seiichi; and Shibuki, Youichi, to Nihon Denshi Kabushiki Kaisha. Insulated elastic support and clamping means for resistance heaters and emitter tip of electron gun. 4,068,145, Cl. 313-237.000.

Nakagawa, Toshimi; Numata, Takanobu; and Ito, Noribumi, to Mitsui Toatsu Chemicals Inc. Process for the continuous preparation of reactive copolymers. 4,068,061, Cl. 526-68.000.

Nakajima, Hiroshi: *See*—
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, 4,068,070, Cl. 542-470.000.

Nakajima, Shigeo; Takahashi, Ken; Itoh, Tsunetoshi; and Endo, Hajime, to Taiheiyo Engineering Inc. Apparatus for protecting of coal mine workers. 4,067,618, Cl. 299-31.000.

Nakajima, Tsuyoshi; and Shigesawa, Toshio, to Nippon Steel Corporation. Method for producing steel plate from a hot rolled steel coil. 4,067,215, Cl. 72-40.000.

Nakamo, Tsuyoshi: *See—*
Ohtomo, Koichiro; and Nakamo, Tsuyoshi, 4,067,769, Cl. 162-157.00R.

Nakamura, Itaru: *See—*
Miwa, Tsuneyoshi; Nakazawa, Shinji; Itoga, Masaaki; Sano, Keizo; Nakamura, Itaru; Watanabe, Taigi; and Shingu, Yasuhiko, 4,067,855, Cl. 260-75.00R.

Nakamura, Kiyoshi; Tsuboi, Takashi; and Otazawa, Nobuaki, to Hitachi, Ltd. Power supply system for a linear motor. 4,068,152, Cl. 318-135.000.

Nakamura, Yasuharu: *See—*
Sugiyama, Masatoshi; Ikeda, Tadashi; Ogawa, Akira; Nakamura, Yasuharu; and Kakimi, Fujio, 4,067,738, Cl. 96-84.00R.

Nakamura, Yasushi; and Terada, Hirotomo, to NCR Corporation. Checkout system. 4,068,213, Cl. 340-149.00A.

Nakamura, Zenzo: *See—*
Ohtaki, Shohei; Nakamura, Zenzo; and Kozuki, Susumu, 4,068,245, Cl. 354-149.000.

Nakazawa, Shinji: *See—*
Miwa, Tsuneyoshi; Nakazawa, Shinji; Itoga, Masaaki; Sano, Keizo; Nakamura, Itaru; Watanabe, Taigi; and Shingu, Yasuhiko, 4,067,855, Cl. 260-75.00R.

Nalco Chemical Company: *See—*
Mauceri, Frank A., 4,067,806, Cl. 210-52.000.
Werges, Darrell L., 4,067,902, Cl. 260-561.00N.

Narahara, Hisaaki: *See—*
Tsuchiya, Takao; and Narahara, Hisaaki, 4,068,256, Cl. 358-4.000.

Narozny, Ronald S., to Thomas & Betts Corporation. Electrical connector. 4,067,637, Cl. 339-198.00G.

Naruishi, Tadayuki; Kataoka, Youichi; and Sue, Kazutaka, to Toshiba Ray-O-Vac Co., Ltd. Alkaline dry cell. 4,068,049, Cl. 429-206.000.

National Steel Corporation: *See—*
Judge, James R., 4,067,242, Cl. 73-425.600.

NCR Corporation: *See—*
Graham, Richard E., 4,068,227, Cl. 340-347.0DD.
Nakamura, Yasushi; and Terada, Hirotomo, 4,068,213, Cl. 340-149.00A.

Neau, Alain; and Begey, Jean-Marie, to Garcia Corporation. Safety ski binding. 4,067,590, Cl. 280-626.000.

Nechaev, Evgeny Alexeevich: *See—*
Semkina, Novella Vladimirovna; Mamaeva, Galina Alexandrovna; Nechaev, Evgeny Alexeevich; and Vinogradov, Viktor Petrovich, 4,067,792, Cl. 204-195.00S.

Neel, Jean: *See—*
Violland, Robert; Lagasse, Alain; Papillon, Bernard; Neel, Jean; and Coudurier, Maurice, 4,068,035, Cl. 428-279.000.

Nelligan, William B., to Schlumberger Technology Corporation. Methods and apparatus for enhancing resolution in pulse analysis. 4,068,180, Cl. 328-109.000.

Nelson, Alfred M., to Addressograph Multigraph Corporation. Latent magnetic image transfer method and apparatus. 4,068,239, Cl. 346-74.100.

Nelson, Fredolf O., to General Foods Corporation. Gate control for printed web scanner. 4,067,760, Cl. 156-157.000.

Nelson Manufacturing Company: *See—*
McKinstry, James E., 4,068,116, Cl. 219-523.000.

Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-3,7-inter-m-phenylene-PGD, compounds. 4,067,907, Cl. 260-590.00C.

Nepote, Alain, to Garcia Corporation, The. Hydraulic brake for a fishing reel. 4,067,512, Cl. 242-84.50R.

Ness, Irving Stanley, to Johnson & Johnson. Re-usable tape tab for disposable diapers. 4,067,337, Cl. 128-287.000.

Ness, Irving Stanley, to Johnson & Johnson. Headrest cover fastening device. 4,067,609, Cl. 297-220.000.

Netupsky, Iosif Vulfovich: *See—*
Bezruk, Viktor Ivanovich; Dyakonov, Mikhail Nikolaevich; Lavrov, Ivan Stepanovich; Lazarev, Alexandr Nikolaevich; and Netupsky, Iosif Vulfovich, 4,067,735, Cl. 75-211.000.

Neuls, Frederick W., to Industrial Engineering, Inc. Precipitation cover. 4,067,067, Cl. 2-84.000.

New Nippon Electric Company, Ltd.: *See—*
Iwanari, Sadayoshi; and Umene, Osamu, 4,068,204, Cl. 337-408.000.

Neway Manufacturing, Inc.: *See—*
Horvath, Frank P.; Appleby, J. Robert; and Morris, William J., deceased, 4,067,701, Cl. 51-33.00R.

Newby, John R.: *See—*
Elias, James A., deceased; Newby, John R.; and Pierson, Marvin B., 4,067,754, Cl. 148-12.00F.

Newman, James W.; and Zajac, Ronald E., to Windings, Inc. Coil of flexible material with inserts in outer wall. 4,067,441, Cl. 206-398.000.

Newmont Exploration Limited: *See—*
Harris, Leonard; and Hanson, Alfred K., Jr., 4,067,789, Cl. 204-119.000.

Nichols Engineering & Research Corporation: *See—*
Lado, Ernest Andres, 4,067,682, Cl. 431-11.000.

Nicholson, John M.: *See—*
Ezis, Andre; and Nicholson, John M., 4,067,943, Cl. 264-86.000.

Nielsen, Donald L.; and Bagley, James R., to Union Oil Company of California. Rubberized asphalt paving composition and use thereof. 4,068,023, Cl. 427-138.000.

Nielsen, Jens Peter, to Pedershaab Maskinfabrik A/S. Machine for making concrete pipes in upright position. 4,067,679, Cl. 425-421.000.

Niemann, Klaus; and Wulf, Helmut, to Daimler-Benz Aktiengesellschaft. Steering mechanism with derivative action timer. 4,067,247, Cl. 74-499.000.

Nihon Denshi Kabushiki Kaisha: *See—*
Kokubo, Yasushi, 4,068,123, Cl. 250-311.000.
Nakagawa, Seiichi; and Shibuki, Youichi, 4,068,145, Cl. 313-237.000.

Nikolaev, Igor Vladimirovich; Gornik, Leonid Avrumovich; Lednikov, Anatoly Ivanovich; and Dronova, Lidia Mikhailovna. Pneumatic hammer. 4,067,400, Cl. 173-134.000.

Nimell, Erik Arne, to Medical Products Octagon AB. Valveless rotary-oscillating double-acting piston pump. 4,067,668, Cl. 417-492.000.

Nippon Chemiphar Co., Ltd.: *See—*
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, 4,068,070, Cl. 542-470.000.

Nippon Electric Co., Ltd.: *See—*
Hashimoto, Tadahiro; Okuyama, Yasushi; Koguchi, Toshio; Wada, Koji; Sakamoto, Mitsuru; Yanagawa, Takayuki; and Yamamoto, Kyoji, 4,068,018, Cl. 427-38.000.

Nippon Kakoki Company, Limited: *See—*
Okamoto, Chikashi, 4,067,097, Cl. 29-429.000.

Nippon Kogaku K.K.: *See—*
Nohda, Masao, 4,067,646, Cl. 351-6.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Ishioka, Hiroyuki; and Ise, Yasuo, 4,067,489, Cl. 228-5.700.

Nippon Soken, Inc.: *See—*
Obayashi, Hideki; Kohama, Tokio; Kawai, Hisasi; and Egami, Tsuneyuki, 4,067,233, Cl. 73-116.000.

Nippon Steel Corporation: *See—*
Nakajima, Tsuyoshi; and Shigesawa, Toshio, 4,067,215, Cl. 72-40.000.

Nippon Telegraph and Telephone Public Corporation: *See—*
Sugimura, Akira; Uchida, Naoya; and Kimura, Tatsuya, 4,067,643, Cl. 350-96.0WG.

Nishida, Kazumori: *See—*
Matsuda, Kazuo; Wada, Mitsuyoshi; and Nishida, Kazumori, 4,067,546, Cl. 254-187.400.

Nishida, Masahiro: *See—*
Takano, Yoshinari; Fujita, Keiji; Teraoka, Yasuo; Nishida, Masahiro; Fujitani, Ryoichi; and Kuratomo, Yaichi, 4,067,827, Cl. 260-2.50B.

Nishide, Katsuhiko: *See—*
Fujiwara, Takutoshi; and Nishide, Katsuhiko, 4,067,780, Cl. 204-2.000.

Nishihara, Kyoko: *See—*
Oda, Jun; Koga, Einosuke; Endo, Shiro; Aizawa, Ichiro; and Nishihara, Kyoko, 4,067,321, Cl. 128-2.10E.

Nishikawa, Tomoyasu: *See—*
Kato, Hideo; Mouri, Takaaki; and Nishikawa, Tomoyasu, 4,068,069, Cl. 542-427.000.

Nishino, Masaki: *See—*
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhisa, Seikichi, 4,067,915, Cl. 260-648.00R.

Nittan Company, Limited: *See—*
Miyaguchi, Yoichiro, 4,067,695, Cl. 23-254.00E.

Noakes, Jack E.; Sato, Hiroshi; and Terner, Leslie L., to Ford Motor Company. Method of forming a silicon carbide article. 4,067,955, Cl. 423-345.000.

Nogaj, Alfred: *See—*
Reinehr, Ulrich; Nogaj, Alfred; and Herbertz, Toni, 4,067,948, Cl. 264-182.000.

Nohda, Masao, to Nippon Kogaku K.K. Eyeground inspecting contact lens. 4,067,646, Cl. 351-6.000.

Nomiya, Kosei; and Tsuiki, Takao, to Hitachi, Ltd. Constant current driving circuit. 4,068,148, Cl. 315-169.00R.

Nomura, Noboru: *See—*
Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, 4,068,272, Cl. 360-113.000.

Nomura, Yasushi: *See—*
Sekiya, Fukuo; Morokawa, Shigeru; and Nomura, Yasushi, 4,067,187, Cl. 58-23.00R.

Norick, William B., to Caterpillar Tractor Co. Combined hydrostatic transmission implement system. 4,067,193, Cl. 60-445.000.

Norrhede, Lars: *See—*
Korpela, Heikki; Norrhede, Lars; and Warna, Ralf, 4,067,672, Cl. 425-4.00C.

Northern Telecom Limited: *See—*
King, Frederick David; and Kapron, Felix Paul, 4,067,642, Cl. 350-96.0WG.

Northrop Corporation: *See—*
Bhaumik, Mani L.; and Hasserjian, Gerard, 4,068,195, Cl. 331-94.50G.

Northwest Pipe & Casing Co.: *See—*
Elle, Ralph C.; and Walker, Jerry L., 4,067,228, Cl. 73-49.100.

Nouchi, Norimoto: *See—*
Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, 4,068,272, Cl. 360-113.000.

Novak, Robert M.: *See—*
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., 4,068,012, Cl. 426-538.000.

Novikov, Oleg Nikolaevich: *See—*
Yakshin, Alexandr Sergeevich; Novikov, Oleg Nikolaevich; Grechinsky, Dmitry Alexeevich; Klochko, Viktor Alexandrovich; and Rygalin, Viktor Georgievich, 4,067,231, Cl. 73-658.000.

NRC, Inc.: *See—*
Vartanian, Haig, 4,067,736, Cl. 75-251.000.

Numata, Mitsuo: *See—*
Tsushima, Susumu; Matsumoto, Norichika; and Numata, Mitsuo, 4,068,071, Cl. 544-19.000.
Tsushima, Susumu; Matsumoto, Norichika; and Numata, Mitsuo, 4,068,072, Cl. 544-19.000.

Numata, Takanobu: *See—*
Nakagawa, Toshimi; Numata, Takanobu; and Ito, Noribumi, 4,068,061, Cl. 526-68.000.

N.V. Klippan S.A.: *See—*
Weman, Per Olof, 4,067,612, Cl. 297-389.000.

Nyrop, Per: *See—*
Willus, Charles Arthur; and Nyrop, Per, 4,067,494, Cl. 233-3.000.

Nystrom, Per Henrik Gosta: *See—*
Gronvall, Karl Olof Ragnar; and Nystrom, Per Henrik Gosta, 4,067,191, Cl. 60-39.270.

Obayashi, Hideki; Kohama, Tokio; Kawai, Hisasi; and Egami, Tsuneyuki, to Nippon Soken, Inc. Intake air amount measuring system for an internal combustion engine. 4,067,233, Cl. 73-116.000.

Occidental Petroleum Corporation: *See—*
Morey, Booker W.; and White, William R., 4,067,502, Cl. 241-20.000.

Oce-van der Grinten N.V.: *See—*
Sessink, Bernardus Wilhelmus L. M., 4,067,296, Cl. 118-658.000.

Oda, Jun; Koga, Einosuke; Endo, Shiro; Aizawa, Ichiro; and Nishihara, Kyoko, to Governor of Tokyo Metropolis. Electrodes for electroencephalographic examinations. 4,067,321, Cl. 128-2.10E.

Odawara, Youji: *See—*
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Youji, 4,067,801, Cl. 210-5.000.

Oesterlein, Fritz; Hegar, Gert; and Seitz, Karl, to Ciba-Geigy AG. Fiber-reactive 2-hydroxy-pyrid-6-on-(3)-yl azo dyestuffs. 4,067,864, Cl. 260-153.000.

Oetiker, Hans, to Gebruder Buhler AG. Device for measuring the rate of flow of flowable products, particularly loose material. 4,067,238, Cl. 73-228.000.

Ofco, Inc.: *See—*
Sullivan, Daniel W., 4,067,810, Cl. 210-223.000.

Ogawa, Akira: *See—*
Sugiyama, Masatoshi; Ikeda, Tadashi; Ogawa, Akira; Nakamura, Yasuharu; and Kakimi, Fujio, 4,067,738, Cl. 96-84.00R.

Ogishi, Masaaki, to Yoshida Kogyo K.K. Method of driving door of automatic door assembly. 4,067,144, Cl. 49-360.000.

Ohi, Shigekazu: *See—*
Yui, Hiroshi; Moriwaki, Saburo; Ichikawa, Yukihiro; and Ohi, Shigekazu, 4,067,847, Cl. 260-45.70R.

Ohio State University Research Foundation, The: *See—*
Gassman, Paul G., 4,067,875, Cl. 260-294.80E.

Ohlidal, Vladimir: *See—*
Jaros, Frantisek; Kotrba, Zdenek; Ripka, Josef; Vobornik, Vaclav; Junek, Jan; Ohlidal, Vladimir; Hortlik, Frantisek; Brozkova, Marie; and Zukovska, Vera, 4,067,182, Cl. 57-58.950.

Ohneda, Shoichi; and Okano, Yukio, to Minolta Camera Kabushiki Kaisha. Combination optical low pass filter capable of phase and amplitude modulation. 4,068,260, Cl. 358-44.000.

Ohnishi, Kazuhiko: *See—*
Yamazaki, Taro; Ohnishi, Kazuhiko; and Maeda, Kiyoshi, 4,068,197, Cl. 331-94.50S.

Ohno, Kuniichiro: *See—*
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, 4,068,070, Cl. 542-470.000.

Ohno, Richard J., to Walter Kidde & Company, Inc. Trim alignment for mortise locks. 4,067,599, Cl. 292-356.000.

Ohtaki, Shohei; Nakamura, Zenzo; and Kozuki, Susumu, to Canon Kabushiki Kaisha. Exposure control system for flash photography. 4,068,245, Cl. 354-149.000.

Ohtomo, Koichiro; and Yoshimura, Takuji, to Kanebo, Ltd. Alkali-resistant glass composition and glass fibers made therefrom. 4,067,744, Cl. 106-50.000.

Ohtomo, Koichiro; and Nakamo, Tsuyoshi, to Kanebo, Ltd. Heat resistant and flame resistant papers. 4,067,769, Cl. 162-157.00R.

Okamoto, Chikashi, to Nippon Kakoki Company, Limited. Method of and arrangement for building cylindrical hollow structure. 4,067,097, Cl. 29-429.000.

Okano, Yukio: *See—*
Ohneda, Shoichi; and Okano, Yukio, 4,068,260, Cl. 358-44.000.

Oki Electric Industry Co., Ltd.: *See—*
Ikoma, Kazuo; Takeda, Hidetomo; Kudou, Tadashi; and Kuriki, Shigeya, 4,068,092, Cl. 179-1.0VL.

Okinaka, Yutaka; and Wolowodiuk, Catherine, to Bell Telephone Laboratories, Incorporated. Gold electroplating process. 4,067,783, Cl. 204-43.00G.

Okuyama, Yasushi: *See—*
Hashimoto, Tadahiro; Okuyama, Yasushi; Koguchi, Toshio; Wada, Koji; Sakamoto, Mitsuru; Yanagawa, Takayuki; and Yamamoto, Kyoji, 4,068,018, Cl. 427-38.000.

Olask, Antoinette S. Friction massage member. 4,067,325, Cl. 128-62.00R.

O'Leary, Stephen H., to IVAC Corporation. Syringe pump drive system and disposable syringe cartridge. 4,067,332, Cl. 128-214.00F.

Olin Corporation: *See—*
Mravic, Brian; Shapiro, Stanley; Watson, W. Gary; and Shapiro, Eugene, 4,067,750, Cl. 148-2.000.

Olmstead, Edward Allen, to Black Bocs, Ltd. Computer performance measurement. 4,068,302, Cl. 364-200.000.

Olsen, Herbert. Collapsible ladders. 4,067,413, Cl. 182-164.000.

Olson, William: *See—*
Schumacher, Roger R.; and Olson, William, 4,067,093, Cl. 29-156.50R.

Olsson, Sven-Gunnar; Castor, Rolf; and Tchang, Gabriel, to Siemens Aktiengesellschaft. Arrangement for drift compensation in a gas analyzer. 4,067,320, Cl. 128-2.00C.

Olstowski, Franciszek, to Dow Chemical Company, The. Rapid setting polyurethanes from diols and polyfunctional isocyanates. 4,067,834, Cl. 260-18.0TN.

O'Meara, Thomas R., to Hughes Aircraft Company. Frequency scanned illumination imaging array. 4,068,234, Cl. 343-17.000.

O'Neill, Padraic Seamus: *See—*
Worthington, Ralph Eric; and O'Neill, Padraic Seamus, 4,067,957, Cl. 423-484.000.

Onizawa, Masao, to Sanyo Trading Co., Ltd. Curable compositions containing chloroprene rubber. 4,067,859, Cl. 260-78.00A.

Ono, Yoshikazu, to Kabushiki Kaisha Suwa Seikosha. Method of making a rotor for electronic wristwatch step motor. 4,067,101, Cl. 29-598.000.

Onogawa, Yukio: *See—*
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, 4,068,070, Cl. 542-470.000.

Onoki, Seiji: *See—*
Sonobe, Tadashi; and Onoki, Seiji, 4,068,135, Cl. 307-352.000.

Opper, Lincoln I. Calculator-like device especially useful as an adjunct to a CB radio. 4,068,308, Cl. 364-449.000.

Oprandi, Pierre: *See—*
Tinet, Claude; Peltier, Jean Paul; Oprandi, Pierre; and Romeas, Rene, 4,068,259, Cl. 358-13.000.

Optilon W. Erich Heilmann GmbH: *See—*
Heimberger, Helmut, 4,067,208, Cl. 66-193.000.

Orchard, Lewis Preole, to RCA Corporation. Food product extrusion apparatus and method. 4,068,008, Cl. 426-272.000.

Ore-Ida Foods, Inc.: *See—*
Green, Glen R.; and Hodges, Joseph L., 4,068,011, Cl. 426-482.000.

O'Rear, Jacques G.: *See—*
Griffith, James R.; and O'Rear, Jacques G., 4,067,860, Cl. 260-78.0TF.

Orlowski, Jan Alexander: *See—*
Stoffey, Donald G.; and Orlowski, Jan Alexander, 4,068,082, Cl. 560-90.000.

Orr, Thomas Samuel Campbell: *See—*
Kingsley, Patrick John; and Orr, Thomas Samuel Campbell, 4,067,992, Cl. 424-283.000.

Ortabasi, Ugur: *See—*
Fehlner, Francis P.; and Ortabasi, Ugur, 4,067,315, Cl. 126-271.000.

Orth, Hans-Dieter: *See—*
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,067,775, Cl. 195-99.000.

Orth, Joseph P.; and Schmidt, Gerald F. Electrically operated retractable jack. 4,067,543, Cl. 254-86.00R.

Osann, Robert. Manual dexterity percussion game. 4,067,574, Cl. 273-95.00R.

Ostrowski, Piotr, to Girling Limited. Self-energizing applied wedge actuator. 4,067,417, Cl. 188-71.400.

Oswald, Alexis A.; and Valint, Paul L., to Ciba-Geigy Corporation. O-(Methyl or ethyl)-S-(propyl or butyl)-O-alkyl-(thio/sulfinyl/sulfonyl)-methylphenyl-thiophosphates. 4,067,972, Cl. 424-216.000.

Ota, Masataka: *See—*
Ito, Satoru; Ota, Masataka; and Sugawara, Katsuro, 4,067,099, Cl. 29-571.000.

Ota, Mitsuru: *See—*
Segawa, Masahiro; Ota, Mitsuru; and Hada, Yoshiyuki, 4,068,034, Cl. 428-263.000.

Ota, Yoshihiko: *See—*
Hirota, Akira; Ota, Yoshihiko; and Kosaka, Yoshiteru, 4,068,257, Cl. 358-4.000.

Otazawa, Nobuaki: *See—*
Nakamura, Kiyoshi; Tsuboi, Takashi; and Otazawa, Nobuaki, 4,068,152, Cl. 318-135.000.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Nakagawa, Kazuyuki; Yoshizaki, Shiro; Tanimura, Kaoru; and Tamada, Shigeharu, 4,068,076, Cl. 544-128.000.

Otto, Jeffrey C., to GTE Sylvania Incorporated. Phase-locked loop frequency shift key modulator. 4,068,198, Cl. 332-19.000.

Outboard Marine Corporation: *See—*
Ehrlich, Josef, 4,067,302, Cl. 123-73.0AA.

Overman, Sherman A. Shelf support strip. 4,067,530, Cl. 248-235.000.

Overton, Glen. Method of drying blood. 4,067,119, Cl. 34-12.000.

Ovutime, Inc.: *See—*
Schuster, Samuel R., 4,067,229, Cl. 73-54.000.

Owen, William S., Jr.; and Lovejoy, George C., to General Electric Company. Mechanism for stripping insulation from wire. 4,067,250, Cl. 81-9.510.

Owens-Corning Fiberglas Corporation: *See—*
Chang, Robert C., 4,067,849, Cl. 260-47.00C.

Owens, David G.: *See—*
Datta, Arthur S.; Owens, David G.; and Moore, R. Dale, 4,067,467, Cl. 214-145.00A.

Owens-Illinois, Inc.: *See—*
Karabedian, James A., 4,067,949, Cl. 264-230.000.
Mumford, Eustace H., 4,067,434, Cl. 198-427.000.

Oxy Metal Industries Corporation: *See—*
Leahy, Elizabeth P.; and Karustis, George A., 4,067,784, Cl. 204-46.00R.

Ozaki, Toshiharu: *See—*
Inubushi, Masanobu; Yamamoto, Hajime; and Ozaki, Toshiharu, 4,067,557, Cl. 266-89.000.
P. Fanghanel & Co. Ltd.: *See—*
Fanghanel, Peter Frederick Walter, 4,067,269, Cl. 112-3.00R.
Pace, Thomas L.: *See—*
Brin, Raymond L.; and Pace, Thomas L., 4,067,316, Cl. 126-271.000.
Pacific Northwest Broadcasting Corporation: *See—*
Thompson, Thomas F., 4,068,100, Cl. 179-15.0BT.
Padden, William R. Heating and cooling system for a multiple coil installation. 4,067,383, Cl. 165-35.000.
Pako Corporation: *See—*
Anderson, Conrad V.; and Kellett, William B., 4,068,250, Cl. 354-316.000.
Palumbo, Arnaldo. Small ball sliding in both directions along two thread lengths. 4,067,569, Cl. 272-67.000.
Paoletti, Rodolfo: *See—*
Ferruti, Paolo; and Paoletti, Rodolfo, 4,067,876, Cl. 260-295.50A.
Papillon, Bernard: *See—*
Violland, Robert; Lagasse, Alain; Papillon, Bernard; Neel, Jean; and Coudurier, Maurice, 4,068,035, Cl. 428-279.000.
Pappas, Spiro J.: *See—*
Kenny, John M.; and Pappas, Spiro J., 4,067,523, Cl. 246-130.000.
Park, John Allen, to H. B. Zachry Company. Coating system using tape encapsulated particulate coating material. 4,067,291, Cl. 118-7.000.
Parke, Davis & Company: *See—*
Poschel, Bruno P. H.; and Butler, Donald E., 4,067,983, Cl. 424-263.000.
Parker, Delmer G.; Fraser, Lawrence J.; and Scaletta, Joseph L., to Xerox Corporation. Magnetic microfield donor system. 4,067,295, Cl. 118-653.000.
Parker Manufacturing Company: *See—*
Cunningham, Richard L., 4,067,223, Cl. 72-391.000.
Parks, Melvin Hal; and Parks, Melvin Ray. Height adjustable refuse compaction and ejection system. 4,067,464, Cl. 214-38.0BA.
Parks, Melvin Hal: *See—*
Parks, Melvin Ray; and Parks, Melvin Hal, 4,067,466, Cl. 214-82.000.
Parks, Melvin Ray; and Parks, Melvin Hal. Refuse ejection door. 4,067,466, Cl. 214-82.000.
Parks, Melvin Ray: *See—*
Parks, Melvin Hal; and Parks, Melvin Ray, 4,067,464, Cl. 214-38.0BA.
Parnell, Edgar William: *See—*
Garland, Ian Philip; Hatton, Leslie Roy; Leeds, William George; and Parnell, Edgar William, 4,067,723, Cl. 71-92.000.
Pascoe, Richard Terry: *See—*
Garvie, Ronald Charles; Hannink, Richard Henri Jan; and Pascoe, Richard Terry, 4,067,745, Cl. 106-57.000.
Passavant-Werke Michelbacher Hutte: *See—*
Busse, Oswald; and Klesper, Hugo, 4,067,807, Cl. 210-82.000.
Paterson, John Howard; and Wilson, Francis Marion, Jr., to Lockheed Corporation. Drag reducer for lift surface of aircraft. 4,067,518, Cl. 244-130.000.
Patil, Suhas S., to Massachusetts Institute of Technology. Asynchronous logic array. 4,068,214, Cl. 340-166.00R.
Patton, James H.: *See—*
Watts, John L., Jr.; and Patton, James H., 4,067,200, Cl. 61-72.500.
Paul Troester Maschinenfabrik: *See—*
Koch, Klaus, 4,067,554, Cl. 366-84.000.
Paules, Eugene H., to ExCel Engineering, Inc. Carton set-up and loading machine. 4,067,172, Cl. 53-53.000.
Pautienus, Robert P.: *See—*
Malarkey, Edward C.; and Pautienus, Robert P., 4,068,194, Cl. 331-94.50G.
Payet, George Louis, to Strike Corporation, The. Durable press process for cellulosic fiber-containing fabrics utilizing formaldehyde and an aryl sulfonic liquid or acid catalyst. 4,067,688, Cl. 8-116.400.
Payne, James E.: *See—*
Reid, Edward A., Jr.; Myler, George W.; and Payne, James E., 4,067,681, Cl. 431-10.000.
Peak, Steven C.: *See—*
Anderson, Thomas E.; Peak, Steven C.; and Ibsen, Ole N., 4,068,294, Cl. 363-58.000.
Pease, William M.; Bussiere, Bernard; and Battles, Carl E., to Raytheon Company. Radar system having interference rejection. 4,068,233, Cl. 343-7.00A.
Peddinghaus, Rolf; and Regenbrecht, Ludwig, to Peddinghaus, Rolf. Machine tool with cylindrical assembly units. 4,067,252, Cl. 83-571.000.
Pedershaab Maskinfabrik A/S: *See—*
Nielsen, Jens Peter, 4,067,679, Cl. 425-421.000.
Peisakhov, Isaak Leibovich: *See—*
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.
Pejrud, Lennart Erik. Arrangements for movably supporting display elements. 4,067,537, Cl. 248-476.000.
Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. 5-(4-Chlorophenyl)-N-(2-propynyl)furfurylamines. 4,067,888, Cl. 260-347.700.
Pelousek, Herbert: *See—*
Kohler, Armin; Pelousek, Herbert; and Frohberg, Ekkehard, 4,067,850, Cl. 260-47.00C.
Peltier, Jean Paul: *See—*
Tinet, Claude; Peltier, Jean Paul; Oprandi, Pierre; and Romeas, Rene, 4,068,259, Cl. 358-13.000.
Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, to Societa Farmaceutici Italia S.p.A. Anthracycline glycosides, their preparation and use. 4,067,969, Cl. 424-180.000.
Penionshek, Eduard Kazimirovich: *See—*
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.
Pentith, Gerald Richard Oldham, to Pitcraft Limited. Electrical conduit. 4,067,257, Cl. 104-140.000.
Perkins, Alfred G. Trowel for pipe lining material. 4,067,680, Cl. 425-460.000.
Perl, Richard L., to Tappan Company, The. Gas valve. 4,067,539, Cl. 251-11.000.
Perrier, Dorothy M.; and Benerito, Ruth R., to United States of America, Agriculture. Diquaternary ammonium cellulosic fabrics with wrinkle resistant properties. 4,067,689, Cl. 8-129.000.
Perronnet, Jacques; Taliani, Laurent; and Teche, Andre, to Roussel Uclaf. Certain 2-carbamoyl-1,2,4-thiadiazole-3-one herbicides. 4,067,720, Cl. 71-90.000.
Perry, Eli: *See—*
Chiang, Robert; and Perry, Eli, 4,067,805, Cl. 210-23.00R.
Pesiri, James B., to J. C. Sales & Mfg. Co., Inc. Arm rest and mounting bracket therefor. 4,067,613, Cl. 297-416.000.
Peter, Heinrich: *See—*
Bickel, Hans; Kocsis, Karoly; and Peter, Heinrich, 4,067,979, Cl. 424-246.000.
Peters, Emil. Fence for feed lots or the like. 4,067,547, Cl. 256-23.000.
Peters, Philip H., Jr.; and Wilbur, Donald A., to United States of America, Army. Frequency diversity radar system. 4,068,235, Cl. 343-17.20R.
Peters, Wolfgang; Hauschopp, Alois; and Merten, Gerhard, to Gewerkschaft Eisenhutte Westfalia. Longwall machine guide with detachable cover plate. 4,067,619, Cl. 299-43.000.
Petro-Tex Chemical Corporation: *See—*
Foster, Alan W., 4,067,922, Cl. 260-680.00E.
Manning, Harold E., 4,067,924, Cl. 260-683.300.
Pfaff Industriemaschinen GmbH: *See—*
Angele, Eugen; and Willenbacher, Erich, 4,067,271, Cl. 112-153.000.
Mohilo, Oskar; Kessler, Karl H.; and Stumpf, Friedrich Wilhelm, 4,067,276, Cl. 112-220.000.
Willenbacher, Erich, 4,067,275, Cl. 112-212.000.
Phillips, Ash S. Chlorinator for a swimming pool. 4,067,808, Cl. 210-169.000.
Phillips, Leonard R., to Anemostat Products Division, Dynamics Corporation of America. Air control damper. 4,067,377, Cl. 160-98.000.
Phillips Petroleum Company: *See—*
Reed, Edwin E., 4,067,202, Cl. 61-86.000.
Ririe, Otis E., 4,067,226, Cl. 73-23.100.
Schmidt, Thomas W.; and Cook, Charles F., 4,068,122, Cl. 250-281.000.
Willcox, Kenneth W., 4,068,054, Cl. 526-74.000.
Willis, Daniel H., 4,067,929, Cl. 260-879.000.
Wilson, Newton R., 4,067,942, Cl. 264-80.000.
Phipps, Robert E., to Profile Associates Incorporated. Packaging machinery. 4,067,433, Cl. 198-374.000.
Pichon, Michel, to Compagnie Internationale pour l'Informatique; and Cie Honeywell Bull. Method and apparatus for measuring percent error of an impedance. 4,068,166, Cl. 324-62.000.
Pielkenrood, Jacob, to Pielkenrood-Vinitex B.V. Compound separation device. 4,067,813, Cl. 210-322.000.
Pielkenrood-Vinitex B.V.: *See—*
Pielkenrood, Jacob, 4,067,813, Cl. 210-322.000.
Pierce, James K., to Dow Chemical Company, The. (Isothiocyanatomethoxy) biphenyls. 4,067,896, Cl. 260-454.000.
Pierpont, Ralph Erskine, to Sprague Electric Company. Solid electrolyte capacitor with improved cathode lead. 4,068,291, Cl. 361-433.000.
Pierson, Marvin B.: *See—*
Elias, James A., deceased; Newby, John R.; and Pierson, Marvin B., 4,067,754, Cl. 148-12.00F.
Pinkau, Wolfgang; and Esser, Alfred. Containers for foodstuff. 4,067,475, Cl. 220-23.400.
Pinkerton, Kenneth R.; and Malewicki, Douglas J., to L. M. Cox Manufacturing Co., Inc. Electric powered flying model airplane. 4,067,139, Cl. 46-249.000.
Pintell, Robert H., to Interelectronics Corporation. Protective system for electrical appliances. 4,068,276, Cl. 361-46.000.
Piras, Giancarlo; and Bicocchi, Alberto, to Euteco S.p.A. Automatic remote control system for mercury cells for the production of chlorine and caustic soda. 4,067,793, Cl. 204-219.000.
Pires, H. George, to Teleglobe Pay-TV System, Inc. Pay television system utilizing binary coding. 4,068,264, Cl. 358-122.000.
Pistulka, Wilhelm, to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft. Aqueous NaCl test solution for aluminum and its alloys. 4,067,751, Cl. 148-6.270.

Pitcraft Limited: *See—*
Pentith, Gerald Richard Oldham, 4,067,257, Cl. 104-140.000.
Pitney-Bowes, Inc.: *See—*
Irvine, Robert, 4,067,568, Cl. 271-176.000.
Pitt, Paul Eldred: *See—*
Dechant, Thomas Edward; Glaser, Edward Lewis; Pitt, Paul Eldred; and Way, Frederick, III, 4,068,298, Cl. 364-200.000.
Pittie, Willem H.; and Doig, Kingsley F., to Anglo-Transvaal Consolidated Investment Company Limited. Leaching of copper-nickel concentrates. 4,067,952, Cl. 423-37.000.
Pizzuti, Donato F.; and Triggs, Charles W., to Polaroid Corporation. Photographic camera body and tripod mounting arrangement. 4,068,248, Cl. 354-288.000.
Planz, Alexander: *See—*
Schroter, Herbert; and Planz, Alexander, 4,068,251, Cl. 354-325.000.
Plaski, Walter: *See—*
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Plasma & Flame Coatings Ltd.: *See—*
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Platt, Alan E.; and Russell, Robert J., to Dow Chemical Company, The. Method for preparing monovinyl aromatic monomer-acrylonitrile copolymer. 4,068,064, Cl. 526-194.000.
Plessey Handel und Investments AG: *See—*
Cutler, Ronald Michael, 4,068,305, Cl. 364-200.000.
Martin, Barrie James, 4,067,496, Cl. 239-102.000.
Plessey Incorporated: *See—*
Konyak, John Francis; Troxtel, Edrol Ford; Schuman, George Mundy, Jr.; Maguire, Andrew Hugh; and Guthrie, Elwin Arthur, 4,067,549, Cl. 74-579.00R.
Pluss, Kurt; and De Martin, Bruno Romano, to Cilag-Chemie A.G. Electroplating additives. 4,067,785, Cl. 204-49.000.
Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
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Masson, Yves, 4,067,372, Cl. 152-354.00R.
Polaroid Corporation: *See—*
Bartles-Keith, James R.; Burgess, Mary T.; and Rogers, Jean B., 4,067,871, Cl. 260-287.00T.
Bloom, Stanley M., 4,067,872, Cl. 260-288.0CF.
Douglas, Lawrence M., 4,068,244, Cl. 354-85.000.
Harrison, George C., 4,068,151, Cl. 315-241.00P.
Pizzuti, Donato F.; and Triggs, Charles W., 4,068,248, Cl. 354-288.000.
Polaschegg, Hans-Dietrich, to Leybold-Heraeus GmbH & Co. KG. Test bar for a vacuum chamber. 4,067,697, Cl. 23-259.000.
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Staruch, Stanislaw; Fijalkowski, Bogdan; and Zawilinski, Janusz, 4,068,293, Cl. 363-27.000.
Poly-Chem Industries, Inc.: *See—*
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Polysius AG: *See—*
Klein, Hans; Arbeletche, Carlos; Balzau, Gerhard; and Steinman, Manfred, 4,067,623, Cl. 302-53.000.
Pope, Richard J.: *See—*
Ivey, Mary C., 4,067,341, Cl. 128-330.000.
Popp, Roger C., to Midland-Ross Corporation. Pressure-sensing semiconductor transducer. 4,068,206, Cl. 338-36.000.
Portals Water Treatment Limited: *See—*
Rowe, Melvin Charles, 4,067,748, Cl. 127-36.000.
Portec Inc., Railway Products Div.: *See—*
Qureshi, Khurshid Ahmed, 4,067,495, Cl. 238-349.000.
Portmann, Hubert, to Ebauches S.A. Voltage multiplier for an electronic time apparatus. 4,068,295, Cl. 363-60.000.
Poschel, Bruno P. H.; and Butler, Donald E., to Parke, Davis & Company. Pharmaceutical compositions and methods. 4,067,983, Cl. 424-263.000.
Potin, Philippe: *See—*
Biensan, Michel; and Potin, Philippe, 4,067,861, Cl. 260-78.00L.
Potter, James Charles, to Lucas Industries Limited. Fuel pumping apparatus. 4,067,304, Cl. 123-140.0MP.
Potts, James Edward; Cornell, Stephen Watson; and Sracic, Albert Martin, to Union Carbide Corporation. Environmentally degradable compositions exposed to actinic or ionizing radiation and process. 4,067,836, Cl. 260-23.00H.
Powell, Harry C., Sr. Bin filling mechanism. 4,067,432, Cl. 198-302.000.
PPG Industries, Inc.: *See—*
Ecke, George G., 4,067,909, Cl. 260-607.0AR.
Prain, Hunter Douglas: *See—*
Durant, Graham John; Emmett, John Colin; Ganellin, Charon Robin; and Prain, Hunter Douglas, 4,067,984, Cl. 424-263.000.
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Priestley, Ronald: *See—*
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Prince, Emanuel C., to Southeastern Laboratories, Inc. Composition for topical application to humans and animals. 4,067,967, Cl. 424-149.000.
Pritchard, Peter E., to Sonic Research, Inc. Stylus suspension. 4,067,582, Cl. 274-37.000.
Probst, Walter, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Plant for surface treating, in particular pickling and phosphatizing, metallic work pieces. 4,067,293, Cl. 118-73.000.
Procter & Gamble Company, The: *See—*
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Juneja, Prem Sagar, 4,067,962, Cl. 424-52.000.
Laughlin, Robert Gene, 4,067,961, Cl. 424-15.000.
Mast, John George, Jr., 4,067,087, Cl. 28-118.000.
Proctor & Schwartz, Inc.: *See—*
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Profile Associates Incorporated: *See—*
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Puccio, Guy S., to Acme Highway Products Corporation. Elastomeric expansion seal. 4,067,660, Cl. 404-69.000.
Pujol, Carlos Oliver. Horizontal-axle grinder with rotatable sieve. 4,067,505, Cl. 241-171.000.
Purdue Frederick Company, The: *See—*
Sasmor, Ernest J., 4,067,974, Cl. 424-231.000.
Purrmann, Robert: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf Dieter, 4,067,853, Cl. 260-47.0UA.
Puyat, Alfonso G.: *See—*
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Qualls, W. L.: *See—*
Austin, Carl E.; Hamilton, Ramon K.; and Qualls, W. L., 4,067,349, Cl. 138-97.000.
Quentin, Jean Pierre, to Rhone Poulenc Industries. Dialysis. 4,067,803, Cl. 210-22.00C.
Qureshi, Khurshid Ahmed, to Portec Inc., Railway Products Div. Unitary spring clip rail fastener. 4,067,495, Cl. 238-349.000.
R. M. Wade & Co.: *See—*
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R. P. Scherer Limited: *See—*
Fadda, Carlo, 4,067,960, Cl. 424-14.000.
Rabatin, Jacob G., to General Electric Company. Bismuth activated rare earth oxybromide phosphors and X-ray image converters utilizing said phosphors. 4,068,129, Cl. 250-483.000.
Rae, James A.: *See—*
Baldwin, Francis P.; and Rae, James A., 4,068,051, Cl. 526-47.000.
Raggio, Ivan J. Gas lift valve. 4,067,350, Cl. 137-155.000.
Rails Company, The: *See—*
Burwell, Garwood N., 4,068,133, Cl. 307-116.000.
Ramanathan, Visvanathan; Schlesinger, Ulrich; and De Montmollin, Rene, to Ciba-Geigy Corporation. 3-Nitro-5-azopyridine dyestuffs. 4,068,085, Cl. 260-156.000.
Rambold, Wolfgang: *See—*
Mansmann, Manfred; and Rambold, Wolfgang, 4,067,747, Cl. 106-302.000.
Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Alkyl alkanoate derivatives of substituted piperazine-diones and polymer compositions stabilized thereby. 4,067,848, Cl. 260-45.8NE.
Rao, Srinivasa R.: *See—*
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Rapids, Felix R. Method for electroplating. 4,067,781, Cl. 204-15.000.
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Knorr, Walter; Licht, Helmut; Raquet, Erwin; and Spieker, Walter, 4,067,600, Cl. 295-23.000.
Rasmussen, Poul, to Colorlux a-s. Sign board casing. 4,067,130, Cl. 40-563.000.
Rath, Heinrich Bernhard; Madzgalla, Hans Georg; and Micke, Sigma, to Girling Limited. Noise reducing assemblies for disc brakes for vehicles. 4,067,418, Cl. 188-72.400.
Rattenborg, Christen C.; and Mikula, Raymond J., to Continental IL National Bank and Trust Co. Pressure monitoring system. 4,068,096, Cl. 179-2.00A.
Rauhut, Otto: *See—*
List, Ferdinand; Rauhut, Otto; Hegenberg, Peter; and Strobele, Rudolf, 4,067,779, Cl. 203-28.000.
Ray, Louis F. Cable stay crane. 4,067,446, Cl. 212-48.000.
Ray, Ranjan, to Allied Chemical Corporation. Amorphous alloys which include iron group elements and boron. 4,067,732, Cl. 75-126.00P.
Raychem Corporation: *See—*
Brook, Greville B.; Brooks, Peter L.; and Iles, Roger F., 4,067,752, Cl. 148-11.50R.
Raymond Lee Organization, Inc., The: *See—*
Little, Oney M., 4,067,213, Cl. 70-232.000.
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Ahmed, Adel Abdel Aziz, 4,068,184, Cl. 330-257.000.
Dingwall, Andrew Gordon Francis; and Rosenthal, Bruce David, 4,068,182, Cl. 330-9.000.
Orchard, Lewis Preole, 4,068,008, Cl. 426-272.000.
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Reardon, Robert C., Jr.; and Gutierrez, Eddie N., to Lever Brothers Company. Process for the preparation of selectively and symmetrically di-halogenated ketals. 4,067,886, Cl. 260-340.700.
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Reid, Edward A., Jr.; Myler, George W.; and Payne, James E., to Columbia Gas System Service Corporation. Gas-fired smooth top range. 4,067,681, Cl. 431-10.000.
Reijnders, Arnoldus J.; Hage, Jacobus J.; and Segers, Peter J., to Stamicarbon, B.V. Concrete reservoir composed of prefabricated sections. 4,067,160, Cl. 52-245.000.
Reilly, Edwin. Gas and oil mixer. 4,067,551, Cl. 366-332.000.
Reinehr, Ulrich; Nogaj, Alfred; and Herbertz, Toni, to Bayer Aktiengesellschaft. Process for the production of high-shrinkage wet-spun acrylic fibres or filaments. 4,067,948, Cl. 264-182.000.
Reinhardt, Ferdinand; and Simonich, Walter, to IMMUNO Aktiengesellschaft fur chemisch-medizinische Produkte. Syringe for storage and application of at least two injection media. 4,067,333, Cl. 128-218.00R.
Reiss, Wolfgang; Winderl, Siegfried; Schroeder, Wolfgang; and Hoffmann, Herwig, to BASF Aktiengesellschaft. Manufacture of butynediol. 4,067,914, Cl. 260-635.00Y.
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Rensch, Eberhard G. Modular furniture. 4,067,161, Cl. 52-285.000.
Reppert, Merlyn Ralph, to W. R. Grace & Co. Plastic hub cap. 4,067,621, Cl. 301-108.00A.
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Khan, Waheed N., 4,067,776, Cl. 195-103.50M.
Retzler, William, to Bib Hi-Fi Accessories Limited. Tape splicer. 4,067,563, Cl. 269-254.00R.
Reuschel, Konrad, to Siemens Aktiengesellschaft. Method of depositing elemental amorphous silicon. 4,068,020, Cl. 427-85.000.
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Rhoads, Randall D., to Yerger Bros. Inc. Portable edge bander. 4,067,762, Cl. 156-250.000.
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Rice, Joseph A., Jr.; Moore, Larry W.; and Donald, Robert C., to Texas Instruments Incorporated. Marine streamer position determination system. 4,068,208, Cl. 340-7.00R.
Rich, Alan H., to United States of America, Navy. Toxic gas control for RF absorber fires. 4,067,392, Cl. 169-47.000.
Richards, John A., to Whiteman Manufacturing Company. Concrete pumping apparatus. 4,067,666, Cl. 417-265.000.
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Riello, Valerio Giordano, to Riello Condizionatori di Giordano Riello & C. S.p.A. Air conditioner. 4,067,204, Cl. 62-262.000.
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Rigollet, Francisco Diaz, to Etablissements Industriels C. Soule. Protective device for low current transmission circuits. 4,068,282, Cl. 361-119.000.
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Ririe, Otis E., to Phillips Petroleum Company. Chromatographic apparatus. 4,067,226, Cl. 73-23.100.
Rispoli, Joseph M.; Rogers, Morris A.; Shaw, Janice Raiford; and Russo, Joseph J., to General Foods Corporation. Bread crumb coating composition and process. 4,068,009, Cl. 426-291.000.
Ristig, Eberhard, to Siemens Aktiengesellschaft. Prefabricated shielded cabin. 4,068,087, Cl. 174-35.0MS.
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Robbins, Roscoe S.; and Zuccaro, Donald R. Control system for operating machine. 4,068,155, Cl. 318-568.000.
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Robinson, Brian, to Catnic Components Limited. Elements for forming frames. 4,067,157, Cl. 52-127.000.
Robinson, Myron L., to Simekus, Inc. Rinse tank control system. 4,068,162, Cl. 324-30.00B.
Roblin Industries, Inc.: *See—*
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Robugen GmbH: *See—*
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Rosshirt, C. Joseph: *See—*
Gladstone, Shaul; Rao, Srinivasa R.; and Rosshirt, C. Joseph, 4,067,901, Cl. 560-147.000.
Rossmann, Axel, to Motoren- und Turbinen-Union Munchen GmbH. Thermally high-stressed cooled component, particularly a blade for turbine engines. 4,067,662, Cl. 416-97.00A.
Roussel Uclaf: *See—*
Perronnet, Jacques; Taliani, Laurent; and Teche, Andre, 4,067,720, Cl. 71-90.000.
Roux, Etienne; Goodey, James Golden; Gaudin, Antoine M., deceased; and by Gaudin, Anna B., executrix. Process for upgrading ores containing baddeleyite. 4,067,953, Cl. 423-80.000.
Rowe, Melvin Charles, to Portals Water Treatment Limited. Process for the hydrolysis of lactose. 4,067,748, Cl. 127-36.000.
Rozengauz, Solomon Monuilovich; Tikhonov, Vasily Fedorovich; and Mosolov, Nikolai Kliontievich. Machine for sorting flat objects. 4,067,459, Cl. 214-16.40R.
Rubenstein, Kenneth E.; and Ullman, Edwin F., to Syva Company. Compounds for enzyme amplification assay. 4,067,774, Cl. 195-63.000.
Rubin, Kenneth, to Westinghouse Electric Corporation. Nuclear reactor containment spray testing system. 4,067,771, Cl. 176-19.00R.
Ruchser, Erich, to Herion-Werke KG. Pilot-operated directional control valve. 4,067,357, Cl. 137-596.160.
Rudin, Melvin: *See—*
Fleming, James H.; and Rudin, Melvin, 4,067,951, Cl. 264-272.000.
Rudkovsky, Vladimir Leontievich: *See—*
Belyaev, Vladimir Alexandrovich; and Rudkovsky, Vladimir Leontievich, 4,067,923, Cl. 260-681.000.
Rufer, Ernest J.: *See—*
Jones, Thaddeus M.; Kiwale, Jozef; and Rufer, Ernest J., 4,067,490, Cl. 228-102.000.
Ruff, David L.; Stewart, Sherman A.; and Tarbell, Harlan E., to Grefco, Inc. Sealing system. 4,067,155, Cl. 52-105.000.
Ruger, William B.; and Sefried, Harry H., II, to Sturm, Ruger & Co., Inc. Firing mechanism for a revolver. 4,067,131, Cl. 42-65.000.
Ruggen, Werner: *See—*
Bohm, Heinz-Dieter; Darenberg, Dietwald; Ernst, Lothar; and Ruggen, Werner, 4,067,207, Cl. 64-26.000.
Rupprecht, Kurt, to Volkswagenwerk Aktiengesellschaft. Brake. 4,067,419, Cl. 188-79.5GT.
Russell, James T., to Jacobs, Eli S. Method and apparatus for sampling and reproducing television information. 4,068,265, Cl. 358-133.000.
Russell, Robert J.: *See—*
Platt, Alan E.; and Russell, Robert J., 4,068,064, Cl. 526-194.000.
Russell, Ronald R., to General Electric Company. Circuit breaker solid state trip unit incorporating trip indicating circuit. 4,068,283, Cl. 361-205.000.
Russo, Joseph J.: *See—*
Rispoli, Joseph M.; Rogers, Morris A.; Shaw, Janice Raiford; and Russo, Joseph J., 4,068,009, Cl. 426-291.000.
Rutledge, Thomas F., to ICI America Inc. Oxidative coupling of alkylphenols, alkoxyphenols and naphthols catalyzed by metal complexes of amino carboxylic and amino sulfonic acids. 4,067,890, Cl. 260-396.00N.
Rutty, Edward Charles; Czerwinski, Frank Gregory; Van Zelderen, Henderik; and Gavini, Donald Robert, to Stanley Works, The. Coilable rule and replacement cartridge therefor. 4,067,513, Cl. 242-107.300.
Rygalin, Viktor Georgievich: *See—*
Yakshin, Alexandr Sergeevich; Novikov, Oleg Nikolaevich; Grechinsky, Dmitry Alexeevich; Klochko, Viktor Alexandrovich; and Rygalin, Viktor Georgievich, 4,067,231, Cl. 73-658.000.
Rys-Sikora, John; and Abraham, Reuben, to Bata Shoe Company, Inc. Prevention of color migration in shoes. 4,067,124, Cl. 36-45.000.
Rysti, Alpo. Stacking plant and method. 4,067,455, Cl. 214-6.00H.
Sabella, Dominick A. Anchor float adapter. 4,067,287, Cl. 114-299.000.
Sabo, Stephen Charles: *See—*
Alden, John Todd; Miller, Michael Grant; and Sabo, Stephen Charles, 4,067,374, Cl. 152-354.00R.
Saburo, Adachi: *See—*
Yasushi, Nishino; Saburo, Adachi; Koji, Karashima; and Ken, Iwai, 4,067,284, Cl. 114-260.000.
Sadamitsu, Kazuo: *See—*
Sekiguchi, Hideo; Sato, Fumishi; Sadamitsu, Kazuo; and Yoshida, Kazuaki, 4,067,804, Cl. 210-23.00H.
Safety Research & Engineering Corporation: *See—*
Barabino, William A., 4,067,376, Cl. 152-418.000.
Sahm, Peter, to Brown, Boveri & Company Limited. Method of applying a protective coating to a body. 4,068,025, Cl. 427-309.000.
St. Clair, Theodore A., to Textron Inc. Gas pressure regulator having high and low pressure shutoff means. 4,067,354, Cl. 137-329.400.
St. Clair, Theodore A., to Textron Inc. Gas pressure regulator having high and low pressure shut-off means. 4,067,355, Cl. 137-458.000.
Saito, Shigeru; Suzuki, Masahiko; and Sato, Takeshi, to Bridgestone Tire Company Limited. Method of detecting puncture of a pneumatic tire. 4,067,288, Cl. 116-34.00R.
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, to Fuji Chemical Industry Co., Ltd.; and Nippon Chemiphar Co., Ltd. α-Cyanoamine compounds and a process for producing the same. 4,068,070, Cl. 542-470.000.
Sakamoto, Mitsuru: *See—*
Hashimoto, Tadahiro; Okuyama, Yasushi; Koguchi, Toshio; Wada, Koji; Sakamoto, Mitsuru; Yanagawa, Takayuki; and Yamamoto, Kyoji, 4,068,018, Cl. 427-38.000.
Sakharov, Boris Vladimirovich: *See—*
Tsernes, Vladimir Yakovlevich; Shekhel, Alexandr Borisovich; Kakoshkin, Leonid Petrovich; Schukin, Lev Nikolaevich; and Sakharov, Boris Vladimirovich, 4,067,465, Cl. 214-62.00A.
Sakurazawa, Hatuo. Wheat flour band rolling apparatus. 4,067,677, Cl. 425-135.000.
Salto, Rinaldo; and Roano, Domenico, to Ing. C. Olivetti & C., S.p.A. Selector system for a printing head for printing office machines. 4,067,429, Cl. 197-18.000.
Salutsky, Murrell L.: *See—*
Cuisia, Dionisio G.; Hwa, Chih M.; Jacob, Jose T.; and Salutsky, Murrell L., 4,067,690, Cl. 21-2.70R.
Samide, Frank R., to Towmotor Corporation. Locking arrangement for counterweight. 4,067,415, Cl. 187-9.00R.
Sammarco, Peter: *See—*
Hoch, Manfried L.; Fritz, Edward A.; and Sammarco, Peter, 4,067,176, Cl. 56-15.600.
Samonides, John, to Unical Corporation. Apparatus and method of producing transparent labels with printing on the adhesive and product produced thereby. 4,068,028, Cl. 428-40.000.
Sampei, Tohru: *See—*
Amada, Nobutaka; Sampei, Tohru; and Maeda, Akinori, 4,068,187, Cl. 330-268.000.
Sample, Steven B.; Scheuer, Paul R.; and Cox, Karmen D., to Design and Manufacturing Corporation. Electronic cycle-select switching system. 4,068,179, Cl. 328-72.000.
Sandler, Michael E.; and Rodman, Jeffrey C. Auxiliary variable coordinate sonic display system. 4,068,262, Cl. 358-82.000.
Sandoz Ltd.: *See—*
Hofer, Kurt; Moesch, Rudolf; Tscheulin, Guenther; and Voykowitsch, Anton, 4,067,895, Cl. 260-404.
Troxler, Franz; and Wiskott, Erik, 4,067,873, Cl. 260-288.00D.
Sandstorm Enterprises Inc.: *See—*
Boofer, George McCoy, 4,067,579, Cl. 273-254.0GA.
Sano, Keizo: *See—*
Miwa, Tsuneyoshi; Nakazawa, Shinji; Itoga, Masaaki; Sano, Keizo; Nakamura, Itaru; Watanabe, Taigi; and Shingu, Yasuhiko, 4,067,855, Cl. 260-75.00R.
Santic, Blaz; and Volz, Otto, to Karl Mengele & Sohne. Lever transmission particularly for lifting means. 4,067,245, Cl. 74-96.000.
Sanyo Trading Co., Ltd.: *See—*
Onizawa, Masao, 4,067,859, Cl. 260-78.00A.
Sarkozy, Francis A.: *See—*
Spurr, Robert; Dahms, Francis A.; and Sarkozy, Francis A., 4,067,438, Cl. 198-805.000.
Sarnik, Stanislaw: *See—*
Lagerwall, Ralph Georg Torbjorn; and Sarnik, Stanislaw, 4,067,556, Cl. 266-65.000.
Sasaki, Hiroharu: *See—*
Hayashi, Masaaki; Tsuneta, Kazuyoshi; Sasaki, Hiroharu; and Takada, Hiroshi, 4,067,838, Cl. 260-29.2TN.
Sasmor, Ernest J., to Purdue Frederick Company, The. Stabilized solid form choline salicylate compositions. 4,067,974, Cl. 424-231.000.
Sasse, Klaus; and Eue, Ludwig, to Bayer Aktiengesellschaft. 3-Ureido phenylacetamide herbicides. 4,067,726, Cl. 71-120.000.
Sasse, Klaus; Frohberger, Paul-Ernst; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. 7-Substituted-benzo-1,2,4-triazine-3-ethers. 4,067,981, Cl. 424-249.000.
Sato, Fumishi: *See—*
Sekiguchi, Hideo; Sato, Fumishi; Sadamitsu, Kazuo; and Yoshida, Kazuaki, 4,067,804, Cl. 210-23.00H.
Sato, Gunkichi; and Yamaguchi, Masahisa, to Kokusai Denshin Denwa Kabushiki Kaisha. Circuit for compensating for nonlinear characteristics in high-frequency amplifiers. 4,068,186, Cl. 330-149.000.
Sato, Hiroshi: *See—*
Noakes, Jack E.; Sato, Hiroshi; and Terner, Leslie L., 4,067,955, Cl. 423-345.000.
Sato, Takeshi: *See—*
Saito, Shigeru; Suzuki, Masahiko; and Sato, Takeshi, 4,067,288, Cl. 116-34.00R.
Saunders, James C., Jr.: *See—*
Alford, Harvey E.; and Saunders, James C., Jr., 4,067,796, Cl. 208-11.0LE.
Saurer-Allma GmbH, Allgauer Maschinenbau: *See—*
Bleeck, Heinz, 4,067,180, Cl. 57-58.520.
Klose, Walter, 4,067,183, Cl. 57-106.000.

Sautiev, Taimuraz Danilovich: *See—*
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich; Penionshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.

Savec, Societe Anonyme: *See—*
Giraud, Francois Louis, 4,067,421, Cl. 188-195.000.

Savins, Joseph George, to Mobil Oil Corporation. Hydraulic fracturing technique. 4,067,389, Cl. 166-246.000.

Scafetta, Philip. Snow and ice remover. 4,067,107, Cl. 30-136.500.

Scaletta, Joseph L.: *See—*
Parker, Delmer G.; Fraser, Lawrence J.; and Scaletta, Joseph L., 4,067,295, Cl. 118-653.000.

Schafer, Walter: *See—*
Wagner, Kuno; Block, Hans-Dieter; and Schafer, Walter, 4,067,820, Cl. 252-426.000.

Schaffner, Carl P.: *See—*
Gordon, Harry W.; and Schaffner, Carl P., 4,067,966, Cl. 424-119.000.

Scheffel, Herbert, to South African Inventions Development Corporation. Damping railway vehicle suspension. 4,067,261, Cl. 105-157.00R.

Scheffel, Herbert, to South African Inventions Development Corporation. Railway truck. 4,067,262, Cl. 105-168.000.

Scheinpflug, Hans: *See—*
Sasse, Klaus; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,067,981, Cl. 424-249.000.

Schenk, Peter, to Dzus Fastener Co., Inc. Fastener. 4,067,090, Cl. 24-221.00K.

Scherrer, Robert A., to Riker Laboratories, Inc. Antimicrobial 2-nitro-3-phenylbenzofurancarboxylic acids. 4,067,993, Cl. 424-285.000.

Scheuer, Paul R.: *See—*
Sample, Steven B.; Scheuer, Paul R.; and Cox, Karmen D., 4,068,179, Cl. 328-72.000.

Scheuermann, Horst: *See—*
Hoch, Helmut; and Scheuermann, Horst, 4,067,903, Cl. 260-570.600.

Schiepe, Heinz, to Heinz Schiepe, Holzbearbeitungs-Maschinen und Automaten, Firma. Stacking arrangement for plank and board piece goods, particularly profile strips. 4,067,457, Cl. 214-6.00M.

Schleh, Wolfgang: *See—*
Ahlisch, Hans-Dieter; Amann, Rolf; Bald, Franz; Dostal, Gerhard; Folster, Alfred; Schleh, Wolfgang; Kachele, Gunther; Kowallek, Rolf; and Schnaufer, Helmut, 4,067,602, Cl. 296-71.000.

Schlesinger, Ulrich: *See—*
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Schlumberger Technology Corporation: *See—*
Nelligan, William B., 4,068,180, Cl. 328-109.000.

Schmid Laboratories, Inc.: *See—*
Gordon, Harry W.; and Schaffner, Carl P., 4,067,966, Cl. 424-119.000.

Schmid, Pierre; Brunner, Eduard; and Stofer, Walter, to Gretag Aktiengesellschaft. Method and apparatus for the scrambled transmission of spoken information via a telephony channel. 4,068,094, Cl. 179-1.50R.

Schmidt, Gerald F.: *See—*
Orth, Joseph P.; and Schmidt, Gerald F., 4,067,543, Cl. 254-86.00R.

Schmidt, Robert Rudolf: *See—*
Draber, Wilfried; Dickore, Karlfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert Rudolf, 4,067,724, Cl. 71-93.000.

Schmidt, Thomas W.; and Cook, Charles F., to Phillips Petroleum Company. Isotope analysis. 4,068,122, Cl. 250-281.000.

Schmitt, Robert A., to Columbia Machine, Inc. Apparatus for arranging and stacking nonrigid articles. 4,067,456, Cl. 214-6.00P.

Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf Dieter, to ESPE Fabrik pharmazeutischer Praparate GmbH. Compositions of bishydroxysubstitutedary di acrylates for prosthodontia. 4,067,853, Cl. 260-47.0UA.

Schmitz, Heinrich: *See—*
Kastening, Bertel; and Schmitz, Heinrich, 4,067,787, Cl. 204-84.000.

Schnaufer, Helmut: *See—*
Ahlisch, Hans-Dieter; Amann, Rolf; Bald, Franz; Dostal, Gerhard; Folster, Alfred; Schleh, Wolfgang; Kachele, Gunther; Kowallek, Rolf; and Schnaufer, Helmut, 4,067,602, Cl. 296-71.000.

Schneider, Franz; Maier, Karl; and Tappen, Gerhard, to L. Schuler GmbH. Apparatus for the unstacking and transportation of blanks. 4,067,458, Cl. 214-8.50D.

Schneider, Raymond C.; and Cox, Clairdel C., to Twin Disc, Incorporated. Control system for rotary drill. 4,067,423, Cl. 192-3.630.

Schneider, Rudolf, to Busatis-Werke KG. Driving arrangement for a harvester. 4,067,179, Cl. 56-297.000.

Schneiter, Ali, to Ebauches S.A. Passive electro-optic display device. 4,068,230, Cl. 340-378.00R.

Schnell, Hans Gunther, to Van Kooten, B.V. Cylinder piece for a pile driving ram. 4,067,399, Cl. 173-134.000.

Schnell, Hans Gunther, to Van Kooten, B.V. Pile-driving hammer. 4,067,401, Cl. 173-135.000.

Schnell, Hans Gunther, to Van Kooten, B.V. Rammer. 4,067,402, Cl. 173-137.000.

Schoetensack, Wolfgang: *See—*
Klemm, Kurt; Schoetensack, Wolfgang; and Prusse, Wolfgang, 4,067,982, Cl. 424-250.000.

Scholl, Hans-Joachim; Markush, Peter; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Aqueous solutions of alkali silicates and hydrogen phosphates. 4,067,815, Cl. 252-8.100.

Schramm, Jurgen: *See—*
Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,068,002, Cl. 424-322.000.

Schraudenbach, Paul. Decorative stone. 4,067,196, Cl. 61-35.000.

Schriber, Stanley O.: *See—*
McKeown, Joseph; Fraser, John S.; and Schriber, Stanley O., 4,068,146, Cl. 315-5.260.

Schroeder, Wolfgang: *See—*
Reiss, Wolfgang; Winderl, Siegfried; Schroeder, Wolfgang; and Hoffmann, Herwig, 4,067,914, Cl. 260-635.00Y.

Schroter, Herbert; and Planz, Alexander, to Hoechst Aktiengesellschaft. Developing device for printing plates. 4,068,251, Cl. 354-325.000.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Goldammer, Georg, 4,067,625, Cl. 308-149.000.

Schukin, Lev Nikolaevich: *See—*
Tsernes, Vladimir Yakovlevich; Shekhel, Alexandr Borisovich; Kakoshkin, Leonid Petrovich; Schukin, Lev Nikolaevich; and Sakharov, Boris Vladimirovich, 4,067,465, Cl. 214-62.00A.

Schultz, Everett M.: *See—*
Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Schultz, Everett M., 4,067,980, Cl. 424-248.400.

Schultz, Herman S., to Itek Corporation. Hydrophilic copolymer of N,N-(C_1-C_2 alkyl) acrylamide. 4,067,839, Cl. 260-29.6TA.

Schumacher, Roger R.; and Olson, William, to Dynamic Seals Incorporated. Piston assembly and method for manufacturing. 4,067,093, Cl. 29-156.50R.

Schuman, George Mundy, Jr.: *See—*
Konyak, John Francis; Troxtel, Edrol Ford; Schuman, George Mundy, Jr.; Maguire, Andrew Hugh; and Guthrie, Elwin Arthur, 4,067,549, Cl. 74-579.00R.

Schuon, Eberhard, to Wandel u. Goltermann. Method of and means for measuring distortion of binary and ternary signals. 4,068,172, Cl. 324-102.000.

Schurter, Rolf; Clauson-Kaas, Niels; and Rempfler, Hermann, to Ciba-Geigy Corporation. 3-Pyridyl-oxy-alkanecarboxylic acid amides. 4,067,725, Cl. 71-94.000.

Schuster, Samuel R., to Ovutime, Inc. Viscometer for indicating rheological properties of biological fluids. 4,067,229, Cl. 73-54.000.

Schwager, Thomas E.; and Burkhardt, Joseph A., to Exxon Production Research Company. Apparatus and method for connecting a tubing string to downhole well equipment. 4,067,385, Cl. 166-.600.

Schwander, Hansrudolf: *See—*
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, 4,067,889, Cl. 260-364.000.

Schwartz, Malcolm M.; and Jaquet, James R., to Infinetics, Inc. Harmoic flux gate magnetometers and gradimeters and windings. 4,068,164, Cl. 324-226.000.

Schwartzman, Everett H. Turbine booster pump system. 4,067,665, Cl. 417-245.000.

Schwarz, Herbert: *See—*
Vogel, Gunter; and Schwarz, Herbert, 4,067,482, Cl. 222-153.000.

Schwarz, Wilhelm, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Arrangement for improving transloading pourable materials by means of a grab bucket. 4,067,460, Cl. 214-17.00B.

Schweizerische Lokomotiv-und Maschinenfabrik: *See—*
Finsterwald, Emil, 4,067,260, Cl. 105-29.00R.

Schwinn, Horst; and Heimburger, Norbert, to Behringwerke Aktiengesellschaft. Antihemophilic agent and process for its manufacture. 4,067,964, Cl. 424-105.000.

Scotti, Carlo: *See—*
Montiglio, Ugo; Aspes, Pierfrancesco; Scotti, Carlo; and Basile, Giampiero, 4,068,038, Cl. 428-404.000.

Seamone, Woodrow; and Loveless, John H., to United States of America, Veterans' Affairs. Prosthetic joint lock and cable mechanism. 4,067,070, Cl. 3-1.100.

Searle, Thomas C. Hang glider. 4,067,515, Cl. 244-16.000.

Sease, John D.: *See—*
Lackey, Walter J., Jr.; and Sease, John D., 4,068,015, Cl. 427-6.000.

Seaton, George R.: *See—*
Kravitz, Bernard L.; and Seaton, George R., 4,068,255, Cl. 357-56.000.

Sefried, Harry H., II: *See—*
Ruger, William B.; and Sefried, Harry H., II, 4,067,131, Cl. 42-65.000.

Segawa, Masahiro; Ota, Mitsuru; and Hada, Yoshiyuki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Heat-insulation laminate of polyvinylidene fluoride, metal and plastic. 4,068,034, Cl. 428-263.000.

Segers, Peter J.: *See—*
Reijnders, Arnoldus J.; Hage, Jacobus J.; and Segers, Peter J., 4,067,160, Cl. 52-245.000.

Seitz, Karl: *See—*
Oesterlein, Fritz; Hegar, Gert; and Seitz, Karl, 4,067,864, Cl. 260-153.000.

Sekerich, Michael, to Buildex, Inc. Drawer slide. 4,067,632, Cl. 312-341.00R.

Sekiguchi, Hideo; Sato, Fumishi; Sadamitsu, Kazuo; and Yoshida, Kazuaki, to Furukawa Electric Company, Limited, The. Solute-separating membrane. 4,067,804, Cl. 210-23.00H.

Sekiya, Fukuo; Morokawa, Shigeru; and Nomura, Yasushi, to Citizen Watch Co., Ltd. Electronic timepiece. 4,067,187, Cl. 58-23.00R.

Semkina, Novella Vladimirovna; Mamaeva, Galina Alexandrovna; Nechaev, Evgeny Alexeevich; and Vinogradov, Viktor Petrovich.

Solid metal oxide electrolyte and method of making. 4,067,792, Cl. 204-195.00S.

Seney, John Seymour, to Du Pont de Nemours, E. I., and Company. Tension transducer. 4,067,234, Cl. 73-144.000.

Serfess, Albert. Sailboat control apparatus. 4,067,280, Cl. 114-128.000.

Sessink, Bernardus Wilhelmus L. M., to Oce-van der Grinten N.V. Magnetic roller. 4,067,296, Cl. 118-658.000.

Shaffer, Francis Nathan: *See—*
Chenot, Charles Frederic; Mathers, James Evan; and Shaffer, Francis Nathan, 4,068,128, Cl. 250-483.000.

Shah, Vinod Chandulal: *See—*
Epel, Joseph Norman; Shah, Vinod Chandulal; and Iseler, Kenneth Alfred, 4,067,845, Cl. 260-40.00R.

Shannon, A. Vernon, Sr. Tabbed towel. 4,067,327, Cl. 128-132.00D.

Shapiro, Eugene: *See—*
Mravic, Brian; Shapiro, Stanley; Watson, W. Gary; and Shapiro, Eugene, 4,067,750, Cl. 148-2.000.

Shapiro, Stanley: *See—*
Mravic, Brian; Shapiro, Stanley; Watson, W. Gary; and Shapiro, Eugene, 4,067,750, Cl. 148-2.000.

Shaputis, John. Welding apparatus. 4,068,106, Cl. 219-137.200.

Shasta Beverages, Division of Consolidated Foods Corporation: *See—*
Karr, Fred A., 4,068,010, Cl. 426-477.000.

Shaw, Janice Raiford: *See—*
Rispoli, Joseph M.; Rogers, Morris A.; Shaw, Janice Raiford; and Russo, Joseph J., 4,068,009, Cl. 426-291.000.

Shaw-Walker Company, The: *See—*
Anderson, Clarence A. F., 4,067,167, Cl. 52-614.000.

Sheahan, Edmund C. Retaining block. 4,067,166, Cl. 52-593.000.

Shekhel, Alexandr Borisovich: *See—*
Tsernes, Vladimir Yakovlevich; Shekhel, Alexandr Borisovich; Kakoshkin, Leonid Petrovich; Schukin, Lev Nikolaevich; and Sakharov, Boris Vladimirovich, 4,067,465, Cl. 214-62.00A.

Shephard, Margaret Claire; and Worthington, Paul Anthony, to Imperial Chemical Industries Limited. 1,3-Diazole heterocyclic compounds and their use as pesticides. 4,067,989, Cl. 424-273.00R.

Shepherd Products U.S. Inc.: *See—*
Greene, Frederick C., 4,067,083, Cl. 16-45.000.

Shepler, Edward E.: *See—*
Gaudelli, Edmond N.; and Shepler, Edward E., 4,067,941, Cl. 264-69.000.

Sherburn, Raymond Robert, to Canadian General Electric Company Limited. Foam-insulated side-by-side refrigerator. 4,067,628, Cl. 312-214.000.

Shibanuma, Tadao: *See—*
Murakami, Masuo; Isaka, Ichiro; Kawahara, Norio; Iwanami, Masaru; Fujimoto, Masaharu; Maeda, Tetsuya; Shibanuma, Tadao; and Nagano, Yoshinobu, 4,068,074, Cl. 544-27.000.

Shibata, Tadayoshi: *See—*
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Shibata, Takuo: *See—*
Fujiwara, Shinji; and Shibata, Takuo, 4,068,253, Cl. 357-31.000.

Shibuki, Youichi: *See—*
Nakagawa, Seiichi; and Shibuki, Youichi, 4,068,145, Cl. 313-237.000.

Shiffler, Robert A.: *See—*
Morge, Michael P.; and Shiffler, Robert A., 4,067,588, Cl. 280-163.000.

Shigesawa, Toshio: *See—*
Nakajima, Tsuyoshi; and Shigesawa, Toshio, 4,067,215, Cl. 72-40.000.

Shimada, Keizo; Harada, Toshiaki; Koga, Masahiro; and Nagahama, Shizuo, to Teijin Limited. 8-Benzimido substituted quinaphthalone derivatives. 4,067,870, Cl. 260-287.00F.

Shimizu, Tokihiko: *See—*
Iijima, Yasuo; and Shimizu, Tokihiko, 4,068,286, Cl. 361-315.000.

Shingu, Yasuhiko: *See—*
Miwa, Tsuneyoshi; Nakazawa, Shinji; Itoga, Masaaki; Sano, Keizo; Nakamura, Itaru; Watanabe, Taigi; and Shingu, Yasuhiko, 4,067,855, Cl. 260-75.00R.

Shirley, James N.: *See—*
Berry, Fred M.; and Shirley, James N., 4,068,292, Cl. 361-437.000.

Shirley, Ronald Clyde, to Kartridg Pak Co., The. Plastic web sealing apparatus using hot air heated sealing roller. 4,067,761, Cl. 156-218.000.

Shogren, David K., to Xerox Corporation. Apparatus for synchronously scanning a flat platen with a rotating mirror. 4,067,640, Cl. 350-6.000.

Short, Hoyt E., to Tuftco Corporation. Narrow gauge cut pile tufting agaku. 4,067,270, Cl. 112-79.00R.

Shumate, Michael S.: *See—*
United States of America, National Aeronautics and Space Administration; and Shumate, Michael S., 4,067,653, Cl. 356-204.000.

Shumrak, George K.: *See—*
Mack, Anthony C.; and Shumrak, George K., 4,068,115, Cl. 219-386.000.

Shuster, Edward J.: *See—*
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., 4,068,012, Cl. 426-538.000.

Shuttleworth, Howard P., to Shuttleworth, Inc. Multiple-roller conveyor. 4,067,428, Cl. 193-35.00R.

Shuttleworth, Inc.: *See—*
Shuttleworth, Howard P., 4,067,428, Cl. 193-35.00R.

Siemens Aktiengesellschaft: *See—*
Hassler, Heinrich; and Kippenberg, Horst, 4,067,379, Cl. 164-69.000.
Hilbert, Ferdinand; and Wolscheck, Hans, 4,067,786, Cl. 204-56.00R.
Labinsky, Michael; and Vetter, Michael, 4,068,165, Cl. 324-62.000.
Olsson, Sven-Gunnar; Castor, Rolf; and Tchang, Gabriel, 4,067,320, Cl. 128-2.00C.
Reuschel, Konrad, 4,068,020, Cl. 427-85.000.
Ristig, Eberhard, 4,068,087, Cl. 174-35.0MS.

Sierracin Corporation: *See—*
Walker, Jack S.; and Kittler, Wilfred C., 4,067,764, Cl. 156-267.000.

Sigalas, George S.: *See—*
Georgopapadakos, Agis M.; and Sigalas, George S., 4,067,706, Cl. 55-239.000.

Sigg-Grutter, Trudi: *See—*
Frater, Georg; Sigg-Grutter, Trudi; and Wild, Jost, 4,067,910, Cl. 260-609.00R.

Signore, Dennis J.: *See—*
Stark, Forest G.; and Signore, Dennis J., 4,067,630, Cl. 312-319.000.

Sigwalt, Pierre; Guyot, Patrick; Fontanille, Michel; and Vairon, Jean-Pierre, to Societe Chimique des Charbonnages-Cdf Chimie; and Agence Nationale de Valorisation de la Recherche. Organo-lithium compounds and a process for their preparation. 4,067,917, Cl. 260-665.00R.

Sikula, William John, to Derre & Company. Vibration isolation and sealing gasket. 4,067,531, Cl. 248-358.00R.

Silvanov, Beverley. Matter collecting unit. 4,067,335, Cl. 128-283.000.

Simekus, Inc.: *See—*
Robinson, Myron L., 4,068,162, Cl. 324-30.00B.

Simm, Wolfgang: *See—*
Steine, Hans T.; and Simm, Wolfgang, 4,067,753, Cl. 148-11.50R.

Simmons, Raymond W.: *See—*
Troutner, Vernon H.; and Simmons, Raymond W., 4,067,323, Cl. 128-18.000.

Simokat, Frank L., to TII Corporation. Overvoltage protector. 4,068,277, Cl. 361-55.000.

Simonich, Walter: *See—*
Reinhardt, Ferdinand; and Simonich, Walter, 4,067,333, Cl. 128-218.00R.

Simonov, Vadim Dmitrievich; Gazizov, Raif Timergalievich; Simonov, Vladimir Vadimovich; Voronenko, Boris Ivanovich; and Karpova, Vera Vladimirovna. Method of preparing dichloromaleic anhydride. 4,067,887, Cl. 260-346.740.

Simonov, Vladimir Vadimovich: *See—*
Simonov, Vadim Dmitrievich; Gazizov, Raif Timergalievich; Simonov, Vladimir Vadimovich; Voronenko, Boris Ivanovich; and Karpova, Vera Vladimirovna, 4,067,887, Cl. 260-346.740.

Singer Company, The: *See—*
Cameron, Albert Rea, 4,067,095, Cl. 29-157.10R.
Kwast, Theodore Emil, 4,067,359, Cl. 137-630.140.
McTaggart, James Everett, 4,068,176, Cl. 325-363.000.

Singer, Hans, to Reiter, Joseph; and Singer, Hans. Device for the braking of towing cables in tow-type ski lifts. 4,067,545, Cl. 254-160.000.

Singh, Prith P.: *See—*
Hamm, James R.; and Singh, Prith P., 4,067,190, Cl. 60-39.69A.

Sinkula, Anthony A.: *See—*
Wright, John B.; and Sinkula, Anthony A., 4,067,995, Cl. 424-304.000.

Sion, Marcel-Xavier: *See—*
Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, 4,067,905, Cl. 260-584.00R.

Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. 2,4-Dichloro-4-benzoylureido-diphenyl ethers. 4,068,002, Cl. 424-322.000.

SKF Compagnie d'Applications Mecaniques: *See—*
Moulin, Guy, 4,067,790, Cl. 204-129.600.

Slade, Edward C. Segmented plug valve. 4,067,540, Cl. 251-63.400.

Slonczewski, John Casimir: *See—*
Argyle, Bernell Edwin; Dekker, Pieter; and Slonczewski, John Casimir, 4,068,220, Cl. 365-30.000.

Slosek, Patrick F., to American Optical Corporation. Chemical splash shield. 4,067,065, Cl. 2-10.000.

Slosek, Patrick F.; and Fischlein, Robert R., to American Optical Corporation. Safety Goggle. 4,067,069, Cl. 2-441.000.

Smith, Brace C.: *See—*
Gebhart, Daniel E.; Meints, Edward G.; and Smith, Brace C., 4,067,661, Cl. 415-118.000.

Smith, Clay D.; and Keller, Douglas V., Jr., to Standard Oil Company. Methods of and apparatus for mining and processing tar sands and the like. 4,067,616, Cl. 299-7.000.

Smith, Curtis P., to Upjohn Company, The. Compounds and process. 4,068,055, Cl. 526-21.000.

Smith, Curtis P., to Upjohn Company, The. Compounds and process. 4,068,065, Cl. 526-275.000.

Smith, George B.: *See—*
Fisher, Michael H.; Smith, George B.; and Hoff, Dale R., 4,067,987, Cl. 424-272.000.

Smith, Hayden N., to Admiral Corporation. Condensate evaporation system for air conditioners. 4,067,206, Cl. 62-280.000.

Smith International, Inc.: *See—*
Crase, Gary M., 4,067,404, Cl. 175-75.000.
Garner, Lloyd L.; and Harris, Charles Richard, 4,067,406, Cl. 175-341.000.

Kellner, Jackson M.; and Vetter, Vincent Hugo, 4,067,596, Cl. 285-133.00A.

Smith, Job Frederick, to Coal Industry (Patents) Limited. Underground mine equipment. 4,068,088, Cl. 174-136.000.

Smith, Joseph E. Safety device for preventing the unauthorized firing of a weapon. 4,067,132, Cl. 42-66.000.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham John; Emmett, John Colin; Ganellin, Charon Robin; and Prain, Hunter Douglas, 4,067,984, Cl. 424-263.000.

SmithKline Corporation: *See—*
Berges, David A., 4,067,880, Cl. 260-307.00A.
Berges, David A., 4,068,073, Cl. 544-26.000.
Hoover, John Russel Eugene; and Weisbach, Jerry Arnold, 4,067,976, Cl. 424-246.000.
Hoover, John Russel Eugene; and Weisbach, Jerry Arnold, 4,067,977, Cl. 424-246.000.
Hoover, John Russel Eugene; and Weisbach, Jerry Arnold, 4,067,978, Cl. 424-246.000.

Soames, Michael Richard, to Image Analysing Computers Limited. Image analysis methods. 4,068,263, Cl. 358-107.000.

Societa' Farmaceutici Italia: *See—*
Foglio, Maurizio; Franceschi, Giovanni; Masi, Paolo; and Suarato, Antonino, 4,067,866, Cl. 260-239.00A.

Societa Farmaceutici Italia S.p.A.: *See—*
Lazzari, Ettore; Arcamone, Federico; and di Marco, Aurelio, 4,067,968, Cl. 424-180.000.
Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, 4,067,969, Cl. 424-180.000.

Societe Anonyme dite: MAR-PHA, Societe d'Etude et d'Exploitation de Marques: *See—*
Mardiguian, Jean, 4,067,899, Cl. 260-465.00F.

Societe Anonyme Francaise du Ferodo: *See—*
Fabris, Claude Robert, 4,067,420, Cl. 188-171.000.

Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See—*
Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, 4,067,905, Cl. 260-584.00R.

Societe Chimique des Charbonnages-Cdf Chimie: *See—*
Sigwalt, Pierre; Guyot, Patrick; Fontanille, Michel; and Vairon, Jean-Pierre, 4,067,917, Cl. 260-665.00R.

Societe Generale de Constructions Electriques et Mecaniques Alsthom: *See—*
Gillet, Roger; and Carlier, Jacques, 4,068,142, Cl. 310-214.000.

Societe Generale de Constructions Electriques et Mecaniques "Alsthom et Cie": *See—*
Chillier-Duchatel, Nicole; and Verger, Bernard, 4,068,042, Cl. 429-19.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Germain, Roger Louis Elysee; and Duquenne, Claude Eugene Desire, 4,067,583, Cl. 277-27.000.

Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
Huguenin, Raymond; Matthey, Hubert; and Engdahl, Jean, 4,068,171, Cl. 324-79.00R.

Soderlund, Lars Magnus Gunnar: *See—*
Franzen, Sven Mauritz; and Soderlund, Lars Magnus Gunnar, 4,067,398, Cl. 173-43.000.

Soin, Nikolay. Paint tank unit. 4,067,485, Cl. 222-386.500.

Sola Basic Industries, Inc.: *See—*
Bassett, John A., 4,068,157, Cl. 363-75.000.

Solberg, Dean C. Plug holder for head bolt heaters. 4,067,635, Cl. 339-119.00R.

Solender, Peter E.: *See—*
Wheelwright, Robert W.; and Solender, Peter E., 4,067,253, Cl. 84-1.100.

Solomon, Anthony T.; and Crawford, William B., to Burlington Industries, Inc. Automatic buckram attachment machine for draperies and process. 4,067,277, Cl. 112-262.000.

Solomon, Frank, to Electromedia, Inc. Electrochemical production of finely divided metal oxides, metal hydroxides and metals. 4,067,788, Cl. 204-96.000.

Solvay & Cie.: *See—*
Walraevens, Rene; and Collin, Andre, 4,067,911, Cl. 260-615.00B.

Sommer, Charles. Method of forming constructional elements. 4,067,758, Cl. 156-91.000.

Sonic Research, Inc.: *See—*
Pritchard, Peter E., 4,067,582, Cl. 274-37.000.

Sonobe, Tadashi; and Onoki, Seiji, to Honeywell Inc. Signal isolating and sampling circuit. 4,068,135, Cl. 307-352.000.

Sony Corporation: *See—*
Amatsu, Hideo; Fujimoto, Kazumi; and Ikeda, Kishio, 4,067,629, Cl. 312-319.000.
Doi, Toshitada, 4,068,091, Cl. 179-1.00G.
Horinaga, Hiroshi, 4,068,183, Cl. 330-253.000.
Tsuchiya, Takao; and Narahara, Hisaki, 4,068,256, Cl. 358-4.000.

Soter, Paul Joszef. Clutch apparatus. 4,067,425, Cl. 192-91.00A.

South African Inventions Development Corporation: *See—*
Scheffel, Herbert, 4,067,261, Cl. 105-157.00R.
Scheffel, Herbert, 4,067,262, Cl. 105-168.000.

Southeastern Laboratories, Inc.: *See—*
Prince, Emanuel C., 4,067,967, Cl. 424-149.000.

Southern Pacific Transportation Company: *See—*
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, 4,067,469, Cl. 214-152.000.

Southwire Company: *See—*
Chia, Enrique C., 4,067,731, Cl. 75-68.00R.

Spalding, Robert George: *See—*
Hyde, Peter John; Cripps, Peter Kendall; Buchanan, Donald George; and Spalding, Robert George, 4,067,486, Cl. 222-26.000.

Sparks, Buddy G.: *See—*
Murphy, Frank W., Jr.; and Sparks, Buddy G., 4,068,274, Cl. 361-23.000.

Speiser, Jeffrey M.: *See—*
Whitehouse, Harper J.; and Speiser, Jeffrey M., 4,068,311, Cl. 364-827.000.

Spence-Bate. Data recording microform camera. 4,067,650, Cl. 355-20.000.

Spencer Cleveland: *See—*
Ghormley, Kristine D.; and Georgia, Mark H., 4,068,095, Cl. 179-2.0DP.

Speranza, George P.: *See—*
Austin, Thomas H.; and Speranza, George P., 4,067,833, Cl. 260-2.5AQ.

Sperduti, Anthony, to Bethlehem Steel Corporation. Safety control apparatus for coke oven batteries. 4,067,461, Cl. 214-23.000.

Spetzler, Edgar: *See—*
Klapdar, Wilhelm; Richter, Helmut; Rommerswinkel, Heinrich-Wilhelm; Spetzler, Edgar; and Wendorff, Jochen, 4,067,730, Cl. 75-58.000.

Spieker, Walter: *See—*
Knorr, Walter; Licht, Helmut; Raquet, Erwin; and Spieker, Walter, 4,067,600, Cl. 295-23.000.

Spink, Donald R.: *See—*
Dullien, Francis A. L.; and Spink, Donald R., 4,067,703, Cl. 55-92.000.

Sprague Electric Company: *See—*
Pierpont, Ralph Erskine, 4,068,291, Cl. 361-433.000.

Sprecher & Schuh AG: *See—*
Zahner, Hansruedi, 4,067,925, Cl. 260-830.0TW.

Sprecker, Mark A.: *See—*
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., 4,068,012, Cl. 426-538.000.

Spreitzer, Francis F. Microfiche reader. 4,067,648, Cl. 353-27.00R.

Spruth, Wilhelm G.: *See—*
Bechtle, Bastian; Bleher, Hartmut J.; Hasselmeier, Helmut; Spruth, Wilhelm G.; Stucki, Peter; and Weis, Helmut, 4,068,224, Cl. 340-324.0AD.

Spumalit-Anstalt: *See—*
Prodel, Ulrich, 4,067,474, Cl. 220-21.000.

Spurr, Robert; Dahms, Francis A.; and Sarkozy, Francis A., to Emhart Industries, Inc. Magnetic drive for conveyor. 4,067,438, Cl. 198-805.000.

Square D Company: *See—*
Karch, Walter C.; and Gribble, Joseph J., 4,068,201, Cl. 335-173.000.

Sracic, Albert Martin: *See—*
Potts, James Edward; Cornell, Stephen Watson; and Sracic, Albert Martin, 4,067,836, Cl. 260-23.00H.

Stamberg, Jiri: *See—*
Hradil, Jiri; Stamberg, Jiri; and Coupek, Jiri, 4,067,825, Cl. 260-2.10M.

Stamberg, Karel: *See—*
Votapek, Vaclav; Marval, Eduard; Jilek, Rudolf; and Stamberg, Karel, 4,067,821, Cl. 252-427.000.

Stamicarbon, B.V.: *See—*
Reijnders, Arnoldus J.; Hage, Jacobus J.; and Segers, Peter J., 4,067,160, Cl. 52-245.000.

Standard Oil Company: *See—*
Alford, Harvey E.; and Saunders, James C., Jr., 4,067,796, Cl. 208-11.0LE.
Smith, Clay D.; and Keller, Douglas V., Jr., 4,067,616, Cl. 299-7.000.

Standard Oil Company (Indiana): *See—*
Corkhill, David P., 4,068,210, Cl. 340-17.00R.
Hauschildt, Frank William; and Bertolacini, Ralph J., 4,067,798, Cl. 208-92.000.

Standlick, Ronald E. Variably adjustable measured increment power dispensing apparatus. 4,067,484, Cl. 222-309.000.

Stanistreet, Harold Peter, to Imperial Chemical Industries Limited. Fibrous product. 4,068,036, Cl. 428-296.000.

Stanley Works, The: *See—*
Rutty, Edward Charles; Czerwinski, Frank Gregory; Van Zelderen, Henderik; and Gavini, Donald Robert, 4,067,513, Cl. 242-107.300.

Stanton, Austin N. Optical transmission line. 4,067,709, Cl. 65-3.00B.

Stark, Forest G.; and Signore, Dennis J., to AVM Corporation. File drawer compressor. 4,067,630, Cl. 312-319.000.

Staruch, Stanislaw; Fijalkowski, Bogdan; and Zawilinski, Janusz, to Politechnika Krakowska. SCR d.c. interrupter. 4,068,293, Cl. 363-27.000.

Stauffer Chemical Company: *See—*
Aurichio, Joseph A., 4,067,841, Cl. 260-30.40R.
Gaughan, Edmund J., 4,068,079, Cl. 544-165.000.
Muntz, Ronald L.; and Via, Francis A., 4,067,856, Cl. 260-75.00R.
Muntz, Ronald L.; and Walsh, Edward N., 4,067,932, Cl. 260-927.00R.
Muntz, Ronald Lee, 4,067,857, Cl. 260-75.00R.
Weil, Edward D., 4,067,927, Cl. 260-836.000.

Stavin, Irwin A., to A & G Manufacturers, Inc. Carton handle and top retainer. 4,067,493, Cl. 229-52.0AC.

Steckel, Thomas Frier, to Lubrizol Corporation, The. Bridged phenol metal salt-halo carboxylic acid condensate additives for fuels. 4,067,698, Cl. 44-66.000.

Stefani, Joseph P.: *See—*
Zampini, Louis, Jr.; and Stefani, Joseph P., 4,067,169, Cl. 53-3.000.

Steffen, Ronald W., to Dickey-john Corporation. Monitor system for agricultural harvesting apparatus. 4,068,223, Cl. 340-267.00R.

Stein, Thomas R.: *See—*
Chen, Nai Yuen; Gillespie, Bernard M.; Ireland, Henry R.; and Stein, Thomas R., 4,067,797, Cl. 208-15.000.

Steine, Hans T.; and Simm, Wolfgang, to Eutectic Corporation. Process for the manufacture of shaped parts from multi-component silver-copper alloys. 4,067,753, Cl. 148-11.50R.

Steinman, Manfred: *See—*
Klein, Hans; Arbeletche, Carlos; Balzau, Gerhard; and Steinman, Manfred, 4,067,623, Cl. 302-53.000.

Stencel, Edgar L., to VSI Corporation. Mechanically locking fastener. 4,067,371, Cl. 151-41.730.

Stendel, Wilhelm: *See—*
Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,068,002, Cl. 424-322.000.

Sterrett, Robert Wendell, to W. R. Grace & Co. Growing medium containing combusted bark particles. 4,067,716, Cl. 71-24.000.

Stevenson, Richard Michiel, to Kendrick Stevens Limited. Apparatus for conveying fluid from a lower level to an elevated level. 4,067,500, Cl. 239-556.000.

Stewart, Sherman A.: *See—*
Ruff, David L.; Stewart, Sherman A.; and Tarbell, Harlan E., 4,067,155, Cl. 52-105.000.

Stewart-Warner Corporation: *See—*
Brouwer, Frans; and Ferrari, Francis E., 4,068,216, Cl. 340-168.00R.

Stoddard, William H.: *See—*
Hollister, James F.; McGill, James E.; and Stoddard, William H., 4,067,361, Cl. 138-42.000.

Stofer, Walter: *See—*
Schmid, Pierre; Brunner, Eduard; and Stofer, Walter, 4,068,094, Cl. 179-1.50R.

Stoffey, Donald G.; and Orlowski, Jan Alexander, to Lee Pharmaceuticals. Process for preparing esters. 4,068,082, Cl. 560-90.000.

Stokker, Gerald E.: *See—*
Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Schultz, Everett M., 4,067,980, Cl. 424-248.400.

Stollberg, Ray H.: *See—*
Leakey, Joseph W.; and Stollberg, Ray H., 4,067,491, Cl. 229-23.00R.

Storer, Clyde K., to Buckeye Stamping Company, The. Support-foot and cord-retainer. 4,067,526, Cl. 248-65.000.

Stout, Ernest G.; and Thornburg, Francis L., to Lockheed Aircraft Corporation. Hydro-ski craft with longitudinal flaps. 4,067,286, Cl. 114-283.000.

Stratton, Boyd Lehman, to Arvin Industries, Inc. Stepper for slow motion disc recorder. 4,067,581, Cl. 274-23.00A.

Straub, John C. Process of shot peening and cleaning and preparing shot pellets therefor. 4,067,240, Cl. 72-377.000.

Streich, Steven G., to Halliburton Company. Indexing automatic fill-up float valve. 4,067,358, Cl. 137-624.130.

Streit, James L. Musical instrument support stand with counter-balanced, vertically movable horn support rack. 4,067,527, Cl. 248-125.000.

Strickland, Troy: *See—*
Conley, Thomas R.; Dawson, Larry; and Strickland, Troy, 4,067,411, Cl. 180-114.000.

Strike Corporation, The: *See—*
Payet, George Louis, 4,067,688, Cl. 8-116.400.

Strike, Donald P.; and Kao, Wen-Ling, to American Home Products Corporation. Prostaglandin derivatives. 4,067,898, Cl. 260-464.000.

Strobele, Rudolf: *See—*
List, Ferdinand; Rauhut, Otto; Hegenberg, Peter; and Strobele, Rudolf, 4,067,779, Cl. 203-28.000.

Strozzi, Luigi. Automatic sealing device for containers of volatile or perishable liquids. 4,067,476, Cl. 220-224.000.

Stryker Corporation: *See—*
Richmond, James W.; and Eaton, Russell K., 4,067,403, Cl. 173-163.000.

Stubits, Marcella C.: *See—*
Teng, James; Stubits, Marcella C.; Minton, Abraham; and Baker, James H., 4,067,824, Cl. 252-522.000.

Stucki, Frank Fred: *See—*
Markland, Richard Donald; Stucki, Frank Fred; and Bryant, Paul Max, 4,067,235, Cl. 73-146.500.

Stucki, Peter: *See—*
Bechtle, Bastian; Bleher, Hartmut J.; Hasselmeier, Helmut; Spruth, Wilhelm G.; Stucki, Peter; and Weis, Helmut, 4,068,224, Cl. 340-324.0AD.

Studiengesellschaft Kohle m.b.H.: *See—*
Wilke, Gunther; and Heimbach, Paul, 4,067,918, Cl. 260-666.00A.

Stumpf, Friedrich Wilhelm: *See—*
Mohilo, Oskar; Kessler, Karl H.; and Stumpf, Friedrich Wilhelm, 4,067,276, Cl. 112-220.000.

Sturm, Ruger & Co., Inc.: *See—*
Ruger, William B.; and Sefried, Harry H., II, 4,067,131, Cl. 42-65.000.

Sturwold, Robert J., to Emery Industries, Inc. Modified triglyceride metal working lubricants. 4,067,817, Cl. 252-49.300.

Suarato, Antonino: *See—*
Foglio, Maurizio; Franceschi, Giovanni; Masi, Paolo; and Suarato, Antonino, 4,067,866, Cl. 260-239.00A.

Sue, Kazutaka: *See—*
Naruishi, Tadayuki; Kataoka, Youichi; and Sue, Kazutaka, 4,068,049, Cl. 429-206.000.

Sugawara, Katsuro: *See—*
Ito, Satoru; Ota, Masataka; and Sugawara, Katsuro, 4,067,099, Cl. 29-571.000.

Sugimura, Akira; Uchida, Naoya; and Kimura, Tatsuya, to Nippon Telegraph and Telephone Public Corporation. Input and output devices for optical fiber. 4,067,643, Cl. 350-96.0WG.

Sugiyama, Masatoshi; Ikeda, Tadashi; Ogawa, Akira; Nakamura, Yasuharu; and Kakimi, Fujio, to Fuji Photo Film Co., Ltd. Photographic light-sensitive element having a dyed layer. 4,067,738, Cl. 96-84.00R.

Sullivan, Daniel W., to Ofco, Inc. Fluid filter magnet assembly. 4,067,810, Cl. 210-223.000.

Sumitomo Chemical Company, Limited: *See—*
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 4,067,868, Cl. 260-251.0QB.
Matsunaga, Hiroomi; Tsuji, Kozo; and Watanabe, Masashi, 4,067,141, Cl. 47-57.600.

Sunouchi, Akio: *See—*
Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, 4,068,243, Cl. 354-60.00R.

Surakka, Jorma; and Lankinen, Matti, to Enso-Gutzeit Osakeyhtio. Hydrocyclone. 4,067,814, Cl. 210-512.00R.

Suzuki, Masahiko: *See—*
Saito, Shigeru; Suzuki, Masahiko; and Sato, Takeshi, 4,067,288, Cl. 116-34.00R.

Suzuki, Norio: *See—*
Kojima, Akira; Aoki, Teruaki; and Suzuki, Norio, 4,067,100, Cl. 29-578.000.

Svelund, Lawrence Eugene, to International Business Machines Corporation. Digital carrier wave detect circuitry. 4,068,174, Cl. 325-325.000.

Swarts, John M.; and Lee, Zion S., to B. F. Goodrich Company, The. Method for rubberizing steel cords. 4,068,041, Cl. 428-625.000.

Swartzendruber, Robert F.: *See—*
McLaughlin, Richard S.; Plaski, Walter; and Swartzendruber, Robert F., 4,067,267, Cl. 109-24.100.

Sweatman, Travers Fraser: *See—*
Jones, Wilfred; Jones, Keith W.; and Sweatman, Travers Fraser, 4,067,935, Cl. 261-63.000.

Sweetheart Plastics, Inc.: *See—*
Mack, Anthony C.; and Shumrak, George K., 4,068,115, Cl. 219-386.000.

Swiley Laboratories, Inc.: *See—*
Curtis, Robert Mark, 4,067,696, Cl. 23-258.50B.

Switzer, George W., to Gilbert Associates Inc. Method for gasifying coal. 4,067,700, Cl. 48-210.000.

Sylverst, Leroy M. Sea terminal. 4,067,080, Cl. 9-8.00P.

Synthelabo: *See—*
Najer, Henry; Giudicelli, Don Pierre Rene Lucien; Manoury, Philippe Michel Jacques; and Roger, Jean-Marie Louis Eugene, 4,067,996, Cl. 424-308.000.

Systems Development Corporation: *See—*
Dechant, Thomas Edward; Glaser, Edward Lewis; Pitt, Paul Eldred; and Way, Frederick, III, 4,068,298, Cl. 364-200.000.

Syva Company: *See—*
Rubenstein, Kenneth E.; and Ullman, Edwin F., 4,067,774, Cl. 195-63.000.

Szarkowski, Raphael J. Method and apparatus for handling and laying strips of sod. 4,067,393, Cl. 172-1.000.

Szkrybalo, William, to Hoffmann-La Roche Inc. Plant growth regulant compositions. 4,067,722, Cl. 71-92.000.

Szwargulski, Jesse L.: *See—*
Berich, John J.; Krein, John H.; Augstin, Mervin L.; and Szwargulski, Jesse L., 4,067,306, Cl. 123-198.00D.

Tachick, Henry N.: *See—*
Boliver, Vincent J.; and Tachick, Henry N., 4,067,636, Cl. 339-143.00C.

Taiheiyo Engineering Inc.: *See—*
Nakajima, Shigeo; Takahashi, Ken; Itoh, Tsunetoshi; and Endo, Hajime, 4,067,618, Cl. 299-31.000.

Takada, Hiroshi: *See—*
Hayashi, Masaaki; Tsuneta, Kazuyoshi; Sasaki, Hiroharu; and Takada, Hiroshi, 4,067,838, Cl. 260-29.2TN.

Takahashi, Ken: *See—*
Nakajima, Shigeo; Takahashi, Ken; Itoh, Tsunetoshi; and Endo, Hajime, 4,067,618, Cl. 299-31.000.

Takahashi, Soroku, to Kyuroku Kabushiki-Kaisha. Heavy-duty offshore stud chain link. 4,067,188, Cl. 59-35.0CP.

Takamori, Shigeru; Kono, Yoshinao; and Takemoto, Hirotaka, to Kao Soap Co., Ltd. Glass fiber sizing agent. 4,067,835, Cl. 260-22.00R.

Takano, Yoshinari; Fujita, Keiji; Teraoka, Yasuo; Nishida, Masahiro; Fujitani, Ryoichi; and Kuratomo, Yaichi. Process for producing expandable beads of polymethyl methacrylate. 4,067,827, Cl. 260-2.50B.

Takeda Chemical Industries, Ltd.: *See—*
Tsushima, Susumu; Matsumoto, Norichika; and Numata, Mitsuo, 4,068,071, Cl. 544-19.000.
Tsushima, Susumu; Matsumoto, Norichika; and Numata, Mitsuo, 4,068,072, Cl. 544-19.000.

Takeda, Hidetomo: *See—*
Ikoma, Kazuo; Takeda, Hidetomo; Kudou, Tadashi; and Kuriki, Shigeya, 4,068,092, Cl. 179-1.0VL.

Takemoto, Hirotaka: *See—*
Takamori, Shigeru; Kono, Yoshinao; and Takemoto, Hirotaka, 4,067,835, Cl. 260-22.00R.

Taliani, Laurent: *See—*
Perronnet, Jacques; Taliani, Laurent; and Teche, Andre, 4,067,720, Cl. 71-90.000.

Tally Corporation: *See—*
Bringhurst, Edward D.; and Marshall, John L., 4,068,121, Cl. 250-227.000.

Tamada, Shigeharu: *See—*
Nakagawa, Kazuyuki; Yoshizaki, Shiro; Tanimura, Kaoru; and Tamada, Shigeharu, 4,068,076, Cl. 544-128.000.

Tamburino, James C.; Domes, E. A.; and Venere, Lawrence A., to International Harvester Company. Load transporting vehicles. 4,067,410, Cl. 180-64.00R.

Tanimoto, Tadao: *See—*
Furuya, Tsutomu; Ayabe, Shinichi; Kobayashi, Miyuki; and Tanimoto, Tadao, 4,067,142, Cl. 47-58.000.

Tanimura, Kaoru: *See—*
Nakagawa, Kazuyuki; Yoshizaki, Shiro; Tanimura, Kaoru; and Tamada, Shigeharu, 4,068,076, Cl. 544-128.000.

Tapmatic Corporation: *See—*
Johnson, Allan S., 4,067,424, Cl. 192-56.00R.

Tappan Company, The: *See—*
Perl, Richard L., 4,067,539, Cl. 251-11.000.

Tappen, Gerhard: *See—*
Schneider, Franz; Maier, Karl; and Tappen, Gerhard, 4,067,458, Cl. 214-8.50D.

Tarbell, Harlan E.: *See—*
Ruff, David L.; Stewart, Sherman A.; and Tarbell, Harlan E., 4,067,155, Cl. 52-105.000.

Tatani, Atsushi: *See—*
Atsukawa, Masumi; and Tatani, Atsushi, 4,067,707, Cl. 55-242.000.

Tate, Merle D. Drive mechanism for agricultural implements. 4,067,501, Cl. 239-672.000.

Tavares, Robert F.; and Katten, Elliot, to Givaudan Corporation. Novel process for the synthesis of tricyclo[6.2.2.0^{2,9}]dodecane derivatives. 4,067,906, Cl. 260-586.00G.

Taylor, Edward C.: *See—*
White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, 4,067,823, Cl. 252-431.00C.

Taylor, John Richard: *See—*
Commander, Robert Duncan; and Taylor, John Richard, 4,068,269, Cl. 360-78.000.

Tchang, Gabriel: *See—*
Olsson, Sven-Gunnar; Castor, Rolf; and Tchang, Gabriel, 4,067,320, Cl. 128-2.00C.

TDK Electronics Company, Ltd.: *See—*
Umeki, Shinji; Aue, Kazuhide; and Tokuoka, Yasumichi, 4,067,755, Cl. 148-105.000.

Teates, N. Grove. Compost machine. 4,067,504, Cl. 241-101.700.

Teche, Andre: *See—*
Perronnet, Jacques; Taliani, Laurent; and Teche, Andre, 4,067,720, Cl. 71-90.000.

Technology Application Services Corporation: *See—*
Camacho, Salvador Lujan; and Circeo, Louis Joseph, Jr., 4,067,390, Cl. 166-302.000.

Teel, Billy E.; and Magruder, Samuel L., to Westinghouse Electric Corporation. Ground fault protective apparatus and method. 4,068,275, Cl. 361-44.000.

Teijin Limited: *See—*
Shimada, Keizo; Harada, Toshiaki; Koga, Masahiro; and Nagahama, Shizuo, 4,067,870, Cl. 260-287.00F.

Telefonaktiebolaget L M Ericsson: *See—*
Blomberg, Knut Hugo, 4,068,102, Cl. 179-146.00R.
Mikkola, Osmo Arvid Ilmari; and Braugenhardt, Staffan Anders Emil, 4,068,099, Cl. 179-15.0AT.
Thyselius, Per-Olof, 4,068,098, Cl. 179-15.0BV.

Teleglobe Pay-TV System, Inc.: *See—*
Pires, H. George, 4,068,264, Cl. 358-122.000.

Telenetics, Inc.: *See—*
Tunzi, Burton Ralph, 4,068,178, Cl. 328-14.000.

Temper Corporation: *See—*
Rode, John E., 4,067,585, Cl. 277-200.000.

Templeton, William B., to Burroughs Corporation. Method and apparatus for identifying characters printed on a document which cannot be machine read. 4,068,212, Cl. 340-146.3ED.

Teng, James; Stubits, Marcella C.; Minton, Abraham; and Baker, James H., to Anheuser-Busch, Incorporated. Gelled perfume. 4,067,824, Cl. 252-522.000.

Terada, Hirotomo: *See—*
Nakamura, Yasushi; and Terada, Hirotomo, 4,068,213, Cl. 340-149.00A.

Teraoka, Yasuo: *See—*
Takano, Yoshinari; Fujita, Keiji; Teraoka, Yasuo; Nishida, Masahiro; Fujitani, Ryoichi; and Kuratomo, Yaichi, 4,067,827, Cl. 260-2.50B.

Terner, Leslie L.: *See—*
Noakes, Jack E.; Sato, Hiroshi; and Terner, Leslie L., 4,067,955, Cl. 423-345.000.

Tessner, Roy Lynnard, to Elberton Granite Association, Inc. Automatic feedback control for wire saw. 4,067,312, Cl. 125-21.000.

Texaco Development Corporation: *See—*
Austin, Thomas H.; and Speranza, George P., 4,067,833, Cl. 260-2.5AQ.

Texaco Inc.: *See—*
Hess, Howard Vincent; Franz, William Francis; and Cole, Edward Lawrence, 4,067,767, Cl. 162-31.000.

Texas Instruments Incorporated: *See—*
Holton, William C., 4,067,641, Cl. 350-96.0WG.
Lou, Perry W., 4,068,140, Cl. 307-304.000.
Rice, Joseph A., Jr.; Moore, Larry W.; and Donald, Robert C., 4,068,208, Cl. 340-7.00R.

Texas Pacific Oil Company, Inc.: *See—*
Hunt, Hubert B., 4,068,160, Cl. 324-1.000.

Textron Inc.: *See—*
St. Clair, Theodore A., 4,067,354, Cl. 137-329.400.
St. Clair, Theodore A., 4,067,355, Cl. 137-458.000.

Tezuka, Mutsuto: *See—*
Komatsu, Hidetoshi; Tezuka, Mutsuto; and Morozumi, Shinji, 4,068,090, Cl. 179-1.00A.

Thermasol Ltd.: *See—*
Altman, Murray; Altman, Richard; and Roberts, Arthur, 4,067,071, Cl. 4-145.000.

Thomas & Betts Corporation: *See—*
Narozny, Ronald S., 4,067,637, Cl. 339-198.00G.

Thomas, Gareth: *See—*
Koo, Jayoung; and Thomas, Gareth, 4,067,756, Cl. 148-144.000.

Thomas, John C. Mulch and process of making same. 4,067,140, Cl. 47-9.000.

Thomas, John P.: *See—*
Guinn, David C.; Haggard, Archie K.; and Thomas, John P., 4,067,282, Cl. 114-230.000.

Thompson, Buster Ray. Coke oven pushing and charging machine and method. 4,067,462, Cl. 214-23.000.

Thompson, Harwell B.: *See—*
Grohoski, Raymond J.; and Thompson, Harwell B., 4,067,186, Cl. 58-91.000.

Thompson, Thomas F., to Pacific Northwest Broadcasting Corporation. Method and apparatus for transmitting and receiving amplitude modulated stereo. 4,068,100, Cl. 179-15.0BT.

Thomson-Brandt: *See—*
Bied-Charreton, Philippe; and Le Carvennec, Francois, 4,068,258, Cl. 358-4.000.
Tinet, Claude; Peltier, Jean Paul; Oprandi, Pierre; and Romeas, Rene, 4,068,259, Cl. 358-13.000.

Thomson-CSF: *See—*
Autran, Jean Michel; and Epsztein, Bernard, 4,068,141, Cl. 310-366.000.
Lagier, Michel, 4,068,209, Cl. 340-10.000.

Thornburg, Francis L.: *See—*
Stout, Ernest G.; and Thornburg, Francis L., 4,067,286, Cl. 114-283.000.

Thorne, David Edward; Baggaley, Keith Howard; and Morgan, Brian, to Beecham Group Limited. Substituted (4-carboxyphenoxy) phenyl alkane compounds. 4,067,892, Cl. 260-410.90R.

Thornton, Leonard: *See—*
Davies, Robert William; and Thornton, Leonard, 4,067,436, Cl. 198-742.000.

Thorp, Peter M.: *See—*
Wheeler, Stanley C.; and Thorp, Peter M., 4,068,284, Cl. 361-230.000.

Throckmorton, Elbert S.; and Throckmorton, Norajane R. Lamp shade structure and method for assembling same. 4,068,120, Cl. 362-351.000.

Throckmorton, Norajane R.: *See—*
Throckmorton, Elbert S.; and Throckmorton, Norajane R., 4,068,120, Cl. 362-351.000.

Thurner, Elmar, to Hilti Aktiengesellschaft. Connecting element for a composite beam. 4,067,168, Cl. 52-733.000.

Thyselius, Per-Olof, to Telefonaktiebolaget L M Ericsson. Method of and arrangement for addressing a switch memory in a transit exchange for synchronous data signals. 4,068,098, Cl. 179-15.0BV.

Thyssen Niederrhein AG Hutten-und Walzwerke: *See—*
Klapdar, Wilhelm; Richter, Helmut; Rommerswinkel, Heinrich-Wilhelm; Spetzler, Edgar; and Wendorff, Jochen, 4,067,730, Cl. 75-58.000.

TII Corporation: *See—*
Simokat, Frank L., 4,068,277, Cl. 361-55.000.

Tikhonov, Vasily Fedorovich: *See—*
Rozengauz, Solomon Monuilovich; Tikhonov, Vasily Fedorovich; and Mosolov, Nikolai Klientievich, 4,057,459, Cl. 214-16.40R.

Tillmann, Horst, to Dorma-Baubeschlag G.m.b.H. & Co. K. G. Automatic door closer. 4,067,084, Cl. 16-80.000.

Timex Corporation: *See—*
Grohoski, Raymond J.; and Thompson, Harwell B., 4,067,186, Cl. 58-91.000.

Timmler, Helmut: *See—*
Draber, Wilfried; Dickore, Karlfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert Rudolf, 4,067,724, Cl. 71-93.000.

Timmons, Jay, to Hiebert, Inc. Panel system. 4,067,165, Cl. 52-585.000.

Timms, Donny Lee: *See—*
Beranek, Robert Louis, Jr.; and Timms, Donny Lee, 4,067,678, Cl. 425-305.100.

Tinet, Claude; Peltier, Jean Paul; Oprandi, Pierre; and Romeas, Rene, to Thomson-Brandt. Coder and decoder for a system designed to disseminate color television audio video signals. 4,068,259, Cl. 358-13.000.

Tjurin, Viktor Alexandrovich: *See—*
Arabei, Boris Georgievich; Zukher, Mark Semenovich; Markov, Jury Mikhailovich; Trokhina, Galina Nikolaevna; Tjurin, Viktor Alexandrovich; Khazanov, Iosif Isaakovich; Belmer, Pavel Fedorovich; and Zverev, Ivan Ivanovich, 4,067,743, Cl. 106-44.000.

Tobey, Morley C., Jr.; Giuliani, David J.; and Ashkin, Peter B., to Hewlett-Packard Company. Barrier height voltage reference. 4,068,134, Cl. 307-297.000.

Toby, Edward P. Apparatus for aligning rows of stacked articles. 4,067,435, Cl. 198-434.000.

Tokuoka, Yasumichi: *See—*
Umeki, Shinji; Aue, Kazuhide; and Tokuoka, Yasumichi, 4,067,755, Cl. 148-105.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Unno, Yoichi; Motegi, Naoto; and Ito, Takao, 4,067,937, Cl. 264-1.000.
Yoshizaki, Setsuya, 4,068,261, Cl. 358-55.000.

Tomio, Nishikayama, to Yamada Dobby Co., Ltd. Apparatus for reversing and racing a card in a dobby machine. 4,067,364, Cl. 139-324.000.

Tomita, Tetsuo; Yoshii, Tadashi; and Ito, Akira, to Mitsubishi Gas Chemical Company, Inc. Process for preparing polyphenylene oxides. 4,067,851, Cl. 260-47.0ET.

Toray Industries, Inc.: *See—*
Miwa, Tsuneyoshi; Nakazawa, Shinji; Itoga, Masaaki; Sano, Keizo; Nakamura, Itaru; Watanabe, Taigi; and Shingu, Yasuhiko, 4,067,855, Cl. 260-75.00R.
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhisa, Seikichi, 4,067,915, Cl. 260-648.00R.

Toro Company, The: *See—*
Hunter, Edwin J., 4,067,541, Cl. 251-129.000.

Toshiba Ray-O-Vac Co., Ltd.: *See—*
Naruishi, Tadayuki; Kataoka, Youichi; and Sue, Kazutaka, 4,068,049, Cl. 429-206.000.

Toussaint, Herbert: *See—*
Goetz, Norbert; Zeeh, Bernd; Decker, Martin; Hupfer, Leopold; and Toussaint, Herbert, 4,068,077, Cl. 544-178.000.

Tout, William R., to Universal Harvester Company, Inc. Harvester reel. 4,067,177, Cl. 56-226.000.

Towmotor Corporation: *See—*
Artrip, Robert W.; and Klimo, Robert G., 4,068,153, Cl. 318-373.000.
Murphy, George B., 4,067,426, Cl. 192-.098.
Samide, Frank R., 4,067,415, Cl. 187-9.00R.

Townson, Thomas: *See—*
Juriss, Ivan Bertram; Hay, Roger Douglas; Goodfellow, Andrew Culross; Townson, Thomas; and Hay, Keith Eric, 4,067,159, Cl. 52-234.000.

Toye, Larimore F., to Recognition Equipment Incorporated. Liquid jet modulator with piezoelectric hemispheral transducer. 4,068,144, Cl. 310-327.000.

Toyo Ink Manufacturing Co., Ltd.: *See—*
Konno, Ryozo; Goto, Kiyoshi; and Matsubara, Toru, 4,067,791, Cl. 204-159.150.

Toyoda Koki Kabushiki-Kaisha: *See—*
Kikuchi, Makoto, 4,067,148, Cl. 51-165.770.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kono, Toshiyuki, 4,067,300, Cl. 123-8.130.

Tracy, John M., to Rockwell International Corporation. Method of fabricating an array of flexible metallic interconnects for coupling microelectronics components. 4,067,104, Cl. 29-626.000.

Trans-World Manufacturing Corporation: *See—*
Abramson, Allan P.; Dewees, John G.; and Lasky, Richard J., 4,067,129, Cl. 40-563.000.

Tremco Incorporated: *See—*
Barron, Larry R.; and Turk, Herbert M., 4,067,844, Cl. 260-37.00N.

Treviranus, Ulrich, to U.S. Philips Corporation. Circuit arrangement for automatic level control for optical sensors with pulsed radiation, for example for surveillance equipment. 4,068,222, Cl. 340-258.00R.

Triggs, Charles W.: *See—*
Pizzuti, Donato F.; and Triggs, Charles W., 4,068,248, Cl. 354-288.000.

Trina, Inc.: *See—*
Rose, Arnold, 4,067,535, Cl. 248-470.000.

Trokhina, Galina Nikolaevna: *See—*
Arabei, Boris Georgievich; Zukher, Mark Semenovich; Markov, Jury Mikhailovich; Trokhina, Galina Nikolaevna; Tjurin, Viktor Alexandrovich; Khazanov, Iosif Isaakovich; Belmer, Pavel Fedorovich; and Zverev, Ivan Ivanovich, 4,067,743, Cl. 106-44.000.

Troutner, Vernon H.; and Simmons, Raymond W., to Concept Inc. Light for vaginal speculum. 4,067,323, Cl. 128-18.000.

Troxler, Franz; and Wiskott, Erik, to Sandoz Ltd. Certain 1-amino-3-(1-isoquinolinyl)oxy-2-propanol derivatives. 4,067,873, Cl. 260-288.00D.

Troxtel, Edrol Ford: *See—*
Konyak, John Francis; Troxtel, Edrol Ford; Schuman, George Mundy, Jr.; Maguire, Andrew Hugh; and Guthrie, Elwin Arthur, 4,067,549, Cl. 74-579.00R.

Truitt, Thomas E. Pendulum device. 4,067,111, Cl. 33-27.00L.

TRW Inc.: *See—*
Acker, Roy M., 4,068,238, Cl. 343-895.000.

Tscheulin, Guenther: *See—*
Hofer, Kurt; Moesch, Rudolf; Tscheulin, Guenther; and Voykowitsch, Anton, 4,067,895, Cl. 260-404.

Tsernes, Vladimir Yakovlevich; Shekhel, Alexandr Borisovich; Kakoshkin, Leonid Petrovich; Schukin, Lev Nikolaevich; and Sakharov, Boris Vladimirovich. Unloading station of an installation for pneumatic transportation of goods in a containers. 4,067,465, Cl. 214-62.00A.

Tsuboi, Takashi: *See—*
Nakamura, Kiyoshi; Tsuboi, Takashi; and Otazawa, Nobuaki, 4,068,152, Cl. 318-135.000.

Tsuchiya, Takao; and Narahara, Hisaaki, to Sony Corporation. Video recording apparatus with color killer. 4,068,256, Cl. 358-4.000.

Tsuda, Haruo: *See—*
Minejima, Yukihiko; Yamashita, Masahiro; and Tsuda, Haruo, 4,068,229, Cl. 340-347.0AD.

Tsuiki, Takao: *See—*
Nomiya, Kosei; and Tsuiki, Takao, 4,068,148, Cl. 315-169.00R.

Tsuji, Kozo: *See—*
Matsunaga, Hiroomi; Tsuji, Kozo; and Watanabe, Masashi, 4,067,141, Cl. 47-57.600.

Tsuneta, Kazuyoshi: *See—*
Hayashi, Masaaki; Tsuneta, Kazuyoshi; Sasaki, Hiroharu; and Takada, Hiroshi, 4,067,838, Cl. 260-29.2TN.

Tsushima, Susumu; Matsumoto, Norichika; and Numata, Mitsuo, to Takeda Chemical Industries, Ltd. Process for producing 6-aminopenicillanic acid or 7-aminocephalosporanic acid derivatives. 4,068,071, Cl. 544-19.000.

Tsushima, Susumu; Matsumoto, Norichika; and Numata, Mitsuo, to Takeda Chemical Industries, Ltd. Process for production of 6-aminopenicillanic acid or 7-aminocephalosporanic acid derivatives. 4,068,072, Cl. 544-19.000.

Tuboplast France: *See—*
Lataix, Gilbert, 4,067,440, Cl. 206-222.000.

Tucker, Linwood G.: *See—*
Van Ackeren, Joseph; and Tucker, Linwood G., 4,067,778, Cl. 202-248.000.

Tuerk, Robert P. Truck stake arrangement. 4,067,601, Cl. 296-36.000.

Tuftco Corporation: *See—*
Short, Hoyt E., 4,067,270, Cl. 112-79.00R.

Tunzi, Burton Ralph, to Telenetics, Inc. Variable frequency waveform synthesizer. 4,068,178, Cl. 328-14.000.

Turk, Herbert M.: *See—*
Barron, Larry R.; and Turk, Herbert M., 4,067,844, Cl. 260-37.00N.

Turner, Roger C., to General Electric Company. Fastener anchor formed in thermoplastic sheet. 4,067,256, Cl. 85-32.00V.

Twin Disc, Incorporated: *See—*
Schneider, Raymond C.; and Cox, Clairdel C., 4,067,423, Cl. 192-3.630.

Tzeng, John Jenn. Mystic numbered geometrics. 4,067,580, Cl. 273-156.000.

Uchida, Naoya: *See—*
Sugimura, Akira; Uchida, Naoya; and Kimura, Tatsuya, 4,067,643, Cl. 350-96.0WG.

Uchiyama, Takashi: *See—*
Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, 4,068,243, Cl. 354-60.00R.

Ueno, Yoshinobu; and Shibata, Tadayoshi, to Matsushita Electric Industrial Co., Ltd. Apparatus for holding knobs. 4,067,658, Cl. 403-357.000.

Ullman, Edwin F.: *See—*
Rubenstein, Kenneth E.; and Ullman, Edwin F., 4,067,774, Cl. 195-63.000.

Umeki, Shinji; Aue, Kazuhide; and Tokuoka, Yasumichi, to TDK Electronics Company, Ltd. Method of making powdered magnetic iron oxide material. 4,067,755, Cl. 148-105.000.

Umene, Osamu: *See—*
Iwanari, Sadayoshi; and Umene, Osamu, 4,068,204, Cl. 337-408.000.

Underhill, Michael J.: *See—*
Clark, Michael A. G.; and Underhill, Michael J., 4,068,181, Cl. 328-133.000.

Underhill, Thomas Travis: *See—*
Hubbard, James Henry; LeClere, Ralph Joseph; and Underhill, Thomas Travis, 4,067,649, Cl. 355-14.000.

Unger, Robert P., to Heinemann Electric Company. Bimetallic circuit breaker. 4,068,203, Cl. 337-56.000.

Unical Corporation: *See—*
Samonides, John, 4,068,028, Cl. 428-40.000.

Union Carbide Corporation: *See—*
Kanner, Bernard; and Prokai, Bela, 4,067,828, Cl. 260-2.5AH.
Potts, James Edward; Cornell, Stephen Watson; and Sracic, Albert Martin, 4,067,836, Cl. 260-23.00H.

Union Chimique Continentale-U.C.C.: *See—*
Winicki, Bernard, 4,067,329, Cl. 128-145.800.

Union Oil Company of California: *See—*
Lukasiewicz, Ronald J., 4,067,699, Cl. 44-66.000.
Nielsen, Donald L.; and Bagley, James R., 4,068,023, Cl. 427-138.000.

Uniroyal, Inc.: *See—*
Batorewicz, Wadim, 4,067,931, Cl. 260-927.00R.

United Aircraft Products, Inc.: *See—*
Lord, Thomas J., 4,067,381, Cl. 165-11.000.

U.S. Divers Co.: *See—*
Cerniway, Leon A.; and Marx, Bruce C., 4,067,064, Cl. 2-2.10R.

United States of America
Agriculture: *See—*
Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., 4,067,687, Cl. 8-116.00P.

Mangialardi, Gino J., Jr.; and Griffin, Anselm C., Jr., 4,068,167, Cl. 324-65.00P.
Perrier, Dorothy M.; and Benerito, Ruth R., 4,067,689, Cl. 8-129.000.
Army: *See—*
Arons, Gilbert N.; Coffin, Laurance G.; and Macnair, Richard N., 4,067,210, Cl. 66-202.000.
Conway, Frank Horton; and Myles, Innis Raymond, 4,067,366, Cl. 141-59.000.
Kleider, Alfred, 4,068,124, Cl. 250-332.000.
Naffa, Faisal A.; and Messerschmidt, Rudolph (said Rudolph Messerschmidt assors. to), 4,067,263, Cl. 105-499.000.
Peters, Philip H., Jr.; and Wilbur, Donald A., 4,068,235, Cl. 343-17.20R.
Energy: *See—*
Andersen, John A.; Flanigan, John J.; and Kindley, Robert J., 4,067,308, Cl. 124-16.000.
Brin, Raymond L.; and Pace, Thomas L., 4,067,316, Cl. 126-271.000.
Hickman, Robert G., 4,067,702, Cl. 55-2.000.
Koo, Jayoung; and Thomas, Gareth, 4,067,756, Cl. 148-144.000.
Energy Research and Development Administration: *See—*
Lackey, Walter J., Jr.; and Sease, John D., 4,068,015, Cl. 427-6.000.
Environmental Protection Agency: *See—*
Vrolyk, John J.; and Melvold, Robert W., 4,067,759, Cl. 156-94.000.
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Whalen, Mark E., Jr. Method for making a reconstituted metal strand. 4,067,096, Cl. 29-403.000.
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Morey, Booker W.; and White, William R., 4,067,502, Cl. 241-20.000.
Whitehouse, Harper J.; and Speiser, Jeffrey M., to United States of America, Navy. Discrete transform systems using permuter memories. 4,068,311, Cl. 364-827.000.
Whiteley, Eric, to General Electric Company. Discoidal winding for dynamoelectric machines. 4,068,143, Cl. 310-268.000.
Whiteman Manufacturing Company: *See*—
Richards, John A., 4,067,666, Cl. 417-265.000.
Whiting Corporation: *See*—
Ames, Victor H.; and Hartelius, Marshall V., 4,067,259, Cl. 105-26.00R.
Whitten, James R.: *See*—
Chen, Arthur C. M.; Barber, William D.; Berninger, Walter H.; Carlson, Gerald J.; Gittinger, Norman C.; and Whitten, James R., 4,068,306, Cl. 364-414.000.
Wiecko, Jacek. Process for preparing pyrazine precursor of methotrexate or an N-substituted derivative thereof and/or a di(lower)alkyl ester thereof. 4,067,867, Cl. 260-250.0BN.
Wienhold, James L., to CPT Corporation. Typewriter carriage movement mechanism. 4,067,430, Cl. 197-82.000.
Wilbur, Donald A.: *See*—
Peters, Philip H., Jr.; and Wilbur, Donald A., 4,068,235, Cl. 343-17.20R.
Wilczynski, Joseph E.: *See*—
McGady, Donald L.; Hooper, Thomas M.; and Wilczynski, Joseph E., 4,067,691, Cl. 21-56.000.
Wild, Jost: *See*—
Frater, Georg; Sigg-Grutter, Trudi; and Wild, Jost, 4,067,910, Cl. 260-609.00R.
Wilke, Gunther; and Heimbach, Paul, to Studiengesellschaft Kohle m.b.H. 3-Buten-1-yl (3) and 3 buten-2-yl (1) cyclooctadiene (1,5). 4,067,918, Cl. 260-666.00A.
Willard, John Wesley, Sr., to CAW Industries, Inc. Method of growing plants in soil. 4,067,712, Cl. 71-24.000.
Willard, John Wesley, Sr., to CAW Industries, Inc. Method of improving the fertility of soil and the soil thus prepared. 4,067,713, Cl. 71-24.000.
Willard, John Wesley, Sr., to CAW Industries, Inc. Method of watering plants and/or feeding nutrients to plants. 4,067,714, Cl. 71-24.000.
Willard, John Wesley, Sr., to CAW Industries, Inc. Method of transplanting plants. 4,067,715, Cl. 71-24.000.
Willcox, Kenneth W., to Phillips Petroleum Company. Prevention of fouling in polymerization reactors and antistatic agents. 4,068,054, Cl. 526-74.000.
Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Device for sewing machines for displacing sewn material for a short period of time. 4,067,275, Cl. 112-212.000.
Willenbacher, Erich: *See*—
Angele, Eugen; and Willenbacher, Erich, 4,067,271, Cl. 112-153.000.
William Zinsser & Co.: *See*—
Martin, James W., 4,067,773, Cl. 195-63.000.
Williams, Bruce T. Overload protection circuit for amplifiers. 4,068,278, Cl. 361-56.000.
Williams, Malcolm J., to Feeder One, Inc. Automatic stationery handling method and apparatus. 4,067,566, Cl. 271-2.000.
Williams, Orie L. Railroad safety and warning arrangement. 4,067,522, Cl. 246-1.00C.
Willis, Daniel H., to Phillips Petroleum Company. Promoters in the polymerization of monovinyl-aromatic compounds with primary lithium initiators. 4,067,929, Cl. 260-879.000.
Willus, Charles Arthur; and Nyrop, Per, to Dorr-Oliver Incorporated. Nozzle type centrifugal machine with improved slurry pumping chambers. 4,067,494, Cl. 233-3.000.
Wilmanns, Ingo G. Method for regulating evaporating rate and layer build up in the production of thin layers. 4,068,016, Cl. 427-10.000.
Wilmot, Richard D., to Hughes Aircraft Company. Automatic clutter-mapper. 4,068,231, Cl. 343-5.0CM.
Wilson, David T., to Raytheon Company. Focussed radiographic camera. 4,068,126, Cl. 250-363.00S.
Wilson, Farris H., Jr., to Goodyear Tire & Rubber Company, The. Phenolic phosphites as stabilizers for polymers. 4,067,933, Cl. 260-930.000.
Wilson, Francis Marion, Jr.: *See*—
Paterson, John Howard; and Wilson, Francis Marion, Jr., 4,067,518, Cl. 244-130.000.
Wilson, James D., to Banner Metals Division of Intercole Automation, Inc. Retainer bar assembly for mail carrying rack. 4,067,444, Cl. 211-126.000.
Wilson, Michael A., to Electro Corporation. Linear oscillator for proximity sensor. 4,068,189, Cl. 331-65.000.
Wilson, Newton R., to Phillips Petroleum Company. Heat treatment of resinous block copolymer to improve clarity. 4,067,942, Cl. 264-80.000.
Wimberley, Jerry W., to Continental Oil Company. Method for geochemical prospecting. 4,067,693, Cl. 23-230.0EP.
Winderl, Siegfried: *See*—
Reiss, Wolfgang; Winderl, Siegfried; Schroeder, Wolfgang; and Hoffmann, Herwig, 4,067,914, Cl. 260-635.00Y.
Windings, Inc.: *See*—
Newman, James W.; and Zajac, Ronald E., 4,067,441, Cl. 206-398.000.
Winger, Paul: *See*—
Eckle, Otto; and Winger, Paul, 4,067,251, Cl. 82-1.200.
Winicki, Bernard, to Union Chimique Continentale-U.C.C. Tube disconnection warning device. 4,067,329, Cl. 128-145.800.
Winston, Emanuel A. Adjustable back supporter. 4,067,078, Cl. 5-368.000.
Winters, William L. Roll flip machine. 4,067,451, Cl. 214-1.00Q.
Wiskott, Erik: *See*—
Troxler, Franz; and Wiskott, Erik, 4,067,873, Cl. 260-288.00D.
Witco Chemical Corporation: *See*—
Gladstone, Shaul; Rao, Srinivasa R.; and Rosshirt, C. Joseph, 4,067,901, Cl. 560-147.000.
Witenhafer, Donald Edward, to B. F. Goodrich Company, The. Internally coated reaction vessel for use in olefinic polymerization. 4,068,059, Cl. 526-62.000.
Withycombe, Donald Arthur: *See*—
Vinals, Joaquin F.; Kiwala, Jacob; Withycombe, Donald Arthur; Mookherjee, Braja Dulal; and Mussinan, Cynthia J., 4,067,344, Cl. 131-17.00R.

Witman, Jack H., to Armstrong Cork Company. Multilevel embossing by printing with a reactive monomer. 4,068,030, Cl. 428-159.000.
Wohrstein, Edwin, to Feinwerkbau, Westinger & Altenburger KG. Air gun with trigger mechanism therefor. 4,067,309, Cl. 124-67.000.
Wolf, Richard E., to DeSoto, Inc. Signal coating suitable for lead-based paint hazard abatement or the like and formulations therefor. 4,067,840, Cl. 260-29.60R.
Wolma, Rodney J., to Johnson, Philip L. Fascia compression clip. 4,067,152, Cl. 52-60.000.
Wolowodiuk, Catherine: *See*—
Okinaka, Yutaka; and Wolowodiuk, Catherine, 4,067,783, Cl. 204-43.00G.
Wolscheck, Hans: *See*—
Hilbert, Ferdinand; and Wolscheck, Hans, 4,067,786, Cl. 204-56.00R.
Worthington, Paul Anthony: *See*—
Shephard, Margaret Claire; and Worthington, Paul Anthony, 4,067,989, Cl. 424-273.00R.
Worthington, Ralph Eric; and O'Neill, Padraic Seamus, to Fitzwilton Limited. Process for producing hydrogen fluoride from an aqueous hydrofluorosilicic acid solution. 4,067,957, Cl. 423-484.000.
Wright, John B.; and Sinkula, Anthony A., to Upjohn Company, The. Compounds, compositions and methods of use. 4,067,995, Cl. 424-304.000.
Wuchinich, David G., to Master, Arthur M., Jr. Flasher circuit with low power drain. 4,068,149, Cl. 315-200.00A.
Wulf, Gerhard: *See*—
Baruschke, Holger; and Wulf, Gerhard, 4,067,950, Cl. 264-257.000.
Wulf, Helmut: *See*—
Niemann, Klaus; and Wulf, Helmut, 4,067,247, Cl. 74-499.000.
Wurlitzer Company, The: *See*—
Wheelwright, Robert W.; and Solender, Peter E., 4,067,253, Cl. 84-1.100.
Wurmli, Arthur, to Rieter Machine Works Ltd. Apron drafting arrangement. 4,067,088, Cl. 19-253.000.
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, to Merck Patent Gesellschaft mit beschrankter Haftung. Process and composition for determining the activity of creatinekinase-MB. 4,067,775, Cl. 195-99.000.
Xerox Corporation: *See*—
Bailey, Raymond E.; and Herbert, William G., 4,067,782, Cl. 204-25.000.
Kramer, Charles J., 4,067,639, Cl. 350-6.000.
Liao, Henry H. J., 4,068,266, Cl. 358-280.000.
Parker, Delmer G.; Fraser, Lawrence J.; and Scaletta, Joseph L., 4,067,295, Cl. 118-653.000.
Shogren, David K., 4,067,640, Cl. 350-6.000.
Wheeler, Stanley C.; and Thorp, Peter M., 4,068,284, Cl. 361-230.000.
Yakshin, Alexandr Sergeevich; Novikov, Oleg Nikolaevich; Grechinsky, Dmitry Alexeevich; Klochko, Viktor Alexandrovich; and Rygalin, Viktor Georgievich. Device for measuring parameters of impact pulses. 4,067,231, Cl. 73-658.000.
Yamada Dobby Co., Ltd.: *See*—
Tomio, Nishikayama, 4,067,364, Cl. 139-324.000.
Yamada, Kuniharu; Morozumi, Yukio; and Iuchi, Keiichi, to Kabushiki Kaisha Suwa Seikosha. Variable capacitor. 4,068,285, Cl. 361-293.000.
Yamada, Takahiro, to Hitachi, Ltd. Ink-jet recording device with alternate small and large drops. 4,068,241, Cl. 346-75.000.
Yamada, Yasuyuki; Morita, Kazuhiko; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording members. 4,068,040, Cl. 428-425.000.
Yamaguchi, Masahisa: *See*—
Sato, Gunkichi; and Yamaguchi, Masahisa, 4,068,186, Cl. 330-149.000.
Yamamoto, Hajime: *See*—
Inubushi, Masanobu; Yamamoto, Hajime; and Ozaki, Toshiharu, 4,067,557, Cl. 266-89.000.
Yamamoto, Hisao: *See*—
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 4,067,868, Cl. 260-251.0QB.
Yamamoto, Kyoji: *See*—
Hashimoto, Tadahiro; Okuyama, Yasushi; Koguchi, Toshio; Wada, Koji; Sakamoto, Mitsuru; Yanagawa, Takayuki; and Yamamoto, Kyoji, 4,068,018, Cl. 427-38.000.
Yamamoto, Michihiro: *See*—
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 4,067,868, Cl. 260-251.0QB.
Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Murakami, Masuo; Isaka, Ichiro; Kawahara, Norio; Iwanami, Masaru; Fujimoto, Masaharu; Maeda, Tetsuya; Shibanuma, Tadao; and Nagano, Yoshinobu, 4,068,074, Cl. 544-27.000.
Yamaoka, Kishihiro. Continuous kneader. 4,067,553, Cl. 366-82.000.
Yamaoka, Tetsuo: *See*—
Iwata, Hiroshi; and Yamaoka, Tetsuo, 4,068,150, Cl. 315-241.00P.
Yamashita, Masahiro: *See*—
Minejima, Yukihiko; Yamashita, Masahiro; and Tsuda, Haruo, 4,068,229, Cl. 340-347.0AD.
Yamazaki, Shuichi; and Kajitani, Ikuo, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust manifold for internal combustion engine. 4,067,192, Cl. 60-282.000.
Yamazaki, Taro; Ohnishi, Kazuhiko; and Maeda, Kiyoshi, to Dainippon Screen Seizo Kabushiki-Kaisha; and Ushio Electric Inc. Apparatus for stabilizing beam for exposure. 4,068,197, Cl. 331-94.50S.
Yanagawa, Takayuki: *See*—
Hashimoto, Tadahiro; Okuyama, Yasushi; Koguchi, Toshio; Wada, Koji; Sakamoto, Mitsuru; Yanagawa, Takayuki; and Yamamoto, Kyoji, 4,068,018, Cl. 427-38.000.
Yano, Akio; and Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Multi-color holographic stereograms. 4,067,638, Cl. 350-3.500.
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhisa, Seikichi, to Toray Industries, Inc. Method for producing cyclohexane derivatives directly from aromatic hydrocarbons. 4,067,915, Cl. 260-648.00R.
Yasushi, Nishino; Saburo, Adachi; Koji, Karashima; and Ken, Iwai, to Mitsubishi Jukogyo Kabushiki Kaisha. Barge-carrying ship. 4,067,284, Cl. 114-260.000.
Yates, Robert V., Jr., to Milliken Research Corporation. Tubular package forming apparatus and method. 4,067,170, Cl. 53-28.000.
Yauchi, Akio: *See*—
Yuki, Nakaji; and Yauchi, Akio, 4,067,894, Cl. 252-446.000.
Yerger Bros. Inc.: *See*—
Rhoads, Randall D., 4,067,762, Cl. 156-250.000.
Yokoyema, Takao, to Hitachi, Ltd. Phase locked loop circuit. 4,068,188, Cl. 331-8.000.
Yoshida, Kazuaki: *See*—
Sekiguchi, Hideo; Sato, Fumishi; Sadamitsu, Kazuo; and Yoshida, Kazuaki, 4,067,804, Cl. 210-23.00H.
Yoshida Kogyo K.K.: *See*—
Ogishi, Masaaki, 4,067,144, Cl. 49-360.000.
Yoshida, Masashi: *See*—
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, 4,068,070, Cl. 542-470.000.
Yoshii, Tadashi: *See*—
Tomita, Tetsuo; Yoshii, Tadashi; and Ito, Akira, 4,067,851, Cl. 260-47.0ET.
Yoshimura, Takuji: *See*—
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Yoshizaki, Setsuya, to Tokyo Shibaura Electric Co., Ltd. Image pickup devices and image pickup tubes utilized therein. 4,068,261, Cl. 358-55.000.
Yoshizaki, Shiro: *See*—
Nakagawa, Kazuyuki; Yoshizaki, Shiro; Tanimura, Kaoru; and Tamada, Shigeharu, 4,068,076, Cl. 544-128.000.
Young, Douglas L., to Ingersoll-Rand Company. Screening apparatus. 4,067,800, Cl. 209-273.000.
Youngdale, Gilbert A., to Upjohn Company, The. 2a,2b-Dihomo-16,16-dimethyl-PGF$_2$-analogs. 4,067,891, Cl. 260-410.90R.
Yu, Ruey J.; and Van Scott, Eugene J. Treatment of psoriasis with 6-aminonicotinamide and thionicotinamide. 4,067,975, Cl. 424-240.000.
Yui, Hiroshi; Moriwaki, Saburo; Ichikawa, Yukihiro; and Ohi, Shigekazu, to Mitsubishi Petrochemical Co., Ltd. Self-extinguishing resin composition. 4,067,847, Cl. 260-45.70R.
Yuki, Nakaji; and Yauchi, Akio, to Director-General of the Agency of Industrial Science and Technology. Process for the production of granular metal-capturing agents for treating waste effluents containing heavy metals. 4,067,894, Cl. 252-446.000.
Zahler, Wolf Dieter: *See*—
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf Dieter, 4,067,853, Cl. 260-47.0UA.
Zahn, Irwin; Meisinger, Wilhelm R.; and Fischer, Edward M., to General Staple Co., Inc. Method of making an insulated splice and an insulated terminal and composite supply strip therefor. 4,067,105, Cl. 29-628.000.
Zahnen, Joseph G.: *See*—
Hicks, James E.; Zahnen, Joseph G.; and Wedam, Werner F., 4,068,158, Cl. 323-17.000.
Zahner, Hansruedi, to Sprecher & Schuh AG. Electric insulator. 4,067,925, Cl. 260-830.0TW.
Zajac, Ronald E.: *See*—
Newman, James W.; and Zajac, Ronald E., 4,067,441, Cl. 206-398.000.
Zampini, Louis, Jr.; and Stefani, Joseph P., to General Electric Company. Method of forming a wall plate package. 4,067,169, Cl. 53-3.000.
Zawilinski, Janusz: *See*—
Staruch, Stanislaw; Fijalkowski, Bogdan; and Zawilinski, Janusz, 4,068,293, Cl. 363-27.000.
Zeeh, Bernd: *See*—
Goetz, Norbert; Zeeh, Bernd; Decker, Martin; Hupfer, Leopold; and Toussaint, Herbert, 4,068,077, Cl. 544-178.000.
Zeewy, Abraham: *See*—
Cecil, Shelby; and Zeewy, Abraham, 4,068,154, Cl. 318-568.000.
Zeller, Hans-Rudolf: *See*—
Dlouhy, Jiri; and Zeller, Hans-Rudolf, 4,067,644, Cl. 350-160.00R.
Zemon, Stanley A.; and Dakss, Mark L., to GTE Laboratories Incorporated. Acoustooptic modulator for optical fiber waveguides. 4,068,191, Cl. 331-94.50M.
Zenz, Frederick A., to Ducon Company, Inc., The. Granular bed filter. 4,067,704, Cl. 55-96.000.
Zhuravlev, Dmitry Alexandrovich: *See*—
Bykhover, Leonid Nosonovich; Zhuravlev, Dmitry Alexandrovich; Kozhemyakin, Vladimir Alexeevich; Levin, Vladimir Grigorievich; Ljutin, Felix Betsialovich; Kotin, Nikolai Nikolaevich; Mitnik, Viktor Leonidovich; Peisakhov, Isaak Leibovich; Malakhov, Gennady Vasilievich; Mukhin, Anatoly Sergeevich;

Peniorshek, Eduard Kazimirovich; and Sautiev, Taimuraz Danilovich, 4,067,708, Cl. 55-304.000.

Zickendraht, Christian: *See*—
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, 4,067,889, Cl. 260-364.000.

Zinpro Corporation: *See*—
Anderson, Dean R.; and Abdel-Monem, Mahmoud M., 4,067,994, Cl. 424-295.000.

Zirps, Wilhelm, to Robert Bosch GmbH. Valve for controlling an opening for the passage of fluid into and out of a pressure accumulator. 4,067,360, Cl. 138-30.000.

Zuccaro, Donald R.: *See*—
Robbins, Roscoe S.; and Zuccaro, Donald R., 4,068,155, Cl. 318-568.000.

Zukher, Mark Semenovich: *See*—
Arabei, Boris Georgievich; Zukher, Mark Semenovich; Markov, Jury Mikhailovich; Trokhina, Galina Nikolaevna; Tjurin, Viktor Alexandrovich; Khazanov, Iosif Isaakovich; Belmer, Pavel Fedorovich; and Zverev, Ivan Ivanovich, 4,067,743, Cl. 106-44.000.

Zukovska, Vera: *See*—
Jaros, Frantisek; Kotrba, Zdenek; Ripka, Josef; Vobornik, Vaclav; Junek, Jan; Ohlidal, Vladimir; Hortlik, Frantisek; Brozkova, Marie; and Zukovska, Vera, 4,067,182, Cl. 57-58.950.

Zverev, Ivan Ivanovich: *See*—
Arabei, Boris Georgievich; Zukher, Mark Semenovich; Markov, Jury Mikhailovich; Trokhina, Galina Nikolaevna; Tjurin, Viktor Alexandrovich; Khazanov, Iosif Isaakovich; Belmer, Pavel Fedorovich; and Zverev, Ivan Ivanovich, 4,067,743, Cl. 106-44.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JANUARY, 1978

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amblard, Paul Alexis: *See*—
Paris, Rene Antoine; Amblard, Paul Alexis; and Rousset, Abel Claude, Re. 29,515, Cl. 423-252.000.

Donohue, James M.; and Mueller, Daniel L., to Xerox Corporation. Programming control system for printing machine. Re. 29,514, Cl. 355-16.000.

General Kinematics Corporation: *See*—
Musschoot, Albert, Re. 29,512, Cl. 198-770.000.

Johnson, Lennart B., to Teradyne, Inc. Electrical connection apparatus. Re. 29,513, Cl. 339-112.00R.

Mueller, Daniel L.: *See*—
Donohue, James M.; and Mueller, Daniel L., Re. 29,514, Cl. 355-16.000.

Musschoot, Albert, to General Kinematics Corporation. Vibratory material handling device with variable force. Re. 29,512, Cl. 198-770.000.

Paris, Rene Antoine; Amblard, Paul Alexis; and Rousset, Abel Claude. Metal cyanide complexes. Re. 29,515, Cl. 423-252.000.

Rousset, Abel Claude: *See*—
Paris, Rene Antoine; Amblard, Paul Alexis; and Rousset, Abel Claude, Re. 29,515, Cl. 423-252.000.

Rubenstein, Burrell R. Parking meter. Re. 29,511, Cl. 58-142.000.

Teradyne, Inc.: *See*—
Johnson, Lennart B., Re. 29,513, Cl. 339-112.00R.

Xerox Corporation: *See*—
Donohue, James M.; and Mueller, Daniel L., Re. 29,514, Cl. 355-16.000.

LIST OF PLANT PATENTEES

Chopin, David Earl, to Chopin & Wright Nursery, Ltd. Crape myrtle. 4,182, 1-10-78, Cl. 54.000.

Chopin, David Earl, to Chopin & Wright Nursery, Ltd. Crape myrtle. 4,183, 1-10-78, Cl. 54.000.

Chopin, David Earl, to Chopin & Wright Nursery, Ltd. Crape myrtle. 4,184, 1-10-78, Cl. 54.000.

Chopin, David Earl, to Chopin & Wright Nursery, Ltd. Crape myrtle. 4,185, 1-10-78, Cl. 54.000.

Chopin, David Earl, to Chopin & Wright Nursery, Ltd. Crape myrtle. 4,186, 1-10-78, Cl. 54.000.

Chopin & Wright Nursery, Ltd.: *See*—
Chopin, David Earl, 4,182, Cl. 54.000.
Chopin, David Earl, 4,183, Cl. 54.000.
Chopin, David Earl, 4,184, Cl. 54.000.
Chopin, David Earl, 4,185, Cl. 54.000.
Chopin, David Earl, 4,186, Cl. 54.000.

LIST OF DESIGN PATENTEES

Adelhardt, William Marinus. Retainer for an elongated lighter. 246,912, 1-10-78, Cl. D27-51.000.

Alleman, Benjamin D.: *See*—
Bess, Kenneth B., Jr.; and Alleman, Benjamin D., 246,911, Cl. D24-26.000.

AMBA Marketing Systems, Inc.: *See*—
Casser, Constantine, 246,939, Cl. D87-3.00F.

Anchor Hocking Corporation: *See*—
Thrush, James Lloyd, 246,882, Cl. D7-9.000.

ATARI, Inc.: *See*—
Cheng, Regan L., 246,916, Cl. D34-5.00J.
Sauter, Kenneth W., 246,917, Cl. D34-5.00J.
Sauter, Kenneth W., 246,918, Cl. D34-5.00J.

Berman, Eugene B.: *See*—
Kahn, Evan R.; and Berman, Eugene B., 246,913, Cl. D28-13.000.

Bess, Kenneth B., Jr.; and Alleman, Benjamin D. Automatic blind suturing machine. 246,911, 1-10-78, Cl. D24-26.000.

Bristol-Myers Company: *See*—
Eron, Theodore, 246,893, Cl. D9-9.000.

Brownlee, Carroll R.: *See*—
Szabo, Helga, 246,905, Cl. D19-59.000.

Bruce, Elmer M., to Conrac Corporation. Combined microphone gooseneck adapter and switch therefor. 246,899, 1-10-78, Cl. D14-13.000.

Cameron, Russell J.: *See*—
Fialkowski, Daniel H.; and Cameron, Russell J., 246,907, Cl. D23-19.000.

Canavan, Richard W., III. Spectacles frame front. 246,903, 1-10-78, Cl. D16-65.000.

Casser, Constantine, to AMBA Marketing Systems, Inc. Combined handbag and detachable fitted clutch. 246,939, 1-10-78, Cl. D87-3.00F.

Cecala, Don G.; and Gwilliam, James L., Jr., to Dynatone Corporation. Combined emergency light and clock. 246,931, 1-10-78, Cl. D48-20.00D.

Cheng, Regan L., to ATARI, Inc. Game cabinet. 246,916, 1-10-78, Cl. D34-5.00J.

Christiansen, Godtfred, to Interlego A.G. Toy construction piece. 246,927, 1-10-78, Cl. D34-15.0GG.

Cone, Richard E. Toy raft. 246,926, 1-10-78, Cl. D34-15.0JJ.

Conrac Corporation: *See*—
Bruce, Elmer M., 246,899, Cl. D14-13.000.

Conwed Corporation: *See*—
Eckerline, Austin, 246,887, Cl. D8-382.000.
Eckerline, Austin, 246,889, Cl. D8-382.000.

Corbin Gentry, Inc.: *See*—
Hanagan, Michael W., 246,879, Cl. D6-48.100.

Dennis, Dean R., to Robertshaw Controls Co. Constant flow selector valve. 246,909, 1-10-78, Cl. D23-21.000.

Dinnerstein, Albert J.; Savitt, Mervin A.; and Sena, Ralph, to Reliance Pet Products Corporation. Modular pet habitat. 246,914, 1-10-78, Cl. D30-1.000.

Di Ruscio, Richard V. Trivet. 246,883, 1-10-78, Cl. D7-130.000.

Drackett Co.: *See*—
Jones, David A.; and Pardo, John, 246,897, Cl. D9-118.000.

Duty, Gilbert J., Jr. Combined accessory carrier and engine mount for aircraft. 246,901, 1-10-78, Cl. D15-5.000.

Dynatone Corporation: *See*—
Cecala, Don G.; and Gwilliam, James L., Jr., 246,931, Cl. D48-20.00D.

East, Gregory M. Pour spout attachment for a paint can or the like. 246,892, 1-10-78, Cl. D9-290.000.

Eckerline, Austin, to Conwed Corporation. Room divider connector or similar device. 246,887, 1-10-78, Cl. D8-382.000.

Eckerline, Austin, to Conwed Corporation. Room divider connector or similar device. 246,889, 1-10-78, Cl. D8-382.000.

Eron, Theodore, to Bristol-Myers Company. Combined dispensing container and cap therefor. 246,893, 1-10-78, Cl. D9-9.000.

Euclid Products Co., Inc., The: *See*—
Finke, Theodore R., 246,884, Cl. D7-95.000.

Fabbri, William C., to Keene Corporation. Free standing light fixture. 246,933, 1-10-78, Cl. D48-20.00A.

Fetty, Harold D., to Ross Operating Valve Company. Solenoid operated pilot valve. 246,908, 1-10-78, Cl. D23-19.000.

Fialkowski, Daniel H.; and Cameron, Russell J., to Ross Operating Valve Company. Solenoid valve operator. 246,907, 1-10-78, Cl. D23-19.000.

Finke, Theodore R., to Euclid Products Co., Inc., The. Frying pan or the like. 246,884, 1-10-78, Cl. D7-95.000.

Green, James R. Combined storage and dispensing unit for loose fill material. 246,894, 1-10-78, Cl. D9-249.000.
Green, Marianne C., to Koehring Company. Plastic container for liquids or the like. 246,891, 1-10-78, Cl. D9-125.000.
Gwilliam, James L., Jr.: *See—*
Cecala, Don G.; and Gwilliam, James L., Jr., 246,931, Cl. D48-20.00D.
Haber, Terry M. Dip stick wiper. 246,885, 1-10-78, Cl. D7-181.000.
Hanagan, Michael W., to Corbin Gentry, Inc. Motorcycle seat. 246,879, 1-10-78, Cl. D6-48.100.
Heign, Robert Wellington. Wire puzzle. 246,922, 1-10-78, Cl. D34-15.00M.
Heign, Robert Wellington. Wire puzzle. 246,924, 1-10-78, Cl. D34-15.00M.
Heinemann Electric Company: *See—*
Lisnay, Albert D., 246,898, Cl. D13-34.000.
Henthorne, Marjorie L., to Henthorne, Marjorie L. Rack for a ball game or the like. 246,915, 1-10-78, Cl. D34-5.00R.
Huang, Barney H. Game cabinet. 246,919, 1-10-78, Cl. D34-5.00J.
Imber, Marion; and Wezenter, Seymour, to Ray Control Corp. Table. 246,881, 1-10-78, Cl. D6-177.000.
Interlego A.G.: *See—*
Christiansen, Godtfred, 246,927, Cl. D34-15.0GG.
Jones, David A.; and Pardo, John, to Drackett Co. Bottle or similar article. 246,897, 1-10-78, Cl. D9-118.000.
K-tel International, Inc.: *See—*
Koblick, Jeffrey, 246,920, Cl. D34-14.00D.
Kahn, Evan R.; and Berman, Eugene B., to Ming Dynasty, Inc. Hair dryer and holder. 246,913, 1-10-78, Cl. D28-13.000.
Kayser-Roth Corporation: *See—*
Smith, Neil, 246,937, Cl. D80-8.000.
Keene Corporation: *See—*
Fabbri, William C., 246,933, Cl. D48-20.00A.
Keller, Jerry E. Hanging lamp. 246,934, 1-10-78, Cl. D48-23.00R.
Kellwood Company: *See—*
Marquart, Tom Eugene, 246,938, Cl. D87-1.00R.
Kitzis, Stanley. Combined toothbrush and mirror. 246,877, 1-10-78, Cl. D4-18.000.
Kitzis, Stanley. Combined toothbrush, tongue scraper and mirror. 246,878, 1-10-78, Cl. D4-18.000.
Koblick, Jeffrey, to K-tel International, Inc. Snow scooter. 246,920, 1-10-78, Cl. D34-14.00D.
Koehring Company: *See—*
Green, Marianne C., 246,891, Cl. D9-125.000.
Krause, Roger W. Carpet toe tool. 246,888, 1-10-78, Cl. D8-15.000.
Kuest, Johnnie. Grain grinder housing. 246,902, 1-10-78, Cl. D15-98.000.
Leopoldi, Norbert. Paper dispenser. 246,906, 1-10-78, Cl. D19-92.000.
Lisnay, Albert D., to Heinemann Electric Company. Housing for a circuit breaker. 246,898, 1-10-78, Cl. D13-34.000.
MacIntosh, John J. Finger ballpoint pen. 246,904, 1-10-78, Cl. D19-41.000.
Malafouris, Dannie O., to Newco Fireplace Equipment Limited, Inc. Combination damper and grate lifter for an hibachi type-grill. 246,886, 1-10-78, Cl. D7-129.000.
Marquart, Tom Eugene, to Kellwood Company. Back pack frame. 246,938, 1-10-78, Cl. D87-1.00R.
Mascio, Lea-Claire Massari. Solar system game board, or similar article. 246,923, 1-10-78, Cl. D34-5.0SS.
Ming Dynasty, Inc.: *See—*
Kahn, Evan R.; and Berman, Eugene B., 246,913, Cl. D28-13.000.
Miola, Pat. Table for use in gamma ray inspection. 246,880, 1-10-78, Cl. D6-175.000.
Mitchell, Philip L. Arabic typeface. 246,936, 1-10-78, Cl. D64-12.00B.
Moline, Gary D. Motor mount for model aeroplanes. 246,921, 1-10-78, Cl. D34-15.0HH.
Nelson, Norman, to Nelson Tool & Machine Company, Inc. Miniature hurricane lamp for dollhouses and the like. 246,932, 1-10-78, Cl. D48-20.00R.
Nelson Tool & Machine Company, Inc.: *See—*
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Newco Fireplace Equipment Limited, Inc.: *See—*
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Norris Industries, Inc.: *See—*
Yu, Jim, 246,890, Cl. D8-322.000.
Owens-Illinois, Inc.: *See—*
Plummer, James Edmund, 246,896, Cl. D9-100.000.
Pardo, John: *See—*
Jones, David A.; and Pardo, John, 246,897, Cl. D9-118.000.
Patel, Nanoo. Combined incense holder and ash tray. 246,910, 1-10-78, Cl. D23-78.000.
Plummer, James Edmund, to Owens-Illinois, Inc. Bottle. 246,896, 1-10-78, Cl. D9-100.000.
Ray Control Corp.: *See—*
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Reliance Pet Products Corporation: *See—*
Dinnerstein, Albert J.; Savitt, Mervin A.; and Sena, Ralph, 246,914, Cl. D30-1.000.
Robertshaw Controls Co.: *See—*
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Ross Operating Valve Company: *See—*
Fetty, Harold D., 246,908, Cl. D23-19.000.
Fialkowski, Daniel H.; and Cameron, Russell J., 246,907, Cl. D23-19.000.
S. C. Johnson & Son, Inc.: *See—*
van der Heijden, Johannes, 246,895, Cl. D9-258.000.
Sabol, Alma J. Carrying bag with tennis racket holding ring. 246,940, 1-10-78, Cl. D87-3.00F.
Sanyo Electric Co., Ltd.: *See—*
Yasuoka, Junji, 246,900, Cl. D14-68.000.
Satten, Michael I. Toy piano. 246,925, 1-10-78, Cl. D34-15.00C.
Sauter, Kenneth W., to ATARI, Inc. Game cabinet. 246,917, 1-10-78, Cl. D34-5.00J.
Sauter, Kenneth W., to ATARI, Inc. Game cabinet. 246,918, 1-10-78, Cl. D34-5.00J.
Savitt, Mervin A.: *See—*
Dinnerstein, Albert J.; Savitt, Mervin A.; and Sena, Ralph, 246,914, Cl. D30-1.000.
Sena, Ralph: *See—*
Dinnerstein, Albert J.; Savitt, Mervin A.; and Sena, Ralph, 246,914, Cl. D30-1.000.
Sjodahl, Stanley G.: *See—*
Sjodahl, Wesley G.; and Sjodahl, Stanley G., 246,935, Cl. D48-24.00R.
Sjodahl, Wesley G.; and Sjodahl, Stanley G. Lantern. 246,935, 1-10-78, Cl. D48-24.00R.
Smith, Neil, to Kayser-Roth Corporation. Sock display form. 246,937, 1-10-78, Cl. D80-8.000.
Szabo, Helga, to Brownlee, Carroll R. Set of moveable notational figures for musical scale. 246,905, 1-10-78, Cl. D19-59.000.
Thrush, James Lloyd, to Anchor Hocking Corporation. Mug or similar article. 246,882, 1-10-78, Cl. D7-9.000.
van der Heijden, Johannes, to S. C. Johnson & Son, Inc. Combined actuator and dispensing cap for a pressurized container. 246,895, 1-10-78, Cl. D9-258.000.
Warenback, Melvin S. Brow contouring sun visor. 246,876, 1-10-78, Cl. D2-247.000.
Wezenter, Seymour: *See—*
Imber, Marion; and Wezenter, Seymour, 246,881, Cl. D6-177.000.
Win, Murray M. Ceiling light fixture side panel. 246,928, 1-10-78, Cl. D48-16.00A.
Win, Murray M. Shallowside panel for ceiling lights. 246,929, 1-10-78, Cl. D48-16.00A.
Win, Murray M. Narrow side panel for light fixture. 246,930, 1-10-78, Cl. D48-16.00A.
Yasuoka, Junji, to Sanyo Electric Co., Ltd. Combined automobile radio receiver, tape player and digital time and frequency displayer. 246,900, 1-10-78, Cl. D14-68.000.
Yu, Jim, to Norris Industries, Inc. Knob face plate for a door knob. 246,890, 1-10-78, Cl. D8-322.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 10, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

January 17, 1978 Volume 966 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

National Inventors Day

The Sixth Annual Inventors Day Exposition will be held on Saturday and Sunday, February 11 and 12, 1978 at the Patent and Trademark Office in Arlington, Virginia.

Limited space is available for appropriate display and demonstration of patented materials, devices or methods. Such limited space dictates early consideration by perspective participants. No application can be considered after January 20, 1978.

Other than electricity and allotted space—floor, wall or table top, all expenses must be borne by the exhibitor. Arrangements for delivery, return, set up and take down, as well as individual exhibits and personnel are the exhibitor's responsibility. Neither the Patent and Trademark Office nor individual employees can accept a collect shipment or provide storage.

The Patent and Trademark Office National Inventors Day Committee will select the items to be exhibited and allot available space. Suitability for dynamic demonstration and current public interest are prime consideration in selecting exhibits.

Inventors or firms interested in participating are encouraged to contact the National Inventors Day Committee (phone: 557-3428). Communications should be directed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attn: Oscar Mastin, Office of Information Services.

JOSEPH PETERS,
Chairman.

Dec. 7, 1977

National Inventors Day

The Patent and Trademark Office will be sponsoring National Inventors Day in the Public Search Room on Saturday, February 11, from 1:00 p.m. to 5:00 p.m. and Sunday February 12, 1978 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend a formal program at 2:00 p.m. on Sunday.

In order to accommodate the exhibits, it will be necessary to close the Public Search Room at 5:00 p.m. on Friday, February 10, 1978.

We would appreciate the cooperation of all users of the Search Room facilities in removing all personal items and belongings in order to permit the early closing time.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

Dec. 7, 1977

Patent and Trademark Office Advisory Committee

Notice of Renewal

In accordance with the provisions of the Federal Advisory Committee Act, 5 U.S.C. App. I and Office of Management and Budget Circular A-63 of March 1974, and after consultation with OMB, it has been determined that the renewal of the Patent and Trademark Office Advisory Committee is in the public interest in connection with the performance of duties imposed on the Department by law.

The Committee was first established in December 1975 (40 FR 54600, November 25, 1975), and it was to terminate on December 14, 1977. Its purpose was to continually advise the Patent and Trademark Office on matters concerning the patent system and the administration of the Office. The Committee has been successful in achieving this objective. Its recommendations, most of which have been accepted or are currently being studied by the Office, have meaningfully contributed to the strengthening of the patent system.

In renewing the Committee, it has been determined that the original objective of advising the Commissioner on patent related matters was important and worth continuing. The patent system has a significant impact on the development of new technology and thereby on the domestic and international economies. The Commerce Department and the Patent and Trademark Office are continually faced with a broad range of policy questions as a result of pending patent legislation, patent treaties, court decisions, and other possibilities for change. Expert advice is needed from the private sector on patents, and neither the Department nor the Office have any other advisory committee that can perform this function.

The makeup of the Committee will continue with a balanced representation of at least 8 but no more than 15 members drawn from independent and corporate inventors, patent attorneys, corporate executives, corporate research directors, members of the judiciary, consumer representatives, economists, journalists, and educators, appointed by the Secretary of Commerce.

Copies of the Committee's revised charter will be filed with appropriate committees of the Congress.

Inquiries or comments may be addressed to the Committee Control Officer, Herbert C. Wamsley, U.S. Patent and Trademark Office, Washington, D.C. 20231, telephone 703-557-3071.

Dated: Dec. 6, 1977. GUY W. CHAMBERLIN, JR.,
Assistant Secretary for Administration.

[FR Doc. 77-35254; Filed 12-8-77; 8:45 am]

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys or agents will be held on Tuesday, March 7, 1978.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Applications to take the examination must be filed in the Patent and Trademark Office together with a $35 fee not later than January 31, 1978.

Application blanks may be obtained from the Clerk of the Patent and Trademark Office Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va. or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

Dec. 19, 1977. LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks and Chairman, Committee on Enrollment.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,322,296, Re. S.N. 853,185, Filed Nov. 21, 1977, Cl. 220/273, EASY OPEN CONTAINER, Nick S. Khoury, Owner of Record: *Continental Can Company, Inc., New York, N.Y.*, Attorney or Agent: Richard D. Mason, et al., Ex. Gp.: 241

3,822,258, Re. S.N. 840,929, Filed Oct. 11, 1977, Cl. 260/243 R, 4-HYDROXY-3-(3-ISOXAZOLYLCARBAMOYL)-2H-1,2-BENZOTHIAZINE 1,1-DIOXIDES AND PROCESS FOR THEIR PRODUCTION, Harold Zinnes, et al., Owner of Record: *Warner-Lambert Company, Morris Plains, N.J.*, Attorney or Agent: Albert H. Graddis, et al., Ex. Gp.: 121

3,913,759, Re. S.N. 843,767, Filed Oct. 20, 1977, Cl. 214/77 R, WHEELCHAIR LIFT, Scott C. Deacon, Owner of Record: *Inventor*, Attorney or Agent: Harold E. Wurst, Ex. Gp.: 314

3,915,015, Re. S.N. 844,276, Filed Oct. 21, 1977, Cl. 73/432 R, STRAIN GAUGE TRANSDUCER SYSTEM, Hewitt D. Crane, et al., Owner of Record: *SRI International, Menlo Park, Calif.*, Attorney or Agent: Urban H. Faubion, et al., Ex. Gp.: 244

3,952,508, Re. S.N. 849,192, Filed Nov. 7, 1977, Cl. 60/330, CONTROL FOR FLUID COUPLING, Warren G. Bopp, Owner of Record: *Eaton Corporation, Cleveland, Ohio*, Attorney or Agent: Paul S. Rulon, Ex. Gp.: 341

3,979,548, Re. S.N. 847,321, Filed Oct. 31, 1977, Cl. 428/425, POLYURETHANE COATED SAFETY GLASS, Wolfgang Schafer, et al., Owner of Record: *Saint-Gobain Industries, Neuilly-sur-Seine, France*, Attorney or Agent: John T. Synnestvedt, Ex. Gp.: 164

4,012,002, Re. S.N. 852,756, Filed Nov. 18, 1977, Cl. 242/54 R, AUTOMATIC COUPLING MECHANISM FOR HOSE REELS, Dean McDonald, et al., Owner of Record: *FMC Corporation, San Jose, Calif.*, Attorney or Agent: C. E. Tripp, et al., Ex. Gp.: 242

4,029,488, Re. S.N. 851,078, Filed Nov. 14, 1977, Cl. 65/136, METHOD OF ADJUSTING GLASS TEMPERATURE IN A FOREHEARTH, Chester K. Rhett, Owner of Record: *C. Rhett, Inc., Tukwila, Wash.*, Attorney or Agent: Arthur H. Seidel, et al., Ex. Gp.: 173

4,045,145, Re. S.N. 852,930, Filed Nov. 18, 1977, Cl. 415/89, PITOT PUMP WITH TURBULENCE ELIMINATION, Walter W. Crichlow, Owner of Record: *Kobe, Inc., Huntington Beach, Calif.*, Attorney or Agent: Robert L. Parker, et al., Ex. Gp.: 343

PATENT NOTICES

Certificates of Correction for the Week of Jan. 17, 1978

3,888,213	4,026,184	4,039,580	4,050,585
3,890,969	4,028,261	4,040,126	4,050,716
3,947,250	4,029,439	4,040,739	4,051,004
3,956,995	4,029,505	4,041,675	4,051,007
3,965,356	4,029,750	4,042,674	4,051,220
3,971,925	4,030,280	4,043,978	4,051,228
3,974,190	4,030,697	4,043,992	4,051,251
3,979,439	4,030,888	4,044,123	4,051,256
3,983,165	4,031,723	4,045,412	4,051,297
3,993,687	4,032,788	4,045,917	4,051,348
4,000,775	4,033,429	4,046,312	4,051,624
4,002,483	4,035,013	4,047,455	4,051,887
4,002,740	4,035,291	4,048,288	4,051,897
4,002,992	4,035,518	4,048,614	4,051,910
4,004,174	4,036,773	4,048,641	4,051,936
4,009,108	4,037,473	4,049,422	4,052,008
4,010,229	4,037,636	4,050,114	4,052,115
4,012,402	4,038,094	4,050,449	4,052,674
4,019,562	4,038,609	4,050,483	4,053,365
4,023,332	4,039,136	4,050,515	4,054,004
4,024,920	4,039,322	4,050,534	
4,025,819	4,039,393	4,050,579	

Disclaimers

3,057,449.—*James E. Thomson*, Munith, Mich. TYPEWRITER. Patent dated Oct. 9, 1962. Disclaimer filed Oct. 17, 1977, by the assignee, *Western Stamping Corporation*.

Hereby enters this disclaimer to claim 9 of said patent.

3,363,615.—*George M. Meyerle*, South Ozone Park, N.Y. SWITCHING CIRCUIT. Patent dated Jan. 16, 1968. Disclaimer filed Nov. 2, 1977, by the assignee, *BSR (USA) Ltd.*

Hereby enters this disclaimer to the remaining term of said patent.

3,368,787.—*Norman H. Sachnik* and *Jesse L. Culpepper, Jr.*, Houston, Tex. FLOW REGULATOR WITH RADIALLY EXPANDING ELASTOMERIC BLOCK. Patent dated Feb. 13, 1968. Disclaimer filed Oct. 3, 1977, by the assignee, *Vapor Corporation*.

Hereby enters this disclaimer to all claims of said patent.

3,380,470.—*Jesse L. Culpepper, Jr.* and *Norman H. Sachnik*, Houston, Tex. FLOW REGULATOR WITH RADIALLY EXPANDING ELASTOMERIC BLOCK. Patent dated Apr. 30, 1968. Disclaimer filed Oct. 3, 1977, by the assignee, *Vapor Corporation*.

Hereby enters this disclaimer to all claims of said patent.

3,884,111. *Verna M. Leonard*, Fresno, Calif. INVERSION MAKER AND CHORD MATCHER. Patent dated May 20, 1975. Disclaimer filed Oct. 13, 1977, by the inventor.

The term of this patent subsequent to May 20, 1992 has been disclaimed.

Dedications

3,288,846.—*Riyad R. Irani* and *Kurt Moedritzer*, St. Louis, Mo. PROCESSES FOR PREPARING ORGANOPHOSPHONIC ACIDS. Patent dated Nov. 29, 1966. Dedication filed Oct. 11, 1977, by the assignee, *Monsanto Company*.

Hereby dedicates to the Public the entire term of said patent.

3,393,411.—*John Bethea McElveen*, Rutherford, N.J. PROCESS FOR DYEING PILE MATERIAL WITH VARIOUS COLORED DYES FROM A PLURALITY OF STREAMS. Patent dated July 23, 1968. Dedication filed Oct. 13, 1977, by the assignee, *Milliken Research Corporation*.

Hereby dedicates to the Public the entire term of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 3, 1977

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-3-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-21-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-7-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-6-76
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-3-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-18-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-8-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-24-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-5-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-3-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-6-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-15-76
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	4-1-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-8-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	12-2-76
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-1-77

Expiration of patents: The patents within the range of numbers indicated below expire during December 1977, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,962,719 to 2,966,680, inclusive
Plant Patents..... Numbers 1,991 to 2,008, inclusive

REISSUES

JANUARY 17, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

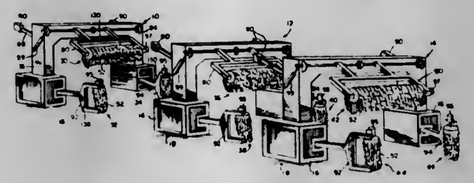
Re. 29,516
AUTOMATIC SURFACE POLISHING SYSTEM

Joseph L. Genaro, deceased, late of Fort Wayne, Ind., by Beverly Ann Genaro, administratrix, assignor to Shur Brite Wax-O-Matic, Inc., Brentwood, Tenn.

Original No. 3,774,259, dated Nov. 27, 1973, Ser. No. 144,452, May 18, 1971. Continuation-in-part of Ser. No. 13,096, Feb. 20, 1970, abandoned. Application for reissue Nov. 25, 1975, Ser. No. 635,097

Int. Cl.[2] B60S *3/06*

U.S. Cl. 15—97 B 24 Claims



1. An automatic surface polishing apparatus comprising an applicator having a rotatable drum with one end of a fabric connected therewith, means for applying polish to said fabric, a polisher having a rotatable drum with one end of a fabric connected therewith, said fabric having a substantial surface area closely adjacent to a surface to be polished, means for effecting relative movement between a surface to be polished and said applicator and said polisher, means for automatically moving said applicator fabric into contact with a surface to be polished during relative movement between said surface and said applicator to apply polish to said surface by said applicator fabric making intermittent contact with said surface while said applicator drum is being rotated, and means for automatically moving said polisher fabric into contact with said surface during relative movement between said surface and said polisher to polish said surface by said polisher fabric making intermittent contact with said surface while said polisher drum is being rotated.

Re. 29,517
COMPOSITE WALL ELEMENT FOR THERMAL AND ACOUSTIC INSULATION

Otto Alfred Becker, Robert-Koch-Strasse 59, 66 Saarbruechen 6, Germany

Original No. 3,803,784, dated Apr. 16, 1974, Ser. No. 156,852, June 25, 1971. Application for reissue Apr. 2, 1976, Ser. No. 673,158

Int. Cl.[2] E04C *2/36*

U.S. Cl. 52—173 R 16 Claims

1. In a composite wall element for thermal and acoustic insulation of walls, ceilings, floors and the like, comprising:

a. an outer wall element, said outer wall element being pressure resistant and imparting to the composite wall element the requisite structural strength and integrity,

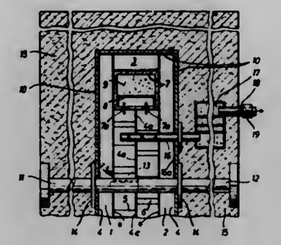
b. an inner insulating wall element positioned within and enclosed by said outer wall element, said inner insulating wall element including

1. an outer continuous covering fitting tightly within said outer wall element, said covering being provided on its inner surface with means for vapor-tight sealing said covering,

2. first spacer means lining the interior of said covering and said sealing means to impart the desired shape and rigidity to said covering, the inwardly facing surfaces of said spacing means being provided with reflecting means which reflect toward the inner cavity formed by said spacer means,

3. a reflective foil positioned within said cavity and space from said reflecting means,

4. a plurality of spaced, second spacer means positioned on either side of said reflective foil and extending between



said foil and said reflecting means, said second spacer means forming radiation chambers, and

c. passage means communicating the interior of said composite element with the exterior thereof whereby a supply of air may be admitted to and exhausted from said radiation chambers.

Re. 29,518
STIRLING CYCLE HEAT ENGINES

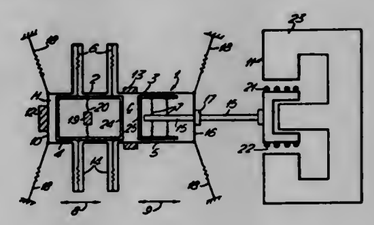
Ernest Franklin, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Original No. 3,802,196, dated Apr. 9, 1974, Ser. No. 271,713, July 14, 1972. Application for reissue May 26, 1976, Ser. No. 690,298

Claims priority, application United Kingdom, Aug. 2, 1971, 36317/71

Int. Cl.[2] F02G *1/04*

U.S. Cl. 60—520 22 Claims



1. A Stirling cycle heat engine comprising hot and cold variable volume chambers intercommunicating through a regenerator through which gas is displaced between the chambers in a reciprocating manner, a closed vessel of cylindrical form, a gas-displacer member and a gas-actuated member disposed in tandem *and located independently of one another so as to be free of frictional sliding movement relative to each other and* with at least one of said [chambers] *members* disposed within the vessel, resilient supports for flexibly supporting the members *so that they are out of frictional contact with the vessel and arranged so that at least one of the members is supported radially by the resilient supports*, the resilience of said supports permitting working movement of the members by oscillation towards and away from each other, one of the hot and cold chambers being formed between one of said members and the

adjacent end of the vessel and the other of said hot and cold chambers being formed between adjacent parts of the two members, and means for converting oscillating movement of one of the members into useful work.

Re. 29,519
PUMPS

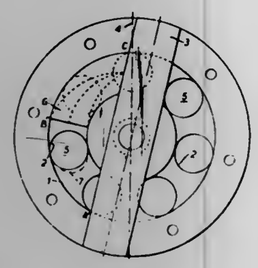
George William Pearson Scott, Stroud, and Kenneth Henry Lloyd, Gloucester, both of England, assignors to Severn Pumps Limited, Great Britain

Original No. 3,818,803, dated June 25, 1974, Ser. No. 307,942, Nov. 20, 1972. Application for reissue June 25, 1976, Ser. No. 699,688

Claims priority, application United Kingdom, Nov. 24, 1971, 54303/71

Int. Cl.[2] I01B *13/04*

U.S. Cl. 91—499 **16 Claims**



1. An axial piston pump adapted for pumping concrete or other abrasive media and slurries, including a cylinder block with an annular array of axially parallel cylinders, each with a reciprocable piston therein and a working end face to which the cylinders open; bearing means for locating said block in an axially fixed position; means co-operating with said face to divide it into an inlet and a delivery side; means for reciprocating the pistons to give them suction strokes on the inlet side and pressure strokes on the delivery side, the strokes commencing at an upstream end and finishing at a downstream end of the respective side to draw and discharge media progressively into and from the cylinders; guide means disposed in the circumferentially downstream portion of the inlet side, leaving the upstream portion of the inlet side free and the full diametral extent of said cylinders exposed in that upstream portion, said guide means having a first surface facing said cylinder block and forming a convergent tunnel therewith, open at the upstream end and narrowing in height [and width] towards the downstream end to urge media carried towards said guide means into the cylinders by a wedging action, and a second surface facing away from said cylinder block to reject and return to the upstream portion solids that are not correctly sized and/or positioned for entry into the cylinders in the downstream portion.

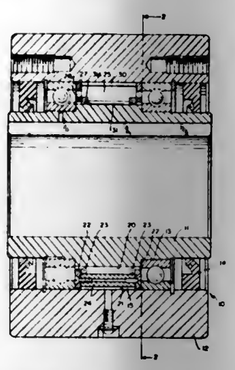
Re. 29,520
SPRAG ASSEMBLY FOR ONE-WAY CLUTCHES

Bryan P. Kent, Hinsdale, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Original No. 3,545,581, dated Dec. 8, 1970, Ser. No. 785,103, Dec. 19, 1968. Application for reissue Nov. 12, 1976, Ser. No. 741,325

Int. Cl.[2] F16D *41/07, 43/14*

U.S. Cl. 192—45.1 **10 Claims**



1. A sprag assembly for one-way overrunning clutches having an inner and an outer race comprising a sprag cage for retaining sprags between the inner and the outer races, a series of sprags rotatably mounted in said cage and about axis fixed with respect to the cage, said sprags having inner and outer race cam surfaces normally engaging the inner and outer races respectively when rotated in one direction to provide a drive between said races and tending to disengage and drag on adjacent races in the other direction to provide a nondriving overrunning condition between said races, *friction drag means between said cage and one of said races,* and means in engagement with said sprags for urging said sprags rotatably in said one direction, said sprags having a counterweight portion for rotatably urging said sprags in the other direction under the effects of centrifugal force when said cage is rotated in overrunning condition with *said* one of said races for overcoming the effects of said sprag engaging and urging means at a predetermined rotational speed to cause said sprags to completely disengage from said races during overrunning above said predetermined speed.

PLANT PATENTS

GRANTED JANUARY 17, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,187
SCHEFFLERA

John Mastaler, Hialeah, Fla., assignor to Schefflera, Unlimited Inc., Coconut Grove, Fla.

Filed June 16, 1976, Ser. No. 696,543
Int. Cl.[2] A01H *5/12*

U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of Schefflera Plant of the species *Brassaia actinophylla* substantially as herein shown and described characterized particularly as to novelty by the overall variegation of leaves, stems, and trunk from green to yellow and with stems of rosy marbled appearance, close noded position of stems and compact upright rapid growth, with leaves of leathery, thick form, vigorous growth with leaves continuing to hang on at lower portion of plant.

4,188
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 13, 1976, Ser. No. 732,190
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., known by the cultivar name Circus and particularly characterized as to uniqueness by the combined characteristics of flat inflorescence form; daisy inflorescence type; lavender-pink ray floret color, with minimum color oxidation; yellow-green (immature) to yellow (mature) disc floret color; uniform nine week flowering response to photographic short day control; diameter across face of inflorescence up to 70 mm. at maturity; medium plant height; and semi-spreading branching pattern.

4,189
AFRICAN VIOLET PLANT

Reinhold Holtkamp, Wertherstrasse 112, 4294 Isselburg, Germany

Filed Nov. 30, 1976, Ser. No. 746,223
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of african violet known by the cultivar name New York and particularly characterized as to uniqueness by the combined characteristics of intensive violet-blue flower color which doesn't fade; relatively large flower size; strong and upright stems; compact growth habit; medium green leaves; long blooming period, and the saleability of the plant after the first flash of flowers.

4,190
IMPATIENS PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jan. 31, 1977, Ser. No. 764,002
Int. Cl.[2] A018 *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Impatiens known by the cultivar name Betsy Ross and particularly characterized as to novelty by the combined characteristics of compact growth habit with close internodes; thick and large foliage which is variegated, having central portions which varies from light yellow to cream depending on light conditions; light pink flowers and by its long lasting characteristic.

4,191
IMPATIENS PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jan. 31, 1977, Ser. No. 764,011
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Impatiens plant known by the cultivar name Patriot and particularly characterized as to uniqueness by the combined characteristics of distinct white flower color at maturity, with the flower being close to the foliage; large variegated foliage with close internodes, and slow growth and compact habit.

4,192
IMPATIENS PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jan. 31, 1977, Ser. No. 764,012
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Impatiens known by the cultivar name Monticello and particularly characterized as to uniqueness by the combined characteristic of distinct variegated pattern of foliage; excellent and fast growth; good branching habit and white flowers in which the top petal tends to be spaced or isolated from the remaining four petals, and its tolerance to outdoor environments.

4,193
IMPATIENS PLANT—AZTEC

John J. Ryan, 39877 Sundale Drive, Fremont, Calif. 94538

Filed Mar. 28, 1977, Ser. No. 782,282
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of Impatiens as described and illustrated known by the cultivar name Aztec, and particularly characterized by a distinctive clean-cut variegation; excellent breaking action; a dark, yet bright red flower with a white eye, usually ringed with a bluish tint; flowers well with good duration; and makes a very good basket plant and productive stock plant.

4,194
IMPATIENS PLANT—HOPI

John J. Ryan, 39877 Sundale Drive, Fremont, Calif. 94538

Filed Mar. 28, 1977, Ser. No. 782,283
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of Impatiens plant as described and illustrated, known by the cultivar name Hopi, and particularly characterized by short internodes, a small abundant very bright red-orange flower, a glossy bright green spreading foliage; quite sodium sensitive; yet excellent breaking action making a very full basket.

PATENTS

GRANTED JANUARY 17, 1978

ERRATA

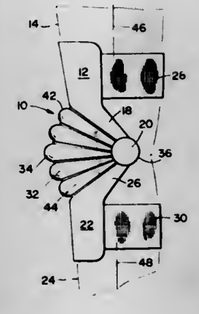
For CLASS	See PATENT NO.
122–034	4,068,627
294–067 R	4,068,971
283–049	4,068,972
270–052.5	4,068,973
401–150	4,068,974
415–080	4,068,975
051–434	4,069,025
062–003	4,069,028
062–051	4,069,028
423–105	4,069,315
560–001	4,069,381
134–057 D	4,069,425
220–003.2	4,069,448
364–474	4,069,488

PATENTS

GRANTED JANUARY 17, 1978

GENERAL AND MECHANICAL

4,068,312
ATHLETIC KNEE GUARD
Thomas Ledesma, 774 N. 16th St., San Jose, Calif. 95112
Filed Nov. 10, 1976, Ser. No. 740,564
Int. Cl.[2] A41D *13/06*
U.S. Cl. 2—24 **8 Claims**



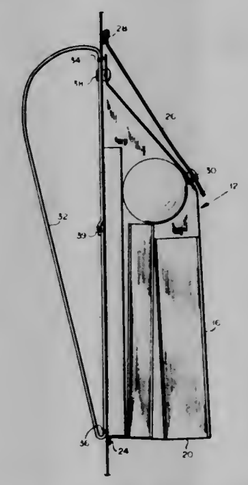
1. A knee guard useful for protecting an athlete's knee from injury, comprising:
a first rigid shell of generally hemicylindrical shape for resting generally matingly against a front portion of a person's leg slightly above the person's knee, said first shell including a pair of arms extending generally downwardly and rearwardly therefrom, each to a respective position on opposite sides of said knee;
a second rigid shell of generally hemicylindrical shape for resting generally matingly against a front portion of a person's leg slightly below the person's knee, said second shell including a pair of arms extending generally upwardly and rearwardly therefrom, each to a respective one of said positions on opposite sides of said knee;
means for attaching said first shell above the person's knee;
means for attaching said second shell below the person's knee;
a plurality of rigid generally arcuate bars, each extending from a respective one to a respective other of said positions on opposite sides of said knee with a central portion of each bar forward of said knee, said central portions being progressively spaced one after another from said first rigid shell to said second rigid shell, said arcuate bars abutting one another to form a continuous guard surface from said first shell to said second shell when the person's knee is straightened, an uppermost one of said arcuate bars abutting said first shell and a lowermost one of said arcuate bars abutting said second shell when the person's knee is straightened;
a pair of pivot means, one at each of said positions, each pivot means pivotally connecting a respective arm of said first shell, a respective arm of said second shell and a respective end portion of each of said arcuate bars to pivot thereabout; and
fabric interconnecting successive of said arcuate bars to one another and further connecting the uppermost one of said arcuate bars to said first rigid shell and connecting the lowermost one of said arcuate bars to said second rigid shell.

4,068,313
ARTICLE OF CHIDRENS PROTECTIVE CLOTHING IN COMBINATION WITH AN ARTICLE OF USE
Diana Goldman, Tower East Apt. 22B, 190 E. 72nd St., New York, N.Y. 10021
Filed Nov. 2, 1976, Ser. No. 737,906
Int. Cl.[2] A41B *13/10*
U.S. Cl. 2—49 R **6 Claims**



1. An object-retaining baby's bib comprising:
a bib having front and back surfaces and having an opening defined therein;
means for reinforcing said opening;
flexible inelastic cord means having first and seconds ends;
a toggle permanently secured to said first end of said cord means, said toggle being adapted to be inserted through said opening from said front surface and be detachably engaged by said back surface, whereby said cord means is suspended along said front surface;
an article of use permanently secured to said second end of said cord means.

4,068,314
JACKET WITH BACK PACK
Richard C. Yellen, Rochester, N.Y., and Edward A. Morrell, Wendell, N.C., assignors to Champion Products Inc., Rochester, N.Y.
Filed Mar. 15, 1976, Ser. No. 666,620
Int. Cl.[2] A41D *1/00*
U.S. Cl. 2—94 **15 Claims**



1. In a garment of a type which can be worn as a jacket or

similar article of apparel and which includes a storage pack carried on a back portion thereof, the improvement comprising

a storage pack formed from back, side and bottom panels which are secured to an outside surface of a back portion of said garment so as to provide, with said back portion of the garment, an enclosed structure having an open top for receiving a load therein,

a pair of shoulder straps secured to said back portion of said garment and comprising a pair of loop structures which can be placed over the shoulders and under the arms of a user when the garment is worn, said straps being secured to said back portion of the garment at points which provide support for upper and lower corners of both sides of said storage pack to thereby (a) distribute load forces from the storage pack to both of the straps and (b) prevent lateral shifting of upper and lower ends of the storage pack when a load is contained therein, and

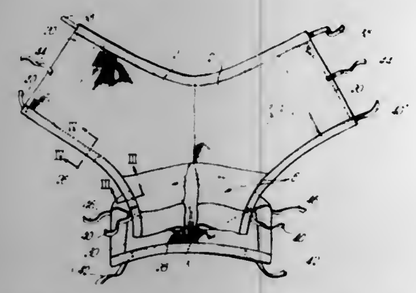
releasable fastening means carried on said back panel of said storage pack proximate the open top thereof for securing the back panel to said straps to thereby suspend any load forces on the back panel from said straps.

4,068,315

MULTI-LAYERED GARMENT FOR THE LOWER BODY

Lucien G. Rainville, 2057 - 31 Jasmine Crescent, Ottawa, Ontario, Canada

Filed Nov. 4, 1976, Ser. No. 738,964
Int. Cl.² A41B 9/00
U.S. Cl. 2—114 **5 Claims**



1. A multi-layered garment for the lower body for use primarily by bedridden patients, at least an inner layer thereof being moisture absorbent and at least one layer thereof being moisture impermeable, the garment comprising:

two lateral side panels of pentagonal configuration secured together by a central seam and which are together to cover the rear, at least part of the abdomen, and sides of a user from waist to mid-thigh when worn,

a central panel extending from said lateral side panel in generally T-configuration, said central panel being formed of two panels of pentagonal configuration secured together along a central seam, and being secured along upper edges thereof to lower edges of said two lateral side panels,

said central portion being adapted to cover the crotch area, and the insides of the legs of the user down to mid-thigh, and the frontal portion of his abdomen to his waist,

and means unfixedly to secure said central panel to side edges of said lateral side panels in partially overlapping relationship along spaced apart lines of joinder which extend along the frontal portion of the abdomen of the user from his waist to mid-thighs,

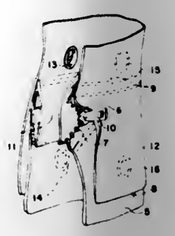
said lateral side panels when opened being of a lateral dimension to receive the user when rolled on his side and to provide a towelling and cleaning aid.

4,068,316

CONVERTIBLE SHIRT

Jay L. Haywood, Clancey, Mont., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 25, 1977, Ser. No. 762,458
Int. Cl.² A41B 1/08
U.S. Cl. 2—126 **2 Claims**



1. A convertible shirt, comprising

a pair of long sleeves each severed above the elbow whereby a pair of short sleeves extend from the shirt and a pair of arm covering parts are independent therefrom;

a pair of zippers each having a pair of cooperating tooth strips one of which is affixed to the inside of a corresponding one of the short sleeves in the area of the severed edge thereof and the other of which is affixed to a corresponding one of the arm covering parts in the area of the severed edge thereof whereby each of the zippers releasably affixes a corresponding one of the arm covering parts to a corresponding one of the short sleeves whereby when the zippers are zipped the shirt is longsleeved and when the zippers are unzipped the shirt is shortsleeved, each of the short sleeves extending beyond the zipper thereof;

a pair of flaps each affixed to the inside of a corresponding one of the short sleeves and extending between the corresponding one of the zippers and the arm of a wearer; and

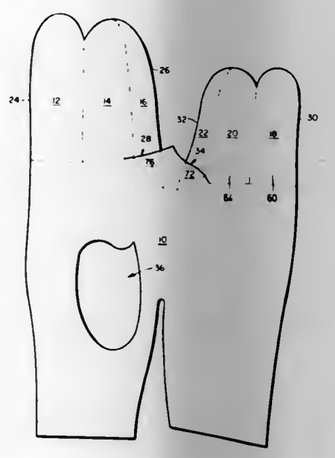
releasable fastening means affixed to the short sleeves in spaced relation with each other for forming inside cuffs for releasably covering each of the zippers when the short sleeves are the extremities of the shirt.

4,068,317

GLOVE

Stefan Roeckl, Auf der Sonnenlang 8, 8021 Icking, Germany

Filed Mar. 3, 1976, Ser. No. 663,628
Int. Cl.² A41D 19/02
U.S. Cl. 2—169 **9 Claims**



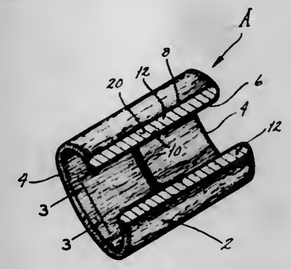
1. A hand glove comprising a first panel forming a covering for the palm, sides and lateral portions of the back of the hand and forming stalls for the index and small fingers, a second panel forming a stall for the thumb, secured about an opening for the thumb provided in said first panel, and a third panel secured to said first panel forming a covering for the central area of the back of the hand and forming stalls for the second and third fingers, said third panel including six panel sections integral with the bases of the stalls for the second and third fingers for fitting over the canted areas of the crotches between each of the fingers on the back-hand side of the hand, first and second of such panel sections being secured together between the second and third fingers, third and fourth of such panel sections being secured to the base of the stall for the index finger between the index finger and second finger, and fifth and sixth such panel sections being secured to the base of the stall for the small finger between the third and small fingers.

4,068,318

WRIST BAND CONTAINING AN ANTISLIP COMPOSITION

William P. McMahon, 14416 Marmont, Chesterfield, Mo. 63017

Filed Sept. 8, 1976, Ser. No. 721,201
Int. Cl.² A41D 19/02
U.S. Cl. 2—170 **13 Claims**



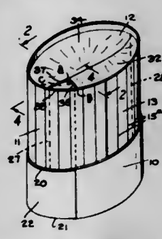
1. A wrist band comprising: a flexible cover capable of assuming an annular configuration and being sized to fit around one's wrist or arm, the cover having an interior pocket therein and further having openings between the pocket and the exterior of the cover; and an antislip composition in the pocket of the cover and being releasable through the openings in the cover so one may apply the antislip composition to his hand, to a racket handle, or to some other object brought against the cover.

4,068,319

CHEF'S HAT

Gilbert B. Wagenfeld, Bala Cynwyd, Pa., assignor to Cellucap Manufacturing Co., Philadelphia, Pa.

Filed June 9, 1976, Ser. No. 694,181
Int. Cl.² A42B 1/22
U.S. Cl. 2—197 **12 Claims**



1. A disposable chef's hat comprising a head band part, a side wall part extending vertically above the upper edge of said head band part and a crown part secured to the upper marginal portion of said side wall part, all of said parts being respectively formed of individual rectangular blanks of flexible sheet material cut to equal lengths and joined together along parallel lines extending horizontally about the peripheral extent of the hat with the corresponding ends of all of said blanks in vertical registry, said joined blanks being commonly creased along a pair of vertically extending lines spaced apart a distance less than half the overall length of said blanks to provide a flat folded assembly thereof having opposite side panels extending from front to rear of the hat, one of said side panels being continuous in length and the other being split between said crease lines to provide it with a pair of sections of unequal length disposed in overlapping relation, and wherein:

a. said head band part of the hat is horizontally folded upon itself to provide an outer panel of uniform depth having downwardly and upwardly turned inner portions freely overlying the inner face of said outer panel, the overlapping end sections of said head band being telescopically interengaged for adjustment thereof to a selected head size,

b. said side wall part of the hat, formed of a material of substantially greater flexibility than that of said head band, is folded upon itself to provide it with a plurality of closely related vertical pleats spaced about the full circumferential extent thereof and has its bottom edge portion secured to said upwardly turned inner portion of the head band so that it extends upwardly beyond the upper edge of said head band to provide the hat with a side wall of substantial height rising as a vertical extension of said head band, and

c. said crown part, formed of a material having a flexibility at least as great as that of said pleated side wall part, is disposed interiorly of said hat with its flat folded sections respectively disposed in overlying relation to the corresponding flat-folded sections of said side-wall part and its top horizontally extending marginal portion secured throughout the full length thereof to the corresponding top marginal portion of said side wall part of the hat, said crown part depending freely from its said secured top marginal portions thereof to a level intermediate the horizontally extending top and bottom edges of said side wall part of the hat, the longer one only of the overlapped sections of the split side panel of said crown part having its depending horizontally extending bottom marginal portion thereof secured along the full extent thereof to the corresponding marginal portion of that section of the opposite side panel of said crown part which extends continuously between the aforesaid vertically extending crease lines of the hat whereby when said hat is expanded from its flat folded condition into a generally circular head-fitting shape the sections of the opposite side panels of the crown part which have their marginal bottom portions secured together are drawn into a position extending generally flat-wise across the top of the expanded hat while the remaining unjoined portions of said crown part are relatively spread apart to provide an opening for ventilating the interior of the hat.

4,068,320

METHOD OF PRODUCING KNITTED SLACKS

Frantisek Machacek, Strelice; Vladislav Bezemek, Brno; Dusan Kudlacek, Brno; Lubomir Kliment, Brno; Arnost Pirek, Brno; Vladimir Smejkal, Brno; Frantisek Svoboda, Brno, and Stanislav Vach, Brno, all of Czechoslovakia, assignors to Vyzkumny ustav pletarsky, Brno, Czechoslovakia

Filed Mar. 31, 1976, Ser. No. 672,241
Claims priority, application Czechoslovakia, Apr. 2, 1975, 2232/75
Int. Cl.² A41D 1/06
U.S. Cl. 2—227 **6 Claims**

1. Method of producing knitted outerwear slacks of thermoplastic fibers, of permanently finished natural fibers, or of a thermoplastic and natural fiber blend, comprising knitting on a medium diameter circular knitting machine to seamless tubular knitted fabrics one after another, the circumference of the fabric being equal to one trouser leg circumference, the trouser legs having at least at one of their ends a double welt, separately heat molding said tubular knitted fabrics on individual

molds to the final shape of the trouser legs, and then connecting both trouser legs together by one seat seam in the slacks seat and crotch portion, cutting away the remaining material



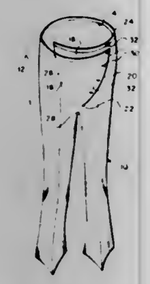
between said seam and the waistline of said slacks to form the crotch portion, and finishing the slacks by making-up operations.

4,068,321

ADJUSTABLE PANTS

Brigitte S. Chayer, Arvida, Canada, assignor to Robert Laliberte, Chicoutimi, Canada

Filed Sept. 24, 1975, Ser. No. 616,444
Int. Cl.² A41D *1/06*
U.S. Cl. 2—227 **3 Claims**



1. A pair of adjustable maternity pants made of substantially non-stretchable material, comprising a lower body wrapping section having a rear part and two frontal upper flaps adapted to overlap upon each other over the abdomen of the body, each flap being trianguloid in shape and extending from the side of the said rear part, the said trianguloid flaps being fixed to each other at a point corresponding to their apex and adapted to have the said apex at about the crotch of the body wearing the said pants and the base of said trianguloid at about the waist of said body, the free side of each flap being adapted to be normally directed diagonally in the general direction of the side of the hips, the free side of the rearward flap being generally outwardly curved, fastening means extending between the apex and the said base and mounted on the forward and the rearward flaps for releasably fixing the forward flap over the rearward flap, the said fastening means comprising two releasably connected parts, one of said parts being permanently provided along the edge of the forward part and the other of said parts being releasably fixed to the rearward flap, in a position corresponding to the convexity of the abdomen,
whereby the said other part of said fastening means is adapted to be displaceably fixed to the rearward flap along a radial line having its center at about the said apex of the flaps, to allow the two flaps to overlap in a plurality of fan-like positions to adjust to a plurality of convex protuberances of the abdomen while providing a firm sidewise and forward support for the abdomen in each position.

4,068,322

PANTYHOSE MENDER

Lori A. Rathel, 1035 Sutter St., Apt. 34, San Francisco, Calif. 94109

Filed Nov. 26, 1976, Ser. No. 745,055
Int. Cl.² A41B *11/02*
U.S. Cl. 2—239 **5 Claims**



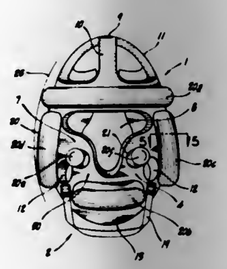
1. The method of mending a snag in a pantyhose which is formed of a thermoplastic material, comprising
placing a decorative mending device over the snag on the outside of said pantyhose and affixing said device to said pantyhose,
placing a matching backing piece over the snag on the inside of said pantyhose and affixing said piece to said pantyhose, and
applying pressure to said decorative mending device and said matching backing piece to permanently secure said device and said piece to each other and to said pantyhose.

4,068,323

ATHLETIC PROTECTIVE SYSTEM

Pu Gill Gwon, P.O. Box 36, Florissant, Mo. 63033

Filed Oct. 6, 1976, Ser. No. 729,910
Int. Cl.² A42B *3/02*
U.S. Cl. 2—413 **8 Claims**



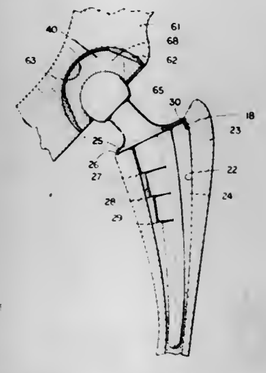
1. A protective helmet for use in athletic contests to protect the wearer against blows struck by an opponent in the contest, comprising:
a helmet assembly adapted to be worn on a person's head and capable of absorbing energy including resilient foam means covered by a pliable casing, said foam means defining a first plane of protection for the wearer, said helmet having at least one opening in it generally conforming to a person's eyes and nose;
a pattern of enclosed air pockets defining a second plane of protection, said second plane of protection being spaced outwardly from the plane of protection defined by said resilient foam means, said air pockets being non-rupturable in normal use and being positioned on said helmet to provide protection about the opening for said eyes and nose so that said second plane of protection effectively extends along said opening; and
means for securing said helmet to the wearer.

4,068,324

PLATFORM SUPPORTED HIP PROSTHESIS

Charles O. Townley, Port Huron, Mich.; Allan Vegell, Warsaw, and Daniel G. Eaby, Winona Lake, both of Ind., assignors to Bio-Dynamics Inc., Indianapolis, Ind.

Filed Jan. 19, 1977, Ser. No. 760,622
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.913 **5 Claims**



1. A platform supported hip prosthesis comprising:
a. a ball head for insertion into an acetabular socket;
b. a neck connected to and having a common axis with said ball head;
c. a platform connected to said neck and oriented at an angle of about 70° relative to the common axis of said neck and said ball head to evenly distribute the forces exerted on the prosthesis during loading, said platform having a medial portion and a lateral portion;
d. and an arcuate stem, said stem being T-shaped in cross section, connected to and projecting from said platform oppositely of said neck and said ball head and proportioned for reception in the medullar cavity of a femur, said platform having a lip on the lateral portion of said platform, said lip projecting in generally the same direction as said stem and defining a recess which faces toward said stem and is adapted to compress the cement into the medullar cavity during insertion of the prosthesis to securely anchor the prosthesis and thereby resist the tendency for medial tilting during loading.

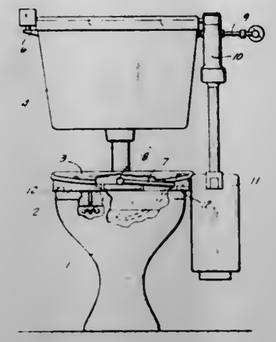
4,068,325

SPRAYING DEVICE FOR USE IN TOILETS

Johannes Benthin, Bremerhaven, Germany, assignor to MFB-Neuwerk Mechanische Fensterbehange GmbH, Bremerhaven, Germany

Filed Sept. 10, 1976, Ser. No. 722,213
Claims priority, application Germany, Sept. 13, 1975, 2540927
Int. Cl.² A47K *11/08, 3/22*
U.S. Cl. 4—7 **12 Claims**

1. A spraying device, particularly for use in toilets, comprising a spraying head including external wall means bounding a chamber and having at least one first and one second spraying aperture communicating said chamber with the exterior of said spraying head, and internal wall means subdividing said chamber into at least two compartments sealed with respect to one another and communicating with said first and said second spraying aperture, respectively; means for admitting spraying liquid into each of said compartments to issue therefrom through the respective spraying aperture; and means mounting said spraying head in a toilet bowl movable relative to the latter and operative for moving said spraying head between a first position in which the spraying liquid is admitted into one of said compartments to issue therefrom through said first



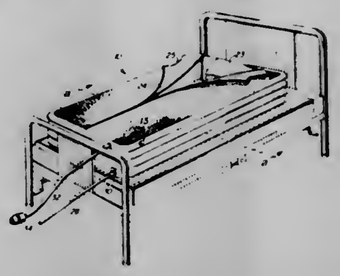
aperture and a second position in which the spraying liquid is admitted into at least the other compartment to issue therefrom through said second aperture.

4,068,326

INFLATABLE BATHTUB

Kathleen E. Deschler, 18111 Dorchester Circle, Villa Park, Calif. 92677

Filed June 9, 1975, Ser. No. 585,080
Int. Cl.² A47K *3/06, 3/062, 3/07, 3/23*
U.S. Cl. 4—150 **4 Claims**



1. A portable bathtub which can be pneumatically erected about a bed-ridden patient supported on the patient's bed, said bathtub comprising:
a. tub means including:
i. a floor of generally impervious material;
ii. generally tubular sidewalls secured to said floor and inflatable to define a generally longitudinal self-supporting enclosure to accommodate the patient, said floor and sidewalls in a deflated condition being portable and adapted to be supported on a bed surface along side a bed-ridden patient;
b. a cover extending from said sidewalls and across the enclosure to prevent water from splashing therefrom and to ensure patient privacy, said covering having fastening means associated therewith which can be selectively opened and closed to admit the patient into said enclosure; said enclosure defining an opening for at least the head of said patient;
c. a drain outlet attached to sid tub means connectable to a drain for selectively draining water from said enclosure; and
d. water supply means including:
i. conduit means attachable to a water source and connected to tub means;
ii. spray means connected to said conduit means and se-

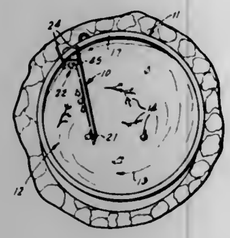
cured to one of the said cover or said sidewall means within the enclosure oriented to deliver a spray of water on the enclosed patient whereby the bathtub can be located on the bed adjacent to the bed-ridden patient in a deflated condition and inflated to a self-supporting position of use about the patient and connected to a water supply to deliver a spray of water directed onto the body of the patient.

4,068,327

SWIMMING POOL SURFACE DEBRIS SKIMMER AND METHOD

Joseph Heinlein, 15128 Chestnut Lane, Oak Forest, Ill. 60452

Filed Sept. 30, 1976, Ser. No. 728,296
Int. Cl.² E04H *3/20*
U.S. Cl. 4—172.15 **10 Claims**



1. A skimming device for removing surface debris from a swimming pool filled with water, the swimming pool having a side wall provided with an overflow drain and the water in the pool circulating in one direction, the device comprising:
an elongate skimmer bar;
means for attaching one end of the bar to the pool side wall adjacent to the overflow drain and with the bar projecting from the pool side wall divergently relative to the pool side wall and partially immersed along the length of the bar in the surface of the water to define with the adjacent area of the side wall of the pool a debris-receiving pocket having a wide mouth directed toward the circulating water to direct debris in the inflowing circulating water toward the overflow drain;
a bracket member attached to and extending in supporting relation from said one end of the bar to project across the inner end portion of said pocket to said pool side wall;
and means for attaching said bracket member to the pool side wall at a point on said wall spaced from said bar attaching means;
said bracket member being shaped to permit surface water which flows into the pocket to escape past the bracket member to the overflow drain.

6. A skimming device for removing surface debris from a swimming pool filled with water, the swimming pool having a side wall provided with an overflow drain and the water in the pool circulating in one direction, the device comprising:
an elongate bar of a vertical width ample to permit partial submersion of the bar in a horizontal position in the surface water in the swimming pool;
a mounting bracket body of generally V-shape in plan having vertically oriented horizontally extending divergently related portions;
said portions having distal end means;
attachment clip means vertically adjustably attached to said distal end means and having upper gripping jaws for releasably grippng structure at the upper end of the swimming pool wall;
and means attaching an end portion of the bar to one of said diverging portions whereby to support the bar in a generally diverging relation to the pool wall adjacent to the overflow drain for directing surface debris circulating into a pocket defined between the bar and the pool wall toward the overflow drain.

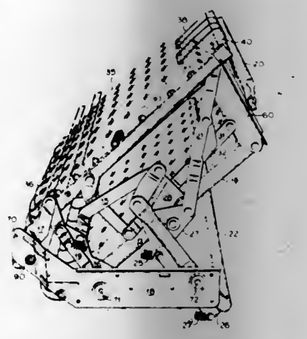
8. A skimming device for removing surface debris from a swimming pool filled with water, the swimming pool having a side wall provided with an overflow drain and the water in the pool circulating in one direction, the device comprising:
an elongate skimmer bar;
a supporting bracket on one end of the skimmer bar for supporting the skimmer bar in substantially diagonally divergent relation to the pool side whereby to define with the pool side a surface water debris-receiving pocket having a wide mouth directed toward the circulating water to direct debris laden surface water to the overflow drain;
said bracket being configured to be flipped over to a second supporting position;
and means for attaching the bracket to the pool wall in either position of the bracket so that the bar can be selectively oriented in opposite diagonally diverging relation to the pool wall by flipping over said bracket whereby to accommodate either clockwise or counterclockwise circulation of the surface water into the debris laden surface water receiving pocket.

4,068,328

CONVERTIBLE FURNITURE

William V. Gerth, 451 Phillip St., Waterloo, Ontario, Canada

Filed Sept. 27, 1976, Ser. No. 726,564
Int. Cl.² A47C *17/04, 17/14*
U.S. Cl. 5—13 **2 Claims**



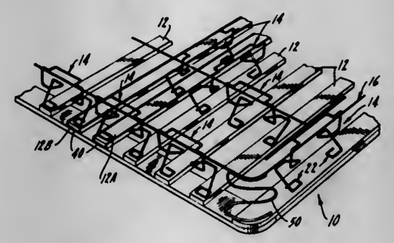
1. Convertible furniture comprising in combination;
a chesterfield frame having a back, two opposite sides and a front with a level top edge thereto;
a back deck rail attached between said sides forward of the back and above the top of said front top edge;
a bed frame having a spring attached thereto and a mattress held thereon, said bed frame being collapsibly storable within said chesterfield frame below said front top edge and partly beneath said back deck rail, whereby said bed frame when stored within the chesterfield frame provides the seat cushion support for said chesterfield;
said bed frame, when collapsed, comprising an upper and lower U-shaped member disposed in spaced apart relationship by a pair of channel members, said channel members being pivotably attached to the ends of the legs of the U-shaped members;
linked mesh wire fabric attached to the U-shaped members and between them to form said bed spring and provide a mattress support therebetween; a base plate attached to each side of said chesterfield frame and having a forward and rearward end thereon;
a main torsion support tube pivotably attached to the forward end of each base plate and pivotably linked to a pair of swing levers, one swing lever being attached to one leg of the U-shaped lower bed frame member and the other swing lever being attached to the other end of the lower U-shaped bed frame member;
a lock linkage pivotably connected between a rearward end of each base plate and one of the pair of swing levers, to provide a brace to the lower bed frame when the bed is in the unfolded position and being collapsible when the folded bed frame and mattress combination are thrust beneath the back deck rail;
a separate support leg pivotably connected to the ends of the upper U-shaped bed frame member, said legs being storable parallel with the frame member of the bed when in the collapsed position and being extensible into load bearing position when the frames and channels are in outwardly extended by means of a linkage arm connected between the channel members and the legs.

4,068,329

MODULAR BOX SPRING ASSEMBLY

Nathan Gross, Pittsburgh, Pa., and William B. Friddle, Louisville, Ky., assignors to Restonic Corporation, Oak Brook, Ill.

Filed Oct. 4, 1976, Ser. No. 729,270
Int. Cl.² A47C *23/02*
U.S. Cl. 5—255 **5 Claims**



1. A box spring assembly comprising:
a. a frame;
b. a plurality of laterally supporting slats extending across said frame; said slats having a closer spacing adjacent the lateral center line of said frame with the slats disposed immediately adjacent said lateral center line having a metallic U-shaped member nesting same;
c. a plurality of elongated formed wire torsion springs having a primary torsion bar interconnecting two body portions which are affixed to said slats, said springs adjacent the lateral center line of said assembly having their primary torsion bar perpendicular to said slats, the density of said springs adjacent the lateral center line being higher than that of the springs displaced away from said center line;
d. a metal latticework mounted on said springs and affixed thereto; and
e. a fabric covering said unit.

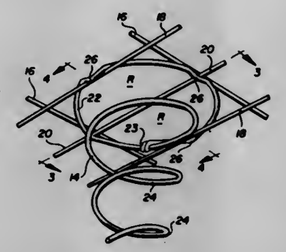
4,068,330

WOVEN SPRING UNIT

Wallace J. Rakow; Elmer J. Millette, both of Sheboygan, Wis., and Peter J. Johnston, Conyngham, Pa., assignors to Spiller Spring Company, Sheboygan, Wis.

Filed Feb. 20, 1976, Ser. No. 659,942
Int. Cl.² A47C *23/02*
U.S. Cl. 5—267 **7 Claims**

1. A spring unit comprising:
coil spring means having a generally circular top coil and lower coils;
a top grid portion having a first group or straight, undeformed wires and having a second group of straight, undeformed wires extending transversely to said first group;
said first group of wires comprising a pair of straight, undeformed wire members;
said second group of wires including straight, undeformed outside wire members spaced apart and including a straight, undeformed locking wire member located between said outside wire members and intersecting each of said wire members in said first group of wires;
said top coil including means for overlapping in a radially outward direction and engaging said outside wire members of said second group of wires;



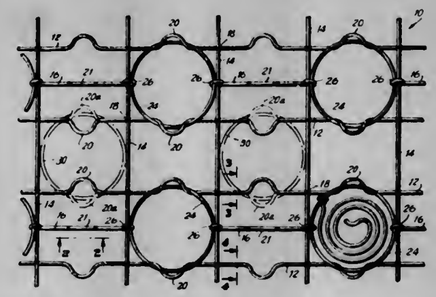
said top coil also including means for underlapping and receiving said locking wire member at a pair of locations each adjacent the intersection of said locking wire member and a respective wire member of said first group of wires; and,
means, including said overlapping means on said top coil, for biasing the top coil into woven attachment with the top grid portion;
said underlapping means on the top coil and said locking wire members compising means cooperating to hold said overlapping means in engagement with said outside wires members.

4,068,331

BOX SPRING GRID AND METHOD OF MANUFACTURE

Wayne G. Dasher, Danbury, Conn., assignor to The Gilbert & Bennett Mfg. Co., Georgetown, Conn.

Division of Ser. No. 603,610, Aug. 11, 1975, Pat. No. 3,983,910.
This application May 19, 1976, Ser. No. 688,009
Int. Cl.² A47C *23/02*; A61J *19/06*
U.S. Cl. 5—267 **12 Claims**



1. A box spring grid which comprises:
a. a plurality of spaced apart warp wires;
b. a plurality of spaced apart fill wires, said warp and fill wires being transversely disposed and secured together at points of intersection;
c. a plurality of ears formed in each of said warp wires, each of said ears being located between a respective pair of fill wires, said warp wires being spaced apart so that corresponding pairs of ears on said warp wires are spaced apart for grippingly engaging the end coil of a spring; and
d. a plurality of support wires, each of said support wires

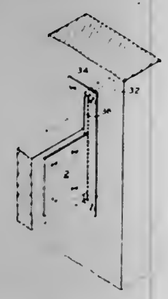
being parallel to said warp wires and extending across and being secured only to selected pairs of said fill wires, the ends of each of said support wires extending beyond the fill wires to which said support wire is secured and each of said support wires including an ear formed therein intermediate the pair of fill wires to which said support wire is attached.

4,068,332

BED LOCKING INSERT PLATES

Kirby L. Ball; Glenn S. Nance, and Roy J. Turner, all of Thomasville, N.C., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Nov. 15, 1976, Ser. No. 741,778
Int. Cl.[2] A47C *19/00*
U.S. Cl. 5—296 **1 Claim**



1. A connecting device consisting of two interconnecting members, the first interconnecting member being a plate having on its one edge two L-shaped hooks spaced one above the other in the same plane with both hooks having their openings facing in the same direction, the second interconnecting member being two parallel plates spaced apart a distance slightly greater than the thickness of the plane of the first-mentioned plate having the L-shaped hooks, pin means spanning the space between said parallel plates and flush with the exterior surface of each plate to provide engagement points for the L-shaped hooks, said L-shaped hooks engaging said pin means and said pin means passing through the openings of the L-shaped hooks and providing a resting point for said hooks, said parallel plates having right angle flanges formed with mounting means for mounting said parallel plates in position, said parallel plates are separate plates fixed at one end to the flanges which are formed from a single plate with an elongated slot therein having closed ends to permit said L-shaped hooks to pass therethrough to engage said pin means, and said parallel plates having opposite free ends, and with said fixed ends secured contiguous with the respective edges of said elongated slot along the length thereof and terminating at the ends of said elongated slot so as to be overlapped by the ends of said single plate with the ends of said single plate extending beyond the ends of said parallel plates said plate with the L-shaped hooks being fastened to the side rails of a bed, and said parallel plates are embedded in the post of the headboard of the bed.

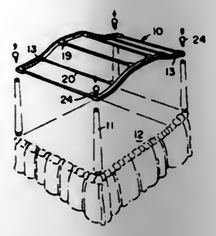
4,068,333

CANOPY FRAME FOR BED

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035

Continuation-in-part of Ser. No. 631,042, Nov. 12, 1975, Pat. No. 4,004,306. This application Mar. 22, 1976, Ser. No. 669,304
Int. Cl.[2] F16B *7/10*; A47C *29/00*
U.S. Cl. 5—362 **7 Claims**

1. A canopy bed frame comprising two longitudinal members and a plurality of lateral members adapted to be interconnected adjacent the ends thereof to said longitudinal members to form a generally rectangular ladder-like frame, each longitudinal member including a pair of end-connected parts to form an arched side of said frame, each longitudinal member part being constructed of resilient plastic material and having bottom and side walls arranged to provide a generally trapezoidal shape in cross section, one part of each longitudinal member at the end thereof having a male fitting telescopically received in the adjacent end of the other longitudinal member part, the other longitudinal part at said adjacent end having a top wall



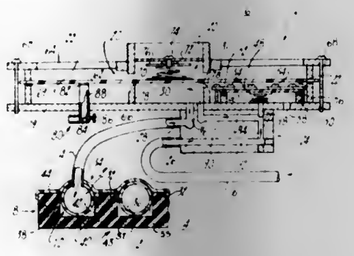
cooperating with said bottom and side walls in defining a female fitting, the walls of said female fitting having longitudinally extending inwardly directed integral ribs, said male fitting having an end wall stabilizing the side walls adjacent thereto for engagement with said ribs, and resilient lock means interconnecting said male and female fittings against inadvertent detachment.

4,068,334

INFLATABLE BODY SUPPORT APPARATUS

Nathan A. Randall, Tucson, Ariz., assignor to Harry E. Grover, Deerfield, Ill. and Richard C. Ruppin, Detroit, Mich.

Filed June 4, 1976, Ser. No. 692,793
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—365 **13 Claims**



1. In a body support apparatus connected to a source of pressurized fluid, the combination comprising:
- a plurality of inflatable and deflatable cells providing support for a body while in an inflated condition;
- control means in communication with said cells and said source of pressurized fluid for alternatingly inflating said cells by connecting said source of pressurized fluid to the cells and deflating the cells; and
- a plurality of uninflated, spaced apart, support strips providing support for said body while said cells are in a deflated condition, said uninflated support strips each having first and second facing sides comprising side walls of one of said cells.

4,068,335

MATTRESS HAVING AN UPPER INTERNAL MATERIAL-CONTAINING CHAMBER

Raymond M. Phillips, 2566 Tuna Canyon Road, Malibu, Calif. 90265

Filed Sept. 17, 1976, Ser. No. 724,355
Int. Cl.[2] A47C *27/08*; B31F *7/00*
U.S. Cl. 5—371 **26 Claims**

1. A mattress for use in a rigid containing frame for supporting an individual in an inclined position and which mattress generally assumes its peripheral shape from said frame, said mattress comprising:
- a. an upper sheet,
- b. a lower sheet in spaced apart relationship to said upper sheet,
- c. a continuous outer side wall extending between and secured in operative relationship to said upper and lower sheets,
- d. a continuous panel operatively secured to said upper sheet inwardly of a peripheral end margin of said upper sheet by a first continuous seal, said panel also being secured to said upper sheet at a point in close proximity to the peripheral margin thereof by a second continuous seal to form a



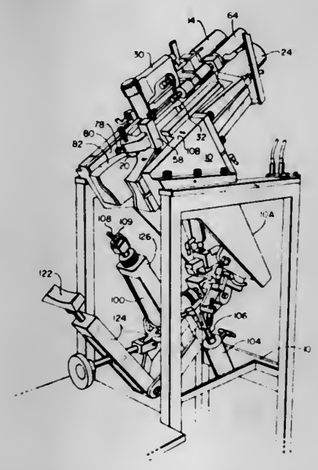
material-containing chamber bounded by at least a portion of said upper sheet and said panel between said first and second seals, with a liquid chamber bounded at least by said lower sheet, said side wall, and a portion of said upper sheet, and
- e. said material-containing chamber extending continuously around the periphery of the upper sheet and being located above the liquid chamber at least in the region between said first and second seals and effectively being on top of said liquid chamber so that it is free of certain hydrostatic pressures which would otherwise be exerted on the material-containing chamber and so that an individual reclining on said upper sheet may be peripherally supported by the material in said material-containing chamber.

4,068,336

MACHINE FOR CLAMPING THE HEEL PORTION OF AN UPPER TO THE CORRESPONDING PORTION OF A FORM

Michael M. Becka, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Dec. 6, 1976, Ser. No. 747,578
Int. Cl.[2] A43D *21/00*
U.S. Cl. 12—14.4 **22 Claims**



1. A machine for clamping the heel portion of an upper to the corresponding portion of a form that comprises: support means for so supporting a shoe assembly formed of a form having an upper mounted thereon that the heel of the shoe assembly faces rearwardly; a clamp pad, having a pair of legs extending forwardly and divergently from a bight, so located that the bight is rearward of the heel end extremity of the shoe assembly and the legs are located outwardly of the sides of the heel portion of the shoe assembly; pad bight mounting and operating means operable to cause the pad bight to bear against the heel end extremity of the shoe assembly; and pad leg mounting and operating means operable to cause the pad legs to bear against the sides of the heel portion of the shoe assembly; wherein the pad leg mounting and operating means comprises: a plate located outwardly of each pad leg; means mounting each plate for inward-outward movement; connecting means connecting each plate to its associated pad leg; resilient means yieldable urging the plates, together with the pad legs, outwardly into initial plate positions such that the plates are inclined forwardly and outwardly; a head associated with each pad leg mounted for forward-rearward movement in intersecting relationship with its associated plate; means for initially retaining each head in an initial head position that is rearward of its associated plate; and means for yieldably urging each head forwardly of its initial head position to thereby cause the heads to engage the plates and yieldably force the plates, together with the pad legs, inwardly of said initial plate positions.

4,068,337

ANKLE PAD FOR FOOTWEAR

Alden B. Hanson; Chris A. Hanson, and Donald W. Bertetto, all of Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.

Division of Ser. No. 664,042, March 4, 1976, Pat. No. 4,019,266. This application Feb. 7, 1977, Ser. No. 766,148
Int. Cl.[2] A43D *9/00*
U.S. Cl. 12—142 P **2 Claims**



1. The method of fitting a ski boot comprising a shell, a liner having a recess, and a filling material adapted to be disposed between said shell and liner; said method comprising the steps of:
- inserting said liner having said recess in the shell of a ski boot;
- placing in said liner recess a first pad having a density of at least the density of said liner;
- inserting filling material between said liner and said shell;
- removing said first pad from said recess; and, inserting in said liner recess a second pad having a density less than the density of said liner.

4,068,338

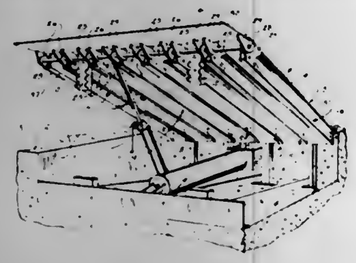
RAMP CONSTRUCTION FOR A DOCKBOARD

Thomas G. Artzberger, Menomonee Falls, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Filed Oct. 1, 1976, Ser. No. 728,636
Int. Cl.[2] E01D *1/00*
U.S. Cl. 14—71.3 **15 Claims**

14. In a dockboard, a supporting structure, a ramp hinged at

its rear edge to the supporting structure, and movable between a generally horizontal cross traffic position and an upwardly inclined position, a lip hinged to the forward edge of the ramp and movable between a downwardly hanging pendant position and an extended position where the lip forms an extension to the ramp, said ramp including a generally flat deck plate and a series of beams supporting said deck plate, each beam having a pair of upper outwardly diverging legs secured to the undersurface of the deck plate and each beam including a base section spaced beneath the deck plate, the width of the base section being substantially equal to the distance between the upper



ends of said legs, and a pair of hinge plates secured to the side surfaces of each beam, each hinge plate having an upper edge secured to the undersurface of the deck plate and having a side surface secured to the respective upper leg and base section of the beam, each hinge plate having a generally curved projecting forward edge projecting forwardly of the beam and the deck plate, first opening means disposed in the projecting end portion of each hinge plate and disposed to receive a hinge pin, a series of lugs connected to the lip, second opening means disposed in said lugs and aligned with said first opening means, and a hinge pin extending through the aligned first and second opening means to hinge the lip to the ramp.

4,068,339

FLEXIBLE MATTING

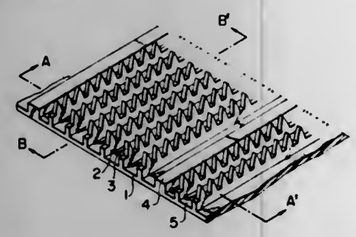
Kenjiro Maruyama, Kobe; Tsuyoshi Miki, Osaka; Yoshiyuki Nishi, Amagasaki, and Masato Takao, Takatsuki, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Dec. 4, 1975, Ser. No. 637,862

Claims priority, application Japan, Dec. 5, 1974, 49-146338[U]

Int. Cl.² A47L *23/26*

U.S. Cl. 15—215 **17 Claims**



1. A flexible matting adapted for cleaning shoes comprising
a one-piece mat of integrally molded flexible material inculding
a base sheet,
a plurality of tread bars substantially parallel to each other integrally molded to said base sheet at intervals shorter than the width of shoes,
a plurality of ridges having piles thereon integrally molded to said base sheet and arranged at approximately equal intervals between and parallel to said tread bars with the width of the ridges narrower than the width of the tread bars and forming grooves between said ridges and said ridges and tread bars,
whereby said ridges and piles have a flexibility requiring the support of said tread bars against an excessive pressing force on said ridges and piles,
the top of said piles being approximately 2 to 15mm higher than the upper surface of said tread bars.

4,068,340

STEAM AND VACUUM CLEANING APPARATUS

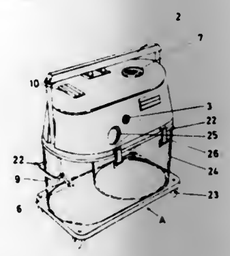
Raymond John Forward, Stevenage, England, assignor to Steam Vacuum Extraction Limited, England

Filed June 16, 1976, Ser. No. 696,507

Claims priority, application United Kingdom, June 20, 1975, 26394/75

Int. Cl.² A47L *7/00*

U.S. Cl. 15—321 **1 Claim**



1. A hot water and vacuum cleaning apparatus comprising:
a wheeled base platform;
a transparent water tank and a transparent vacuum tank mounted on the upper portion of said wheeled base platform, said vaccum tank having a common wall with said water tank;
a main deck releasably attached to the upper portions of said tanks to enclose said tanks, said deck having separate compartments;
attaching means carried by said tanks for releasably engaging said main deck to secure said main deck to said tanks;
a pressure pump mounted on the upper surface of said main deck in one of said separate compartments above said water tank, said pump having an inlet pipe extending through said main deck and into said water tank, said pump having an outlet;
an auxiliary deck mounted in another compartment of said main deck above said vacuum tank;
a vacuum pump motor supported on said auxiliary deck;
a vacuum pump supported between said main deck and said auxiliary deck and drivingly connected to said vacuum pump motor, said vacuum pump having an inlet extending through said main deck and into said vacuum tank;
a cover retained on said main deck to enclose said compartments;
a U-shaped carrying handle having a base and a pair of downwardly extending legs which retain said cover on said main deck to permit a user to grasp said base and remove said main deck from said tanks when said attaching means are released;
first coupling means accessible through said cover for connecting a hose to said pressure pump; and
second coupling means accessible through said cover for connecting a second hose to said vacuum tank.

4,068,341

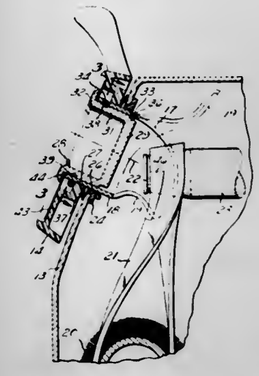
TRANSPARENT BELT LIFTER MOUNTING FOR VACUUM CLEANERS

Ernest R. Scott, Mayfield Heights, and Charles H. MacFarland, Rocky River, both of Ohio, assignors to The Scott & Fetzer Company, Cleveland, Ohio

Filed Feb. 26, 1976, Ser. No. 661,834

Int. Cl.² A47L *5/32*

U.S. Cl. 15—339 **9 Claims**



1. A vacuum cleaner comprising a housing assembly, a powered floor treatment member in said housing assembly, a motor in said housing assembly having a motor shaft, a belt operable to connect said motor shaft to said floor member for driving the latter, and a belt lifter mounted on said housing assembly rotatable about an axis from a first position in which it allows said belt to be connected to said motor shaft and a second position in which it causes said belt to be disconnected from said motor shaft, said belt lifter including rotatable shaft means supporting said belt lifter on said housing assembly for rotation about said axis between said first and second positions, said shaft means including a transparent window allowing a user to observe the position of said within said housing from a location exterior of said housing.

4,068,342

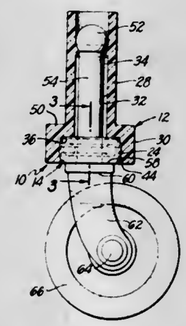
CASTER SUPPORT STRUCTURE

Vernon J. Carrier, 25830 Viana St., Lomita, Calif. 90717

Filed July 22, 1976, Ser. No. 707,842

Int. Cl.² B60B *33/00*

U.S. Cl. 16—21 **2 Claims**



1. A caster support structure which comprises:
a housing and a bearing,
said housing being a unitary body of a polymer material shaped so as to include first and second axially aligned hollow cylinders located in end to end relationship,
said first cylinder being of smaller external diameter than said second cylinder,
said first cylinder havng an internal annular bead extending into the interior thereof,
said second cylinder having an internal cavity in the end thereof remote from said first cylinder,
said cavity constituting an enlargement of the interior of said second cylinder symmetrically located about the common axis of said cylinders in communication with the interiors of said cylinders,
said cavity having sides located perpendicular to the common axis of said cylinders and a barrel shaped peripheral wall located remote from said common axis connecting said sides,
a first of said sides of said cavity being coplanar with the end of said second cylinder remote from said first cylinder, said first side serving to expose the interior of said cavity within said peripheral wall,
at least a portion of said peripheral wall remote from said first side being located further from said common axis of said cylinders than the portion of said peripheral wall adjacent to said end of said second cylinder remote from said first cylinder,
said bearing including two generally ring shaped ball race parts, said parts being located adjacent to one another and each including a groove serving as a portion of a ball race, a series of balls located betwen said parts within said grooves and a retainer located around said parts,
said retainer fitting relative to said parts so as to hold said parts and said ball relative to one another so that one of said parts is capable of being rotated relative to the other of said parts,
the exterior of said retainer having an external barrel shape and being in direct intimate contact with said peripheral wall and so that said one of said parts is located adjacent to the end of said second cylinder remote from said first cylinder,
said retainer serving to hold said parts in parallel planes perpendicular to the common axis of said cylinders in a position in which one of said parts is exposed at the end of said second cylinder remote from said first cylinder.

4,068,343

CASTOR FORK ASSEMBLY WITH PROTECTIVE SURFACE

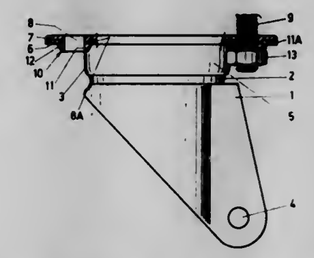
Hendrikus Jacobus Maria Timmer, Tiel, Netherlands, assignor to SKF Industrial Trading and Development Company B.V., Nieuwegein, Netherlands

Filed June 14, 1976, Ser. No. 695,422

Claims priority, application Netherlands, June 26, 1975, 7507593

Int. Cl.² B60B *33/00*

U.S. Cl. 16—31 R **9 Claims**



1. In a castor wheel assembly having a fork, a rolling bearing mounted to the top of the fork, said assembly having a support plate with bolt holes mounted to the top of said rolling bearing, whereby a load or carriage can be connected to one side of said support plate by bolts extending through said bolt holes, the improvement comprising a layer of relatively thin slightly deformable material on said one side of said support plate, said

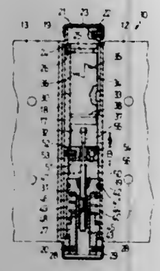
layer having hollow projections of said material extending through said bolt holes, said projections having rims of said material which resiliently engage the side of said support plate opposite said one side thereof and adjacent said holes.

4,068,344

DOOR HINGE MECHANISM

Chiyo Okabe, 19-Go, 12-Banchi, Hirano, Osaka, Japan (547)

Filed Oct. 21, 1976, Ser. No. 734,459
Int. Cl.² E05F *3/20*
U.S. Cl. 16—54 **7 Claims**



1. A door hinge mechanism comprising a pair of flanges each fixedly mounted on a door and a means for fixedly mounting said mechanism on said door, one of said flanges being connected to a cylinder while the other is connected to a supporting means in pivotally supported relation with respect to said cylinder, a pair of pistons mounted internally of said cylinder at a suitably spaced apart interval, a working oil filled in said pair of pistons, a movable means mounted externally of said pistons to move the latter in upward and downward directions along with the relatively opening and closing motions of said flanges, a partition mounted between said pistons, an orifice and a reversely stopping valve means formed on said partition, said valve means being adapted to be released when said flanges are moved in the opening direction thereof, a valve means formed on one of said pistons reciprocable through said orifice of the partition thereby to control the quantity of working oil to be fed through said orifice during the latter half process wherein said pair of pistons have moved in the closing direction of said flanges.

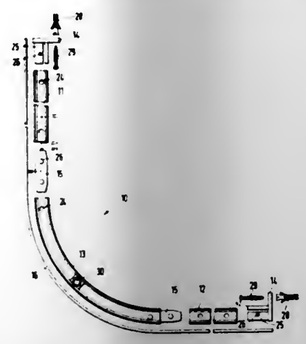
4,068,345

SHOWER CURTAIN ROD ASSEMBLY

Klaus Hehl, Remscheid-Lüttringhausen, and Heike Schrankel, Wuppertal, both of Germany, assignors to Riloga-Werk Julius Schmidt, Remscheid, Germany

Filed Oct. 12, 1976, Ser. No. 731,345
Claims priority, application Germany, Oct. 16, 1975, 2546326
Int. Cl.² A47H *1/04, 1/44*
U.S. Cl. 16—94 D **11 Claims**

1. A curtain rod comprising: at least two elongated rail sections of like profile and each formed with a longitudinally extending upwardly open channel, with a longitudinally extending downwardly open channel, and between the respective channels with a longitudinally extending and upwardly, downwardly, and laterally closed passage having a pair of ends, each section having at least one side having an upper longitudinally extending edge and a lower edge parallel thereto, one of said ends of one of said sections being longitudinally aligned with one of said ends of the other section; a coupling element having one portion snugly longitudinally engaged in one of said one ends and another portion snugly longitudinally engaged in the other of said one ends; a mounting element engaged longitudinally snugly in the other end of one of said passages and adapted to be secured to a fixed surface; and a valance strip extending along and secured to said sides of said rails and substantially covering said sides.

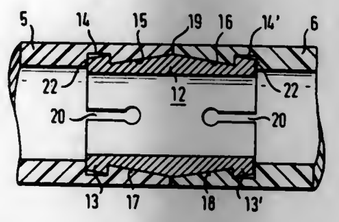


4,068,346

HANDLE FOR A HAND IMPLEMENT SUCH AS A RAKE, A BROOM, OR THE LIKE

Josef Binder, Bayerwaldstrasse 18,, 8391 Strasskirchen, Germany

Filed Dec. 9, 1976, Ser. No. 749,027
Claims priority, application Germany, Dec. 12, 1975, 2556058
Int. Cl.² A46B *5/00*
U.S. Cl. 16—110 R **23 Claims**



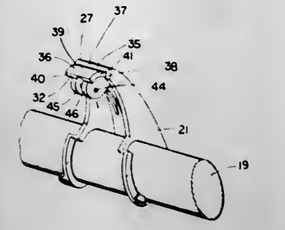
1. A handle for a hand implement, such as a rake, broom or the like, said handle being in the form of a tube consisting of at least two tubular members and a coupling member for joining the individual tubular members permanently to each other flushly and with a smooth transition at their respective confronting ends, said coupling member having a separate coupling means for engaging each tubular member at one of said respective confronting ends, each coupling means being formed as a tubular part of one single coupling member, said parts being of approximately equal length and symmetrical with respect to a transverse central plane through said coupling member, each part being non-releasably joinable to the one of the respective confronting tubular member ends by means of axially-oriented connection means in the form of engaging projections on said part for mating with axially-oriented connection means of the respective tubular member ends, in combination with conical peripheral surfaces on each said part mating with corresponding conical peripheral surfaces of the respective tubular member ends, whereby said tubular members can be manually telescopically engaged with said coupling member, thereby to effect permanent end-to-end joining of said tubular members.

4,068,347

HANDLE HINGE TO TRANSFER LIFTING FORCE IN A DIRECTION PARALLEL AND NORMAL TO MOUNTING WALL

Bennie R. Johnson, R.R. 1, and Gary L. Cox, 1920 Virginia Ave., both of Connersville, Ind. 47331

Filed Aug. 27, 1976, Ser. No. 718,152
Int. Cl.² A47B *45/02*
U.S. Cl. 16—112 **8 Claims**



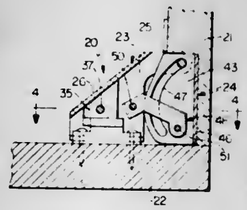
8. A handle hinge mountable to a wall comprising:
a base adapted to be mounted onto said wall, said base having a first exterior stop surface and a second interior stop surface, said interior stop surface extending perpendicular to said wall;
a lifting arm having a proximal end pivotally mounted to said base;
means on said base and engaged with said lifting arm operable to allow said lifting arm to be pivoted from a downward position near said wall to an upward position away from said wall;
said lifting arm having a curved finger with a tip extending into said base from said proximal end and with said arm further having a ledge, said tip and said ledge being positioned to simultaneously contact respectively said interior stop surface and said exterior stop surface when said arm is in said upward position to direct at least some of said lifting force parallel to said wall; and wherein:
said lifting arm includes a plurality of mounting walls integrally secured thereto and projecting inwardly into said base adjacent said means which includes a pivot pin mounted to and extending between said base and said mounting walls.

4,068,348

FULLY CONCEALED DOOR HINGE

Thomas R. Chivers, Winston-Salem, N.C., assignor to Southern Tool Mfg. Co., Inc., Winston-Salem, N.C.

Filed Apr. 20, 1976, Ser. No. 678,567
Int. Cl.² E05D *3/06*
U.S. Cl. 16—129 **3 Claims**



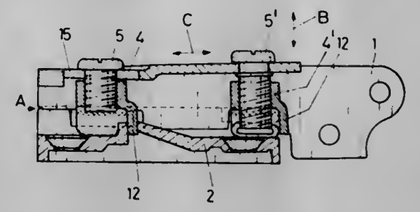
3. Hinge means for mounting a door on a fixed structure having an opening in a manner to entirely conceal the hinge means when the door closes the opening of said structure, said hinge means comprising a first hinge member, means for adjustably mounting said first hinge member on said fixed structure inwardly of said opening, including a base having longitudinally extending slots along opposite sides, said first hinge member having spaced generally parllel side walls with inwardly extending flanges adjustably received within the slots of said base, an upwardly extending web mounted on said base, at least one clamping plate located between said side walls, and means for selectively moving said clamping plate into clamping engagement with said web to hold said first hinge member in fixed adjusted position, said first hinge member having an outwardly extending portion with a guide pin mounted thereon, a second hinge member, means for mounting said second hinge member in fixed position on said door, said second hinge member having an upstanding rib with an arcuate control slot therein, at least a portion of said rib being in side-by-side relationship with said outwardly extending portion of said first hinge member so that said guide pin is located within said control slot, a connecting link swingably connected at one end to said first hinge member and swingably connected at the other end to said second hinge member, said swingable connections of said connecting link being in spaced relationship with said guide pin and said control slot at all times so that said hinge means controls the motion of said door when said door is moved and positions at least a portion of the door within the opening of the fixed structure when the door is opened.

4,068,349

HINGE

Erich Rock, Kuferstrasse 1085, A-6973 Hochst, and Bernhard Mages, Harte 10, A-6850 Dornbirn, both of Austria

Filed Apr. 5, 1976, Ser. No. 673,892
Claims priority, application Austria, Apr. 7, 1975, 2623/75; Mar. 4, 1976, 1582/76
Int. Cl.² E05D *7/04*
U.S. Cl. 16—131 **16 Claims**



1. A hinge arrangement comprising, in combination, a base plate; a hinge arm; an intermediate member between said base plate and said hinge arm; toggle joint means carried by said hinge arm, said hinge arm being anchorable in said base plate; projections on said base plate; said intermediate member comprising two intermediate elements having lugs gripping behind said projections; at least one of said intermediate elements having an extended portion extending into an opening of said base plate when the hinge arrangement is mounted in place.

4,068,350

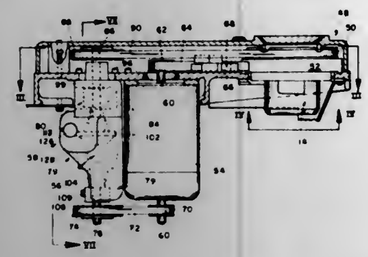
ARTICLE CONTOUR FOLLOWER MECHANISM

William VanAppledorn, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Continuation of Ser. No. 591,852, June 30, 1975, abandoned.
This application Nov. 22, 1976, Ser. No. 743,585
Int. Cl.² A22C *17/04*
U.S. Cl. 17—1 G **11 Claims**

1. An article contour follower apparatus including an annular inner member and annular outer member supported for rotation about an axis in the same rotational direction and defining an opening through which an elongated article is axially movable, at least one follower member pivotally mounted to said inner annular member and said outer annular member for movement therewith, and means for shifting the relationship of said annular members with respect to each other to cause said follower member to move toward and away from the axial center of said opening to follow the contour of

an elongated article moved axially through said opening, said shifting means including: a drive means including a common drive for driving said inner and said outer annular members in the same rotational direction, said drive means also including a first drive and a second drive; said first drive being directly coupled to said common drive and to one of said annular members; said second drive being coupled to a third drive for rotating said other of said annular members; control means



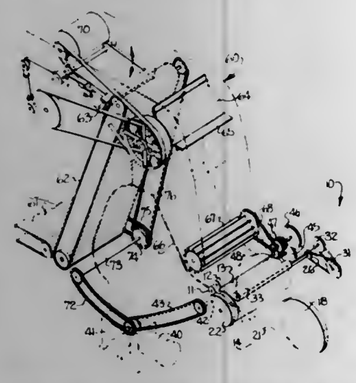
coupled between said second drive and said third drive; means mounting said control means for rotational movement relative to said second drive and said third drive whereby rotation of said control means will shift the relative rotational positions of said second and third drives causing said other annular member to rotatably shift relative to said one annular member to thereby urge said follower member to open and close toward said axial center of said opening to thereby follow the contour of an elongated article moved therethrough.

4,068,351

METHOD OF INCREASING THE CAPACITY OF A CARDING MACHINE

William J. Schmiel, and Mark O. Schmiel, both of Charlotte, N.C., assignors to RSM Co., Charlotte, N.C.

Filed July 12, 1976, Ser. No. 704,229
Int. Cl.² D01G *15/40*
U.S. Cl. 19—105 **3 Claims**



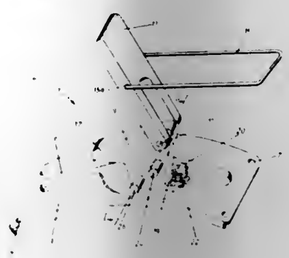
1. A method for processing fibrous material on a carding machine whereby the machine is capable of a substantially increased production capacity and with a significant reduction in maintenance, said method comprising delivering the fibrous material to the input end of the carding machine in the form of a thin, lightweight substantially non-compacted batt having a density of no more than about 75 grams per square foot, while feeding the fibrous material into the machine at a linear speed of at least about 10 feet per minute.

4,068,352

ADJUSTABLE BUCKLE FOR SKI SHOES

Ivan Uhricek, and Ruedi Schneider, both of Stafa, Switzerland, assignors to Ivan Uhricek; Schneider, Ruedi, both of Stafa and Jaroslav Vlk, Uster, all of, Switzerland

Filed Apr. 4, 1977, Ser. No. 784,067
Claims priority, application Switzerland, Apr. 5, 1976, 4258/76
Int. Cl.² A43C *11/00*
U.S. Cl. 24—69 SK **10 Claims**



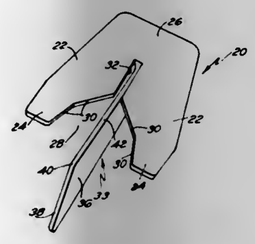
1. An adjustable buckle for a ski shoe or the like and comprising,
a base plate having means for being secured to said shoe, said plate having upper and lower surfaces, a locking holder having a shiftable connection with said base plate for shifting in a longitudinal direction relative to and on said base plate,
a locking lever swingably mounted on said holder,
a locking member swingably secured to said lever,
said locking holder also being oscillatingly mounted on and relative to said plate about an axis which is transverse to said longitudinal shifting direction of said holder, and locking means on said holder for releasably and simultaneously engaging said upper and lower surfaces of said base plate, whereby said holder is selectively releasably connected to said base plate by said locking means.

4,068,353

CARTON CLIP

Samuel F. Speers, North Attleboro, and James L. Pelto, Fitchburg, both of Mass., assignors to Hasbro Development Corporation, Pawtucket, R.I.

Filed Jan. 31, 1977, Ser. No. 766,766
Int. Cl.² A44B *21/00*
U.S. Cl. 24—81 BF **10 Claims**



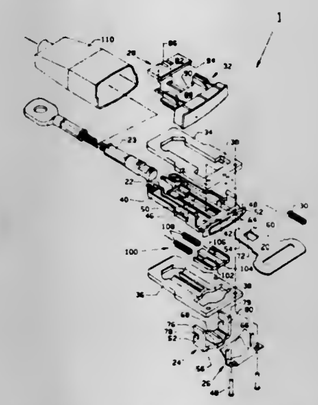
1. A clip for use with a regular slotted carton having adjacent side and end foldable closure flaps, said clip being selectively usable for temporarily holding opposed side flaps in a closed position and adjacent side and end flaps in an open position, and comprising a pair of generally coplanar wings spaced from each other at forward portions thereof and interconnected at base portions thereof so as to cooperatively form a first carton contacting surface of a generally flat configuration, a longitudinally orientated leg connected to said first carton contacting surface at said wing base portions thereof, said leg disposed between said wings and having a relatively thin upper edge forming a second carton contacting surface having the main portions thereof generally disposed below and spaced from said first surface whereby said first surface is adapted to contact top portions of said side flaps and said second surface is adapted to contact bottom portions of one of said end flaps in said closed position, and whereby said first surface is adapted to contact bottom portions of said adjacent flaps and said second surface is adapted to contact interior wall corner portions of said carton in said alternate open position.

4,068,354

SAFETY BELT BUCKLE

Yogendra S. Loomba, Washington, and Surendra D. Narayan, Warren, both of Mich., assignors to Allied Chemical Corporation, N.J.

Filed Mar. 1, 1976, Ser. No. 662,988
Int. Cl.² A44B *11/26*
U.S. Cl. 24—230 A **6 Claims**



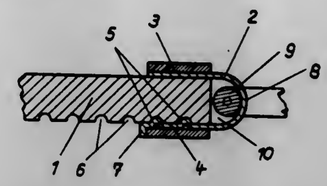
1. A vehicle safety belt buckle comprising:
a. a housing having an opening therein and provided with a cavity extending from said opening to a wall of said housing opposite said opening;
b. inlet means communicating with said cavity for receiving a tongue of a seat belt;
c. connecting means for connecting the housing to an anchorage point on the vehicle;
d. latching means having a raised portion for engaging said tongue and a plurallity of shoulders each of said shoulders having a notch therein and a forward face having a corner;
e. first biasing means connected to said housing for biasing said latching means into engagement with said tongue;
f. locking means slidably mounted on said housing for locking engagement with said latching means said locking means including a lock bar having a forward face adapted to mate with the notch of each shoulder to form said locking engagement;
g. second biasing means connected to said housing and to said lock bar for biasing said lock bar of said locking means into said locking engagement; and
h. release means slidably mounted on said housing for rotating said latching means to move said locking means out of locking engagement therewith.

4,068,355

ATTACHMENT DEVICE FOR BRACELETS AND THE LIKE

Laurent C. Rey, Avenue de Lavaux 64A, 1009 Pully VD, Switzerland

Filed June 2, 1976, Ser. No. 692,205
Claims priority, application Switzerland, June 14, 1975, 7734/75
Int. Cl.² A44C *5/18*
U.S. Cl. 24—265 R **4 Claims**



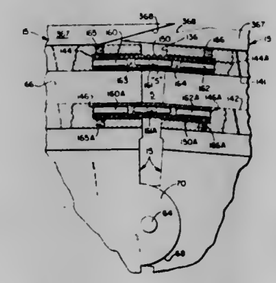
1. Apparatus for adjustably securing a connector to the end of an enlongated strip, comprising
a. an elongated strip with a flat end;
b. said flat end having a plurality of spaced first engaging means on one surface thereof; the improvement comprising
c. a securing piece comprising a body portion with opposed spaced-apart legs for engaging opposite surfaces of said flat end;
d. one of the flat end engaging surfaces of one of said spaced-apart legs having a plurality of spaced second engaging means for cooperating with said first engaging means;
e. radially extending stop means on one end of one of said spaced-apart legs;
f. a locking sleeve extendible over said legs on said flat end and engagable with said stop means; and
g. a connector for said elongated strip for holding said sleeve in engagement with said stop means, said connector including means for extending between the end of said strip and said body portion of said securing device.

4,068,356

TENTER GUIDE RAIL GAP CROSSING MECHANISM

Henry Parrillo, Johnston; John Sherman Harrington, Warwick, and Glenn Howard Curtis, North Kingstown, all of R.I., assignors to Marshall and Williams Company, Providence, R.I.

Division of Ser. No. 524,550, Nov. 18, 1974. This application July 8, 1976, Ser. No. 703,577
Int. Cl.² D06C *3/04*
U.S. Cl. 26—91 **2 Claims**



1. Apparatus for stretching web material by use of tentering clips and providing a uniform distribution of transverse stretching forces comprising a frame, a plurality of cross members secured to said frame, a plurality of bearings fastened to each cross member, a plurality of shafts, one for each cross member, each shaft having a right hand thread and a left hand thread, means rotatably mounting said shafts in said plurality of

bearings, a plurality of saddles, two for each cross member, means slidably mounting said saddles to said cross members, a plurality of nuts, one secured in each saddle, one nut of one saddle of an associated shaft connected to a right hand thread, alternately, another nut of the other saddle of the shaft connected to a left hand thread, whereby rotation of the shaft in one direction draws the saddles toward each other and rotation of the shaft in an opposite direction separates said saddles, a plurality of blocks, one for each saddle, means slidably mounting a block in each saddle, a plurality of pivot pins, one fastened in each block, a plurality of grooved guide straight rail sections having upper forward straight tenter clip engaging faces and lower rear straight tenter clip engaging faces, pivotally mounted to said saddles, with the end of one rail being pivotally mounted to the end of an adjacent rail through said pivot pins, thereby to provide two pivotally connected adjacent grooved guide straight rail sections with a gap therebetween, each of said plurality of grooved guide straight rail sections having complimentary tapered ledges on opposite ends, said plurality of grooved guide straight rail sections forming two closed loop paths to accommodate, respectively, two closed loop tentering chains, said shafts providing incremental adjustment between pairs of rails controlled by the same shaft and incremental adjustment between adjacent rails, a first means providing a gap crossing mechanism between the ends of adjacent grooved guide straight rail sections at the upper forward tenter clip engaging face, and a second means providing a gap crossing mechanism between the ends of adjacent grooved guide straight rail sections at the lower rear tenter clip engaging face, said first means and said second means yielding on an arc having a radius with a center located in the center of the pivot pin upon relative pivotal movement between adjacent grooved guide straight rail sections, said first means and said second means providing a smooth arcuate connection between respectively, said upper forward tenter clip engaging face and said lower rear tenter clip engaging face, during various degrees of diverging and converging relationship between adjacent grooved guide straight rail sections, the ledge on one rail section complimentary tapered to cooperate with the complimentary taper on the adjacent rail section providing a path without jar for a roller on a tenter clip.

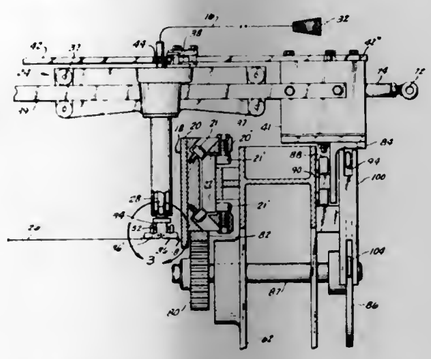
2. Apparatus for stretching web material by use of tentering clips and providing a uniform distribution of transverse stretching forces comprising a frame, a plurality of cross members secured to said frame, a plurality of bearings fastened to each cross member, a plurality of shafts, one for each cross member, each shaft having a right hand thread and a left hand thread, means rotatably mounting said shafts in said plurality of bearings, a plurality of saddles, two for each cross member, means slidably mounting said saddles to said cross members, a plurality of nuts, one secured in each saddle, one nut of one saddle of an associated shaft connected to a right hand thread, alternately, another nut of the other saddle of the shaft connected to a left hand thread, whereby rotation of the shaft in one direction draws the saddles toward each other and rotation of the shaft in an opposite direction separates said saddles, a plurality of blocks, one for each saddle, means slidably mounting a block in each saddle, a plurality of pivot pins, one fastened in each block, a plurality of grooved guide straight rail sections having straight tenter clip engaging faces, pivotally mounted to said saddles, with the end of one rail being pivotally mounted to the end of an adjacent rail through said pivot pins, thereby to provide two pivotally connected adjacent grooved guide straight rail sections with a gap therebetween, said plurality of grooved guide straight rail sections forming two closed loop paths to accommodate, respectively, two closed loop tentering chains, said shafts providing incremental adjustment between pairs of rails controlled by the same shaft and incremental adjustment between adjacent rails, that improvement in which means between the ends of adjacent grooved guide straight rail sections provide a gap crossing mechanism, said means yielding on an arc, having a radius with the center located in the center of the pivot pin, upon relative pivotal movement between adjacent grooved guide straight rail sections, said means providing a smooth arcuate connection between the straight tenter clip engaging faces having various degrees of diverging and converging relationship with respect to one another, said means between the ends of adjacent grooved guide straight rail sections which provide a gap crossing mechanism comprise a coil spring, having a flat tenter clip engaging surface, a front chamber and a rear chamber provided, respectively, in opposite ends of each grooved guide straight rail section, said coil spring located between opposite ends of adjacent grooved guide straight rail sections, with one end located in a front chamber and the other end located in a rear chamber, with said flat tenter clip engaging surface forming an arcuate surface continuation of the straight face tenter clip engaging surfaces of the, respective, adjacent pivotally connected grooved guide straight rail sections, a first dowel pin located within one end of said coil spring, a second dowel pin located within the other end of said coil spring, set screw means rotatably secured in the opposite ends of said adjacent pivotally connected grooved guide straight rail sections, engaging, respectively, opposite ends of said coil spring at the, respective, dowel pin, and a tapered dowel pin located within the medial area of the coil spring at the gap between the ends of adjacent grooved guide straight rail sections, whereby said tapered dowel pin supports said coil spring at said gap while permitting said coil spring to bend in an arc having a radius scribed from the center of said pivot pin.

4,068,357

METHOD AND APPARATUS FOR FABRICATING OPEN WEAVE SCRIM CLOTH

William B. Goldsworthy, Palos Verdes, Calif., and Harald E. Karlson, Eugene, Oreg., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 27, 1976, Ser. No. 754,491
Int. Cl.² D04H *3/04*
U.S. Cl. 28—101 **33 Claims**



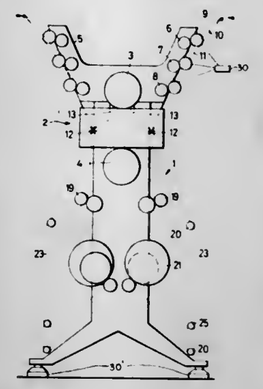
1. In apparatus for fabricating open weave scrim cloth consisting of uniformly spaced longitudinal or X filaments, and transverse or Y filaments, the combination comprising transversely spaced parallel longitudinally extending moveable supports, hooks mounted on said supports in oppositely facing relation, and a Y filament or fiber payoff mechanism positioned between said moveable supports, said Y payoff mechanism including fiber dispensing means, support means for said fiber dispensing means, said fiber dispensing means being mounted on said support means, means mounting said support means and said fiber dispensing means for transverse motion between the oppositely facing hooks on said longitudinally extending supports, means for rotating said fiber dispensing means a predetermined amount during transverse motion of said fiber dispensing means from adjacent the hooks on one said longitudinally extending support to adjacent the hooks on the opposite said longitudinally extending support, and fiber support means carried on said fiber dispensing means, to receive a fiber from said fiber dispensing means during rotation and transverse motion thereof between said longitudinally extending supports, and to snap said filament over a hook or hooks on one of said longitudinally extending supports when said fiber dispensing means and said fiber support means are disposed adjacent the hooks on said one of said longitudinally extending supports.

4,068,358

MACHINE FOR AIR-JET TEXTURIZING OF CONTINUOUS SYNTHETIC FILAMENTS

Gerhard Luther, Berlin, Germany, assignor to Berliner Maschinenbau-AG vormals L. Schwartzkopff, Germany

Filed June 16, 1976, Ser. No. 696,506
Claims priority, application Germany, June 18, 1975, 2527511
Int. Cl.² D02G *1/16*
U.S. Cl. 28—272 **8 Claims**



1. In a machine for the air-jet texturizing of synthetic continuous filaments, said machine having a plurality of texturizing nozzles which are connected to compressed air; the texturizing nozzles having channels directed in a vertical direction;

supply mechanisms for guiding at least two synthetic continuous filaments to each nozzle, said supply mechanism being located with their axes parallel to the longitudinal plane of said machine;

an improvement comprising at least two supply mechanisms for each nozzle, each supply mechanism supplying a continuous filament, said supply mechanism being located in a common plane directed at an acute angle with respect to the longitudinal middle plane of the machine, said supply mechanisms being offset with respect to each other in their plane in the longitudinal direction of the machine;

a vessel which is filled with compressed air, said vessel extending over the entire length of said machine, said vessel serving to supply said texturizing nozzle; and

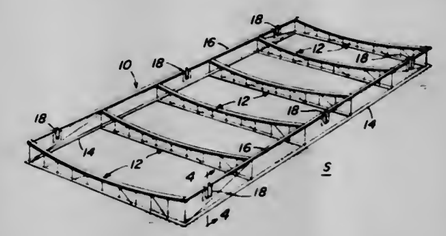
a nozzle box attached to the vessel, said nozzle box containing said texturizing nozzles which are located on both sides of said vessel, said texturizing nozzles being located in the plane which is formed by said supply mechanisms, said vessel supplying the texturizing nozzles from at least one branch; said nozzle box having a plurality of openings corresponding to the number of said filaments for guiding said filaments toward said nozzles to prevent their coming into contact with each other prior to entry into said jet nozzle channels.

4,068,359

TANK FABRICATION APPARATUS

Jack E. Bunker, 108 E. Ash, Winfield, Iowa 52659

Division of Ser. No. 461,456, April 16, 1974, Pat. No. 3,935,633.
This application Nov. 7, 1975, Ser. No. 629,977
Int. Cl.² B23Q *7/00*
U.S. Cl. 29—33 K **4 Claims**



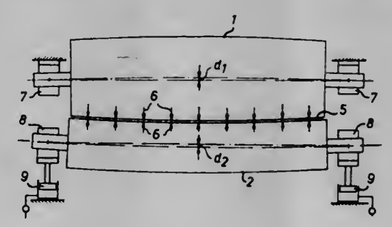
1. Apparatus for shaping sheet material for use in constructing containers in which the sheet of material has a weight sufficient to bend the sheet, comprising jig means provided with a concavity for supporting the sheet for conforming the sheet to the concavity by the force present due to the weight of the sheet, said jig means including a plurality of longitudinally spaced, transversely extending girders having concave upper edges, longitudinal stringers rigidly interconnecting said girders, said stringers including recesses therein spaced from the girders, transversely extending shapers received and supported in said recesses, each of said shapers having an arcuate upper edge conforming with the upper edges of the girders for engaging the sheet, and means for securing the shapers to the sheet for maintaining the arcuate configuration thereof when the sheet along with the shapers are removed from the jig means.

4,068,360

PRESS ROLL WITH BENDING CONTROL DEVICE

Fred H. Freuler, Bannlistrasse, Riedholz, Switzerland

Filed Oct. 20, 1976, Ser. No. 734,045
Claims priority, application Switzerland, Oct. 24, 1975, 13820/75
Int. Cl.² B21B *13/02*
U.S. Cl. 29—116 AD **13 Claims**



1. A press roll having bending control apparatus comprising

a substantially cylindrical roll shell having an outer surface for receiving pressing forces and an inner surface;

a supporting shaft extending through and rotatable with said shell;

means outside of said shell for rotatably supporting said shaft;

a plurality of supporting devices longitudinally arranged on said shaft for exerting outward forces on said shell relative to said shaft in opposition to said pressing forces;

a source of fluid under pressure;

means in said shaft defining a plurality of ducts for supplying fluid under pressure from said source to said supporting devices,

each of said supporting devices comprising

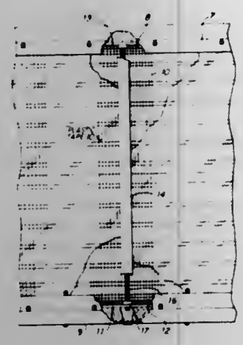
an elastically compressible and flexible annular member radially movable relative to said shell and said shaft,
means on said shaft for limiting the radial outward movement of said annular member to a position in which the maximum outward expansion of said member relative to the axis of said shaft is a position in which the distance between the axis of said shaft and the outer surface of said member is substantially equal to the inner radius of said shell,
means on said shaft for limiting axial movement of said annular member,
said member, said means for limiting outward movement and said means for limiting axial movement forming a continuous annular chamber around said shaft connected to receive fluid from one of said ducts, and
sealing means for preventing outflow of fluid from said chamber,
whereby said fluid under pressure exerts forces through said annular members on the inner surface of said shell such that the orientation of the resultant forces produced by each of said supporting devices remains unchanged as said shell rotates.

4,068,361

SELF-JIGGING METHOD OF FABRICATING SOLAR COLLECTOR HEAT TRAP FROM FLEXIBLE PLASTIC ROLL MATERIAL

Ernest F. Root, Nashua, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 26, 1976, Ser. No. 652,023
Int. Cl.² B23P *15/26*
U.S. Cl. 29—157.3 R **8 Claims**



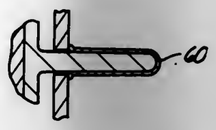
1. A method of fabricating wall portions of the cells of a solar energy heat trap comprising:
a. providing a frame having first receptor means associated with one side of said frame for receiving a first plurality of wall support members together with second receptor means associated with the opposite side of said frame for receiving a second plurality of wall support members;
b. wrapping a continuous strip of thin, flexible light transmissive wall material about a first wall support member of said first plurality of wall support members and thereafter inserting said first wall support member into said first receptor means, thereafter wrapping said material about a wall support member of said second plurality of wall support members, thereafter inserting said wall support member of said second plurality of wall support members into said second receptor means, thereafter wrapping said material about a second wall support member of said first plurality of wall support members, thereafter inserting said second wall support member into said first receptor means, and so forth to produce zig-zagged wall portions of the cells of said solar energy heat trap;
c. inducing tension within said flexible light transmissive wall material after each of the wrapping steps of paragraph (b), thereby to prevent drooping of said material.

4,068,362

METHOD OF FORMING RINGS

Edward G. Spisak, 35700 Oakwood Lane, Westland, Mich. 48185

Continuation-in-part of Ser. No. 639,397, Dec. 10, 1975. This application Oct. 20, 1976, Ser. No. 734,235
Int. Cl.² B21D *53/26*
U.S. Cl. 29—159 A **9 Claims**



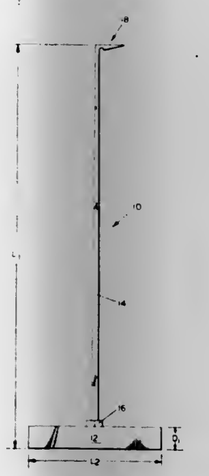
1. The method of forming an annular ring having a generally U-shaped cross section from an endless, circular workpiece in which the material extends axially comprising; positioning a cylindrical workpiece relative to forming apparatus capable of exerting a force radially outwardly in all directions on an inner circumferential portion of said workpiece, actuating said forming apparatus to engage said workpiece to exert said force between spaced annular marginal edge portions of said workpiece to displace the material in said workpiece radially outwardly until all of the material in said marginal edge portions is disposed radially to form annular portions disposed parallel to each other, said force being applied on said inner circumferential portion of said endless workpiece while all remaining surfaces of said workpiece remain unsupported.

4,068,363

HAND TOOL FOR MANIPULATING COIL SPRINGS

John Costa, 13601 Athania, Silver Spring, Md. 20906

Filed Oct. 26, 1976, Ser. No. 735,269
Int. Cl.² B23P *19/04*
U.S. Cl. 29—227 **4 Claims**



1. A hand tool useful for the assembly and disassembly of a coil spring securing a sealed beam headlight within an automotive headlight assembly wherein the space between said sealed beam and a wall of said assembly is at least approximately 0.125 inches, said tool comprising:
a handle;
shank means secured at one end thereof to said handle;

elongated hook means integrally secured to the other end of said shank means and disposed perpendicular to the longitudinal axis of said shank means so as to form therewith a substantially L-shaped member,
said shank means having a thickness of about 3/32 inch in the vicinity of said hook means and said hook means having a length of about 9/16 to 13/16 inch and a thickness of about 3/32 inch, said dimensions permitting the insertion of said hook means and said other end portion of said shank means between the central coils of a coil spring and within the interior of said spring, said dimensions permitting the manipulation and rotation of said shank means within said coil spring and insertion between a sealed headlight and a wall of said assembly which is about 0.125 inch wide; and
said hooked means further comprising inclined surface portion means for facilitating said insertion of said hooked portion between said spring coils and within the interior portion of said spring and recess means defined between said inclined portion of said hook and said shank member for receiving one of said coils of said spring upon insertion of said hook portion into the interior of said spring.

4,068,364

RESLEEVING TOOL

Gordon H. Tharp, 8910 Sunset Drive, Wonder Lake, Ill. 60097, and Herman Dorland, 2850-F W. Touhy, Chicago, Ill. 60645

Filed Jan. 15, 1976, Ser. No. 649,506
Int. Cl.² B23P *19/02*
U.S. Cl. 29—235 **7 Claims**



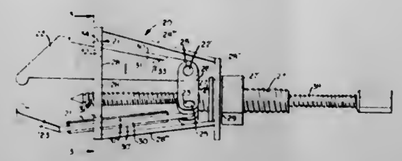
1. A two-piece tool for applying an elastic sleeve to a shaft which consists of a pair of separate, unconnected, elongated, channel-shaped members adapted, when placed together, long edges to long edges, to rock with respect to each other on a transverse axis intermediate their length to juxtapose ends of said members at one extreme of said rocking movement, said ends when juxtaposed being proportioned to be insertable into said sleeve, and to define an open tube proportioned to encompass said shaft and to stretch said end of said sleeve to permit the placement thereof about one end of said shaft at another point in said rocking movement, said members including an interengaged notch and protruding bearing on said long edges at each side at said rocking axis when placed together to prevent longitudinal relative displacement as between said members, said bearings being flush with the inside surface of said defined tube, and brackets on one of said members extending from the long edges thereof at said rocking axis spaced to embrace the other of said members to prevent relative lateral displacement from said edges-to-edges relationship.

4,068,365

LOCKING PULLER DEVICE

Paul W. Brandt, and Dean S. Somerville, Box 215, both of McHenry, N. Dak. 58464

Filed Feb. 14, 1977, Ser. No. 768,338
Int. Cl.² B23P *19/04*
U.S. Cl. 29—261 **3 Claims**



1. A locking puller device comprising a plurality of pivotally mounted arm-like jaws pivotably mounted to a collar at their rearward ends, a sleeve fixed to said collar and projecting rearwardly, a threaded nut means threaded onto said sleeve, a cam ring forward of the collar surrounding the jaws, braces fixed to the cam ring and extending rearwardly, a ring rotatably mounted to the nut means, said braces having their rearward ends fixed to the ring, projecting lug means mounted to and supported only by the cam ring and projecting from the cam ring radially inward about the outer edge surfaces of the jaws, said jaws having under surfaces, said lug means projecting beneath the under surfaces of the jaws, said jaws having its outer and under surfaces tapered relative to the direction of the cam ring movement, to cause the jaws to move toward one another by engagement with the cam ring on the outer surfaces as the cam ring moves forward or spread apart by the engagement with the cam ring lug means on the under surfaces as the cam ring moves rearward, said cam ring is movable forward by the rotation of the nut means in one direction, with the nut means engaging against the ring to move the ring and as the ring moves, the brace moves thereby moving the ring forward and the cam ring engages the tapered outer surfaces of the jaws to cam the jaws toward one another, and by rotation of the nut means in the opposite direction the nut means engages against the ring which moves the ring which moves the brace which moves the cam ring and projecting lugs rearward, and the projecting lug means engages the under surfaces of the jaws to cam the jaws apart.

4,068,366

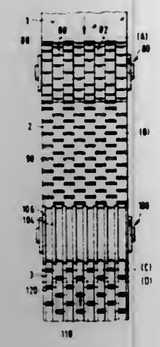
METHOD AND APPARATUS FOR PRODUCING OPENINGS IN SHEET MATERIAL

Hans Hillesheim, Heinrich Luttig Strasse 2, 6781 Hohfroschen, Germany

Filed Nov. 1, 1976, Ser. No. 737,282
Claims priority, application Germany, Nov. 3, 1975, 2549072
Int. Cl.² B21D *31/04*
U.S. Cl. 29—527.4 **20 Claims**

1. A process for producing openings in sheet material, said openings being aligned in a longitudinal direction of said material, comprising the steps of:
deforming the sheet material to provide notches therein arranged in rows extending in said longitudinal direction; and
reducing the thickness of partial areas of the notched sheet material between said rows, said partial areas including

the ends of the notches, thus enlarging the notches which lie between the reduced thickness partial areas of the



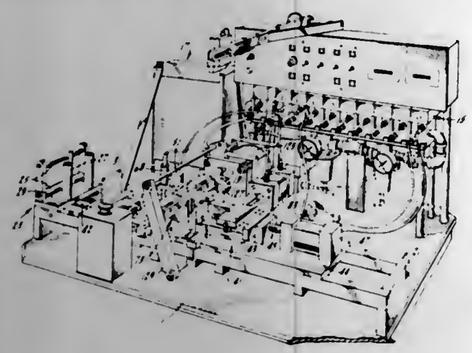
notched sheet material to form openings extending between the major surfaces of said sheet material.

4,068,367

TERMINAL FORMING AND INSTALLING APPARATUS

Maurice H. Brown, 11655 S. Mayfield, Worth, Ill. 60482

Filed Nov. 3, 1976, Ser. No. 738,639
Int. Cl.² B23P *23/00*
U.S. Cl. 29—564.6 **15 Claims**



6. An apparatus for simultaneously forming a plurality of terminals from a plurality of lengths of wire and inserting the terminals simultaneously into openings preformed in a plastic part, said apparatus including:

means for simultaneously moving a plurality of lengths of wire held in spaced relation to one another in more than one plane to a severing position,

means for simultaneously severing end portions from said lengths of wire at said severing position to form a plurality of terminals,

means for supporting said terminals in spaced relation to one another,

means for supporting a plastic part having openings formed therein for receiving said terminals; and

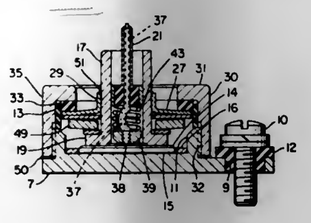
means for moving said plastic part and said terminals into engagement with one another to embed said terminals in said openings in said plastic part.

4,068,368

CLOSURE FOR SEMICONDUCTOR DEVICE AND METHOD OF CONSTRUCTION

James Edward DeBard, Eatontown; Raymond Walter Borden, Farmingdale, and John Joseph Tumpey, Oakhurst, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Division of Ser. No. 621,917, Oct. 14, 1975, abandoned. This application Aug. 9, 1976, Ser. No. 713,071
Int. Cl.² B01J *17/00*
U.S. Cl. 29—588 **4 Claims**



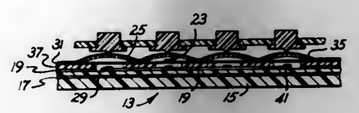
1. A method of assembling a semiconductor device comprising securing a diaphragm with an aperture therein by means of insulation to a ring-shaped electrode having a threaded skirt depending therefrom, assembling a spring member on a cylindrical electrode having a flange at one end and inserting the cylindrical electrode through the aperture in the diaphragm with the spring member being positioned between the flange and the diaphragm, positioning a semiconductor pellet on a base having a threaded flange, positioning the flange of the cylindrical electrode on the semiconductor pellet, and screwing the threaded skirt onto the threaded flange on the base to a predetermined torque to compress the spring member and exert a predetermined pressure on the pellet, and securing the diaphragm to the cylindrical electrode.

4,068,369

METHOD OF MAKING PUSHBUTTON KEYBOARD SYSTEM

Perry W. Kaminski, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 535,468, Jan. 10, 1975, Pat. No. 3,996,427. This application Aug. 20, 1976, Ser. No. 716,034
Int. Cl.² H01H *13/26*
U.S. Cl. 29—622 **13 Claims**



1. A method of making low profile keyboard switches comprising the steps of providing a substrate having a first relatively flat surface,

applying a dielectric layer to selected portions of the substrate leaving an inner contact area exposed, the top surface of the dielectric layer being a first distance from the substrate,

simultaneously coating a plurality of spaced electrically conductive inner contact portions on the flat surface within the inner contact area and a plurality of spaced electrically conductive outer contact portions on the top surface of the dielectric layer,

an outer contact portion disposed adjacent each inner contact portion, the top surface of the outer contact portion being spaced from the substrate a distance greater than the top surface of the inner contact portion,

placing a switch actuating element on each outer contact portion, and

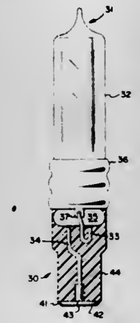
disposing retaining means over the substrate to maintain the actuating elements in position relative to their respective contact portion.

4,068,370

MOUNTING MEANS FOR A CIRCUIT BREAKER AND METHOD OF MAKING THE SAME

Svein T. Nordberg, and Donald R. Shaner, both of El Paso, Tex., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Division of Ser. No. 669,999, March 24, 1976. This application Apr. 14, 1977, Ser. No. 787,430
Int. Cl.² H01H *69/00*
U.S. Cl. 29—628 **2 Claims**



1. A method of forming a mount for mounting a circuit breaker having an envelope with a pair of electrical conductors extending from a base of said envelope in a holder having an electrically insulative body with a conductive first contact carried by the base of said body and a conductive first retaining means carried by said body comprising the steps of:

bonding a conductive second retaining means to said envelope in a position circumscribing at least a portion of said envelope for engaging said first retaining means to retain said circuit breaker in said holder;

attaching one of said pair of electrical conductors to said second retaining means for forming an electrical connection therebetween;

attaching a conductive second contact to the other one of said pair of electrical conductors; and

molding electrically insulative spacing material between said base of said envelope and said second contact for spacing said second retaining means from said second contact a predetermined distance, said spacing material encompassing said pair of conductors for holding said conductors in a spaced relationship, said predetermined distance ensuring contact between said first and second contacts when said first and second retaining means are engaged.

4,068,371

METHOD FOR COMPLETING WIRE BONDS

Charles Fredrick Miller, 2165 N. Glassell, Orange, Calif. 92667

Filed July 12, 1976, Ser. No. 704,319
Int. Cl.² H01R *43/02*
U.S. Cl. 29—628 **4 Claims**

1. The method of making wire connections between circuit points on the surface of a miniature assembly of electronic elements through the medium of a bonding tool of the kind that includes an opening through which the bonding wire is threaded, which method comprises the steps of:

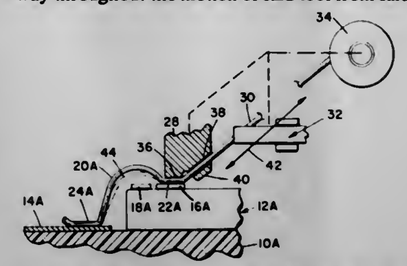
arranging a length of wire such that it extends through the passage in the bonding tool with sufficient freedom to permit relative movement between the standing part of the wire and the tool in either direction through the passageway;

bonding an end of said wire to a first circuit point using said tool;

lifting the tool from the first bond point in a generally vertical direction while permitting the standing part of the wire to be payed out by being pulled through the tool;

moving the tool laterally to a position directly over the second point;

clamping said wire against movement through said passageway throughout the motion of said tool from said position



over the second circuit point to said second circuit point; and

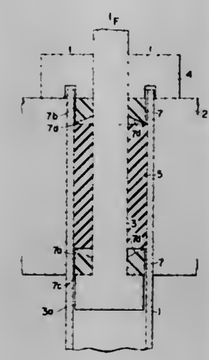
lowering the tool to the second point such that the wire underlies the tool on said second circuit point while preventing movement of the wire in either direction through said passageway.

4,068,372

TUBE EXPANDER

Hideaki Kamohara, Kudamatsu; Toji Nakatui, Hikari; Yuji Yoshitomi, Kudamatsu; Iwao Sasaki, Kudamatsu, and Kenji Shimada, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 14, 1977, Ser. No. 768,198
Claims priority, application Japan, Feb. 18, 1976, 51-15879
Int. Cl.² B23P *17/00*
U.S. Cl. 29—727 **10 Claims**



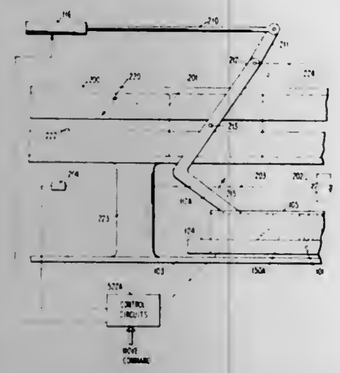
1. A tube expander having a tubular, elastic expansion medium having axially opposite end surfaces and adapted to be inserted into a tube which, through a radial expansion thereof, is adapted to be fixed to a tube plate; a pressurizing rod passing through said expansion medium; a pressurizing rod head provided at one end of said pressurizing rod; a back-up ring adapted to be supported by an end of said tube plate straddling a tube-receiving bore of said tube plate, said back-up ring being telescopically received by said pressurizing rod; and seal rings each disposed to abut respective ones of said end surfaces of said expansion medium, said seal rings being of an elastic material having a hardness greater than that of said expansion medium and telescopically received by said pressurizing rod, and at least one of said seal rings having a conical recess at its portion confronting the end surface of said expansion medium.

4,068,373

COMPONENT INSERTION MACHINE

Terry Lee Bell; Lyle G. Call, both of Boulder; George Omer Dillan, Longmont; James Phillip Jackson, Jr., Longmont, and Larry Albin Johnson, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1976, Ser. No. 730,496
Int. Cl.[2] H05K 3/30
U.S. Cl. 29—741 5 Claims



1. Apparatus for inserting different size circuit modules into a circuit board, each of said circuit modules having two or more leads emerging from a first side thereof, said modules to be inserted into a circuit board;

a number of positionable module-containing magazines, each of said magazines containing a stack of essentially identically dimensioned modules positioned with their leads parallel with each other;

a table supporting said magazines and being movable transverse to direction of module feed within said magazines;

the improvement including in combination:

a loading driver having an upper actuating end and a lower pushing end;

a friction block guide extending parallel to the direction of module feed and disposed above said movable table;

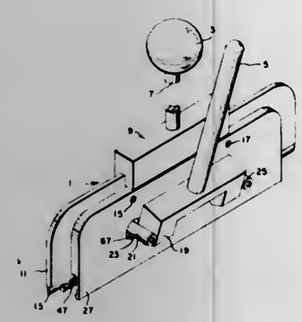
a friction slide block in said guide for pivotably supporting said loading driver such that said loading driver is pivotable between a module engaging position and a retracted noninterferring position.

4,068,374

TOOL FOR REMOVING AND INSTALLING CONNECTOR

James Ray Coller, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 27, 1976, Ser. No. 754,308
Int. Cl.[2] H01R 43/00
U.S. Cl. 29—747 11 Claims



1. A tool for removing and installing a connector housing within which is disposed a row of elongated resilient connector pairs, wherein each of the connectors of a pair is anchored at one end in a circuit board and is provided with closely spaced confronting contact portions distal from the board, said connectors abutting an adjacent wall of the housing at a location spaced from the contact portions,

said tool comprising wedge means including a wall member terminating at one end in a wedge tip for insertion between the contact portions of the connectors and a handle member at the opposite end, a pair of gripping elements mounted on one of said members for movement to engage the opposite walls of the housing between them while the wedge tip extends between the contact portions to remove said housing from the connectors while rocking it relative thereto, and

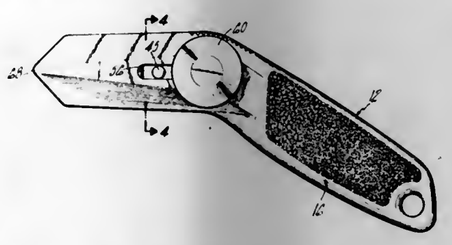
camming means movably mounted on said tool for moving said gripping elements to engage said walls of the housing.

4,068,375

HEAVY DUTY RETRACTABLE BLADE UTILITY KNIFE

Richard H. Rathbun, Oakdale, and Robert F. West, Simsbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Dec. 8, 1976, Ser. No. 748,510
Int. Cl.[2] B26B 5/00
U.S. Cl. 30—125 4 Claims



1. A retractable blade utility knife having a blade receiving opening through one end thereof and comprising a pair of elongated mating handle halves separable along a plane generally extending longitudinally of the knife, a blade carrier having a base for supporting a blade thereon, said blade carrier being mounted between the handle halves for reciprocable movement toward and away from the blade receiving opening to shift a blade mounted thereon between an exposed and sheathed position, one of said handle halves providing a pair of spaced longitudinally extending lands defining a first longitudinal slot, the other of said handle halves defining a mating second longitudinal slot, a blade carrier having a finger piece and a carrier base with an offset extension connected to the carrier base by a necked portion, said necked portion being positioned in said first longitudinal slot with said extension and said base of the blade carrier being disposed on opposite sides of said lands to straddle the same, said finger piece being exposed through said second longitudinal slot and secured to the other of said handle halves for reciprocable movement therein, said finger piece further being secured to said extension thereby to secure the handle halves in assembled relation.

4,068,376

FLEXIBLE CUTTING LINE AND ROTOR THEREFOR

Jack Briar, Gardner, Kans., assignor to Allied Industries of Kansas, Inc., Gardner, Kans.

Filed Oct. 26, 1976, Ser. No. 735,834
Int. Cl.[2] B26B 27/00
U.S. Cl. 30—276 10 Claims

10. In combination, a rotor and a cutting line for a flexible-line lawn trimmer having a drive shaft, said combination comprising:

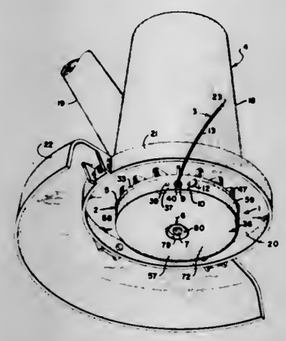
a. a body having a peripheral portion and an axial central portion;

b. means for connecting the central portion of said body with the drive shaft of said lawn trimmer whereby said rotor body is bodily rotated;

c. an entry opening and an exit opening; said exit opening being positioned generally radially through the peripheral portion of said body;

d. means communicatively joining said entry and exit openings with an angular relationship therebetween;

e. a flexible cutting line threaded through said entry and exit openings and having an enlarged end and a free end; said enlarged end being adjacent to and outwardly of said entry opening, abuttingly engaging said body, and separably anchoring said flexible cutting line in said body; said



free end extending outwardly of said exit opening and being of suitable length for cutting vegetation in response to rotor rotation;

f. said entry and exit openings are positioned apart and at an angular relationship;

g. said means communicatively joining said entry and exit openings comprises an elongate passageway within said body, said elongate passageway having an entry portion and an exit portion extending into said body from the entry and exit openings respectively and a curved portion connecting said entry portion and exit portion of said elongate passageway and permitting a cutting line free end to be inserted into said entry opening and move through said elongate passageway and out the exit opening to extend therefrom with the enlarged end abutting said body at the inlet opening.

4,068,377

ROTARY CUTTING ASSEMBLY

Richard L. Kimmel, 1402 Lawrence Lane; Walter B. Kamp, 206 Bellevue Blvd. South, both of Bellevue, Nebr. 68005, and Alvin L. P. Aasgaard, III, 3623 Armbrust, Omaha, Nebr. 68124

Filed Aug. 9, 1976, Ser. No. 712,507
Int. Cl.[2] B26B 27/00; A01D 55/18
U.S. Cl. 30—276 13 Claims

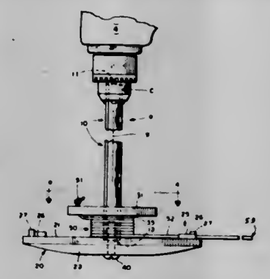
1. Rotary cutting assembly for cutting vegetation with whirling filament and comprising:

A. An elongate lineal shaft extending along a vertical-axis, the longitudinally extending shaft having a bottom-end and also a top-end for removable insertion into a portable manually-held chuck whereby the shaft is powerably rotatable about its vertical-axis;

B. A disc-like base-plate co-rotatably associated with the shaft and located at the shaft bottom-end, said base-plate including a peripheral-edge lying within a horizontal plane and with the shaft at the substantial geometric center of said base-plate, the base-plate including a pair of transversely extending surfaces including a lower-surface and an upper-surface;

C. A convolute supply of filament surrounding the shaft vertical-axis and located immediately adjacent a transverse surface of the base-plate, successive leadward portions of said filament supply being horizontally drawable radially outwardly from the vertical-axis and outwardly beyond the base-plate peripheral-edge for cutting vegetation as the shaft rotates;

D. At least one retainer means attached to the base-plate for



removably securing a leadward filament portion to the base-plate, the said at least one retainer being located nearer the base-plate peripheral-edge than to the longitudinal vertical-axis;

E. Axial confinement means for maintaining the stored convolute filament longitudinally confined with respect to the base-plate; and

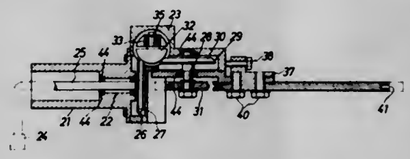
F. Gravimetric balancing means to ensure that the center-of-mass for the combination of base-plate, retainer means, and axial confinement means is located substantially at the shaft vertical-axis.

4,068,378

PORTABLE CHAIN SAW

Tashiro Arai; Masaaki Sato, and Eiji Kobayashi, all of Tokyo, Japan, assignors to Nippon Kuatsu System Co., Ltd., Tokyo, Japan

Filed June 23, 1976, Ser. No. 699,136
Claims priority, application Japan, June 26, 1975, 50-88751[U]; Nov. 28, 1975, 50-160092[U]; Dec. 5, 1975, 50-162857[U]
Int. Cl.[2] B27B 17/10
U.S. Cl. 30—382 9 Claims



1. A portable chain saw comprising a chain saw body, a power driven flexible shaft extending to said chain saw body, a chain saw cutter mounted on said chain saw body, and an overload protection means on said chain saw body interposed between said flexible shaft and said chain saw cutter such that the chain saw cutter is driven by said flexible shaft through said overload protection means, said overload protection means comprising a rotatable spherical member and a friction wheel operable to engage said rotatable spherical member, mounting means providing relative movement between said spherical member and said friction wheel, and biasing means urging said spherical member and friction wheel toward one another such that during normal load conditions power is transmitted through the frictional engagement between the spherical member and the friction wheel and upon encountering overload

conditions, slippage occurs between the spherical member and the friction wheel to interrupt the power transmission.

4,068,379

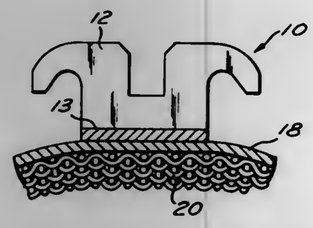
ORTHODONTIC APPLIANCE WITH POROUS TOOTH-ABUTTING FACE

Frank R. Miller, Azusa; Craig A. Andreiko, Pasadena, and Kenneth W. Premo, Fullerton, all of Calif., assignors to Ormco Corporation, Glendora, Calif.

Continuation-in-part of Ser. No. 779,056, March 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 677,412, April 15, 1976, abandoned. This application June 1, 1977, Ser. No. 802,011

Int. Cl.[2] A61C *7/00*

U.S. Cl. 32—14 A **16 Claims**



1. Apparatus for use in the practice of orthodontics by being fixed to a tooth by means of an adhesive comprising:

a base having

a. a first portion which is a mesh with cross-members which are bonded together at each point of intersection therebetween, said first portion having an outer tooth-contour conforming face and an inner face and

b. a second non-porous portion co-extensive with the said first portion; said first portion terminating in said second portion at the inner face of the mesh by a bond therebetween opposite each cross-member bond; and

an orthodontic appliance extending outwardly from the second portion remote from said first portion, whereby said adhesive enters the mesh-like tooth-abutting surface portion but does not pass through the base to reach the orthodontic appliance.

4,068,380

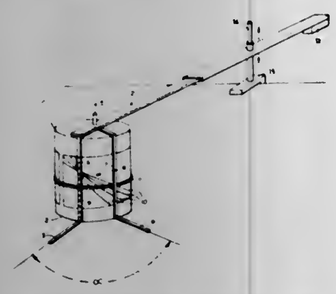
DEVICE FOR DIVIDING AN ANGLE

Willem van Spijker, Valeriusstraat 181 boven, Amsterdam, Netherlands

Filed June 24, 1975, Ser. No. 589,851

Int. Cl.[2] G01B *3/56*

U.S. Cl. 33—1 AP **6 Claims**



1. A device for dividing an angle into equal parts or into parts with a certain proportion with respect to each other comprising

a solid geometric figure having a surface,

an axis of said solid geometric figure perpendicular to the plane in which the angle to be divided is lying and adjustable to pass through the vertex of the angle to be divided,

a zero line, and additional lines corresponding to the number of angles into which the angle is to be divided described on said surface of said solid geometric figure with all of said additional lines passing through one point on said zero line,

a first radial means positioned at said zero line and adjustable for placement at one of the legs of the angle to be divided,

a rotating adjustable means to rotate around said axis to follow a said additional line,

said rotating adjustable means including an adjustable element extending in a plane perpendicular to said axis and slidable over said surface and thereby crossing said additional lines at points to designate placements of said rotating adjustable means to divide the angle into equal or proportional parts.

4,068,381

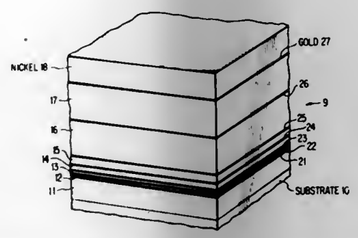
SCANNING ELECTRON MICROSCOPE MICROMETER SCALE AND METHOD FOR FABRICATING SAME

David B. Ballard, Derwood; Fielding Ogburn, Rockville, and John P. Young, Laytonsville, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Oct. 29, 1976, Ser. No. 736,987

Int. Cl.[2] H01J *37/26*; G01B *3/02*

U.S. Cl. 33—1 R **5 Claims**



1. A scanning electron microscope micrometer scale comprising:

a substantially nonmagnetic, corrosion resistant substrate;

a microscopically thin multilayer composite deposited on the substrate, said composite formed of a plurality of straight parallel layers of one substantially nonmagnetic, corrosion resistant metal interleaved with a plurality of straight parallel layers of another substantially nonmagnetic corrosion resistant metal, said two metals being of substantially different electron emission coefficients;

the layers of the one of said two metals having a uniform thickness of about 40–80 nm;

the layers of the other of said two metals having thicknesses ranging from about 1 μm near said substrate to many μm away from said substrate;

a cross sectional edge of said composite being ground and metallographically polished; and

a microscopic indentation placed in said substrate adjacent said deposited layers to define a reference region.

4,068,382

ANGLE TANGENT MICROMETER

Joseph E. Jankowiak, 2910 Culver Road, Rochester, N.Y. 14622

Filed Mar. 3, 1977, Ser. No. 773,928

Int. Cl.[2] B43L *7/00, 13/00*

U.S. Cl. 33—75 R **2 Claims**

1. A device

for converting between angular values and the corresponding tangential values, comprising

a protractor,

means mounting a cylindrical micrometer housing adjacent said protractor, said housing having on a portion of its outer peripheral surface a set of axially spaced graduations,

a reciprocable shaft projecting slidably from one end of said housing and extending over, and parallel to, a portion of at least one quadrant of said protractor,

said housing having a sleeve rotatably mounted thereon and operatively connected to said shaft to shift said shaft selectively in and out of said one end of said housing,

a pin carried by said shaft and having a pointed end overlying said protractor for movement by said shaft between a first limit position in which the pointed end of said pin registers with a line on said protractor corresponding to a zero angle on the protractor, and a second limit position in which said pointed end registers with a line denoting an angle of 45° on the protractor,

said graduations on said housing being calibrated to represent the corresponding tangential values of the angles included on the protractor between said zero and 45° designations,



said sleeve being mounted to reciprocate axially on said housing, when rotated in opposite directions thereon,

said sleeve being in one of its limit positions when the pointed end of said pin registers with the zero angle on said protractor, and is in the other of its limit positions when said pointed end registers with the 45° angle on said protractor,

one end of said sleeve registering with a graduation denoted as zero on said housing, when the sleeve is in said one, position, and registering with a graduation denoted as "1" on said housing, when said sleeve is in its other limit position,

a rod having a bifurcated end pivotally connected to said shaft by said pin, and

means supporting said rod intermediate its ends for pivotal movement about the center point of said protractor, and for sliding movement at right angles to axis of its pivotal movement, whereby when said shaft is reciprocated the angular position of said rod about said center point will have its corresponding tangential value represented by the graduation on said housing then in registry with said one end of said sleeve.

4,068,383

TAPE MEASURE REEL

Klaus Krebs, Neuenhain, Germany, assignor to Hoechstmass Balzer GmbH & Co., Frankfurt am Main, Germany

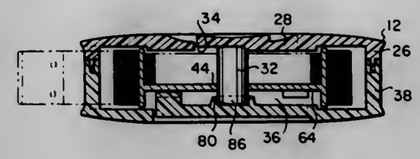
Filed Sept. 30, 1976, Ser. No. 728,131

Claims priority, application Germany, Oct. 9, 1975, 2545203

Int. Cl.[2] G01B *3/10*

U.S. Cl. 33—138 **9 Claims**

1. A tape measure comprising a hollow casing having first and second superimposed casing sections, said casing sections each including a resilient tongue, said tongue on said first casing section including an axial rod extending transversely of the casing to an end adjacent the tongue on the second casing section, a tape drum rotatably mounted within said casing and having an opening therein through which said rod extends, an elongated flexible tape secured to said drum and being normally wound thereon, and means in said casing operatively engaged with said drum for normally biasing said drum in a rotary direction for winding the tape on the drum, said drum and said tongue on the second casing section including cooperating means for normally holding said drum against rotation



and under the bias of said spring means whereby depression of the tongue on the first casing section towards the second casing section causes said rod to move the tongue on the second casing section away from the drum to disengage said cooperating means whereby the drum is free to rotate under the influence of the spring means to wind the tape thereon; said cooperating means comprising at least one stop on said drum extending therefrom towards said second casing section and a cooperating tooth on said tongue of the second casing section extending towards said drum and normally located in the path of travel of said stop during rotation of the drum.

4,068,384

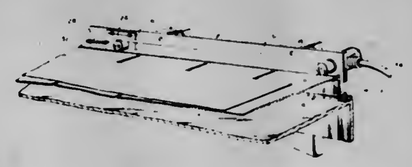
LINEAR POSITION MEASURING DEVICE

Josef K. Holy, and Alan R. Henderson, both of Carlsbad, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 12, 1976, Ser. No. 741,260

Int. Cl.[2] G01B *3/12, 5/04, 7/04*

U.S. Cl. 33—141 F **2 Claims**



1. A device for providing output signals indicative of the linear travel of a conveyor, said device comprising:

magnetic strips rigidly fastened along the length of the conveyor;

a support frame;

two pulleys;

a shaft encoder rotary measuring device fixedly mounted to said support frame, said rotary measuring device having an input shaft coupled to one of said pulleys and is adapted for providing output signals indicative of the rotation of said input shaft;

a plate slideably mounted to said support frame and rotatably mounting said other pulley;

an endless steel belt passing around said two pulleys; and

a spring connected between said plate and said frame whereby said belt is tautly maintained;

said support frame being disposed relative to said conveyor so that said belt is in contact with said magnetic strips; whereby

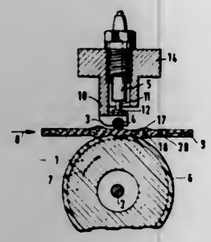
the output signals from said rotary measuring device are indicative of the linear travel of the conveyor.

4,068,385

APPARATUS FOR MEASURING THICKNESS DIFFERENCES IN RECORD CARRIERS, SUCH AS BANK NOTES AND THE LIKE

Wilhelm Mitzel, Neukaeferloh, Germany, assignor to G.A.O. Gesellschaft fur Automation und Organisation m.b.H., Germany

Filed July 12, 1976, Ser. No. 704,482
Claims priority, application Austria, July 15, 1975, 5470/75
Int. Cl.² G01B 7/06; B07C 5/08
U.S. Cl. 33—143 L **8 Claims**



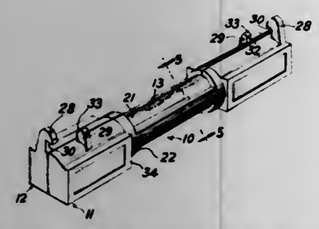
1. Apparatus for measuring thickness differences in record carriers, such as bank notes and the like, comprising, in combination, a roll mounted for rotation about an axis and having an elastic surface; a transducer defining a sensing axis mounted perpendicular to the axis of rotation of said roll and rigidly with respect to said roll axis; and a sensor mounted quasi-rigidly, with respect to said transducer, between said roll and said transducer and fixedly joined to said transducer; said sensor being so positioned that, in the quiescent condition of the arrangement without a record carrier being passed between said sensor and said roll, the spacing of said roll surface from said sensor is less than the smallest paper thickness to be measured.

4,068,386

LINE LEVEL

Walter E. Streeter, 3161 NW. 108th Drive, Coral Springs, Fla. 33065

Continuation-in-part of Ser. No. 713,187, Aug. 10, 1976. This application Feb. 1, 1977, Ser. No. 764,593
Int. Cl.² G01C 9/28
U.S. Cl. 33—369 **3 Claims**



1. A line level consisting of a first half and a second half each having a mating inner surface each said half consisting of a first end portion, an intermediate portion, and a second end portion, said first half and said second half in said intermediate portion having a curved inner surface in the shape of a part of a circular cylinder, said first end portion and said intermediate portion are defined by a first partition, and said second end portion and said intermediate portion are defined by a second partition, a level vial is disposed between said first half and said second half in said intermediate portion, said level vial resting between said first portion and said second partition, and between said curved inner surfaces of the said intermediate portions of said first half and said second half, said first end portion and said second end portion of said first half and said second half having flat outer surfaces on the bottom and outer sides thereof, said first and second portions have an outer surface portion defining a generally rectangular shape, at least one of said halves having an energy director flange formed on the inner surface for ultrasonic welding of said halves together, and a hook formed on one said end of said first half and a stop formed on the other said end of said first half and a hook and a stop formed on the opposite end portions of said second half whereby said line level can be supported on a line between said hooks and said stops, a first viewing port formed in the upper surface of each said half at said intermediate portion and a second viewing port formed in the lower surface of each said half at said intermediate portion.

4,068,387

SOLVENT DRYING OF CELLULOSE ESTER MEMBRANES

Philip Manos, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 6, 1976, Ser. No. 702,449
Int. Cl.² F26B 5/00
U.S. Cl. 34—9 **9 Claims**

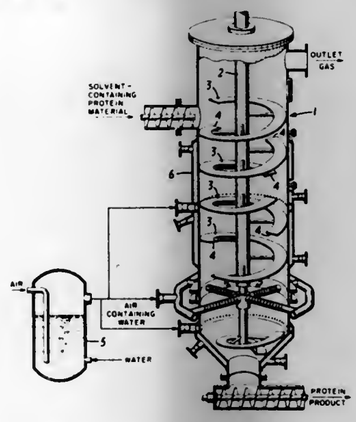
1. A process for drying water-wet, semipermeable cellulose ester membrane by contacting the membrane at a temperature of about from 0° to 50° C with volatile solvent having a boiling point below about 175° C to substantially completely remove water from the membrane, the volatile solvent (a) being inert to the membrane and the membrane wetting liquid and having (b) a solubility parameter not greater than about 8.4 cal. $^{\frac{1}{2}}cc.^{-3/2}$ and (c) a hydrogen bonding component of the solubility parameter not greater than about 2.5 cal. $^{\frac{1}{2}}cc.^{-3/2}$; and vaporizing the volatile solvent from the membrane.

4,068,388

PROCESS FOR REMOVING SOLVENT FROM PROTEINACEOUS MATERIAL

Tryggve Lund Knutsen, Asa Station, and Sven-Olof Osterman, Molndal, both of Sweden, assignors to Astra Protein Products AB, Sweden

Continuation-in-part of Ser. No. 502,902, Sept. 3, 1974, abandoned. This application Dec. 22, 1975, Ser. No. 643,302
Claims priority, application Sweden, Sept. 14, 1973, 7312533
Int. Cl.² F26B 3/00
U.S. Cl. 34—36 **13 Claims**



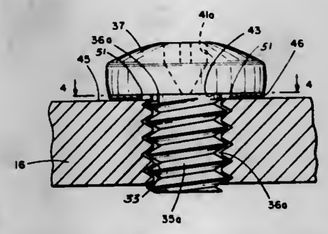
1. A process for evaporation of solvent from solvent-containing proteinaceous material which comprises continuously treating the protein material in a vertical column with countercurrently flowing humidified air in an amount of from 1.0 to 5.0 m^3 per kg. of treated protein material, the column being indirectly heated to a temperature below the temperature of the humidified air introduced and the humidified air having a temperature of from 40° C. to 90° C. and and a relative humidity of at least 50% such that enough energy is added for vaporization of the solvent at the same time as water is condensed from the humidified air and replaces the amount of solvent being vaporized.

4,068,389

GAS-DIFFUSION PLATE FOR FLUIDIZED BED APPARATUS

H. Kenneth Staffin, and Robert Staffin, both of Colonia, N.J., assignors to Procedyne Corporation, New Brunswick, N.J.

Filed Apr. 15, 1976, Ser. No. 677,466
Int. Cl.² F26B 17/00
U.S. Cl. 34—57 A **4 Claims**



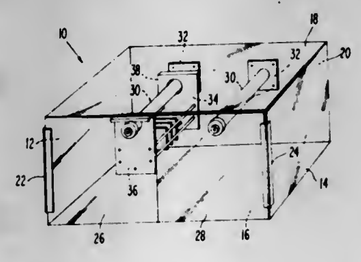
1. A fluidized bed reactor including a diffusion plate, said plate having a plurality of ports therethrough to provide for a plurality of flows of gas through said ports from one side of said plate to the other side thereof, wherein each of said ports comprises a threaded hole, the crests of said threads being truncated, threaded means individual to each of said ports rotatably engaged with a respective one of the threaded holes for axial adjustment within the individual port to define with the respective threaded hole an adjustable helical path for said flow of gas through said plate, the threaded means defining, with the surface of said other side of said plate, passage means to discharge the gaseous flow from each of the ports in a laterally, outwardly-directed path, said threaded means comprises a plurality of machine screws, one individual to each port and each having a head and shank and a lock washer received over the shank, said washer having a plurality of circumferentially spaced resilient tangs to adjustably position and secure said head in spaced relation with the said surface of said other side of said plate to define a plurality of channels beneath said head for gaseous flow in a plurality of radially and outwardly directed, substantially horizontal, gaseous streams across said surface.

4,068,390

PHOTOMASK DRYER

Robert Andrew Geshner, Warren, N.J., and Louis Joseph Sciambi, Philadelphia, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1976, Ser. No. 718,805
Int. Cl.² F26B 21/00
U.S. Cl. 34—239 **12 Claims**



1. A photomask dryer comprising:

a. an enclosed box having at least one door;
b. at least one heated air distributor tube extending into said box from a wall thereof said at least one distributor tube having at least one opening within said box through which air may pass from said at least one distributor tube downward into said box;
c. filter means positioned within said at least one distributor tube for filtering and evenly distributing said air before said air leaves said at least one distributor tube within said box;
d. means external to said box for heating said air which enters said at least one distributor tube;
e. a rack adapted to be suspended from said at least one distributor tube and adapted to hold at least one photomask under said at least one opening whereby said at least one photomask placed in said rack will be positioned for drying beneath said at least one distributor tube, said rack being completely removable from said dryer.

4,068,391

REFRIGERATION SYSTEM DEMONSTRATION DEVICE

Richard Seymour Smith, North Syracuse, and Philip Abraham Hider, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 677,426, April 15, 1976, abandoned. This application Apr. 6, 1977, Ser. No. 785,190
Int. Cl.² G09B 25/02
U.S. Cl. 35—13 **13 Claims**



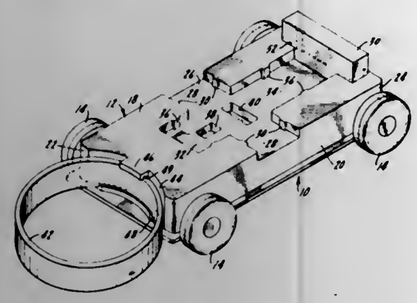
1. A demonstration device for demonstrating the operation of an actual refrigeration system, said device comprising:
display means comprising a display of a schematic representation of the actual refrigeration system, said representation including symbols of: heat exchange apparatus, apparatus for changing the pressure and temperature characteristics of the refrigerant, refrigerant flow lines, and apparatus for controlling the direction of refrigerant flow;
apparatus illuminating means associated with said display means for selectively illuminating said apparatus symbols;
refrigerant flow line illuminating means associated with said refrigerant flow line symbols for selectively illuminating said flow line symbols to simulate refrigerant flow and the phase state and temperature of the refrigerant; and
electrical control means for selectively simulating at least one mode of operation of the refrigeration system, said control means including:
first electrical circuit means for effecting energization of the apparatus illuminating means to illuminate the symbols of said apparatus corresponding to the apparatus energized when the actual refrigeration system operates in the simulated mode of operation; and
second electrical circuit means for effecting energization of the refrigerant flow line illuminating means to simulate the direction of movement of refrigerant in the flow lines and the phase state and temperature of the refrigerant in the flow lines corresponding to the actual direction of refrigerant flow and the phase state and temperature of the refrigerant, when the actual refrigeration system operates in the simulated mode of operation.

4,068,392

INTERACTION AND RELATIVITY CART

Marshall A. Montgomery, Napa, and Robert Karplus, Orinda, both of Calif., assignors to Rand McNally & Company, Skokie, Ill.

Filed Sept. 28, 1976, Ser. No. 727,457
Int. Cl.[2] G09B *23/08, 23/18*
U.S. Cl. 35—19 R **1 Claim**



1. A vehicle for use as an educational toy to demonstrate elastic interaction and magnetic attraction and repulsion, including a vehicle body, a pair of spaced axles journaled in said body, with each axle having a pair of wheels positioned on opposite ends thereof,

a magnet, a recess for positioning and supporting said magnet adjacent one end of said body, said recess being generally parallel to and positioned above one of said axles,

an elastic ring extending outwardly from the opposite end of said body and positioned to contact an obstruction ahead of said body when the vehicle is moved toward an obstruction, means on said body for removably positioning and supporting said ring including a curved recess formed on said vehicle body and latch means integral with said body and positioned on opposite sides of said curved recess,

and a general centrally disposed recess in said body for use in supporting and positioning a replica of a human figure for demonstration purposes.

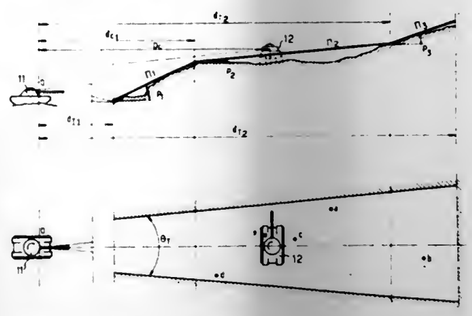
4,068,393

PROJECTILE FIRING TRAINING METHOD AND DEVICE

Vsevolod Tararine, 6, rue Daumier, Paris, France (75016), and Jacques Hubert, 7, rue Parmentier, Asnieres, France (92600)

Continuation-in-part of Ser. No. 605,554, Aug. 18, 1975, abandoned, which is a continuation of Ser. No. 517,770, Oct. 24, 1974, abandoned, which is a continuation of Ser. No. 374,079, June 27, 1973, abandoned. This application Aug. 9, 1976, Ser. No. 712,830
Claims priority, application France, June 27, 1972, 72.23118
Int. Cl.[2] F41G *3/26*
U.S. Cl. 35—25 **15 Claims**

1. A method of gunnery training including the simulation of the firing of a projectile from a gun up to and including the point of impact of the fired projectile which comprises optically representing the trajectory of said projectile as a function of the aiming of the gun and of reference data which includes a reference line of sight from the gun to the target and the distance to the target from the gun; determining the point of impact of said projectile as defined by its simulated intersection with simulated terrain data which defines at least three ground planes perpendicular to the vertical plane containing the line of sight, said ground planes located respectively around the target, in front of the target, and behind the target, with respect to said gun; and providing an optical indication of said point of impact, with said optical indication being shown either as a visible or hidden impact depending on the position of the point



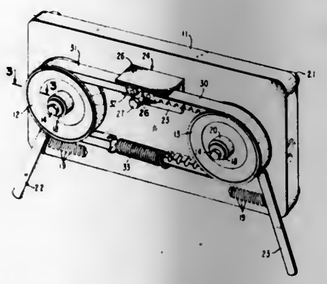
of impact on the ground planes with respect to the target outline.

4,068,394

V-BELT DEMONSTRATOR DEVICE

Waldo A. Sanna, and Carl A. Sand, both of Cincinnati, Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 8, 1977, Ser. No. 785,159
Int. Cl.[2] G09B *25/00*
U.S. Cl. 35—50 **10 Claims**



1. A device for demonstrating coefficient of friction of a V-belt comprising a pair of aligned grooved pulleys; an assembly consisting of two dissimilar V-belt segments, a connector securing one end of each segment together, and a tension member securing the other end of each segment together; said assembly passing around said pulleys so that each segment engages a different pulley, and means for rotating each of said pulleys to apply frictional forces to said segments whereby the comparative slippage between each pulley and its corresponding segment provides an indication of the relative frictional characteristics of said segments.

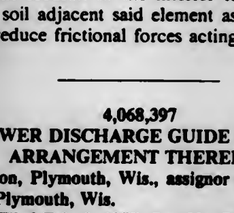
4,068,395

SHOE CONSTRUCTION WITH UPPER OF LEATHER OR LIKE MATERIAL ANCHORED TO INNER SOLE AND SOLE STRUCTURE SEALED WITH FOXING STRIP OR SIMULATED FOXING STRIP

Jonas Senter, 910 Fifth Ave., New York, N.Y. 10011

Continuation of Ser. No. 555,612, March 5, 1972, abandoned. This application Sept. 9, 1976, Ser. No. 722,055
Int. Cl.[2] A43B *00/00*; A43C *13/08*
U.S. Cl. 36—83 **4 Claims**

1. An article of footwear (10) having a sole structure that comprises an outer sole (12) of rubber material, an inner sole (17) placed inside the footwear upon said outer sole, an upper (11) of leather or like material that is difficult to be bonded to rubber, such as the outer sole, and an outer member (16) disposed about said outer and said inner soles, on the one hand, and said upper on the other; a separate intermediate strip (15) positioned between said outer member and said upper, said intermediate strip (15) being substantially coextensive with said outer member to form a contact surface boundry therewith, said strip being of a textile material readily bondable both to the leather material of said upper and to the rubber material of said outer sole and affixed to a lower peripheral edge (13) of



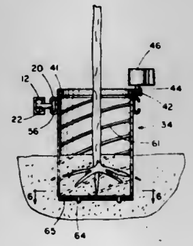
said upper, adjacent the upper edge of said strip, and lasted with its bottom edge into said inner sole; said intermediate strip in cooperation with said outer member forming a common connection between said outer and said inner soles and said upper, whereby said strip provides a substantially vertical contact surface for bonding with said outer member and extending upwardly to overlie and be secured to a part of said upper.

4,068,396

MACHINE FOR UPROOTING TREE STUMPS AND TREES

Harvard H. Langguth, 12111 Marlowe Drive, Garden Grove, Calif. 92641

Filed Jan. 5, 1977, Ser. No. 756,846
Int. Cl.[2] A01G *23/06*
U.S. Cl. 37—2 R **7 Claims**



6. In a tree-balling machine which comprises a cylindrical shell having means at one end to cut an annular trench in the soil, means supporting said shell for rotation and means to rotate said shell, the improvement which comprises at least one helical element secured to the interior face of the shell to compact the soil adjacent said element as the trench is cut, whereby to reduce frictional forces acting between the shell and soil.

4,068,397

SNOWBLOWER DISCHARGE GUIDE AND CONTROL ARRANGEMENT THEREFOR

Roger J. Bacon, Plymouth, Wis., assignor to Gilson Brothers Company, Plymouth, Wis.

Filed Feb. 2, 1977, Ser. No. 766,057
Int. Cl.[2] E01H *5/04*
U.S. Cl. 37—43 R **10 Claims**

1. A power snowthrower comprising, in combination,

a handle,

a snow collector assembly including a housing and a snow collector disposed within said housing,

a frame assembly connecting said snow collector housing and said handle,

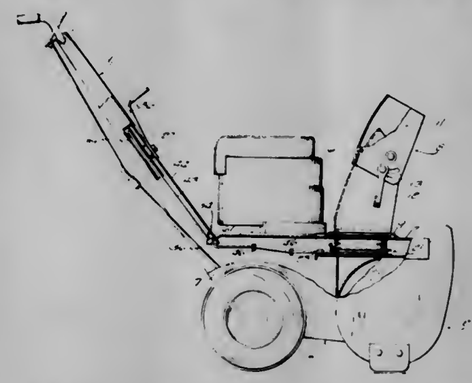
an engine,

a portion of said frame assembly extending generally horizontal and forming a base and having said engine attached thereto,

means defining a generally vertically extending outlet tube in said snow collector housing and communicating with the interior of said housing so that snow collected therein by said collector assembly is directed for discharge through said outlet tube,

said base extending over said tube outlet and including means defining an opening which registers generally with said tube outlet,

a flange assembly positioned around said tube outlet and supported for rotatable movement relative to said tube outlet,



a discharge guide assembly adapted to direct snow passing therethrough laterally of said snowthrower,

means attaching said discharge guide to said base at said opening for support of said discharge guide on said base and for rotatable movement of said discharge guide relative to said opening,

means defining a driving connection between said discharge guide and said flange assembly,

a control lever,

means supporting said control lever on said handle for pivotal movement relative to said handle,

and flexible cord means extending along said handle and frame assembly from said lever to said flange assembly for transmitting pivotal movement of said lever to said flange assembly so that pivotal movement of said lever is translated into rotational movement of said flange assembly and through said drive connection to said discharge guide.

4,068,398

KNOCKDOWN SIGN ASSEMBLY

Dominick Parisi, Park Ridge, Ill., assignor to Spanjer Brothers Inc., Chicago, Ill.

Filed June 21, 1976, Ser. No. 698,485
Int. Cl.[2] G09F *1/00*
U.S. Cl. 40—607 **3 Claims**

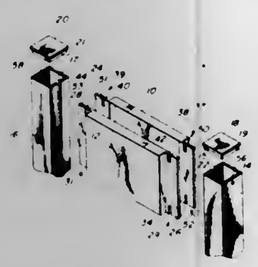
1. In a knockdown sign assembly having posts which are hollow and open at the top and spaced a predetermined distance apart with a display panel having a flange at each end thereof for engaging each of said posts in support therebetween, the combination with said sign assembly of:

a. a bottomed slot in each of the mutually facing walls of said posts extending downwardly from and opening to the top thereof and engaging a respective one of the panel end flanges therein;

b. bottom slip-joint means comprising a slot at the bottom of each flange for engaging the wall of the respective post at the bottom of the bottomed slot therein, said slip-joint slot

having a width slightly greater than the thickness of the post wall;

c. a cap for each post having a shouldered pilot inserting in each of the open tops thereof;



d. a top slip-joint means comprising a groove in the bottom surface of each of said caps engaging with a tongue at the top of each of said flange members; and

e. a fastening means for securing the caps on their respective posts.

4,068,399

APPARATUS FOR USE IN LONG-LINE FISHING

Kolbjorn Bjorshol, 6560 Langoyneset, Norway

Filed May 13, 1976, Ser. No. 686,099

Claims priority, application Norway, May 16, 1975, 751750

Int. Cl.² A01K *79/00*

U.S. Cl. 43—4.5 **5 Claims**



1. An apparatus for use in long-line fishing, comprising at least one fishing hook store adapted for individual advancing of fishing hooks, at least one passage adapted to advance a series of snoods each attached to a fishing line and provided with a snood head and at least one blow device, each adapted to force a fishing hook neck into secured engagement with a snood head.

4,068,400

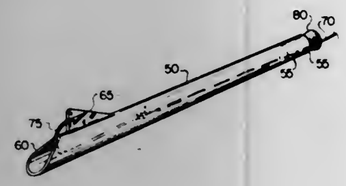
FISHING DEVICE

Horace S. McCoy, 11203 Lanewood Circle, Dallas, Tex. 75218

Filed Jan. 12, 1976, Ser. No. 648,101

Int. Cl.² A01K *97/00*

U.S. Cl. 43—53.5 **5 Claims**



1. An improved fishing device for attachment to a fishing line having a hook at one end thereof, said device comprising:

an elongated hollow member open at both ends and having at least one hole in its wall for providing frictional engagement between said line and said member when said line is threaded through said at least one hole;

at least one notch, with a generally pointed deep end formed in one end of said hollow member; and

at least one fin projecting outward from said hollow member,

said notch having said fin associated therewith with the fin being longitudinally displaced from the deep end of the notch.

4,068,401

SELF-POWERED TOY ANIMAL

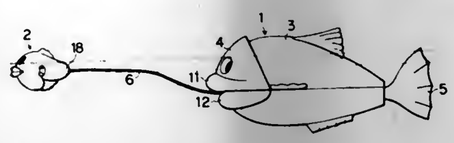
Shigeru Saitoh, Tokyo, Japan, assignor to Masudaya Toy Company Limited, Tokyo, Japan

Filed July 19, 1976, Ser. No. 706,525

Claims priority, application Japan, Aug. 19, 1975, 50-114212[U]; United Kingdom, May 6, 1976, 18644/76

Int. Cl.² A63H *23/10, 14/02*

U.S. Cl. 46—92 **7 Claims**



1. A toy comprising:

a floatable and relatively small toy animal;

a floatable and relatively large toy animal having a generally hollow interior and an openable mouth;

a reel in said interior;

a paddle projecting from said large animal and movable to displace said large animal in a liquid;

a line having one end attached to said small animal and another end attached to said reel, said line passing through said mouth and being windable on said reel; and

drive means including a spring windup mechanism in said interior attached to said reel and to said paddle for winding said line around said reel to pull said small animal into said interior through said mouth and to oscillate said paddle and thereby displace said large animal in a liquid in which same is floating.

4,068,402

TOY VEHICLE AND TRACKWAY

Yutaka Tanaka, Urawa, Japan, assignor to Toytown Corporation, Tokyo, Japan

Filed Nov. 30, 1976, Ser. No. 746,195

Int. Cl.² A63H *19/10*

U.S. Cl. 46—216 **6 Claims**

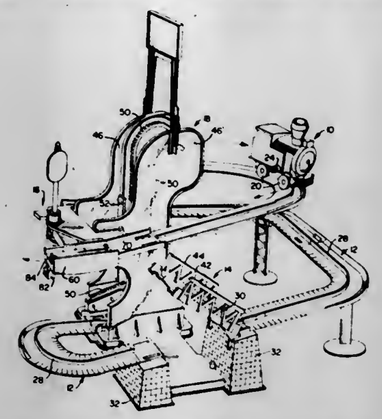
1. An amusement device, comprising:

a vehicle provided with wheels freely mounted for rotation, first driven gears mounted for rotation and a second stationary gear mounted concentrically with respect to one of said first gears; and

a trackway against which said wheels of said vehicle rest and provided with guide means for directing said vehicle therealong, and including:

a first section terminating at a first end, a second section beginning at a second end, a carrier for said vehicle, means mounting said carrier to rotate between said first and second ends of said first and second sections, and spring means normally urging said carrier into abutting relationship against said first end such that as said vehicle leaves said first end entering said carrier said vehicle and said carrier are rotated to said second end of said second section at which time said vehicle leaves said carrier entering said second end of said second section, and

a third section terminating in a third end, an upstanding tower positioned at said third end, said tower having upstanding side portions provided with first continuous racks positioned to be engaged by said rotating first gears of said vehicle to propel said vehicle upwardly along said side portions of said tower, one of said side portions also being provided with a second rack spaced apart from said first rack and positioned to be engaged



by said second stationary gear of said vehicle to cause said vehicle to rotate about said second gear simultaneously while moving upwardly along said side portions of said tower, and a fourth section terminating in a fourth end located in the vicinity of the uppermost portions of said first racks such that as said vehicle leaves said tower it enters said fourth section.

4,068,403

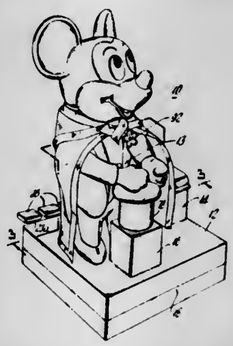
FINGER OPERATED MAGICIAN SIMULATING ANIMATED TOY

Hal Weiser, New York, N.Y., assignor to Durham Industries, Inc., New York, N.Y.

Filed Nov. 12, 1976, Ser. No. 741,189

Int. Cl.² A63H *33/26, 11/00*

U.S. Cl. 46—241 **13 Claims**



1. An animated toy device comprising an animal figure simulating upright body member including a first arm member supported proximate its inner end for swinging between a raised position and a lowered forwardly downwardly extending position, manually operable first actuating means for swinging said arm member between its raised and lowered positions, a permanent magnet carried by said arm member proximate its outer end, an article at least partially formed of a magnetic material and means for removably supporting said article proximate said magnet when said arm is in its lowered position.

4,068,404

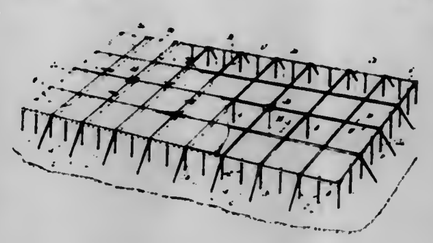
SHADE-PRODUCING STRUCTURE AND METHOD

Robert T. Sheldon, P.O. Box 486, DeLeon Springs, Fla. 32028

Filed Dec. 17, 1975, Ser. No. 641,622

Int. Cl.² A01G *13/02*

U.S. Cl. 47—26 **20 Claims**



1. A shade producing structure comprising a shade cloth supported on uprights above a land area and including cables above the shade cloth to prevent excessive billowing thereof, a hold down restraint for said shade cloth comprising anchor means fastened to the land within the shade structure, a hold down cable attached at its lower end to the anchor means and passing upwardly through the shade cloth and means on the upper end of said hold down cable slidably engaged to at least one of said cables above said shade cloth.

4,068,405

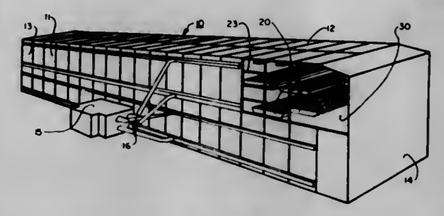
AUTOMATIC FOOD PLANT PRODUCTION

Joseph W. Campbell, Glendale, and Ralph Siebert, La Canada, both of Calif., assignors to Joseph W. Campbell, Glendale; Ralph Siebert, La Canada and Harry R. Highkin, Sherman Oaks, all of Calif.

Filed Sept. 11, 1975, Ser. No. 612,307

Int. Cl.² A01G *31/00*

U.S. Cl. 47—65 **2 Claims**



1. An environmentally controlled growing chamber comprising;

a substantially closed elongated chamber;

means for supplying selected gaseous atmosphere to the chamber to support growth of the plants therein;

lamp means positioned to radiate over a longitudinally extending region within said chamber;

a plurality of plant holding means;

means for transporting said plant holding means through said longitudinally extending region to expose plants therein to illumination through said lamp means;

said transport means including continuous conveying means including end sprockets journaled about generally horizontal axes for reversing the direction of the plant carrying means to transport the plant carrying means through said illuminated longitudinally extending region and retrace through a region of lesser illumination;

said chamber including a work station located adjacent to one of said end sprockets from which all manual plant tending may be performed on plants in said plant carrying means as the plants move around said end sprocket between said regions;

whereby a worker at said work station has access to all plants in the said plant carrying means during each cycle

of movement of said transport means and successive access to and ready view of the top of the foliage of the plant, the sides thereof, and the stem portion and planting soil as plants transverse the end sprocket region without the need of stooping.

4,068,406

SIDE CAMMING BALANCE SPRING LOCK

Edward H. Wood, Sanford, N.C., assignor to Jim Walter Corporation, Tampa, Fla.

Filed Aug. 19, 1976, Ser. No. 715,724
Int. Cl.[2] E05D *13/10, 15/22*
U.S. Cl. 49—181 8 Claims



1. A side camming balance spring lock for use in a jamb of a vertical channel window comprising, a block slidably positioned in each jamb and adapted to slide therein, said block having a cylindrical aperture therethrough extending from a back to a front surface of the block, a cylindrical shaft having an annular collar at one end of the same bearing against the back surface of the block and "U" shaped notch extending from the other end of the shaft and exposed on the front surface of the block, said shaft having at least one flat surface extending axially of the block and intermediately the extent of the shaft, a first recess in the block extending from the top of the block to the cylindrical aperture, a second recess in the block extending from a side surface of the block to the cylindrical aperture, a camming member slidably mounted in the second recess and having a length longer than the second recess and adapted to be contacted by the flat and cylindrical surfaces of the shaft upon rotation of the shaft in the cylindrical aperture, a notched surface in the side of the first recess adapted to receive a clip to be connected to a balance spring, said "U" shaped notch in the shaft being adapted to receive a key attached to a sash which upon tilt of the sash from the jamb rotates the shaft to project the camming member out of the side of the block and against the wall of the jamb, and plug means removably mounted in the first recess to secure the clip in the notched surface of the recess and close the communication of the "U" shaped notch in the shaft of the block.

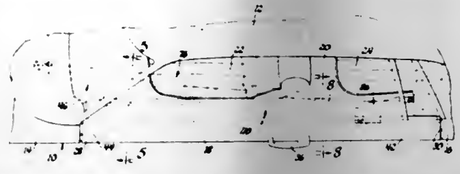
4,068,407

SLIDING VEHICLE DOOR

Edward G. Podolan; Francis C. Przybysz, both of Utica, and Thadius F. Jozefczak, Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1976, Ser. No. 728,552
Int. Cl.[2] E05D *15/10*
U.S. Cl. 49—215 3 Claims

1. Support and guide mechanism for a swingable and slidable door assembly of a vehicle adapted to cover a body opening defined between forward and rearward pillars and between an upper roof edge portion and a lower body edge portion, comprising: extended arm means attached to one end portion of the door and with a portion engaging a track formed in the vehicle body; said track extending along said opening and curving laterally inward at one end so that said one end portion of the door is located flush with an adjacent pillar portion of the body when in a closed operative position; a link arm supporting the other end portion of said door and mounted on the other pillar member; said link arm mounted for pivotal movement about a substantially vertical axis from a closed door position in which the link arm is in a generally fore and aft orientation to an open door position in which the link arm projects laterally outward from the vehicle body; first and second tracks formed in the vehicle door in a generally horizontal plane; said link arm having upper and lower projecting portions; a roller carriage member supported on the end of one of said projecting portions and mounted to permit rotation about a vertical axis; rollers supported by said carriage for rotation about both horizontal and vertical axes for engagement with one of said tracks in said door; a pair of spaced pivot and guide rollers mounted on the end of the other projecting portion of said link



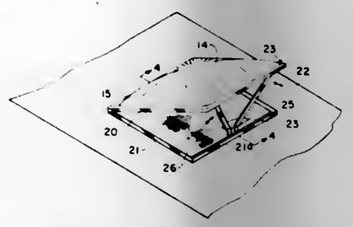
arm and pivotal about generally vertical axes; the first of said spaced rollers mounted in line with the axis of the projecting portion and the second of said spaced rollers being offset mounted so as to be spaced laterally outward from the first spaced roller when the link member is in a closed operative position whereby the first and second spaced rollers move into alignment with each other and the other of said door-mounted tracks as the pivotal link arm swings laterally outward from its closed door operative position; a cam plate supported by said door adjacent the end of said other door-mounted track and having curved guide surface extending in substantial horizontal orientation and opening to the other door-mounted track, said second spaced roller engaging said guide surface during swinging movement of said link arm from the laterally outward orientation of said second roller with respect to said first roller when the door is closed to the aligned orientation between said rollers and said other door-mounted track when said door is opening by movement of both rollers through said other door-mounted track.

4,068,408

VENT OPERATOR

Peter Fritz Hauber, Burbank, Calif., assignor to Reflectolite Products, Inc., Sun Valley, Calif.

Filed Mar. 8, 1976, Ser. No. 664,682
Int. Cl.[2] E05F *11/00*
U.S. Cl. 49—324 1 Claim



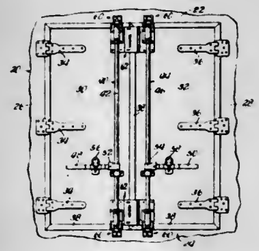
1. A closure assembly for recreational vehicles having an opening in the surface thereof comprising;
a closure cover;
means hinging said closure cover from one side thereof to overlie said opening;
an operator assembly including a unitary body portion affixed to said recreational vehicle at the side of the opening therein opposite the hinged side of the closure cover;
an operator shaft including a worm gear portion mounted for rotational movement within said operator assembly body portion;
operator arms engaging said operator shaft for arcuate movement thereby and engaging said cover to open and close said cover;
said body further defining a recess for receiving operator arms including access from said recess to opposite sides of said worm gear portion of said operator shaft;
said body portion further including an integral bridge portion extending across said recess and defining therein a bearing recess for said operator shaft and the outer surface of said bridge portion being a mounting surface of said body whereby loads from said closure cover are transferred via said operator arms to said shaft and to said operator body and the recreational vehicle through said bridge portion.

4,068,409

ANTI-RACKING MEANS FOR DOORS

Clarence E. White, Kenosha, Wis., assignor to White Welding and Mfg., Inc., Kenosha, Wis.

Division of Ser. No. 565,750, April 7, 1975, Pat. No. 4,014,138.
This application Dec. 27, 1976, Ser. No. 754,579
Int. Cl.[2] E05C *7/02*
U.S. Cl. 49—367 2 Claims



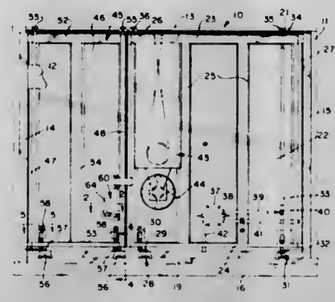
1. In an apparatus including anti-racking means for use with a door frame, a pair of doors vertically hinged to the frame and presenting free edges which are adjacently located when the doors are in closed position, and rotary bar door locking mechanism, said anti-racking means comprising a first bracket having a base portion secured to one of the doors and having a side portion adjacent the free edge of the door, a second bracket having a base portion secured to the other door and having a side portion adjacent the free edge of said other door, said side portions of said brackets being provided with interengageable means, said side portions of said backets being disposed in overlapping relationship when the doors are in closed position, and said interengageable means being interengaged when the doors are in closed position for reinforcing the doors and the door frame, the improvement comprising:
said side portion of a first of said brackets being formed with a vertically oriented tongue extending perpendicular to the plane of the one door, and a vertically oriented aperture; and said side portion of the second of said brackets being formed with a vertically oriented tongue extending perpendicular to the plane of the other door, and a vertically oriented aperture; said tongue of said first bracket being interengaged with said aperture of said second bracket, and said tongue of said second bracket being interengaged with said aperture of said first bracket, when the doors are in closed position.

4,068,410

RAILWAY CAR DOOR LOCKING MECHANISM

Walter J. Marulic, Gary, Ind., and Ray L. Ferris, Thornton, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Mar. 1, 1976, Ser. No. 662,494
Int. Cl.[2] E06B *3/42*
U.S. Cl. 49—370 5 Claims



1. In a railway car having a side wall provided with a door opening, first and second doors slidingly supported on said car and movable from a closed position over said opening to one side thereof to an open position,
door actuating mechanism on said first door including reciprocating bolt means for locking said first door in said closed position,
said second door including a vertically extending hollow side frame member at one edge thereof positioned in contiguous relation to said first door in the closed position thereof, the improvement comprising:
locking means for said second door including;
a locking bar supported within said hollow side frame member for vertical reciprocation;
a keeper supported on said car below said opening adapted to be engaged by said locking bar;
means for reciprocating said locking bar including a bell crank lever pivotally mounted on said second door, and having a vertical handle portion and a leg extending generally horizontally in the locking position of said locking means;
an actuating link pivotally connected to said second door and to said bell crank lever and to said locking bar and in the locking position of said locking means extending lengthwise diagonally downwardly from one end at said bell crank leg to its other end connection with said locking bar,
said one end of said actuating link including a slot and said pivotal connection of said leg to said link comprising a first pivot stud extending through said slot,
said stud being located in the locking position of said locking means at one end of the slot; and
said link having both ends bifurcated and respectively embracing said upper end of the locking bar and said leg for holding said link in operative relation to said leg and bar.

4,068,411

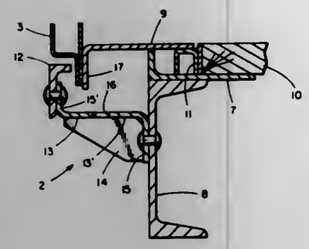
DOOR TRACK CONSTRUCTION

Donald C. Bodinger, Portage; Paul A. Tombers, Merrillville, and Richard C. Snyder, Michigan City, all of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jan. 17, 1977, Ser. No. 760,046
Int. Cl.[2] E06B *7/14*
U.S. Cl. 49—408 7 Claims

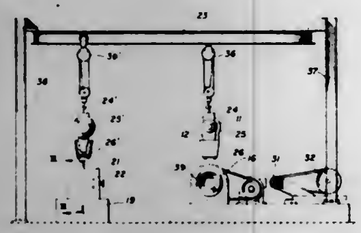
1. A railway box car having a wall including a door opening,
a side sill construction below said door opening including a longitudinally extending side sill,
a floor supported on said side sill,
a threshold plate supported on and projecting outwardly from said side sill,

a door supported on said car for sliding movement between open and closed positions relative to said door opening, the improvement of a door track construction positioned below said door comprising;
a track support including bracket means having a continuous horizontal web member extending the width of said door opening, and to one side thereof,
means connecting an inner side of said web member to said side sill,



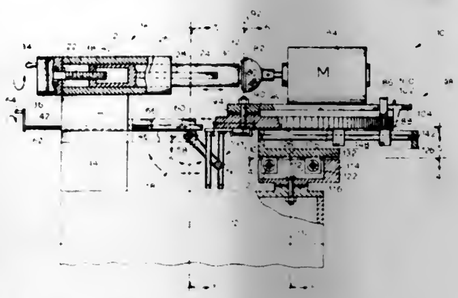
a door track coextensive with said web member,
means connecting an outer side of said web member to said track
said track member having an upper inwardly extending door supporting surface, and
a plurality of gusset members supported on said side sill and connected to said web members substantially throughout the length thereof.

4,068,412
GRINDING MACHINE
Edward C. Camp, Princeton; Ellsworth C. Enos, Holden, and Dennis Michael Bombara, Douglas, all of Mass., assignors to Cincinnati Milacron-Heald Corporation, Worcester, Mass.
Filed Nov. 12, 1976, Ser. No. 742,411
Int. Cl.² B24B *5/04, 41/06*
U.S. Cl. 51—5 D **3 Claims**



1. Grinding machine, comprising
a. a workpiece-holding chuck having a locating surface and having an open-ended container normally holding a low-temperature melting alloy in which a first portion of the workpiece is embedded with a second portion of the workpiece with a reference surface exposed on which the grinding operation is to be performed,
b. a workhead and a wheelhead mounted for relative controlled movement to perform the grinding operation, the workhead having a locating surface for engagement by the locating surface on the chuck, and
c. a setup head remote from the workhead having a locating surface exactly similar to the locating surface on the workhead and having a clamping means for engaging the said reference surface to hold the workpiece in the container in such a way that the locating surface of the chuck and the reference surface of the workpiece lie in a predetermined geometric relationship.

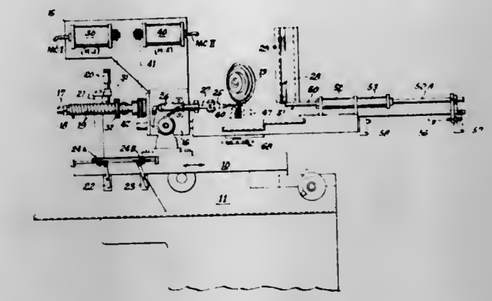
4,068,413
ADJUSTABLE LENS GRINDING APPARATUS
Jack M. Suddarth, 5551 18th, St. Petersburg, Fla. 33710
Filed Oct. 2, 1975, Ser. No. 619,041
Int. Cl.² B24B *9/14, 17/02*
U.S. Cl. 51—55 **30 Claims**



6. A lens grinding apparatus of a type having a chuck for securing a lens blank thereto and an abrading cup having an annular abrading surface thereon for sweeping through said lens blank during said abrading stroke, wherein an improvement in the apparatus for guiding said abrading cup during said abrading stroke comprises:
a first member for supporting said chuck and said lens blank secured thereto, said lens blank defining a plane generally perpendicular to an axis of said chuck;
a second member for movably supporting said abrading cup, said abrading cup having an axis of rotation centered therethrough and an annular abrading surface at the distended circumference thereof, with said abrading cup being spaced longitudinally from said chuck;
a guide having a cambered surface thereon and guide following means movably coupled to said guide for following along said guide during relative motion therebetween, said guide and said guide following means being operably interposed between said first member and said second member for guiding the sweep of said abrading cup through said lens blank during said abrading stroke; and
first means for changing the effective camber of said cambered surface of said guide, whereby said sweep of said abrading cup through said lens blank may be altered to provide a plurality of different lens surfaces.

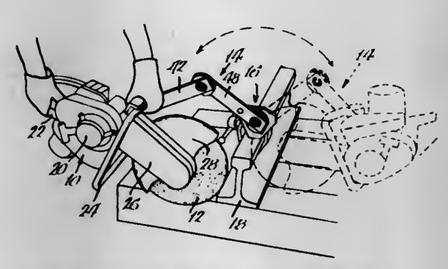
4,068,414
AUTOMATIC FLUTE GRINDING MACHINE
Charles Thomas Breitenstein, Elk Grove Village, and Allen Roland Holecek, Rockton, both of Ill., assignors to Spiral Step Tool Company, Elk Grove Village, Ill.
Continuation of Ser. No. 697,558, June 18, 1976, abandoned.
This application Apr. 22, 1977, Ser. No. 789,991
Int. Cl.² B24B *3/24*
U.S. Cl. 51—95 LH **20 Claims**

1. A machine for spiral grinding and fluting wherein a reciprocable carriage supports a rotary work spindle with automatic chuck and chuck-loading means, characterized in that separate pulse-activated motors respectively drive the carriage and spindle; a source of drive pulses for said motors; first circuit means including digitally presettable switch means operative to preset digital values representing the speed and direction of motor operation with means converting said values into binary motor pulsing values; second circuit means operative under control of the first circuit means to apply said binary pulsing values to each motor to produce directional and speed response thereof in accordance with the setting of said presettable switch means; third circuit means including further digitally-presettable ratio switch means operative to control the speed of said motors in desired ratio to govern spiral displacement of the chucked work piece relative to a tool with respect to which the carriage travels from a home position to an advanced working position; fourth circuit means operative responsive to a cycle start switch to initiate and conclude predetermined duty-cycle operation of said machine in accordance with setting of said presettable switch means in each of which



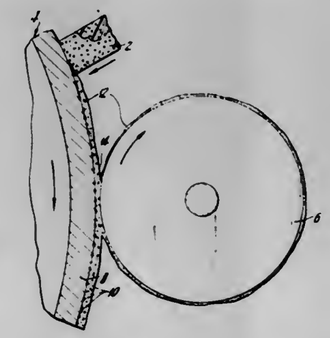
said carriage advances from said home to said advanced positions and returns to home position a predetermined number of times in each cycle and said spindle rotates a chucked work piece as aforesaid during at least a predetermined portion of the forward working pass of the carriage; fifth circuit means operative to preset the number of times said carriage will advance in working passes in each cycle, and to cause said chuck means to discharge the work piece at the conclusion of the last pass.

4,068,415
RAIL CUTTING APPARATUS
William P. McIlrath, Racine, Wis., assignor to Racine Railroad Products, Inc., Racine, Wis.
Filed Jan. 12, 1976, Ser. No. 648,749
Int. Cl.² B24B *23/02*
U.S. Cl. 51—178 **3 Claims**



1. In a rail cutting apparatus, the combination of:
a base adapted to be disposed on the head of a rail;
opposed, inwardly directed fingers on said base for disposition about the head of a rail, the finger(s) on one side of the base being movable toward the opposed finger(s);
means for applying a clamping force to said fingers to clamp said base to the head of a rail;
a pair of links having adjacent ends pivotally interconnected for relative rotation about an axis generally parallel to the direction of elongation of the head of a rail;
means pivotally connecting an end of one of said links remote from said adjacent end to said base for limited rotation about an axis parallel to said one axis;
a cutting tool pivotally connected to the end of the other link remote from said adjacent end,
whereby when said apparatus is clamped to a rail, said cutting tool may be swung to either side thereof to cut the rail without removing said apparatus from the rail;
said base being an open-ended tube; and further including an adapter plate adapted to be interposed between said base and a railhead to adapt said apparatus for cutting rail of differing weight; and means for selectively securing said adapter plate in
a. a first position against the underside of said base, and
b. a second position stored within said tube.

4,068,416
GRINDING WHEEL DRESSING METHOD
Phillip E. Bonnice, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio
Filed Dec. 20, 1974, Ser. No. 535,016
Int. Cl.² B24B *1/00*
U.S. Cl. 51—325 **9 Claims**



1. A method for dressing a bonded rigid, grinding wheel comprising the steps of (i) setting the wheel against a workpiece at substantially zero clearance, (ii) rotating the wheel and applying a wheel dresser comprising a multiplicity of abrasive crystals dispersed in a normally solid friction-meltable organic polymeric matrix to the moving surface of said grinding wheel whereby the matrix is melted and the crystals and melted polymer are spread on the surface of the wheel, and (iii) abrading said wheel surface having said crystals spread thereon against said workpiece to remove selected portions of the surface of said wheel, said steps (i) and (ii) being carried out in any order, sequentially or simultaneously.

4,068,417
FIRE VENT
Joseph R. Anghinetti, Kennebunkport, and Paul A. Couture, Emery Mills, both of Maine, assignors to Wasco Products, Inc., Sanford, Maine
Continuation-in-part of Ser. No. 341,780, March 15, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,808
Int. Cl.² E05F *15/20*
U.S. Cl. 52—1 **24 Claims**

1. A vent for a building comprising;
a fixed frame,
a movable frame adapted to fit within said fixed frame when in a closed position,
a panel means for insertion into said movable frame,
means for pivotally securing said movable frame to said fixed frame,
means for urging said movable frame to an open position,
latch means for maintaining said movable frame in the closed position,
means for releasing said latch means to permit said movable frame to move to its open position,
and means for limiting the open position of said movable frame including a pair of shock absorbers secured at oppo-

site ends to said fixed frame and movable frame respectively,

said fixed and movable frames each including spaced walls with the walls of the fixed frame facing the walls of the movable frame and being interdigitally arranged to form a



space between one wall of the fixed frame and one wall of the movable frame for accommodating the shock absorbers,

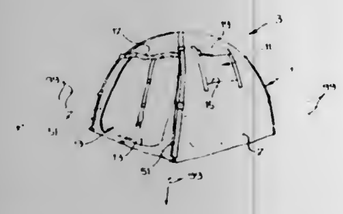
said means for urging not operable even though said releasing means is operable when the outside wind velocity is greater than a predetermined velocity.

4,068,418

COLLAPSIBLE SHELTER

Jean-Pierre Masse, 900 Tessier Street, Apt. 202, Sherbrooke, Quebec, Canada

Filed June 11, 1976, Ser. No. 695,198
Int. Cl.² E04B *1/34*
U.S. Cl. 52—2 **5 Claims**



1. A collapsible shelter having a flexible outer wall structure and an inflatable tubular armature structure fixed to said wall structure and capable, when inflated, of causing erection of said wall structure as well as collapse thereof when deflated, said armature structure being made of a plurality of structural rib members having, when inflated, a predetermined curvature, each of said structural members comprising:

an inner air-impermeable inflatable elastic tube and means, at the ends thereof, for closing said tube;

at least one outer non-expandible flexible sheath containing said inner tube snugly when the latter is inflated into said predetermined curvature, whereby to restrain its outward expansion and prevent it from rupturing,

wherein said sheath is formed from a pair of elongated strips of like sizes precut according to said predetermined curvature whereby to provide uniform stress concentration in said sheath when said inner tube is inflated, and

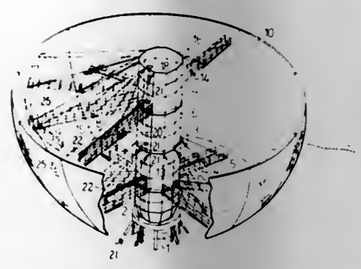
means joining said strips along the longitudinal edges thereof to form said sheath.

4,068,419

INSIDE SCAFFOLDING FOR LARGE METALLIC STRUCTURES AND METHOD OF USING SAME

Jean-Pierre Decoppet, Corseaux, Switzerland, assignor to General Dynamics Corporation, St. Louis, Mo.

Filed Feb. 4, 1976, Ser. No. 655,170
Claims priority, application Switzerland, Feb. 14, 1975, 1860/75
Int. Cl.² E04H *12/34*
U.S. Cl. 52—40 **3 Claims**



1. Removable scaffolding structure for constructing a spherical tank from metallic plates which comprises a free-standing central tower which is divided into a plurality of detachable sections that are aligned one section atop another and which tower contains equipment for the welding of the spherical tank, the lowermost section of said central tower being supported in base means that is fixed to the ground, each said detachable section being supported in turn upon the next lower section of said tower, radially extendable passageways connected to several of said tower sections by hinges at one end thereof, which passageways are each divided into at least two sections that are mutually displaceable, and stays connected to each of said passageways at a location spaced from said hinged end and to an upper location on said tower so as to support said passageways in working positions during welding operations in the construction of the spherical tank, said welding equipment including supply conduits for welding operations, which conduits are connected to corresponding plugs at the outside of the spherical tank structure through said base, connections between said supply conduits being made at each junction between said detachable sections and working connections to each of said supply conduits being provided as a part of each section of said tower which carries passageways, whereby after the completion of the welding operations, said passageways are pivotable about said hinges to be folded back to lie against said tower section to which each passageway is hinged, allowing each of said tower sections including the welding equipment contained therein to be withdrawn sequentially from the structure through an orifice of relatively small diameter which is left in the top of the spherical tank.

4,068,420

DEMOUNTABLE MULTIPLE LEVEL BUILDING STRUCTURES

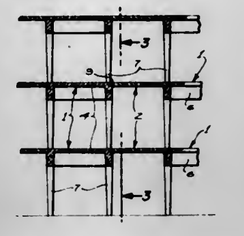
Edward K. Rice, Los Angeles, Calif., assignor to Unicon Parking Structures, Inc., Van Nuys, Calif.

Continuation of Ser. No. 93,097, Nov. 27, 1970, abandoned. This application Mar. 13, 1973, Ser. No. 340,663
Int. Cl.² E04B *1/348*
U.S. Cl. 52—79.9 **3 Claims**

1. A building floor structure, comprising:

a. slab set including a plurality of elongated supporting slabs

disposed is spaced relation and having supporting means thereunder, said supporting means for each supporting slab including a pair of longitudinal beams at the side margins thereof, and supporting legs at the extremities thereof, each supporting slab also having elongated side margins formed with supporting recesses; and a plurality of elongated supported slabs disposed between the supporting slabs and having elongated side margins resting in the recesses with edge surfaces of said supporting and supported slabs in abutting relation, the supporting and supported slabs being disposed in coplanar relation;



b. the supporting and supported slabs of the slab set having transversely extending tendon guideways terminating in registry at the side margins of the slabs between the upper and lower surfaces of the slabs to form continuous parallel guideways between the extreme slabs of the slab set;

c. a plurality of tensioned tendons slidably received and slidably maintained in each continuous guideway;

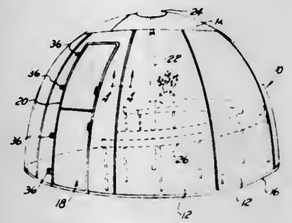
d. and means attached to the extremities of each tendon and bearing against the extreme slabs of the slab set to maintain distributed tension force in the tendons and distributed transverse compression force through and between the slabs.

4,068,421

FRAMELESS SHELTER FOR SUNLIT ENCLOSURES SUCH AS GREENHOUSES, SOLARIUMS AND POOL SHELTERS

John M. Marovich, 1564 Welling, Troy, Mich. 48084

Filed Oct. 1, 1976, Ser. No. 728,613
Int. Cl.² E04B *1/32*
U.S. Cl. 52—80 **11 Claims**



1. A frameless hemispherical structure of rigid translucent plastic material comprising:

a lower tier consisting of a first plurality of adjacent congruent truncated segments of a sphere, each segment having substantially U-shaped integral concave lateral edge channels which overlap and nest within the opposite edge channel of the adjacent panel to form a first series of depressions which extend throughout the vertical length of the lower tier and are uniformly spaced therearound;

an upper tier consisting of a second plurality of congruent hemispheroidal segments having substantially U-shaped integral concave lateral edge channels which overlap and nest within the edge channels of adjacent panels to form a second series of depressions which extend the vertical length of the upper tier and are uniformly spaced thereround;

all of said panels in said first and second pluralities having a common uniform compound radius of curvature;

the upper edge of the lower tier panels and the lower edge of the upper tier panels also having substantially U-shaped integral concave channels which overlap and nest within one another to form a continuous horizontal depression which encircles the structure and is contiguous to both the first and second series of spaced depressions;

the number of panels in the lower tier being greater than the number of panels in the upper tier;

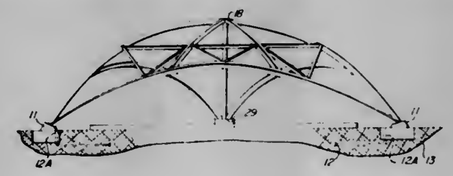
and fastener means sealingly disposed through the panels in the depressions to secure the structure together.

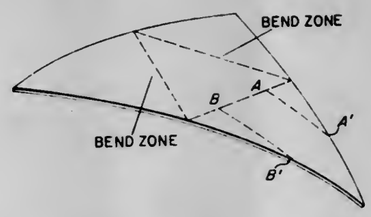
4,068,422

ROOFING FOR DOMICAL SHELL STRUCTURE

John S. Sumner, 728 N. Sawtelle, Tucson, Ariz. 85716

Continuation-in-part of Ser. No. 544,766, Jan. 28, 1975, abandoned. This application Mar. 2, 1976, Ser. No. 663,191
Int. Cl.² E04B *1/32*
U.S. Cl. 52—80 **9 Claims**





1. A domical structure comprising:

a plurality of bases,

a first plurality of arcuately shaped beams each carried on at least one end by a different one of said bases and extending therefrom in a substantially vertical plane,

a first means for connecting said first beams at the apex of said structure,

a plurality of arcuately shaped edge beams supported on adjacent bases and extending upwardly and outwardly therebetween to define the perimeter of said structure,

a second plurality of arcuately shaped beams carried on at least one end by one of said edge beams and at their other ends by said first means at the apex of said structure,

said second plurality of arcuately shaped beams being spaced around the domical structure between each of said first plurality of arcuately shaped beams,

said first and second plurality of beams and said plurality of edge beams being arcs of great circles and forming a structural framework defining spherical triangular openings,

said spherical triangular openings each having a corner of said triangles at the apex of said domical structure, and

a domically shaped covering for the structure comprising a plurality of originally flat panels each of a curved triangular configuration the edges of which lie on the arcuate beams of said framework in edge to edge assembly around

said structure and each panel covering one of said curved triangular openings formed together a dome-like outer configuration,

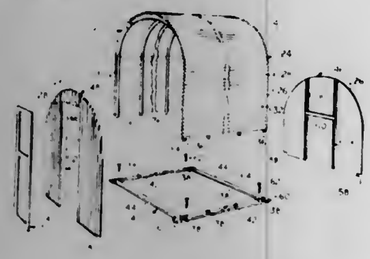
each of said panels being formed by three curved substantially isosceles triangles formed in the corners of each spherical triangular opening together with an interconnecting plane triangle.

4,068,423

SIMPLIFIED GREENHOUSE STRUCTURE SUITABLE FOR MASS PRODUCTION AND FIELD ASSEMBLY

Edwin R. Marsh, 2523 1/2 Tacoma Ave., Tacoma, Wash. 98402

Filed Mar. 1, 1976, Ser. No. 584,720
Int. Cl.[2] E04B *1/32*
U.S. Cl. 52—86 8 Claims



1. A greenhouse, rapidly made in initially flat subassemblies, preferably at a factory site, then easily handled and transported to an erection side, while flat, and then rapidly arranged and rapidly erected by one person, the manufacture and erection being undertaken while using conventional materials and only standard hand held tools, comprising:

a. a roof and sidewall subassembly, manufactured and shipped as a flat, unitary structure, to be manually flexed into an arched protective weather cover at the greenhouse construction site, comprising in turn a continuous flexible sheet of corrugated fiberglass, with the corrugations arranged longitudinally, and a plurality of transverse, spaced, and parallel, flexible plastic pipes secured to the continuous fiberglass sheet by using self tapping screws;

b. a planar base frame subassembly, defining the foundation perimeter of the erected greenhouse, to be positioned at the greenhouse construction site and to be secured to the ground and to retain the roof and sidewall subassembly as an arched protective weather cover; and

c. planar end subassemblies, each comprising, a preflexed plastic pipe which also serves as the endmost arched plastic pipe support of the roof and sidewall subassembly, attached to a vertical sheet of corrugated fiberglass having the corrugations arranged vertically, and having an essentially horizontal bottom edge, and also having upper and side edges matching the curve of the arched plastic pipe, to thereby fit within the respective ends of the roof and sidewall subassembly after its securement to the planar base frame subassembly.

4,068,424

RAINWATER RUN-OFF DISPERSION SYSTEM

Alfred W. Madfis, 38 Pine St., Swampscott, Mass. 01907

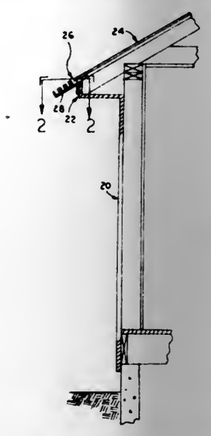
Filed Dec. 6, 1976, Ser. No. 747,896
Int. Cl.[2] E04D *13/00*
U.S. Cl. 52—94 5 Claims

1. A rainwater run-off dispersion system and method for disposing of rainwater run-off from a sloped or pitched roof of a building, by converting said rainwater into a non-errosive shower of droplets and distributing over an extended area of the ground, by means of a structure mounted at the roof edge, which comprises:

a receiving surface, solid and impervious, elongated and of sufficient width to intercept the path of rainwater run-off flowing therefrom,

a plurality of raised, intermediate baffles, which project upwards from said receiving surface, and extend continuously in the direction of elongation, to impede the flow of said rainwater run-off,

a final breaker baffle which projects upward from said receiving surface, and extends continuously in the direction of elongation, at the edge of said receiving surface furthest from, but in a plane parallel to said roof edge, and from which, said rainwater run-off overflow falls in showers of droplets to the ground,



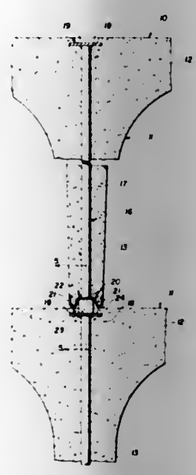
a mounting means to secure said structure to the facia board of said building, so that said receiving surface is tangentially aligned and firmly positioned against roof edge.

4,068,425

MODULAR MAUSOLEUM

Edward S. Czorniak, Chicago, Ill., assignor to Permacrete Products Corporation, Columbus, Ohio

Filed Apr. 5, 1977, Ser. No. 784,814
Int. Cl.[2] E04H *1/04*; E04B *1/343*
U.S. Cl. 52—136 11 Claims



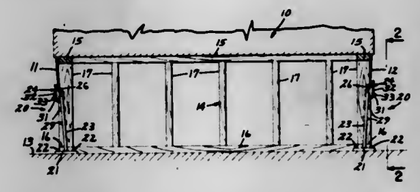
1. In a modular multi-level concrete structure formed from vertically stacked cast concrete modules, each module having a vertical load bearing wall in alignment with like walls of other modules in said structure, the improvement comprising a continuous top to bottom load bearing leg structure within said aligned vertical walls of the multi-level structure, said leg structure comprising at least one vertical rod embedded in the vertical wall of each module and extending substantially from the top to the bottom thereof, and a load bearing shim interposed between the opposing ends of the rods in adjacent modules to form therewith said continuous leg structure from top to bottom of said multi-level structure.

4,068,426

ANCHORING APPARATUS

Harley K. Warren, 9108 Fifth Ave. South, Bloomington, Minn. 55420

Filed May 3, 1976, Ser. No. 682,599
Int. Cl.[2] E04D *1/34*
U.S. Cl. 52—149 7 Claims



1. The method of anchoring to the ground a structure having an anchor strap which comprises the steps of

securing to the ground in line with said strap an anchor plate having an upstanding tongue with a stepped clamp at its upper end,

temporarily securing a winch having a drum to said tongue below said clamp,

feeding said strap through said clamp and clamping it to the drum of said winch,

tightening the strap by use of the winch and clamping it to the first step of said clamp,

releasing and removing the winch, and

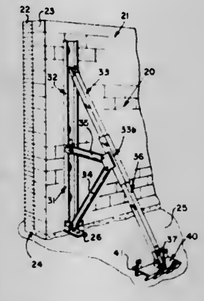
folding the strap on itself and securing the folded end to the second step of said clamp.

4,068,427

WALL BRACING ASSEMBLY AND METHOD

Gaspare Camardo, 688 Euclid Ave., Elmhurst, Ill. 60126

Filed Sept. 23, 1976, Ser. No. 725,726
Int. Cl.[2] E04G *21/18, 21/22*
U.S. Cl. 52—127 16 Claims



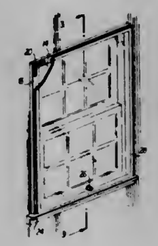
1. An assembly for temporarily bracing a newly constructed masonry wall built upon a foundation, said assembly comprising: a vertically extending support member having a surface adapted to engage a face of said masonry wall; a bracing member having an upper end connected to an upper portion of said support member and extending downwardly and outwardly therefrom; a horizontally extending support plate adapted to removably extend through a bed joint in a masonry wall in overlying relationship with said foundation; said horizontally extending support plate including an upper surface which supportingly receives said vertically extending support member and a flange portion adapted to engage a vertical sidewall face on one of said foundation or said masonry wall which is oppositely disposed to the face of said masonry wall in engagement with said support member; and, means for resisting shifting of said foundation plate transversely to said wall.

4,068,428

INSULATION WINDOW

O. James Peterson, III, 2841 River Oaks Drive, Midlothian, Va. 23113

Filed Oct. 22, 1976, Ser. No. 735,221
Int. Cl.[2] E05C *21/02*
U.S. Cl. 52—202 17 Claims



1. An insulation window system comprising:

a transparent, rigid sheet of plastic to be mounted on internal, in situ, window frames of buildings, said sheet of plastic having an outer face, an inner face, and a margin about the edge thereof;

a fastening means including separable, mating, hook-and-loop fastening portions, a first portion of said hook-and-loop fastening portions including a plurality of elements, said elements each comprising a first attaching means for individually attaching said elements directly to the inner face of said sheet of plastic at spaced intervals about the margin thereof, a second portion of said hook-and-loop fastening portions including a plurality of elements, said elements each comprising a second attaching means for individually attaching said elements directly to said in situ window frames in spaced positions complementary to the positions of said elements of said first fastening portion; and,

a weather stripping including a third attaching means for attaching said weather stripping directly to the inner face of said sheet of plastic about the margin thereof to form a seal between said sheet of plastic and said in situ window frames when said rigid sheet of plastic is mounted on said window frames with complementary elements of said hook-and-loop fastening portions engaged.

4,068,429

WALL AND WALL PART

Alvin Edward Moore, 8712 Manini Way, Diamondhead, Rte. 1, Bay St. Louis, Miss. 39520

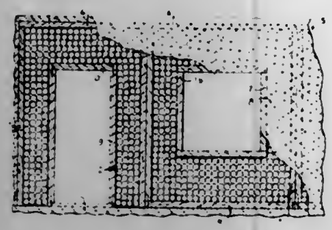
Continuation-in-part of Ser. No. 569,922, April 21, 1975, and Ser. No. 599,681, July 28, 1975, said Ser. No. 569,922, is a continuation-in-part of Ser. No. 359,800, May 14, 1973, Pat. No. 3,878,661, which is a continuation of Ser. No. 102,317, Dec. 29, 1970, abandoned, said Ser. No. 599,681, is a continuation-in-part of Ser. No. 543,661, Jan. 24, 1975, Pat. No. 3,979,870. This application Feb. 25, 1977, Ser. No. 772,218
Int. Cl.[2] E04C *1/06*
U.S. Cl. 52—204 16 Claims

1. A wall, including a foundation, a plurality of can-comprising panels on said foundation, each adjacent pair of the panels having panel edges that are juxtaposed to each other, means

holding said edges in assembled relation, and wall-finishing material on one side of said panels; each of a plurality of said panels including:

a substantially planar can-supporting element on the side of said panel opposite from said wall-finishing material;

at least one panel-reinforcing bar, connected to said can-supporting element;



a plurality of cans on said can-supporting element, some of said cans being juxtaposed to said bar;

panel-reinforcing network on said cans;

means holding said network in place on said cans; and

a matrix comprising material of the type that sets into firm material from previously fluent condition, sheathing said cans, in contact with said planar element, and juxtaposed to said bar.

4,068,430

PREFABRICATED BOX-SHAPED STRUCTURAL SECTION

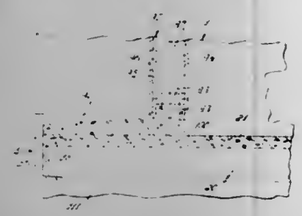
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Continuation of Ser. No. 402,083, Oct. 1, 1973, abandoned, which is a continuation of Ser. No. 138,479, April 29, 1971, abandoned. This application Dec. 10, 1974, Ser. No. 531,376

Claims priority, application Netherlands, May 1, 1970, 7006497

Int. Cl.[2] **E04B** *5/29;* **E04C** *2/04*

U.S. Cl. 52—79.7 **9 Claims**



1. A prefabricated box-shaped structural section which comprises a concrete slab floor with a vertically disposed periphery, at last two upright walls, and a ceiling member, said floor comprising a concrete slab and horizontally disposed structural metal beams surrounding and connected with at least the greater part of said periphery of said concrete slab, said floor slab being provided with a rim which is elevated relative to the remainder of the slab and is spaced a relatively short distance inboard of said periphery and is substantially parallel therewith, said walls joining said rim at least in part, said upright walls having at least two upright beams secured to said metal beams of said floor with their outer facing sides flush with said vertically disposed periphery, wall sheets mounted on opposite inner and said outer facing sides of said upright beams so that the beams are situated between the wall sheets, said wall sheets mounted on said outer facing sides of said upright beams overlapping and contacting said vertically disposed periphery, said walls being composed of a non-concretitious material providing a density substantially less than concrete and including between sheets a non-concretitious insulating material, the upper ends of each of said upright beams being connected with longitudinal and transverse beams provided to form with said upright beams and said horizontal metal beams a parallelepiped frame structure, a ceiling member being connected to said longitudinal and transverse beams, said ceiling member being composed of light weight non-concretitious materials whereby the section has a relatively low center of gravity.

4,068,431

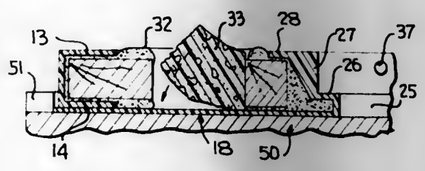
ATMOSPHERIC RESISTANT DOORS AND METHOD OF MANUFACTURE

William V. Pitt, P.O. Box 7622, Waco, Tex. 76710

Filed Oct. 16, 1975, Ser. No. 623,094

Int. Cl.[2] **E06B** *3/54*

U.S. Cl. 52—204 **8 Claims**



1. A door comprising a one-piece, integral, continuous stile and rail collar of an inwardly opening generally U-shaped cross-sectional configuration, said collar being constructed of reinforced plastic material resistant to corrosive and/or high humidity environments, said collar being defined by a bight portion and opposite faces, a plate secured to the exterior of each of said faces, said stile and rail collar and plates defining a completely sealed interior chamber, window means in said door, said window means being defined by a continuous annular wall integrally formed as a portion of a first of said plates projecting toward a second of said plates, an opening in said second plate defined by an inboard margin, said annular wall having an outwardly directed flange, and said inboard margin being secured to said outwardly directed flange.

4,068,432

MOVABLE PARTITION WALL

Donald A. Davis, Winchester, Mass., assignor to The Schwamb Corporation, Arlington, Mass.

Filed July 30, 1976, Ser. No. 710,132

Int. Cl.[2] **E06B** *1/04*

U.S. Cl. 52—205 **19 Claims**



1. A demountable partition assembly comprising

a. an integrally formed ceiling runner rigidly attached to an upper supporting surface, said ceiling runner including a base, a pair of downwardly extending outer legs, and a pair of outwardly and downwardly inclined inner legs, each outer leg and adjacent inner leg defining a space therebetween;

b. a pair of wall panels at either side of said partition assembly and forming the exposed wall surfaces thereof, the upper end of each panel being removably positioned in said ceiling runner, said panels being spaced and thereby providing a substantially open area therebetween for accommodating wiring, piping and the like;

c. a floor runner comprising a base, a pair of outer legs having upwardly and downwardly extending leg portions, and a pair of outwardly and upwardly inclined inner legs, the upper portion of each outer leg and the adjacent inner leg defining a space therebetween, said ceiling and floor runners being spaced so as to exceed in dimension the vertical dimension of said wall panels whereby said panels when installed can first be raised upwardly in said ceiling runner and thereafter lowered so that the bottom edges of said panels engage said base of said floor runner, and

d. means for supporting and laterally stabilizing said floor runner and thus said partition wall from a supporting surface, said supporting means serving as the sole support for said partition assembly, said means for supporting and laterally stabilizing said floor runner and thus said partition walls comprising a leveling block disposed within the downwardly extending portions of said outer legs of said floor runner, and a floor strip positioned within said outer legs below said leveling block, said floor strip being spaced from the supporting surface for the partition assembly by nail means extending downwardly through said floor strip into engagement with said supporting surface, whereby said floor strip and thus said partition assembly can be installed over carpet without significant damage thereto, said downwardly extending portions of said outer legs of said floor runner terminating adjacent the upper surface of the carpet whereby said outer legs function as finish trim members.

4,068,433

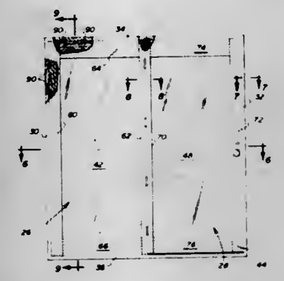
WOOD-FRAME GLASS DOOR UNIT

J. Raymond Glover, Rt. 1 Box 336, Mt. Pleasant, Tex. 75455

Filed May 6, 1976, Ser. No. 683,718

Int. Cl.[2] **E06B** *1/04;* **E04C** *2/00*

U.S. Cl. 52—207 **21 Claims**



1. An entrance and exit wood frame glass door unit comprising:

a wood surround structure,

a first and second door panel each comprising a frame with a glass pane fitted therein, each said frame including laminated first and second side rails maintained in a spaced relation by laminated top and bottom rails attached between the first and second side rails, said lamination permitting the reduction of the width of said frame members and said first side rail of said second door panel and said second side rail of said first panel being on the order of one-half the width of said second side rail of said second panel and said first side rail of said first panel,

fastener means for rigidly mounting said first door panel to said surround structure,

hinge means for hingedly connecting said first side rail of said second door panel to said second side rail of said first door panel whereby said second door panel hinges against said first door panel.

4,068,434

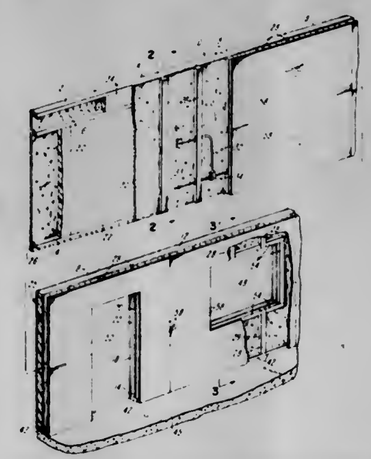
COMPOSITE WALL PANEL ASSEMBLY AND METHOD OF PRODUCTION

Stephen W. Day, 73 W. Alexandersville-Bellbrook Road, Dayton, Ohio 45459, and Daniel M. Hutcheson, 3855 Upper Bellbrook Road, Bellbrook, Ohio 45305

Filed Apr. 5, 1976, Ser. No. 673,383

Int. Cl.[2] **E04B** *5/48*

U.S. Cl. 52—220 **5 Claims**



1. A composite wall panel assembly adapted to simplify the construction of a building structure, comprising an inner facing of wood sheet material and an outer facing of wood sheet material disposed in parallel spaced relation, each said facing extending substantially continuously from the top of the wall panel assembly to the bottom of the assembly, a core of substantially rigid foam insulation material disposed between and contacting said inner and outer facings, a layer of adhesive bonding substantially the entire contacting surface of each said facing to the corresponding side of said core to form a laminated wall unit having a horizontal length greater than its vertical height, a plurality of horizontally spaced vertical wood furring strips positioned adjacent said inner facing and projecting inwardly towards the interior of the building structure, a layer of adhesive rigidly bonding substantially the entire contacting surface of each said furring strip to said inner facing, and said furring strips being adapted to receive inner sheeting material to form an interior wall surface for the building structure.

4,068,435

PRE-STRESSED TENSION RING STRUCTURES

Hollis C. Scott, Portland, Oreg., assignor to Unadilla Silo Company, Inc., Unadilla, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,015

Int. Cl.[2] **E04B** *1/32*

U.S. Cl. 52—223 R **11 Claims**

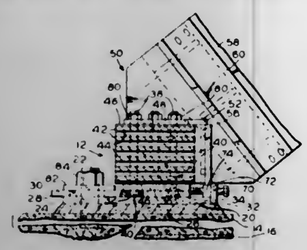
1. In a tension ring joint,

a bearing plate,

a connector plate slidable on the bearing plate,

connector bolts rigidly secured to the connector plate and adapted to connect the tension ring to the connector plate,

and adjustable thrust bolt means including a lug on the bearing plate, and a thrust bolt threadedly engaging the



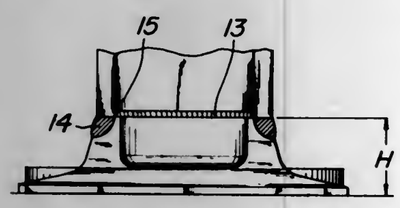
lug and engaging the connector plate for moving the connector plate relative to the bearing plate.

4,068,436

H-SHAPED STEEL COLUMN BASE MEMBER AND WELDING THEREOF

Kuniaki Sato, Hiratsuka, Japan, assignor to Kajima Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 385,166, Aug. 2, 1973, Pat. No. 4,048,776. This application Sept. 15, 1975, Ser. No. 613,347
Int. Cl.² E04G 25/00; E02D 27/00
U.S. Cl. 52—298 4 Claims



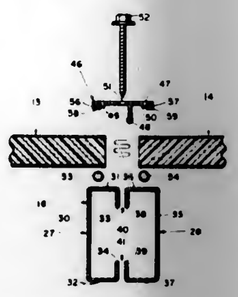
1. A steel column base plate member for connecting an H-shaped steel column member to a concrete foundation, which base plate member is a unitary body comprising a substantially planar bottom plate portion engageable with said concrete foundation, a projection upwardly extending from the planar bottom plate portion and having a top surface whose shape is substantially identical to cross sectional shape of the steel column member, a web part of a top surface of said projection in opposition to a web of said column member having a width broader than that of the said web of the column member so as to effect sufficient fillet welding therewith, J-shaped welding grooves formed along both edges of said top surface of said projection facing to lower ends of flanges of said column member extending from outer peripheries of the top surface of said projection so as to effect J-shaped groove welding between said lower ends of the flanges and the J-shaped welding grooves, a sloped top surface formed between said projection to said bottom plate portion so as to increase the thickness thereof as the planar bottom plate portion extends toward said projection, and abutments formed on the planar bottom portion in a sufficient thickness and having anchor bolt holes bored therethrough.

4,068,437

PANEL ROOF CONSTRUCTION WITH IMPROVED JOINTS

Morley Ben Byxbe, Holland; Richard Allan Meckley, Wyoming, and William Hunt Porter, West Olive, all of Mich., assignors to W. H. Porter, Inc., Holland, Mich.

Filed Nov. 4, 1976, Ser. No. 738,747
Int. Cl.² E06B 3/54
U.S. Cl. 52—464 15 Claims



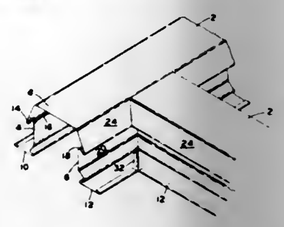
1. In a panel roof construction wherein each panel of said roof includes a sandwich type construction having a center insulating core, an outer skin and an under skin, said panels being supported on roof trusses to define longitudinal joints and transverse joints, the improvement comprising: said roof trusses defining an elongated slot extending along said longitudinal joints, the longitudinal edges of said panels being flush, each longitudinal joint including a cover strip extending therealong and having a general T-shape including an upper web straddling the adjacent edges of two panels and a stiffening member adapted to extend into the space between adjacent panels, the lower surface of said web defining a rib adjacent each edge thereof for spacing said web from said roof panels, first and second sealing strips for sealing the sides of said web respectively to adjacent panels, and threaded fastener means for securing said cover strip by threading into said slot of said roof truss at locations spaced along said longitudinal joint; and said transverse joints including a groove at the lower edge of each panel formed by extending the outer and under skins thereof to form upper and lower laps, a strip of flexible sealing material secured to the under surface of said upper lap, the upper edge of lower panels being sized to be received into the groove of an upper panel, said flexible sealing strip acting as a seal in itself and spacing the lap of an upper panel above the outer surface of a lower panel or break the capillary therebetween.

4,068,438

CEILING RUNNER

Ernest B. Nute, Jr., Mountville, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Mar. 23, 1977, Ser. No. 780,418
Int. Cl.² E04B 5/52; E04C 3/32
U.S. Cl. 52—488 2 Claims



1. In a ceiling runner having an elongated sheet metal body

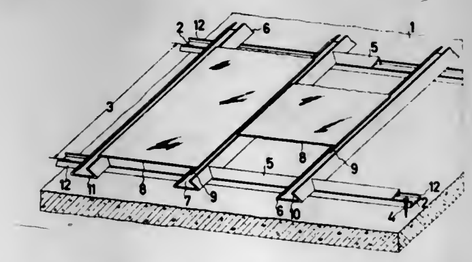
with a generally inverted U-shaped configuration, said runner having two side walls connected together at their one ends with a flat top member, the opposite sides of the side walls having horizontal flanges which extend outwardly from the body of the runner to support ceiling boards on either side of the runner, said side walls having a first groove means therein, said first groove means being in the mid region of the side walls and extending outwardly from the side walls to form two parallel ledges inside the U-shaped body configuration, said grooves extending below and outwardly of the parallel ledges, and a second groove means in the side walls closely positioned to the horizontal flanges forming a stop means extending outwardly from the side walls of the runner adjacent said horizontal flanges.

4,068,439

WALL COVERING

Heinz-Erhardt Andersen, Burgkirchen, Alz, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 20, 1976, Ser. No. 724,542
Claims priority, application Germany, Sept. 24, 1975, 2542526
Int. Cl.² E04B 5/52
U.S. Cl. 52—497 4 Claims



1. A wall covering system of plastic elements consisting of panels having lateral edges folded by an angle of more than 90°;

profiles having a dovetail cross section for holding the panels;

structural shapes having a dovetail cross section, said structural shapes are fastened in parallel position on the wall; and

spacers having V-shaped cross section with such chamfered end faces that their inclination degree corresponds to the inclination of the lateral faces of the profiles and having a length which corresponds to that of the panels, said spacers are fitted into the structural shapes in which they are sliding in longitudinal direction and fix the profiles on the structural shapes, whereby the folded edges of said panels constitute together with said profiles a form-closed fitting.

4,068,440

FRAMING JOINT CONSTRUCTION AND CLIP THEREFOR

Ben W. Lillethorup, Henrico County, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 24, 1976, Ser. No. 689,111
Int. Cl.² E04H 12/00; E04D 1/34
U.S. Cl. 52—301 12 Claims

1. A framing joint construction intended to be readily assembled comprising

a. a base member having a foundation-engaging surface and at least one vertically extending wall-defining member extending upwardly therefrom,

b. means defining a horizontal support surface vertically spaced from said foundation-engaging surface,

c. clip means attached to said means defining a horizontal support surface,

1. said clip means including a U-shaped section providing a vertically extending upwardly open channel,

d. a vertically extending stud member received in said U-shaped section of said clip means,



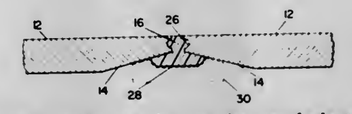
e. and a cover member attached to said vertically extending stud member at the top thereof.

4,068,441

CUT GLASS PANEL

B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio

Filed May 7, 1975, Ser. No. 575,419
Int. Cl.² E04B 5/46
U.S. Cl. 52—308 1 Claim



1. A decorative self-supporting cut glass panel adapted to be mounted with its periphery encompassed in a frame in a window, door, or the like, comprising, in combination,

a. a plurality of pieces of light-transmitting sheet glass bonded together in coplanar relation forming a self-supporting and light-transmitting panel having a decorative side and a reverse side,

b. the peripheral edges of each of said glass pieces which are adjacent others of said pieces in said panel being cut to approximately the mirror image of said adjacent pieces and being arranged with spaces of approximately uniform width between adjacent said pieces,

c. adhesive material filling said spaces between adjacent said pieces of glass,

d. said adhesive being a mixture of organic materials and inorganic filler,

e. said filler having a coefficient of thermal expansion closely approximating that of said glass pieces and being selected from the group consisting of finely ground glass, magnesium oxide and calcium carbonate,

f. said mixture of organic materials comprising an epoxy resin and a curing agent,

g. said adjacent edges of said glass pieces being beveled on said decorative side of said panel,

h. said bevel being at an angle in the range of 5° to 17° from the plane of said decorative side of said panel and having a width of the order of ⅛ inch,

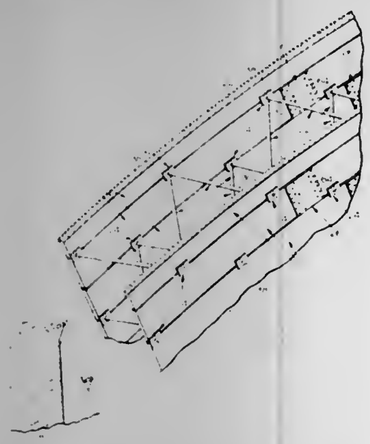
i. the edges of said glass pieces facing each other having structurally irregular surfaces providing better bonding engagement with said adhesive material,
j. said adhesive material extending through said panel between adjacent pieces of glass and having a generally T-shaped cross-section including a head portion overlying the adjacent surface portions of said bevels but retained within the plane of said decorative surface, and
k. the end of said T-shaped section opposite said head portion being flush with said reverse side of said panel.

4,068,442

INTEGRAL TRUSS-SUPPORTED DECK

Arthur L. Troutner, Boise, Idaho, assignor to Trus Joist Corporation, Boise, Idaho

Filed Mar. 8, 1976, Ser. No. 664,494
Int. Cl.² E04C *3/02*; E04B *5/52*
U.S. Cl. 52—693 **4 Claims**



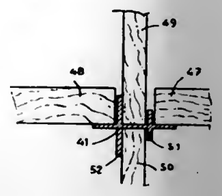
1. An integral, truss-supported deck comprising:
a. outer and inner spaced chords each comprising at least one pair of substantially coplanar planks arranged with their side edges adjacent,
b. a plurality of truss web members arranged zig-zag between the chords,
c. a plurality of side connectors positioned in longitudinally spaced relation along the adjacent side edges of each plank pair,
d. each side connector comprising a pair of back-to-back angle irons disposed with their backs in spaced relationship, said angle irons being connected to each other at their ends and thereby defining a recess between the spaced backs of said angle irons, the backs of the angle irons being provided with a pair of aligned openings, the adjacent ends of each pair of web members being flat and perforate and inserted in lapped relation into the recess with the perforations in the web member ends aligned with the openings through the angle iron backs, the laterally extending portions of the angle irons comprising lateral projections engaging the adjacent planks,
e. a plurality of first fasteners comprising pin means inserted through all of said openings and perforations fastening the adjacent ends of adjacent web members to the adjacent side connectors, thereby connecting the web members to the side connectors, and
f. a plurality of second fasteners fastening the lateral projections of each side connector to the adjacent planks, thereby connecting the planks to each other.

4,068,443

SECTION PIECE FOR T-SECTION ASSEMBLY

Jean Stoltz, rue de l'Eglise, 77 Ury, France

Division of Ser. No. 365,097, May 30, 1973, Pat. No. 3,920,345.
This application Oct. 4, 1974, Ser. No. 512,142
Claims priority, application France, June 1, 1972, 72.19650
Int. Cl.² E04C *3/30*
U.S. Cl. 52—726 **3 Claims**



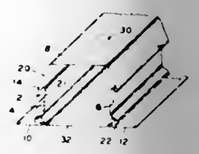
1. An assembly element and section piece comprising a parallelpiped with respective pairs of first, second and third endfaces, two first slots, each first slot opening lengthwise into one of the first endfaces across at least a substantial portion of one dimension thereof, a section piece including an elongated member with one side being adapted to abut said first endface, a blade portion projecting from said one side of the member, each first slot having a depth sufficient to receive and accommodate the blade portion of said section piece, one of the first slots including an inner surface shaped and adapted to form a mating portion to mate with the cooperating mating portion of the blade portion inserted therein, four first threaded openings in the parallelpiped, each first opening extending therethrough parallel to the first slots and opening into both of the second endfaces thereof each of the openings being located between one of the first slots and one of the third endfaces, two second slots extending perpendicular to and intersecting the first slots, each second slot opening lengthwise into one of the first endfaces of the parallelpiped across the entire dimension thereof and into the third endfaces a distance corresponding to its depth, the second slots having a depth sufficient to receive and accommodate additional section pieces, two second threaded openings opening into one of the third endfaces and extending through the parallelpiped and opening into the surface of the first slot opposite the surface that includes the mating portion, the second openings being located on opposite sides of the second slot which intersects the first slot that includes the surface with the mating portion.

4,068,444

CEILING RUNNER WITH CLOSURE STRIP

James C. Ollinger, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed May 2, 1977, Ser. No. 792,897
Int. Cl.² E04C *3/32*
U.S. Cl. 52—731 **6 Claims**



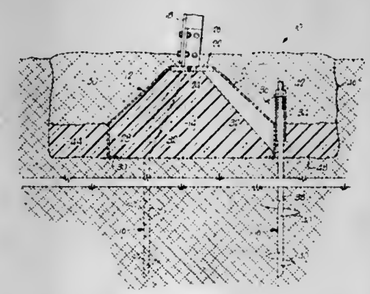
1. In combination: a ceiling runner having an elongated sheet metal body with a generally inverted U-shaped configuration, said runner having two side walls connected together at their one ends with a flat top member, the opposite sides of the side walls having horizontal flanges which extend outwardly from the body of the runner to support ceiling boards on either side of the runner, said side walls having a groove means in the side walls closely positioned to the horizontal flanges forming a projection extending outwardly from the side walls of the runner adjacent said horizontal flanges; and, a closure strip means having a flat elongated body portion and flanges on the sides of the body portion, said flanges being in the form of two offset leg means positioned on one side of the plane containing the body portion, said closure strip means being sized to have its flanges positioned in said groove means and, at the same time, partly conform in shape to the flat top member and part of the side walls of the runner.

4,068,445

LIGHTWEIGHT, SCREW ANCHOR SUPPORTED FOUNDATION AND METHOD OF INSTALLING SAME

Donald E. Bobbitt, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Continuation-in-part of Ser. No. 550,753, Feb. 18, 1975, abandoned. This application Feb. 23, 1976, Ser. No. 660,434
Int. Cl.² E04D *15/00*; E02D *27/00*
U.S. Cl. 52—743 **6 Claims**



1. A method of installing a foundation comprising the steps of:
driving a plurality of spaced earth anchors into the earth at a selected foundation site, each of said anchors including an elongated shaft and a generally transversely extending load-bearing member adjacent the lower embedded end of the shaft;
positioning force-spreading structure adjacent said anchors with the base thereof contacting the earth and presenting a first effective area; and
tensionally coupling said earth anchors and force-spreading structure in a manner to pull said base and load-bearing members in opposition to each other for creating a prestressed bulb of soil between the base and load-bearing members,
the greatest effective horizontal cross-sectional area of said bulb of soil being greater than said first effective area of said base for spreading compressive and tensile loads imposed on said foundation in order to increase the holding power of said foundation,
said coupling including the steps of successively pulling said base and load-bearing members in opposition to each other a plurality of times at desired intervals for creating said bulb of soil.

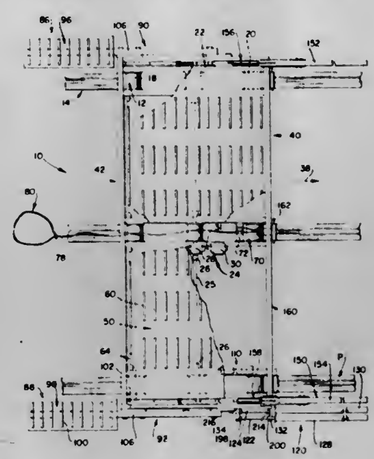
4,068,446

MOVING WORK STATION FOR USE IN CONSTRUCTING A BUILDING ROOF

Ralph H. Brueske, Kansas City, Mo., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Dec. 30, 1976, Ser. No. 755,848
Int. Cl.² E04B *1/00*; E04G *21/00*
U.S. Cl. 52—747 **24 Claims**

21. A method of constructing a roof, including the steps of:
providing a moving work station;
locating roofing materials on top of the roof;
moving working materials onto the work station;
moving the work station to a work location;
positioning insulation on top of the roof purlins;
maintaining the insulation in a taut configuration;



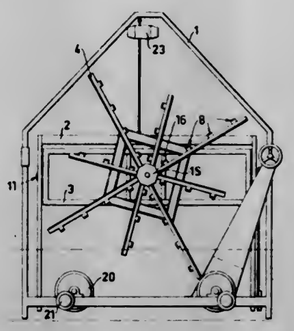
locating a roof panel on top of the taut insulation;
securing the roof panel to the roof purlins; and
moving the work station to the next location.

4,068,447

METHOD AND AN APPARATUS FOR PREPARING A PLATFORM FOR BOTTOM CASTING

Curt Jerling, Sundbyberg; Hans Olsson, Stockholm, and Torgny Veiback, Bandhagen, all of Sweden, assignors to Norbergs Mekaniska Verkstads AB, Norberg, Sweden

Filed Apr. 30, 1976, Ser. No. 681,930
Claims priority, application Sweden, May 6, 1975, 7505278
Int. Cl.² E04G *21/00*
U.S. Cl. 52—749 **16 Claims**



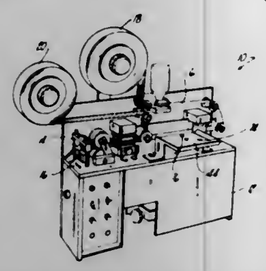
1. A bricklaying apparatus for preparing a platform having channel means therein for bottom casting, characterized in that it comprises a supporting frame, a loading member pivotally suspended therein and having arm structures capable of holding bricks forming rows by means of securing and clamping members, means for tilting and lowering or raising the loading member into or away from a horizontal position wherein the bricks are received by said channel means, and means for suspending the action of said securing and clamping members.

4,068,448

SMALL ARTICLE PACKAGING APPARATUS

Marvin O. Modeen, Columbus, Ohio, assignor to IN-Pac Corporation, Columbus, Ohio

Filed Aug. 9, 1976, Ser. No. 712,687
Int. Cl.[2] B65B 5/02, 11/50, 61/26
U.S. Cl. 53—131 5 Claims



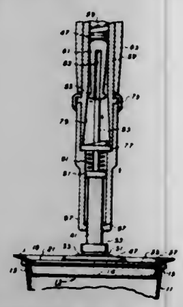
1. In a machine for packaging items in sealed pockets of packages formed from a pair of strips of packaging material; means defining a continuous path of movement for one of the strips first in one direction and thereafter in a direction opposite said one direction, means disposed in the path for intermittently printing a label on one side of one of the strips when disposed for movement in said one direction, means located in the path for intermittently indenting said one strip at an opposite side thereof when disposed for movement in said opposite direction, said indenting means including a recessed punch member cooperating with an opposing die member for cold pressing spaced indentations in said one strip, means for directing the other of said strips in flat form to overlie said indented strip after the items to be packaged are loaded in said indentations, means adjacent said directing means for intermittently heat sealing said strips together along the periphery of said indentations to provide a strip of sealed packages, said sealing means including a heated platen cooperating with an opposing heat sink member, means for intermittently advancing said strip of packages along said path, and means for intermittently cutting said strip of packages between said indentations, said cutting means including a bearing block cooperating with an opposing blade member, said punch member, platen and bearing block being mounted for reciprocating movement into contact with their respective opposing members.

4,068,449

TOOL FOR PLACING LIDS ON CUPS

Paul W. Harper, Rochester, N.Y., assignor to Our Mother of Sorrows Church, Rochester, N.Y.

Filed Aug. 17, 1976, Ser. No. 715,937
Int. Cl.[2] B67B 1/04, 5/02; B65B 7/28
U.S. Cl. 53—319 10 Claims



1. A tool for applying a lid to a cup, said lid having an upstanding marginal flange shaped for a sealed fit against the inside of said cup, and said tool comprising:

a. a shoe for engaging said lid within said flange;

b. resilient means projecting radially outward from said shoe for engaging the inside of said upstanding flange to retain said lid on said shoe;

c. a shank connected to and rising from said shoe;

d. a handle arranged to be vertically movable relative to said shank and said shoe;

e. spring means operatively connected between said handle and said shank for applying a predetermined maximum downward pressure to said shoe in response to downward movement of said handle relative to said shoe during application of said lid to said cup; and

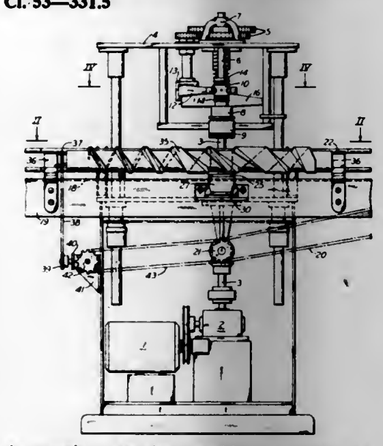
f. means for signalling to the user of said tool that said predetermined maximum pressure has been reached and said lid is properly seated in said cup.

4,068,450

CONTAINER CAPPING MACHINE

William M. Easter, Pittsburgh, Pa., assignor to Horix Manufacturing Company, McKees Rocks, Pa.

Filed Nov. 17, 1976, Ser. No. 742,416
Int. Cl.[2] B65B 7/28; B67B 3/08, 3/20
U.S. Cl. 53—331.5 1 Claim



1. A container capping machine comprising a vertically reciprocable rotary chuck for holding a screw cap in its lower end while it screws the cap onto a container below it, a continuously moving horizontal conveyor spaced below the chuck, a continuously rotating horizontal positioning screw extending along one side of the conveyor and past said chuck and provided with a helical trough in a position to receive containers on the conveyor and control their forward movement, the portion of said trough beside said chuck having side walls extending part way around the screw in radial planes of the screw to stop temporarily the forward movement of a container in the trough when it reaches a position below said chuck for receiving a cap therefrom, a pair of jaws movable toward and away from each other across the top of said conveyor, means synchronized with the rotation of said positioning screw for moving the jaws toward each other to grip a stopped container between them after it enters between said radial side walls of the screw trough, means for moving said rotary chuck down and up while said jaws are gripping a container below it in said cap-receiving position, and means for moving said jaws away from each other while a capped container is still between said radial side walls, the pitch of said screw trough being such that the screw accelerates containers as they approach said jaws and accelerates them again as they leave the jaws to bring them up to substantially the speed of said conveyor.

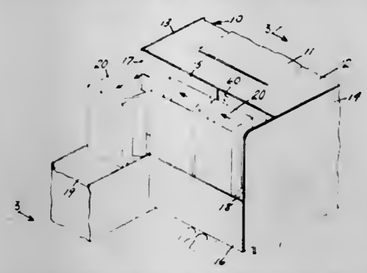
4,068,451

PAPER BAG OPENING DEVICE

Richard A. Bewerse, Rte. 3, Box 601, Meritt Island, Fla. 32952, and Stanley Joseloff, 185 S. Atlantic Ave., Cocoa Beach, Fla. 32931

Filed Mar. 31, 1977, Ser. No. 783,275
Int. Cl.[2] B31B 1/76
U.S. Cl. 53—385 4 Claims

1. An improved folded paper bag opening device comprising: support means supporting a stack of folded bags in substantially horizontal orientation; an elongated bag-handling arm having a first end pivoted for rotation about a horizontal axis above said support means, said bag-handling arm having associated bag clamping means on a second end thereof; a bag-opening arm having a first end pivotally mounted for rotation about an axis parallel to that of said bag-handling arm, and having clamping means on a free opposite end thereof, said bag-opening arm being shorter in length than said bag-handling arm; means for cyclically moving said bag-handling arm between horizontal and vertical positions, and for opening and closing said associated clamping means when said bag-handling arm is at said horizontal and vertical positions; low velocity air current supply means positioned adjacent said stack



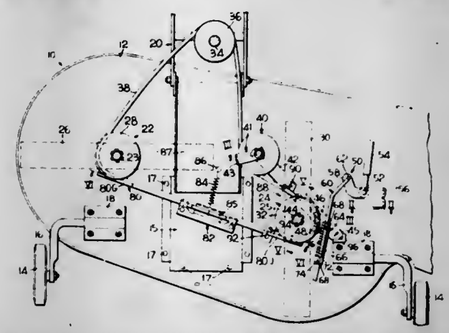
supporting means to apply a current of air serially to the opened ends of said folded bags in said stack; said bag-handling arm progressively lowering to position its associated clamping means adjacent an open end of an uppermost bag in said stack to contact said bag under the influence of said air current supply means, and close said clamp means thereon; said bag-handling arm thereafter elevating to vertical position; said bag-opening arm subsequently pivoting downwardly beneath a lower closed edge of said engaged bag, and subsequently upwardly to engage a free edge of a bottom wall of said bag with its associated clamping means, and thereafter downwardly, to move said bottom wall to a horizontal plane and fully open said bag.

4,068,452

MOWER SPINDLE AND SPINDLE DRIVE BELT BRAKING ARRANGEMENT FOR ROTARY MOWER HAVING PLURALITY OF MOWER SPINDLES

Daniel W. Schaefer, and Kenneth H. Klas, both of Port Washington, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 11, 1976, Ser. No. 666,046
Int. Cl.[2] A01D 69/08, 69/10
U.S. Cl. 56—11.6 14 Claims



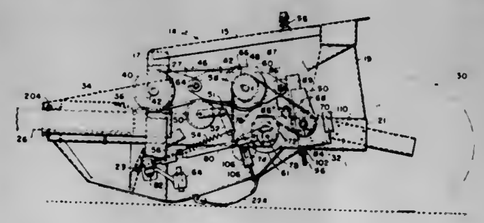
1. A rotary mower comprising a mower deck, a pair of arbors mounted on said deck in spaced-apart relation to each other, a spindle supported for rotation by each of said arbors, a mower blade mounted on each of said spindles for rotation with the respective spindle in a plane beneath said mower deck, a driven pulley fixed to each spindle above said mower deck, a drive belt driven from a suitable drive source, each of said driven pulleys being adapted to have said drive belt trained therearound, an idler pulley support arm supported for movement by said mower deck, an idler pulley carried by said idler pulley support arm, a clutch lever means carried by said mower and operatively associated with said idler pulley support arm, said clutch lever means being selectively movable to move said idler pulley support arm to one or the other of two alternative positions, whereby to selectively move said idler pulley into either tensioning or nontensioning relation to said drive belt and thus whereby to cause said drive belt to be selectively either in driving or in non-driving relation to said driven pulleys, a brake member common to both of said driven pulleys and supported by said mower in proximity to and extending between both of said driven pulleys, said brake member having contiguous each of its opposite ends a brake portion which is engageable in braking relation to a corresponding one of said driven pulleys, and control link means carried by said mower and operatively associating said idler pulley support arm with said brake member, said control link means being movable in accordance with movements of said idler pulley support arm to one or the other of said two alternative positions whereby to determine by its position whether said brake member is selectively in either nonbraking relation or in braking relation to both of said driven pulleys in accordance with whether said idler pulley is respectively in said tensioning relation or in said nontensioning relation to said drive belt.

4,068,453

DRIVE SYSTEM FOR HAY HARVESTING AND CONDITIONING MACHINE

Amos Hill, Newton, Kans.; Warner M. Heckley, Rockford, and Gerald F. Richards, Celina, both of Ohio, assignors to Avco Corporation, Coldwater, Ohio

Filed June 28, 1976, Ser. No. 700,328
Int. Cl.[2] A01D 45/00
U.S. Cl. 56—14.4 7 Claims



1. A crop harvesting and conditioning machine of the type adapted to be drawn by a tractor having a power take-off, comprising:

a transversely arranged header assembly including a main frame, rearwardly positioned support wheels, and a sickle mower positioned along the front of said frame;

a tongue subframe, a pivotal mount between said subframe and one end of said main frame sidewalls and having at its other end a drawbar coupling having provision for attachment to said tractor;

a pair of crop conditioning rolls rotatably mounted relative to said main frame on generally transverse axes above and behind said mower, each roll having a shaft extending axially outward therefrom, said shafts allowing rotatable journalling of said rolls to said machine;

lever arm plates swingably mounted on the sidewalls of the main frame, the lower of said rolls being journaled on a fixed axis relative to said main frame and the upper of said rolls being journaled at its ends on said lever arm plates;

spring means adjacent each end of said upper crop conditioning roll for exerting a compressive force urging the crop conditioning rolls together, one end of each of said spring means being anchored to said frame, the other end of each of said spring means being attached to the swingable end of one of said lever arm plates;

a transmission mounted on said subframe and coupled to said

power take-off, said transmission including an output element having an axis coaxial with said pivot;

belt drive means for transferring power from said output element to said upper crop conditioning roll, said belt drive means including a pulley attached to the axially extending shaft on the end of said upper crop conditioning roll; and

an arrangement of means for utilizing said upper crop conditioning roll to drive said lower crop conditioning roll, said arrangement of means comprising:

a driving sprocket on the outward extending shaft of said upper crop conditioning roll,

a driven sprocket on the outward extending shaft of said lower crop conditioning roll,

a yieldably restricted slide element attached to one of said spring means and moving in synchronism with any displacement of the companion lever arm plate,

a plurality of chain positioning elements of which one is rotatably mounted on said slide element, and

an endless chain entrained around said sprockets and chain positioning elements, said one chain positioning element being both within the chain periphery and secured to said slide to move linearly to compensate for sprocket chain slack variation introduced as said crop conditioning rolls are separated in response to varying amounts of crop material passing therebetween.

4,068,454

CROP GATHERING REEL ASSEMBLY

Bryant F. Webb, Ephrata, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 30, 1976, Ser. No. 718,639
Int. Cl.² A01D *57/02*
U.S. Cl. 56—220 **9 Claims**



1. An improved crop gathering reel assembly for a harvesting machine, comprising:

shaft means mounted to said machine for rotation about a transverse axis;

at least one pair of spaced apart support members;

a plurality of crop-engaging members extending between and interconnecting the peripheries of said support members;

means mounting each of said support members to said shaft means for universal articulation relative to said shaft means; and

means mounted to said machine for positioning said support members in generally parallel planes disposed at predetermined oblique angles relative to said transverse rotational axis of said shaft means such that, upon predetermined rotation of said shaft means, said support means rotate therewith within said planes and concurrently universally articulate relative thereto so that said crop-engaging members interconnecting said support members will engage and sweep crop rearwardly and laterally to said harvesting machine.

4,068,455

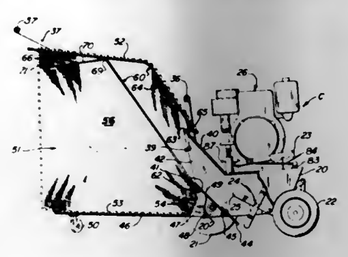
BAG FOR A LAWN COMBER

Claude D. Zehrung, Jr., Lakewood; Clarence L. Urie, and Joseph C. Martinez, both of Denver, all of Colo., assignors to Bluebird International, Inc., Englewood, Colo.

Filed Feb. 17, 1976, Ser. No. 658,420
Int. Cl.² A01D *43/02*
U.S. Cl. 56—344 **9 Claims**

1. In combination with a lawn comber, or the like, having a rearward discharge chute wherethrough debris is discharged with the exit portion of the discharge chute being a generally rectangular opening formed by an upper plate, a lower plate and sidewall plates, a debris bag attached to said exit portion to extend rearwardly therefrom to receive debris, and comprising:

a. a body of pliable, cloth-like sheet material having a generally rectangular bottom disposed near the ground surface below the exit portion of the discharge chute, a front wall extending upwardly from the front edge of the bottom and to said lower plate, side walls extending upwardly from the respective side edges of the bottom to a top edge portion above the top of the discharge chute with the



front edges of the side walls at the adjacent sides of said sidewall plates and a rear wall extending upwardly from the rear edge of the bottom to the top edges of the sidewalls to complete the bag form, and

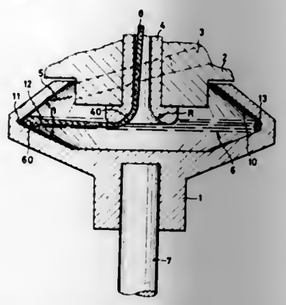
b. a bag frame including an upright section attached to the exit portion of the discharge chute and a bag supporting section having rearwardly extended longitudinal top rods connected by a rear transverse cross rod, corresponding with the bag form, being cantilevered from the top of the upright section and being connected with the top edge portions of the sidewalls and rear wall of the bag body to suspend the bag body in an open debris-receiving position.

4,068,456

OPEN-END SPINNING DEVICE

Hans Landwehrkamp, Lenting, Germany, assignor to Schubert & Salzer, Ingolstadt, Germany

Filed Sept. 27, 1976, Ser. No. 726,805
Claims priority, application Germany, Oct. 4, 1975, 2544503
Int. Cl.² D01H *1/12*
U.S. Cl. 57—58.89 **3 Claims**



1. A spinning rotor for use in an open-end spinning device for producing twisted open-end yarns while said spinning rotor is driven at speeds of between 50,000 and 70,000 revolutions per minute, said spinning rotor comprising:

a. upper and lower walls converging together at an angle of between 40° and 60° defining a collecting channel for yarn being produced at the junction of said upper and lower wall,

b. a thread draw-off nozzle extending into said rotor,

c. a bore extending through said thread draw-off nozzle, and

d. a thread contact surface surrounding a lower end of said bore over which yarn being produced in said rotor passes to exit through said draw-off nozzle,

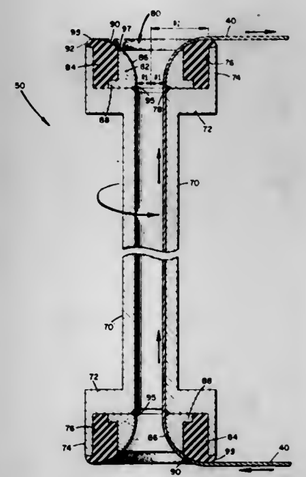
e. said thread contact surface having a radius of curvature between 7.5 and 8.5 mm.

4,068,457

BI-COMPONENT FRICTION DISC FOR YARN TEXTURING

John W. Glaze, Jr., Charlotte, and Billy Mac Graves, Graham, both of N.C., assignors to Intech Corporation, Charlotte, N.C.

Filed July 13, 1976, Ser. No. 704,957
Int. Cl.² D01H *7/92*
U.S. Cl. 57—77.4 **7 Claims**



1. A rotatable friction disc for imparting twist to a yarn comprising an annular flared friction surface symmetrically disposed about an axis of rotation and terminating at one end in a minor radius defining an opening and at the other end in a major radius, said friction surface defining in cross-section a substantially smooth curve and having a first surface portion extending from said minor radius to a point intermediate said radii and a second surface portion extending from said intermediate radius to said major radius, said first surface portion being of a ceramic-like material having a relatively low coefficient of friction with said yarn and said second surface portion being of a rubber-like material having a relatively high coefficient of friction with said yarn.

4,068,458

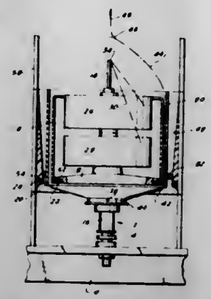
BALLOON SUPPRESSOR FOR LIGHT AND HEAVY YARNS

Aloys Greive, Munster, Germany, assignor to Hamel GmbH Zwirnmaschinen, Munster, Germany

Filed Sept. 17, 1976, Ser. No. 724,461
Claims priority, application Germany, Sept. 17, 1975, 2541493
Int. Cl.² D01H *1/10, 1/42*
U.S. Cl. 57—108 **11 Claims**

1. In a twisting apparatus wherein a yarn package is supported on a rotatably supported holder in a laterally closed but upwardly open space defined between a plurality of upright walls defining at least adjacent their bases a circle, and wherein coacting magnets on said holder and at least one of said walls at the base thereof prevent rotation of said holder, the improvement comprising:

a balloon-limiting sleeve of generally cylindrical shape receivable between said holder and said walls, and



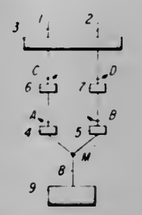
an elastic ring on the exterior of said sleeve snugly engaging said walls for releasably securing said sleeve in said space on said walls for easy removal therefrom.

4,068,459

METHOD OF TWIST-PLYING A FIBROUS PRODUCT

Pavel Mikhailovich Movshovich, Pechatnikov pereulok, 3, kv. 8; Gennady Konstantinovich Maximov, Kaspiiskaya ulitsa, 20, korpus 3, kv. 137, both of Moscow; Viktor Pavlovich Khavkin, ulitsa Vatutina, 11, kv. 4, Moskovskaya oblast, Khimki; Lev Nikolaevich Ivanov, Kotelnicheskaya naberezhnaya, 25/8, kv. 74, Moscow; Natalya Borisovna Babushkina, Chasovaya ulitsa, 5b, kv. 15, Moscow; Vladimir Konstantinovich Afanasiev, Galyanovsky proezd, 4ª, kv. 219, Moscow; Tamara Nikolaevna Kudryavtseva, Davydkovskaya ulitsa, 6, kv. 5, Moscow, and Sergei Vladimirovich Nezelenov, Klneshemskoe shosse, 8ª, kv. 6, Kostroma, all of U.S.S.R.

Filed June 25, 1976, Ser. No. 699,935
Claims priority, application U.S.S.R., July 22, 1975, 2158695
Int. Cl.² D02G *3/26*; D01H *7/90*
U.S. Cl. 57—156 **10 Claims**



1. A method of twist-plying a fibrous product, comprising the steps of continuously feeding at least two fibrous ribbons; applying to each continuously fed fibrous ribbon a pulsating torque of an invariable direction, created by a vortex of air; simultaneously with said pulsating torque subjecting each fibrous ribbon constantly to an additional torque the direction of which is opposite to that of the pulsating torque and the amount of which is less than that of the pulsating torque, whereby each fibrous ribbon is caused to acquire a sign-variable twist; and then joining said fibrous ribbons together so that, while untwisting on each other, they are caused to interlace, thereby forming a finished product; and then winding the finished product onto a bobbin.

4,068,460

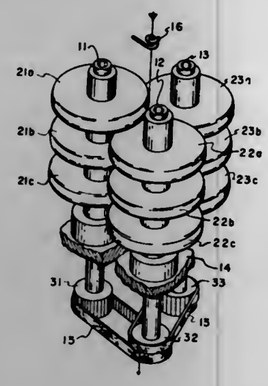
YARN PROCESS

Melvyn Robert Fischbach, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Division of Ser. No. 632,873, Nov. 17, 1975, Pat. No. 4,012,896, which is a continuation-in-part of Ser. No. 445,718, Feb. 25, 1974, abandoned. This application Oct. 4, 1976, Ser. No. 729,577 The portion of the term of this patent subsequent to Mar. 22, 1994, has been disclaimed.

Int. Cl.[2] D02G *1/04*; D01H *7/92*

U.S. Cl. 57—157 TS **19 Claims**



1. In a process for producing false twist crimped multifilament yarn, wherein yarn is fed over the outer periphery of a rotating disc, the improvement comprising causing said yarn traveling at running speeds of at least 1000 feet per minute to pass over a disc, the yarn contacting surface of which is inorganic with a hardness of greater than 975 on the $Knoop_{100}$ scale, and a surface texture of more than 75 and less than 400 peaks of at least 50 microinches in height per linear inch.

4,068,461

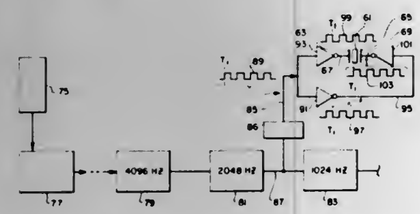
DIGITAL ELECTRONIC ALARM WATCH

John R. Fassett, Irvine; Ivan V. Rondas, Mission Viejo; Joseph P. George, Huntington Beach, and Claus Sondermann, Orange, all of Calif., assignors to Frontier Inc., Newport Beach, Calif.

Filed Apr. 15, 1976, Ser. No. 677,192

Int. Cl.[2] G04B *19/30*

U.S. Cl. 58—23 R **10 Claims**



1. A method of driving a piezoelectric, audible tone producing crystal of a wristwatch, comprising:

producing an audio frequency signal, said producing step comprising:

generating in a crystal controlled oscillator the fundamental time base signal for said wristwatch;

dividing said fundamental time base signal by a factor which produces an audio frequency signal; and

utilizing said audio frequency signal for driving the time keeping functions of said wristwatch and for driving said audible tone producing crystal; and

noninductively applying said signal to said crystal to induce an alternating polarity potential to said crystal, said applying step comprising:

inverting said audio frequency signal to produce an inverted audio frequency signal;

conducting said audio frequency signal to a first terminal of said piezoelectric crystal; and

conducting said inverted audio frequency signal to a second terminal of said piezoelectric crystal.

4,068,462

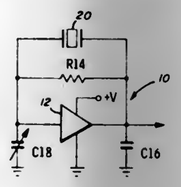
FREQUENCY ADJUSTMENT CIRCUIT

Donald R. Duff, Mountain View; James O. Lamb, and Donald E. Pezzolo, both of Cupertino, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 17, 1976, Ser. No. 687,053

Int. Cl.[2] G04C *3/00*; H03F *1/00*

U.S. Cl. 58—23 AC **8 Claims**



1. A circuit for adjusting the frequency of operation of an electronic time keeping device including a source of clock pulses, said circuit comprising:

a. means for storing a numeric code representative of a time delay of said clock pulses having a plurality of data output terminals;

b. means for counting a time interval in proportion to said numeric code, including a plurality of data input terminals coupled to respective ones of said data output terminals of said means for storing, a plurality of data output terminals, and a clock input terminal;

c. circuit means having a first input coupled to the source of clock pulses, a first clock output terminal coupled to the clock input terminal of said means for counting, a plurality of data input terminals coupled to respective ones of said data output terminals of said means for counting and a second clock output terminal disposed for supplying clock pulses of an adjusted frequency to the electronic time keeping device.

4,068,463

REFERENCE SIGNAL FREQUENCY CORRECTION IN AN ELECTRONIC TIMEPIECE

Hidetoshi Maeda, Tenri, and Takehiko Sasaki, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 17, 1975, Ser. No. 641,822

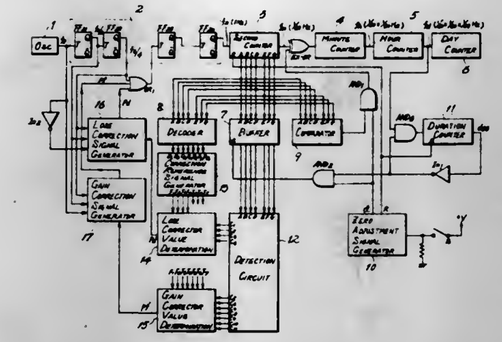
Claims priority, application Japan, Dec. 17, 1974, 49-145232; June 23, 1975, 50-77735

Int. Cl.[2] G04C *23/00*; H03K *21/32*; H03B *3/04*

U.S. Cl. 58—23 AC **8 Claims**

1. In an electronic timepiece which comprises a base signal generator, a frequency divider for developing a reference signal, a time information calculation circuit responding to the reference signal, a display system for displaying the time information, a zero adjustment switch and a zero adjustment control circuit associated with the zero adjustment switch, the improvement comprising:

a. a detection circuit for developing detection signals in accordance with second information in the time information calculation circuit when the zero adjustment switch is closed; and



b. a correction signal generator for correcting the frequency of the reference signal in response to the detection signals derived from the detection circuit.

4,068,464

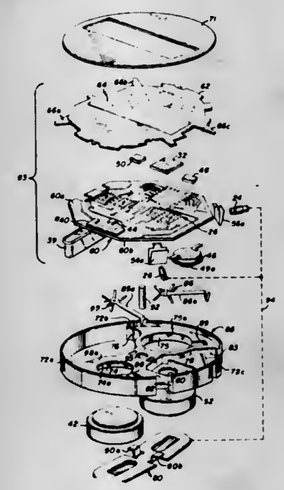
SHOCK RESISTANT WRISTWATCH MODULE

James V. Barnett, II, Cupertino; Ernest F. Mayer, Palo Alto; James W. Pfeiffer, Santa Clara, and Larry D. Wickwar, San Mateo, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Feb. 17, 1976, Ser. No. 658,219

Int. Cl.[2] G04B *19/30*

U.S. Cl. 58—50 R **9 Claims**



1. An electronic wristwatch comprising:

a case;

a cup-shaped module frame of electrically insulating material having a plurality of retainers with tab receiving openings located on the periphery thereof;

a lens plate of an electrically insulating material including a corresponding plurality of flexible tabs disposed on the periphery thereof for engaging corresponding ones of said retainers on said frame, thereby flexibly suspending said lens plate in said frame;

a substrate mounted to said lens plate and having rigidly mounted thereto a frequency standard, a frequency divider, an electro-optical display means, and means for driving said display, said substrate including printed electrical circuit means for coupling the constituent components of the circuit forming said electronic watch;

at least one battery mounted in an opening in said frame and having a terminal thereof electrically coupled to the printed means on said substrate; and

means for securing said at least one battery in said frame and for coupling a second terminal of said battery to circuitry on said substrate.

4,068,465

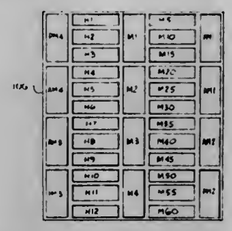
CLOCK USING ALTERNATING CURRENT CYCLE COUNTING

David C. Bacon, Clarkston, Mich., assignor to Bernard M. Licata, St. Clair Shores, Mich.

Filed July 14, 1975, Ser. No. 595,567

Int. Cl.[2] G04B *19/30*

U.S. Cl. 58—50 R **14 Claims**



1. Improvement in a clock in which time is kept by counting the cycles of an alternating current source and having power supply means providing both alternating and direct current power, display means for displaying time including a plurality of lights and windows corresponding to said lights, said direct current power including a variable display voltage for illuminating said lights, pulse generator means for generating pulses from said alternating current source, counting means for counting and dividing the output of said pulse generator means, said display means decoding the output of said counting means and lighting said lights and windows in accordance with the time of day, said improvement comprising setting means operative upon said counting means for correcting the time displayed by said clock, said setting means including a plurality of electrical switch means corresponding to said lights, actuation of any of said switch means completing an electrical circuit to up date said counting means, comparator means for comparing, upon actuation of one of said switch means said display voltage with the voltage applied to the light whose corresponding switch means is actuated, said comparator means operative, whenever the compared voltages are unequal, to actuate said counting means to correct the time displayed by said clock.

4,068,466

COUPLING DEVICE OF THE BACK-COVER AND THE MIDDLE OF A WATERPROOF SHAPED W· TCH-CASE

Lucien Tissot, La Chaux-de-Fonds, Switzerland, assignor to Jean-Louis Kernen, La Chaux-de-Fonds, Switzerland

Filed Mar. 9, 1976, Ser. No. 665,334

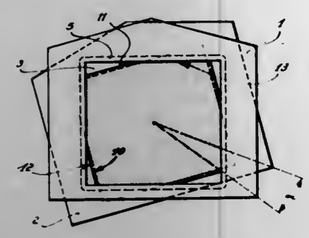
Claims priority, application Switzerland, Mar. 11, 1975, 3044/75

Int. Cl.[2] G04B *37/08*

U.S. Cl. 58—90 R **9 Claims**

1. A bayonet-type coupling device of the back-cover and the middle of a waterproof shaped watch-case, in which said middle presents a hollow comprising a groove in its internal wall and said back-cover comprises a wall provided with at least two outwardly extending ledges, and in which the sizes of said wall and of said hollow are such that, for at least an angular position of the back-cover with regard to the middle, they are free, the wall of the back-cover being placed within the hollow of the middle, and that, for at least another angular position,

they are coupled by engagement of at least a part of the ledges in the groove, characterized by the fact that said angular coupling position is defined by the contact of a part of the external surface of the wall of the back-cover with the internal surface of the hollow, both these surfaces having the same shape and the same sizes, so that the external surfaces of the middle and



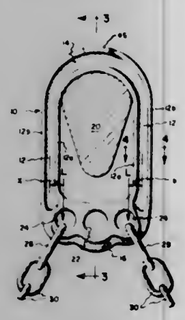
of the back-cover are in coincidence; by the fact that the external surface of the wall of the back-cover comprises at least an edge, constituting a locking strong point, cooperating with the internal surface of the hollow in order to lock the back-cover and the middle in their coupling angular position; and by the fact that a watertight joint is disposed between the middle and the back-cover and surrounds the wall of said back-cover.

4,068,467

FORGED MASTER LINK FOR SLING CHAIN DEVICES

Kenneth D. Schreyer, Clarence, and Edward R. Behnke, Lockport, both of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed July 29, 1976, Ser. No. 709,865
The portion of the term of this patent subsequent to Sept. 28, 1990, has been disclaimed.
Int. Cl.² F16G *13/12*
U.S. Cl. 59—93 **4 Claims**



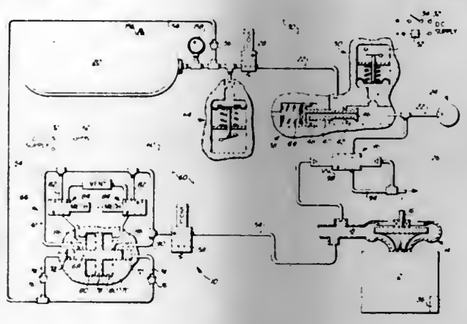
1. A sling chain device comprising in combination:
a master link, said master link having a generally oblong configuration defined by substantially straight opposite side leg portions, a hanging end portion joining upper ends of said leg portions and a load carrying end portion joining lower ends of said leg portions, said leg portions being of I-beam sectional form, said load carrying end portion being provided with a plurality of eyes, a pair of said eyes being disposed one eye in substantial longitudinal alignment with each of said leg portions;
at least two sling chains; and
at least two sling chain connecting links connected one to each of said sling chains and passing one through each eye of said pair of eyes for connecting said sling chains to said master link, said connecting links having a size exceeding the size of links of said sling chains and being sized relative to said eyes and portions of said load carrying end portion bounding said eyes as to permit said connecting links to freely pivot within said eyes relative to said master link.

4,068,468

STARTING METHOD AND SYSTEM FOR A GAS TURBINE

Palmer R. Wood, Scottsdale, and James A. Rhoden, Phoenix, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed May 29, 1975, Ser. No. 582,007
Int. Cl.² F02C *7/26;* F04B *17/00, 9/08*
U.S. Cl. 60—39.14 **29 Claims**



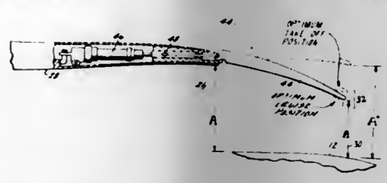
1. In combination with a gas turbine machine having a compressor:
a reservoir for pressurized gas;
an expanding rotary vane motor communicating with said reservoir and operably coupled to drive said compressor;
means including a conduit between said motor and said reservoir, for connecting said reservoir with said motor and delivering pressurized gas from said reservoir to said motor to effect rotation of said compressor to initiate starting of said machine;
pressure amplifier means connected with said reservoir and said compressor being supplied with gas at a first pressure from said compressor during operation of said machine, said amplifier means for delivering gas to said reservoir at a second pressure greater than said first pressure; and
a pressure regulating valve disposed in said conduit operable to reduce pressure of gas supplied from said reservoir to a relatively constant preselected third pressure substantially less than said second pressure prior to delivery to said motor.

4,068,469

VARIABLE THRUST NOZZLE FOR QUIET TURBOFAN ENGINE AND METHOD OF OPERATING SAME

Arthur P. Adamson, Cincinnati, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 29, 1975, Ser. No. 581,750
Int. Cl.² F02K *3/06*
U.S. Cl. 60—204 **9 Claims**



1. A method of operating an aircraft gas turbofan engine in a forward flight mode including the steps of:

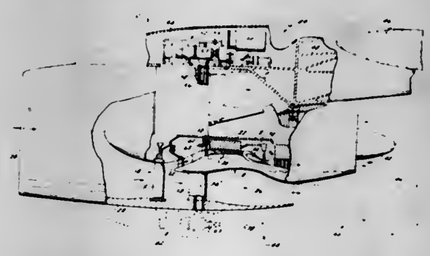
pressurizing air flowing through a stage of rotating fan blades disposed within an inlet duct;
passing a portion of the air through an annular bypass duct of generally fixed geometry;
discharging said portion through a nozzle of the type having a generally constant inlet area and variable exit area; and
modulating the nozzle exit area from a first value associated with a flight cruise operating condition which is convergent with respect to the nozzle inlet to a second value which is at least five percent greater than the first value, thereby reducing engine thrust and noise; and wherein fan blade rotational speed is essentially constant.

4,068,470

GAS TURBINE ENGINE WITH CONVERTIBLE ACCESSORIES

Donald F. Sargisson, and Arthur P. Adamson, both of Cincinnati, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,109
Int. Cl.² F02K *3/02;* F16H *35/00, 1/14*
U.S. Cl. 60—226 R **5 Claims**



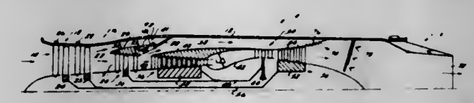
1. A gas turbine engine comprising:
a core engine including a core shaft;
a nacelle partially circumscribing said core engine;
first gear means within said core engine and driven by said core shaft;
a plurality of circumferentially spaced hollow struts extending radially between said core engine and said nacelle and in general axial alignment with said first gear means;
convertible accessory means disposed external to said nacelle and in general alignment with one of said struts; and
drive shaft means, one end of which is drivingly connected to said accessory means, and the other end of which includes a second gear means insertable into any of said hollow struts and into driving engagement with said first gear means, and
wherein said first gear means and said second gear means may be disengaged by withdrawing said drive shaft means radially outwardly with respect to said core shaft.

4,068,471

VARIABLE CYCLE ENGINE WITH SPLIT FAN SECTION

John Robert Simmons, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.

Filed June 16, 1975, Ser. No. 587,134
Int. Cl.² F02K *3/06*
U.S. Cl. 60—262 **7 Claims**



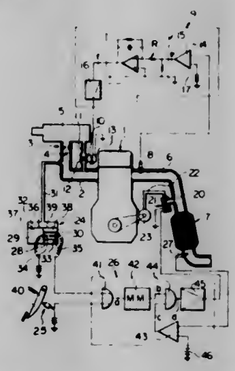
1. An improved variable cycle gas turbine engine of the type having an inlet for supplying a gas flow to a gas generator comprising a compressor, a combustor, and a high pressure turbine in serial flow relation, wherein the improvement comprises:
a fan disposed in the inlet having a front section for receiving and compressing the total inlet airflow and an aft section axially displaced downstream from the front fan section,
duct means for bypassing a portion of the inlet gas flow around the aft fan section and gas generator, and
diverter valve means disposed intermediate the aft fan section and gas generator for controlling the amount of gas flow from the front fan section to the bypass duct means, aft fan section and gas generator and movable between a first position in which the total gas flow exiting the front fan section is directed to and compressed by the aft fan section and the airflow exiting the aft fan section is divided between the bypass duct means and gas generator, and a second position in which the gas flow exiting the front fan section is divided between the bypass duct means and aft fan section, and the total gas flow exiting the aft fan section is directed to the gas generator.

4,068,472

FIRST AND SECOND AIR FEEDING MEANS TO REGULATE A/F RATIO WHEREIN SECOND AIR FEED REQUIRES TWO SIGNALS FOR ACTUATION

Akira Takata; Toshio Tanahashi, and Toshio Oda, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 30, 1976, Ser. No. 718,535
Claims priority, application Japan, May 18, 1976, 51-56024
Int. Cl.² F02B *75/10;* F01N *3/15;* F02M *23/00*
U.S. Cl. 60—276 **19 Claims**



1. An exhaust gas purifying device in an internal combustion engine having at least one cylinder, comprising:
an intake and an exhaust passage of said engine;
means for producing a rich air-fuel mixture in said intake passage;
a catalytic converter containing a three way catalyzer therein and disposed in said exhaust passage;
first detecting means for detecting the concentration of oxygen containing in the exhaust gas flowing in the exhaust passage located upstream of said catalytic converter, said first detecting means issuing a first output signal indicative of the concentration of oxygen;
means for regulating the air-fuel ratio of said rich air-fuel mixture so that said air-fuel ratio conforms to the stoichiometric air-fuel ratio in response to said first output signal of said first detecting means;
second detecting means for detecting the concentration of oxygen contained in the exhaust gas flowing in the exhaust passage located downstream of said catalytic converter, said second detecting means issuing a second output signal indicative of the concentration of oxygen;
third detecting means for detecting the accelerating, decelerating, and gear-shifting operations of the engine and for

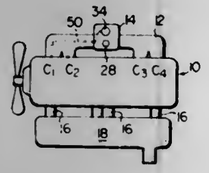
issuing a third output signal indicative of said operations, and means for feeding secondary air into the exhaust gas flowing in the exhaust passage located upstream of said catalytic converter so that the ratio of air consisting of said secondary air and air contained in the mixture introduced into the cylinder of the engine to the fuel contained in the mixture introduced into the cylinder of the engine is made equal to the stoichiometric air-fuel ratio in response to both said second and third output signals of said second and third detecting means at the time of acceleration, deceleration and gear-shifting.

4,068,473

AIR-FUEL MIXTURE DISTRIBUTION SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 20, 1975, Ser. No. 560,527
Claims priority, application Japan, Apr. 22, 1974, 49-45210
Int. Cl.² F01N *3/10*; F02B *75/10*
U.S. Cl. 60—282 **3 Claims**



1. In a multi-cylinder internal combustion engine equipped with means for purifying exhaust gases discharged from all the cylinders, the system for supplying during low load engine operation a first air-fuel mixture leaner than stoichiometric mixture into predetermined cylinders and a second air-fuel mixture richer than stoichiometric mixture into the remaining cylinders, and during medium and high load engine operations the first air-fuel mixture into all the cylinders, comprising:

a carburetor for supplying the first air-fuel mixture into all the cylinders; and

a mixture enriching device arranged to supply supplemental fuel from the fuel chamber of said carburetor into portions upstream of the intake ports of said remaining cylinders to enrich the first air-fuel mixture therethrough into the second air-fuel mixture, said mixture enriching device being arranged to supply the supplemental fuel in response to the engine load only during low load engine operation.

4,068,474

APPARATUS AND PROCESS FOR STEAM GENERATION BY SOLAR ENERGY

Boris Dimitroff, 4014 Perlita Ave. No. 6, Los Angeles, Calif. 90039

Filed Aug. 30, 1976, Ser. No. 718,402
Int. Cl.² F03G *7/02*
U.S. Cl. 60—641 **6 Claims**

1. For use in a steam generating system having a conventional steam turbine,

apparatus to generate steam from solar energy, comprising

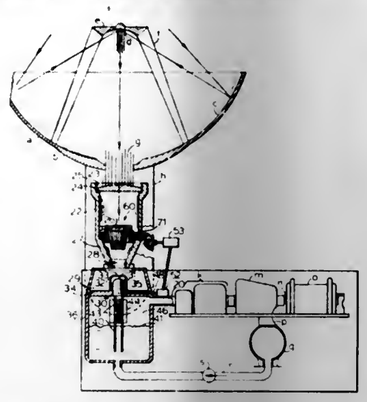
reflector means to concentrate said solar energy and

lens means to focus such solar energy substantially at a focal point,

a conductor element having a heat-receiving head portion positioned substantially at said focal point, whereby such energy impinges thereon, and having a conductive portion depending therefrom,

a water reservoir chamber having a normal water level and a head space thereabove including a steam outlet communicating with such turbine, said conductor element being mounted in a top wall of said reservoir chamber with its head portion projecting thereabove and its heat conducting portion extending downward into the lower part of said reservoir chamber,

whereby its lower end projects below such water level, thereby to conduct heat to such water,



said conductive portion having finned convection surface means above such water level,

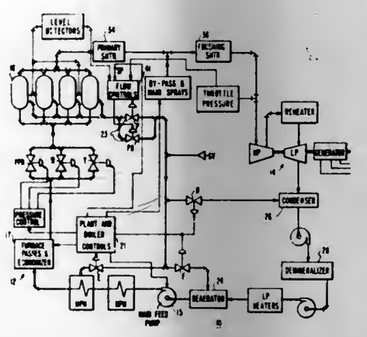
whereby to superheat the steam rising in the head-space of said reservoir chamber.

4,068,475

FLOW CONTROL FOR ONCE-THROUGH BOILER HAVING INTEGRAL SEPARATORS

Morton H. Binstock, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 20, 1976, Ser. No. 678,525
Int. Cl.² F01K *13/02*
U.S. Cl. 60—646 **10 Claims**



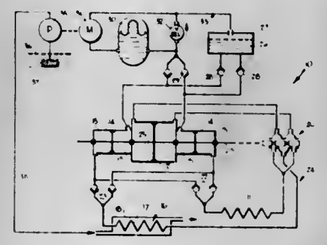
1. A startup system for a once-through boiler having a boiler feed pump for controllably driving water as a working fluid through the boiler tubes where heat is added to the working fluid under burner control, said system comprising separator means disposed in the main boiler flow path, means for detecting separator level, drain valve means for varying a drain flow from the separator means to balance boiler inflow and outflow during startup, first means for controlling said drain valve means for boiler flow balance during startup in response to a separator water level signal from said detecting means over a first working fluid pressure range up to a pressure below supercriticality, means for displacing said first control means from controlling effect at pressure above the first range and at a pressure below a pressure value at which the level signal becomes invalid, and second means for controlling said drain valve means for boiler flow balance during startup in response to a signal representative of at least one predetermined boiler operating parameter other than separator level at pressures above the first pressure range.

4,068,476

SOLAR DRIVEN POWER UNIT

Christopher George Kelsey, Glenalta, Australia, assignor to Andrew Graham Brown and K. E. Ellis Holdings Pty. Ltd., both of Australia

Filed Nov. 14, 1974, Ser. No. 523,909
Claims priority, application Australia, Nov. 15, 1973, 5654/73
Int. Cl.² F01K *25/10*
U.S. Cl. 60—671 **12 Claims**



1. A power unit comprising a double acting vapour pressure actuated motor, a first pump, a mechanical coupling between the motor and first pump, a condenser, an evaporator, conduits and valves interconnecting said evaporator, motor, first pump and condenser in a closed thermodynamic circuit, and a fluorocarbon refrigerant fluid in both liquid and vapour phases contained in the circuit, such that heating the liquid phase in the evaporator causes evaporation of the vapour at pressure which in turn applies pressure to one side of the motor and thereby actuates the motor, actuation of the motor effecting exhaustion of vapour from the other side of the motor into the condenser wherein the vapour is condensed, and then pumped as liquid by the first pump from the condenser, and through the evaporator to complete the fluid thermodynamic cycle,

the unit also comprising a second pump being an hydraulic pump, an hydraulic motor, hydraulic conduits and valves coupling the second pump and hydraulic motor in hydraulic circuit, and a mechanical coupling between the vapour pressure actuated motor and the hydraulic pump such that operation of the vapour pressure actuated motor also causes operation of the hydraulic pump and consequential operation of the hydraulic motor.

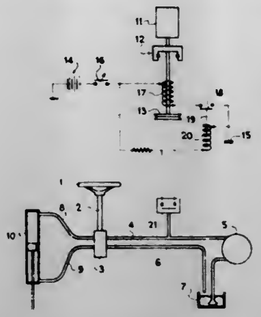
4,068,477

DEVICE FOR CONTROLLING ACCESSORIES DRIVEN BY THE ENGINE OF A VEHICLE HAVING AN ASSISTED STEERING

Pascal Lefebvre, Paris, France, assignor to Automobiles Peugeot, Paris, France

Filed Feb. 28, 1977, Ser. No. 772,570
Claims priority, application France, Mar. 1, 1976, 76 05727
Int. Cl.² F01B *21/00*; F04B *49/08*
U.S. Cl. 60—698 **2 Claims**

1. In a device for controlling at least one accessory which operates in an intermittent manner and is driven through a connection by the heat engine of a vehicle which has a hydraulic steering assistance supplied with fluid under pressure through a delivery pipe by a pump driven by said engine, said accessory being driven by the engine through an electromagnetic clutch controlled by an electric circuit; the improvement comprising, disposed in said delivery pipe, a pressure-switch which is connected in said electric circuit controlling the



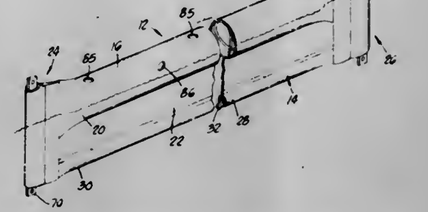
clutch so as to cut off said connection when the delivery pressure of the pump reaches a predetermined threshold value.

4,068,478

CONTAINMENT BARRIER SECTION ARRANGEMENT

Frank Meyers; Henry J. Folson, and Gwenn B. Meyers, all of Los Angeles, Calif., assignors to Frank Meyers, Torrance, Calif.

Filed Nov. 3, 1975, Ser. No. 628,231
Int. Cl.² E02B *15/04*
U.S. Cl. 61—1 F **78 Claims**



1. In an improved containment boom section, the improvement comprising, in combination:

flotation means having a predetermined buoyancy to provide upper portions thereof above the surface level of a liquid body for the condition of the boom section in the liquid body, and a lower portion below the surface level;

said flotation means comprising:

an elongated, flexible, generally tubular member having walls having internal surfaces defining an internal cavity and having a first end and a second end, and longitudinally compressible-expandable between a compressed, storage condition and an elongated, deployed condition;

a transversely rigid and longitudinally compressible-expandable means substantially free of longitudinal resilient forces in said cavity extending substantially from said first end to said second end of said tubular member and bearing against said internal surfaces of said walls of said tubular member for maintaining a predetermined transverse cross-sectional configuration of said tubular member in said compressed and said elongated condition;

connection means coupled to said tubular member for connecting said transversely rigid and longitudinally compressible-expandable means to said tubular member; and

vent means in said tubular member in regions adjacent said

upper portion of said flotation means for providing an air passageway between said cavity and regions external said flotation means.

4,068,479

FLOAT TETHER TERMINATOR

Noel W. Lane, Jr., 2106 Windmill View Road, El Cajon, Calif. 92020

Filed Dec. 31, 1975, Ser. No. 645,785
Int. Cl.² E02B 3/04; F16G 11/00
U.S. Cl. 61—5 3 Claims



1. In a tethered float breakwater assembly for reducing wave motion in water comprising at least one float; a tether line respectively connected at one end to said float; and a submerged ballast connected to the other end of said tether line, the improvement comprising:

elastomeric means at each end of said tether line joining the same to said float and to said ballast, respectively, each of said means comprising an elongated, soft, pliable neck of substantially uniform cross section for most of its length, said neck having a head portion at one end thereof and a base portion at the other end;

said head portion having a configuration to receive one end of said tether line in a locking connection therewith; and

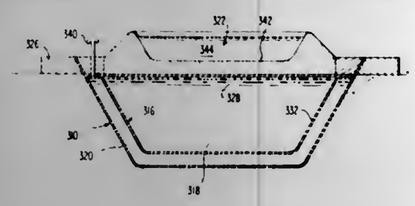
said base portion having a formation to provide a mechanical connection to said ballast.

4,068,480

LIQUID STORAGE SYSTEMS

Kenneth Winans Lefever, Rte. 1, Box 134, Waterford, Va. 22901; John James Gallagher, 171 Williams Drive, Annapolis, Md. 21401

Filed Nov. 13, 1975, Ser. No. 631,686
Int. Cl.² B65D 25/24
U.S. Cl. 61—0.5 17 Claims



1. A system for storing liquids of different densities comprising;

walls defining a liquid-impervious outer chamber;

a flexible liquid-impervious membrane disposed in spaced relation to said walls to define an inner chamber containing the less dense of said liquids;

the more dense of said liquids filling the space between said chambers;

means to adjust the level of the less dense of said liquids to a level substantially equal to that of the more dense of said liquids;

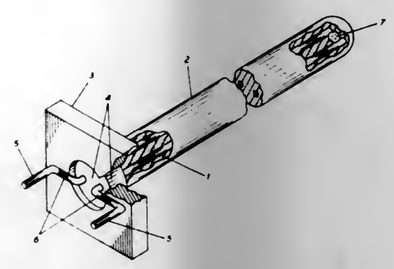
means to overcome the density differential between said liquids such that the surface level of the more dense of said liquids is at least substantially equal to that of said liquids.

4,068,481

SELF-RETAINING ROOF BOLT

William G. Toland, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 5, 1977, Ser. No. 794,166
Int. Cl.² E21D 21/00, 20/00
U.S. Cl. 61—45 B 9 Claims



1. A self-retaining roof bolt comprising:

a. an elongated U-shaped member having a pair of spaced leg sections depending from the connection portion of said U-shaped member, said leg sections being formed to support a flat plate fitted over said U-shaped member;

b. a grouting coated on said U-shaped member to maintain said leg sections under transverse tension at ambient temperature, said grouting being malleable at elevated temperatures;

c. a flat plate having an opening therein positioned over said U-shaped member and supported by said leg sections, said opening being large enough to permit said leg sections to move transversely on release of said transverse tension a sufficient amount to maintain said U-shaped member in place in a roof hole; and

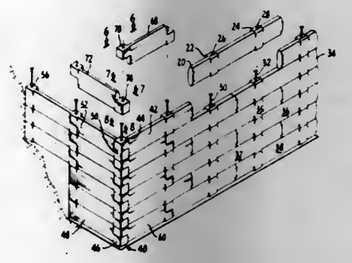
d. a gasket abutting said flat plate member and in sealing engagement with the lower portion of said U-shaped member to prevent flow of said coating below said plate at elevated temperature.

4,068,482

RETAINING WALL STRUCTURE USING PRECAST STRETCHER SECTIONS

William K. Hilfiker, Eureka, Calif., assignor to Hilfiker Pipe Company, Eureka, Calif.

Filed Aug. 2, 1976, Ser. No. 711,081
Int. Cl.² E02D 17/00
U.S. Cl. 61—47 15 Claims



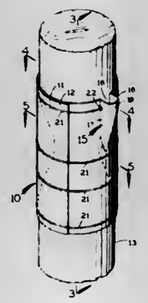
1. A retaining structure comprising: a plurality of courses of preformed stretchers having an elongated body with integral first and second support heads, said heads being spaced apart a predetermined fixed distance and having generally flat upper and lower stacking surfaces, the vertical depth of said heads as measured between the upper and lower surfaces thereof being greater than the vertical depth of the length of the stretcher disposed between said support heads, each of said heads having a vertical tie rod hole generally centrally located in said head for receiving a tie rod; and vertically extending tie rods secured to the lowermost course of stretchers and extending upwardly therefrom through the holes in the courses of stretchers thereabove.

4,068,483

PROTECTIVE SHEATH FOR WATER-ERODED WOOD PILING

Charles A. Papworth, 1018 SW. 21st St., Fort Lauderdale, Fla. 33315

Filed Dec. 22, 1976, Ser. No. 753,288
Int. Cl.² E02D 5/60
U.S. Cl. 61—54 4 Claims



1. In a protective sheath for attachment to an upstanding wood piling in place in a body of water and having a water-eroded area in the vicinity of the water line, said protective sheath comprising a preformed, longitudinally split casing of water-resistant plastic material having a length greater than the height of the eroded area of the piling for circumferentially enclosing the latter, said casing having overlapping opposite circumferential end segments disconnected from each other along the entire length of the casing and arranged with one circumferentially overlapping the other on the outside, said end segments of the casing being sufficiently flexible to be spread apart to enable the casing to be expanded radially and applied around the piling and being sufficiently resilient to spring back into said overlapping relationship after the casing has been applied around the piling, and means for clamping said casing directly to the piling above and below the eroded area,

the improvement wherein said casing has a preformed integral, outwardly offset spout at its upper end spaced circumferentially from said overlapping end segments and providing at the top of the casing a pour opening for concrete or the like, said spout extending down along the casing a distance sufficient to reach the eroded area of the piling to which the casing is applied.

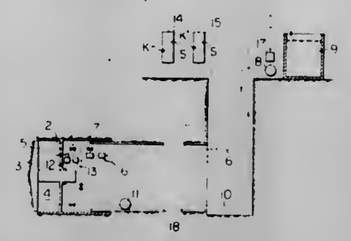
4,068,484

AUTOMATIC TUNNEL FACE HYDRAULIC PRESSURE CONTROLLING APPARATUS IN SHIELD TYPE HYDRAULIC TUNNEL BORING SYSTEM

Yasuyuki Iwamitu, Ichikawa; Yoshiaki Uchida, Koshigaya; Shigeru Kobayashi, and Masamitu Tateno, both of Tokyo, all of Japan, assignors to Tekken Construction Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1977, Ser. No. 767,037
Claims priority, application Japan, Apr. 5, 1976, 51-37201
Int. Cl.² E21D 9/00
U.S. Cl. 61—85 3 Claims

1. In a hydraulic tunnel boring system using a shield type boring excavator including a hydraulic pressure chamber defined between a rotary cutter head and a bulkhead, said chamber is filled with a hydraulic material fed through a feeding pipe from a hydraulic material reservoir and a mixture of said material and ground formations excavated by rotation of said cutter head is discharged through a discharging pipe to the reservoir, an apparatus for automatically conrolling tunnel face hydraulic pressure in said chamber, which comprises a regulating valve provided in said feeding pipe at a position close to said bulkhead, a feeding pump provided in the feeding pipe, a pressure gauge provided in the hydraulic pressure chamber for measuring actual tunnel face hydraulic pressure in



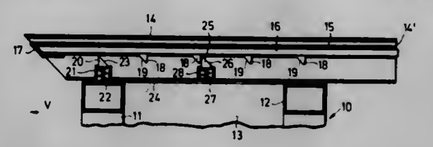
the chamber, a pressure signal transmitter connected to said gauge for converting pressure value measured and provided by the gauge into an electric signal, a first regulator receiving said signal from said transmitter and controlling said regulating valve in response to differences between the signal indicating said actual tunnel face hydraulic pressure and a predetermined pressure preliminarily set in said first regulator, and a second regulator receiving the signal from the transmitter and controlling pumping rate of said feeding pump in response to differences between the signal indicating the actual tunnel face hydraulic pressure and a predetermined pressure preliminarily set in said second regulator.

4,068,485

APPARATUS FOR DRIVING TUNNELS OR THE LIKE

Dieter Stuckmann, Selm; Hans Jutte, Dortmund-Brechten; Siegmund Babendererde, Bad Vilbel, and Reinhard Bokemeyer, Offenbach, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen and Hochtief AG, Frankfurt, both of Germany

Filed Aug. 2, 1976, Ser. No. 710,820
Claims priority, application Germany, Aug. 5, 1975, 2534860
Int. Cl.² E01G 3/00
U.S. Cl. 61—85 17 Claims



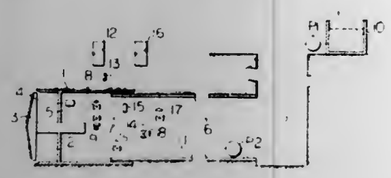
1. In an apparatus for use in driving tunnels or the like and which employs a plurality of elongate drive members arranged side-by-side and a frame for supporting the drive members for longitudinal displacement the members and the frame being advanced in succession towards a working face as the driving progresses; the improvement comprising a plurality of devices movable with at least some of the drive members and means of automatically extending said devices from the drive members when the frame is shifted to bring the devices into a position for treating the working face.

4,068,486

AUTOMATIC TUNNEL FACE HYDRAULIC PRESSURE CONTROLLING APPARATUS IN SHIELD TYPE HYDRAULIC TUNNEL BORING SYSTEM

Yoshiaki Uchida, Koshigaya; Akira Nakaya, and Kunitaka Saito, both of Tokyo, all of Japan, assignors to Tekken Construction Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1977, Ser. No. 767,038
Claims priority, application Japan, Sept. 8, 1976, 51-106820
Int. Cl.² E21D *9/00*
U.S. Cl. 61—85 **4 Claims**



1. In a hydraulic tunnel boring system using a shield type boring excavator including a hydraulic pressure chamber defined between a rotary cutter head and a bulkhead, said chamber is filled with a hydraulic material fed through a feeding pipe from a hydraulic material reservoir and a mixture of said material and ground formations excavated by rotation of said cutter head is discharged through a discharging pipe to the reservoir, an apparatus for automatically controlling tunnel face hydraulic pressure in the chamber, which comprises a first pressure gauge provided in the chamber for measuring the tunnel face hydraulic pressure. a first bypass pipe of said feeding pipe provided at a position close to said bulkhead, a first pressure regulating valve provided in said first bypass pipe, a second pressure regulating valve provided in the feeding pipe so that the first bypass pipe will be disposed across said second regulating valve, a first pressure regulator connected to said first pressure gauge and second regulating valve for controlling the second valve in response to differences if any between the tunnel face hydraulic pressure measured by the first pressure gauge and a predetermined feeding pressure preliminarily set in said first pressure regulator, a second pressure gauge provided in the feeding pipe upstream the first bypass pipe for measuring fed-hydraulic-material pressure in the feeding pipe, a third pressure regulating valve provided in the feeding pipe upstream said second pressure gauge, and a second pressure regulator connected to said second pressure gauge and third regulating valve for controlling the third regulating valve in response to differences if any between said fed-hydraulic-material pressure measured by the second pressure gauge and a predetermined feed pressure preliminarily set in said second pressure regulator.

4,068,487

METHOD AND APPARATUS FOR CONDUCTING SUBAQUEOUS OPERATIONS IN ICE CONDITIONS

Floyd Tim Pease, Houston; Gerhard Helmut Reusswig, Conroe, and Porter Russell Edling, Houston, all of Tex., assignors to The Offshore Company, Houston, Tex.

Filed Apr. 30, 1976, Ser. No. 682,187
Int. Cl.² E02B *17/00*; E21B *15/00*
U.S. Cl. 61—93 **3 Claims**

1. An improved platform from which subaqueous operations are performed in ice conditions, the platform having an aperture therethrough through which the subaqueous operations are performed, the improvement comprising:

at least two lower skid beams secured to the face of the platform, the two lower skid beams being positioned parallel to each other on opposite sides of the aperture;

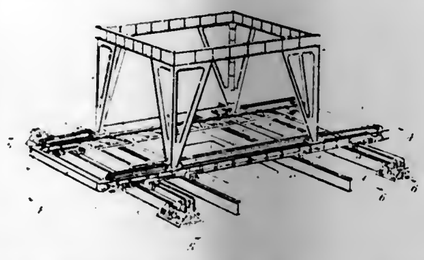
at least two upper skid beams positioned the top of the lower skid beams, the two upper skid beams being positioned parallel to each other on opposite sides of the aperture;

a substructure for supporting equipment for performing the subaqueous operations positioned atop the upper skid beams;

at least one carriage rail mounted longitudinally along selected lengths of each of said upper skid beams and said lower skid beams;

at least two travelling members carried by the underside of the substructure, each travelling member being associated with an upper skid beam, each of such travelling member including a wheel for communicating with the carriage rail mounted on such upper skid beam and presenting relatively low lateral resistance between the substructure and the upper skid beam whereby the substructure may move in either direction longitudinally along the upper skid beams:

at least two travelling members carried by the underside of the upper skid beams, each travelling member being associated with a lower skid beam, each of such travelling members including a wheel for communicating with the carriage rail mounted on such lower skid beam and presenting relatively low lateral resistance to the movement of the upper skid beam relative to the lower skid beam whereby the upper skid beams may move in either direction longitudinally along the lower skid beams;



a gear rack mounted longitudinally along selected lengths of each of said upper and lower skid beams;

a drive pinion carried by each of the travelling members and in communication with gear rack mounted on the respective skid beam with which the travelling member is associated;

a drive motor associated with each travelling member and operatively coupled to the drive pinion for generating motive forces to revolve the drive pinion whereby the substructure may be moved in either direction longitudinally along the upper skid beam and the upper skid beams may be moved in either direction longitudinally along the lower skid beams.

4,068,488

METHOD OF BACKFILLING PIPELINE TRENCHES

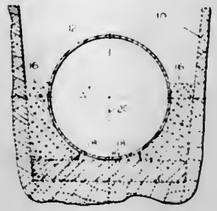
D. Graham Ball, North Vancouver, Canada, assignor to Rader Companies, Inc., Portland, Oreg.

Filed Apr. 30, 1975, Ser. No. 573,021
Int. Cl.² F16L *1/00*
U.S. Cl. 61—105 **12 Claims**

1. A method of backfilling a trench containing a pipeline comprising:

temporarily supporting said pipeline at a desired final position and grade within said trench spaced from the opposite sides of said trench and spaced above the bottom of the trench on removable support pads spaced at intervals along the bottom of said trench,

at a portion of said pipeline unsupported by said support pads blowing under pneumatic pressure a granular fill material into said trench first below and into the space beneath and about said pipeline and then progressively upwardly about and along the opposite sides of said pipeline to fill the trench spaces about the pipeline to at least about the spring line thereof, said fill material being blown at a velocity sufficient to simultaneously backfill said trench and compact said granular fill material to a substantially uniform desired final density about said pipeline to support the same at its final position and grade within said



trench, whereby subsequent compaction of said fill material is not required,

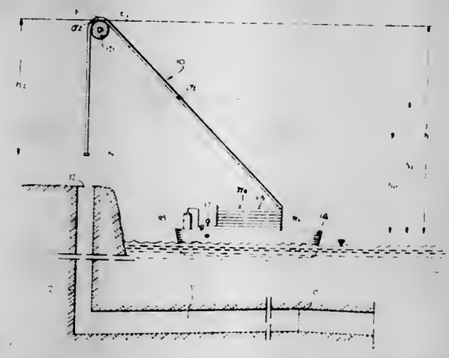
and continuing the aforesaid pneumatic filling operation progressively in a given direction along said trench and removing said support pads seriatim as the filling operation approaches each said pad.

4,068,489

METHOD AND APPARATUS FOR LAYING AN OIL FILLED CABLE AT DEPTHS BELOW THE LAYING EQUIPMENT

Paolo Gazzana Priaroggia, Milan, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Aug. 31, 1976, Ser. No. 719,121
Claims priority, application Italy, Sept. 26, 1975, 27675/75
Int. Cl.² F16L *1/00*
U.S. Cl. 61—105 **5 Claims**



1. A method for laying an oil filled cable which is subject to damage when the pressure of the oil therein exceeds a predetermined limit, from a first point to a second lower point which is below said fiirst point by a distance sufficient to cause the weight of said oil in a vertical iength of said cable equal to said distance to exert a pressure on said cable which exceeds said limit, said method comprising:

feeding an end of said cable with said oil under normal pressure therein from said first point to a third point at a level above said first point by a further distance which is sufficient to produce a relative oil pressure of zero within the cable and at a fourth point therein intermediate said first and third points but which is insufficient to cause the oil pressure in said cable to exceed said limit;

feeding said end of said cable from said third point downwardly toward said second point;

as said cable is fed from said third point to said second point and prior to the time that the pressure at said end thereof exceeds said limit, reducing the pressure of the oil in said cable at said first point thereby to cause oil to flow away from said third point whereby a vacuum is produced in said cable adjacent said third point and the pressure of the oil at said end of said cable is reduced; and

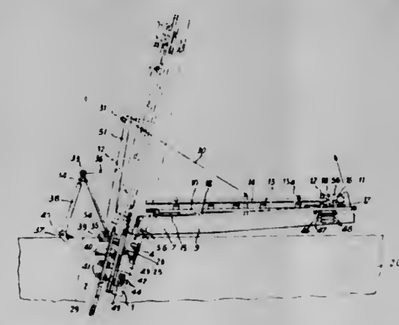
continuing the feeding of said cable end downwardly to said second point while maintaining the pressure of the oil at said end at less than said limit by adjusting the pressure of the oil in said cable at said first point.

4,068,490

METHOD AND APPARATUS FOR ASSEMBLING AND LAYING UNDERWATER PIPELINE

Michel J. Jegousse, Nantes, France, assignor to Compagnie Francaise des Petroles, Paris Cedex; Etudes Petrolieres Marines, Societe, Paris; Ateliers et Chantiers de Bretagne, Nantes; Compagnie Maritime d'Expertises, Marseille; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS), Paris and Entreprise de Recherches et d'Activites Petrolieres (E.R.A.P.), Paris, all of France

Filed May 5, 1976, Ser. No. 683,345
Claims priority, application France, May 6, 1975, 75 14079
Int. Cl.² F16L *1/00*
U.S. Cl. 61—108 **31 Claims**



1. A method of assembling and laying an undersea pipe from a surface support having a variable inclination laying ramp comprising: sequentially fixing a new pipe section to the end of a pipe portion already submerged, supporting said submerged section at the end to be coupled on the laying ramp, and moving said surface support by a distance corresponding to the length of the new pipe section simultaneously with submersion of the new pipe section, wherein said submerged pipe portion is suspended from said surface support and the tension in said submerged pipe portion is maintained substantially constant irrespective of vertical movements of said surface support relative thereto by providing first damping means between the pipe suspension means and said surface support.

4,068,491

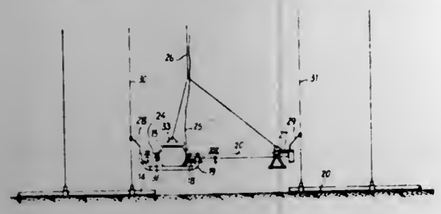
METHOD AND APPARATUS FOR CONNECTING THE ENDS OF SUBMERGED PIPES

Philippe C. Nobileau, Neuilly-sur-Seine; Rene M. Dermy, Courcouronnes, and Guy J. Fleury, Paris, all of France, assignors to Compagnie Francaise des Petroles, Paris Cedex; Etudes Petrolieres Marines, Paris; Ateliers et Chantiers de Bretagne-A.C.B., Nantes; Compagnie Maritime d'Expertises, Marseille; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS), Paris and Entreprise de Recherches et d'Activites Petrolieres (E.R.A.P.), Paris Cedex, all of France

Filed Dec. 14, 1976, Ser. No. 750,315
Claims priority, application France, Dec. 19, 1975, 75 38988
Int. Cl.² F16L *1/04*
U.S. Cl. 61—110 **12 Claims**

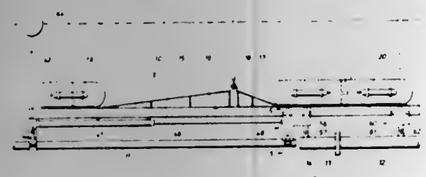
1. A method of connecting two ends of submerged pipes

using a receiver which is provided with two apertures through which the pipe ends extend, the method comprising introducing the pipe ends into the receiver, at least one of said pipe ends being introduced by movement of the receiver relative to the pipe end, after the introduction of the ends of the two pipes, lowering an undersea intervention unit onto said receiver to create by their assembly a watertight enclosure for an intervention crew for connecting the two ends of the pipes by means of a sleeve, the watertightness of the outer envelope of the assembly being ensured by seal means which establish the connection between the outer surfaces of the pipes and the apertures in the



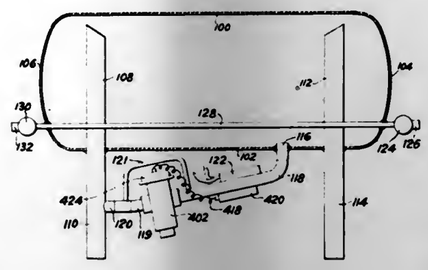
receiver, the watertightness of the inner envelope being ensured by two stoppers bearing seal means which are applied against the inner walls of the ends of the pipes, the stoppers being maintained spaced apart by a first boom, arranging a sleeve inside the receiver, the receiver being of a length appropriate to the gap between the ends of the pipes to be connected and carrying a replacement boom inside the sleeve, and placing the sleeve in position between the pipe ends under remote control with simultanoues replacement of the first boom by the replacement boom, after placing the receiver under hydrostatic pressure to balance the pressures being exerted upon the faces of the stoppers.

4,068,492
UNDERWATER PIPELINE COUPLING APPARATUS
Bobby J. Reneau, P.O. Box 14, Bellaire, Tex. 77401
Filed Aug. 5, 1976, Ser. No. 711,991
Int. Cl.² F16L *1/00*
U.S. Cl. 61—110 **10 Claims**



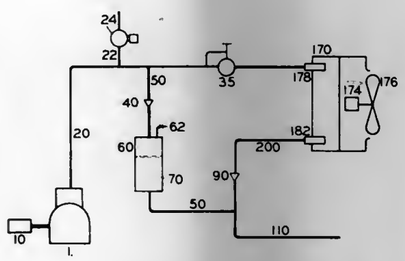
1. An apparatus for achieving underwater connection of a first pipe which is telescoped into a second pipe, comprising:
an elongate frame member;
means for releasably clamping said frame member parallel to a first pipe;
second means for clamping said elongate frame member relative to a second pipe, the first and second pipes being parallel to one another and axially spaced apart;
moving means carried on said elongate frame member and connected between said first and second clamp means for pulling one of said clamp means toward the other to move the first and second pipes toward one another and telescoping connection with one another.

4,068,493
SUCTION ACCUMULATOR FOR REFRIGERATION SYSTEMS
William Micai, Trenton, N.J., and Daniel Kramer, Yardley, Pa., assignors to Kramer Trenton Company, Trenton, N.J.
Filed Mar. 4, 1976, Ser. No. 663,867
Int. Cl.² F25B *43/00*
U.S. Cl. 62—194 **16 Claims**



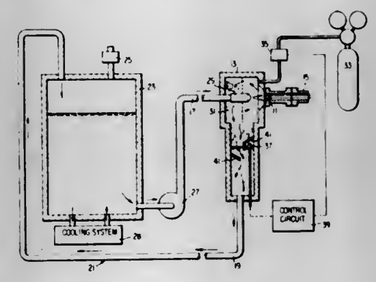
1. Improved suction accumulator means adapted to be used in mechanical compression type refrigeration systems, said accumulator means comprising a tank having a vapor inlet, a vapor outlet, and liquid outlet means; wherein the improvement comprises: automatic control means for sensing the presence and absence of liquid refrigerant in said accumulator means; and valve means located in the liquid outlet means and subject to the control means, said valve means constituting means for restricting flow from said liquid outlet means in the presence of liquid refrigerant and for allowing flow from said liquid outlet means in the absence of liquid refrigerant.

4,068,494
POWER SAVING CAPACITY CONTROL FOR AIR COOLED CONDENSERS
Daniel E. Kramer, 2009 Woodland Drive, Yardley, Pa. 19067
Filed Jan. 19, 1976, Ser. No. 650,240
Int. Cl.² F25B *41/00*
U.S. Cl. 62—196 B **12 Claims**



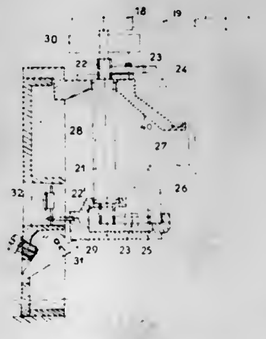
1. An improved compression type refrigeration system including a compressor having a discharge conduit; air cooled condenser means for receiving refrigerant from the discharge conduit and condensing it, said condenser means having an inlet and an outlet, said condenser means adapted to be exposed to varying ambients; an expansion device and an evaporator; a bypass conduit having a first end connected to the compressor discharge conduit, a condenser circuit comprising an inlet conduit joining one end of the bypass conduit with the condenser inlet, the condenser means, and an outlet conduit joining the other end of the bypass conduit with the condenser outlet; receiver means connected into the bypass conduit between the first end and the other end; single pressure regulator valve means adapted to cause flow through the bypass conduit and receiver when the high side pressure is lower than a predetermined minimum and to prevent said flow when the high side pressure is higher than said minimum.

4,068,495
CLOSED LOOP SPRAY COOLING APPARATUS
Donald L. Alger; William B. Schwab, both of Cleveland, and Edward R. Furman, North Olmsted, all of Ohio, assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.
Filed Mar. 31, 1976, Ser. No. 672,220
Int. Cl.² F25D *17/02*
U.S. Cl. 62—376 **10 Claims**



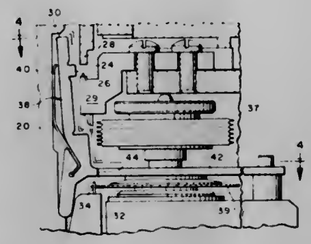
1. A closed loop apparatus for spraying a radiation target with liquid coolant comprising:
a loop for circulating the liquid coolant including a coolant reservoir, a chamber communicating with the target, and first and second tubular connections between the reservoir and the chamber for circulating the liquid coolant therethrough;
means disposed within the chamber and connected to one of the tubular connections for spraying the liquid coolant against the back of the target;
a source of high pressure gas communicating with the chamber; and
means for regulating the supply of gas to the chamber.

4,068,496
DEVICE FOR DRIVING NEEDLE BEDS IN A CIRCULAR KNITTING MACHINE
Norbert Paul Bourgeois, Troyes, France, assignor to ASA S.A., Roanne, France
Filed Sept. 27, 1976, Ser. No. 726,953
Claims priority, application France, Oct. 1, 1975, 75.30069
Int. Cl.² D04B *9/06*
U.S. Cl. 66—27 **7 Claims**



1. In a circular knitting machine of the type having a substantially vertical machine axis and a pair of synchronously rotating needle beds comprising a horizontal dial and a vertical cylinder, an improved apparatus for driving and positioning said needle beds comprising:
a motor disposed on the machine axis;
at least three bed drive assemblies symmetrically radially disposed equidistant from the machine axis, each said assembly comprising:
a rotatably driven vertical shaft having upper and lower pinion gears disposed at the ends thereof;
an upper intermediate gear having teeth meshing with said upper pinion gear and having associated means for rotatably driving the dial;
a lower intermediate gear having teeth meshing with said lower pinion gear and having associated means for rotatably driving the cylinder;
the teeth of said pinion gears and intermediate gears intermeshing to provide synchronous drive of the dial and cylinder and strict centering thereof;
means for supporting the dial;
support means for the cylinder including means for raising or lowering the cylinder relative to the dial;
means for braking said vertical shaft;
transmission means mechanically connecting said motor to each said vertical shaft for imparting rotation to the shafts.

4,068,497
CIRCULAR KNITTING MACHINE
George Roger Haynie, Laurens, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.
Filed Oct. 19, 1976, Ser. No. 733,762
Int. Cl.² D04B *15/74*
U.S. Cl. 66—50 B **1 Claim**



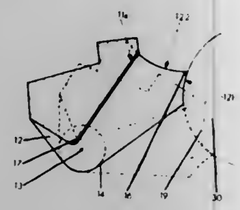
1. A circular knitting machine including a tricked needle cylinder, individually operated knitting needles in said tricks, needle controlling jacks provided below and in the same tricks as said needles and a jack raising cam operably associated with said jacks, each of said jacks having a cam engaging first butt portion and a second butt portion, said knitting machine having a plurality of yarn feed positions, a pattern attachment mounted at each yarn feed position to control the position of needle controlling jacks at each of said feed positions, a presser mounted at certain selected yarn feed positions projecting towards said jacks, means mounting control springs at certain pre-selected jack positions in engagement with said second butt portions of said jacks, and jacks at certain other jack positions having a third butt portion projecting from said second butt portion engaging said presser when said needle cylinder is rotated to place said third butt portion opposite to said presser to pivot said first butt portion out of engagement with said jack raising cam.

4,068,498

INTERLOCKING CAMS

Norbert Bourgeois, Troyes, France, assignor to ASA S.A., Roanne, France

Filed June 16, 1975, Ser. No. 586,881
Claims priority, application France, Oct. 15, 1974, 74 34681
Int. Cl.[2] D04B *15/32*
U.S. Cl. 66—57 1 Claim



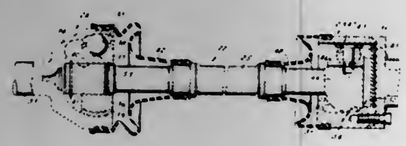
1. A circular knitting machine comprising at least one sinking cam and one movable cam enabling a selection of knitting elements to occupy several positions wherein said sinking cam is rotatably biased into a working position in which its working ramp cooperates with the butts of the knitting elements selected for knitting and can be moved to a rest position in which the working ramp cooperates with the knitting elements which are welting, said sinking cam being held in said rest position by a surface thereon which engagingly cooperates with a locking means on said movable cam when the latter is in a position to cause the knitting elements to welt.

4,068,499

TELESCOPING UNIVERSAL JOINTS

Everett H. Sharp, 344 E. Maryknoll, Rochester, Mich. 48063

Filed Jan. 26, 1976, Ser. No. 652,511
Int. Cl.[2] F16D *3/02*
U.S. Cl. 64—8 68 Claims



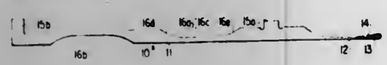
1. A telescoping universal joint comprising
a driving member,
a driven member,
torque transmitting means between the driving and driven members,
and means for limiting relative axial inward and outward movement between said members and for maintaining said members in fixed axial relationship while limiting said axial movement between said members as the joint rotates at any angular alignment of the members.

4,068,500

KNITTING MACHINE NEEDLE WITH FRONT AND BACK CUT-OUTS AND SPRING

Alfred O. Koborn, 862 Wyckoff Ave., Brooklyn, N.Y. 11227

Filed May 13, 1976, Ser. No. 685,970
Int. Cl.[2] D04B *35/04*
U.S. Cl. 66—123 3 Claims



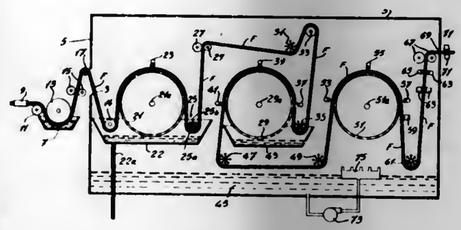
1. For use in a high speed circular knitting machine having a dial and cylinder provided with needle grooves and cams for moving the needle in said grooves, a needle comprising a flat sheet metal shank of generally rectangular transverse cross section and having an integral needle portion extending therefrom and having a hook, the needle shank having a groove contacting back and a front provided with butt means adapted for engagement with cams of a knitting machine, said needle having cut-out means at the back and at the front of the shank, said cut-out means each comprising an edge generally parallel to the longitudinal axis of the needle shank, and arcuate edges joined thereto, and spring means on the side of said needle shank and located on said shank adjacent the path of travel of vibrations from said butt means toward said needle hook for attenuating vibrations generated in said shank by engagement of said butt means with the cam of the knitting machine, whereby to reduce the transmission of vibrations to the needle hook.

4,068,501

APPARATUS FOR TREATING TUBULAR FABRICS

Edward I. Aronoff, St. Laurent, and William J. McLay, Montreal, both of Canada, assignors to Knit-Fin Machinery Ltd., Montreal, Canada

Filed Dec. 28, 1976, Ser. No. 754,951
Claims priority, application Canada, Oct. 25, 1976, 264255
Int. Cl.[2] D06B *1/08*
U.S. Cl. 68—19.1 5 Claims



1. An apparatus for treating tubular fabric, including a liquid treatment impregnation bath, means for passing the fabric through said bath, squeeze rollers for removing excess treating liquid from the fabric as it exits from the treatment bath, a first sieve drum, roller means for passing the tubular fabric over the first sieve drum, spray means for spraying rinse liquid onto the fabric as it passes over the first sieve drum, a second sieve drum downstream of the first sieve drum, means for passing the fabric above the second sieve drum and returning it in the opposite direction over and in contact with the second sieve drum such that the fabric has been reversed to expose the other surface thereof, spray means for spraying rinsing liquid onto the fabric as it passes over the second sieve drum, means for passing the fabric underneath the second sieve drum, and means for removing the excess rinsing liquor from the fabric.

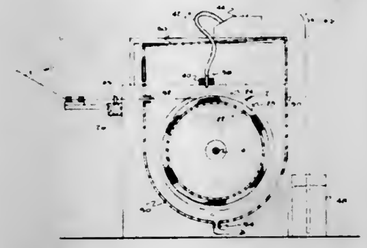
4,068,502

APPARATUS FOR MULTICOLOR DYEING OF TEXTILE YARNS

Harald Anderson, 18 King's Hill Court, Summit, N.J. 07901

Filed Aug. 6, 1976, Ser. No. 712,186
Int. Cl.[2] D06B *1/02*
U.S. Cl. 68—27 8 Claims

1. Improved apparatus for the high speed, multicolor dyeing of a yarn strand comprising:
a. a rotatable drum having end flanges and a central barrel portion for collecting a running length of yarn in a plurality of layers thereon;
b. means positioned in outwardly spaced relation from the surface of the barrel and extending along the barrel length between said end flanges for continuously directing a row of discrete, cohesive streams of dye against the outer surface of the yarn on said barrel to form narrow adjacent radial bands of color in the yarn layers during rotation of the drum;
c. means for guiding a yarn strand onto the barrel surface while traversing the strand along the length of the barrel between said end flanges to sequentially locate desired lengths of the yarn strand in each of said radial bands of color during rotation of the drum;



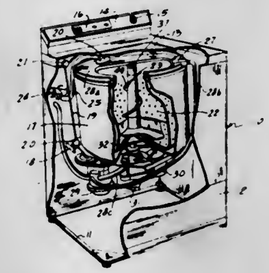
d. means for rotating the drum at a predetermined high rate of speed to produce centrifugal force sufficient to cause radial outward flow of dye from inner layers of the yarn in each of said bands of color to penetrate the inner surfaces of outer yarn layers on the barrel; and
e. shield means completely surrounding the outer yarn receiving surface of the barrel in spaced relation therefrom for continuously collecting excess dye centrifugally expelled from the surface of the yarn on the drum during winding and having a yarn entrance slot located therein.

4,068,503

COMBINED OSCILLATING AND UNIDIRECTIONAL AGITATOR FOR AUTOMATIC WASHER

Clark I. Platt, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 595,792, July 14, 1975, Pat. No. 3,987,651, which is a continuation of Ser. No. 418,378, Nov. 23, 1973, abandoned. This application June 16, 1976, Ser. No. 696,746
The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.
Int. Cl.[2] D06F *13/06*
U.S. Cl. 68—133 17 Claims



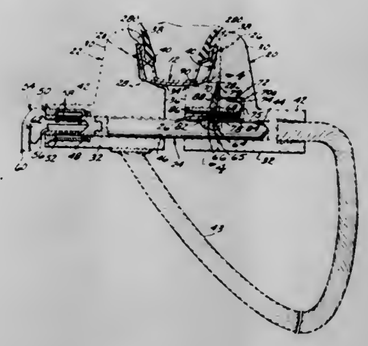
1. An agitator assembly for a clothes washing machine comprising:
a first agitator element,
a second agitator element,
drive means for driving said first agitator element in an oscillatory motion and for concurrently driving said second agitator element in an unidirectional rotary motion, said first and second agitator elements cooperating to circulate the contents of the machine in a toroidal rollover pattern within the washing machine, and
means associated with said second agitator element for forcing articles adjacent thereto into the oscillatory path of said first agitator element and into said rollover pattern, said first agitator element having formed thereon flexible vanes which are free to flex in response to oscillatory motions of the agitator element, thereby to yieldingly engage fabrics deflected downwardly and lessening high impact loading of the first agitator element.

4,068,504

BICYCLE LOCK

Frank W. Pickard, Inglewood, Calif., assignor to Eleanor D. J. Stanford, Inglewood, Calif., a part interest

Filed July 26, 1976, Ser. No. 708,748
Int. Cl.[2] E05B *73/00*
U.S. Cl. 70—18 8 Claims



1. A bicycle lock, comprising:
a pair of jaws for gripping opposite sides of a rim of a spoked wheel in a direction generally parallel to an axle of said wheel, at least one of said jaws supporting a projection for engaging a fork-like frame member supporting the said axle when said jaws are affixed in place on said rim to limit rotation of said wheel, said jaws including coaxial holes;
a connecting shaft turnable in said coaxial holes in said jaws, axially fixed relative to a fixed one of said jaws, and axially slidable in the hole in a movable one of said jaws; and
cooperative means on said movable jaw and connecting shaft for (a) driving said movable jaw toward said fixed jaw and for (b) releasably locking said movable jaw against axial movement on said shaft away from said fixed jaw as said shaft is turned to a preselected rotational position relative to said movable jaw.

4,068,505

LOCKING DEVICE

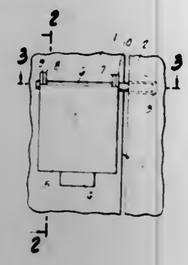
Kenneth Q. Volk, Jr., San Marino, Calif., assignor to Public Storage, Inc., Pasadena, Calif.

Filed Feb. 25, 1977, Ser. No. 772,027
Int. Cl.[2] E05B *67/38;* E05C *1/04, 13/02*
U.S. Cl. 70—56 8 Claims

1. Locking means including a base plate and a cover plate hinged thereto, the base plate including:
flanges extending laterally from opposite sides of said base plate, each base plate flange including an aperture near one end of said base plate, the apertures lying at least partly in the same plane, and means for joining the locking means to a first surface;
the cover plate including flanges extending laterally from opposite sides of said cover plate, each cover plate flange including an aperture near one end of said cover plate, said apertures lying at least partly in the same plane;
the cover plate flanges alone, the base plate flanges alone, or both together bridging the spaces between the edges of base and cover plates on said opposite sides;

said base plate and cover plate each including a lock-receiving flange on its inner surface, each lock-receiving flange including a lock-receiving aperture, said lock-receiving apertures lying at least partly in the same plane when said cover plate is closed against said base plate;

first bar means passing through the apertures in the base plate and cover plate flanges and joining the plates



hingedly and being sufficiently long to engage a second surface when said second bar means lies on the side of at least one of said lock-receiving flanges nearer the second surface; and

second bar means joined to and extending laterally from said first bar means at least to the lock-receiving flange on said base plate.

4,068,506

HIDDEN LOCK

Robert A. Phelps, 220 Granlan Road, Baltimore, Md. 21228

Filed Nov. 5, 1976, Ser. No. 739,036
Int. Cl.[2] E05B 65/08; E05C 19/18
U.S. Cl. 70—100 4 Claims



1. A concealed lock for panels such as windows and doors that have adjoining portions when the panels are in closed position, and when closed having an aligned opening extending from one panel to the other, comprising:

a symmetrically formed hollow sleeve member slidably insertable without rotation and removable from said aligned opening, either end first, with the entire sleeve being concealed inside the aligned opening,

a key member insertable into said concealed hollow sleeve and easily and quickly interengageable and disengageable with the sleeve at the closest end to remove the sleeve member and unlock the panels,

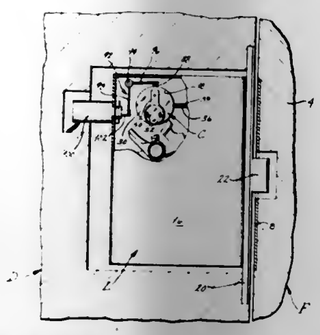
said hollow sleeve member having engageable means near each opposite end, and said key having coacting means for easily engaging said sleeve member at either end when inserted into the concealed sleeve, despite the angular orientation of the key with respect to the sleeve.

4,068,507

LIMITED ACCESS LOCK

Francis C. Peterson, St. Louis County, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed Aug. 11, 1976, Ser. No. 713,275
Int. Cl.[2] E05B 27/04, 43/00
U.S. Cl. 70—271 13 Claims



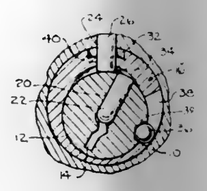
1. In a lock including a case and a bolt in the case, improved key operated means for retracting the bolt on a selective basis, said means comprising: a member having a bore therein; a core in the bore and being capable of receiving a first key, the core having a hole therein; first means in the member for engaging the core and preventing the core from rotating when the key is out of the core and being disengaged from the core by the key when the key is inserted into the bore; second means engageable with the core for preventing rotation of the core irrespective of whether or not the first key is in the core, the second means including a push rod which will project into the hole of the core and prevent the core from rotating when the core is in the proper position of rotation and a spring urging the push rod away from the core; and actuating means for controlling the position of the push rod, the actuating means when energized overcoming the force exerted on the push rod by the spring and urging the push rod toward the core.

4,068,508

PIN TUMBLER LOCK WITH PULL RESISTANT PLUG

Joseph M. Genakis, Worcester, Mass., assignor to Benjamin D. Pollack, Morris, Conn.

Filed Sept. 24, 1976, Ser. No. 726,208
Int. Cl.[2] E05B 27/04
U.S. Cl. 70—364 A 9 Claims



1. A cylinder lock comprising:

a lock housing defining a circularly cylindrical bore and a plurality of housing pinways;

a circularly cylindrical sleeve means rotatably mounted in said bore and having a circularly cylindrical passage with a central axis eccentric to the axis of said bore, said sleeve means defining a plurality of sleeve pinways aligned with said housing pinways;

a cylindrical plug rotatably mounted in said passage and defining a longitudinally extending keyway, said plug further defining a plurality of transversely extending plug

pinways intersecting said keyway and aligned with said sleeve pinways;

a plurality of stacked pins longitudinally movable within each set of said aligned housing, sleeve and plug pinways;

bias means forcing said stacked pins toward said keyway;

rotational coupling means limiting rotation of said plug within said passage; and

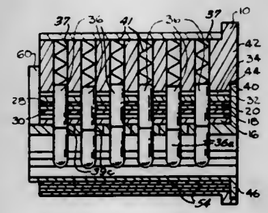
longitudinal coupling means for preventing longitudinal movement of said plug and said sleeve means with respect to said housing, said coupling means comprising selective keying means engaging said plug and said sleeve means so as to prevent relative longitudinal movement therebetween while allowing relative rotational movement therebetween and further comprising external recesses in the outer surface of said sleeve means and coincident with said sleeve pinways, said external recesses being longitudinally spaced apart on the outer surface of said sleeve means.

4,068,509

PIN TUMBLER LOCK CYLINDER

Joseph M. Genakis, Worcester, Mass., assignor to Benjamin D. Pollack, Morris, Conn.

Continuation of Ser. No. 579,040, May 19, 1975, abandoned.
This application July 19, 1976, Ser. No. 706,935
Int. Cl.[2] E05B 27/04
U.S. Cl. 70—364 A 15 Claims



1. A cylinder lock comprising:

a lock housing defining a circularly cylindrical bore and a plurality of housing tumbler-ways;

a circularly cylindrical sleeve means rotatably mounted in said bore and having a circularly cylindrical passage with a central axis eccentric to the axis of said bore, said sleeve means defining a plurality of sleeve tumbler-ways aligned with said housing tumbler-ways;

a cylindrical plug rotatably mounted in said passage and defining a longitudinally extending keyway, said plug further defining a plurality of transversely extending plug tumbler-ways intersecting said keyway and aligned with said sleeve tumbler-ways;

a plurality of stacked tumblers longitudinally movable within each set of said aligned housing, sleeve and plug tumbler-ways;

bias means forcing said stacked tumblers toward said keyway; and

coupling means substantially preventing rotation of said plug within said passage so as to limit lock opening movement of said plug to an orbital path about the axis of said bore.

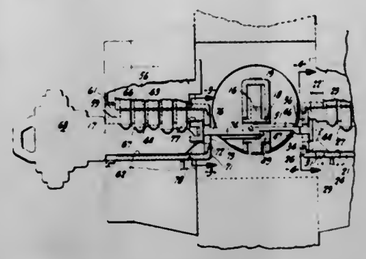
4,068,510

DOUBLE CYLINDER SAFETY LOCK

Ralph E. Neary, San Francisco, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed June 28, 1976, Ser. No. 695,304
Int. Cl.[2] E05B 9/10
U.S. Cl. 70—379 R 9 Claims

1. A safety lock comprising a bolt, means including a hub rotatable about an axis and having a non-circular hole therein for moving said bolt between a projected position and a retracted position, a plug rotatable about said axis and including means defining a keyway in said plug along said axis, means depending upon the rotary position of said plug for retaining a key in said plug, an actuator at one end disposed in said plug and extending along said axis and occupying only a portion of



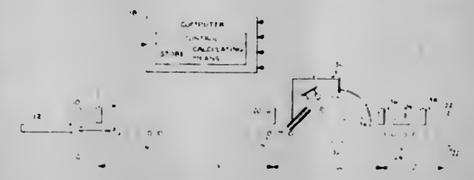
said hole in said hub, a lost-motion device on said plug for connecting one end of said rotary plug and said one end of said actuator and operable by a key in said keyway in said plug, and a direct device for immediately connecting a key in said keyway in said plug and said end of said actuator.

4,068,511

METHOD AND APPARATUS FOR BAR TEMPERATURE DETERMINATION IN A HOT STRIP MILL

George P. Petrus, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Mar. 15, 1977, Ser. No. 777,618
Int. Cl.[2] B21B 37/10
U.S. Cl. 72—13 14 Claims



1. In a continuous hot strip mill system including a first rolling mill, a second rolling mill and an intermediate delay table having an open portion and a coiler portion, means for determining the temperature of a bar being rolled comprising:

a. means to determine the bar temperature as it emerges from the first rolling mill;

b. means to determine the amount of time the bar remains on the open portion of the delay table;

c. means to determine the amount of time the bar remains in said coiler portion; and,

d. computer means including calculating means for calculating the temperature of the bar as it enters the second rolling mill as a function of the determined times and the bar temperature as it exited the first rolling mill.

4,068,512

APPARATUS AND METHODS FOR FORMING MULTIPLE ELONGATED PRODUCTS

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 8, 1975, Ser. No. 638,493
Int. Cl.[2] B21C 23/01, 23/08, 23/32
U.S. Cl. 72—41 10 Claims

1. Apparatus for deforming a lubricant-coated, metallic workpiece to produce simultaneously a plurality of elongated, metallic products, said apparatus comprising:

a die having a plurality of discrete apertures extending in

parallel therethrough, including at least one generally central aperture and a plurality of additional apertures, said at least one generally central aperture being located closer to a center of the die than is each of said additional apertures, said plurality of discrete apertures being arrayed along an open-ended curve selected to promote a free flow of the lubricant coating on the metallic workpiece both to said at least one generally central aperture and to said additional apertures upon a forcing of said metallic workpiece against and through the die, while



simultaneously permitting numerous apertures to be included in the array of apertures so as to reduce the pressure required for said forcing; and

means for forcing the lubricant-coated, metallic workpiece against said die with sufficient pressure to cause different lubricant-coated portions of the metallic workpiece to pass simultaneously through said at least one generally central aperture and said additional apertures while applying the lubricant coating to each of said generally central and additional apertures, such that a plurality of elongated, metallic products is produced.

4,068,513

METHOD OF DRAWING LIGHT METALS AND ALLOYS AT VERY HIGH SPEEDS

Pierre Guerit, Chambery, and Gilbert Pollet, La Rivoire, both of France, assignors to Servimetal, Paris, France

Filed Jan. 7, 1977, Ser. No. 757,607
Claims priority, application France, Jan. 28, 1976, 76 02852
Int. Cl.² B21C *9/02*
U.S. Cl. 72—42 **3 Claims**

1. A method of high-speed hot drawing light metals and alloys, particularly aluminum, magnesium and alloys based on aluminum or magnesium, comprising the steps of drawing the metal through a draw die and lubricating the die by interposing between the metal and the die a vitreous substance having a viscosity within the range of 10^3–10^4 poises at a temperature within the range of 400°–650° C, in which the vitreous substance consists essentially of 25.6 to 68.3% by weight P_2O_5, 1.7 to 53% by weight B_2O_3 and up to 38.9% by weight Na_2O.

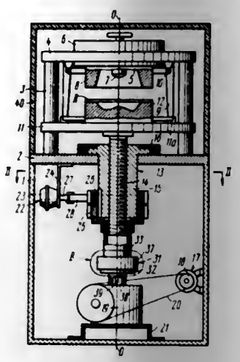
4,068,514

DEVICE FOR ELECTROHYDRAULIC DIE-FORGING

Viktor Nikolaevich Chachin, bulvar Lunacharskogo, 8, kv. 21; Jury Efimovich Sharin, ulitsa Ya. Kolasa, 43, korpus 1, kv. 18; Gennady Nikolaevich Zdor, ulitsa V. Khoruzhei, 19, kv. 14; Vladimir Leontievich Shaduya, ulitsa Pervomaiskaya, 8, kv. 7, and Alexandr Julyanovich Zburavsky, prospekt Partizansky, 28, korpus 2, kv. 135, all of Minsk, U.S.S.R.

Filed July 12, 1976, Ser. No. 704,178
Int. Cl.² B21D *26/02*
U.S. Cl. 72—56 **3 Claims**

1. A device, for electrohydraulic die-forging of a blank, having a bed and at least two parallel columns secured on said bed; said device comprising a first plate rigidly secured on said columns; an explosion chamber located on said plate and adapted to contain a fluid; a power source; an electrode arranged in said explosion chamber and connected electrically to said power source; a wall of said explosion chamber serving as a second grounded electrode; a die supporting said blank mounted on another or second plate set parallel to said first plate and adapted to move towards and away from said first plate along said columns for moving said die and blank and pressing same against said explosion chamber in the course of die-forging; a mechanism for moving said second plate and pressing it against said explosion chamber being in the form of a kinematic screw-and-nut pair; said mechanism comprising a progressively moving element rigidly connected with said second plate; a rotatable element mounted on said bed; a drive



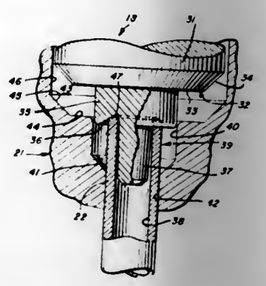
system for progressively moving said second plate; and independent drive of said mechanism for pressing said die and blank against said explosion chamber; and said rotatable element being linked kinematically with said drive system of said second plate and with said independent drive for pressing said die and blank against said explosion chamber, whereby said die and blank are brought into contact with the explosion chamber and pressed thereagainst by the action of said drive system and said independent drive.

4,068,515

FLARING TOOL

Leonard J. Kowal, Prospect Heights, and Edward N. Garvey, Schaumburg, both of Ill., assignors to Gould Inc., Chicago, Ill.

Filed Feb. 7, 1977, Ser. No. 767,642
Int. Cl.² B21D *19/16*
U.S. Cl. 72—115 **15 Claims**



1. A manually operable tube flaring tool for providing a controlled buckling of the end of a deformable tube to form a partial double flare therein, said tool comprising: a flaring head defining a frustoconical flaring surface and a cylindrical pilot portion projecting axially from said flaring surface to be received in the tube end for guiding the flaring surface axially against the distal end of the tube, said flaring surface extending radially substantially the entire radial dimension of the flaring head radially outwardly of the pilot portion; a support for fixedly positioning said tube end coaxially adjacent said flaring surface, said support defining a cylindrical recess coaxially confronting said flaring surface and including an axially outer right circularly cylindrical portion having an inner diameter

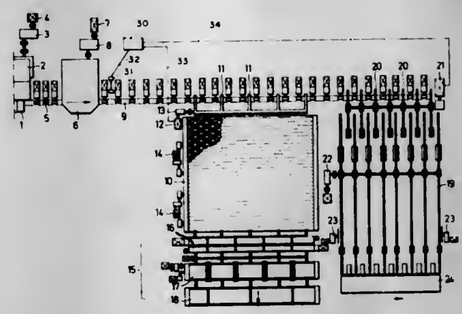
slightly greater than that of the large end of said flaring surface for slidably guiding the flaring head during a flaring operation, an axially inner frustoconical, outwardly widening portion opening coaxially into said outer portion, and an axially innermost tube clamping right circularly cylindrical portion; force transmitting means for forcibly urging the flaring head axially inwardly against said distal end of the tube secured by said clamping portion, the angularity of said frustoconical portion being preselected to allow said tube end to buckle radially outwardly to have an axially inner portion abut said frustoconical portion of the support and an axially outer portion adjacent said distal end about said flaring surface of the flaring head; and stop means for positively limiting inward movement of the flaring head relative to said support for assuring an accurately preselected buckled partial double flare configuration of the tube end, said stop means including an annular, inwardly facing planar stop surface on said flaring head outwardly adjacent said flaring surface, and a complementary annular outwardly facing planar stop surface on said support outwardly adjacent said outer recess portion.

4,068,516

METHOD AND APPARATUS FOR HANDLING BAR-SHAPED MATERIAL

Rudolf Woelsch, Mailand, Italy, assignor to Firma Friedrich Kocks, Duesseldorf, Germany

Filed Nov. 18, 1976, Ser. No. 742,869
Int. Cl.² B21B *43/00*
U.S. Cl. 72—201 **14 Claims**



1. A method of handling bar-shaped material, such as tubes, beyond a plant for at least one of manufacturing and machining the same, comprising the steps of sub-dividing the material moving out of the plant by means of a severing device, sorting the cut lengths of material into at least two groups, each group of generally similar character, feeding said sorted lengths to at least two spaced cooling beds, one group to each bed, conveying the cut lengths from the first cooling bed and subjecting them to substantially automatic continuous after-processing and conveying the cut lengths from the second cooling bed, after intermediate storage subjecting them at the second cooling bed to at least partially manual individual after-processing.

4,068,517

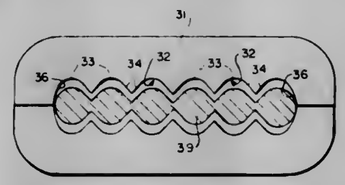
METHODS AND APPARATUS FOR FORMING WIRE TAPES

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 25, 1976, Ser. No. 670,467
Int. Cl.² B21C *23/02, 25/02*
U.S. Cl. 72—253 R **11 Claims**

1. A method of hydrostatic extrusion for deforming an elongated workpiece so as to form an integral article, which article comprises a plurality of elongated members, each of substantially circular cross-section, extending longitudinally in parallel while arrayed in a substantially laterally extending line, and joined together in edge-to-edge contact substantially along parallel, longitudinally extending lines of tangency between adjacent elongated members, the method comprising the steps of:

a. applying hydrostatic forces to the elongated workpiece in such direction as to extrude the elongated workpiece through first die aperture wall means, having a fixed configuration and shaped to deform the elongated workpiece into an intermediate structure, which intermediate structure comprises a plurality of elongated elements extending in a longitudinal direction, in parallel, while arrayed in a substantially laterally extending line, and joined together along adjacent lateral edges of adjacent elements, each of said elements having a cross-section which includes a substantially circular, arcuate portion between said adjacent lateral edges of adjacent elements and a non-circular, junction region generally converging



toward each of said adjacent lateral edges of adjacent elements; and thereafter

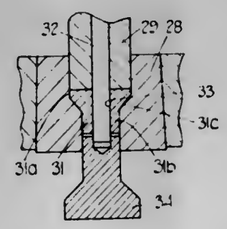
b. further extruding said intermediate structure, by means of said hydrostatic forces, through second die aperture wall means, having a fixed configuration and shaped to compress said intermediate structure substantially laterally, along the substantially laterally extending line in which the plurality of elongated elements are arrayed in said intermediate structure, to round out said non-circular, junction regions in such manner as to form an integral article comprising a plurality of elongated members, equal in number to the number of elongated elements in said plurality of elongated elements, with the elongated members each having a substantially circular cross-sectional shape, and being joined together along adjacent lateral edges of adjacent elongated members.

4,068,518

METHOD OF MANUFACTURING AN EXTRUDED STEEL COMPONENT

Ian Anthony Dockerill, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 17, 1976, Ser. No. 687,209
Claims priority, application United Kingdom, May 20, 1975, 21376/75
Int. Cl.² B21D *22/00*
U.S. Cl. 72—354 **8 Claims**



1. A method of manufacturing an extruded steel component, including the steps of:

a. producing a steel preform which defines a shank part of a required component and which includes a hollow head

portion tapering inwardly to the shank part, the external diameter of the head portion being substantially equal to the external diameter of the head part of the required component, but the bore in the head portion having a diameter less than that required for said head part, and

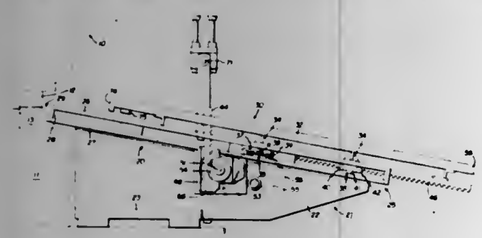
b. positioning the preform in a die cavity of the shape of the required component, and performing an extrusion operation on the head portion of the preform using a punch including inner and outer, relatively movable punch members, the inner punch member defining the shape of the wide portion of said bore in the required component and the head part of the outer punch member defining the shape of the free end of the required component, the extrusion operation comprising moving the inner punch member relative to the outer punch member and the die cavity so as to enter said head portion and produce said wide bore portion and a cam surface on the wall of the bore in the head part, and urging the outer punch member against the free end of the head portion to apply a predetermined load to the head portion of the preform so as to restrict the flow of material extruded from the preform by said inner punch member, said material thereby being constrained to fill the region of the die cavity defining the head part of the component.

4,068,519

UNLOADER FOR PRESS

B. E. Baringer, West Bloomfield, Mich., assignor to Kasle Steel Corporation, Detroit, Mich.

Filed Jan. 5, 1976, Ser. No. 646,125
Int. Cl.² B21D *45/04*; B26D *7/18*
U.S. Cl. 72—426 **4 Claims**



1. In an unloader to be attached to a press or the like, the press including a reciprocable ram having a lower position for forming workpieces in a die area and having an upper position where said formed pieces are released or dropped such as by a positive knock out or the like, said ram being driven between said upper and lower positions as is conventional, and an automatic workpiece unloader to be driven by the movement of the ram including a drive rack to be attached to said reciprocable ram for positive synchronized reciprocation therewith;

a stationary support frame having a distal end extending into said die area, said frame at all times being free from contact with said ram;

a tray movably mounted on said stationary support frame, said tray having an extended position with the distal end of the tray beyond the distal end of the frame into the die area and beneath the ram when the ram is in its upper position, said tray having a withdrawn position out of the die area; and drive means driven by said drive rack for reciprocating said tray between its extended position and its withdrawn position upon reciprocation of said ram between its upper position and its lower position, respectively;

so that during movement of the ram toward its upper position, the tray is moved toward its extended position under the ram to receive a falling workpiece as the workpiece is released by the press and during movement of the ram toward its lower position the tray is moved toward its withdrawn position clear of the moving ram, the improvement comprising:

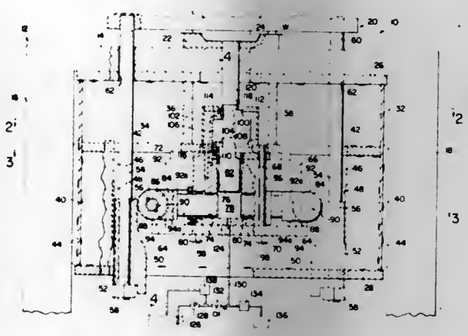
one pair of spaced apart rails on each side of said stationary support frame, each pair including an upper rail and a lower rail defining a single track therebetween; roller means positioned in each single track; said tray mounted on said roller means; and said roller means includes first and second sets of three rollers each, said first set of rollers including two rollers contacting only the lower rail and the third roller contacting only the upper rail and said second set of rollers having two rollers contacting only said upper rail and the third roller contacting only said lower rail, said rollers contacting the rails for constraining the tray to linear movement parallel to the longitudinal axis of said rails, and to prevent bouncing of the tray when workpieces are dropped on the tray.

4,068,520

CAM ACTUATED EJECTOR MECHANISMS FOR PRESSES

Louis F. Carrieri, LaGrange Park, Ill., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed May 13, 1976, Ser. No. 686,448
Int. Cl.² B21D *45/02, 45/04*; F16H *25/18*
U.S. Cl. 72—427 **11 Claims**



1. An ejector mechanism for a press having a bed and a slide reciprocable relative thereto comprising, a frame mountable on said bed, a pair of opposed spaced apart parallel guide tracks on said frame, opposed cam members each slidably interengaged with one of said guide tracks, opposed cam follower means on said frame each actuatable by one of said cam members, means supporting said cam follower means for linear displacement by the corresponding cam member transverse to said guide tracks and toward and away from one another, ejector means between said opposed follower means and supported by said frame for reciprocating movement parallel to said guide tracks, means interengaging said opposed cam follower means and said ejector means to displace said ejector means in response to displacement of said follower means, and means interconnecting said cam members and said slide, whereby reciprocation of said slide displaces said cam members relative to said frame for said cam follower means to displace said ejector means relative to said frame.

4,068,521

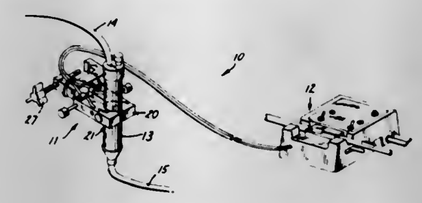
ULTRASONIC AIR AND BLOOD FOAM DETECTOR

Louis C. Cosentino, Wayzata, and LeRoy J. Fischbach, Minneapolis, both of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Filed July 22, 1976, Ser. No. 707,485
Int. Cl.² G01N *7/00*
U.S. Cl. 73—19 **17 Claims**

10. An ultrasonic air and blood foam detector for use with a blood tube system including a drip chamber, comprising:

a. an ultrasonic sensor assembly including a pair of sensor body members, means slideably interconnecting said members for permitting relative motion of said members towards and away from each other, said sensor body members configured to form a drip chamber receiving area therebetween, and an ultrasonic transducer crystal mounted in at least one of said body members and positioned for contacting the side of a blood drip chamber when positioned in said receiving area;



b. energization means connected to said sensor assembly for causing ultrasonic energy to be transmitted through said blood drip chamber; and

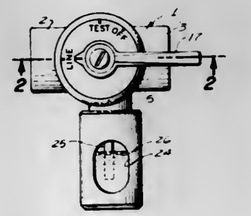
c. electronic signal level detection means operatively connected to said sensor assembly for receiving signals transmitted through said blood drip chamber and operable in response to the signal level of the received ultrasonic signals to produce an output signal indicative of the presence of air or blood foam in said chamber.

4,068,522

GAS LEAK DETECTOR

Lloyd Richard Poe, Long Beach, Calif., assignor to Hartwell Corporation, Placentia, Calif.

Continuation-in-part of Ser. No. 693,754, June 8, 1976, abandoned. This application Jan. 5, 1977, Ser. No. 757,080
Int. Cl.² G01M *3/08*
U.S. Cl. 73—40.5 R **3 Claims**



1. A leak detector for a fluid discharge system, comprising:

a. a valve body including a main inlet for connection to a fluid supply, a main outlet for connection to a fluid discharge system, and a valve chamber therebetween;

b. a manually operable plug valve rotatably mounted in the valve chamber, and having a transverse main flow passage connecting the main inlet and main outlet;

c. a handle for manually rotating the plug valve;

d. a leak detecting means including a chamber underlying the plug valve and containing a liquid exposed for observation;

e. a first pressure sensing passage extending between the main inlet through the plug valve to the leak detecting means;

f. and a second pressure sensing passage extending between the leak detecting means and the main outlet;

g. the plug valve being movable between an ON position in which the main flow passage connects the main inlet and outlet; and a TEST position wherein the main flow passage is isolated from the main inlet and outlet, and the first and second pressure sensing passages interconnect the main inlet and outlet through the leak detecting means for observation of the state of the liquid in its chamber;

h. means for limiting rotation of the plug valve between its ON position and its TEST position; and

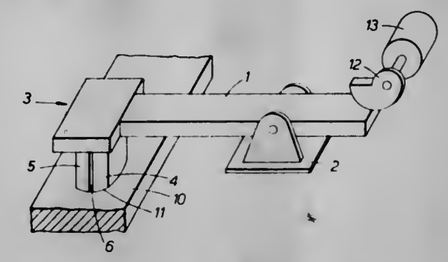
i. spring means engaging the plug valve to yieldably urge the plug valve from its TEST position to its OFF position.

4,068,523

NON-DESTRUCTIVE TESTING

Matthew J. Hetherington, Near Market Harborough; Richard Lewis, Rushden, and Graham E. Goode, Corby, all of England, assignors to British Steel Corporation, London, England

Filed Dec. 23, 1975, Ser. No. 643,685
Claims priority, application United Kingdom, Dec. 31, 1974, 56193/74
Int. Cl.² G01N *29/04*
U.S. Cl. 73—628 **15 Claims**



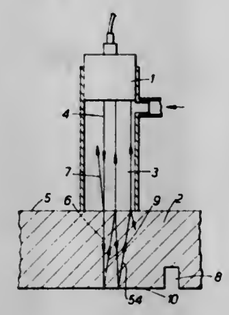
1. Apparatus for the non-destructive testing of articles comprising a head mounted for reciprocating movement; ultrasonic testing transducer means mounted on the head; means for reciprocating the head such that in use the head is caused to impact upon the article to be tested with an impulsive blow of short dwell time once during each reciprocation of the head; and means for actuating the transducer means for testing operation by the transmission of pulses and the reception of pulse echoes through the contacting area of the head and the article to be tested during the dwell time of each impact.

4,068,524

ULTRASONIC INSPECTION OF ARTICLES

Richard Lewis, Rushden, and Michael J. Parker, Kettering, both of England, assignors to British Steel Corporation, London, England

Filed May 11, 1976, Ser. No. 685,159
Claims priority, application United Kingdom, May 14, 1975, 20402/75
Int. Cl.² G01N *29/04*
U.S. Cl. 73—598 **16 Claims**



1. A method of ultrasonically inspecting an article comprising transmitting a succession of ultrasonic pulses into the arti-

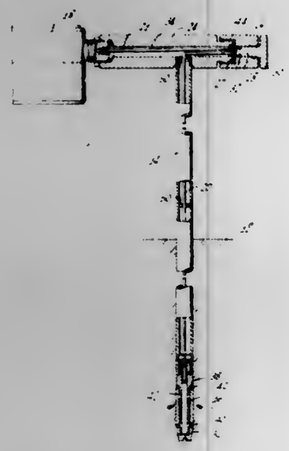
cle; for each transmitted pulse, detecting and registering electrically the reflected pulse from the front surface of the article; detecting and registering electrically, with a predetermined gain, any reflected pulses indicative of faults or discontinuities within the article; detecting and registering electrically, again with a predetermined gain, at least the first reflected pulse from the rear surface of the article; monitoring the amplitudes of the registered reflected pulse from the front surface and at least the first reflected pulse from the rear surface of the article; and continuously controlling gains for succeeding pulses in dependence on the amplitude of the reflected pulse from the front surface of the article.

4,068,525

PORTABLE TENSIOMETER FOR SOIL MOISTURE MEASUREMENT

Percy E. Skaling, Santa Barbara, Calif., assignor to Soilmoisture Equipment Corporation, Santa Barbara, Calif.

Filed Sept. 20, 1976, Ser. No. 724,628
Int. Cl.² G01N 25/56
U.S. Cl. 73—73 **8 Claims**



2. A portable tensiometer for measuring soil moisture content, comprising:

an elongated housing tube having a hollow porous tip secured to one end to be inserted in the soil, the interior of said porous tip in part defining the walls of a first chamber inside said tube;

a handle element secured to the end of said housing tube remote from said porous tip, said handle element having a bore therein communicating with the interior of said housing tube;

a vacuum gauge secured to one end of said handle element;

a cylinder secured to the other end of said handle element;

a plunger adjustable engaged in said cylinder to form a second chamber of adjustable volume;

a first section of capillary tubing connecting said first chamber to said second chamber and disposed within said housing tube and said bore of said handle element; and

a second section of capillary tubing connecting said second chamber to said vacuum gauge and disposed in said bore of said handle element;

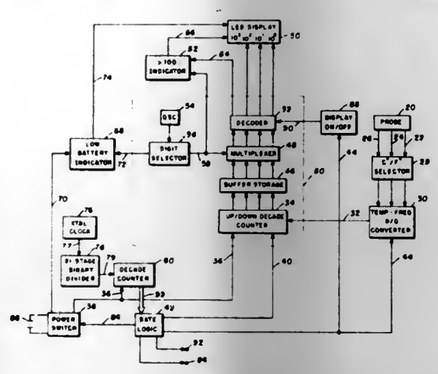
whereby said sections of capillary tubing minimize the volume of water in said tensiometer and minimize errors due to differential expansion and contraction of the water caused by temperature changes, and whereby said plunger is adjustable within said cylinder in order to converge upon a stable vacuum gauge reading more rapidly.

4,068,526

ELECTRONIC THERMOMETER

Harold Goldstein, Westbury, N.Y., assignor to Control Electronics Co., Inc., Farmingdale, N.Y.

Filed July 29, 1975, Ser. No. 599,971
Int. Cl.² G01K 7/24
U.S. Cl. 73—362 AR **23 Claims**



1. An electronic thermometer for producing an estimated final temperature consisting of a means for taking temperature measurements including a temperature responsive element, a means for transforming at first and second predetermined, discrete times said measurements into signals having a variable pulse rate determined by the measured temperatures, a counter means for operating upon said signals in accordance with the algorithm

$$T_F = \frac{T_2 - (T_1)e^{-\frac{\Delta t}{\tau}}}{1 - e^{-\frac{\Delta t}{\tau}}}$$

wherein T_F is the final temperature being measured, T_1 is the temperature measurement at the first time, T_2 is the temperature measurement at the second time, Δt is the difference in time between the first and second times, τ is a thermal time constant which is dependent upon the temperature responsive element and e is the base of the natural log, and means for visually digitally displaying said counter means results, said electronic thermometer further comprising:

control means electrically connected to said transforming means for selectively enabling said transforming means at said first and second predetermined, discrete times and electrically connected to said counter means for controlling said counter to count the pulses of said signals having a variable pulse rate in accordance with said algorithm.

4,068,527

TRANSDUCER

Ernest M. Jost, Plainville; Arthur L. Reenstra, Attleboro, both of Mass., and George Trenkler, East Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 427,943, Dec. 26, 1973, Pat. No. 3,940,992.
This application Dec. 3, 1975, Ser. No. 637,482
Int. Cl.² G01L 9/10
U.S. Cl. 73—704 **6 Claims**

1. A vacuum transducer comprising:

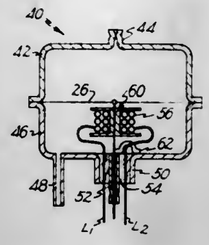
a casing means having first and second portions, the first portion formed of magnetic material having an open end,

a diaphragm formed of magnetic material hermetically sealed to and closing said open end,

a thin wire member having first and second ends and having a longitudinal axis therebetween composed of magnetic material mounted in said first portion of the casing with said first end atttached to said diaphragm and said second end fixed relative to said first portion of the casing, the member adapted to be placed under tension,

an electrical coil disposed within said first portion of the casing about the member intermediate the ends thereof,

an egress formed in said first portion of the casing and connectable to a vacuum to be measured,



the second portion of the casing having an open end which mates with and is hermetically sealed to the first portion with the diaphragm interposed therebetween and which includes means for providing a reference vacuum in the second portion of the casing, the member being placed in tension when the second portion of the casing is evacuated, and

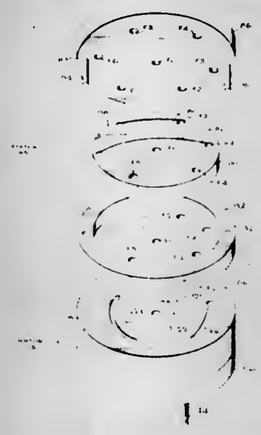
means to energize said coil.

4,068,528

TWO POSITION ROTARY VALVE FOR INJECTING SAMPLE LIQUIDS INTO AN ANALYSIS SYSTEM

Richard Gundelfinger, Oakland, Calif., assignor to Rheodyne Incorporated, Berkeley, Calif.

Continuation-in-part of Ser. No. 650,469, Jan. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 609,394, Sept. 2, 1975, Pat. No. 3,961,394. This application Apr. 13, 1976, Ser. No. 676,424
The portion of the term of this patent subsequent to Aug. 8, 1993, has been disclaimed.
Int. Cl.² G01N 1/10
U.S. Cl. 73—422 GC **16 Claims**



1. For use with a source of liquid from which liquid flows at a first pressure to a liquid receiver a rotary valve positionable in either a first position definable as a load position or a second position definable as an inject position, for injecting a liquid sample into the stream of liquid from said source to said receiver, the valve comprising:

a stationary stator including a plurality of external ports and a corresponding plurality of internal liquid flow paths in communication with said ports said ports including a pair of ports connectable to said source and receiver, and further including a group of n ports, where n is an integer not less than 3;

an external conduit defining a sample loop through which liquid is adapted to flow, said conduit being of a selected length and internal diameter and being connected to first and second of said n ports, said n ports including a third port exposed to a second pressure less than said first pressure;

rotor means rotatable with respect to said stator about a selected axis to thereby position said valve in either said load or inject position, and including a cavity having first and second open ends, said first open end being in flow communication with said first external port irrespective of the valve position, said rotor means further including a plurality of rotor flow passages for providing a liquid flow path between the stator flow paths in communication with said second and third ports, only when the valve is in said load position and for providing a liquid flow path between the pair of ports to which said source and receiver are connected through said cavity and said sample loop, when said valve is in the inject position;

seal means for sealing the cavity second end, said seal means defining an opening accessible from the valve exterior for facilitating the insertion of a syringe needle into said cavity therethrough for injecting a liquid sample into said sample loop through said cavity; and

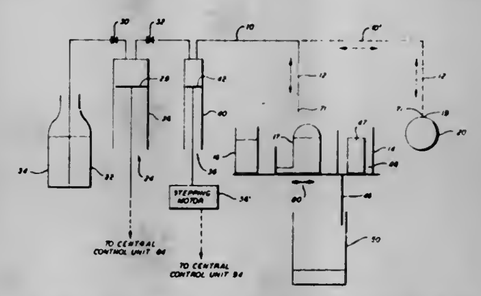
plug means for effectively closing the opening of said seal means, said seal means with said plug means being adapted to withstand said first pressure when liquid flows through said cavity at said selected pressure when said valve is in said inject position, said plug means comprising an elongated wire having a front portion thereof insertable into said cavity through the seal means opening to thereby close the latter, and a lockable plug holder connected to the wire end opposite the front portion which is insertable into said cavity.

4,068,529

METHOD AND APPARATUS FOR AUTOMATICALLY PERFORMING SERIES ANALYSES

Eberhard Konig, Uberlingen, Germany, assignor to Bodenseewerk Perkin-Elmer & Co. GmbH, Uberlingen, Bodensee, Germany

Filed Jan. 19, 1977, Ser. No. 760,568
Claims priority, application Germany, Jan. 24, 1976, 2202675
Int. Cl.² G01N 1/12
U.S. Cl. 73—423 A **23 Claims**



1. A method for making successive measurements with an analyzer comprising, for each complete cycle of operation, in controlled sequence, the steps of:

picking up with a single stepwise movable metering probe, in a first measuring cycle, a sample for measurement from a sample container and a small volume of air;

introducing said sample and the small volume of air into the inlet of said analyzer;

picking up with said metering probe, in a secondary measuring cycle, a sample for measurement from said sample

container and a small volume of air, and picking up with said metering probe a metered quantity of liquid additive and a second small volume of air;

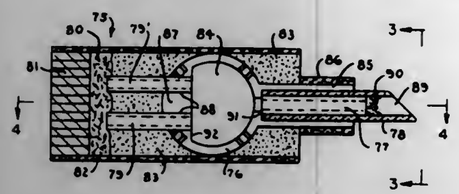
introducing said sample, said liquid additive and said air picked up in said secondary measuring cycle into the inlet of said analyzer.

4,068,530

DEVICE AND METHOD FOR OBTAINING ONE OR MORE SAMPLES OF LIQUID

William J. Collins, 7005 Madison St., Merrillville, Ind. 46410

Division of Ser. No. 543,687, Jan. 24, 1975, Pat. No. 4,002,071.
This application May 3, 1976, Ser. No. 682,563
Int. Cl.² G01N *1/12*
U.S. Cl. 73—425.4 R **5 Claims**



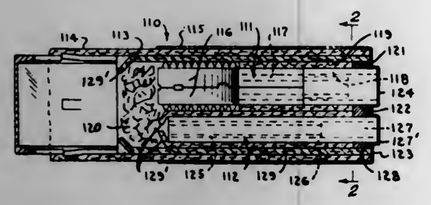
1. Structure constituting a subassembly of a device for obtaining a sample of molten material, said subassembly comprising a pair of half sections, each of said sections having a head provided with a recess and an extended portion provided with a groove, said head of each section also having a relatively thick portion provided with a pair of grooves spaced from the grooves in the extended portions, the arrangement being such that when the sections are correctly assembled, said recesses and grooves in said extended portions will form a primary chamber and an opening leading thereto and said grooves in said thick portions will form a pair of openings, a pair of tubular means secured in said last mentioned openings and providing secondary chambers for receiving molten material from said primary chamber, and a pair of telescopically engaged refractory tubes secured in said opening formed by said extended portions with one tube being extended in advance of the other for initially receiving molten material for flow into said primary chamber.

4,068,531

MOLTEN METAL SAMPLER

William J. Collins, 7005 Madison St., Merrillville, Ind. 46410

Division of Ser. No. 595,155, July 11, 1975, Pat. No. 4,002,073.
This application May 26, 1976, Ser. No. 690,054
Int. Cl.² G01N *1/12*
U.S. Cl. 73—425.4 R **10 Claims**



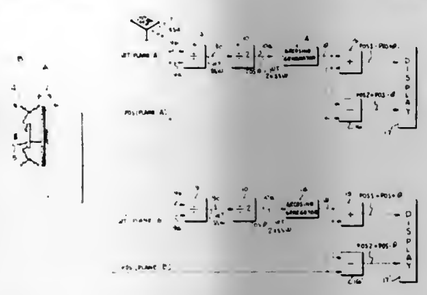
1. Structure comprising a casing, a pair of dissimilar devices disposed in said casing in a side-by-side relation for respectively receiving different forms of samples of molten metal, a support secured in said casing and provided with a pair of openings respectively receiving portions of said devices, one of said devices comprising a pair of mating sections defining a chamber, a pair of telescopically connected glass tubes for receiving molten metal for flow into said chamber, with one of said tubes extending through one of said openings, /and/ the other of said devices comprising a pair of telescopically connected glass tubes with one of these tubes extending through the other opening in said support, an elongated tubular housing surrounding said structure, and said casing being provided with means for engagement by a member insertable into said housing for facilitating release of said casing and devices as a unit from said housing.

4,068,532

ELECTRONIC WHEEL BALANCER APPARATUS AND METHOD

Bernard J. Green, Bristol, Tenn., and Jerome J. Chorosevic, Bristol, Va., assignors to Plumblum Manufacturing Corporation, Bristol, Tenn.

Filed Dec. 21, 1976, Ser. No. 753,094
Int. Cl.² G01M *1/08*
U.S. Cl. 73—462 **22 Claims**



1. In a system for counter-balancing wheels by using balance weights of a single, pre-selected mass, the system having means for providing a pair of electrical signals, the first signal of such pair representing the angular location on the wheel, at a pre-selected radius, at which a weight of a magnitude sensed by said means should be placed to develop a counter-balancing moment in the direction required in order to balance the wheel, and the second signal of such pair representing the magnitude of the sensed weight which, if placed at said angular location, will develop a counter-balancing moment needed to balance the wheel, the improvement comprising:

a. electronic means for receiving said pair of electrical signals;

b. electronic processing means for converting said pair of electrical signals into electrical balancing position signals representing at least two locations on said wheel at said pre-selected radius at which one each of said balance weights should be affixed to said wheel to counter-balance said wheel; and

c. means for visually displaying said locations at which the balance weights should be affixed.

4,068,533

ESG REFLECTED IMPEDANCE PICKOFF

Lincoln Stark Ferriss, Lincoln Park, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Nov. 30, 1976, Ser. No. 746,041
Int. Cl.² G01C *19/28*
U.S. Cl. 74—5.6 D **14 Claims**

1. An electrostatic gyroscope having two input axes and a spin axis comprising:

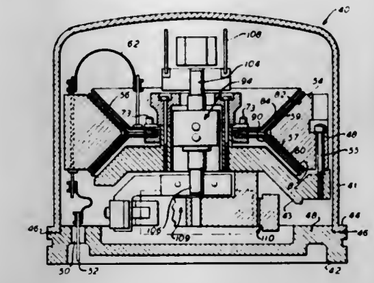
an electrode structure,

a rotor disposed about said electrode structure,

means for capturing said rotor along three orthogonal axes in displacement and about said two input axes of said orthogonal axes in rotation,

means to impart a rotation to said rotor and to sustain said rotation at a predetermined rate said rotation being about said spin axis of said orthogonal axes,

mounting means on said electrode structure providing two degree-of-freedom rotational compliance about said two orthogonal axes about which said rotor is captured rotationally, and



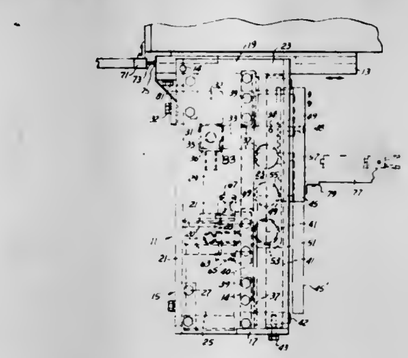
means responsive along said two orthogonal axes about which said rotor is captured rotationally coupled to said electrode structure constraining said electrode structure in place in the presence of gyroscopic reaction torques and providing output signals representative of input rate.

4,068,534

VERTICAL LIFT ASSEMBLY

Claude Descoteaux, and Chester Wenzel, both of 15555 E. 12 Mile Road, Roseville, Mich. 48066

Filed Sept. 30, 1976, Ser. No. 728,276
Int. Cl.² F16H *21/02*
U.S. Cl. 74—27 **9 Claims**



1. A vertical lift assembly comprising a framework including top and bottom plates, side plates and a back plate, and open at the front;

an upright air cylinder on said bottom plate bearing against and secured to said back plate; and

including a reciprocal piston rod projecting from said cylinder;

a lift arm at one end secured to the upper end of said piston rod and parallel to said bottom plate;

a pair of spaced upright guide rods extending between said top and bottom plates and secured to said framework;

a vertically reciprocal carriage mounting a pair of bearing blocks with internal bushings guidably mounted upon said guide rods, and adapted to mount a horizontally disposed workpiece gripper;

an upright movable rack gear mounted upon the interior of said carriage;

an upright stationary rack gear opposed to and spaced from said movable rack gear interposed between said top and bottom plates and secured to said framework;

a vertically reciprocal carrier having a pair of opposed upright side plates; and

a series of vertically spaced pinions journalled upon said carrier between said side plates, in meshing engagement with said stationary rack gear;

at least one pair of pinions at all times being in meshing engagement with both of said rack gears;

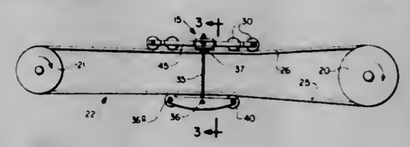
the other end of said lift arm being secured to said carrier, whereby reciprocal movements of said piston rod and lift arm effect corresponding movements of said carrier, in turn, effecting corresponding raising and lowering movements of said carriage.

4,068,535

METHOD AND APPARATUS FOR CONTROLLING THE TENSION OF DRIVE BELTS

Kerney T. Sheets, Duplessis, La., assignor to David L. Ray, Baton Rouge, La.

Filed Nov. 10, 1975, Ser. No. 630,195
Int. Cl.² F16H *7/12, 7/10*
U.S. Cl. 74—242.11 A **16 Claims**



1. A floating apparatus for controlling the tension of a flexible drive belt connecting a drive pulley to a driven pulley, said apparatus being supportable solely by said drive belt, said floating apparatus comprising:

a. first rotatable means for frictionally engaging the slack run of said drive belt, said first means being disposed on the outside of said drive belt,

b. second rotatable means for frictionally engaging the drive run of said drive belt, said second rotatable means being disposed on the outside of said drive belt, said second rotatable means having an axis of rotation parallel to the axis of rotation of said first rotatable means,

c. means for connecting said first rotatable means to said second rotatable means,

d. adjustable tension imposing means connected to said first rotatable means for urging said drive run of said drive belt and said slack run of said drive belt toward each other to maintain the tension in said drive belt sufficiently to prevent substantial slippage of said drive belt about said drive pulley and said driven pulley.

4,068,536

MANIPULATOR

Theodore Hahn Stackhouse, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 23, 1976, Ser. No. 753,725
Int. Cl.² F16H *1/14*
U.S. Cl. 74—417 **18 Claims**

18. An improved remotely operable articulated manipulator of the type having a plurality of serially connected drive shafts and an end-effector mounted to one end thereof, wherein the improvement comprises:

a. a first set of concentric drive shafts independently rotatable about a first axis coincident with one ordinant of a mutually perpendicular triordinate system;

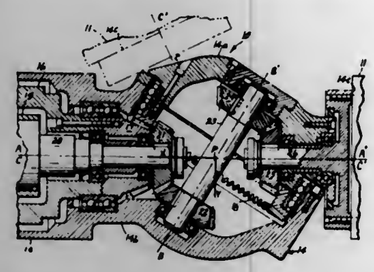
b. a second set of concentric drive shafts independently rotatable about a second axis obliquely oriented with respect to said first axis and rotatable thereabout;

c. a first set of gears, including at least two bevel gears, attached to at least two shafts in said first set of shafts;

d. a second set of gears, including at least two bevel gears,

attached to at least two shafts in said second set of shafts, said second set of gears being drivingly connected to said first set of gears; and

e. a third shaft mounted to said second set of shafts and rotatable about a third axis obliquely fixed to said second axis and rotatable thereabout, said third shaft having the



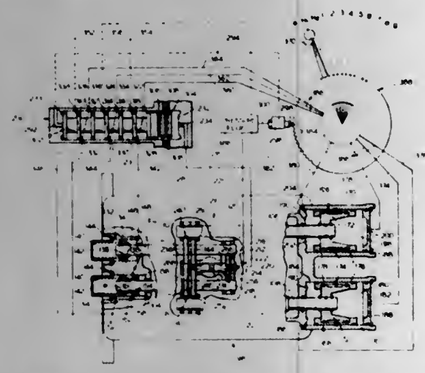
end-effector mounted thereto whereby the movement of said end-effector has a directional component of movement in each of the directions defined by said mutually perpendicular triordinate system as said end-effector is rotated about said second axis, and said third axis intersects said first axis and said second axis at a single point.

4,068,537

SHIFT CONTROL SYSTEM FOR A MULTIPLE INPUT TRANSMISSION

Robert W. Wolfe, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Oct. 12, 1976, Ser. No. 731,391
Int. Cl.² G05G 5/10
U.S. Cl. 74—477 **20 Claims**



1. A shift control system in combination with a transmission having a multiple input portion and a multiple output portion each of which in turn contains a plurality of change speed gears to provide for a plurality of drive ratios, said control system comprising:

a. a movable control member for a preselector valve having a plurality of positions, each corresponding to a separate one of said drive ratios;

b. first sensing means, associated with said preselector valve, for producing a first signal upon movement of said control member from one to another of said plurality of positions;

c. a neutral sequence valve including movable means, said movable means being maintainable in first and second alternate positions, said neutral sequence valve being fluidically interconnected, on one end, with said first sensing means for moving said movable means to one of said first and second positions in response to said first signal;

d. a plurality of fluid-pressure operated actuators, each being shiftable between at least two predetermined positions, to couple and de-couple predetermined ones of said change speed gears, with the actuators associated with said transmission input portion being fluidically interconnectable with said preselector valve via said neutral sequence valve and the actuators associated with said transmission output portion being fluidically interconnected with said preselector valve;

e. mechanical interlock means associated with said actuators to lock said transmission output portion in gear whenever said transmission input portion is in gear and to lock said transmission input portion in neutral whenever said transmission output portion is in neutral;

f. second sensing means, associated with said interlock means and fluidically interconnected with another end of said neutral sequence valve, for producing a second signal upon movement to neutral of said transmission input portion, said movable means being movable to the other of said first and second positions in response to said second signal; and

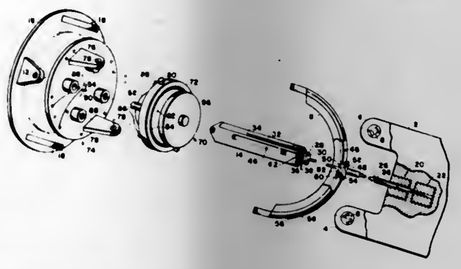
g. a source of fluid pressure fluidically interconnected with said preselector valve, first sensing means, second sensing means and movable means.

4,068,538

STABILIZED PLATFORM SYSTEM

Walker Butler, Scottsdale, and Fred Krahulec, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed June 12, 1975, Ser. No. 586,322
Int. Cl.² G01C 19/28, 19/30
U.S. Cl. 74—5.22 **11 Claims**



1. A stabilized platform apparatus for use on a mobile vehicle, comprising:

pedestal means mountable on the mobile vehicle;

gimbal means rotatably supporting and positioning the platform and allowing at least one axis of rotation, said gimbal means having a plurality of shaped edges for slideably mounting said gimbal means on said pedestal means said slideable mounting of said gimbal means for limiting said gimbal means to motion in an arcuate path with respect to said pedestal means; and

free gyro means gimballed to the platform for supplying a positional reference with respect to said platform in said at least one axis.

4,068,539

VARIABLE-RATIO TRANSMISSION

Wladimir Nyc, 5254 San Jose Blvd., Jacksonville, Fla. 32207

Filed Oct. 24, 1975, Ser. No. 625,632
Int. Cl.² F16H 55/54
U.S. Cl. 74—230.18 **19 Claims**

1. A transmission connecting a drive shaft to a driven shaft having variable requirements to torque and speed, said transmission comprising:

a. a frame;

b. a first drum rotatably mounted on said frame for rotation about a first axis;

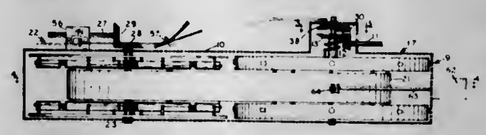
c. first means for connecting said drive shaft and said first drum;

d. a first substantially circular resilient band mounted coaxially on said first drum for radial expansion and contraction;

e. a second drum rotatably mounted on said frame for rotation about a second axis;

f. second means for connecting said second drum and said driven shaft;

g. a second substantially circular resilient band mounted coaxially on said second drum for radial expansion and contraction;



h. an endless belt connecting said first circular band and said second circular band, said belt being effective to transfer power from said drive shaft and said first drum to said second drum and said driven shaft;

i. said first means for connecting said drive shaft and said first drum including spring means connected therebetween for transferring power from said drive shaft to said first drum and yieldable in response to change in torque transmitted therethrough thereby to permit limited relative angular displacement between said drive shaft and said first drum, and

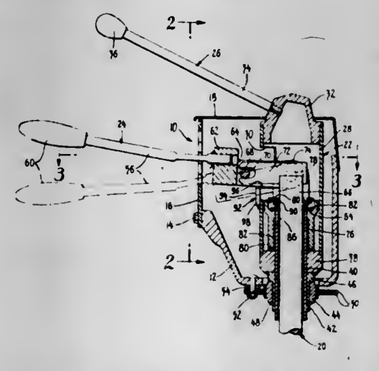
j. means responsive to such displacement to vary the diameter of said first circular band.

4,068,540

TRANSMISSION CONTROL

Joseph W. Beckerman, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Aug. 4, 1976, Ser. No. 711,344
Int. Cl.² G05G 5/10
U.S. Cl. 74—476 **3 Claims**



1. A transmission control for use with a transmission of the type having a first change gear mechanism for establishing a plurality of drive speeds and a second change gear mechanism for establishing either a forward or reverse drive for each of said plurality of drive speeds, said transmission control including:

first shift lever means shiftable between a plurality of positions corresponding to each of said plurality of drive speeds;

a first tube assembly interconnecting the first shift lever means with the first change gear mechanism;

second shift lever means shiftable between forward and reverse positions; and

a second tube assembly interconnecting the second shift lever means with the second change gear mechanism, the second tube assembly being coaxially disposed about the first tube assembly;

said transmission control means being further characterized by the combination therewith of

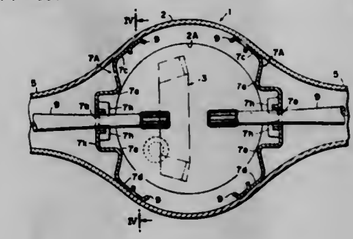
stop means mounted on the second tube assembly and contactable by the first shift lever means to prevent the transmission from operating in one or more selected reverse speeds.

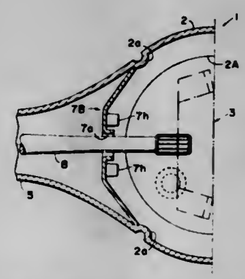
4,068,541

BANJO-SHAPED AXLE CASING

Masao Sakamoto; Ryoichi Okuda; Hitoshi Saito, and Kenzi Sasazaki, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed July 29, 1976, Ser. No. 709,804
Claims priority, application Japan, Dec. 11, 1975, 50-167557
Int. Cl.² F16H 57/02
U.S. Cl. 74—607 **6 Claims**





1. A banjo-shaped axle casing of the type including a differential housing and a pair of axle housings coupled to said differential housing comprising:

at least one pair of mounting members provided on the inside surface and on each side of the axle casing and opposite each other; and

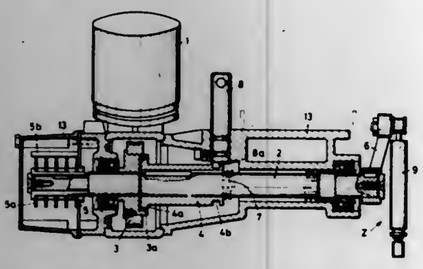
at least one pair of flexible partitions inserted into the axle casing, said flexible partition being inserted into the axle casing such that they engage with the mounting members and partition the differential housing from the axle housing thereby preventing large amounts of oil from flowing into said axle housing during applications of a horizontal inertial force.

4,068,542

DRIVE ARRANGEMENT FOR TRANSPORT VEHICLES

Werner Brand, Leverkusen; Dieter Schillings, Neuss; Leo Geers, Kaarst, and Edmund Pietrowski, Duesseldorf, all of Germany, assignors to Waggonfabrik Uerdingen A.G., Duesseldorf, Germany

Filed Oct. 12, 1976, Ser. No. 731,344
Claims priority, application Germany, Oct. 14, 1975, 2545846
Int. Cl.² F16H *37/00*
U.S. Cl. 74—625 13 Claims



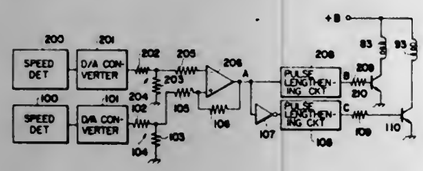
1. A drive arrangement, particularly for driving elements such as movable steps and doors on vehicles, comprising a driven element manually movable between operative positions; motorized means for moving said element, including a turnable shaft coupled to said element, and a motor coupled with said shaft for turning the latter about its axis and for moving said element between said operative positions; means for uncoupling said motor from said shaft so that said element can be manually moved; and switching means having first parts spaced from and about said shaft and second parts mounted on said shaft for joint rotation therewith and having respective angular orientations relative to said shaft, said second parts each being turnable with said shaft to and from a control position relative to said first parts, in which control positions said second parts cooperate with said first parts for controlling the operation of said motor so that manual movement of said shaft upon uncoupling of said motor therefrom enforces movement of said second parts to said control positions, whereby subsequent actuation of said motor is facilitated.

4,068,543

HYDRAULIC TRANSMISSION CONTROL DEVICE

Toshimitsu Sakai, Okazaki; Mitsuo Kawai, Toyota, and Kiyofumi Mizuno, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of Japan

Filed Oct. 6, 1975, Ser. No. 619,966
Claims priority, application Japan, May 30, 1975, 50-64095
Int. Cl.² B60K *41/04*
U.S. Cl. 74—866 10 Claims



1. In a transmission system utilizing a differential gear set having a high speed transmission path and a low speed transmission path for coupling power from an input shaft to an output shaft, said gear set being operably connected to selectively controllable, variable displacement hydraulic pump-motor speed control means constructed and arranged to supply a selectively variable speed control input to said differential gear set to adjust the speed ratio thereof, the combination comprising:

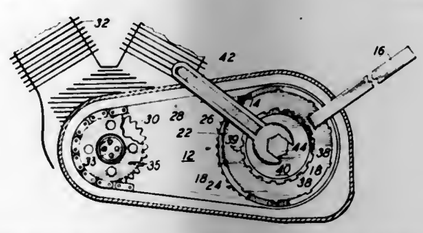
a. first clutch means operable when engaged to couple said speed control means to said gear set to control the speed ratio of said high speed transmission path;
b. second clutch means operable when engaged to couple said speed control means to said gear set to control the speed ratio of said low speed transmission path;
c. means for producing speed signals representative of the rates of rotation of said output shaft and said input shaft, respectively; and
d. control means responsive to said speed signals for controlling the engagement and disengagement of said first and second clutch means, said control means being constructed and arranged to cause one of said clutch means to engage and the other of said clutch means to disengage when said speed signals attain a predetermined ratio indicating that the components of said high and low speed transmission paths are operating at a common speed; and
e. retarding means for delaying the disengagement of said disengaging clutch means so that both said first and second clutch means are temporarily engaged for a period of time immediately following the time when said speed signals attain said predetermined ratio.

4,068,544

MOTORCYCLE CLUTCH TOOL

Gregory P. Breeckner, Candlewood Shores, Brookfield, Conn. 06804

Filed Sept. 16, 1976, Ser. No. 724,030
Int. Cl.² B25B *13/48, 13/02*
U.S. Cl. 81—3 R 7 Claims



1. A motorcycle clutch tool for securing a clutch hub assembly to a clutch shell normally rotatable with respect to said hub so as to facilitate removal of a clutch hub nut and disassembly of a motorcycle clutch assembly, as well as to facilitate removal of the motorcycle drive sprocket from the associated drive shaft, comprising:

A. a unitary rigid substantially planar thin disc having a central aperture completely passing therethrough and having a diameter substantially greater than its thickness incorporating:
   a. first means about the outer periphery of said disc engageable with said clutch shell, and
   b. second means about the inner periphery of said disc aperture engageable with said clutch hub assembly; and
B. a handle member, for attachment to the unitary disc, and when attached usefull for positioning and applying torque to said disc.

4,068,545

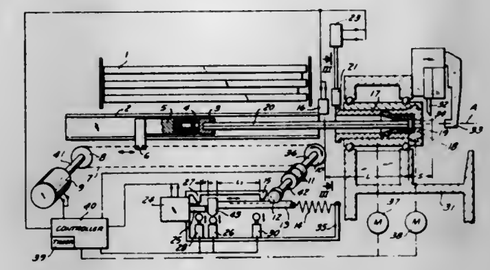
METHOD OF AND APPARATUS FOR FEEDING NONROUND-SECTION BARS TO SCREW MACHINES

Holger Scheler, Klausdorf, Schwentine, Germany, assignor to Hagenuk Vormals Neufeldt & Kuhnke GmbH, Kiel, Germany

Filed July 28, 1976, Ser. No. 709,284
Claims priority, application Germany, Aug. 26, 1975, 2537852
Int. Cl.² B23B *13/02*
U.S. Cl. 82—1 C 10 Claims

1. A method of feeding an elongated profiled bar to a screw machine having a headstock whose collet has an openable aperture that complements the cross-sectional shape of said bar and wherein the collet is closed on said bar and driven at a relatively high rotational speed during machining, said method comprising the steps of:

holding said collet open;
detecting the rotational speed of said collet and generating a



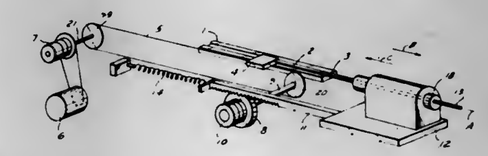
speed output only when said rotational speed lies within a predetermined relatively low-speed range;
pushing said bar longitudinally forwardly toward said collet only in response to generation of said speed output, whereby when the open aperture and said bar align the latter can pass forwardly through the former; and
closing said collet on said bar only after passing of same forwardly through said aperture.

4,068,546

FEED APPARATUS FOR SCREW MACHINE

Johannes Werkmeister, Reichenbach, Germany, assignor to Hagenuk Vormals Neufeldt & Kuhnke GmbH, Kiel, Germany

Filed July 28, 1976, Ser. No. 709,283
Claims priority, application Germany, Aug. 22, 1975, 2537473
Int. Cl.² B23B *13/02*
U.S. Cl. 82—1 C 10 Claims



1. A bar feed apparatus for a lathe having a headstock displaceable axially forwardly and backwardly, said apparatus comprising:

a pusher axially displaceable adjacent said headstock;
means including a chuck rotatable on said pusher for holding a bar extending axially through said headstock and for coupling said pusher to a bar held in said chuck for joint axial displacement forwardly and backwardly;
drive means couplable to said pusher for displacing same axially forwardly toward said headstock and thereby displacing a bar held in said chuck through said headstock; and
releasable means connected between said pusher and said headstock for positively linking same together for joint synchronous axial displacement thereof forwardly and backwardly.

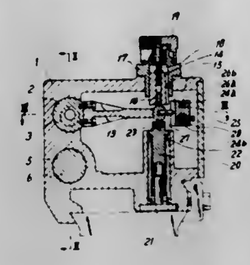
8. In a method of operating a screw machine wherein a shaft is rotated to move a pusher rod that in turn displaces a bar forwardly along an axis through a headstock axially displaceable forwardly and backwardly, the improvement comprising the step of positively linking said headstock to said shaft and thereby coupling said headstock and said pusher rod for joint and synchronous axial movement forwardly and backwardly during machining operations.

4,068,547

TAIL STOCK

Teruyuki Ito, Nagoya, and Tadashi Yamauchi, Kariya, both of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Japan

Filed Jan. 26, 1977, Ser. No. 762,932
Claims priority, application Japan, Apr. 2, 1976, 51-39582[U]
Int. Cl.² B23D *23/00*
U.S. Cl. 82—31 5 Claims



1. A tail stock for compensating for tapering of a workpiece to be machined, comprising:

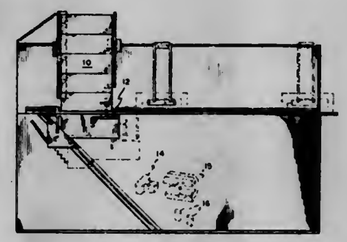
a housing;
a center sleeve slidably and rotatably mounted in said housing and provided at one end thereof with a bore with a predetermined eccentricity for holding a center;
actuating means for sliding said center sleeve;
an arm secured at one end thereof to the center sleeve;
a cylindrical member mounted in said housing being slidable in a direction perpendicular to a sliding direction of said center sleeve and abuttingly engaging one side surface of the other end of said arm;
a feed screw shaft rotatably mounted on said housing, but being restrained from axial movement relative thereto, and being threadedly engaged with said cylindrical member;
a supporting member slidably mounted in said housing in an opposite relation with said cylindrical member for supporting the other side surface of the other end of said arm in cooperation with said cylindrical member; and
resilient means for urging said supporting member in a direction to engage the other side surface of the other end of said arm.

4,068,548

METHOD AND A TOOL FOR CUTTING MATERIALS

Cray L. Ross, 309 Jackson Road, Enfield, Conn. 06082

Division of Ser. No. 503,182, Sept. 4, 1974, abandoned, which is a continuation of Ser. No. 355,170, April 27, 1973, abandoned.
This application May 4, 1976, Ser. No. 682,910
Int. Cl.² B26F *3/12*
U.S. Cl. 83—1 6 Claims



1. A method of forming cavities in a block of packing material including the steps of providing at least one heated wire tool, a portion of which heated wire tool is formed as a closed generally planar loop portion defining a figure having an out-

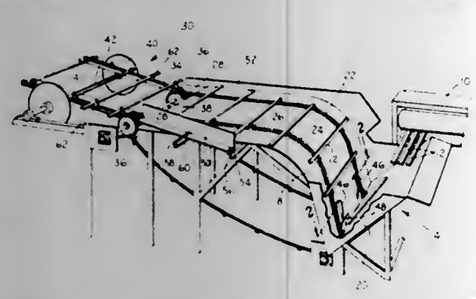
line corresponding to the section of the cavity to be formed, and a portion formed as a support for said generally planar loop portion, pressing said planar loop portion into a block of packing material in the direction generally normal to the plane of said generally planar loop portion to the depth desired for said cavity to define the side walls of a first cavity, leaving waste material therein, moving said tool in a direction generally parallel to the plane of said generally planar loop portion a distance equal to the distance desired between said plurality of cavities to sever the waste material in said first cavity and to form the bottom surface of a second cavity, and withdrawing said tool from said block of packing material in a direction generally normal to the plane of said generally planar loop portion to form the side walls of the second cavity as the heated wire simultaneously severs the waste material within said second cavity from said block of heat severable material.

4,068,549

PICKER STICK FEED AND SAWING DEVICE

James Earle Huffman, 42 Stone Haven Drive, Greenville, S.C. 29607

Filed Dec. 27, 1976, Ser. No. 754,589
Int. Cl.² B27B *5/04*
U.S. Cl. 83—417 **5 Claims**



1. An apparatus for conveying and positioning wooden blanks relative to rotating saw blades carried in spaced relation on a rotating shaft so that said blanks can be sawed into a predetermined length for use as picker sticks, said apparatus comprising:

a. a hopper for receiving said wooden blanks,

b. said hopper having a substantially "V" shaped cross-section with a forward wall thereof being arcuate,

c. a pair of opposed endless conveyor chains running up through the bottom of said hopper up over said forward wall,

d. aligned dogs carried on said opposed chains for engaging and lifting said wooden blanks as said dogs pass through said hopper,

e. inclined members carried on said front wall of said hopper for engaging said wooden blanks as they are raised on a pair of spaced dogs forcing improperly positioned wooden blanks off of said conveyor chains,

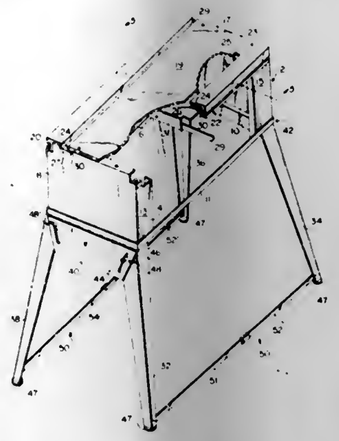
f. said inclined members extending outwardly from said front wall and terminating short of an outer surface of said dogs, said run of said conveyor chains passing under said saw blades so that opposed ends of said wooden blanks are cut off as said blanks are transported past said saw blades.

4,068,550

FOLDABLE BENCH FOR A PORTABLE HAND-HELD CIRCULAR SAW

Edward L. Gray, Rte. 7, Gray Bluff Trail, Chapel Hill, N.C. 25714, and Bruce E. Browning, Jr., P.O. Box 56, Carrboro, N.C. 25710

Filed Sept. 14, 1976, Ser. No. 723,475
Int. Cl.² B27B *5/18*
U.S. Cl. 83—471.2 **21 Claims**



1. A foldable bench for converting a normally hand held electrically power circular saw having a base plate into a table saw, comprising

a. housing means for supporting a normally hand held electrically powered circular saw, said housing means including an upper surface for supporting material in a position to be cut by a normally hand held, electrically powered circular saw supported by said housing means, said housing means generally defining a parallelopiped having a first and second pair of opposed side walls, said first pair of opposed side walls having a greater horizontal dimension;

b. retractable support means for supporting said housing means in a position above a floor level such that the said upper surface is easily accessible by an operator, said retractable supporting means including a plurality of foldable leg members having floor engaging extremities movable from a first position wherein said foldable leg members are contained entirely within said housing means to the second position wherein said floor engaging extremities are positioned laterally beyond the lateral extremities of said upper surface; and

c. stabilizer means for engaging the upper extremity of each leg member when in said second position in order to resist further outward lateral movement, said stabilizer means including four clips rigidly connected adjacent each of the lower lateral edges of said first opposed side walls, whereby said foldable bench may be extremely compact when said foldable leg members are in said first position and extremely stable when said foldable leg members are in said second position.

4,068,551

EXTENSION TABLE FOR POWER SAWS

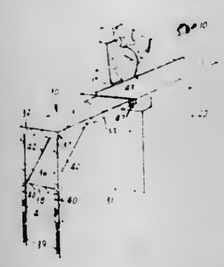
Lloyd D. Kreitz, P.O. Box 60, Pequot Lakes, Minn. 56472

Filed Dec. 27, 1976, Ser. No. 753,990
Int. Cl.² B27B *5/20*
U.S. Cl. 83—471.3 **9 Claims**

1. In combination with a power saw of the type comprising a generally rectangular flat-topped horizontal worktable supported a fixed distance above a floor and a driven blade associatively connected thereto for cutting a workpiece supported thereon,

a generally C-shaped horizontally disposed mounting bracket connected to a lateral edge of the worktable slightly below the upper surface thereof, said bracket terminating in a pair of horizontally spaced arms, each containing a hole functioning as a gudgeon,

a generally rectangular, flat-topped extension table comprising an elongate flat panel having lips depending from each of the longer sides thereof, the length of said longer sides being slightly less than the distance said gudgeons are above the floor, the length of the shorter sides of said extension table being slightly less than the distance between said gudgeons, the proximal end of said extension table being positioned between said gudgeons, a pintle



extending through said lips and said gudgeons, said extension table being rotatable about said gudgeons to assume a horizontal, laterally extending position closely approximating the lateral edge of the worktable and substantially coplanar therewith when said extension table is in use and a vertical, downwardly extending position adjacent the lateral edge of said worktable when said extension table is not in use, said extension table being readily detachable from said worktable by removing the pintle from said gudgeons,

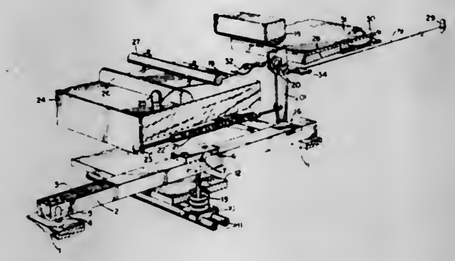
a pair of legs, each located between said lips and hingedly connected thereto at the distal end of said extension table to permit said legs to support said distal end when the extension table is in use and to fold thereunder when said extension table is in stored position.

4,068,552

METHOD OF AND APPARATUS FOR PRODUCING MUSICAL INSTRUMENT KEYBOARD-CONTROLLED PITCH VARIATION, TONE ALTERATION AND THE LIKE

John Allen, 130 Hamilton St., Cambridge, Mass. 02138

Filed July 2, 1976, Ser. No. 702,297
Int. Cl.² G10H *1/02, 3/02*
U.S. Cl. 84—1.06 **9 Claims**



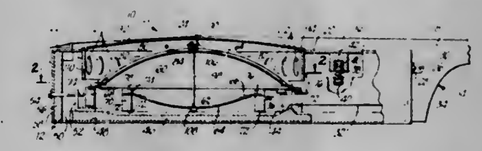
1. A method of introducing tone variations into the sound created by the impact of downwardly depressed longitudinally extending planar playing key mechanisms in musical instruments, that comprises, depressing the key mechanisms individually; moving each key mechanism with individual freedom of longitudinal movement backward and forward substantially in the plane of the keys; limiting such backward and forward movement within predetermined limits; and responding to said backward and forward movement of the downwardly depressed key mechanisms to introduce corresponding pitch variations, tone alternations and related effects, said pitch variations being separately and differently generated for the individual key mechanisms in accordance with the degree of backward and forward movement of the corresponding key mechanisms.

4,068,553

STRINGED MUSICAL INSTRUMENT

John Dopyera, 1206 S. Escondido, Escondido, Calif. 92025

Filed Apr. 7, 1976, Ser. No. 674,378
Int. Cl.² G10D *3/02. 1/08*
U.S. Cl. 84—296 **3 Claims**



1. A stringed, resonator type musical instrument having an instrument body, a neck mounted on and extending from said body, at least one string extending along said neck and across the top of said body, a bridge engaging and supporting said string on said body, and a resonator means located in said body generally beneath said bridge and mechanically connected to said bridge in which the improvement comprises:

a second resonator means located within said body generally parallel to said first mentioned resonator means beneath said first resonator means, and

mechanical means for transmitting vibration from said bridge to both of said resonator means,

said mechanical means including a rigid spider having a centrally located hub and a rod extending from said hub,

said bridge being mounted on said hub so as to extend therefrom, the ends of the legs of said spider remote from said hub engaging said first resonator means adjacent to the periphery of said first resonator means,

said rod extending through said first resonator means adjacent to the periphery of said first resonator means,

said rod extending through said first resonator means adjacent to the center thereof and connecting said hub with the center of said second resonator.

4,068,554

SHEET SCREW

Fumio Hirabayashi, 11-11, 3-chome, Nishimikuni, Yodogawa-Osaka, Japan

Filed Jan. 6, 1976, Ser. No. 646,884
Claims priority, application Japan, Nov. 4, 1975, 50-150991[U]
Int. Cl.² F16B *25/00*
U.S. Cl. 85—41 **9 Claims**

1. A sheet screw comprising:

a screw head;

a threaded shank formed of a blank by rolling and connected at its top to said screw head;

a substantially pyramidal end extending integrally from a bottom of said threaded shank to terminate in a point;

a maximum diameter of said pyramidal end being not larger than a blank diameter of said blank;

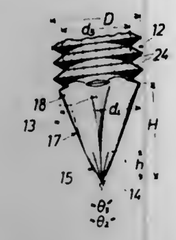
said pyramidal end having a tip portion disposed adjacent said point, and a base portion disposed between said tip portion and said bottom of said threaded shank;

said tip portion being of a substantially regular polygon in

cross section having at least five edges and at least five flat sides extending divergently from said point to said base portion;

said base portion being of a substantially regular polygon in cross section having at least three sides and at least three rounded ridges with curved outer surface;

each of said sides of said base portion being connected with a pair of adjacent rounded ridges of said base portion so as to provide a smoothly continuous contour line;



said tip portion being provided with more sides than said base portion; and

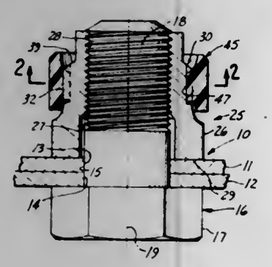
said curved outer surface of each of said rounded ridges becoming wider as it approaches the bottom of said threaded shank, thereby producing a curvature of said curved outer surface varying so as to be progressively increasing in radius toward the bottom of said threaded shank.

4,068,555

INHERENTLY TORQUE-LIMITED NUT

Josef F. Volkman, Torrance, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed Sept. 2, 1976, Ser. No. 719,738
Int. Cl.² F16B *31/02*
U.S. Cl. 85—61 **8 Claims**



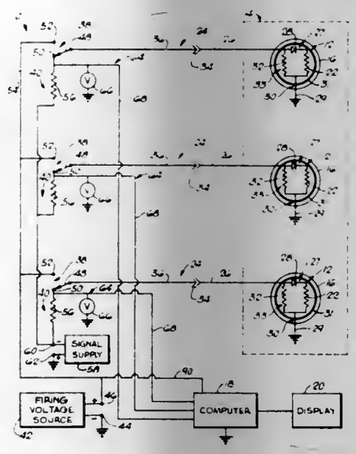
1. An inherently torque-limited nut comprising: a metal nut body having a central axis and an axially-extending internal shank-receiving opening therein; an internal thread in said opening adapted to engage a mating thread on said shank; a bearing face on said nut for bearing against adjacent structure when the nut is tightened down against the structure; engagement means formed as a peripheral array on the outside of the nut body comprising a plurality of axially extending alternating teeth and serrations, said teeth and serrations being defined by surfaces which are parallel to said central axis; a non-metallic ring surrounding said nut body; drive means on said drive ring by means of which a torque can be applied to the drive ring to turn the nut, said drive ring having a central opening having a wall; engagement means on said wall comprising surfaces in contact with the surfaces defining said teeth and serrations on the nut body, said contact being peripherally continuous and contiguous for a substantial length of both of said engagement means, whereby said drive ring and nut body are joined to one another in rotational driving relationship; the unit shear strength of the drive ring material being less than that of the nut body material, whereby upon exertion of a sufficient torque between the drive ring and the nut, the engagement means on the drive ring fails in shear at the tips of the teeth on the nut, two engagement means thereby constituting inherent limiting means limiting the torque which can be applied thereto by shear failure at a predetermined torque.

4,068,556

AMMUNITION IDENTIFICATION AND FIRING SYSTEM HAVING ELECTRICAL IDENTIFICATION MEANS

Nelson D. Foley, Little Rock, Ark., assignor to BEI Electronics, Inc., Little Rock, Ark.

Filed Feb. 3, 1977, Ser. No. 765,099
Int. Cl.² F41F *3/04*; F42C *19/12*
U.S. Cl. 89—1.814 **18 Claims**



1. A system for identifying and firing ammunition,

comprising a round of ammunition having an igniter with a predetermined electrical resistance and operable by an electrical firing current,

a firing circuit for said igniter and having two electrical firing circuit terminals,

a diode rectifier,

a firing current path connecting said diode rectifier and said igniter in series between said firing circuit terminals,

said diode rectifier being capable of carrying a firing current of one polarity in said firing current path,

a firing voltage source for supplying the firing current of said polarity,

a signal source for supplying a signal current of opposite polarity relative to the polarity of said firing current,

said diode rectifier being nonconductive as to the signal current,

switching means for initially connecting said firing circuit to said signal source to identify the ammunition and for subsequently connecting said firing circuit to said firing voltage source to energize said igniter and thereby fire the round of ammunition,

said round of ammunition including an identification impedance having a nature to identify said ammunition,

said round of ammunition having a signal current path connecting said identification impedance to said firing circuit,

said signal current path being in parallel with at least a portion of said firing current path,

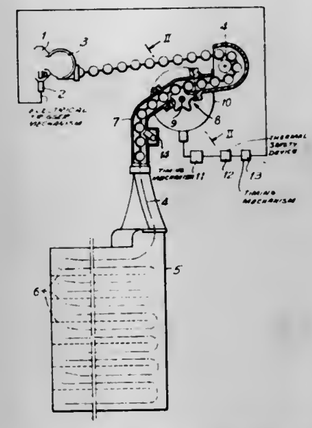
and measuring means connected to said firing circuit for measuring the impedance of said signal current path and thereby indicating the nature of said identification impedance to identify the ammunition.

4,068,557

AUTOMATIC WEAPONS HAVING A CARTRIDGE BELT FEED

Paul Rene Montjailard, 25ᴰ rue Edmond Charpentier, 42000 St. Etienne; Joseph M. Laniel, Lotissement la Taille, 42390 Villars, and Guillaume A. Gay-Chatain, 66 rue Marengo, 42000 St. Etienne, all of France

Filed Oct. 14, 1976, Ser. No. 732,441
Claims priority, application France, Oct. 15, 1975, 75 31480
Int. Cl.² F41D *9/02*
U.S. Cl. 89—33 E **13 Claims**



1. In an automatic weapon fed by a cartridge belt and comprising a trigger and feed means for feeding the cartridge belt by applying traction force to the belt, an improvement comprising feed assisting means for applying additional traction to the belt comprising at least one star-shaped rotor in mesh with the cartridge belt in a zone situated downstream of the feed means and an electrical motor directly drivingly coupled to said rotor and coupled to said trigger to furnish a torque whose energization is controlled by the operation of the trigger such that each time the trigger is activated the motor is energized, said motor being a direct current motor having a laminated coil and planar air gap and including an output shaft directly coupled to said rotor in driving engagement, said motor being underfed in voltage and being capable of periodic stoppage during stoppage of the belt while continuing to deliver torque to said rotor without overheating the motor.

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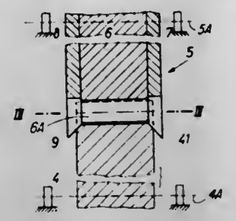
DEVICE FOR DEBURRING OR CHAMFERING OF THE FACE EDGES OF GEARS

Herbert Loos, Dorfen, Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany

Filed July 14, 1976, Ser. No. 705,269
Claims priority, application Germany, Aug. 2, 1975, 2534574; Aug. 2, 1975, 2534575
Int. Cl.² B23F *19/06*; B26D *1/12*
U.S. Cl. 90—1.6 A **11 Claims**

1. In a device for deburring or chamfering the axial edges of teeth on a workpiece, the improvement comprising:

a tool having a toothed, non-cutting guide disk and at least one toothed cutting disk fixedly mounted on an axially facing side of said guide disk, the teeth on said guide disk being axially aligned with the teeth on said cutting disk, each tooth on said cutting disk having on the edges thereof adjacent said guide disk a beveled surface facing axially toward said cutting disk, said beveled surface having cutting means thereon whereby a meshing engagement of said tool with said workpiece will effect an engagement of said beveled surface and said cutting means thereon and a cutting of a beveled edge on the corresponding axially facing edge of the teeth on said workpiece.

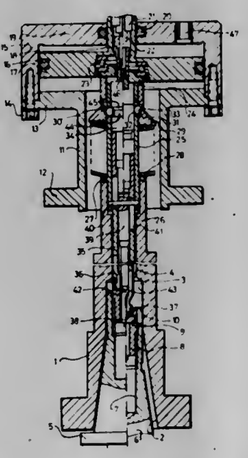


4,068,559

TOOL FASTENING DEVICE

Herbert Schmid, Jr., Albstrasse 1, 7251 Malmsheim, Germany, and Edmo Benatti, Via del Vivaio, 46100 Frassine-Mantova, Italy

Filed July 30, 1976, Ser. No. 710,016
Int. Cl.² B23C *5/26*
U.S. Cl. 90—11 D **4 Claims**



1. In a quick change device for a hollow spindle of a machine tool, in particular a milling machine arranged for the quick releasing and clamping of a conical tool holder, said tool holder having a shaft with a ring groove at the small end of the shaft, a coupling casing, said coupling casing being attached to the spindle and having a flange, a cylindrical drawbar axially shiftable within the casing, clamping spring means about the casing pressing on one hand against said flange, a tool holder drawbar connection including radially movable clamping jaws attached to said longitudinally shiftable cylindrical drawbar, an expansion rod connected to said coupling casing and being located within the drawbar for actuating the said jaws of the drawbar as the drawbar pulls the holder into the spindle under the influence of clamping springs, the clamping jaws being detachable upon compression of the clamping springs through an external means, and a releasable coupling between said drawbar and said clamping springs comprising a plurality of bores in said coupling casing and a group of radially movable balls retained in said bores, the drawbar rod being provided with a groove, a ring with a hollow cone shaped surface surrounding the drawbar, said spring means acting on the other hand against the ring, the balls being radially pressed to the inside of the drawbar groove by said ring on which the clamping springs are acting.

4,068,560

FLUID-POWERED STEPPING MOTOR

George Orloff, Solihull; Peter Ian Muanoch, Hall Green, and Alan Thomas, Stratford-on-Avon, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Aug. 17, 1976, Ser. No. 715,090
Claims priority, application United Kingdom, Aug. 30, 1975, 35848/75
Int. Cl.[2] F15B *21/02;* F01B *1/06*
U.S. Cl. 91—36 11 Claims



1. A fluid-powered stepping motor comprising a body, a cam track, a cylinder member mounted on said body for rotation relative to said cam track, said cylinder member having at least three radial bores therein, piston elements slidable in the respective bores and being engagable with said cam truck, means, responsive to input control signals, for sequentially applying fluid pressure pulses to said bores, said cam track including a surface having a plurality of zones whose distance from said cylinder progressively decreases substantially symmetrically on either side of a centre part of each zone, and means, operable in synchronism with said fluid pressure pulse applying means, for supplying pulses of lubricating fluid between relatively sliding faces of said body and said cylinder member only when said body and said cylinder member are urged into relative rotation by said fluid pressure pulses, whereby a sequence of said fluid pressure pulses causes stepwise relative rotation between said body and said cylinder member and in the intervals between said pressure pulses frictional resistance to said relative rotation is increased.

4,068,561

PRE-DETERMINED PRESSURE SYSTEM

Robert C. Fay, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 22, 1976, Ser. No. 651,351
Int. Cl.[2] F15B *13/042, 13/044*
U.S. Cl. 91—433 1 Claim

1. A system to apply pressure to an article to be worked on comprising: a piston chamber having a piston head slidably mounted therein, a source of fluid, an electrically operated reversing valve means, a first means to supply fluid from said source through said valve means to one side of said piston head, a second means to return fluid from the other side of said piston head to said source, a third means to return fluid from said first means to said source, a fourth means operably associated with said third means to allow fluid from said first means to flow through said third means only when the pressure of the fluid in said first means is at a pre-determined level and an electrical control circuit including a time delay means operably associated with said valve means and having flow switch means for energizing said time delay means responsive to the flow of fluid in said third means past said fourth means as it returns to said source to allow fluid to flow in said first means for a pre-determined time and then reverse the position of said



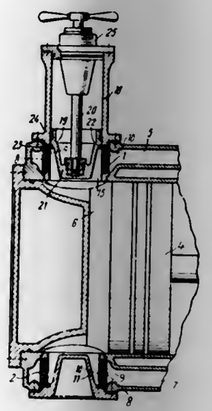
valve means to reverse the flow of fluid to and from said piston head.

4,068,562

CYLINDER OF PISTON COMPRESSOR

Mark Isaakovich Frenkel, ulitsa Karbyshcva, 6, korpus 2, kv. 20, Leningrad, U.S.S.R.

Filed Dec. 19, 1973, Ser. No. 426,242
Int. Cl.[2] F01B *31/14*
U.S. Cl. 92—60.5 6 Claims



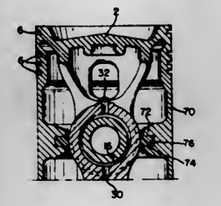
1. An arrangement for controlling the capacity of a piston compressor comprising: a piston axially movable in said cylinder; an admission space in said cylinder; a working space in said cylinder, cylindrical admission valves, each communicating said admission space of said cylinder with the working space thereof; annular elastic notched laminae of each of said cylindrical admission valves; annular rigid seats of each of said cylindrical admission valves; said seats having passages for the flow of the fluid being compressed; said annular elastic notched laminae and said annular rigid seats alternating with one another; a delivery space of said cylinder; cylindrical delivery valves, each communicating said delivery space of said cylinder with said working space thereof; annular elastic notched laminae of each of said cylindrical delivery valves; annular rigid seats of each of said cylindrical delivery valves; said seats having passages for the flow of the compressed fluid, said annular elastic notched laminae and said annular rigid seats alternating with one another; a volume reducing cone adjacent to said admission valves and said delivery valves for reducing dead space in said valves; and means cooperating with one of said cones for adjusting the output of said cylinder.

4,068,563

INTERNAL OIL SEAL FOR PISTON

Fred W. Ryan, P.O. Box 845, Seahurst, Wash. 98062, and Robert J. Webber, 23633 101st W., Edmonds, Wash. 98020

Division of Ser. No. 502,356, Sept. 3, 1974, Pat. No. 3,992,980, which is a continuation of Ser. No. 257,871, May 5, 1972, abandoned. This application Sept. 27, 1976, Ser. No. 726,828
Int. Cl.[2] F01B *31/10;* F16J *1/04*
U.S. Cl. 92—157 1 Claim



1. In a hollow piston and connecting rod assembly for use in an internal combustion engine wherein the piston includes a head, a cylindrical skirt extending from the head and a pair of diametrically opposed, transverse bores extending through the skirt of the piston, wherein a connecting rod has a passageway therethrough for passage of lubricant and a bulbous portion at one end through which a bore extends, wherein a wrist pin extends through the bore of the connecting rod and is supported in the diametrically opposed bores of the piston, wherein inner bushing means are inserted in the bore of the connecting rod around the wrist pin, providing bearing surfaces between the inner surfaces of the bushing means and the wrist pin, wherein outer bushings are inserted in the bore extending through the skirt of the piston and around the wrist pin to provide bearing surfaces between inner surfaces of the outer bushings and the wrist pin, the outer bushings spaced from terminating ends of the inner bushing means to provide lubricant passages so that lubricant forced under pressure through the passageway in the connecting rod lubricates the wrist pin and cools the piston head, the improvement comprising:

sealing means, including inwardly projecting lips extending from the interior surface of the skirt and integral therewith disposed opposite the axis of the wrist pin and on each side thereof, a groove formed in the portion of each of the lips facing the wrist pin, and a wiping seal received in each of the grooves contacting the exterior surface of the bulbous portion of the connecting rod, the inwardly projected lips and wiping seals closing the entire area between the bulbous portion of the connecting rod and the interior surface of the skirt of the piston so that the lubricant forced through the passageway in the connecting rod beneath the piston head and above the connecting rod builds up pressure therein, the lubricant forced to return below the sealing means substantially only along the bearing surfaces between the inner and outer bushings and wrist pin to provide continuous lubrication thereto.

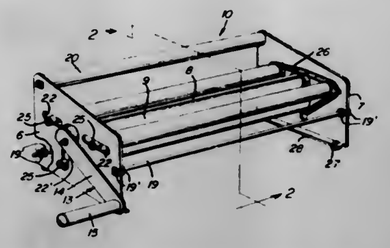
4,068,564

MACHINE FOR ROLLING NEWSPAPER INTO LOGS

Reuben O. Dahlstrom, 435 Second Ave. NW., Milaca, Minn. 56353

Filed June 11, 1976, Ser. No. 695,160
Int. Cl.[2] B31C *1/00*
U.S. Cl. 93—1 C 9 Claims

1. A paper roller having spaced relatively braced end supports, a winding roller removably journaled between the end supports, a plurality of spring urged floating rollers journaled between the end supports and opposing the winding roller from remote sides to apply continual pressure thereto, rotary torque input means drivingly connected to the winding roller, said end supports defining elongated guides disposed on remote sides of said winding roller and extending generally radially of the axis of rotation of the latter, bearings mounted in



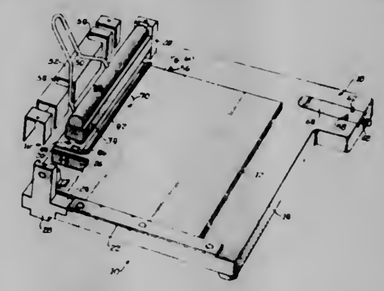
said guides for shifting therealong, the opposite ends of said floating rollers being journaled from said bearings. said bearings at each end support including aligned recessed portions facing outwardly from said winding roller, and an endless spring member trained about each set of corresponding recessed portions yieldingly biasing said bearings, and thus said floating rollers, inwardly along said guides toward said winding roller.

4,068,565

METHOD AND APPARATUS FOR MAKING BUSINESS FORM DUMMY

Samuel R. Olsen, 207 Data Drive, Streamwood, Ill. 60103, and Robert Lapp, 5733 Grant, Hinsdale, Ill. 60521

Filed Aug. 19, 1976, Ser. No. 715,685
Int. Cl.[2] B31F *5/02*
U.S. Cl. 93—1.1 17 Claims



1. A method for forming a test dummy of business forms for imprinting by a business machine having a plurality of spaced apart traction pins for moving said forms through said machine comprising the steps of:

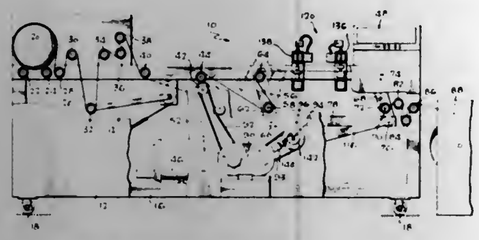
collating a selected variable number of paper business forms including interleaved carbon papers of variable thickness to create a stack having one common longitudinal edge;

moving said edge a predetermined distance past a plurality of perforating dies each spaced by a distance corresponding to the spacing between each pair of traction pins and a respective aligned perforating punch with said dies and punches longitudinally aligned parallel to said edge and past a plurality of crimping dies each having an aligned respective crimping punch to position said stack between all of said punches and dies; and

simultaneously and manually operating all of said punches relative to all of said dies while said stack is stationary for both piercing and crimping said stack at a plurality of spaced positions adjacent said one edge of said stack to

form a series of first perforations spaced apart by a distance corresponding to the distance between said spaced apart traction pins and spaced from said one edge by said predetermined distance.

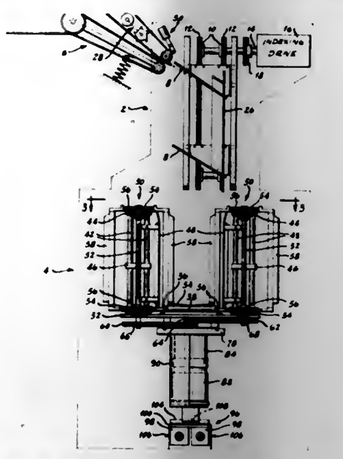
4,068,566
UNIVERSAL BAG-MAKING MACHINE
Richard L. Joice, 8955 Fullbright Ave., Chatsworth, Calif. 91311
Filed Mar. 15, 1976, Ser. No. 667,205
Int. Cl.[2] F15B *15/22*
U.S. Cl. 93—8 R **21 Claims**



1. A bag-making machine comprising:
means for advancing a web of tubular synthetic polymer composition material from a source at a substantially constant rate;
first and second web control arms, each of said control arms being pivoted on its own separate pivot axis and spaced from each other in parallel with each other so as to pivot in the same direction with respect to the advancing web, each of said control arms carrying guide rollers thereon for guiding the web and for engaging the web for acting on the advancing web to cause the web to dwell at an operation station positioned between said first and second web control arms so that operation can be performed on the web at the operation station;
means positioned at said operation station for acting on said web, said means for acting on said web having power means thereon; and
detecting means for detecting the position of said web control arms and connected to said power means for energizing said power means so that an operation is performed on the web when the web dwells at said operation station.

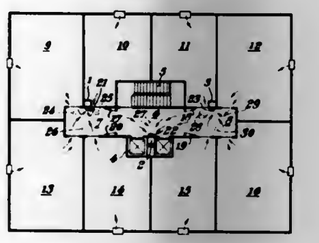
4,068,567
COMBINED EJECTOR-GATE MEANS FOR ROTATABLE TABLE OF AN ARTICLE COUNTER-STACKER
Arthur F. Allison, Aurora; Dennis C. Christopherson, Denver; Byron L. Mays, Boulder, and Reginald A. Reed, Golden, all of Colo., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed Jan. 31, 1977, Ser. No. 764,081
Int. Cl.[2] B31B *1/98*; B65G *57/09*
U.S. Cl. 93—93 C **13 Claims**

1. In an apparatus for conveying, counting and stacking articles having an input conveyor for delivering articles in a lapped stream, counting means for counting articles passing a point in said input conveyor, stacking means at the output end of said conveyor for stacking said articles one upon another and a table for receiving said stack of articles from said stacking means, the combination comprising:
vertical guide means mounted on said table for engaging opposite edges of said articles in said stack;
ejector means mounted on said table and positioned for engagement with the ends of said articles in said stack at at least one unguided end of said stack;
means operable to drive said ejector means across said table to eject said stack of articles therefrom; and
means operable to rotate said table, said guide means and said ejector means through one-half revolution and to restrain said ejector means against movement relative to said table during rotation thereof, whereby said guide



means and said ejector means cooperate to provide vertical support to said stack during table rotation.

4,068,568
FIRE SAFETY SYSTEMS
Cyril Herbert Moss, Heath Common, Storrington, Sussex, England
Filed Mar. 29, 1976, Ser. No. 671,098
Claims priority, application United Kingdom, Apr. 2, 1975, 13423/75
Int. Cl.[2] F24F *13/00*
U.S. Cl. 98—33 R **14 Claims**

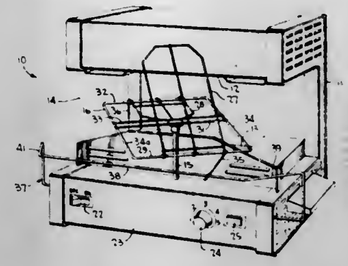


1. A fire safety system for use in a building having a plurality of accommodation units and at least one communal unit providing means of access to said accommodation units, said system including at least one smoke detector in said communal unit and means for maintaining the pressure in said accommodation units above that in the communal unit when no smoke is detected by said smoke detector and for maintaining the pressure in said communal unit above that in the accommodation units when smoke is detected by said smoke detector.

4,068,569
ROTARY TOASTER DEVICE
George B. Munsey, Box 4285 Asher Ave., Little Rock, Ark. 72204
Filed Feb. 4, 1977, Ser. No. 765,704
Int. Cl.[2] A47J *37/08*
U.S. Cl. 99—327 **8 Claims**

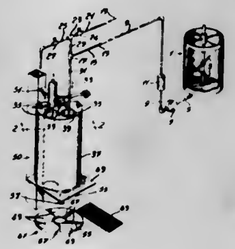
1. A toaster device comprising, a casing having spaced horizontal walls and an opening at the front thereof, a rotatable shaft extending vertically in said casing, a horizontal support

grid mounted on said shaft between said walls, means for rotating said shaft and said support grid about the central axis of said shaft, heating elements disposed horizontally on opposite sides of said support grid, at least one grid element for supporting a toastable item, said element resting on said support grid and being pivotally connected thereto for movement between a horizontal position and a raised position, means extending outwardly of said grid element for moving same to



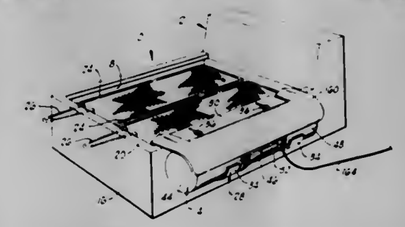
said raised position, and said casing including abutment means disposed for contact by said outwardly extending means throughout one segment of rotation of said support grid, said abutment means being located at said front opening, whereby upon support grid rotation about said axis said grid element is caused to be moved from said horizontal position to said raised position for delivering the toastable item outwardly of said casing through said front opening.

4,068,570
APPARATUS FOR PRODUCING PIECES OF EGGS
Paul Emile Lanoie, 146, rue Principale, Upton, Quebec, Canada
Filed Mar. 10, 1976, Ser. No. 665,563
Claims priority, application United Kingdom, Mar. 18, 1975, 11265/75
Int. Cl.[2] A47J *27/04*
U.S. Cl. 99—353 **6 Claims**



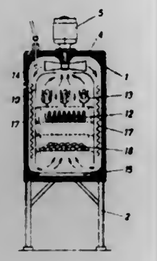
1. An apparatus for producing pieces of eggs which comprises:
a. a mixer for producing a blend of eggs;
b. a source of steam under pressure;
c. first duct means connected to said mixer, said first duct means comprising a tube having a constriction which prevents formation of voids in the flow of egg blend;
d. second duct means connected to said source of steam;
e. means enabling said first and second duct means to be joined whereby said blend of eggs and said steam are contacted to produce a burst of the eggs and to initiate a preliminary cooking thereof;
f. third duct means connected to said means defined in (e) to discharge the preliminary cooked eggs;
g. a container to receive the discharged eggs and to hold the same until completely cooked, said container comprising an elongated cylinder formed with a plurality of concentrically arranged cylindrical axial compartments;
h. means to cause said discharge of preliminary cooked eggs to be made alternately in said compartments;
i. means to rotate said cylinder to a next compartment when one compartment has been filled with said preliminary cooked eggs; and
j. means enabling disintegration of said cooked eggs into small pieces.

4,068,571
COOKING OIL CLEANER AND FILTER SYSTEM FOR DEEP FAT FRYERS
Cecil R. Cunningham, 1912 Mockingbird Lane, Altus, Okla. 73521
Filed May 3, 1976, Ser. No. 682,395
Int. Cl.[2] A47J *37/12*
U.S. Cl. 99—408 **21 Claims**



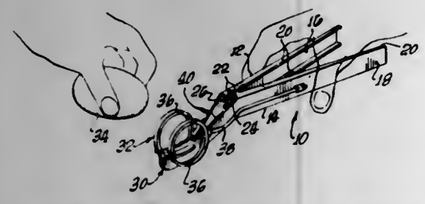
1. A deep fat fryer assembly comprising in combination:
a deep fat fryer well for containing cooking oil and having a rim extending around at least a portion of the well;
a substantially cylindrically shaped cooking oil filtration assembly having a longitudinal axis, said filtration assembly including:
a filter housing having a longitudinal substantially cylindrical outer surface and having a filter cavity formed therein communicating with an open transverse end portion thereof;
a pump housing having a longitudinal substantially cylindrical outer surface coaxially aligned with said filter housing and having a first and second transverse end portions, the first end portion thereof communicating with the open end portion of said filter housing;
filter means disposed within the filter cavity for filtering cooking oil passing therethrough;
pump means disposed in said pump housing and having a first port communicating with the open end portion of said filter housing and a second port communicating with the outer surface of said pump housing for pumping cooking oil through said pump housing; and
a motor mounted on the second end portion of said pump housing and having an output shaft drivingly connected to said pump means;
bracket means for supporting said cooking oil filtration assembly adjacent the rim of said deep fat fryer well;
first conduit means communicating with the filter cavity for conveying cooking oil between said deep fat fryer well and the filter cavity;
second conduit means communicating with the second port of said pump means for conveying cooking oil between said pump means and said deep fat fryer well; and
a shield supported by said bracket means and positioned above said cooking oil filtration assembly and over at least a portion of said first and second conduit means at the location where said first and second conduit means extend between said deep fat fryer well and said filter cavity and pump means, respectively, whereby said cooking oil filtration assembly is shielded from contact by a person adjacent the deep fat fryer.

4,068,572
APPARATUS FOR HEATING FOOD
Hans Vogt, 8391 Erlau, Passau, Germany
Division of Ser. No. 222,406, Jan. 31, 1972, abandoned. This application Dec. 20, 1973, Ser. No. 426,608
Int. Cl.[2] A21B *1/24*
U.S. Cl. 99—447 39 Claims



1. Apparatus for heat-treating foodstuffs, comprising a heat-insulated housing with a door and a sheet metal container mounted in and open below and above and at the side which faces the door, the container being spaced from the walls of the housing at least above and on both sides, further comprising a blower arranged in the space between the roof of the housing and the upper opening in the container and heating elements in the space between the side walls of the housing and the container and a temperature controller for maintaining the pre-set treatment temperature characterised in that, at least one gas-permeable drum is mounted in the container for rotation about a horizontal axis to receive the goods to be treated, the drum being connected to driving means.

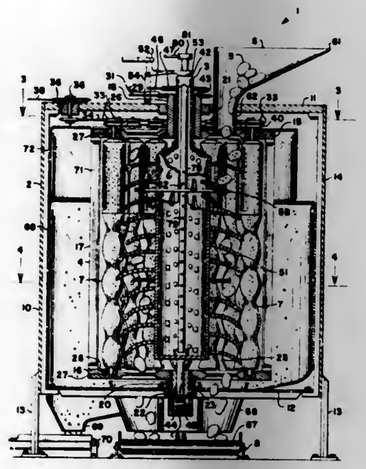
4,068,573
UTENSIL FOR CRACKING EGGS
Angel L. Romero, 2700 Southern Ave., No. B, South Gate, Calif. 90280
Filed June 7, 1976, Ser. No. 693,739
Int. Cl.[2] A23N *5/00*; A47J *43/00, 13/00*; B26B *17/00*
U.S. Cl. 99—578 3 Claims



1. A utensil for cracking and separating egg shells, to allow the yoke therein to be extracted therefrom, said utensil comprising:
- a tongue having a pair of handles including a gripping portion formed at one end thereof, and longitudinal extending arm members formed at the opposite end thereof;
- pivotal means operably interconnecting each handle thereof;
- biasing means engaging said handles, forcing said gripping portion thereof apart;
- cracking-and-separating means formed on the ends of said extending arm members to operate with said gripping ends of said handles;
- egg-supporting means comprising a pair of juxtapositioned support-ring members positioned adjacent said cracking-and-separating means, a flexible strut member being secured at one end of said ring members, and the other end being secured to said respective handles;

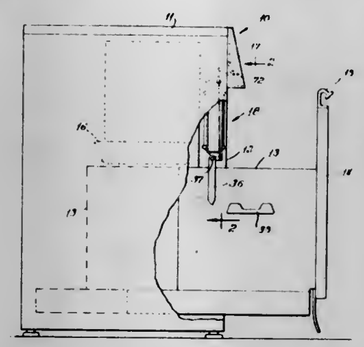
said cracking-and-separating means comprising:
- a pair of upwardly extended blade members integrally formed on each of said arm members, and centrally positioned between and below said support-ring members, wherein each blade member includes a wedged-shaped cutting edge having a substantially "V"-shaped configuration, so as to directly engage the shell of an egg disposed between said ring member, thus cracking said shell into two sections as the extending arm members are stroked downwardly against a surface area; and
- a shoulder member laterally extending outwardly from said arm member, adjacent and below said blade members, whereby each shell section is supported on said shoulders during separation thereof.

4,068,574
CONTINUOUS PEELING APPARATUS
John H. Amstad, 2101 Central Ave., Alameda, Calif. 94501
Continuation-in-part of Ser. No. 452,420, March 18, 1974, abandoned. This application Nov. 26, 1975, Ser. No. 635,606
Int. Cl.[2] A23N *7/00*; A47J *17/00*
U.S. Cl. 99—587 11 Claims



1. Peeling apparatus comprising:
- a. a plurality of spindles having a vegetable engaging surface and at least partially forming a cage defining a chamber adapted to contain a mixture of vegetables and peelings therefrom, certain of said spindles being spaced apart defining openings communicating from the interior of said cage to the exterior thereof and of a size to permit passage of said peelings but retention of said vegetables;
- b. certain of said spindles having axes and being rotatable thereabout;
- c. abrading means on said vegetable engaging surface of certain of said spindles for removing peelings from said vegetables;
- d. power means operably engaging certain of said spindles and rotating same about said spindle axes;
- e. mounting structure supporting said cage for rotary motion about an axis extending through said chamber;
- f. power means operably engaging and rotating said cage at a rotary speed at least sufficient to maintain contact of said vegetables with peeling pressure against said spindles by centrifugal force produced by said vegetables travelling substantially at said rotary speed in contact with said spindles; and
- g. means urging said vegetables into initial engagment with said spindle vegetable engaging surfaces permitting said cage to accelerate said vegetable to said rotary speed;
- h. said means urging said vegetables into contact with said spindle vegetable engaging surfaces including a member positioned in said cage and having elongate flexible fingers and projecting generally toward said spindles a distance sufficient to contact said vegetables while said vegetables maintain contact with said spindles by centrifugal force induced by the rotation of said cage and power means operably engaging said member and rotating same, whereby peelings produced from said vegetables during said cage rotation are discharged by said centrifugal force through said openings between said spindles to said exterior of said cage.

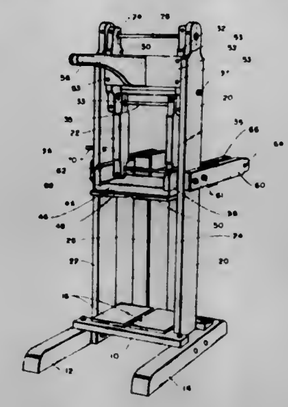
4,068,575
REFUSE COMPACTOR WITH SELECTIVE SPRAY DEVICE
Charles R. Difley, Danville; Milton J. Johnson, Stanford, and William R. McDonald, Danville, all of Ky., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 24, 1976, Ser. No. 717,368
Int. Cl.[2] B30B *15/30*
U.S. Cl. 100—45 14 Claims



1. In a refuse compactor having a receptacle for holding refuse, and means for movably carrying the receptacle for selective disposition in a refuse compacting position and in an exposed refuse receiving position, improved refuse treating means comprising: means for removably mounting above the receptacle a container of refuse treating material having a discharge valve and valve actuating means for selectively opening the valve to deliver refuse treating material from the container onto refuse in the receptacle; means for fixedly supporting the valve actuating means; and means for selectively moving the container relative to the fixedly supported valve actuating means to open the valve, said means for moving the container comprising means responsive to movement of said receptacle.

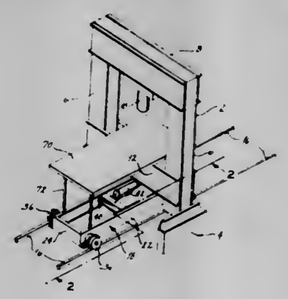
4,068,576
HAND-OPERATED PRESS FOR BALING NEWSPAPERS
Richard K. Smith, 12096 Ventura Avenue, Ojai, Calif. 93023
Filed Dec. 14, 1976, Ser. No. 750,538
Int. Cl.[2] B30B *1/12*
U.S. Cl. 100—219 7 Claims

1. A manually-operated press for compressing a stack of folded newspapers, and the like, comprising: a base forming the bottom of a compression box; a frame mounted on the base and forming the sides and back of the compression box and defining an open front for the compression box, said frame including a pair of spaced and parallel elongated upright members and a first pair of spaced and parallel generally horizontal elongated members extending outwardly from intermediate positions on respective ones of the upright members; a first pair of spaced and parallel linkage arms; means for pivotally mounting the linkage arms of the first pair to the top of the frame; a second pair of spaced and parallel linkage arms pivotally mounted to the lower ends of the respective arms of the first pair; a top for the compression box pivotally mounted to the lower ends of the second pair; a second pair of elongated parallel members attached to said top and extending outwardly therefrom in generally co-planar relationship therewith; means pivotally coupling the distal ends of said generally horizontal



elongated members of said first pair and the distal ends of said elongated members of said second pair; and a lever-like handle affixed to one of the pairs of parallel linkage arms and extending outwardly from the plane thereof for turning the parallel linkage arms between an inclined position and an essentially vertical position so as to move said top up and down in said compression box.

4,068,577
WORK POSITIONING TABLE
Patrick Joseph Murphy, 1324 S. Plaza, Springfield, Mo. 65804
Filed Mar. 15, 1976, Ser. No. 667,080
Int. Cl.[2] B30B *15/30*
U.S. Cl. 100—224 10 Claims



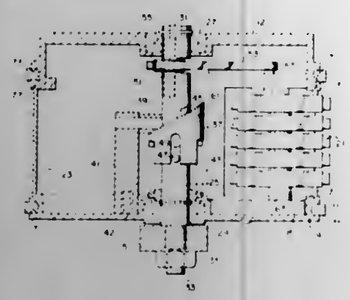
1. A table comprising: a carriage frame; a table top supported by the carriage frame; a pair of parallel axle shafts mounted on the carriage frame and having eccentric spindles at their ends; wheels mounted on the spindles and rotatable relative thereto; and means for rotating the axle shafts in unison so as to lower the wheels relative to the carriage frame and thereby elevate the carriage frame and table top, the means for rotating the axle shafts including chains wrapped around the axle shafts and means remote from the shafts for exerting a force on the chains.

4,068,578

SEQUENCE NUMBERING CODE MARKING DEVICE

Patrick Delligatti, c/o Dalemark Industries Inc., 950 Airport Road, Lakewood, N.J. 08701

Filed Aug. 6, 1976, Ser. No. 712,217
Int. Cl.² B41F *17/26*
U.S. Cl. 101—35 7 Claims



1. Apparatus for forming successive code marks on successive mark receiving surfaces such that the marks are positioned a predetermined distance from the leading edge of each successive mark receiving surface as the mark receiving surfaces move along a predetermined path in spaced apart relationship, said apparatus comprising

a. a support spindle;

b. a housing rotatably supported on said support spindle adjacent the predetermined path;

c. surface engaging means mounted on said housing for successively engaging each mark receiving surface as the surface moves along the path and for rotating said housing when in engagement with each mark receiving surface;

d. biasing means for continuously angularly biasing said rotatable housing toward a null position having a predetermined angular relationship with said support spindle to cause return of said housing to said null position between disengagement of said surface engaging means with one mark receiving surface and engagement of said surface engaging means with the next succeeding mark receiving surface;

e. advanceable code forming means mounted to rotate with said housing and positioned to form a successive code mark on each successive mark receiving surface when said surface engaging means is engaged therewith;

f. advance means for causing said code forming means to advance to form the next successive code mark upon rotation of said housing in excess of 180° beyond said predetermined null position, said advance means including

1. a cam surface eccentrically mounted with respect to the longitudinal axis of said support spindle,

2. an actuating lever means extending between said cam surface and said advanceable code forming means and movable between a fully retracted position and a fully advanced position, said cam being positioned eccentrically to move said actuating lever means into said fully retracted position when said housing is in the null position and to move said lever means to said fully advanced position when said housing is rotated to a position 180° from said null position, and

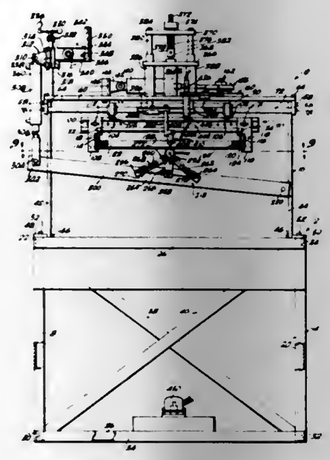
3. ratchet means for preventing said actuating lever from initiating advance of said advanceable code forming means when said activating lever means moves from its fully retracted position to its fully advanced position and for initiating and completing one advance of said advanceable code forming means each time said actuating lever means moves back from said fully advanced position to said fully retracted position.

4,068,579

CYLINDRICAL CONTAINER SILK SCREEN PRINTER WITH COORDINATED SCREEN HEIGHT AND STROKE ADJUSTMENT INDEXING MECHANISM

Ramon E. Poo, and Faustino Poo, both of Miami, Fla., assignors to Ventura International, Inc., Hialeah, Fla.

Filed Feb. 2, 1976, Ser. No. 654,551
Int. Cl.² B41F *17/32*
U.S. Cl. 101—38 R 21 Claims



1. A device for a silk screen printing the outer peripheral surface of a cylindrical container comprising, in combination, a first carriage means for supporting a printing screen prepared with printing indicia; a second carriage means beneath said printing screen for supporting the container to be printed for rotational movement about its longitudinal axis, means for measuring the diameter of a container, means connecting said diameter measuring means with a first drive means to sequentially move said second carriage means, with said container, into and out of a position whereat the cylindrical surface of said container is in abutting contact with the bottom surface of said screen, a second drive means to reciprocatively drive said first carriage means to effect a printing stroke in a first direction and a return stroke in the opposite direction, means to force ink deposited on the top surface of said printing screen through said silk screen, a third drive means to move said ink forcing means into engagement with the top surface of said screen on said printing stroke to effect printing of said indicia on the cylindrical container surface and to raise said ink forcing means from said top surface on said return stroke, and means for adjusting said printing and return strokes of said first carriage means so as to be correlated with the diameter of the container being printed and the movements of said second carriage means.

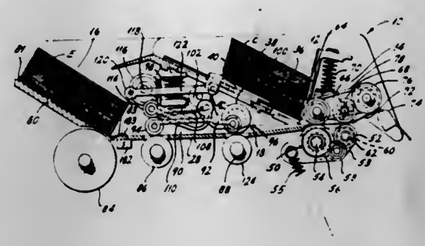
4,068,580

SELECTIVE DUPLICATING MACHINE

Henri Othmar Selhofer, Geneva, Switzerland, assignor to Scriptomatic, Inc., Philadelphia, Pa.

Filed Aug. 24, 1976, Ser. No. 717,085
Int. Cl.² B41L *47/46*
U.S. Cl. 101—53 28 Claims

1. A duplicating machine for selectively duplicating printed material from a master card containing information characteristics on one face thereof to a workpiece, said machine comprising a master card feed station including a tray for supporting a stack of master cards and card feed means for feeding a master card from the stack, a workpiece feed station including workpiece feed means for feeding a workpiece therefrom, a print station at which the printed material on a master card is duplicated on a workpiece when said print station receives both a master card and a workpiece, moistening means for applying solvent to said workpiece between said workpiece feed station and said print station, said card feed means and said moistening means being operatively connected to a common drive member whereby said common drive member simultaneously operates said card feed means and moves said moistening means from an inoperative position where it can apply solvent to a workpiece, card reading means including a plurality of sensors operative to provide signals in a circuit and being located in the bottom of said tray whereby the information



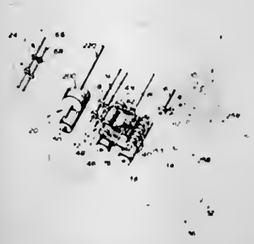
characteristics on the bottom card in the stack overlie said sensors, said card reading means reading information characteristics on the bottom master card before it is fed to said print station for providing output signals indicating that predetermined information characteristics have or have not been detected, and control means responsive to the signals from said card reading means for operating said drive member and said workpiece feed means if the printed material on said master card is to be duplicated on a workpiece or for operating only said drive member if the printed material is not to be duplicated on a workpiece.

4,068,581

ADDRESSING MACHINE

George E. Shepherd, 51 Pasteur, Dollard des Ormeaux, Quebec, Canada

Filed Mar. 14, 1977, Ser. No. 777,392
Claims priority, application Canada, Mar. 8, 1977, 273442
Int. Cl.² B41L *47/46*
U.S. Cl. 101—53 11 Claims



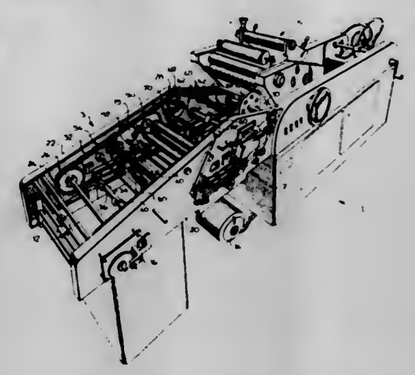
1. A hectographic apparatus for printing information on envelopes and similar workpieces from master cards each of which having an information bearing area, comprising a master card holder for receiving a stack of master cards, master card dispensing means for automatically feeding said master cards, card guiding means for translating dispensed master cards from said holder to a printing station and from said printing station to a master card discharge station, a first feed roll defining a workpiece receiving station, workpiece guiding means for translating workpiece from said workpiece receiving station to said printing station and from said printing station to a workpiece discharge station, drive means for rotating said first feed roll throughout every printing cycle, moistening means defining a moistening station upstream of said printing station for applying solvent only over the area of said workpiece to be printed, common actuating means for operating said master card dispensing means and for operating said moistening means in synchronism to insure that in every printing cycle the area of the workpiece being translated over which solvent is applied is in registry with the information bearing area of the master card being translated, sensing means for producing an electrical signal when the leading edge of a workpiece at said workpiece receiving station reaches a predetermined point in said apparatus, and registration adjustment means for adjusting the distance between the leading edge of a workpiece and the area of said workpiece to be printed, said registration adjustment means including a manual control for determining the angular displacement of said first feed roll taking place between the occurence of said electrical signal and the beginning of the operation of said common actuating means, said printing station comprising a second feed roll driven by said drive means, the axes of said first and second feed rolls being parallel to each other the linear speed of said first and second feed rolls being equal and in the same direction, said printing station also comprising a narrow segmented printing roll made of soft material and having a non-circular portion, and secured to an auxiliary shaft which is parallel to and spaced apart from the axis of said second feed roll, said auxiliary shaft being normally freely rotatable, the distance between the axis of said auxiliary shaft and that of said second feed roll being fixed and sufficient to leave a gap between the non-circular portion of said printing roll and the periphery of said second feed roll, but said distance being sufficiently short to ensure substantial flattening of said printing roll by said second feed roll when their circular surfaces meet; said apparatus also comprising a printing roll driver for causing engagement of said second feed roll and printing roll by rotating said printing roll a fixed period of time after receiving said electrical signal, and printing roll stop means for setting the starting angular position of said printing roll each time the periphery thereof looses contact with said second feed roll thus maintaining said gap until the next operation of said printing roll driver.

4,068,582

AUTOMATICALLY CONTROLLED NUMBERING MACHINE

Andre Poitras, Laval, and Christian Tailleux, Longueuil, both of Canada, assignors to Equipment Precibec Inc., Montreal, Canada

Filed Nov. 12, 1976, Ser. No. 741,549
Int. Cl.² B41I *45/00*
U.S. Cl. 101—76 4 Claims



1. In an offset press comprising a printing machine, a delivery machine cooperatively arranged relative to the printing machine for receiving the printed material discharged therefrom and delivering them to a point of deposit, and a numbering assembly comprising a numbering machine cooperatively

arranged on a shaft relative to the delivery machine to serially number the printed material passing therethrough an impression roller positioned beneath the numbering machine in cooperative relationship therewith and an inking device, said delivery machine including driving means and picking-up devices associated to said driving means for gripping the material discharged from the printing machine, said numbering machine including printing wheels having serial numbers thereon, a pawl for selectively stepping the printing wheels each time a number is to be impressed upon a sheet of printed material and a stop for actuating said pawl at each passage of a sheet of printed material, the combination therewith of a control assembly comprising:

a first electrical circuit comprising detection means responsive to the presence and absence of gripped material, a first normally open switch and a relay connected in series, said detection means closing said first circuit when printed material is normally supplied and opening the same when printed material is missing, said first switch closing said first circuit for a short time at each rotation of the shaft of the numbering machine, said relay closing a second electric circuit for a predetermined period of time each time it receives an electric pulse,

said second electrical circuit comprising a main switch, said relay and a first solenoid connected in series, said main switch selectively deactuating the numbering assembly, said first solenoid operating first mechanical means which in turn closes a third electrical circuit,

said third electrical circuit comprising a switch operated by said first mechanical means, the main switch and a second solenoid, said second solenoid operating second mechanical means which brings the stop of the numbering machine in operative position into the path of the pawl so that the number to be impressed be stepped each time a sheet of printed material is passing through the numbering machine,

said first mechanical means operated by the first solenoid of the second electrical circuit comprising a first lever which is mounted on a central pivot and permanently provided with an oscillatory movement generated by a pullback spring and a cam mounted on the shaft of the numbering machine, blocking means connected to the first solenoid for holding said first lever in an operative position relative to the switch of said third electrical circuit when the second circuit is closed, and connecting means mounted on the ends of the first lever for transmitting the oscillatory movement of the later to the impression roller and inking device.

4,068,583
HAMMER ACTUATED DOT MATRIX PATTERN PRINTER

Fumio Sato, Higashiosaka; Shigeru Fujimura, and Toshio Urakawa, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 10, 1976, Ser. No. 713,246
Claims priority, application Japan, Aug. 12, 1975, 50-98252
Int. Cl.² G02B 5/12
U.S. Cl. 101—93.04 **6 Claims**

1. A dot matrix pattern printer of the impact type comprising:

a. a vertical line element carrier;

b. a plurality of vertical line elements formed on the vertical line element carrier with a predetermined distance therebetween equal to one printed character width;

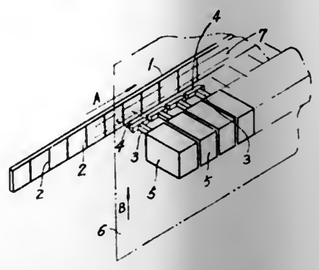
c. a driving means for driving the vertical line element carrier at a predetermined velocity in the lateral direction corresponding to a line of characters to be printed;

d. a hammer adjacent said vertical line element carrier;

e. means for actuating the hammer;

f. a projection fixed to the active end of the hammer, the projection having a predetermined length in the lateral direction substantially equal to the width of the dot matrix defining a said printed character and said hammer being responsive to said actuating means to impact said projection with selected ones of said vertical line elements as the latter traverse said dot matrix;

g. a recording paper disposed between said vertical line elements and said hammer; and

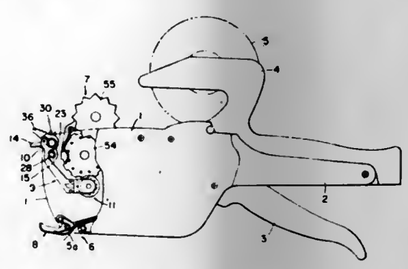


h. means for shifting the recording paper in the vertical direction to scan said dot matrix of a character to be printed in cooperation with said vertical line elements.

4,068,584
CARTRIDGE-TYPE INK SUPPLY DEVICE FOR LABELING MACHINES

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

Division of Ser. No. 663,693, March 4, 1976. This application May 3, 1977, Ser. No. 793,371
Claims priority, application Japan, Mar. 6, 1975, 50-26525
Int. Cl.² B41F 1/46
U.S. Cl. 101—103 **5 Claims**

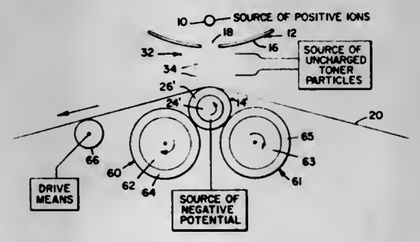


1. In an ink supply device for supplying ink onto a type surface of a printing mechanism of a labeling machine, said printing mechanism being used for printing inscriptions on each of a series of labels fed by indexed movement along a travel path thereof within the machine and said ink supply device comprising holding means adapted for supporting and attaching the device onto the machine; said ink supply device comprising an inking roller cartridge having at least one inking roller and a U-shaped inking roller support for supporting said inking roller, said U-shaped inking roller support having engaging means, said holding means comprising a cartridge holder adapted for holding said inking roller cartridge, said cartridge holder having a first part adapted to be detachably engaged with a part of the labeling machine and with a second part adapted to be detachably engaged with said former engaging means of said U-shaped inking roller support to support thereby said inking roller cartridge, the inking roller cartridge comprising a U-shaped inking roller support having a pair of side plates which are confronted with each other, at least one pivotal shaft supported by said side plates so as to be projected outward therefrom, and an inking roller supported by said pivotal shaft, said U-shaped inking roller support being provided with a fixing means; and the cartridge holder comprises a holder and an attaching member, said holder comprising a pair of arms which are spaced for a predetermined distance, supporting means which comprise a pair of holding pieces unified with one side ends of said arms and having cut slots adapted to be engaged with the pivotal shaft of said U-shaped inking roller support, and a support pin adapted to be engaged with said fixing means of said U-shaped inking roller support, said attaching member being attached to other side ends of said arms and comprising support means for attaching the attaching member itself to the labeling machine thereby to attach said holder with the inking roller support to the labeling machine.

4,068,585
ELECTROSTATIC PRINTER SUPPORT WITH CONTROLLED ELECTROSTATIC SURFACE VOLTAGE

Lester E. Thompson, Los Altos, Calif., assignor to ElectroPrint, Inc., Cupertino, Calif.

Continuation of Ser. No. 359,287, May 11, 1973, abandoned. This application Aug. 29, 1975, Ser. No. 608,940
Int. Cl.² B41F 15/00; H01T 19/04
U.S. Cl. 101—114 **29 Claims**



1. In a non-contact line printing apparatus of the type having a print receiving medium, a source of charged particles spaced from one side of the medium, an electrode on the other side of the medium to form an electric field in the space between the source and the medium so that charged particles are propelled by the field through space from the source to impinge the medium in a printing zone, and means for electrically modifying the field in accordance with an image to be reproduced, the improvement comprising: semiconductor or insulator means positioned between the electrode and the medium to provide a support surface for the medium and to cause the electric field in the space between the source and the print receiving medium to decrease continuously thoughout the printing zone from a print line in directions at right angles to the print line in the plane of the medium to thereby prevent ionization in the vicinity of the electrode said semiconductor or insulator means surrounding said electrode and being comprised of first and second materials of different resistivity, the first material comprising the portion of said semiconductor or insulator means lying between the electrode and the medium being of a material having a lower resistivity than the second material comprising the portion of the semiconductor or insulator means on the opposed side of the electrode.

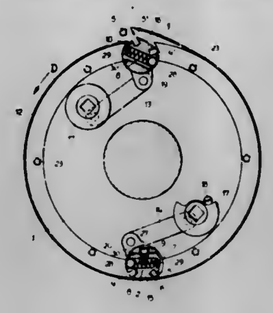
4,068,586
CYLINDER FOR CLAMPING PRINTING PLATES

Rudolf Frey, Dirmstein; Joachim Bernauer, Frankenthal, and Pirmin Göbel, Lambsheim, all of Germany, assignors to Albert Frankenthal AG, Frankenthal, Germany

Filed Oct. 7, 1976, Ser. No. 730,398
Claims priority, application Germany, Oct. 8, 1975, 2545124
Int. Cl.² B41F 21/06
U.S. Cl. 101—415.1 **7 Claims**

1. A cylinder for clamping printing plates for photogravure printing, wherein the cylinder has at least one longitudinally-extending, bore opening onto the cylindrical, circumferential surface thereof, comprising:

at least one clamping spindle mounted for reciprocable-rotatable movement within said at least one bore of said cylinder for movement between a release position and a clamping position, said spindle having a longitudinally-extending, generally cylindrical, peripheral surface portion, which lies flush with the circumferential surface of said cylinder, when said spindle is in a clamping position, and a pair of longitudinally-extending grooves disposed on opposite sides of said cylindrical surface portion, one of which serves to retain one end of a printing plate and both



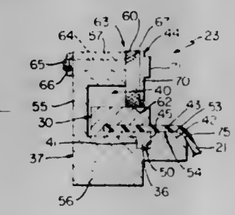
of which serve to retain sealing means, said spindle also including a generally flattened, peripheral surface portion adjacent to the side of said one-end retaining groove thereof, opposite the cylindrical surface portion, for retaining in cooperation with the surface of said bore of said cylinder, the other end of the printing plate; and

sealing means disposed with said grooves of said spindle for effecting sealing engagement of said spindle within said bore of said cylinder.

4,068,587
PRINTING BLANKET HOLDING APPARATUS

Jacob A. Bollmer, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Feb. 24, 1977, Ser. No. 771,588
Int. Cl.² B41F 29/04
U.S. Cl. 101—415.1 **13 Claims**



1. Apparatus for holding an end portion of a printing blanket on an associated cylinder comprising; an elongate holding bar of roughly U-shaped cross-sectional outline having a pair of substantially equal length legs defining a channel for receiving said end portion of said blanket therewithin, said legs having planar outside surfaces, one of said legs having a projection extending perpendicularly from a terminal end portion of its planar outside surface, said projection having a lower portion of substantially U-shaped outline, and said projection having a bearing surface disposed perpendicular to said end portion of said blanket with said bearing surface being defined by a leg of the U-shaped outline of said lower portion; and a bar support for installation on said cylinder, said bar support having a roughly U-shaped cross-sectional outline and having a bight and a pair of parallel arms extending from opposite ends of said bight with said bight and arms defining a space in said bar support for receiving said holding bar therewithin, said bar support having a groove therein for receiving said projection therewithin, an extension shelf on said bar support extending

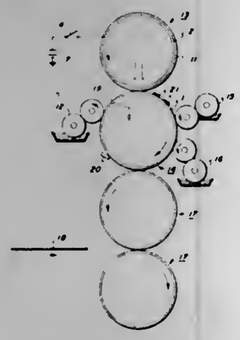
outwardly of said groove for supporting a part of said printing blanket thereon in spaced relation from said projection, and quick attach means for attaching and detaching said holding bar in said bar support; said bearing surface of said projection serving to carry loads applied against said blanket which tend to pull said holding bar out of said bar support; said projection being the sole means holding said holding bar and blanket against movements tending to pull said end portion of said blanket outwardly of said groove.

4,068,588

PRINTING USING AN ELECTROCHROMIC IMAGE

Keita Nakano, Yokohama, and Mutsuo Takenouchi, Isehara, both of Japan, assignors to Rank Xerox Ltd., London, England

Filed Dec. 8, 1976, Ser. No. 748,807
Claims priority, application Japan, Dec. 26, 1975, 50-154719
Int. Cl.² B41C *1/10*; G03G *13/28, 13/044*
U.S. Cl. 101—466 **6 Claims**



1. A printing method comprising forming a layer of electrochromic material on a conductive electrode, bringing an image recording element into contact with said electrochromic material said image recording member comprising a photoconductive layer contacting the electrochromic material, applying electromagnetic radiation in an image pattern to said photoconductive layer, applying a bias voltage to the conductive electrode to form a colored ink attractive image of said electrochromic material on said conductive electrode, applying ink to said image and transferring the ink image to an image receiving surface.

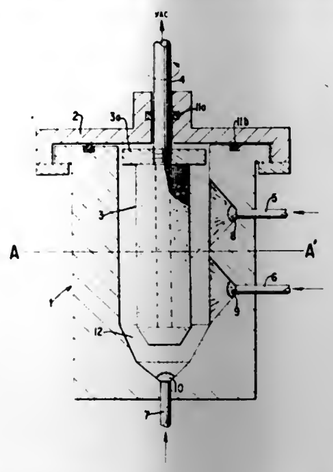
4,068,589

METHOD FOR THE PRODUCTION OF COMBUSTIBLE AMMUNITION CONTAINERS AND PRODUCT THEREOF

Wilhelm Oversohl, Koblenz-Karthause, Germany, assignor to Wasag Chemie AG, Munich, Germany

Filed Dec. 30, 1976, Ser. No. 755,653
Int. Cl.² F42B *5/06*
U.S. Cl. 102—43 R **18 Claims**

1. In a process for the manufacture of a combustible munitions container, wherein a hollow, water-permeable but fiber-impermeable, porous shape under suction is contacted with an aqueous suspension of nitrocellulose fibers, cellulose fibers, and synthetic resin binder material thereby forming a wet web, said web is pressed to remove free water, dried and hot-pressed to form a molded container, the improvements which comprise rotating said forming shape axially and contacting different longitudinal zones of said porous shape with a different aqueous suspension containing said fibers and said binder, the nitrocellulose fiber:cellulose fiber:binder ratio in each said suspension being different from the ratio in each other suspension,



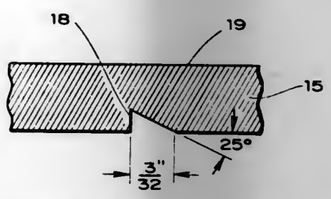
whereby an ammunition container is produced which is non-uniform in its longitudinal composition.

4,068,590

MEANS FOR CONTROLLED FRAGMENTATION

John Pearson, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1970, Ser. No. 67,245
Int. Cl.² F42B *13/48*
U.S. Cl. 102—67 **9 Claims**



1. A method of manufacturing a single-walled cylinder so that upon fragmentation thereof uniform sized fragments of a predetermined shape and mass are produced which comprises
forming indentations on the inner surface of the cylinder corresponding to a diamond-shaped pattern,
said pattern having the major axis of the diamonds disposed parallel to the longitudinal axis of the cylinder; and
the walls of said indentation having a steep and shallow side respectively.

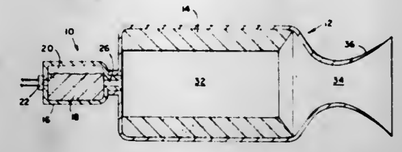
4,068,591

IGNITION SYSTEM USED IN TESTING SOLID PROPELLANT COMPOSITIONS FOR SMOKELESSNESS

Robert E. Betts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 10, 1976, Ser. No. 665,490
Int. Cl.² C06D *5/00*
U.S. Cl. 102—70 R **1 Claim**

1. In an igniter for igniting a main solid propellant charge being tested for smokelessness, said igniter including in combination a casing having an inner combustion chamber and an orifice, an ignition material in said chamber, and means for initiating combustion of said ignition material whereby said ignition material combusts and combustion products from said ignition material flow from said chamber through said orifice onto and thereby igniting said main solid propellant charge, the improvement comprising: said ignition material being of the same composition as said main solid propellant charge selected from propellant types consisting of composite and double base



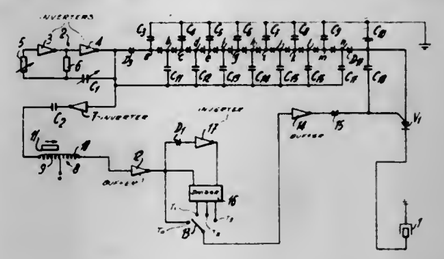
propellant, said ignition material having a weight ratio of about 0.9–1.2 grams to a main solid propellant charge weight of about 60 grams, and said ignition material being detached small pieces of solid propellant having an aggregate burning web thickness of 0.03 cm or less so that said ignition material will combust within 10 msec after said initiation of combustion.

4,068,592

ELECTRONIC FIRING DEVICE FOR PROJECTILES

Roger Beuchat, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed June 23, 1975, Ser. No. 589,543
Claims priority, application Switzerland, July 5, 1974, 9247/74; June 2, 1975, 7070/75
Int. Cl.² F42B *9/08*
U.S. Cl. 102—70.2 R **5 Claims**



1. An electronic firing device for a pyrotechnic charge, comprising an electric fuse, a firing capacitor, a delay device, a controlled-conductivity semi-conductor element for delivering the charge of said capacitor to said fuse, an oscillator providing a pulsed output signal which is simultaneously applied, on the one hand, to means for charging said capacitor, and on the other hand, to the delay device as a clock signal, said delay device controlling said controlled-conductivity semi-conductor element.

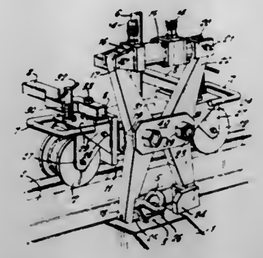
4,068,593

DRIVING OF RAIL CLIPS IN MAKING A RAILWAY RAIL-AND-FASTENING ASSEMBLY

Geoffrey Gordon Leeves, Bearsted, England, assignor to Pandrol Limited, London, England

Filed Sept. 12, 1975, Ser. No. 613,026
Claims priority, application United Kingdom, Sept. 16, 1974, 40273/74
Int. Cl.² E01B *29/24*
U.S. Cl. 104—1 R **14 Claims**

1. Apparatus comprising wheels suitable for running along at least one of two rails of a railway track and for supporting the remainder of the apparatus, a spigot for entering one end of a passage afforded by one of two upward projections on opposite sides of a rail, a portion for engaging a clip a part of which is to be inserted into the other end of said passage and power-operated means for forcing said portion towards the spigot to drive said clip so that said part of it moves along said passage



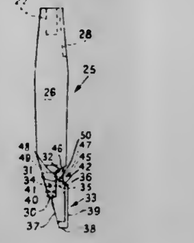
towards the spigot and the clip is driven into a position for holding down the rail.

4,068,594

TAMPING TOOL

James E. Crowell, 708 Marlin Ave., Foster City, Calif. 94404

Filed Feb. 4, 1976, Ser. No. 655,078
Int. Cl.² E01B *27/00*
U.S. Cl. 104—10 **1 Claim**



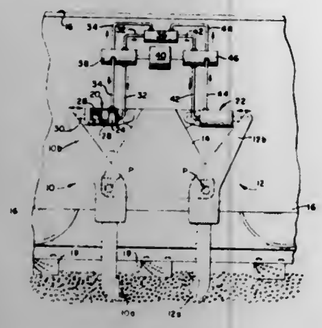
1. A tamping tool for tamping railroad ballast and the like comprising:
a. an elongated shank having a lower portion formed with a lower extremity providing a bearing surface and an inset portion extending above such bearing surface and terminating at its upper end in an outwardly sloping first shoulder overlying the recessed area;
b. a foot member having a tip at its lower end which directly bears the impact of tamping, said foot member being formed with an inwardly directed second shoulder above said tip and a recessed portion extending above and overlying said second shoulder and terminating in an outwardly sloping upper extremity;
c. said foot member being detachably clamped to the lower portion of said shank with such second shoulder abutting said bearing surface and the face of the recessed portion of said foot member abutting the face of the recessed portion of said shank;
d. the upper extremity of said foot member being spaced from said first shoulder to provide a wedge-shaped cavity between the upper extremity and the first shoulder;
e. a wedge disposed within said cavity and bearing against the upper extremity of the foot member and said first shoulder to receive and transmit to the shank the impact of tamping, and
f. means detachably clamping said wedge to said shank.

4,068,595

TRACK TAMPER

Robert A. Weber, Pittsburgh, Pa., and Franz Allmer, Sophia, N.C., assignors to Graystone Corporation, Monroeville, Pa.

Filed Nov. 17, 1975, Ser. No. 632,696
Int. Cl.[2] E01B *27/16*
U.S. Cl. 104—12 10 Claims



1. Track tamping apparatus of the type comprising a pair of opposed, vibrating tamper arms pivotally mounted on a carriage having means for positioning corresponding lower ends of the tamper arms on either side of a railroad tie and for drawing the vibrating arms together to compact the ballast thereunder, wherein the improvement comprises:

a pair of hydraulic piston assemblies operatively connected between the carriage and the upper ends of said tamper arms respectively such that reciprocation of each piston assembly causes pivotal reciprocable vibration of the respective tamper arms to aid in compacting the ballast, each said hydraulic piston assembly having a supply line and a return line for filling and evacuating hydraulic fluid from said piston assembly, respectively;

a pair of rotary valve means connected respectively to said piston assemblies for alternately communicating the supply and return lines for said respective piston assemblies with a common source of pressurized hydraulic fluid; and

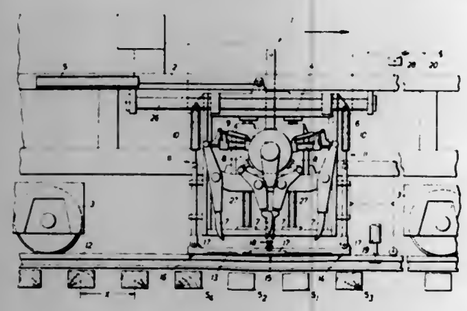
drive means for imparting continuous rotation to each said rotary valve.

4,068,596

MOBILE BALLAST TAMPER

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed June 14, 1976, Ser. No. 695,643
Claims priority, application Austria, Aug. 25, 1975, 6564/75
Int. Cl.[2] E01B *27/17*
U.S. Cl. 104—12 15 Claims



1. A mobile machine for tamping ballast underneath a track consisting of two rails fastened to a plurality of spaced ties resting on the ballast, the machine comprising

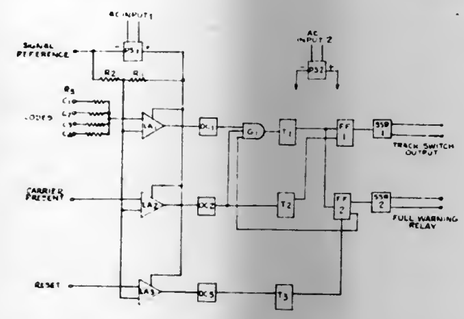
1. a frame
2. a tamping unit vertically movably mounted on the frame, the unit including
   a. a pair of vibratory tamping tools for tamping ballast under a respective one of the ties whereby the track is pressed upwardly, and
3. means mounted on the frame for holding the track in position against the upward pressure, the track holding means including
   a. a counterpressure beam having two ends and extending in a vertical plane above each of the track rails in the direction thereof in the operating area of the tamping tools, the counterpressure beam having at least three points of engagement with and downward pressure against, the associated rail, and
   b. power-actuated drives, a respective one of the drives being linked to the counterpressure beam in the region of each one of the beam ends for exerting downward pressure upon the beam ends and the beam ends engaging track rail points having a desired level.

4,068,597

CONVEYOR SYSTEM CONTROL CIRCUIT

Ernest P. Moyer, Frederick, Md., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

Filed Sept. 13, 1976, Ser. No. 722,352
Int. Cl.[2] G06K *7/10*
U.S. Cl. 104—88 16 Claims



1. In a system wherein a traveling mechanism is moved in a predetermined path and selectively controlled in its movement including an encoder unit mounted on the mechanism and a readout unit mounted along the path and wherein the encoder unit provides a code comprising a plurality of input signals and the readout unit reads the signals to actuate a control device along the path to determine the path of movement of the traveling mechanism, the improvement comprising

a control circuit associated with said encoder unit and comprising a readout circuit and a logic circuit,

said readout circuit including an AND circuit having an input for receiving signals from the encoder unit and transmitting an output signal when the code on the encoder unit matches the code on the readout unit,

said logic circuit having an input and an output,

means for coupling the output of said readout circuit and the input of the logic circuit while maintaining the readout circuit electrically isolated from the logic circuit,

and means for coupling the output of the logic circuit and the control device along the path of the traveling mechanism while maintaining the logic circuit and the control device electrically isolated from one another,

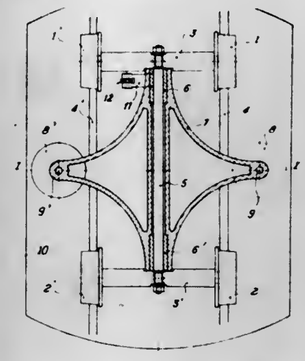
said readout circuit comprising a plurality of input buffers for sensing the presence or absence of an externally originating signal from said encoder unit and for sensing the presence or absence of simultaneous code signals from the encoder unit.

4,068,598

ELEMENT OF VEHICLE RUNNING ON RAILWAY TRACKS

Gerard Bardet, Arcueil, France, assignor to Automatisme & Technique, Arcueil, France

Filed Apr. 22, 1976, Ser. No. 679,455
Claims priority, application France, Apr. 23, 1975, 75.12706
Int. Cl.[2] E01B *7/00*
U.S. Cl. 104—130 5 Claims



1. A vehicle for running on the rails of a railway track having a switching junction, the vehicle comprising two axles, wheels on the axles for running along the tops of the rails, a bistable rockable lever between said axles, means supporting the lever for rocking on an axis at right angles to the axles, said lever having side portions extending out beyond said wheels, shunting wheels suspended from the outer ends of said side portions, crank means connected with said lever for rocking it, an eccentric for operating and locking the crank means, and means adapted to be actuated by fixed ramps beside the track for turning the eccentric to position either of said shunting wheels beside the adjacent side of the track for engagement with a side surface thereof.

4,068,599

UNITIZING FRAME FOR A PALLET

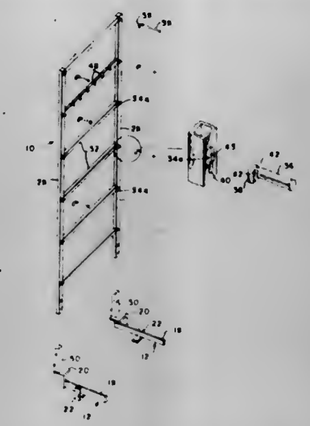
Lawrence G. Sapp, 621 Lone Palm Drive; James F. Slappey, Tillman Road, both of Lakeland, Fla. 33801, and C. Bart Nixon, 125 NW. 15th St., Oklahoma City, Okla. 73103

Continuation-in-part of Ser. No. 624,888, Oct. 22, 1975, Pat. No. 4,027,599. This application Sept. 22, 1976, Ser. No. 725,452
The portion of the term of this patent subsequent to June 7, 1994, has been disclaimed.
Int. Cl.[2] B65D *19/44*
U.S. Cl. 108—55.1 9 Claims

1. A unitizing frame for a four-way entry pallet, the pallet having an upper surface and including a pair of stringers extending along the sides of the pallet, the stringers having aligned cutout portions in the lower surfaces thereof to provide the four-way entry, and said pallet having an open area across its lateral dimension between the stringers, the unitizing frame comprising:

a pair of like panels having a width substantially equal to the lateral dimension of the pallet, said panels including side members extending the length of the panel;

means for unassistedly supporting said panels vertically on said pallet without obstructing the open area, said supporting means including a pair of bars each having a length substantially equal to the length of the stringers and a plurality of planar members including an upper plate at each end of each bar integral with each said bar and extending inwardly over the upper surface of the pallet, a side of each upper plate being substantially flush with an end of the pallet, and at least a pair of lower plates integral with each said bar and extending inwardly of said pallet in individual frictional contact with a portion of the lower surfaces of the stringers above the cut-out portions and means on said upper plates for stably, but removably, engaging the lower ends of said side members, said engaging means including means for preventing accidental disengagement of said lower ends of said side members, and said pair of panels interlocking said bars on said pallet; and



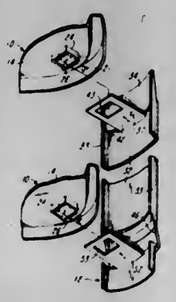
at least one pair of rod members for disengagingly interlocking each side member of one of said pair of panels to the opposing side member of the other of said panels when said panels are held vertically on said pallet by said pallet support means.

4,068,600

TABLE ASSEMBLY OF MOLDED PLASTICS MATERIAL

James R. Driscoll, 404 Winston Ave., Dayton, Ohio 45403

Filed Oct. 12, 1976, Ser. No. 731,363
Int. Cl.[2] A47B *3/06*
U.S. Cl. 108—111 9 Claims



1. A table assembly adapted to be conveniently and quickly erected, comprising a tray member including a generally horizontal bottom wall portion integrally connected to an upwardly projecting peripheral rim portion, said rim portion including a downwardly projecting skirt portion and having generally an inverted U-shaped cross-sectional configuration to define an open bottom peripheral cavity, a plurality of peripherally spaced leg members each including an upper lip portion projecting upwardly into said cavity and engaging said skirt portion of said tray member, means connecting said lip portion of each leg member to said skirt portion of said tray member for limiting relative vertical movement between said tray and leg members, each said leg member including an integral generally horizontal flange portion projecting inwardly from generally the base of said lip portion under said

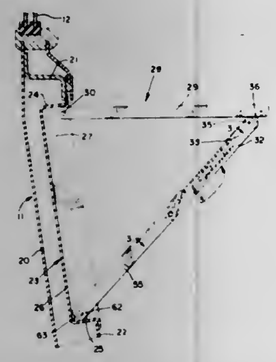
bottom wall portion of said tray member, snap-type latch means connecting said bottom wall portion of said tray member with said flange portion of each said leg member to limit relative horizontal movement between said tray member and each said leg member, and said inwardly projecting flange portion of each said leg member being slightly flexible relative to said lip portion of said leg member to effect connection of each said latch means.

4,068,601

FOLDING TABLE CONSTRUCTION

Ronald W. Marsh, Michigan City, Ind., and Grant M. Newbury, Shawano, Wis., assignors to Pullman Incorporated, Chicago, Ill.

Filed Sept. 2, 1976, Ser. No. 720,020
Int. Cl.[2] A47B *3/00*
U.S. Cl. 108—134 **10 Claims**



1. A wall mounted table including a table top,
means hingedly connecting said table top to a vertical wall for movement from a horizontally extending use position to a vertical non-use position substantially parallel to said wall, the improvement comprising;
a folding bracket construction including a first bracket member, and a second bracket member,
means pivotally connecting said first bracket member to said table top,
means pivotally connecting said second bracket member to said vertical wall,
means pivotally connecting adjacent ends of said first and second bracket members whereby said folding bracket may be collapsed from a linear diagonal supporting position to a stored folded position in the non-use position of said table top,
a latch arrangement for releasably maintaining said folding bracket in said linear diagonal position including,
a latch member supported on said first bracket member for relative reciprocating sliding movement,
first guide means on said second bracket member for guiding said latch member,
said latch member having one end portion overlapping said second bracket member and engaging said second bracket member at a point laterally spaced to one side of said means pivotally connecting said adjacent ends of said first and second bracket members in the linear position of said folding bracket and thereby lock said bracket members against folding movement,
manually operated means on said latch member for moving said latch members whereby said one end portion is laterally movable to another side of said pivotal means connecting said adjacent ends of said bracket members and is disengaged from said second bracket member whereby said folding bracket and table top may be moved to said collapsed position,
said one end portion comprising a guided extension having a rounded edge,
said one end portion and guided extension having spaced side wall portions providing a groove,
said first guide means on said second bracket slidably engaging said groove in guiding relation, said first guide means on said second bracket comprising a boss projecting from said second bracket,
said side wall portion of said extension having a concave upper surface,
a first stop member on said latch member having a stop surface,
a second stop member on said first bracket member engageable by said stop surface of said first stop in the linear position of said folding bracket, and
said second stop member engaging said undercut surfaces of said side wall portion in sliding relation during reciprocating movement of said latch member.

4,068,602

COATED SEED AND METHOD OF SEEDING

Robert R. Mickus, Sacramento, and James T. Munson, Robbins, both of Calif., assignors to Rice Growers Association of California, Sacramento, Calif.

Filed June 21, 1976, Ser. No. 698,423
Int. Cl.[2] A01C *1/06, 7/00*
U.S. Cl. 111—1 **4 Claims**

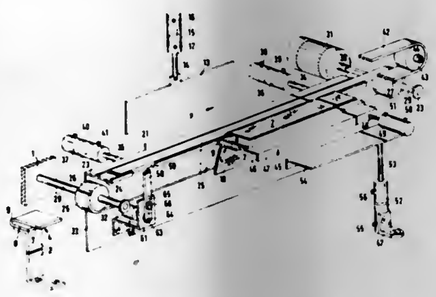
1. The method of seeding a flooded rice paddy comprising:
coating each individual rice seed with a coating consisting essentially of a liquid saccharide and talc to increase the weight of the seed by at least 20%,
passing said coated seeds to a finishing step wherein the seeds become discreet and free flowing, and
applying said seeds in the absence of presoaking to said rice paddy by aerial broadcast.

4,068,603

APPARATUS FOR FEEDING MATERIAL FOR FORMING A DOUBLE TUCK ON THE CUT EDGES THEREOF

Conrad Arbter, Mittelweg 9, Saal an der Saale, Germany (8741)

Filed Sept. 15, 1976, Ser. No. 723,229
Claims priority, application Germany, Oct. 3, 1975, 2544409
Int. Cl.[2] D05B *19/00, 35/04, 27/08*
U.S. Cl. 112—121.11 **12 Claims**



1. A system in sewing installations for the forming of a double tuck at the cut edges of flat material webs, and for feeding of a material web, for example, to a sewing station, comprising means defining a folding station adjacent the sewing station including a stationary U-shape folding bar having spaced apart legs and a web connecting the legs at their one ends, a fold slide and means cooperating therewith for moving said slide to fold the material over the connecting web end of the folding bar, a folding plate, means mounting said folding plate for movement in two mutually perpendicular planes and in a path in which it is inserted into the space between said legs of said folding bar, and a plurality of conveyor belts arranged

in opposite pairs and clamping the material web between pairs, the improvement comprising at least one movable conveyor belt engaging at the material in the vicinity of the tuck portion to move the material in a feed direction, and auxiliary feed means engageable with the material for driving the material briefly and at a rate faster than said conveyor belts engaging the material in the vicinity of the tuck portion.

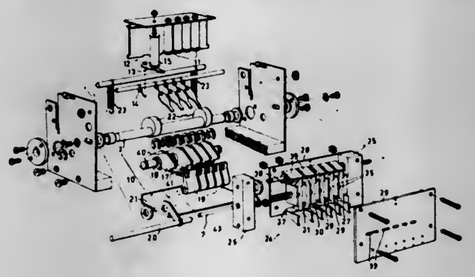
5. A method of advancing material to a sewing needle which includes at least one edge having a double tuck and using a U-shaped folding plate about which the material is tucked, comprising positioning the material on the folding plate and folding it downwardly over the connecting web of the U-shape portion, thereupon, folding it substantially horizontal into engagement with the lower leg of the folding plate, subsequently folding the free end over the edge of the lower leg of the U-shape folding plate and into the space between the legs thereof, engaging at least one side of the material along a considerable portion of its length and advancing it in a feeding direction toward the sewing machine needle and, at least directly before it is fed into the needle, advancing the material by separate feed means which is engaged with the opposite side of the material adjacent the end which is folded over the leg of the U-shape folding bar to advance it at a speed greater than the traveling speed of the material.

4,068,604

SEWING MACHINE

Kenneth Oscar Emanuel Skogward, Jonkoping, Sweden, assignor to Husqvarna AB, Sweden

Filed May 28, 1976, Ser. No. 691,098
Claims priority, application Sweden, May 28, 1975, 7506074
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 E **3 Claims**



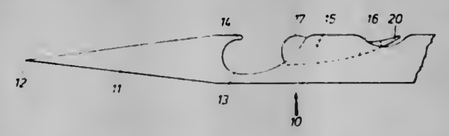
1. In a sewing machine for stitching material, said sewing machine comprising motor means for powering said sewing machine;
needle means, responsive to said motor means, for forming stitches;
zig-zag means for controllably displacing said needle means in a direction angularly displaced from the path of material through the machine to form a zig-zag stitch pattern, said improvement of said zig-zag means comprising:
control means, responsive to manual setting of a desired stitch pattern, for providing a control signal indicative of a desired displacement of said needle means from said path of material through said machine;
converter means, responsive to said control means, for producing a variable thickness, said thickness varying according to said desired displacement, said converter means comprising a plurality of packet means for providing a variable thickness, said thickness variable between a thick and thin position;
electromagnetic activating means for operating said packet means between said thick and thin positions;
linkage means for sensing said variable thickness of said converter means and displacing said needle means in response thereto;
said packet means comprising at least two plates, each of said plates having at least one raised portion and one flat portion, said plates, acting in cooperation with said raised and flat portions, providing a variable thickness of said packet means when said plates are moved relative to each other, said packet means further comprising rocker means, responsive to both plates of said packet means, for moving one of said plates in response to movement of the other of said plates in the opposite direction, said movement varying the thickness of said packet means between a thick and thin position.

4,068,605

NEEDLES

Denis Matthews, Sutton-in-Ashfield, England, assignor to Mathbirk Limited, England

Filed Nov. 22, 1976, Ser. No. 743,796
Claims priority, application United Kingdom, Nov. 12, 1975, 50933/75; Dec. 20, 1975, 52292/75
Int. Cl.[2] D05B *85/14*
U.S. Cl. 112—223 **6 Claims**



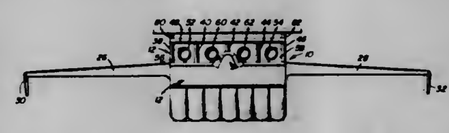
1. An imperforate needle for use with a textile linking machine, comprising an elongated shank having a pointed end and a cut-out with an inlet opening for inserting a thread through the latter and into said cut-out, said cut-out having a dimension in a direction substantially transverse to the direction of elongation of said shank, which is substantially commensurate with the thickness of said shank; and a latch element having at least two portions spaced from each other, said latch element being pivotable between a closed portion in which one of said portion bridges said inlet opening of said cut-out so as to close the same, and a second position in which said one portion of said latch element is retracted from said inlet opening and located substantially within the outer circumference of said shank as seen in said transverse direction, whereas the other portion of said latch element in said second position at least partially extends into said cut-out so as to be engaged by the thread during insertion of the latter in said cut-out whereby said latch element is pivoted from said open into said closed position.

4,068,606

SURFACE EFFECTS AIR VEHICLE

John Van Veldhuizen, 25975 SW. 182 Ave., Homestead, Fla. 33030

Filed Oct. 15, 1976, Ser. No. 732,991
Int. Cl.[2] B63B *1/34*
U.S. Cl. 114—67 A **14 Claims**



5. In an air cushion support system of the type including a rigid vehicle body having a bottom structure, said bottom structure including a rigid bottom plate, a plurality of parallel, elongated and horizontal downwardly projecting inflatable bottom surface members supported from and disposed beneath said bottom plate, said plate being elongated and said bottom surface members extending longitudinally of said plate, means defining crossed and intersecting horizontal air plenums above said bottom plate, air supply means operative to supply air

under pressure into said air plenums, each of said air plenums crossing each of said inflatable bottom surface members in vertical registry therewith, and air transfer means communicating those portions of said bottom surface members crossed by said air plenums with the interiors of said plenums for inflation of the bottom surface members by air supplied thereto from said plenums.

4,068,607

CONTROLLABLE WING SAIL

G. Lamar Harmon, 1362 Granville Drive, Winter Park, Fla. 32789

Filed Sept. 10, 1976, Ser. No. 722,159
Int. Cl.² B63H 9/06
U.S. Cl. 114—102 3 Claims



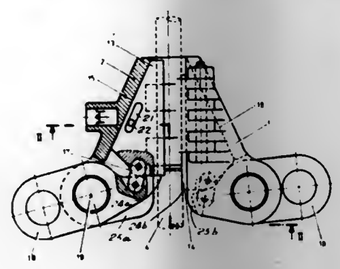
1. A sail and rigging comprising:
a vertical mast installable on a hull;
at least one boom pivotally attached to said mast at a point near the base of said mast, said boom pivotable in a vertical plane;
a yard disposed near the outer end of said boom and maintained essentially at right angles to said boom;
an essentially rectangular cambered sail having the span of said sail greater in length than the chord of said sail with the upper edge of said span attached to said yard;
boom control means operatively connected to said boom, said boom control means effective to selectively adjust the vertical angle of said boom with respect to said mast;
yard control means operatively connected to said yard, said yard control means effective to selectively adjust the angle of said yard with respect to the horizon;
sail angle control means operatively connected to said sail, said angle control means effective to selectively adjust the angle of attack of said cambered sail with respect to the relative wind;
sail trimming control means operatively connected to said sail, said sail control means effective to selectively control the angle of attack of at least one portion of said sail with respect to other portions of said sail; and
rigging means for erecting and lowering said sail, said rigging means operative to maintain said sail when in the erected condition supported in a kite-like fashion and arranged to transfer the force of a wind incident on said sail to the center of effort of the hull whereby said hull is propelled by such force without an overturning moment from the force of the wind on said sail.

4,068,608

CABLE STOPPER

Peter Hartz, Langen, Germany, assignor to Aktien-Gesellschaft "Weser", Bremen, Germany

Filed Feb. 20, 1976, Ser. No. 659,856
Claims priority, application Germany, Feb. 28, 1975, 2508764
Int. Cl.² B63B 21/08
U.S. Cl. 114—199 20 Claims



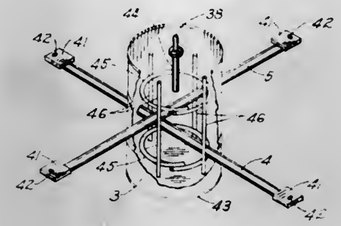
1. A device for clamping and stopping elongated objects, particularly cables, comprising means defining a passage adapted to receive at least an elongated section of the object to be clamped and stopped, said means defining said passage being a casing having an equilateral trapezoidal configuration bounded by bottom and top walls spaced from each other by elongated rectangular side walls, said casing having on the wide lower and the narrow apex side thereof an aperture for passage of a cable; said casing having a hinge-like configuration formed by a pair of equal half-portions, suspended in their bottom walls on a joining stem parallel to the casing longitudinal axis and limitedly pivotable thereupon, so that said casing half-portions, in being pivoted on said joining stem, open between their top walls a longitudinal gap for insertion of a cable, at least two jaws located in said passage adjacent to said elongated section of the object to be clamped and stopped, said clamping jaws being arranged in a pair against one another within said casing, slidable therein and movable toward each other to clamp and stop therebetween a cable, each of said jaws having the form of a right-angled triangular body bounded by a base edge, a slanting distal edge parallel to the adjacent side wall of said casing, and an inward edge extending at right angle from said base edge, so that the inward edges of said jaws extend parallel to one another; means mounting said jaws in said casing for displacement toward and away from said elongated section to thereby clamp and release said elongated object, said mounting means including guide walls of said casing which converge in the longitudinal direction of said passage, and surfaces on said jaws which engage said casing guide walls, so that the jaws slide along said guide walls during said displacement; means for shifting said jaws in longitudinal direction inside said casing, so that the shift of said jaws toward the apex region of said casing causes said jaws to slide on their slanting distal edges along said casing guide walls, to approach one another on their inward side edges and thus to provide in various longitudinal positions thereof different spacings between each other to compress along their entire lengths from either side cables of various diameters, said shifting means being lateral double-arm levers pivotally attached to said casing, each having an internal and an external arm, each being coupled on its internal arm to one of said jaws proximate thereto, so that the actuating of the corresponding one of said external arm produces motion of the corresponding one of said jaws in the longitudinal direction of said casing, each of said external arms being provided with a means for attachment thereto of an actuating means, said actuating means being a tug coupled at one end thereof to each of said attachment means and provided at the other end thereof with a looped means for its connection to a stationary support structure providing local anchoring of said casing, the tugs having said connecting looped means in common.

4,068,609

MOORING ANCHOR

Carl H. Hoetker, Jr., 615 8th Ave., San Diego, Calif. 92101

Filed Nov. 10, 1975, Ser. No. 630,208
Int. Cl.² B63B 21/34
U.S. Cl. 114—301 2 Claims



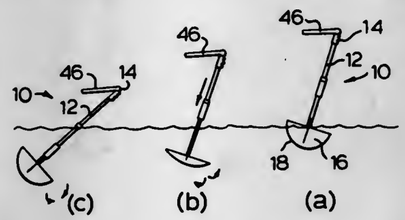
1. An anchor comprising:
a. a metal drum completely closed at one end having the other end entirely open;
b. two pairs of oppositely disposed holes provided in the walls of said drum; the holes of one pair being spaced longitudinally with respect to the holes of the second pair, and disposed on the drum at right angles to the holes of the second pair; the pairs of holes being located substantially equal distances from the respective ends of said drum;
c. straight rods extending through the pairs of holes, said rods having central portions within said drum and portions of equal length radiating from a central axis perpendicular to the rods;
d. a ring centered outside the open end of said drum, said ring having a shank portion extending within the drum;
e. poured concrete completely filling said drum from end to end; said rods and said ring secured against relative movement by the concrete upon curing; and
f. flukes of rectangular shape affixed to the ends of each rod by welds or other means; the surface of each fluke being parallel to the ends of said body.

4,068,610

SKI PROPULSION POLES

Riccardo Tesan, 2397 Finch Ave. W., Weston, Canada

Filed Dec. 6, 1976, Ser. No. 747,666
Int. Cl.² B63H 16/04
U.S. Cl. 115—24.1 10 Claims



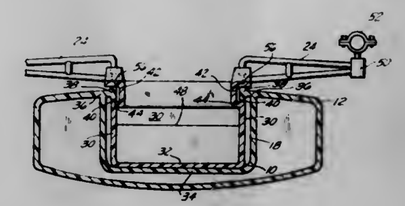
1. A propulsion pole or paddle for use by an operator in self-propulsion on a mobile conveyance relative to a medium, said paddle including a lower portion for engaging the medium on propulsive thrust;
a shaft extending upwardly from said lower portion and having at its upper portion a handle adapted to be gripped by the hand of an operator;
an arm supporting means pivotally secured to said shaft for angular movement relative thereto substantially in a single plane, and including biasing means urging the shaft in a direction towards the arm of the operator when gripping said handle, said arm supporting means also being adapted to releasably engage the arm of an operator when the operator grips said handle.

4,068,611

BOAT CONVERSION DEVICE

Richard B. Leather, 50 Valley Road, Plandome, N.Y. 11030

Filed Sept. 24, 1976, Ser. No. 726,643
Int. Cl.² B63H 16/06
U.S. Cl. 115—24.1 38 Claims



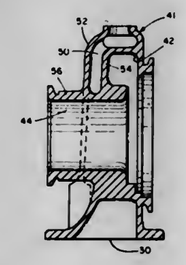
1. A device for use in a sailing vessel, having a footwell, to provide rowing capability to the vessel, said device comprising a one piece molded shell adapted to be mounted in the footwell of said sailing vessel and including means for providing a generally horizontal seating surface therein, and a pair of oppositely extending outrigger support structures operatively connected to said shell, each of said support structures including an oar lock mounted therein for receiving a rowing oar; and said means for providing a seating surface comprising an integral seat molded in said one piece shell.

4,068,612

TURBOCHARGER HOUSING CONSTRUCTION FOR MARINE TURBOCHARGER AND DEVICE FOR TURBOCHARGING A MARINE ENGINE

Elmo R. Meiners, Anchor, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Continuation-in-part of Ser. No. 652,184, Jan. 26, 1976, abandoned. This application Sept. 2, 1976, Ser. No. 719,848
Int. Cl.² B63H 21/14
U.S. Cl. 115—76 7 Claims



1. In a turbocharger for marine engines of the type including a compressor housing, an impeller in the compressor housing, a turbine housing, a turbine wheel in the turbine housing, a drive shaft connecting the turbine wheel and impeller, the improvement of a fluid shielding manifold structure integral with the turbine housing, said turbine housing defining a toroidal passage for exhaust gases, an inlet to the toroidal passage from the engine at the outer toroid surface, an outlet from the inner toroid surface to the center passage in the housing, the center passage including the turbine wheel, a second separate substantially toroidal passage concentric with the first passage positioned radially outward from the first passage, said second

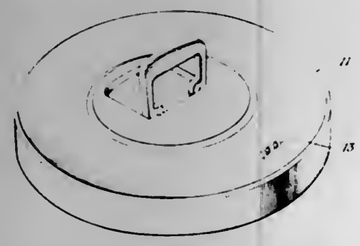
passage being separated from the first passage by a wall and its opposite ends adjacent the first toroidal passage exhaust inlet to define a fluid flow path substantially surrounding the first passage, said second passage also including a cooling fluid inlet at one end and a cooling fluid outlet at the other end for connection with the fluid cooling system of the marine engine, said second passage defining an L-shaped cross-section and said first passage defining a generally rectangular cross-section bounded on only two sides by the second passage to shield the first passage, the turbine housing being attached to the compressor housing at an unshielded side of the compressor housing.

4,068,613

DEVICE FOR SHOWING RECEIPT OF PREDETERMINED SHOCK

Ulyss Ray Rubey, Lewisville, Tex., assignor to Detectors, Inc., Graham, Tex.

Filed May 3, 1976, Ser. No. 682,605
Int. Cl.² G01P *15/04*
U.S. Cl. 116—114 AH **9 Claims**



1. A device for affording an indication if a predetermined acceleration has been received by a container, article, object and the like comprising:

a. attachment means for attaching said device to the container for monitoring if said predetermined acceleration has been received;

b. measuring means for measuring if said predetermined acceleration has been received; said measuring means being connected with said attachment means; and comprising:

i. a structure for holding two materials adjacent each other in a configuration so as to define an interfacial barrier therebetween;

ii. at least two materials disposed in said structure, at least one of said materials being a liquid in the form of a reservoir that will deform responsive to acceleration and return to its original shape when said acceleration ceases if said acceleration is below said predetermined acceleration; said liquid reservoir being disposed adjacent the other said material to effect an interfacial tension and define an interfacial barrier therebetween, said interfacial tension and said structure being chosen such that said predetermined acceleration effects rupture of said interfacial barrier such that at least a droplet of said liquid breaks away from said liquid reservoir;

iii. closures sealingly connected with said structure sealingly holding said materials therewithin so as to prevent flow of said liquid from said structure; and

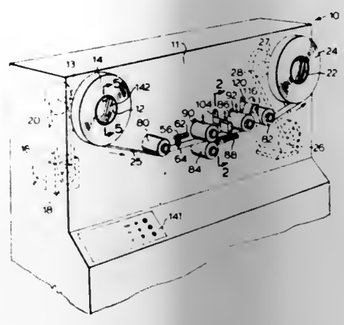
c. indicator means comprising visual means disposed adjacent said other material and said interfacial barrier for indicating when said interfacial barrier has been ruptured by said predetermined acceleration; said visual means being adapted for enhancing the visual indication that at least said droplet has separated from said liquid reservoir.

4,068,614

MACHINE FOR APPLYING LIQUID TO ABSORBENT MATERIAL

Slavco A. Kopachkov, Toronto, Canada, assignor to Rothmans of Pall Mall Canada Limited, Toronto, Canada

Filed May 7, 1976, Ser. No. 684,196
Int. Cl.² B05C *1/04*
U.S. Cl. 118—6 **11 Claims**



1. An apparatus comprising:

first hub means mounted for rotation about its axis and adapted to receive a take-up spool for a band of impregnated material;

drive motor means operatively connected to said first hub means for driven rotation of said first hub means on its axis;

second hub means spaced apart from said first hub means and mounted for rotation about its axis and adapted to receive a source spool of a band of material for impregnation;

brake motor means operatively connected to said second hub means for application of braking force to said second hub means;

said first and second hub means being mounted for rotation about parallel spaced upright axes on axles extending through an upright face of apparatus frame means;

band flow path defining means located between said first and second hub means for guiding said band of material for impregnation between said first and second hub means and comprising a plurality of roll means mounted for rotation about horizontal axes which are parallel to each other and to said axes of said axles of said first and second hub means;

said plurality of roll means including first and second spaced roll means mounted to said upright face at locations respectively adjacent said first and second hub means, a pair of upper and lower roll means, the lower of which is mounted to said upright face at a location closer to said first spaced roll means than to said second spaced roll means and the upper of which is vertically movable between a lower position defining a material band contacting position and an upper inoperative position, and a third roll means located closer to said second spaced roll means than said pair of roll means;

liquid applicator means located adjacent said band flow path for application of liquid material to said band of material; and

control means associated with said drive motor means, brake motor means and liquid applicator means for controlling the application of liquid material to said band of material at a substantially uniform level.

4,068,615

CONTROL FOR WIRE COATING LINE

Victor Louis LeNir, Montreal, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 10, 1976, Ser. No. 740,354
Claims priority, application Canada, Nov. 1, 1976, 264575
Int. Cl.² B05C *11/00*
U.S. Cl. 118—6 **15 Claims**



1. In the provision of plastic insulated wire by apparatus including:

means for causing wire to travel in a path,

a control for adjusting the speed of said travel,

a coating head located on said path,

a molten plastic extrusion means connected to provide molten plastic to said extrusion head,

said head being designed to cause the application of a layer of such molten plastic to such wire passing said head,

a control for the temperature of such molten plastic,

a control for the extrusion rate,

cooling means for cooling the plastic coated wire travelling out of said head,

the spacing between said cooling means and said head being adjustable,

a control for said spacing,

means for obtaining an analogue measure of the capacitance of plastic insulated wire formed on said path,

means for converting said capacitance measure to a digital value representative thereof,

means for comparing said digital value to a preset capacitance digital value representative of the desired capacitance and obtaining a digital correction value which is a function of such two digital values,

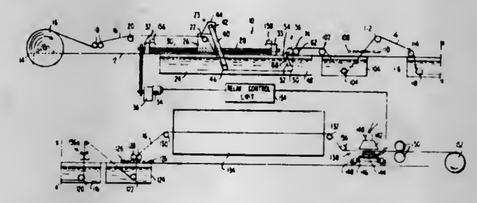
means actuable by said digital correction value to produce an analogue signal to control said extrusion rate in a sense to reduce the difference between said two digital values.

4,068,616

APPARATUS FOR TREATING PLASTIC FILM

Sidney J. Baum, Encino, and Anton J. Mayr, Canoga Park, both of Calif., assignors to Foster Grant Co., Inc., Leominster, Mass.

Division of Ser. No. 308,633, Nov. 21, 1972, Pat. No. 3,992,141.
This application May 4, 1976, Ser. No. 683,147
Int. Cl.² B05C *3/12*
U.S. Cl. 118—8 **9 Claims**



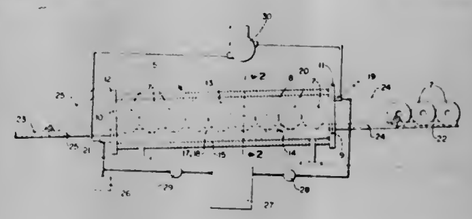
1. An apparatus for processing thermoplastic film including a receptacle for containing a bath of a liquid treatment solution, driven roll means for drawing a length of film to be processed longitudinally through the apparatus, and guide roll means for guiding a bight of the moving film through said bath, the improvement comprising a first pair of squeeze rolls mounted in closely spaced relation to the top surface of said liquid dye solution and resiliently urged into engagement with one another, means for drawing said film upwardly from said dye bath through the nip of said pair of squeeze rolls to mechanically roll any adhering dye solution from the surface of said film, and an elongated spray bar extending over the exit nip of said pair of squeeze rolls for supplying a rinsing liquid into the exit side of said nip to rinse the surface of the film passing therethrough and permitting the rinsing liquid to continuously flow from said exit side of said nip at the ends of said squeeze rolls.

4,068,617

APPARATUS FOR COATING WIRE ON A SPOOL

Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 3, 1976, Ser. No. 682,709
Int. Cl.² B05C *3/109*
U.S. Cl. 118—50 **8 Claims**



1. An apparatus for coating a continuous element, such as a wire tire cord, wound on a spool comprising:

a. an elongated chamber having openings at opposite ends, closures at said ends for said openings to permit the passage of said spool and for sealing from the ambient atmosphere, said chamber having a transverse cross section larger than the longitudinal cross section of said spool;

b. a trackway extending longitudinally of said chamber for guiding said spool through the chamber,

the trackway having a width at least as great as the length of said spool and being inclined from the horizontal such that said spool will roll, by gravity, along the trackway;

c. means for circulating liquid coating, under pressure, to the chamber;

d. means for creating at least a partial vacuum in the chamber;

e. means coacting with the vacuum creating means (d) for alternately creating fluid pressure in the chamber;

f. outlet means for removing residual liquid coating from said chamber; and

g. means for circulating a heated fluid through the chamber to dry liquid coating on the element.

4,068,618

APPARATUS FOR MAKING MATERIAL WITH FUSIBLE BACKING

Robert Greenberg, New York, N.Y., assignor to Trufuse International Ltd., Long Island City, N.Y.

Filed Jan. 29, 1976, Ser. No. 653,596
Int. Cl.² B05C *19/00*
U.S. Cl. 118—60 **15 Claims**

1. Apparatus for manufacturing a fusible interlining consisting of a fabric substrate to which a fusible polymer is applied, comprising:

a. a rotating screen printing drum;

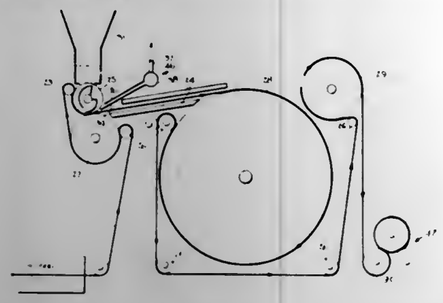
b. means for holding the substrate in contact with said drum over a substantial portion of its circumference;

c. means applying a free flowing polymer dust to the other side of said printing drum, said means feeding polymer dust to the inside of said drum over said portion with which said substrate is in contact;

d. means for removing said substrate from said screen after polymer dust has been deposited thereon;

e. a reverse doctor blade inside said drum arranged so as to

scrape excess polymer material from the inside of said drum at the point where said substrate is removed from said drum; and



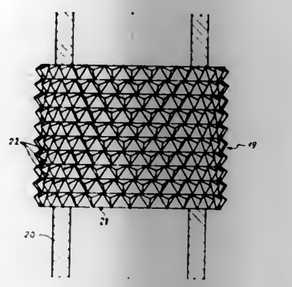
f. means for heating said substrate with the polymer dust thereon from below.

4,068,619
ASSEMBLY FOR APPLYING LIQUID TO ELONGATED MATERIAL
Robert Lee Batts, Denison, Tex., assignor to Johns-Manville Corporation, Denver, Colo.
Filed Dec. 5, 1975, Ser. No. 638,014
Int. Cl.² B05C *11/02*
U.S. Cl. 118—122 **1 Claim**



1. An assembly for applying a liquid resin material to fibers, said assembly comprising:
a. a container having therein a supply of said resin;
b. a rotatably mounted roller at least partially located within said container, a portion of said roller being submerged within said supply of resin and a portion being located outside said supply;
c. means including a stationary substantially flat surface having one end in engagement with an unsubmerged portion of said roller and an opposite end spaced from and out of engagement with said roller, said flat surface being at an incline with the horizontal such that said spaced end is below said roller engaging end;
d. means for rotating said roller such that some of the resin in said container moves onto said roller and from said roller onto said flat surface; and
e. means supporting said fibers for movement over and against said flat surface through the liquid resin on said surface, whereby to coat said fibers with said resin, said supporting means including stationary means for pressing said moving fibers against said surface and in said resin, said fibers supporting means further including
i. a first pair of adjacent stationary squeeze rods located adjacent to but spaced from said spaced end of said flat surface and a second pair of adjacent stationary squeeze rods located between said first pair of rods and the spaced end, said squeeze rods being positioned such that said fibers, after being coated with said resin, pass through and are squeezed by each of said pair of rods and said first pair of rods including squeezing surfaces constructed of material of predetermined hardness and wherein said second pair of rods includes squeezing surfaces constructed of material harder than the material of said first pair, and
ii. a number of means in direct contact with said fibers, all of said direct contacting means being stationary.

4,068,620
PROFILED ROLLER
Wilhelmus G. M. Peters, Venlo, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands
Filed Jan. 7, 1976, Ser. No. 647,054
Claims priority, application Netherlands, Jan. 13, 1975, 7500351
Int. Cl.² B05C *1/00*; B21B *27/02*
U.S. Cl. 118—249 **3 Claims**

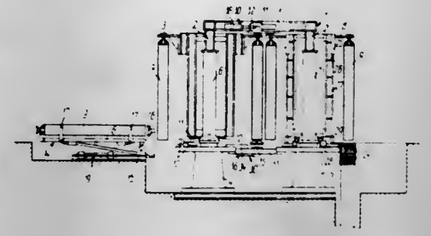


1. A profiled roller comprising a core and a sleeve thereon composed of a multiplicity of contiguous identical rings, characterized in that each said ring is provided with a peripheral series of protuberances recurring *n* times circumferentially of the ring, the tops of which have open spaces therebetween and with the tops of the protuberances of the other rings define a cylindrical roller outline, each said ring being turned circumferentially relative to a contiguous ring at an angle thereto of less than $360°/n$ and each said ring being provided on one of its sides with at least one projection and on its other side with at least one recess each complementary to at least one said projection, each said recess being located circumferentially away from a said projection at an angle relative thereto equal to the aforesaid angle, the tops of said protuberances each having a surface area of less than 0.5 mm^2, and the tops of successive protuberances of each ring being spaced apart by a distance of between 1.5 mm and 5 mm, measured along the circle described by said tops, said open spaces each having an area of at least 1.5 mm^2 to 2 mm^2.

4,068,621
INSTALLATION FOR CONTINUOUS ENAMELLING OF PIPES
Evgeny Nikolaevich Podkletnov, deceased, late of Moscow, U.S.S.R.; by Vera Matveevna Malkina, and by Evgeny Evgenievich Podkletnov, administrators, both of Smolenksy bulvar, 6-8 kv. 144, Moscow, U.S.S.R.
Continuation of Ser. No. 632,776, Nov. 17, 1975, abandoned, which is a continuation of Ser. No. 537,700, Dec. 31, 1974, abandoned. This application Dec. 23, 1976, Ser. No. 753,937
Int. Cl.² B05C *5/00*
U.S. Cl. 118—620 **5 Claims**

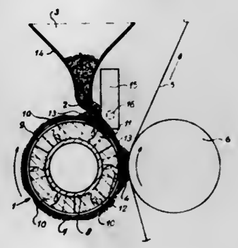
1. An apparatus for continuous enameling of pipes comprising: at least three working stations comprising in succession at least one working station including means for applying an enamel slip coating to at least one side of a pipe, at least one working station including means for drying the enamel slip coating and at least one working station including means for baking the enamel slip coating; two rotors mounted vertically

side by side and provided with grips for holding pipes in a vertical position, one of the rotors serving to receive and discharge the pipes and the other of the rotors serving as a working rotor for moving the pipes along the at least three working stations disposed along the path of movement of the working rotor; means for transferring the pipes from the receiving and discharging rotor to the working rotor and from the working rotor to the receiving and discharging rotor; a



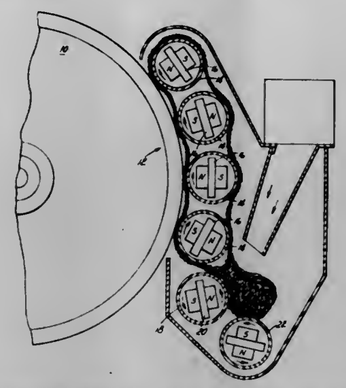
conveyor means adjoining the receiving and discharging rotor for moving the pipes in a horizontal position and transferring the pipes thereto and therefrom, the conveyor means including a turnover device for shifting the pipes from the horizontal position to the vertical position as the pipes are transferred to the receiving and discharging rotor, and from the vertical position to the horizontal position as the pipes are transferred from the receiving and discharging rotor to the conveyor means.

4,068,622
MAGNETIC ROLLER
Mathias J. J. M. Vola, Sittard, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands
Filed Oct. 18, 1976, Ser. No. 733,127
Claims priority, application Netherlands, Oct. 22, 1975, 7512356
Int. Cl.² B05B *5/02*
U.S. Cl. 118—658 **11 Claims**



1. In a magnetic roller comprising a rotatable cylinder of diamagnetic material and magnetic poles extending in axial direction inside said cylinder, each of said magnetic poles being formed by respective pole portions of like polarity of a plurality of magnets, which pole portions lie beside one another axially of the cylinder, the improvement which comprises at least one of said magnetic poles having disposed over and along said pole portions thereof between the same and said cylinder a length of material having high magnetic permeability, whereby a substantially homogeneous magnetic field is maintained over the length of the magnetic pole.

4,068,623
MAGNETIC FEED SYSTEM FOR DEVELOPER MIX
James F. O'Toole, Elmhurst, and Daryl F. Osberg, Hoffman Estates, both of Ill., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 709,963, July 30, 1976. This application Apr. 6, 1977, Ser. No. 784,967
Int. Cl.² B05B *5/02*; G03G *13/09*
U.S. Cl. 118—658 **3 Claims**



1. A sumpless magnetic brush apparatus for mixing and applying developing material to electrostatic images in an electrostatic printing machine of the type utilizing a moving photoreceptor surface, comprising at least one magnetic developing brush roller with an internal magnetic means for establishing a north and south pole on an axis extending in a generally normal direction to a tangent plane at the intersection of said axis and the surface being developed, said pole at the surface being inboard, and the opposite pole being outboard, said roller having a periphery upon which bristles of magnetic developing material are adapted to be formed;
a first mixer cylinder mounted adjacent to said brush roller with the axis thereof substantially parallel said brush roller, and with the surface thereof spaced from said brush roller a distance equal to the maximum depth of toner mix desired for said toner blanket;
magnetic means for establishing a north and south pole in the first mixer cylinder with the poles positioned to place the pole of the first mixer cylinder which lies outboard and the outboard pole of the brush roller in the same polarity to thereby create a flux pattern dividing the flux of the mixer cylinder to create a projecting pattern of the roller pole and mixer cylinder outboard and a blanket flow pattern to the inboard pole of the brush roller;
a second mixer cylinder mounted adjacent said first mixer cylinder, with means for establishing a north and south pole opposite to said first mixer cylinder with a flow flux pattern bridging the cylinders in a generally tangential direction; and
means to turn said developer brush roller in a direction to impel toner mix from the mixer cylinders along said surface being developed, and the mixer cylinders in the opposite direction.

4,068,624
REFILLABLE PERMANENT COLLAR FOR ANIMALS
Tiberius Ramney, Freehold Township, N.J., assignor to Bio-Pet Research Company, Wayne, N.J.
Filed May 21, 1976, Ser. No. 688,933
Int. Cl.² A01K *27/00*
U.S. Cl. 119—106 **5 Claims**

1. A refillable permanent collar for animals, comprising:
An elongated, flexible member having at the ends thereof a means for the securement of said ends about the neck of an

animal, said member defining therein a multiplicity of internal compartments integral therewith, said internal compartments defining openings for the removeable frictional securement therein of deodorant or other medicinal



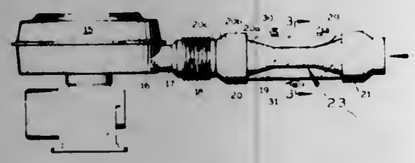
substances in tablet form, wherein said flexible member further defines a multiplicity of vapor escape channels communicating with said internal compartments in order to permit the flow therefrom of chemical vapors from said tablets in a direction away from the fur of the animal.

4,068,625

ENGINE INTAKE AIR MOISTURIZER

Charles Lester Brown, 8801 SW. 116 St., Miami, Fla. 33176

Filed May 12, 1976, Ser. No. 685,718
Int. Cl.² F02D *19/00*
U.S. Cl. 123—25 A **14 Claims**



1. A moisturizer for an engine carburetor comprising:
an open-ended housing for connection at one open end to the air intake of the carburetor, said housing having an air inlet opening at its opposite end;
an open-ended, annular body inside said housing defining a venturi passageway between its ends for conducting air from said air inlet opening of the housing to said air intake of the carburetor, said body having a reduced diameter throat at which air pressure in said body is at a minimum, and having tapered portions at both axial sides of said throat tapering outwardly therefrom, said body for at least a portion of its extent being spaced from said housing to define therewith a water chamber at the outside of said body, said body at said latter portion of its extent being porous to pass moisture from said water chamber for evaporation into the air flowing through said venturi passageway, said venturi passageway providing increased migration of water through said body at said throat due to the reduction of air pressure at said throat;
and means on said housing for introducing water into said chamber.

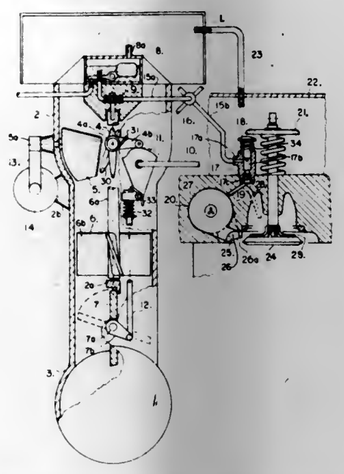
4,068,626

FUEL CONTROL OF INTERNAL COMBUSTION ENGINES

Willy A. Fiedler, 12758 Leander Drive, Los Altos Hills, Calif. 94022

Filed Dec. 5, 1975, Ser. No. 638,086
Int. Cl.² F02M *37/04, 69/00*
U.S. Cl. 123—30 D **10 Claims**

1. An arrangement for supplying fuel and air in dependence of operational and environmental conditions to an internal combustion engine, comprising in combination
an air duct for delivering air to said engine;
air control means, including
a throttle plate for controlling air flow in said air duct, means for controlling said throttle plate,
a plurality of vanes movably mounted in said air duct for generating air vortices,
means for controlling each of said vanes independently,
means for measuring air speed and vorticity in said air duct;
fuel flow control means, including
a floatbowl containing fuel under near-ambient pressure, means for metering fuel flow,
at least one fuel valve receiving said metered fuel flow, venting means between said fuel valve and said floatbowl for holding pressures within said fuel flow control means at near-ambient,



a manifold interconnecting said means for metering fuel flow and said fuel valve;
means for coupling said means for measuring air speed and vorticity with said means for metering fuel flow;
whereby said fuel flow control means are governed by said air control means, wherein said means for measuring air speed and vorticity are controlled by said throttle plate and said vanes in said dependence of operational and environmental conditions.

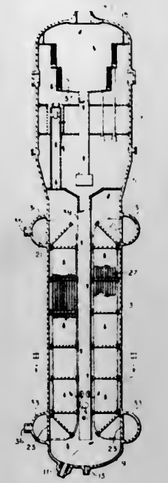
4,068,627

STEAM GENERATOR WITH VERTICAL TUBESHEETS

Hans D. Giesecke, Washington, D.C., and Sterling J. Weems, Chevy Chase Village, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 6, 1976, Ser. No. 646,813
Int. Cl.² F22B *1/06;* B22C *13/14*
U.S. Cl. 122—34 **10 Claims**

1. A heat exchanger for transferring heat from a primary fluid to a secondary fluid, said heat exchanger comprising:
a vertically oriented cylindrical sheel portion, said shell portion having an upper thickened cylindrical portion and a lower thickened cylindrical portion, said thickened portion having a plurality of holes so disposed to form upper and lower tubesheets integral with the shell and extending around the upper and lower portions thereof;
an upper head forming one end closure for said shell;
a lower head forming another end closure for said shell; and
a plurality of C-shaped tubes, the end of which are received by said holes to form the heat transfer surface of said heat exchanger, said tubes being disposed in wedge shaped bundles with a space between adjacent bundles and being disposed to provide a central opening free of tubes extending throughout said bundles, thereby forming a heat exchanger with vertically oriented tubesheets to eliminate the buildup of crud adjacent the lower tubesheet.

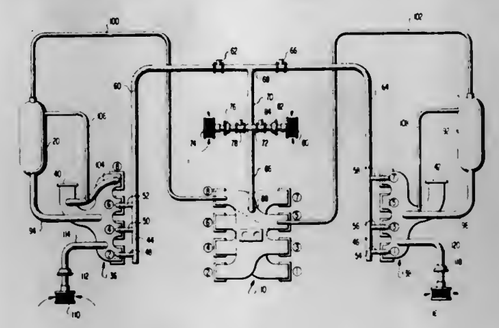


4,068,628

INTERNAL COMBUSTION ENGINE WITH DESIGNATED EXHAUST BURNING CYLINDERS

Charles England Duckworth, 1421 SE. 10th St., Deerfield Beach, Fla. 33441

Continuation-in-part of Ser. No. 654,750, Feb. 3, 1976, abandoned, and Ser. No. 579,736, May 21, 1975, abandoned. This application Sept. 20, 1976, Ser. No. 724,835
Int. Cl.² F02B *75/20;* F02M *25/06*
U.S. Cl. 123—59 EC **14 Claims**



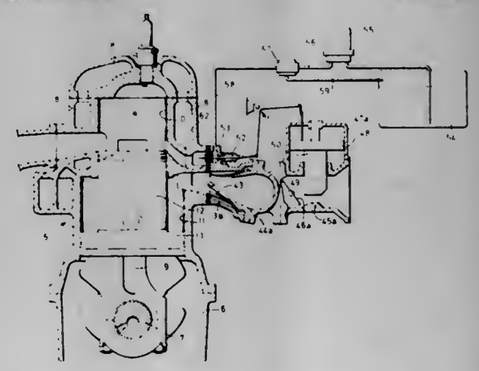
8. In a multi-cylinder, gasoline burning internal combustion engine of the type employing timed spark ignition, said engine including:
a. at least two cylinders selected to be designated exhaust burning cylinders, said selected cylinders having their pistons at the same relative positions and traveling in the same relative directions during all cycles of the operation of the engine, the remaining cylinders being gasoline burning cylinders,
b. an isolated intake manifold to supply a combustible mixture to said designated exhaust burning cylinders,
c. a common exhaust manifold system for both the gasoline burning and the designated exhaust burning cylinders, said common exhaust manifold system having a secondary exhaust manifold for drawing off a portion of the exhaust gases from the gasoline burning cylinders and also accumulator means for allowing expansion of the exhaust gases in the common exhaust manifold system to reduce the variations in pressure in the common exhaust manifold system, and
d. means for supplying the isolated intake manifold with a controlled mixture of fresh air and the exhaust gases drawn off by the secondary exhaust manifold for burning in the designated exhaust burning cylinders, whereby a more complete combustion of the fuel supplied to said engine is achieved thereby improving the efficiency and economy of the operation of the engine and at the same time reducing the levels of pollutants in the exhaust gases vented to the atmosphere.

4,068,629

STEPPED PISTON TWO STROKE ENGINES

Bernard Hooper, Maybank House, Hope Street, Wordsley, Stourbridge, West Midlands, England

Filed Apr. 21, 1976, Ser. No. 678,935
Claims priority, application United Kingdom, Apr. 25, 1975, 17170/75; Dec. 31, 1975, 53386/75
Int. Cl.² F02B *75/02*
U.S. Cl. 123—65 S **6 Claims**



1. A two-stroke engine comprising a set of two cylinders each cylinder having a working part of smaller diameter and a pumping part of larger diameter; a piston slidably reciprocable in each cylinder and having a working part which slides in the working part of the cylinder and a pumping part which slides in the pumping part of the cylinder; and transfer passage means between the pumping part of each cylinder of the set and the working part of the other cylinder of the set so that at least the air for each charge required by the working part of each cylinder of the set is pumped, during operation of the engine, to such working part along transfer passage means from the pumping part of the other cylinder of the set, the piston motion within the cylinders of the set being such that the pistons are 180° out of phase, the improvement wherein:
I. the working part of each cylinder is provided with exhaust port means, main inlet ports and auxiliary inlet port means,
II. the main inlet ports are arranged symmetrically about, and spaced from, a plane which contains the longitudinal axis of the cylinder and which passes through the center of the exhaust port means,
III. the auxiliary inlet port means comprises at least one port in the cylinder wall opposite to the exhaust port means,
IV. the transfer passage means comprises main transfer passage means connected to the main inlet port means and auxiliary transfer passage means connected to the auxiliary inlet port means, and
V. the exhaust port means of both cylinders of the set lies to one side of an axial plane containing the axes of the two cylinders of the set and the auxiliary inlet port means of both cylinders of the set and auxiliary transfer passage means of the set lies wholly on the other side of said axial plane; and

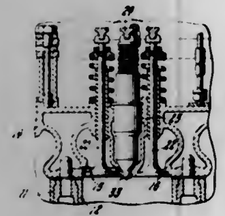
VI. means for supplying fuel to air which, when the engine is in use, passes through the auxiliary transfer passage means and the auxiliary inlet port means;
VII. means for sensing variations in the mass flow of air into the pumping parts of the cylinders of the set; and
VIII. means for metering the fuel supply in dependence on variations in said mass flow.

4,068,630

ENGINE WITH NOISE REDUCING EXHAUST VALVE ARRANGEMENT

David E. Bennett, Westland; Terrence S. Trasatti, Sterling Heights, and Lawrence D. Peterson, Detroit, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 12, 1975, Ser. No. 640,054
Int. Cl.² F02B 75/02
U.S. Cl. 123—75 C **4 Claims**



1. The combination in an internal combustion engine of
a cylinder having a plurality of parallel exhaust ports defining separate passages through an end wall thereof, each passage being directly connected to a common exhaust passage,
poppet valves, one for each port, actuatable to periodically close or open their respective ports, and
means for actuating said valves in timed relation to engine operation and operable to open at least a first one of said valves slightly in advance of at least a second one of said valves and to maintain said valves open simultaneously for the major portions of their open periods, said actuating means controlling the initial opening motion of said first valve to provide a predetermined limited time-area opening in advance of the opening of said second valve,
whereby exhaust flow is restricted during the initial opening period of said first valve, thus reducing the cylinder pressure by limiting exhaust gas flow in advance of the opening of said second valve and the wider opening of said first valve so that the exhaust blowdown pulse is controlled and exhaust noise is thereby limited.

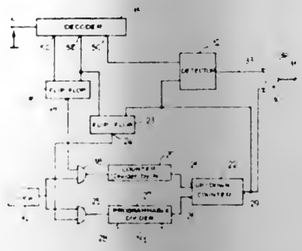
4,068,631

INTERNAL COMBUSTION ENGINE ELECTRONIC IGNITION CONTROL SYSTEM

Claude Lombard, and Claude Leichle, both of Boulogne-Billancourt, France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of France

Filed Apr. 9, 1976, Ser. No. 674,456
Claims priority, application France, Apr. 10, 1975, 75 11175
Int. Cl.² F02P 5/04
U.S. Cl. 123—117 D **6 Claims**

1. an electronic ignition control system for an internal combustion engine comprising a rotary member means for revolving at the engine velocity, two successive reference marks positioned on said rotary member means, a sensor means disposed in close vicinity of said rotary member means for producing successively a first and second signal at the moment of passage of said two reference marks, a decoder means, means for connecting said sensor means to said decoder means, said decoder means provided for separating respectively on a first and second output, said first and second signal, an up-and-down counter, a first clock means for producing pulses which are gated for positive counting to said up-and-down counter during the time separating said first and second signals, a second clock means for producing pulses which are gated for negative counting to said up-and-down counter in response to said second signal, said first and second clock means having a common clock and said second clock means including a preselection counter operable as a programmable divider comprising programmation inputs, an ignition advance angle computing means for generating a number representative of a desired ignition advance law characteristics, means for applying said number to said programmation inputs, means for re-setting said up-and-down counter, and generating means responsive to the



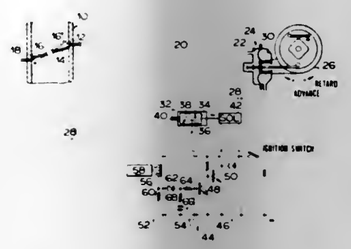
resetting of said up-and-down counter for interrupting said negative counting and for generating an ignition signal, wherein said rotary member means includes a third successive reference mark, said sensor means including means for producing a third signal at the moment of passage of said third reference mark, said decoder means including means for separating on a third output said third signal, said generating means for generating an ignition signal including an OR gate having a first input responsive to said resetting of said up-and-down counter and a second input which is operatively connected to the third output of said decoder so that said OR gate generates an ignition signal in case of failure of the signal applied to its first input.

4,068,632

INTERNAL COMBUSTION ENGINE

Yoshio Kanaida, Mitaka; Ryuji Kataoka, and Kuniji Imai, Chofu, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1975, Ser. No. 639,158
Claims priority, application Japan, Dec. 25, 1974, 49-504695
Int. Cl.² F02P 5/04
U.S. Cl. 123—117 A **3 Claims**



1.
A spark timing control system for internal combustion engines, comprising
a distributor,
a vacuum means operatively connected to said distributor for actuation of the latter to advance and retard spark timing,
said vacuum means including an operative spark retard chamber,

a carburetor intake passageway,
a throttle valve closeably and openably mounted in said intake passageway defining a vacuum side and an atmospheric side, respectively,
conduit means connecting said intake passageway with said spark retard chamber of said vacuum means,
said conduit means communicating with said intake passageway at the vacuum side of said throttle valve when said throttle valve is closed in an idle position and communicating at the atmospheric side of said throttle valve when said throttle valve is partly opened,
valve means disposed in said conduit means intermediate said intake passageway and said spark retard chamber for selectively communicating said intake passageway with said spark retard chamber constituting a communicating condition and for venting said conduit means constituting a venting condition, respectively,
a solenoid means for operating said valve means in response to a predetermined signal to change said valve means over from said communicating condition to said venting condition,
switching means for supplying said predetermined signal to said solenoid means for said venting condition in response to a switching signal,
said switching means comprises a transistor circuit,
means for supplying said switching signal to said switching means comprising a comparator circuit and a delay circuit, the latter being connected operatively to said comparator circuit and to said transistor circuit,
said delay circuit comprises a diode and a first resistor connected to each other, the latter connected to an input of said transistor circuit, as well as a capacitor and a second resistor connected to each other in series, one end of said second resistor being connected at a point between said diode and said first resistor,
said comparator circuit includes a normally closed switch and a third resistor connected to each other at a junction, the latter being connected to a free side of a diode, as well as an engine speed sensor means for opening said normally closed switch when the engine speed exceeds said predetermined level,
means for supplying a potential to said transistor circuit, said delay circuit and to said comparator circuit.

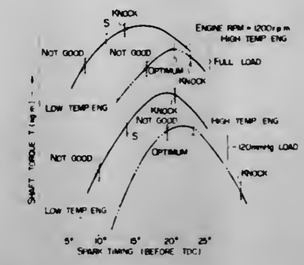
4,068,633

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Noriaki Kawai, Okazaki; Hisaji Okamoto, Aichi; Yosiaki Takeda, Nagoya; Fukuzi Sano, Kariya; Akio Kakiuchi, Nagoya; Masami Manabe, Kariya; Takashi Nomura, Kariya, and Sigeya Abe, Kariya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippondenso Kabushiki Kaisha, Kariya, both of Japan

Division of Ser. No. 386,874, Aug. 9, 1973, Pat. No. 3,930,474, which is a continuation of Ser. No. 116,343, Feb. 18, 1971, abandoned. This application Nov. 25, 1975, Ser. No. 635,069
Claims priority, application Japan, Feb. 27, 1970, 45-17189; Mar. 30, 1970, 45-30471; Apr. 9, 1970, 45-34366; Apr. 9, 1970, 45-34367
Int. Cl.² F02P 5/04
U.S. Cl. 123—117 A **7 Claims**

1. An ignition system for an spark-ignition type internal combustion engine comprising an ignition device capable of performing the spark timing control function, and a temperature detecting element for detecting the temperature having an effect on the engine torque efficiency, whereby said ignition device is operated so that the spark timing under a low temperature condition is advanced as compared to that used under a high temperature condition according to the temperature detected by said temperature detecting element,
wherein said ignition device comprises a first vacuum spark advance mechanism having a first casing slidably secured to the housing of said ignition device and connected to said movable breaker plate, and
a second vacuum spark advance mechanism having a second casing secured to a housing of said ignition device,
said first and second casings being secured to said housing facing each other,
said first casing including a first diaphragm disposed therein,
said second casing including a second diaphragm disposed therein,



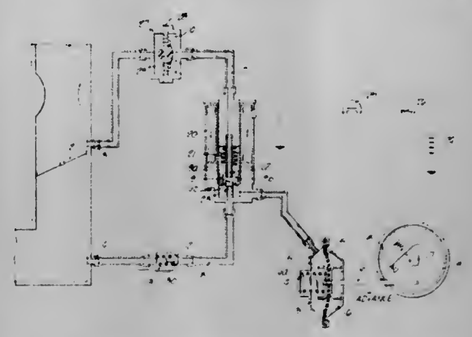
said first casing and said first diaphragm defining a first vacuum chamber therebetween,
said second casing and said second diaphragm defining a second vacuum chamber therebetween,
said first and second diaphragms being connected with each other by a connecting rod, whereby said first vacuum chamber is communicated with said first vacuum intake port by way of said temperature changeover valve, and said second vacuum chamber is directly communicated with said second vacuum intake port.

4,068,634

CONTROL SYSTEM FOR IGNITION TIMING OF ENGINE

Minoru Tanaka, Chofu; Youji Ishii, Fujimi; Touru Yagi, Musashino, and Syoichi Otaka, Miyoshi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1975, Ser. No. 602,436
Claims priority, application Japan, Aug. 8, 1974, 49-94012
Int. Cl.² F02P 5/04
U.S. Cl. 123—117 A **3 Claims**



1. Ignition timing control apparatus for an internal combustion engine having, in combination: an intake passage and a throttle valve positioned in the intake passage, the intake passage having a first vacuum outlet located above the idle speed position of the throttle valve and subjected to vacuum intensity varying as a function of the degree of opening of the throttle valve from its idle speed position, the intake passage having a second vacuum outlet spaced substantially downstream from the throttle valve, the engine having a distributor including a movable ignition timing control member for varying the igni-

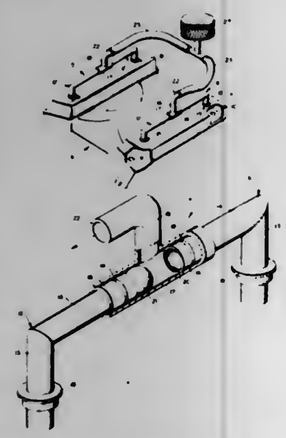
tion timing of the engine and having a vacuum chamber, the vacuum chamber being operatively connected to the ignition timing control member for advancing the ignition timing of the engine in accordance with increase in vacuum intensity in the vacuum chamber, a selector valve assembly communicating with said vacuum chamber, a first passage leading from said first vacuum outlet to said selector valve assembly, a second passage leading from said second vacuum outlet to said selector valve assembly, the selector valve assembly having an element movable from a first position in which said first passage is connected to said vacuum chamber to a second position in which the second passage is connected to said vacuum chamber, means responsive to increasing temperature of the engine for causing said element of the selector valve assembly to move from said second position to said first position, said first passage having a check valve permitting flow toward said selector valve assembly and having orifice means in parallel with said check valve to restrict flow through said passage in the other direction, and a check valve in said second passage permitting flow toward said second vacuum outlet when the vacuum intensity at said second vacuum outlet is greater than at said vacuum chamber and preventing flow toward said second vacuum outlet when the vacuum intensity at said second vacuum outlet is less than at said vacuum chamber, for keeping said vacuum chamber at relatively stable high vacuum intensity.

4,068,635

PRESSURE VENT

Henry Yunick, 1175 N. Halifax, Daytona Beach, Fla.

Filed June 8, 1976, Ser. No. 693,920
Int. Cl.² F01M *13/00*; F02M *7/00*
U.S. Cl. 123—119 B **8 Claims**



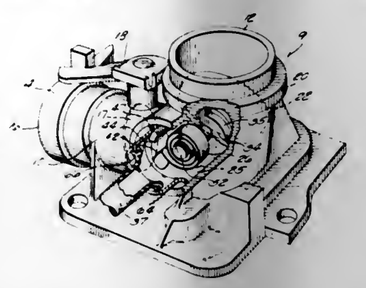
1. A pressure vent for an internal combustion engine comprising a conduit having ends connected to and communicating with end portions of a valve cover of an internal combustion engine, said conduit having spaced apart internally disposed valve seats, an outlet port between the valve seats, and a valve disposed in said conduit for movement between said valve seats and responsive to inertia and centrifugal forces for closing one or the other of said conduit ends during rapid acceleration, deceleration, or sharp cornering of a vehicle propelled by the engine.

4,068,636

THERMOSTATIC DEVICE FOR AUTOMATIC CHOKE CONTROL

Paul R. Nau, Wauwatosa; James L. Bartlett, Mequon, and Heinz K. Gund, Brookfield, all of Wis., assignors to Briggs & Stratton Corporation, Wawwatosa, Wis.

Filed Oct. 29, 1975, Ser. No. 626,928
Int. Cl.² F02M *1/10*
U.S. Cl. 123—119 B **10 Claims**



1. An internal combustion engine that has a crankcase, a carburetor comprising a body in which there is a mixing passage and a choke that has a rotatable shaft which projects through a wall of the mixing passage, a crankcase breather that permits gases to flow substantially freely out of the crankcase but restricts entry of air thereinto, and duct means communicating the crankcase breather with said mixing passage, said engine being characterized by:

A. a portion of said duct means comprising a chamber which is adjacent to the mixing passage and into which said shaft projects; and

B. a spirally coiled bimetal element in said chamber

1. having its inner end portion connected with said shaft,
2. having its outer end portion adapted to react against a portion of the wall of the chamber so that the bimetal element tends to position the choke valve in accordance with the temperature that prevails in said chamber, and
3. which is so arranged in said chamber that gases pass thereacross in flowing from the crankcase to the mixing passage, so that the temperature in said chamber always closely reflects the operating temperature of the engine.

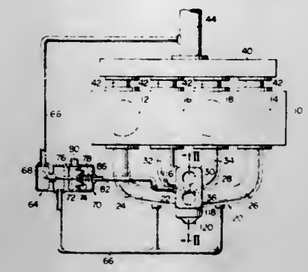
4,068,637

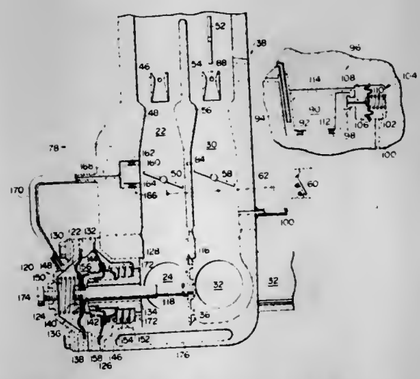
MULTICYLINDER INTERNAL COMBUSTION ENGINE

Bonnosuke Takamiya, Jyoyo, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Oct. 8, 1976, Ser. No. 731,013
Claims priority, application Japan, Oct. 24, 1975, 50-128720
Int. Cl.² F02M *25/06*; F01N *3/15*; F02B *75/10*
U.S. Cl. 123—119 A **6 Claims**

1. A multicylinder internal combustion engine comprising cylinders to which rich air-fuel mixture is supplied, cylinders to which lean air-fuel mixture is supplied, a rich mixture intake manifold supplying mixture from a rich mixture forming device to said rich mixture cylinders, a lean mixture intake manifold supplying mixture from a lean mixture forming device to said lean mixture cylinders, a manifold connecting port through which said two manifolds communicate with each other, an open-and-close valve installed in said connecting port, a pressure-responsive device that has a first and a second movable diaphragms vertically spaced in casing and comprises a first chamber defined by said first movable diaphragm and casing and a second chamber defined by said second movable diaphragm and casing, a rod that connects said first movable diaphragm to said open-and-close valve to actuate the valve, a mixed vacuum passage through which a mixture of vacuum in a first vacuum passage communicating with an intake passage upstream of a throttle valve in the perfectly closed position and vacuum in a second vacuum passage communicating with an intake passage downstream of the throttle valve in the perfectly closed position, a third vacuum passage connecting said second chamber to at least either of said rich and lean mixture intake manifolds, a conduit connecting said first chamber to said mixed vacuum passage, a first spring that always urges said open-and-close valve toward the closing position, and a





second spring that always urges said open-and-close valve toward the opening position with greater force than said first spring.

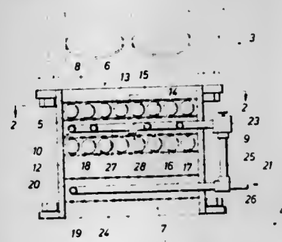
2. A multicylinder internal combustion engine in accordance with claim 1, comprising an exhaust-gas recirculating passage that connects the engine exhaust system to at least either of said rich and lean mixture intake manifolds.

4,068,638

FUEL VAPORIZING METHOD AND APPARATUS

Farrell G. Butler, Jr., P.O. Box 763, Pearland, Tex. 77581

Filed July 16, 1975, Ser. No. 596,309
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 AA **5 Claims**



1. In an engine or the like employing a volatile liquid fuel and having carburetor means and internal combustion cylinder means, the improvement in combustion therewith comprising

housing means interconnected therewith and having an intake port for receiving fuel from the carburetor means and an outlet port for defining a flow path from the carburetor means to the combustion cylinder means,

a plate member positioned in said housing adjacent said intake port and laterally disposed across said flow path and having a plurality of apertures therein of a size increasing as a function of their relative lateral displacement from the axial center of said flow path,

support means spaced apart from said plate member and disposed laterally across said flow path in said housing,

a plurality of spherical members disposed in close proximity between said support means and said plate member,

tubular means having a first end connected to a source of heated air and extended along a circuitous path in close proximity to said said support means for supplying heat to said spherical members and having a second end disposed along the axial center of said flow path for discharging said heated air along said flow path toward said outlet port, and

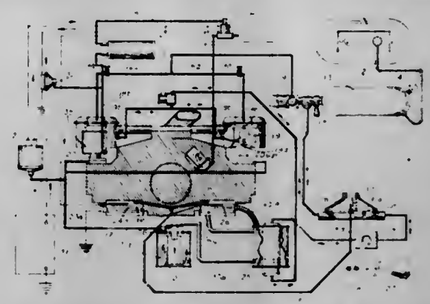
adjustment means interposed in said tubular means for regulating said heat supplied to said spherical members.

4,068,639

AUTOMOBILE ENGINE ECONOMIZER

Earl Charles Cook, 15 Hawthorne Way, Apt. 106, San Jose, Calif. 95110

Continuation-in-part of Ser. No. 559,322, March 17, 1975, abandoned, and Ser. No. 441,114, Feb. 11, 1974, abandoned. This application June 14, 1976, Ser. No. 696,078
Int. Cl.² F02M *13/06*; F02B *75/12*
U.S. Cl. 123—127 **5 Claims**



1. In an Automotive Engine Economizer for air-cooled and/or liquid-cooled internal combustion engines having a separate intake manifold for each bank of cylinders, and by which device the liquid primary fuel and the gaseous secondary fuel are combined with air and employed simultaneously to form the explosive charge, there being a liquid fuel carburetor to supply said charge by means of said intake manifolds to each bank of said cylinders, with said liquid fuel carburetors having been modified to require a percentage of gaseous secondary fuel to complete said explosive charge; an auxilliary liquid propane storage tank with vapor outlet means, located at some convenient place in the vehicle trunk space, communicating with a secondary gaseous fuel storage tank with pressure gauge and safety shut-off means, located in the engine compartment; a hand- and cable-controlled safety shut-off means to facilitate the employ of said gaseous secondary fuel by said air-cooled or liquid-cooled internal combustion engine or to shut down said economizer device or system when required; the combination of cut-off and pressure-regulator means for the gaseous secondary fuel communicating by line means with the modified air filters of said liquid fuel carburetors, said cut-off and pressure-regulator means being dependent upon and responsive to the engine temperature and intake manifold vacuum, there being no mechanical means for control of said gaseous secondary fuel by throttle members; a manifold-vacuum-operated master switch means to energize electrically said economizer device or system, and hot-air-damper-controlled micro-switch ground

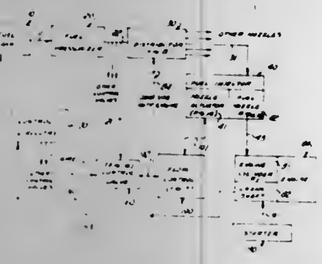
means or a liquid-coolant sensor switch ground means to establish or interrupt the electrical circuit of said device or system; an exhaust manifold back-pressure-regulated pressure regulator valve in the gaseous secondary fuel supply means, and line means to communicate said exhaust manifold back-pressure to the control chamber of said gaseous secondary fuel pressure regulator valve; a micropressure regulator valve and solenoid valve means communicating with said modified air filters of said liquid primary fuel carburetors, means to supplement restricted liquid primary fuel when said air-cooled or liquid-cooled engine is idling; a distributor-advance-vacuum-operated micro-switch means to energize said solenoid valve; a combination vacuum tank and three-way solenoid valve means to control distributor advance mechanism to stabilize vacuum loses which may appear in the course of the operation of said device or system; a crankcase emission filter means to supply heat necessary to the proper conditioning of said gaseous secondary fuel, and line means to supply heated air from cooling-air dampers of air-cooled engine so equipped, or hose line and valve means to supply heated liquid medium from a liquid-cooled engine to said heat exchanger as needed; said economizer device or system being completely automatic once gaseous secondary fuel hand valve control is open and engine is started.

4,068,640

COMMON RAIL FUEL INJECTION SYSTEM

Edwin B. Watson, and Charles V. Brack, both of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 411,605, Nov. 1, 1975, Pat. No. 3,990,422. This application May 19, 1976, Ser. No. 687,830
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 AT **12 Claims**



1. A fuel system for an engine having a crankshaft and a combustion chamber, comprising:

means for continuously pressurizing fuel to a first predetermined pressure;

a fuel injector connected to said combustion chamber, said injector having an actuator and a nozzle which is opened when said actuator is in a first position and closed when said actuator is in a second position, said nozzle permitting fuel from the pressurizer to pass into said combustion chamber when said actuator is in said first position and pressurized fuel is present at said injector;

means for receiving and periodically distributing said pressurized fuel to said injector;

means for controlling the position of said actuator in timed relation to the rotation of said engine crankshaft, said control means including:

a flow control circuit which establishes a first rate of flow of pressurized fuel to said actuator to close said nozzle and which establishes a second different rate of flow of fuel from said actuator to open said nozzle, whereby the rate of opening and closing of said nozzle is controlled by said flow control circuit;

an electromagnetic control valve means connected between said means for pressurizing said fuel and said flow control circuit; and

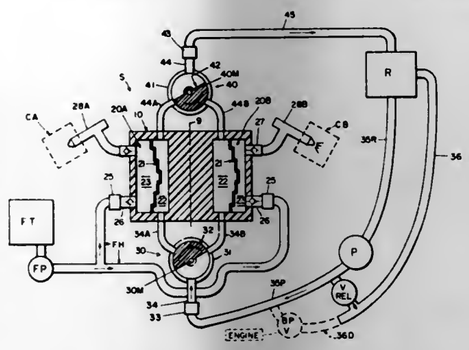
electrical circuit means for operating said electromagnetic valve means to open and close said electromagnetic control valve means in timed relation to the rotation of said engine crankshaft, whereby fuel is periodically injected into said combustion chamber in timed relation to the rotation of said engine crankshaft.

4,068,641

METERED FUEL INJECTION APPARATUS

Dennis L. Johnson, 509 Thurston Ave., Pender, Nebr. 68047

Filed Mar. 3, 1976, Ser. No. 663,254
Int. Cl.² F02M *37/12, 59/14;* F04B *43/06*
U.S. Cl. 123—139 A **8 Claims**



1. A metered fuel injection apparatus for sequentially injecting metered fuel from a fuel-tank into the respective combustion chambers of a multi-cylinder engine and each cylinder having its own fuel injection nozzle, said apparatus being removably connectable with elongate hoses respectively leading into a reservoir of motive hydraulic liquid stored at a finite reservoir-pressure value, a fuel-hose to said fuel-tank, and also a supply-line from a pumping means for delivering hydraulic liquid from the reservoir at input-pressure which exceeds reservoir-pressure, said apparatus comprising:

A. an upright housing surrounding an upright rotary shaft lying along a vertical-axis and comprising a plurality of compartments spaced at regular angular increments around said shaft, each compartment being equipped with a single upright fluid-impervious semi-rigid diaphragm-like barrier defining two subcompartments including firstly a fuel-chamber and secondly a single hydraulic-chamber extending continuously and without interruption both to a rotary inlet-valve and to a rotary outlet-valve, fuel-inlet means and incoming checkvalve communicating between the fuel-chambers and the fuel-hose, fuel-outlet means communicating from each fuel-chamber through an outgoing checkvalve to a said fuel injection nozzle, liquid-outlet means communicating from the respective hydraulic-chambers to said exhaust-hose, and liquid-inlet means regularly angularly spaced about said shaft and communicating from said inlet-valve to each hydraulic-chamber;

B. said rotary type inlet-valve being co-rotatational with said upright rotary shaft and located within said housing at the juncture of the supply-line and the angularly spaced liquid-inlet means whereby said inlet-valve is capable of delivering regularly-timed pulses of motive hydraulic liquid at input-pressure through said liquid-inlet means sequentially into the said hydraulic-chambers and whereby the respective divider-walls sequentially flex into the fuel laden fuel-chamber to deliver a metered fuel batch through said outgoing checkvalve and its nozzle; and

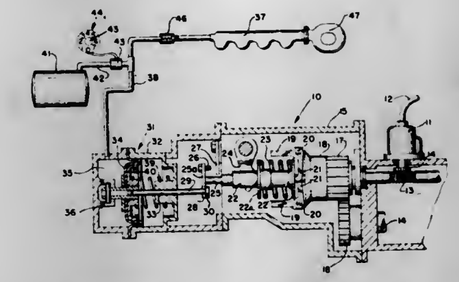
C. said rotary type outlet-valve being co-rotational with said upright rotary shaft and located within said housing in vertical alignment with but angularly lagging the inlet-valve, said lagging outlet-valve being at the liquid-outlet means thereby being capable of exhausting motive hydraulic liquid from said hydraulic-chamber at less than input-pressure along said liquid-outlet means into the reservoir after the divider-wall diaphragm has already delivered a fuel batch to the injection nozzle.

4,068,642

FUEL RATIO CONTROL WITH MANUALLY OPERATED AIR OVERRIDE

Joseph P. Little, Jr., Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 14, 1975, Ser. No. 631,964
Int. Cl.² F02M *39/02;* F02D *1/02*
U.S. Cl. 123—140 MP **8 Claims**



1. In an engine fuel-control system having fuel-limiting means for controlling and limiting the quantity of fuel delivered to the engine in response to a signal generated by pressure in a manifold by operation of the engine to an expansible chamber of said system, the improvement comprising means for overriding said fuel-limiting means comprising

pressure-responsive means connected to said fuel-limiting means and responsive to pressure variations in said expansible chamber for controlling actuation of said fuel-limiting means;

an auxiliary source of fluid pressure independent of pressure in said manifold; and

control means for adjustably directing pressurized fluid from said auxiliary source to said pressure-responsive means so that said pressure-responsive means acts in opposition to and overrides said fuel-limiting means, including adjustable valve means for selectively communicating pressurized fluid from said auxiliary source to said expansible chamber.

4,068,643

MULTIPLE SPARK IGNITION SYSTEM

Ian C. McKechnie, 252-27 E. Tropicana, Las Vegas, Nev. 89109

Filed May 28, 1976, Ser. No. 690,890
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 CA **13 Claims**

1. A multiple spark ignition system comprising, in combination:

a crankshaft driven reluctor having a plurality of spaced arms extending radially outwardly from an axis,

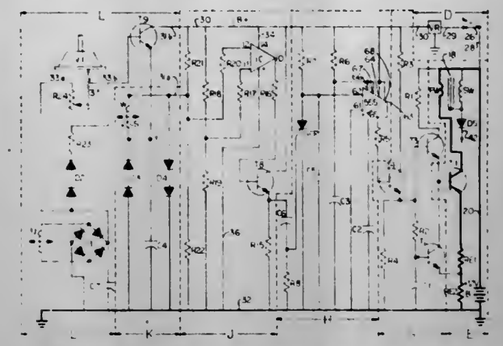
a first magnetic pickup coil having a core and a pair of terminals all mounted in magnetic association with said reluctor,

a unidirectional voltage divider the resistance of which decreases with increasing applied voltage connected across the terminals of said first coil with its divider point connected to ground potential,

a capacitor connected across one of said terminals of said first coil and ground, and

an amplifier having an input terminal connected to the other of said terminals of said first coil,

said amplifier producing an output pulse at a linearly earlier position of each arm of said reluctor in relationship to said core as operating speeds of an associated internal combustion engine increases so that an essentially fixed time interval exists from the time said amplifier produces an



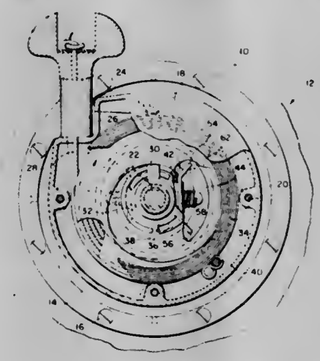
output pulse until each said reluctor arm reaches a constant position relative to said core.

4,068,644

REWIND STARTER PULLEY ASSEMBLY

Samuel O. Newport, Beloit, Wis., assignor to Colt Industries Operating Corporation, New York, N.Y.

Filed June 25, 1976, Ser. No. 699,994
Int. Cl.² F02N *3/02;* F16D *13/14*
U.S. Cl. 123—185 BA **10 Claims**



1. In a pull starter for cranking an internal combustion engine in a cranking direction which includes a clutch driven means mounted upon a rotatable part of said engine, driving clutch means mounted for rotation by a starting pulley and movable to an engaged position with said clutch driven means in response to rotation of the starting pulley in the cranking direction, a starting pulley assembly means comprising a spring retrieved starting pulley for rotating said driving clutch means, and clutch disengagement means mounted upon said starting pulley and positioned to engage said driving clutch means only if said driving clutch means is rotated in the cranking direction by said clutch driven means by the failure of said driving clutch means to disengage from said clutch driven means when said driving clutch means is no longer rotated by said starting pulley.

4,068,645

ALUMINUM-SILICON ALLOYS, CYLINDER BLOCKS AND BORES, AND METHOD OF MAKING SAME

David Charles Jenkinson, Sidmouth, Australia, assignor to Comalco Aluminium (Bell Bay) Limited, Bell Bay, Australia

Continuation-in-part of Ser. No. 459,261, April 9, 1975, abandoned. This application Sept. 29, 1975, Ser. No. 617,438
Claims priority, application Australia, Apr. 16, 1973, 2998/73
Int. Cl.[2] F02F 1/18
U.S. Cl. 123—193 C 23 Claims



1. An aluminum-silicon alloy suitable for wearing surfaces consisting essentially of aluminum and an amount of silicon which is in excess of 12.7% and up to 18%, said alloy having a microstructure which is free of primary aluminum and silicon phases and is composed of fibrous, fully modified particles of eutectic silicon having a particle size of less than 10 microns.

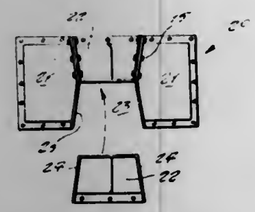
12. A cylinder block of an internal combustion engine, said cylinder block having a bore, said bore having as a wearing surface thereof the alloy of claim 1, said bore being fitted with a piston having an aluminum alloy working surface.

4,068,646

CRANK CASE OIL PAN

Joseph F. Hnojsky, 2249 S. 18th Ave., North Riverside, Ill. 60546

Filed Sept. 15, 1975, Ser. No. 613,482
Int. Cl.[2] F16N 31/00
U.S. Cl. 123—195 C 1 Claim



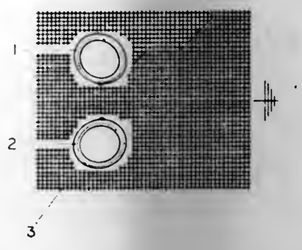
1. An improved crank case oil pan, comprising in combination, a plurality of six interfitting sections, and including an end section at each end and a pair of wedge-shaped sections therebetween, each said section including a flange having openings therethrough for receiving mounting bolts to fasten said sections to an underside of an engine block, said bolts extending through a gasket fitted between said engine block and said oil pan, one end of said oil pan being downwardly relatively deep while an opposite end thereof is downwardly shallow, a vertical wall forming a shoulder between said deep and said shallow ends, said vertical wall extending across said wedge-shaped sections, each said section additionally including an outwardly turned flange along all edges that abut with mating-like flanges of an adjacent said section, bolt openings through said flanges receiving mounting bolts for securing said sections together, and said sections each being independently removable from said engine block without need of removal of adjacent said sections.

4,068,647

AUTOMOTIVE IGNITION TOOL

Jerome R. Leddy, 322-16th St., Seal Beach, Calif. 90740

Filed Sept. 4, 1975, Ser. No. 610,111
Int. Cl.[2] F02B 77/00
U.S. Cl. 123—198 R 2 Claims



1. In combination with an internal combustion engine powered vehicle having a plurality of spark plugs, a plurality of high tension voltage conductors that include terminals secured to said spark plugs, and a grounded portion, a device for removing a desired one of said conductors from a spark plug by a user without said user receiving an electric shock, said device including:

a. a pliable metallic screen having first and second spaced openings therein in which a forefinger and thumb of said user may be inserted to deform said screen into contact with one of said terminals to permit said conductor of which it forms a part to be separated from a spark plug when said internal combustion engine is operating;

b. A pliable electrical conductor secured to said screen; and

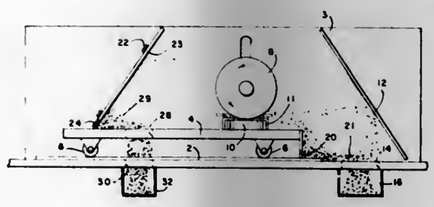
c. A metallic clip on a free end of said conductor that is secured to said grounded portion, with said high tension voltage conductor being removable from said plug when said engine is operating without said user receiving a shock due to said voltage flowing to said grounded portion rather to said user.

4,068,648

BRICK SAW APPARATUS

Peter M. Erdman, 320 Ainakea Way, Honolulu, Hawaii 96815

Filed Nov. 6, 1975, Ser. No. 629,393
Int. Cl.[2] B28D 1/04
U.S. Cl. 125—13 R 13 Claims



1. Brick saw apparatus comprising a frame having a base, track means mounted on the base of the frame for limiting movement of a device moving on the track, slidable table means mounted on the track for reciprocating movement forward and rearward along the track, enclosure means mounted on the frame and partially surrounding the track and sliding table for gathering sawed particles, the enclosure means having the base underneath the track, circular saw means mounted in the enclosure above the sliding table and being oriented parallel to a direction of table movement, an opening

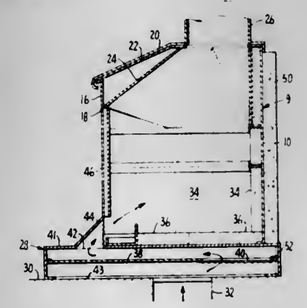
means in the base at a distal end of the enclosure means for receiving sawed particles from the enclosure means, and a pit means connected to the enclosure means beneath the base in communication with the opening means for receiving sawed particles from the opening means and the table having a flexible wiper means mounted on a distal end of the sliding table means and extending downward from the sliding table means to the base of the enclosure for wiping sawed particles rearward toward the opening means.

4,068,649

FREE STANDING FIREPLACE STOVE

William R. Johnson, Santa Cruz, Calif., assignor to Peerless Portable Metal Building, Santa Cruz, Calif.

Filed May 12, 1976, Ser. No. 685,453
Int. Cl.[2] F24B 1/18
U.S. Cl. 126—120 5 Claims



1. A free standing fireplace stove having a front and a back with a mouth in the front for supplying fuel to the stove, and having in combination:

a. a base for said fireplace stove, said base extending forward beyond the mouth of said fireplace and having an open passage for air therein;

b. an outlet for combustion air leading from said passage in said base to the front of said fireplace said passage extending completely across the mouth; and

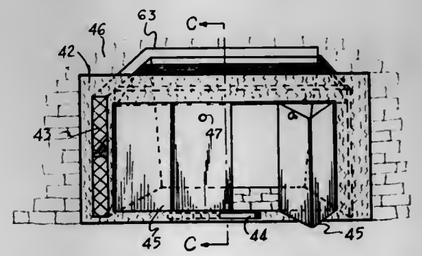
c. an air inlet adjacent the rear of said base whereby combustion air for said fireplace enters the rear of the base, passes completely under the fireplace, the enters the fireplace stove as combustion air through said outlet.

4,068,650

FIREPLACE HEATING CHANNEL

Clifford H. Nelson, 9 Merry Point Terrace, Newport News, Va. 23606

Continuation-in-part of Ser. No. 641,725, Dec. 18, 1975, Pat. No. 3,995,611. This application Aug. 23, 1976, Ser. No. 716,595
The portion of the term of this patent subsequent to July 29, 1992, has been disclaimed.
Int. Cl.[2] F24B 7/04
U.S. Cl. 126—121 6 Claims



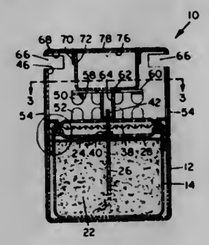
1. A free standing fireplace heating channel comprised of a three sided hollow metal room air conveying channel equipped with an internal baffle to direct the flow of air, an internally mounted blower for forcing circulation of room air, a thermostatic blower control, a flame guide radiation reflector vane and vertically adjustable legs, the entire assembly being insertible in an existing fireplace without requiring modification to the structure thereof, said air conveying channel having a center channel joined with two forward facing channel arms and designed to fit against the three inside walls of an existing fireplace, said air conveying channel having adjoining walls exposed to the heat from the fire with corresponding rear walls spaced therefrom and connected by spacer means so as to form a continuous air channel for conveying room air to be heated by the fire, including baffle means, dividing said air channel into upper and lower portions, to direct the circulating room air to make multiple horizontal passes through said air conveying channel wherein air blower means is provided for forcing room air through said air conveying channel along its lower portion prior to existing back into a room through the upper portion thereof as useful heated air, a thermostatic blower control located inside one of said channel arms and mounted on the air channel wall exposed to the fire, said flame guide radiation reflector vane being symmetrically attached to the upper inside surfaces of said forward facing channel arms and having an approximately V-shaped crosssection with a vertical surface located under an existing fireplace arch and provided with a small top horizontal flange and an adjoining bottom surface slanting upward and rearward being positioned forward of the center air channel to provide suitable exit for the fire exhaust gases to the chimney, said bottom surface of said flame guide radiation reflector vane having a top covering of heat insulation preventing major loss of heat energy to an existing chimney, said vertically adjustable legs attached to the bottom of said air conveying channel providing means of moving the whole assembly upward to place said small top horizontal flange of the flame guide radiation reflector vane in direct contact with an existing fireplace arch during installation of the fireplace heating channel.

4,068,651

CATALYTIC HEATER OR WARMER

Alfred A. Rappaport, 2081 S. Ocean Drive, Apt. 305, Hallandale, Fla.

Filed Aug. 20, 1976, Ser. No. 716,260
Int. Cl.[2] A61F 7/06
U.S. Cl. 126—208 16 Claims



1. A catalytic heater (10) comprising a lower container section (12) having an upwardly extending flange (44) adjacent to the top of said lower container section (12), an upper chimney section (46) fitting snugly on and removably supported on said lower container section (12) about said lower container section extending flange (44), said chimney section (46) having air draft means (50, 52, 54) therein, a sealed fuel cartridge (14) having a fuel absorbent material (22) therewithin having a premeasured amount of liquid fuel absorbed therein, and a wick (26) in said fuel absorbent material (22) extending up from said material (22), said sealed fuel cartridge (14) having a readily removable cover (16) secured thereon, said cartridge fitting within said lower container section (12), a catalyst con-

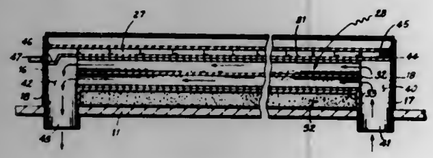
taining member (28) supported over said fuel absorbent material (22) and having aperture means (40) through which said wick (26) is extended, a wick snuffer (64) depending from a frame (62) mounted above said fuel cartridge (14) insertable through a top opening in the roof (68) of said chimney section (46), said chimney section having fuel combustion vapor emitting openings (66) therein.

4,068,652

MULTI-PURPOSE SOLAR COLLECTOR/HEAT EXCHANGER

Mark N. Worthington, 10227 White Mountain Road, Sun City, Ariz. 85351

Continuation-in-part of Ser. No. 519,521, Oct. 31, 1974, Pat. No. 3,957,109. This application Feb. 17, 1976, Ser. No. 658,475
Int. Cl.² F24J *3/02*
U.S. Cl. 126—270 **10 Claims**



1. In a multi-purpose solar collector-heat exchanger intended for installation in a building in a position having a vertical component,

a. a multiple tier unit providing a plurality of longitudinal channels in parallel relation and comprising three flat metallic sheets arranged in spaced relation with two longitudinally grooved sheets each of which is interposed between a pair of adjacent flat sheets and secured thereto, said flat and grooved sheets cooperating to define two tiers of longitudinal channels,

b. a manifold at each end of said channels communicating with all of said channels,

c. a duct extending from and communicating with each of said manifolds, one of said ducts constituting an air inlet and the other duct an air outlet,

d. a frame comprising bottom, side and end walls providing an open top, and enclosing said flat and grooved sheets and said manifolds,

e. a transparent heat trap supported by said frame in spaced relation with respect to the uppermost of said flat sheets,

f. a perforated pipe extending across the upper end of the uppermost of said flat sheets and communicating with a source of liquid under pressure and of a desired temperature whereby jets of said liquid are delivered onto the upper end of the uppermost of said flat sheets to form a film of liquid thereon, and

g. a trough at the lower end of the uppermost of said flat sheets which receives said liquid after it has passed over the uppermost of said flat sheets, said trough having a drain pipe communicating therewith.

4,068,653

SOLAR HEATING UNIT

Leo Bourdon; Richard K. Burley, both of Reseda, and Clifford F. Kennedy, Thousand Oaks, all of Calif., assignors to Leo Bourdon; Richard K. Burley and Clifford F. Kennedy

Filed Mar. 1, 1976, Ser. No. 662,679
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **12 Claims**

1. Apparatus for collecting heat produced by solar energy comprising:

a base;

a pair of legs attached to said base;

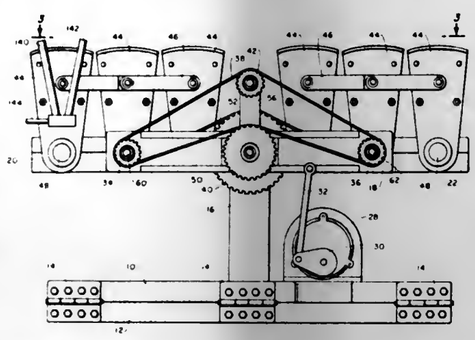
a substantially rectangular carriage;

axle means rotatably supporting said carriage on said legs;

a plurality of panels rotatably supported by said carriage;

a plurality of fluid circulating conduits supported by said panels;

focusing means for focusing the solar rays on said conduits;



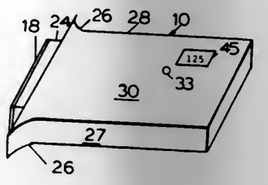
rotatable means for simultaneously rotating the carriage panels and focusing means at predetermined intervals to maintain said fluid circulating conduits substantially normal to the solar rays.

4,068,654

BLOOD PRESSURE MEASURING APPARATUS AND METHOD

Oiva A. Paavola, and Richard D. Brugger, both of Erie, Pa., assignors to Oiva A. Paavola, Erie, Pa.

Continuation-in-part of Ser. No. 551,071, Feb. 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 344,752, March 26, 1973, abandoned. This application Feb. 17, 1976, Ser. No. 658,178
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 N **5 Claims**



1. An instrument for evaluating the circulatory system of an animal by sensing externally applied pressure and by sensing Korotkoff sounds at the systolic and diastolic points comprising,

a body having finger-engaging means thereon,

a detector head supported on said body,

said detector head having skin-engaging means thereon,

a pressure pickup means and a sound-pickup means connected to said skin-engaging means,

a first circuit,

and a second circuit,

said first circuit comprising,

said pressure pickup means and,

a memory means connected to said pressure pickup means,

and a digital numeric display means connected to said memory means,

said second circuit comprising,

said sound pickup means,

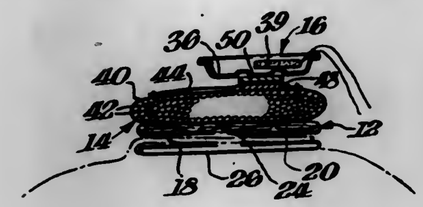
means connecting said sound pickup means to said memory means for triggering said memory means to actuate said numeric display means whereby said numeric display means indicates proportional to the pressure exerted on said pressure pickup means at the occurance of each said sound by said pickup.

4,068,655

SURGICAL RETRACTOR AND SPONGE CARRYING ASSEMBLY

Pierre L. LeRoy, Wilmington, Del., assignor to New Research and Development Lab., Inc., Wilmington, Del.

Filed Aug. 2, 1976, Ser. No. 710,735
Int. Cl.² A61B *17/02*
U.S. Cl. 128—20 **16 Claims**



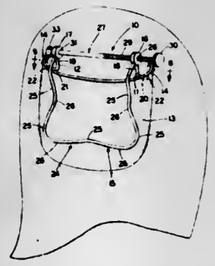
1. A surgical wound flap retractor comprising an absorbent pad member having a lower surface, a cover member partially enveloping said pad member with at least a portion of said lower surface of said pad member being exposed, said cover member including end extension sections extending beyond opposite ends of said pad member whereby said pad member may be placed directly above and in contact with an inverted wound flap with said exposed lower surface in contact therewith and said extension sections may be tucked under the wound flap to at least partially encircle the wound flap, said cover member being made of a flexible extensible non-conductive material which is capable of being heat sterilized, securing means on said pad member and cover member for maintaining said pad member in place with respect to said cover member and for permitting said device to be affixed to surgical drapery or the like, and said securing means including aligned apertures extending through said cover member and said pad member whereby fasteners may be inserted through said aligned apertures.

4,068,656

ORTHOPEDIC TOENAIL DEVICE

Barbara Ann Barmore, Rte. 17, Dewittville, N.Y. 14757

Filed Sept. 30, 1976, Ser. No. 728,277
Int. Cl.² A61F *5/00*
U.S. Cl. 128—81 A **4 Claims**



1. An orthopedic appliance for relieving the pain of an ingrown nail and placing the nail in proper position for growth comprising:

a. insert means adapted to act on the forward front underside edges of the nail and free from contact with the top side edges of the nail;

b. resilient means adapted to act on the upper rear surface of the nail;

c. said insert means and resilient means being integral and in fixed angular relation with one another;

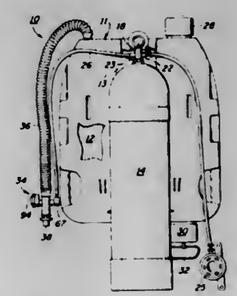
c. an adjustment member coacting between said insert means and said resilient means and adapted to separate said insert means against the side edges of the nail tending to load the resilient means and move the nail side edges upward and outward to relieve the pressure of the nail and place the nail in proper position for growth.

4,068,657

CONSTANT VOLUME BUOYANCY COMPENSATION SYSTEM

John Kobzan, Glenview, Ill., assignor to Dacor Corporation, Northfield, Ill.

Filed June 28, 1976, Ser. No. 700,581
Int. Cl.² A62B *7/00*
U.S. Cl. 128—142 R **9 Claims**



1. An underwater buoyancy compensation control system for use by a diver having a source of breathing air under pressure, comprising

a buoyancy tank adapted to be attached to said diver,

said tank having a constant volume chamber therein sealed from the ambient,

a first manually operable valve connected to the bottom of said chamber for controlling the flow of ambient water into and out of said chamber,

first pressure regulator valve means connected between said chamber and the ambient,

said first pressure regulator valve means being responsive to the pressure differential between said chamber and the ambient for automatically connecting said chamber to the ambient when the chamber pressure exceeds ambient pressure by at least a predetermined amount,

a hand-held manually controlled unit for enabling the diver to adjust the buoyancy compensation of said system,

a first flexible conduit connected between said unit and said chamber,

a second flexible conduit connected between said unit and said source of breathing air,

a mouthpiece mounted on said unit,

second pressure regulator valve means mounted in said unit for automatically connecting said first conduit to said second conduit when the ambient pressure exceeds the pressure in said chamber by at least a predetermined amount,

said second pressure regulator valve means having an inlet connected to said second conduit and an outlet connected to said first conduit,

manually operable means mounted on said unit for operating said second pressure regulator valve means to connect said first conduit to said second conduit, and

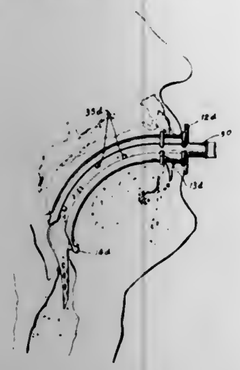
a second manually operable valve means mounted in said unit for connecting said mouthpiece with said outlet of said second pressure regulator valve means.

4,068,658

INTUBATING PHARYNGEAL AIRWAY

Robert A. Berman, 501 Cedar Hill Road, Far Rockaway, N.Y. 11691

Division of Ser. No. 708,274, July 23, 1976. This application Mar. 15, 1977, Ser. No. 777,641
Int. Cl.² A61M *16/00, 25/00*
U.S. Cl. 128—208 **1 Claim**



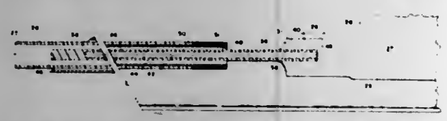
1. An intubating airway, comprising:
a. A tubular longitudinally extending body member, said body member having a longitudinally extending side opening, defined therein,
b. said member having a distal end for insertion into the mouth and throat of a patient and a proximal end for location at the mouth of the patient,
c. said longitudinally extending side opening being provided with a plurality of flexible retaining pins extending therein in staggered relationship, whereby an endotracheal tube may be passed laterally through said longitudinally extending side opening and is retained in position within said airway by said retaining pins.

4,068,659

CATHETER PLACEMENT ASSEMBLY

Harvey Robert Moorehead, Salt Lake City, Utah, assignor to Deseret Pharmaceutical Co., Inc., Sandy, Utah

Filed July 12, 1976, Ser. No. 704,715
Int. Cl.² A61M *5/00*
U.S. Cl. 128—214.4 **18 Claims**



1. A catheter placement assembly for displacing a catheter tube from a sterile sheath into a body cavity of a patient comprising:
a cannulated disposable needle having a sharpened leading end;
a substantially linear semi-rigid shape-retaining disposable sheath having an axial slit therein;
disposable hollow means connecting the trailing end of the needle to the leading end of the sheath whereby the needle, sheath and hollow means are joined together and discarded essentially simultaneously after use;
a flexible plastic catheter tube of substantially constant diameter throughout the entire length thereof at least the trailing end of which is initially disposed within the hollow of the sheath;
catheter advancing means comprising means abutting but separate from the trailing end of the catheter tube and manually manipulatable means connected to the abutting means and laterally projecting through said slit in the sheath whereby the catheter advancing means and the catheter tube are unitarily advanced and the catheter advancing means alone retracted for placement of the leading part of the catheter tube into the body cavity through the hollow of the needle following puncture, the catheter tube eventually becoming completely separated from the sheath and needle and the remainder of the assembly excluding the catheter tube being essentially unitarily discarded after said complete separation and while retaining the catheter tube within the body cavity.
14. A catheter comprising:
a highly pliant elongated catheter tube the leading part of which is to be placed and left indwelling within the vein of a patient, the tube comprising silicone rubber and a radiopaque material therein and having a substantially constant outside diameter throughout the entire length of the catheter tube; and
hollow means on said catheter tube and located at the interior of the trailing end of the catheter tube which cannot be occluded, said interior means defining a constant, rigid inside surface at the interior of said trailing end for accommodating subsequent reception of a female adapter, said hollow means further having an outside surface no larger than said outside diameter of said catheter tube.

4,068,660

CATHETER PLACEMENT ASSEMBLY IMPROVEMENT

Richard William Beck, Sandy, Utah, assignor to Deseret Pharmaceutical Co., Inc., Sandy, Vt.

Filed July 12, 1976, Ser. No. 704,716
Int. Cl.² A61M *5/00*
U.S. Cl. 128—214.4 **10 Claims**



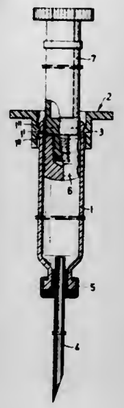
1. A catheter placement assembly for displacing a catheter tube from a sterile sheath into a body cavity of a patient comprising:
a cannulated disposable needle having a sharpened leading end;
a substantially linear hollow semi-rigid shape-retaining disposable sheath having an axial slit therein;
disposable hollow means connecting the trailing end of the needle to the leading end of the sheath whereby the needle, sheath and hollow means are joined together and discarded essentially simultaneously after use;
a flexible plastic catheter tube of substantially constant diameter throughout the entire length thereof at least the trailing end of which is initially disposed within the hollow of the sheath, the trailing end of the catheter tube including laterally flexible anti-occludable hollow reinforcing means;
catheter advancing means comprising means abutting but separable from the trailing end of the catheter tube and manually manipulatable means connected to the abutting means and laterally projecting through said slit in the sheath whereby the catheter advancing means and catheter tube are unitarily advanced and the catheter advancing means alone retracted for placement of the leading part of the catheter tube into the body cavity through the hollow of the needle following puncture, the catheter tube eventually becoming completely separated from the sheath and needle and the remainder of the assembly excluding the catheter tube being essentially unitarily discarded after said complete separation and while retaining the catheter tube within the body cavity.

4,068,661

INJECTION SYRINGE WITH SEPARATE ONE-PIECE FINGER REST

Werner Hennings, Bunde, Germany, assignor to Bunder Glas GmbH, Germany

Filed Feb. 9, 1976, Ser. No. 656,461
Claims priority, application Germany, Feb. 12, 1975, 7504229[U]
Int. Cl.² A61M *5/00*
U.S. Cl. 128—215 **5 Claims**



1. An injection syringe comprising:
a. a cylindrical barrel having a forward end forming a head and an open rear end;
b. the barrel having a finger rest region in the vicinity of its open rear end with at least one annular groove;
c. a cannula held by the head;
d. a plunger closing the open rear end of the barrel;
e. a ram for slidably displacing the plunger inside the barrel;
f. an initially separate, one-piece finger rest having a mating surface that is correspondingly shaped with respect to the shape of said finger rest region and includes at least one ridge which is complementary to the groove in the barrel;
g. the finger rest being slidingly fitted to the barrel with the ridge on the finger rest being effective to engage the groove in the barrel and secure the finger rest in place; and
h. an annular thickening ridge is located on each side of said groove in the barrel to create a snap action effect when the separate finger rest is fitted to the barrel.

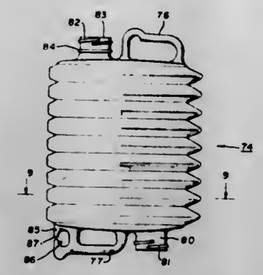
4,068,662

ACCORDION-STYLE SYRINGES, DOUCHES AND ATTACHMENTS THEREFOR

Vincent R. Sneider, 3422 Hallcrest Drive, NE., Atlanta, Ga. 30319

Continuation-in-part of Ser. No. 592,037, June 30, 1975, Pat. No. 4,014,332. This application June 29, 1976, Ser. No. 700,838
The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.
Int. Cl.² A61M *1/00*
U.S. Cl. 128—232 **9 Claims**

1. An accordion-style container for vaginal douches, enemas and the like, said container including: (a) a flexible side wall having an accordion configuration and terminating with end member portions and with each end porition of the container having finger gripping handle portions, and with the discharge end of the container additionally provided with retaining means for a fluid conduit; (b) a manipulative shutoff valve associated with said discharge conduit, said valve when open permitting the flow of fluid from the container, said conduit being semiflexible and having at least one stiffening rib locally formed as a part of the outer surface of the conduit and providing an assist to insure bending of the conduit into a pinch configuration to provide fluid-flow cutoff when the conduit is bent substantially at a right angle to and away from the stiffening rib whereby in this bent condition the sides of the conduit are brought together to inhibit flow therethrough; (c) a depending portion formed on the lower end portion of the container and having an aperture adapted for releasably retaining this conduit in the bent condition during storage and shipment until the conduit is straightened for fluid flow and use, and (d) a discharge nozzle attachably associated with the outlet end of the conduit.



4,068,663

CONTAINER

Alfred C. D'Alessandro, Marblehead, Mass., assignor to Aid Pak, Inc., Stoneham, Mass.

Continuation of Ser. No. 408,299, Oct. 23, 1973, abandoned. This application Jan. 15, 1976, Ser. No. 649,330
Int. Cl.² A61M *1/00*
U.S. Cl. 128—232 **11 Claims**



1. In combination, a Fluid containing plastic squeeze bottle having an integrally formed cover, a nozzle attachment having an integrally formed means for removably interlocking said nozzle to said cover, said cover having a dome with an opening formed therein by twisting off an integral twist off member along an annularly shaped thin section in said dome, said dome comprising a cantilever section and an integral annular depending skirt about its outer periphery, said opening being formed in the center of said cantilever section and defined solely by the thickness of said thin section, said skirt having a thickness greater than the thickness of said cantilever section whereby said cantilever section may be deflected in the direction of the axis of said skirt, said nozzle attachment having means defining a downwardly depending internal annular ring engaging said cantilever section in a fluid tight seal about the

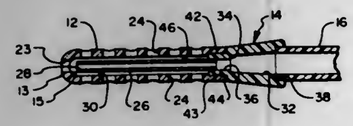
periphery of said opening and a passage extending through the nozzle attachment terminating at one end in a plurality of portals and at the other end in an opening with the annular ring disposed adjacent to and concentric with the opening in the nozzle attachment, the openings in the nozzle attachment and dome being of comparable size and the cantilever section extending a sufficient distance to define the opening in the dome.

4,068,664

SURGICAL SUCTION WAND ASSEMBLY AND METHOD

Russell G. Sharp, Sugar Land; Charles C. Reed, and Denton A. Cooley, both of Houston, all of Tex., assignors to Texas Medical Products, Inc., Houston, Tex.

Filed Feb. 25, 1976, Ser. No. 661,224
The portion of the term of this patent subsequent to June 15, 1993, has been disclaimed.
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—276 2 Claims



1. A surgical suction wand and tip assembly comprising in combination:

an elongated suction tip comprising a body having a smoothly contoured exterior and an internal cavity which cavity is polygonal in cross-section, each face of the polygon defining an essentially flat interior surface within the tip;

an array of apertures in the body of the suction tip intersecting the longitudinal axis of the internal cavity and communicating the exterior of the body with the internal cavity at one of each of the flat surfaces of the polygon, the array in one surface being displaced along the axis of the tip with respect to the array in the adjacent surface;

an adaptor comprising a through-bore, a first coupling for securing the adaptor to the suction tip, a forwardly projecting hollow tube mounted concentric with the through-bore of the adaptor, said hollow tube projecting telescopically within the internal cavity of the suction tip, a second coupling differing in size from the first on the rear of the adaptor;

a wand assembly and means joining the adaptor to the wand assembly, said wand assembly comprising an essentially rigid hollow tube mounted to the second coupling of the adaptor and extending rearwardly therefrom;

a weighted handle of metal construction, the handle comprising a single axial, generally cylindrical through-bore opening at the leading end and at the trailing end of the handle, the leading end of the through-bore tapering outwardly;

an elongated conduit comprising a unitary, generally cylindrical insert having an external configuration which corresponds to the through-bore within the handle, the insert tapering outwardly at its leading end and joined at its leading end to the hollow tube mounted to the second coupling of the adaptor;

the external surface of the insert defining a diameter which is essentially the same as the diameter of the through-bore, said insert being telescopically surmounted by the handle and releasably attached thereto with a press-fit coupling, the through-bore receiving the insert in snug relationship along the entire length of the bore; and

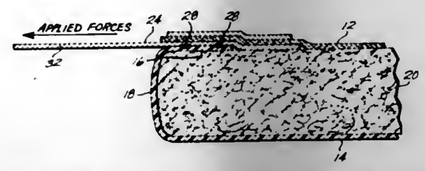
a coupling for flexible suction tubing integral and coextensive with the trailing end of the insert, said coupling projecting beyond the trailing end of the handle when the handle surmounts the insert.

4,068,665

DISPOSABLE DIAPER WITH IMPROVED TAPE FASTENER

Lawrence E. Nelson, Vader, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 6, 1976, Ser. No. 747,589
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—287 2 Claims



1. In an absorbent article of the type having a fluid-permeable body contacting top sheet, a fluid-impermeable plastic film backing sheet, and an absorbent filler disposed therebetween together with a tape fastener system along at least one edge of the article, the improvement comprising:

at least one fastening tape having a fixed portion with one surface thereof being bonded to a portion of the bottom surface of the top sheet and the other surface thereof bonded to a portion of the backing sheet and an attachment portion having an open and closed position, and in which said portion of the backing sheet to which the fixed portion is bonded is a narrow marginal portion thereof which extends inwardly from the article edge after having extended around said edge and in a plane substantially coplaner with the top sheet and

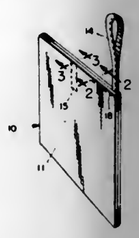
said fastening tape, when in the open position, serving to transmit a substantial amount of the forces applied thereto through the bonded area between the fixed portion and a portion of the bottom surface of the top sheet to the top sheet.

4,068,666

SURGICAL SPONGE AND METHOD OF FORMING THE SAME

James A. Shiff, Encino, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed May 16, 1975, Ser. No. 578,355
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—290 W 14 Claims



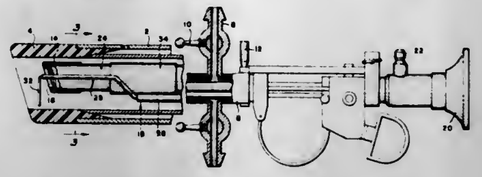
1. A surgical sponge or dressing comprising an absorbent planar core layer interposed between a pair of porous and substantially non-linting outer layers, said outer layers having reverted peripheral edge portions extending about the entire perimeter of said sponge, said reverted edge portions of the respective outer layers being in continguous relation with each other and being disposed only on one side of said core layer, said core layer having a reverted peripheral portion received within the fold of the reverted peripheral edge portion of one of said outer layers, and means directly securing the reverted edge portion of said outer layers and the reverted peripheral portion of said core layer together, said core layer having substantial surface portions thereof unsecured to said outer layers.

4,068,667

ANTI-ARCING RESECTOSCOPE

Jose J. Iglesias, 1341 North Ave., Elizabeth, N.J. 07200

Filed Sept. 3, 1976, Ser. No. 720,424
Int. Cl.[2] A61B *17/32*
U.S. Cl. 128—303.15 2 Claims



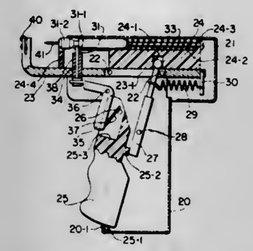
1. A resectoscope comprising an elongated tubular sheath having a distal end, an elongated tubular telescope within and extending longitudinally of the sheath and having a distal end adjacent the distal end of the sheath, a tube extending longitudinally of the sheath and the telescope and having a distal end adjacent the distal end of the telescope and at least partially surrounding and engaging the telescope to support and stabilize it, and a cutting loop assembly mounted within the sheath for longitudinal reciprocation with respect to the telescope and the tube and having a depending bare wire loop disposed distally to the distal end of the telescope and the distal end of the tube and adapted to be charged with electricity, means for reciprocating the cutting loop assembly, the distal end of the tube extending beyond the distal end of the telescope and having its peripheral surface completely coated at and adjacent to its distal end with a material which is non-conductive to electricity, resistant to high temperatures and chemicals used in transurethral procedures, and provides an anti-friction surface on the surface of the tube on which it is coated.

4,068,668

EAR LOBE PIERCING DEVICE

Larry D. Moore, Attleboro, Mass.; Isaiah W. Johnson, Greensboro, and Charley L. Thompson, Jr., McLeansville, both of N.C., assignors to Concept Marketing, Inc., Attleboro, Mass.

Filed Sept. 8, 1975, Ser. No. 611,449
Int. Cl.[2] A61B *17/00*; F41B *7/00*; F41C *19/00*
U.S. Cl. 128—330 11 Claims



1. An ear lobe piercing device comprising support means, clamping means supported by said support means adapted to clamp an ear lobe, plunger means supported by said support means for supporting a stud so that a portion thereof is adapted to be inserted into an ear lobe when held by said clamping means, means for releasably holding said plunger means in a non-operative position, actuating means operable to simultaneously close said clamping means and pre-load said plunger means, and trigger means for actuating said holding means to release said pre-loaded plunger for movement of said stud toward said clamping means, said trigger means being located closely adjacent said actuating means whereby said device and said actuating and trigger means may be easily and conveniently held and operated by a single hand.

4,068,669

STIMULATOR FAULT PROTECTION CIRCUIT

Bill Howard Niemi, Brooklyn Park, Minn., assignor to Stimulation Technology, Inc., Minneapolis, Minn.

Filed Nov. 24, 1975, Ser. No. 634,577
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—419 R 15 Claims



1. A fault protection circuit for a medical unit having triggered output signal generator circuitry therein to provide a series of output signals, comprising:

means for monitoring said output signals from said medical unit output signal generator, said monitoring means being connected to said output signal generator;

means associated with said monitoring means for differentiating between successive signal values of said output signals monitored for detecting when said successive signal value differentials exceed a threshold; and

means connected to said differentiating and detecting means for affecting the operation of said medical unit signal generator upon the detection of said threshold being exceeded.

4,068,670

SMOKING COMPOSITION

Hiromu Yokota; Hajime Namikoshi, both of Himeji; Masataka Watanabe, Yokohama; Kunio Kato, Yokohama, and Akio Ohnishi, Yokohama, all of Japan, assignors to Daicel Ltd., Osaka and The Japan Tobacco & Salt Public Corporation, Tokyo, both of Japan

Filed Nov. 10, 1975, Ser. No. 630,272
Claims priority, application Japan, Nov. 11, 1974, 49-129699
Int. Cl.[2] A24B *15/00*
U.S. Cl. 131—2 18 Claims

1. A smoking product consisting essentially of a homogeneous mixture of cellulose acetate having a degree of substitution of from 0.5 to 2.0, and from one to 4 parts by weight of tobacco, per one part by weight of said cellulose acetate.

4,068,671

NICOTINE REMOVAL PROCESS

William J. Casey, Trumbull, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Filed July 25, 1975, Ser. No. 599,277
Int. Cl.[2] A24B *15/02*
U.S. Cl. 131—143 9 Claims

1. A process for removing nicotine from tobacco without substantially removing solubles other than nicotine which comprises forming an aqueous dispersion of particulate nicotine-containing tobacco at a pH of at least about 8.5, and rapidly air convection drying said dispersion at an elevated temperature and at air flow rates such that material temperature does not exceed about 200° F and at least 90% of the initial water content is removed within 2 minutes.

4,068,672

METHOD AND APPARATUS FOR BREAKING THE HABIT OF SMOKING

Romeo E. Guerra, Dallas, Tex., assignor to Alfohn Corporation, Irving, Tex.

Filed Dec. 22, 1975, Ser. No. 643,514
Int. Cl.[2] A24F *15/06*
U.S. Cl. 131—170 A 3 Claims

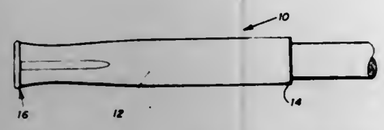
1. An anti-smoking device having utility in interfering with

a person's desire to hold an object (such as a cigarette, cigar or pipe) between his lips, comprising:

a. a generally tubular shell of electrically non-conductive material and having first and second ends, with a first end being adapted to receive a tobacco-holding object, and the second end thereof including structure adapted to be held between a person's lips;

b. a DC voltage source of at least 6 volts but not much more than about 9 volts, with said voltage source being mounted within the tubular shell; and

c. first and second electrically conductive members connected to the output of the DC source, with the distal ends of said conductive members extending alongside the lip-contacting structure of the tubular shell so that they may be readily touched by a person's lips, and the distal ends of



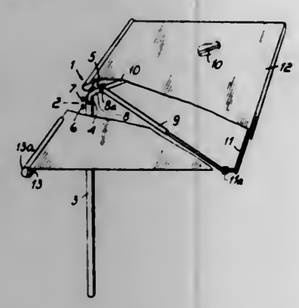
said conductive members being about ¼ inch wide in the vicinity of the lip-contacting region, and the distal ends of said conductive members being separated so as to form a normally open electrical path, with one distal end being positioned to contact the upper lip and the other distal end being positioned to contact the lower lip, such that placing the lip-contacting structure between a person's lips will instantaneously close the electrical path without actuation of an ON/OFF switch, thereby resulting in the discharge of DC current from said source through the lips during the entire time that the tubular shell is held between the lips, and the lip-contacting end of each of the electrically conductive members having an area of at least 0.06 square inch, such that injury to a person's lips is precluded as a result of current flow of about 1–5 milliamps from said source.

4,068,673

AWNING TYPE SUNSHADE

Dario Bernardi, Via Mazzini, 5, Cattolica (Forli), Italy

Filed June 28, 1976, Ser. No. 700,644
Claims priority, application Italy, July 3, 1975, 44017/75
Int. Cl.² E04F *10/06*; A45F *1/14*
U.S. Cl. 135—5 R **8 Claims**



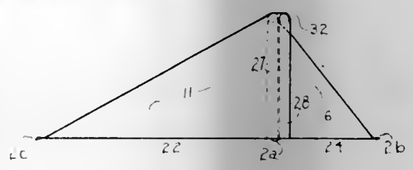
1. An awning type sunshade structure particularly for beaches, gardens and the like, comprising a take-up roller defining a center line thereof, a flexible awning element woundable on said take-up roller and having an end thereof connected to said take-up roller, an elongated front member cooperating with said awning element and extending substantially parallel to said center line, a supporting frame for supporting said take-up roller rotatably about said center line thereof, a pair of telescoping arms, first hinge means for hingedly connecting first ends of said telescoping arms to said supporting frame and second hinge means for connecting second ends of said telescoping arms to said elongated front member, all said hinge means defining respective axis of rotation extending in a direction substantially parallel to each other and transverse to said center line, said telescoping arms being arranged to converge towards a common intersecting point thereof.

4,068,674

CAMPERS TENTING WITH A COMBINATION OF ENTRY AND SUPPORT MEANS

Hal D. Mitchell, Box 226, Rte. 4, Rolla, Mo. 65401

Filed Aug. 6, 1976, Ser. No. 712,205
Int. Cl.² A45F *1/08, 1/10*
U.S. Cl. 135—14 D **5 Claims**



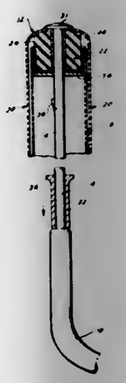
1. A top opening tent comprising a floor portion, a foot canopy portion, and a head canopy portion, wherein the floor portion has at least four sides, each canopy portion is attached to at lest two sides of the floor portion and has an edge unattached to the floor portion, the unattached edges of the canopies facing each other and being adjusted to form an arcuate closeable entrance to the tent, the unattached edge of each canopy including elongated support means, whereby the tent may be closed when the support means are in place, by causing the unattached edge of one canopy to overide the unattached edge of the other canopy to form an arched support means and a closed tent.

4,068,675

INFLATABLE UMBRELLA

George Pappanikolaou, 621 90th St., Brooklyn, New York, N.Y. 11228

Filed June 14, 1976, Ser. No. 695,640
Int. Cl.² A45B *19/02*
U.S. Cl. 135—20 B **25 Claims**



1. An umbrella having a shaft and handle portion comprising: a flexible canopy having an inflatable enclosed space forming a part of said canopy; and having a self-contained compressible fluid reservoir containing a generally permanently closed or sealed fluid supply system communicating with said enclosed space; and means for compressing said fluid reservoir, whereby upon compression said fluid is forced into said enclosed space thereby inflating said canopy of said umbrella, and restoration means expanding said fluid reservoir thereby evacuating said enclosed space to deflate said canopy.

4,068,676

METHOD FOR DISSOLVING POLYMERIC MATERIALS IN HYDROCARBON LIQUIDS

Donald J. Thorn, and John W. Burnham, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 26, 1976, Ser. No. 652,356
Int. Cl.² F17D *1/16*
U.S. Cl. 137—13 **28 Claims**

1. A method for producing a solution of a polymer dissolved in a hydrocarbon liquid consisting essentially of:

mixing an aqueous emulsion, having said polymer as the internal phase thereof, with a release agent in the immediate presence of said hydrocarbon liquid to thereby produce said solution within a time of about one minute wherein within said time said solution exhibits at least 65 percent less frictional resistance in turbulent flow than does said hydrocarbon liquid;

wherein said hydrocarbon liquid is selected from the group consisting of straight and branched chain paraffin hydrocarbons, cyclo-paraffin hydrocarbons, mono-olefin hydrocarbons, di-olefin hydrocarbons, alkene hydrocarbons, aromatic hydrocarbons, crude oil and mixtures thereof, said hydrocarbon liquid being in the liquid state at atmospheric conditions;

wherein said polymer is produced by the polymerization of compounds represented by the general formula

$$CH_2=\underset{\displaystyle R_2}{\overset{\displaystyle |}{C}}-R_1$$

and mixtures thereof, wherein R_1 is selected from hydrogen and alkyl radicals having 1 to 20 carbon atoms and R_2 is selected from methyl radicals, phenyl radicals, alkyl phenyl radicals having 7 to 26 carbon atoms and carboxylate radicals having 2 to 19 carbon atoms; and further

wherein said release agent is selected from the group consisting of anhydrous hygroscopic chemicals, selected from the group consisting of alkali metal and alkaline earth metal carbonates, bicarbonates, acetates halides, and sulfates; hygroscopic organic polymers, selected from the group consisting of water soluble polysaccharides, water soluble polyacrylamides, water soluble polyacrylic acids and vinyl ether maleic anhydride copolymers; concentrated aqueous solutions or inorganic salts, selected from the group consisting of alkali metal and alkaline earth metal halides; chemicals which react with water, selected from the group consisting of acetyl chloride, acetic anhydride, phthalyl dichloride, calcium oxide and aluminum trichloride; strongly acidic solutions of mineral acids having a pH of no greater than about 2; and strongly basic solutions of alkali metal hydroxides having a pH of at least about 10.

4,068,677

PROCESS CONTROL CIRCUIT FOR METAL-DEPOSITING BATHS

Hubert De Steur, Drongen, Belgium; Wolfgang Pernegger, Erlangen, and Egon Bussmann, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 21, 1976, Ser. No. 688,784
Claims priority, application Germany, June 3, 1975, 2524589
Int. Cl.² G05D *11/13*; C25B *15/02*; C25D *21/14*
U.S. Cl. 137—93 **11 Claims**

1. A process control circuit adapted for the simultaneous and repeated control and monitoring of a plurality of parameters in at least one metal-depositing bath, comprising:

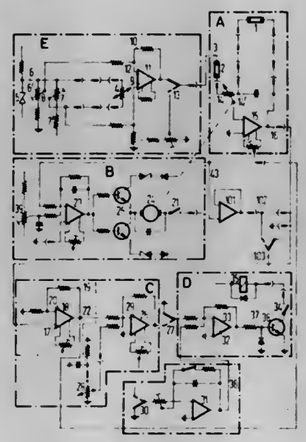
a. an independent parameter control circuit block for each of said plurality of parameters, each block having

i. measuring means for producing a measured value for one of said parameters;

ii. calibrator means connected to the measuring means for calibrating said measuring means;

iii. comparator means connected to said measuring means for comparing said measured value to a nominal value stored in said comparator means and creating a comparison signal;

iv. a dosing means connected to said comparator means for dosing said metal-depositing bath in response to said comparison signal;



b. a program generator means connected to each of the parameter control circuit blocks for controlling the operation of each in a simultaneously fashion so as to simultaneously control and monitor the bath parameters, said program generator means including at least

i. first switch means in each parameter circuit block for activating the calibrator means, and

ii. second switch means in each parameter circuit block for activating the measuring, comparator and dosing means to maintain tight control over the value of each parameter in the bath.

4,068,678

VALVE FOR HYDRAULIC SYSTEMS

Armin Lang, Schwabisch Gmund, and Rolf Fassbender, Mutlangen, both of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Apr. 20, 1976, Ser. No. 678,607
Claims priority, application Germany, Apr. 26, 1975, 2518738
Int. Cl.² G05D *11/03*
U.S. Cl. 137—100 **22 Claims**

1. Valve device for a booster steering hydraulic system having a main pump, a reserve pump, and a sump, for operating a pressure operated consumer;

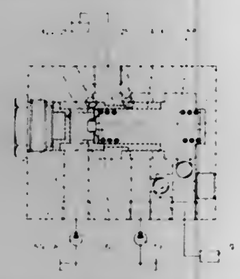
said valve device being for selectively controlling flow to said sump from said pums and comprising means effecting a pair of pressure chambers;

a pressure operable valve member and bias means biasing said valve member to a neutral position relative to said pressure chambers;

said valve member being actuatable by differential pressure between said pressure chambers wherein differential pressure is operative to shift said valve member from said neutral position in opposition to said bias means;

said valve device having pump, sump, and consumer passages for connecting to respective pump outlets and to said sump and consumer;

said valve device having a throttle;
said valve device having passage means whereby flow from said main pump passes through said throttle to said consumer passage and whereby said throttle communicates on opposite sides thereof with respective pressure chambers to effect a differential pressure between said pressure chambers for actuating said valve member responsive to a predetermined pressure differential;
said valve device having coacting flow control means whereby said valve member is operative to block flow from pump passages to said sump passage in said neutral position of said valve member;



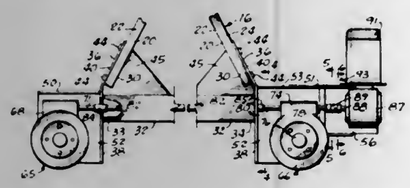
actuation of said valve member to a first position responsive to a predetermined degree of differential pressure between said pressure chambers effecting coaction of said flow control means to direct the flow from said reserve pump passage to said sump passage;
increased pressure differential actuating said valve member to a second position to effect a coaction of said flow control means to direct a portion of the flow from the main pump passage to said sump passage;
and flow rate responsive means operative to require a predetermined increase in the flow rate to effect a pressure differential for actuating said valve member to said second position disproportionately greater than the flow rate required for effecting actuation to said first position.

4,068,679

TOWER DRIVE MECHANISM FOR SELF-PROPELLED SPRINKLER SYSTEM

Ray T. Pringle, and Kenneth R. Ames, both of Walla Walla, Wash., assignors to Frontier Machinery, Inc., Walla Walla, Wash.

Filed May 14, 1976, Ser. No. 686,467
Int. Cl.² B05B *3/12*
U.S. Cl. 137—344 **8 Claims**



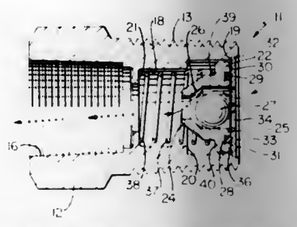
1. In a self-propelled sprinkler irrigation system having an elongated water supply conduit elevationally supported by at least two spaced upright mobile tower assemblies, each of said tower assemblies comprising:
an upright frame operatively connected to the conduit and extending transverse to the longitudinal axis of the conduit;
said frame having leg members that extend downward and laterally outward from the conduit;
said frame having a hollow axle tube extending horizontally between the legs transverse to the water supply conduit;
wheel assemblies mounted on the frame adjacent ends of the axle tube for movably supporting the frame;
an electric motor mounted to the frame adjacent one end of the axle tube and operatively connected to one of the wheel assemblies for driving the one wheel assembly; and
interconnecting drive shaft extending axially through the interior of the hollow axle tube interconnecting the wheel assemblies to cause the wheel assemblies to be driven in unison with the tube protecting the interconnecting drive shaft from environment elements such as water and preventing the interconnecting drive shaft from becoming entangled with field debris or vegetational growth or engaging operating personnel.

4,068,680

SELF-CONTAINED VENT VALVE UNIT AND SYSTEM UTILIZING THE SAME

Boyd P. Sliger, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 21, 1976, Ser. No. 707,384
Int. Cl.² F16K *17/04*
U.S. Cl. 137—512.1 **6 Claims**



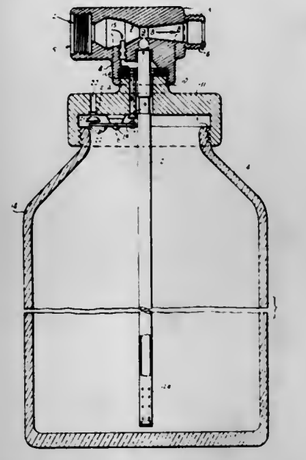
1. In a liquid system wherein liquid is to substantially fill a cavity and thereafter be pressurized in said cavity and having a self-contained valve unit for said system that has a first valve means disposed in fluid communication with said cavity for venting air to a vent from said cavity during low pressure filling of said cavity with said liquid, said first valve means automatically closing upon the pressurization of said liquid in said cavity to a first certain value thereof, said valve unit having a second valve means disposed in fluid communication with said cavity for venting said liquid to said vent from said cavity when the pressure of said liquid reaches a second certain value thereof, said valve unit having a housing, said first valve means comprising a first valve seat carried by said housing and a first movable valve member for opening and closing said first valve seat, said second valve means comprising a second valve seat carried by said housing and a second movable valve member for opening and closing said second valve seat, said first valve seat and said second valve member being the same part that is movable relative to said housing, a spring being carried by said housing and is operatively associated with said part to tend to hold the same against said second valve seat to close said second valve seat, said housing having a stop for limiting opening movement of said part relative to said second valve seat, said part having opposed ends with an opening passing through said ends, one of said ends defining said first valve seat and the other of said ends defining said second valve member, the improvement wherein said stop comprises an annular shoulder of said housing that defines a circular opening that leads to said vent, said part being square in cross-section so as to provide flow paths along the sides thereof through said circular opening to said vent when the corners thereof are seated against said annular shoulder.

4,068,681

LIQUID PROPORTIONING DEVICE

Hugh Noel McNair, Fruitland Park, and Stuart William Olson, Leesburg, both of Fla., assignors to Hydro Mix, Inc., Lebanon, N.J.

Filed Oct. 10, 1975, Ser. No. 621,568
Int. Cl.² F16K *19/00*
U.S. Cl. 137—588 **12 Claims**



1. In the apparatus comprising an attachment device applicable to a container and adapted for the proportioned admixture and dispensing of liquids, a main conduit, a venturi in said main conduit for effecting a pressure differential determining high and low pressure sides thereof during the flow of liquid therethrough, a flow diverting conduit connected with the high pressure side of the main conduit and adapted to supply a diverted flow of liquid from the said main conduit to the container, a conduit connected with the throat portion of the venturi in the said main conduit, a metering jet having an orifice inlet and a passage of greater diameter relative to the said orifice, the said jet comprising the inlet end portion of said flow-diverting conduit, the said orifice being of a predetermined ratio relative to the venturi throat portion, the relationship of the said orifice to the venturi throat portion being adapted to afford a substantially fixed ratio through a wide range of pressures and flows in the said main conduit, a header adapted for attachment to a container, both the said flow-diverting conduit and the said conduit connected with the throat portion of the venturi extending through the said header, wherein the said header is equipped with suitable air vent means to allow the escape of air during the initial filling of the container with the liquid that initially flows through the main conduit, and wherein the said header member is equipped at its base with a container closure member and wherein the closure member is fitted on its lower side with a pivot support member and two connected valve closure members each suitably designed to alternately close the flow-diverting conduit and the air vent means.

4,068,682

TIMING DEVICE FOR FLUID VALVE

Charles P. O'Neil, Milwaukee, Wis.; Adam Smorzaniuk, West Millington, N.J., and James O. Young, Waukesha, Wis., assignors to Amerace Corporation, New York, N.Y.

Filed Feb. 17, 1976, Ser. No. 658,773
Int. Cl.² F16K *31/163, 11/04*
U.S. Cl. 137—624.11 **20 Claims**

1. In a timing device for actuating a fluid valve upon expiration of a prescribed time interval following a given event, the timing device including
a frame;
a motion transmitting member mounted in the frame for movement along a prescribed path of travel in either one of two directions between a first location and a second location;
timing means on the frame coupled with the motion transmitting member for effecting movement of the motion transmitting member at a predetermined rate in one only of said two directions to establish said timed interval between the departure of said motion transmitting member from the first location thereof and the arrival of the motion transmitting member at the second location, and permitting return movement of the motion transmitting member from the second location to the first location at an unrestricted rate;
a fluid valve comprising:
a valve body having a chamber;
first and second passages communicating with the chamber;
a shuttle in said chamber movable between a first position, wherein the shuttle closes communication between one of said first and second passages and the chamber, and a second position wherein communication is open between both said first and second passages and the chamber; and
a shuttle in said chamber movable between a first position, wherein the shuttle closes communication between one

of said first and second passages and the chamber, and a second position wherein communication is open between both said first and second passages and the chamber; and
means responsive to the motion transmitting member for moving the shuttle from one to the other of said first and second positions upon the arrival of the motion transmitting member at the second location thereof;
the valve body includes a wall between the chamber and the exterior of the valve;
the means responsive to the motion transmitting member includes a snap-action mechanism coupling the motion transmitting member with the shuttle, the snap-action mechanism having a first lever extending through the wall, said first lever including a first end engaging the shuttle within the chamber, a second end outside the chamber and an intermediate portion passes through the wall, and wherein the snap-action mechanism includes
a second lever having first and second ends;
pivotal means mounting the second lever, adjacent the first end thereof, for pivotal movement relative to the frame and relative to the first lever;
a snap-action spring coupling the first and second levers adjacent the second ends thereof; and

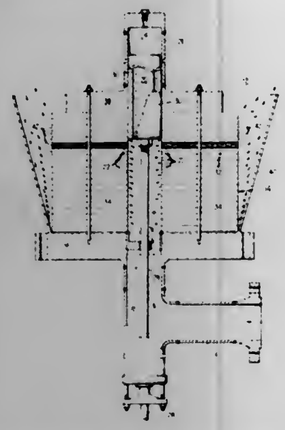
trip means coupling the second lever, adjacent the second end thereof, with the motion transmitting member.

4,068,683

HIGH ENERGY LOSS DEVICE

Richard E. Self, Los Alamitos, Calif., assignor to Control Components, Inc., Irvine, Calif.

Filed Sept. 9, 1975, Ser. No. 611,737
Int. Cl.² F16K *47/08*
U.S. Cl. 137—625.3 **7 Claims**



1. A high energy loss fluid flow controlling device comprising:

a plurality of members having aligned scalloped outer peripheries and being joined together into a rigid structure having a scalloped outer periphery continuously extending along the height of the rigid structure, said rigid structure having a series of high energy loss paths for fluid flow formed by said plurality of members;

inlet means centrally cut in each of said members according to a first geometrical configuration to define an inlet area for conducting fluid to the series of paths formed in said rigid structure by said plurality of members; and

scalloped outlet means formed along the entire scalloped outer periphery of said rigid structure to define a continuous scalloped outlet area along the entire height of said rigid structure.

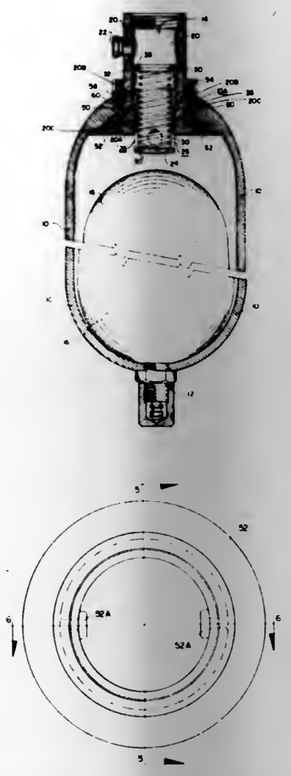
4,068,684

LOCKING RING ASSEMBLY FOR THE LIQUID PORT OF A PRESSURE ACCUMULATOR

Edward M. Greer, 820 Loma Vista Drive, Beverly Hills, Calif. 90210

Continuation of Ser. No. 603,339, Aug. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 585,034, June 9, 1975, abandoned. This application Sept. 22, 1976, Ser. No. 725,491
Int. Cl.² F16L *55/00*
U.S. Cl. 138—30 **2 Claims**

1. In a pressure accumulator including a rigid shell having an opening at one end thereof, a valve assembly mounted in the opening comprising: a tubular housing having an outer diameter less than the diameter of the opening and having a peripheral shoulder formed at the inner end thereof whose outer diameter is less than the diameter of the opening; a retaining ring formed of a plurality of arcuate segments mounted coaxially around the tubular housing and configured to engage said peripheral shoulder and also to engage the inner surface of the shell surrounding the opening; a resilient ring mounted concentrically around the inner end of the tubular housing and having an outer peripheral surface engaging the inner surface of the shell surrounding the opening, and said resilient ring further having a plurality of wedge-like portions, each extending radially inwardly with increasing transverse dimensions between



the segments forming said retaining ring to constitute a mounting means for the resilient ring on the retaining ring.

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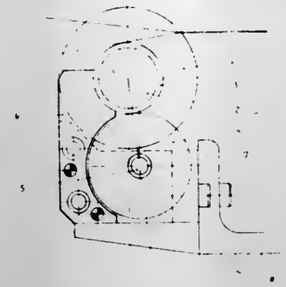
SUPPORTING MEMBERS FOR A REVOLVING COMB ON A MULTISHED WEAVING LOOM

Nicola Santucci, Schio (Vicenza), Italy; Zabotin Aleksandr Aleksandrovic, Moscow, U.S.S.R.; Loschilin Evgheni Dmitrievich, Moscow, U.S.S.R.; Galperin Aleksandr Lvovich, Moscow, U.S.S.R., and Onikov Eduard Archakovich, Moscow, U.S.S.R., assignors to Nuovo Pignone S.p.A., Italy and ZNIKHBI: Tsentralny Nauche - issledovatelsky institut khlopchatobumezhnoi promyshlennesti, U.S.S.R.

Filed Sept. 30, 1976, Ser. No. 728,238
Claims priority, application Italy, Oct. 3, 1975, 27953/75
Int. Cl.² D03D *49/60, 47/26*
U.S. Cl. 139—188 R **5 Claims**

1. A device for supporting, at intermediate points, a revolving comb of a multished loom having weft-thread grasping and beating-up disks mounted in a ganged helical array on a shaft with spreaders therebetween, comprising: a base plate affixed to the frame of the loom, and a set of members on said base plate having a blade-like shape adapted to be inserted between the grasping and beating-up disks of the revolving comb until said members contact and act upon the spreaders confined between said disks, and wherein said members are mounted on said base plate so as to be spread relative to one another and to allow relative movement therebetween for undergoing small displacements in order to become spontaneously arranged in the desired position in contact with said spreaders, and said spreaders having cylindrical surfaces upon which said members

act and having a small size as compared to the size of the grasping and beating-up disks, to thereby provide for efficient



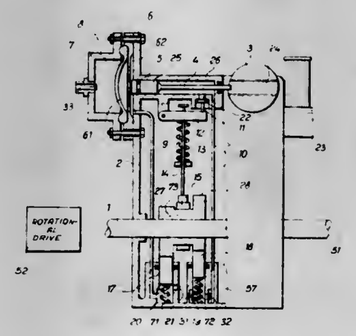
positioning of said members for counteracting the thrust originated by the weft-thread shot.

4,068,686

TECHNIQUE FOR CONTROLLABLY RECIPROCATING THE WEFT INSERTION PORTION OF A SHUTTLE-TYPE WEAVING LOOM

Vladimir Svaty, Liberec, Czechoslovakia, assignor to Elitex, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Filed Aug. 30, 1976, Ser. No. 718,793
Int. Cl.² D03D *47/24, 49/34*
U.S. Cl. 139—438 **10 Claims**



1. In a hydraulically-actuated weft insertion apparatus for a weaving loom that includes a reciprocable shuttle movable in both forward and reverse directions along a first path by means of a single piston attached thereto, the apparatus comprising, in combination, a first reservoir, an elongated drive shaft, means for rotating the shaft about its axis, a working cylinder extending in the forward direction along the first path, means supporting the piston for reciprocation in the cylinder, and means coupling the first reservoir to the cylinder for launching the shuttle in the first direction when the piston is moved forwardly in the cylinder from a rear-most position thereof under the force of hydraulic fluid in the first reservoir, the improvement which comprises, in combination, a unitary, substantially closed housing radially surrounding a portion of the shaft, the housing having a lower end in which the first reservoir is situated and an open end in which the cylinder is disposed, a second reservoir supported adjacent the rear end of the cylinder and having front and rear ends, a perforated plate disposed in the housing adjacent the rear end of the cylinder for providing fluid communication between the front end of the second reservoir and the rear end of the cylinder, first means disposed in the housing and coupled to the shaft for transferring fluid between the first and second reservoirs in first timed relation to the shaft rotation, and second means disposed in the housing and coupled to the shaft for transferring fluid between the first reservoir and the front end of the cylinder in second timed relation to the shaft rotation to initiate a reverse movement of the shuttle along the first path.

4,068,687

VAPOR RECOVERY LIQUID DISPENSING APPARATUS

Robert A. Long, R.R. No. 2, P.O. Box 158, Friendship, Wis. 53934

Filed July 1, 1976, Ser. No. 701,637
Int. Cl.² B65B *31/00*
U.S. Cl. 141—59 **22 Claims**



1. A liquid dispensing vapor recovery nozzle adapted for use with a vapor recovery vacuum pump which provides a source of vacuum, comprising:

a. a nozzle body having therein a vacuum chamber, a vapor inlet passageway in communication with said vacuum chamber, a vapor outlet passageway in communication with said vacuum chamber and said vapor inlet passageway, a liquid inlet passageway, and a liquid outlet passageway, said vapor inlet and outlet passageways being sealed off from said liquid inlet and outlet passageways to thereby prevent mixing of vapor with liquid flowing in said liquid inlet and outlet passageways, and wherein said vapor outlet passagway provides an outlet from said nozzle body which is adapted to be connected to a source of vacuum to thereby draw vapors through said vapor inlet and outlet passageways to discharge the vapor from said nozzle body to the source of vacuum;

b. a flow control valve normally blocking communication of said liquid inlet and outlet passageways;

c. a manually actuated lever adapted to open said flow control valve when said lever is manually operated and provide communication of said liquid inlet and outlet passageways;

d. a liquid discharge tube in communication with said liquid outlet passageway and having a liquid exit end opening through which liquid is discharged;

e. a vapor recovery tube which is in communication with said vapor inlet passageway and having a vapor entrance end opening through which vapor is received; and

f. vacuum actuated means responsive to lower than atmospheric pressure in said vacuum chamber and operably connected to said lever for disabling said lever in response to a selected low pressure in said vacuum chamber to prevent said lever from opening said flow control valve whereby, when vapors are being withdrawn from said vapor outlet passageway by a source of vacuum, a low pressure will be developed in said vacuum chamber sufficient to actuate said vacuum actuated means when said entrance end opening of said vapor recovery tube is substantially obstructed by liquid to prevent withdrawal of liquid through said vapor recovery tube.

4,068,688

STACKED DISC FINGER JOINT CUTTER ASSEMBLY

George E. Benson, Elmira, Oreg., assignor to Industrial Carbide Tooling Incorporated, Eugene, Oreg.

Filed June 2, 1975, Ser. No. 582,864
Int. Cl.² B27G *13/12*
U.S. Cl. 144—90 A **14 Claims**

1. A finger joint cutter assembly comprising

a plurality of cutters, each cutter including a disc of prese-

lected thickness and a plurality of cutter teeth secured to and projecting radially outwardly from said disc, said cutter teeth on a disc being thinner than said disc, having preselected lengths measured circumferentially of said discs and being spaced apart circumferentially about said



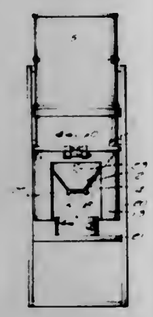
disc a distance greater than said preselected length, each of said discs being of substantially similar diameter, and connecting means for securing said cutters in face-to-face contiguous, concentric relationship with said cutter teeth on adjacent cutters spaced apart axially and circumferentially of said assembly.

4,068,689

TOOL FOR TRANSFERRING POWDERED MATERIAL FROM ONE CONTAINER TO ANOTHER

Frank B. Krull, P.O. Box 205B, Ingalliston, Menominee, Mich. 49858

Filed Aug. 27, 1976, Ser. No. 718,392
Int. Cl.² B65B *1/04*
U.S. Cl. 141—93 **6 Claims**



1. A tool with which fine pulverized material such as aluminum powder can be transferred into an open-topped container from a receptacle having a cover removably secured to a rim encircling its mouth, without creating an objectionably dusty environment, which comprises:

A. a funnel of a size such that its large receiving end fits and is securable to the rim of the receptacle after its cover is removed;

B. means at the discharge mouth of the funnel providing a closure that can be opened and closed;

C. wall means fixedly secured to the funnel near its receiving end and projecting axially from its securement to the funnel towards and beyond the discharge end of the funnel in increasingly spaced relation to the funnel to form a skirt around the funnel, said skirt and funnel coacting to define a zone through which must pass the material leaving the receptacle and issuing from the funnel when the connected receptacle and funnel are inverted and the closure is opened; and

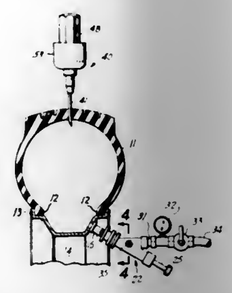
E. means whereby a subatmospheric pressure can be maintained in said zone so that upon placement of the open-topped container in said zone beneath the funnel and opening of said closure, the container can be filled without raising a cloud of dust.

4,068,690

AIR RELEASE REGULATOR

Ransome J. Wyman, Redondo Beach, Calif., assignor to Arnco, Marina del Rey, Calif.

Filed Dec. 1, 1975, Ser. No. 636,749
Int. Cl.² B65B *1/30*
U.S. Cl. 141—95 **5 Claims**



1. An air release regulator for controlling the escape of air from a pneumatic tire while the tire is being inflated and filled with a liquid resin that subsequently cures to form a solid elastomeric filling, said tire being mounted on a wheel rim having a tire valve through which air and liquid resin are injected into the interior of the tire, said air release regulator comprising, in combination:

a body having an internal passageway provided therein;

a hollow needle connected to said body and communicating with said internal passageway, said needle being adapted to pierce and penetrate the tread rubber on the tire;

a spring-loaded pressure-relief valve disposed within said internal passageway, so as to allow air within the tire to escape when the internal pressure exceeds a predetermined limit;

a vent opening extending from said internal passageway outwardly of said check valve, so as to allow air and liquid resin to escape from the tire; and

a cup attached to said valve body to catch liquid resin escaping from said vent opening.

4,068,691

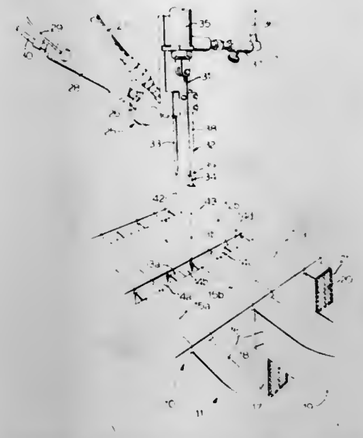
APPARATUS FOR INJECTING ELASTOMERIC MATERIAL

Palmer Lonseth; Hubert Gerald Panter, and Donald G. Moorby, all of Peterborough, Canada, assignors to Canadian General Electric Company, Toronto, Canada

Filed Feb. 10, 1976, Ser. No. 656,865
Claims priority, application Canada, Feb. 17, 1975, 220400
Int. Cl.² B67C *3/34*
U.S. Cl. 141—284 **5 Claims**

1. A gun for injecting an uncured, semiconducting, elastomeric material between coil sides and slot walls of an electromagnetic component of a dynamoelectric machine; said component including a core member having a plurality of stacks of magnetic laminations spaced apart axially to define interstack spaces; axially directed slots in said core member; spacers disposed radially in said interstack spaces and extending between said slots; and coil sides disposed in said slots; said gun comprising a body portion; material release means secured to said body portion and adapted for receiving said material

under pressure from a source; an injector tool having a stem projecting from said body portion and terminating in a head; a flat face on said head of length about equal to the radial dimension of a coil side and of width slightly less than the width of the interstack spaces; an orifice in about the middle of said face;



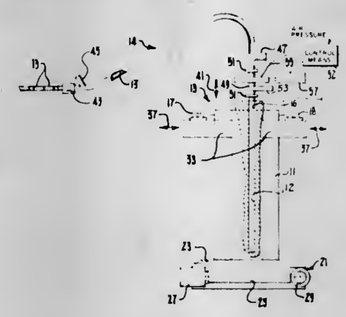
a flow passage connecting said orifice to the output of said release means; and means for securing said tool in an interstack space with said face pressed against a radial surface of a coil whereby the tool is in place for injecting said material between the coil side and the adjacent slot wall by actuating said material release means.

4,068,692

FUEL ELEMENT LOADING SYSTEM

Satya Prakash Arya, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Aug. 11, 1975, Ser. No. 603,531
Int. Cl.² B65B *1/08*
U.S. Cl. 141—392 **8 Claims**



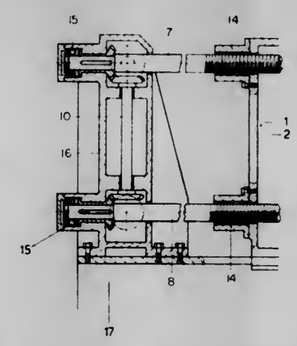
1. A nuclear fuel element loading system in combination with a fuel element having a plurality of longitudinal passages, each for receiving a plurality of fuel rods aligned axially therein, said system comprising, conveyor means for conveying fuel rods in succession into a tube disposed in axial alignment with and above the longitudinal passages, adapter means for guiding the fuel rods from said tube into the longitudinal passages, said adapter means defining a transfer passage extending from said tube to a longitudinal passage, said axially aligned tube including a section having two pinch valve means which are vertically spaced apart and insertion means for inserting a spacer element located between said two pinch valve means, means for operating said two pinch valve means and said insertion means to assemble two fuel rods in said tube section with a spacer element therebetween and to release the fuel rods to allow said released fuel rods and spacer element to fall together as a three-member group toward the fuel element, said transfer passage having a cross-sectional size which is larger than the cross-sectional size of the corresponding longitudinal passage by an amount sufficient that the entrance to the longitudinal passage is within the perimeter of said transfer passage for maximum misalignment due to dimensional variations within tolerances, and vibrator means for vibrating the fuel elements to cause the fuel rods to fall into the longitudinal passages, said vibrator means being adapted to impart both horizontal and vertical components of oscillation to the fuel elements.

4,068,693

TRAVERSING DEVICE FOR WOOD SHEARING MACHINE

Angelo Cremona, V.le Lombardia, 275, Monza, Italy (20052)

Filed May 17, 1976, Ser. No. 686,680
Claims priority, application Italy, June 26, 1975, 24800/75
Int. Cl.² B27L *5/06*
U.S. Cl. 144—178 **3 Claims**



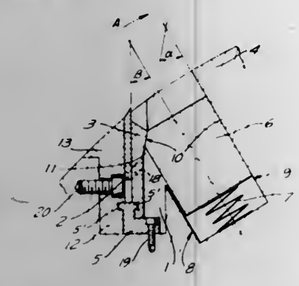
1. For use in a vertical type wood shearing machine having a bed, a pair of spaced apart guides, a side slide slideably mounted on said guides adapted for movement toward and away from a wood stock to be cut, a bar carrying unit and blade holding unit interconnected between said slides, the improvement of a traversing device for effecting the drive of said slides and connected bar carrying unit and blade carrying unit toward or away from the wood stock comprising a pair of spaced apart upper screws, said pair of screws being operatively connected to a corresponding slide adjacent the upper end of said slides and slightly above the bar carrying unit, a pair of lower screws, each of said lower screws being operatively connected to the lower end of said slides, and means for synchronizing the rotation of said upper and lower pair of screws whereby said bar carrying unit and blade carrying unit can be uniformally advanced toward or away from the wood stock, and reaction body means including thrust bearings therein being connected to said bed, said screws having the other ends thereof journalled in said reaction body means and reacting with said thrust bearing so that said screws resist any torque imparted to said bar carrying unit and blade carrying unit during a cutting operation.

4,068,694

CUTTER SHAFT FOR WOOD MACHINING APPARATUS

Arnold Schmidt, Gutenberg, and Hans Sybertz, Hargesheim, both of Germany, assignors to Hombak Maschinenfabrik KG, Bad Kreuznach, Germany

Filed July 1, 1976, Ser. No. 701,868
Claims priority, application Germany, July 14, 1975, 2531345
Int. Cl.² B27G *13/00*
U.S. Cl. 144—230 **10 Claims**



6. In a wood machining apparatus, a combination comprising an elongated cutter element having an axis and being rotatable in one direction about said axis and provided with at least one pocket extending in the longitudinal direction of said element from the peripheral surface of the latter into the same and having a bottom face; an elongated cutting knife located in said pocket and projecting with a cutting edge thereof beyond said peripheral surface, said cutting knife having a pair of substantially parallel side faces, one of said side faces leading in the direction of rotation of said element; a pressure plate abutting with one face thereof against said one side face of said knife; a wedge guided in a cutout of said element for movement in substantial radial direction of the latter and having a wedge face inclined at an angle to the direction of movement of the wedge and engaging a correspondingly inclined face of the pressure plate opposite said one face thereof, said angle being within a range that is outside the angular range at which self-locking occurs between said wedge and said pressure plate; biasing means engaging said wedge for biasing the same in radial outward direction; a part subject to wear located in said pocket and engaging the other side face of said cutting knife substantially over the whole length thereof, said part having an outer surface flush with said peripheral surface of said element, said one face of said pressure plate and a face of said wear part opposite said one face of the pressure plate both being provided with grooves extending in longitudinal direction of said shaft; a holding bar abutting against said bottom face of said pocket and having a pair of opposite lateral projections respectively located in said grooves; and means connecting said holding bar to said shaft.

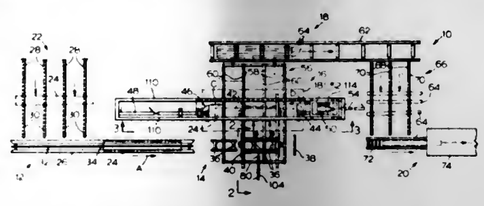
4,068,695

METHOD AND APPARATUS FOR CUTTING WOOD

J. Kenneth Seaman, Box 4013, Quesnel, B.C., Canada (V2J 3J2)

Filed Mar. 4, 1976, Ser. No. 663,583
Claims priority, application Canada, Feb. 13, 1976, 245685
Int. Cl.² B27B *1/00, 5/02*
U.S. Cl. 144—312 **10 Claims**

1. A method of cutting a log into lumber comprising: gripping opposed end portions of the log at a plurality of spaced-apart intervals by longitudinally compressing the log between a pair of opposed chucks, the chucks having radially extending blades for gripping the log; cutting the log radially and longitudinally between said spaced-apart intervals to form a plurality of wedge-shaped elongated segments; holding the segments at said spaced-apart intervals with said chuck blades to prevent



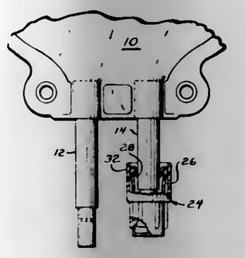
relative movement between the segments; and releasing the segments after all said cuts have been made.

4,068,696

SUPPLEMENTAL ADDITIVE INDICATION CAP FOR CONTAINERS AND THE LIKE HAVING AUXILIARY SLEEVE

David A. Winchell, Twin Lakes, Wis., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 624,195, Oct. 20, 1975, Pat. No. 4,005,739. This application Nov. 19, 1976, Ser. No. 743,185
Int. Cl.² B65D *33/16*
U.S. Cl. 150—8 **4 Claims**



1. A supplemental additive indication cap adapted for installation on a tubular access port of a container, said cap defining at one end thereof a plurality of gripper arms, said gripper arms being positioned to engage said tubular access port upon attempted removal of the cap from the access port to prevent removal thereof, and a sleeve, carried by said cap and immovably positioned about said gripper arms, to prevent the manual disengagement of the arms while the cap is positioned on the tubular access port, the innner diameter of said sleeve being proportioned to enhance the gripping of said access port by the gripper arms by preventing the outward displacement of said gripper arms beyond a predetermined limit.

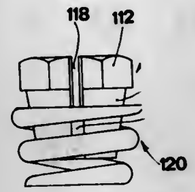
4,068,697

SELF-LOCKING SCREW NUT

Ubaldo Schiaffino, Via Tito Speri 18, La Spezia, Italy

Filed Sept. 1, 1976, Ser. No. 719,395
Claims priority, application Italy, Sept. 2, 1975, 69182/75
Int. Cl.² F16B *39/24, 39/36*
U.S. Cl. 151—19 R **1 Claim**

1. In a self-locking screw nut including a central body with a screw threaded hole and an external surface having a prismatic portion for engagement by a tightening tool, and an externally tapering portion extending from said prismatic portion, these two portions being coaxial with the tapering portion decreasing in diameter in a direction away from said prismatic portion, said central body having a first longitudinal slit extending over the entire length thereof, and a second partial longitudinal slit extending over the prismatic portion and over part of the tapering portion, the improvement comprising a frustoconical helical spring having an inside diameter corresponding to the external diameter of the tapering portion of the central body for application between said tapering portion and a surface to be clamped by said screw nut, said frustoconical helical spring being mounted on said tapering portion and extending axially beyond the free end thereof, the threads of



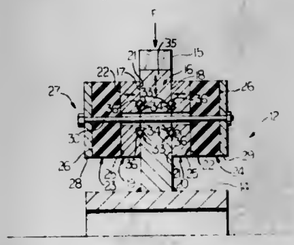
said frustoconical helical spring being spaced from one another in the unclamped position of said screw nut and approaching one another as said screw nut is tightened to exert pressure both radially inwardly and axially of said screw nut in the clamped operative positive thereof.

4,068,698

VEHICLE WHEEL HAVING RADIALLY MOVABLE IMPACT ABSORBING RIMS

Roger L. Boggs, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 9, 1976, Ser. No. 713,078
Int. Cl.² B62D *55/12;* B60B *9/12*
U.S. Cl. 152—27 **11 Claims**



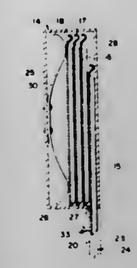
1. Wheel apparatus, comprising:
a hub;
a movable rim connected to said hub;
a flange extending inwardly from the rim in a direction toward the hub, said flange having first and second opposed sides;
first and second floating plates each having first and second sides and being positioned on a respective side of said rim flange, said first sides being positioned closer to said rim flange than said second sides;
first and second biasing means each having first and second sides and being positioned on the second side of a respective floating plate with the biasing means second side being directed outwardly therefrom;
means for maintaining the first and second biasing means at preselected relative locations, said maintaining means including first and second load plates each positioned on the second side of the respective biasing means and an element movably attached to said plates, said element being adjustable for controllably exerting compression forces of a preselected magnitude on the biasing means in the installed position; and
means for compressing the biasing means in response to movement of portions of the rim radially toward and from the hub.

4,068,699

FIREPLACE CLOSURE

Lyndell L. Tucker, 2035 Hickory Creek Drive, Humble, Tex. 77338

Filed Oct. 14, 1975, Ser. No. 621,700
Int. Cl.² E04F *10/08*
U.S. Cl. 160—33 **3 Claims**



1. In apparatus adapted for providing a temporary enclosure for an opening through a fireplace and the like wherein a pair of U-shaped guides are positioned in upright, facing, parallel relation to one another on opposite sides of the fireplace opening, and a panel-receiving housing having front, rear and bottom walls disposed horizontally above the channel guides and adapted for receiving panels in stacked relation and for dispensing the same through a slot in the bottom wall which is aligned in communication with the channel guides, the improvement comprising:
a plurality of substantially flat, rectangular, fire-resistant panels, each said panel having an upper and a lower horizontal edge, each said upper horizontal edge formed to cooperatively engage the lower horizontal edge of an adjacent panel wherein one edge includes an acutely angled, flat return lip projecting over the surface of its associated panel and wherein the horizontal edge of the adjacent panel is formed as a hooked portion of the associated said panel and projecting first obtusely away from the associated said panel and terminating in a reverse curved portion, the end of said reverse curved portion substantially returning to the plane of the associated said panel for releasably engaging said flat return lip;
force applying means for yieldingly urging said panels within said housing successively into alignment with said slot;
means for serially advancing said panels successively from the stack along said guide means, said panel edges being arranged such that said one edge of each said panel in succession receives said other edge of each next said panel in the stack as said panels are serially advanced through said housing slot into said guide means whereby said panels are urged into coplanar relation to one another to form a common closure across the opening between said guide means, allowing coplanar orientation of said panels within the channel guides; and
vertical channel-engaging edges on said flat panels including slide bearing means projecting in a lateral direction from said vertical channel-engaging edges for a distance sufficient to prevent said reverse curved portions and said hooked portions from contacting said channel guides as they are serially advanced along said channel guides.

4,068,700

DIVIDER SCREEN

George Legler, Kirkland, Canada, assignor to Precision Mfg Inc-Fabrication Precision Inv, St. Laurent, Canada

Filed July 23, 1976, Ser. No. 708,030
Int. Cl.² A47G *5/00*
U.S. Cl. 160—351 **7 Claims**

1. A partition with vertical and horizontal frame members

having mitered ends which are interconnected at the corners of the partition;

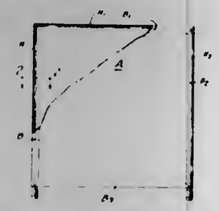
each frame member including a web and an integral pair of first flanges extending along the length thereof, each first flange terminating in an inwardly directed extension, the inwardly directed extensions of the vertical and upper horizontal frame members releasably engaging cooperating hooked ends of respective cap members which are releasably secured to the frame members, each cap member having a semicylindrical outer surface extending the length thereof;

each frame member being provided with a pair of spaced-apart second flanges extending the length of the frame members and situated between the first flanges, the second flanges being integral with and extending outwardly from the web in the direction of the first flanges and terminating short of the inwardly directed extensions of the first flanges, the second flanges stiffening the web of the frame member against binding forces applied thereto;

each of the cap members releasably connected to the vertical frame members having one of a pair of cooperating tape fasteners connected to the cylindrical outer surface thereof;

an inner surface of each of the second flanges being provided with a pair of spaced-apart grooves extending along a length thereof, the grooves of adjacent frame members meeting at the corners of the partition, the grooves forming cooperating pairs of inner and outer grooves in each cooperating pair of second flanges;

an angle member interconnecting adjacent horizontal and vertical frame members at each corner of the partition, the



legs of each angle member being mounted in the inner grooves of the second flanges and being releasably secured in position by means of fasteners extending through openings in the legs of the angle members and engaging cooperating openings in respective webs of the frame members, whereby secure corner joints of the frame members are provided at each corner of the partition; and

a partition leg mounted on each of the lower corners of the partition, each leg having a respective mounting bracket engaging a respective outer pair of cooperating grooves at the lower ends of one of the vertical frame members, the mounting brackets being releasably secured to the webs of the vertical frame members by threaded fasteners, the partition legs extending downwardly below the lower horizontal member and having a supporting member releasably connected thereto, the leg being a thick-walled tubular member, inner and outer surfaces of which are threaded to releasably connect the supporting member thereto, a pair of telescopically arranged cup members mounted on the leg between a lower edge of the panel and the support member, each cup member having a circular end wall and a cylindrical side wall extending at right angles thereto, the circular end walls of the cup; members having aligned openings therein for mounting of the cup members on the leg, adjacent ends of the cylindrical side walls of the telescopic cup members being in overlapping sliding engagement and moving relative to each other upon adjustment of the support member on the leg, an upper cup member being releasably secured to the leg adjacent a lower end of the leg mounting bracket and a lower cup member resting on an upper surface of the support member, the telescopically arranged cup members concealing the leg from view upon adjustment of the support member relative to the leg.

4,068,701

REFRACTORY MATERIALS

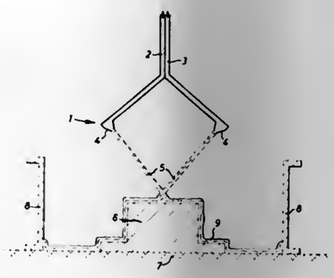
Harold Garton Emblem, and Richard Dudley Shaw, both of Cosmos House, Bromley Common, Bromley BR2 9TL, England

Filed Jan. 27, 1977, Ser. No. 763,147

Claims priority, application United Kingdom, Jan. 30, 1976, 3807/76

Int. Cl.[2] B22C *9/12, 5/08*

U.S. Cl. 164—16 **11 Claims**



1. A method of preparing a mould or core for casting liquids such as molten metals, such method comprising the steps of coating a pattern with a mixture of two slurries each of which is substantially stable but which together gell to form a rigid coherent shape wherein each slurry is discharged as a stream onto the pattern, the two streams converging adjacent the pattern to mix the slurries.

4,068,702

METHOD FOR POSITIONING A STRONGBACK

Robert A. Herold, Tolland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

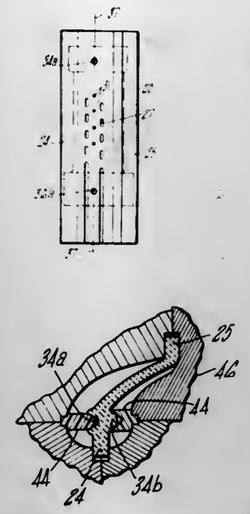
Filed Sept. 10, 1976, Ser. No. 722,181

Int. Cl.[2] B22C *9/10, 7/02*

U.S. Cl. 164—30 **5 Claims**

1. In making investment molds having a strongback suspended in the mold cavity thereof for casting articles having mating surfaces to be subsequently bonded together, wherein a strongback having bonding locators is first suspended in the cavity of a pattern mold for formation of expendable patterns of the articles thereon and then the assembly of strongback and patterns is surrounded by an investment mold, the improvement which comprises increasing the precision and reproducibility with which the strongback is positioned in the investment molds, including:

suspending the strongback in the pattern mold by expendable locating means adapted to engage the bonding locators, the locating means being initially incorporated into the patterns as they are formed and being subsequently removed, along with the patterns, after the investment mold is formed, the incorporation of the locating means into the patterns enabling the bonding locators to also serve as locators for positioning the strongback in the pattern mold, thereby eliminating dimensional and other tolerances between such locators and improving the precision and reproducibility with which the strongback is positioned in relation to the pattern mold, to the patterns



formed thereon and consequently to the investment mold ultimately formed therearound.

4,068,703

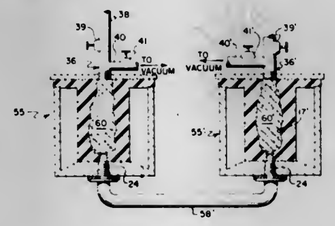
APPARATUS FOR CATALYTIC GASSING IN THE MANUFACTURE OF FOUNDRY CORES AND MOLDS

Andrew P. Dunlop, Riverside, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Sept. 10, 1975, Ser. No. 611,913

Int. Cl.[2] B22C *9/02*

U.S. Cl. 164—160 **4 Claims**



1. In an apparatus for shaping and hardening gas catalyst-hardenable binder-coated porous particulate masses, said apparatus comprising shaping means including a shaping cavity, and gassing means for introducing a gas-catalyst into interstitial voids in the particulate mass residing within said shaping cavity, whereby said gas catalyst is introduced at a first portion of the shaping cavity, the improvement comprising:

aftervoid chamber means connected directly to said cavity at a second portion thereof which is opposite said first portion of said shaping cavity, said aftervoid chamber means including a dead-end chamber of sufficient volume for the gas catalyst which is introduced at said first portion to pass at least through the entirety of the interstitial voids within said shaping cavity; and in which said aftervoid chamber comprises a second independent shaping means having a respective second shaping cavity filled with a second mass of said gas catalyst-hardenable porous packed liquid bound particulate material, and in which said means for connecting said first shaping cavity with said second shaping cavity are connected to the respective shaping cavities at second portions thereof opposite those respective portions of the respective shaping cavities into which the hardening gas is destined to be introduced.

4,068,704

CAVITYLESS CASTING MOLD

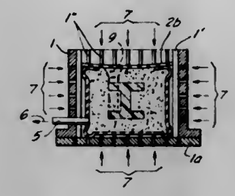
Adalbert Wittmoser, Lampertheim, Germany, assignor to Grunzweig & Hartmann und Glasfaser AG, Ludwigshafen, Germany

Continuation-in-part of Ser. No. 682,037, April 30, 1976. This application Mar. 1, 1977, Ser. No. 773,168

Claims priority, application Germany, May 2, 1975, 2519463

Int. Cl.[2] B22C *15/22, 9/22*

U.S. Cl. 164—160 **7 Claims**



1. A cavityless mold for the casting of metallic articles, comprising a rigid shell with an open top and a perforated bottom, a first movable airtight membrane overlying said bottom, a second movable airtight membrane spanning said top, said membranes defining between them a space filled with a free-flowing mass of refractory particles and with a pattern imbedded in said mass conforming to the shape of the article to be cast, said pattern consisting of a material which is destructible by the heat of molten metal used in forming said article, inlet means extending to said pattern for introducing molten metal into the site of said pattern, and conduit means communicating with said space for establishing across each of said membranes a pressure differential tending to compact said mass from opposite sides around said insert.

4,068,705

FORMING APPARATUS WITH ROLLER GUIDE TUBE

Daniel B. Cofer, and Enrique Calixto Chia, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 540,022, Jan. 10, 1975, Pat. No. 4,005,744, which is a division of Ser. No. 446,842, Feb. 28, 1974, which is a division of Ser. No. 109,421, Jan. 25, 1971, Pat. No. 3,806,366, which is a division of Ser. No. 808,976, March 20, 1969, Pat. No. 3,623,532. This application Aug. 30, 1976, Ser. No. 718,648

Int. Cl.[2] B22D *11/14*

U.S. Cl. 164—270 **3 Claims**



1. In apparatus for continuously forming metal rod including a casting machine, a rolling mill and a coiler, the combination therewith of means for pickling the rod after the rod leaves the rolling mill, guide means downstream of said pickling means for bending the rod from a substantially horizontal direction of

movement to a substantially vertical direction of movement substantially without engaging the rod with sliding friction, said guide means comprising an elongated guide tube defining an arcuate path along its length, and a plurality of rollers mounted outside of said guide tube and having only peripheral portions thereof extending through slots in the radial outer wall of said tube into the interior thereof so that said peripheral portions and the inner wall surfaces of said tube between said slots present a substantially continuous surface for guiding the rod through said tube.

4,068,706

THERMAL STABILIZATION OF CHLOROBENZENES

Walter Mahler, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 470,636, May 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 365,274, May 30, 1973, abandoned. This application Apr. 15, 1976, Ser. No. 677,444

Int. Cl.[2] C09K *5/04, 15/02*; C07C *25/04, 25/10*

U.S. Cl. 165—1 **17 Claims**

1. In a method of heat transfer wherein at least one chlorobenzene of the formula

$C_6H_{6-x}Cl_x$

where x is 2 to 5

is cycled through a thermal gradient including temperatures above about 260° C, the improvement which comprises contacting said chlorobenzene with a thermal stabilizing amount of a solid acid acceptor selected from

a. a carbonate, phosphate, borate or molybdate of a Group I-A alkali metal of atomic number 3-55 of a Group II-A alkaline earth metal of atomic number 12-56, or

b. an oxide of a Group II-A metal of atomic number 12-56 or a Group II-B metal of atomic number 30-48.

4,068,707

MATRIX STRUCTURE AND METHOD FOR MAKING

Chester John Dziedzic, Dushore, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 25, 1976, Ser. No. 661,261

Int. Cl.[2] F28D *19/04*

U.S. Cl. 165—8 **22 Claims**



1. In an annular matrix structure adapted for use in a rotary heat regenerator for a turbine engine wherein said matrix includes an inner operative region and an outer region substantially about said operative region and adapted for having a driveable means affixed thereto, said operative region defined by a plurality of radially alternating corrugated and flat ceramic strips each of a pre-established thickness and secured together to define a plurality of radially sealed axial flow passages, wherein said outer region comprises a plurality of corrugated and flat ceramic strips radially disposed in a predetermined pattern, a substantial portion of said strips of a thickness substantially greater than said preestablished thickness of said ceramic strips of said operative region,

the improvement wherein the total cross-sectional area of said outer region is within the range from about 8% to about 11% of the total cross-sectional area of said matrix structure, and the thickness of said substantial portion of said ceramic strips of said outer region is within the range of from about 2 to about 4 times greater than said preestablished thickness of said ceramic strips of said operative region.

4,068,708

SEAL ASSEMBLY IN ROTARY REGENERATIVE HEAT EXCHANGER

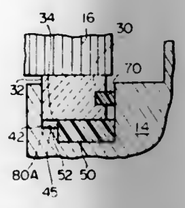
Yoshihiro Sakaki, Suwa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 18, 1976, Ser. No. 668,073

Claims priority, application Japan, Mar. 24, 1975, 50-38355[U]

Int. Cl.[2] F28D *19/00*

U.S. Cl. 165—9 **7 Claims**



1. In a rotary regenerative heat exchanger having a heat-transferring member which is cylindrical and rotatable on the longitudinal axis thereof and a stationary block member having a surface opposite to and spaced from an end face of the heat-transferring member, a seal assembly for providing seal between said end face and said surface, comprising:

a loop-shaped seal member having a substantially rectangular configuration of a heat-resistant and substantially rigid material having an outer surface, an inner surface, a flat front surface stretched between said inner and outer surfaces and a back surface;

a loop-shaped groove having a substantially rectangular configuration formed in said surface of the block member to have a width larger than the width of said seal member, said groove having an inner wall;

a loop-shaped back-up having a substantially rectangular configuration member of a resilient material tightly received in said groove, said seal member being received in said groove such that said front surface and said back surface of said seal member are kept in contact with said end face of the heat-transferring member and said back-up member, respectively, said back-up member being sandwiched with a compressive force between said back surface of said seal member and the bottom of said groove when said front surface is in contact with said end face, at least one of said groove and said back-up member being shaped such that a loop-shaped space is formed in said groove partly defined by said inner wall and an inner extreme region of said back surface, so that part of an inner surface of said back-up member comes into no contact with part of said inner wall of said groove; and

a loop-shaped auxiliary seal member of a resilient material arranged in said groove to provide seal between an outer wall of said groove and said outer surface of said seal member and keep said inner surface of said seal member in intimate contact with said inner wall of said groove with a compressive force.

4,068,709

DEVICE FOR CLEANING AND HEAT RECOVERY FROM THE EXHAUST GASES IN HEAT TREATMENT AND DRYING INSTALLATIONS

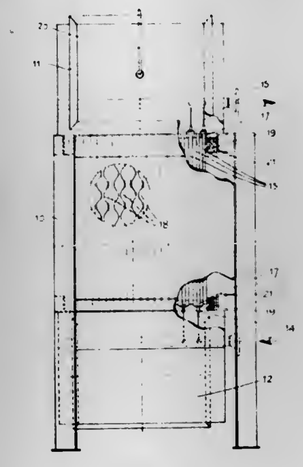
Alfred Schraud, Maschen near Hamburg, and Wolfgang Dressler, Wuppertal, both of Germany, assignors to Artos Dr.-Ing. Meier Windhorst Kommanditgesellschaft, Hamburg, Germany

Filed Oct. 22, 1975, Ser. No. 624,795

Claims priority, application Germany, Oct. 24, 1974, 2450497

Int. Cl.[2] F28D *9/00*

U.S. Cl. 165—95 **5 Claims**



1. A device for the cleaning and heat recovery from the exhaust gases in a production installation for drying and heat treatment in the textile industry using a cooling fluid, comprising:

a housing having a multiplicity of vertically disposed, parallel, double-walled cooling plates through which cooling fluid may flow, disposed adjacent one another with the outer lateral faces of adjacent plates opposing one another and each being provided with laterally extending corrugations serving as distance spacers, said housing having a common support on which said plates are flexibly and slidably mounted, for movement toward and away from one another so that, when said plates are moved closely adjacent one another, they define narrow passages therebetween for the flow of exhaust gases therethrough and, when said plates are moved apart, they define wide spaces between the plates to facilitate their cleaning;

means for supplying exhaust gases from above said plates and means for discharging exhaust gases from below said plates, the gases passing through the narrow spaces between the opposed outer lateral faces of said adjacent plates from said supply means to said exhaust means; and

means for supplying cooling fluid coupled to the lower ends of said plates and means for discharging cooling fluid coupled to the upper ends of said plates, the fluid passing through the walls of said plates from said supply to said discharge means in a direction opposite to the flow of the exhaust gases.

4,068,710

VAPOR CONDENSER FOR VAPOR RECOVERY SYSTEMS

Ray C. Edwards, Kinnelon, N.J., assignor to Edwards Engineering Corporation, Pompton Plains, N.J.

Division of Ser. No. 598,004, July 22, 1975, Pat. No. 4,027,495. This application Apr. 2, 1976, Ser. No. 673,270

Int. Cl.[2] F28B *3/00*; F17C *7/02*

U.S. Cl. 165—111 **5 Claims**



1. A vapor condenser for the recovery of the vapors of low volatile liquids such as hydrocarbons comprising,

a. housing means having an inlet means for vapors to be condensed, and an outlet means for venting air and other non-condensable gases,

b. a U-shaped flow passage means formed in said housing having an entrance flow passage connected to said inlet means and an exit flow passage connected to the outlet means,

c. condensing means disposed in the entrance flow passage and exit flow passage for condensing vapors passing through said U-shaped flow passage from the inlet means,

d. said condensing means consists of finned type condenser tubes lying transversely in the respective entrance flow passage and exit flow passage of the U-shaped flow passage means,

e. the fins on the finned type condenser tubes in the entrance flow passage being spaced substantially wider apart on those finned type condenser tubes closer to the inlet means then those which are more remote from the inlet means,

f. said housing forming a collecting space below said U-shaped flow passage means for collecting condensate formed by said condensing means, and to form a thermal trap with said U-shaped flow passage and

g. said housing having a discharge outlet for recovering condensate from said collecting space in the housing.

4,068,711

CASING CUTTER

Merle W. Aulenbacher, Conroe, Tex., assignor to International Enterprises, Inc., Houston, Tex.

Filed Apr. 26, 1976, Ser. No. 680,470

Int. Cl.[2] E21B *29/00*

U.S. Cl. 166—55.3 **16 Claims**

1. A cutting tool comprising:

a housing member having a radial opening therethrough;

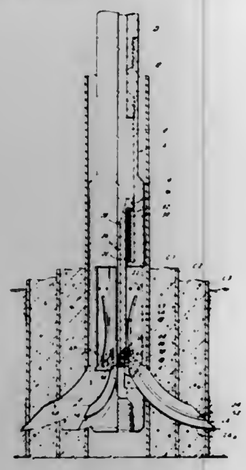
a cutting blade member movably mounted on said housing member for at least partial extension and retraction through said opening, said blade member having a cutting portion;

actuating means within said housing member and longitudinally movable in said housing member;

connection means pivotally connecting said blade member to said actuating means distal said cutting portion of said blade member; and

guide means cooperative with said blade member for translating a portion of the longitudinal force exerted on said blade member by said actuating means into a radial force whereby said blade member is moved in a path having both longitudinal and radial components with respect to

said housing member upon said longitudinal movement of said actuating means;



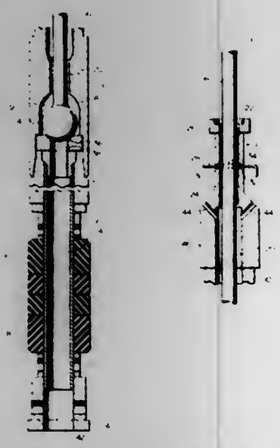
wherein said connection means is at least partially circumferentially offset with respect to said guide means.

4,068,712

WIRE-LINE RETRIEVABLE, MECHANICALLY OPERATED SPOT VALVE

L. G. Stump, Odessa, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Nov. 26, 1976, Ser. No. 745,312
Int. Cl.² E21B *33/16, 43/00*
U.S. Cl. 166—156 **6 Claims**



1. A spotting tool for use in placing a charge of liquid chemical downhole in a well by forcing the liquid chemical down a tubing string, having a seating nipple or the like affixed to its lower terminus, for expulsion from the lower terminus, said tool comprising:

A. an elongated, generally cylindrical housing having generally axially aligned passage therethrough extending between first and second ends thereof;

B. a valve disposed within said aligned passage intermediate the length thereof, said valve including a seat and a spherical moveable valve member for selectively engaging and disengaging said seat to correspondingly close and open said passage for fluid communication therethrough;

C. fluid seal means disposed circumferentially about said housing along at least a portion of the length thereof, said seal means being adapted to engage the internal walls of the tubing string and thereby effect a fluid seal in both axial directions therefrom;

D. actuator means coupled to said moveable valve member, said actuator means including an axially directed rod portion directly affixed to said moveable valve member and extending through said passage beyond said first end of said housing; and

E. a frangible member adapted to transfix said actuator with said housing such that said spherical moveable valve member normally sealingly engages said valve seat;

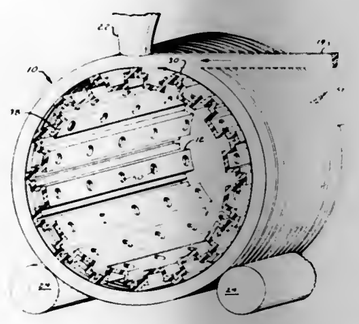
whereby an axial force applied to said rod portion serves to part said frangible member, thereby permitting said actuator to release said spherical moveable valve member from said valve seat to establish a fluid communication path through said passage.

4,068,713

PLASTIC WELL SCREEN

John S. McGuire, Olathe, Kans., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 8, 1976, Ser. No. 748,809
Int. Cl.² E21B *43/08*
U.S. Cl. 166—233 **5 Claims**



1. A plastic well screen comprising a hollow fluted core portion and a formed wire enwrapment portion defining open slots for the passage of liquid, said fluted core portion having spaced apart external rib portions and spaced apart internal rib portions, said internal rib portions each having a series of openings therein for the passage of liquid between the outside and inside of said fluted core portion, said internal rib portions having a width which is greater than the width of the external rib portions but less than the width of the space between adjacent pairs of external rib portions, the internal rib portions being joined to the external rib portions by generally radially extending wall portions, the wall portions which extend from the adjacent edges of adjacent internal rib portions cooperating with the inner surface of the external rib portions to define flow channels which are recessed outwardly of the inner surfaces of the internal rib portions.

4,068,714

METHOD FOR ACIDIZING SUBTERRANEAN FORMATIONS

James E. Hessert, and Brent J. Bertus, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 24, 1975, Ser. No. 643,986
Int. Cl.² E21B *43/26, 43/27*
U.S. Cl. 166—246 **19 Claims**

1. A method for acid treating a porous subterranean formation susceptible of attack by an acid and penetrated by a well bore, which method comprises:

injecting into said formation via said well bore a gelled acidic composition comprising

water;

a water-thickening amount of a water-dispersible biopolysaccharide produced by the action of bacteria of the genus Xanthomonas on a carbohydrate;

an amount of a water-soluble compound of a polyvalent metal wherein the metal present is capable of being reduced to a lower polyvalent valence state and which is sufficient to cause gelation of an aqueous dispersion of the components of said composition when the valence of at least a portion of said metal is reduced to said lower valence state;

an amount of a water soluble reducing agent which is effective to reduce at least a portion of said metal to said lower valence state and cause said gelation;

an amount of an organic acid which is capable of reacting with a significant amount of the acid-soluble components of said formation;

said biopolysaccharide, said polyvalent metal compound, said reducing agent, and said acid, in the amounts used, being sufficiently compatible with each other in an aqueous dispersion thereof to permit said gelation and thus form a said composition having sufficient stability to degeneration by the heat of said formation to permit good penetration of said composition into said formation; and

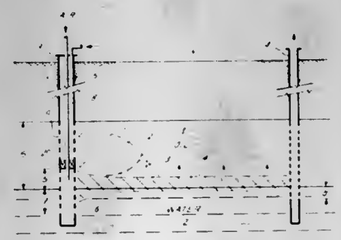
maintaining said composition in said formation in contact therewith for a period of time usually sufficient for the acid in said composition to significantly react with the acid-soluble components of said formation and stimulate the production of fluids therefrom.

4,068,715

METHOD FOR RECOVERING VISCOUS PETROLEUM

Ching H. Wu, Golden, Colo., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 620,667, Oct. 8, 1975, Pat. No. 3,997,004. This application June 25, 1976, Ser. No. 699,752
Int. Cl.² E21B *43/24, 47/06*
U.S. Cl. 166—251 **18 Claims**



1. A method for recovering viscous petroleum from a subterranean, permeable, viscous petroleum-containing formation overlying and in contact with a water-saturated formation, said petroleum formation being penetrated by at least two wells which penetrate the water-saturated zone by a distance of at least 5% of the thickness of the petroleum-containing zone, comprising:

a. establishing a first fluid injection means in the first well between the surface and in communication with the bottom 5–25 percent of the petroleum-containing zone and a similar distance into the water-saturated zone; p1 b. establishing a second fluid injection means in the first well separate from the first fluid injection means between the surface and in fluid communication with at least a portion of the petroleum containing zone above the portion thereof with which the first fluid injection means communicates;

c. establishing fluid communication between the second well and the full thickness of the petroleum-containing zone plus a distance into the top of the water-saturated zone equal to from about 5 to 15 percent of the thickness of the petroleum-containing zone;

d. injecting heated air into the formation near the oil water contact via the first fluid injection means to establish an in situ combustion reaction at the point of contact between the bottom of the oil-containing zone and the top of the water-saturated zone;

e. continuing injection of air into the bottom of the oil-containing zone and the top of the water-saturated zone until the temperature in the petroleum formation above the zone in which the combustion reaction is occurring has been raised to at least 200° F;

f. injecting a thermal fluid comprising steam into the formation substantially above the oil water contact via the second fluid injection means while continuing injecting air into the first fluid injection means and producing petroleum from the production well.

4,068,716

OIL RECOVERY PROCESS UTILIZING AROMATIC SOLVENT AND STEAM

Joseph C. Allen, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 560,425, March 20, 1975, abandoned. This application Sept. 17, 1976, Ser. No. 724,131
Int. Cl.² E21B *43/24, 43/26*
U.S. Cl. 166—271 **16 Claims**

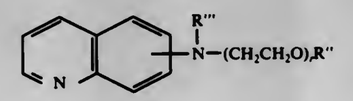
1. A method for recovering petroleum from subterranean, viscous petroleum containing formations including tar sand deposits, said formations being penetrated by at least one injection well and by at least one production well, comprising:

a. establishing a fluid communication path in the formation between the injection well and the production well;

b. injecting via an injection well a slug of an aromatic hydrocarbon solvent saturated with a material selected from the group consisting of carbon dioxide, a gaseous hydrocarbon and mixtures thereof into the communication path;

c. injecting via the sand injection well into the communication path an oil-displacing fluid selected from the group consisting of hot water, steam and superheated steam;

d. recovering petroleum from the formation via the production well, and wherein a solubilizing agent having the formula:



wherein r is an integer of from about 5 to about 50; wherein R″ is selected from the group consisting of hydrogen and $-SO_3M$, wherein M is selected from the group consisting of hydrogen, sodium, potassium and the ammonium ion and R‴ is selected from the group consisting of hydrogen and $(CH_2CH_2O)_rR''$ wherein r and R″ have the same meaning as previously described, is included with the oil-displacing fluid.

4,068,717

PRODUCING HEAVY OIL FROM TAR SANDS

Riley B. Needham, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 5, 1976, Ser. No. 646,468
Int. Cl.² E21B *43/24*
U.S. Cl. 166—272 **6 Claims**

1. In the recovery of heavy oil from an underground tar sand reservoir by injecting steam into at least one injection well penetrating said reservoir so that permeability of the reservoir is obtained and the tar sand contacted by the steam is heated

and mobilized, heavy oil is produced from at least one producing well penetrating the reservoir, the improvement of:

a. injecting a surface-active agent dissolved or dispersed in a suitable carrier into at least one injection well, thereby

b. generating a condensible foam,

c. penetrating the more permeable portions of said reservoir with said foam, thereby

d. diverting steam into less permeable portions of said reservoir, and

e. injecting an amount of steam into said underground tar sand reservoir to, at least, elevate the pressure in the reservoir contained by said condensible foam sufficiently to sustain the porosity of the tar sand reservoir.

4,068,718

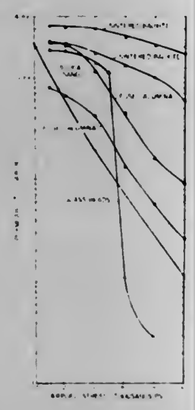
HYDRAULIC FRACTURING METHOD USING SINTERED BAUXITE PROPPING AGENT

Claude E. Cooke, Jr., Houston, Tex.; Walter A. Hedden, Worthington, and William C. Chard, Columbus, both of Ohio, assignors to Exxon Production Research Company, Houston, Tex.

Continuation of Ser. No. 617,253, Sept. 26, 1975, abandoned, which is a continuation-in-part of Ser. No. 471,098, May 17, 1974, abandoned. This application Oct. 26, 1976, Ser. No. 735,565

Int. Cl.[2] E21B *43/26*

U.S. Cl. 166—280 **15 Claims**



1. In a hydraulic fracturing method in which a fluid is injected into a subterranean formation to open a fracture therein, said formation being located at a depth in excess of about 7150 feet, the improvement wherein said fracture is propped with a slightly deformable, high strength propping agent having a permeability to brine at about 200° F which decreases not more than about three-fourths when the applied stress on said propping agent is increased from 1000 to 10,000 psi, said high strength propping agent comprising particles of sintered bauxite having a specific gravity greater than about 3.4, said particles prepared from bauxite material, substantially all of the grains of said bauxite material being about 12 microns or less.

4,068,719

METHOD FOR ACIDIZING SUBTERRANEAN FORMATIONS

Richard L. Clampitt, and James E. Hessert, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 24, 1975, Ser. No. 643,987

Int. Cl.[2] E21B *43/26, 43/27*

U.S. Cl. 166—282 **19 Claims**

1. A method for acid treating a porous subterranean formation susceptible of attack by an acid and penetrated by a well bore, which method comprises:

injecting into said formation via said well bore a gelled acidic composition comprising

water;

an amount of a water-dispersible polymer of acrylamide which is sufficient to thicken said water;

an amount of a water-soluble compound of a polyvalent metal wherein the metal present is capable of being reduced to a lower polyvalent valence state and which is sufficient to cause gelation of an aqueous dispersion of the components of said composition when the valence of at least a portion of said metal is reduced to said lower valence state;

an amount of a water-soluble reducing agent which is effective to reduce at least a portion of said metal to said lower valence state and cause said gelation;

an amount of a non-oxidizing acid which is capable of reacting with a significant amount of the acid-soluble components of said formation;

said polymer, said polyvalent metal compound, said reducing agent, and said acid, in the amounts used, being sufficiently compatible with each other in an aqueous dispersion thereof to permit said gelation and thus form a said composition having sufficient stability to degeneration by the heat of said formation to permit good penetration of said composition into said formation; and

maintaining said composition in said formation in contact therewith for a period of time usually sufficient for the acid in said composition to significantly react with the acid-soluble components of said formation and stimulate the production of fluids therefrom.

4,068,720

METHOD FOR ACIDIZING SUBTERRANEAN FORMATIONS

James E. Hessert; Brent J. Bertus, both of Bartlesville, and Chester C. Johnston, Jr., Dewey, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 24, 1975, Ser. No. 643,985

Int. Cl.[2] E21B *43/26, 43/27*

U.S. Cl. 166—282 **21 Claims**

1. A method for acid treating a porous subterranean formation susceptible of attack by an acid and penetrated by a well bore, which method comprises:

injecting into said formation via said well bore a gelled acidic composition comprising

water;

an amount of a water-soluble cellulose ether which is sufficient to thicken said water;

an amount of a water-soluble compound of a polyvalent metal wherein the metal present is capable of being reduced to a lower polyvalent valence state and which is sufficient to cause gelation of an aqueous dispersion of the components of said composition when the valence of at least a portion of said metal is reduced to said lower valence state;

an amount of a water-soluble reducing agent which is effective to reduce at least a portion of said metal to said lower valence state and cause said gelation;

an amount of a non-oxidizing acid which is capable of reacting with a significant amount of the acid-soluble components of said formation;

said cellulose ether, said polyvalent metal compound, said reducing agent, and said acid, in the amounts used, being sufficiently compatible with each other in an aqueous dispersion thereof to permit said gelation and thus form a said composition having sufficient stability to degeneration by the heat of said formation to permit good penetration of said composition into said formation; and

maintaining said composition in said formation in contact therewith for a period of time usually sufficient for the acid in said composition to significantly react with the acid-soluble components of said formation and stimulate the production of fluids therefrom.

4,068,721

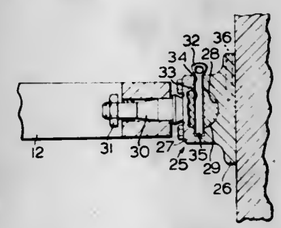
BULLDOZER ASSEMBLY WITH LOCKING PIN AND METHOD

Robert J. Trayler, Braidwood, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 20, 1976, Ser. No. 752,708

Int. Cl.[2] E02F *3/76*

U.S. Cl. 172—1 **12 Claims**



10. A method for adjusting the angling of a blade relative to a frame of a bulldozer assembly wherein the blade is universally connected to said frame by a ball and socket connection comprising the steps of

inserting a pin in said ball and socket connection to prevent tipping of said blade relative to said frame, and

angling said blade relative to said frame.

4,068,722

MANURE CRUSHING AND EARTH MIXING ROTARY MACHINE

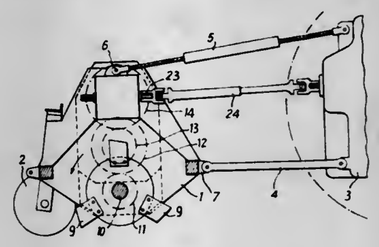
Emile Le Guelennec, 56620 Bas Pont Scorff, France

Filed Feb. 2, 1976, Ser. No. 654,252

Claims priority, application France, Feb. 13, 1975, 75 04456

Int. Cl.[2] A01B *33/02, 33/08, 59/06*

U.S. Cl. 172—123 **2 Claims**



1. A combine manure-crushing and soil-mixing rotary machine adapted to be hitched to a tractor having a power take-off, which comprises a main frame having front and rear portions, a transverse shaft rotatably mounted in said frame and tool means mounted on said transverse shaft, gear means on said main frame for rotating said transverse shaft in opposite directions, said gear means comprising first means for receiving power from the power take-off of a tractor for rotating said transverse shaft in one direction and second means for alternately receiving power from the power take-off of a tractor for rotating said transverse shaft in the other direction, said first means extending toward the front of said main frame and said second means extending toward the rear of said main frame, a first set of hitching means disposed at the front of the main frame for coupling the machine to a tractor and a second set of hitching means disposed on the rear of the main frame for coupling the machine to a tractor, with said main frame reversed.

4,068,723

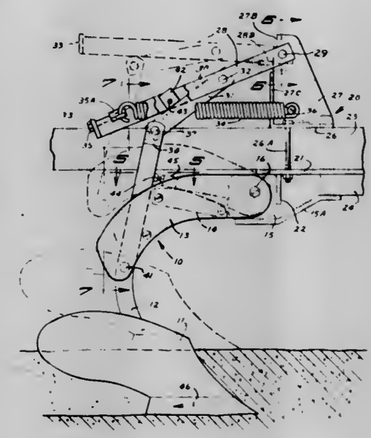
FLOATING BEAM PLOW

Sherman H. Quanbeck, Aneta, N. Dak. 58212

Filed May 28, 1976, Ser. No. 690,858

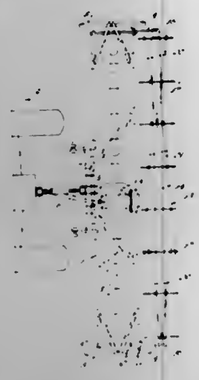
Int. Cl.[2] A01B *61/00*

U.S. Cl. 172—267 **17 Claims**



1. An earth working tool support mechanism comprising a frame, an earth working tool support shank carrying an earth working tool and extending upwardly from the earth working tool with which it is used, link means for connecting said support shank to said frame including a first link pivotally mounted to said frame about a first pivot and mounted to said support shank about a second pivot that is to the rear of and below the first pivot with the earth working tool in a working position, a second link assembly mounted to said frame about a third pivot spaced above said first pivot, and said second link assembly being pivotally mounted to said support shank at a fourth pivot spaced above the second pivot, said fourth pivot being below said third pivot with the earth working tool in a working position, said second link assembly comprising a toggle linkage having a pair of toggle elements pivotally connected together at a toggle pivot between said third and fourth pivots, and a stop to retain said toggle linkage in a latched position to form a rigid but foldable link, and a spring which exerts a load as it extends in length having a first end attached to one of said toggle elements to urge said toggle elements toward said latched position with the toggle pivot approaching a plane defined by said third and fourth pivots, said spring being mounted at a second end thereof to said frame at a location on a horizontal plane between said first and third pivots and said spring also thereby urging said first link and said second link assembly to pivot downwardly on the first and third pivots to carry an earth working tool carried by said support shank toward working position under spring force, the upper end of said support shank and said fourth pivot being free to pivot rearwardly about the second pivot to permit the earth working tool carried by the support shank to raise from its working position without tripping said toggle elements from their latched position, said toggle linkage being movable from latched position to a folded position under a predetermined compression load on said toggle linkage to permit the earth working tool carried by the support shank to move upwardly from working position while said support shank remains in one position about said second pivot, said spring being positioned to extend in length whenever the earth working tool carried by the support shank moves from its working position.

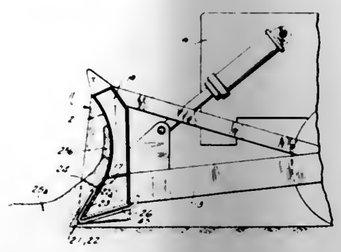
4,068,724
AGRICULTURAL IMPLEMENTS WITH SUPPORTING ROLLER
Cornelis van der Lely, 7, Bruschearain, Zug, Switzerland
Filed May 2, 1974, Ser. No. 466,458
Claims priority, application Netherlands, May 3, 1973, 7306136
Int. Cl.² A01B *21/00*
U.S. Cl. 172—552 **7 Claims**



1. A combined supporting and soil compressing member comprising an elongated substantially horizontal central axis shaft and a plurality of substantially radial supports, mounted along the length of said shaft at substantially regular intervals, a plurality of elongate elements detachably mounted on said compressing member and said elements extending generally in the same longitudinal direction as said shaft, said elements being positioned adjacent the peripheries of said supports and forming an outer ground engaging periphery of said compressing member, said elements being included in at least two groups and each group comprising at least one pair of said elements, each of said elements having a length that is at least equal to twice the distance of an interval between neighboring supports but substantially less than the length of said shaft, the elements of one pair in one group being diametrically opposed to one another around said shaft, said two groups being angularly offset with respect to one another around said axis shaft by about 90° and located in different but adjoining regions of said combined compressing member, each of said regions spanning at least one interval and two supports that are not common to an adjoining region.

4,068,725
LUBRICATING SYSTEM FOR PLOW BLADES
William R. Watson, Burbank, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.
Filed May 19, 1976, Ser. No. 687,984
Int. Cl.² A01B *17/00*
U.S. Cl. 172—801 **5 Claims**

1. A lubricating system for plow blades mounted on a vehicle comprising:
a. a lubricating fluid storage container;
b. a plow blade having a blade surface and a cutting edge at a lower edge of said surface, said cutting edge being formed by a lower edge of a cutting plate mounted to a lower portion of said blade surface, an offset being formed between said cutting plate and blade surface;
c. a tube outlet aligned to expel said lubricating fluid upward from said offset and onto said blade surface, said tube outlet being located above said cutting edge and at said offset;
d. a feed tube supplying the lubricating fluid to said tube outlet;
e. a pump leading from said storage container and connected to said feed tube; and



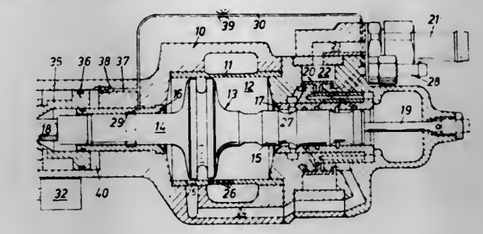
f. said cutting plate having a notch cut to receive a portion of the feed tube which connects to said tube outlet, said tube outlet being located under and shielded by said cutting plate.

4,068,726
GROUND-MOVING EQUIPMENT
LeRoy Marvin Heitman, 28900 Ironwood, Sunnymead, Calif. 92388
Filed May 28, 1976, Ser. No. 691,076
Int. Cl.² E02F *3/76*
U.S. Cl. 172—802 **4 Claims**



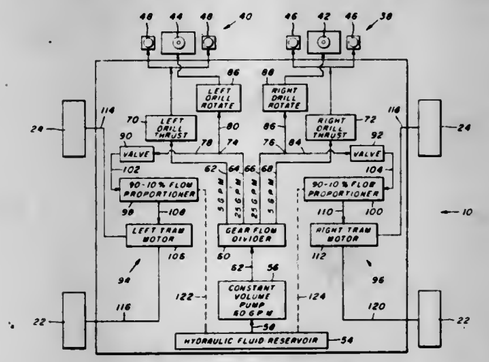
1. Ground-moving equipment for attachment to suitable motive power means comprising in combination,
an arcuate main blade having a ground-cutting edge and adapted with fastening means for attachment to said motive power means in a substantially horizontal position to be raised and lowered, and to be angled in the horizontal and vertical planes as desired,
an elongated auxiliary blade having a ground-cutting edge, and means including hinge means connected to said auxiliary and main blades and a hydraulic actuator comprising remote control means and a source of hydraulic power, said actuator being connected to said main and auxiliary blades at such locations that said ground-cutting edge of said auxiliary blade can be positioned below and above the horizontal position of said main blade,
said hinge means constituting the sole support for said auxiliary blade against movement in a horizontal plane comprising a pair of sleeves fixed in spaced relation to said main blade and having individual ware bushings and a bifurcated mounting member on said auxiliary blade having a pair of spaced extensions straddling one of said sleeves, and a pivot pin positioned in aligned openings in said wear bushings and extensions to prevent movement other than rotational movement between said blades.

4,068,727
METHOD AND DEVICE FOR DAMPING THE RECOIL OF A WORK TOOL CONNECTED TO A ROCK DRILLING MACHINE
Kurt Holger Andersson, Tyreso; Carl Gösta Bernhard Ekwall, Saltsjobaden, and Bo Erik Forsberg, Vallingby, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Mar. 10, 1976, Ser. No. 665,630
Claims priority, application Sweden, Mar. 18, 1975, 75030387
Int. Cl.² B25D *9/00*
U.S. Cl. 173—1 **27 Claims**



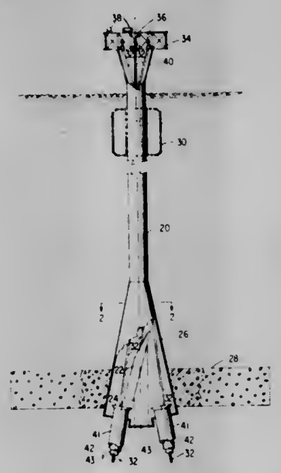
1. A method for damping the recoil of a work tool comprising:
applying a feeding force to a percussive tool (10),
transmitting the feeding force to the work tool (18) over a retard piston member (36), said retard piston member being axially movable in a cushioning chamber,
continuously supplying said cushioning chamber with pressurized fluid through a passage in the machine housing of the percussive tool, said machine housing being subjected during operation to a rearwardly acting force which includes a force caused by the recoil of the work tool, and
providing a floating impact position of said retard piston member by regulating at least one of the feeding force and the pressure in said passage relative to said rearwardly acting force so that said retard piston member during operation is maintained out of axial contact with said machine housing.

4,068,728
HYDRAULIC FLOW DIVIDER FOR A MINING VEHICLE
Joseph Subrick, Gary, W. Va., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed May 14, 1976, Ser. No. 686,963
Int. Cl.² E21C *11/02*
U.S. Cl. 173—27 **11 Claims**



1. A hydraulic flow divider system for a multi-function mine roof bolting vehicle, such vehicle having at least one drill head requiring a hydraulic input for rotating a drill steel, at least one drill head thrusting mechanism requiring hydraulic input for moving such drill head and drill steel toward the mine roof, and at least one tramming system requiring hydraulic input for moving at least one side of such bolting vehicle, said hydraulic flow divider system comprising:
means for retaining a quantity of hydraulic actuating fluid;
a pump for pumping such fluid from said retaining means at a constant volume;
means for dividing the flow of such fluid from said pump into at least two given constant volume flow paths, one of said paths providing hydraulic fluid to one of the elements requiring hydraulic input, the other flow path being split between the tramming system and the remaining hydraulic input requiring element;
a divider valve for switching said other hydraulic flow path either to the tramming system or to the remaining hydraulic input requiring element; and
means for proportioning hydraulic flow, located between said divider valve and such tramming system for permitting a gradual flow of such hydraulic fluid to such tramming system for a smooth acceleration of such vehicle.

4,068,729
APPARATUS FOR MULTIPLE WELLS THROUGH A SINGLE CAISSON
Robert M. Peevey, Carriere, Miss., assignor to Standard Oil Company (Indiana), Chicago, Ill.
Continuation-in-part of Ser. No. 696,327, June 14, 1976, abandoned. This application Feb. 14, 1977, Ser. No. 768,019
Int. Cl.² E21B *15/02*
U.S. Cl. 175—8 **10 Claims**



6. An apparatus for a multiple well platform especially suited for deepwater production of hydrocarbons using at least three different size casings in each well and using a riser caisson adapted to extend from about the marine bottom to above the water level, said apparatus comprising:
a. a bottom section connectable to the lower end of said riser caisson, said bottom section having a plurality of generally downward-looking exit holes, each said exit hole being adapted to have a largest size casing mounted in said exit hole with the top of said largest size casing being at about the level of the said exit hole and with the diameter of said largest size well casing compared to the diameter of said riser caisson being such that the largest casings from all of said exit holes would not simultaneously fit in said riser caisson; and
b. an orientable guide means located inside and generally on the vertical axis of said bottom section which guide means can be oriented to direct well drilling apparatus to any one of said exit holes such that wells can be drilled and casings installed through said exit holes.

4,068,730

DRILL COLLAR

James F. Arnold, 241 Kilts Drive, Houston, Tex. 77024

Filed Jan. 31, 1977, Ser. No. 763,101
Int. Cl.² E21B 17/00
U.S. Cl. 166—320 9 Claims



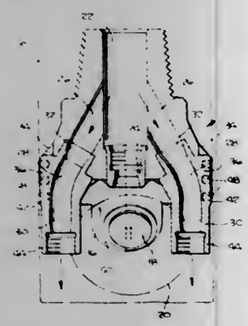
1. An eccentrically weighted drill collar for connection in a drill string above a drill bit in an earthen borehole comprising a straight tubular member having means at the lower end thereof for connection to a rotary drill bit to provide a common axis of rotation of said member and said bit; said member being weight-relieved along one side thereof to produce an eccentric weighting on opposite sides of the member corresponding to one-half to ten percent of the original weight of said collar; the amount of said weight removed varying between a maximum and a minimum along the length of each of a plurality of zones which zones collectively extend along substantially the length of the collar.

4,068,731

EXTENDED NOZZLE AND BIT STABILIZER AND METHOD OF PRODUCING

Lloyd L. Garner, San Clemente, and Charles Richard Harris, Whittier, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Nov. 17, 1976, Ser. No. 742,590
Int. Cl.² E21B 9/10
U.S. Cl. 175—339 4 Claims



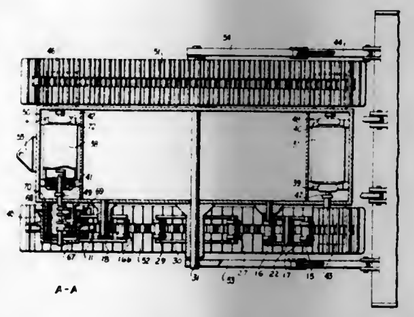
1. In a drill bit having a rotary body with a longitudinal axis of rotation, a drilling fluid supply passage, cutter means supported by and disposed below the body, and of a given gage,
a drilling fluid nozzle having an upper portion supported by the body in flow communication with the drilling fluid supply passage and having a downwardly extending free lower portion with a drilling fluid outlet,
the upper portion of said nozzle having a radially outer portion comprising a wear-resisting, bit stabilizing surface on a circle approximating the diameter of the bit,
and the lower portion of said nozzle having a radially outer portion lying within a circle concentric to and of less diameter than that of said upper nozzle portion to protect said lower portion from wear and shock from the wall of a hole being drilled.

4,068,732

FOUR SPROCKET WHEEL DRIVE SYSTEM FOR TRACK-TYPE VEHICLE

Thorvald G. Granryd, 825 N. Sheridan Road, Lake Forest, Ill. 60045

Filed Oct. 14, 1975, Ser. No. 621,699
Int. Cl.² B62D 11/04, 55/30
U.S. Cl. 180—6.7 5 Claims



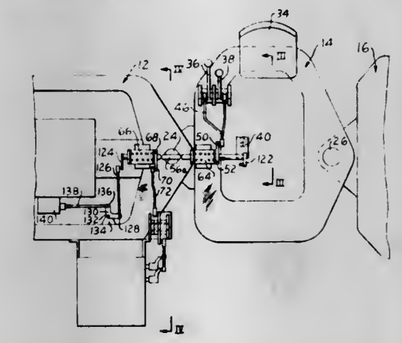
1. A track-type vehicle comprising a frame, having a left side, a right side, a front and a rear,
a left side pair of sprocket wheels rotatably mounted on said frame at a point elevated from the ground and operatively engaged with a left side continuous track chain assembly for aiding in a clear operative engagement with said chain assembly, and
a right side pair of sprocket wheels rotatably mounted on said frame at a point elevated from the ground and operatively engaged with a right side continuous track chain assembly for aiding in a clear operative engagement with said chain assembly,
a front engine and a rear engine, both of said engines mounted transversely on said frame and both having opposing left and right drive shafts for transmitting power to a first and second drive means, respectively,
said first drive means including means for transmitting power in different modes and speeds from said left drive shafts of said front and rear engines to said left side pair of sprocket wheels, means for achieving each said mode and speed in response to hydraulic control signals from a transmission hydraulic control means,
said second drive means including means for transmitting power in different modes and speeds from said right drive shafts of said front and rear engines to said right side pair of sprocket wheels, means for achieving each said mode and speed in response to hydraulic control signals from a transmission hydraulic control means,
said hydraulic transmission control means including solenoid actuated valve means for each said first and second drive means for providing a plurality of distinct hydraulic signals for achieving a particular mode and speed, an operator control for simultaneously actuating each said solenoid actuated valve means for providing an identical control signal to each said first and second drive means to achieve a common mode and speed, and each said solenoid actuated valve means including an operator controlled override means for independently actuating each of said solenoid actuated valve means to provide a plurality of distinct control signals to a respective one of said first and second drive means to achieve a particular mode and speed, whereby the vehicle could be steered in various steering modes.

4,068,733

CONTROL LINKAGE FOR CROSSING PIVOTAL JOINT

Gerald Paul Simmons, Washington, and Frank August Grooss, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 2, 1976, Ser. No. 702,167
Int. Cl.² B60K 23/00
U.S. Cl. 180—77 R 14 Claims



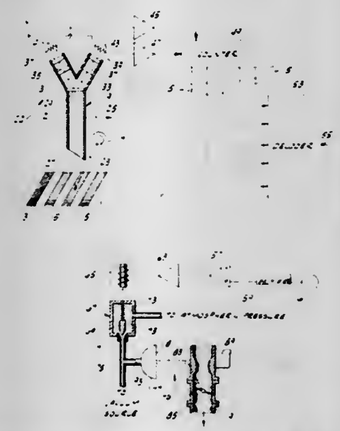
1. In an articulated vehicle having a first and a second frame pivotally connected together about a vertical axis, a link on said first frame, means on said first frame for imparting translation movement to said link, mounting means on each frame for rotatably carrying coupling means extending between the two frames, means on said first frame for converting said translation movement of the link to rotating movement of said coupling means, and means on said second frame for converting the rotating movement of the coupling means to actuating movement for an operating part of said vehicle.

4,068,734

AUTOMATIC VEHICLE SPEED LIMITING SYSTEM

James E. Foeller, 711 Mueller Road, Festus, Mo. 63028

Filed Jan. 8, 1976, Ser. No. 647,424
Int. Cl.² B60K 31/00
U.S. Cl. 180—98 7 Claims



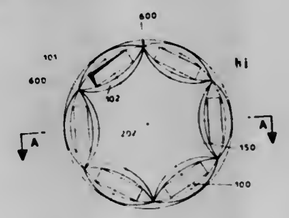
1. An automotive vehicle speed control system for being carried by a vehicle for automatically controlling the speed of the vehicle in response to external light signals, said system comprising:
means for optically detecting a first color signal;
means for optically detecting a second color signal;
a digital counter;
means for resetting the digital counter in response to each optical detection of the first color signal;
means for causing the digital counter to count to a number corresponding to the number of optical detections of the second color signal, the count number representing a speed limit for the vehicle;
means for converting the count in the counter to an analog reference signal;
speed governing means for limiting the speed of the vehicle to a speed limit corresponding to the value of said analog reference signal; whereby the speed governing means limits the speed of the vehicle to said speed limit.

4,068,735

GROUND-REACTION MACHINES

Andre Grihangne, 186, Avenue Victor Hugo, Paris (16°), France

Division of Ser. No. 476,326, June 4, 1974, Pat. No. 3,987,866, which is a continuation of Ser. No. 241,029, April 4, 1972, abandoned. This application Aug. 9, 1976, Ser. No. 712,861
Claims priority, application France, Apr. 9, 1971, 71.12639
Int. Cl.² B60V 1/16
U.S. Cl. 180—128 6 Claims



1. A flexible enclosure for enclosing a fluid cushion to support a ground-effect machine having a platform, said enclosure comprising a plurality of separate cells, each of which forms a peripheral support plenum cushion, connected in series and adapted to be attached at an upper attachment section thereof along the periphery of said platform and surrounding a single undivided chamber, each of said cells being bounded by two converging, intersecting flexible walls connected to the flexible walls of adjoining cells, each upper attachment section being substantially rectangular in horizontal cross-section, the horizontal cross-sectional area of each of said cells decreases continuously from the upper attachment section at the periphery of said platform where air under pressure is fed to said cells, to a lower section thereof through which the air exits, each lower section being of bi-convex lenticular shape in horizontal cross-section.

4,068,736

METHOD AND DEVICE FOR REDUCING NOISE

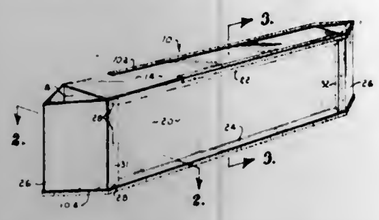
Raymond H. Dean, Shawnee Mission, and Michael M. Roberts, Leawood, both of Kans., assignors to Tempmaster Corporation, North Kansas City, Mo.

Filed Apr. 14, 1975, Ser. No. 567,746
Int. Cl.² F01N 1/04; G10K 11/04
U.S. Cl. 181—224 21 Claims

1. A device for reducing substantially low frequency noise occurring or transmitted within the operating proximity thereof, said device comprising
a compliant sound absorption composite media, said media having an exposed fibrous structure and an acoustical resistance capable of dissipating sound energy therein from said noise by the fibrous media interaction, said composite media including an air impervious compliant

membrane attached to and enclosing said exposed structure, said composite media further having a combined membrane and fibrous structure thickness that is substantially equal to a quarter wavelength in the media for the frequency of the undesirable noise,

the air external to said composite media having a character-



istic resistance to sound, the acoustical resistance of said media being substantially matched to said external air characteristic resistance at said undesirable noise frequency, and

means for supporting said media in proximity to said noise without substantially altering the acoustical wavelength and the acoustical resistance of said media.

4,068,737

SAFETY DEVICE FOR MOBILE WORK PLATFORM LIFT

Leonard L. Lenz, Greenville, S.C., assignor to American Mobile Corporation, Greenville, S.C.

Filed June 16, 1975, Ser. No. 587,330
Int. Cl.[2] E04G *1/18, 1/34*
U.S. Cl. 182—63 3 Claims



1. In a mobile work platform lift assembly wherein a wheeled vehicle carries a pivoted tower movable from a substantially lowered position to an upright substantially vertical position for carrying a work platform and having a platform carriage movable responsive to a supporting cable on parallel rails longitudinally mounted on said tower, the improvement including:

A. means mounting the horizontal work platform on said platform carriage extending outwardly in cantilevered relation on said platform carriage;

B. a first pair of transversely spaced wheels carried on an upper portion of said platform carriage engageable with the rails on a side thereof remote from the work platform;

C. a second pair of transversely spaced wheels carried on a lower portion of said platform carriage engageable with the rails on the other side of the rails;

D. a stop member opposite said first pair of wheels on said other side of the rails in spaced relation thereto;

E. wedging means carried by said carriage opposite said stop member held out of engagement by said supporting cable when said platform carriage is supported thereby;

F. an oscillatable shaft carried transversely of said platform carriage in horizontal alignment with a respective rail;

G. linkage means normally held by cable tension so as to maintain said wedging means in deactivated position;

H. resilient means normally urging said linkage means to move said wedging means into wedging engagement with said rail;

I. an outwardly extending crank arm fixed adjacent one end to said shaft;

J. a pair of arms extending across said platform carriage;

K. means pivotally supporting each of said arms with respect to said platform carriage in an intermediate portion thereof;

L. means connecting an adjacent end of each of said arms to a respective crank arm;

M. means connecting the other end of each arm to an adjacent cable;

O. a compression spring bearing against each arm intermediate said means pivotally supporting each of said arms and said means connecting the other end of each arm to an adjacent cable; and

P. means limiting upper movement of said arms as a result of force exerted thereon by said cable;

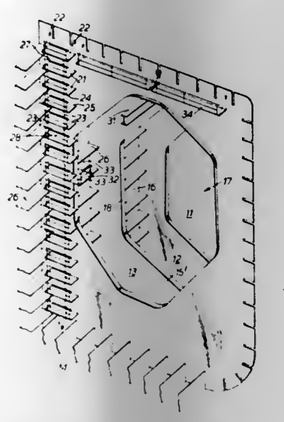
whereby when said cable is no longer supporting said platform carriage said wedging means engages said rails engaging said stop member.

4,068,738

SCAFFOLDING

Ronald Reed, 6, Cutherbert's Terrace, Hexham-on-Tyne, Northumberland, England

Filed Nov. 17, 1975, Ser. No. 632,574
Claims priority, application United Kingdom, Nov. 18, 1974, 49827/74
Int. Cl.[2] E04G *3/10*
U.S. Cl. 182—128 17 Claims



1. Staging erected within a tank comprising:

a collapsible assembly of platforms fixedly secured at points spaced within the plane of each platform to three chains disposed within a three-point, triangular arrangement such that said platforms are suspended, in respective vertically-spaced horizontal planes, from said chains at a different distance, along said chains, which includes a substantial vertical component,

said assembly of platforms and chains being secured at the top and bottom thereof to an inner side wall of said tank or

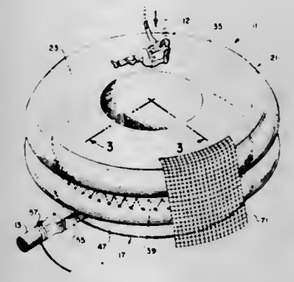
to the neighboring surface of the top or bottom of said tank.

4,068,739

DISASTER EVACUATION AIR CUSHION

Donald W. Gordon, 2718 Standish, Anaheim, Calif. 92806, and Dar A. Robinson, 9755 Matick, Sepulveda, Calif. 91343

Filed Apr. 9, 1976, Ser. No. 675,426
Int. Cl.[2] A62B *1/22*
U.S. Cl. 182—139 21 Claims



1. Apparatus for absorbing the momentum of a falling object, comprising:

a primary, flexible, air-filled enclosure impacted by said falling object;

a secondary enclosure; and

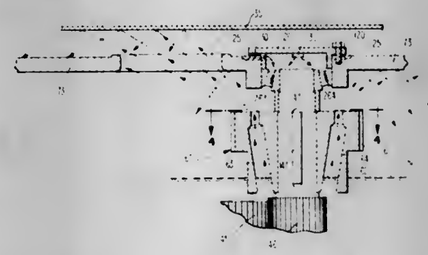
restrictive orifice means connecting said primary and secondary enclosures for permitting inflation of said secondary enclosure when said primary enclosure is impacted and for permitting reinflation of said primary enclosure by said secondary enclosure after said impact, said orifice means providing the primary path for the escape of air from said primary enclosure upon impact by said falling object.

4,068,740

GEAR PUMP ASSEMBLY

Jerome B. Quinn, Kennett Square, and Edward L. Heimark, King of Prussia, both of Pa., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.

Filed June 23, 1976, Ser. No. 698,947
Int. Cl.[2] F01M *9/10*
U.S. Cl. 184—6.12 16 Claims



10. A gear train assembly comprising:

a. a gear box containing a reservoir of lubricant fluid;

b. a train of gears within said gear box;

c. a plurality of shafts within said gear box on which at least some of the gears of said gear train are mounted;

d. a member on one of said shafts adapted to function as a centrifugal pump;

e. said pump member having a lower body portion partially immersed in said reservoir of lubricant fluid;

f. at least one passageway extending through said pump member inclined outwardly upwardly;

g. said passageway terminating in an intake port at the lower surface of the pump member and terminating in a discharge port at the upper surface of said pump member;

h. said gear box having an upper plate;

i. said upper plate being provided with openings in alignment with said shafts;

j. bearings mounted in said openings for supporting the upper ends of the shafts;

k. caps covering said openings;

l. at least one additional opening in said upper plate for passage therethrough of lubricant fluid which is projected angularly upwardly by said pump member;

m. the upper surface of said upper plate being provided with a recessed area in which said openings for said bearing mountings are located;

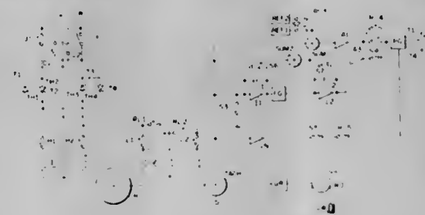
n. said caps being provided with ports for passage of lubricant fluid from said recessed area to bearings mounted in said openings.

4,068,741

ELEVATOR MOTOR CONTROL SYSTEM FOR A.C. INDUCTION MOTOR

Rene Ficheux, and Francois Ronsin, both of Paris, France, assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 19, 1976, Ser. No. 659,396
Claims priority, application France, Mar. 20, 1975, 75 08769
Int. Cl.[2] B66B *1/30*
U.S. Cl. 187—29 R 6 Claims



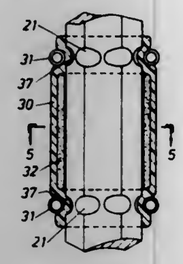
1. An elevator motor control system in which a three phase A.C. induction motor with fast and slow speed stator windings is accelerated by having its fast speed windings appropriately connected by switching apparatus to the supply lines of a three phase A.C. voltage source in at least two lines of which are current regulating devices for regulating the magnitude of alternating current applied to said fast speed windings in accordance with a signal representing the difference between a reference speed signal and the output signal of a tachometer generator driven in response to the rotation of said motor, wherein said switching apparatus operates in response to the location of said car at a predetermined distance from a landing at which a stop is to be made to disconnect said fast speed windings from and to connect said slow speed windings to said current regulating devices to receive three phase alternating current from said source in a phase sequence different from that by which said current was applied to said fast speed windings, said switching apparatus in operating also switching the control of said current regulating devices from said difference signal to an error signal derived by comparing said tachometer generator signal with a deceleration pattern signal produced by a function generator in response to the distance the car is calculated to be from said landing at which it is to stop, said calculated distance being represented by a continuously decreasing signal generated by an integrating circuit which integrates the signal produced by said tachometer generator after said car arrives at said predetermined distance and subtracts that integrated signal from a signal representing said predetermined distance.

4,068,742

VIBRATION DAMPER FOR IMPACT TOOL

Nils Carl Hakan Resare, Ektorp, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sept. 22, 1976, Ser. No. 725,564
Claims priority, application Sweden, Feb. 4, 1976, 7601167
Int. Cl.² F16F 9/10; B25D 17/12
U.S. Cl. 188—1 B 16 Claims



1. In an impact tool comprising an elongated working part (10) which includes a shank portion (11) for connection to an impact machine, a working end (12) and a collar (14) intermediate said shank portion (11) and working end (12), said impact tool transmitting impact energy in its axial direction,

a vibration damper for damping lateral vibrations is said impact tool, comprising:

an envelope (30) surrounding a portion of the working part of the tool intermediate said collar and working end;

a liquid-like material (33) enclosed within said envelope for damping lateral vibrations of said working part; and

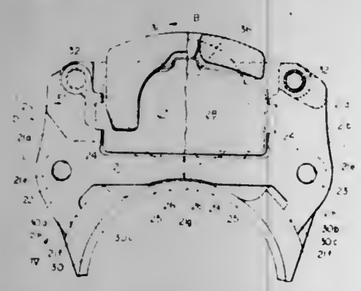
bag means (32) situated between said envelope and said working part and containing said liquid-like material within said bag means.

4,068,743

DISC BRAKE SUPPORT STRUCTURE

Yasuo Karasudani, Yokohama, and Tetsuo Haraikawa, Funabashi, both of Japan, assignors to Tokico Ltd., Japan

Filed June 11, 1976, Ser. No. 694,997
Claims priority, application Japan, June 20, 1975, 50-85876
Int. Cl.² F16D 55/00
U.S. Cl. 188—71.1 3 Claims



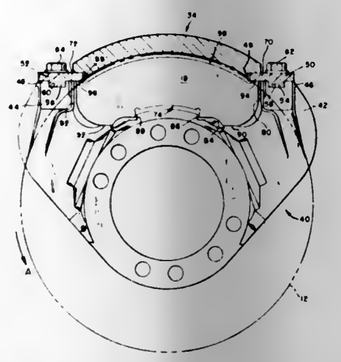
1. A disc brake comprising: a rotatable disc; a stationary supporting member, only two axially extending and circumferentially spaced, relative to the disc, mounting bolts securing said supporting member to a non-rotatable part of a vehicle on one side of the disc; a pair of friction pads on the opposite sides of the disc; a pair of axially extending and circumferentially spaced arms integral with the supporting member on which the friction pads are slidably guided and for receiving braking torque from the friction pads when the brake is actuated, and clamping means engaged with the friction pads for urging the friction pads against the disc; said supporting member having at least one abutment arm thereon extending from adjacent one of the mounting bolts radially inwardly toward the non-rotatable part and forming the other end of a lever the one end of which is formed by the portion of the supporting member between said mounting bolt and the point on the side of the supporting member corresponding to said bolt at which said friction pads are slidably guided and which lever is pivoted around said bolt, said abutment arm having an arm surface at the free end thereof; and an abutment integrally formed as part of said non-rotatable part and having a surface on the free end thereof against which the arm surface at the free end of said abutment arm abuts for opposing pivoting of said abutment arm around said bolt toward the part of said supporting member between said bolts, whereby when the disc is rotating with the periphery moving toward said abutment arm, the torque transmitted to said supporting member from said friction pads is opposed by said abutment.

4,068,744

FLOATATION AND ANCHORING MECHANISM FOR DISC BRAKE

Matthew Edward Markert, Medina, Ohio, assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 30, 1976, Ser. No. 718,637
Int. Cl.² F16D 65/02
U.S. Cl. 188—73.3 9 Claims



9. In a disc brake, a rotor mounted for rotation with a member to be braked, said rotor having a pair of opposed friction faces, a pair of friction elements disposed adjacent said friction faces and adapted to frictionally engage the latter when a brake application is effected, a torque member mounted adjacent said rotor and having a pair of circumferentially spaced arms defining a recess therebetween, said recess having a pair of side edges defined by said arms and an edge joining said side edges, a caliper straddling said rotor and slidably mounted on said arms, one of said friction elements being mounted on said caliper, said one friction element anchoring through said caliper to one arm of the torque member, the other friction element being slidable in said recess and anchoring on a pair of abutment surfaces on said joining edge and a third abutment surface on the other arm when a brake application is effected.

4,068,745

DISC BRAKE

Tetsuo Haraikawa, Funabashi, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Aug. 10, 1976, Ser. No. 713,036
Claims priority, application Japan, Aug. 14, 1975, 50-98823; Aug. 14, 1975, 50-98828
Int. Cl.² F16D 55/224
U.S. Cl. 188—73.3 6 Claims

1. Floating caliper type disc brake apparatus, for use in association with a machine provided with base structure and a brake disc mounted for rotation relative to said structure and having a pair of oppositely facing surfaces extending outwardly relative to the axis of rotation thereof and including respective brakable zones juxtaposed and adapted to be oppositely engaged by opposed braking means, said apparatus including:

a support assembly of generally bifurcated configuration having a bight portion and a pair of spaced arm portions;

first means adapted for rigidly mounting said support assembly on said structure with one of said arm portions being displaced from the other arm portion in a direction generally parallel to the direction of movement of said zones during rotation of said disc;

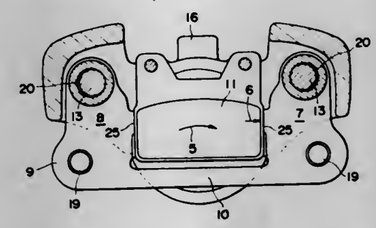
a housing assembly having a pair of spaced caliper portions;

second means, including a generally cylindrical hole in each of said arm portions and a generally cylindrical pin for each of said holes respectively extending through the corresponding hole and between said caliper portions, for shiftably mounting said housing assembly on said support assembly for movement relative to the latter along a path generally parallel to said axis of rotation of said disc with certain opposed parts of each of said caliper portions being in spaced, facing relationship to the respectively corresponding zone of said disc;

a pair of brake pads;

third means for mounting one of said pads on said parts of one of said caliper portions in facing relationship to one of said zones of said disc; and

fourth means for shiftably mounting the other of said pads on said parts of the other of said caliper portions in facing



relationship to the other of said zones of said disc and for shifting said other pad in a direction generally parallel to said axis of rotation of said disc toward and into forceful engagement with said other zone for both exerting a braking force on the latter and causing said housing assembly to shift along said path and thereby move said one pad into opposing braking engagement with said one zone of said disc;

the improvement of which apparatus further includes so constructing and arranging said second means that:

said pins are rigid and are in respective direct sliding relationship with those wall portions of the corresponding holes which are contacted thereby,

at least the one of said holes which is provided in said one arm portion is of substantially larger diameter than the corresponding one of said pins,

the spacing between the central axes of said holes is at least as great as the spacing between the central axes of said pins,

the differences between the diameters of each pin and its corresponding hole and the difference between the spacings of the central axes of the pins and the central axes of the holes are so related that said one pin is prevented from contacting the portion of the wall of said one hole remote from said other hole by said other pin first contacting the portion of the wall of said other hole proximate said one hole,

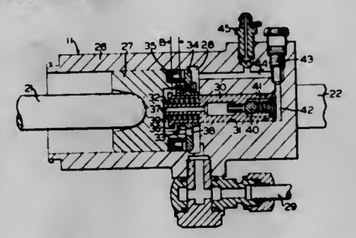
whereby, when lateral reaction forces are exerted on said pads in the general direction of said displacement of said one arm portion from said other arm portion during braking engagement of said pads with said zones of said disc, those lateral forces exerted upon said one pad will be transmitted through said housing assembly, is other pin and said other hole and applied to said other arm portion of said support assembly.

4,068,746

BRAKE CYLINDER DEVICE INCLUDING MEANS FOR AUTOMATICALLY COMPENSATING FOR BRAKE PAD WEAR

Kazuyoshi Munechika, Kobe, Japan, assignor to Nippon Air Brake Company Ltd., Kobe, Japan

Filed Nov. 15, 1976, Ser. No. 741,569
Claims priority, application Japan, Nov. 20, 1975, 50-158111
Int. Cl.² F16D 65/74
U.S. Cl. 188—196 A 1 Claim



1. A brake cylinder device for use in brake apparatus and comprising:

a. a casing;

b. a piston reciprocably disposed in said casing and effective when axially moved in one direction out of an initial release position, in response to pressurized hydraulic fluid supplied to a primary pressure chamber formed in said casing adjacent one side of said piston, for providing an application force for the brake apparatus;

c. a sleeve member coaxially disposed in said casing and normally occupying a spaced-apart position relative to said piston at a certain axial distance therefrom,

d. said sleeve member being engageable by said piston for movement therewith upon movement of the piston in said one direction in excess of said certain axial distance and having a pressure face at one end thereof subjectable to hydraulic pressure in an equalizing chamber formed in the casing adjacent said pressure face, said equalizing chamber being communicable with hydraulic pressure in said primary chamber via a passageway extending coaxially through the sleeve member for effecting equalization of hydraulic fluid pressure between the two chambers;

e. a precalibrated spring coaxially disposed between said piston and said sleeve member for biasing the piston and the sleeve member to said spaced-apart position relative to each other;

f. positioning means for positioning said sleeve member at said certain axial distance from said piston incidentally to return of the piston to a subsequent release position, notwithstanding that said subsequent release position does not coincide with said initial release position; and

g. a one-way check valve interposed in said passageway in said sleeve member providing flow in a direction from said primary pressure chamber to said equalizing chamber only.

4,068,747

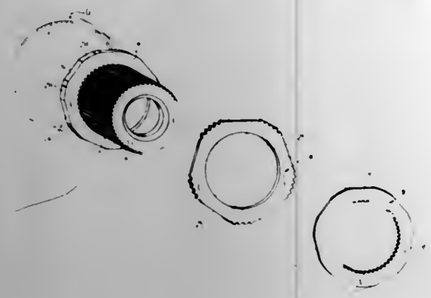
MULTI-PLATE CLUTCH HAVING MEANS TO PREVENT PLATE FLUTTER

Joseph B. Snoy, Rockford, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Sept. 23, 1976, Ser. No. 725,773
Int. Cl.² F16D 13/64
U.S. Cl. 192—30 V 11 Claims

1. In a multi-plate friction type clutch having interleaved

clutch plates which can be axially clamped together for clutch engagement or released for clutch disengagement and in which said clutch plates have peripheral surfaces, means formed on the outer periphery of said plates so as to cause said outer



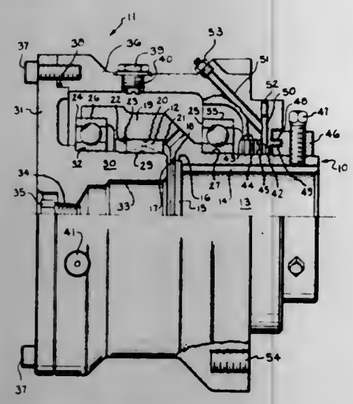
peripheral surfaces to be of non-circular shape, a clutch hub having a splined portion on which some of said plates are splined, said hub also having a back plate portion, said back plate portion having a periphery, and irregular portions formed on said periphery for contact with an adjacent plate.

4,068,748

SHAFT MOUNTED STANDBY DRIVE CLUTCH

Loris Joseph Charchian, Troy, Mich., and David Charles Heidenreich, Middleburgh Heights, Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 6, 1976, Ser. No. 747,754
Int. Cl.² F16D *41/07*
U.S. Cl. 192—41 A **8 Claims**



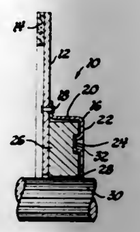
1. In a clutch assembly comprising a first driving member, a second driving member and means selectively locking said members for rotation the improvement wherein said first and second driving members are supported by and one another by a pair of bearings one of said bearings being supported on its interior by said first member and on its exterior by said second member and the other of said bearings being supported on its interior by said second member and on its exterior by said first member.

4,068,749

CLUTCH PLATE AND DAMPER ASSEMBLY

Warren W. Antrim, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 9, 1976, Ser. No. 694,210
Int. Cl.² F16D *3/14*
U.S. Cl. 192—106.1 **3 Claims**



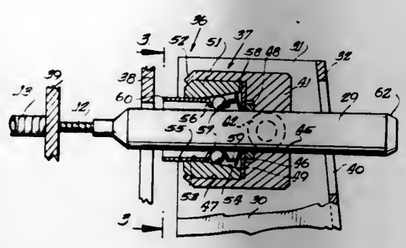
1. A clutch plate and damper assembly for use in a drive system having an engine and a drive shaft comprising; a pressure plate; an annular friction facing secured to said pressure plate adjacent the outer periphery thereof adapted to be driven by said engine; a retainer member secured to said pressure plate intermediate the center and outer periphery thereof, said retainer having an annular wall portion spaced from said pressure plate, and at least one protuberance formed in said annular wall; and a hub member disposed between said pressure plate and said retainer, said hub member having an indentation complementary to said protuberance, and a portion having drive means thereon for connection with said drive shaft; said annular wall of said retainer having resilient properties and being operable to maintain the only resilient drive connection between said pressure plate and said hub means, and said protuberance and surface deformation cooperating to provide a friction connection between said pressure plate and said hub means in response to the resilient properties of said annular wall to permit relative angular motion between said pressure plate and said hub member controlled by the resilient properties and the friction connection whereby torsional vibrations of the engine are isolated from th drive shaft.

4,068,750

AUTOMATIC ADJUSTER FOR CLUTCH LINKAGES

Sidney Ulane Gatewood, Roseville, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 22, 1976, Ser. No. 753,328
Int. Cl.² F16D *13/75*
U.S. Cl. 192—111 A **17 Claims**



1. A self-adjusting actuating mechanism comprising a pivotally mounted arm, stop means adapted to limit movement of said arm at a first position, spring means urging said arm to the first position, a flexible cable connecting said mechanism with a device to be actuated and terminating at one end in an elongated shaft portion, and gripping means positioned in said arm receiving said elongated shaft portion and including a collar pivotally mounted in said arm and having an internal conical

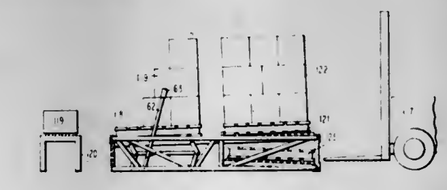
surface, a generally cylindrical ball retainer substantially completely received and axially reciprocable in said collar and receiving said elongated shaft portion therein, a plurality of balls in said retainer and adapted to wedge against said conical surface and the elongated shaft portion, biasing means within said collar urging said ball retainer and balls to their wedging position, said ball retainer extending beyond said collar towards said stop means, and means acting to exert a preload force on said cable and elongated shaft portion.

4,068,751

GRAVITY FEED-RETURN PALLET STORAGE RACK

Victor D. Azzi, Durham, N.H., assignor to The Kingston-Warren Corporation, Newfields, N.H.

Filed Jan. 29, 1976, Ser. No. 653,482
Int. Cl.² B65G *13/10*
U.S. Cl. 193—36 **27 Claims**



1. In a unitary gravity storage pallet platform,
a rear, reserve and empty pellet storing section comprising
an upper, forwardly inclined, reserve pallet receiving roller trackway, and
a lower, rearwardly inclined, empty pallet receiving roller trackway,
the planes of said upper and lower rear-section trackways non-intersecting within said frame; and
a front, active pallet storing section comprising
a platform-independent, active pallet receiving and discharging roller trackway, and
means for shifting said active pallet trackway, by simultaneous movement thereof in both translation and rotation, between an upper, full pallet receiving position of the same upper plane and forward inclination as said upper rear trackway, and a lower, empty pallet returning position of the same lower plane and rearward inclination as said lower rear trackway,
said upper and lower rear platform section trackways both non-extending to said front platform section whereby said shifting means is free to effect its said simultaneous movement shifting of said front section trackway between its said upper and lower, same-plane-and-inclination positions without interference with said rear section trackways.

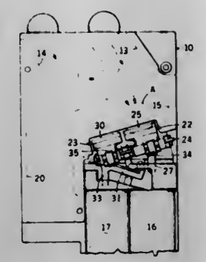
4,068,752

INTERACTING COIN-BLOCKOUT UNITS FOR A PREFERRED LOADING OF COIN TUBES

Bart G. Martin, St. Louis, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Filed Aug. 30, 1976, Ser. No. 718,779
Int. Cl.² G07F *1/00*
U.S. Cl. 194—1 H **8 Claims**

1. In a coin-feeding assembly:
a. means providing a common inlet path through which a coin can move edgewise, and a pair of reception paths generally below the inlet path,
b. a pair of coin-control units pivotally mounted generally above the reception paths for individual swinging movement of the units,
c. one coin-control unit including:
1. a coin-blockout deflector movable into and out of a position in the inlet path in which the deflector blocks entry of a coin to one of the reception paths and directs the coin to the other of the reception paths, and
2. a finger in said one reception path and responsive to the entrance of a coin into said one reception path when the deflector of said one unit is out of its blocking position for swinging the deflector into said position, and
d. the other of the coin-control units including:



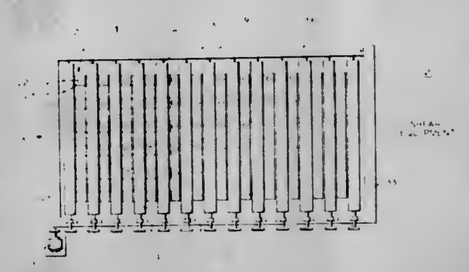
1. a first finger movable into and out of a position in which the first finger retains the coin introduced into the said reception path, and
2. a second finger in the said other reception path and responsive to the impact of a coin deflected by said one unit into the said other reception path for pivoting the said other unit and moving the said first finger out of its coin-retaining position to release the retained coin.

4,068,753

SHEAR FRONT FEED SYSTEM

David J. Jarman, Aurora, Ind., assignor to Continental M.D.M., Inc., Aurora, Ind.

Filed Mar. 4, 1976, Ser. No. 663,669
Int. Cl.² B65G *47/24*
U.S. Cl. 198—373 **3 Claims**



1. A shear front feed system for feeding sheet metal into the front of a shear,
said system including conveyor means for receiving said sheet metal and transferring it to the front of the shears for shearing operations,
said conveyor means having a sheet metal receiving end remote from said shears and a sheet metal transferring end adjacent said shears,
said transfer end being separated from said receiving end by the length of said conveyor means,
said conveyor means comprising a plurality of parallel spaced apart powered roller means for moving the sheet metal in a substantially straight line from the receiving end to the transferring end,
each of said roller means extending from one side of the conveyor means to the opposite side transverse to the length of the conveyor means from the receiving end to the transferring end,
ball transfer means free to rotate in any direction mounted

on said conveyor means for facilitating the movement of the sheet metal from the normal straight line motion actuated by the roller means to thereby present the sheet metal at a selected one of various angles to the blade of the shear; and means for lifting said ball transfer means to a position above said powered roller means to separate said sheet metal from said roller means for reorientation upon said ball transfer means,

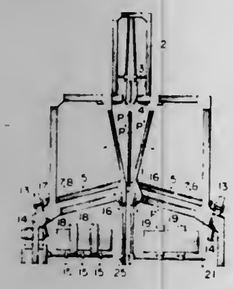
said ball transfer means being arranged in spaced apart rows with said rows being located transversely between each of said spaced apart roller means.

4,068,754

APPARATUS FOR PILING UP PLATE-SHAPED ARTICLES

Toshinori Hirata, Yoshiki, and Masamitu Yamada, Nei, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1976, Ser. No. 663,913
Claims priority, application Japan, Mar. 14, 1975, 50-30753
Int. Cl.² B65G *57/06*
U.S. Cl. 198—422 **6 Claims**



1. An apparatus for handling and stacking electrodeposited metal plates, comprising:

movable conveyer means adapted to have said plates supported and stacked thereon;

plate receiving means positioned above said conveyer means for initially receiving said plates thereon and then depositing said plates on said conveyer means, said receiving means when in a plate receiving position having means defining an upwardly facing support surface which is inclined at a small angle with respect to the horizontal, said last-mentioned means permitting slidable movement of a plate along said surface toward the lower end of said receiving means, and stop means associated with said receiving means for holding the plate on said receiving means in a selected position;

said receiving means including a pair of substantially identical receivers positioned in side-by-side relationship, and means swingably mounting said receivers for swinging movement in opposite rotational directions between said plate receiving position and a lowered position which permits the plate on said receiving means to be dropped onto said conveyer means;

chute means disposed on opposite sides of said conveyer means and extending along a direction parallel to the direction of movement of said conveyer means, said chute means causing the plates as deposited from said receiving means onto said conveyer means to be positionally aligned one above the other in a direction which is perpendicular to the direction of movement of said conveyer means, whereby said chute means cooperates with the side edges of said plates for guiding same into the proper position; and

adjusting means associated with the conveyer means and cooperating with the front and rear edges of said plates for positioning the stacked plates in aligned relationship in a direction which is substantially parallel to the direction of movement of said conveyer means;

said adjusting means including front and rear vertically elongated adjusting members which are horizontally spaced apart in the direction of movement of said conveyer means and are positioned for respectively cooperating with the front and rear edges of the stacked plates, said adjusting members having the lower ends thereof disposed adjacent said conveyer means, said lower ends being pivotally supported so that said adjusting members are swingably movable in a vertical plane which extends parallel with the direction of movement of said conveyer means, said adjusting members being swingably movable between a normal position wherein the adjusting members project upwardly and are slightly inclined outwardly away from the vertical and away from the stacked plates and an alignment position wherein the adjusting members project vertically upwardly for causing accurate alignment of the stacked plates along the direction of movement of said conveyer means, said adjusting members when in said normal position acting as upwardly projecting diverging guides for causing each plate as dropped from said receivers to be approximately aligned with the stack along the direction of movement of said conveyer means;

said adjusting means including means for sensing the dropping of each said plate from said receivers onto said conveyor means and for simultaneously swinging said adjusting members in opposite rotational directions toward one another into said alignment position for causing each plate to be individually accurately aligned on the stack, said adjusting means also including means for causing vertical swinging movement of said front adjusting member into a lowered substantially horizontal position after a preselected number of plates have been stacked to permit substantially horizontal movement of the stack by said conveyer means whereby said stack passes over said front adjusting member when it is in said lowered position.

4,068,755

WET BELT CONVEYOR

David M. Parkes, Calgary, and John D. Shaw, Fernie, both of Canada, assignors to Kaiser Resources, Limited, Vancouver, Canada

Filed July 22, 1976, Ser. No. 707,811
Claims priority, application Canada, Apr. 6, 1976, 249696
Int. Cl.² B65G *15/04*
U.S. Cl. 198—557 **7 Claims**



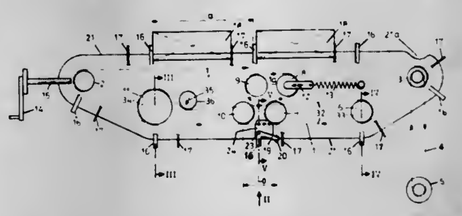
1. A conveyor for use in a mine to convey a slurry of water and heavy aggregate over runs of long distance within the mine and of insufficient grade to enable effective gravity flow within a fixed flume, said conveyor comprising a flume trough having upstream and downstream ends and a generally flat lower surface, said trough extending over the length of said run at substantially the same downward slope as said run; a continuous belt conveyor having a lower reach supported on the lower surface of the trough and extending over the length of the trough, end portions extending upwardly from the lower surface of the trough, and an upper reach supported on said trough in spaced relationship to the lower surface thereof; means at the upstream end of the flume trough to load a slurry into the trough and onto the lower reach of the belt within the trough; means at the downstream end of the trough to remove slurry from the trough in response to movement of the slurry toward the downstream end; and means to drive the belt conveyor to continuously move the lower reach and any aggregate supported thereon from the upstream end to the downstream end of the trough whereby heavy aggregate which settles out of the slurry is carried by the lower reach of the belt conveyor, while water and suspended aggregate is conveyed in the trough through the influence of gravity and the movement of the lower reach conveyor belt and aggregate supported thereon.

4,068,756

CONVEYOR WITH ENDLESS CHAIN

Horst Loewenthal, Tiengen, Germany, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Nov. 18, 1976, Ser. No. 743,141
Claims priority, application Switzerland, Nov. 24, 1975, 15216/75
Int. Cl.² B65G *19/24*
U.S. Cl. 198—653 **8 Claims**



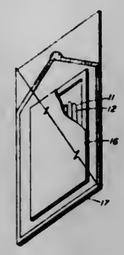
1. In a conveying device including an endless main chain, a plurality of first sprockets around which the chain is guided, the sprockets being arranged to cause the chain to travel along a path having a first portion of adjustable length and presenting a gap, and a second portion defining a loop of adjustable length and extending between the edges of the gap, the first portion and the gap together defining a conveying path and the loop being located out of the conveying path, a plurality of carriers arranged to be driven by the chain along the conveying path and spaced at uniform intervals along the conveying path, and means for adjusting the length of the loop, in order to vary the length of the conveying path to permit a change in the spacing between carriers, the improvement wherein: said device comprises auxiliary conveyor means disposed for conveying said carriers across the gap in said conveying path, and transfer means for transferring said carriers from driving association with said chain to said auxiliary conveyor ahead of said gap and returning said carriers to operative association with said chain beyond said gap; said auxiliary conveyor means comprise an endless auxiliary chain provided with carrier-engaging pins projecting laterally from said auxiliary chain, a respective pin being connected to each link of said auxiliary chain, and a plurality of auxiliary sprockets around which said auxiliary chain is guided, said auxiliary sprockets being arranged to travel along a path having a portion which extends parallel to part of the first portion of said main chain and across said gap, said auxiliary chain being disposed to one side of said main chain with said pins projecting toward said main chain; said main chain is provided with carrier-engaging pins projecting laterally from said main chain toward the side at which said auxiliary chain is disposed; said carriers are provided with means arranged to be engaged by adjacent pins on either of said chains; and said transfer means present guide surfaces acting on said carriers to shift each said carrier at a location ahead of said gap from engagement with pins on said main chain to engagement with pins on said auxiliary chain, and at a location beyond said gap from engagement with pins on said main chain to engagement with pins on said auxiliary chain.

4,068,757

CHITIN DERIVED POWDER IN STERILE SURGICAL ELEMENT PACKAGE

Donald James Casey, Ridgefield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 3, 1976, Ser. No. 738,501
Int. Cl.² A61L *17/02*; A41D *19/00*
U.S. Cl. 206—363 **7 Claims**



1. A sterile surgical element package comprising

a strippable laminate container having therein

a surgical element of natural or synthetic rubber; having on the surface of said element in a small but lubricity imparting quantity;

a finely divided biodegradable powder consisting essentially of

an enzymatically degradable form of poly(N-acetyl-D-glucosamine) selected from the group consisting of poly[N-acetyl-6-0-(carboxymethyl)-D-glucosamine], poly[N-acetyl-6-0-(2'-hydroxyethyl)-D-glucosamine], poly[N-acetyl-6-0-(ethyl)-D-glucosamine], and poly(N-acetyl-D-glucosamine) itself

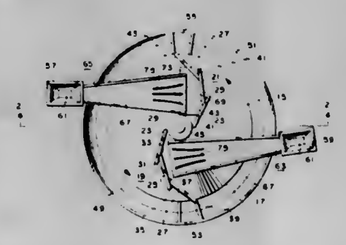
whereby in surgical use, any of the lubricity imparting powder which is transferred into a wound is readily absorbed by living tissue without adverse side effects.

4,068,758

FEED SYSTEM FOR A CONOIDAL SOLIDS SEPARATING SYSTEM AND METHOD OF SEPARATING

Yahia A. K. Abdul-Rahman, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 749,589, Dec. 10, 1976. This application Dec. 13, 1976, Ser. No. 749,638
Int. Cl.² B07C *9/00*
U.S. Cl. 209—112 **14 Claims**



1. A system for separating spherically-shaped solids which tend to roll down an inclined surface from irregularly-shaped solids which tend to slide down an inclined surface comprising:

a. a conically-shaped member with its apex pointing up, said conically shaped member being adapted to rotate about its vertical axis and having an outer surface inclined from horizontal at an angle at least as great as the static roll angle of the spherically-shaped solids and less than the

static slide angle of the irregularly-shaped solids, said outer surface having a circular-shaped lower edge rim;

b. supply means adapted to feed a mixture of said spherically-shaped solids and said irregularly-shaped solids through an opening onto an upper part of an inclined spreader chute;

c. said inclined spreader chute having a bottom surface, a lower end and an upper end and being adapted to receive said mixture from said supply means and to pass said mixture from said supply means off said lower end onto an impingement area of said outer surface of said conically-shaped member, said inclined spreader chute having its upper end outside the periphery of said lower edge rim and its lower end inside said periphery, said bottom surface being inclined from horizontal along its longitudinal axis and being substantially parallel to horizontal along its lateral axes, said bottom surface being wider at said lower end than it is at said upper end and being substantially wider at said lower end than the width of said opening through which said mixture is fed by said supply means onto said inclined spreader chute, said bottom surface being wide enough to allow said mixture to spread into a vertical monolayer on said bottom surface, said lower end of said bottom surface being above said outer surface of said conically-shaped member by a preselected distance, said distance being at least as great as the size of most of the solids to be separated by said system;

d. means adapted to receive spherically-shaped solids rolling from said outer surface off said lower edge rim;

e. removal means adapted to remove irregularly-shaped solids from said outer surface off said lower edge rim, and

f. means adapted to receive irregularly-shaped solids removed from said outer surface off said lower edge rim by said removal means.

4,068,759

CONOIDAL SOLIDS SEPARATOR WITH SPECIAL SCRAPER AND SEPARATING METHOD

Yahia A. K. Abdul-Rahman, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 10, 1976, Ser. No. 749,589
Int. Cl.² B07C 9/00
U.S. Cl. 209—112 **10 Claims**



1. A system for separating spherically-shaped solids which tend to roll down an inclined surface from irregularly-shaped solids which tend to slide down an inclined surface comprising:

a. a conically-shaped member with its apex pointing up, said conically-shaped member being adapted to rotate about its vertical axis and having an outer surface inclined from horizontal at an angle at least as great as the static roll angle of the spherically-shaped solids and less than the static slide angle of the irregularly-shaped solids, said outer surface having a lower edge rim, a lower surface area portion above and adjacent said lower edge rim, and a higher surface area portion above said lower surface area portion;

b. supply means adapted to feed a mixture of said spherically-shaped solids and said irregularly-shaped solids onto an impingement area in said higher surface area portion of said outer surface;

c. a sectionalized removal means having at least a first and a second section, said sectionalized removal means adapted to coact with rotation of said conically-shaped member and movement of irregularly-shaped solids with said conically-shaped member to move said irregularly-shaped solids in a path extending across said higher and said lower surface area portions and terminating near said lower edge rim, said path having at least three component directions, said component directions being downwardly with respect to the apex of said conically-shaped member, outwardly with respect to the vertical axis of said conically-shaped member, and circumferentially with respect to said supply means and to the perimeter of cross-sectional planes perpendicular to the vertical axis of said conically-shaped member, said path having essentially only a circumferential component direction at at least one point, said at least one point being between two parts of said path having said three component directions, and the remaining portions of said path having at least said three component directions;

d. means adapted to receive spherically-shaped solids rolling from said outer surface off said lower edge rim, and

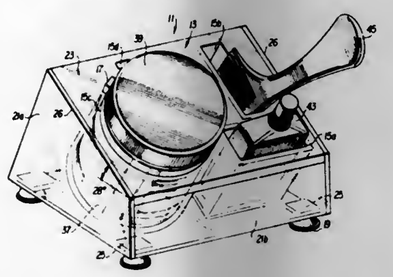
e. means adapted to receive irregularly-shaped solids moved from said outer surface off said lower edge rim by said removal means.

4,068,760

UTILITY RACK

Harvey C. Johnson, Jr., 315-17 N. 2nd St., Richmond, Va. 23219

Filed Apr. 30, 1976, Ser. No. 681,938
Int. Cl.² A47B 73/00
U.S. Cl. 211—74 **14 Claims**



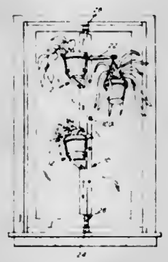
1. A utility rack for supporting at least one round container on a horizontal support surface for allowing a material to be easily scooped from said at least one round container without thereby rotating said container, said rack comprising a solid transparent plastic frame including solid sidewalls, an open bottom, and a flat top wall having receiving openings therein, said top wall forming an angle of between 20° and 45° with the horizontal when said rack is supported on said horizontal support surface, said rack further comprising a plurality of compartments positioned on the inside of said rack at each of said top-wall receiving openings, to receive and hold said items inserted into said receiving openings, said compartments being attached to said top wall and having solid, transparent plastic side-surface members which extend into said rack at an angle of between 20° and 45° with the vertical so that said compartments extend into said rack substantially perpendicularly to said top wall, said compartments further including solid bottom surface members each being shaped to form drainage openings in the lower-most corners of said compartments, at least one of said compartments having a round cross-sectional shape, to hold said at least one round container said rack further including a separate wedge for wedging between the exterior surface of said round container and the interior surface of said compartment to inhibit rotation of said round container relative to said rack, said rack also defining a means for engaging said wedge and thereby inhibiting rotation of said wedge relative to said rack.

4,068,761

APPARATUS FOR SUPPORTING AND DISPLAYING PLANTS

James H. McCarthy, 103 W. Rustic Lodge, Minneapolis, Minn. 55409

Filed Aug. 30, 1976, Ser. No. 718,592
Int. Cl.² A47G 7/00
U.S. Cl. 211—134 **3 Claims**



1. An apparatus for supporting and displaying plants comprising:

an upstanding elongated post member with means for anchoring the same at the top and the bottom and having a plurality of holes formed therein,

at least one plant supporting platform having a connecting dowel means on one end to be received in a selected hole, and

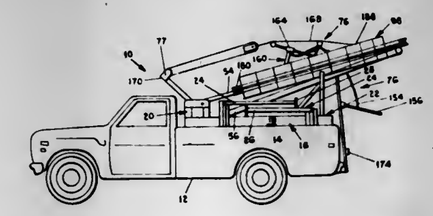
anchoring means radially offset from the selected hole and connecting said platform and said post for securely holding said dowel in the selected post hole to prevent rotation thereof.

4,068,762

PICKUP TRUCK DERRICK

Dwight Clinton Kennard, Jr., and James Clinton Kennard, both of 3830 Incochee Trail, Mich. 49684

Filed Sept. 11, 1975, Ser. No. 612,296
Int. Cl.² B66C 23/06
U.S. Cl. 212—49 **25 Claims**



1. A collapsible boom and derrick hoist assembly removably mountable on a vehicle, comprising:

a base frame adapted for mounting on a vehicle;

a derrick frame supported on said base frame for movement from a collapsed, transporting position to an erected operating position and including a leg pivotally connected to said base frame, said derrick frame having a boom mounting plate at one end thereof;

a foldable boom assembly having a hoisting section and a counterbalance section;

hoist means on said derrick frame and said boom for hoisting articles;

trunnion means rotatably secured to said boom mounting plate and operatively connected to said boom assembly for permitting yawing and pitching motion of said boom assembly, said hoisting section and said counterbalance section pivotally connected to said trunnion means and further including means for releasably securing each of said boom assembly sections together, whereby said boom assembly may be folded along the sides of said derrick frame for transporting; and derrick frame erection means on said base frame and operatively connected to said derrick frame for moving said frame from a collapsed transporting position to an erected hoisting position, said trunnion means comprising:

a lower yoke having a base and upstanding sides;

means rotatably securing said lower yoke to said boom mounting plate;

an upper yoke having depending sides; and

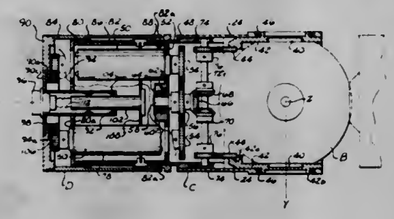
a shaft hingedly connecting said upper and lower yokes through said upstanding and depending sides.

4,068,763

WRIST JOINT ASSEMBLY

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Leendert Kersten, Lincoln, Nebr., and James D. Johnston, Madison, Ala.

Filed July 26, 1976, Ser. No. 708,800
Int. Cl.² B25J 3/00
U.S. Cl. 214—1 CM **13 Claims**



1. A wrist joint assembly for use with a mechanical manipulator arm for moving and finely positioning an end-effector carried by said wrist joint on the terminal end of said manipulator arm, said wrist joint assembly comprising:

a disk segment having an outwardly extending arm affixed to the terminal end of said manipulator arm;

a first housing member rotatably carried on said disk segment;

first drive means connected between said first housing member and said disk segment for rotating said first housing member about a first axis coinciding with the axis of said disk segment to produce a yaw motion;

a second housing member carried by said first housing member pivotable about a second axis normal to and intersecting said first axis.

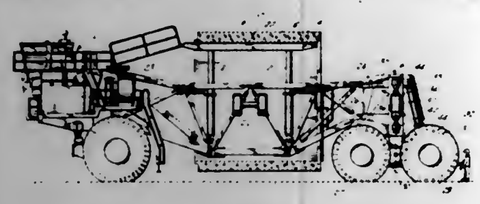
second drive means connected between said second and first housings for rotating said second housing member about said second axis to produce a pitch motion, said second housing being movable in both said yaw and pitch motions;

a third housing member rotatably carried by said second housing about a third axis normal to the plane of said first and second axes so that said first, second, and third axis are mutually normal to each other and have a common point of origin;

third drive means connected between said third and second housings for rotating said third housing about said third axis to produce a roll motion; and

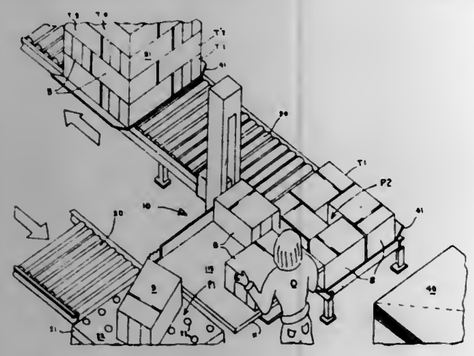
said third housing being movable in accordance with said yaw, pitch, and roll motions to provide for fine positioning of said end-effector carried by said third housing.

4,068,764
REAR STEPPER ASSEMBLY FOR A PIPE HANDLING VEHICLE
Frederick W. Loeber, Downey, and Louis Russo, Lawndale, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.
Filed Nov. 8, 1976, Ser. No. 739,480
Int. Cl.² B66C 23/42
U.S. Cl. 214—1 PA **22 Claims**



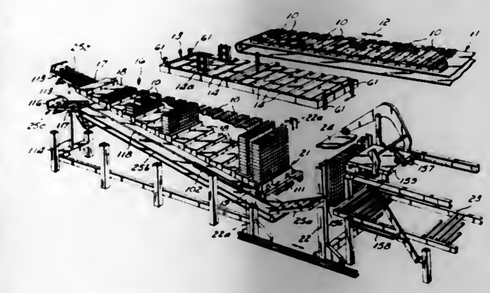
1. In a pipe transporting vehicle an improvement in a stepper assembly which steps into and out of a pipe, the improvement comprising:
a. a vertical stanchion;
b. a support stanchion having a vertical sleeve, the sleeve receiving the stanchion;
c. slide bearing means between the stanchion and the sleeve load coupling the stanchion and sleeve together for horizontal forces and moments about all axes and permitting relative vertical motion between the stanchion and the sleeve;
d. shock absorber and load transfer means between the stanchion and the support structure for transferring vertical loads between the two and absorbing energy associated with the vertical loads;
e. a walking beam pivotally mounted on the stanchion about a transverse axis so that each end of the beam can raise and lower with respect to the pivot, the beam extending front-to-rear with respect to the line of motion of the vehicle and having front and rear ends;
f. front and rear axle set means, each axle set means including wheel means to support the stepper assembly on the front and rear ends of the walking beam, respectively; and
g. front and rear means to raise and lower the front and rear axle means individually while the wheel means of the remaining axle means rests on the ground.

4,068,765
STACKING OF MATERIALS
William F. Pulda, Piscataway, N.J., assignor to Vanguard Machinery Corporation, Edison, N.J.
Filed Apr. 29, 1976, Ser. No. 681,683
Int. Cl.² B65G 57/22
U.S. Cl. 214—6 G **9 Claims**



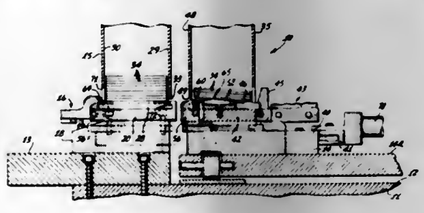
1. A stacking assemblage comprising
a movable platen for supporting materials received at a first position;
a guide member transversely movable with respect to said platen against which said materials are arranged in a tier in accordance with a prescribed pattern;
means for transversely moving said guide member away from said tier;
means for shifting said platen through the position previously occupied by said guide member to overlie a second position;
said guide member being displacable in the direction of motion of said platen when said platen is shifted to overlie said second position; and
the shifting means depositing said tier at said second position as a constituent of a multi-tier stack by drawing said tier against said guide member.

4,068,766
METHOD AND APPARATUS FOR STACKING AND BLENDING BRICKS OR THE LIKE
Marvin Glenn Schmitt, Fountain Valley, Calif., assignor to AMI Industries, Inc., Downey, Calif.
Filed July 21, 1976, Ser. No. 707,183
Int. Cl.² B65G 57/26
U.S. Cl. 214—6 A **36 Claims**



1. A brick stacker blender for forming stacks of courses of brick comprising an inclined conveyor providing a plurality of stacking surfaces progressively movable along said conveyor between stacking positions in which each surface is spaced below the preceding surface by a distance substantially equal to the height of a course of brick, and transfer means operable to position a course on each stacking surface at each stacking position.

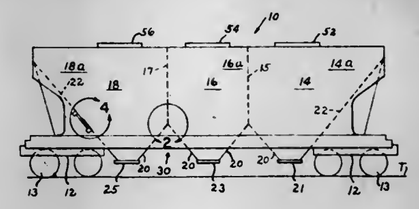
4,068,767
TRANSFER MECHANISM
Kenneth Boyd Tippetts, Glendale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.
Filed Aug. 9, 1976, Ser. No. 712,565
Int. Cl.² B65G 57/30
U.S. Cl. 214—6 BA **4 Claims**



1. In combination:
a support member,
a first base mounted on said support member,

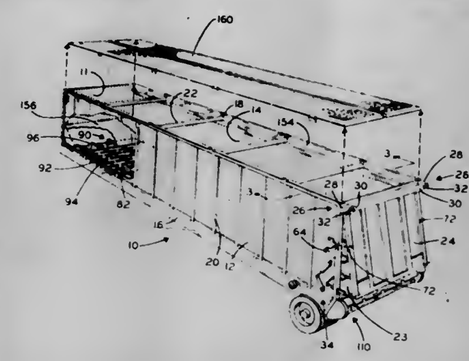
a first magazine adapted to have a plurality of substantially similar objects stacked in it,
means for removably mounting said first magazine on said first base,
a second base mounted on said support member,
a second magazine having a base and adapted to have a plurality of said objects transferred to and stacked in it, means forming an opening in the base of the second magazine,
means for removably mounting said second magazine on the second base,
cam means having a cam surface mounted on the second base, a part of the cam surface projecting through the means forming an opening in the base of the second magazine when the second magazine is mounted on the second base;
extractor means for engaging an object at the bottom of a stack of said objects in the first magazine and for inserting said object into the second magazine,
an actuator mounted on the support member and adapted to be energized,
means connecting the extractor means to the actuator, said actuator when energized causing the extractor means to cycle between a first position in which the extractor means is positioned to engage an object at the bottom of the stack of said objects in the first magazine and a second position in which an object engaged by the extractor is inserted into the second magazine,
the object being inserted into the second magazine contacting the cam surface of the cam means to forcibly move upwardly any of such objects stacked in the second magazine, whereby the object being transferred becomes the bottommost object in the second magazine.

4,068,768
VIBRATOR BRACKET ASSEMBLY FOR HOPPERS AND RAILWAY CARS
Paul E. Hicks, Jr., Florissant, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Division of Ser. No. 554,931, March 3, 1975, Pat. No. 4,039,128. This application May 28, 1976, Ser. No. 691,169
Int. Cl.² B65G 67/24
U.S. Cl. 214—64.2 **13 Claims**



1. A railway hopper car comprising: a plurality of hoppers supported by trucks at opposite ends of the car; said hoppers comprising at least one hopper slope sheet at the lower portion thereof; at least two spaced support members adapted to extend parallel to and integrally engage, respectively, a hopper planar surface of at least one of said hoppers; said spaced support members each having a longitudinal axis; a vibrator mounting bracket extending between said support members and having first and second planar surfaces, said planar surfaces being parallel to the longitudinal axis of said spaced support members and adapted to receive a vibrator suitable for facilitating loading and/or unloading of the hopper by applying vibrational forces to the hopper; whereby reciprocating vibrational forces applied to the vibrator mounting bracket are transmitted through said spaced support members and are applied to said hopper planar surface essentially entirely as shear loads in the plane of said hopper planar surface.

4,068,769
CARGO BOX
Philip J. Sweet; Buck C. Hamlet, and David L. Sweet, all of Fresno, Calif., assignors to American Carrier Equipment, Fresno, Calif.
Continuation of Ser. No. 592,788, July 2, 1975, abandoned. This application May 2, 1977, Ser. No. 792,774
Int. Cl.² B60P 1/36
U.S. Cl. 214—83.18 **22 Claims**



1. In an elongated cargo box for transporting compacted contents having a pair of substantially vertically oriented converging side walls extended between opposite ends of the box, and an inclined floor extending the length of the box, between the side walls thereof, and characterized by a first width and a first height dimension near a first end thereof, the improvement comprising:
means defining in said box at a second end thereof, a contents discharge opening of a substantially rectangular configuration disposed in a plane transversely related to the longitudinal plane of symmetry of said cargo box and characterized by a second width and a second height dimension greater than said first width and said first height dimension, movable conveyor means extended rearwardly along the surface of the floor and projected through said contents discharge opening for conveying contents beyond the limits of the box, and closure means for said opening including a closure panel of a substantially planar configuration displaceable between a contents confining configuration wherein the panel is disposed between the rearward end of said conveyor and the contents discharge opening and a contents discharge configuration wherein the panel is disposed in a rearwardly spaced relation with the opening and suspension means arranged in rearwardly spaced relation with said opening including support members extending rearwrdly from opposite sides of said opening, mounting means affixed to said panel, and coupling means pivotally coupling said mounting means to said support members in rearwardly spaced relation with said opening supporting said closure panel for mass-induced pivotal displacement from its contents confining configuration to a contents discharge configuration about a horizontal axis located in rearwardly spaced relation with the opening.

14. In an elongated cargo box for an overland vehicle, particularly suited for use in hauling refuse, characterized by a discharge opening disposed in a substantially vertical plane, the improvement comprising:
A. a closure panel for said opening continuously biased by its own mass in angular displacement away from a closed position in which said panel obstructs said opening; and
B. cantilevered suspension means for supporting said panel for angular displacement including a first pair of bracket arms mounted on the upper portion of said box and projected rearwardly therefrom in mutually spaced parallelism, a second pair of bracket arms mounted on the upper

portion of said closure panel and projected rearwardly therefrom in contiguous relation with said first pair of bracket arms, and means disposed in displaced relation with said discharge opening pivotally connecting the extended end portions of said first pair of arms to the extended end portions of said second pair of arms for supporting said panel in pivotal suspension for mass-induced angular displacement about an axis arranged in spaced relation with said discharge opening.

4,068,770

FOLDABLE INCLINED MULTI-SECTION RAMP ACTUATION SYSTEM

Wilfred E. Boehringer, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed May 27, 1976, Ser. No. 690,637
Int. Cl.[2] B60P *1/00*
U.S. Cl. 214—85 **32 Claims**



1. Foldable, articulated ramp apparatus comprising in combination:

at least three separate ramp sections foldable for storage within a vehicle and extendible therefrom, including first and second sections pivotably joined together by a first hinge mechanism for relative rotation about a first hinge axis; and a third section pivotably joined by a second hinge mechanism to the second section outboard of the first section for relative rotation about a second hinge axis;

a plurality of pulleys individually mounted at respective hinge axes for rotation thereabout;

cable anchoring means mounted on one of said sections;

cable driving means mounted inboard of said cable anchoring means relative to the vehicle; and

a cable extending about each of the pulleys and between the cable anchoring means and the cable driving means for folding and unfolding the ramp sections relative to each other.

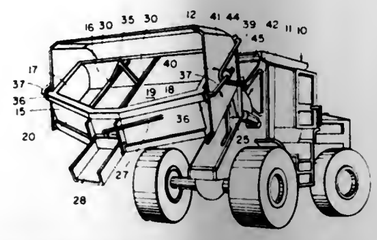
4,068,771

CARRIER BUCKET AND APPARATUS FOR REMOVABLY ATTACHING THE SAME TO A LOADER BUCKET

James Eldon Zimmerman, 600 Manatee Ave. W., Holmes Beach, Fla. 33577

Filed Oct. 18, 1976, Ser. No. 733,218
Int. Cl.[2] E02F *3/81*
U.S. Cl. 214—313 **3 Claims**

1. Apparatus for removable attachment to a loader bucket for converting the loader bucket to carry flowable material comprising a carrier bucket having upright first and second side walls, a rear wall and a front wall, and a bottom interconnecting all of said walls, said carrier bucket being formed to be received in said loader bucket, the rear wall, first and second side walls and bottom wall of said carrier bucket conforming to the shape of said loader bucket, first and second attaching means for removably securing the exterior of said first and second side walls of said carrier bucket to said loader bucket, said first and second attaching means each comprising a linkage assembly secured to a side wall of said carrier bucket adjacent the forward portion thereof and extending rearwardly therefrom, and bracket means secured to the rear wall of said loader bucket and adapted to receive the rear portion of said linkage means.

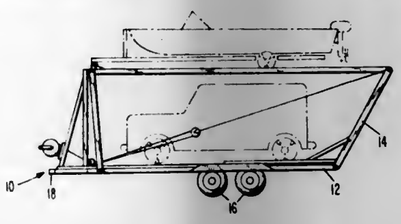


4,068,772

DUAL LOAD TRAILER

C. R. Prudhomme, P.O. Box 219, Blanco, Tex. 78606

Filed Jan. 12, 1977, Ser. No. 758,765
Int. Cl.[2] B60P *3/08*
U.S. Cl. 214—505 **9 Claims**



1. A dual load trailer comprising

a trailer base having wheel means thereon and adapted to carry a first load thereupon;

a carrier frame mounted on the trailer base;

a load platform of the carrier frame movable between a carrying and a loading position and adapted to carry a second load;

front and rear leg means on the carrier frame connecting the load platform to the trailer base and pivotally connected to both the load platform and the trailer base, the rear leg means being longer than the front leg means and being tilted rearwardly to bias the load platform to pivot rearwardly to lower the load platform to its loading position; and

holding means to secure the load platform against rearward movement to hold the load platform parallel to the trailer base in its carrying position.

4,068,773

LIFT VEHICLE WITH FAIL-SAFE OVERLOAD PROTECTIVE SYSTEM

Terry R. Downing, Hazel Crest, Ill., and Warren E. Herwig, Wind Lake, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Apr. 3, 1975, Ser. No. 564,719
Int. Cl.[2] B65E *47/00*; G08B *21/00*
U.S. Cl. 214—674 **8 Claims**

1. A fail-safe overload protective system for a vehicle having a frame, load supporting means including a shiftable load support on said vehicle, power means affixed to said frame and operable to shift said load support on said vehicle and including a load carrying member which is subjected to the forces exerted by said power means and resists the tilting moment acting on said vehicle as a result of the position of said load support on said vehicle, sensor means including a plurality of strain gages mounted on said load carrying member and arranged in an electrical bridge for detecting the mechanical strain in said load carrying member and generating an electrical strain signal whose magnitude varies as a function of said mechanical strain, means for applying a first potential to said electrical bridge, a differential amplifier having its inputs coupled across a diagonal of said bridge for raising the level of said strain signal and being coupled to said bridge through electrical leads, whereby said bridge may be inherently unbalanced due to the weight of the unloaded load support acting on said load carrying member and consequently the output voltage of said differential amplifier may vary, comparator means for deriving a trip signal when the output voltage from said differential amplifier exceeds a predetermined magnitude when said load support carries a load, disabling means responsive to said trip signal for inhibiting said power means from shifting said load support in a direction to increase the tilting moment acting on said vehicle, fail safe means for providing an unbalance effect on said differential amplifier if one of said electrical leads is open, said fail safe means including voltage divider means having one portion of said bridge and a portion of one of said electrical leads as a part thereof for applying a second potential to said system, said differential amplifier being responsive to one of said electrical leads being open to cause said output voltage of said differential amplifier to exceed said predetermined magnitude to thereby actuate said disabling means, and potentiometer means for selectively applying a variable unidirectional voltage to one input of said differential amplifier to zero the voltage output therefrom when said load support is unloaded and said second potential is being applied to said system.



4,068,774

MATERIAL HANDLING IMPLEMENT

Silas E. Howell, Jr., Rte. 1, Garland, N.C. 28441

Filed Nov. 8, 1976, Ser. No. 740,058
Int. Cl.[2] E02F *3/82*
U.S. Cl. 214—766 **3 Claims**

1. A material handling implement adapted to be connected to and powered by a three-point hitch assembly of a conventional tractor, said material handling implement comprising:

a. a main frame structure including a single elongated beam member having front and rear ends;

b. connecting means operatively associated with said elongated beam member for connecting said beam member to the three-point hitch assembly of said tractor such that when connected to said tractor said elongated beam member extends generally rearwardly from said tractor and may be powered up and down by the tractor's three-point hitch assembly, said connecting means including means for directly pivotly connecting said front end of said beam member to an upper central hitch point of said three-point hitch assembly and a pair of connecting links connected to respective lower left links forming a part of said three-point hitch assembly and extending generally upwardly therefrom where they connect to elongated beams about an intermediate point between said front and rear ends thereof;

c. a transverse support member secured to the rearward end of said elongated beam member and including two laterally spaced apart leaf members projecting from said transverse support members;

d. a shovel assembly secured to said transverse support member disposed about the rear end of said elongated beam member;

e. said shovel assembly including a generally U-shaped yoke pivotably mounted to said leaf members projecting from said transverse support member, and a shovel pivotably mounted about a transverse axis within said U-shaped yoke and movable between a filling position and a dumping position;

f. said shovel including counter balancing means strategically associated with said shovel relative to said shovel's axis of rotation for causing said shovel to automatically return from said dumping position to said filling position in response to said shovel being emptied;

g. said shovel further including an anchor plate having a generally curved shaped caming surface with an opening therein with said anchor plate being secured about the rear side of said shovel and which generally abuts against shovel stop means forming a part of said shovel assembly when said shovel is disposed in said filling position;



h. shovel blocking means normally engaged with said shovel and operative to maintain said shovel in said filling position, said shovel locking means including a locking pin axially movable within a sleeve stationarily mounted to said shovel assembly with said locking pin being spring biased so as to normally extend through said opening formed in said anchor plate for locking said shovel in said filling position;

i. actuating means operatively connected to said shovel locking means for effectively disengaging said locking pin from said opening formed in said anchor plate such that said shovel may move from said filling position to said dumping position due to the presence of material within said shovel, said actuating means for disengaging said locking pin including a lever pivotably mounted about said elongated beam about a forward portion thereof in reach of an operator stationed on said tractor, and a cable operatively interconnected between said lever and said locking pin; and

j. manually actuated control means associated with said material handling implement for adjusting and varying the angle of said shovel assembly relative to said elongated beam member such that the digging angle of said shovel may be adjusted for various working conditions, said manually actuated control means including a hand crank rotatively mounted about said elongated beam member and positioned thereon about the front area thereof in reach of the tractor operator and a worm gear rotatively

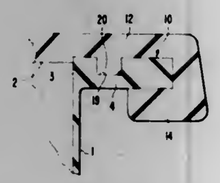
mounted in a collar stationarily secured relative to said elongated beam member wherein said worm gear is operatively connected between said hand crank and said shovel assembly such that the actuation of said hand crank causes said shovel assembly and the shovel thereof to be angularly adjusted relative to said elongated beam member.

4,068,775

SEALABLE CONTAINER DEVICE

Guy V. Palmer, Inkster, Mich., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Dec. 30, 1976, Ser. No. 755,796
Int. Cl.² B65D *41/06*
U.S. Cl. 215—331 **2 Claims**



1. A sealable canning container device, comprising

a container having an open top with a rim therearound, a substantially annular flange extending substantially radially from the container at the rim thereof in a plane substantially perpendicular to the axis of the container, said flange being integrally formed with the container and having a plurality of notches formed therein and extending substantially radially inwardly from the outer edge of the flange, said flange having a substantially planar top surface and tapered bottom surfaces forming a plurality of inverted inclined planes relative to the top surface, each extending from one of the notches to the next-adjacent notch in the same direction around the flange;

a lid having a plurality of lock members formed thereon in the same angular relationship as the notches of the container whereby each of the lock members is simultaneously passable through a corresponding one of the notches of the flange of the container, each of said lock members comprising an arm supported by the lid and extending substantially parallel to the lid in spaced relation below said lid in a manner whereby when the lid is positioned on the container with the lock members in alignment with the notches of the flange and the lock members are passed through the notches and the lid is turned, the arms of the lock members move into abutment with the bottom surfaces of the flange, and if the lid is further turned, said arms securely seal said lid to said container via said flange to provide a seal strong enough to preserve perishable foods for years;

a plurality of stop projections each extending from a bottom surface of the flange at a corresponding one of the notches at the area of maximum flange thickness between top and bottom surfaces; and

a circular groove formed in the top surface of the flange in spaced relation with the notches thereof and a corresponding circular protrusion extending from the bottom of the lid for fitting in the groove and sealing the container.

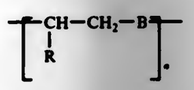
4,068,776

PLASTISOL COMPOSITION AND CONTAINER CLOSURE GASKET MADE THEREFROM

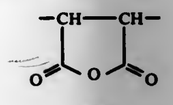
Walter R. Wszolek, Sykesville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 563,018, March 28, 1975, Pat. No. 4,020,966. This application Jan. 3, 1977, Ser. No. 756,143
Int. Cl.² B65D *45/10*; C08L *35/00*; C08K *5/04*
U.S. Cl. 215—349 **5 Claims**

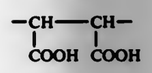
1. A plastisol composition comprising (a) a copolymer resin of a normal α-olefin and maleic anhydride (1:1 mole ratio) having a particle size in the range from about 0.1 to about 1500 microns and having the structure



wherein B is a member of the group consisting of

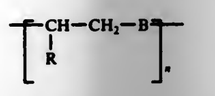


and

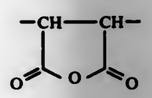


R is H or C_xH_{2x+1}, x is 1 to 16 and n is 2–300, and (b) 65–600 parts/100 parts copolymer of a polyol plasticizer.

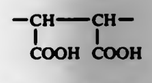
2. A container closure comprising a cap having deposited therein a resinous mass functioning as a gasket to seal the container when the closure is in sealing relationship with the container, said resinous mass comprising a fluxed plastisol of a composition comprising (a) a copolymer resin of a normal α-olefin and maleic anhydride (1:1 mole ratio) having a particle size in the range from about 0.1 to about 1500 microns and having the structure



wherein B is a member of the group consisting of



and



R is H or C_xH_{2x+1}, x is 1 to 16 and n is 2–300, and (b) 65–600 parts/100 parts copolymer of a polyol plasticizer.

4,068,777

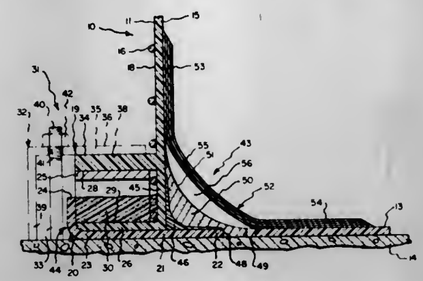
EXPANSIBLE BOTTOM STRUCTURE FOR FIBERGLASS REINFORCED PLASTIC TANKS

Frederick H. Humphrey, Markham, Canada, and James J. Jarvis, Snyder, N.Y., assignors to Metal-Cladding, Inc., North Tonawanda, N.Y.

Filed Nov. 25, 1975, Ser. No. 635,067
Int. Cl.² B65D *25/24*
U.S. Cl. 220—1 B **7 Claims**

1. An upstanding fiberglass reinforced plastic tank adapted to receive and store a fluid exposed to atmospheric pressure, said tank having a bottom resting on a support and having an annular side wall structure, the head of a fluid stored within said tank exerting hydrostatic pressure on said side wall structure which urges said side wall structure to expand outwardly in a radial direction, wherein the improvement comprises:

movable means forming a slidable foot at a lowermost portion of said side wall structure for permitting radial expansion of a lower portion of said side wall structure due to hydrostatic pressure of a stored fluid, said slidable foot including a portion having a surface resting on and unattached to said support and substantially coplanar with the



lower surface of the tank bottom, said foot being separated from said tank bottom; and

joining means interconnecting said tank bottom and side wall structure, said joining means including annular batten means formed of fiberglass reinforced plastic material and having an upper portion bonded to said side wall structure, having a lower portion bonded to said tank bottom, and having an intermediate transitional portion adapted to flex during such radial expansion of said side wall structure;

whereby, during such radial expansion, said slidable foot may slide outwardly along said support without significant deformation of its original shape.

4,068,778

VOID CAP

William Wilson, 716 Scott St., Stroudsburg, Pa. 18360

Filed Mar. 11, 1976, Ser. No. 665,976
Int. Cl.² B65D *7/42*
U.S. Cl. 220—66 **10 Claims**



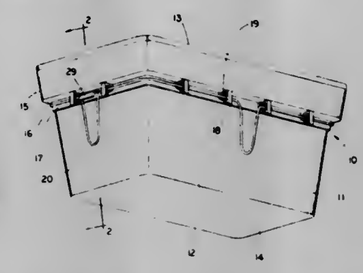
1. A void device for a container, said cap having a rigid generally conical shape and having an opening at each end, the larger end of said cap being of sufficient size to be coupled to an open end of a container that contains material and the smaller end being for discharge of the material, said larger end including an axis, the inner surface of the side walls of said cap being comprised of a plurality of side wall portions that are parallel to said axis and a plurality of angular side wall portions, some of said angular side wall portions being disposed at an angle of about 45° relative to said axis, some of said side wall portions being disposed at an angle of about 60° relative to said axis, said angular portions being disposed between said annular portions with said portions angled at 60° being further from said large end than said portions angled at 45° and the juncture of said wall portions is rounded so that said angled side wall portions and said parallel side wall portions cooperate with each other and with said rounded junctures to disrupt the flow of material and cause it to change direction thereby intermixing it as it is discharged from the container through said void cap.

4,068,779

FOAMED PLASTIC COOLER AND HANDLE COMBINATION

Michael P. Canfield, 7516 Placing Road, Indianapolis, Ind. 46226

Filed Dec. 1, 1975, Ser. No. 636,633
Int. Cl.² B65D *25/28*
U.S. Cl. 220—94 R **3 Claims**



1. A foamed plastic cooler and handle combination which comprises:

a foamed plastic cooler having an upwardly extending side wall, the exterior of the side wall including a downwardly facing shoulder extending at least partially around the side wall, the side wall having a first portion lying immediately below the shoulder, the first portion comprising four flat surfaces intersecting at approximately right angles;

frame means for engaging the downwardly facing shoulder, said frame means including a pair of apertures located along each of the four flat surfaces, said frame means including a support member which extends perimetrically about the foamed plastic cooler adjacent the downwardly facing shoulder; and

handle means attached to said frame means for permitting said foamed plastic cooler to be lifted, said handle means comprising a flexible member, the flexible member of said handle means being continuous in passing through each of the pair of apertures of said frame means.

4,068,780

ELECTROTHERMALLY ACTUATED FLUID DISPENSING DEVICE

Charles R. Fegley, 1606 Frush Valley Road, Laureldale, Pa. 19605

Filed June 3, 1976, Ser. No. 692,455
Int. Cl.² F17C *13/08*
U.S. Cl. 222—5 **23 Claims**

1. A fluid dispensing device for use with a pressurized container, the device comprising;

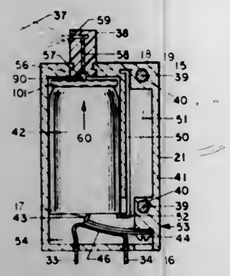
a. a body member;

b. means for supporting said pressurized container in said body member, wherein said pressurized container has a fluid-dispensing element adapted to release fluid under pressure from said pressurized container when actuated;

c. dispensing element actuating means in said body member adapted to engage and actuate said fluid-dispensing element of said pressurized container;

d. a passageway in said dispensing element actuating means having an entry section at one end thereof;

e. an electrothermal actuator strip mounted in said body member moving between a quiescent position and an actuation position, in said quiescent position said fluid-dispensing element of said pressurized container and said dispensing element actuating means are separated from each other, said electrothermal actuator strip moving to said actuation position upon the application of an electric



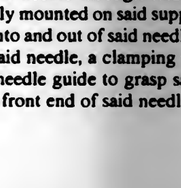
current whereby said electrothermal actuator strip forces said fluid-dispensing element and said dispensing element actuating means into engagement with each other, thereby causing said fluid-dispensing element of said pressurized container to be actuated, whereby fluid is released from said pressurized container to pass through said entry section and passageway.

4,068,781
HOT AND COLD BEVERAGE VENDOR
Bartholomew L. Toth, St. Louis, Mo., assignor to UMC Industries, Inc., Stamford, Conn.
Filed Mar. 8, 1976, Ser. No. 664,634
Int. Cl.² B67D *5/06*
U.S. Cl. 222—52 **1 Claim**



1. A vendor for hot and cold beverages having a hot water tank, an electrical heater for heating water in the tank to constitute a supply of hot water for hot beverages, a pump for pumping water for cold beverages, an electric motor for driving the pump, a refrigeration system for cooling water for cold beverages including a compressor and an electric motor for driving the compressor, means for supplying current to the heater upon a demand for heating water in the tank, means for supplying current to the pump motor upon a demand for water for cold beverage, means for supplying current to the compressor motor upon a demand for refrigeration, and means responsive to operation of one of said pump and compressor motors while there is a demand for heating water in the tank to reduce the current supplied to the heater so as to limit the total current drawn by the heater and the two motors, said current-reducing means being responsive to operation of either the pump motor or the compressor motor, the means for supplying the heater with current comprising a line connected across a source of voltage, having a thermostatic switch connected therein responsive to the temperature of water in the tank, and said current-reducing means comprising a set of normally closed contacts in said line, means for opening said contacts in response to operation of either the pump motor or the compressor motor, and a shunt around said contacts having current limiting means therein, the means for supplying the heater with current supplying alternating current, and said current limiting means being a diode for halving the current drawn by the heater when said contacts are open.

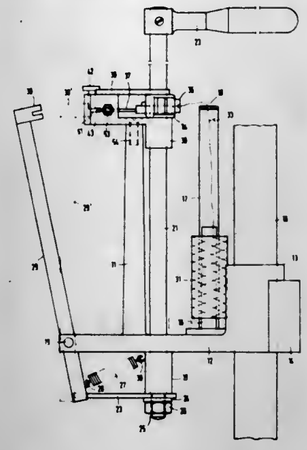
4,068,782
GLADE OVERCAP FOR TILT VALVE
Johannes Van der Heijden, Nieuwkoop, Netherlands, assignor to S. C. Johnson & Son Inc., Racine, Wis.
Filed Jan. 29, 1976, Ser. No. 653,331
Claims priority, application Canada, Oct. 23, 1975, 238204
Int. Cl.² B65D *83/14*
U.S. Cl. 222—402.13 **10 Claims**



1. In a pressurized package of the type having a product reservoir and a tilt-actuatable valve with tiltable valve stem extending from said reservoir and forming an axis line, said stem having a product release orifice substantially at its end, the improvement comprising an actuator-overcap including a main portion adjacent said reservoir and a finger-depressible tab portion hinged at one end to said main portion and having its other end adjacent said stem, said tab portion having a finger-contact surface between said hinged end and said other end, said actuator-overcap defining an access opening for said stem to expose said product release orifice, said opening normally being substantially centered on said axis and being larger than said stem such that said stem is freely received therein as said tab is axially depressed, said opening moving off center with respect to said axis line as said tab is axially depressed such that said stem is tilted by a wedging action of said tab in which said tab moves axially relative to said stem during said depression.

4,068,783
SKIRT MARKER AND SHAPING DEVICE
Erwin Maier, Kongen, Germany, assignor to Wilhelm Maier & Sohne UNITAS-Maschinenfabrik, Kongen, Germany
Filed Aug. 27, 1976, Ser. No. 718,377
Claims priority, application Germany, Aug. 30, 1975, 2538751
Int. Cl.² A41H *9/00*
U.S. Cl. 223—1.1 **28 Claims**

1. Apparatus for shaping and marking a skirt with inserted threads, comprising a vertical support, a pressure plate mounted on said support for holding said material, a material deflector pivotally mounted with respect to said support and adapted to deflect said material against said plate, said pressure plate and said material deflector being formed with cooperating opposed faces for folding said material and with a needle guide for passage of a needle through said folds, a needle, a needle-carrier movably mounted on said support for movement carrying the needle into and out of said needle guide, means for feeding a thread to said needle, a clamping means arranged at the rear end of said needle guide to grasp said thread, cutting means located at the front end of said needle guide to cut said thread and actuating means for sequentially operating said material deflector, needle carrier, clamping means and cutting



means to effect insert of thread of defined length in the folds of said material.

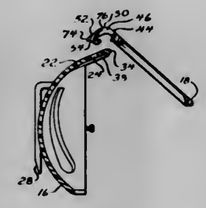
4,068,784
HOLSTER AND SHOULDER-HARNESS ASSEMBLY
Robert Angell, 8 Centre Market Place, New York, N.Y. 10013
Filed Aug. 21, 1975, Ser. No. 606,591
Int. Cl.² F41B *13/04*
U.S. Cl. 224—2 B **4 Claims**

1. A holster and shoulder-harness assembly for suspending a pistol in an invested position adjacent an arm of a wearer whereby it is free to swing and thereby accommodate itself to the contour of the wearer as well as to the demands imposed on the holster when the pistol is withdrawn therefrom, comprising:

A. a harness including a yoke which is loopable about a selected shoulder of the wearer, said yoke having dependent ends which extend down opposite sides of the wearer body, and a female component of a snap fastener attached to each end of the yoke, each snap fastener having in addition to said female component a male component and being directional whereby it cannot be decoupled except by a force applied in a predetermined direction at one position of the female component, and

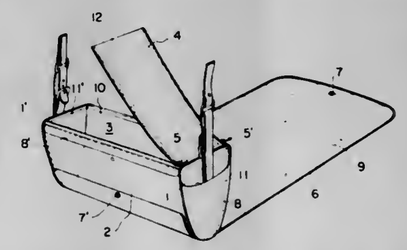
B. a holster for suspending said pistol from said harness in an inverted position so that the grip of the pistol normally protrudes from the bottom of the holster, said holster having the male components of the snap fasteners secured thereto at spaced positions to complement said female components on the ends of the yoke, said female components being rotatable relative to the male components to define pivots whereby said holster is free to swing with respect to said harness to facilitate the withdrawal of the pistol at a desired angle, said holster having a triangular formation defining a nose and an opening for receiving the pistol, said pistol being retained in said inverted position in said holster by readily releasable flap means, one of said male components being disposed adjacent said nose and the other of said male components being disposed adjacent said opening.

4,068,785
BALL HOLDER CONNECTOR
Noel G. Goudreau, Bradley, Ill., assignor to Icon American International, Inc., Kankakee, Ill.
Filed Feb. 23, 1976, Ser. No. 660,189
The portion of the term of this patent subsequent to Mar. 25, 1992, has been disclaimed.
Int. Cl.² A63B *61/00*
U.S. Cl. 224—5 D **7 Claims**



1. In a ball holder adapted for readily removably holding a ball on a person of a player having a first portion having a cavity defining a portion of a sphere less than a hemisphere, said sphere having a diameter approximately the diameter of the ball; a clip connected to the first portion for securing the ball holder to an article of clothing worn by the player; and a second portion resiliently connected to the first portion; said second portion being adapted for engagement with and retention of a ball positioned in the cavity; the improvement comprising: a first tongue connected to one of said portions, an aperture formed in said first tongue; and a second tongue connected to the other of said portions, a hook connected to said second tongue, said hook being adapted to pass through said aperture of said first tongue to engage lockingly said first tongue.

4,068,786
SHOULDER BABY BAG
Susumu Taniguchi, Tokyo, Japan, assignor to King Baby Corporation, Winston-Salem, N.C.
Filed Aug. 16, 1976, Ser. No. 714,658
Int. Cl.² A47D *13/02*
U.S. Cl. 224—6 **10 Claims**



1. A shoulder baby bag comprising: a pair of first covers having a generally inverted triangular shape and spaced apart

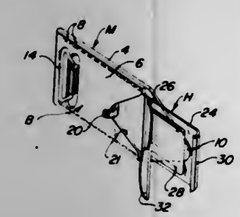
from and in opposing relation with each other; a second cover having a generally rectangular shape and stitched to the side edges of said first covers for defining a cavity with said first and second covers; a third cover having a generally rectangular shape and having one end stitched to the upper edge of one of said first covers and having its side edges attachable to the upper edges of said second cover with zippers, said third cover further having the other end extending to the upper edge of the remaining first cover and being swingable around said one end of said third cover when said side edges of said third cover is dissociated from the upper edges of said second cover; a tongue cover having a generally rectangular shape and having one end stitched to the lower portion of said second cover and the other end fastenable to said one end with a sufficient length to wrap said second cover and third cover; and a shoulder strap having ends secured to the upper portions of said first covers whereby said tongue when unwrapped serves as a bed and said first, second and third covers serve as a pillow.

4,068,787

MONEY BUCKLE

James W. Craighead, 501 Dexter St., Denver, Colo. 80220

Filed July 12, 1976, Ser. No. 704,511
Int. Cl.[2] A45C *1/04*
U.S. Cl. 224—26 E 5 Claims



1. A money buckle for secretly carrying valuables and the like, for use with a belt having a first end which folds back upon itself for attachment to a buckle and having a plurality of spaced holes extending longitudinally from a point adjacent a second end for adjustably fastening the belt about the waist of the wearer, said buckle comprising:
   an envelope-like body which has an inner and an outer wall interconnected along one end and along opposite edges to form a cavity for receiving the valuables and has a foldable safety flap for closing the opposite end to conceal the valuables;
   first means adjacent said one end for releasably attaching said buckle to the first end of the belt;
   second means extending from said body adjacent said opposite end releasably engagable with and extendable through said flap and further engagable with one of the of the holes in the belt for holding said flap in a closed position sandwiched between said body and said belt when said second means is in engagement with one of the holes in the belt.

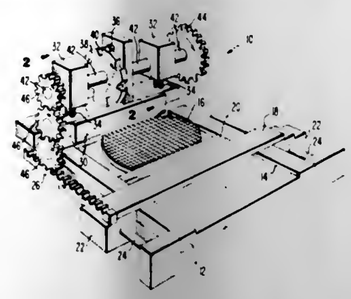
4,068,788

METHOD FOR CRACKING BRITTLE MATERIAL

Nicholas Francis Gubitose, Moosic; Leonard Gawelko, Wilkes Barre, both of Pa., and Robert Joseph Satriano, Allamuchy, N.Y., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 29, 1975, Ser. No. 617,632
Int. Cl.[2] B26F *3/00*
U.S. Cl. 225—1 4 Claims

1. A method of cracking a sheet of brittle material having two intersecting sets of parallel scribe lines, said sets enclosing a plurality of pellets thereon comprising the steps of:
   supporting said sheet in a cantilever manner at a point at least one scribe line away from an edge thereof, said edge being substantially parallel with said scribe lines;
   applying, by means of a shear blade, a shear force to said edge of said sheet, whereby said sheet is fractured at said one scribe line;
   repeating said method until all scribe lines of one set are



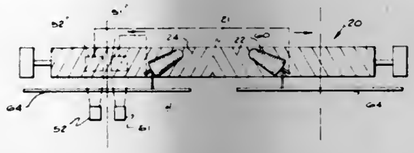
   fractured, whereby a plurality of rows of pellets are formed; and
   rotating said rows of pellets and repeating said method on the other set of parallel scribe lines.

4,068,789

METHOD AND APPARATUS FOR CONTROLLING A MOVING WEB

William O. Young, Jr., Spartanburg, and Mansel A. Jennings, Inman, both of S.C., assignors to Young Engineering, Inc., Spartanburg, S.C.

Filed Oct. 24, 1975, Ser. No. 625,756
Int. Cl.[2] B65H *23/02*
U.S. Cl. 226—3 17 Claims



1. Apparatus for controlling lateral position of a moving textile web comprising:
   a. a driven roll extending across a path of travel of said moving textile web, said roll means having at least one helical element thereon to move said textile web in a lateral direction under predetermined conditions;
   b. pressure applicator means located adjacent said driven roll and being actuatable under predetermined conditions to make contact with said web on said roll and cooperate with said roll to drive said web in a lateral direction while avoiding imparting any substantial axial forces on said web with respect to the direction of web travel; and
   c. web detector means located along said path of travel for detecting lateral position of said web, said detector means being operatively associated with said pressure applicator means to actuate and deactuate same responsive to the lateral position of said web.

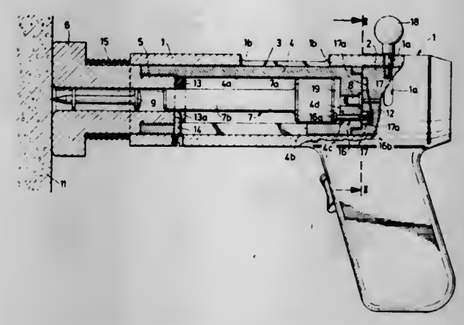
14. A method of controlling the lateral position of a moving textile web comprising the steps of:
   a. feeding a textile web over a driven roll, in engagement across the width of said textile web with at least one helical element thereon;
   b. sensing the lateral position of the web;
   c. applying pressure on said web at said roll upon sensing a lateral misalignment of same, said pressure being applied on said web at a lateral location of same opposite the lateral misalignment in an amount insufficient to create any substantial axial force on said web with respect to the direction of web travel, whereby said web is driven laterally towards the location of applied pressure so long as said pressure continues; and
   d. releasing said pressure when said web is sensed as being back in proper lateral alignment.

4,068,790

POWER CONTROL ARRANGEMENT FOR AN EXPLOSIVE POWDER-DRIVEN SETTING GUN

Helmut Osterle, Nofels, and Herbert Rangger, Frastanz, both of Austria, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 22, 1976, Ser. No. 735,093
Claims priority, application Germany, Oct. 27, 1975, 2548014
Int. Cl.[2] B25C *1/14*
U.S. Cl. 227—8 10 Claims



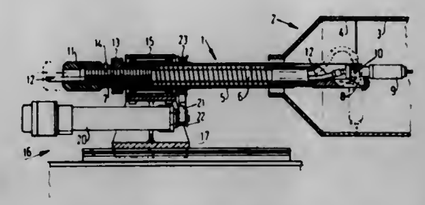
1. Explosive powder-driven setting gun comprising a casing forming an axially extending first bore having a muzzle end and a rear end spaced axially from the muzzle end, a piston guide axially displaceably mounted in the bore in said casing, said piston guide having a muzzle end and a rear end spaced axially from the muzzle end with the muzzle end of said piston guide oriented relative to one another in the same manner as the muzzle end and rear end of the bore in said casing, said piston guide forming a second bore with the axis thereof disposed in substantially parallel relation with the axis of the first bore, an axially elongated driving piston axially displaceable through the second bore in said piston guide between the rear end and muzzle end thereof, said driving piston having a forward end closer to the muzzle end of said piston guide and a rearward end closer to the rear end of said piston guide, a locking piece located within said casing at the rear end of the bore rearwardly of said piston guide, an axially displaceable stop pin mounted in the rear end of said piston guide and having the axis thereof disposed in parallel relation with the axis of said driving piston, said stop pin having a front end facing toward the muzzle end of said piston guide and a rear end facing in the opposite direction, wherein the improvement comprises that said locking piece being axially stationarily mounted in said casing, said stop pin being axially displaceable relative to said piston guide for locating the front end of said stop pin within the second bore in said piston guide to limit the position of the rear end of said driving piston relative to the rear end of said piston guide, and a supporting element for the rear end of said stop pin, said supporting element adjustably mounted in said locking piece and arranged for varying the extent to which said stop pin extends into the second bore in said said piston guide.

4,068,791

HOLDER FOR A WELDING HEAD

Christiaan Gustaaf Adolf Scholtus, Oudorp; Willebrordus Cornelis Hoeboer, Amsterdam, and Antonius Ruiter, Schagen, all of Netherlands, assignors to Ultra-Centrifuge Nederland N.V., The Hague, Netherlands

Filed Dec. 12, 1975, Ser. No. 640,389
Claims priority, application Netherlands, Dec. 23, 1974, 7416810
Int. Cl.[2] B23K *37/02*
U.S. Cl. 228—45 3 Claims



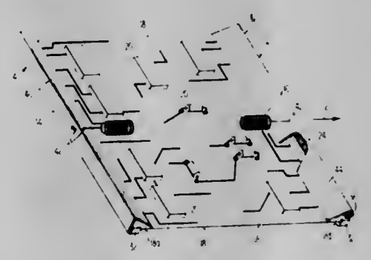
1. A welding head positioner for carrying out welds on the inner side of a substantially closed, narrow body which comprises a carriage provided with a mounting, an elongated, motor-driven cantilever sleeve-like member rotatably positiond within said mounting, a hollow, rod-like member slidably disposed within said sleeve-like member, a frame consisting of two lengthwise side-by-side arranged flats fixed to the cantilever end of said sleeve-like member and pivotly supporting therebetween a holding member having on opposite sides thereof protruding stub-like pins turning in holes provided in said flats, said holding member fixedly carrying within it a welding head, pin and slot linkage means acting between said rod-like member and holding member, said linkage means serving to pivot said holding member responsive to axial, sliding movement of said rod-like member, the welding head being pivotable from an axially directed position to a radially directed position by the axial displacement of the rod-like member inside of the sleeve-like member.

4,068,792

DEVICE FOR PROTECTING THE EDGE CONNECTORS OF PRINTED CIRCUIT BOARDS DURING WAVE SOLDERING

Charles Fulton Dixon, Drexel Hill, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 28, 1977, Ser. No. 791,871
Int. Cl.[2] B23K *3/00*
U.S. Cl. 228—57 7 Claims



1. A device for protecting the edge contacts of a printed circuit board during wave soldering comprising:
   a pair of spaced-apart allochirally disposed sections;
   tensioning means coupling said sections to each other;
   each of said sections having a substantially right triangular cross-sectional geometry, the sides of the right angle portion of each of said sections defining respectively a vertical member and a horizontal member, the length of

said horizontal member being abbreviated to provide an opening into said section between its extremity and that of a third side representing the hypotenuse of said triangular geometry;

said sections being capable of being pivoted from their initial positions about horizontal axes through the respective vertices of their right angles thereby permitting the friction-free insertion of the respective opposite ends of said printed circuit boards through the openings therein;

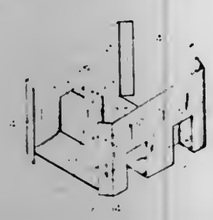
said tensioning means restoring said sections to their initial positions and causing the extremities of the third sides of said sections to exert respective forces on said circuit board which result in the lower surfaces at opposite ends of said board being held firmly in contiguity with the inner surfaces of said horizontal members.

4,068,793

CUSHIONING INSERT

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Apr. 25, 1977, Ser. No. 790,600
Int. Cl.² B65D *25/14*
U.S. Cl. 229—14 C **9 Claims**



1. A cushioning insert for shipping containers for a plurality of necked articles of commerce such as a television picture tube having a wide screen at one end and a narrow neck at the other end, said articles being arranged in allochiral relationship, said insert being formed from a cut and scored blank of paperboard or the like, and comprising:

a. a base panel having a pair of wall panels foldably joined to and upstanding from opposed edges thereof;

b. one of said wall panels and a portion of said base panel, adjacent a line of fold therebetween, having cut and scored portions erectable to define a support for the neck of one of said articles;

c. the other of said wall panels and said base panel having spaced portions of said base panel and spaced portions of said other wall panel adjacent a line of fold between said base panel and said other wall panel, having cut and scored portions erectable to define spaced supports, each for support of the neck of another one of said articles;

d. structure for locking each of said supports in position comprising locking flpas foldably connected to said panel portions and to each other and cut from said base panel and a correlative wall panel;

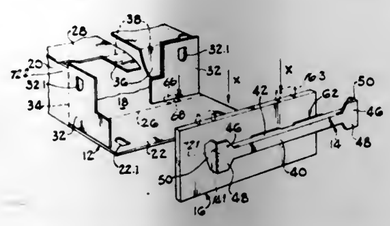
e. one of said locking flaps overlying the panel portion formed from a wall panel, and having a diagonal score line therein to provide folding of said locking flap over the panel portion formed from a wall panel.

4,068,794

CONTAINER PARTICULARLY, BUT NOT EXCLUSIVELY FOR USE IN SHIPPING PERISHABLES

Bryan Lawrence, Noordhoek, Cape Province, South Africa, assignor to The Deciduous Fruit Board, Cape Town, Cape Province, South Africa

Filed Sept. 24, 1976, Ser. No. 726,435
Claims priority, application South Africa, Sept. 25, 1975, 75/6116
Int. Cl.² B65D *5/02, 61/00*
U.S. Cl. 229—23 R **11 Claims**



1. A container comprising a base panel, upstanding side panels and upstanding end panels, said panels forming an upwardly open tray, a locking panel at each end of each side panel, each pair of locking panels being parallel to and spaced from the adjacent end panel, a load bearing insert at each end of the container, each insert being between one of the end panels and the two adjacent locking panels, each insert, adjacent end panel and adjacent pair of locking panels forming a composite end wall of the container, and an end piece of inverted U-shape at each end of the container, the vertical walls of each end piece receiving the upper edge of one of the composite end walls therebetween, and elements which protrude upwardly at each end of the container with respect to the remainder of the container.

4,068,795

FOLDED CLOSED CARTON CONVERTIBLE TO OPEN TRAY

William Edward Forster, Liverpool, England, assignor to Metal Box Limited, Reading, England

Filed Aug. 30, 1976, Ser. No. 718,985
Int. Cl.² B65D *5/24*
U.S. Cl. 229—31 R **18 Claims**



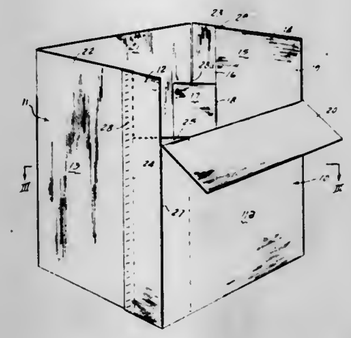
1. A new article of manufacture comprising a blank for selectively forming an open tray and a closed carton of a size lesser than said tray, said blank being in the form of a generally rectangular sheet, longitudinal fold lines dividing said sheet into a central and two end portions, and transverse fold lines dividing said central portion into body panels and said end portions into edge panels disposed at opposite ends of said body panels, said edge panels of each end portion including two remote connecting panels and only two end panels, one of said two end panels of each end portion having fold line means for positioning said one end panel selectively coplanar with the other of said two end panels and in overlapped relation to the other of said two end panels.

4,068,796

CONTAINER WITH INTEGRAL CORNER POSTS

Thomas D. Kullman, Jr., Wheeling, W. Va., assignor to Consolidated Packaging Corporation, Chicago, Ill.

Filed Jan. 27, 1976, Ser. No. 652,732
Int. Cl.² B65D *5/42*
U.S. Cl. 229—49 **3 Claims**



1. A reinforced container formed of foldable paper board comprising:

a. first and second container segments,

b. the first container segment being folded to form a first side wall and a major portion of a second side wall with an intermediate corner, one edge of said first side wall having a minor portion of a third side wall formed therewith with a first associated corner defined thereby, the opposite vertical edge of the major portion of said second side wall having a first inner lap extending therefrom,

c. the second container segment being folded to form a fourth side wall and a major portion of said third side wall with an intermediate corner, one edge of said fourth side wall having a minor portion of said second side wall formed therewith with a second associated corner defined thereby, the opposite vertical edge of the major portion of said third side wall having a second inner lap extending therefrom,

d. the minor and major portions of said second side wall being joined together at points causing said first inner lap to extend into the container adjacent to said first associated corner, and

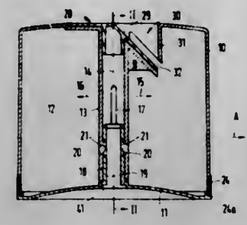
e. the minor and major portions of said third side wall being joined together at points causing said second inner lap to extend into the container adjacent said second associated corner.

4,068,797

SAVINGS BANK

Hans Rudolf, Leutenbach, and Gerhard Riegraf, Affalterbach, both of Germany, assignors to Gerhard Riegraf KG, Affalterbach, Germany

Filed Nov. 22, 1976, Ser. No. 743,666
Claims priority, application Germany, Nov. 28, 1975, 2553462
Int. Cl.² G07F *9/06*
U.S. Cl. 232—4 R **6 Claims**



1. A molded savings bank consisting essentially of:

first and second hollow body parts, said parts being molded so as to fit together and thereby form an essentially closed hollow money chamber,

said first body part including an elongated hollow plug member integrally formed therewith,

said second body part including an elongated hollow socket member integrally formed therewith,

said plug member and said socket member having interfitting cross-sectional configurations and being of lengths such that said members telescopically engage each other over a substantial portion of their length,

a distal end of said socket member including furcations formed such that said socket member is radially and resiliently expandable,

said socket member further including inwardly projecting lugs integrally formed on said furcations,

said plug member including recesses formed therein equal in number to the number of said lugs and axially disposed so as to be engaged by said lug when said body parts are united for releasably locking said body parts together, and

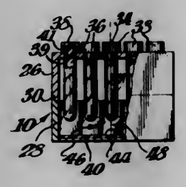
a money slot formed in one of said body parts.

4,068,798

METHOD AND APPARATUS FOR STOPPER REMOVAL

Vernon Carl Rohde, Newtown, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 29, 1976, Ser. No. 728,001
Int. Cl.² B04B *5/02*
U.S. Cl. 233—26 **6 Claims**



1. Apparatus for removing stoppers from test tubes using a centrifuge having a swinging bucket-type carrier comprising, in combination,

a rack to be placed in said bucket-type carrier and having upper and lower separable members,

said upper member having an upper surface defining plural apertures receiving said test tubes,

at least a portion of each said stopper having an enlarged portion with an outside diameter greater than the diameter

of its associated test tube, thereby to permit said test tubes to hang from said upper surface supported only by their respective stoppers,

said lower member having a bottom,

supporting means associated with said lower member for supporting said test tubes against lateral movement, and

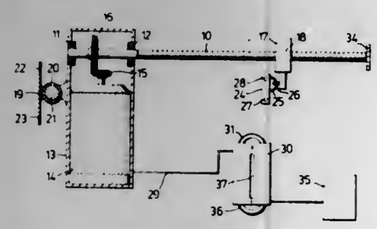
the spacing between the bottom of said test tubes and said lower member bottom being greater than the length of the stoppers along the axis of said tubes in contact with said tubes, whereby subjecting said rack to centrifugal force separates said test tubes from said stoppers to rest on said lower member bottom such that said stoppers can be discarded and access had to the contents of said test tubes by removing said upper member from said lower member.

4,068,799

AUTOMATIC VENTILATION REGULATING DEVICE FOR WINDOWS, DOORS AND THE LIKE

Eric Brodin, 44, Boulevard d'Italie, Monte Carlo, Monaco

Filed Feb. 10, 1976, Ser. No. 656,879
Claims priority, application Sweden, Feb. 10, 1975, 7501426
Int. Cl.² F01P *7/10*
U.S. Cl. 236—49 **5 Claims**



1. An automatic ventilation regulating device for windows, doors and like having an openable portion and a fixed portion, said device including: a threaded spindle rotatably mounted; a slide displaceable on said spindle when said spindle is rotated, said spindle being pivotally connected with one portion and said slide being pivotally connected with the other portion; and means to automatically vary the degree to which the window or door is opened in response to temperature, said means comprising intermittently operated motor means for rotating said spindle for short periods, and a settable thermostat for controlling the operation of said motor means to drive said motor means intermittently for short periods in response to the temperature in the ventilated room.

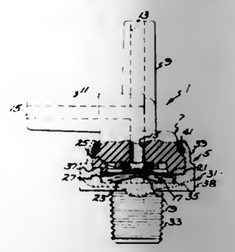
4,068,800

THERMALLY RESPONSIVE VALVE ASSEMBLY

John Doherty, Jr., Assonet, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 600,337, July 30, 1975, abandoned, which is a continuation of Ser. No. 428,569, Dec. 26, 1973, abandoned. This application Oct. 14, 1976, Ser. No. 732,280
Int. Cl.² G05D *23/10*
U.S. Cl. 236—101 C **6 Claims**

2. A thermally responsive valve assembly compising a body molding of a synthetic material and a thermally conductive metal valve body member, said metal valve body member being cup-snaped with an open-ended recess therein, having said synthetic valve body molding secured to said metal valve body member in said open recess end to form a chamber therebetween, and having an externally threaded portion on said metal valve body member for use in mounting the valve assembly, the synthetic valve body molding having a first nipple and and adjacent second nipple for connection to fluid lines, having an inlet passage in one of said nipples and an outlet passage in the other of said nipples, and having one end of each of said passages disposed in side-by-side relation to each other at one side of the chamber opening into said chamber, a valve seat within said chamber extending completely around said one end of one of said passages, an abutment on the synthetic body molding at said one side of the chamber defining at least part of a ring encompassing both of said one passages ends, a valve member comprising a generally circular dish-shaped thermostatic disk responsive to a variation in temperature to move with snap action between a first dished curvature and an inverted dished curvature, said dish-shaped bimetallic disk having a central portion and a perimeter and being disposed within said valve body chamber with said disk perimeter aligned with said abutment and with said central portion aligned with said



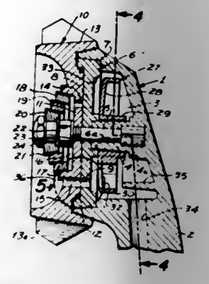
valve seat with one side of said disk facing both of said one passage ends, and spring means bearing against said metal valve body member and said bimetallic disk to bias said disk into engagement with said seat while said disk has said inverted curvature, thereby to apply sufficient force to said bimetallic disk to normally maintain said central disk portion against the valve seat to close communication between said valve passages while permitting said disk perimeter to engage said abutment to move said central disk portion away from said valve seat against said spirng bias to permit fluid flow between said valve passages at said one side of said disk when said disk moves to said first curvature in response to temperature change.

4,068,801

PULSATING JET SPRAY HEAD

Harold H. Leutheuser, Hillsdale, Mich., assignor to Alson's Corporation, Somerset, Mich.

Continuation-in-part of Ser. No. 678,042, April 19, 1976, which is a continuation of Ser. No. 621,376, Oct. 10, 1975, abandoned. This application Sept. 17, 1976, Ser. No. 724,117
Int. Cl.² B05B *1/08*
U.S. Cl. 239—102 **20 Claims**



1. A shower head comprising:

a. a housing forming a chamber defined in part by a plate having a set of fine spray supply ports, and a set of jet spray supply ports;

b. a peripherally engageable handle disk sealingly confronting and covering the plate, the handle disk having a set of fine spray nozzles and a set of jet nozzles, the handle disk being manually movable arcuately to connect the fine spray supply ports and fine spray nozzles, or to connect the jet spray supply ports with the jet spray nozzles;

c. means for producing a rotating current of water in the chamber;

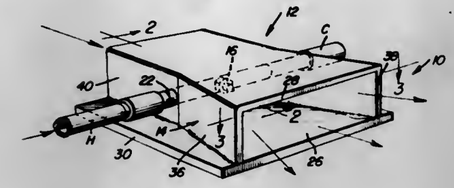
d. and a rotor driven by the rotating water current, the rotor including a rotatable base plate disposed contiguous to the supply port plate, the base plate having closed and open portions movable past the supply ports in succession to produce at jet spray nozzles a pulsating effect.

4,068,802

SPRAYING SYSTEM TO CONTROL AIR-BORNE COAL DUST

Shelby H. Goings, Rte. No. 7, Princeton, W. Va. 24740

Filed June 25, 1976, Ser. No. 699,809
Int. Cl.² F04F *5/02*
U.S. Cl. 239—419.5 **5 Claims**



1. A spraying system for controlling airborne particulate matter, comprising, in combination:

a. a short open-ended housing including a subsonic diffuser portion having an entrance and an outlet, the diffuser portion diverging from the entrance to the outlet;

b. a liquid spray nozzle means including a pipe arranged transversely of the housing and mounting adjacent the entrance of the diffuser portion a diverging spray head disposed at the entrance of the diffuser portion for directing a diverging spray toward the outlet of the diffuser portion; and

c. the housing further including air intake means connected to the entrance of the diffuser portion and forming a passage of constant cross-sectional area and of the same size and cross-sectional configuration as the entrance to the diffuser portion and simultaneously forming an extension of the entrance of the diffuser portion, the passage extending from the entrance of the diffuser substantially the same distance as the outlet of the diffuser portion extends from the entrance of the diffuser portion for mixing air with the liquid spray and forming a mist which attracts and entrains particulate matter from air adjacent the mist downstream of the diffuser portion.

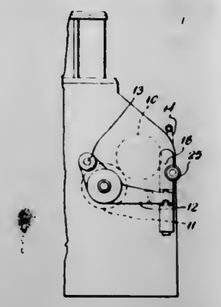
4,068,803

ROLLERMILLS

Richard Fullalove, Denton, and Frederick Spencer, Stockport, England, assignors to Henry Simon Limited, Stockport, England

Filed Sept. 13, 1976, Ser. No. 722,574
Claims priority, application United Kingdom, Oct. 24, 1975, 43944/75
Int. Cl.² B02C *4/32*
U.S. Cl. 241—32 **7 Claims**

1. In a rollermill comprising a pair of rotatable grinding rolls, means mounting one of said rolls for displacement relative to the other and comprising a movable actuating member for determining said displacement, resilient means providing a roll separation resisting force acting directly on said member for urging said one roll toward the other roll for normally maintaining the surfaces of said rolls in grinding engagement while permitting separation of said surfaces in the event an obstacle passes between them during grinding, and means including shear pin means effective after a predetermined separation of said surfaces permitted by said resilient means for substantially solidly resisting further movement of said member and thereby resisting further relative separation of said surfaces, said shear pin means being constructed and arranged to fail upon said predetermined separation of said roll surfaces when the roll separation force acting on said member exceeds the combined resisting forces of said resilient means and said shear pin means to permit increased separation of said surfaces to non-grinding



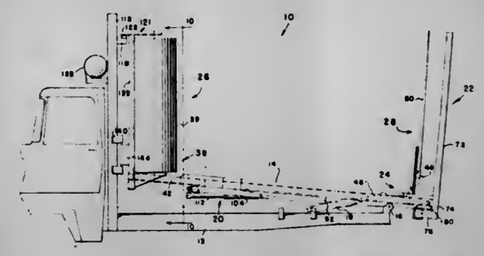
position while the full force of the resilient means alone remains acting on said member, whereby in the event of failure of said shear pin means and subsequent passage of the condition causing said increased separation of the roll surfaces said resilient means will continue with full force to urge said surfaces toward normal grinding relation.

4,068,804

METHOD AND MACHINE FOR TEARING APART STACKED CROP MATERIAL BALES

L. Dennis Butler; Gene R. Butler, both of Kingsburg; Anthony E. Furtado, Riverdale; Jerry W. Welker, Fresno, and Donald M. Grey, Selma, all of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Division of Ser. No. 467,359, May 6, 1974. This application Dec. 22, 1975, Ser. No. 643,045
Int. Cl.² A01C *3/06*
U.S. Cl. 241—101.7 **10 Claims**



1. In a machine for tearing apart crop material bales from a stack thereof, the combination comprising:

a mobile chassis;

a load bed pivotally mounted near its one end to said chassis and moveable between a generally horizontal position and a genrally upright retrieving position in which said load bed may be disposed generally against a side of said bale stack, said one end being the rear end with respect to the primary direction of travel of the machine;

stack retaining means including a pair of stack supporting arms mounted to said load bed and extending in a generally upright relation therefrom respectively adjacent opposing corners of said one end thereof, said arms being operable for movement between respective open positions disposed outwardly from opposite lateral sides of a lower end of said stack and respective closed positions disposed in supporting engagement with said stack lower end when said load bed is disposed in its upright stack retrieving

position, and a pair of stack clamping arms mounted to said load bed and extensible in a generally upright relation therefrom respectively adjacent opposing corners of said other opposite end thereof, said arms being operable for movement between respective open positions disposed outwardly from opposite lateral sides of an upper end of said stack and respective closed positions disposed in clamping engagement with said stack upper end when said load bed is disposed in its upright stack retrieving position;

means mounted on said load bed for advancing said stack longitudinally along said load bed toward an opposite other end of said load bed opposite to its one end when said load bed is disposed in its horizontal position;

a generally horizontally-positioned platform mounted on said chassis adjacently along said other end of said load bed when said load bed is disposed in its horizontal position, said platform capable of receiving and supporting a leading portion of said stack each time said stack advancing means advances said stack longitudinally along said load bed;

a crop material bale shredder operatively mounted on said chassis adjacent one lateral side of said platform; and

feeder means mounted to said chassis along said platform and moveable toward said shredder for feeding said leading stack portion along said platform in a transverse relation to the longitudinal extent of said load bed and into said shredder.

4,068,805

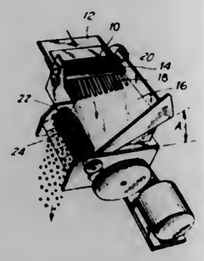
SHREDDING MACHINE

Fred Oswald, Forest Drive, Sands Point, N.Y. 11050

Filed Nov. 5, 1976, Ser. No. 739,268

Int. Cl.[2] B02C *19/00*

U.S. Cl. 241—159 **15 Claims**



1. A paper shredder comprising interdigitated rotatable members each including alternating first and second portions of different diameter, said members being adapted to shred paper therebetween, and comb means operatively extending into at least one of said members to strip paper therefrom, the said comb means and the said one of said members cooperatively including tongue and groove means to assist in removing paper from the members whereby to prevent jamming of said shredder, the first and second portions being cylindrical sections of different diameters, each of said sections being provided with annular grooves constituting part of said tongue and groove means.

4,068,806

BOBBIN TUBE CLAMPING DEVICE

Louis Moser, Hettlingen, and Albert Rüegg, Pfaffikon, both of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

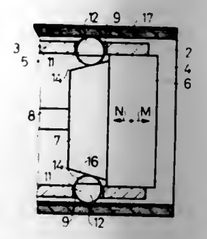
Filed Feb. 19, 1976, Ser. No. 659,325

Claims priority, application Switzerland, Mar. 14, 1975, 3241/75

Int. Cl.[2] B65H *75/30, 79/00*

U.S. Cl. 242—46.4 **5 Claims**

1. A bobbin tube clamping device for a bobbin chuck for textile bobbins, comprising a substantially hollow tubular sleeve member for supporting textile bobbin tubes, a chuck member mounted to be movable within the tubular sleeve member in the axial direction thereof, bobbin tube clamping elements cooperating with said chuck member, said chuck member being provided with a guide surface which is inclined with respect to the lengthwise axis of the chuck member for supporting and moving said bobbin tube clamping elements in a radial direction, said tubular sleeve member being provided with at least three openings extending substantially in the axial direction of the tubular sleeve member, each axially extending opening being provided with at least two guide surfaces extending substantially in the axial direction of the tubular sleeve member for guiding an associated bobbin tube clamping element, each said bobbin tube clamping element having a portion guided by the two axially extending guide surfaces of the associated opening, said guided portion having a substantially arcuate end protruding from the tubular sleeve member, the axis of the radius of curvature of said arcuate end extending substantially transversely of the axis of said tubular member, said guided portion having opposed substantially parallel walls which contact the two axially extending guide surfaces of the associated opening, each bobbin tube clamping element having a gliding portion extending into the interior of the tubular sleeve member and having projection means extending beyond the distance between the parallel walls of the guided portion of such bobbin tube clamping element.



4,068,807

THREAD SUPPLY DEVICE

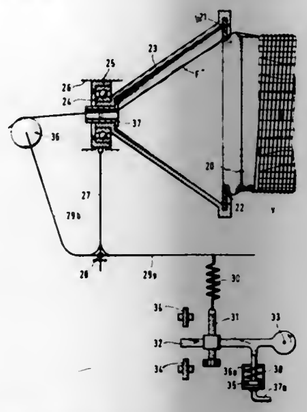
Kurt Arne Gunnar Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Sept. 20, 1976, Ser. No. 724,918

Claims priority, application Germany, Sept. 25, 1975, 2542824

Int. Cl.[2] B65H *51/00, 51/20*

U.S. Cl. 242—47.01 **11 Claims**



1. In a thread supply device having a storage drum on which the thread issuing from a storage bobbin can be tangentially wound and from which the thread can be endwise unwound, the storage drum having a conical brake surface over which the thread passes as it is unwound endwise from the drum, and resilient brake ring positioned in surrounding relationship to the brake surface and movable axially relative thereof for varying the contact brake pressure between the brake ring and the brake surface, the thread as withdrawn endwise of the drum passing between and being engaged by the brake ring and the brake surface, the improvement comprising adjusting means coacting between the brake ring and the withdrawn thread for automatically axially moving said brake ring relative to said brake surface in response to variation in the tension of the withdrawn thread downstream of the brake ring, said adjusting means causing the braking pressure between the brake surface and the brake ring to be increased in response to a decrease in the tension of the withdrawn thread, and vice versa.

4,068,808

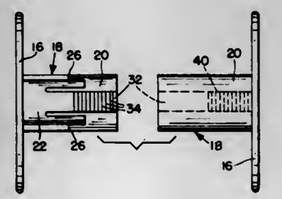
TWO PART PLASTIC REEL

Richard J. King, c/o Galley Industries, 149 Hamilton St., Leominster, Mass. 01453

Filed Feb. 16, 1977, Ser. No. 769,283

Int. Cl.[2] B65H *75/14*

U.S. Cl. 242—118.4 **7 Claims**



1. A reel comprising two like parts, each part comprising a flange and a partial spool thereon,

each partial spool comprising a semi-cylindrical portion of a predetermined radius, and another semi-cylindrical portion of lesser radius, a springy longitudinal tongue forming a part of one of the semi-cylindrical portions,

interengaging means on the tongue on the outside aspect thereof, and complementary interengaging means on the other of said semi-cylindrical portions at the inside aspect thereof, said interengaging means forming a snap-over connection upon longitudinal motion inwardly together of said spool portions to a point where the free ends of each semi-cylindrical portion approaches the inside aspect of the flange on the other of said semicylindrical portions.

4,068,809

FILMSTRIP CARTRIDGE WITH FILM LOCK

Richard H. Koester, Rochester, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Sept. 20, 1976, Ser. No. 724,880

Int. Cl.[2] G03B *1/04;* **G11B** *15/32;* **G03B** *23/02*

U.S. Cl. 242—197 **2 Claims**

1. A filmstrip cartridge with means to arrest the longitudinal movement of film having marginal perforations along an edge comprising:

a filmstrip cartridge having a guide channel thru which film may be moved along its longitudinal axis;

a resilient wire having one end secured to a portion of said cartridge;

said resilient wire being generally parallel to said longitudinal axis of said film;

a nub formed in said wire;

said nub having a first leg and a second leg;

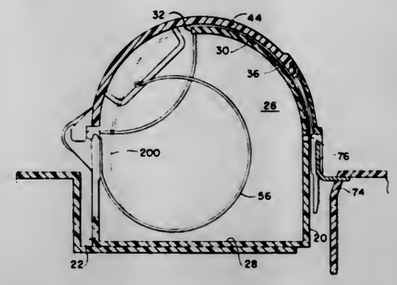
said second leg and said resilient wire defining an obtuse angle;

said nub capable of penetrating one of said perforations;

said nub movable to a first position in which said nub penetrates one of said perforations to arrest the longitudinal movement of said film;

said wire resiliently biasing said nub to said first position; and

said nub movable to a second position out of engagement with said perforations;



whereby a pulling force above a predetermined level applied along said longitudinal axis of said film will cause said nub to be forced out of said perforation.

4,068,810

COMBINATION MOTORCYCLE AND HANG-GLIDER

Douglas J. Malewicki, 14962 Merced Circle, Irvine, Calif. 92714

Filed May 5, 1975, Ser. No. 574,308

Int. Cl.[2] B64C *37/02*

U.S. Cl. 244—2 **3 Claims**



1. A motorized hang-glider comprising:

a flexible wing, said wing including a trifurcated frame having a central keel boom and a pair of converging, leading, edge booms intersecting at their forward ends, forming an acute triangle, said booms being held in rigid angular relation to each other by a transverse support beam;

a motorized vehicle having an engine therein, said vehicle being pivotally connected to said flexible wing, and positioned beneath and remotely therefrom, said motorized vehicle comprises:

a motorcycle;

truss means pivotally interconnecting said wing to said motorized vehicle, wherein said truss means comprises:

a forward adjustable strut member pivotally attached to the forward portion of said central keel boom at one end thereof, the opposite end of said strut being pivotally attached to said motorcycle, said forward, adjustable, strut member includes:

an upper, adjustable, elongated, strut member;

a lower, tubular, strut member whereby one end of said upper strut is slidably received therein;

a pair of centrally disposed strut members pivotally attached to the outer ends of said transverse support beam, each strut depending downwardly and inclined inwardly, pivotally attaching to either side of said motorcycle; and

a second pair of oppositely disposed strut members wherein the upper ends of said strut members are pivotally connected to the rear of said central keel boom and project

downwardly therefrom, being pivotally connected at their lower ends to said motorcycle;

pivotal means connecting one end of said truss means to said wing, and the opposite end thereof to said motorized vehicle;

a releaseable means mounted to one of said truss means whereby the angle of said wing relative to said motorized vehicle can be changed to cause said motorized hang-glider to be airborn; wherein said releaseable means comprises:

a cylindrical housing having a pair of elongated, diametrically opposed slots disposed therein, said housing being secured to said lower strut member;

a shank member slidably received in said housing and forming a part of said upper strut member;

a locking means for releaseably locking said shank in a retracted mode of operation; and

means attached to said shank member to provide limited movement of said upper strut member;

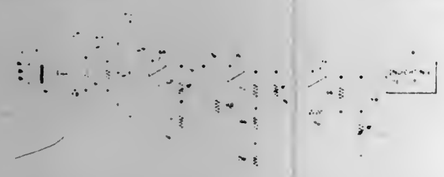
wherein said limiting means comprises a pin mounted to said shank and extending outwardly from opposite sides thereof, and slidably received in said respective slot in said housing.

4,068,811

HOTBOX DETECTOR

Paul W. Caulier, Greenwood, Va., assignor to General Electric Company, Salem, Va.

Filed Apr. 28, 1977, Ser. No. 791,955
Int. Cl.[2] B61K *9/06*
U.S. Cl. 246—169 A **10 Claims**



1. An improved circuit for use in apparatus for detecting the temperature of railroad car wheel journals as a train passes a fixed wayside point whereby infrared signals are transmitted from the wheel journals to the apparatus at a frequency corresponding to the rate at which said wheels pass said wayside point, said circuit comprising:

a. sensor means including a pyroelectric cell for outputting a voltage signal having a magnitude which is a function of the infrared input signals applied thereto, said sensor means exhibiting a substantially flat gain response to input signals occurring at frequencies within a first range and a gain response which varies exponentially with an increase in the frequency of the input signals within a second range of frequencies higher than said first range; and,

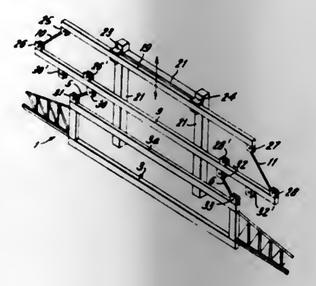
b. differentiating means responsive to the output of said sensor means to output a voltage signal having a magnitude porportional to the temperature of the wheel journal, said differentiating means having a substantially flat gain response to signals having a frequency within said first range and a gain response within said second range which varies exponentially at the same rate but in a direction opposite to that of said sensor means.

4,068,812

DEVICE FOR MOUNTING CANTILEVER-SUSPENDED BOOMS ON AGRICULTURAL VEHICLES FOR DISTRIBUTING TREATMENT MATERIALS

Pierre E. Demaret, 16, Chaus. de Namur, Molgnelee, Belgium (B-5690)

Filed Oct. 16, 1975, Ser. No. 623,011
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—14 **5 Claims**



1. A mounting device for booms suspended from a vehicle and used for distributing agricultural-treatment materials or the like, said mounting device comprising, in combination:

an anti-roll mechanism including a rigid, horizontal deflecting bar;

primary connecting rods suspended angularly in a vertical plane from opposite ends of said deflecting bar;

an upper, rigid, horizontally-disposed longitudinal member parallel to said deflecting bar and including means for connection to a vehicle;

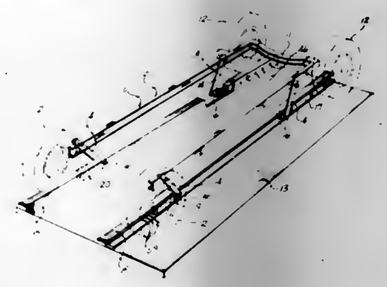
second connecting rods depending angularly in a vertical plane from opposite ends of said upper longitudinal member, said connecting rods being freely pivoted to their respective deflecting bar and longitudinal members, and a boom-frame pivotally-connected to the first-mentioned, primary connecting rods and having a boom projecting outwardly beyond said primary connecting rods.

4,068,813

VEHICLE TIE-DOWN METHOD AND APPARATUS

Maurice Stephen Chatwin, Seattle, and George Zell Porter, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 28, 1976, Ser. No. 727,496
Int. Cl.[2] B60P *7/00*
U.S. Cl. 248—119 R **7 Claims**



1. Apparatus for tying-down a wheeled vehicle to a platform having edges, said vehicle having tires and resilient suspension members, said apparatus comprising:

at least one rail attached to said platform between said vehicle and said platform and adapted for attachment of a first stop means and installation of a second stop means;

first and second link assemblies for attaching said vehicle to said rail;

each of said link assemblies comprising:

vehicle attachment means for pivotally removably connecting said link assembly to said vehicle at spaced apart points aligned with said rail;

platform attachment means for removably engaging said rail and being free to move along said rail while engaging it;

tension means connecting said vehicle attachment means to said platform attachment means, having a length such that said first and second link assemblies are in essentially vertical positions when pivotally connected to said vehicle and movably engaged with said rail;

placement means for moving said rail engaging platform attachment means of said second link assembly to a position closer to said rail engaging platform attachment means of said first link assembly while both are engaged with said rail, so that said first and second link assemblies are pivoted out of said essentially vertical positions into angled positions so that the vertical distance between said pivotally connecting vehicle attachment means and said movable, rail engaging platform attachment means is decreased, causing said tires and suspension members to be effectively compressed;

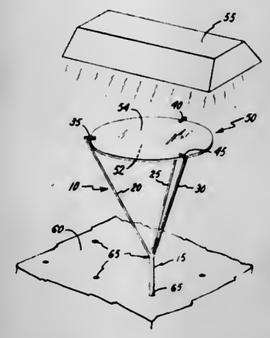
locking means for removably securing said rail engaging platform attachment means of said second link assembly to said rail in a predetermined longitudinal disposition with respect to said first link assembly along said rail.

4,068,814

SEMICONDUCTOR BODY HOLDER

Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,237
Int. Cl.[2] B01J *17/12, 17/02*
U.S. Cl. 248—176 **1 Claim**



1. A semiconductor body holder comprising:

a base comprising a rigid refractory member comprising a quartz rod and having first and second ends, said first end being adapted to support said holder and

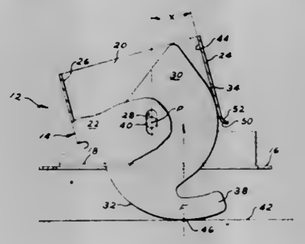
three flexible refractory arms, of quartz each of said arms including distal and proximal ends, the proximal end of each arm being fixed to said second end of said base, said arms forming an obtuse angle of quartz with said base and each of said arms including a refractory finger fixed to the distal end thereof, each of said fingers extending generally toward the central axis of said base, the orientation of said fingers, said arms and said base with each other minimizing any shadowing effect of the arms upon radiation emitted by a wafer supported by the holder as well as minimizing the inducement of undesirable thermal gradients in said wafer, each of said fingers being capable of engaging only a minimal outermost peripheral surface area of a wafer and each arm being capable of only contacting a minimal portion of an edge of a wafer.

4,068,815

SELF LOCKING SUPPORT MECHANISM

Gerhard K. Losert, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 26, 1977, Ser. No. 762,565
Int. Cl.[2] F16M *11/24*
U.S. Cl. 248—188.2 **4 Claims**



1. A self-locking support mechanism for leveling an appliance relative to the floor, comprising:

a. a support member secured to the appliance and having at least one end wall and one side wall, said side wall having a slot;

b. a rotatable cam member having:

i. a pivot point,

ii. a cam surface to contact the floor for height adjustment, said cam surface contacting the floor at a point through which a vertical force moment is applied to the cam member,

iii. a radius surface relative to the pivot point and opposite the cam surface;

c. a pin through the pivot point of the cam member and the slot in the support member side wall and slidably movable within the slot, said slot and support end wall being spaced from and converging toward each other in a direction away from the floor and arranged such that the vertical force moment is applied to the cam member between the pivot point and the support end wall; and

d. means for rotating the cam member, whereby upon rotating the cam member the pin is moved within the slot away from the floor and the cam member radius surface abuts the support end wall to lock the cam member.

4,068,816

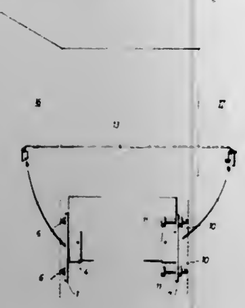
SUPPORT ASSEMBLY

Karl Gunnar Andersson, Handen, Sweden, assignor to Friktions-Stamp AB, Sweden

Filed Dec. 2, 1976, Ser. No. 747,075
Int. Cl.[2] A47H *1/14*
U.S. Cl. 248—251 **9 Claims**

1. A support assembly for mounting a crossbar between two opposite walls, including a pair of end parts each including a plate, one surface of each of said plates being provided with a U-shaped yoke, the bottom web of said yoke forming a vertical support for the associated end of the crossbar and the legs of said yoke forming lateral supports for the associated end of said crossbar, one plate being provided with fixed pegs to rest against one of the walls, the other plate being provided with throughgoing threaded clamping bolts adapted to be screwed against the other wall, said pegs and said clamping bolts being

generally aligned parallel to the longitudinal axis of said crossbar and being operable to clamp the entire support assembly to



the opposite walls by axial compression forces through the crossbar.

4,068,817

SUSPENSION HANGER

Sol J. Berger, 310 Melvin Drive, Northbrook, Ill. 60062

Filed Dec. 29, 1976, Ser. No. 755,467
Int. Cl.[2] B42F *13/00*
U.S. Cl. 248—340 10 Claims



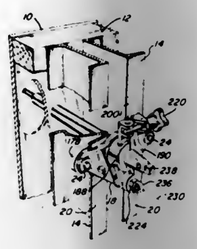
1. A variable height free swinging suspension display unit of the type to be set in free-swinging motion by ambient air currents, said unit comprising a display piece and a slender cordlike helically coiled spring having means at one end for suspending the unit from a support and at its other end means for suspending the display piece from the spring for free swinging movement of the suspended display piece, characterized by the fact that the spring has a modulus of elascticity small enough to permit it to be stretched beyond its elastic limit by exerting on the suspended display piece a pulling force which is a small amount in excess of the weight of the display piece to permanently lengthen the spring end thus lower the level at which the display piece is suspended by the spring.

4,068,818

CLAMPING LOCK FOR TIE ROD ENDS

H. Gordon Gates, Denver, Colo., assignor to Gates & Sons, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 494,967, Aug. 5, 1974, Pat. No. 3,984,079. This application Aug. 13, 1976, Ser. No. 714,032
The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.
Int. Cl.[2] E04G *17/06*
U.S. Cl. 249—42 10 Claims



1. A clamping lock for use with a tie rod end in a settable casting combination from structure, said clamping lock comprisng:

a base plate having a tie rod end receiving bore extending therethrough and a jaw confronting surface;

means on said base plate for fastening said base plate to said casting form structure;

a pair of jaws pivotally anchored on said base plate and selectively movable about a first pivot axis between an open position and a closed position about the tie rod end, said jaw confronting surface of the base plate uniformly decreasing in thickness bilaterally from a line corresponding to the parting line of the jaws when closed to exert a wedging effect on the jaws in closing and a quick release effect in opening, each of said jaws having a pair of spaced projections;

means on said jaws for coacting between the jaws when closed and a tie rod end for preventing axial movement of the jaws with respect to the tie rod end;

a threaded swing bolt pivotally mounted between the pair of projections on one jaw and arranged to pivot about a second pivot axis; and

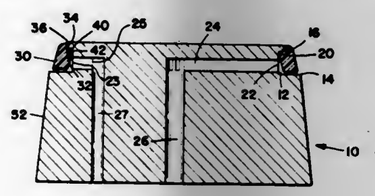
a handle threaded on the threaded portion of the swing bolt, said swing bolt being pivotable about said second pivot axis so that it can fit between the projections on the other jaw and the handle can engage and be tightened against said projections on the other jaw to lock said jaws in their closed position.

4,068,819

PORT PROTECTIVE RING IN A MALE MOLD

Douglas M. Bell, San Rafael, Calif., assignor to Handi-Kup Company, Corte Madera, Calif.

Filed Oct. 4, 1976, Ser. No. 729,221
Int. Cl.[2] B29D *27/00*
U.S. Cl. 249—66 A 9 Claims



1. A ring for protecting a U-shaped annular venting groove circumscribing a frustoconical male mold used for forming objects of expansible resin beads comprising:

a rigid, nonexpansible, nondeformable annular element of a diameter adapted to snap over said male mold and to fit into said groove

wherein said element when in position in said groove defines an annular fluid distributing chamber and at least one permanently open fluid outlet aperture

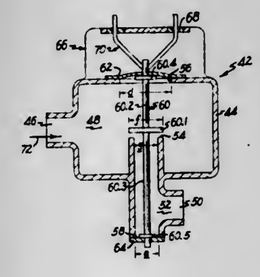
and wherein said aperture is for establishing a restriction having a minimum dimension less than the mean cross-sectional dimension of the unexpanded resin beads, for providing a continuous fluid flow path and for minimizing flow induced noise during fluid escape.

4,068,820

VALVE

Daniel R. Pimentel, Seekonk, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 500,215, Aug. 26, 1974, Pat. No. 3,974,844. This application Jan. 15, 1976, Ser. No. 649,304
Int. Cl.[2] F16K *31/00*
U.S. Cl. 251—11 7 Claims



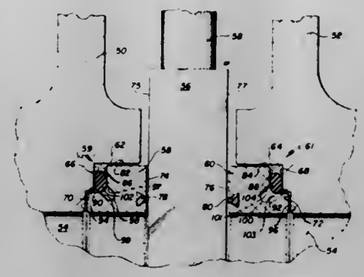
1. A valve device comprising valve body means having an inlet passage and an outlet passage, having a valve seat between said passages, and having a pair of apertures communicating with said respective passages in alignment with said valve seat, a valve member having a disc portion and having a pair of stem portions extending from respective opposite sides of said disc portion into said respective apertures, said valve member being mounted in said valve body means for movement between an open valve position having said disc portion spaced from said valve seat and a closed valve position having said disc portion engaging said valve seat, a pair of flexible diaphragm means secured to respective valve member stem portions and secured to sealing relation to said valve body means around said respective apertures, said flexible diaphragm means and said valve member disc portion having relative areas to be exposed to fluid in said passages for moving said valve member to said closed valve position with a selected force and for normally holding said valve member in said closed valve position with at least an increment of said force when fluid is introduced into said passages through said inlet passage, an actuator wire of a selected metal alloy secured outside said valve body means between an exterior portion of said body means and a portion of said valve member extending outside the body means through one of said apertures to be deformed from an original length to a second relatively longer length as said valve member is moved to said closed valve position in response to said force while said metal alloy displays a relatively low modulus of elasticity below a transition temperature and to abruptly return to said original length and to display a relatively higher modulus of elasticity to move said valve member to said open valve position against said force when said metal alloy is heated above said transition temperature, and means selectively directing electrical current through said actuator wire for selectively self-heating said metal alloy above said transition temperature.

4,068,821

VALVE SEAT RING HAVING A CORNER GROOVE TO RECEIVE AN ELASTIC SEAL RING

Bertram L. Morrison, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 13, 1976, Ser. No. 722,893
Int. Cl.[2] F16K *3/20*
U.S. Cl. 251—172 6 Claims



1. A valve comprising:

a. a housing with a longitudinal bore therethrough,

b. a valve chamber intersecting said bore,

c. a valve member mounted within said valve chamber for movement between open and closed portions,

d. a pair of facing annular recesses surrounding said bore at said valve chamber, each of said recesses having an end wall joining said bore and an annular wall coaxial with said bore joining said end wall and said valve chamber,

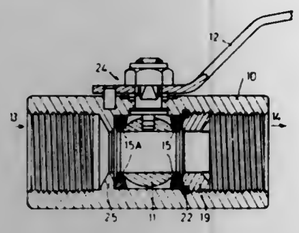
e. a pair of seat ring members loosely mounted within said annular recesses for floating back and forth movement in said recesses, each of said seat ring members having an outer circumference comprising a pair of generally parallel inner and outer stepped peripheral surfaces, a radially disposed outwardly facing annular surface connecting the stepped peripheral surfaces, and a radially disposed seat end surface joining said inner stepped peripheral surface and the internal bore of said seat ring member, said seat ring member having a peripheral groove at the juncture of said inner stepped peripheral surface and said radially disposed outwardly facing annular surface, said groove having a pair of generally parallel opposed sides respectively joining said inner stepped peripheral surface and said radially disposed outwardly facing annular surface at obtuse angles,

f. a seal ring chamber between each of said seat ring members and the end wall of the associated annular recess, said seal ring chamber defined by said recess annular wall, said inner stepped peripheral surface, said radially disposed outwardly facing annular surface, and said recess end wall, and

g. a resilient O-ring positioned within the seal ring chamber and having a cross-sectional span sufficient to seal between said recess end wall and said radially disposed outwardly facing annular surface when said O-ring is initially positioned in said seal ring chamber upon assembly of said valve, said groove sides being spaced apart a distance substantially approximately the original cross-sectional radius of said O-ring, the depth of said groove being at least equal to the original cross-sectional diameter of said O-ring to receive a portion of said O-ring between said generally parallel sides when said O-ring is subjected to mechanical compression between said recess end wall and said radially disposed outward facing annular surface so said O-ring is squeezed no more than approximately 35 percent between said end wall and said radially disposed outwardly facing annular surface in order that the elastic limit of said O-ring is not exceeded, said radially disposed seat end surface contacting said recess end wall to limit outward movement of said seat ring member when the

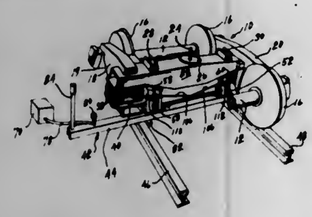
groove has received a portion of said O-ring with said O-ring being in fluid-tight sealing contact with said recess end wall, said radially disposed outwardly facing annular surface, and said groove sides.

4,068,822
BALL VALVE
Cecil Graham Richards, Aspley, Australia, assignor to B. C. Richards & Co. Pty. Ltd., Geelung, Australia
Filed June 1, 1976, Ser. No. 691,483
Claims priority, application Australia, May 29, 1975, 1804/75
Int. Cl.[2] F16K *5/06*
U.S. Cl. 251—315 **2 Claims**



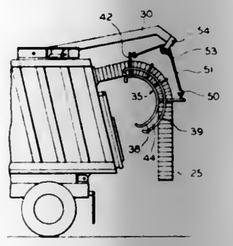
1. A seal assembly in a ball valve, said assembly including: a seal ring contacting the surface of the ball; a body insert longitudinally movable along a fluid passageway in the body of the valve and contacting the rear face of said seal ring to force said seal ring against the ball, said passageway being formed with an annular groove having flat front and rear faces, and said insert including a front contacting surface and being formed with an annular rebate in the contacting surface thereof, said rebate including a flat rear face; and a peripheral ring of deformable material lying partly in said rebate and partly in said annular groove formed in said passageway, said ring having flat front and rear faces, when in an undeformed condition, the front flat face of said peripheral ring when said insert is in an assembled position contacting the front face of said groove and the rear face of said seal ring, and the rear flat face of said peripheral ring contacting the flat rear face of said rebate, thereby to provide solid line contact at both the front and rear flat faces of said ring to provide a peripheral seal between said seal ring and the body of the valve.

4,068,823
APPARATUS FOR LIFTING THE BOLSTER OF A RAILWAY CAR TRUCK
Gerard Belanger, Boucherville, Canada, assignor to Tecnobec, Inc., Canada
Filed Jan. 10, 1977, Ser. No. 758,336
Claims priority, application Canada, Jan. 30, 1976, 245046
Int. Cl. B66f *7/26*
U.S. Cl. 254—89 H **9 Claims**



1. An apparatus for lifting the bolster of a railway car truck mounted on rails so as to remove the weight of said car from other parts of said truck, comprising: an elongate rigid member having sufficient length so as to sit transversely on both rails; a pair of hydraulic jacks each having a lower portion thereof fixedly secured to said rigid member, said jacks being spaced from one another on said rigid member a distance corresponding generally to the distance separating said rails; fitting means mounted at the upper portion of each said jack for engaging said bolster; conduit means mounted to said rigid member for hydraulically connecting said jacks to an external power source; means on said rigid member allowing said rigid member to be rotated about an axis parallel to its longitudinal axis whereby, after a portion of said rigid member containing both said jacks is inserted sidewise beneath said bolster to lay on both rails with said jacks extending in a plane substantially parallel with a plane that includes said rails, said rigid member may be rotated to bring said jacks in vertical alignment with said bolster for jacking engagement therewith.

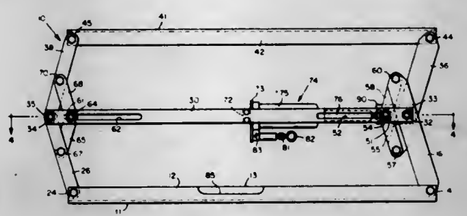
4,068,824
POWER BOOM AND VACUUM HOSE SUPPORT
Thomas P. Flynn, Milwaukee, Wis., assignor to Super Products Corporation, Milwaukee, Wis.
Filed June 21, 1976, Ser. No. 697,825
Int. Cl.[2] B66F *11/00*
U.S. Cl. 254—124 **4 Claims**



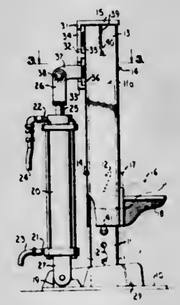
1. A system for supporting and manipulating an elongate flexible hose, said system comprising:
a vertically elevatable boom means having a first end mounted to a boom support and a second end elevatable with respect to said first end,
a pulley means mounted adjacent said second end of said boom means,
a hose support cradle including a plurality of generally C-shaped elongate rods which together define a generally C-shaped elongate hose support channel, said channel being generally semicircular in cross-section and having a hose accommodating length which exceeds the length of at least one of said rods, said cradle also including means connecting said rods for imparting structural rigidity to said cradle and two spaced apart fastener receiving means on said cradle, and
a cable passing over said pulley means and having first and second ends fastened to said fastener receiving means of said cable.

4,068,825
DOUBLE PARALLELOGRAM JACK
Roger Macpherson, 183 Pleasant Way, Penfield, N.Y. 14526
Filed Oct. 26, 1976, Ser. No. 735,164
Int. Cl.[2] B66F *3/00*
U.S. Cl. 254—124 **10 Claims**

1. A jack, comprising
a base,
an intermediate frame,
a first plurality of links pivotally connected to said base and said frame to support said frame on said base for translational movement in an arc about a pair of spaced axes and between first and second limit positions,
a load-bearing member,
a second plurality of links pivotally connected to said frame and said load-bearing member to support said load-bearing member on said frame for movement relative thereto,
drive means mounted on said frame for arcuate movement therewith and having a reciprocable driver,
a third plurality of links pivotally connected to said frame and to at least certain of said first and second pluralities of links for translational movement with said frame relative to said base and said load-bearing member, and
means pivotally connecting said third plurality of links to said driver and operative to impart said arcuate movement to said frame, and to reciprocate said load-bearing plate linearly toward and away from said base plate upon reciprocation of said driver.

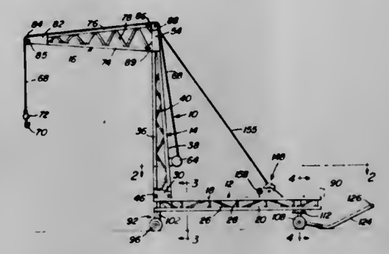


4,068,826
HEAVY DUTY LIFTING DEVICES
Leroy A. Scott, R.R. No. 6, Paola, Kans. 66071
Filed July 21, 1977, Ser. No. 817,578
Int. Cl.[2] B66F *7/28*
U.S. Cl. 254—134 **7 Claims**



1. A jack construction comprising, in combination,
a substantially rectangular base plate,
an elongate post of rectangular cross-section fixed at one end thereof to the base plate and extending substantially normal thereto,
an elongate sleeve of rectangular cross-section congruent to the cross-sectional shape of the post having one open end and one closed end mounted on and movable along and with respect to said post,
the length of the sleeve substantially that of the post,
the closed end of the sleeve positioned away from the base plate, there being a flat end plate closing the end of said sleeve which is adapted to receive work loads thereon,
first lug means on the base plate adjacent to one side of the post which is adapted to receive and engage one end of a hydraulic cylinder,
the said end plate of the sleeve having an extending, substantially rectangular lip projecting outwardly past the wall of the sleeve next the side of the post adjacent to said lug means,
means on the upper portion of the sleeve and on the side thereof next to the said first lug means forming a pair of horizontal slideways of a size and configuration equal to one another, said slideways positioned one above the other and below said lip,
two slides removably insertable in the said slideways, one slide into each slideway, one of said slides having second lug means thereon for engagement with the piston rod of the hydraulic cylinder,
and means cooperating between the post and the sleeve for fixing an extended position of the sleeve with respect to the post once the sleeve is extended thereon by action of the hydraulic cylinder.

4,068,827
PORTABLE HOIST
Larry J. Fanning, and Dwight L. Duimstra, both of Sioux Falls, S. Dak., assignors to Dwight L. Duimstra, Sioux Falls, S. Dak.
Filed June 29, 1976, Ser. No. 700,856
Int. Cl.[2] B66C *23/60*
U.S. Cl. 254—139.1 **6 Claims**



1. A portable hoist comprising a generally elongated, rectangular, horizontally disposed frame having a substantially planar bottom surface, an elongated upright mounted on one end of said frame and extending upwardly therefrom, an elongated boom mounted at the upper end of the upright and extending generally horizontally, said boom and said frame extending in opposite directions from the upright, winch means mounted on said hoist and including a lift cable entrained over a pulley at the outer end of the boom, means on the free end of the lift cable for engaging a load, said upright being detachably connected to said frame by removable pin means, and removable pin means connecting the boom to the upper end of the upright, said winch means including a winch drum and motor mounted on the upright adjacent the lower end thereof, a pulley mounted on the upper end of the upright in alignment with the winch drum for receiving the lifting cable with the lifting cable being wound on said winch drum, a wheeled unit mounted in underlying relation to each end of the frame to enable the frame to be moved from one location to another, one of said wheeled units being steerable for guiding movement of the hoist, the wheeled unit adjacent the end of the frame to which the upright is connected including a rigid axle journaling more than two wheels along a single axis and lying in parallel planes, upstanding support pins rigid with the axle and terminating in upper ends extending above a horizontal member rigidly spaced above said axle, said frame including a pair of vertical sleeves rigidly mounted in the corners of said frame at one end thereof and telescopically and detachably receiving the pins for mounting the wheeled unit below the frame.

4,068,828
BLENDING OF PARTICULATE MATERIALS
Robert R. Goins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 19, 1976, Ser. No. 743,197
Int. Cl.[2] B01F *15/00, 5/00*
U.S. Cl. 366—136 **12 Claims**

1. Solids blending apparatus comprising:

a vessel having a solids inlet in the upper region thereof and a solids outlet in the lower region thereof;

a first baffle disposed within said vessel between said upper region and said lower region, said first baffle blocking a substantial amount of communication between said first and second regions; and

a plurality of conduits positioned within said vessel so as to extend in generally vertical directions downwardly from said upper region past said baffle to said lower region, each of said conduits having at least one first opening therein in said upper region to permit solids disposed in said upper region to enter the conduit and flow by gravity downwardly toward said lower region, each of said conduits having a second opening in said lower region to



discharge solids into said lower region, all of said first openings except the uppermost in each of said conduits being provided with baffle means to permit solids to enter the conduit when solids are flowing downwardly through the conduit from a region above the opening, and the vertical locations and numbers of said first opening and the sizes of said baffle means being such that when the upper region of said vessel is filled with solids to the uppermost first opening and permitted to empty by gravity flow of solids through said conduits the total flow of solids through said conduits at progressively lower elevations increases substantially as a linear function with respect to vertical distance measured downwardly from said uppermost first opening.

4,068,829

HEAD FOR MIXING AND DISCHARGING AT LEAST TWO INGREDIENTS

Daniel Laurent, Meylan, and Alain Felten, Grenoble both of France, assignors to Secmer S.A., France

Filed Jan. 27, 1976, Ser. No. 652,698

Claims priority, application France, Jan. 28, 1975, 75 03193

Int. Cl.² B01F *15/00*; F17D *3/00*

U.S. Cl. 366—177 **13 Claims**

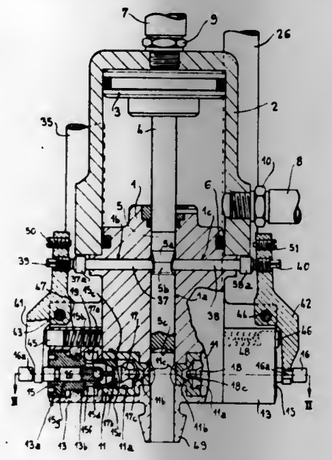
1. A head for mixing at least two ingredients supplied thereto from plural sources under pressure and for discharging the mixed product, comprising:

a body having a main bore therethrough, having a mixing chamber, and having a separate transverse bore extending into said main bore corresponding with each ingredient;

a slide member in the main bore and having ramp surfaces in the vicinity of said transverse bores, and means for moving the slide member axially in the main bore;

distribution valve means corresponding with each ingredient coupled to a source and extending through the body, and each valve means having two valves controlling the flow of the ingredient in different branches of the valve including a discharge branch communicating with a discharge seat at a discharge orifice extending into said mixing chamber, and including a recirculation branch having a return flow seat and leading to a duct returning to the associated source, and each valve means having a stem reciprocable through said discharge and return flow seats and having needle valves facing the respective seats and operative to control the flow through the seats inversely, whereby the flow through one seat is restricted as the flow through the other seat is increased; and

control means for each ingredient, each control means including rod means in each transverse bore contacting and being positioned by a ramp surface and having an outer end extending from the transverse bore by a distance determined by the axial position of the slide member, and



including a lever for each rod means pivotally attached to the body of the head and having one leg tilted about the pivot in response to motion by the rod means and having another leg coupled to reciprocate a corresponding valve to displace the axis of pivoting of the actuating levers for one valve with respect to the other, which can be done simply by changing the point of application of push rods which are associated with a sliding member against which the rods rest.

According to one modification, the pivoted lever which serves to actuate each valve is provided with an axially regulated abutment which cooperates with a pendulous arm moved by contact with the corresponding control rod. means.

4,068,830

MIXING METHOD AND SYSTEM

Joseph B. Gray, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

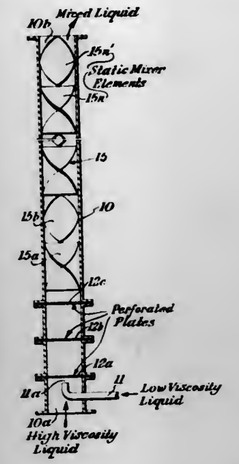
Filed Jan. 4, 1974, Ser. No. 430,756

Int. Cl.² B01F *15/02, 5/10*

U.S. Cl. 366—174 **2 Claims**

1. A method of mixing a low viscosity liquid with a high viscosity liquid where the proportion of said low viscosity liquid to said high viscosity liquid is in the volumetric flow ratio range of about 0.01 to 0.2, and where the ratio of viscosities of said high viscosity liquid to said low viscosity liquid is in the range of about 4×10^3 to about 10^6 comprising introducing said low viscosity liquid under pressure into a flowing stream of said high viscosity liquid, thence flowing said liquids

through a perforated plate establishing a multiplicity of wakes of said low viscosity liquid on the downstream side of said



plate, and then impelling said low viscosity and said high viscosity liquids through a static mixing element.

4,068,831

APPARATUS FOR THE PRODUCTION OF FOAM MATERIALS CONTAINING A FILLER MATERIAL

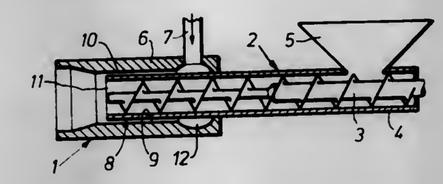
Wilfried Ebeling, Cologne, and Klaus Schulte, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 26, 1976, Ser. No. 717,813

Claims priority, application Germany, Sept. 13, 1975, 2540934

Int. Cl.² B01F *7/08, 15/02*

U.S. Cl. 366—156 **6 Claims**



1. An apparatus for the production of foam materials containing a filler material, such as waste foam material, from at least two flowable chemical components in addition to the filler material, comprising a storage container for each component, a pipe leading from each container to a mixing head via a dosing pump, and a charging mechanism for powdery to fine-grained filler material arranged in at least one of the pipes between the mixing head and the dosing pump, said charging mechanism comprising a component feed pipe, and a feed screw for the filler material having a tubular housing having a discharge opening, said tubular housing positioned inside said feed pipe and spaced inwardly therefrom, the discharge opening of said housing projecting axially into said feed pipe, so as to form an annular slot between the feed pipe and the housing to which slot a pipe from the dosing pump is connected, one end of the feed pipe being sealed to the housing.

4,068,832

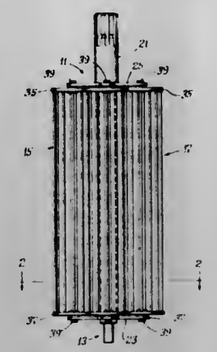
DASHER

Philip H. Blaetz, Barrington, Ill., assignor to Kraft, Inc., Glenview, Ill.

Filed Dec. 8, 1975, Ser. No. 638,291

Int. Cl.² A01J *11/00*; A23C *1/00*; B01F *7/00*

U.S. Cl. 366—280 **6 Claims**



1. A dasher adapted for mounting within a generally cylindrical whipping chamber, said dasher comprising a drive shaft defining a first axis of rotation, a pair of support plates affixed to said drive shaft in axially spaced relation thereon, said support plates lying in substantially parallel planes generally perpendicular to said first axis of rotation, at least two cages mounted between said support plates, each of said cages including a pair of substantially parallel axially aligned end plates having a plurality of elongate elements secured therebetween in substantially normal relation thereto, said elongate elements of each cage having their longitudinal axes intersecting a circle lying in a plane disposed normal to said axes and said elongate elements being disposed in equidistantly circumferentially spaced relation about said circle, each of said cages being freely rotatable relative to said support plates for rotation about an axis parallel and eccentric to said first axis and without interference with said chamber.

4,068,833

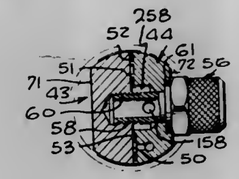
TORCH

Wesley E. Buford, 1042 Wingate, Covina, Calif. 91723

Continuation of Ser. No. 459,133, April 8, 1974, abandoned. This application May 17, 1976, Ser. No. 687,033

Int. Cl.² B23K *7/00, 7/10*

U.S. Cl. 266—48 **5 Claims**



5. A torch comprising:

an outer tube centered about a predetermined longitudinal axis;

a valve body at a first end of said tube adapted to be connected to sources of fuel and oxygen;

conduit structure connnected to said valve body and projecting therefrom within said tube toward the second end thereof;

valve means carried by said body for controlling the delivery of fuel and oxygen to said conduit structure;

a first hinge part at said second end of said tube connected to

said conduit structure and containing passages for receiving fuel and oxygen from the conduit structure;

a second hinge part detachably connectable to said first hinge part for relative rotary adjusting movement about a hinge axis disposed essentially transversely of said axis of the tube and containing passages communicating in different angular settings of the second hinge part with said passages in the first hinge part to receive fuel and oxygen therefrom;

a nozzle carried by said second hinge part through which said fuel and oxygen are emitted to produce a flame and adjustable to different angular settings relative to said first hinge part with said second hinge part;

said tube having an internal size large enough to pass said first hinge part axially through said tube, in a relation enabling said tube to be moved to a position about said conduit structure by bodily advancement of said tube axially past said first hinge part while received thereabout;

said first hinge part having at one side thereof a generally flat fluid conducting face at which said passages of the first hinge part terminate and which extends essentially transversely of said hinge axis, said face being disposed approximately in a plane which contains said axis of the tube and which extends essentially diametrically with respect to said tube, said face having a width transversely of said axis of the tube which is just slightly less than the internal diameter of said tube;

said second hinge part having a fluid conducting face opposite and closely proximate to said face of the first hinge part and at which said passages of the second hinge part terminate;

seal means between said fluid conducting faces disposed essentially in said plane which extends diametrically with respect to said tube and positioned to pass fuel and oxygen streams from said first hinge part to said second hinge part in sealed isolation from one another; and

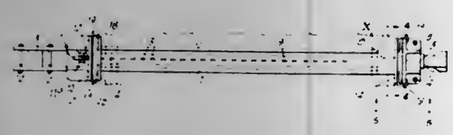
a threaded fastener having a shoulder which is clamped against said second hinge part in retaining relation, and having a reduced diameter tubular shank with external threads connected to said first hinge part and containing an internal passage opening at one end into one of said passages in said first hinge part, said tubular shank having at an opposite end thereof a side wall opening near said shoulder for placing said internal passage in communication with one of said passages in the second hinge part.

4,068,834

CLAMP WITH ROCKABLE JAW FACE PLATE

John L. Mortoly, Poughkeepsie, N.Y., assignor to James L. Taylor Manufacturing Company, Poughkeepsie, N.Y.

Filed Jan. 7, 1976, Ser. No. 647,041
Int. Cl.² B25B *1/22*
U.S. Cl. 269—264 **7 Claims**



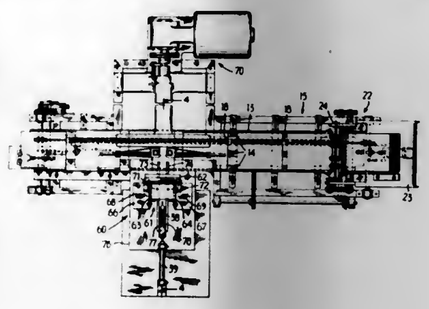
1. A clamp jaw for use in a clamp wherein there are two relatively movable jaws on a frame and means to cause relative movement of said jaws to clamp and release stock between the jaws, said jaw comprising a body having a face, and a face plate rockable on said body on a horizontal axis, said face plate having on the rear side a curved fulcrum rib intermediate its upper and lower edges abutting said face of the jaw and providing said axis, means for mounting said face plate on said jaw comprising a spring device including parts engaging both said body of the jaw and the front of said face plate and the rear side of said face plate on at least one side of said rib means holding said face plate on the jaw body, and means providing resilient rocking action of said face plate on said axis.

4,068,835

APPARATUS FOR ASSEMBLING TAKE-ONE ADVERTISING DISPLAYS

Allen A. Bortner, Searingtown, N.Y., assignor to Charles Offset Company, Inc., New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,993
Int. Cl.² B42B *2/00*
U.S. Cl. 270—53 **8 Claims**



1. Apparatus for assembling "take-one" coupons to a support panel comprising:

means for moving said panel along a defined path and for stopping said panel at a predetermined point on said path;

means for separating a preset number of "take-one" coupons from a stack of said coupons in order to form a pack of coupons, said means for separating including a wedge-shape blade, means for moving the blade along a second defined path into the stack of coupons at a height sufficient to separate the preset number of coupons from the bottom of the stack, and a displaceable gate member for bracing the preset number of coupons as the blade is moving into the stack, said gate being movable out of the path of the blade to permit the coupons to be moved into registry with said panel;

means for moving said preset number of "take-one" coupons to a position in overlying registry with said panel when said panel is at the predetermined point;

means for fastening said preset number of coupons to said panel in a manner permitting ready manual removal of individual ones thereof; and

means for synchronizing the operation of said coupon moving and fastening means with each other and with said means for moving said panels to enable assembly of said coupons to said support panel in desired registration.

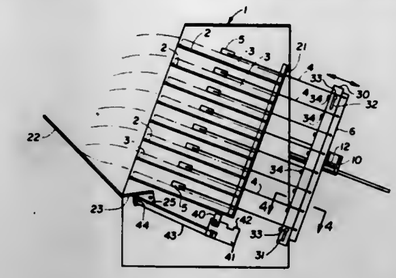
4,068,836

MANUAL PAPER COLLATOR

George H. Dimopoulos, Park Ridge, Ill., assignor to Michael Business Machines Corporation, New York, N.Y.

Filed June 9, 1976, Ser. No. 694,233
Int. Cl.² B65H *39/05*
U.S. Cl. 270—58 **8 Claims**

7. A manually operable collator for simultaneously gathering multiple sheets of paper comprising, in combination, a plurality of trays for receiving and storing stacks of paper sheets arranged according to a desired sequence of assembly; means for simultaneously transporting the top sheet of paper from each tray having elongated pivotally mounted pusher means extending into each of said trays to engage said top sheets of paper; adjustable guide means disposed adjacent said trays and pivotally movable between a paper loading position and a plurality of paper guiding positions in which said guide means is adapted to receive and converge the leading edges of the transported paper sheets to facilitate the gathering thereof; and means operatively linked to the guide means and the pusher means for pivotally lifting said pusher means out of engagement with said top sheets of paper when the guide means is moved to the paper loading position.

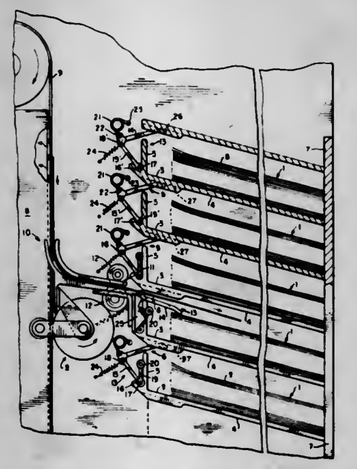


4,068,837

PAPER HOLD-DOWN DEVICE FOR COLLECTOR

Richard Allen Lamos, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1976, Ser. No. 727,872
Int. Cl.² B65H *31/26, 31/24*
U.S. Cl. 271—173 **9 Claims**



9. In a sheet collecting and stacking apparatus having support means for collecting a plurality of sheets in stacked relation, an entrance at one side of said support means, and feeding means for feeding sheets through said entrance and into superimposed relation with previous sheets stacked on said support means, said feeding means being mounted for movement from a first position out of alignment with said entrance to a second position aligned with said entrance when a sheet is to be fed therethrough, and improved sheet hold-down device for holding the trailing edge of the sheets of the stack down at said entrance to prevent obstruction thereof and permit feeding of the next sheet therethrough and into said superimposed relation with said stack, said hold-down device comprising:

a. a sheet hold-down arm;

b. support means for supporting the holddown arm for movement between a first standby position spaced from the trailing edge of the stack and a second operative position disposed in overlying relation with the trailing edge of the stack and in underlying relation to the path of feeding of the next sheet onto said stack; and

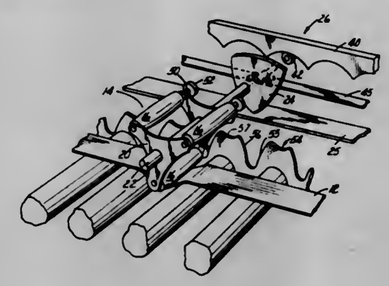
c. actuator means including means responsive to movement of said feeding means into its second position to actuate said hold-down arm and cause movement thereof from said first position to said second position as said feeding means moves into its second position.

4,068,838

CONVEYOR AND THREE-ROLLER SHEET DEFLECTOR FOR SHEET DISTRIBUTOR

Henricus J. Anbergen, Arlon, Belgium, and Peter McCabe, Godalming, England, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed July 28, 1976, Ser. No. 708,854
Int. Cl.² B65H *29/60*
U.S. Cl. 271—173 **5 Claims**



1. A sheet distributor, comprising:

a plurality of spaced conveyor bed members aligned to define an elongated transport path in a plane tangent to the spaced members, the space between the members being gates from the transport path;

at least one belt web traveling about end guides of fixed position, resting on the bed members and bridging the spaces therebetween to clamp sheets between said belt and the conveyor bed members;

drive means for driving said belt web in a conveying direction to convey sheets along the transport path;

a three-roller deflector assembly with the rollers thereof spaced in equiangular relationship;

means for revolving and advancing the assembly along said path over said belt web;

means to guide said assembly in a cyclic path which causes the assembly to plunge one roller fully into one said space until the belt is contained without appreciable slack in its path, and thereafter pivot about that one roller as it remains in position until a subsequent roller is brought into contact with the belt at the subsequent space, whereafter the one roller is retracted at a rate equal to the rate of insertion of the subsequent roller, whereby, the belt is maintained deflected for an extended period of time in each space and the belt is never permitted to become slack.

4,068,839

SHEET STACKING APPARATUS

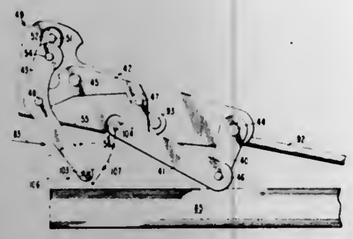
Michael Kermit Bullock; Sherwood Anderson Clay, and Gregory Bingham Overton, all of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 4, 1977, Ser. No. 774,579
Int. Cl.² B65H *29/44*
U.S. Cl. 271—180 **15 Claims**

1. Sheet hold-down apparatus for use in stacking flexible sheets in a substantially fixed-position horizontal plane from a substantially fixed-position sheet entrance path, the apparatus comprising:

a hold-down bar and a pusher bar having quiescent positions wherein said hold-down bar resides substantially in said horizontal plane, and operates to hold down the trailing edge portion of sheets within a stack, and wherein said pusher bar is positioned a distance above said horizontal

plane, the space between said bars defining an unobstructed entrance for the insertion of a sheet;
sensing means responsive to the insertion of a sheet; and
motive means controlled by said sensing means and operative to produce synchronized substantially vertical movement of said pusher bar down onto said inserted sheet and



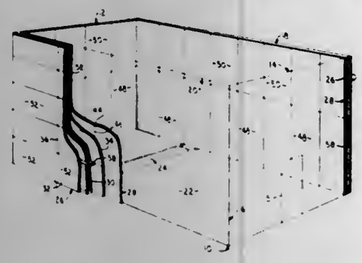
substantially into said horizontal plane, and back to its quiescent position, as said hold-down bar moves in a substantially circular path, first toward and beyond the trailing edge of said inserted sheet, then above said inserted sheet as said sheet is held down by said pusher bar, and then back to its quiescent position.

4,068,840

PLAYING SURFACE FOR HANDBALL AND RACQUETBALL COURTS

Charles A. Spaulding, Jr., 13600 Clayton Road, Manchester, Mo. 63011

Filed Aug. 9, 1976, Ser. No. 712,672
Int. Cl.[2] A63B *71/04*; B32B *3/26*
U.S. Cl. 272—3 **5 Claims**



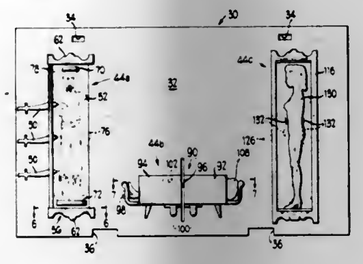
1. In a court for handball or racquetball or the like, where a playing surface is presented by a panel structure that includes a relatively thick, base sandwich panel member having a foam core interposed between opposed sheets for imparting the desired bounce to a ball played off the panel structure, said base panel member including a plurality of panel elements thereof joined in edge-to-edge relationship, the improvement in said panel structure comprising:
a thin finish panel member on said base member in direct surface contact therewith, said finish member including a layer of impact-resistant material faced with a smooth, hard, impact-resistant skin bonded to said layer and presenting an outer playing surface characterized by durability and hardness,
said finish member further including a plurality of panel sections thereof presenting respective portions of said playing surface; and
means for joining said panel sections, during on-site construction of the composite panel structure, in edge-to-edge relationship with the respective surface portions thereof in planar alignment,
the lines of joinder of the elements of a planar expanse of said base member being substantially out of alignment with the lines of joinder of the sections of the finish member thereon, whereby the resultant, comparatively inexpensive playing surface is resistant to mars and dents and provides a consistently true bounce for the playing ball.

4,068,841

ILLUSION APPARATUS

Wayne A. Kuna, Oak Park; Ralph J. Kulesza, Chicago, and Gordon A. Barlow, Evanston, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 12, 1976, Ser. No. 657,643
Int. Cl.[2] A63J *5/00*
U.S. Cl. 272—8 R **3 Claims**



1. An illusion performing apparatus, comprising:
a base;
a generally vertical support wall including an aperture therein having a front side facing an observer;
a substantially flexible illusion card of predetermined length;
frame means mounted on said support wall having a portion extending over said front side of said aperture beyond the ends thereof and concealing a substantial portion of said aperture forming a vertical slot between the ends of the frame means in alignment with said aperture, the length of said frame means between its respective ends being smaller than the predetermined length of said illusion card so that the illusion card placed between said frame means and support wall is forced to bow through said aperture so that an article reciprocated in said slot although appearing to engage and cut the illusion card in two portions actually clears the surface of said bowed portion of the card to perform the illusion of cutting the card in two parts while actually not doing so.

4,068,842

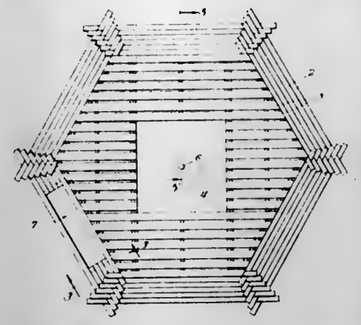
CHILD RECREATION STRUCTURE

Robert L. Callecod, Long Lake, Minn., assignor to Recreation Systems Co., North Aurora, Ill.

Filed June 4, 1976, Ser. No. 693,014
Int. Cl.[2] A63B *9/00*
U.S. Cl. 272—113 **2 Claims**

1. A child recreation structure comprising at least four side walls arranged to form a polygonal enclosure, each of said walls comprising spaced horizontal rails each of which rests upon and extends beyond a rail of adjoining sides, said walls inclining inwardly, a horizontal platform for supporting a user of the structure at the uppermost limit of the walls and, spanning the area defined by the tops of all of said walls, said having a central opening therein, and a vertical pole mounted and arranged at approximately the center of said opening and extending above said platform of sliding from said platform

down into the interior of said structure, said pole being completely unsupported by the walls and the platform, one of said



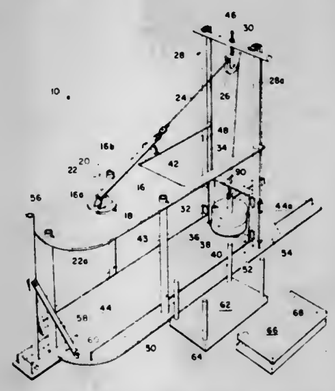
walls having an open doorway therein to permit passage therethrough by a user of the structure.

4,068,843

HEAVY-DUTY SWIVEL ARM-WRESTLER AND EXERCISER

Donald L. Frost, 322 N. Marlyn Ave., Baltimore, Md. 21221

Filed June 25, 1976, Ser. No. 699,863
Int. Cl.[2] A63B *21/06*
U.S. Cl. 272—118 **13 Claims**



1. Arm wrestling practice apparatus comprising: an arm having first and second ends, a table having first and second portions, means hindgedly connecting the first end of the arm to the table and for rotatably mounting the first end of the arm to permit rotation of the arm in a plane substantially parallel to the plane of the table, and means biasing the second end of the arm in a direction relative to the table providing resistance to said pressing over of the arm.

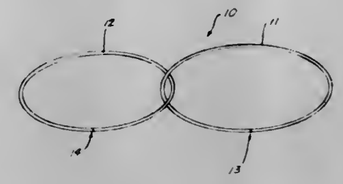
4,068,844

METHOD AND APPARATUS FOR A GAME

Gary J. Tempel, 1208 Cottage Road, Webster City, Iowa 50595

Filed Dec. 2, 1976, Ser. No. 747,074
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—1 R **1 Claim**

1. A method of performing a game with apparatus including:
a first annular member, said first annular member having a first end and a second end, said first and second ends having openings therein;
first connection means for connecting said first and second ends of said first annular member comprising a member having a shape complementary to the openings in said first and second ends and positioned in frictional engagement within said first and second openings whereby said first and second ends are held together, but allowing said first and second ends to be separated when sufficient force is applied to said first annular member;
a second annular member in interlocking engagement with said first annular member, said second annular member having a third end and a fourth end, said third and fourth ends having openings therein;
second connection means for connecting said third and fourth ends of said second annular member comprising a member having a shape complementary to the openings in said third and fourth ends of said second annular member and positioned in firm frictional engagement within said third and fourth openings whereby said third and fourth ends are held together, but allowing said third and fourth ends to be separated when sufficient force is applied to said second annular member; and



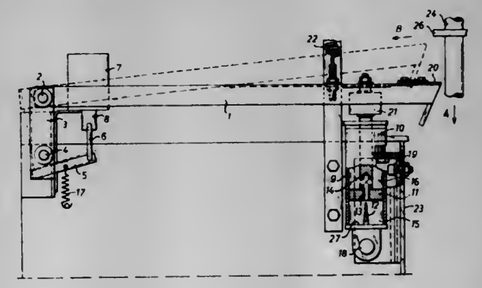
wherein said second annular member is smaller than said first annular member thereby allowing said second annular member to pass through said first annular member from one side of said first annular member to the other side of said first annular member, said first and second members being larger in diameter than the average size of a human head; said method comprising:
placing the first annular member around the neck of a first person;
placing the second annular member around the neck of a second person; and
switching the first and second annular members whereby the first annular member is around the neck of a second person and the second annular member is around the neck of the first person, said switching being performed solely by said first and second persons without the use of their hands.

4,068,845

BOWLING PIN POSITIONING APPARATUS

August Schmid, Schwerzenbach, Switzerland, assignor to Patentverwertungs-und Finanzierungsgesellschaft, Serania AG, Glarus, Switzerland

Filed May 11, 1976, Ser. No. 685,308
Claims priority, application Switzerland, May 30, 1975, 6982/75
Int. Cl.[2] A63D *5/08*
U.S. Cl. 273—42 A **7 Claims**



1. Bowling pin positioning arrangement having a vertically

movable frame (28) adapted to receive and place bowling pins (40) on the surface (46) of a bowling alley;

means (48, 49) coupled to the frame moving the frame downwardly and upwardly through a stroke extending between top and bottom limiting position comprising

a crank arm (49) and a chain (48) supporting the frame (28) and, upon rotation of the crank arm, suspending the frame (28) for vertical movement;

and a stroke limiting means to decrease the length of the stroke of movement in downward direction including

an abutment element (26) secured to said frame,

a movable control and limit level (1) selectively positionable in interfering or non-interfering relation with respect to the abutment element (26) to control movement of the frame (28), said abutment element (26) being supported by the control and limit lever (1) when in interfering position to, in turn, support said frame;

an electromagnet (7) coupled to and moving the control and limit lever (1) between interfering and non-interfering in dependence on respective energization or non-energization of the electromagnet;

said chain (48) suspending the frame (28) when the frame carries out a full stroke and being slack for a portion of the stroke if the control and limit lever is selectively positioned in interfering relationship with respect to the abutment element, and hence the frame (28) during a complete rotation of the crank (49), to control the stroke length of the frame (28) independently of the rotation of the crank (49);

and a damping dashpot (10) operably connected to the control and limit lever (1) to dampen movement of the frame (28) when the limit lever (1) is positioned in interfering relation with respect to the movement of the frame (28),

said dashpot being a hydraulic dashpot (10) and comprising a cylinder-piston combination (9, 11), the piston being formed with a fluid passage (13) therethrough, the piston (11) subdividing the cylinder (9) into two chambers (15, 16)

and a conical pin (13) located within the cylinder (9) and in alignment with the fluid passage (13), located in position to penetrate the fluid passage upon movement of the piston (11) in the cylinder to decrease the cross-sectional flow area available for fluid flow from one chamber into the other through said fluid passage (13) thereby progressively throttling said fluid flow and increasingly braking movement of said limit lever and hence of the frame (28), the piston (11) engaging the bottom wall (27) of the lower chamber (15) of the dashpot when the piston (11) reaches its limiting position to support the piston, and hence to control and limit lever (1) and thereby the frame (28) if the control and limit lever was in interfering position with respect to the frame.

4,068,846

PLACE-KICKING FOOTBALL RECEIVING TARGET

Charles Phelps Forrest, 1306 St. Stephens Road, Mobile, Ala. 36603

Filed July 26, 1976, Ser. No. 709,004
Int. Cl.² A63B *67/00*
U.S. Cl. 273—55 B **13 Claims**

1. A football receiving target for practicing placekicking comprising:

a. a vertically disposed frame having a horizontal top cross bar and a pair of vertical legs;

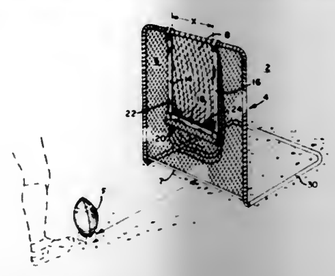
b. a backstop net secured to said frame;

c. a rectangular cutout in said net;

d. a pocket having an open end and a closed end, said open end being secured to the edges of said rectangular cutout;

e. a pair of vertical straps and a horizontal strap attached to said net outlining said open end of said pocket whereby said attached straps simulate a football goalpost; and

f. a pair of auxiliary straps removalbly attachable to said horizontal top bar of said frame and to said horizontal strap, said auxiliary straps being attachable parallel to said



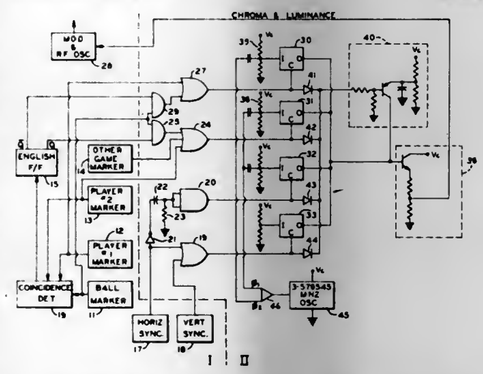
vertical straps whereby the opening of said pocket may be limited for practicing field goals from different distances.

4,068,847

CHROMA AND LUMINANCE SIGNAL GENERATOR FOR VIDEO GAMES

Jeffrey Reed Lukkarila, and Kenneth D. Liston, Jr., both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed June 23, 1976, Ser. No. 699,127
Int. Cl.² A63F *7/06*
U.S. Cl. 273—85 R **7 Claims**



1. In a video game, having a game marker generator for generating a video signal for representing a game marker to be displayed on a television receiver, a luminance and chroma signal generator comprising:

a. an oscillator means having a signal at a frequency of substantially 3.579545 MHz;

b. means for combining said oscillator signal with a d.c. voltage, said d.c. voltage representing a luminance level; and

c. means for switching said combined oscillator signal and d.c. voltage combination in response to said video signal whereby said switched signal comprises a chroma and luminance signal.

4,068,848

PROFESSIONAL MALPRACTICE BOARD GAME APPARATUS

Allan S. Lichtman, 18370 Burbank Blvd., Tarzana, Calif. 91358, and Rosemary R. Lichtman, 22448 Calipatria Drive, Woodland Hills, Calif. 91364

Filed Jan. 26, 1976, Ser. No. 652,555
Int. Cl.² A63F *3/00*
U.S. Cl. 273—257 **8 Claims**

1. Means to play an adult game based upon possible legal and

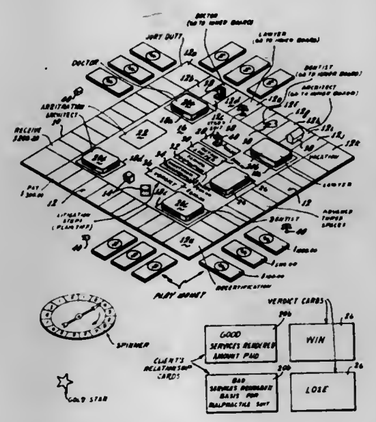
business activities and possible experiences of persons in selected professions, said means comprising:

a. a plurality of movable elements, at least one of said elements to be provided each player;

b. means for each player, when his turn comes up, to develop by chance a numerical factor;

c. a first board, said first board having defined thereon a plurality of consecutive spaces constituting a path of travel for said movable elements, the number of spaces to be traveled by each element at the turn of its player, being determined by the numerical factor developed by such player upon using said means to develop said numerical factor; each of said spaces having instructions thereon, said instructions either (i) affecting the movement of the movable element over said spaces; (ii) providing for the payment to or by the player whose elements land on such space, of money in an amount as stated on such space; or (iii) directing the player to proceed to a second board for instructions;

d. a second board, said second board having defined thereon a number of first spaces, one of each of said first spaces



being provided for each of the selected professions, and a plurality of second spaces, each of said second spaces constituting a step in a legal proceeding and indicating the amount of money to be paid by the plaintiff in said proceeding with each step of the litigation;

e. a plurality of groups of first cards, each group of said first cards providing information either good or bad, concerning a client's relationship with the person of the particular one of said professions and, on the basis thereof, if good, indicating the amount of money to be paid by such client and returning the player to his position on the first board for further movement of his element on the spaces of the first board; or, if bad, providing a basis for a malpractice suit and the formula for a possible monetary recovery against the professional person if a suit should be brought against the latter, or an arbitration thereof conducted, with a successful result;

f. a plurality of second cards, said second cards being verdict cards, some of which represent positive votes for recovery against the defendant and others negatives votes denying recovery to the plaintiff; and

g. play money in various denominations.

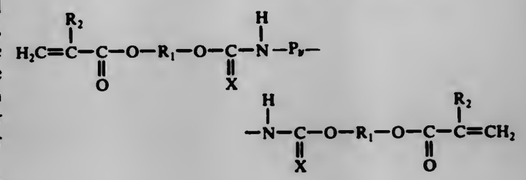
4,068,849

SOLID GOLF BALL

Gail D. DiSalvo, Scotch Plains, N.J., and Raymond A. Berard, Portsmouth, R.I., assignors to Acushnet Company, New Bedford, Mass.

Filed Mar. 21, 1975, Ser. No. 560,868
Int. Cl.² C08L *15/00*
U.S. Cl. 273—218 **9 Claims**

1. A golf ball comprising at least in part a polymerized unsaturated elastomer said polymerized unsaturated elastomer being cross linked by a compound having the formula:



wherein:

R_1 is any divalent, aliphatic, or cycloaliphatic moiety of up to about 20 carbon atoms or mixtures thereof including heteroatom substituted aliphatic or cycloaliphatic moieties;

R_2 is hydrogen or an alkyl group having up to about 5 carbon atoms;

P_y is an aliphatic, cycloaliphatic or aromatic moiety of from about 5 to about 20 carbon atoms or is $R_3—P_z—R_4$ wherein:

R_3 is an aliphatic, cycloaliphatic or aromatic moiety of from about 5 to about 20 carbon atoms;

R_4 is an aliphatic, cycloaliphatic or aromatic moiety of from about 5 to about 20 carbon atoms;

P_z is an organic polymeric segment selected from the group consisting of polyurethanes, polyureas, polyethers, and polyesters and has a molecular weight of from about 500 to about 5,000.

X is oxygen or sulfur.

4,068,850

STYLUS UNIT FOR PICK-UPS AND/OR CUTTERS

Elzo Smit, and Keimpe van Wijk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 560,162, March 20, 1975, abandoned.
This application July 20, 1976, Ser. No. 707,036
Claims priority, application Netherlands, Apr. 1, 1974, 7404360
Int. Cl.² G11B *3/46*
U.S. Cl. 274—37 **8 Claims**



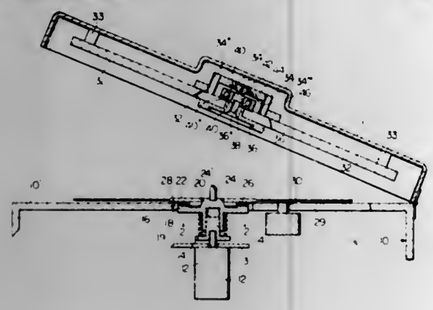
1. A stylus unit of the type used for grooved recordings, comprising a stylus, a stylus holder and a magnet, wherein the stylus holder comprises an elongated unitary mass of reinforced plastic material having a center portion, a first end portion, and a second end portion; said first end portion having a hole for holding the stylus, said stylus being fitted directly in said hole, said center portion having a cavity, said magnet being embedded in said cavity, said second end portion of said mass forming a locating wire.

4,068,851

AUDIO/VIDEO DISC PLAYBACK APPARATUS WITH MEANS FOR CORRECTLY POSITIONING THE DISC RELATIVE TO A REFERENCE LEVEL

Takashi Yamamura, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Japan

Filed Jan. 21, 1977, Ser. No. 760,984
Claims priority, application Japan, Jan. 23, 1976, 51-6656
Int. Cl.² G11B *3/60*
U.S. Cl. 274—39 A 11 Claims



1. An audio-video disc playback apparatus, comprising:
a housing;
a cover hinged to said housing and rotatable between open and elosed positions relative to said housing;
a rotary drive shaft rotatably mounted in said housing;
a rotor disc for mounting an audio-video disc and having a tapered portion for engagement with the center hole of the audio-video disc;
a stationary disc having a diameter equal to or greater than the diameter of said audio-video disc and mounted on the under side of the cover and having an opening at the center thereof;
a pressure disc;
one of the rotor and pressure discs having a guide shaft and the other of the rotor and pressure discs being provided with a bore for receiving said guide shaft when the cover is in the closed position;
a bearing having an inner race coupled to the pressure disc for rotation therewith and an outer race;
means for mounting the pressure disc in the opening of the stationary disc when the cover is in the closed position; and
means engageable with the mounting means for suspending the pressure disc from said mounting means when the cover is in the open position and disengageable from the mounting means for enabling said guide shaft to be received in said bore to coaxially align the rotor disc and the pressure disc when the cover is in the closed position while engaging the outer race of the bearing with the mounting means so that the audio-video disc is under pressure between the pressure disc and the rotor disc.

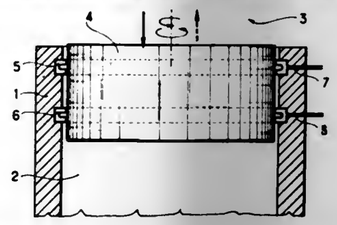
4,068,852

SEAL RING

Jacques Anglade, Paris, France, assignor to Le Joint Francais, Paris, France

Filed Dec. 5, 1975, Ser. No. 638,214
Claims priority, application France, Dec. 19, 1974, 74 42073
Int. Cl.² F16J *15/46*
U.S. Cl. 277—34.3 6 Claims

1. Seal ring made of an elastomeric material intended to operate at a temperature at least equal to 150° C and to be in contact on its opposite sides with two gaseous fluids, one of which at least is a fluid emitting nuclear radiations, and to be able to slide with a very slight friction coefficient in contact with a body which rotates and/or moves in a linear direction, comprising an outer casing made of an elastomer which is resistant to heat and to nuclear radiations and has a low friction coefficient, an inner casing made of a heat resistant elastomer, and an intermediate casing closely welded to both said outer



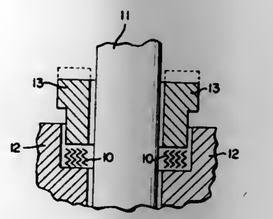
casing and said inner casing, said seal ring being filled with a gas at a relatively low pressure and said inner casing being impermeable to said gas.

4,068,853

STUFFING BOX SEAL

Danny Louis Schnitzler, North Ridgeville, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 618,064, Sept. 30, 1975, abandoned, which is a continuation of Ser. No. 354,318, April 25, 1973, abandoned. This application July 27, 1976, Ser. No. 709,211
Int. Cl.² F16J *15/16*
U.S. Cl. 277—102 5 Claims



1. In a stuffing box assembly comprising a stuffing box, a shaft disposed in said stuffing box, and a gland positioned between the shaft and the stuffing box, the improvement which comprises having at least two superimposed layers of a corrugated expanded graphite tape wrapped about the portion of said shaft disposed in the stuffing box, the corrugations of said expanded graphite tape running transverse to the length of the tape and the superimposed layers of said expanded graphite having multiple zig-zag interlocking folds along their lengths and forming an interference fit between the shaft and the stuffing box as a result of compression by the gland parallel to the direction of the corrugations.

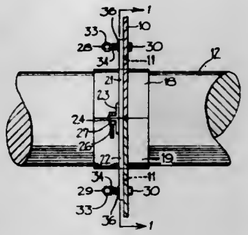
4,068,854

DUST SEAL FOR ROTATABLE SHAFT PASSING THROUGH A BIN WALL

Edward T. Douglass, Jr., 14 Clubview Drive, Birmingham, Ala. 35222

Filed Jan. 6, 1977, Ser. No. 757,446
Int. Cl.² B65D *53/02*
U.S. Cl. 277—237 A 1 Claim

1. In a dust seal for use between a rotatable shaft and a passageway through a bin wall through which said shaft extends with said bin wall being divided along a generally horizontal line into upper and lower sections,
a. a split sleeve having at least two adjacent sections adapted to surround said shaft with a snug, rotatable fit,
b. a plate-like section carried by each section of said split sleeve and extending laterally therefrom with adjacent edges of adjacent platelike sections abutting each other along the line dividing the bin wall into upper and lower sections and defining a composite plate of a size and shape to completely surround said passageway through the bin wall and overlie the adjacent portion of said bin wall surrounding said passageway,
c. means securing said adjacent plate-like sections to each other to provide a dust-tight connection therebetween,
d. at least two threaded members carried by said adjacent portion of said bin wall and extending outwardly therefrom toward said plate-like sections, and



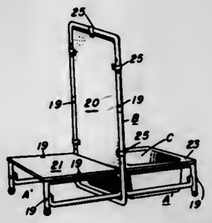
e. elongated slots in said plate-like sections in position to receive said threaded members with each said elongated slot being of a width and length greater than the diameter of said threaded members and extending in horizontal planes above and below said shaft to permit lateral adjustment of said plate-like sections both vertically and horizontally relative to said bin wall.

4,068,855

GRAPHIC MERCHANDISING GONDOLA

Robert H. Hackett, Oakmont, Pa., assignor to IDL Incorporated, Pittsburgh, Pa.

Filed June 3, 1976, Ser. No. 692,345
Int. Cl.² B62D *53/06*
U.S. Cl. 280—79.3 22 Claims



1. In an improved merchandising gondola for mounting on a floor, a unitary frame structure of tubular construction having a horizontally extending floor-positioned bottom support frame of step-like construction and a backwardly positioned upright display frame, a cross-extending glide member in alignment with and connected to a lower end portion of said upright display frame and downwardly with respect to said bottom frame for engagement with the floor, and casters extending downwardly from said bottom frame in a forwardly spaced-apart relation with respect to said glide member for engaging the floor and with said glide member for retaining said frame structure in a stable easily moved position on the floor at which said upright frame is in a substantially straight vertically extending relation.

4,068,856

SAFETY SPARE TIRE LOCKING BOLT

Herbert Harris, 1828 - 4th St., Washington, D.C. 20001

Filed Aug. 8, 1967, Ser. No. 667,616
Int. Cl.² B62D *43/00*
U.S. Cl. 280—179 R 1 Claim



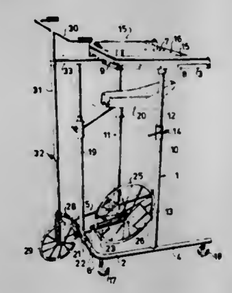
1. A spare tire holding and locking device comprising; a padlock having a shackle, a shaft bent at its lower end to hook under a bracket on a flat interior surface of an automobile trunk, said shaft having a straight portion for extending through a bolt hole in a spare tire wheel when the tire is flat against said surface, said straight portion including an upper portion of increased diameter which has a crosshold formed therethrough removably receiving the padlock shackle, said upper portion being threaded at its end for receiving a washer and threaded nut for the purpose of protecting and concealing the padlock.

4,068,857

APPARATUS ENABLING DISABLED PERSONS TO MOVE INDEPENDENTLY

Sven Arne Leanart Karlsson, Box 4, S-570 81 Jaraforsen, Sweden

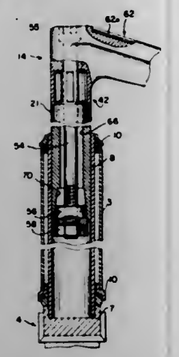
Filed Apr. 30, 1975, Ser. No. 573,081
Claims priority, application Sweden, Apr. 30, 1974, 7405830
Int. Cl.² B62M *1/02*
U.S. Cl. 280—259 1 Claim



1. An apparatus for the independent movement and exercise of disabled persons comprising a wheel supported frame including a lower horizontal frame member, an upper frame member substantially parallel to, but spaced from said lower frame member, vertically extending posts connecting said frame members, a wheel being pivotally connected to and extending forwardly of said lower frame member, a steering bar being operatively connected to said wheel, a driving wheel provided with pedals, being rotatably connected to and extending within said lower frame member, said lower frame member and said upper frame member each being U-shaped

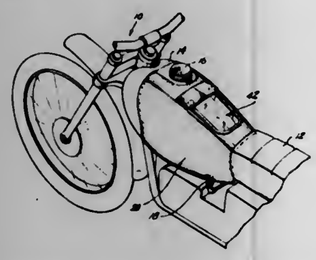
having two legs diverging from a waist portion connecting said legs, a vertical saddle post extending from the central waist portion of said lower frame member and a saddle adjustably mounted on said saddle post.

4,068,858
BICYCLE
George Harrison, Berwyn, and Nelson Harrison, Riverside, both of Ill., assignors to Nelson K. Harrison, Berwyn, Ill.
Filed Jan. 9, 1976, Ser. No. 647,912
Int. Cl.[2] B62N *00/00*
U.S. Cl. 280—289 R 9 Claims



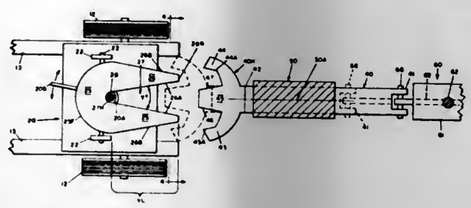
1. A bicycle including a wheeled frame, front wheel assembly pivotally connected to the frame, handlebar means for grasping by the operator, a handlebar mounting member keyed to the front wheel assembly and to which the handlebar means is secured for steering the bicycle, the improvement wherein:
a. said member includes a bar portion formed with an opening recess,
b. an identification plate fixedly inset in said recess and bearing identification indicia on its outwardly facing side,
c. said recess defining a floor surface covered by said plate and said floor surface bearing identification data,
d. said plate side and the surrounding bar surface being subjected to mutilation by efforts to tamper with said plate indicia, and said plate side and the bar surface surrounding it are disposed on the bicycle such that when the bicycle is parked upright, said plate side and its surrounding surface present themselves for ready inspection for detection of such mutilation.

4,068,859
COMBINED FUEL TANK PROTECTIVE COVER AND THIGH GRIP PAD FOR MOTORCYCLES
Melvin M. Dittman, 17513 - 32nd Ave. W., Lynnwood, Wash. 98036
Filed June 11, 1976, Ser. No. 695,264
Int. Cl.[2] B62J *7/00*
U.S. Cl. 280—289 E 9 Claims



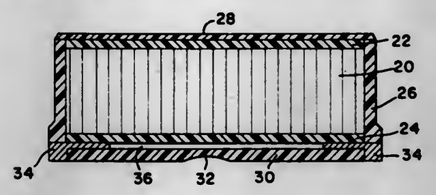
1. A combined protective cover and rider's leg grip pad device for removable mounting on a motorcycle fuel tank having contiguous top, sides and bottom exterior surfaces extending forwardly from the motorcycle rider's seat, said cover and grip pad device comprising a pad panel member of flexible and elastically stretchable sheet material having a transverse span between opposite side edges to permit drawing such edges transversely inward into mutual proximity beneath the tank with said panel member draped transversely over and enwrapping said tank, and fastener means for removably interconnecting said opposite edges extending inwardly into mutual proximity beneath the tank with the panel member maintained thereby in tension enwrapping the tank and stretched transversely of such panel member througout the length thereof so as to conform to and snugly fit the fuel tank.

4,068,860
TRAILER ANTI-JACKKNIFING APPARATUS
William G. Meyers, R.R. #1, Gretna, Nebr. 68028, and Arthur A. Dirks, 5357 N. 47th St., Omaha, Nebr. 68104
Filed Oct. 12, 1976, Ser. No. 731,308
Int. Cl.[2] B62D *53/08*
U.S. Cl. 280—432 8 Claims



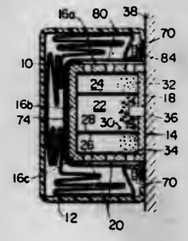
1. Trailer anti-jackknifing apparatus in combination with a conventional tractor-drawn trailer wherein the tractor includes a forward operator's cab and a rearward skid-plate comprising a generally circular forward portion and a pair of longitudinally horizontally rearwardly extending guide-lugs having rearwardly divergent upright inward-sides terminating at transversely opposed rear-tips to provide an elongate V-slot forwardly converging for a longitudinal finite-length from the rear-tips to a secureable kingpin at the tractor-to-trailer vertical pivot-axis, the outside contour of the skid-plate being geometrically symmetrical and having an upright outward-side, the trailer longitudinally extending underside carrying a depending kingpin, said anti-jackknifing apparatus comprising:
A. a generally horizontal longitudinally extending elongate ram terminating as a forward head-end, said ram being located beneath the trailer underside and attached to the trailer rearwardly of the kingpin, said ram head-end having an inactive normal-station and an anti-jackknifing extended-station respectively located rearwardly most remote from and nearer to the skid-plate, said ram at extended-station being rigidly and non-pivotably associated with the trailer;
B. a sturdy header rigidly attached to and co-reciprocatable with the ram head-end, said header including a pair of co-elevational forwardly extending horizontal arms which diverge outwardly away from the ram head-end and also a forwardly extending horizontal tongue having a pair of upright faces disposed between said arms, the inside contour of the header being geometrically symmetrical with respect to the trailer longitudinal-axis whereby at ram extended-station at least one of the header arms and also a tongue upright face during trailer swerving about the kingpin are adapted to simultaneously engage an outward side and an inward side of the skid-plate guide-lug, and
C. actuation means for causing the ram and its rigidly attached forward header to reciprocate between normal-station and extended-station, the ram actuation means including control means located within the tractor operator's cab and hence forwardly remote from the skid-plate.

4,068,861
LIGHTWEIGHT, FLEXIBLE SKI
Hubert R. Zemke, Jr., Danville, Calif., assignor to Hexcel Corporation, San Francisco, Calif.
Filed Feb. 26, 1976, Ser. No. 661,506
Int. Cl.[2] A63C *5/04*
U.S. Cl. 280—610 1 Claim



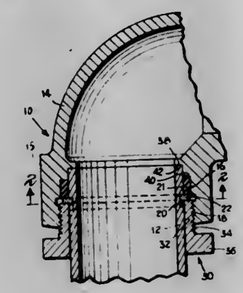
1. A lightweight, flexible ski comprising:
a honeycomb sandwich defined by an open celled core having a ribbon direction parallel to the ski length, having facings bonded to the top and bottom portion of the core, said facings being comprised of a multiplicity of substantially straight, parallel fibers extending over the length of the core, and said core having flexible sidewalls bonded directly to said core, said sidewalls comprising sheets of rubberized thermoplastic material with a modulus of about 2×10^3 psi; a running surface beneath said bottom facings and having at least one of its running edges formed from a flexible metallic strip, and said strip comprising an elongated, one-piece metal body having a plurality of laterally extending gaps transverse to its running edge to form a plurality of running edge segments, said segments having interconnecting means integral with adjacent running edge segments and said interconnecting means being less than one-half the thickness of the running edge segments whereby the ski exhibits high longitudinal and sidewall deflection.

4,068,862
SAFETY BAG INFLATION APPARATUS WITH EXTENDIBLE GUARD MEMBER AGAINST CONTACT OF BAG WITH HEATED GAS GENERATOR
Takashi Ishi, Sayama; Takuzi Murakami, Tokorozawa; Masayoshi Kato, Shiki, and Tadahiko Nagaoka, Tokorozawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Oct. 10, 1975, Ser. No. 621,603
Claims priority, application Japan, Nov. 20, 1974, 49-133866; Apr. 30, 1975, 50-59155[U]; May 24, 1975, 50-69884[U]
Int. Cl.[2] B60R *21/08*
U.S. Cl. 280—740 6 Claims



1. A safety apparatus comprising:
a gas generator including a housing with a plurality of gas outlets formed in a wall thereof, a combustible gas-generating composition disposed in said housing, and a heat-absorbing material disposed in said housing between said gas generating composition and said outlets;
an inflatable bag folded and arranged such that said housing extends into said bag, the mouth of said bag being in a fixed position with respect to said housing, so that said bag is inflated when a gas is discharged from said outlets; and
a guard member fixedly arranged between said housing and said bag, said guard member having a hollow shape generally similar to and slightly larger than the exterior of said housing, a plurality of slits formed in a wall of said guard member overlying said outlets, said slits being separated by portions of said guard member which expanded outwardly, enlarging said slits, when gases are discharged from said outlets.

4,068,863
PIPE JOINT
John A. Lasko, 50 Notch Hill Road, North Branford, Conn. 06471
Filed Oct. 14, 1976, Ser. No. 732,427
Int. Cl.[2] F16L *19/00*
U.S. Cl. 285—39 1 Claim



1. A mechanical pipe joint comprising, in combination:
a. a length of metal pipe having an annular external groove in said pipe axially spaced from one end thereof
b. a compression ring disposed in said annular groove,
c. a cylindrical compressible packing ring surrounding the end portion of the pipe between the substantially radial end surface of the pipe and said compression ring, adapted for engagement by the latter,
d. a companion pipe fitting part having a bore in which the pipe end, the compressible packing ring and the compression ring are received, said bore having a first substantially radial shoulder for engagement with the substantially radial end surface of the pipe, said bore having a second substantially radial shoulder and a cylindrical portion adjacent said second shoulder, said packing ring having a substantially radial end surface in abutment with said second shoulder and an external cylindrical surface engaging said cylindrical portion,
e. said bore of the companion fitting part having internal screw threads, and
f. a compression nut comprising a sleeve having external screw threads engaged with the internal threads of the companion pipe fitting part and having means engageable by a wrench for applying a turning movement to it, thereby to screw the sleeve into the campanion pipe fitting part, said sleeve having an inner substantially radial end surface engageable with the compression ring whereby the pipe end can be brought up snug against its cooperable first shoulder in the fitting part through the intermediary of the compression ring, said ring simultaneously exerting a compression force on the packing ring tending to bulge the latter and effect a tight seal between the companion pipe fitting part and the pipe end portion,
g. said compression ring being split, forming two end portions juxtaposed to one another, thereby enabling the ring

to be spread an extent during its installation in the annular groove,

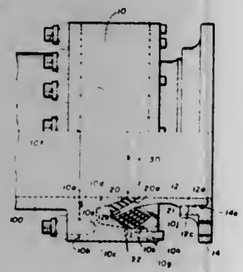
h. said groove having a width measured axially of the pipe, which is substantially greater than the thickness of said compression ring and on the order of roughly twice said thickness whereby the ring can shift axially on the pipe within limits determined by the engagement of the opposite sides of said ring with the opposite walls respectively of said groove so as to facilitate starting of the nut in the bore of the companion pipe fitting part.

4,068,864

SINGLE ELEMENT FLEXIBLE CONNECTION

John T. Herbert; Frank J. Kovitch, both of Arlington; Paul E. Sullivan, Euless, all of Tex., and Stanley P. Vitt, Redlands, Calif., assignors to Murdock Machine & Engineering Company, Irving, Tex.

Filed June 30, 1976, Ser. No. 701,088
Int. Cl.[2] F16L *11/12*
U.S. Cl. 285—49 14 Claims



1. In a flexible joint for pipelines where an annular housing with a central cavity has a nipple partially submerged therein with said nipple having a flared end on the submerged portion, the combination which comprises:

a. an elastomeric ring adhered to the inner surface of said flared end and internally contoured spherically with reference to a common center point spaced from said flared end and located on the longitudinal axis of said joint,

b. an elastomeric body having an assembly of concentric spherical rings embedded therein, with said body adhered to the outer surface of said flared end and with said rings contoured and positioned in symmetry to said common center point,

c. a collar encircling said nipple and engaging the outer surface of said elastomeric body to maintain said body in position,

d. support structure in said housing having an outward facing spherical surface mating in sliding relation with the internal surface of said elastomeric ring, and

e. means to secure said collar to said housing.

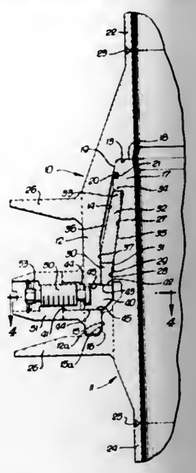
4,068,865

PIPE CONNECTORS

Forrest E. Shanks, II, Farmers Branch, Tex., assignor to Vetco Offshore, Inc., Ventura, Calif.

Continuation-in-part of Ser. No. 644,719, Dec. 29, 1975, abandoned. This application July 28, 1976, Ser. No. 709,274
Int. Cl.[2] F16L *21/00*
U.S. Cl. 285—90 23 Claims

1. A connector for pipe subjecting the connector to high tensile and bending forces comprising a rigid metallic tubular pin having a first transverse thrust surface at one extremity, a rigid metallic tubular box telescopically disposed over said pin and having a transverse shoulder abutting said first thrust surface, said box and pin having inner and outer wall portions, respectively, spaced laterally from each other to provide an annular space therebetween, lock means on said box shiftable laterally thereof, rigid metallic thrust transmitting means in said annular space, said thrust transmitting means having a second transverse surface engaging a third transverse surface on said pin, first cam means on said thrust transmitting means engaging second cam means on said lock means, and means for shifting said lock means laterally toward said pin to force said second cam means against said first cam means to force said second transverse surface against said third transverse surface



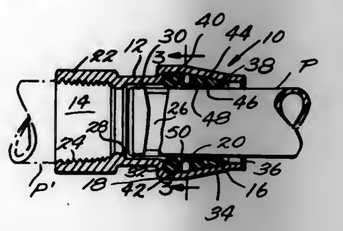
and urge said pin axially toward said shoulder to force said first transverse surface against said transverse shoulder to axially pre-load said pin and box for resisting axial separation of said first transverse surface and said shoulder under high tensile forces; and said connector having coengaged laterally opposed circumferentially extended wall means spaced from said first transverse surface and said transverse shoulder for resisting bending of the connector.

4,068,866

STAB-TYPE JOINT FOR SMOOTH END OR FLARELESS PIPE

Narayan C. Saha, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed Mar. 25, 1976, Ser. No. 670,153
Int. Cl.[2] F16L *17/00*
U.S. Cl. 285—105 18 Claims



1. An improvement in a joint for connecting an end portion of a smooth wall pipe to fittings or other pipes comprising:

a hollow body member having a passageway therethrough with an axially extending portion for receiving the end portion of the pipe, said axially extending end portion of said passageway having a bore defining a chamber between the same and the wall of the pipe, said bore having a frusto-conical portion extending inwardly from adjacent the outer end of the end portion of said passageway, a cylindrical portion extending inwardly from the inner end of said frusto-conical portion and an annular wall at the

inner end of said cylindrical portion, said annular wall defining an inner end of said chamber and said annular wall having an inner diameter at least as great as said pipe's outside diameter whereby said pipe may pass inwardly thereof, said frustoconical portion having a minor diameter at its outer end large enough to receive the end portion of said pipe and a major diameter at its inner end from which said cylindrical portion extends;

a spring-like annular split gripper ring having an axial extent less than the axial extent of said frusto-conical portion, said ring having a frusto-conical surface tapering in the same direction as the frusto-conical portion of said bore and a cylindrical interior surface provided with pipe gripping means thereon;

an elastomeric fluid pressure activated sealing 0-ring member positioned within said chamber between said cylindrical portion and the exterior of said pipe and providing a seal between the exterior of said pipe and the interior of said passageway; and,

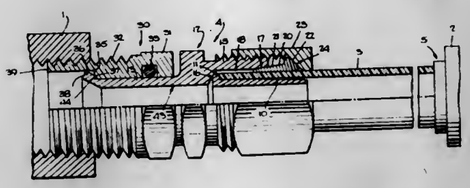
means interposed axially between said split gripper ring and said elastomeric sealing O-ring and normally flexibly urging said split gripper ring and said elastomeric sealing O-ring axially apart with said sealing O-ring engaging said annular wall whereby said gripper ring contracts into initial gripping contact with said pipe when said pipe is inserted through said gripper ring an initially and then continuously applying an axial load on said sealing O-ring sufficient to cause radial sealing before and after being fluid pressure actuated, said last mentioned means being a resilient ring having a wall thickness substantially less than the radial spacing between said cylindrical portion of said bore and the exterior surface of said pipe.

4,068,867

AIR HOSE FITTING

Frank J. Rodgers, Fanwood, and Harold Gibson, Califon, both of N.J., assignors to Nycoil Company, Fanwood, N.J.

Filed Mar. 15, 1976, Ser. No. 666,901
Int. Cl.[2] F16L *27/08*
U.S. Cl. 285—174 2 Claims



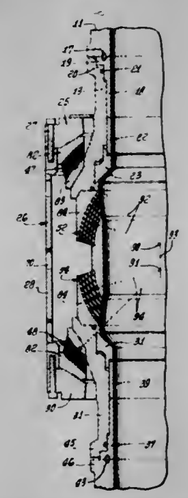
1. A swivel fitting comprising a hollow outer member and a hollow inner member, each of said members having an axis, the inner member having a portion extending from one end and mounted within the outer member in axial alignment therewith, said extending portion having a cylindrical wall, the outer and inner surfaces of said wall being parallel to each other and to the axes of both inner and outer members, locking element means at the end of said extending portion and cooperating with said outer member to hold the two members together, said outer member being countersunk to provide an internal shoulder, said locking element means on said inner member comprising an outwardly extending lip cooperating with and in contact with said shoulder to hold the two elements together, the inner surface of said lip being outwardly flared and at an angle to the inner surface of said extending portion, a notch in the outer surface of said extending portion connecting said lip and said outer surface of said extending portion, the cross sectional shape of said notch comprising front and rear substantially straight-walled edges angled with respect to each other and meeting each other radially inwardly from said outer surface, the front edge thereof being the portion of said lip which cooperates with and is in contact with said shoulder to hold the two elements together, a seal between said inner and outer members and in direct contact with both, said outer member being provided with a circular channel to accommodate said seal, the inner surface of the outer member and the outer surface of the inwardly extending portion of the inner member between said locking elements and said seal being elongated parallel to each other and in substantial contact with each other to prevent the two from wobbling relative to each other, said inner member having a hose clamping mechanism extending from the other end which comprises an inwardly tapered inner supporting element and an outer ferrule adapted to hold a hose therebetween, said inner supporting element having an outwardly extending stop shoulder, said inner member having a stop shoulder and the inner supporting member having a front stop on said outwardly extending stop shoulder against which the stop shoulder of said inner member abuts, said ferrule having an outer beveled surface and a rear heel, the inner member having a beveled bearing surface adapted to bear against the beveled surface of the ferrule and a locking nut mounted over the outer member and having a portion adapted to bear against the heel of the ferrule.

4,068,868

FLEXIBLE JOINTS FOR MARINE RISERS

Juergen H. Ohrt, Kreis, Renasburg, Germany, assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

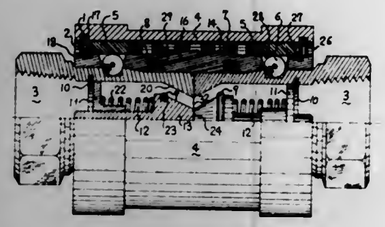
Filed Sept. 2, 1975, Ser. No. 609,584
Int. Cl.[2] F16L *27/04*
U.S. Cl. 285—263 19 Claims



1. A flexible joint through which fluid can be conducted comprising: first and second bodies having a fluid passage therethrough and adapted to be disposed in a tubular string, a housing structure surrounding said bodies, a first bearing assembly between and engaging said first body and housing structure for transmitting loads therebetween while permitting relative tilting between said first body and housing structure, a second bearing assembly between and engaging said second body and housing structure for transmitting loads therebetween while permitting relative tilting between said second body and housing structure, and a seal assembly between and engaging said bodies to prevent fluid flow between said passage and the exterior of said bodies, said seal assembly including means for transmitting axial loads between said bodies while permitting relative tilting between said bodies, each of said bearing assemblies including laminations of alternate layers of rigid material and yieldable material and secured to a body and housing structure, said seal assembly including a third body between said first and second bodies and laminations of alternate layers of rigid material and yieldable material

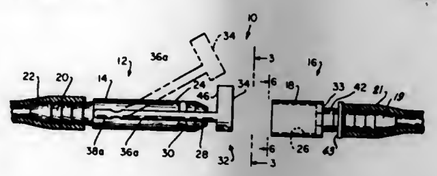
between and secured to said third body and each of said first and second bodies, said housing structure including means for compressing said first and second bearing assemblies between said housing structure and first and second bodies and said seal assembly laminations between said third body and said first and second bodies.

4,068,869
COUPLER
Tadaaki Maruyama, 1089-130 Nedo Abiko, Chiba, Japan
Filed June 16, 1976, Ser. No. 696,770
Claims priority, application Japan, June 16, 1975, 50-71988
Int. Cl.² F16L *37/18*
U.S. Cl. 285—316 **1 Claim**



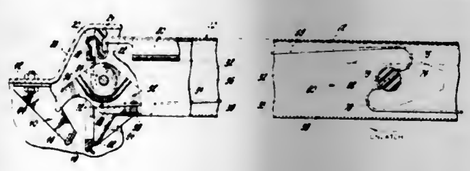
1. A coupler for connecting a pair of plugs (3) in fluid tight relationship comprising in combination:
an outer sliding sleeve (4) provided with a pair of internal annular narrow grooves (17) each of which is formed on the internal surface of said sleeve (4) adjacent to each end thereof,
an inner stationary sleeve forming a socket (16) having a pair of external annular narrow grooves (18) each of which is formed on the external surface of said socket (16) adjacent to each end thereof, a plurality of circumferentially spaced detent means-receiving holes (28) which are disposed axially inwardly adjacent to said external narrow grooves (18), a pair of external radial shoulders (14) axially inwardly spaced from said holes (28) for limiting the inward movement of a pair of axially sliding collars (5) with respect to said socket (16),
a pair of axially sliding collars (5), each of which is provided with a frustoconical cam surface (27) at its one end, mounted coaxially slidably within an annular space (26) defined between said sliding sleeve (4) and said stationary socket (16), and disposed symmetrically to each other with respect to said shoulders (14) so as to face the outside at said cam surfaces (27),
detent means (6) radially movably received in said holes (28) to connect said plug (3) positively with said socket (16) when said collar (5) is positioned over said detent means thereby preventing said detent means (6) from moving radially outwardly after said plug (3) is fully inserted into said socket (16) and to disconnect said plug (3) from said socket (16) when said collar (5) is axially inwardly moved toward its innermost position adjacent to said shoulder (14) thereby being positioned away from said detent means for releasing said detent means (6) from their locking position,
a pair of relatively large diameter snap rings (1) mounted in said internal narrow grooves (17) for providing internal radial projections which serve as means for driving said collars (5) to right and left along the periphery of said socket (16),
a pair of relatively small diameter snap rings (2) mounted in said external narrow grooves (18) for providing external radial projections which serve as means for limiting the outward movement of said collars (5) with respect to said socket (16),
bias means (7) for biasing said collars (5) outwardly so as to make said collars (5) abut resiliently against said snap rings (1 and 2) at said cam surfaces (27),
sealing means (8) fixedly mounted in said socket (16) inwardly beyond said holes (28) for establishing sealing engagement between said socket (16) and plugs (3).

4,068,870
FLEXIBLE HOSE COUPLING
John Kimball Whitney, Orchard Park; Allan Hugh Cosgrove, Eggertsville, and Roland Edward Flick, West Seneca, all of N.Y., assignors to Gaymar Industries Incorporated, Orchard Park, N.Y.
Filed Apr. 2, 1976, Ser. No. 673,275
Int. Cl.² F16L *47/00*
U.S. Cl. 285—320 **4 Claims**



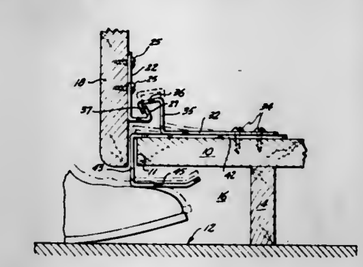
1. A coupling for flexible hose comprising: a male member and a female member; said male member having a body with a first end formed to engage a hose and a second end formed to telescopically couple internally with a chamber in said female member; said female member having a body with a first end formed to engage a hose and a second end containing said chamber formed to receive said second end of said male member therein, said chamber having a circular cross-section; the outer configuration of said second end of said female member being non-circular; and
releasable locking means formed on said male member to engage a specific area on said female member, said specific area lying between said first and second ends of said female member and being immediately adjacent a locking surface formed by an edge of said non-circular body, said locking means comprising a locking device carried by a pair of opposed, hinged arms, said locking device thus being pivotable into and out of locking engagement said locking device being formed of resilient material and including a semi-circular unit comprising an over-center-semi-circular aperature dimensioned to encompass a specific area of said other member adjacent said locking surface, said semi-circular unit and said non-circular second end of the female member being constructed to prevent closing said semi-circular unit over said non-circular second end in the event the male member is not sufficiently seated within said chamber.

4,068,871
LATCH OPERATING MECHANISM
Robert R. Mercer, Ortonville, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 3, 1976, Ser. No. 738,603
Int. Cl.² E05C *9/00*
U.S. Cl. 292—48 **3 Claims**



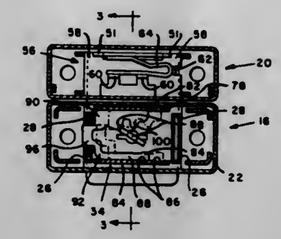
1. A latch mechanism acting between a first member and a second member movable relative the first member, said latch mechanism comprising:
first and second latch bolts movably mounted on one of the members for movement between a latched position engaging the other member and an unlatched position permitting movement of the second member relative the first member;
a continuous flexible rod having one end connected with one latch bolt and a second end connected with the other latch bolt, said flexible rod providing the sole operating connection between the first and second latch bolts and resiliently urging the first and second latch bolts to their respective latched positions
and a handle journalled for rotation on the member to which the first and second latch bolts are movably mounted, said handle being operatively connected with the flexible rod so that rotation of the handle flexes the flexible rod to move the first and second latch bolts from the latched position to the unlatched position.

4,068,872
LATCHED CABINET STRUCTURE
Charles V. Smith, 24120 Dunlap Road, Bothell, Wash. 98011
Filed Feb. 11, 1976, Ser. No. 657,159
The portion of the term of this patent subsequent to Sept. 14, 1993, has been disclaimed.
Int. Cl.² E05C *19/06*
U.S. Cl. 292—87 **2 Claims**



1. In a cabinet or the like having a kick space beneath the front edge of the bottom shelf and a door panel hinged at one side edge to said cabinet and normally closing to said bottom shelf, substantially invisible latching mechanism for said door, comprising: an instanding strike device on the inside of said door panel, said strike device having an upstanding catch located to overlie the bottom shelf in spaced relation thereabove when the door is closed; an elongated latching tang is secured to the upper face of said shelf and disposed wholly inside the front edge of said shelf and, said tang including a downwardly-biased, forward-extending flexible arm supporting a downstanding jaw latch located to engage said catch to retain said door closed against said shelf edge, and unlatching means, comprising:
an upwardly movable, flexible lifter arm secured to said shelf in underlying relation to said flexible arm and operable upward in the space beneath said strike device to disengage said jaw latch from said catch;
said lifter arm extending forwardly past the front edge of said shelf; and
a lifter leg depending from the forward portion of said lifter arm between said shelf front edge and the door closed thereto, said leg having a lower terminal in spaced relation to the underside of said shelf and accessible to be engaged by a user's toe applied with an upward thrust.

4,068,873
AUTOMATICALLY CLOSING LOCK
Carmen Testa, Stamford, and William J. Bouton, Jr., South Norwalk, both of Conn., assignors to Excelsior Hardware Co., Stamford, Conn.
Filed May 21, 1976, Ser. No. 688,773
Int. Cl.² E05B *65/48;* E05C *19/10*
U.S. Cl. 292—101 **7 Claims**



1. An automatically closing lock for a container having a body and a closure mounted with the body for movement to close it, said lock comprising:
A. a catch assembly having a catch housing adapted to be mounted on one of said container closure and body, said catch housing defining
1. a planar striker surface formed with at least one catch slot therein; and
2. a catch surfact defined by said catch slot having a portion substantially perpendicular to said striker surface;
B. a latch assembly having;
1. a latch housing, formed with an attachment slot, adapted to be mounted on the other of said container closure and body;
2. a latch member pivotably mounted with said latch housing and having
a. a web formed to overlie said striker surface,
b. at least one tab formed with said web to interfit with said catch slot, said tab having
1. an inclined edge formed to slidingly engage said catch housing and pivot said latch member away therefrom and to align said tab with said catch slot,
2. a hook-like surface shaped to latchingly engage said catch surface when said tab is interfitted with said catch slot; and
c. means for limiting pivoted movement of said latch member in said latch housing to less than 90°, said limiting means comprising:
1. a hanger bar formed with said latch member to project into said attachment slot, and
2. retainer means for preventing disengagement of said hanger bar from said attachment slot and against which said hanger bar binds to limit latch member pivoted movement, and
C. means for urging said latch member to pivot into firm contact with said striker surface and said tab into interfitting engagement with said catch slot.

4,068,874
ROTARY LATCH MECHANISM WITH LOCKING DEVICE
Paul D. Fleming, and Kenneth N. Gulleksen, both of Glendale, Calif., assignors to W & F Manufacturing Inc., Glendale, Calif.
Filed Mar. 1, 1976, Ser. No. 662,623
Int. Cl.² E05C *3/04, 19/10*
U.S. Cl. 292—128 **7 Claims**

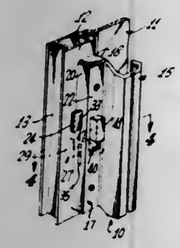
1. In a combined handle, latch and locking assembly including an elongated handle, a mounting channel joined to said handle for attachment to a sliding closure, a latch assembly including a rotary latch member secured to an axle stud and

supported by said stud for movement between latched and unlatched positions, and means mounted said latch assembly in said mounting channel beneath a top wall thereof, for extension and retraction of said latch member therefrom, an improved locking device comprising:

a locking slide comprising a generally rectangular, thin and flat base plate, and a box-like projection on one side of said base plate forming an operating knob for the locking device, said slide having a recess opening through the other side and extending into said projection;

means defining a slot in said cover wall overlying said latch assembly and sized to receive said projection with a sliding fit, said slot being substantially longer than the projection to permit the latch to reciprocate in said slot along a predetermined path between locked and unlocked positions, said base plate being disposed between said top wall and said latching assembly, and said projection extending away from said latch assembly through said slot;

an elongated tab on the end of said stud adjacent said slide extending diametrically across the stud and projecting



into said recess, said tab having flat sides spaced a preselected distance apart and being centered on the axis of said stud;

means in said recess defining an elongated channel parallel to said path and having sidewalls spaced and positioned to receive said tab with a close fit when the latter is parallel to said path, thereby to prevent rotation of said tab, said stud and said latch member, said tab being positioned on said stud to be parallel to said path when said latch member is in the latched position;

said recess also having an enlarged clearance portion at one end of said channel, large enough to permit said stud to rotate unobstructed therein;

said tab being disposed in said clearance portion when said slide is in said unlocked position, and in said channel when said slide is in said locked position;

and detent ridges on the sidewalls of said channel at the juncture of said clearance portion and said channel for yieldably resisting passage of said tab, thereby to hold the slide releasably in the locked and unlocked positions.

4,068,875

SECURITY LATCH FOR SLIDING DOORS

Nathaniel W. Miller, Hopewell, Va., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Sept. 29, 1976, Ser. No. 727,946
Int. Cl.² E05C *1/04*
U.S. Cl. 292—206 **1 Claim**

1. A latch for sliding doors, comprising:

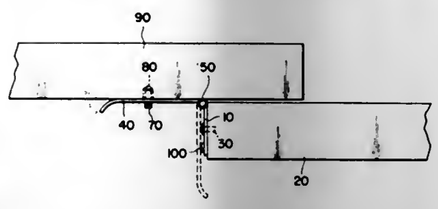
a first flat steel plate;

a second flat steel plate having one upwardly curving end;

a hinge connecting the two plates end to end so that the plates can be folded together parallel to each other or apart perpendicular to each other, with the curved end of the second plate being remote from the hinge and curving towards the first plate when the plates are folded together;

a threaded screw threaded through a threaded hole in the second plate, with the head of the screw projecting out of that side of the second plate which will be adjacent the first plate when the plates are folded together;

a magnet located on that side of the first plate which is



adjacent the second plate when the plates are folded together; and

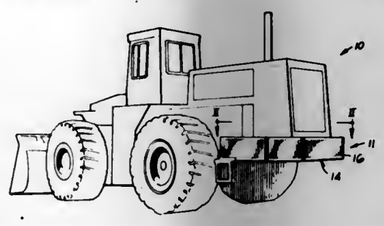
a torsion spring located at the hinge and pressing the plates apart.

4,068,876

BUMPER AND COUNTERWEIGHT ARRANGEMENT AND METHOD FOR ASSEMBLING THE SAME

Donald R. Muellner, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 8, 1976, Ser. No. 674,786
Int. Cl.² B60R *19/04*
U.S. Cl. 293—69 R **20 Claims**



1. A combined bumper and counterweight arrangement mounted on one end of a frame of a vehicle having a work implement mounted on the other end thereof comprising

a bumper assembly including a horizontally disposed bottom plate and a plurality of upstanding plates secured to said bottom plate to define a compartment therein,

a counterweight disposed within said compartment and resting on said bottom plate,

bracket means comprising at least one horizontally disposed bracket mounting said bumper assembly on said frame

a vertically disposed pin further disposed in vertically aligned bores formed through said bracket and said frame whereby said bumper assembly can be mounted expeditiously on said frame and

vertically disposed attachment means releasably attaching said counterweight to said bottom plate.

4,068,877

ROLLER VEHICLE PUSHING BUMPER

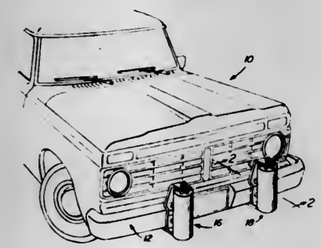
Finn Burleson, Lubbock, Tex., assignor to Winston P. Brummette and Craig Brummette, both of Lubbock, Tex., part interest to each

Filed Aug. 2, 1976, Ser. No. 710,472
Int. Cl.² B60R *19/00, 21/14;* B61F *19/04*
U.S. Cl. 293—72 **1 Claim**

1. In combination with a motor vehicle including, arranged transversely of a longitudinal extent of the vehicle, a longitudinally extending front bumper substantially disposed in a vertical plane, a pair of vehicle pushing bumpers spaced along the bumper symmetrically with respect to a midpoint of the longitudinal extent of the bumper, each of the pushing bumpers comprising, in combination:

a. a roller; and

b. bracket means connected to the roller for rotatably mounting the roller in substantially vertical disposition on the bumper of the vehicle, the bracket means including a framework attachable to the front bumper of the vehicle, a vertically disposed axle rotatably journaled on the freamwork, with the roller being rotatably journaled on the axle, the roller having a substantially cylindrical configuration including a cylindrical surface revolving about an axial extent of the roller, and the roller being provided with an axial through hole arranged for receiving the axle,



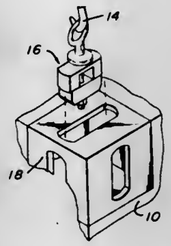
with the cylindrical surface of the roller being entirely spaced horizontally from the vertical plane of the bumper, the framework including a substantially planar first part journaling the axle and extending from the axle and beneath the front bumper, and a second part having a portion shaped to conform to the front bumper and a portion arranged substantially parallel to the first part and disposed journaling the axle in cooperation with the first part, the roller being constructed from a resilient material, with the roller being provided with a plurality of bores in radial distribution about the roller and extending substantially parallel to the axial through hole provided in the roller.

4,068,878

CONTAINER LIFT COUPLING

Irving Wilner, Cranford, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 28, 1976, Ser. No. 727,504
Int. Cl.² B66C *1/66*
U.S. Cl. 294—83 R **10 Claims**



1. A twist lock coupling for a hollow lift fitting having a slot therethrough, comprising, in combination:

a shank member for inserting in the slot and having an elongated shank portion adapted to be connected at one end to a lifting device and having at the other end a pair of opposed segments laterally extending in opposite directions from said shank portion formed to closely fit through the slot when parallelly aligned therewith and to engage the inside of the lift fitting on either side of the slot when orthogonally aligned therewith; and

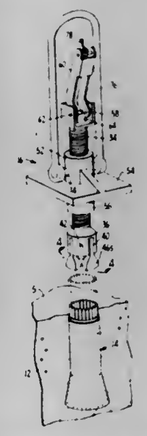
a locking member rotatably and slidably disposed on said shank portion intermediate the ends and laterally extending in opposite directions from said shank portion and formed to fit in the slot when parallelly aligned therewith, said locking member having a recess formed therein for non-rotatable gravitational engagement with said segments and the fitting when said shank member is inserted in the slot with said segments orthogonally aligned below the slot, thereby locking said shank member in the lift fitting.

4,068,879

CONCRETE SLAB HOISTING APPARATUS

Philip A. Torbet, San Mateo, and Cyril Thomas Eager, San Francisco, both of Calif., assignors to The Burke Company, San Mateo, Calif.

Filed July 12, 1976, Ser. No. 704,368
Int. Cl.² B66C *1/66*
U.S. Cl. 294—89 **10 Claims**



1. Apparatus for engaging a concrete slab to hoist the same, said slab having a generally planar surface, said apparatus comprising in combination: a socket cavity in said slab, said cavity being elongated along an axis substantially normal to said surface and symmetrical about said axis, said cavity having a cylindric portion communicating with said surface and a frusto-conical portion below said surface accessible through said cylindric portion and coaxial therewith, said frusto-conical portion defining a wall that converges in a direction toward said surface; a shaft having a diameter less than said cylindric portion and a length greater than the depth of said cavity, said shaft having an inner end and an outer end, a cylindrical enlargement on said inner end defining a bearing surface of substantially the same diameter as said cylindric portion and being coaxial with said shaft; at least three arms secured to said inner end at equal angularly spaced positions therearound for pivotal movement between a retracted position to afford insertion and removal of said shaft relative said cavity and an extended position for engaging said frusto-conical wall; and means accessible from the outer end of said shaft for controllably moving said arms between a retracted position and an extended position.

4,068,880

AUTOMATIC DRUM GRIPPER

Takefusa Kikuchi, 3-6-18, Sakai, Musashino, Tokyo, Japan

Filed Oct. 12, 1976, Ser. No. 731,689
Claims priority, application Japan, Feb. 28, 1976, 51-15827
Int. Cl.² B66C *1/42*
U.S. Cl. 294—90 **2 Claims**



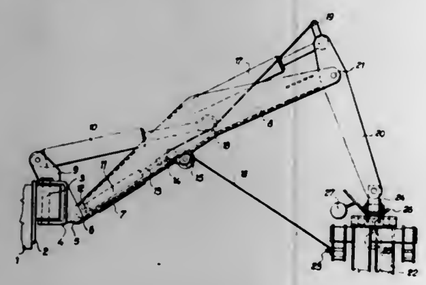
1. An apparatus to hold and transport a drum by gripping and releasing its chime automatically, consisting of a lifting bracket, which is to be installed on a fork lift or other lifting device, of a gripper bracket, equipped with a chime gripping device, consisting of said gripper bracket, of a pair of gripping levers, each of which, having a gripper jaw to grip the chime of a drum and of a connecting lever, these four members being pin jointed with each other to make a quadrilateral link mechanism and suspended by said lifting bracket through a spring at one side and also at the other, supported vertically freely by said lifting bracket through a pin-elliptical hole joint, so as to swing and to be able to shift to and hold the most suitable position automatically to conform to various conditions during the operation, and equipped with a releasing device, consisting of a jaw releaser with a hook at its top end and vertically freely supported by said lifting bracket through a pin-elliptical hole joint and at its bottom end being connected with said quadrilateral link by a spring, of a jaw releaser stopper, equipped with a disengaging slider to release said jaw releaser off a stop jaw of a jaw releaser stopper, which is equipped at the top right corner of said gripper bracket and of a disengaging slider pusher, fixed at the upper side of said lifting bracket, to push said disengaging slider.

4,068,881

ARRANGEMENT FOR AUTOMATIC REGULATION OF THE CABLE LENGTH OF A HOLDING CABLE OF GRAB MEANS

Mirko Dressler, and Ladislav Dofek, both of Krtiny, Czechoslovakia, assignors to Vyzkumny ustav lesniho hospodarstvi a myslivosti, Jiloviste-Strnady, Czechoslovakia

Filed Oct. 13, 1976, Ser. No. 732,122
Int. Cl.² B66C *1/42*
U.S. Cl. 294—111 **3 Claims**



1. An arrangement for the automatic regulation of the cable length of a securing cable of grab means suspended on one end of an auxiliary arm supported in rocking fashion on one end of an elongated jib arm, which jib arm is anchored on some traction means and adapted to be raised and lowered, said arrangement comprising in combination:

a holding cable, one end of said cable being coupled to the grab means, the other end of said cable being fastened to the other end of the auxiliary arm remote from the end of said auxiliary arm on which said grab means is suspended;

first guiding means for said cable provided on the grab means;

second guiding means for said cable disposed on said jib arm;

a tensioning roller with tensioning means for tensioning said cable disposed on said jib arm;

said holding cable overlying a portion of said tensioning roller;

third guiding means for said cable provided on said jib arm; and

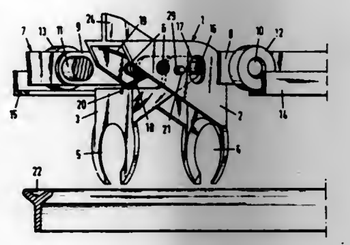
means for securing said holding cable to the free end of the auxiliary arm.

4,068,882

CARRIER FOR ARTICLES, SUCH AS EGGS

Jelle van der Schoot, Aalten, Netherlands, assignor to Staalkat B.V., Aalten, Netherlands

Filed Nov. 16, 1976, Ser. No. 742,248
Claims priority, application Netherlands, Nov. 21, 1975, 7513631
Int. Cl.² B66C *1/42*
U.S. Cl. 294—116 **9 Claims**



1. A carrier for articles, such as eggs, comprising:

a. a frame;

b. two hook-shaped gripper means, each of which has a free end which has an opening, for receiving between said free ends an article having its longitudinal axis oriented substantially horizontally;

c. shafts, mounted in said frame, for pivotally mounting the other ends, opposite said free ends, of said hookshaped gripper means, so that the free gripper ends can be moved towards and from each other, which shafts at minimum interspace between the free gripper ends always lie inwardly of the plane of the opening of the free end of the gripper means mounted on that shaft and wherein said shaft for each hook-spaced gripper means lies on a side of the median perpendicular plane between the free ends which is opposite to the side on which the free end lies which is supported by that shaft; and

d. means for pivotally mounting said other ends of the hook-shaped gripper means on their respective shafts.

4,068,883

WIND DEFLECTOR CONFIGURATION

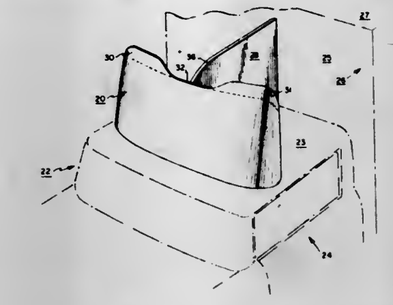
Steven L. Meinecke, Woodbridge, Va., and Walter Selden Saunders, Baltimore, Md., assignors to Walter Selden Saunders, Baltimore, Md.

Filed June 11, 1975, Ser. No. 585,843
Int. Cl.² B62D *35/00*
U.S. Cl. 296—1 S **15 Claims**

1. A wind deflector for mounting to land vehicles forward of a drag producing surface and comprising upstanding baffle means positioned above a substantially horizontal surface for deflecting oncoming air over the drag producing surface and thereby reducing the drag caused by said surface and comprising:

A. a substantially rectangular frontal shape generally convex in a horizontal plane as viewed from the front and generally angled in the vertical plane toward the rear; and

B. at least one extension portion



a. positioned about an upper corner of said substantially rectangular baffle means, and

b. increasing the height dimension of the baffle means at said corner, and

c. said extension substantially smoothly continuing said convex and rear angled contour of said frontal shape,

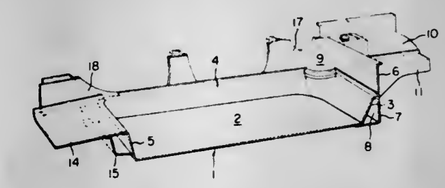
thereby providing a wind deflector with improved drag reduction capabilities.

4,068,884

UNDERSTRUCTURE OF AN AUTOMOTIVE BODY

Hiroo Watanabe, Tokyo, and Yoshiaki Ocho, Wakoo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1976, Ser. No. 715,209
Claims priority, application Japan, Sept. 11, 1975, 50-124379; Sept. 11, 1975, 50-124380
Int. Cl.² B62D *23/00*
U.S. Cl. 296—28 F **3 Claims**



1. An understructure for an automotive body comprising:

a dished floor panel having a single continuous flat body portion and four side portions rising from the periphery thereof;

an angled dashboard panel defined by an upstanding body portion integrally secured to the outer surface of a front side portion of said floor panel along a top edge thereof, and a horizontally rearwardly extending bottom portion integrally secured along the rear side edge thereof to said front side portion of said floor panel at said bottom thereof, both said body portion and said bottom portion transversely extending from side to side of said automotive body so as to define, in cooperation with said front side portion of said floor panel, a first hollow reinforcing beam of substantially triangular cross-section extending transversely and continuously from side to side of said automotive body;

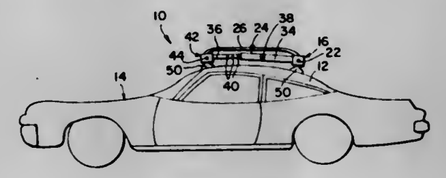
a pair of trough-like side frames opening sidewise toward each other and integrally secured along the upper and lower edges thereof, to the outer surfaces of the adjacent lateral side portions of said floor panel to define a pair of second longitudinally extending hollow reinforcing beams, said second reinforcing beams being integrally and continuously connected at their front ends with said first reinforcing beam at its lateral sides forming a continuous hollow space.

4,068,885

RETRACTABLE HEAT SHIELD FOR VEHICLES

Leon H. Berger, 38 Indiana Ave., Long Beach, N.Y. 11561

Filed Jan. 5, 1977, Ser. No. 756,900
Int. Cl.² B60N *3/06*
U.S. Cl. 296—78 R **5 Claims**



1. A retractable heat shield for the roof of a vehicle comprising in combination:

a first pair of end housings and a first rod element connected therebetween so as to maintain said end housings in spaced relation;

a flexible shade element mounted rollably on said first rod element;

first and second pairs of elongated telescopable members, one end of each of said pairs of telescopable members being connected to respective ones of said end housings, said pairs of telescopable members being adapted to extend in spaced generally parallel relation;

a second pair of end housings connected respectively to the other ends of said pairs of telescopable members;

a transverse support rod connected between said second pair of end housings in generally parallel relation to said first rod element;

means carried by said shade element adjacent the free edge thereof adapted to detachably mount same on said transverse support rod; and

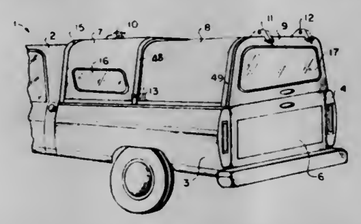
means on each of said end housings for removably mounting the same on the roof of a vehicle, whereby said shade element may be selectively extended in spaced overlying relation to the roof of a vehicle.

4,068,886

TELESCOPIC COVER ASSEMBLY FOR OPEN BED VEHICLES

Richard B. Gostomski, 636 Sixth St., Owen, Wis. 54460

Filed Oct. 28, 1976, Ser. No. 736,647
Int. Cl.² B60J *7/10*
U.S. Cl. 296—137 B **8 Claims**



1. Apparatus for covering in a substantially weathertight sealing configuration the open bed of a vehicle, the bed having

first and second ends and opposing sides, said apparatus comprising:

a. first and second track members adapted to be mounted on the opposite sides of the bed in a parallel relationship to each other, each of said first and second track members including:

1. a first elongate runner section extending substantially from the first end of the bed to the second end thereof;
2. a second elongate runner section in juxtaposition with said first runner section, said second runner section extending substantially from the first end of the bed to a location past the midpoint between the first and second ends of the bed;
3. said first and second runner sections each having a longitudinal roller slot and roller retaining flange extending the length thereof;
4. each said roller retaining flange having notches therein in selective locations, said notches being of sufficient size to permit said rollers, set forth below in subparagraph (c) (1), to be removed therethrough;

b. first and second cover sections each having a length approximately one half that of the bed and a generally inverted U-shaped cross sectional configuration, said second cover section being smaller in height and width than said first cover section whereby it may telescopingly fit within said first cover section;

c. said first cover section further including roller means affixed on each side thereof and rollably engaged with said slot and roller retaining flange of said second runner sections, said roller means including;

1. a first pair of rollers on one end of said first cover section, one on each side thereof, and a second pair of rollers on the other end of said first cover section, one on each side;
2. each roller having an axle extending therethrough, said axle affixed to said second cover section in a substantially horizontal cantilevered fashion;

d. said second cover section further including roller means affixed on each side thereof and rollably engaged with said slot and roller retaining flange of said first runner sections, said roller means having a configuration exactly like that described above in subparagraphs (c) (1) and (c) (2); and

e. said notches in said roller retaining flanges being located along said track members in such a relationship to each other that said second pairs of rollers may be selectively aligned therewith to either individually or simultaneously remove or pivot said first and second cover sections through an arc of from 0° to about 90° with respect to the plane of said track members while said first pairs of rollers remain engaged with said slots and roller retaining flanges.

4,068,887

SEAT MOUNTINGS

Frederick William Babbs, Sherwood, England, assignor to Cox of Watford Limited, England

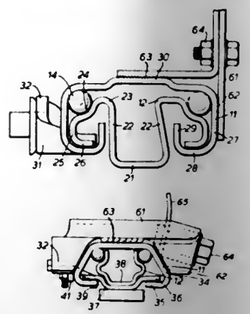
Filed Aug. 19, 1975, Ser. No. 605,936

Claims priority, application United Kingdom, Aug. 22, 1974, 37013/74

Int. Cl.² B60R *21/10*

U.S. Cl. 297—216 **14 Claims**

1. A mounting for a vehicle seat which comprises two relatively slidable elongated members, one of which is attachable to a vehicle seat and the second of which is attachable to a vehicle floor, each of said two elongate members having a cross-section which includes two arcuate portions, said elongate members being positioned relative to one another such that each arcuate portion of one member is positioned in correspondence with an arcuate portion of the other member to thereby form two separate ball tracks; roller means positioned in each of said ball tracks to provide frictionless slidable movement between said elongate members; each elongate member also including extension flanges extending beyond each of said arcuate portions, said extension flanges of each of said two elongate members cooperating with each other to contact and bend one another in response to loads applied to said elongate



member attachable to said vehicle seat; and means on said elongate member attachable to said vehicle seat for connection to one end of a seat belt.

4,068,888

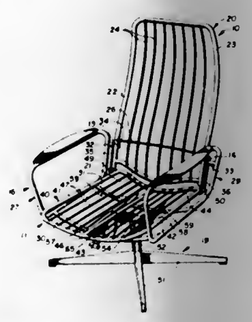
RECLINER CHAIR

Merton M. Bottemiller, Wadena, Minn., assignor to Homecrest Industries, Inc., Wadena, Minn.

Filed Jan. 7, 1976, Ser. No. 647,134

Int. Cl.² A47C *1/02*

U.S. Cl. 297—317 **7 Claims**



1. An adjustable recliner chair comprising a base, a chair supporting frame secured to and supported by said base, a chair back pivotally supported from said frame about a first pivotal axis substantially above the bottom of said back, a chair seat pivotally secured to the rear thereof to said chair back along a second pivotal axis substantially below said first pivotal axis, and a cam member secured to the underside of said seat adjacent the front thereof with an inclined lower wall in the form of a plate sloping downwardly from front to rear and having a slot of predetermined length therethrough extending longitudinally of said plate, said supporting frame having a support member extending beneath said inclined lower wall of said cam member in adjustable engagement therewith so that as said chair back is tilted back, the chair seat moves forwardly and the front portion thereof moves upwardly due to shifting of the area of engagement of the inclined wall of said cam member with said support member, a friction member engaging said plate, said support member having a rod member extending through said slot and through said friction member generally transverse to said plate, the amount of movement of said chair seat relative to said supporting frame being limited by the engagement of said rod member with the opposite ends of said slot, and said rod member having means associated therewith

for holding said friction member in yieldable frictional engagement with said plate.

4,068,889

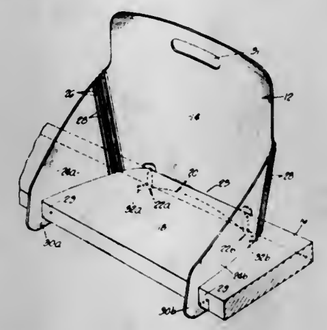
PORTABLE BACK REST

James E. Pierce, and Max E. Goodwin, both of Valencia, Calif., assignors to Marcy Gymnasium Equipment Co., Glendale, Calif.

Filed Apr. 19, 1976, Ser. No. 677,927

Int. Cl.² A47C *1/16*

U.S. Cl. 297—352 **2 Claims**



1. A one-piece foldable back rest adapted to be releasably locked on a bleacher seat, comprising:

a. a back panel formed of a resilient flexible polyethylene sheet material, said back panel being substantially planar in its transport configuration and capable of being flexed into an operative back supporting configuration;

b. first bleacher seat gripping means for releasably gripping the rearward edge and bottom surface portions of the bleacher seat when said back panel is in its operative configuration, said first gripping means comprising at least two hook-shaped members formed integrally with said back panel, depending downwardly therefrom and disposed in the plane of said back panel when the latter is in a transport configuration said hook-shaped members including outwardly extending fingers and being movable with said back panel and substantially immovable relative thereto, whereby when said back panel is flexed into an operative back supporting configuration, said fingers of said gripping means will move into engagement with the bottom surface of the bleacher seat;

c. a pair of side panels formed of a resilient flexible polyethylene sheet material hingeably interconnected to said back panel, said side panels being movable from a transport configuration wherein they are disposed in planes substantially parallel to the plane of said back panel to an operative configuration wherein they are disposed in planes forming an angle relative to said back panel, said side panels being swingably movable relative to said back panel about hinge means formed intermediate each of said side panels and said back panel, said hinge means comprising a plurality of stria formed in said flexible material intermediate said back panel and each of said side panels; and

d. second bleacher seat gripping means integrally formed on each of said side panels for releasably gripping the forward edge portions of the bleacher seat when said side panels are in an operative configuration, said second bleacher seat gripping means comprising hook-shaped members formed at the free ends of said side panels and so constructed and arranged to embrace the front edge and undersurface of the bleacher seat, said members being movable with said side panels and substantially immovable relative thereto.

4,068,890

SEAT LOCK DEVICE

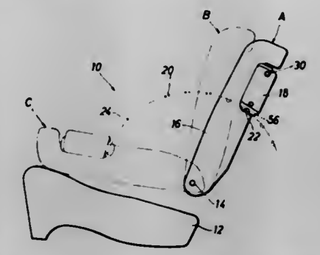
Toshio Kurozu, Chigasaki; Shinjiro Yamada, Tokyo, and Norio Miyashita, Oizumi, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd. and Honda Motor Co., Ltd., both of Tokyo, Japan

Filed Apr. 29, 1977, Ser. No. 792,239

Claims priority, application Japan, May 19, 1976, 51-56655

Int. Cl.² A47C *1/024*

U.S. Cl. 297—355 **5 Claims**



1. A seat lock device comprising a lock unit fitted to one member of an immovable member and a swingable back rest member of a seat, the back rest member being rotatably supported by a pivotal shaft mounted on the immovable member and at a point spaced from the pivotal shaft; a plurality of strikers mounted on the other member of the immovable member and the swingable member along the circumference of a circle centered at the pivotal shaft for lockable engagement with the lock unit, wherein the lock unit includes a case; a substantially circular actuating unit pivotally supported by the case to be rotated into selective engagement with any of the strikers; lock means for locking the actuating unit when it is rotated to a lock position; a direction-setting unit for rotating the actuating unit to set it at a free position ready for engagement with an approaching striker while the actuating unit remains disengaged from all said strikers; a gate means for preventing the lock action of the lock means while the actuating unit remains disengaged from all the strikers; and a releasing mechanism for releasing the lock action of the lock means.

4,068,891

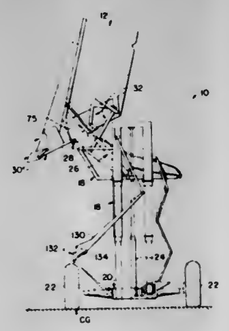
SIDE DUMP TRAILER WITH RETRACTABLE CHUTE

Benjamin T. Herbst, P.O. Box 67, Esparto, Calif. 95627

Filed Oct. 18, 1976, Ser. No. 733,622

Int. Cl.² B62B *1/00*

U.S. Cl. 298—7 **9 Claims**



1. A stable dump cart capable of operating in a low overhead environment for the discharge of materials from the cart into a container having a relatively high side, the cart comprising: a support frame including a plurality of laterally spaced-apart members supporting the frame on the ground, the support

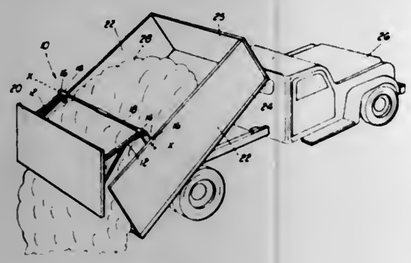
members comprising a plurality of spaced-apart wheels defining between them a lateral wheel base; a bin carried by the frame for receiving materials that are to be dumped into the container; means attached to the frame and the bin for moving the bin in a vertical direction between a lowermost material receiving position attached to the frame and an uppermost position, from which the materials are discharged into the container, the vertical movement means comprising a pair of spaced-apart hydraulic actuator means and including means for flowing hydraulic fluid under pressure to the actuator means; means for adjusting the rate of flow to the actuator means so that the actuator means move at substantially identical rates when the fluid flowing means is actuated; said vertical movement means further including means guiding the bin along a substantially vertical path when the hydraulic actuators are energized, the bin guiding means comprising a pair of spaced-apart, vertically oriented and vertically extensible masts operatively connecting the pivot means with the frame; each mast being defined by a pair of spaced-apart vertical posts and an uppermost, generally U-shaped member having downwardly extending legs engaging and guided by the posts; means attached to the vertical movement means for tilting the bin from the material receiving and holding position into an inclined material dumping position, the tilting means being disposed within the lateral extent of the support members to thereby avoid any instability of the cart during the dumping operations; and means for guiding materials being dumped from the bin laterally past the support members into the container positioned adjacent the cart and laterally spaced from the support members.

4,068,892

TAIL GATE APPARATUS HAVING AN OFFSET PIVOT AXIS

Rafael J. Welch, P.O. Box 175, St. John, Kans. 67576

Filed Dec. 20, 1976, Ser. No. 752,472
Int. Cl.² B60P *1/04*
U.S. Cl. 298—17 R **5 Claims**



3. A tail gate apparatus having an offset pivot axis for automatically opening and closing a tail gate mounted at the rear of a tiltable truck bed mounted on a dump truck, the truck bed having a vertical front wall and vertical side walls, the tail gate disposed adjacent the ends of the side walls and the bottom of the truck bed when the bed is in a horizontal position, the apparatus comprising:

a pair of elongated gate arms attached at one end to the sides of the tail gate, said gate arms extending forwardly toward the front wall;

a pair of collars including collar arms extending outwardly from said collars, said collar arms having a plurality of apertures therein for adjustably attaching to the other end of said elongated gate arms;

a pair of mounting brackets mounted on top of the side walls, said mounting brackets positioned at a predetermined distance from the rear of the truck bed; and

an elongated pivot arm mounted horizontally and parallel to the width of the truck bed, said pivot arm slidably received through said collars, the ends of said pivot arm attached to said mounting brackets;

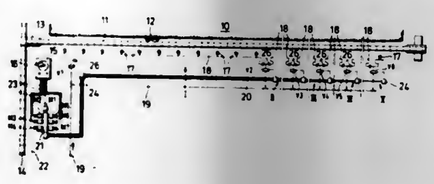
the tail gate, said gate arms and said collars pivoting about a horizontal axis through the center of said pivot arm, the horizontal axis offset and forward the rear of the truck bed so that the tail gate will open and close automatically based on the angle of the unloading position of the truck bed from the horizontal and the pressure applied against the tail gate by material being unloaded from the truck bed, by indexing the apertures in the end of said gate arms with selected apertures in said collar arms and bolting the arms together, the distance between the tail gate and the axis of rotation of said pivot arm may be adjusted.

4,068,893

APPARATUS FOR CONTROLLING WATER SPRAYING OPERATIONS IN MINERAL MINES

Walter Weirich, Dortmund, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Germany

Filed Nov. 1, 1976, Ser. No. 737,332
Claims priority, application Germany, Nov. 7, 1975, 2550049
Int. Cl.² E21C *35/22*
U.S. Cl. 299—43 **9 Claims**



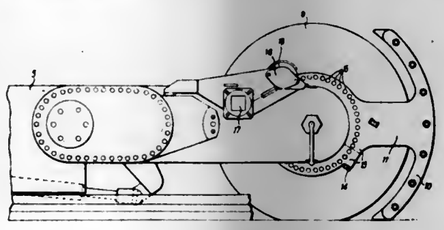
1. In a mineral mining installation which employs a mineral winning machine moved along a mineral face and waterspray nozzles for spraying water in the operating region of the machine, apparatus for controlling the operation of the nozzles, said apparatus comprising a plurality of valves connected to the nozzles to cause water to be sprayed from a selected number of nozzles when actuated, and an electromechanical device separate from the machine for generating a series of control signals in accordance with the movement of the machine as it moves along the face, said signals serving to remotely actuate the valves.

4,068,894

MINING MACHINE COWL ASSEMBLY

Eric Dring, Mansfield, England, assignor to Dale (Mansfield) Limited, Mansfield, England

Filed Oct. 6, 1976, Ser. No. 729,897
Claims priority, application United Kingdom, Mar. 26, 1976, 12316/76
Int. Cl.² E21C *35/20*
U.S. Cl. 299—45 **4 Claims**



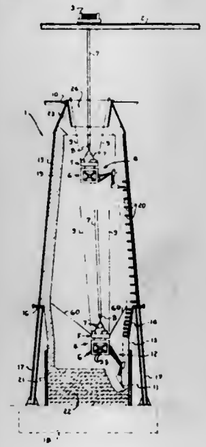
1. A cowl assembly for use in association with the shearing drum of a mining machine, the cowl assembly comprising an arcuate cowl member and a cowl arm connected to the cowl member, the cowl arm having an annular mounting member at the end thereof remote from said cowl member to enable mounting of the cowl assembly in association with the shearing drum for angular movement about the axis of the drum, a power drive mechanism adapted to be supported on the mining machine and including a sprocket wheel, and a plurality of peg members arranged circumferentially on said mounting member, said peg members being cantilevered from said mounting member and being spaced from each other and from all other components of the machine with the exception of said sprocket wheel which directly engages some of said peg members.

4,068,895

DEMOLITION MACHINE FOR DELINING A FURNACE

Roy C. Reese, Wheatfield, Ind., and Richard C. Wehrle, South Chicago Heights, Ill., assignors to O. W. Reese, Inc., Wheatfield, Ind.

Filed July 1, 1976, Ser. No. 701,503
Int. Cl.² E04G *1/36*; E21D *7/02*
U.S. Cl. 299—70 **29 Claims**



1. A machine for use in a substantially cylindrical furnace having a vertical center axis and an inner masonry wall, said machine comprising structure provided with means for supporting a tool for demolishing at least a portion of said wall, means for suspending said structure in such a furnace, (and power operated) cable means carried by said structure (and operable independently of said suspension means) for connection with means on said furnace; and power means operable independently of said suspension means whereby said structure can be adjusted and secured centrally in said furnace or in any one of an infinite number of radial and/or circumferential stable position about such an axis in order to facilitate locating such a tool variable distances away from such an axis for operation against said wall.

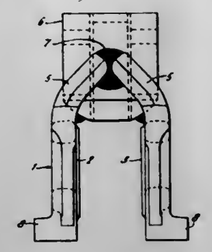
4,068,896

MINERAL CUTTER CHAINS

Sidney Ernest Proctor, High Wycombe, England, assignor to Austin Hoy & Company Limited, High Wycombe, England

Filed Oct. 12, 1976, Ser. No. 731,841
Claims priority, application United Kingdom, Oct. 23, 1975, 43675/75
Int. Cl.² E21C *25/34*
U.S. Cl. 299—83 **3 Claims**

1. A cutter chain having links thereof carrying supports for cutter tools, wherein the support-carrying links each comprise a pair of side members which are disposed side-by-side and adjacent to one another, the side members being arranged for articulation to other links of the chain, and each of the side members having a pair of lugs embracing a cutter tool support, said lugs having free ends, the arrangement being such that the lugs in each pair of side members project inwardly so that they



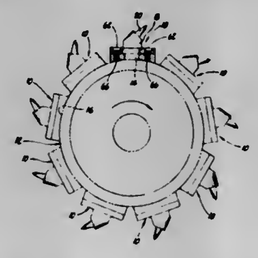
meet near the center line of the chain, and the free ends of the lugs in each pair being connected by welding.

4,068,897

REPLACEABLE CUTTING BIT HOLDER ASSEMBLY

Michael J. Amoroso, Marion, Ill., assignor to M.A.T. Industries, Inc., West Frankfort, Ill.

Filed Oct. 22, 1976, Ser. No. 734,997
Int. Cl.² E21C *35/18*
U.S. Cl. 299—91 **8 Claims**



1. A replaceable cutting bit holder assembly for a mining machine of the type having a movable cutter member, said assembly comprising:

a. an elongate base means fixedly attachable to the cutter member and including opposed sides extending longitudinally generally in the direction of travel and having seating means,

b. an elongate bit-holding block means including opposed sides extending longitudinally generally in the direction of travel and having means engageable with said seating means, and

c. a pair of longitudinally spaced threaded fastener means received through and connecting said block means to said base means and tending to urge said block means toward said cutter member.

4,068,898

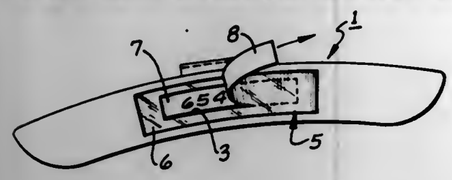
WHEEL-BALANCING WEIGHT HAVING RECORDING SURFACE

Donald E. Hanson, 986 Crane Ave., Foster City, Calif. 94404

Filed Jan. 22, 1976, Ser. No. 651,576
Int. Cl.² B60B *27/00*
U.S. Cl. 301—5 B **2 Claims**

1. A vehicle wheel-balance weight with a rectangular indentation having a base defining a recording surface; data on said recording surface setting forth the state of the vehicle at the time a tire is installed on said vehicle; means on said weight for adhering the same to said vehicle wheel; an adhesive tape to cover said recording surface to preserve data on the same

during use of said wheel to which said weight is adhered; and a recess peripherally surrounding said indentation to define a

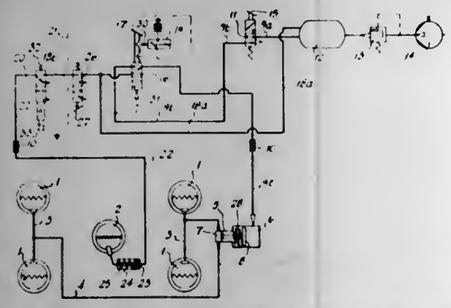


shelf to which said tape is securable spaced above said recording surface.

4,068,899
BRAKING SYSTEMS

Gert Nolte, Gehrden, and Wolfgang Dittberner, Hannover, both of Germany, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Feb. 22, 1977, Ser. No. 771,125
Claims priority, application United Kingdom, Feb. 25, 1976, 07336/76
Int. Cl.[2] B60T *11/10*
U.S. Cl. 303—6 A 19 Claims

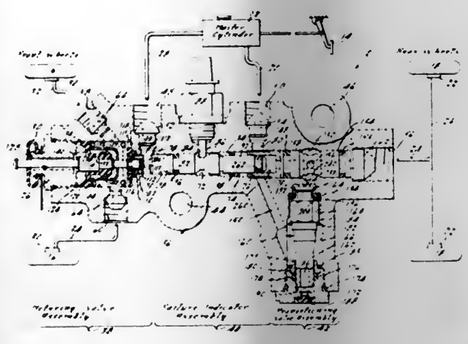


1. A fluid pressure operated braking system for a wheeled vehicle comprising a first braking circuit for wheel brakes, a second braking circuit for a transmission brake and means for controlling operation of said first and second braking circuits, said means including a first valve means connected to a source of fluid pressure and movable between first and second operating positions, a second valve means movable between first and second operation positions, a first conduit for conducting fluid pressure connecting said first and second valve means, a second conduit separately connected to said source of fluid pressure and to said second valve means, means connecting said second valve means to said first braking circuit in said second position of said second valve means, means connecting said second conduit to said first braking circuit in said first position of said second valve means and to said second braking circuit in said second position of said second valve means, means responsive to operation of said first valve means for moving said second valve means between said first and said second positions, means responsive to movement of said second valve means for connecting said second conduit to said second braking conduit.

4,068,900
BLEND BACK PROPORTIONING BRAKE CONTROL APPARATUS

Roger E. Doerfler, Detroit, and Gary A. Willi, Taylor, both of Mich., assignors to Kelsey-Hayes Co., Romulus, Mich.

Filed Aug. 5, 1976, Ser. No. 711,775
Int. Cl.[2] B60T *8/26*
U.S. Cl. 303—6 C 11 Claims



2. A device for a dual brake system including a master cylinder and front and rear brake actuators, said device being located in said system between said master cylinder and said rear brake actuator and including

a housing having a fluid inlet adapted to receive fluid from said master cylinder, a fluid outlet through which fluid is adapted to be displaced to said rear brake actuator, and a chamber providing communication between said inlet and said outlet,

first valve means in said chamber actuable in response to fluid pressure at said inlet above a first predetermined pressure and below a second predetermined pressure for decreasing the transmission of fluid pressure from said outlet,

second valve means different from said first valve means and having a first area exposed to inlet fluid pressure and a second area different from said first area exposed to the difference between said fluid pressure at said fluid inlet and said fluid outlet, said inlet pressure on said first area producing a first force in a direction to open said second valve means when said fluid pressure at said inlet is above said second predetermined pressure, the fluid pressure differential between said inlet and outlet pressures on said second area producing a second force biasing said second valve means toward its open position when said fluid pressure at said inlet is above said second predetermined pressure, and

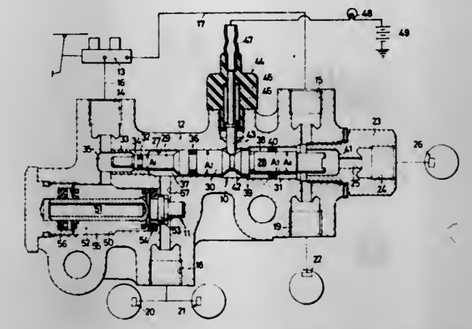
means for resiliently biasing said second valve means to its closed position, said first force and said second force being additive in opposition to the biasing force of said resilient means,

said second valve means being actuable when said fluid pressure at said inlet is above said second predetermined pressure to provide a direct flow path circumventing said first valve means and permitting fluid to flow at a controlled second rate from said inlet to said outlet, said second valve means disposed within said first valve means and movable longitudinally therein.

4,068,901
BRAKE PRESSURE DIFFERENCE WARNING SYSTEM FOR VEHICLES

Mizuo Nyunoya, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Continuation of Ser. No. 587,050, June 16, 1975, abandoned.
This application Sept. 24, 1976, Ser. No. 726,229
Claims priority, application Japan, June 26, 1974, 49-73528
Int. Cl.[2] B60T *8/26*
U.S. Cl. 303—6 C 10 Claims



1. A brake pressure difference and failure warning system operatively associated with a dual type master brake cylinder having two independent brake lines, one brake line being fluidically connected to rear wheel brakes while the other brake line is fluidically connected to front wheel brakes, comprising:

a housing provided with an axial bore therein;

a stepped piston slidably disposed within said bore and provided with a small diameter portion and a large diameter portion;

a proportioning valve assembly disposed within said one of said brake lines;

a first fluid chamber defined within said housing at one end of said small diameter portion of said stepped piston and disposed within said one brake line;

a second fluid chamber defined within said housing and around said smaller diameter portion of said stepped piston and fluidically connected to said rear wheel brakes;

a passage provided within said housing and disposed within said one of said brake lines, said second fluid chamber being normally fluidically connected to said first fluid chamber through means of said proportioning valve assembly and said passage, said proportioning valve assembly thereby controlling the pressurization of said second chamber;

a third fluid chamber defined within said housing at the large diameter end portion of said stepped piston and disposed within said other brake line;

seal means provided upon said small diameter portion of said stepped piston, and interposed between said first and second fluid chambers for permitting fluid communication therebetween when said stepped piston is axially moved;

switch means operatively connected to said stepped piston;

said stepped piston having a predetermined configuration, and the stepped portions thereof having a predetermined area ratio with respect to each other, such that said stepped piston is axially movable, so as to actuate said switch means when each one of said first and third fluid chambers is subjected to a fluidic failure; and,

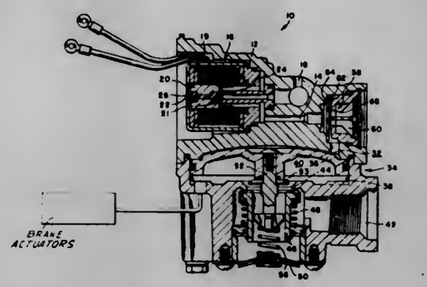
when the proportioning valve is inoperatively seated on its valve seat with said first and said second fluid chambers not subjected to fluid failure such that the hydraulic pressure within said second fluid chamber is lower than the normal hydraulic pressure supplied to said second fluid chamber, fluid communication between said master cylinder and said rear wheel brakes is established through means of said first and second fluid chambers, and said passage; and

means disposed within said axial bore for controlling the fluid communication between said first and second fluid chambers when said piston is axially moved in response to a fluidic failure.

4,068,902
ADAPTIVE BRAKING MODULATOR WITH ELECTRICALLY ACTIVATED RELAY VALVE

Brian Charles Deem, and Marc Alan Karon, both of Elyria, Ohio, assignors to The Bendix Corporation, South Bend, Ind.

Filed Nov. 15, 1976, Ser. No. 742,152
Int. Cl.[2] B60T *8/02, 13/66*
U.S. Cl. 303—28 17 Claims

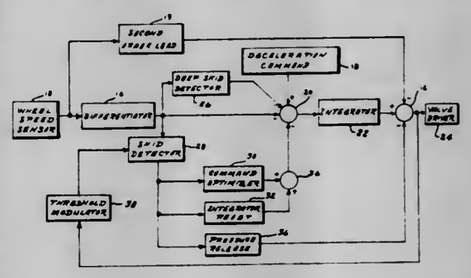


3. In an electrically actuated relay valve for a vehicle fluid pressure braking system including a fluid pressure source, a housing defining a chamber therewithin, means for communicating said chamber with the fluid pressure source, electrically actuated valve means actuable to vent the fluid pressure content of said chamber, brake application effecting means responsive to fluid pressure from said source to effect a brake application, pressure differential responsive means responsive to the pressure differential between the pressure level in the brake application effecting means and the pressure level in said chamber to vent said brake application effecting means when the pressure level in the brake application effecting means exceeds the pressure level in the chamber.

4,068,903
ADAPTIVE SKID DETECTOR THRESHOLD APPARATUS

Henrik H. Straub, Mercer Island, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 8, 1976, Ser. No. 748,579
Int. Cl.[2] B60T *8/093*
U.S. Cl. 303—99 3 Claims



1. In combination with a fluidic antiskid circuit comprising a pneumatic wheel speed sensor connected to a wheel, means for

determining the rate of deceleration of the wheel, means for comparing the rate of deceleration with a preselected rate of deceleration and producing an output signal, valve means connected to the wheel braking system and adapted to receive said output signal, and means for detecting and compensating for excessive wheel deceleration, wherein the improvement comprises:

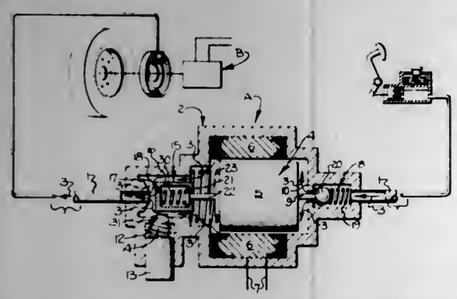
threshold detector means receiving said output signal from said comparing means, said threshold detector means applying a valve command signal to said detecting and compensating means, said valve command signal varying the threshold level within said detecting and compensating means, said valve command signal is inversely proportional to said output signal.

4,068,904

ANTI-LOCKING BRAKE APPARATUS AND METHOD

Folke Ivar Blomberg, Duvstigen 4, S-181 40 Lidingo, and Jan-Olov Martin Holst, Skogsduvevagen 14, S-75252 Uppsala, both of Sweden

Filed Feb. 13, 1976, Ser. No. 657,762
Claims priority, application Sweden, Feb. 19, 1975, 7501883
Int. Cl.² B60T *13/68*
U.S. Cl. 303—115 24 Claims



1. In apparatus for braking a rotating member which has fluid pressure actuated brake cylinder means for exerting force braking rotation of the member, reservoir means for supplying fluid to the cylinder means, conduit means for establishing operative communication between the cylinder means and the reservoir means, and sensor means for detecting the rate of retardation of rotation thereof and for signalling the occurrence of a rate of retardation in excess of a pedetermined rate, that improvement which comprises brake modulator means interposed in said conduit means between said reservoir means and said cylinder means for normally accommodating free flow of fluid between said reservoir means and said cylinder means through said conduit means and said modulator means, said modulator means being operatively connected to said sensor means and responsive thereto for pumping fluid through said conduit means in one of the directions of toward and away from said cylinder means in response to a signalled excessive rate of retardation and thereby for releasing braking forces otherwise retarding rotation of the member.

4,068,905

DETACHABLE ROAD PROTECTING DEVICE FOR TRACKED VEHICLES

Chester A. Black, 6303 W. 159th St., Rte. No. 1, Stilwell, Kans. 66085, and Lester A. Black, 1106 Second St., Alva, Okla. 73717

Filed Sept. 10, 1975, Ser. No. 612,217
Int. Cl.² B62D *55/28*
U.S. Cl. 305—51 3 Claims

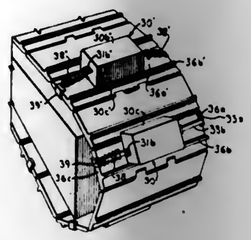
1. Track and road protecting means for use with individual track elements of an endless tracked vehicle, successive track elements of said endless track having a transverse cleat on the outboard surface thereof adjacent one end therefore, comprising, in combination:

a somewhat resilient, somewhat flexible, somewhat deformable, yet normally substantially shape-retaining block under load adapted to fit on the outboard face of a single track element of an endless track and positioned thereon,

said block substantially rectangular in plan, side and end views and having substantially rectangular, paired and parallel sets of side faces, end faces and inbaord-outbard load bearing faces,

the length of said block a substantial part of the distance from cleat to cleat of successive elements.

the height of the block substantially greater than the cleat height from the clean outboard surface of the track element, and



the width of the block at least a substantial part of the width of the track,

an elongate, non-extensible element received substantially centrally of and secured within said block and extending transversely thereof from side to side of the block,

means for removably connecting the said non-extensible element to the opposite edges of an individual track element positioned laterally of each of the side faces of said block, and

tensioning means positioned laterally of the block on each side thereof engaging one end of the said non-extensible element with an inward portion thereof and the connecting means with an outward portion thereof,

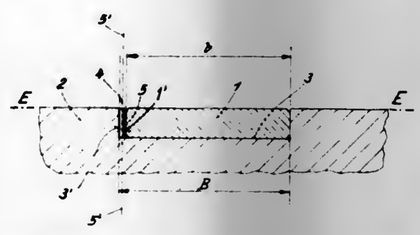
one of said tensioning means incuding a nut fixed to one end of the non-extensible element and a bolt carried by and engaging the connecting means on one side of the block.

4,068,906

SYSTEM FOR SECURING GUIDE RAILS IN MACHINE STAND

Werner Dür, St. Margrethen, and René Forster, Amriswil, both of Switzerland, assignors to Hydrel A.G., Romanshorn, Switzerland

Filed Mar. 4, 1976, Ser. No. 663,811
Claims priority, application Switzerland, Nov. 26, 1975, 15310/75
Int. Cl.² F16C *29/00*
U.S. Cl. 308—3 A 4 Claims



1. An assembly comprising a machine stand having an elongated body formed with a shallow groove opening at a planar surface, said groove extending along said body and having a pair of longitudinally extending flanks;

a precision guide rail of a thickness equal to the depth of said groove and received therein, said guide rail extending substantially over the length of said groove and having a face flush with said surface, said guide rail having a width less than the distance between said flanks and having a side defining with one of said flanks a longitudinally extending space while bearing on the other of said flanks; and

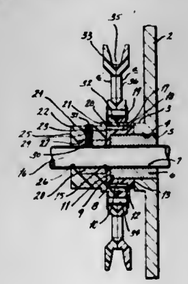
an elongated spring-steel strip received in said space and compressed against said one of said flanks and said side of said rail, said strip having a width equal to that of said side and further having a succession of parallel corrugations whose trough and crest axes extend transversely to said surface and said face, said troughs alternately and directly engaging said one of said flanks and said side.

4,068,907

PULLEY MOUNTING

Edwin A. Zenthoefer, 3860 Londell Road, Arnold, Mo. 63010

Filed Dec. 23, 1976, Ser. No. 753,909
Int. Cl.² F16H *55/00*
U.S. Cl. 308—18 6 Claims



1. The combination with a casing having an opening in one portion thereof and a shaft of lesser diameter than said casing opening projecting outwardly therethrough, of a wheel mounting means comprising a mounting member fixed within said casing opening and projecting outwardly therebeyond, said mounting member having a bore through which said shaft extends, a fitting fixedly engaged on said mounting member in its projecting portion, a multiplicity of bearing elements arranged circumferentially about, and supported upon, said fitting, said fitting having a bearing for journalling of said shaft extending therethrough, means disposed radially outwardly of said fitting for retaining said bearing elements against displacement from operative position, a wheel having a hub portion, said hub portion being engaged upon said means retaining said bearing elements, and means interconnecting said shaft and said bearing element retaining means.

4,068,908

WRITING-TABLE AND MACHINE-TABLE COMBINATION

Dieter Horn, Backnanger Str. 40, D-7062 Rudersberg, Germany

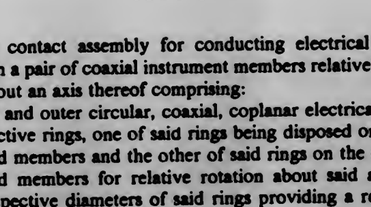
Filed Feb. 18, 1976, Ser. No. 659,028
Claims priority, application Germany, Nov. 27, 1975, 7504835
Int. Cl.² A47F *5/08*
U.S. Cl. 312—30 6 Claims

1. A writing and machine table combination including a broad-surfaced planar table top and a movable machine drawer slidably disposable in said table below the table top, the invention comprising:

a machine-supporting plate mounted on said machine drawer;

support means associated with said plate for swingably supporting a machine below the upper surface of said plate when not in use and supporting a machine above said upper surface when in use;

positioning means coupled to said drawer for positioning said upper surface of said plate immediately in front and at the level of the upper surface of said table top when said drawer is in its outward extended position; and



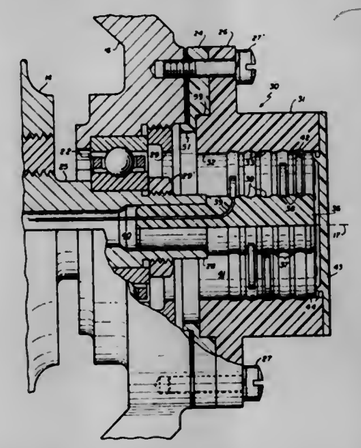
swingable bottom plate means hingedly attached at the lower-front portion of said machine drawer and normally extending downwardly and rearwardly therefrom for swinging upwardly to a knee-clearing horizontal position when desired.

4,068,909

ELECTRICAL CONTACT ASSEMBLY AND METHOD AND APPARATUS FOR ASSEMBLING THE SAME

Peter E. Jacobson, Ariz., and Terry S. Allen, both of Phoenix, assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 14, 1977, Ser. No. 759,298
Int. Cl.² H01R *39/00*
U.S. Cl. 339—5 R 15 Claims



1. A contact assembly for conducting electrical energy between a pair of coaxial instrument members relatively rotatable about an axis thereof comprising:

inner and outer circular, coaxial, coplanar electrically conductive rings, one of said rings being disposed on one of said members and the other of said rings on the other of said members for relative rotation about said axis, the respective diameters of said rings providing a relatively large radial gap therebetween,

a resilient, filamentary, electrically conductive loop having a free diameter greater than the radius of said gap normally compressed between said rings whereby said loop rolls on said ring surfaces upon relative rotation between said instrument members,

inner and outer cylindrical support members for said inner and outer rings carried by said instrument members, one of said support members being radially fixedly mounted

on one of said instrument members relative to said axis, and

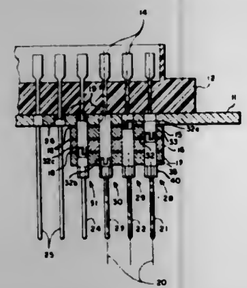
means for movably mounting the other support member on the other of said instrument members between a normal coaxial position relative to said one support member and an eccentric position relative to said one support member, the amount of said movement providing an enlarged radial gap greater than the free diameter of said loop, whereby said loop may be assembled within said gap at said eccentric position without distorting the same and is compressed between said rings at said normal position.

4,068,910

BUS BOARD CONNECTION APPARATUS

Arthur W. Brown, Los Angeles; Heinz E. Goetz, San Bernadino; Ronald J. Morrow, and Charles H. Waldhauer, Jr., both of Los Angeles, all of Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 23, 1976, Ser. No. 780,627
Int. Cl.² H01R *3/06, 7/08*
U.S. Cl. 339—18 P **16 Claims**



1. In electrical apparatus of the type including at least one bus board for supplying electrical potential to a component having a conductive pin which extends through a hole in the board along a central axis of the hole, the hole being at least partially bounded by a conductive surface, an improved connection device comprising:

a transversely expansible conductive washer sized to permit positioning thereof around the conductive pin within the hole in the bus board, compression of said washer along the axis of the hole causing transverse expansion of said washer; and

expander means for compressing said washer between a pair of surfaces transverse to the axis of the hole, thereby transversely expanding said washer to achieve electrical connection between the board and the pin.

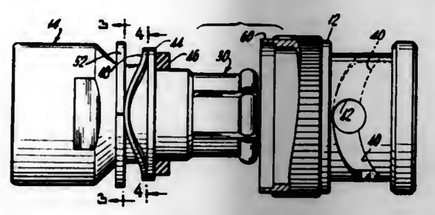
4,068,911

WASHER AND CONNECTOR ASSEMBLY

Alphonso Lodato, Corona; Americo Cornacchio, Mount Vernon, both of N.Y., and Edward M. Fox, Waldwich, N.J., assignors to Kings Electronics Company, Inc., Tuckahoe, N.Y.

Division of Ser. No. 672,136, March 31, 1976. This application Oct. 29, 1976, Ser. No. 737,150
Int. Cl.² H01R *13/54*
U.S. Cl. 339—90 R **5 Claims**

1. A bayonet type connector assembly comprising a body and a sleeve, said sleeve having at least one elongated opening therein, a spring washer and an open end washer between said body and said sleeve, shoulder means against which one end of said spring washer abuts, the other end of said spring washer abutting against said open end washer, said spring washer being firmly anchored between said open end washer and said shoulder means to allow relative movement between said sleeve and said body, said body having a forward portion and a rear portion, the forward portion being of lesser diameter than the rear portion, said spring washer, shoulder means and open end washer being mounted on said forward portion, said spring washer being slit on one side thereof to permit installation of said spring washer onto said body, said open end washer being slit at one side and being provided with at least



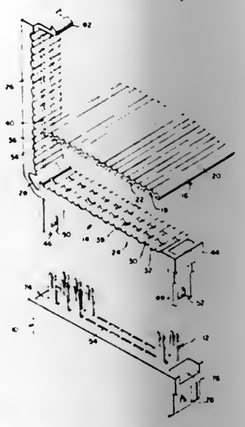
one notch cut at a point spaced from said slit a distance sufficient to permit the open end washer to have an opening large enough to permit the said washer to be mounted on said connector body.

4,068,912

CABLE CLAMPING INSULATION DISPLACING ELECTRICAL CONNECTOR FOR MULTI-CONDUCTOR FLAT FLEXIBLE CABLE

William Jeffrey Hudson, Jr., Hershey, and Johannes Cornelis Wilhelmus Bahermans, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1977, Ser. No. 772,172
Int. Cl.² H01R *13/38*
U.S. Cl. 339—99 R **7 Claims**



1. An electrical connector for electrically terminating conductors of multi-conductor flat flexible cable of the type having a plurality of conductors in side-by-side parallel spaced relationship within a web of plastic insulating material, said connector comprising:

a base member of insulating material having a plurality of cavities extending therethrough from one side thereof to another side which is opposite to said one side;

an electrical contact terminal mounted in each said cavity, each said contact terminal having a conductor receiving portion comprising a pair of spaced apart arms having opposite edges defining therebetween a conductor receiving slot, said arms extending normally beyond one side of said base member, and a mating portion directed towards said another side;

a cable clamping assembly comprising a pair of members hingedly attached at a first end and latching means at the opposite end, said clamping members having mating faces profiled to define therebetween a plurality of conductor

aligning passageways, a like plurality of slots passing through both members of said assembly each intersecting a respective one of said passageways, and clamping means securing said cable clamping assembly on said base member,

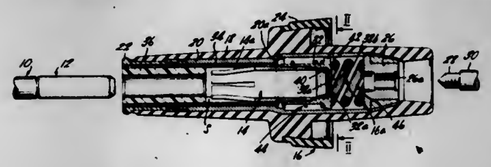
whereby upon positioning said cable in said cable clamping assembly and movement thereof towards said one side, said arms penetrate through said slots to engage in the conductors restrained in said passageways with the conductors being forced into the slot of a respective contact terminal to effect an insulation displacing engagement therebetween.

4,068,913

ELECTRICAL CONNECTOR APPARATUS

Robert J. Stanger, Alpha, and Larry N. Siebens, Great Meadows, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Continuation of Ser. No. 610,049, Sept. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 406,281, Oct. 15, 1973. This application Nov. 8, 1976, Ser. No. 740,074
Int. Cl.² H01R *13/20*
U.S. Cl. 339—111 **10 Claims**



1. A contact assembly separable during energization of a high voltage circuit therethrough, comprising:

a. a housing having an open end and an axial passage extending interiorly from said open end;

b. a male contact assembly axially disposed in said passage and comprising a male contact element and an elongate member supported by said male contact element extending axially therefrom along said passage and evolving arc-quenching gas upon the striking of an arc in said passage, such gas evolving member having a first end joined to said male contact element an opposite end defining an end taper;

c. a female contact assembly in said housing and comprising a female contact element releasably engaging said male contact element and spacedly encircling said gas evolving member during said energization of a high voltage circuit through said contact assembly; and

d. said gas evolving member having an axial location of larger diameter axially spaced toward said first end from said end taper and an axial location of smaller diameter between said location of larger diameter and said end taper, thus to facilitate withdrawal of said gas evolving member from said female contact element.

4,068,914

CONNECTOR DEVICE FOR TELEPHONE TERMINALS OR HOUSINGS

Jules A. Mack, 513 Second Ave., NW., Conover, N.C. 28613

Filed May 10, 1976, Ser. No. 685,043
Int. Cl.² H01R *7/28*
U.S. Cl. 339—143 R **5 Claims**

1. A connector apparatus for connecting multiple leads to a common point comprising at least two, substantially identically formed blanks, each blank comprising a body portion and a plurality of male tabs formed integrally therewith and extending outwardly therefrom at similarly spaced points around the periphery of the body portions, said blanks in the assembled position being superposed one atop the other in electrical conductive relationship with each other and with the tabs of the upper body portion protruding outwardly from the same corresponding positions as the tabs of the lower body portion, and with the tabs of the lower body portion having a first, angular relationship with the surface of said body portion and the tabs of the upper body portion having a second, more



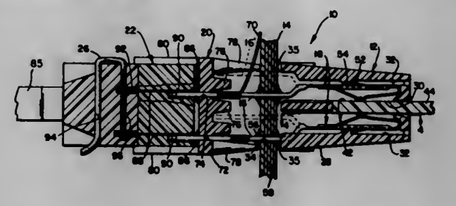
elevated angular relationship with the surface area of said upper body portion than is the case with the tabs with the lower body portion, whereby the number of connections within a prescribed space may be maximized while permitting sufficient access room for each of said male tabs.

4,068,915

ELECTRICAL CONNECTOR

Robert F. Evans, New Cumberland, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 615,355, Sept. 22, 1975, abandoned. This application July 22, 1976, Ser. No. 707,610
Int. Cl.² H05K *1/07*
U.S. Cl. 339—176 MP **3 Claims**



1. A terminal formed from flat metal stock, said terminal comprising: an elongated base; a first cantilever spring arm extending from and bent back over the base, there being a contact surface on the free end of the arm, said first arm being disposed at an acute angle to the base; a tab bent from and overlying the base; a second cantilever spring arm extending from the tab, said second arm also being disposed at an acute angle to the base and having its free end under the free end of the first arm so that upon engagement of a printed circuit board with the first arm both arms are compressed, said second arm being work-hardened to increase its spring constant; and contact means integrally joined to said base for establishing electrical connection between said contact surface and a wire.

4,068,916

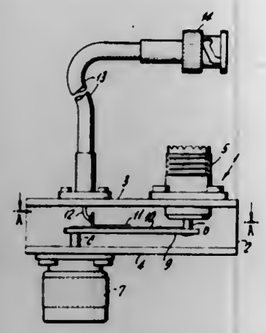
VOLTAGE TAP

Frederick Della Iacono, Crestwood; Allen Trustman, Ossining, and Donald J. LeVine, Tarrytown, all of N.Y., assignors to Kings Electronics Company, Inc., Tuckahoe, N.Y.

Filed Feb. 18, 1977, Ser. No. 769,876
Int. Cl.² H01R *17/18*
U.S. Cl. 339—177 R **4 Claims**

1. Voltage tap to a coaxial line, comprising a first coaxial line having an extended center conductor, a second coaxial line having an extended center conductor, a first metal plate elec-

trically interconnecting said extended center conductors, a second metal plate mounted parallel to and in close proximity to said first metal plate, a third coaxial line, means electrically



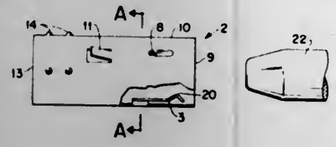
connecting the center conductor of said third coaxial line to said second metal plate and means electrically interconnecting the outer conductors of all said coaxial lines.

4,068,917

ELECTRICAL CONTACT SOCKET

Jack Harold Seidler, Flushing, N.Y., assignor to Akzona Incorporated, Asheville, N.C.

Filed Oct. 21, 1976, Ser. No. 734,569
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—258 R 16 Claims



12. A socket contact for use in electrical connectors comprising: a tubular member adapted to receive an associated pin contact; a spring member integral with said tubular member, said tubular member and said spring member having been stamped from a piece of sheet metal, said spring member being located entirely inside of said tubular member for protecting all of said spring member; a portion of said spring member being bent at its place of attachment with said tubular member approximately 180° from its original stamped position; a portion near the end of said spring member opposite said attachment place being bent in a direction toward the inner surface of said tubular member for receiving an associated pin contact.

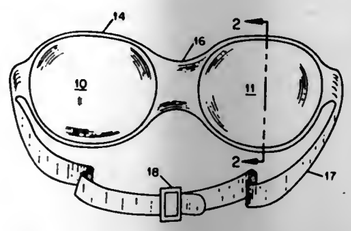
4,068,918

EYE COOLER FOR SUNBATHERS

Cressie E. Holcombe, Jr., 1613 Blackwood Drive, Knoxville, Tenn. 37921

Continuation-in-part of Ser. No. 597,839, July 21, 1975, abandoned. This application Nov. 26, 1976, Ser. No. 745,471
Int. Cl.[2] G02B *3/12, 1/06*
U.S. Cl. 350—3 6 Claims

1. An eye cooler for providing comfort to skin of the eye region, and thus the eyes of a wearer, the cooler having a size and flexibility sufficient to conform to and contact a substantial portion of the eye region skin, which comprises: a pair of unframed lenses, each lens being formed from two overlying sheets of a flexible plastic film sealed to each other about their periphery thereby forming an internal volume, at least one of the sheets of plastic film having a thickness of about 0.02 to 0.25 mm; a liquid at substantially atmospheric pressure completely filling the interior volume of each lens, the liquid being of sufficient quantity to produce a lens thickness of about 4 to 10 mm; a nose bridge of flexible plastic film connected between



adjacent edges of the lenses; and a flexible head band attached to opposite edges of the lenses for retaining the lenses of the eye cooler in contact with the eye region skin of the wearer.

4,068,919

METHOD OF MANUFACTURING AN ELECTRON-SENSITIVE RESIN, AND AN APPLICATION OF SAID RESIN TO INTEGRATED OPTICS

Jean Claude Dubois; Maryse Gazard; Claude Duchesne, and Jean Claude Lavenn, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 9, 1976, Ser. No. 665,250
Claims priority, application France, Mar. 11, 1975, 75 07522
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96 WG 5 Claims

5. In an optical wave guide integrated into a substrate and formed in a resin, the improvement which comprises an electrosensitive resin prepared by the process which comprises:

a. hydrolyzing phenyltrichlorosilane to phenylsilanetriol

b. polycondensing said phenylsilanetriol by:

i. heating said phenylsilanetriol to a temperature of from 250 to 300° C in a solution comprising an azeotropic mixture of diphenyl and diphenyloxide in the presence of potassium;

ii. cooling and then adding methanol to the resulting solution to precipitate the phenylsiloxanol polymers;

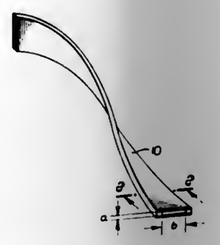
c. fractioning said phenylsiloxanol polymers to obtain a polymer fraction having the desired mean molecular weight.

4,068,920

FLEXIBLE WAVE GUIDE FOR LASER LIGHT TRANSMISSION

Michael Bass, Pacific Palisades; Elsa Garmire, Pasadena, and Thomas R. McMahon, Los Angeles, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Aug. 20, 1976, Ser. No. 716,296
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96 WG 17 Claims



1. A hollow rectangular wave guide for transmission of radiation in the infrared portion of the spectrum, comprising:

top and bottom walls of thin flexible material with metal inner surfaces spaced apart a distance *a;* and

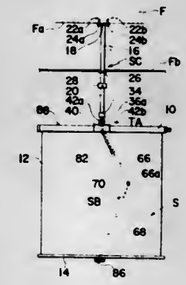
side walls of a flexible material and spaced apart a distance *b,* with the ratio of *b/a* at least about 4/1 and with each of *a* and *b* at least about ten times the wavelength of the infrared radiation.

4,068,921

SCREEN ASSEMBLY

Shonosuke Okumura, Sakai, Japan, assignor to Os Screen Co., Ltd., Osaka, Japan

Filed Aug. 3, 1976, Ser. No. 711,374
Claims priority, application Japan, Jan. 7, 1976, 51-693[U]; Feb. 27, 1976, 51-24171[U]; Feb. 27, 1976, 51-24172[U]
Int. Cl.[2] G03B *21/56;* B42F *13/00*
U.S. Cl. 350—117 5 Claims



1. A screen assembly which comprises in combination:

a screen unit including a hollow screen casing, having a winding spindle coaxially housed within the screen casing and a screen winder operatively associated with the winding spindle, and a screen sheet having one end rigidly secured to the winding spindle within the screen casing and the other end situated outside the screen casing and a frame rod to which said other end is secured;

means for suspending the screen unit from an overhead support structure;

means including first and second upright frame members for connecting said screen unit to said suspending means, said first and second upright frame members being spaced from each other to define an accommodation space therebetween;

a tilt angle adjusting mechanism including a tiltable member and operatively accommodated within said accommodation space for adjustably tilting said tiltable member from an initial position to a maximum tilted position through one or more intermediate tilted positions, said mechanism having a plate means integrally formed with the tiltable member, the plates means having a semi-circular periphery with a plurality of sawteeth thereon equal in number to the number of positions of the tiltable member including the initial position, intermediate tilted positions and the maximum tilted position, a clutch plate of substantially segmental shape having an arcuate peripheral portion and a pair of flanks and including a notch in the arcuate peripheral portion of the clutch plate, and a latch element pivotally supported in position between the first and second upright frame members and urged in one direction, a common shaft on which the plate means and the clutch plate are pivotally mounted, said shaft being mounted between the first and second upright frame members with the arcuate peripheral portion of the clutch plate projecting slightly outwardly from the semicircular periphery of the plate means, the flanks of the clutch plate substantially facing the tiltable member and adapted to receive alternately an external pushing force from the tiltable member, the latch element being positioned for remaining engaged in the notch in the clutch plate during the pivotal movement of the tiltable member from the initial position to the maximum tilted position past the intermediate tilted positions riding over the sawteeth in the plate means with one of the flanks receiving the force from the tiltable member pivoting towards the maximum tilted position and, during return of the tiltable member back towards the initial position, the latch element being disengaged from the notch in the clutch plate and the other of the flanks receives the force from the tiltable member then pivoting towards the initial position, the return of the tiltable member back towards the initial position being initiated after the tiltable member is further pivoted beyond the maximum tilted position;

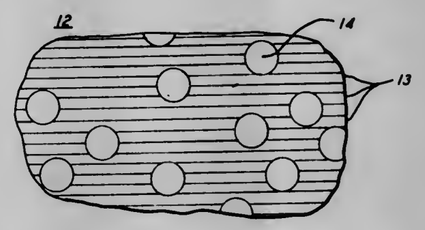
a tiltable support bar means including first and second straight sections articulated to each other, one end of the first section remote from the second section being pivotally connected to said tiltable member and one end of the second section remote from the first section being pivotally connected to the frame rod at a position substantially intermediate of the length of the frame rod, said first and second sections of the tiltable support bar means being folded close to each other when and so long as the screen sheet is not drawn out of the screen casing to a stretched position, and being brought into substantial alignment with each other when and so long as the screen sheet is drawn out of the screen casing to the stretched position, said tiltable support bar means being tiltable together with the tiltable member for corresponding tilting the screen sheet substantially about the screen casing, the screen sheet when the tiltable member is in the initial position being in a plane perpendicular to the horizontal datum.

4,068,922

FRONT PROJECTION SCREEN

Martin Dotsko, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Oct. 1, 1976, Ser. No. 728,606
Int. Cl.[2] G03B *21/60*
U.S. Cl. 350—126 8 Claims



1. A semi-specular front projection screen of selective gain comprising:

a beaded film of cellulose acetate butyrate lacquer having a highly directional light scattering characteristic, said film comprising a plurality of spray coats of said lacquer with lacquer beads distributed throughout, said spray coats being derived from a spraying mixture formed by mixing 30 parts, by volume, of the following lacquer mixture:

Ingredient	Parts by Weight
Ethyl Lactate	3.0
Paraplex G-40	1.0
Di-2 Ethylhexyl Phthalate (DOP)	1.0
Toluene	2.4
Ethyl Acetate	2.4
Acetone	7.6

Ingredient	Parts by Weight
Cellulose Acetate Butyrate EAB-381-½	1.0

-continued

Ingredient	Parts by Weight
Cellulose Acetate Butyrate EAB-381-20	1.2

with 80 parts by volume of the following diluent mixture:

Ingredient	Parts by Weight
Toluene	5.6
Acetone	1.4
Ethyl Acetate	1.0; and

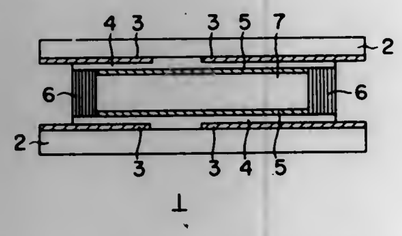
a backing member having a light reflective surface adjacent said film, the thickness of the film and the degree of reflectivity of said surface being variable to control the gain of said screen.

4,068,923

ELECTRO-OPTICAL CELL

Takashi Toida, Chiba, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1976, Ser. No. 717,186
Claims priority, application Japan, Aug. 27, 1975, 50-103671
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC 16 Claims



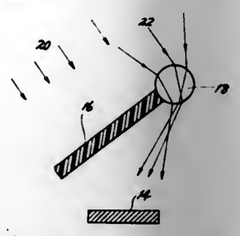
1. An electro-optical cell for field-effect type liquid crystal display comprising:
- a pair of electrode base plates each comprising a transparent base plate and an electrode film adhering to one surface thereof;
- a pair of inorganic-protecting layers respectively provided in direct contact with at least the peripheral portion of the surface of each of said electrode base plates having the electrode films thereon;
- an inorganic sealing agent applied at the peripheral portions of the electrode base plates in direct contact with the respective inorganic protecting layers so as to seal said base plates together with said electrode films facing each other to form a cell containing therein a nematic liquid crystal material having a positive dielectric anisotropy, and the cell being placed on an optical path so that the light passes through the pair of electrode base plates; and
- a pair of polyimide resin films respectively oriented in one direction and provided within the cell over each of the electrode films in direct contact with the nematic liquid crystal material such that the directions of the orientations of the polyimide resin films intersect each other as viewed along the optical path.

4,068,924

LIGHT COLLECTOR MEANS FOR IRRADIATING A LIQUID CRYSTAL DISPLAY DEVICE

Yasuhiro Kotani, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 3, 1976, Ser. No. 663,459
Claims priority, application Japan, Mar. 4, 1975, 50-26633; May 21, 1975, 50-68878; Sept. 23, 1975, 50-130588
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC 14 Claims



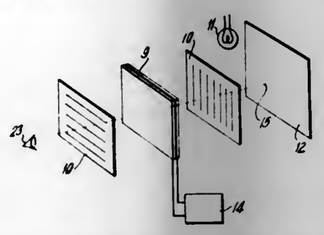
1. In a housing for an electronic calculator including a calculator body having an upper surface provided with a keyboard section and an indication section of the liquid crystal type, and a shielding hood structure mounted on the end portion of the upper surface of said calculator body adjacent said indication section, said shielding hood having a lowermost end portion adjacent said calculator body and extending to an upper end portion positioned above said indication section, the improvement comprising:
- a light collector means mounted at said upper end of said shielding hood structure for refracting light beams introduced therein toward said indication section.

4,068,925

LIQUID CRYSTAL DISPLAY DEVICE

Chizuka Tani, and Fumihiro Ogawa, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Dec. 16, 1974, Ser. No. 532,855
Claims priority, application Japan, Dec. 20, 1973, 48-143308
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC 13 Claims



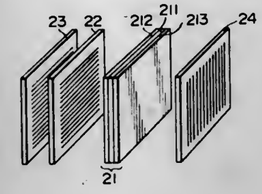
1. A liquid crystal cell including a nematic liquid crystal of negative dielectric anisotropy disposed between a pair of transparent electrode substrates, said electrode substrates having small parallel grooves formed on their inner surfaces, said grooves on one substrate surface being perpendicular to those on the other substrate surface, an active surface agent disposed on the inner surface of at least one substrate for rendering the long axes of the liquid crystal molecules perpendicular to said inner surfaces of said substrates in the absence of a voltage applied between said substrates.

4,068,926

LIQUID CRYSTAL DISPLAY DEVICE FOR DISPLAYING COLORED PATTERNS

Kenji Nakamura, Kamakura, and Iwao Seno, Toyonaka, both of Japan, assignors to Japan Suncrux Co., Ltd., Tokyo, Japan

Filed June 16, 1975, Ser. No. 586,897
Claims priority, application Japan, Nov. 13, 1974, 49-137348; Nov. 13, 1974, 49-137349
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC 6 Claims



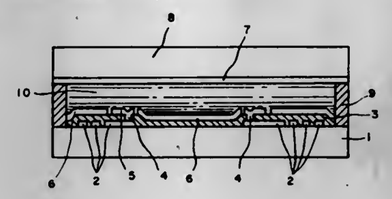
1. A liquid crystal display device of twisted nematic structure which displays colored patterns comprising in combination:
- a pair of spaced apart oppositely disposed transparent substrates bearing on the inside surfaces thereof a patterned electrode layer,
- a layer of nematic liquid crystal material having positive dielectric anisotropy sandwiched between said pair of transparent substrates,
- means for effecting a twisted nematic structure in the layer of nematic liquid crystal material,
- an achromatic linear polarizer disposed outside and adjacent one of said pair of transparent substrates,
- a first colored linear polarizer disposed outside and adjacent the other of said pair of transparent substrates, and
- a second colored polarizer superposed with the first colored linear polarizer with the polarizing plane thereof oriented in parallel to that of the latter.

4,068,927

ELECTROPHORESIS DISPLAY WITH BURIED LEAD LINES

Roger Paul White, Yonkers, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Sept. 1, 1976, Ser. No. 719,604
Int. Cl.² G02F *1/19*
U.S. Cl. 350—160 R 7 Claims



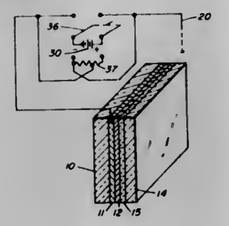
1. An electrophoretic visual display device comprising:
- An electrophoretic suspension comprising an opaque insulating liquid containing, in suspension, pigment particles of a contrasting color to that of said liquid and generally of a single polarity;
- a first transparent electrode;
- at least one segmented electrode and a field electrode having major surfaces in opposition to the major surface of said first transparent electrode and spaced therefrom by at least one thin insulating member;
- said electrodes and said insulating members together forming a cell for containing said electrophoretic suspension;
- said electrophoretic suspension positioned in said cell;
- an insulating layer in contact with the surfaces of said segmented and field electrodes in reverse to those in opposition to said first transparent electrode, said insulating layer being provided with electrically conductive channels providing electrically conductive passages from said segmented and field electrodes through said insulating layer;
- voltage supply means for supplying a reversible electric field between said first transparent electrodes and said segmented electrode;
- electrical lead lines positioned on the surface of said insulating layer remote from said segmented and field electrode and electrically connected thereto through said electrically conductive channels and electrically conductive means electrically connecting said lead lines to said voltage supply means.

4,068,928

PROCESS FOR PREPARATION OF AN ELECTRODE STRUCTURE CONTAINING WO_3 USE OF THE STRUCTURE IN AN ELECTROCHROMIC CELL

Marion Douglas Meyers, Stamford, Conn., and Henry Patrick Landi, Yorktown Heights, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 565,307, April 4, 1975, which is a continuation of Ser. No. 392,165, Aug. 27, 1973, abandoned, which is a division of Ser. No. 105,882, Jan. 12, 1971, abandoned.
This application July 1, 1976, Ser. No. 701,822
Int. Cl.² G02F *1/36*
U.S. Cl. 350—160 R 3 Claims



1. A method for forming a counter-electrode for an electrochromic variable light transmission device comprising: admixing a persistent electrochromic material with a plasticizer, a polyfluoroalkylene compound, and an electrically conductive material; forming sheets of the admixture; and pressing at least one of said sheets onto a planar electrically conductive support.

4,068,929

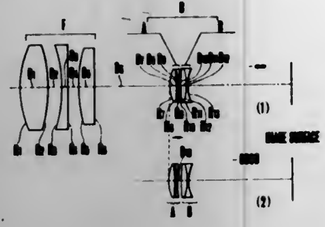
HIGH SPEED FOCUSING TELEPHOTO LENS

Hideo Yokota, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1976, Ser. No. 678,364
Claims priority, application Japan, Apr. 23, 1975, 50-49384
Int. Cl.² G02B *9/60, 9/62*
U.S. Cl. 350—215 18 Claims

1. A high speed focusing telephoto lens comprising: a front lens group which has a positive refracting power and remains stationary during focusing; and a rear lens group having a negative refracting power and consisting of at least one stationary sub-group and at least one movable sub-group having a

positive refracting power, said movable sub-group being moved on the optical axis toward an object so as to cause said



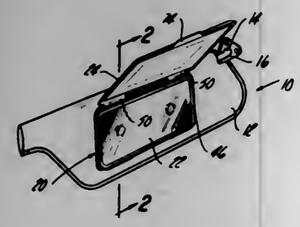
telephoto lens to focus an object at near distance from its focusing on an object at far distance.

4,068,930

VISOR ASSEMBLY AND COVERED VANITY MIRROR

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Dec. 27, 1976, Ser. No. 754,279
Int. Cl.² G02B *5/08*
U.S. Cl. 350—277 **9 Claims**



1. A visor and vanity mirror assembly comprising; a visor adapted for attachment to a vehicle, a housing supported on said visor, said housing including a relatively rigid frame portion and a relatively rigid cover portion, hinge means joining said frame and cover for movement of the latter between open and closed positions relative to said frame, said frame, cover and hinge means being of unitary, homogeneous plastic construction, said hinge means being relatively flexible and a mirror supported relative to said frame to be covered by said cover portion when the latter is in a closed position relative to said frame.

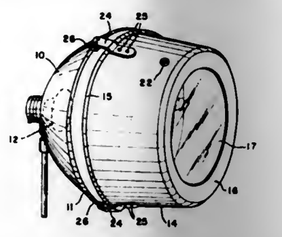
4,068,931

REFLECTOR INCLUDING LIGHT FILTER FOR PHOTOGRAPHIC USE

Bill S. Weaks, 510 S. Broadway, Plainview, Tex. 79072

Filed Oct. 5, 1976, Ser. No. 729,869
Int. Cl.² G02B *7/00*; F21V *11/16, 9/08*
U.S. Cl. 350—318 **6 Claims**

1. A hood for carrying a light filter for use in photography wherein a source of light is contained within a reflector body to produce light rays that are formed into a beam issuing from a source of light supported in the reflector body and the filter is interposed between the light source and the object being exposed to the reflected rays, comprising a concave reflector body defined by a flaring reflector wall having an edge forming an outlet, the wall being adapted to collect said rays issuing from said source and project a beam of light through said outlet; a hood having an enclosing wall which defines an inlet and outlet opening, said outlet opening being defined by an inwardly projecting peripheral flange on one end of said hood; a filter plate disposed within said hood, a circumferential portion of one side of the plate being in engagement with said flange; means carried by said hood interiorly thereof for engaging the periphery of the other side of said plate and thereby holding said plate against said flange; a plurality of post means carried by said hood near said inlet opening, said post means



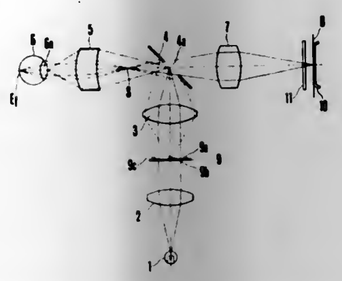
holding the hood in a position before said reflector to direct said beam toward the outlet end of said hood and to maintain the inlet end of said hood spaced from the outlet edge of said reflector so that air may circulate into the reflector.

4,068,932

OPTICAL INSTRUMENT FOR EXAMINING THE EYE FUNDUS

Shinichi Ohta, Tokyo; Isao Matsumura, Yokohama; Kazunobu Kobayashi, Yokohama, and Haruhisa Madate, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1976, Ser. No. 687,645
Claims priority, application Japan, May 23, 1975, 50-61522; Feb. 24, 1976, 51-19137; Feb. 24, 1976, 51-19313
Int. Cl.² A61B *3/14*
U.S. Cl. 351—7 **18 Claims**



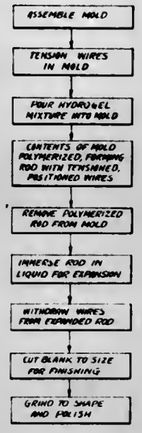
1. An optical instrument for examining the eye fundus comprising:
- an imaging lens system for forming the image of the eye fundus of the eye to be inspected, said system including an objective lens system optically opposite to the eye to be inspected;
- an image inspection means for examining the image of the eye fundus; and
- a visual line guide means for guiding the visual line of the eye to be inspected along the direction corresponding to the desired part of the eye fundus to be inspected, said means including a visible target being located at the position substantially conjugate to the eye fundus of the eye to be inspected, in the optical path of the light beam passing through the objective lens system of the imaging lens system.

4,068,933

FENESTRATED HYDROGELS FOR CONTACT LENS USE AND METHOD FOR MAKING SAME

Maurice Seiderman, 3306 Deronda Drive, Hollywood, Calif. 90068

Filed Mar. 18, 1975, Ser. No. 559,575
Int. Cl.² G02C *7/04*; B29D *11/00*
U.S. Cl. 351—160 **7 Claims**



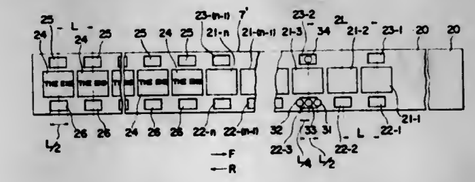
1. A method for producing fenestration hydrogels adapted for use as ophthalmic corrective contact lenses comprising the steps of:
- a. confining unpolymerized hydrogel monomers within a container;
- b. adjustably tensioning a plurality of spaced, substantially parallel elongate, substantially uniform members disposed within said container;
- c. polymerizing said confined hydrogel monomers to a solid, non-swollen infusible mass;
- d. disposing said polymerized hydrogel with uniform members in a swelling agent for said hydrogel; and
- e. withdrawing said uniform members intact from said hydrogel thereby yielding a hydrogel casting characterized as possessing a plurality of fenestrations corresponding to the regions defined by said removed elongate members, and whereby said uniform members are capable of reproducible reuse.

4,068,934

AUTOMATIC INFORMATION RETRIEVAL DEVICE

Atsuyuki Tanaka, and Nobuaki Nishioka, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Dec. 10, 1975, Ser. No. 639,612
Claims priority, application Japan, Dec. 16, 1974, 49-145387; Dec. 16, 1974, 49-145388; Dec. 16, 1974, 49-145389
Int. Cl.² G03B *23/12*
U.S. Cl. 353—26 A **5 Claims**



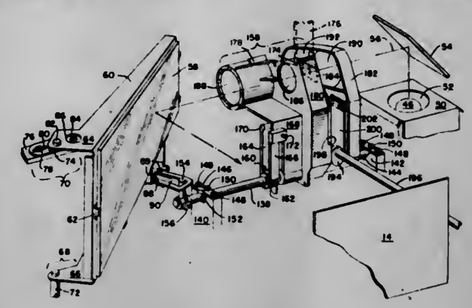
1. An automatic information retrieval device for use with an information film having an opaque leading end porion, a plurality of information containing frames following said leading end portion, light transmitting blip marks in a position corresponding to each of said information containing frames, and a plurality of dummy frames at the trailing end portion following said information containing frames, the device comprising a light source and a projecting means operatively associated with said light source for projecting said information containing frame onto a screen, means for transporting said film past said light source and projecting means in a first direction for forwarding the film and in a second direction for reversing the film, means designating a desired frame number of said information containing frames which it is desired to project, a photo-sensing means positioned adjacent the path of the film for receiving light transmitted through said blip marks and generating a pulse signal at the passage of every blip mark, a counter to which said photosensing means is connected, a first means associated with said counter and said designating means and coupled to said transporting means for disabling said transporting means for stopping the film with the designated frame positioned relative to said light source and projecting means for projecting the designated frame onto said screen, a second means associated with said counter and coupled to said transporting means for disabling said transporting means upon detection of said leading end portion by said photosensing means as said film is transported in said second direction, and a third means associated with said counter means and coupled to said transporting means for disabling said transporting means when said dummy frames are projected onto said screen while the film is transported in said first direction.

4,068,935

BACKLASH FREE LENS FOCUSING APPARATUS

Richard H. Koester, Rochester, and Roy E. Hickey, Honeoye Falls, both of N.Y., assignors to The Singer Company, New York, N.Y.

Filed Sept. 20, 1976, Ser. No. 724,879
Int. Cl.² G02B *7/02*; G03B *21/22, 3/00*
U.S. Cl. 353—71 **4 Claims**



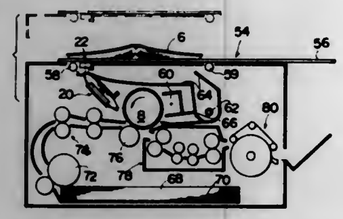
1. A lens focusing apparatus comprising:
- a lens carrier having a first section spaced apart from a second section;
- said lens carrier including a first objective lens in alignment with a first condensing lens; and
- a second objective lens in alignment with a second condensing lens.
- said first objective lens and said second objective lens carried in said first section; and
- said first condensing lens and said second condensing lens carried in said second section.
- said lens carrier mounted on a shaft and adapted for axial displacement along said shaft;
- a rotatably mounted cam disposed between said first section and said second section; and
- a force biasing means disposed between said cam and said second section to urge a surface portion of said first section against said cam;
- whereby rotation of said cam causes axial displacement of said lens carrier relative to said shaft.

4,068,936

OPTICAL PROJECTION APPARATUS FOR IMAGE TRANSFER TYPE ELECTROPHOTOGRAPHIC COPIERS

Teizo Kushima, Osaka; Takaji Kurita, Kawachinagano, and Hiroaki Mizunoe, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1976, Ser. No. 753,099
Claims priority, application Japan, Dec. 28, 1975, 50-176893[U]
Int. Cl.² G03B 27/00, 15/28
U.S. Cl. 355—1 4 Claims



1. An optical projection apparatus for use in an image transfer type electrophotographic copier for projecting an optical image of an original document to a photosensitive drum comprising:

an image transmitter formed by a bundle of optical fibers of graded refractive indexes disposed obliquely relative to the original document to be copied;

two prism-shaped reflecting members respectively disposed in facing relation to each end of the image transmitter, each of said prism-shaped reflecting members including a prism portion and a support portion integrally formed therewith;

means for supporting said image transmitter and the support portion of each said prism-shaped reflecting members fixed therebetween;

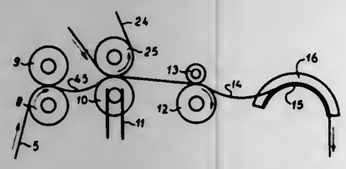
the optical image of the original document being projected through said optical projection apparatus wherein the image is at first reflected through said prism-shaped reflecting member located on the original document side, and projected through the image transmitter and further reflected through the prism-shaped reflecting member located on the photosensitive drum side, whereby the image is projected onto the peripheral surface of the photosensitive drum at a point remote from the top portion of the photosensitive drum.

4,068,937

COPIER IMAGE TRANSFER SYSTEM

Adrianus H. Willemse, Grubbenvorst, and Mathias J. J. M. Vola, Sittard, both of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Mar. 4, 1976, Ser. No. 663,971
Claims priority, application Netherlands, Mar. 11, 1975, 7502874
Int. Cl.² G03G 15/16
U.S. Cl. 355—3 TR 14 Claims



1. In a copying apparatus comprising a first support movable to supply on its surface electrostatic or powder images and a movable intermediate support having a surface adapted to receive said images by transfer from said first support, at least one of said supports being an endless belt;

respective driving means for said supports for moving them continuously and operative to drive said belt at a speed greater than the speed of the other of said supports;

means operable while said supports are moving to press them together at a transfer location downstream from said belt driving means so that said belt will be driven at said location by frictional engagement with and at the lower speed of said other support for transfer of an image, and to disengage said supports after image transfer, whereby while said supports are pressed and moving together the greater speed of said belt driving means produces slack in the length of belt extending between said belt driving means and said transfer location;

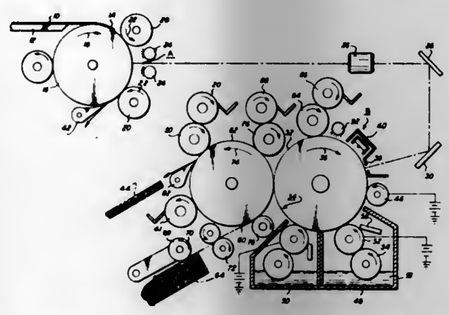
and means operative upon disengagement of said supports to displace slack in said belt length downstream from and thus tension the belt at said transfer location.

4,068,938

ELECTROSTATIC COLOR PRINTING UTILIZING DISCRETE POTENTIALS

Robert Robertson, London, England, assignor to Rank Xerox Ltd., London, England

Filed June 16, 1975, Ser. No. 587,479
Claims priority, application United Kingdom, Sept. 24, 1974, 41465/74
Int. Cl.² G03G 15/01, 15/10
U.S. Cl. 355—4 11 Claims



1. An apparatus for rendering visible an electrostatic latent image having a portion thereof with an image potential greater than a first threshold and a second portion thereof with an image potential less than a second threshold, the second threshold being less than the first threshold, wherein the improvement includes:

a developer unit applying particles of a first color to the first portion of the latent image and particles of a second color to the second portion of the latent image

further including means for selectively discharging the electrostatic latent image to a potential less than the second threshold in portions thereof having a potential greater than the second threshold by a preselected level.

4,068,939

COLOR TRANSPARENCY REPRODUCING MACHINE

Louis D. Mailloux, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 540,617, Jan. 13, 1975, Pat. No. 4,027,962.
This application July 16, 1976, Ser. No. 705,870
Int. Cl.² G03G 15/01
U.S. Cl. 355—4 6 Claims

1. An electrophotographic printing machine for reproducing a color transparency, including:

a platen;

means for projecting a light image of the color transparency onto said platen;

a screen member disposed on said platen for modulating the light image of the color transparency projected onto said platen to form a half-tone light image thereof;

a photoconductive member;

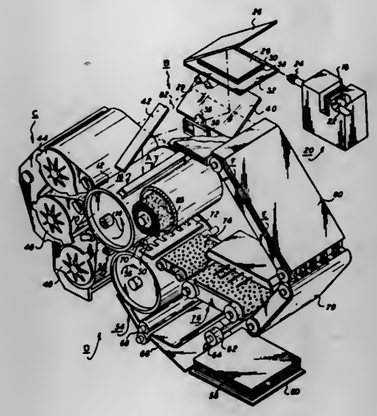
means for charging at least a portion of said photoconductive member;

means for filtering the half-tone light image;

a composition frame disposed on said platen defining an opaque border extending outwardly from the color transparency image formed on said platen;

means for exposing the charged portion of said photoconductive member to a light image of said composition frame and the filtered half-tone light image of the color transparency to record a combined electrostatic latent image of the color transparency and said composition frame on said photoconductive member;

means for developing the combined electrostatic latent image recorded on said photoconductive member with toner particles complementary in color to the color of the filtered half-tone light image, said developing means comprising a first developer housing defining a chamber storing a developer mix comprising carrier granules and yellow toner particles, first conveyor means mounted for



movement within the chamber of said first developer housing and arranged to move the developer mix from a first region to an intermediate region, first rotary driven transport means mounted within the chamber of said first developer housing and arranged to move the developer mix from the intermediate region to a second region for discharge thereat, first rotary driven developer means mounted within the chamber of said first developer housing closely proximate to said first transport means for receiving the developer mix therefrom and arranged to deposit yellow toner particles onto a blue filtered electrostatic latent image when in operative communication therewith, and first means for driving said first conveyor means such that the reaction torque to the driving moment applied to said first conveyor means pivots said first developer housing disposing said first developer means adjacent the blue filtered electrostatic latent image recorded on said photoconductive member;

means for transferring the toner powder image adhering to the combined electrostatic latent image recorded on said photoconductive member to a sheet of support material; and

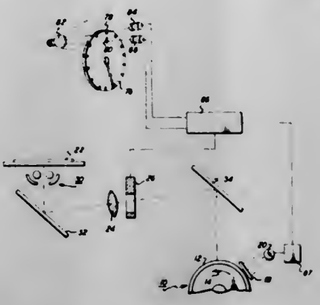
means for fusing the toner powder image to the sheet of support material.

4,068,940

VARIABLE CONTRAST OPTICAL SCREENING SYSTEM

Richard M. Bobbe, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 13, 1976, Ser. No. 722,448
Int. Cl.² G03G 15/01
U.S. Cl. 355—4 8 Claims



1. An electrophotographic printing machine for reproducing an original document, including:

a photoconductive member;

means for charging at least a portion of said photoconductive member to a substantially uniform level;

means for exposing the charged portion of said photoconductive member to a light image of the original document to record thereon the latent image thereof;

means for filtering the light image to expose the charged portion of said photoconductive member to successively differently colored light images corresponding to different colors of the original document;

a screen member;

a first light source arranged to project light rays through said screen member forming a screen pattern on said photoconductive member;

a power supply coupled to said first light source; and

means, responsive to the color of the light image exposing said photoconductive member, for adjusting said power supply to vary the voltage exciting said first light source to regulate the intensity of the light rays emitted from said first light source.

4,068,941

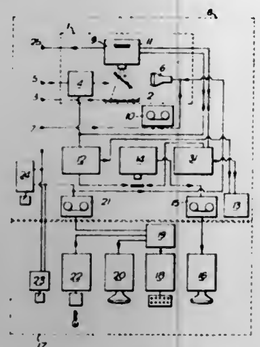
MICROFICHE RECORDS

Harry Arthur Hele Speace-Bate, 1 Cheam Place, Morley, Australia (6062)

Filed Sept. 14, 1976, Ser. No. 723,599
Claims priority, application Australia, Sept. 18, 1975, 3241/75
Int. Cl.² G03G 15/00
U.S. Cl. 355—5 17 Claims

1. Apparatus for handling information comprising a microform camera including a document copying platen, a microform film holder, and a cathode ray tube, means for recording an image from either the copying platen, film holder or tube onto a further microform film held on a moveable carriage in the camera, means for moving the further film to an image recording position so that images can be recorded in different frames on the film, and electronic scanner for scanning each recorded image, a first store arranged to store the electronic scanned image, a first display for displaying the image stored in

the first store, a keyboard generating characters, a second store storing the generated characters and a second display for



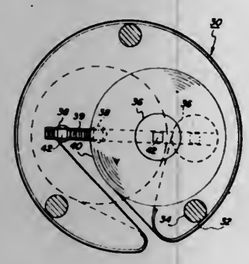
displaying the generated characters, the second store feeding said cathode ray tube.

4,068,942

ADVANCED PHOTORECEPTOR

Richard C. Peswell, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 14, 1975, Ser. No. 621,890
Int. Cl.² G03G *15/00*
U.S. Cl. 355—16 **3 Claims**



1. Advanceable photoreceptor apparatus comprising:

a hollow drum having slot means substantially coextensive with the longitudinal axis of said drum;

an elongated photosensitive web;

means for supporting a major portion of said photosensitive web internally of said drum while a smaller portion thereof is trained through said slot means over the outer surface of said drum, said major portion supporting means comprising a supply member and a takeup member;

means for effecting periodic movement of said photosensitive web from said supply member to said takeup member;

means for stationarily supporting said supply and takeup members in various positions internally of said drum;

means for effecting periodic repositioning of said members independently of movement of said photosensitive web after a predetermined quantity of photoreceptor has been transferred from said supply member to said takeup member; and

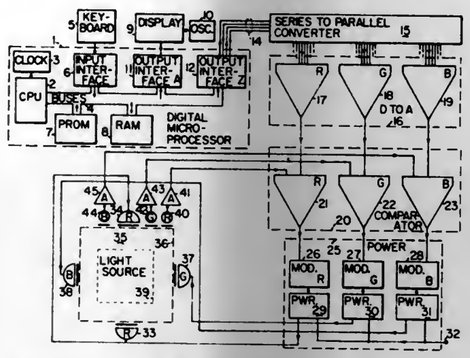
said means for periodically repositioning said members including a threaded rod operatively coupled to supports for said members.

4,068,943

ADDITIVE COLOR PRINTER CONTROL

Robert Paul Gyori, Studio City, Calif., assignor to De luxe General, Incorporated, Hollywood, Calif.

Filed Aug. 18, 1976, Ser. No. 715,610
Int. Cl.² G03B *27/78, 27/32*
U.S. Cl. 355—38 **6 Claims**



2. An additive color printer control, comprising;

a. digital microprocessor means (1) for accepting electrically represented components of color information corresponding to a given color transparency (39),

b. a series to parallel converter (15) connected to said microprocessor means to temporarily, simultaneously and separately retain said plural components of color information,

c. plural digital to analog converters (16) connected to said series to parallel converter to simultaneously accept said plural components of color information and to form separate electrical amplitudes corresponding to said components,

d. an electrical amplitude comparator (20) connected to each said digital to analog converter, and

e. a feedback circuit (25, 35, 40, 42, 44, 20) including plural illumination means for color printing also individually connected to each said comparator,

whereby each of said plural illumination means is energized according to said plural components of color information provided by said microprocessor means.

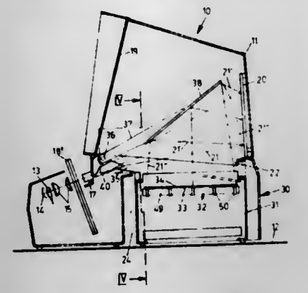
4,068,944

MICROFILM VIEWER HAVING ENLARGED COPY PRODUCTION ATTACHMENT

Max Leibundgut, Wadenswil, Switzerland, assignor to Alos AG, Zurich, Switzerland

Filed Mar. 19, 1976, Ser. No. 668,812
Claims priority, application Switzerland, Mar. 26, 1975, 3874/75
Int. Cl.² G03B *13/28*
U.S. Cl. 355—45 **11 Claims**

1. A table-top microfilm viewer and separate attachment device for producing enlarged copies of the microfilm, said viewer including a cabinet containing a light means, a microfilm holding device, a projection lens, means for deflecting a light beam issuing from said lens, and a projection screen onto which the light beam is deflected for viewing the transillumination; said light means and said projection lens being so disposed that an optical axis common to said light means and to said projection lens lies at an angle of between 10° and 30° to a horizontal plan; said deflecting means comprising a single surface first mirror mounted a predetermined spacing from said screen within said cabinet and lying in a substantially vertical plane for deflecting the light beam onto said projection screen; said cabinet having removable means for forming an opening therein below the area between said screen and said first mirror, and said cabinet being formed so as to provide an undercut portion below said opening and above a tabletop; a separate attachment device for producing enlarged copies of the microfilm removably positionable in said undercut portion, said device comprising a housing, means connected to said housing supporting a single surface second mirror, a horizontally disposed platform means in said housing, means for positioning a light-sensitive material on said platform means, and said support means for said second mirror being pivotable so as to position said second mirror through said opening in said cabinet and into said area between said first mirror and said screen so as to deflect the light beam from said first mirror onto said platform to illuminate said light-sensitive material.

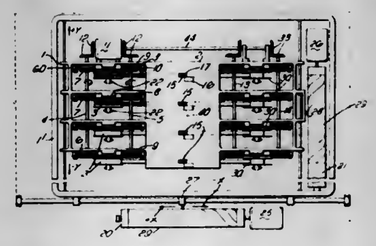


4,068,945

MICROFORM EDITORS

Harry Arthur Hele Spence-Bate, 1 Cheam Place, Morley, Australia (6062)

Filed Sept. 3, 1976, Ser. No. 720,503
Claims priority, application Australia, Sept. 8, 1975, 3069/75
Int. Cl.² G03B *27/42, 27/64, 27/44*
U.S. Cl. 355—54 **5 Claims**



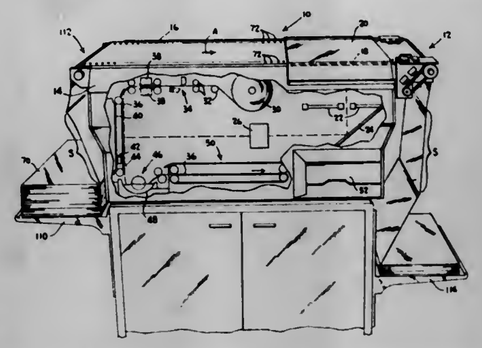
1. A microform copying apparatus comprising a housing, a camera lens, a first carriage moveable in an X and Y direction in relation to the camera lens, means for holding a plurality of rolls of microfilm on said carriage, means for moving said microfilm past windows defined by apertures in said carriage, microfiche holding means moveable in an X and Y direction in relation to the camera lens, illumination means associated with said carriage for projecting an image from a selected said roll of film onto a microfiche held on said microfiche holding means, whereby images from the microfilm transfer to the microfiche.

4,068,946

DOCUMENT FEEDING APPARATUS

Earl E. Eschweiler, Jr., Norwalk, and Richard B. Smith, Ridgefield, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed May 3, 1976, Ser. No. 682,572
Int. Cl.² G03B *27/32, 27/52*
U.S. Cl. 355—64 **16 Claims**



1. An apparatus for automatically incrementally feeding a continuous fan-folded document having interconnected segments over the illuminating station bed plate of an electrostatic photocopier and for sequentially positioning each segment of the document on the bed plate to be photocopied; said apparatus comprising:

A. drive means for engaging the document and advancing it over the photocopier bed plate;

B. a motor for supplying motive power to said drive means;

C. clutch means through which said motor is coupled to said drive means for controlling the supply of motive power thereto;

D. brake means coupled to said drive means for stopping said drive means from advancing the document over the photocopier bed plate;

E. feed control means electrically connected to the photocopier to be signalled thereby

1. for engaging said clutch means and releasing said brake means when copying of a given segment of the document is completed to feed the next segment of the document to the photocopier bed plate, and

2. for engaging said brake means and releasing said clutch means when the next document segment is positioned on the photocopier bed plate and

F. lobe means connected to said feed control means to control the feeding of the next segment of said document.

4,068,947

OPTICAL PROJECTION AND SCANNING APPARATUS

Jere D. Buckley; David A. Markle, both of Norwalk, Conn.; William H. Newell, Mount Vernon, N.Y., and Abe Offner, Darien, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 339,860, March 9, 1973, abandoned.
This application Mar. 29, 1976, Ser. No. 671,653
Int. Cl.² G03B *27/58, 27/62*
U.S. Cl. 355—72 **8 Claims**

1. Apparatus for photographically exposing an image-receiving surface to a light image of an object, said apparatus comprising:

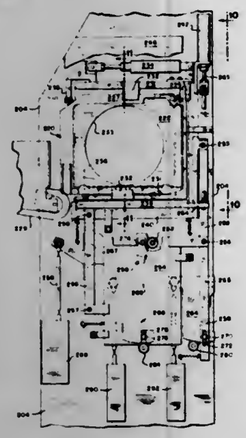
an optical system having an optical axis and conjugate planes;

a carriage;

separate stages on said carriage for supporting an object surface and an image-receiving surface in said conjugate planes, respectively, each of said stages including four link

members pivotally interconnected at points defining a parallelogram, one link member of each parallelogram being adapted for supporting thereon such object and image receiving surfaces, respectively;

means to rotate a second link member in each parallelogram respectively opposite said one link member thereof, rotation of said second link member causing concomitant rotation of an object surface and imagereceiving surface supported on said one link member of the respective parallelogram; and



means to translate said second link member of each parallelogram and means to rotate a third link member in each parallelogram, translation of said second link member in each parallelogram causing concomitant translation of such object and image-receiving surfaces in one direction and rotation of said third link member in each parallelogram causing concomitant rotation of such object surface and image-receiving surface in a direction substantially normal to said one direction.

4,068,948

COPYING APPARATUS

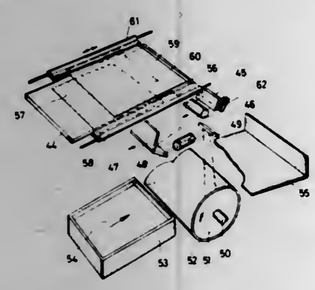
Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33, Germany

Continuation-in-part of Ser. No. 592,846, July 3, 1975. This application Mar. 18, 1976, Ser. No. 668,182

Claims priority, application Germany, July 4, 1974, 2432424; Feb. 13, 1975, 2506127

Int. Cl.² G03B *27/62*

U.S. Cl. 355—75 **10 Claims**



1. A copying method comprising the steps of:

supporting an original face down on a transparent support;

interposing a mask having two parts forming a slot between said original and said support and exposing only a portion of said original through said slot to a scanner on the other side of said support;

repeatedly scanning said original through said support with said scanner and producing a succession of copies each carrying only that portion of the original exposed during the respective scan through said slot;

automatically relatively displacing said original and said mask after each scan to expose a different portion of said original to said scanner for the subsequent scanning, whereby each scan produces a copy carrying a replica of a different portion of said original; and

varying the width of said slot by relatively displacing said parts.

4,068,949

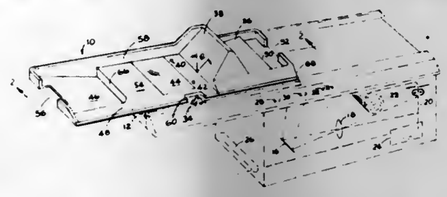
DOCUMENT HANDLING DEVICE

Richard A. Booth, Norwalk; Denis C. Well, Wilton, both of Conn., and Daniel N. Yanofsky, Jericho, N.Y., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed June 30, 1976, Ser. No. 701,243

Int. Cl.² G03B *27/62*

U.S. Cl. 355—75 **9 Claims**



1. Document handling device for facilitating manipulation of a plurality of documents for successively copying said documents on a copying machine having a reciprocating document carriage operating with a copying stroke and a reverse non-copying stroke, said device comprising:

A. a generally rectangular body member dimensioned to rest upon the reciprocating document carriage of a photocopying machine,

B. a substantially steeply inclined surface portion adjacent one end of said body member for supporting documents thereon in an inclined stack,

C. means to prevent said documents from sliding down said inclined surface,

D. access means in said body member for permitting illumination from the copying machine to strike the undersurface of said documents as the document carriage reciprocates with said body member positioned thereon, and

E. a generally horizontal surface portion adjacent the other end of said body member for receiving documents after they have been copied, whereby documents are simultaneously fed by an operator from the inclined stack to said access means and from said access means to said receiving surface during the reverse or non-copying stroke of the document carriage without necessity for substantial movement by the operator.

4,068,950

VARIABLE PLATEN COVER

Hidetoshi Kito, Ebina, Japan, assignor to Rank Xerox Ltd., London, England

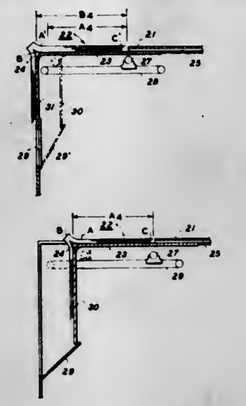
Filed June 22, 1976, Ser. No. 698,664

Claims priority, application Japan, Oct. 15, 1975, 50-139462[U]

Int. Cl.² G03B *27/62*

U.S. Cl. 355—75 **16 Claims**

1. In an electrophotographic copying machine in which an original copying platen is mounted at one side of the body of the copying machine, and the platen has an exterior corner edge providing for bound document copying with the document binding placed over the platen corner, and wherein the platen is stationary during the copying of documents thereon, and wherein the copying machine has movable optical scanning means for scanning a document on the stationary platen, and wherein the scanning means has a scan starting registration position adjacent an interior side of the platen opposite from said corner of the platen, and wherein said scanning means has



a platen scanning direction from said registration position towards said corner; the improvement comprising means for movable repositioning said platen, relative to said body of said copying machine toward or away from said scanning direction of said scanning means for changing said scan starting registration position of said scanning means relative to said platen in order to change the effective size of said platen scanned by said scanning means for different sizes of originals.

4,068,951

DISTANCE MEASURING APPARATUS

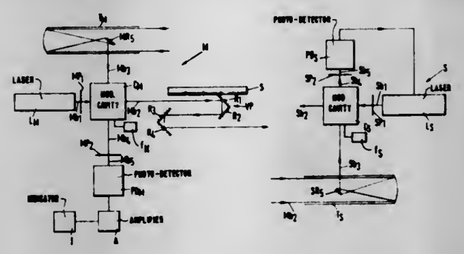
Keith Davy Froome, and George Russell, both of Teddington, England, assignors to National Research Development Corporation, England

Filed Apr. 27, 1976, Ser. No. 680,850

Claims priority, application United Kingdom, May 7, 1975, 19218/75

Int. Cl.² G01C *3/08*

U.S. Cl. 356—5 **10 Claims**



1. A distance measuring apparatus comprising: a first unit comprising a first modulating means for polarization modulating at a first high frequency a first optical beam carrier radiation and a first transmitting means for transmitting the first optical carrier radiation over a path the length of which is to be measured; and a second unit comprising receiving means for receiving the polarization modulated first optical radiation after said first modulated light has traversed the path the length of which is to be measured, a second modulating means for polarization modulating at a second high frequency a second optical beam carrier radiation, means for supplying the received first optical radiation to said second modulating means so as to produce a low down-converted frequency corresponding to the difference between the first high frequency modulation and the second high frequency modulation, a further modulating means for modulating said second optical carrier radiation at the low down-converted frequency corresponding to the difference between the first high frequency modulation and second high frequency modulation to produce separate modulation of said second optical carrier radiation, and second transmitting means for transmitting the combined low frequency and high frequency modulated second optical carrier radiation to the first unit over the path the length of which is to be measured, said first unit further comprising means for supplying the received modulated second optical carrier radiation to said first modulating means so as to provide frequency down-conversion thereof, detecting means for detecting the polarization modulation phase of the second optical carrier after frequency down-conversion by said first modulating means and means for providing an indication of the length of the path based on said polarization modulation phase.

4,068,952

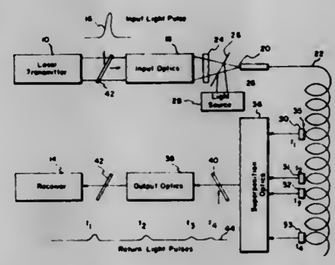
RANGE TESTING SYSTEM HAVING SIMULATED OPTICAL TARGETS

Virgil Erbert, Albuquerque, N. Mex., and Leroy O. Braun, Marina Del Rey, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed July 23, 1976, Ser. No. 708,168

Int. Cl.² G01C *3/08*

U.S. Cl. 356—5 **8 Claims**



1. A test unit for a laser range finder comprising a laser transmitter and laser receiver, said laser range finder having a signal transmission path and a single signal reception path comprising:

an optical waveguide comprised of a plurality of sequential sections including an input section, each section having ends;

input optical means positioned to direct light energy in said signal transmission path to an input end of said input section;

signal sampling means including a plurality of sampling structures each coupling the corresponding ends of sequential sections to provide gaps of a predetermined length for tapping a portion of the light energy from said optical waveguide, and

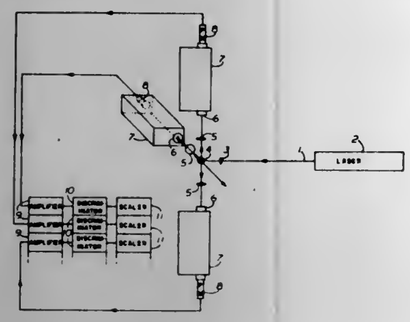
superposition optical means for directing the sampled light energy to said single signal reception path.

4,068,953

RAMAN SCATTERING METHOD AND APPARATUS FOR MEASURING ISOTOPE RATIOS AND ISOTOPIC ABUNDANCES

Robert C. Harney, 5665 Charlotte Way, No. 80, Livermore, Calif. 94550, and Stewart D. Bloom, 141 Via Serena, Alamo, Calif. 94507

Filed Apr. 11, 1975, Ser. No. 567,373
Int. Cl.² G01J 3/44
U.S. Cl. 356—75 25 Claims



1. A method for measuring isotope ratios and isotopic abundances, comprising the steps of:
a. directing a beam of quasi-monochromatic photons onto a sample to be analyzed, thereby causing each isotopic species in the sample to Raman-scatter photons at discrete frequencies characteristic of each of said species,
b. utilizing detectors for measuring the intensity of said scattered photons for each isotopic species of interest,
c. generating the fractional abundance, f_j, of an isotope j of an element X by inserting the respective measured photon intensities in the equation:

$$f_j = \frac{\sum_k n_{kj} I_{mk} \epsilon_k^{-1}}{\sum_k n_{kX} I_{mk} \epsilon_k^{-1}}$$

and determining the value of f_j, and
d. generating the ratio, R_{ij}, of the abundance of isotope i to isotope j of element X by inserting the respective measured photon intensities in the equation:

$$R_{ij} = \frac{\sum_k n_{ki} I_{mk} \epsilon_k^{-1}}{\sum_k n_{kj} I_{mk} \epsilon_k^{-1}}$$

and determining the value of R_{ij},
where n_{ki} and n_{kj} are the number of atoms of isotope i and isotope j, respectively, per molecule of isotopic species k, where n_{kX} is the total number of atoms of element X per molecule of isotopic species k, where I_{mk} is the measured scattered photon intensity for isotopic species k, where ϵ_k is the effective efficiency of the detector for photons scattered from isotopic species k, and where the summations, Σ, are carried out over the total number of isotopic species of interest.

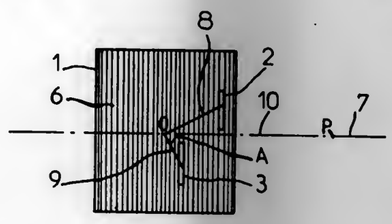
11. An apparatus for measuring isotope ratios and isotopic abundances, comprising the combination of:
a. a laser,
b. a sample cell adapted to contain a sample whose isotope ratios and isotopic abundances are to be measured,
c. means for holding said sample cell in the laser beam,
d. an optical system for directing and focusing said laser beam into said sample cell, thereby causing each isotopic species in the sample to Raman-scatter photons at discrete frequencies characteristic of each of said species,
e. two monochromators,
f. two optical systems for collecting and focusing the Raman-scattered photons onto the entrance slits of said monochromators,
g. two photomultiplier tubes, one for each monochromator,
h. a power supply to energize the photomultiplier tubes, and
i. means for electronically processing the output signals from said photomultiplier tubes to obtain data representative of the desired isotope ratios and isotopic abundances.

4,068,954

MONOCHROMATOR HAVING A CONCAVE HOLOGRAPHIC GRATING

Edouard Da Silva, Lille, France, assignor to Instruments S.A., Ivry-sur-Seine, France

Filed Jan. 9, 1976, Ser. No. 647,767
Int. Cl.² G01J 3/18
U.S. Cl. 356—100 6 Claims



1. In a monochromator adapted for the study of RAMAN spectrums having a turntable concave holographic grating with parallel lines and an inlet slot parallel to the lines of the grating for passage of incident light and an outlet slot also parallel to the lines of the grating, for passage of diffracted light, an improvement wherein said inlet and outlet slots are each disposed on opposite sides of a diametral median plane of the grating extending perpendicular to the lines of the grating and passing through the center of the grating, the bisector of the angle formed by two lines connecting the center of each slot to the center of the grating being contained in said diametral plane, the slots being additionally disposed such that the projection of said angle on the diametral plane is $\leqq 3°$ and the projection said angle on a second plane passing through the bisector and perpendicular to the diametral plane is $\leqq 15°$.

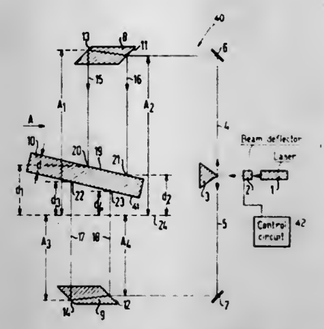
4,068,955

CONTACT-FREE THICKNESS MEASURING METHOD AND DEVICE

Viktor Bodlaj, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 9, 1976, Ser. No. 647,669
Claims priority, application Germany, Jan. 13, 1975, 2501015
Int. Cl.² G01B 11/06
U.S. Cl. 356—167 3 Claims

1. A method for the contact-free measurement of the thickness of a workpiece having first and second surfaces which are opposite and plane-parallel to each other, said workpiece being disposed adjacent a reference plane of a device having means for providing a laser beam, means for splitting the laser beam into at least two sub-beams, means for directing the sub-beams to opposite sides of the reference plane, means for reflecting at least a portion of each of the sub-beams at the reference plane and having at least one reflecting surface on each side of said reference plane so that each of said first and second surfaces of the workpiece is struck by at least one portion, means for causing each of the portions to move periodically across the respective surface of the workpiece from an initial position and back, and separate sensing means associated with each of the portions for detecting a beam reflected by a scattering point on one of said first and second surfaces arriving along a given path, each portion while in the initial position and the given path for the associated sensing means intersecting at a point in the reference plane with the initial position forming an angle α with a normal of the reference plane and the given path forming an angle β with the normal, said method comprising splitting the laser beam; directing the sub-beams; creating two separate spaced portions of each sub-beam and reflecting the portions at the first and second surfaces of the workpiece; deflecting said portions from the initial position, so that two



portions move along each of said first and second surfaces which reflect the respective portion in a diffused fashion as a reflected beam; sensing each reflected beam from a scattering point on the surface of the workpiece as the reflected beam assumes the given path; measuring the time lapse from the initial position of each portion until the reflected beam is sensed; converting each of the time lapses into a deflection angle γ; calculating the distance d_i of each scattering point from the reference plane according to

$$d_i = A_i \frac{\sin \gamma_i}{\sin(\alpha + \beta \pm \gamma_i)} \cdot \frac{\cos \beta}{\cos \alpha}$$

where $i = 1,2,3$ and 4,
wherein γ_i is the angle between the initial position and the position when a reflected beam of the given path is detected for the portion i, A_i is the distance between the reference plane and the reflector i, γ_i being positive when the angle of incidence of the portion increases and being negative when the angle decreases; and subsequently calculating the thickness d of the workpiece according to

$$d = \frac{(d_1 d_3)(d_1 + d_2) + (d_1 + d_3)}{(d_2 - d_1) + (d_1 - d_4)(d_1 + d_2) + (d_1 + d_4)(d_2 - d_1)} \Big/ 2\sqrt{(d_1 + d_2)^2 + (d_2 - d_1)^2}$$

so that a thickness of a workpiece, which is tilted in relation to the reference plane about two perpendicular axes which are parallel to the reference plane, can be determined.

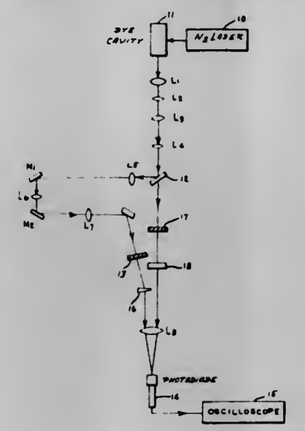
4,068,956

PULSED LASER DENSITOMETER SYSTEM

John Taboada, 159 Ebbtide, San Antonio, Tex. 78227

Filed Apr. 16, 1976, Ser. No. 677,588
Int. Cl.² G01N 21/22
U.S. Cl. 356—205 2 Claims

1. A pulsed densitometer system for measuring a sample comprised of a pump laser of the TEA N_2 type, a dye cavity pumped by said pump laser to provide an output beam of pulses, the pulse duration of said dye cavity being of the order of 5–10 ns, a cylindrical lens for correcting the sssymetry of the output beam from said dye cavity, a combination of a focal length relay lens and a collimating telescope for further correcting the bam from said cylindrical lens, a beam splitter to separate the beam from said combination into a probe beam and a reference beam, means to delay said reference beam to provide temporal separation of said probe and reference beam, said delay means having a predetermined length x, x being equal to 3 ct with c being the speed of light propagation in the delay means and t being the pulse duration time, said delay means consisting of first, second and third mirrors in sequence and first, second and third lenses, each of said lenses with several meters of focal lengths to control the beam divergence, said first lens positioned between said beam splitter and said first mirror, said second lens between said first and second mirrors, said third lens between said second and third mirrors, an attenuation reference filter receiving the reference beam from said delay means for reduction to a minimum detectable



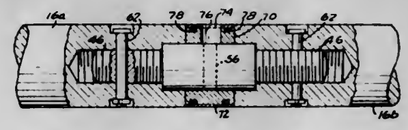
level, a sample to be measured for density, said probe beam from said beam splitter passing therethrough, a focusing lens receiving the probe beam from said sample, a wedge receiving the reference beam from said attentuation reference filter to co-align said reference beam with said probe beam on said focusing lens, a high speed photodiode detector receiving the co-aligned probe and reference beam from said focusing lens in a small area thereupon of about 1 mm² to inhibit small gain variations from different parts of the detectors surface, an oscilloscope receiving the output from said high speed photodiode detector to provide the optical density information of said sample in the ratio of the pulse amplitude of the probe beam to the reference beam.

4,068,957

TRANSFER BAR COUPLING

John H. Brems, Birmingham; John Kobane, Jr., Livonia, both of Mich., and Wilfred J. Zetner, LaSalle, Canada, assignors to F. Jos. Lamb Company, Warren, Mich.

Filed Aug. 23, 1976, Ser. No. 716,832
Int. Cl.² F16D 1/00
U.S. Cl. 403—8 6 Claims



1. In a machine for transferring workpieces progressively through a series of stations, a cylindrical transfer bar comprising a plurality of linearly successive sections coupled together at their adjacent ends, the adjacent end faces of said sections being in abutting relation with the opposite end faces of a tubular spacer positioned therebetween, the adjacent end portions of each of said sections having a threaded bore therein

concentric with the longitudinal axes of said sections, the threads of said bores being of opposite hand, a double-ended screw in threaded engagement with said threaded bores so that when the screw is rotated in opposite directions the transfer bar sections are displaced axially toward and away from each other, said spacer and screw having radially registering openings therein for the reception of a tool for turning said screw to compress the spacer between the ends of adjacent transfer bar sections, said holes being shaped to permit final tightening of the screw while the spacer remains fixedly clamped between the ends of the transfer bar sections, means for locking said screw and transfer bar sections against relative rotation for retaining said spacer in said compressed condition, the outer diameter of said spacer being less than the outer diameter of the transfer bar sections and including a tubular shield circumferentially circumscribing the spacer, said shield having a radial opening therein adapted to register with the radial opening in said spacer, said shield having a length smaller than the spacer to permit rotation of the shield relative to the spacer to locate the opening therein in a preselected circumferential position, said shield having an outer diameter corresponding to the outer diameter of the transfer bar sections.

4,068,958

DIFFERENTIALLY BOLTED JOINT

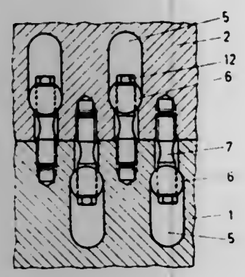
Wolfgang Beckershoff, Aarau, Switzerland, assignor to BBC, Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jan. 28, 1977, Ser. No. 763,320

Claims priority, application Switzerland, Apr. 6, 1976, 4281/76

Int. Cl.² F16B *5/02*

U.S. Cl. 403—8 **11 Claims**



1. A differentially threaded bolting arrangement for securing two machine parts together comprising at least one threaded bolt, the opposite end portions of said bolt being provided respectively with threads differing in pitch, a threaded hole in a first one of said machine parts into which the end of said bolt having the greater pitch is threadable, a throughbore provided in a second one of said machine parts in alignment with the threaded hole in said first machine part and a hollow area forming an extension of said throughbore, said hollow area being accessible for effecting rotation of said bolt, a nut disposed in said hollow area, said nut being movable axially into contact with an end face of said hollow area but restrained against rotation about its axis by engagement with lateral faces of said hollow area, and the opposite end of said bolt having the smaller pitch being threadable into said nut whereby said nut is moved axially upon rotation of said bolt into contact with said end face of said hollow area accompanied by a drawing together of said first and second machine parts.

4,068,959

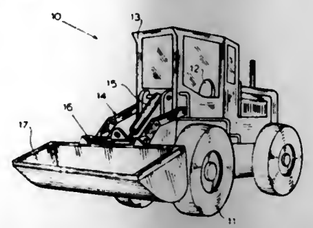
COUPLER APPARATUS

Bruce W. Pemberton, No. 314, Lake Howell Arms Apartments, Casselberry, Fla. 32707

Filed Nov. 26, 1976, Ser. No. 745,063

Int. Cl.² F16D *1/00*; F16L *17/00, 29/00*

U.S. Cl. 403—15 **10 Claims**



1. A coupling mechanism for front end loaders and the like, comprising in combination:

vehicle attaching portion having a frame, and a pair of fixed attachment engaging members said frame having two side frame members, each having at least one slot therein connected together by a transverse member and being movably connected to said frame;

a pair of movable locking members movably connected to said frame, each movable locking member extending through a slot in one side frame member for sliding therein;

a fluid cylinder connected between said frame and said movable locking members for moving said movable locking members from a first unlocked position to a second locked position;

attachment connecting portion, having a pair of upper brackets connectable to an attachment for a vehicle, and shaped to receive said fixed attachment engaging members of said vehicle attachable portion;

a pair of lower brackets connectable to an attachment for a vehicle and shaped to receive said movable locking members for locking said attachment to said vehicle upon actuation of said movable locking members when said attachment is supported by said fixed, attachment engaging members in said upper brackets;

at least one guide member connected to said movable locking member transverse member; and

at least one track attached to said frame and positioned to guide one said guide member for guiding the movement of said movable locking members in said slots in said side frame members.

4,068,960

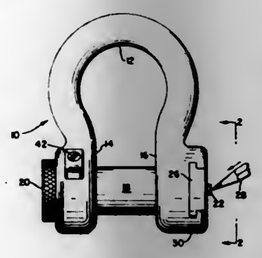
SAFETY LOCK FOR A REMOVABLE SHAFT

William E. Swager, P.O. Box 656, Fremont, Ind. 46737

Filed Sept. 17, 1976, Ser. No. 724,264

Int. Cl.² B25G *3/00*

U.S. Cl. 403—20 **7 Claims**



1. A shaft locking means comprising in combination, a shaft having an axially disposed spring biased pin projecting therefrom, a rim disposed along the edge of the shaft about the spring biased pin, a shaft support member having means to receive the shaft, and a slidable rim engaging member having a slot therein for receiving the spring biased pin, said slidable rim engaging member being disposed within the body portion of the support member.

4,068,961

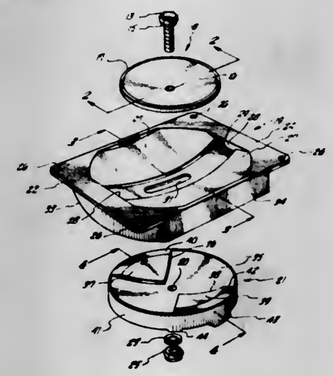
SWIVEL JOINT

John Steven Ebner, Boca Raton; Francis Charles Pizzeri, Miami Shores, and Charles Grimes Sprecher, III, Pembroke Pines, all of Fla., assignors to Milgo Electronic Corporation, Miami, Fla.

Filed Aug. 23, 1976, Ser. No. 716,379

Int. Cl.² F16B *7/10*

U.S. Cl. 403—55 **10 Claims**



1. A swivel joint for permitting limited movement in two orthogonal planes, comprising:

a swivel top having a recess therein, said recess having a surface of curvature defined by a first radius, an oblong aperture located adjacent said surface of curvature, its longer axis lying in a first orthogonal plane;

a swivel bottom, having a surface of curvature defined by a second radius, two riser segments on the second radius surface of curvature, and an aperture in said second radius surface of curvature; and

means for holding said swivel top and swivel bottom together in a nested slidable relationship.

4,068,962

CABLE OR ROPE CLAMP

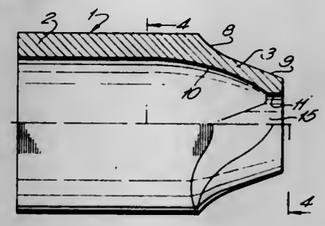
Cedric Gwilliam Birks, Leeds, England, assignor to CCL Systems Limited, Surbiton, England

Filed June 2, 1976, Ser. No. 692,142

Claims priority, application United Kingdom, June 10, 1975, 24807/75

Int. Cl.² F16G *11/02*

U.S. Cl. 403—212 **5 Claims**



1. A cable or rope clamp, comprising a metal sleeve or ferrule having a body portion of substantially oval cross-section and an end portion of substantially frusto-conical formation, said ferrule having a central longitudinal axis, said body portion, when viewed in transverse cross-section, having a long axis and a short axis extending lengthwise thereof, wherein the wall of said end portion, when viewed in longitudinal section along a longitudinal plane including said long axis, has an outer surface comprising a short concave part having a sharp junction with said body portion and leading directly into a long straight part inclined towards said central longitudinal axis of said ferrule.

4,068,963

MEANS ANCHORING A BUNDLE OF WIRES IN A SOCKET

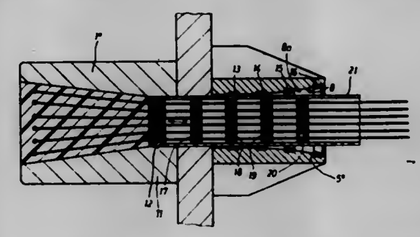
Antonio Brandestini, Kusnacht, Switzerland, assignor to Bureau BBR Ltd., Zurich, Switzerland

Filed Jan. 27, 1977, Ser. No. 763,093

Claims priority, application Switzerland, Feb. 9, 1976, 1546/76

Int. Cl.² B25G *3/34*

U.S. Cl. 403—268 **20 Claims**



1. An anchoring arrangement for anchoring a bundle of wires in an anchoring head, comprising:

an anchoring head through which extends the bundle of wires;

said bundle of wires departing from the anchoring head at an exit side theeof;

a support body provided at the exit side of said anchoring head and through which extend said bundle of wires;

said support body having a support surface equipped with friction-reducing means;

said support surface, viewed in longitudinal sectional view, outwardly widening in a substantially curved-shaped configuration.

4,068,964

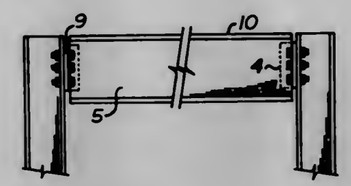
END PLATE CONNECTION UNIT FOR BEAMS

Robert J. Stoker, 951 Thistle Place, Warren, Ohio 44480

Filed Feb. 9, 1977, Ser. No. 767,129

Int. Cl.² B25G *3/34*

U.S. Cl. 403—272 **6 Claims**



1. An end plate shear connection for bolting a steel beam or the like to a structural shape, comprising a connection plate unit of T section with the head of the T perpendicular to the stem of the T, said unit adapted to be fixed to the web of a beam with the head in a vertical plane perpendicular to a vertical plane through the center line of the web, the head facing one end of the web and having bolt holes on opposite sides of the center line of the web for bolting the head to a structural shape, the stem of the T lying against the web and adapted to be

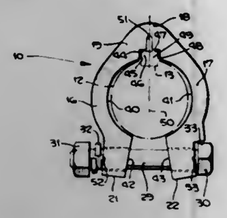
secured to the web by a weld penetrating the head and the adjacent portions of the stem and said one end of the web for fastening the web to the head and stem.

4,068,965

SHAFT COUPLING

Robert D. Lichti, Lakewood, Calif., assignor to CraneVeyor Corporation, South El Monte, Calif.

Filed Nov. 8, 1976, Ser. No. 739,468
Int. Cl.² F16D *1/04*
U.S. Cl. 403—313 **7 Claims**



1. A unitary coupling for non-rotatably connecting axially aligned shafts which have keyways in axial alignment and a key member for said keyways, said coupling comprising an integral single piece body of resilient material having opposite complementary half sections with inside arcuate surfaces adapted for engagement with laterally opposite sides of the shafts,

said half sections having adjacent captive ends and a hinge of said material joining said ends,

portions of said captive ends having a slot therebetween adjacent said hinge,

each of said captive ends having surfaces forming a corner with a space between said surfaces and said spaces together forming a keyway adjacent said slot,

complementary flanges on respective free ends of said half sections including fastening means,

said half sections having an initial relationship extending at an acute angle outwardly relative to each other from the hinge wherein portions of said arcuate surfaces are spaced at progressively varying distances from the respective sides of the shaft and portions of said surfaces at the corner are spaced at progressively varying distances from said key member to enable the body to be placed over and clear of the shafts before clamping,

said half sections being adapted to be drawn toward each other and toward said key member and the shaft progressively from the captive ends to the free ends by use of said fastening means whereby the arcuate surfaces engage the shafts and the surfaces at the corners engage the key member.

4,068,966

MOUNTING APPARATUS

Ben C. Johnson, New Braunfels, Tex., and Pieter Band, Blackburn, Australia, assignors to Thermon Manufacturing Company

Continuation of Ser. No. 562,024, March 26, 1975, abandoned. This application June 1, 1976, Ser. No. 691,244
Int. Cl.² F16L *3/08*
U.S. Cl. 403—397 **6 Claims**

1. A mounting apparatus for releasably securing an external member to a tubular member comprising;

an elongate tubular member;

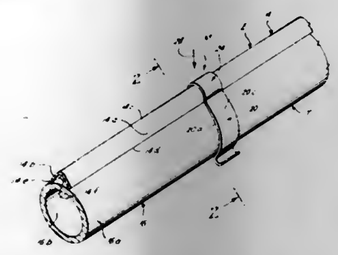
an elongate external member adapted to be releasably secured to and in engagement with said tubular member;

a clamping member having:

a resilient arcuate mounting portion adapted to engage said elongate external member having spaced apart, symmetrically formed mounting portion ends, the distance between said mounting portion ends being no less than the distance between any two points on said mounting portion forming a line parallel to a line joining said mounting portion ends; and,

two resilient, symmetrically formed curved clamping legs joining said mounting portion at said mounting portion ends wherein said mounting portion ends merge into and form an intergral part with said clamping legs;

said curved clamping legs positioned opposite each other and spaced apart a distance less than the diameter of said elongate tubular member prior to mounting said curved clamping legs for resiliently engaging said elongate tubular member;



said clamping legs terminating at spaced apart, symmetrically formed, clamping leg ends having symmetrically formed, curved end projections on said clamping leg ends of said clamping legs to facilitate mounting on said elongate tubular member and release therefrom;

the distance between said mounting portion ends being less than the maximum distance between said curved clamping legs; and,

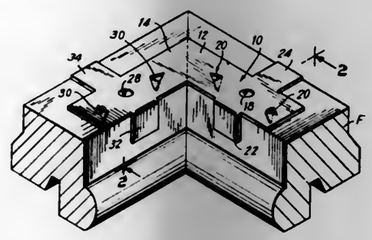
said mounting portion releasably securing said elongate external member to said elongate tubular member along the length of said external member and said tubular member with said elongate external member in longitudinal engagement with said elongate tubular member.

4,068,967

CORNER BRACKET FOR FRAMES

Marvin Hoodis, 14 Riviera Drive, Smithtown, N.Y. 11787

Filed Oct. 27, 1976, Ser. No. 735,999
Int. Cl.² B25G *3/36*
U.S. Cl. 403—402 **15 Claims**



1. A bracket for connecting the side sections of an annular frame, said bracket comprising:

a. a substantially L-shaped body defined by first and second legs;

b. connecting means integral with said legs for permitting said body to be secured to a portion of the frame; and

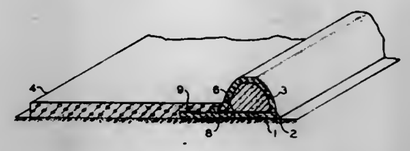
c. at least two spacedly opposed tab means integral with each said leg along opposite side edges thereof, at least a portion of one of said tab means integral with each said leg being in planes that are perpendicular to each other and parallel to the side edges of said legs with the other of said tab means integral with each said leg being co-planar with said respective leg whereby said portions of said one tab means are adapted to retentively engage the side sections of the frame on the inside or outside surface thereof.

4,068,968

ROADWAY BARRIER STRUCTURE AND METHOD OF MAKING

Duane W. Gagle, and Homer L. Draper, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 16, 1976, Ser. No. 706,030
Int. Cl.² E01C *11/22*
U.S. Cl. 404—7 **25 Claims**



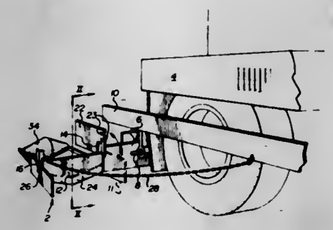
1. A roadway structure comprising a base course, a porous fabric at least a portion of which rests upon said base course, a traffic-bearing course resting upon at least a portion of the portion of said porous fabric which rests upon said base course, a barrier structure resting upon and bonded to at least a portion of the portion of said porous fabric which rests upon said base course and extends beyond said traffic-bearing course.

4,068,969

GUTTER ATTACHMENT FOR ASPHALT SPREADER

Roy Beach, and Ivan Beach, both of 1708 - 6th Avenue East, Owen Sound, Ontario, Canada

Filed May 27, 1977, Ser. No. 801,041
Int. Cl.² E01C *11/28*
U.S. Cl. 404—98 **12 Claims**



1. An attachment for one side of an asphalt paving machine, the paving machine having draw arms, a screw auger and a screed, to permit the laying of a gutter adjacent to and integral with a roadway surface being simultaneously laid, the attachment comprising:

a. a flat extension plate for vertical orientation, the plate having top and bottom and opposite sides, and supports secured to each side thereof;

b. means associated with one of the supports to releasably secure the plate in vertical orientation parallel to and aligned with the screed;

c. a rearwardly curved base secured to and extending from side to side along the bottom of the extension plate to conform to the desired cross-sectional profile shape of the gutter, the bottom of the portion of the base nearest the screed, when the attachment is secured in position to the machine, being more or less flush with the bottom of the screed;

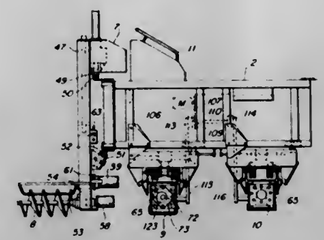
d. an end gate secured to the outer support to ensure proper width and edging of asphalt gutter.

4,068,970

CONCRETE FINISHING MACHINES

Murray A. Rowe, Canton, S. Dak., assignor to CMI Corporation, Oklahoma City, Okla.

Filed May 3, 1976, Ser. No. 682,522
Int. Cl.² E01C *19/22*
U.S. Cl. 404—120 **9 Claims**



1. A concrete finishing machine comprising

a. an elongated supporting frame,

b. means mounted on said frame for moving said frame along a highway in a direction transverse to the length of said frame,

c. supporting means mounted on said frame for movement longitudinally thereof,

d. means mounted on said frame for reciprocating said supporting means longitudinally of said frame,

e. an elongated conveyor screw

1. mounted on and carried by said supporting means for movement therewith longitudinally of said frame in a direction transverse to the length of said screw, and

2. projecting generally horizontally from one longitudinal side of said frame for moving concrete away from said one side upon rotation of said screw,

f. means mounted on said supporting means for rotating said screw,

g. an elongated screed,

h. means mounting said screed on said frame in substantially directly underlying parallel relation thereto in position to engage concrete underlying said frame,

i. means on said supporting frame for longitudinally reciprocating said screed, and

j. means on said screed for vertically vibrating the latter,

k. said means mounted said screed comprising

1. two pairs of substantially horizontally extending parallel tracks mounted on respective end portions of said screed and disposed thereabove in substantially parallel relation to said screed,

2. two pairs of rollers,

3. each of rollers supportingly underlying a respective end of said tracks,

4. abutment means projecting outwardly from opposite lateral sides of each of said end portions of said screed, and

5. two pairs or other rollers mounted on and supported by said frame in depending relation thereto,

6. each of said rollers being operatively engaged with the upper surface of a respective one of said abutment means in position to hold said tracks down against said first mentioned rollers.

4,068,971

UNIVERSAL COIL CARRIER

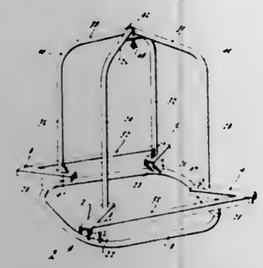
Walter W. McNeill, Toronto, Canada, assignor to Bundy Corporation, Detroit, Mich.

Filed Mar. 16, 1976, Ser. No. 667,291
Int. Cl.² B65H *75/20*
U.S. Cl. 294—67 R **14 Claims**

1. A coil carrier comprising:

a. a base having a central opening;

b. a coil receiving portion disposed above said base, said coil receiving portion having a lower generally vertical portion adapted to have coils of tubing or the like wrapped therearound and being of a size and shape to fit within the central opening of another similar carrier when the latter is disposed thereabove in nested relationship, and an upper generally horizontal portion; and



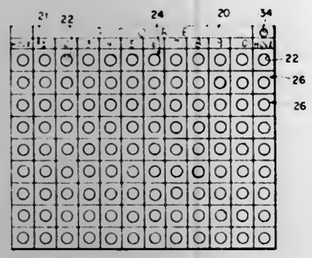
c. support means positioned on said carrier and extending radially inwardly to a position overlying said central opening, said support means being adapted to rest upon said upper portion of the coil receiving portion of another similar carrier when stacked on the latter.

4,068,972

GOLF PEG SCORE CARD

Clifford C. Stuart, 1505 Village Ave., Loveland, Colo. 80537

Filed Jan. 5, 1976, Ser. No. 635,978
Int. Cl.[2] G09B *19/22*; G08B *5/00*
U.S. Cl. 283—49 1 Claim



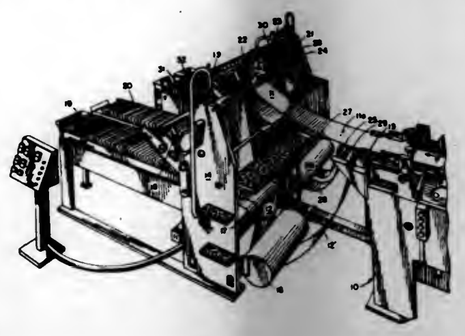
1. A golf scoring apparatus comprising:
a rigid planar substrate;
means defining an array of holes distributed across a major surface of said substrate in a pattern of rows and columns, there being a total of a predetermined number of vertical columns and nine horizontal rows of said holes;
a plurality of indicia distributed in one direction in a horizontal row adjacent to one end of said columns and individually disposed adjacent to respective different successive ones of all but two of said columns, said indicia individually representing successively different respective numbers in a series of numbers in order from the number "one" through a number that is two less than the total number of said columns;
a plurality of eighteen pegs manually securable removably in said holes, each individual different one of said pegs being marked to indicate a respective different one of the numerals from "one" through "eighteen", and said pegs being securable in said holes in selectively different relative orientations with respect to the orientation of the marking to indicate said numerals.

4,068,973

METHOD FOR MANUFACTURE OF BUSINESS FORMS

James B. Fulk, Saratoga, Calif., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 606,647, Aug. 21, 1975, abandoned. This application June 28, 1976, Ser. No. 700,138
Int. Cl.[2] B65H *41/00*
U.S. Cl. 270—52.5 5 Claims



1. In a method for manufacture of business forms, the steps of advancing at least three superposed webs along a generally horizontal processing path wherein said webs are simultaneously and continuously processed, said processing including at least across perforation, advancing only one of said webs further in said path to a two-wide folder and zig-zag folding said one web, moving one of the remaining webs laterally of said path to a second path parallel to the first mentioned path and introducing the same into said two-wide folder and zig-zag folding the same, moving the other of said remaining webs a distance laterally of the first mentioned path substantially further than the distance said one of the remaining webs was moved laterally into a third path parallel with said first mentioned path and then folding said other of said remaining webs in a second folder separate from said two wide folder, said folders being generally aligned in a direction transverse of said first mentioned path whereby at least three stacks of zig-zag folded webs are presented in side-by-side relation along a common front for takeaway.

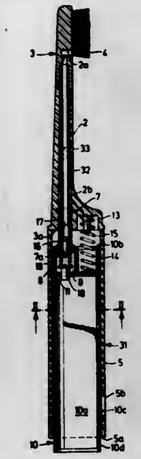
4,068,974

FOUNTAIN TOOTHBRUSH HAVING BRISTLE CARRIER EASILY PRODUCIBLE BY INJECTION MOLDING

Walter Meyer, and Anton Bara, both of Triengen, Switzerland, assignors to Trisa Bursteafabrik AG Triengen, Triengen, Switzerland

Filed July 13, 1976, Ser. No. 704,939
Claims priority, application Switzerland, June 8, 1976, 7184/76
Int. Cl.[2] A46B *11/00*
U.S. Cl. 401—150 6 Claims

1. A fountain toothbrush comprising a bristle carrier, a set of bristles on said carrier near one end thereof, a rigid handle containing a reservoir for liquid or pasty dentifrice, a duct leading form the reservoir through the bristle carrier to the set of bristles, actuating means facing toward the reservoir and comprising a spring member which urges the reservoir in a direction out of the handle, and a piston which is borne by the bristle carrier at its end facing away from the bristles, and being firmly connected thereto, and which has a passage being connected to said duct and to the interior of said reservoir; and a cylinder sleeve part being provided on said reservoir into which said piston protrudes, being displaceable and sealingly guided in said sleeve part in unactuated, or in an actuated position, whereby, when the piston is pushed into the sleeve part in the direction towards the reservoir, dentifrice is conveyed through said piston passage and said duct onto the bristles, and wherein the reservoir is inserted axially displaceably into the handle so that it protrudes with its outer end out of the handle, the latter being open at its end away from the bristle carrier, and wherein the reservoir can be displaced into the handle for conveying dentifrice onto the bristles, said reservoir having an opening connecting the interior of the reservoir with the interior of said sleeve part, and wherein said



piston carries, at its end facing toward said reservoir, a sealing element being permanently in sealing engagement with the inner wall of said sleeve part; said piston further comprising, housed in the passage therethrough, a valve body which is displaceable relative to the piston and containing means for obturating said opening toward the end of each stroke of the piston into said sleeve part, and freeing said opening again when the piston and the sleeve part are displaced away from one another.

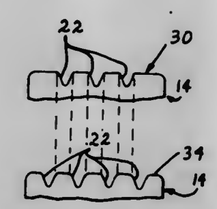
allow the discharge of the fluid from the free vortex cavity.

4,068,976

CUTTING INSERT CONFIGURATION

Ernest J. Friedline, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed June 29, 1976, Ser. No. 700,877
Int. Cl.[2] B26D *1/00*
U.S. Cl. 407—114 5 Claims



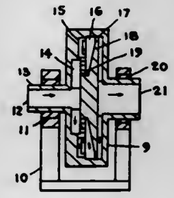
1. An even sided polygonal cutting insert formed of a hard wear resistant material and comprising a body having substantially parallel polygonal faces connected by a peripheral wall which forms cutting edges at the juncture thereof with at least one of said faces, the peripheral wall having notches formed therein extending transversely to said faces and interrupting the cutting edge in regions uniformly spaced therealong and having n notches interrupting a pair of cutting edges on one face and n plus m notches interrupting another pair of cutting edges on said one face, the notches interrupting said pair of cutting edges on said one face being staggered relative to the notches interrupting said another pair when said edges are viewed in superposed relation.

4,068,975

FLUID PRESSURIZER

Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042

Continuation-in-part of Ser. No. 568,895, April 17, 1975, Pat. No. 4,003,673, and a continuation-in-part of Ser. No. 636,310, Nov. 18, 1975, Pat. No. 4,012,164. This application Dec. 27, 1976, Ser. No. 754,734
Int. Cl.[2] F01D *1/18*
U.S. Cl. 415—80 2 Claims



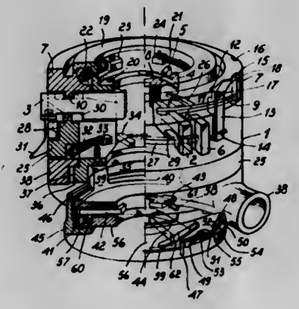
1. A fluid pressurizer comprising:
a. a shaft mounted for rotation;
b. a rotor mounted on said shaft to rotate therewith, said rotor being provided with an entry for a fluid to be pressurized, said entry communicating with a pressurizing cavity extending outwardly from the rotor center, said pressurizing cavity communicating with a set of feeder nozzles for passing a fluid forwardly in the direction of rotation into a free vortex cavity of circular configuration and transverse to the rotor axis, said free vortex cavity communicating near its periphery with exit openings to

4,068,977

TAPPING HEAD

Attilio Rossetti, Via Verdi, 2, San Benedetto Po (Mantova), Italy

Filed July 22, 1976, Ser. No. 707,784
Claims priority, application Italy, July 28, 1975, 18109/75
Int. Cl.[2] B23G *1/52, 5/12*
U.S. Cl. 408—177 1 Claim



1. A tapping head having at least two groups of indexable chasers of different pitches, arranged over a circumferential array and radially extending thereto, comprising a block in the form of a hollow cylinder block, radial grooves in said cylinder block for slidably receiving therein said chasers, the chasers of a first of said groups having each a groove on a side thereof facing one end of said cylinder block and the chasers of a second of said groups having each a second groove on an opposite side thereof facing a first ring nut coaxially arranged

near said one end of said hollow cylinder block and circumferentially slidable therein, said first ring nut having cam means in the form of an arcuated rib projecting from a surface thereof facing said side of the chasers of said first group thereof and engaging said grooves thereof to radially shift said first group chasers during rotation of said first ring nut, said first ring nut having transverse indexing notches on an outside peripheral surface thereof for positioning said first ring nut in operative positions thereof defined by said notches and first locking means on said cylinder block, for locking said first ring nut in a selected operative position, said first locking means comprising a first click member hinged on said cylinder block and first spring means urging said first click member in selective engagement with one of said first notches when the selected first notch is brought in the reach of said first click member during indexing of said first ring nut and a first threaded adjustment dowel for exact angular positioning of said first ring nut, a shaped cover ring superposed on said first ring nut independently thereof and fixed on said cylinder block, said shaped cover ring and said first ring nut defining an arcuated cavity therebetween, spring means within said arcuated cavity and having one end thereof rigid with said first ring nut an another end thereof rigid with said cover ring to urge said first ring nut in a rest position thereof, a second ring nut concentric with said hollow cylinder block and arranged slidably thereon remote from said first ring nut, said second ring nut having second cam means in the form of an arcuated rib projecting from a surface thereof facing said opposite side of the second group chasers and engaging said second grooves thereof to radially shift said second group chasers during rotation of said second ring nut, said second ring nut having second transverse indexing notches on an outside peripheral surface thereof for positioning said second ring nut in operative position thereof defined by said second notches and second locking means on said cylinder block remote from said first locking means for locking said second ring nut in a selected operative position thereof, said second locking means comprising a second spring biased click member hinged on said cylinder block and urged in selective engagement with one of said second notches when the selected second notch is brought in the reach of said second click member during indexing of said second ring nut, a circumferential recess at the inside periphery of said second ring nut member, a second spring means within said circumferential cavity and having one end thereof rigid with said second ring nut and the other end thereof rigid with said hollow cylinder block to urge said second ring nut member in a rest position thereof, self centering guide and support devices for the pipe to be worked while cutting the thread therein and devices for rotating the cylinder block to impart cutting motion to the chasers.

4,068,978

ASSOCIATING DRILL CHUCK KEYS WITH DRILL

J. Farny Brock, 11531 Samoline Ave., Downey, Calif. 90241

Filed Aug. 20, 1976, Ser. No. 716,116
Int. Cl.² B23B *39/00*; B25B *13/44*; B23Q *11/00*
U.S. Cl. 408—241 R **10 Claims**

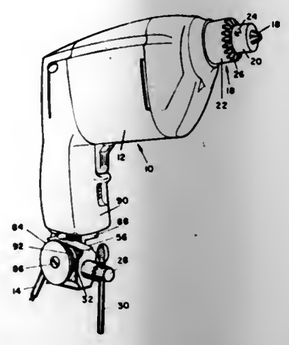
1. For an electric drill of the kind having a chuck whose relatively moving parts are rotatable by a key, the key including a pin insertable into a first part of the chuck and a gear whose teeth mesh with teeth on a second part of said chuck when the pin is inserted to the first part of said chuck;

an improved key and key attachment assembly comprising a key having a shank ending at one end in a pin and a gear;

fastening means for clamping the key to said first part of a drill chuck with its pin in the first part of the chuck and with its teeth in mesh with the teeth of the chuck while permitting simultaneously rotation of the key and said second part of the chuck;

said clamping means comprising a pair of spaced resilient arms extending in like direction on opposite sides of said pin and gear;

said arms being biased toward one another to a position in which their spacing is less than the dimension across said first part of the chuck; and



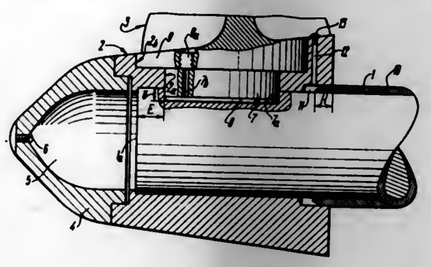
securing means for securing said arms to the key while permitting rotation of the gear relative to said arms.

4,068,979

MARINE PROPULSIVE DEVICE

Nikolai Sergeevich Vysokorodov, prospekt Stachek, 75, kv. 169, Leningrad, U.S.S.R.

Filed Sept. 22, 1975, Ser. No. 615,204
Claims priority, application U.S.S.R., July 26, 1973, 1950482
Int. Cl.² B63H *1/26*
U.S. Cl. 416—207 **2 Claims**



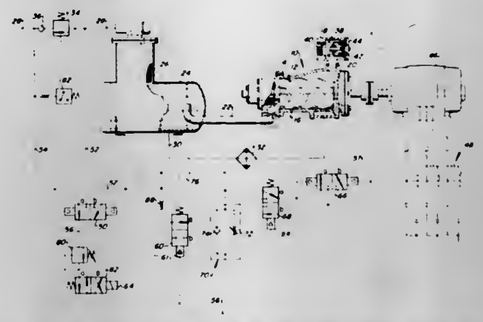
1. A marine propulsive device, comprising a propeller drive shaft; a screw propeller secured on said propeller drive shaft and having a hub with cylindrical radial holes, and blades with roots which are held in said cylindrical radial holes, said hub of said screw propeller is made as a sleeve fitted onto an extension of the propeller shaft in such a manner that a space is established between the end portion of said sleeve and the butt end of the propeller drive shaft, said space being communicated, through a two-way passage in the end portion of said sleeve, with the outside surface of the sleeve and being adapted for feeding a liquid under pressure directly into said space in the course of hub dismantling, each of said cylindrical radial holes in the hub of said screw propeller being open-ended, and sockets coaxial with said cylindrical radial holes are provided in the propeller drive shaft for receiving and holding the end of the propeller blade roots, wherein said propeller drive shaft includes a bushing, a cylindrical boring coaxial with the propeller drive shaft is made in the propeller hub end facing said bushing; said hub is adapted to fit onto said bushing so as to define an annular space therebetween, said annular space communicating with the outside surface of said hub through a two-way passage provided in said hub.

4,068,980

COMPRESSOR STARTUP CONTROL

Gary J. Fine; Michael G. Herschler, and John C. Shoop, all of Quincy, Ill., assignors to Gardner-Denver Company, Dallas, Tex.

Filed Oct. 1, 1976, Ser. No. 728,703
Int. Cl.² F04B *49/02*
U.S. Cl. 417—282 **7 Claims**



1. In a control system for a gas compressor including a positive displacement gas compressor, a motor drivably connected to said compressor, an inlet throttling valve operable to be open to admit inlet gas to said compressor upon commencement of starting of said compressor and including a pressure fluid actuator for closing said throttling valve, compressed gas receiver means connected to said compressor, a compressed gas service conduit connected to said receiver means for conducting compressed gas from said receiver means, and a check valve interposed in said service conduit and operable to prevent the back flow of compressed gas from said service conduit to said receiver means, the improvement characterized by:

first conduit means in communication with said receiver means for conducting a pressure fluid signal to said actuator to close said throttling valve in response to increasing pressure in said receiver means upon starting said compressor;

a normally open control valve interposed in said first conduit means, said control valve being pressure fluid actuated to interrupt said pressure fluid signal to said throttling valve,

a pressure fluid timer in communication with said first conduit means for receiving a pressure fluid signal therefrom and for actuating said control valve to interrupt said pressure fluid signal to said actuator at the expiration of a predetermined time period to allow said throttling valve to reopen;

second conduit means in communication with said service conduit downstream of said check valve in regard to the normal flow of compressed gas; and,

a first shuttle valve connected to said first conduit means and said second conduit means and responsive to the greater of the pressure signals in said respective conduit means to conduct said greater pressure signal to said actuator for closing said inlet throttling valve.

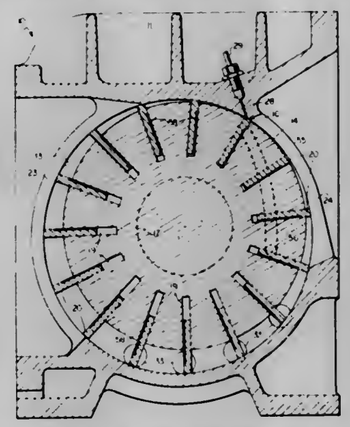
4,068,981

BLADE-TYPE ROTARY COMPRESSOR WITH FULL UNLOADING AND OIL SEALED INTERFACES

Zoltan A. Mandy, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Filed July 13, 1976, Ser. No. 704,886
Int. Cl.² F04B *49/02*; F01C *21/04*; F04C *27/00, 29/02*
U.S. Cl. 417—310 **2 Claims**

1. In a rotary compressor having a body with a cylindrical bore, end caps at opposite ends of said body, a rotor eccentrically mounted within said bore, said rotor substantially engaging said bore along a seal line, means for driving said rotor, said rotor having a plurality of radial grooves extending the entire length, a blade slidably mounted in each groove, said blades cooperating with said bore, said end caps and said rotor to define a plurality of compression pockets, said body having a fluid inlet opening on one side for introducing fluid to be compressed into said compression pockets and a discharge opening remote from said inlet opening for discharging compressed fluid from said body, means for driving said rotor in a direction from said inlet opening toward said discharge opening, the area between said inlet and discharge openings in the direction of rotation of said rotor defining the compression side of said compressor, the improvement comprising, each of said



end caps having an elongated arcuate channel extending throughout its length adjacent to the discharge opening of said body, and means for introducing oil under pressure greater than the pressure created within the compression pockets into an inlet end of said channel, said inlet end of said channel being located at the beginning of the discharge opening outwardly of the inner side edge surfaces of the blades and spaced inwardly from the periphery of said rotor, said channel curving outwardly along the discharge opening and terminating adjacent to the periphery of said rotor substantially at said seal line adjacent the end of the discharge opening.

4,068,982

CHARGE CONTROL VALVE AND PISTON ASSEMBLY FOR DIAPHRAGM PUMP

Vernon K. Quarve, Minneapolis, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Dec. 20, 1976, Ser. No. 752,419
Int. Cl.² F04B *9/10, 35/02*
U.S. Cl. 417—387 **10 Claims**

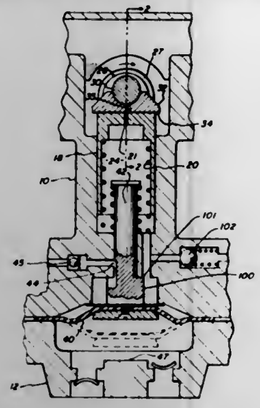
1. In a diaphragm pump of the type having a reciprocating piston for alternately pressurizing and relieving an oil-filled chamber having a diaphragm separating said chamber from a liquid pumping chamber, the improvement in piston reciprocating drive and oil volume control, comprising:

a. a rotatable crankshaft with an axially offset cam;

b. a bearing shoe fitted on said cam and having a bearing surface for contacting said piston, said bearing shoe having an oil groove along its surface fitted on said cam and having an oil port between said groove and said piston bearing surface; and

c. a piston oil port passing through said piston and opening

to said piston surface contacting said bearing surface, whereby said piston oil port and said bearing shoe oil port



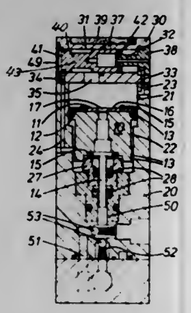
come into coincidence during each piston reciprocating stroke.

4,068,983

PISTON PUMPS DRIVEN BY FLUID-ACTUATED PISTON HAVING A CONSTANT FLUID FORCE AGAINST THE SMALL AREA SURFACE

Roy Balme, Altrincham, and John Francis Perkins, Newton, near Walsall, both of England, assignors to Charles S. Madan & Company Limited, Altrincham, England

Filed July 28, 1975, Ser. No. 599,405
Int. Cl.[2] F04B *17/00, 35/00*
U.S. Cl. 417—401 **7 Claims**



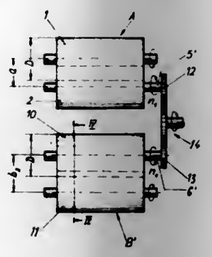
1. A reciprocating pump for liquids comprising a body, a piston slideably disposed within said body and having a large area face and a small area face, a shuttle valve casing associated with said pump body and having a motive air inlet and a motive air exhaust, a valve shuttle operable with respect to said motive air inlet and motive air exhaust having a large area face and a small area face disposed in said casing between said motive air inlet and motive air exhaust, and the large area face of said piston, said valve shuttle being slideable in said casing between a first position wherein it occludes said motive air inlet and a second position wherein said motive air inlet communicates with the large area face of said piston, signal air inlet means provided in said pump body and opening on the small area face of said piston, said signal air inlet means being positioned to continuously maintain signal air pressure on said small area face for all portions of said piston and at the same pressure as said motive air, first conduit means provided in said pump body and shuttle valve casing between said signal air inlet and the large area face of said shuttle valve for signal air flow to drive said valve shuttle into said first position, second conduit means provided in said pump body and shuttle valve casing between said signal air inlet and the small area face of said valve shuttle for signal air flow to drive said valve shuttle into said second position whereby said piston is driven in a pumping stroke by the pressure of said motive air against the large area face of said piston, hydraulic fluid receiving chamber means provided within said pump body and defining an inlet and outlet, and a pump ram for relative reciprocal movement within said chamber means responsive to movement of said piston, said pump ram expelling hydraulic fluid from said chamber means during a pumping stroke of said piston.

4,068,984

MULTI-STAGE SCREW-COMPRESSOR WITH DIFFERENT TOOTH PROFILES

Walter G. Spindler, Munich, Germany, assignor to H & H Licensing Corporation, Miami, Fla.

Filed Dec. 3, 1974, Ser. No. 529,115
Int. Cl.[2] F01C *1/16, 11/00*; F04C *17/12, 23/00*
U.S. Cl. 418—9 **7 Claims**



1. A screw compressor system for compressing gaseous media adapted to compress small suction intake volumes of media and provided with a series of pairs of meshing rotors comprising two compression stages characterized in that the rotors of each series have an outside diameter which is large with respect to the suction intake volume of gas, one of said rotors of each series being a male rotor having teeth disposed in grooves of a female rotor, the axes of rotation of the second pair of rotors being spaced farther apart from each other than the axes of rotation of the first pair of rotors, and the ratio of the diameter of the rotors at the peripheral edge of the rotor teeth to the diameter of the rotor at the base of the teeth for the pairs of rotors being so related to provide grooves which compensate for the difference in volume between the intake of fluid to the first pair and the intake to the succeeding pair of rotors and wherein the rotors of the two compressor stages have essentially the same outside diameter, the ratio of the outside diameter to the dedendum diameter of the rotors in the second stage is smaller than the ratio of the outside diameter to the dedendum diameter of the rotors in the first stage and characterized in that the tooth contours of the rotors in the second stage are so designed that the ratio of tooth width of the female rotor at its narrowest point to the tooth groove width at its widest point is at least 1.0.

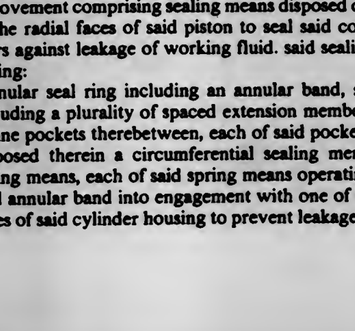
4,068,985

ROTARY ENGINE OR PUMP CONSTRUCTION

John S. Baer, Schooner Head, Bar Harbor, Maine 04609

Filed Apr. 6, 1976, Ser. No. 674,141
Int. Cl.[2] F04C *1/00*
U.S. Cl. 418—36 **55 Claims**

1. A rotary engine construction comprising:
a housing providing a cylindrical cavity within and defined by cavity walls,
a drive shaft extending coaxially through said cylindrical cavity supported by the housing on the axis of the cavity in suitable bearings permitting rotation thereof,
an even number of imperforate movable walls extending at least between said shaft and said cavity wall such that alternate movable walls are mechanically connected to move together in a first assembly and intermediate movable walls are mechanically connected to move together in a second assembly,
sealing structures on said first and second assemblies such that the spaces between the respective movable walls form energy chambers which are mutually isolated from one another,
separate drive coupling means respectively between points on each of said first and second assemblies spaced radially outwardly from the shaft and an associated rigid radial extension from the shaft outside the energy chambers, each respective coupling means including means permitting oscillatory movement of the respective assembly relative to said rigid radial extension and timing means



associated with each of the drive coupling means to assure a predetermined phasing in the movement of the movable walls relative to one another such that an integral number of oscillatory cycles occurs each full revolution of each movable wall, whereby each said coupling means is arranged to accommodate out-of-phase movements of said movable walls so that said oscillatory movement of said walls does not interfere with transmission of rotational movement to said shaft and energy from the walls is transmitted directly to the shaft,
inlet port means through the housing positioned in a wall of said cylindrical cavity to permit fluid to flow into the successive energy chambers as the walls move apart, and
outlet port means through the housing positioned in a wall of said cylindrical cavity, to permit fluid to be expelled from the successive energy chambers as the walls close together.

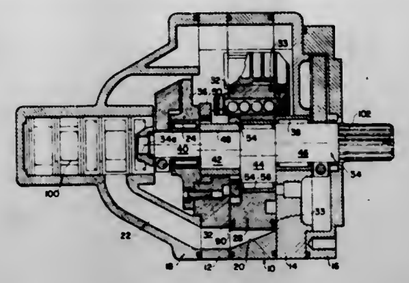
4,068,986

SEALING MEANS FOR RADIAL FACES OF PISTON IN ORBITAL PISTON DEVICE

Vukasin Todorovic, 220 Littleton Road, Parsippany, N.J. 07054

Filed Feb. 25, 1977, Ser. No. 772,125
Int. Cl.[2] F01C *1/02*; F02B *53/00*; F01C *19/08*
U.S. Cl. 418—61 R **7 Claims**

1. In a motor, engine, or pump having a piston mounted for rotation about an axis within a cylinder housing, said housing including radial faces and a plurality of combustion chambers, the improvement comprising sealing means disposed on at least one of the radial faces of said piston to seal said combustion chambers against leakage of working fluid. said sealing means comprising:
an annular seal ring including an annular band, said band including a plurality of spaced extension members which define pockets therebetween, each of said pockets having disposed therein a circumferential sealing member and spring means, each of said spring means operating to bias said annular band into engagement with one of the radial faces of said cylinder housing to prevent leakage of working fluid in a radial direction, and each of said circumferential sealing members preventing working fluid from



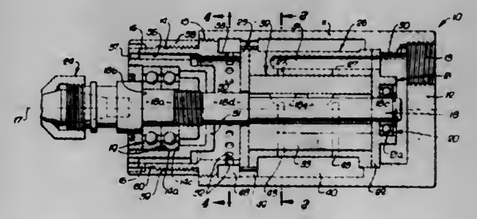
escaping from its corresponding pocket and leaking in a circumferential direction to an adjacent combustion chamber.

4,068,987

PNEUMATIC MOTOR WITH MUFFLED EXHAUST

Fuller A. Crooks, Huntington Beach, Calif., assignor to Elmer A. Selzer, Huntington Beach, Calif.

Filed July 23, 1976, Ser. No. 708,275
Int. Cl.[2] F01C *13/02, 21/00*
U.S. Cl. 418—181 **7 Claims**



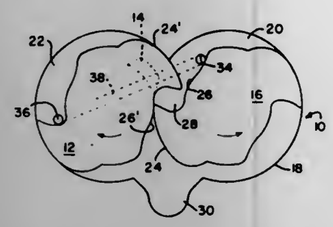
1. In a pneumatic motor that includes a vaned rotor, a rotor chamber having a gas inlet and gas outlet means, a housing and an axially extending rotor shaft to rotate in said chamber, structure to control and muffle the escape of exhaust gas comprising
a. a first exhaust chamber extending about the rotor chamber and into which pressurized exhaust gas escapes from the rotor chamber,
b. a second exhaust chamber spaced axially from the first exhaust chamber and extending about the shaft, and primary porting communicating between the first and second exhaust chambers, said primary porting including multiple flow restricting ports circularly spaced about said shaft and spaced radially outwardly therefrom,
c. a third exhaust chamber extending about the shaft and located radially inwardly of the second exxhaust chamber, there being radially inwardly extending porting spaced about the shaft and communicating between the second and third exhaust chambers to direct escaping exhaust directionally inwardly and in conflicting turbulent streams to dissipate energy contained in said streams,
d. there being additional exhaust gas escape porting extending generally axially from said third chamber and communicating with the exterior via radially directed outlets,
e. and a sleeve supported on the housing for rotation and progressive axial displacement in progressively closing relation with said outlets to selectively and variably control the escape of exhaust gas therefrom, said sleeve having threading connected with threading on the housing to provide said progressive axial displacement in response to said rotation of the sleeve relative to the housing.

4,068,988

POSITIVE-DISPLACEMENT, FLUID MACHINE

Paul Dale Webb, Tioga, Pa., and Larry Neil Willover, Painted Post, N.Y., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed July 30, 1976, Ser. No. 710,123
Int. Cl.² F04C *17/04, 29/00*
U.S. Cl. 418—189 **3 Claims**



1. A positive-displacement, fluid machine, such as a compressor, pump, expander, and the like, comprising:
a housing having end walls and arcuate side walls;
first means for admitting fluid into said housing;
second means for discharging fluid from said housing;
rotary piston means cyclically-movably disposed within said housing to rotate therewithin on axes normal to said end walls;
said rotary piston means having given surfaces formed thereon which cooperate with said walls of said housing to define a given chamber having a first volume, and to define another chamber having a maximum volume, upon said piston means effecting a first prescribed movement, and to define said another chamber as having a minimum volume, upon said piston means effecting a second prescribed movement, to enclose fluid admitted to said housing within said given and another chambers; and
means, formed in said end walls and spaced inwardly of said side walls, opening onto both said given and another chambers to cause said chambers to be in fluid communication; wherein
said piston means further has means occluding said means coincident with said another chamber achieving a volume intermediate said maximum and minimum volumes and retention of said first volume by said given chamber, to halt said fluid communication of said chambers; wherein
said piston means comprises a plurality of interengaging rotary pistons having mating lobes and recesses;
said lobes and recesses, together with said walls, cooperatively define therebetween a fluid pocket, adjacent and appendant to said another chamber, which, upon movement of said pistons, closes off from said another chamber and traps fluid therewithin; and
said occluding means halts said fluid communication of said chambers only following a closing off of said pocket.

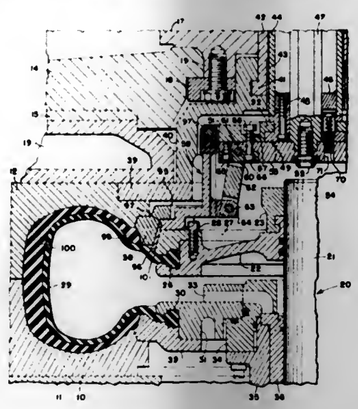
4,068,989

TIRE CURING PRESS

Armindo Cantarutti, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed Sept. 3, 1976, Ser. No. 720,192
Int. Cl.² B29H *5/02*
U.S. Cl. 425—38 **40 Claims**

1. A tire curing press of the type wherein a top movable mold section moves vertically away from and horizontally with respect to a stationary bottom mold section, an upstanding bladder center mechanism in said stationary mold section which includes a movable top plate, and an expandable and collapsible chuck means in said movable mold section cooperating with said top plate and operative when expanded to secure the cured tire shortly after the press begins to open, first to hold the tire while the tire is stripped from the mold sections



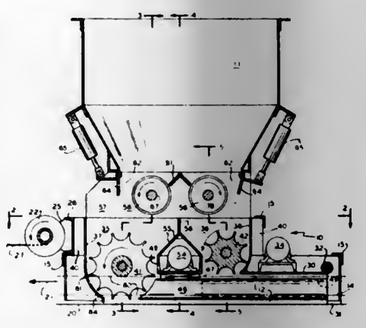
and the bladder is stripped from the tire, and then to remove the cured tire from the press with the movable mold section.

4,068,990

CONCRETE SLAB FORMING MACHINE

Arvids Kalns, 541 Central Ave., Albany, N.Y. 12206

Filed Mar. 26, 1976, Ser. No. 670,883
Int. Cl.² B28B *13/02*
U.S. Cl. 425—64 **11 Claims**



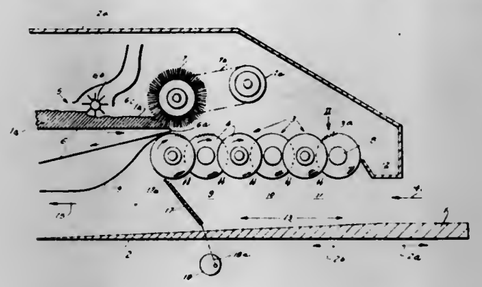
1. A concrete forming machine adapted for movement along a track over a flat surface comprising a carriage a portion of which coacts with the flat surface to form a mold cavity, a plurality of core members disposed longitudinally in the cavity in spaced parallel relation to each other, a hopper for a concrete mix mounted on the carriage, primary feed means in the carriage for delivering concrete mix from the hopper to an area adjacent the forward ends of the core members and for packing the mix above, below and between the members, said primary feed means having a portion thereof extending in front of the forward ends of and below the upper surfaces of the core members, secondary feed means in the carriage for delivering concrete mix from the hopper to an area above the core members at a point spaced rearwardly from the forward ends thereof and for packing the mix above and between the members, and power means on the carriage for advancing it along the track.

4,068,991

LAYER-FORMING APPARATUS ESPECIALLY FOR PARTICLE BOARD MATS

Werner Ufermann, Peazberg; Heinrich Axer, Nettetal-Hinsbeck, and Wolfgang Michels, Krefeld, all of Germany, assignors to G. Siempelkamp & Co., Krefeld, Germany

Filed Aug. 5, 1976, Ser. No. 711,836
Claims priority, application Germany, Aug. 8, 1975, 2535461
Int. Cl.² B29J *5/00*
U.S. Cl. 425—81 **10 Claims**



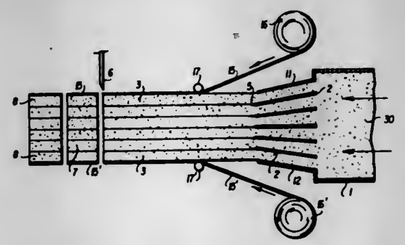
1. An apparatus for forming a particle-board mat, comprising:
a mat-forming surface displaceable in a given direction;
a spreading head disposed above said surface, said spreading head comprising an array of mutually parallel interdigitated disk rollers defining between them spaces of a width increasing from an upstream side of said array to a downstream side thereof;
means for feeding particulate material to said array at said upstream side thereof whereby said particulate material passes downwardly between said rollers in a fine-particle column, an intermediate-particle column and a coarse-particle column, onto said surface;
means forming an air sifter between said head and said surface for promoting the separation of fine particles and the deposition thereof on said surface as a respective zone of the mat;
a separating sieve in said air sifter proximal to the upstream side of said array; and means for periodically displacing said sieve.

4,068,992

APPARATUS FOR MANUFACTURING TILES

Arthur Buchel, Balzers, Liechtenstein, assignor to Interoptik Handelsanstalt, Liechtenstein

Continuation-in-part of Ser. No. 476,866, June 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 227,859, Feb. 22, 1972, abandoned. This application Apr. 29, 1976, Ser. No. 681,408
Claims priority, application France, Mar. 1, 1971, 71.06908
Int. Cl.² B28B *11/00, 11/12*
U.S. Cl. 425—91 **9 Claims**



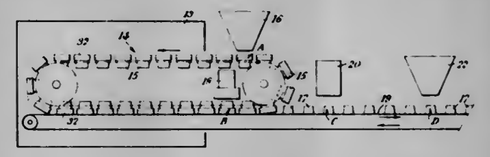
1. An apparatus for manufacturing tiles by extrusion of clay or a similar material, comprising a die having therein a number of spaced apart rigid blades for dividing the extruded material into a plurality of superposed layers, said blades being located upstream of the die outlet in planes which converge towards said die outlet, said blades being mounted to be pivotable about their outer ends; means attached to said blades for pivoting individually said blades about their outer ends; means at the side edges of the blades for ensuring an adjustable lateral feed of material to be extruded; means located substantially in the planes of said blades downstream of the outer ends thereof for projecting a powder product at right angles to the direction of extrusion into interstices between the layers; means for placing impermeable coatings on the outer surface of an assembly of extruded superposed layers; and means for cutting such an assembly, and impermeable coatings, into separate piles of superposed tiles.

4,068,993

APPARATUS FOR MOULDING CONFECTIONERY

Raymond Gwilym Dacey, Hemel Hempstead, and Richard Hugh Verity, Ampthill, both of England, assignors to Baker Perkins Holdings Limited, England

Filed Aug. 28, 1975, Ser. No. 608,685
Claims priority, application United Kingdom, Aug. 30, 1974, 38097/74
Int. Cl.² A23G *3/12*
U.S. Cl. 425—104 **6 Claims**



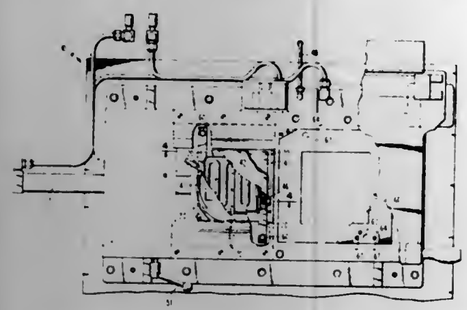
1. A confectionary moulding machine which comprises:
1. an endless mould conveyor which includes a pair of parallel chains and multiple moulds fixed to and straddling the chains; each mould having an upper surface, means forming cavities which have a predetermined depth, and projections which extend away from the upper surface in a direction opposite to the depth of the cavities, the projections extending a distance less than the depth of the cavities; said endless mould conveyor being mounted such that said moulds traverse in a continuous procession along an upper run in which the mould cavities face upwardly and a lower run in which the cavities face downwardly;
2. a depositor disposed above the upper run of the mould conveyor which is operative to deposit fillings of liquid confectionary into the moulds and thus into the cavities as the moulds move in succession along the upper run;
3. a band which is mounted so as to have a run which travels continuously beneath the lower run of the mould conveyor and in the same direction as the lower run of the mould conveyor;
4. a demoulding unit which is operative to discharge the fillings of the cavities of each mould in succession onto the band; and
5. the relative positioning of the lower run of the mould conveyor and the run of the band being such that the projections which extend downwardly from the moulds when the moulds are on the lower run of the mould conveyor contact the surface of the run of the band and constrain the band to move at the same speed as the mould conveyor.

4,068,994

APPARATUS FOR THE PRINTING OF CERAMIC GREEN SHEETS

Robert H. Cadwallader, Wappingers Falls; Yves Darves-Bornoz, La Grangeville; Angelo S. Gasparri, Stormville, all of N.Y., and Francis J. Racine, Pompano Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 11, 1976, Ser. No. 740,707
Int. Cl.[2] B29C *27/00*
U.S. Cl. 425—110 8 Claims



1. An apparatus for printing a paste pattern on a ceramic green sheet provided with a plurality of alignment apertures comprising:

a loading station;

a printing station;

a stencil mask at said printing station;

a carrier for supporting a ceramic green sheet;

a means to locate a ceramic green sheet in a given reference position on said carrier by engagement of said alignment apertures in said green sheet;

a means to move said carrier horizontally from said loading station to a position beneath said printing station, and vertically to a position to be printed underlying said stencil mask, and back to said loading station in the reverse movement order;

said means to move said carrier comprised of a horizontal slide for slidably supporting said carrier;

a first lower part and a second upper part of said carrier;

an inclined camming surface between said first and second parts of said carrier;

an abutment for engaging said second upper part of said carrier which prevents further horizontal movement of the upper part of said carrier but allows further movement of said lower part of said carrier;

a means to move said lower part of said carrier horizontally along with said slide;

said means to move said lower part of said carrier capable in operation of moving the entire carrier as a unit from said loading station to a position beneath said printing station until said upper part of said carrier contacts said abutment, and to continue movement of said lower part of said carrier in a horizontal direction thereby camming said upper part of said carrier upwardly into printing position relative to said stencil mask, and to return the carrier to said loading station by the reverse order of said movements.

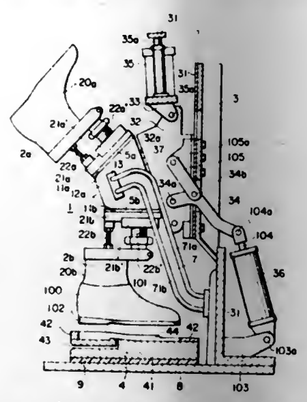
4,068,995

INJECTION MOLDING MACHINE FOR THE MANUFACTURE OF SHOES

Hideki Hayashi, 380, Nonaka, Kurume, Fukuoka, and Sadayoshi Ishii, 380, Tsubukubon, Kurume, Fukuoka, both of Japan

Filed May 26, 1976, Ser. No. 689,973
Int. Cl.[2] B29F *1/10*
U.S. Cl. 425—129 S 6 Claims

1. A shoe-injection molding machine for molding a sole and attaching same to a prefabricated instep, said machine comprising: a stationary base plate; at least one sole support assembly mounted on said base plate; a machine frame attached to said base plate; a slide vertically movable on and along said machine frame; a frusto-conical head rotatably mounted on said slide; a plurality of last supporting units adjustably mounted on side surfaces of said head; an insulating sheet between each of said last supporting units and said head; and means for cooling



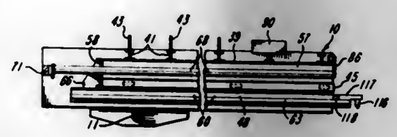
said head, said cooling means comprising a cooling liquid circulating system having coolant passages formed within said head, the main part of said passages being positioned in close proximity to said side surfaces on which said last supporting units are mounted, said system having inlet and outlet sockets positioned in close proximity to each other on a further side surface of said head, means operable to supply a cooling liquid to said inlet socket, and means operable to remove liquid from said outlet socket.

4,068,996

APPARATUS FOR MOLDING CONCRETE ARTICLES AND THE LIKE

Charles J. Heitzman, Honolulu, Hawaii, assignor to William J. Shannon, Miliani Town, Hawaii, a part interest

Filed Sept. 22, 1976, Ser. No. 725,634
Int. Cl.[2] B28B *21/90*
U.S. Cl. 425—253 19 Claims



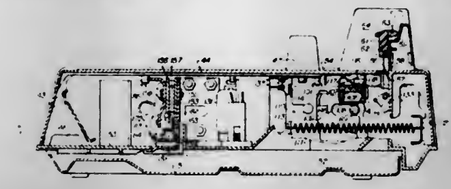
1. In apparatus for molding articles of self-hardening moldable material and including a mold box, means supporting said mold box for tilting movement between a generally vertical filling position and a generally horiziontal stripping position, means for supplying the moldable material to said mold box when in said filling position to form an article within said mold box, a mold box member carried by said mold box and movable relative to said mold box, and means forming a generally horizontal platform disposed for receiving a molded article from said mold box after said mold box is moved to said stripping position, the improvement comprising power operated stripping means associated with said platform and including a pulling member movable along said platform, means for releasably connecting said pulling member to said mold box member when said mold box is in said stripping position, and means for moving said pulling member along said platform for pulling said mold box member to effect stripping of a molded article from said mold box onto said platform.

4,068,997

CUTTING MEANS FOR BOOK BINDING MACHINE

George E. Elder, San Jose; Clark A. Van Horne, Santa Clara, and George C. Wu, San Jose, all of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Division of Ser. No. 625,949, Oct. 28, 1975, Pat. No. 3,994,055.
This application June 2, 1976, Ser. No. 692,200
Int. Cl.[2] B29C *17/08*
U.S. Cl. 425—305.1 6 Claims



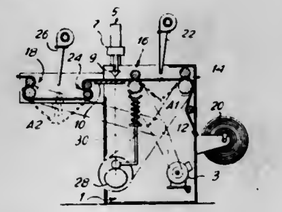
1. Cutting means for use with a plurality of thermoplastic members comprising locating means for said members, a knife formed of a thin narrow ribbon of metal, electrical means for heating said knife by resistance, a support for said knife, a frame, guide means on said frame for guiding movement of said support from a first position remote from said members to a second position at which said knife cuts through said members, and support actuating means to move said support from first position to a second position and back to first position, said electrical means having a first switch to pass current through said knife as said support leaves first position and a second switch to cut off current to said knife when said support has heated said knife sufficiently to cut said members as said support reaches second position, said guide means having a third position in a direction relative to said second position at a right angle to the direction of movement of said support from first to second position whereby said knife first forms heads on stubs of cut material of said members and then cools said heads.

4,068,998

APPARATUS FOR PROCESSING CONTINUOUSLY-FED PLASTICS MATERIAL

Enrico Attucci, and Fernando Attucci, both of Via Imprunetana 183, Mezzomonte, Impruneta, Florence, Italy (I-50023)

Filed Aug. 12, 1976, Ser. No. 713,918
Claims priority, application Italy, Aug. 21, 1975, 9525/75
Int. Cl.[2] B29C *17/04*
U.S. Cl. 425—317 12 Claims



1. In an apparatus for processing plastics material in strip-like form including either embossing, scoring or shearing plastics strip material.

means for continuously feeding the material, means defining a material feed path,

tool means for performing a processing operation on the material in a working zone of the apparatus,

means for cyclically operating the tool means,

said material feed path being arranged to permit a material storage loop to be formed in a portion of the path and to remove the material storage loop,

said portion being defined between the feed means and said working zone,

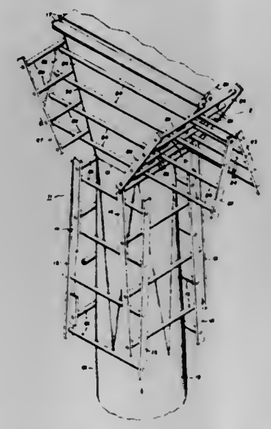
means enabling the material to be drawn from the loop at a speed higher than the feed speed of the continuous feed means to remove the material storage loop, and to be stretched in said portion of the path, and means for braking the material in the material feed path and for stopping the feed of the material in said working zone during operation of the tool means.

4,068,999

BLOWN TUBE COLLAPSE FRAME ASSEMBLY

Charles W. Dawson, Marblehead, Mass., assignor to General Electric Company, Hudson Falls, N.Y.

Continuation-in-part of Ser. No. 349,643, April 9, 1973, abandoned. This application Mar. 12, 1976, Ser. No. 666,508
Int. Cl.[2] B29C *15/00*
U.S. Cl. 425—392 6 Claims



1. In a blown tube apparatus in which an inflated circular cross section thermoplastic tube is collapsed from the circular section to a line or flat section, an improved collapsing frame assembly next preceding said flat section comprising

a. a frame assembly to surround said tube,

b. tube surface engaging means in said frame to engage said tube over an extended length thereof to converge said cross section to a substantially square cross section without significantly stretching or compressing said tube material,

c. a transition section on said frame assembly next adjacent said line section to collapse said square section to said line section

1. said transition section comprising two pairs of oppositely positioned and oppositely angled planar tube surface engaging means, the pairs of which are coincident with the parallel sides of said square section and each planar set of tube surface engaging means having an angle θ_1 between its plane and the longitudinal axis of the tube which are essentially equal so that points on said square section arrive at the line section along lines perpendicular thereto.

4,069,000

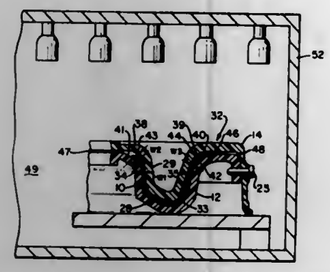
MOLD FOR SHAPING AND CURING REINFORCED PLASTIC MATERIAL

William J. Hampshire, Peninsula, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 12, 1976, Ser. No. 675,993
Int. Cl.[2] B29C *17/02*
U.S. Cl. 425—395 10 Claims

1. A mold for shaping and curing a fiber reinforced body of plastic material comprising a female mold member and a male mold member for supporting a preform of oriented plastic coated fibers therebetween, a transverse plane through said

female and male mold members, said female mold member having a mold cavity extending in one direction from said transverse plane, said male mold member having a core extending in said one direction from said transverse plane, said male mold member being movable toward said female mold member upon closing of said mold with said core movable into said cavity for urging said preform into a molding space defined by said core and the surface of said female mold member in said cavity, said female mold member having sloped lead-in surfaces at the edges of said cavity, said male mold member having recessed surfaces at the edges of said core, said lead-in surfaces and said recessed surfaces extending away from said transverse plane on an opposite side of said transverse plane from said mold cavity and said core, peripheral spaces enclosed by said lead-in surfaces and said recessed surfaces permitting substantially unrestricted movement of said preform from a position between said male mold member and said female mold member into said molding space during closing of said mold without distortion of said oriented plastic coated fibers and means to apply heat to said mold for curing said preform.



4,069,001

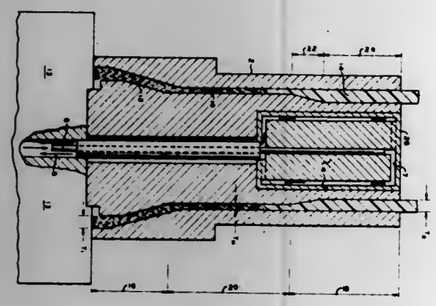
APPARATUS FOR FORMING A THICK-WALLED TUBULAR PRODUCT

Guy E. Carrow, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 301,899, Oct. 30, 1972, Pat. No. 3,980,746, which is a continuation-in-part of Ser. No. 76,100, Sept. 28, 1970, abandoned. This application July 22, 1976, Ser. No. 707,724

Int. Cl.² B29F *3/08*

U.S. Cl. 425—467 **4 Claims**



1. An extrusion die assembly for forming a thick-walled tubular product, including a mandrel and bushing, said bushing having an axis and an opening extending therethrough for coaxially receiving said mandrel and said mandrel having an axis and a plurality of fluid pathways formed therethrough for passing a cooling fluid through the mandrel for cooling extrudate passing from an associated dynamic extruder through an annulus formed between said mandrel and said bushing, the improvement comprising:

said annulus having first, middle and second portions, the first portion being located upstream with respect to the second portion, said middle portion of said annulus having a wall thickness in the range of 25 to 50 percent of the greatest wall thickness of said first portion of said annulus and said second portion of said annulus having a wall thickness greater than one-quarter inch and being greater than the wall thickness of said middle portion of said annulus, and

at least a portion of said middle portion of said annulus and of said second end portion of said annulus are adjacent the fluid pathways formed through said mandrel.

4,069,002

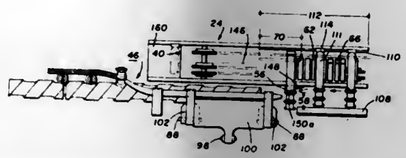
APPARATUS IMPROVEMENTS IN REMOVING ARTICLES FROM WHEEL BLOW MOLDING MACHINES

John F. Seelye, Thomaston, Conn., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 576,559, May 12, 1975, Pat. No. 4,041,124. This application July 22, 1976, Ser. No. 707,858

Int. Cl.² B29D *23/03*

U.S. Cl. 425—539 **15 Claims**



1. In a continuous blow molding apparatus comprising:

a wheel arranged to rotate in a substantially vertical plane;

plural molds carried with said wheel having outer sections substantially radially movable with respect to the wheel axis to open said molds;

means operatively associated with said molds operable to blow mold articles in said molds;

eject means releasing elongated still hot articles from the molds; and

a pocket conveyor transporting said released articles in a substantially horizontal orientation in pockets along a substantially horizontal plane away from said vertical plane;

the improvements in said apparatus comprising, in combination:

A. article turning means cooperating with said conveyor by receiving and turning the articles from said substantially horizontal orientation and plane into another plane including a screw rotating in synchronism with the pockets which engages specific portions of the articles in the thread portion of said screw.

4,069,003

INJECTION MOLDING APPARATUS

Ronald L. Cecchi, Brookfield, Ill., assignor to Dinamode Corporation, Villa Park, Ill., a part interest

Filed Apr. 21, 1975, Ser. No. 569,811

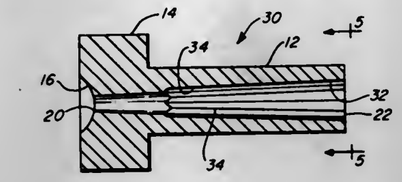
Int. Cl.² B29F *1/03*

U.S. Cl. 425—568 **1 Claim**

1. A sprue bushing for use with a mold in plastics injection molding operations wherein a sprue is integrally formed at each injection with the part being molded, said sprue bushing comprising:

a generally cylindrical body member having an inner end, an outer injection end, and a longitudinal frusto-conical bore extending therethrough between said ends, said bore being concentric with the central longitudinal axis of the body member and tapering outwardly toward said inner end, and

a plurality of straight elongate grooves formed in the wall of said bore extending longitudinally over at least 50% of the length thereof and converging toward said injection end,



adjacent sides of adjacent grooves converging to apices at a first radial distance from the central longitudinal axis of the bore, and sides of each groove converging to points at a radial distance from the central longitudinal axis substantially greater than said first radial distance,

said grooves thereby increasing the surface area of the bore to enhance heat transfer and producing a sprue which is readily released from the bushing with simple longitudinal and non-rotational relative movement therebetween.

4,069,004

DEVICE TO EMIT SHOCK WAVES, WITH ADJUSTABLE CAPACITY

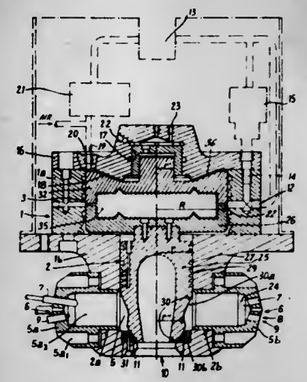
Leon Sayous, Pau, France, assignor to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed June 15, 1976, Ser. No. 696,351

Claims priority, application France, June 20, 1975, 75.19452

Int. Cl.² F23C *3/02*

U.S. Cl. 431—1 **2 Claims**



1. A shock-wave emitting device comprising a valve, a barrel with a seat for this valve, said barrel and valve being arranged coaxially, and forming between them an annular combustion chamber, which can be placed in communication with the outside atmosphere by axial movement of the valve, and which comprises means of admitting the fuel-oxidant mixture, and ignition means, the said valve comprising a differential piston, one side of which forms a mobile wall of a pressurized fluid chamber, and part of the other side of which forms a mobile wall of the combustion chamber, a fixed wall portion of the combustion chamber containing at least two regularly spaced apertures at its periphery, into which fit removable plugs, each of which comprises a cavity opening into the combustion chamber.

4,069,005

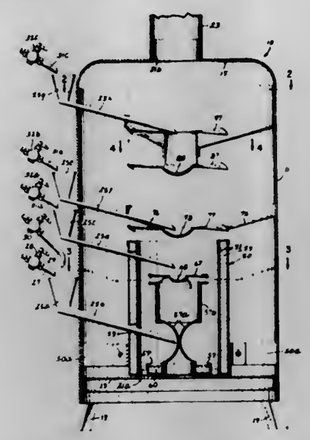
METHOD AND APPARATUS FOR PRODUCING HEAT

Narayanaswami Palani, 2500, IV Avenue, Annanagar, Madras-40, India

Continuation-in-part of Ser. No. 666,422, March 16, 1976. This application Apr. 29, 1976, Ser. No. 681,452

Int. Cl.² F23J *7/00*

U.S. Cl. 431—4 **14 Claims**



1. The heat generating process which comprises:

a. continuously introducing a carbonaceous fuel, oxygen, and water into a preheated first reaction zone, said preheated first reaction zone containing a first catalytic surface comprising a transition metal;

b. permitting the resulting fuel/water/oxygen mixture to form hot gaseous reaction products in the presence of said catalytic surface;

c. deflecting a portion of the sensible heat produced by said steps (a) and (b) back into said first reaction zone, while simultaneously passing a gas steam comprising said hot gaseous reaction products and unreacted oxygen upwardly out of said first reaction zone into a second reaction zone containing a second catalytic surface, whereby any unburned combustible reactants in said gas stream are burned to produce additional hot reaction products in said second reaction zone;

d. deflecting a portion of the sensible heat produced in said second reduction zone back toward said first and second reaction zones, whereby the elevated temperature of said first and second catalytic surfaces can be continuously maintained and the catalytic action in said first and second reaction zones can be continuously maintained, while simultaneously passing a flue gas stream out of said second reaction zone toward a flue gas opening; and

e. obtaining heat energy from said flue gas stream.

4,069,006

HOUSEHOLD AND BARBECUE TORCH LIGHTER

Crowell B. Jackson, 179 E. 79th St., New York, N.Y. 10021

Filed June 30, 1976, Ser. No. 701,093

Int. Cl.² A21D *2/00*

U.S. Cl. 431—344 **4 Claims**

1. A gas lighter comprising:

a lighter body having a reservoir portion for holding a supply of volatile liquid fuel,

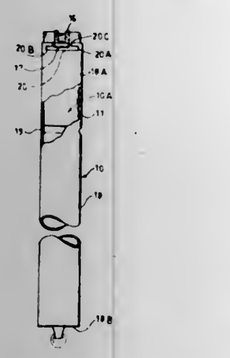
a normally closed valve for controlling the flow of gaseous fuel from said reservoir,

a sparking ignition means disposed in igniting relationship with said normally closed valve,

a valve actuator connected to said normally closed valve,

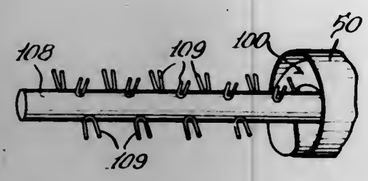
means for pivotally mounting said valve actuator on said lighter body,

said actuator having a portion extending beyond the periphery of said lighter body,
means for positively maintaining and locking said valve actuator in the open valve position for maintaining said lighter ignited upon ignition,
said latter means, including a member circumscribing said lighter body,
said circumscribing member being mounted for rotation relative to said lighter body, and
said circumscribing member having a slot formed therein for accommodating the extended portion of said valve actuator,



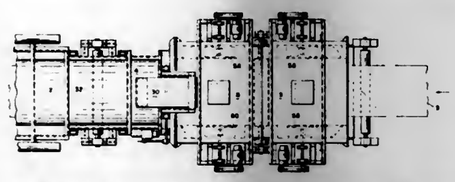
said slot having a lateral offset leg portion for receiving said extended portion in the opened valve position upon effecting a predetermined relative rotation between said lighter body and said circumscribing member so as to positively lock said valve actuator in the open valve position for maintaining ignition,
said lighter including a flame adjusting lever, and said circumscribing member includes a notched out portion for accommodating said adjusting lever, said notched out portion being disposed opposite said slot.

4,069,007
ROTARY RETORT FURNACE
Jonathan Smith, Glen Ellyn, Ill.; Robert C. Larko, and Eugene E. Booth, both of Meadville, Pa., assignors to Sunbeam Equipment Corporation, Meadville, Pa.
Division of Ser. No. 615,281, Sept. 22, 1975, Pat. No. 4,025,297.
This application Oct. 26, 1976, Ser. No. 735,641
Int. Cl.² F27D 1/16
U.S. Cl. 432—3 3 Claims



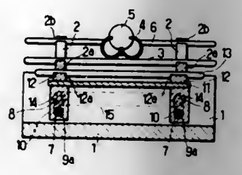
1. A method of forming an internal helical auger for a rotary retort furnace comprising, forming a number of toroids from a resilient material, making a radial cut in each of said toroids, slightly deforming each of said radially cut toroids to form a single flight of a helix, fastening one of the edges of each of said flights resulting from said radial cut to an opposite edge of another of said flights resulting from said radial cut to form a helix subassembly, said subassembly having a free edge of a flight resulting from said radial cut at each end, axially expanding while radially compressing said subassembly by screwing said subassembly onto a shaft having a number of guide pins at preselected intervals, inserting said subassembly and said shaft into a cylindrical retort member of a predetermined length, fastening one of said free ends of said subassembly to the one end of said retort, removing said shaft by unscrewing it from the subassembly while forcing the shaft and the subassembly axially into the retort member permitting and urging said resilient subassembly to radially expand into contact with the inside walls of said retort member, and upon removal of said shaft securing the other of said free ends of said subassembly to the other end of said retort.

4,069,008
METHOD AND APPARATUS FOR HEATING A WORKPIECE
William M. Bloom, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
Filed Mar. 19, 1976, Ser. No. 668,570
Int. Cl.² F27B 9/28
U.S. Cl. 432—8 14 Claims



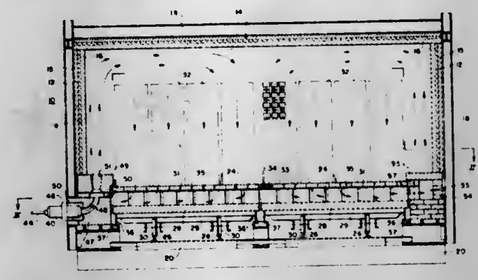
1. A method of heating a steel strip which comprises continuously passing uncoiled strip through the heating chamber of a jet recuperator and then through a main heating chamber where heat is provided by burning fuel, preheating the strip in said jet recuperator by taking waste gases from combustion of said fuel through outlet means offset transversely from the center of said recuperator and intermediate the length of said recuperator and forcing said waste gases through spaced holes against the top and bottom of said strip, and then heating the strip to the desired temperature in said main heating chamber.

4,069,009
APPARATUS FOR TRANSFERRING SEMICONDUCTOR WAFERS
Masao Yamawaki, Handa; Katsuo Aoki, Aichi; Yoshio Oka, Toyota; Takao Suzuki, Kariya; Osamu Ina, Okazaki, and Kinihiko Hara, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Oct. 8, 1976, Ser. No. 730,720
Claims priority, application Japan, Oct. 9, 1975, 50-122111
Int. Cl.² F27B 9/14
U.S. Cl. 432—122 10 Claims



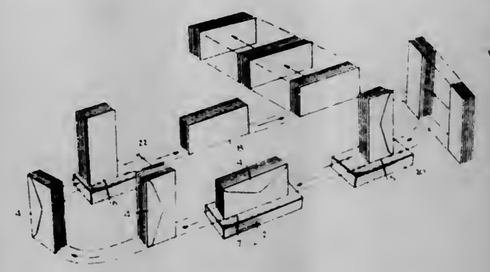
1. An apparatus for transferring semiconductor wafers comprising:
a boat on which semiconductor wafers are loaded;
a body having a pair of side walls;
a pair of first supporting bars, positioned in a fixed relationship with said body, for supporting said boat between said side walls;
a movable unit having a lateral width narrower than the distance between said first supporting bars;
an actuator, operatively coupled to said movable unit, for rotating said movable unit between said first supporting bars; and
a pair of second supporting bars, positioned on said movable unit, for uplifting and transferring said boat during when said second supporting bars are kept higher than said first supporting bars.

4,069,010
KILN FOR CERAMIC PRODUCTS
Gordon C. Fay, Pittsburgh, Pa., assignor to Hendryx Engineers Incorporated, Pittsburgh, Pa.
Filed June 16, 1976, Ser. No. 696,824
Int. Cl.² F27B 9/26, 9/08
U.S. Cl. 432—137 2 Claims



1. A kiln for firing ceramic ware comprising an enclosing structure having side walls and a roof, movable floor means for supporting the ware within the enclosing structure, said floor means being adapted to permit gas to flow downward therethrough and including means for exhausting gas laterally below the level of the floor, a flue extending longitudinally of the kiln along each side wall near the bottom thereof, each flue having a plurality of ports therein in position to receive gas exhausted from said floor means, whereby said gas flows longitudinally in said flue, a plurality of burners spaced apart along each side wall near the bottom thereof, said burners being the sole source of heat in the kiln, each burner including means for directing a stream of hot gas vertically upward in the kiln adjacent the side wall, a refractory block associated with each burner having a vertical Venturi passage therein positioned to receive the stream of hot gas from the burner, the burners and associated blocks being disposed in the flues at spaced intervals and each burner and its associated block being vertically spaced apart to permit gas in the flue to flow between them, and external means for supplying air to said burners in excess of the amount required for combustion to induce a high velocity stream of gas from each burner such that a major portion of the gas flowing in the adjacent flue is entrained in said stream to sustain a high velocity upward flow of a large volume of gas, said gas being redirected by the roof of the kiln to flow downward through the ware.

4,069,011
ENVELOPE OPENING MACHINE
William H. Gunther, Jr., Guilford, Conn., assignor to Thor Dahl, Inc., New York, N.Y.
Filed Apr. 27, 1976, Ser. No. 680,741
Int. Cl.² F24J 3/00
U.S. Cl. 432—230 38 Claims



1. A machine for applying heat to the edges of envelopes having sensitizing and developing agents thereon which comprises a frame, a conveyor means, first, second and third heaters mounted on said frame in proximity to the conveyor, envelope moving means mounted on the conveyor means to move envelopes relative to said heaters, said moving means adapted to move one edge of the envelope over said first heater to apply heat thereto, means on said frame for rotating the envelope 90° to rest a second edge of said envelope on said second heater, said moving means adapted to move said second edge over the second heater to apply heat thereto, means on said frame for rotating the envelopes 90° to rest a third edge of said envelope on said third heater, said moving means adapted to move the third edge over said third heater to apply heat to said third edge, whereby the heat applied will deteriorate the said edges.

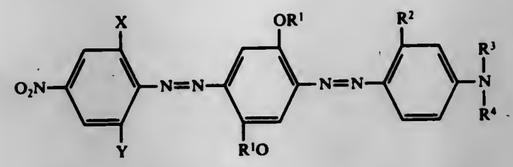
4,069,012

DYEING OF POLYESTER FABRIC WITH DISAZO DYE

Ernst Heinrich, Frankfurt am Main, and Joachim Ribka, Offenbach (Main)-Burgel, both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

Continuation of Ser. No. 667,220, March 15, 1976, abandoned, which is a continuation of Ser. No. 560,618, March 21, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 761,392
Claims priority, application Germany, Mar. 26, 1974, 2414477; Dec. 21, 1974, 2460775
Int. Cl.[2] C09B *27/00, 31/02*
U.S. Cl. 8—41 C 13 Claims

1. In the process of dyeing a polyester fabric with a dispersion of a water-insoluble dye, the improvement wherein said dye is:



in which
R^1, R^3 and R^4 can be the same or different lower alkyl or lower alkenyl,
R^2 is hydrogen, halogen, lower alkyl, lower alkoxy or lower alkenoxy,
X is hydrogen, chlorine, bromine, nitrile or nitro, and
Y is hydrogen, chlorine or bromine.

4,069,013

ANTI-DUSTING FORMULATIONS

Helmut Hett, Offenbach (Main), and Kurt Walser, Bergen-Enkheim, both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

Filed May 21, 1976, Ser. No. 688,579
Claims priority, application Germany, May 24, 1975, 2523096
Int. Cl.[2] C09B *67/00;* D06P *1/64*
U.S. Cl. 8—79 10 Claims

1. In a dyestuff formulation having added material dispersed in it to impart dusting resistance to the formulation when powdered, the improvement according to which the added material is a mixture of a mineral oil boiling in the range of from about 140° to about 310° C, and emulsifier having a polyethoxy hydrophile in an amount sufficient to disperse the oil.

10. A mixture of about 65 to about 95% by weight mineral oil boiling in the range of about 140° to about 310° C, with about 5 to about 35% by weight of an emulsifier having a polyethoxy hydrophile.

4,069,014

PROCESS AND APPARATUS FOR BLEACHING TEMPERATURE-SENSITIVE FIBERS

Enzo Pintar, Busto Arsizio, (Varese), Italy, assignor to Mezzera S.p.A., Milan, Italy

Filed June 23, 1976, Ser. No. 698,996
Claims priority, application Italy, Aug. 29, 1975, 26714/75
Int. Cl.[2] D06L *3/02*
U.S. Cl. 8—111 24 Claims

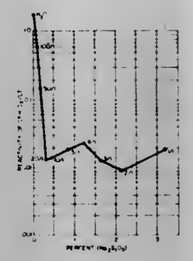
1. A process for bleaching temperature-sensitive fibres, said process comprising the steps of:
applying to said fibres a bleaching agent which bleaches the fibres slowly and releases heat,
adding to said fibres at least one substance which undergoes a chemical or physical change with the absorption of heat,
collecting the treated fibres into a large mass such that said added substance is distributed throughout the mass of fibres, and
leaving the fibres in contact with said bleaching agent and said added substance for an extended period during which said added substance undergoes a physical or chemical change and absorbs the heat released by said bleaching agent whereby at least to reduce the temperature rise of the mass of fibres during bleaching.

4,069,015

METHOD OF INHIBITING RUSTING OF SPONGE IRON

William A. Ahrendt, and David C. Meissner, both of Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Filed Sept. 19, 1975, Ser. No. 614,830
Int. Cl.[2] C23F *9/02*
U.S. Cl. 21—2.5 R 38 Claims



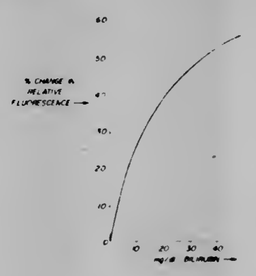
1. A method of inhibiting oxidation of sponge iron consisting of contacting said sponge iron with a solution consisting of an aqueous solution of alkali metal silicate.

4,069,016

ASSAY FOR BILIRUBIN

Tai-Wing Wu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 14, 1977, Ser. No. 759,530
Int. Cl.[2] G01N *31/22, 33/16*
U.S. Cl. 23—230 B 33 Claims



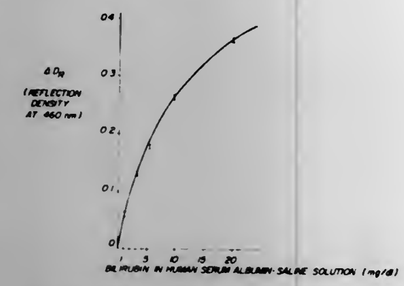
1. A method for the detection of bilirubin in an aqueous liquid sample which comprises
a. contacting together in a reagent zone said liquid sample and an interactive composition,
such interactive composition containing a bilirubin-active complex comprising a diffusible, bilirubin-displaceable, detectable ligand bound to a carrier which can also bind bilirubin, said carrier having a first order binding constant to bilirubin in excess of 10^7 and a first order binding constant to said detectable ligand which is in excess of 10^5 but less than the aforementioned binding constant to bilirubin,
whereby bilirubin displaces said detectable ligand from said interactive composition, and
b. selectively detecting said detectable ligand.

4,069,017

COLORIMETRIC ASSAY FOR BILIRUBIN

Tai-Wing Wu, Rochester, and Glen Marshall Dappen, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 14, 1977, Ser. No. 759,529
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 B 23 Claims



1. A colorimetric method for the detection of bilirubin in an aqueous liquid which comprises

a. contacting in a reagent zone said aqueous liquid and an interactive mordant composition for bilirubin, such interactive mordant composition having one or more binding sites for bilirubin and comprising a hydrophobic organic matrix and at least one charge-bearing cationic group,

whereby bilirubin is mordanted, said mordanted bilirubin exhibiting an absorption peak shifted at least about 10 nm. from that of free bilirubin and a molar extinction coefficient at least about 50 percent higher than that of free bilirubin, and

b. colorimetrically detecting said mordanted bilirubin.

4,069,018

EXPLOSIVE GAS MONITORING METHOD AND APPARATUS

John D. Karna, Renton; Gregory K. Brock, Kelso, and Daniel M. Shellhammer, Longview, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Sept. 28, 1976, Ser. No. 727,360
Int. Cl.[2] G08B *21/00*; G01N *33/00*
U.S. Cl. 23—232 E 32 Claims



1. A method of monitoring an atmosphere containing combustibles to provide an indication of the inflammability potential of the atmosphere in terms of LEL based on the level of combustibles in the atmosphere being monitored, said method comprising the steps of:

sampling the atmosphere to obtain samples thereof;

determining the combustible organic vapors content of the samples in terms of percent LEL based on the total carbon atom concentration of combustible organic vapors present in the samples;

determining if the combustible organic vapors content of the samples is above a predetermined percent LEL;

providing an indication when the combustible organic vapors content is above said predetermined percent LEL;

determining the carbon monoxide content of the samples in terms of percent LEL based on carbon monoxide present in the samples;

determining if the carbon monoxide content of the samples is above a predetermined percent LEL; and

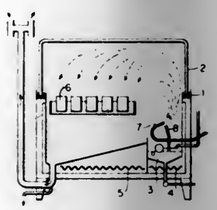
providing an indication when the carbon monoxide content is above said predetermined percent LEL.

4,069,019

SEAL STRUCTURE FOR TANK LID OF SPRAY CORROSION TESTER

Shigeru Suga, Yoyogi 5-20-2, Shibuya, Tokyo, Japan

Filed Sept. 16, 1976, Ser. No. 723,935
Int. Cl.[2] G01N *17/00*; B65D *53/06*; F16J *15/14*
U.S. Cl. 23—253 C 4 Claims



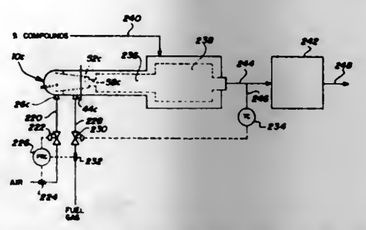
1. In a spray corrosion test apparatus comprising an open topped test tank and a lid having vertically depending sides to cover the top of said tank, said test tank having provided around the top edge of its vertical wall a horizontal upwardly open channel, said channel being adapted to receive the edge of the vertically depending sides of said lid, the improvement wherein the height of the outer vertical wall of the channel is higher than the inner vertical wall of said channel, said channel being filled with a flexible porous insert of a water absorbing material up to the level of the inner vertical wall of the channel.

4,069,020

PRODUCTION OF REDUCING GASES

Desmond H. Bond; George W. Taggart, both of Dallas, and Kurt S. Jaeger, Hurst, all of Tex., assignors to Ford, Bacon & Davis Texas Inc., Garland, Tex.

Division of Ser. No. 508,671, Sept. 23, 1974, Pat. No. 3,963,443.
This application Mar. 31, 1976, Ser. No. 672,409
Int. Cl.[2] C01B *17/02*; F23N *1/02*
U.S. Cl. 23—262 6 Claims



1. An apparatus for reducing gaseous compounds comprising:

a. elongated gas flow chamber having a first end which carries an inlet thereto and a second end which carries an outlet therefor;

b. a thermal reaction chamber communicating with said outlet of said second end of said elongated gas flow chamber and having its outlet spaced therefrom;

c. an air injection means for injecting air into said elongated gas flow chamber through said inlet thereof toward said outlet thereof, from points uniformly about the inner periphery of said elongated gas flow chamber;

d. gas nozzle means positioned adjacent said second end and around said elongated gas flow chamber and directed into said elongated gas flow chamber and toward said thermal reaction chamber, for injecting fuel gas therewithin;

e. a furnace chamber comprising a chamber with an inlet and an outlet, and having its inlet operatively communicating with said outlet of said thermal reaction chamber;

f. a mixing chamber operatively communicating with the outlet of said furnace chamber and having an inlet means for passing said gaseous compounds to be reduced therewithin, and an outlet; and,

g. a catalytic reactor containing a reducing catalyst and conduit means for passing a gas mixture from the outlet of said mixing chamber to said catalytic reactor, and means to withdraw reduced compounds from said catalytic reactor.

4,069,021

OXYGEN GENERATOR

Warren J. Schneider, Fort Lauderdale, Fla., assignor to Green Cross Solid State Oxygen, Inc., Dania, Fla.

Filed Jan. 17, 1977, Ser. No. 759,844
Int. Cl.[2] B01J *7/00*
U.S. Cl. 23—281 3 Claims

1. In an oxygen producing device including a canister with an exit opening and a sealing means covering said exit opening, an oxygen candle generating means in said canister, and an ignition device, the improvement comprising;

said ignition device connected to and sealed to said canister above said opening in said canister for igniting said oxygen candle generating means in the canister,

said ignition device includes a manifold with an inlet and outlet, a capsule filled with ignition material connected to and positioned within said manifold, and an ignition mechanism connected within said manifold, said ignition mechanism including a plunger rod arranged and movably connected to said manifold for opening said capsule and said sealing means,

said inlet, said capsule and said rod positioned over said exit opening,

said rod having a distal end positoned in said manifold and arranged for movement throughout said ignition material and said sealing means to transfer said ignition material through said exit opening into contact with said candle to ignite said candle,

said oxygen producing device includes an outer cover of non-metallic material, and fin means connected between said outer cover and said oxygen producing device, said outer cover having an outer surface,

said outer cover and said fins arranged and designed to provide a cool outer surface during the burn cycle of said candle,

said outer cover includes a plurality of openings and is spaced from said canister for the circulation of air for cooling purposes.

4,069,022

WATER-FREE LIQUID FUEL SLURRY

Grant W. Metzger, San Andreas, Calif., assignor to Carbonoyl Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 446,302, Feb. 27, 1974, Pat. No. 3,907,134. This application July 9, 1975, Ser. No. 594,393
The portion of the term of this patent subsequent to Sept. 23, 1992, has been disclaimed.
Int. Cl.[2] C10L *1/32*
U.S. Cl. 44—51 7 Claims

1. A substantially water-free, high solid content, stable and combustible fuel slurry comprising:

about 5 to about 50 weight percent of a solid particulate carbonaceous material, about 94 to about 49 weight percent of a liquid hydrocarbon fuel, a minor slurry suspension stabilizing amount of starch, and a non-aqueous slurry viscosity reducing amount of an anionic surfactant and being present in an amount sufficient to maintain said slurry at a viscosity below about 300 seconds Saybolt Universal when said slurry is at a temperature of about 175° F.

4,069,023

CARBOXYLATE ESTERS OF 1-AZA-3,7-DIOXABICYCLO[3.3.0] OCT-5-YL METHYL ALCOHOLS, THEIR PREPARATION AND USE AS ADDITIVES FOR OLEAGINOUS COMPOSITIONS

Stanley J. Brois, Wantage, England; Jack Ryer, East Brunswick, and Esther Winans, Colonia, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Division of Ser. No. 573,545, May 1, 1975, Pat. No. 4,017,406.
This application Dec. 20, 1976, Ser. No. 752,873
Int. Cl.[2] C10L *1/22*
U.S. Cl. 44—63 16 Claims

1. A petroleum fuel oil composition comprising a major amount of fuel oil and in the range of about 0.001 to 0.5 wt. % of an oil dispersible or soluble ester which is the ester reaction product of: (a) about 1 molar proportion of a mono or a dicarboxylic acid or anhydride, having an aliphatic hydrocarbyl chain of about 6 to about 300 carbon atoms esterified with the reaction product of (b) either about 1 or 2 molar proportions of an aldehyde, or one molar proportion of ketone and one molar proportion of aldehyde, reacted with about 1 molar proportion of tris(hydroxymethyl) aminomethane; said ester reaction product having a 1-aza-3,7-dioxabicyclo[3.3.0] octyl ring.

4,069,024

TWO-STAGE GASIFICATION SYSTEM

John Henry Fernandes, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 9, 1977, Ser. No. 794,777
Int. Cl.[2] C10J *3/08*
U.S. Cl. 48—197 R 13 Claims



1. A method of producing a fuel gas from a carbonaceous material which comprises the steps of:

a. providing an upright gasifier with an oxidation zone intermediate a preheating zone and a subjacent reducing zone,

b. introducing devolatilized carbonaceous material and limestone to said preheating zone of the gasifier,

c. oxidizing the carbonaceous material to form a gaseous product, a char containing carbon, and a molten slag,

d. reacting said gaseous product with steam and carbon from said char to form a hot reducing type synthesis gas,

e. providing a vertical shaft pyrolyzing furnace having a

"restricted throat" section intermediate a disengaging section and a subjacent reaction section,

f. introducing the hot synthesis gas from the bottom of the gasifier to the bottom portion of the pyrolyzing furnace in the reaction thereof,

g. introducing a charge of carbonaceous material and limestone to the top of the pyrolyzing furnace in the disengaging section thereof,

h. maintaining an upward flow of said hot synthesis gas through the pyrolyzing furnace in opposition to the descending flow of carbonaceous material and limestone whereby said carbonaceous material is heated and partially volatilized to permit the volatile constituents thereof to combine with the synthesis gas passing therethrough to increase the hydrocarbon content thereof before it is exhausted as a final product gas said restricted throat section being formed so as to cause the descending carbonaceous material to be slowed down at first, and then be propelled upward and outward thereby causing circulation of the carbonaceous material in the form of a spouting bed,

i. and transferring devolatilized carbonaceous material and limestone from the bottom of the pyrolyzing furnace to the gasifier as feedstock for the gasifier according to step (b).

4,069,025

BLAST IMPELLOR WHEELS

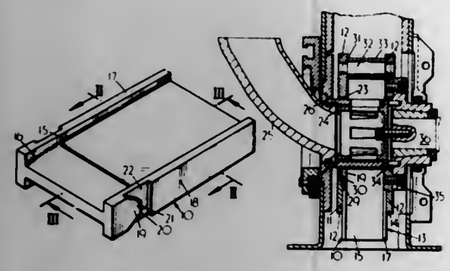
William Robertson Macmillan, Brooklands, England, assignor to Tilghman Wheelabrator Limited, Broadheath, England

Filed July 1, 1976, Ser. No. 701,924

Claims priority, application United Kingdom, Oct. 24, 1975, 43721/75

Int. Cl.² B24C *3/00*

U.S. Cl. 51—434 11 Claims



1. A blade for use in a blast impellor wheel, said blade being rectangular and having an I-configuration in transverse section, opposed ends, a pair of opposed faces each symmetrical about a longitudinal axis for use as an abrasive throwing face, and a pair of longitudinal side flanges, each of said side flanges being cut away adjacent one end of the blade to define in relief a protuberance of substantially triangular shape with a blunt nose pointing towards the other end of the blade such that upon engagement with a retaining ledge of a side plate of a blast impellor wheel, the cut away portion of each flange mitigating abrasive build-up therebetween.

4,069,026

FILTER MADE OF ELECTROSTATICALLY SPUN FIBRES

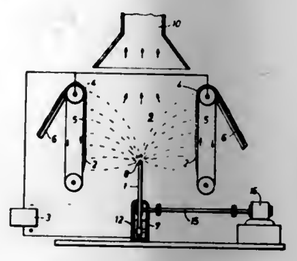
Walter Simm, Leverkusen; Claus Gösling, Opladen; Richard Bonart, Berlin, and Béla von Falkai, Gohr, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 155,189, June 21, 1971, abandoned. This application Nov. 15, 1973, Ser. No. 416,316

Claims priority, application Germany, June 29, 1970, 2032072

Int. Cl.² B03C *1/00*

U.S. Cl. 55—6 12 Claims



1. A fibre filter comprising a fibre fleece having an electrical charge produced by electrostatically spraying a solution of a polymer in a volatile solvent having a conductivity of 10^{-9} $Ohm^{-1}cm^{-1}$ to 10^{-4} $Ohm^{-1}cm^{-1}$ between an electrode wetted by the solution and a conductive support for spraying of the solution, evaporation of the solvent, and collection of the polymer as the fibre fleece on the support, the polymer being polycarbonate and the fibres of the fibre fleece having a porous surface structure, and a gas permeable support combined with the fibre fleece as support therefor.

12. Process of filtering dust particles from a gas which comprises passing the gas containing the dust particles through a fibre filter according to claim 1.

4,069,027

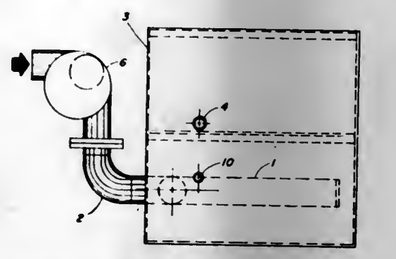
METHOD OF SEPARATING AN ENTRAINED MIST FROM A VAPOR

Charles Spurgeon Ward, Columbia, S.C., assignor to Allied Chemical Corporation, Morris Township, N.J.

Filed May 14, 1976, Ser. No. 686,430

Int. Cl.² B01D *47/02*

U.S. Cl. 55—95 2 Claims



1. A method to remove entrained mist from flowing vapor containing said mist by passing said vapor through a liquid, consisting of

passing said vapor through a U-shaped conduit positioned in said liquid and having slots cut therein,

facing downward from the surface of said liquid, said vapor entering said conduit near the center of the base of said U-shaped conduit, then

exiting said vapor from said slots through said liquid to remove said mist from said vapor, then

withdrawing said vapor overhead from said liquid, and

drawing off said liquid containing said removed mist,

said liquid extending to a level 3 to 15 inches above said U-shaped conduit, and said slots being spaced at about ¼-inch to about 2-¼-inch centers along said U-shaped conduit and having an axis normal to the axis of said U-shaped conduit.

4,069,028

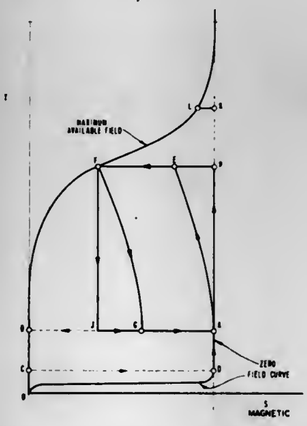
MAGNETIC HEAT PUMPING

Gerald V. Brown, Lakewood, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 30, 1976, Ser. No. 746,580

Int. Cl.² F25B *21/02*

U.S. Cl. 62—3 22 Claims



1. A method of pumping heat for refrigeration or heating employing a ferromagnetic or ferrimagnetic element consisting essentially of a single material containing a rare-earth element and which method consists of

a. changing the element from a first to a second temperature while changing the magnetic field applied to said element from a first strength to a second strength, then

b. changing the element to a third temperature while changing the strength of said field to a third strength, then

c. changing the element to a fourth temperature while changing the strength of said field to a fourth strength, and then

d. changing the temperature of said element back to said first temperature while changing the strength of said field back to said first strength.

4,069,029

PROCESS AND APPARATUS FOR PRODUCING AND USING COLD AMMONIA

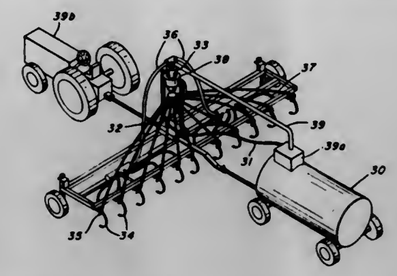
John William Hudson, Atlanta, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 27, 1976, Ser. No. 726,704

Int. Cl.² F17C *7/02*

U.S. Cl. 62—51 33 Claims

1. A method for carrying out the substantially adiabatic expansion of a pressurized stream of ambient-temperature liquid ammmonia to produce a stream of cold liquid ammonia at substantially ambient or atmospheric pressure and a stream of cold gaseous ammonia at substantially ambient or atmospheric pressure, which comprises (1) introducing at a velocity of at least about 5000 feet per minute a stream of ambient-temperature, pressurized liquid ammonia into an expansion chamber, (2) imparting a high velocity spinning motion to the liquid ammonia entering the chamber such that rapid flow is produced around the interior of the chamber to thereby provide rapid separation of the liquid and gaseous ammonia in the chamber, and wherein the expansion chamber is provided with an outlet useful for the removal of gaseous ammonia therefrom which outlet is located above the path of liquid flow and another outlet useful for the removal of cold liquid ammonia therefrom, said outlets being provided at opposite ends of said expansion chamber, (3) directing the flow of the cold substantially ambient or atmospheric pressure liquid ammonia within said expansion chamber to said outlet useful for the withdrawal



of cold ambient or atmospheric pressure liquid ammonia from said expansion chamber to effect separation between cold liquid ammonia and cold gaseous ammonia within said expansion chamber, and (4) withdrawing through said outlet useful for the removal of gaseous ammonia a stream of cold gaseous ammonia at substantially ambient or atmospheric pressure and a stream of cold liquid ammonia at substantially ambient or atmospheric pressure via said other outlet.

4,069,030

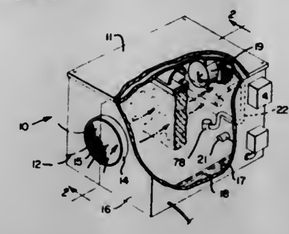
ENERGY CONSERVATION ENTHALPY CONTROL SYSTEM AND SENSOR THEREFOR

Grason T. Nickell, and Jack L. Alexander, Sr., both of Greensboro, N.C., assignors to Air Conditioning Corporation, Greensboro, N.C.

Filed Aug. 20, 1976, Ser. No. 716,231

Int. Cl.² F25D *17/04*

U.S. Cl. 62—176 C 18 Claims



1. In combination, an apparatus for sensing the wet bulb temperature of sampled air passing therethrough ideally under adiabatic saturation conditions and providing a control signal representative of said wet bulb temperature comprising:

a housing which includes means for passing sampled air through said housing and sump means for collecting a body of water;

means cooperating with said housing for filtering said sampled air to remove physical contaminants from said sampled air;

mixing means for intimately mixing and contacting water from said sump means and said sampled air under conditions closely approximating adiabatic saturation;

means for recirculating said water, said recirculating means including a pump for pumping water from said sump means to said mixing means;

sensing means including a sensing element in said water in said sump means for sensing the temperature of said water when the temperature of said air and water are in equilib-

rium to provide an output representative of the wet bulb temperature of said sampled air;
transmitter means for transmitting a signal representing said wet bulb temperature; and
floating means for maintaining the water level in said housing.

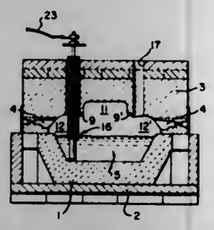
4,069,031
PROCESS FOR FORMING TWO DIFFERENT INDICES OF REFRACTION IN A GLASS CERAMIC

James E. Rapp, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 684,615, May 10, 1976, Pat. No. 4,017,317, which is a division of Ser. No. 169,271, Aug. 5, 1971, Pat. No. 3,984,251. This application Nov. 30, 1976, Ser. No. 746,043
Int. Cl.² C03C 15/00; C03B 25/00, 31/00
U.S. Cl. 65—33 6 Claims

1. A method for forming a transparent glass-ceramic body having at least two different indices of refraction for light transmittal therethrough, said glass-ceramic body being formed by thermally in situ crystallizing a thermally crystallizable glass body, comprising:
a. heating a first portion of said glass body for a period of time and at a temperature sufficient to nucleate and crystallize said first portion of said glass body to a transparent glass-ceramic having a first index of refraction; and
b. heating a second and different portion of the same glass body for a period of time and at a temperature sufficient to nucleate and crystallize said second portion to a transparent glass-ceramic having a second index of refraction which is different from said first index of refraction.

4,069,032
FOREHEARTH FOR GLASS FURNACE

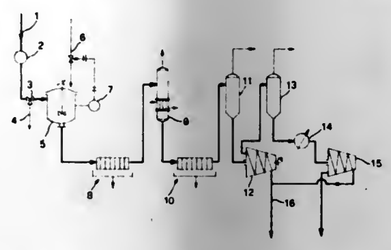
Jean Albert Brax, Chalon sur Saone, France, assignor to Societe Generale pour l'Emballage, Paris, France
Filed Feb. 25, 1977, Ser. No. 772,023
Claims priority, application France, May 4, 1976, 76 13261
Int. Cl.² C03B 5/02, 5/22
U.S. Cl. 65—337 9 Claims



1. A forehearth for the conveyance of molten glass which comprises a trough and a roof over the trough, said roof having at least two longitudinal ridges extending downwardly from the roof and disposed substantially symmetrically on opposite sides of the vertical median plane of the trough to define in the space below the roof a central channel over the central portion of a stream of molten glass flowing through the trough and side channels on respective sides of the central channel over respective side portions of the stream of glass, longitudinally spaced inlet and outlet apertures in the roof over said central channel for the ingress and egress of a gaseous cooling fluid whereby the fluid flows over the central portion of the stream of molten glass in contact with the upper surface of the stream, the portion of said roof over said central channel between said apertures being substantially closed, and means disposed along the sides of said trough for applying heat to the side portions of the stream of glass, said means including a plurality of longitudinally spaced electrodes inserted in respective side portions of the molten stream of glass, said electrodes being suspended from the portions of the roof over said side channels, and means for energizing said electrodes to produce electric current flow through the molten glass in said side portions.

4,069,033
EXTRACTION OF FERTILIZER SALTS AND ORGANIC SUBSTANCES OF HIGH NUTRITIVE VALUE FROM INDUSTRIAL WASTE WATERS

Paolo Baldassari, Reggio Emilia, Italy, assignor to Reggiane Officine Meccaniche Italiane S.p.A., Milan, Italy
Filed Sept. 19, 1975, Ser. No. 614,966
Claims priority, application Italy, Sept. 30, 1974, 3488/74
Int. Cl.² C05F 7/00
U.S. Cl. 71—25 8 Claims



1. A process for the extraction of fertilizer salts, on the one hand, and concentrates of organic substances having a high nutritive value, on the other hand, from industrial waste waters, comprising the following successive steps:
monitoring the T.D.S. cntent of the waste water;
automatically diverting waste waters of high T.D.S. content to the following additional steps from waste water of low T.D.S. which does not undergo the following additional steps;
mixing the waste waters of high T.D.S. content with strong acids or bases, according to the composition of the waste water, in a quantity sufficient to form stable salts of low solubility;
filtering the formed mixture to eliminate insoluble substances or precipitates;
concentrating the filtrate by evaporation until the less soluble salts are saturated;
crystallizing the concentrated filtrate at least once;
separating the crystallized mineral salts, for use as fertilizer salts, from the mother liquor which is the concentrate of organic substances having high nutritive value.

4,069,034
SUSPENSION FERTILIZERS AND METHOD OF PRODUCING SAME

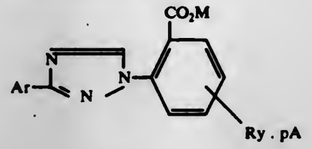
Lonnie Daniel Hoover, Chappell Hill, Tex., assignor to N L Industries, Inc., New York, N.Y.
Filed Nov. 25, 1975, Ser. No. 635,129
Int. Cl.² C05B 7/00
U.S. Cl. 71—33 36 Claims

1. In a method for producing a suspension fertilizer which includes saturating an aqueous phase with at least one phosphate containing fertilizer chemical and thereafter causing said saturated aqueous phase to become supersaturated from which phosphate crystals may be formed, the improvement which comprises adding before said aqueous phase becomes supersaturated between about 0.05% and about 3% by weight, based on the total weight of said suspension fertilizer of an alkali metal or ammonium salt, or mixtures thereof, of humic acid or a material which contains humic acid selected from the group consisting of leonardite, lignite, marine sediments, and mixtures thereof.

4,069,035
1-(2-CARBOXYARYL)-3-ARYL-1,2,4-TRIAZOLES AND USE AS HERBICIDES

Alexander Lawrence Johnson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 590,372, June 25, 1975. This application Sept. 10, 1976, Ser. No. 722,201
Int. Cl.² A01N 5/00, 9/22; C07D 249/08, 401/04
U.S. Cl. 71—76 24 Claims

1. A compound of the formula



in which
Ar is phenyl, naphthyl, biphenylyl, pyridyl, furyl, thienyl or phenyl substituted with up to two of fluorine, chlorine, bromine, iodine, alkyl of 1–5 carbons, methoxyl, trifluoromethyl, nitro, methylthio, trifluoromethoxyl, dimethylamino, cyano, acetyl, methylsulfonyl, carbamoyl or sulfamyl;
R is hydrogen, fluorine, chlorine, bromine, iodine, methoxyl, trifluoromethyl, nitro, methylthio, trifluoromethoxyl or alkyl of 1–5 carbon atoms;
p is 0 or 1;
y is 1 or 2;
A is an acid;
M is hydrogen, sodium, potassium, lithium, calcium or magnesium; with the proviso that when M is other than hydrogen, *p* is 0.

17. The process of regulating plant growth comprising the step of applying to the plant a plant growth retarding amount of a compound of claim 1.

4,069,036
N-HALOACYL 4-SPIROCYCLOALIPHATIC OXAZOLIDINES

Kenneth P. Dorschner, Vienna, Va., and James A. Albright, St. Louis, Mich., assignors to SCM Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 280,836, Aug. 15, 1972, Pat. No. 3,859,292. This application Dec. 20, 1974, Ser. No. 534,824
Int. Cl.² C07D 263/04; A01N 9/22
U.S. Cl. 71—88 22 Claims

1. An N-haloalkanoyl 4-spirocycloaliphatic oxazolidine, wherein the haloalkanoyl group has 2 to 4 carbon atoms, the remaining oxazolidine ring-carbon atom valences are satisfied by hydrogen or C_{1-6} alkyl groups, and said spirocycloaliphatic group contains 5 to 12 carbon atoms and is selected from the group consisting of cyclopentyl, cyclohexyl, cyclohexenyl, cycloheptyl, cyclooctyl wherein said cycloaliphatic groups are unsubstituted or substituted with C_{1-6} lower alkyl groups.

7. An N-haloalkanoyl 4-spirocycloaliphatic oxazolidine dialkylated in the 2-position with C_{1-6} alkyl groups wherein the haloalkanoyl group contains 2 to 4 carbon atoms, the remaining oxazolidine ring-carbon atom valences are satisfied by hydrogen or C_{1-6} alkyl groups, and said spirocycloaliphatic group contains 5 to 12 carbon atoms and is selected from the group consisting of cyclopentyl, cyclohexyl, cyclohexenyl, cycloheptyl, cyclooctyl wherein said cycloaliphatic groups are unsubstituted or substituted with C_{1-6} lower alkyl groups.

11. A herbicidal composition comprising an agricultural carrier and an herbicidal amount of about 1-98% of an N-haloalkanoyl 4-spirocycloaliphatic oxazolidine, wherein the haloalkanoyl group has 2 to 4 carbon atoms, the remaining ring-carbon atom valences are satisfied with hydrogen atoms or C_{1-6} alkyl groups, and said spirocycloaliphatic group is cyclopentyl, cyclohexyl, cycloheptyl or cyclooctyl.

12. A process for protecting crop plants from undesirable growth of other unwanted vegetation which comprises applying to the locus thereof a herbicidal amount of a 4-spirocycloaliphatic N-haloalkanoyl oxazolidine wherein the haloalkanoyl group has 2 to 4 carbon atoms, the remaining ring-carbon atom valences are satisfied with hydrogen atoms or C_{1-6} alkyl groups, and said spirocycloaliphatic group contains 5 to 12 carbon atoms being selected from the group consisting of cyclopentyl, cyclohexyl, cyclohexenyl, cycloheptyl, cyclooctyl wherein said cycloaliphatic groups are unsubstituted or substituted with C_{1-6} lower alkyl groups.

4,069,037
SELECTIVE HERBICIDE FOR PINEAPPLE CROPS

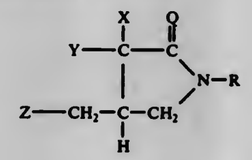
Arlyn Wayne Evans, Memphis, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 28, 1976, Ser. No. 736,453
Int. Cl.² A01N 9/22
U.S. Cl. 71—93 5 Claims

1. Method for preventing and controlling undesired vegetation in pineapple crops without causing significant injury to said crop comprising applying to the locus of said crop an effective amount of 1-methyl-3-cyclohexyl-6-dimethylamino-s-triazine-2,4(1H,3H)-dione.

4,069,038
ACYCLIC AND ALICYCLIC N-SUBSTITUTED HALO-2-PYRROLIDINONES AND THEIR UTILITY AS HERBICIDES

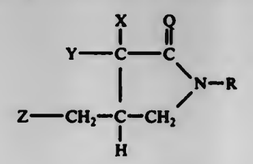
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Continuation-in-part of Ser. No. 563,280, March 28, 1975, abandoned. This application Jan. 9, 1976, Ser. No. 647,962
Int. Cl.² A01N 9/22, 9/12; C07D 207/24, 207/26
U.S. Cl. 71—95 56 Claims

1. A compound having the formula



in which Q is oxygen or sulfur; R is lower alkyl containing from 1 to 6 carbon atoms, inclusive, alkenyl containing from 3 to 6 carbon atoms, inclusive, haloalkyl having 1 to 6 carbon atoms, inclusive, and having one or more halogen substitutions, cycloalkyl having from 3 to 7 carbon atoms, inclusive, cycloalkylalkyl having a total carbon content of from 4 to 8 carbon atoms, inclusive, benzyl and chlorobenzyl; X is hydrogen or chlorine; Y is chlorine or bromine, and Z is chlorine or bromine; provided that when R is allyl, Y and Z are each chlorine or bromine, and provided that when R is cyclohexyl, X is other than chlorine.

30. A method for controlling the growth of undesirable vegetation which comprises applying to at least one of (a) such undesirable vegetation and (b) their habitat, an herbicidally effective amount of a compound having the formula



in which Q is oxygen or sulfur; R is lower alkyl containing from 1 to 6 carbon atoms, inclusive, alkenyl containing from 3 to 6 carbon atoms, inclusive, haloalkyl having 1 to 6 carbon atoms, inclusive, and having one or more halogen substitutions,

cycloalkyl having from 3 to 7 carbon atoms, inclusive, cycloalkylalkyl having a total carbon content of from 4 to 8 carbon atoms, inclusive, benzyl and chlorobenzyl; X is hydrogen or chlorine; Y is chlorine or bromine, and Z is chlorine or bromine; provided that when R is allyl, Y and Z are each chlorine or bromine, and provided that when R is cyclohexyl, X is other than chlorine.

4,069,039

METHOD FOR DESULFURIZATION USING ARC HEAT UNDER VACUUM

Albert L. Lehman, Mount Prospect, Ill., assignor to A. Finkl & Sons Co., Chicago, Ill.

Filed June 23, 1976, Ser. No. 699,072
Int. Cl.² C21C 5/52, 7/10, 7/06
U.S. Cl. 75—12 **15 Claims**

1. In a method of desulfurizing a molten steel bath to 0.006 and below, the steps of
establishing a hot, fluidized, highly basic slag in contact with the molten steel to be desulfurized,
lowering the oxygen potential of the molten steel,
establishing a bath temperature conducive to progression of desulfurization, and
after establishment of the above system conditions,
subjecting the molten steel, while subject to the aforementioned system conditions, to a violent agitation in a vacuum for a period of a total of at least about ten minutes,
said agitation being sufficiently violent to cause metal droplets to be impelled upwardly into the space above the surface of the molten steel, and to pass through the slag upon return to the steel.

4,069,040

METHOD FOR RECOVERY OF PLATINUM AND IRIDIUM FROM CATALYSTS

Maryvonne Thomas, Boulogne Billancourt, and Jean Grosbois, L'Isle Adam, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 18, 1974, Ser. No. 524,777
Claims priority, application France, Nov. 19, 1973, 73.41076
Int. Cl.² C22B 11/04
U.S. Cl. 75—101 BE **12 Claims**

1. A method for the recovery of constituents of catalysts containing platinum and iridium on an aluminous support, comprising the steps of
a. attacking the catalyst with a 3-9 M hydrochloric acid solution to dissolve alumina, platinum and iridium,
b. adding to the solution a sufficient quantity of reducing agent to convert dissolved iridium to the trivalent state,
c. passing the solution into contact with an anion exchange medium on which platinum becomes strongly fixed leaving alumina and iridium in solution,
d. adding an oxidizing agent to the solution from (c) to convert trivalent iridium to the tetravalent state,
e. passing the solution into contact with an anion exchange medium on which the iridium becomes strongly fixed.

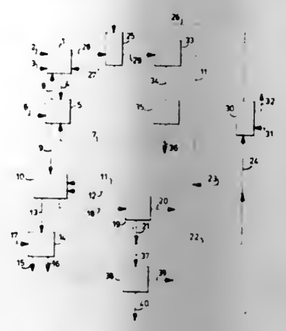
4,069,041

METHOD OF RECOVERING NON-FERROUS METALS FROM SULPHIDIC MATERIALS

Karl Göran Görling, Lidingo; Ingvar A. O. Edenwall, Helsingborg; Jan-Olof Jansson, and Thomas K. Mißen, both of Stockholm, all of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed June 24, 1976, Ser. No. 699,323
Claims priority, application Sweden, July 1, 1975, 7507507
Int. Cl.² C22B 15/00
U.S. Cl. 75—101 R **19 Claims**

1. In a method for recovering copper and/or other non-ferrous metals including precious metals, from iron-containing sulphidic raw material comprising copper and/or other non-ferrous metals, wherein the starting material is first subjected to a sulphatizing treatment so as to convert at least one of the non-ferrous metals into the form of a readily soluble sulphate and/or basic sulphate, whereafter said at least one non-ferrous metal in a leaching stage is leached out with an aqueous sulphuric acid solution, the major quantity of the leached metal or metals then being recovered from the leaching solution formed and wherein remaining non-ferrous metals in the leaching residue formed is optionally recovered by further process stages, the improvement which comprises carrying out the sulphatizing treatment process in two stages, the material being in a first stage roasted in a roasting furnace to a substantially sulphur-free state and then in a second stage the roasted material being treated in a separate reaction chamber by supplying



sulphatizing agent thereto, the second stage treatment being effected under such conditions as to permit substantial forming of compounds comprising sulphates, basic sulphates or mixtures thereof of said at least one non-ferrous metal, feeding a first portion of the residual solution obtained subsequent to recovering non-ferrous metal content from the leaching solution to the leaching stage, the magnitude of said first portion being selected to effect said leaching and returning a second portion of said residual solution to the roasting furnace, where the sulphur content of said second portion of the solution is converted into sulphur dioxide and passed to the gases formed by the roasting.

4,069,042

METHOD OF PRESSING AND FORGING METAL POWDER

Kalman E. Buchovecky, Oakmont, and Milton R. Rearick, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 8, 1975, Ser. No. 638,948
Int. Cl.² B22F 3/00
U.S. Cl. 75—208 R **12 Claims**

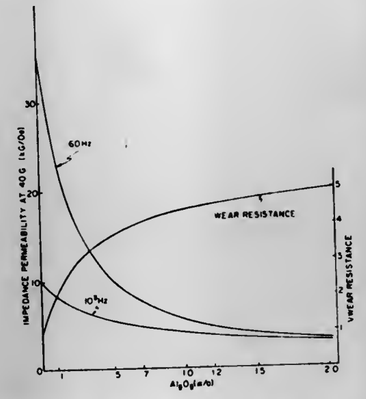
1. A method for forging metal powders of aluminum and its alloys comprises:
placing in an open-ended readily deformable metal container an amount of loose powder, said container having a general shape of an article to be forged, and the amount of said powder being more than sufficient metal needed to forge the article to a predetermined density;
heating said powder within said container to a substantially uniform temperature below the melting point of the powder but at least 600° F to facilitate metallurgical bonding of said powder during conditions of plastic deformation;
maintaining over the open-end of said container during heating a cover sufficient to contain the powder and to allow for escape of gases evolved from heating the powder within said container but to retain in said container a sufficient portion of said gases to effectively shield the powder and provide an oxidation protective atmosphere; and
forging said container with said powder therein into a forged shape of the article having a predetermined density of at least 99% by compressing within substantially closed dies and effecting plastic flow of the metal, the dies having provision for escape of excess metal.

4,069,043

WEAR-RESISTANT SHAPED MAGNETIC ARTICLE AND PROCESS FOR MAKING THE SAME

Friedrich W. Ackermann, Wyomissing, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed Jan. 19, 1976, Ser. No. 650,259
Int. Cl.² B22F 3/00
U.S. Cl. 75—232 **29 Claims**



1. A ferromagnetically soft wear-resistant shaped article made from metal powder in which a refractory oxide powder is substantially uniformly dispersed therein having a minimum particle size greater than about 1 micron which is large compared to the Block wall thickness in the composition of said article, the composition of said article consisting essentially of about

	Weight Percent
Carbon	<0.025
Manganese	0–2
Nickel	70–85
Chromium	0–5
Molybdenum	0–6
Copper	0–6
Titanium	0–1
Niobium	0–1
Refractory oxide	0.1–2.0

the balance being essentially iron and incidental impurities with the iron content being greater than 10%, said article having a density at least 99% of theoretical with residual voids being larger than the Block wall thickness.

15. A process for making a ferromagnetically soft wear-resistant shaped article which includes the steps of blending metal powder and a refractory oxide powder having a minimum particle size greater than about 1 micron that is large compared to the Bloch wall thickness in the composition of said article to provide a substantially homogeneous mixture in such proportions that the composition of the article in its sintered and densified condition in weight percent consists essentially of about

	Weight Percent
Carbon	<0.025
Manganese	0–2
Nickel	70–85
Chromium	0–5
Molybdenum	0–6
Copper	0–6
Titanium	0–1
Niobium	0–1

-continued

	Weight Percent
Refractory oxide	0.1–2.0

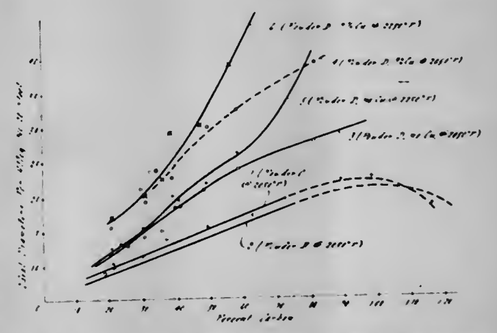
the balance being essentially iron and incidental impurities with the iron content being greater than 10%, then forming a preliminary shape from the blended powders, sintering the preliminary shape at a high enough temperature and for a long enough time in a reducing or inert atmosphere to provide a substantial amount of densification without reducing or melting the refractory oxide, and then working the sintered shape and reducing the thickness thereof to provide a shaped article having at least 99% theoretical density and in which the metal elements present except that combined to form refractory oxide are fully alloyed and homogeneously distributed.

4,069,044

METHOD OF PRODUCING A FORGED ARTICLE FROM PREALLOYED-PREMIXED WATER ATOMIZED FERROUS ALLOY POWDER

Stanislaw Mocarski, 3661 Rockwell, Windsor, Ontario N9E 2B1, Canada, and Daniel W. Hall, 25487 Kennedy, Dearborn Heights, Mich. 48127

Division of Ser. No. 691,914, Aug. 6, 1976. This application Feb. 3, 1977, Ser. No. 765,334
Int. Cl.² B22D 23/08; B22F 1/00
U.S. Cl. 75—243 **4 Claims**



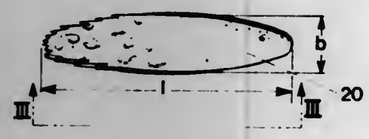
1. A prealloyed ferrous-based powder useful for promoting optimum hardenability when exposed to copper and carbon during sintering, said powder having a mesh size of −80, each particle of said powder being characterized by a substantially irregular spherical configuration consisting of a steel alloy having 0.4–0.65% by weight of molybdenum with or without nickel addition, the remainder being substantially iron, said molybdenum and/or nickel being distributed throughout each of said particles to form an alloy phase at the outer region of each particle which is richer in molybdenum and/or nickel, said powder having an oxygen content no greater than 0.25%, and a carbon content less than 0.04%.

4,069,045

METAL POWDER SUITED FOR POWDER METALLURGICAL PURPOSES, AND A PROCESS FOR MANUFACTURING THE METAL POWDER

Bengt G. S. Lundgren, Ulricehamn, Sweden, assignor to SKF Nova AB, Gatheburg, Sweden

Continuation-in-part of Ser. No. 634,343, Nov. 24, 1975, abandoned. This application May 17, 1976, Ser. No. 686,937
Claims priority, application Sweden, Nov. 26, 1974, 7414811
Int. Cl.² B22D *23/08*
U.S. Cl. 75—251 10 Claims



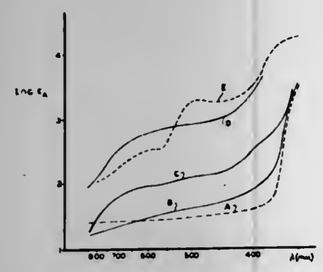
1. A steel powder suited for powder metallurgical purposes, characterized in that it consists of an amorphous to compact-grained, essentially dendrite-free material with irregularly cornered particle shape.

4,069,046

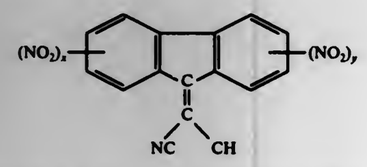
POLYMERIZED VINYL CARBAZOLES SENSITIZED BY NITRO-SUBSTITUTED 9-DICYANOMETHYLENE FLUORENES

Helmut Hoegl, Grand-Lancy, Geneva, and Giacomo Barchietto, Cointrin, Geneva, both of Switzerland, assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 116,989, Feb. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 652,278, July 10, 1967, abandoned. This application Jan. 29, 1974, Ser. No. 437,573
Int. Cl.² G03Q *5/06, 13/22*
U.S. Cl. 96—1 PC 22 Claims



13. A photoelectrostatic member comprising a conductive base support coated with a photoconductive film comprising a polymerized vinyl carbazole compound and a sensitizer having the formula



wherein each of *x* and *y* is a positive integer from 0–2.

4,069,047

TRANSFER OF PHOTOELECTROPHORETIC IMAGES

Luke C. Lin, Rochester, and Morton Schrager, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 27, 1975, Ser. No. 591,182
Int. Cl.² G03Q *13/24*
U.S. Cl. 96—1.4 14 Claims

1. A photoelectrophoretic imaging method comprising the steps of

a. providing a layer of an imaging suspension comprising electrically photosensitive pigment particles in an electrically insulating carrier liquid on the surface of a transparent injecting electrode comprising a substrate carrying a thermoplastic polymeric layer which carries a conductive layer;
b. contacting the free surface of said imaging suspension layer with a second electrode;
c. applying an electrical field across said suspension layer;
d. exposing said suspension to an imagewise pattern of activating electromagnetic radiation;
e. separating said electrodes wherein complementary images are formed on the surfaces of said electrodes;
f. heating said injecting electrode sufficiently to soften the thermoplastic polymeric layer;
g. pressure contacting the image bearing surface of said injecting electrode with a receiving member, whereby said image, said conductive layer and at least a portion of the thermoplastic polymeric layer of the injecting electrode are simultaneously transferred to the receiver member, the transferred portion of the polymeric layer forming a protective layer over the image.

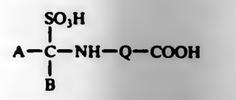
4,069,048

DIFFUSION TRANSFER PHOTOGRAPHIC MATERIALS WITH COLOR DEVELOPER SCAVENGER

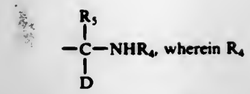
Motohiko Tsubota; Sosuke Hanai; Yasushi Oishi; Hidefumi Sera, and Nobuo Yamamoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 17, 1976, Ser. No. 658,939
Claims priority, application Japan, Feb. 17, 1975, 50-19554
Int. Cl.² G03C *7/00, 5/54, 1/40, 1/76*
U.S. Cl. 96—3 38 Claims

1. In a diffusion transfer color photographic material including a photosensitive element comprising at least one silver halide emulsion layer having associated therewith a non-diffusible dye image forming material, an image-receiving element which fixes a diffusible dye formed from said dye image forming material by the oxidative reaction thereof with a primary aromatic amino color developing agent to form a dye image, and a liquid processing composition for developing the exposed photosensitive element and transferring the dye image formed into the image receiving element, the improvement which comprises including in the photosensitive element, the image receiving element, or the liquid processing composition at least one N-α-sulfoalkylated amino acid represented by the following general formula:



wherein A represents a hydrogen atom, a hydroxy group, a lower alkyl group having 1 to 5 carbon atoms, an alkyl group having 1 to 5 carbon atoms substituted with a hydroxy group or lower alkoxy group, an alicyclic hydrocarbon group, an aryl group or an aryl group substituted by a lower alkyl group, nitro group, cyano group, alkoxy group, sulfo group, allyloxy group, halogen atom, acyloxy group or alkoxycarbonyl group, B represents a hydrogen atom or the group



represents a hydrogen atom, an alkyl group, an aryl group, an aryl group substituted with a sulfo group or carboxy group, R_5 represents a hydrogen atom or a lower alkyl group, and D represents a hydrogen atom or a sulfo group, and Q represents a methylene group, a methylene group substituted with a lower alkyl group, hydroxyalkyl group, lower alkoxyalkyl group, aralkyl group, or aryl group, a phenylene group, and a phenylene group substituted with a lower alkyl group, halogen atom, nitro group, lower alkoxy group, sulfo group or carboxy group.

4,069,049

PROCESS FOR RECORDING HOLOGRAPHIC INFORMATION

Shymon Reich, and Albert A. Friesem, both of Rehovot, Israel, assignors to Yeda Research & Development Co., Ltd., Rehovot, Israel

Division of Ser. No. 628,752, Nov. 4, 1975. This application Apr. 15, 1976, Ser. No. 677,213
Claims priority, application Israel, Dec. 2, 1974, 46164
Int. Cl.² G03C *5/04*
U.S. Cl. 96—27 H 10 Claims

1. A process for recording spatially modulated data and for the recording of holographic information in situ and in real time by means of a device adapted to record a hologram on a recording medium, comprising means for effecting an exposure of said recording medium with an information beam from an object illuminated with spatially coherent electromagnetic waves and means for simultaneously exposing said recording medium to a reference beam of said spatially coherent electromagnetic waves to produce on said recording medium a hologram interference pattern between said information beam and said reference beam, said recording medium consisting of a polymeric layer of from some microns thickness to a few millimeters thickness of a lower-alkyl 2-cyanoacrylate containing p-benzoquinone as photosensitizer, said process comprising:

exposing said recording medium with an information beam from an object illuminated with spatially coherent electromagnetic waves; and

simultaneously exposing said recording medium to a reference beam of said spatially coherent electromagnetic waves to produce on said recording medium a hologram interference pattern between said information beam and said reference beam.

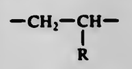
4,069,050

IMAGE FORMING PROCESS

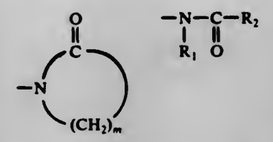
Hiroshi Hara, and Hideyuki Kusaba, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 11, 1976, Ser. No. 713,552
Claims priority, application Japan, Aug. 11, 1975, 50-97250
Int. Cl.² G03C *5/32, 7/16*
U.S. Cl. 96—60 R 27 Claims

1. In a process involving image formation followed by photographic processing which comprises contacting an imagewise exposed color photographic element comprising a support having thereon at least one silver halide emulsion containing image-wise distributed silver catalyst nuclei with an intensifier containing at least one intensifying agent selected from the group consisting of peroxides, halogenous acids and cobalt (III) complex compounds, in the presence of a reducing agent, which is in a processing solution or the element, and thereby image-wise oxidizing the reducing agent and conducting image intensification by the oxidized reducing agent, the improvement comprising that (1) at least one compound represented by the following general formula having a polymerization degree of 1 — 8,000; —(A)$_x$ — (B)$_y$—
wherein A represents



or —CH_2—CH_2—O—, wherein R represents



or —OH, with *m* being an integer of 3 - 7, R_1 is an alkyl group having 1 to 6 carbon atoms, and R_2 is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms,

B represents a monomer unit derived from styrene, methacrylic acid ester, acrylic acid ester, vinyl acetate, acrylonitrile, vinyl alcohol, vinyl chloride, vinyl ether, acrylamide, N,N-dimethylacrylamide, acrylic acid, methacrylic acid, maleic acid, potassium styrenesulfonate, N,N-dialkylaminoalkyl methacrylate, vinyl imidazole or vinyl pyridine, and (2) an antifoggant being at least one nitrogen containing hetero ring compound having no mercapto group are both contained in said intensifier or a developing bath prior to said intensifier.

4,069,051

SILVER HALIDE PHOTOSENSITIVE ELEMENT SENSITIZED WITH AN INORGANIC BISMUTH COMPOUND AND THE USE THEREOF

Akira Horikoshi; Kenro Sakamoto; Toshihiko Koike; Yosuke Sadahiro, and Toyohiko Kato, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1976, Ser. No. 680,513
Claims priority, application Japan, Apr. 30, 1975, 50-52179
Int. Cl.² G03C *5/30, 1/28, 1/76*
U.S. Cl. 96—66 R 8 Claims

1. A developing-out type silver halide photosensitive element comprising a support having thereon a silver halide photosensitive emulsion layer and a constitutive layer adjacent to the emulsion layer, having incorporated into the silver halide photosensitive emulsion composition of said emulsion layer an inorganic bismuth compound after completion of a second ripening step during the preparation of the silver halide photosensitive emulsion composition, and before coating the silver halide photosensitive emulsion composition as a layer on said support, and/or having incorporated said bismuth compound into the constitute layer, said bismuth compound is selected from the group consisting of bismuth oxide, bismuth oxide hydrate and bismuth hydroxide, said bismuth compound being present in an amount of 0.05 to 5 moles per mole of the silver halide of the photosensitve element.

4,069,052

COLOR PHOTOGRAPHIC MATERIALS WITH SPIRO HETEROCYCLIC STABILIZING AGENTS COMPRISING 2-IMIDAZOLIDINE-4',5'-DIONE RINGS

Karl Lohmer; Anita von König, both of Leverkusen; Siegismund Schutz, Metzkausen, and Jürgen Stoltefuss, Haan, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 15, 1975, Ser. No. 640,641
Claims priority, application Germany, Dec. 20, 1974, 2460330
Int. Cl.² G03C *1/48, 1/34, 7/00, 1/40*
U.S. Cl. 96—76 R 7 Claims

1. In a photographic material containing at least one silver

halide emulsion layer and a support and a stabilizer compound the improvement according to which the stabilizer compound is a phenyl compound in which the phenyl ring is ortho disubstituted with oxygen, sulfur or —NH— as bridging members being linked together to form a spiro structure with 2'-imidazolidine-4',5'-dione.

4,069,053

PHOTOGRAPHIC FILMS

Masayoshi Mayama, Hachioji; Tohru Kobayashi, Tachikawa, and Masahide Tamura, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 547,884, Feb. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 444,663, Feb. 21, 1974, abandoned, which is a continuation of Ser. No. 232,193, March 6, 1972, abandoned. This application Mar. 31, 1977, Ser. No. 783,443

Claims priority, application Japan, Mar. 18, 1971, 46-14727

Int. Cl.² G03C *1/98, 1/02*

U.S. Cl. 96—87 A **9 Claims**

1. In a photographic film having a plastic support; a first layer comprising cellulose acetate and a matting agent comprising silicon dioxide less than 1μ in particle size; a second layer comprising a phosphoric acid ester of a C_8 to C_{22}-higher alkyl alcohol, or an amine salt thereof, said first and second layers being carried in that order on one side of the support; and a light-sensitive emulsion layer on the other side of the support.

4,069,054

PHOTOPOLYMERIZABLE COMPOSITION CONTAINING A SENSITIZED AROMATIC SULFONIUM COMPOUND AND A CATIONACALLY POLYMERIZABLE MONOMER

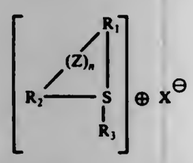
George H. Smith, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 2, 1975, Ser. No. 609,896

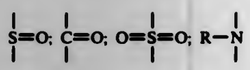
Int. Cl.² G03C *1/68*

U.S. Cl. 96—115 P **3 Claims**

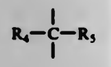
1. A photopolymerizable composition comprising:
a. a cationically polymerizable monomer;
b. an aromatic sulfonium compound of the following forumula:



wherein R_1, R_2 and R_3 are selected from the group consisting of aryl groups having 4 to 20 carbon atoms and alkyl radicals having 1 to 20 carbon atoms; wherein at least one of R_1, R_2 and R_3 is aryl; wherein Z is selected from the group consisting of oxygen; sulfur;



where R is aryl or acyl; a carbon-to-carbon bond; or



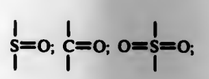
where R_4 and R_5 are selected from the group consisting of hydrogen, an alkyl radical having 1 to 4 carbon atoms, and an alkenyl radical having 2 to 4 carbon atoms; and n is zero or 1; and X— is a halogen-containing complex anion selected from tetrafluoroborate, hexafluorophosphate, hexafluoroarsenate, and hexafluoroantimonate; and

c. a sensitizing compound selected from the group consisting of:

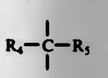
i. aromatic tertiary amines having the formula



where Ar^1, Ar^2 and Ar^3 are groups having 6–20 carbon atoms; Z is selected from oxygen; sulfur;

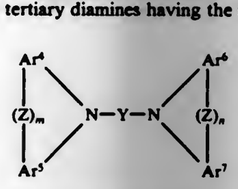


a carbon-to-carbon bond; or



where R_4 and R_5 are selected from hydrogen, alkyl radicals of 1–4 carbons, and alkenyl radicals of 2–4 carbons, and wherein n is zero or 1;

ii. aromatic tertiary diamines having the formula



where Y is a divalent radical selected from arylene and Ar^8—Z—Ar^9, where Z is as described above; Ar^4, Ar^5, Ar^6, Ar^7, Ar^8 and Ar^9 are aryl groups having 6–20 carbon atoms; and wherein n and m are zero or 1; and

iii. aryl polycyclic compounds having at least three fused benzene rings and further having an ionization energy less than about 7.5 ev.

4,069,055

PHOTOCURABLE EPOXY COMPOSITIONS CONTAINING GROUP VA ONIUM SALTS

James V. Crivello, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 466,378, May 2, 1974, abandoned. This application Dec. 9, 1975, Ser. No. 638,994

The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.

Int. Cl.² G03C *1/68*; C09D *11/00*; C08F *2/46, 8/18*

U.S. Cl. 96—115 R **18 Claims**

1. Photocurable compositions consisting essentially of
A. an epoxy resin polymerizable to a higher molecular weight state, and
B. an effective amount of a photodecomposable aromatic onium salt of a Group Va element capable of effecting the cure of (A) when exposed to radiant energy where the photodecomposable aromatic onium salt of a Group Va element has the formula,

$$[(R)_a(R^1)_b(R^2)_cX]^+_d[MQ_e]^{-(e-f)},$$

where R is a monovalent aromatic organic radical selected from carbocyclic radicals and heterocyclic radicals, R^1 is a monovalent organic aliphatic radical selected from alkyl, alkoxy, cycloalkyl and substituted derivatives thereof, R^2 is a polyvalent organic radical forming an aromatic heterocyclic or fused ring structure with X, X is a Group Va element selected from N, P, As, Sb and Bi, M is a metal or metalloid, Q is a halogen radical, a is a whole number equal to 0 to 4 inclusive, b is a whole number equal to 0 to 2 inclusive, c is a whole number equal to 0 to 2 inclusive, and the sum of $a + b + c$ is a value equal to 4 or the valence of X,

$d = e - f$

f = valence of M and is an integer equal to from 2 to 7 inclusive

e is $> f$ and is an integer having a value up to 8.

4,069,056

PHOTOPOLYMERIZABLE COMPOSITION CONTAINING GROUP VA AROMATIC ONIUM SALTS

James V. Crivello, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 466,376, May 2, 1974, abandoned. This application Dec. 9, 1975, Ser. No. 638,993

The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.

Int. Cl.² G03C *1/68*; C08F *8/18, 2/46, 4/00*

U.S. Cl. 96—115 P **10 Claims**

1. Cationically polymerizable compositions consisting essentially of
A. a monomeric or prepolymeric cationically polymerizable organic material free of oxirane oxygen selected from vinyl organic monomers, vinyl organic prepolymers, vinyl organic esters, cyclic organic amines, cyclic organo sulfides, organosilicon cyclics, and cyclic amines, and
B. from 0.1% to 15% by weight based on the weight of polymerizable composition of a photodecomposable aromatic onium salt of a Group Va element capable of effecting the cationic polymerization of (A) when exposed to radiant energy having the formula,

$$[(R)_a(R^1)_b(R^2)_cX]^+_d[MQ_e]^{-(e-f)},$$

where R is a monovalent aromatic organic radical selected from carbocyclic radicals and heterocyclic radicals, R^1 is a monovalent organic aliphatic radical selected from alkyl, cycloalkyl and substituted derivatives thereof, R^2 is a polyvalent organic radical forming an aromatic heterocyclic or fused ring structure with X, X is a Group Va element selected from N, P, As, Sb and Bi, M is a metal or metalloid, Q is a halogen radical, a is a whole number equal to 0 to 4 inclusive, b is a whole number equal to 0 to 2 inclusive, c is a whole number equal to 0 to 2 inclusive, and the sum of $a + b + c$ is a value equal to 4 or the valence of X,

$d = e - f$

f = valence of M and is an integer equal to from 2 to 7 inclusive

3 is $> f$ and is an integer having a value up to 8.

4,069,057

MONOLITHIC REFRACTORY MATERIALS

Siro Kamei, Mitaka; Kenzo Takeda, Toyonaka; Mitsunao Takahashi, Hirakata, and Jiro Nakano, Settsu, all of Japan, assignors to Nippon Crucible Co., Ltd., Tokyo; Teikoku Kako Co., Ltd., Osaka and Nippon Steel Corporation, Tokyo, all of, Japan

Filed Feb. 17, 1976, Ser. No. 658,781

Claims priority, application Japan, Feb. 15, 1975, 50-19327

Int. Cl.² C04B *35/14, 35/52, 35/58, 35/66*

U.S. Cl. 106—55 **5 Claims**

1. In a monolithic refractory material comprising
a. a refractory composition consisting of a powdery refractory component which does not react with silica sol or alumina sol at room temperature; and
b. a binder having a solids content of more than about 5% by weight selected from the group consisting of silica sol, alumina sol or a mixture thereof; the improvement which comprises said material being a thixotropic monolithic refractory material for vibration forming which consists essentially of
i. 100 parts by weight of said powdery refractory component;
ii. from about 5 to 20 parts by weight of said binder; and
iii. from about 0.3 to 3.0 parts by weight of a water-insoluble or slightly water-soluble metal phosphate synthesized at a temperature of from about 230° to about 500° C.

4,069,058

POROUS SILICON OXYNITRIDE REFRACTORY SHAPES

Malcolm E. Washburn, Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 599,387, July 28, 1975, abandoned. This application Nov. 10, 1976, Ser. No. 740,357

Int. Cl.² C04B *35/58*

U.S. Cl. 106—55 **9 Claims**

1. A permeable refractory body consisting of a refractory grain having a mesh size of from 4 to 90, and a silicon oxynitride bond therefor, said body having a porosity, as represented by the ratio of flow rate "F" to pressure drop "P" of F/P of at least about 0.3, where F is measured in cubic feet per hour per inch², and P is measured in inches of water per inch of thickness of said body, the pores of said body being essentially free of silicon nitride whiskers.

4,069,059

SILICON NITRIDE-ZIRCONIUM SILICATE CERAMICS

William J. McDonough, and Roy W. Rice, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington DC

Filed June 11, 1976, Ser. No. 695,296

Int. Cl.² C04B *35/58*

U.S. Cl. 106—57 **1 Claim**

1. A dense and high-temperature-oxidation-resistant ceramic prepared from a mixture consisting of silicon nitride and of zirconium silicate in an amount from 3 to 15 weight percent of said silicon nitride.

4,069,060

ALUMINA-SILICON CARBIDE REFRACTORIES AND THEIR METHOD OF MANUFACTURE

Takeshi Hayashi, Bizen, and Masao Shibuno, Okayama, both of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Sept. 19, 1975, Ser. No. 615,094

Claims priority, application Japan, Oct. 7, 1974, 49-114731

Int. Cl.² C04B *35/02, 35/52, 35/00*; F37B *9/04*

U.S. Cl. 106—65 **13 Claims**

1. A process for manufacturing alumina-silicon carbide type refractories having a bonding structure which comprises mixing a silica-alumina type refractory material with a metallic aluminum powder, molding the mixture, drying the molded mixture, and then firing it in an atmosphere containing predominantly a carbon oxide gas, whereby the silica contained in the silica-alumina refractory material is reduced with the metallic aluminum powder to form metallic silicon and simultaneously corundum and also said metallic silicon is carbonized with the carbon oxide gas to form silicon carbide, so that an inter growth texture comprising corundum and silicon carbide is formed in a portion of the bonding structure of the refractories.

4,069,061

CERAMICS HAVING NONLINEAR VOLTAGE CHARACTERISTICS

Ikuo Nagasawa; Kazuo Mukae; Takashi Ishii, and Koichi Tsuda, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed June 30, 1976, Ser. No. 701,279
Claims priority, application Japan, June 30, 1975, 50-80594; June 30, 1975, 50-80595
Int. Cl.² C04B 35/50; H01C 7/10, 7/12
U.S. Cl. 106—73.2 4 Claims

1. Ceramic compositions consisting essentially of (1) from about 0.08 to about 10.0 atomic % Pr; (2) from about 0.08 to about 10.0 atomic % Mg or from about 0.08 to about 10.0 atomic % Ca; (3) from about 0.1 to about 8.0 atomic % Co; balance ZnO.

4,069,062

ADDITIVE FOR MORTAR AND CONCRETE

Theodor Bürge, Geroldswil, Switzerland, assignor to Sika AG, Vormals Kaspar Winkler & Co., Zurich, Switzerland

Division of Ser. No. 636,930, Dec. 2, 1975, which is a continuation of Ser. No. 465,883, May 1, 1974, abandoned. This application Oct. 28, 1976, Ser. No. 736,423
Claims priority, application Australia, May 8, 1973, 4023/73
Int. Cl.² C04B 7/353
U.S. Cl. 106—93 13 Claims

1. In a process for improving mortar or concrete in which a water-soluble, swellable polymeric substance is incorporated into the mortar or concrete in order to increase the viscosity thereof, the improvement which comprises separately preparing an aqueous dispersion in which the unswollen, water-soluble, swellable polymeric substance is finely dispersed in an aqueous solution of a water-soluble salt or an organic solvent in which said substance is only partially soluble or insoluble, wherein the salt or organic solvent serves to prevent dissolution and swelling of the polymeric substance, said separately prepared aqueous dispersion having a low viscosity and being storage stable, and as needed mixing this separately prepared storage stable, low-viscosity dispersion into the mortar or concrete where the water-soluble, swellable polymeric substance is freed to swell and thereby increase the viscosity of the mortar or concrete.

4,069,063

CEMENT COMPOSITION

Frank J. Ball, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Nov. 24, 1976, Ser. No. 744,526
Int. Cl.² C04B 7/02
U.S. Cl. 106—97 17 Claims

1. A portland cement mix comprising, a ground portland cement with or without added gypsum, aggregate, sufficient water to effect hydraulic setting of the cement, and having added thereto carbon dioxide in an amount sufficient to control setting of the mix and stabilize the hydrated cement.

4,069,064

PHTHALOCYANINE FORMULATIONS HAVING HIGH GLOSS, WHICH ARE STABILIZED AGAINST RECRYSTALLIZATION AND AGAINST CHANGE OF MODIFICATION

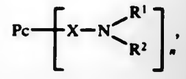
Robert Nett, Neustadt; Wolf Dieter Fechner, Dirmstein; Werner Jettmar, Mannheim; Rudolf Polster, Frankenthal; Reinhard Sappok, Heidelberg, and Eduard Hartmann, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 24, 1976, Ser. No. 669,842
Claims priority, application Germany, Apr. 12, 1975, 2516054
Int. Cl.² C09B 47/04
U.S. Cl. 106—193 P 14 Claims

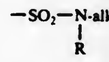
1. A finely divided solid to pasty phthalocyanine formulation which is stable against recrystallization and change of modification, which gives colorations having good gloss, and which consists essentially of

a. a finely divided phthalocyanine dispersed in insoluble form as the pigment and (b) from 10 to 40 percent by weight, based on (a), of a salt or the corresponding homogeneous mixture, also dispersed in insoluble form, of

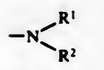
(α) one or more phthalocyanine derivatives of the formula



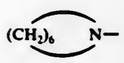
where Pc is an n-valent radical of the metal-free phthalocyanine, of a copper phthalocyanine or of a mixture of these, X is $-CH_2-$,



$-CH_2-CH_2-COO-C_2H_4-$ or $-CH_2-CH_2-COO-C_3H_6-$, R^1 is hydrogen, alkyl of 1 to 20 carbon atoms, phenyl, phenyl which is substituted by methyl, methoxy, ethoxy or chlorine, $-(C_2H_4-NH)_zH$ or $-(C_3H_6-NH)_zH$, R^2 is hydrogen, alkyl of 1 to 6 carbon atoms or cycloalkyl of 6 to 8 carbon atoms, alk is linear or branched saturated alkylene of 2 to 6 carbon atoms, R is hydrogen or alkyl of 1 to 4 carbon atoms, and R and R^2 may be linked to one another, n is a number from 2 to 5, z is an integer from 1 to 3 and the group



may also be a heterocyclic ring selected from the group consisting of morpholinyl, thiomorpholinyl, piperazinyl, N-methylpiperazinyl, N-ethylpiperazinyl, piperidinyl, pyrrolidinyl and



and

(β) a saturated or unsaturated aliphatic sulfonic acid of 8 to 20 carbon atoms, a benzenesulfonic or naphthalenesulfonic acid, substituted by one or two alkyl groups each of 6 to 20 carbon atoms, and in which the benzene or naphthalene nucleus can be substituted by a hydroxyl group, or mixtures thereof, the molar ratio of (α) : (β) being from 1:1 to 1:5, and the said salt or corresponding mixture acting as a stabilizer in the formulation.

12. A pasty formulation as claimed in claim 1 in which components (a) and (b) are suspended as insoluble particles in an organic fluid medium selected from the group consisting of aromatic hydrocarbons, halohydrocarbons, alcohols, glycols, glycol monoalkyl ethers, polyglycols, diacetone alcohol, benzyl alcohol, phenol, substituted phenols, naphthols, substituted naphthols, ketones, C_1 to C_5 alkyl esters of acetic acid, propionic acid, glycollic acid, lactic acid, carboxylic acid amides and N-methylpyrrolidone and mixtures thereof.

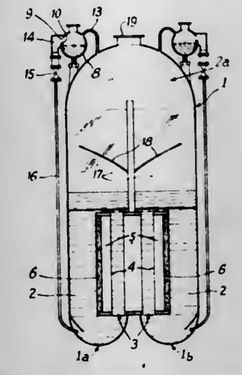
13. A pasty formulation as claimed in claim 12 including a natural, synthetic or semi-synthetic resin dissolved in said organic fluid.

4,069,065

APPARATUS FOR THE CONTINUOUS CRYSTALLIZATION OF SUGAR

Francois Langreney, c/o B.P. 59, 97462 Saint Denis, La Reunion, France

Filed Dec. 16, 1975, Ser. No. 641,256
Claims priority, application France, Mar. 28, 1975, 75 10002
Int. Cl.² C13F 1/00; C13G 1/02
U.S. Cl. 127—15 5 Claims



1. An apparatus for the continuous crystallization of sugar, formed by a longitudinally horizontal tank with separate, longitudinal, liquid heating and circulation zones in open communication with a common vapor zone, said heating zone containing a heat exchanger having vertically disposed pipes to induce upflow of liquid and other zone thermally isolated from said exchanger and not heated, liquid supply circuits being provided along the tank, a liquid overflow shoot at its exit to withdraw concentrated liquid therefrom and maintain a preset liquid level within said tank, and transverse walls in the vapor zone of the tanks above the heat exchangers, these walls extending below the level of liquid within said tank.

4,069,066

METHOD AND COMPOSITION FOR CLEANING POLISHED SURFACES

Peter Hindle, Sycamore Township, Hamilton County, and William James Welsh, Springdale, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 10, 1976, Ser. No. 739,159
Int. Cl.² B08B 3/08; C11D 3/04, 3/30
U.S. Cl. 134—6 13 Claims

11. A process for removing soil from hard surfaces which bear a polish cross-linked by metal ions comprising the following steps:

A. applying to said surface from about 0.05 gms. to 3.00 gms. per square foot of a composition comprising:
   a. from about 0.5% to about 20% of an amine-derived nitrogenous surfactant;
   b. amine impurities which are introduced into said composition with said nitrogenous surfactant;
   c. a water-soluble salt of a metal ion capable of complexing said amines in an amount such that the molar ratio of said salt to said amines is from about 1:1 to 1:4; and
   d. water;

and

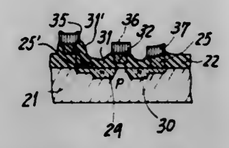
B. distributing said composition in an oscillating manner over the entire area of said surface.

4,069,067

METHOD OF MAKING A SEMICONDUCTOR DEVICE

Eisuke Ichinohe, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 16, 1976, Ser. No. 667,445
Claims priority, application Japan, Mar. 20, 1975, 50-34179; Mar. 20, 1975, 50-34156; Mar. 28, 1975, 50-36588; Mar. 28, 1975, 50-36589; May 6, 1975, 50-54839
Int. Cl.² H01L 21/26
U.S. Cl. 148—1.5 7 Claims



1. A method of making an integrated circuit semiconductor device comprising the successive steps of:

a. providing a semiconductor substrate material of a first conductivity type,
b. forming an insulation film having thinner parts, thicker parts and openings on a principle face of said semiconductor substrate,
c. depositing a low-resistance semiconductor film on both the insulation film and openings,
d. depositing an oxidation-resistant film on said low-resistance semiconductor film,
e. forming a plurality of retained regions of said low-resistance semiconductor film by at least thinning the low-resistance semiconductor regions surrounding said retained regions, said retained regions being at least partly covered by said oxidation resistant film,
f. introducing at least one impurity of a second conductivity type material into selected portions of the substrate region utilizing said retained regions of step (c) as a mask,
g. oxidizing selected parts of the low-resistance semiconductor film by utilizing said oxidation-resistant film as a mask tc form an insulation film,
h. removing said oxidation-resistant film, thereby exposing a surface of said low-resistance semiconductor film, and
i. forming metal contact films of a predetermined pattern on said exposed surface of said low-resistance semiconductor film.

4,069,068

SEMICONDUCTOR FABRICATION METHOD FOR IMPROVED DEVICE YIELD BY MINIMIZING PIPES BETWEEN COMMON CONDUCTIVITY TYPE REGIONS

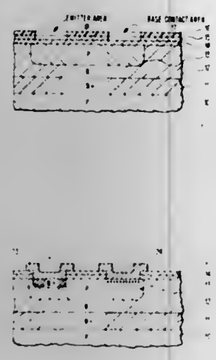
Klaus D. Beyer, Poughkeepsie; Gobinda Das, Beacon; Michael R. Poponiak, Newburgh, and Tsu-Hsing Yeh, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1976, Ser. No. 701,789
Int. Cl.² H01L 21/265, 29/32
U.S. Cl. 148—1.5 9 Claims

1. In the method of manufacture of a semiconductor device, a method of forming an emitter region with a substantial reduction in the number of pipes which result in shorts or leakages between two regions of identical conductivity, comprising the steps of;

forming a base region of a semiconductor device, and
introducing nucleation sites for dislocation loops by ion implanting non-dopant ions into said base region of the semiconductor device to be subsequently doped with emitter type impurity, said nucleation sites being formed near the front surface of said base region of said device, and

subsequently introducing emitter type impurity into said region to form the emitter region whereby said nucleation



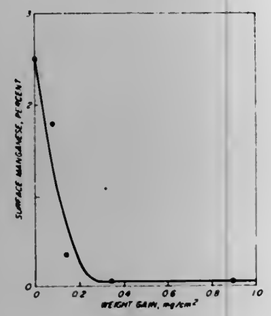
sites are converted into small electrically harmless dislocation loops thereby reducing the number of pipes.

4,069,069

METHOD FOR IMPROVING THE SURFACE QUALITY OF ANNEALED STEEL STRIP

Robert M. Hudson, Churchill Borough; Edward J. Oles, Jr., Pittsburgh, and Clair John Warning, Plum Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1976, Ser. No. 710,997
Int. Cl.[2] C21D *1/74*
U.S. Cl. 148—12.1 2 Claims



1. In the production of low-carbon steel sheet, containing a bulk concentration of from about 0.2 to 0.55 percent free manganese in solid solution, wherein said sheet is cold rolled to desired gage, wound into coils and then box annealed, at an annealing soak temperature between 1050° to 1400° F, in an atmosphere which is protective to the iron in said sheet, said atmosphere containing H_2 and N_2 and having an oxidation potential which is preferentially oxidizing to manganese; whereby during said box annealing the manganese concentration in the surfaces of said coils at the edges thereof, is substantially enriched over that of said bulk manganese concentration, thereby resulting in an undesirable appearance known as "annealing border,"

the improvement which comprises, (a) at a temperature not substantially higher than said annealing soak temperature, heating said coils in an atmosphere which is oxidizing to iron so as to provide an iron oxide weight gain within the range 0.08 to 0.8 mg/cm^2 of strip surface and (b) thereafter annealing said coils in said protective atmosphere, said annealing being conducted for a time at least sufficient to reduce said iron oxide,

and wherein the weight gain from said step (a) oxidizing treatment is at least sufficient to reduce the manganese concentration in the surface of said sheet at the edges thereof, to approximately the bulk manganese concentration.

4,069,070

METHOD OF PRODUCING LOW CARBON TIN-MILL GAGE STEEL WITHOUT ANNEALING BORDER

Robert M. Hudson, Churchill Borough; Edward J. Oles, Jr., Pittsburgh, and Clair J. Warning, Plum Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1975, Ser. No. 633,759
Int. Cl.[2] C21D *1/74, 9/46*
U.S. Cl. 148—12.1 2 Claims

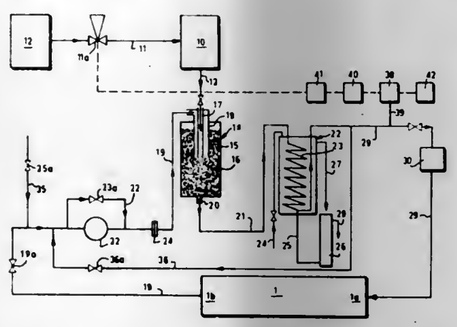
1. In the process for producing a cold rolled tin-mill gage steel coil wherein a low-carbon steel is hot rolled, pickled, cold rolled to final gage and box annealed at a temperature of 1050° to 1400° F in a commercial HNX atmosphere; the improvement comprising preventing the formation of an annealing border on the steel coil during the anneal by providing the steel with a manganese content such that the free manganese in solid solution is less than about 0.23 weight percent.

4,069,071

METHOD FOR GENERATING A REDUCING ATMOSPHERE FOR HEAT-TREATING INSTALLATIONS

Alfred Normand, Paris, France, assignor to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Paris, France

Filed Mar. 18, 1976, Ser. No. 667,983
Claims priority, application France, Apr. 11, 1975, 75 11350
Int. Cl.[2] C21D *1/48*
U.S. Cl. 148—16 9 Claims



1. A method of supplying an atmosphere formed partly of nitrogen and hydrogen to an installation wherein said atmosphere is subjected to contamination by oxygen, comprising the steps of:

recovering the contaminated atmosphere from said installation;

supplying said recovered atmosphere to a catalytic reactor containing palladium-coated grains of alumina for catalytic de-oxidizing at a temperature less than 200° C;

cooling the de-oxidized atmosphere to remove condensable substances therefrom;

supplying the cooled de-oxidizing atmosphere to said installation; and

supplying fresh amounts of nitrogen and hydrogen to said installation as a function of the hydrogen content of said atmosphere.

4,069,072

ALUMINUM ALLOY

Roger Develay, Seyssinet Pariset, and Jean Coupry, Courbierie, both of France, assignors to Pechiney Ugine Kuhlmann, Lyon, France

Continuation-in-part of Ser. No. 479,766, June 17, 1974, abandoned. This application Aug. 2, 1976, Ser. No. 710,413
Claims priority, application France, June 20, 1973, 73 22388
Int. Cl.[2] C22C *21/10*
U.S. Cl. 148—32 3 Claims

1. Wrought aluminum based alloy consisting essentially of:

Zn	6.5 to 10% by weight
Cu	4.5 to 7% by weight
Mg	0.1 to 1% by weight
Mn	0.01 to 0.5% by weight
Ti	0.01 to 0.3% by weight
Fe	up to 1% by weight
Ni and Co	on condition that $\frac{Fe}{Ni + Co} = 1 \pm 0.3\%$ by weight
Si	less than 0.5% by weight
Zr	less than 0.5% by weight
Sn	less than 0.5% by weight
Sb	less than 0.5% by weight
Cd	less than 0.1% by weight
Be	less than 0.1% by weight
Ge	less than 0.75% by weight

Remainder aluminum plus impurities.

4,069,073

PROCESS FOR THE PRODUCTION OF A FERROMAGNETIC METAL POWDER

Eiichi Tadokoro; Masashi Aonuma, and Yasuo Tamai, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 2, 1975, Ser. No. 619,004
Claims priority, application Japan, Oct. 11, 1974, 49-116169
Int. Cl.[2] H01F *1/02, 1/06*
U.S. Cl. 148—105 9 Claims

1. In a process for the production of a ferromagnetic metal powder containing at least 75% by weight of at least one metal selected from the group consisting of Fe, Co, Ni, Fe—Co, Fe—Ni, Co—Ni and Fe—Co—Ni by reducing a metal salt capable of forming the ferromagnetic metal powder with a reducing agent by a wet or dry process in the presence of a non-magnetic element or an organic compound, thus obtaining an oxidation resistant ferromagnetic metal powder, the improvement which comprises treating further the ferromagnetic metal powder separated from the reducing reaction system with a solution containing phosphate ions with a concentration of 0.00001 to 10 mols/liter at a temperature of from −10° to + 120° C.

4,069,074

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Styapas Styapono Yanushonis, ulitsa Antakalne, 94, kv. 31; Bronjus-Vitautas Bronyaus Belyauskas, ulitsa Antakalne, 75, kv. 78; Vida-Katrina Jule Sherkuvene, ulitsa G.Gaya, 24, kv. 3, and Vladas Klemovich Banjulis, ulitsa Ateites, 11, kv. 512, all of Vilnjus, U.S.S.R.

Filed Jan. 7, 1976, Ser. No. 647,010
Int. Cl.[2] H01L *21/225*
U.S. Cl. 148—188 8 Claims

1. A method of making semiconductor devices comprising the steps of:

a. providing a semiconductor substrate having a first type of conductivity;

b. forming a doping layer on said substrate, said doping layer having a dopant of a second type of conductivity, said doping layer being etchable at a known rate with a first etchant;

c. forming a shielding layer atop said doping layer, said shielding layer being etchable at a known rate with the first etchant;

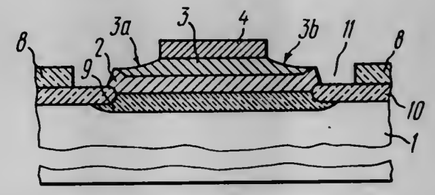
d. forming a first masking layer atop said shielding layer, said masking layer being etchable at a rate higher than said shielding layer;

e. forming a photoresist pattern on said first masking layer;

f. forming a technological structure by etching away exposed portions of said masking, shielding and doping layers with the first etchant;

g. forming an additional masking layer over the entire substrate surface;

h. diffusing a first region of a second type of conductivity into said substrate from said doping layer;



i. forming an insulating layer along the perimeter of said technological structure by thermal treatment under oxidizing conditions;

j. forming a window in said additional masking layer, said window overlapping at least two portions of the perimeter of said technological structure;

k. forming windows by selectively etching said shielding and masking layers to expose the surface of said region of second type of conductivity using as a mask said first masking layer and said additional masking layer;

l. diffusing through at least one of said windows a dopant of the first type of conductivity; and

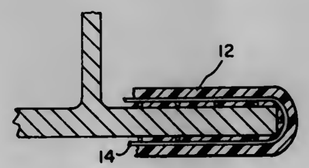
m. forming a metallization pattern.

4,069,075

STRUCTURAL SUPPORT FOR CHAR DERIVED FROM INTUMESCENT COATINGS

Rudolph W. Billing, Littleton, and George K. Castle, Chelmsford, both of Mass., assignors to Avco Corporation, Wilmington, Mass.

Continuation-in-part of Ser. No. 478,844, June 13, 1974, Pat. No. 3,913,290. This application Jan. 27, 1975, Ser. No. 544,168
Int. Cl.[2] B29C *25/00*
U.S. Cl. 156—82 2 Claims



1. A method of producing a structural support for the char residue derived from a char-forming intumescent coating on structural members comprising the steps of:

mounting a fire resistant mesh member on the surface of the structural member; and

applying a self-adhering char-forming intumescent coating on the surface of the structural member so as to substantially encapsulate the entire mesh member and thereby anchoring to the surface the char residue formed when the intumescent coating is fully activated and reacted by a fire.

4,069,076

LIQUID LAMINATION PROCESS

Michael Glean Fickes, Matawan, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 29, 1976, Ser. No. 745,680
Int. Cl.² B32B 31/02
U.S. Cl. 156—83 9 Claims

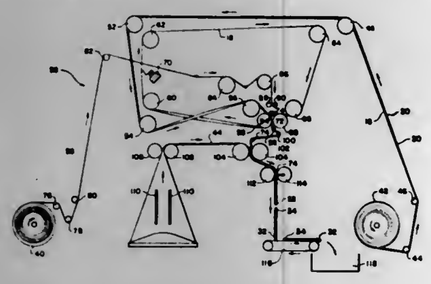
1. In a process for applying a photoresist film to a preimaged, patterned relief substrate wherein the height of the relied image is at least 0.0004 inch and the thickness of the photoresist film is at least one third the thickness of the relief image height, the improvement comprising flooding with a solvent or non-solvent swelling agent the patterned relief substrate to a depth of swelling agent at least to cover the relief height prior to the application of said photoresist film.

4,069,077

TOWEL TABBING MACHINE AND METHOD

Frank Baumgartner, Jamesburg, N.J., assignor to Pacon Manufacturing Corporation, Metuchen, N.J.

Filed Sept. 16, 1976, Ser. No. 723,683
Int. Cl.² B32B 31/00
U.S. Cl. 156—152 9 Claims



1. A tabbing machine comprising:
a source of adhesive tape having a release layer and an adhesive layer having adhesive on both sides thereof;
means for separating said adhesive layer from said release layer;
means for inserting a tab between said separated adhesive layers and said release layer;
means for reuniting said adhesive layer and said release layer; and,
means for cutting substantially transversely through said reunited tape and said tab at the location where said tab was inserted.

4,069,078

PROCESS FOR FINISHING A NONWOVEN FILM-FIBRIL SHEET

Milton David Marder; Robert Osmalov, both of Richmond, Va., and Gerald P. Pfeiffer, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 23, 1976, Ser. No. 717,006
Int. Cl.² B32B 27/00
U.S. Cl. 156—181 4 Claims

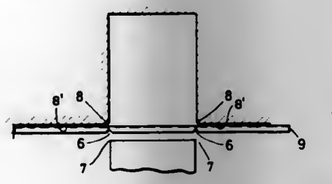
1. A process for preparing a bonded nonwoven sheet of polyethylene film-fibrils, said sheet having high delamination strength and uniformity of appearance, said process comprising
1. providing a lightly consolidated, non-woven, film-fibril sheet having a basis weight of from about 34–119 g/m² (1–3.5 oz/yd²), a coefficient of variation in basis weight, normalized to a 68 g/m² (2 oz/yd²) basis weight, of from about 8 – 15%, and a density of from about 0.2–0.4 g/cc;
2. passing the lightly consolidated sheet through a nip formed between two rolls while applying a nip loading sufficient to provide an average nip pressure of from about 1.7–6.2 MPa (250–900 psi); one of said rolls having a multiplicity of bosses over practically its entire surface and extending from the surface of the roll to a height of from about 50–100% of the thickness of the lightly consolidated sheet, said bosses having tips which have at least one dimension being less than 0.64 cm (0.25 in) and the most prominent of which, in aggregate, form an area which is from about 1–50% of the area of the surface of the roll; the other roll having a surface with a durometer hardness of from about 55–80 as measured on the Shore D scale;
3. passing the resulting sheet, while under restraint, through a heating zone and raising the temperature of one surface of the sheet sufficiently to cause fusion of surface film-fibrils so as to obtain a sheet having an abrasion resistance of at least two cycles and cooling the sheet, while under restraint to a temperature below that at which the sheet distorts or shrinks; and
4. repeating step (3) with the opposite side of the sheet to obtain a bonded sheet with an opacity of more than about 72% but less than about the value obtained from the equation, % opacity = 92 − 1.9 $\sqrt{121}$ − basis weight, said basis weight being the basis weight of the finished product in g/m².

4,069,079

METHOD AND APPARATUS FOR PRODUCING ACCUMULATOR PLATE SEPARATOR POCKETS

Frank Eggert, Hamburg, Germany, assignor to Schlegel GmbH, Hamburg, Germany

Filed Aug. 16, 1976, Ser. No. 714,510
Claims priority, application Germany, Aug. 27, 1975, 2538122
Int. Cl.² B29C 17/04
U.S. Cl. 156—212 6 Claims



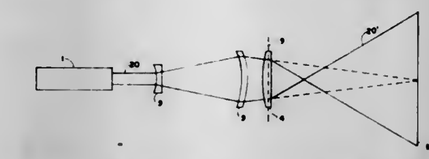
1. A method of producing accumulator separator pockets wherein each pocket comprises two spaced rectangular films positioned in register and joined together on three sides by an elongated edge strip of U-shaped cross section comprising the steps of:
guiding and positioning an elongated edge strip of U-shaped cross section across the entrance of a U-shaped work cavity with a center portion of said edge strip in register with said entrance and having a length slightly smaller than the width of said entrance, said edge strip further having end portions bearing against end surfaces of corners defining said entrance, and an opening in said edge strip facing away from said work cavity;
positioning a pair of rectangular films in registering relation with the leading ends thereof in alignment with said center portion of said edge strip and facing said opening in said edge strip;
inserting said leading ends of said films into said opening in said center portion of said edge strip; and
moving said films and said center portion of said edge strip into said work cavity causing said end surfaces of said corners of said entrance to fold said end portions of said edge strip over corresponding sides of said films for producing a pocket.

4,069,080

METHOD AND APPARATUS OF BONDING SUPERPOSED SHEETS OF POLYMERIC MATERIAL IN A LINEAR WELD

Richard Francis Osborne, Mauldin, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed June 11, 1976, Ser. No. 695,277
Int. Cl.² B29C 19/02; B23K 9/00; G02B 3/06
U.S. Cl. 156—272 5 Claims



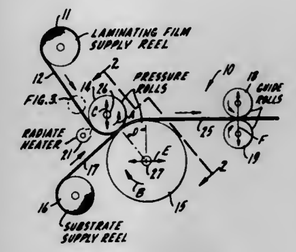
1. A method of welding sheets of polymeric material together with a laser energy source comprising the steps of:
a. pneumatically clamping at least two of said sheets together in the area to be welded with air impinging on opposed sides of said sheets; and,
b. focusing the beam from said laser energy source into a line upon one side of the clamped area thereby bonding said sheets together in a linear weld.

4,069,081

METHOD FOR PROTECTIVE FILM LAMINATION WITH CURL CONTROL

Herbert M. Drower, Wilmette, and Edison L. Rhyner, Chicago, both of Ill., assignors to Sealtran Corporation, Chicago, Ill.

Filed Aug. 4, 1976, Ser. No. 711,491
Int. Cl.² B29C 19/02; B65C 9/25
U.S. Cl. 156—272 11 Claims



1. The method of laminating a protective transparent film to a document substrate, without producing appreciable curl in the finished laminate, comprising the following steps:
A. preparing a composite protective film comprising an outer layer of tough, transparent abrasion resistant resin and an inner layer of transparent thermoplastic bonding resin, including the addition of a limited quantity of a radiant-heat-blocking pigment to the bonding resin in an amount sufficient to increase the radiant heat absorption of the bonding resin and to decrease its radiant heat transmission but small enough to preclude material degradation of the transparency of the composite film to visible light;
B. heating the bonding resin layer of the composite film by directing radiant heat to impinge directly upon the bonding resin;
C. laminating the composite protective film to a substrate by passing the composite film and the substrate between first and second pressure rolls, promptly after heating of the adhesive, with the adhesive surface of the film in engagement with an inner surface of the substrate, the outer surface of the film engaging the first pressure roll, and the outer surface of the substrate engaging the second pressure roll; and
D. maintaining the resulting laminate in engagement with the second pressure roll through an appreciable arcuate distance on the second pressure roll after clearing its engagement with the first pressure roll.

4,069,082

PROCESS FOR THE TRANSFORMATION OF A COMMINUTED SWELLABLE CELLULOSE ETHER INTO AN EASILY WORKABLE MATERIAL

Ludwig Grosse, Taunusstein, and Hans-Werner Dorr, Wiesbaden, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Dec. 6, 1976, Ser. No. 747,958
Claims priority, application Germany, Dec. 4, 1975, 2554558
Int. Cl.² B05D 1/28, 7/00
U.S. Cl. 156—281 8 Claims

1. In the process for the transformation of comminuted cellulose ether, which has been rendered at least largely water-insoluble by modification, but which is still highly swellable with water, into an easily workable material, in which process the modified cellulose ether is attached to a hydrophilic support web,
the improvement comprising dispersing the modified cellulose ether in a solution of unmodified cellulose ether in an organic solvent, coating the support on at least one of its surfaces with the dispersion and then drying.

4,069,083

BONDING MATERIAL AND METHOD

David Nelson Palmer, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 22, 1975, Ser. No. 643,065
Int. Cl.² C09J 5/00
U.S. Cl. 156—329 8 Claims

1. A method of adhering and acoustically and electrically coupling an acoustic transducer to a surface wherein said coupling will be subject to high temperature and radiation comprising the steps of applying a layer of electrically conductive coupling material between said transducer and said surface and allowing said coupling material to cure by vehicle-solvent release to cause said transducer to be adhered and coupled to said surface, said coupling material comprising:
a. a carborane polysiloxane adhesive;
b. a vehicle-solvent for said carborane polysiloxane adhesive, said vehicle-solvent being evaporatable from said bonding material whereby said bonding material will cure by vehicle-solvent release;
c. a wetting agent; and
d. a conductive agent.

4,069,084

NOVEL DOSAGE FORM

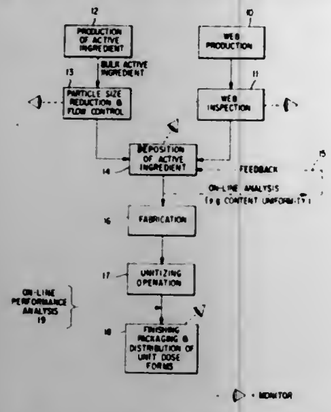
Arthur Roman Mlodozeniec, Montclair, and Lawrence Samuel White, Ramsey, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 640,652, Dec. 15, 1975, Pat. No. 4,029,757.
This application Apr. 4, 1977, Ser. No. 784,011
Int. Cl.² B32B 31/06, 31/08
U.S. Cl. 156—378 4 Claims

1. A system for producing solid, pharmaceutical unit dosage forms comprising in combination:
a. first means for producing a web of edible, therapeutically inert material;
b. second means receiving said web for loading to said web at least one medicament;
c. third means receiving said loaded web for fabricating said loaded web into a solid geometric form of predetermined dimensions having said medicament substantially internalized, said form being divisible into a plurality of unit dosage forms, said means including means for forming a continuous stack of a plurality of layers of web by fan-folding a continuous structure comprising at least one pair

of layers of web having medicament loaded to the facing surfaces thereof and means for densifying and shaping said stack into a continuous rod-like geometric form;

d. fourth means receiving said geometric form for unitizing said geometric form into a plurality of unit dosage forms;



e. fifth means receiving said unit dosage forms for sealing said unit dosage forms and completely internalizing said medicament; and

f. means for testing on-line non-destructively the output of at least one of said first through said fifth means and thereby assure uniform quality of said unit dosage forms.

4,069,085

APPARATUS FOR FORMING APERTURES IN A THIN METAL TAPE SUCH AS A SHADOW MASK FOR A COLOR TELEVISION DISPLAY TUBE

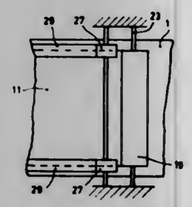
Petrus Johannes Buysman; Gerardus Antonius Wilhelmus Vermeulen, and Cornelis Arie Bos, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 485,845, July 5, 1974, abandoned. This application Sept. 29, 1975, Ser. No. 617,524

Claims priority, application Netherlands, July 16, 1973, 7309840

Int. Cl.² C23F *1/02*

U.S. Cl. 156—345 **3 Claims**



1. In an apparatus for etching apertures in a continuously moving thin metal tape, both surfaces of which tape have previously been provided with apertured etch resistant coatings, by bringing said tape into contact with an etching fluid and then removing said etching fluid from said tape, the improvement wherein said apparatus in addition comprises means for moving a section of an endless belt of an etch resistant synthetic resin material having a width at least as large as that of said metal tape in the same direction and at the same rate as said metal tape, means for bringing said section of said belt into substantial contact with a surface of said thin metal tape while both tape and belt are in motion, and means, prior to bringing said metal tape into contact with said etching fluid, for temporarily causing at least the edges of said belt to adhere to said thin metal tape in a manner such that upon bringing said tape into contact with said etching fluid, the etching fluid is prevented from reaching said surface of said tape in contact with said belt while the opposing surface of said tape is being etched.

4,069,086

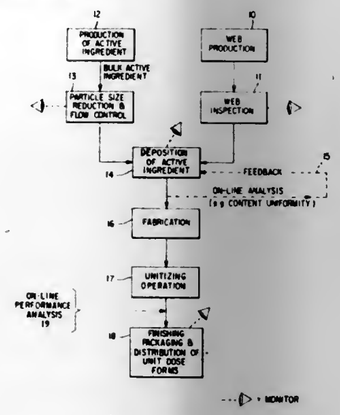
NOVEL DOSAGE FORM

Robert Bruce Reif, Grove City, Ohio, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 640,653, Dec. 15, 1975, Pat. No. 4,031,200. This application Apr. 4, 1977, Ser. No. 784,013

Int. Cl.² B32B *31/06, 31/08*

U.S. Cl. 156—378 **7 Claims**



1. A system for producing solid, pharmaceutical unit dosage forms comprising in combination:

a. first means for producing a web of edible, therapeutically inert material;

b. second means receiving said web for loading to said web at least one medicament;

c. third means receiving said loaded web for fabricating said loaded web into a solid geometric form of predetermined dimensions having said medicament substantially internalized, said form being divisible into a plurality of unit dosage forms, said means including means for forming a continuous stack of a plurality of layers of web and means for densifying and shaping said stack into a continuous rod-like first geometric form;

d. fourth means receiving said geometric form for unitizing said geometric form into a plurality of unit dosage forms and sealing said unit dosage forms thereby completely internalizing said medicament; and

e. means for testing on-line non-destructively the output of at least one of said first through said fourth means and thereby assure uniform quality of said unit dosage forms.

4,069,087

APPARATUS FOR WELDING ARTICLES OF THERMOPLASTS

Johannes Lüke; Willy Muth, both of Frankfurt am Main; Wolfgang Riederer, Hofheim, Taunus, and Gunter Wenzel, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

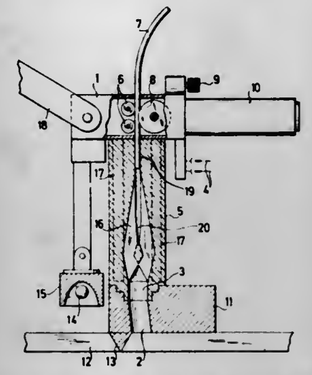
Filed Oct. 1, 1976, Ser. No. 728,542

Claims priority, application Germany, Oct. 4, 1975, 2544492

Int. Cl.² B32B *31/12, 31/30*

U.S. Cl. 156—391 **5 Claims**

1. In an apparatus for welding thermoplastic articles with additional welding material comprising a welding head including feeding means for feeding a rod of welding material through the head, a melting housing for the welding materials mounted on said welding head and receiving said welding material therefrom, and a welding shoe mounted on the melting housing and having an outlet opening formed therein for receiving and discharging plasticized welding material from the welding housing, said shoe including a smoothing element, a guide element for guiding the apparatus along a point to be welded, and heating means for heating the joint to be welded, the improvement comprising said melting housing having a guide channel, a melting channel, a melting chamber and a collecting chamber formed therein, said melting channel being located to receive said welding material from said feeding means and for preheating the welding material, said melting



channel communicating at one end with said guide channel and having a diminishing cross-sectional area and being closed at its other end, said melting channel being in communication with said melting chamber to discharge welding material heated in the melting channel into said melting chamber, said melting chamber being located in communication with said collecting chamber which is in communication with said outlet opening of the welding shoe, and heating means in said housing for heating welding material in said melting channel and melting chamber.

4,069,088

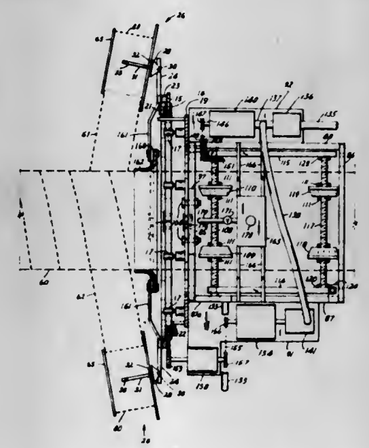
PIPE WRAPPING APPARATUS

Spencer D. Cottam, Harris County, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Filed Nov. 22, 1976, Ser. No. 743,699

Int. Cl.² B65H *81/00*; D02G *3/36*; B65H *75/18*

U.S. Cl. 156—392 **47 Claims**



1. Pipe wrapping apparatus, comprising a tape spindle having a tubular spindle shaft, and a support shaft extending into said spindle shaft and pivotally connected to said spindle shaft at the center of the tape roll widths thereof whereby the angular position of said spindle shaft automatically adjusts in response to the tension of the tape as the tape is withdrawn from the tape roll to be wound onto a pipe.

4,069,089

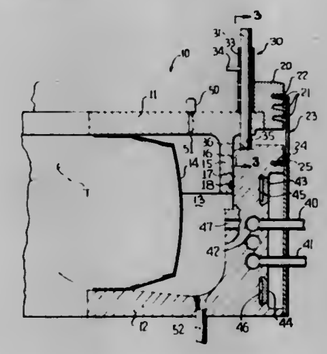
MOLD FOR APPLYING PRE-CURED TREAD RUBBER TO A TIRE, PREFERABLY UTILIZING A RUBBER ENVELOPE

Kenneth T. MacMillan, 4992 Wesleyan Woods Drive, Macon, Ga. 31204

Filed Aug. 13, 1976, Ser. No. 714,280

Int. Cl.² B29H *5/04, 17/36*

U.S. Cl. 156—394 **16 Claims**



1. A mold particularly adapted for applying pre-cured tread rubber to tires of different widths comprising a pair of generally annular mold bodies which collectively define a chamber adapted to receive a tire, said annular mold bodies being capable of relative axial movement whereby an axial dimension of said chamber may be selectively adjusted to accommodate tires of different widths, means for locking said annular mold bodies to each other at any one of a plurality of positions of relative axial adjustment between said mold bodies, axially movable axial adjustment means for selectively adjusting the axial dimension of said chamber, said axial adjustment means being carried by one of said annular mold bodies, and said axial adjustment means when selectively adjusted to accommodate a particular tire width has a terminal end face resting upon another of said annular mold bodies.

4,069,090

APPARATUS FOR FORMING AN END CLOSURE IN A TUBULAR KNITTED ARTICLE

Jo Clara Boyer, Los Angeles, Calif., assignor to Saviano, A.G., Balzers, Liechtenstein

Filed Mar. 10, 1976, Ser. No. 665,378

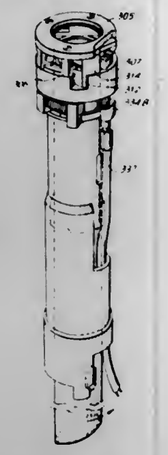
Claims priority, application Germany, Mar. 14, 1975, 2511236; Apr. 24, 1975, 2518298

Int. Cl.² D04B *9/00, 39/00*

U.S. Cl. 156—498 **8 Claims**

1. An apparatus for forming an end closure in a tubular knitted article having a synthetic fusible thermoplastic yarn in a portion thereof, comprising means for radially constricting a knitted tube of fabric into a compact substantially solid mass at said portion, said radially constricting means comprising a plurality of sliders sliding in guides formed in an annular member surrounding the knitted tube, each slider having a surface terminating in an arcuate profile shaped to slide along a contiguous slider in the constricting operation until the arcuate pro-

files engage and constrict the tubular portion into said mass, and means for simultaneously heat severing and sealing said



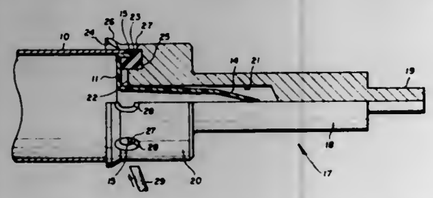
mass to form a small heat set closure core connecting the yarns of the fabric into a closed end.

4,069,091

CARTRIDGE MAKING APPARATUS

Dick T. van Manen, Canandaigua, N.Y., assignor to Voplex Corporation, Pittsford, N.Y.

Division of Ser. No. 589,698, June 23, 1975, Pat. No. 3,982,980, which is a continuation-in-part of Ser. No. 441,971, Feb. 13, 1974, abandoned. This application July 2, 1976, Ser. No. 702,081
Int. Cl.² B23K *19/02*
U.S. Cl. 156—498 2 Claims



1. Apparatus for spin welding an injectionmolded, resin end cap and nozzle to an end region of the cylindrical wall of an extruded resin barrel to form a cartridge for sealants and the like, said end cap and nozzle having a surface having an interference fit with the inside of said end region of said barrel and said end cap and nozzle having a flange extending radially outward from said interference fit surface by approximately the thickness of said wall of said barrel, said apparatus comprising:

a. a tool rotatable on an axis concentric with the axis of said cylindrical barrel, and means for holding said barrel against rotation;

b. means for holding said end cap and nozzle in said tool and for rotating said end cap and nozzle with said tool;

c. means for providing relative motion axially of said barrel between said barrel and said rotating tool sufficient to insert said interference fit surface of said rotating end cap and nozzle inside said end region of said barrel and to press said flange against the end of said wall of said barrel to spin weld both said interference fit surface and said flange of said end cap and nozzle to said end region of said barrel;

d. said tool having a cylindrical surface rotating with said tool and encircling and rotatably engaging the outside of said end region of said barrel for supporting said end region of said barrel against radial expansion from said interference fit during said spin welding; and

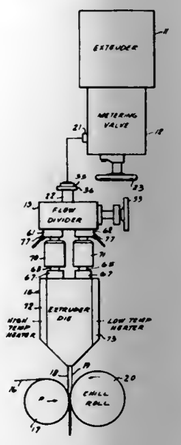
e. said encircling surface of said tool having an aperture positioned for rotating around the seam between said flange and said end wall of said barrel for removing any burrs forming outwardly from said spin weld.

4,069,092

ODOR ELIMINATION APPARATUS FOR EXTRUDED PLASTIC

Stanley C. Zink, Beloit, Wis., and William R. Penrod, Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

Continuation of Ser. No. 544,218, Jan. 27, 1975, abandoned, which is a division of Ser. No. 368,958, Jan. 11, 1973, Pat. No. 3,901,636. This application Nov. 22, 1976, Ser. No. 743,804
Int. Cl.² B29D *3/02, 3/04, 3/08*
U.S. Cl. 156—500 8 Claims



1. An apparatus for combining and controlling the odor of multi-layer extrusion films, comprising:

a single extruder for delivering a thermoplastic melt stream,

means dividing said melt stream into first and second streams,

first heating means to heat said first one of said streams to a high enough temperature to oxidize the resin to attain good flow and adhesive characteristics,

said first heating means including mixing means to mix the resin to allow for uniform heating thereof in said first heating means,

second heating means to at least maintain the second streams at a lower temperature than the first stream, said temperature of said second stream being below the oxidation temperature of the resin,

die means disposed downstream of the first and second heating means having two side-by-side passages therein,,

a third heating means associated with one of said passages and a fourth heating means associated with the other of said passages,

said third heating means maintaining the first melt stream at said high temperature through the die and said fourth heating means maintaining the second melt stream at said lower temperature through the die,

means for extruding the material so heated in the form of a film through the die in side-by-side relation, and

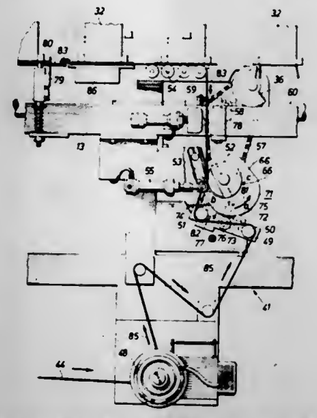
means for combining the two plastic materials with each other and laying the adhesively heated material on a substrate and coating the substrate under pressure.

4,069,093

CARTON SEALING STRIP APPLICATOR

Hans Rolf Ingemar Linner, Helsingborg, Sweden, assignor to AB Akerlund & Rausing, Sweden

Filed Mar. 15, 1977, Ser. No. 777,722
Claims priority, application Sweden, Nov. 12, 1976, 7612636
Int. Cl.² B26D *5/00;* B31B *1/72*
U.S. Cl. 156—522 7 Claims



1. Sealing strip applicator apparatus for use in a packaging machine in which a series of folding boxes are fed one after another in a predetermined direction with substantially constant center-to-center distances and a sealing strip is applied to at least one open end of each folding box, the sealing strip being formed by cutting a length from a continuous ribbon of sealing material, said apparatus comprising:

means for feeding said sealing ribbon;

means for cutting said ribbon at a cutting station;

means responsive to the operation of said cutting means for withdrawing the sealing ribbon a predetermined distance so that the leading edge of said ribbon is aligned with the leading edge of the next folding box as seen in the withdrawal direction, said withdrawing means including a pair of rollers adapted to be pressed into engagement with each other, one of said rollers being driven, the ribbon running between said rollers, and means for moving the other of said rollers, said moving means operative for a predetermined time after the operation of said cutting means to move said other of said rollers into pressure engagement with said driven roller with the ribbon engaged therebetween for driving engagement by said driven roller, in a direction opposite to the ribbon feeding direction; and

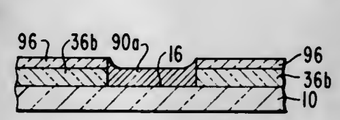
means for adhering the ribbon over said open end of said next folding box.

4,069,094

METHOD OF MANUFACTURING APERTURED ALUMINUM OXIDE SUBSTRATES

Joseph Michael Shaw, Cranbury, and Karl Heinz Zaininger, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 30, 1976, Ser. No. 755,968
Int. Cl.² H01L *21/205*
U.S. Cl. 156—612 8 Claims



1. A method for making a planar composite of a monocrystalline silicon island imbedded in aluminum oxide comprising the steps of:

selectively masking a sapphire wafer with a mask of silicon dioxide or a physico-chemical equivalent material,

depositing substantially monocrystalline aluminum oxide on said wafer,

simultaneously depositing polycrystalline aluminum oxide on said mask,

contacting the aluminum oxide deposited on said mask and said wafer with hot phosphoric acid (H_3PO_4), whereby said polycrystalline aluminum oxide is removed by etching but said substantially monocrystalline aluminum oxide remains intact,

removing the mask, whereby the wafer is selectively exposed by an aperture in the aluminum oxide deposited on the wafer,

depositing monocrystalline silicon into the aperture and on a non-contiguous surface of the deposited aluminum oxide, and

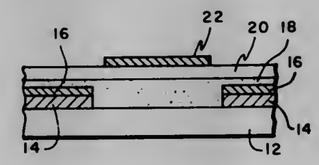
removing a portion of said deposited silicon which extends above the deposited aluminum oxide whereby a monocrystalline silicon island remains imbedded in the deposited aluminum oxide.

4,069,095

METHOD OF PREPARING PHOTODETECTOR ARRAY ELEMENTS

Robert V. Lorenze, Jr., Westford, and Miriam F. Young, Dorchester, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 7, 1976, Ser. No. 720,917
Int. Cl.² B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—632 5 Claims



1. A method of preparing photodetector array elements from a body of photodetector material, comprising:

forming conductive layers on selected portions of a substrate;

coating said conductive layers with a photoresist material;

depositing an adhesive layer on the photoresist and the remaining substrate to a sufficient depth to cover said photoresist;

bonding a body of photodetector material to said adhesive, such that said body is parallel to said substrate;

delineating individual photodetector elements from said body to form elements of an array, thereby exposing the edges of said photoresist material; and

removing the photoresist layer and material deposited thereon.

4,069,096

SILICON ETCHING PROCESS

Alan R. Reinberg, Dallas, and Raman K. Rao, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 3, 1975, Ser. No. 628,184
Int. Cl.² H01L *21/306*
U.S. Cl. 156—643 11 Claims

1. A process for etching silicon comprising the step of:

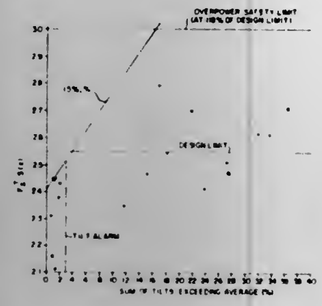
contacting said silicon with a plasma derived from a gas comprising CCl_4, an inert gas, and a gas selected from a group consisting of Cl_2 and HCl.

4,069,097

METHOD AND APPARATUS FOR MONITORING FLUX DEVIATIONS IN A NUCLEAR REACTOR

Fred J. Frank, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 11, 1975, Ser. No. 630,875
Int. Cl.[2] G21C 7/06, 7/00
U.S. Cl. 176—22 14 Claims



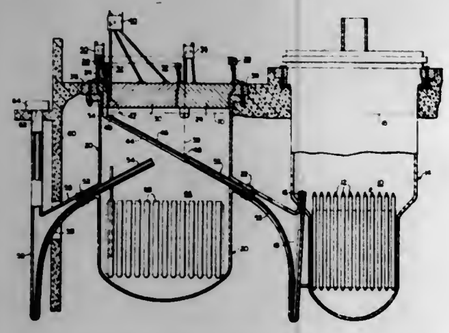
1. An improved method for identifying power maldistributions within a given plane of a core of a nuclear reactor comprising the steps of:
- measuring a parameter representative of the power within the core at a preset number of locations within the given plane;
- supplying an electrical output representative of the power measured at the respective preset locations;
- electrically averaging the respective measured powers;
- electrically summing the electrical outputs representative of the measured power at the respective locations which deviate in a given direction from the average measured power;
- comparing a value representative of the sum to a predetermined setpoint;
- supplying an alarm when the sum exceeds the setpoint.

4,069,098

EX-VESSEL NUCLEAR FUEL TRANSFER SYSTEM

Elman E. Wade, Ruffsdale, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 23, 1976, Ser. No. 660,746
Int. Cl.[2] G21C 19/22, 19/20; B66C 17/08
U.S. Cl. 176—31 8 Claims



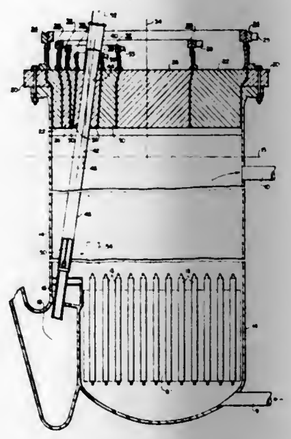
1. A nuclear reactor fuel transfer system comprising:
- a fuel transfer area located below the reactor operating coolant level, inclined at an angle to the horizontal and directly connected to the reactor vessel below said reactor operating coolant level for accommodating the transfer of fuel assemblies;
- a storage area located below said reactor operating coolant level and directly connected to said fuel transfer area and having an exit port disposed outside said reactor vessel and above said reactor operating coolant level for storing said fuel assemblies; and
- an ex-vessel transferring means disposed outside said reactor vessel and cooperating with said storage area and said fuel transfer area for transferring said fuel assemblies between said fuel transfer area and said storage area while said fuel assemblies remain at an angle to the horizontal and while said fuel assemblies remain completely submerged in a continuous body of reactor coolant.

4,069,099

NUCLEAR REACTOR FUEL TRANSFER SYSTEM

Elman E. Wade, Ruffs Dale, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 23, 1976, Ser. No. 660,744
Int. Cl.[2] G21C 19/22, 19/20; B66C 17/08
U.S. Cl. 176—31 12 Claims



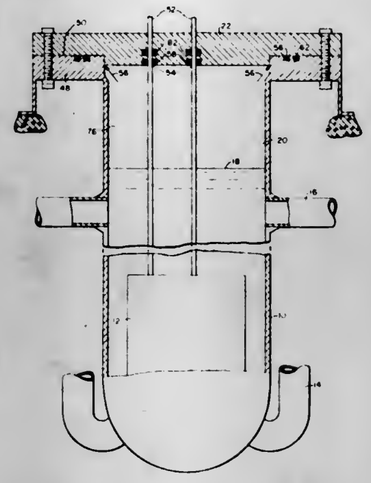
1. A nuclear reactor fuel transfer system including a reactor vessel having a head thereon, fuel assemblies positioned therein, and an inlet and an outlet for circulating a coolant through said fuel assemblies comprising:
- a fuel transfer area located outside said reactor vessel and below the reactor operating coolant level, said fuel transfer area being directly connected to said reactor vessel below said reactor operating coolant level for accommodating the transfer of fuel assemblies;
- valve means disposed on said head of said reactor vessel and on a wall of said reactor vessel adjacent to said fuel transfer area at an angle relative to the horizontal for selectively isolating said fuel transfer area from said reactor vessel; and
- in-vessel transferring means supported by said head of said reactor vessel at an angle to the horizontal corresponding to the inclination of said valve means for transferring said fuel assemblies between said reactor vessel and said fuel transfer area while said fuel assemblies remain at an angle to the horizontal and while said fuel assemblies remain completely submerged in a continuous body of reactor coolant.

4,069,100

ADSORPTION SEAL FOR NUCLEAR REACTORS

Martin H. Cooper, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 13, 1975, Ser. No. 549,570
Int. Cl.[2] G21C 9/00
U.S. Cl. 176—37 5 Claims



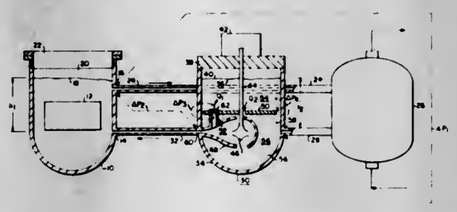
1. A system for reducing the leakage of fission gases from a nuclear reactor comprising:
- an enclosure,
- means for containment of material within said enclosure,
- a first seal installed between said enclosure and said containment means;
- a continuous container installed between said enclosure and said containment means outwardly from said first seal, said continuous container having a plurality of openings therein directed inwardly towards said first seal;
- a first bypass seal coupled to said continuous container and disposed between said continuous container and said containment means;
- a second bypass seal coupled to said continuous container and disposed between said continuous container and said enclosure, said continuous container openings being disposed intermediate said first seal and said bypass seals; and
- a fission gas adsorbing material disposed within said continuous container, said fission gas adsorbing material delaying the passage of gases leaking through said first seal and passing through said continuous container openings.

4,069,101

SELF-COMPENSATING LEVEL CONTROL FOR SUMP SUCTION PUMPS

James D. Mangus, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 10, 1974, Ser. No. 478,128
Int. Cl.[2] G21C 19/28
U.S. Cl. 176—65 4 Claims



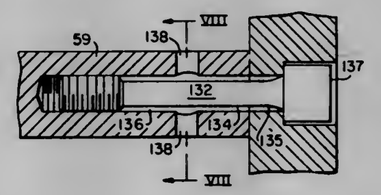
1. A liquid cooled nuclear reactor including a reactor vessel, said reactor vessel being partially filled with reactor coolant and having a cover gas above the level of reactor coolant in said reactor vessel, a heat exchanger connected to an outlet of said reactor vessel, a coolant circulating pump connecting an outlet of said heat exchanger to an inlet of said reactor vessel, said pump being of a type classified as a sump suction pump having an integral sump tank and including inlet and outlet nozzles attached to said sump tank, an impeller disposed within said sump tank, a flow manifold connecting said pump impeller to said pump outlet nozzle, a drive shaft extending within said sump tank and attached to said impeller therein, a divider plate immersed within said reactor coolant within said sump tank, said divider plate being located above said impeller and said pump inlet nozzle so as to divide said sump tank into an upper chamber and a lower chamber, and orifice means for maintaining said cover gas in the tank at a pressure substantially equal to the pressure of said cover gas in the reactor vessel during all speeds of pump operation, said orifice means comprising a flow restricting tube member connecting said manifold to said upper chamber, and said flow restricting tube being sized such that reactor coolant flow through said tube member from said flow manifold to said upper chamber substantially equals reactor coolant flow passed said divider plate from said upper chamber to said lower chamber whereby the reactor coolant level in said pump tank remains substantially constant for all speeds of operation of said pump.

4,069,102

NUCLEAR CORE REGION FASTENER ARRANGEMENT

Robert T. Berringer, Gulf Breeze, and Octavio J. Machado, Pensacola, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 25, 1975, Ser. No. 635,024
Int. Cl.[2] G21C 15/10
U.S. Cl. 176—87 7 Claims



1. An arrangement utilizing flowing reactor coolant fluid to cool a fastener positioned to affix at least two components located between a core and a pressure vessel of a nuclear reactor, said fastener having a head and a shank, at least a portion of the shank of said fastener surrounded by a fastener annulus within at least one of said components, said arrangement comprising a flow channel having an inlet and an outlet, said inlet and outlet being in fluid communication with said annulus and said flowing coolant.

4,069,103

PROCESS FOR RECOVERING DEXTROSE AND DEXTRINS FROM PROTEIN-CONTAINING STARCH PRODUCTS

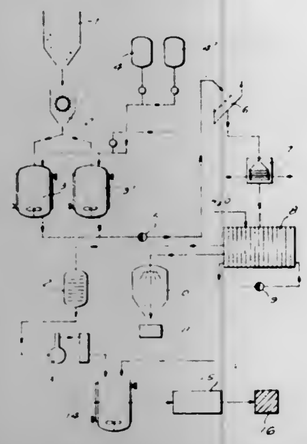
Hans Müller, im Allmendli, 8703 Erlenbach, Switzerland

Filed Apr. 20, 1976, Ser. No. 678,710
Claims priority, application Switzerland, Apr. 28, 1975, 5531/75; May 7, 1975, 6086/75; May 27, 1975, 6880/75; May 28, 1975, 6947/75
Int. Cl.[2] C12D 13/04, 13/06; C13K 1/08; C13L 1/10
U.S. Cl. 195—4 12 Claims

1. A process for obtaining dextrose and dextrins from a protein-containing starch product comprising
- subjecting the starch product to an incomplete or complete acid or enzymatic hydrolysis or a combination of both

types of hydrolysis, then circulating the hydrolyzate containing a low viscosity sugar solution and water soluble high molecular proteins through an ultrafilter to separate the proteins from the sugar solution.

and separately recovering the high molecular soluble pro-



tein from the filtrate of the ultrafiltration followed by subjecting it to spray-drying to obtain a high protein product useful as human food or animal feed,

while recovering the dextrose or, in case of incomplete hydrolysis, the dextrins from the sugar solution obtained as the filter residue.

4,069,104

CONVERSION OF ALDOSE TO KETOSE IN THE PRESENCE OF OXYANIONS OR MIXED OXYANIONS OF TIN OR GERMANIUM

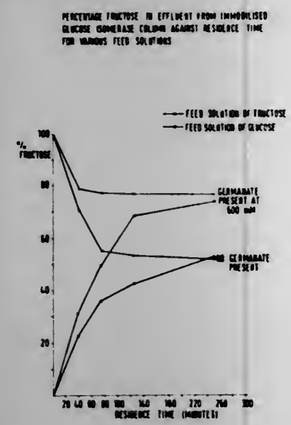
Sidney Alan Barker; Peter John Somers; Robin Ross Woodbury, all of Birmingham, and Geoffrey Harry Stafford, Stockton-on-Tees, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 17, 1976, Ser. No. 696,950

Claims priority, application United Kingdom, June 17, 1975, 25757/75

Int. Cl.² C12D *13/02*; C13K *11/00, 13/00*; C07H *3/02*

U.S. Cl. 195—31 F **18 Claims**



1. A process for the conversion of an aldose or aldose derivative to a ketose or ketose derivative, comprising:

forming an aqueous solution containing an aldose or aldose derivative and chemically or enzymatically isomerizing said aldose or aldose derivative to a corresponding ketose or ketose derivative in the presence of a complexing reagent which is an oxyanion or mixed complex oxyanion of germanium or tin which forms a stronger complex with the ketose or ketose derivative than with the aldose or aldose derivative,

maintaining said aqueous solution under aldose to ketose isomerization conditions, and

recovering a product enriched in said ketose or ketose derivative.

2. A process for the conversion of an aldose or aldose derivative to a ketose or ketose derivative, comprising:

forming an aqueous solution containing an aldose or aldose derivative and chemically or enzymatically isomerizing said aldose or aldose derivative to a corresponding ketose or ketose derivative in the presence to a complexing reagent which is an oxyanion or mixed complex oxyanion of germanium which forms a stronger complex with the ketose or ketose derivative than with the aldose or aldose derivative,

maintaining said solution under aldose to ketose isomerization conditions, and

recovering a product enriched in the ketose or ketose derivative.

4,069,105

LIDOCAINE ANTIGENS AND ANTIBODIES

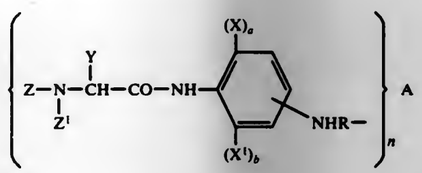
Prithipal Singh, Santa Clara, Calif., assignor to Syva Company, Palo Alto, Calif.

Filed Mar. 3, 1977, Ser. No. 775,658

Int. Cl.² C07G *7/00*

U.S. Cl. 195—63 **24 Claims**

1. A composition of the formula



wherein:

X and X¹ are methyl;

a and *b* are 0 or 1, the sum of *a* + *b* being at least 1;

Y is hydrogen, methyl, or may be taken together with Z to form a 6 membered ring with the carbon and nitrogen atoms to which Y and Z are respectively attached;

Z and Z¹ are the same or different and are alkyl of from 1 to 4 carbon atoms, with the proviso that Z may be taken together with Y;

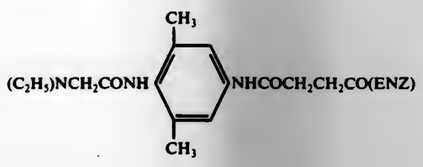
the amino groups bonded to the aromatic ring are separated by from 3 to 4 carbon atoms;

R is a linking group;

A is a poly(amino acid) of at least about 5,000 molecular weight; and

n is at least 1 and not more than the number of available amino groups present in A.

19. A composition of the formula



wherein:

ENZ is an enzyme.

4,069,106

IMMOBILIZATION OF ENZYMES ON KERATIN

William L. Stanley, El Cerrito; Glenn G. Watters, and Bock G. Chan, both of Albany, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 13, 1977, Ser. No. 758,897

Int. Cl.² C07G *7/02*; G01N *31/14*

U.S. Cl. 195—68 **1 Claim**

1. A process for preparing an insoluble but active enzyme, which comprises —

a. reacting keratin-containing material with a sulfur-containing, reductive, disulphide-splitting agent to reduce keratin and produce a reduced keratin-containing material,

b. dissolving a soluble sulfhydryl group containing enzyme in water, and

c. mixing said reduced keratin-containing material with the solution of the enzyme in water so that the enzyme reacts directly with the reduced keratin and becomes chemically bonded to said reduced keratin-containing material.

4,069,107

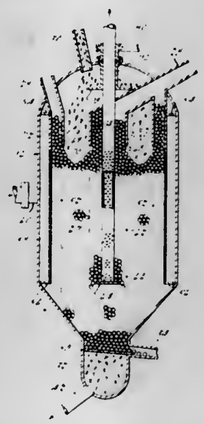
CONTINUOUS THERMAL REACTOR SYSTEM AND METHOD

Edward Koppelman, Encino, and Robert G. Murray, Palo Alto, both of Calif., assignors to Edward Koppelman, Encino, Calif.

Filed May 3, 1976, Ser. No. 682,600

Int. Cl.² C10B *49/18*

U.S. Cl. 201—12 **17 Claims**



10. A process for pyrolysis of a carbonaceous feed material which comprises the steps of introducing a particulated carbonaceous feed material into the upper portion of an elongated upright reaction chamber, introducing heated pebbles at a controlled temperature into the upper portion of said reaction chamber, mixing a portion of the pebbles in heat transfer contacting relationship with said feed material to form a downwardly moving columnar reaction mass, distributing the remaining portion of the heated pebbles in the form of a downwardly moving upstream layer and a downwardly moving downstream layer substantially devoid of any feed material overlying an surrounding said reaction mass, introducing a gas into said reaction chamber for passage substantially transversely through said upstream layer, said reaction mass and said downstream layer; withdrawing the gas and gaseous pyrolysis products from said chamber along a region adjacent to said downstream layer and transversely spaced from the region at which the gas is introduced, controlling the downward movement of the reaction mass to effect a desired pyrolysis of said feed material, separating the pyrolyzed residue from the pebbles in the lower portion of said reaction chamber, and extracting the pyrolyzed residue from said reaction chamber.

4,069,108

APPARATUS FOR REMOVING DUST-CONTAINING GASES DURING COKING OPERATIONS

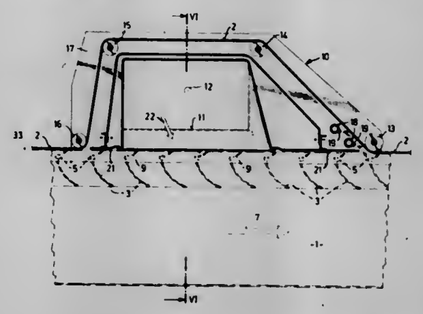
Johann Georg Riecker, Ratingen, Germany, assignor to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Dusseldorf, Germany

Filed Mar. 24, 1976, Ser. No. 669,825

Claims priority, application Germany, Mar. 26, 1975, 2513449; July 22, 1975, 2532770

Int. Cl.² C10B *27/00, 27/04*

U.S. Cl. 202—263 **13 Claims**



1. In an apparatus for removing hot gases from the vicinity of a coking oven battery comprising a gas-collecting arrangement mounted at the coking oven battery for movement in a path from one coking oven to another; means for conducting the hot gases collected in said gas-collecting arrangement to a location remote from the coking oven battery, including an elongated main duct stationarily mounted at the coking oven battery in substantial parallelism with said path and having an elongated opening extending longitudinally of said main duct and communicating with said gas-collecting arrangement at a portion thereof which is in registry with the latter, and a flexible belt covering the elongated opening, and said gas-collecting arrangement including roller means provided on the inside thereof for lifting the flexible belt to provide open communication between the gas-collecting arrangement and the main duct; the improvement comprising means for protecting said belt from deleterious influences of the hot gases entering said main duct through said portion of said opening and conducted longitudinally of said main duct toward said remote location, including a shielding device accommodated in said main duct extending across the interior of said main duct at least in a region juxtaposed with said portion of said opening to separate the hot gases in the collecting main from said belt.

4,069,109

METHOD FOR AUTOMATIC, CONTINUOUS SELECTIVE PLATING ON A TAPE MEMBER

Hiroko Abei, Fujisawashi, Japan

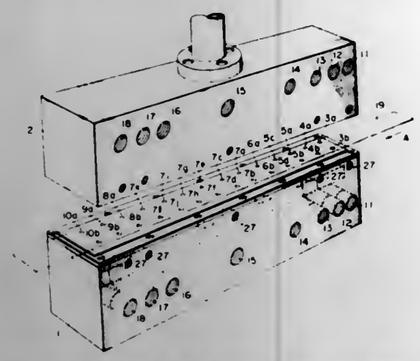
Filed Mar. 31, 1976, Ser. No. 672,512

Int. Cl.² C25D *5/02, 5/08, 5/34*

U.S. Cl. 204—15 **6 Claims**

1. A method for automatic, continuous selective plating on a metal strip, comprisng intermittently moving said metal strip in one direction at a predetermined pitch, intermittently engaging at least one or more desired portions of said metal strip with at least one cleaning nozzle, one vacuum nozzle and one plating nozzle which have a shape corresponding to the desired shape of plating layers to be formed and which are arranged linearly

at intervals equal to the pitch of the intermittent movement of said metal strip and cleaning, vacuuming and plating said metal



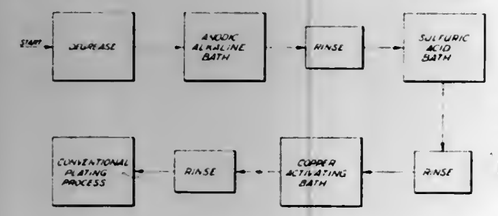
strip intermittently only at said desired portions on said metal strip.

4,069,110

TREATMENT OF BERYLLIUM COPPER SURFACE PRIOR TO ELECTROPLATING

Robert Baboian, Johnston, R.I., and Gardner S. Haynes, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 17, 1976, Ser. No. 658,320
Int. Cl.² C25D 7/00, 5/34
U.S. Cl. 204—29 **10 Claims**



10. A process for electroplating beryllium copper material comprising the steps of:

degreasing the material to remove any organic substances;

passing the material through an anodic alkaline solution to form beryllium compounds of the beryllium in the beryllium copper on the surface and just below the surface of the beryllium copper;

passing the material through a concentrated sulfuric acid bath to dissolve the formed beryllium compounds thereby providing for a copper-rich surface skin;

passing the material through a copper surface activating bath; and

electroplating the material with a suitable plating material.

4,069,111

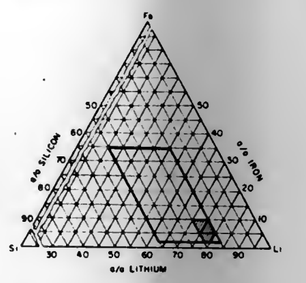
METHOD OF ELECTROCHEMICALLY FORMING A LITHIUM SILICON IRON ALLOY ELECTRODE

San-Cheng Lai, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 715,358, Aug. 18, 1976. This application Feb. 28, 1977, Ser. No. 772,783
Int. Cl.² C25D 5/00
U.S. Cl. 204—39 **3 Claims**

1. A method for electrochemically forming a composite negative lithium electrode structure for an electrical energy storage device from the uncharged state, wherein the formed negative electrode structure comprises a supporting current-collecting matrix in intimate contact with an alloy of lithium, silicon, and iron having the empirical formula Li_xSiFe_y, where x has a value from 1 to 5 and y has a value from 0.125 to 1, which includes the steps of:

providing a supporting current-collecting matrix in intimate contact with an alloy of iron and silicon, the iron being present in an amount from about 11 to 50 atom percent and the silicon being present in an amount from about 89 to 50 atom percent;



immersing the current-collecting matrix containing the iron-silicon alloy in a lithium-containing molten salt electrolyte in a cell in opposing relation to a positive electrode structure, and

electrochemically charging the iron-silicon electrode structure at a selected voltage or current for a time sufficient to form said lithium-silicon-iron alloy negative electrode structure.

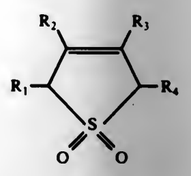
4,069,112

ELECTROPLATING OF NICKEL, COBALT, MUTUAL ALLOYS THEREOF OR TERNARY ALLOYS THEREOF WITH IRON

Edward P. Harbulak, Allen Park, Mich., assignor to M & T Chemicals Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 697,490, June 18, 1976, abandoned. This applicatioa Oct. 4, 1976, Ser. No. 729,074
Int. Cl.² C25D 3/12, 3/56
U.S. Cl. 204—43 T **10 Claims**

6. A composition for the preparation of an electrodeposit which contains; at least one metal selected from the group consisting of nickel and cobalt or; binary or ternary alloys of the metals selected from nickel, iron, and cobalt; which comprises an aqueous acidic electroplating solution containing at least one member selected from nickel compounds and cobalt compounds and iron compounds providing nickel, cobalt and iron ions for electrodepositing nickel, cobalt, nickel-cobalt alloys, nickel-iron alloys, cobalt-iron alloys or nickel-iron-cobalt alloys; the improvement comprising the presence of 5×10^{-6} moles per liter to 0.5 mole per liter of an unsaturated cyclosulfone exhibiting the following generalized structural formula:



wherein

R_1, R_2, R_3 and R_4 are independently hydrogen, lower alkyl, or hydroxyl.

4,069,113

ELECTROPLATING GOLD ALLOYS AND ELECTROLYTES THEREFOR

John Alan Crossley, Oswestry, England; Valerie Kathryn Hacker nee Weimer, Chirk near Wrexham, Wales, and Paul Grahame Clorley, Telford New Town, England, assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed July 19, 1973, Ser. No. 380,804
Claims priority, application United Kingdom, July 26, 1972, 34972/72
Int. Cl.² C25D 3/62
U.S. Cl. 204—43 G **14 Claims**

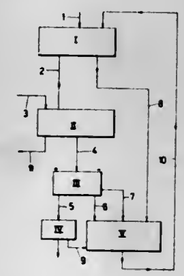
1. An aqueous electrolyte solution for use in the electrodeposition of gold which comprises gold in the form of a soluble salt at a concentration of 1 to 32 grams per liter of gold, a base metal selected from the group consisting of cobalt and nickel in the form of a soluble salt at a concentration of 0.1 to 20 grams per liter of base metal, a compatible buffer system effective to produce a pH of 4 to 6 and a density of 1° to 32° Baume, aluminium in the form of a soluble salt at a concentration of 0.01 to 2 grams per liter, and formate or oxalate ions at a concentration of 1 to 250 grams per liter.

4,069,114

METHOD FOR RECOVERING MANGANESE METAL FROM FERROMANGANESE

René Fernand Paul Winand, Rixensart, Belgium, assignor to Universite Libre de Bruxelles, Brussels, Belgium

Filed May 27, 1976, Ser. No. 690,432
Claims priority, application Belgium, May 27, 1975, 829554
Int. Cl.² C25C 3/00
U.S. Cl. 204—64 R **8 Claims**



1. A method for recovering manganese metal from ferromanganese which comprises:

a. contacting ferromanganese and an iron chloride selected from the group consisting of ferrous chloride and ferric chloride in a molten bath of a metal chloride wherein the metal has a greater chemical affinity for chlorine than iron, to provide a liquid phase containing manganese chloride and a solid phase containing iron precipitate and spent ferromanganese:

b. separating the manganese chloride liquid phase from the iron precipitate and spent ferromanganese;

c. contacting the manganese chloride liquid phase with an additional quantity of ferromanganese to provide a purified liquid phase containing manganese chloride free of iron chlorides and chlorides of metals more noble than manganese;

d. introducing the purified manganese chloride liquid phase into the cathode compartment of an electrolytic cell;

e. introducing the iron precipitate and spent ferromanganese into the anode compartment of the cell;

f. conveying electrolyte from the cathode compartment to the anode compartment of the cell while preventing the iron precipitate and spent ferromanganese from passing from the anode compartment to the cathode compartment of the cell;

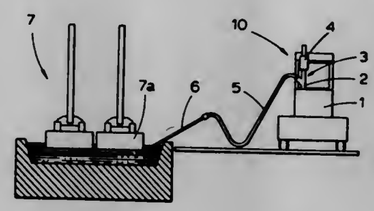
g. operating the cell to liberate manganese at the cathode and chlorine at the anode, the chlorine reacting with the iron precipitate and spent ferromanganese to produce iron chloride for contact with ferromanganese.

4,069,115

METHOD AND ARRANGEMENT FOR REMOVING A GAS CUSHION

Jørgen Rekholt, Rykkinn, Norway, assignor to Maskin A/S K. Lund & Co., Oslo, Norway

Filed Apr. 27, 1977, Ser. No. 791,498
Int. Cl.² C25C 3/06
U.S. Cl. 204—67 **8 Claims**



1. Method of removing a gas cushion formed at the anode in an electrolytic cell for the production of aluminum by electrolysis of aluminum oxide dissolved in molten cryolite, in which there is employed a tubular lance (6) which through a flexible hose (5) is connected to a source of pressurized gas, and which is with its mouth adapted to be introduced into the gas cushion in order to have this blown away, comprising the step of:

applying the exhaust gas of a combustion engine as the source of pressurized gas into the gas cushion, and wherein the combustion engine is located in a movable machine.

4,069,116

ELECTROCHEMICAL PROCESS FOR PRODUCING MANGANESE DIOXIDE

Levan Nikolaevich Dzhaparidze, ulitsa Saburtalinskaya, 37, kv. 9; Temuri Alexandrovich Chakhunashvili, ulitsa Plekhanova, 2/8; Venera Romanovna Mainsuradze, prospekt Akakiya Tseretell, korpus 5, kv. 54; Raul Vladimirovich Changuava, ulitsa Pekinskaya, 2, kv. 23, all of Tbilisi; Zurab Yasonovich Kervalishvili, prospekt Lenina, 14, kv. 3; Nodar Georgievich Sikharulidze, ulitsa Saradzhishvili, 51, kv. 24, both of Rustavi; Dali Georgievna Otiashvili, prospekt V. Pshavela, 11, kv. 12, Tbilisi; Yauzhe Markovich Dubov, Odintsovo, poselok Bakovka, ulitsa Vokzalnaya, 30, Moskovskaya oblast; Eduard Alimovich Bogdanov, tupik Tsulukidze, korpus 2, kv. 10, Tbilisi; Georgy Trofimovich Gogoladze, ulitsa Chavchavadze, 6, kv. 44, Rustavi; Alla Abelevna Teisheva, ulitsa Panfilova, 10, kv. 40, Moscow; Galina Nikolaevna Ryzygraeva, ulitsa Festivalnaya, 65, kv. 706, Moscow; Mikhail Alexeevich Melnikov-Eikhenvald, ulitsa Vavilova, 12, kv. 18, Moscow, and Temuri Valeryanovich Rokva, ulitsa Megrelidze, 16, Tbilisi, all of U.S.S.R.

Filed May 18, 1977, Ser. No. 798,097
Int. Cl.² C25B 1/00
U.S. Cl. 204—96 **6 Claims**

1. An electrochemical process for producing manganese dioxide by electrolyzing a solution containing 100 to 200 g/l of manganese sulphate and 200 to 100 g/l of sulphuric acid, the temperature of the solution being 90° to 98° C, the electrolysis being carried out at an anode current density of 100 to 300 A/m^2 with the use of a titanium anode on whose surface there are provided uniformly spaced hollows whose total surface area is not less than 10 percent of that of the anode, said hollows being provided with a coating consisting of two layers, the first being of a metal of the platinum family, ruthenium dioxide or platinum oxide and having a thickness of 0.8 to 5 mu, or of lead dioxide, in which case it has a thickness of 0.1 to

1 mm, whereas the second layer is of manganese dioxide and has a thickness of 1 to 2 mm, the cathode being of chromium-nickel steel containing 18 to 23 mass percent of chromium, 20 to 28 mass percent of nickel, and alloy additions including copper, molybdenum, titanium, silicon and manganese.

4,069,117

PROCESS FOR REMOVING AND RECOVERING ACIDIC GASES FROM GASEOUS MIXTURES CONTAINING THEM

Hal B. H. Cooper, 4234 Chevy Chase Drive, Pasadena, Calif. 91103

Filed Jan. 28, 1976, Ser. No. 653,400
Int. Cl.[2] C25B *1/20, 1/26;* C01B *31/20, 17/60*
U.S. Cl. 204—98 **5 Claims**

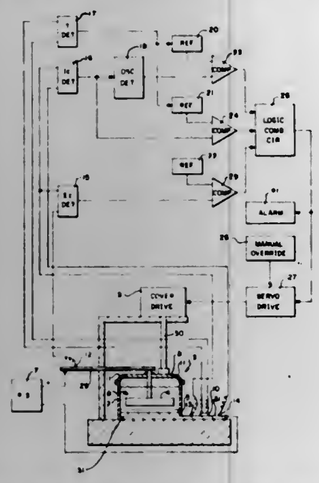
1. A cyclic and regenerative process for the removal and recovery of at least one acid gas from a mixture of gases including carbon dioxide comprising: electrolyzing an aqueous alkali metal chloride in a two-compartment cell including a cationic permselective ion-exchange membrane between the anode and cathode compartments to produce chlorine, hydrogen and aqueous alkali metal hydroxide; producing hydrochloric acid from said hydrogen and said chlorine; treating said mixture with said aqueous alkali metal hydroxide to form aqueous alkali metal carbonate/bicarbonate and to form aqueous alkali metal salt from said at least one acid gas; reacting said hydrochloric acid with said aqueous alkali metal salt to form aqueous alkali metal chloride and liberate said acid gas for recovery; and cycling said aqueous alkali metal chloride to said electrolyzing for production of hydrogen, chlorine and aqueous alkali metal hydroxide.

4,069,118

ELECTROLYSIS CONTROL APPARATUS AND METHOD

Elmer L. Hixson, and Carl M. Talkington, both of Austin, Tex., assignors to Stauffer Chemical Company, Richmond, Calif.

Filed Nov. 10, 1975, Ser. No. 630,099
Int. Cl.[2] C25B *1/16, 1/26, 15/06*
U.S. Cl. 204—99 **39 Claims**



1. A method for controlling an electrolysis reaction in an apparatus having a plurality of anode units positioned above at least one cathode where current is conducted between each anode unit and a cathode comprising the steps of,
generating a plurality of current measurement signals, one for each of said anode units, where each of said current measurement signals is proportional to the current in a different one of said anode units,
detecting each of said current measurement signals to detect changes in current with respect to time in any of said anode units which exhibit oscillations having a frequency of less than approximately one cycle per second,
generating an oscillation alarm signal in response to detection of said oscillations,
forming an average current signal as the average value of said current measurement signals,
comparing each of said current measurement signals with a predetermined limit signal to form a current alarm signal whenever one of said current measurement signals exceeds a predetermined deviation from said average current signal.

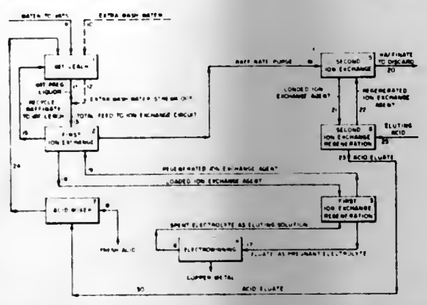
20. An apparatus providing alarm signals for monitoring an electrolysis reaction comprising,
an electrolysis cell having a plurality of anode units, having a cathode and adapted to have an electrolyte where anode current is conducted from the plurality of anode units through the electrolyte to the cathode,
means for generating a plurality of measurement signals, at least one for each of said anode units, where each of said measurement signals is proportional to an electrical parameter of a different one of said anode units,
detecting means, detecting said measurement signals as current measurement signals, for detecting for each of said anode units changes in anode current with respect to time exhibiting oscillations having a frequency which is less than one cycle per second,
first means for generating an oscillation alarm signal in response to detection of said oscillations by said detecting means, and
second means for generating a limit alarm signal in response to one or more of said measurement signals exceeding a limit signal.

4,069,119

COPPER RECOVERY BY LEACHING AND ION EXCHANGE

Soon Y. Wong, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 686,441, May 14, 1976, Pat. No. 4,039,405. This application Feb. 28, 1977, Ser. No. 773,088
Int. Cl.[2] C25C *1/12;* C22B *15/00*
U.S. Cl. 204—106 **10 Claims**



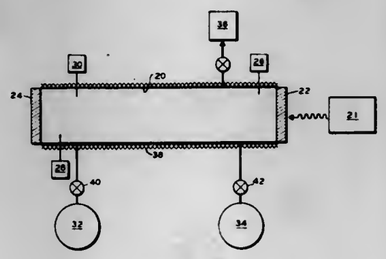
1. A process for the recovery of copper values from copper-bearing ores comprising:
a. leaching the ore with mineral acid in the presence of water to produce a pregnant liquor stream containing dissolved metal values, and washing the leached ore residue with an internal recycle stream from step (c) in addition to other wash waters,
b. passing additional water through the leach vessel containing spent ore residues, said ore being disposed from the system and said water being subsequently combined with the pregnant liquor stream from step (a) to form a resultant stream which is then passed through a
c. first solid ion exchange section containing at least one stage having a solid ion exchange agent for adsorption of copper values, said ion exchange section producing a loaded solid ion exchange agent and an aqueous raffinate stream containing metal values not extracted from resultant stream of step (b) and separating said raffinate stream into a first internal stream of aqueous raffinate and a second internal stream of aqueous raffinate,
d. passing the first internal raffinate recycle stream back to step (a) leach system, and
e. passing the second internal stream to a second ion exchange section having at least one copper adsorption stage containing a second ion exchange agent where the metal values are adsorbed by the ion exchange agent at a low pH, said solid ion exchange stage producing a loaded solid ion exchange agent and a disposal stream, while;
f. the solid ion exchange agent from step (e) is eluted in at least one elution stage in the presence of sufficient eluting acid containing aqueous eluting agent, resulting in a regenerated ion exchange agent and eluate acid stream;
g. reusing the regenerated ion exchange agent from step (f) in the adsorption stage of step (e) while;
h. the eluate acid stream of step (f), containing recovered copper values is passed to the process described in step (a), while;
i. the loaded ion exchange agent produced in step (c) is subjected to at least one regeneration stage wherein a regenerated ion exchange agent and a pregnant electrolyte stream (eluate) is produced, subsequently;
j. reusing the regenerated ion exchange agent on the resultant stream for copper adsorption of step (c), while;
k. passing the eluate pregnant electrolyte to a metal recovery process from which exits a spent electrolyte which is recycled as eluting solution to step (i) as a stripping agent, while;
l. recovering the copper values as copper from step (k).

4,069,120

PHOTO-ELECTROLYTIC PRODUCTION OF HYDROGEN

Russell Gilbert Meyerand, Jr., Glastonbury; Nicholas Leo Krascella, Manchester, and David Gue McMahon, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sept. 21, 1976, Ser. No. 725,302
Int. Cl.[2] B01J *1/10;* C25B *1/02*
U.S. Cl. 204—129 **4 Claims**



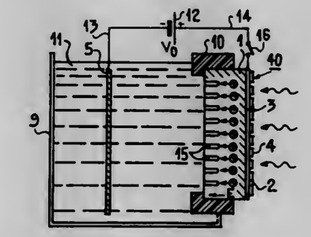
1. In the production of hydrogen from water, the improvement which comprises:
forming a water/halogen gas mixture;
irradiating the mixture with radiation energy in the visible spectrum to form the corresponding hydrogen halide; and
electrolytically decomposing the hydrogen halide to produce hydrogen.

4,069,121

METHOD FOR PRODUCING MICROSCOPIC PASSAGES IN A SEMICONDUCTOR BODY FOR ELECTRON-MULTIPLICATION APPLICATIONS

Christian Baud; Yvan Raverdy, and Henri Hougeot, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed June 21, 1976, Ser. No. 698,224
Claims priority, application France, June 27, 1975, 75 20393
Int. Cl.[2] C25F *3/12, 3/14*
U.S. Cl. 204—129.3 **5 Claims**



1. A method for drilling microscopic passages between two substantially parallel opposite faces of a semiconductor body, utilizing an electrolysis installation comprising: a cathode and an anode in contact with an electrolyte, and mounted between said cathode and said anode a direct voltage source for bringing said anode to a positive potential Vo with respect to said cathode, said method comprising the steps of: forming a semiconductor body with two substantially parallel opposite faces; providing one of said faces with means for creating at said face hole injector points separated from one another and with connection means causing said hole injector points to be in electrical contact with one another; immersing said semiconductor body in said electrolytic solution in such a manner that its other face, opposite said one face, is in contact with said electrolyte; energizing said connection means to the positive terminal of said source; said source being so dimensioned that the positive potential Vo is greater than that potential required to establish in said semiconductor an electric field extending from said one face at least up to a distance from that face in contact with the electrolyte, lesser than the diffusion length of said microscopic passages in said semiconductor.

4,069,122

MOLECULAR-WEIGHT REDUCTION OF NITROCELLULOSE BY ELECTRON BEAM RADIATION

Charles Vincent Murphy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 1, 1975, Ser. No. 636,408
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—158 HE **7 Claims**

1. Irradiation process for producing nitrocellulose of reduced molecular weight which comprises subjecting stabilized nitrocellulose in the presence of a damping agent to an absorbed dose of ionizing radiation in the range of about 1.0 to 50 megarads at ambient temperature.

4,069,123

CROSSLINKED PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Martin M. Skoultchi, Somerset, and Irwin J. Davis, Somerville, both of N.J., assignors to National Starch & Chemical Corporation, Bridgewater, N.J.

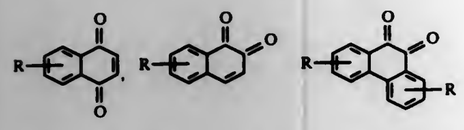
Filed Oct. 24, 1972, Ser. No. 300,294
Int. Cl.[2] C08F *8/00*
U.S. Cl. 204—159.18 **14 Claims**

1. A pressure sensitive adhesive composition comprising a blend of:
1. a pressure sensitive adhesive polymer selected from the class consisting of:

i. homopolymers of alkyl esters of acrylic and methacrylic acids and

ii. copolymers of at least one alkyl ester of acrylic and methacrylic acid present in an amount of at least 35% by weight of the copolymer together with at least one other polymerizable comonomer; and

2. from about 0.1–10.0%, as based on the weight of polymer solids, of a quinone compound corresponding to the formulae:



wherein R is selected from the group consisting of hydrogen, halogen, alkyl radicals, aryl radicals and alkoxy radicals.

4,069,124

METHOD FOR CONTROLLED RADIATION POLYMERIZATION OF OLEFINIC MONOMERS

Miroslav Marek; Ludek Toman, and Jan Pecka, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Division of Ser. No. 564,603, April 3, 1975, Pat. No. 4,025,403, which is a division of Ser. No. 275,157, July 26, 1972, Pat. No. 3,897,322. This application Nov. 29, 1976, Ser. No. 745,985

Claims priority, application Czechoslovakia, July 29, 1971, 5555/71

Int. Cl.² C08D *1/00*; C08F *1/16*

U.S. Cl. 204—159.24 **6 Claims**

1. A method for the polymerization and and copolymerization of mono-olefinic monomers polymerizable by a cationic mechanism, which comprises subjecting to a source of light selected from a group consisting of ultraviolet light, visible light, and infrared light at a temperature between about 0° C. and about −140° C. a polymerizable mixture selected from the group consisting of (a) isobutylene, and (b) mixtures of isobutylene with at least one diolefinic monomer selected from the group consisting of butadiene and isoprene in the presence of at least one halide catalyst selected from the group consisting of tetravalent vanadium, titanium and zirconium halides and in the presence of an activator for said halide catalyst comprising a mixture of an aluminum alkoxide and an aluminum halide, the molar ratio of said halide catalyst to said activator ranging from 10^3 to 10^{-3} part of halide catalyst to 1 part of activator.

4,069,125

METHOD FOR CONTROLLED RADIATION POLYMERIZATION OF OLEFINIC MONOMORS

Miroslav Marek; Ludek Toman, and Jan Pecka, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Division of Ser. No. 564,604, April 3, 1975, Pat. No. 4,025,402, which is a division of Ser. No. 275,157, July 26, 1972, Pat. No. 3,897,322. This application Nov. 29, 1976, Ser. No. 745,772

Claims priority, application Czechoslovakia, July 29, 1971, 5555/71

Int. Cl.² C08D *1/00*; C08F *1/16*

U.S. Cl. 204—159.24 **5 Claims**

1. A method for the polymerization and copolymerization of mono-olefinic monomers polymerizable by a cationic mechanism, which comprises subjecting to a source of light selected from the group consisting of ultraviolet light, visible light, and infrared light at a temperature between about 0° C. and about −140° C. a polymerizable mixture selected from the group consisting of isobutylene and mixtures of isobutylene with at least one diolefinic monomer selected from the group consisting of butadiene and isoprene in the presence of at least one halide catalyst selected from the group consisting of tetravalent vanadium, titanium and zirconium halides and in the presence of at least one activator for acid halide catalyst comprising a reaction produce of BF_3 with a compound selected from the group consisting of (i) an alkoxide, a partially hydrolyzed alkoxide, a halide-hydroxide, and a halide-alkoxide of a metal selected from the group consisting of aluminum and magnesium and (ii) a halide-partially hydrolyzed alkoxide of aluminum, the molar ratio of said halide catalyst to said activator ranging from 10^3 to 10^{-3} part of halide catalyst to 1 part of activator.

4,069,126

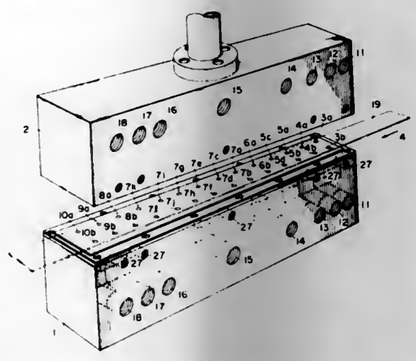
APPARATUS FOR AUTOMATIC, CONTINUOUS SELECTIVE PLATING ON A TAPE MEMBER

Hiroko Abei, Fujisawashi, Japan

Division of Ser. No. 672,512, March 31, 1976. This application Oct. 7, 1976, Ser. No. 730,390

Int. Cl.² C25D *17/00, 19/00*

U.S. Cl. 204—224 R **9 Claims**



1. An apparatus for automatic, continuous selective plating on desired portions of a metal strip, which comprises a plating section including at least one cleaning nozzle, one vacuum nozzle and one plating nozzle, each of said nozzles being mounted in said plating section, which have a shape corresponding to the desired plating layers to be formed and which are arranged linearly, a feeding mechanism for feeding said metal strip on said nozzles intermittently in one direction at a pitch equal to the intervals at which said nozzles are arranged so as to locate said desired portions adjacent said nozzles, a pressing mechanism for pressing only said desired portions of said metal strip onto said nozzles while the metal strip is stopped moving, and means for selectively supplying cleaning liquid to said cleaning nozzle, vacuum to said vacuum nozzle and plating liquid to said plating nozzle.

4,069,127

METHOD AND APPARATUS FOR RECOVERY OF METAL FROM LIQUID

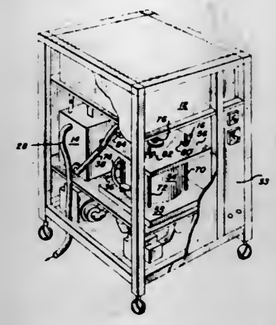
Jerry S. Salemi, Kildeer, and Paul Dean Pease, Palatine, both of Ill., assignors to Ecological Systems, Inc., Palatine, Ill.

Filed Feb. 4, 1976, Ser. No. 655,004

Int. Cl.² C25C *1/20, 7/00*

U.S. Cl. 204—229 **2 Claims**

1. A metal recovery apparatus for recovering a metal carried in a liquid comprising: a receiving tank having an overflow line connected to an upper portion thereof, said receiving tank having a receiving tank feed line connected to a lower portion thereof; a tank connected to said overflow line and said receiving tank feed line, said overflow line being adapted to receive overflow of said liquid from said receiving tank and channel said overflow of said liquid to said second mentioned tank, said receiving tank feed line being adapted to channel said liquid from said receiving tank to said second mentioned tank; a closed recovery tank connected to said second mentioned tank; an anode supported in said closed recovery tank; a cathode supported in said closed recovery tank; a timer connected to said anode and said cathode, said timer controlling a time during which a current is applied to said anode and said cathode to collect said metal on said cathode; and a pump connected between said second mentioned tank and said closed recovery tank, said pump being adapted to circulate all of said liquid carrying said metal between said second mentioned tank and said closed recovery tank.



4,069,128

ELECTROLYTIC SYSTEM COMPRISING MEMBRANE MEMBER BETWEEN ELECTRODES

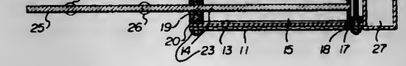
G. Oscar Westerlund, Vancouver, Canada, assignor to Gow Enterprises Limited, Vancouver, Canada

Filed June 8, 1976, Ser. No. 693,752

Claims priority, application Canada, May 3, 1976, 251641

Int. Cl.² C25B *1/16, 1/26, 9/00*

U.S. Cl. 204—258 **37 Claims**



29. An electrolyzer cell box comprising:

A. a plurality of rows of banks of interleaved anode units and cathodes, with each bank comprising alternating anode units and cathodes, each said anode unit/cathode comprising a generally rectangular parallelepiped framework including a pair of spaced-apart grid-like structurally rigid peripheral outer side walls; an ionically conductive gas impermeable membrane secured against the inner face of each said outer peripheral walls; an anode disposed between said membranes to provide a pair of anode compartments, said anode extending beyond the anode unit to provide a cathode, the cathode being provided with spacing electrically non-conductive buttons thereon; means for feeding anolyte to said anode compartments including a channel member along one edge thereof and a lower trough for feeding and distributing anolyte to the anode compartments; a header for receiving spent anolyte and entrained and/or occluded gaseous products of electrolysis and enabling the withdrawal thereof from the unit and for withdrawing spent anolyte and entrained and/or occluded gaseous products of electrolysis therein from said anode unit; and means associated with the inlet channel for separating and withdrawing entrained and/or occluded gaseous products of electrolysis from the anolyte before the anolyte is fed to the anode compartments;

B. an anode connecting means connected to the last anode of each row of anode units;

C. a cathode connecting means connected to the first cathode of each row of cathodes;

D. anolyte inlet means to the last anode unit of each row of anode units;

E. means for connecting the downstream anode unit to the immediately adjacent upstream anode unit in each row of anode units for cascading anolyte upstream and removing gaseous products of electrolysis;

F. spent anolyte outlet means from the first unit of each row of anode units;

G. catholyte inlet means to the cathode chambers;

H. spent catholyte outlet means; and

I. catholyte gas outlet means.

4,069,129

ELECTROLYTIC CELL

Kimihiko Sato; Yasuo Sajima; Toshihiko Kuno, all of Yokohama, and Harumi Ohbe, Tokyo, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Apr. 15, 1976, Ser. No. 677,257

Claims priority, application Japan, Apr. 15, 1975, 50-44776

Int. Cl.² C25B *1/16, 1/26, 9/00*

U.S. Cl. 204—258 **1 Claim**



1. A filter press type electrolytic cell comprising:

a frame for a first catholyte compartment comprising:

a first lower hollow member,

a first upper hollow member,

the first lower and upper hollow members having the same cross sectional shape,

a first left cathode and a first right cathode joining together the first lower hollow member and the first upper hollow member to form a first catholyte compartment therebetween,

the first lower hollow member having apertures in its surface disposed between the first left and the first right cathodes,

the first upper hollow member having apertures in its surface disposed between the first left and the first right cathodes,

a frame for a second anolyte compartment comprising:

a second lower hollow member,

a second upper hollow member,

the second lower and upper hollow members having the same cross sectional shape,

a second left anode and a second right anode joining together the second lower hollow member and the second upper hollow member to form a second anolyte compartment therebetween,

the second lower hollow member having apertures in its surface disposed between the second left and the second right anodes,

the second upper hollow member having apertures in its surface disposed between the second left and the second right anodes,

a frame for a third catholyte compartment comprising:

a third lower hollow member,

a third upper hollow member,

the third lower and upper hollow members having the same cross sectional shape,

a third left cathode and a third right cathode joining together the third lower hollow member and the third

upper hollow member to form a third catholyte compartment therebetween,

the third lower hollow member having apertures in its surface disposed between the third left and the third right cathodes,

the third upper hollow member having apertures in its surface disposed between the third left and the third right cathodes,

the first lower and upper hollow members, the second lower and upper hollow members and the third lower and upper hollow members having the same cross sectional shape,

the second lower hollow member being aligned with and disposed between the first lower hollow member and the third lower hollow member,

the second upper hollow member being aligned with and disposed between the first upper hollow member and the third upper hollow member,

a first diaphragm disposed between the first right cathode and the second left anode but contacting neither the first right cathode nor the second left anode,

the first diaphragm contacting the second lower and upper hollow members and gaskets which contact the first lower and upper hollow members,

a second diaphragm disposed between the second right anode and the third left cathode but contacting neither the second right anode nor the third left cathode,

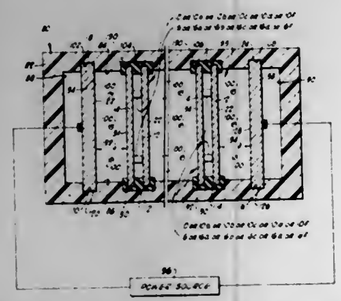
the second diaphragm contacting the second lower and upper hollow members and gaskets which contact the third lower and upper hollow members.

4,069,130

BIPOLAR ELECTRODE AND METHOD FOR CONSTRUCTING SAME

Olen L. Rigga, Jr., Bethany, Okla., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Jan. 29, 1975, Ser. No. 545,015
Int. Cl.² C25B *11/02, 11/10*
U.S. Cl. 204—268 **30 Claims**



30. An improved electrolytic cell having electrodes connected to an electrical power source and at least partially immersed in an electrolyte wherein the electrolytic cell includes at least one bipolar electrode including an anodic member having a first face and a second face and a cathodic member having a first face and a second face, the improvement comprising:

a fastener assembly disposed between the second face of the anodic member and the second face of the cathodic member of each bipolar electrode in the electrolytic cell, each fastener assembly having a portion connected to the second face of the anodic member and the second face of the cathodic member of one of the bipolar electrodes, and each fastener assembly mechanically connecting the anodic member and the cathodic member and spacing the second face of the anodic member a distance from the second face of the cathodic member in one of the bipolar electrodes in the electrolytic cell, a portion of the fastener assembly being constructed of an electrically conductive material establishing electrical continuity between the anodic member and the cathodic member in a fastened position of the fastener assembly; and

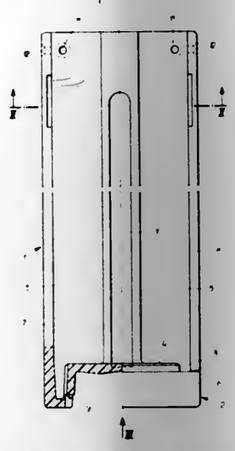
means for substantially sealing electrolyte from a substantial portion of the space between the second face of the anodic member and the second face of the cathodic member.

4,069,131

MOUNTING AND HOLDING FIXTURE FOR ELECTROPLATING UNIFORM THICKNESS METALLIC DEPOSITS

Heinz Beck, Wiesbaden-Dotzheim; Klaus Muller, Naurod, Taunus, and Gerhard Erdelen, Wiesbaden, all of Germany, assignors to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden-Schierstein, Germany

Filed Nov. 17, 1975, Ser. No. 632,810
Claims priority, application Germany, Nov. 18, 1974, 2454625
Int. Cl.² C25D *17/06*
U.S. Cl. 204—297 W **4 Claims**



1. In a device for mounting articles for electroplating in a galvanic bath system, an open-sided mounting and holding fixture body consisting of an integral one-piece member of molded synthetic plastic foamed material that is inert with respect to the electrolyte, said body having a back wall, a pair of side walls projecting from said back wall and a bottom wall extending across the lower ends of said back and side walls, said back wall being formed with a centrally located elongated slot for electrolyte flow, an integral platform projecting forwardly from said back wall and defining an upwardly facing article support surface in said body above the bottom wall and adjacent the lower end of said slot, and means defining electrolyte flow openings through said platform and bottom wall.

4,069,132

OIL SHALE RETORTING PROCESS WITH DESULFURIZATION OF FLUE GAS

Roland F. Deering, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 631,055, Nov. 12, 1975, abandoned. This application Aug. 11, 1976, Ser. No. 713,384
Int. Cl.² C10G *1/02*
U.S. Cl. 208—11 R **23 Claims**

7. In a continuous process for retorting oil shale wherein a stream of raw, crushed oil shale is countercurrently contacted in a retorting zone with a stream of a hot, essentially oxygen-free education gas, thereby educing from said oil shale a gaseous mixture from which a liquid shale oil product and a product fuel gas are subsequently separated, and producing from said retorting zone a hot, retorted shale containing alkaline

mineral components, coke, and sulfur components, the combination of improvements comprising:

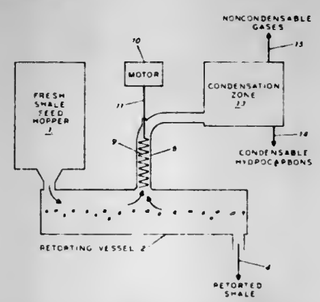
1. introducing at least a portion of about retorted shale into combustor means wherein said retorted shale is passed in succession through a combustion zone and a cooling zone, said combustion zone being maintained at a temperature between about 900° and 1670° F;
2. passing an oxidation gas comprising oxygen concurrently with said retorted shale passing through said combustion zone, said gas being supplied in sufficient quantity and under conditions correlated with the feed rate of said retorted shale and the temperature maintained in said combustion zone so as to:
   a. continuously combust essentially all of said coke in said retorted shale passing through said combustion zone; and
   b. continuously react essentially all gaseous sulfur components produced during the combustion of step (2) (a) with sufficient of said alkaline mineral components to form stable inorganic salts;
3. maintaining said eduction gas and all gases within said combustion zone separately from each other;
4. discharging from said combustion zone an oxygen containing flue gas essentially free of sulfur compounds; and
5. passing a cooling gas countercurrently with the decarbonized shale passing through said cooling zone, thereby cooling said decarbonized shale and heating said cooling gas.

4,069,133

APPARATUS AND PROCESS FOR REDUCING PARTICULATES IN A VAPOROUS STREAM CONTAINING CONDENSABLE HYDROCARBONS

Jack W. Unverferth, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 25, 1976, Ser. No. 700,260
Int. Cl.² C10G *1/02*
U.S. Cl. 208—11 R **7 Claims**



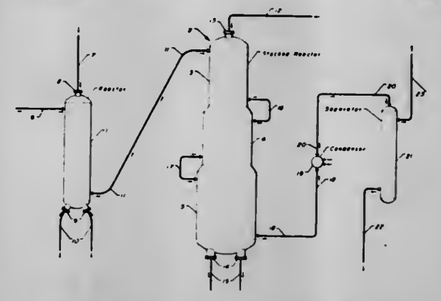
1. In a continuous process for extracting condensable hydrocarbons from hydrocarbon-containing solids including heating said solids in a vessel to form gaseous condensable hydrocarbons and withdrawing from said vessel a gaseous stream including said gaseous condensable hydrocarbons and entrained solid particulate matter, the improvement comprising: removing particulate matter from said stream by passing said stream through a longitudinally curved conduit communicating with said vessel, said curved conduit having rotatably positioned therein a flexible hollow-core elongated spiral element, whereby a portion of said gaseous condensable hydrocarbons are condensed and a semi-solid mass including the resulting condensed hydrocarbons and particulate matter is coalesced, in said conduit, and conveying at least a portion of said mass into said vessel by rotating said element.

4,069,134

HYDROGEN-PRODUCING HYDROCARBON CONVERSION WITH GRAVITY-FLOWING CATALYST PARTICLES

Arthur R. Greenwood, Niles, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 26, 1976, Ser. No. 735,706
Int. Cl.² C10G *35/04*
U.S. Cl. 208—64 **8 Claims**



1. A multiple-stage process for catalytically reforming a hydrocarbon charge stock which comprises the steps of:

a. at least periodically introducing a first quantity of fresh, or regenerated catalyst particles into the upper end of a first moving bed reaction zone, through which catalyst particles are movable via gravity-flow, at least periodically withdrawing deactivated catalyst particles from the lower end of said first moving bed reaction zone and removing the same from said process, reacting said charge stock, in the absence of added hydrogen, in said first zone at catalytic reforming conditions;

b. at least periodically introducing a second quantity of fresh, or regenerated catalyst particles into the upper end of a stacked moving bed reactor system containing a plurality of moving bed reaction zones having a common vertical axis and through which catalyst particles are movable via gravity-flow, at least periodically withdrawing deactivated catalyst particles from the lower end of said moving bed system and introducing the reaction product effluent from said first moving bed reaction zone into the uppermost reaction zone in said stacked moving bed reactor system, and at catalytic reforming conditions;

c. further reacting the resulting uppermost reaction product effluent, at catalytic reforming conditions, in a lower moving bed reaction zone in said stacked moving bed reactor system; and,

d. recovering a normally liquid, catalytically-reformed product from the effluent withdrawn from the lowest reaction zone in said stacked moving bed reactor system.

4,069,135

HYDROGEN-PRODUCING HYDROCARBON CONVERSION WITH GRAVITY-FLOWING CATALYST PARTICLES

Chester J. Giuliani, Schaumburg, Ill., assignor to UOP Inc., Des Plaines, Ill.

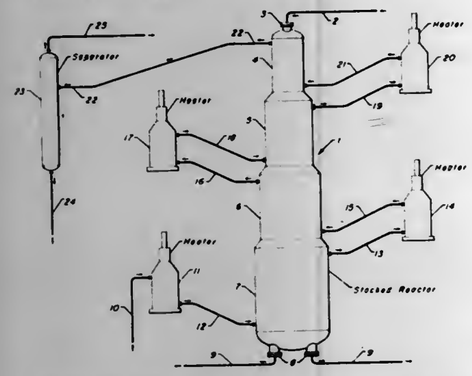
Filed Oct. 26, 1976, Ser. No. 735,705
Int. Cl.² C10G *35/12, 39/00*
U.S. Cl. 208—65 **10 Claims**

1. A process for the catalytic reforming of a naphtha charge stock with a catalyst comprising a Group VIII noble metal or an alumina carrier to produce a gasoline fraction of higher octane number in a multiple-stage system in which (1) catalyst particles flow downwardly, via gravity, through each reaction zone in said system, (2) catalyst particles from one reaction zone are introduced into the next succeeding reaction zone, (3) deactivated catalyst particles are withdrawn from said system through the lower end of the last reaction zone and, (4) fresh, or regenerated catalyst particles are introduced into the upper

end of the first reaction zone, which process comprises the sequential steps of:

a. reacting said charge stock, in the absence of added or recycled hydrogen, in said last reaction zone, from which deactivated catalyst particles are withdrawn from said system, at catalytic reforming conditions;

b. further reacting the effluent from said last reaction zone in at least one intermediate reaction zone, at catalytic reforming conditions;



c. further reacting the effluent from said intermediate reaction zone in said first reaction zone, through which fresh or regenerated catalyst particles are introduced into said system, at catalytic reforming conditions; and,

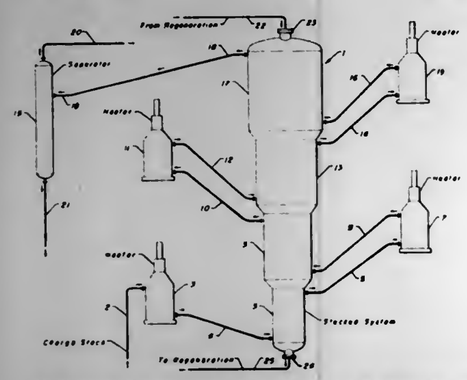
d. recovering a normally liquid, catalytically-reformed product from the effluent withdrawn from said first reaction zone.

4,069,136

COUNTERCURRENT HYDROCARBON CONVERSION WITH GRAVITY-FLOWING CATALYST PARTICLES

Roger L. Peer, La Grange, and Irvin S. Fisch, Skokie, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 26, 1976, Ser. No. 735,707
Int. Cl.² C10G 35/12, 39/00
U.S. Cl. 208—65 **10 Claims**



1. A process for the catalytic reforming of a naphtha charge stock with a catalyst comprising a Group VIII noble metal on an alumina carrier to produce a gasoline of higher octane number in a multiple-stage reactor system in which (1) catalyst particles flow downwardly, via gravity, through each reaction zone in said system, (2) catalyst particles from one reaction zone are introduced into the next succeeding reaction zone, (3) deactivated catalyst particles are withdrawn from said system through the lower end of the last reaction zone and, (4) fresh, or regenerated catalyst particles are introduced into the upper end of the first reaction zone in said system, which process comprises the sequential steps of:

a. reacting said charge stock, in the absence of added or recycled hydrogen, in said last reaction zone, from which deactivated catalyst particles are withdrawn from said system, at catalytic reforming conditions;

b. further reacting the effluent from said last reaction zone in at least one intermediate reaction zone, at catalytic reforming conditions;

c. further reacting the effluent from said intermediate reaction zone in said first reaction zone, through which fresh, or regenerated catalyst particles are introduced into said system, at catalytic reforming conditions; and,

d. recovering a normally liquid, catalytically-reformed product from the effluent withdrawn from said first reaction zone;

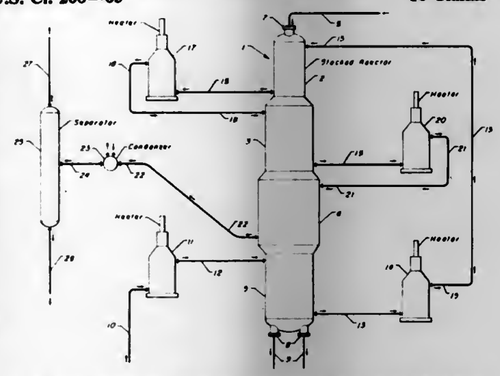
said process being further characterized in that said first reaction zone contains the greater amount of catalyst particles and said last reaction zone contains the least amount of catalyst particles.

4,069,137

HYDROGEN-PRODUCING HYDROCARBON CONVERSION WITH GRAVITY-FLOWING CATALYST PARTICLES

Arthur R. Greenwood, Niles, Ill.

Filed Oct. 26, 1976, Ser. No. 735,708
Int. Cl.² C10G 35/12, 39/00
U.S. Cl. 208—65 **10 Claims**



1. A process for the catalytic reforming of a naphtha charge stock with a catalyst comprising a Group VIII noble metal on an alumina support to produce a gasoline fraction of higher octane number in a multiple-stage system in which (1) catalyst particles flow downwardly, via gravity, through each reaction zone in said system, (2) catalyst particles are transferred in series from reaction zone to reaction zone in said system, (3) deactivated catalyst particles are withdrawn from said system through the lower end of the last reaction zone, and, (4) fresh, or regenerated catalyst particles are introduced into the upper end of the first reaction zone, which comprises the sequential steps of:

a. reacting said charge stock, in the absence of added or recycled hydrogen, in said last reaction zone, from which deactivated catalyst particles are withdrawn from said system, at catalytic reforming conditions;

b. further reacting the effluent from said last reaction zone in said first reaction zone, through which fresh or regenerated catalyst particles are introduced into said system, at catalytic reforming conditions;

c. further reacting the effluent from said first reaction zone in at least one intermediate reaction zone, at catalytic reforming conditions; and,

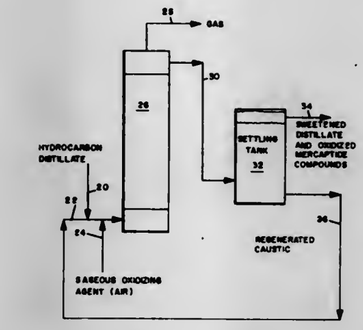
d. recovering a normally liquid, catalytically-reformed product from the effluent withdrawn from said intermediate zone.

4,069,138

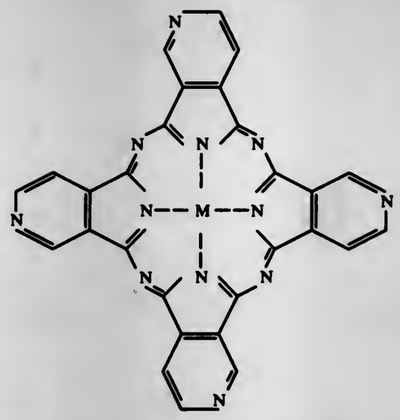
METHOD AND CATALYST FOR REMOVING MERCAPTANS AND MERCAPTIDE COMPOUNDS FROM AQUEOUS ALKALINE SOLUTIONS AND HYDROCARBON DISTILLATES

Clifford Ward, Louisa, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Sept. 30, 1976, Ser. No. 728,041
Int. Cl.² C10G 27/06, 19/02; C07C 149/00
U.S. Cl. 208—206 **10 Claims**



1. A method for oxidizing mercaptans occurring in petroleum hydrocarbon distillates and alkali mercaptide compounds occurring in aqueous alkaline solutions, said compounds resulting from contacting aqueous alkaline solution with said distillates containing mercaptans to their corresponding disulfide compounds comprising contacting said mercaptans and mercaptide compounds in an aqueous alkaline solution with a gaseous oxidizing agent and with a catalyst comprising a metal complex of 3,4-tetrapyridinotetraazaporphine supported on a solid granular inert carrier and having the structural formula:



where M is a metal selected from the group consisting of iron, manganese, chromium, magnesium, copper, nickel, zinc, titanium, hafnium, thorium, tin, lead, columbium, tantalum, antimony, bismuth molybdenum, palladium, platinum, silver, mercury, vanadium and cobalt.

4,069,139

HYDRODESULFURIZATION OF OIL UTILIZING A NARROW PORE SIZE DISTRIBUTION CATALYST

Kenneth L. Riley, Baton Rouge, and Lloyd A. Pine, Greenwell Springs, both of La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Dec. 29, 1975, Ser. No. 644,835
Int. Cl.² C10G 23/02
U.S. Cl. 208—216 **12 Claims**

1. In a process for hydrodesulfurizing a sulfur and asphaltene-containing hydrocarbon oil which comprises contacting said oil under hydrodesulfurization conditions with hydrogen and a catalyst comprising an alumina support composited with a hydrogenation component, said hydrogenation component comprising at least one Group VIB metal component selected from the group consisting of at least one elemental metal, metal oxide or metal sulfide of a Group VIB element of the Periodic Table of Elements and at least one Group VIII metal component selected from the group consisting of at least one elemental metal, metal oxide or metal sulfide of a Group VIII metal of the Periodic Table of Elements, the improvement which comprises said catalyst having a median pore radius ranging from about 70 to about 95 Angstroms, a total pore volume between 0.45 and 1.50 ml/g; less than 0.05 ml/g of said pore volume being in pores with radii greater than 100 Angstroms; at least 0.40 ml/g of said pore volume being in pores with radii in the range between said median pore radius to about 10 Angstroms above and 10 Angstroms below said median pore radius; at least 75 percent of said pore volume being in pores with radii in the range between said median pore radius to about 10 Angstroms above and 10 Angstroms below said median pore radius; less than 0.05 ml/g of said pore volume being in pores with radii below 60 Angstroms, and a total surface area ranging between 130 and 500 square meters per gram.

4,069,140

REMOVING CONTAMINANT FROM HYDROCARBONACEOUS FLUID

Donald K. Wunderlich, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 548,525, Feb. 10, 1975, abandoned. This application May 19, 1975, Ser. No. 578,648
Int. Cl.² C10G 29/04
U.S. Cl. 208—251 H **12 Claims**

1. A method for removing a contaminant of at least one of arsenic and selenium from a synthetic hydrocarbonaceous fluid comprising:

a. providing a plurality of particles of a contaminant-removing material that is capable of removing said contaminant from said hydrocarbonaceous fluid and effecting deposition of said contaminant within said particles of said contaminant-removing material, said contaminant-removing material including a solid, high surface area carrier material having a pore volume of at least 0.8 cubic centimeters per gram (cc/gm) with a major portion of the pore volume having a mean effective pore radius greater than 100 A and feeder pores having radii greater than 1,000 A running therethrough for allowing said hydrocarbonaceous fluid to flow thereinto, said particles carrying an active material at least adjacent said pores for effecting removal of said contaminant from said hydrocarbonaceous fluid; said carrier material being selected from the group consisting of silica, alumina, magnesia, zirconia, thoria, zinc oxide, chromium oxide, clay, kieselguhr, fuller's earth, pumice, bauxite and combinations thereof; said active material being selected from the group consisting of iron; cobalt; nickel; at least one oxide of the metals of iron, cobalt and nickel; at least one sulfide of said metals; and combinations thereof; and

b. contacting said hydrocarbonaceous fluid with said contaminant-removing material in a reducing atmosphere, in the substantial absence of water, and under an elevated temperature and pressure; whereby at least part of said

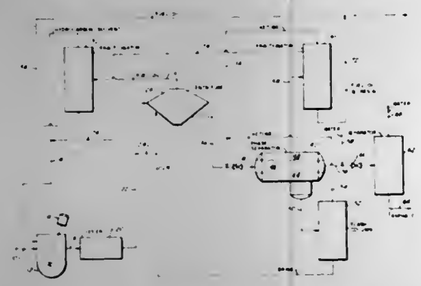
contaminant is removed from said hydrocarbonaceous fluid by way of said particles of contaminant-removing material.

4,069,141

PROCESS FOR RECOVERING FUEL OIL FROM TOPPED CRUDE

Thomas A. Lionetti, Port Arthur; Kenneth D. Miller, Spring, and Levi C. Parker, Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,787
Int. Cl.² C10G *21/16*
U.S. Cl. 208—309 **18 Claims**



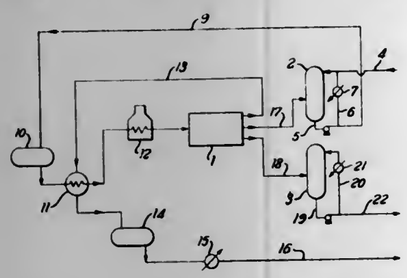
1. A process for recovering fuel oil from a topped crude oil comprising:
   a. admixing said topped crude oil with a hydrocarbon solvent;
   b. centrifuging said mixture of said topped crude oil and said hydrocarbon solvent in the presence of a brine carrier;
   c. recovering a brine-asphalt-fuel oil mixture from said centrifuging step;
   d. admixing said brine-asphalt-fuel oil mixture with a normally liquid ketone solvent selected from the class consisting of aliphatic and alicyclic ketones having at least four carbon atoms;
   e. recovering a ketone rich phase from the mixture produced in step (d); and
   f. recovering said fuel oil from said ketone rich phase.

4,069,142

HYDROCARBON SEPARATING PROCESS

Brian Tait Lauder, Virginia Waters, and John Robert Kenneth Rolfe, Esher, both of England, assignors to The British Petroleum Company Limited, Sunbury-on-Thames, England

Filed Aug. 25, 1976, Ser. No. 717,584
Claims priority, application United Kingdom, Sept. 15, 1975, 37746/75
Int. Cl.² C07C *7/13*; C10G *25/10*
U.S. Cl. 208—310 Z **10 Claims**



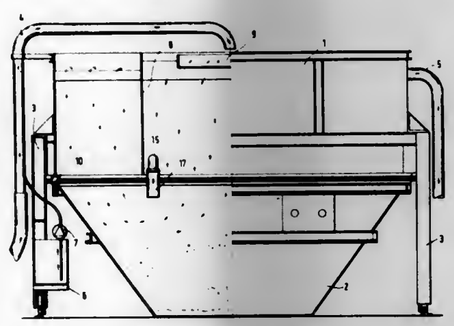
1. A cyclic, vapour phase, pressure swing process for the separation of n-paraffins from a mixture thereof with non-straight chain hydrocarbons comprising the steps of adsorption, purge and desorption, which process comprises
   1. recycling purge effluent mixed with feedstock through a bed of a 5A molecular sieve in an adsorption stage and recovering an effluent of reduced n-paraffin content,
   2. purging the bed to remove surface adsorbed and interstitial matter by reducing the pressure in the bed by direct contact condensation of the purge effluent with fresh feed introduced at or near ambient temperature and recovering said purge effluent-feedstock mixture for recycle to Stage (1), and
   3. desorbing the bed to recover n-paraffins by further reducing the pressure in the bed.

4,069,143

PURIFICATION APPARATUS FOR WATER PURIFICATION AND PURIFICATION SYSTEM THEREFOR

Bernd Friesenborg, Willich, and Helmut Eberhardt, Monchen-Gladbach, both of Germany, assignors to Transportbeton-Beratungs-Gesellschaft mit beschrankter Haftung, Ratingen, Germany

Filed May 25, 1976, Ser. No. 689,861
Claims priority, application Germany, June 6, 1975, 7518028
Int. Cl.² B03B *7/00*
U.S. Cl. 209—10 **2 Claims**



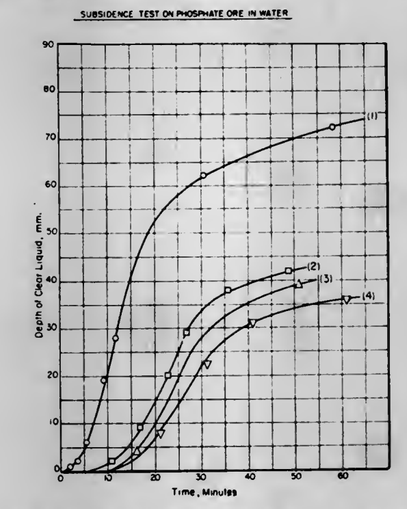
2. A purification system for waste water concentrated with cement and/or lime and additives, with a purification apparatus for water purification with a settling device for sediment, comprising
   a settling device comprising a settling vessel and a separate sediment container,
   said settling vessel and said sediment container being in open connection with one another in assembled condition for purification of water and define a connection plane,
   sealing means for sealing said settling vessel and said sediment container in said connection plane toward the outside,
   said settling vessel and said sediment container being moveable relative to each other for exchange of said sediment container,
   means for separating granular additives from a sediment-water mixture in operative inlet communication with and to said settling vessel,
   a collection vessel means for collecting washing- and industrial- water in outlet communication with and from said settling vessel,
   said means for separating granular additives from the sediment-water mixture comprises,
   vibrating screen means for retaining an overflow of granules larger than 0.2 mm from passing therethrough and for permitting material smaller than 0.2 mm to pass therethrough,
   a supply line means for feeding the material smaller than 0.2 mm passing through said screen means into said settling vessel,
   purge means for supplying washing water from said collection vessel means and for spraying same onto said vibrating screen means.

4,069,144

PHOSPHATE ORE RECOVERY

George C. Johnson, Princeton, N.J., and Albert E. Schweizer, Levittown, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1975, Ser. No. 633,535
Int. Cl.² B03B *1/02*
U.S. Cl. 209—11 **4 Claims**



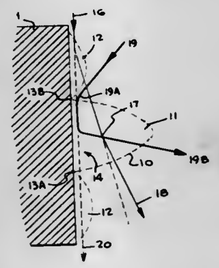
1. An improved process for beneficiating phosphate rock, which process includes at least an acid flotation step and an amine flotation step in which the usual reagents are used, the improvement whereby the mined phosphate rock is dried by a process selected from those consisting of transport, storage or air circulation immediately prior to classification and is mixed with water and classified prior to flotation.

4,069,145

ELECTROMAGNETIC EDDY CURRENT MATERIALS SEPARATOR APPARATUS AND METHOD

Edward J. Sommer, Jr., Nashville, and Garry R. Kenny, College Grove, both of Tenn., assignors to Magnetic Separation Systems, Inc., Nashville, Tenn.

Filed May 24, 1976, Ser. No. 689,663
Int. Cl.² B03C *1/22*
U.S. Cl. 209—212 **22 Claims**



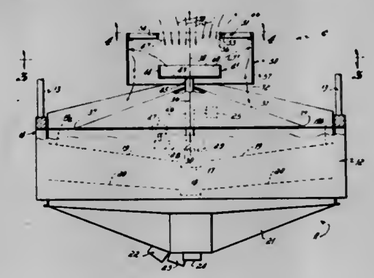
1. An electromagnetic eddy current materials separator for separating a mixture of feed particles moving along a feed-stream according to the electrical conductivities of said particles, comprising
   a. an eddy current magnet having a magnet face adjacent the feedstream and a magnet winding for producing a magnetic field adjacent said magnet face upon energization of the winding, said magnetic field having a central spatial zone adjacent said face forming a region of strongest magnetic field influence capable of producing strong eddy current repulsion of material and bordered upstream and downstream relative to the direction of feedstream travel by fringe magnetic field influence zones capable of producing weak eddy current repulsion of materials,
   b. magnet activating means responsive to control signals applied thereto and connected to said magnet for producing rapid changes in electrical currents in the magnet winding to activate said magnet at selected times,
   c. eddy current magnet control means for producing said control signals,
   d. means for directing said mixture of feed particles in the feedstream along a path advancing the feed particles into the region of strongest influence of the magnetic field of said magnet, and
   e. repository means for collecting particles repulsed by said eddy current magnet.

4,069,146

DISTRIBUTION OF FEED ONTO A SCREENING MACHINE

William E. Lower, Cincinnati, Ohio, assignor to Rotex, Inc., Cincinnati, Ohio

Filed June 18, 1976, Ser. No. 697,317
Int. Cl.² B07B *1/04*
U.S. Cl. 209—254 **14 Claims**



1. In a screening machine having a screen, an improved feed distributor for distributing infed material over said screen, said improved distributor comprising,
   a dish-shaped, concave thrower, said thrower mounted above said screen and positioned to receive a falling stream of infed material,
   a fixed shroud around said thrower, said shroud having a cross-sectional area which is larger than the area of said thrower but smaller than the surface area of said screen,
   said thrower being mounted for rotation about a generally vertical axis at a rate such that infed material falling onto said thrower is slung outwardly and upwardly from it to impinge against said shroud by rotation of said thrower,
   means for rotating said thrower about said axis,
   and a roof positioned above said screen and below said shroud, said roof extending outwardly beyond the shroud so that infed material slung against said shroud drops from said shroud onto said roof, said roof having a peripheral edge from which material dropping onto the roof from said shroud will thereafter drop onto said screen, said roof pesenting a series of vanes extending outwardly toward the peripheral edge thereof, said vanes positioned on said roof to direct material falling onto said roof from said shroud toward said peripheral edge in a predetermined angular distribution,

said screen having a portion which lies outwardly of the peripheral edge of the roof so that material falling over said edge drops onto said portion of the screen.

13. An improved method of distributing an off-center, non-vertical stream of particulate infed material over the screen of a screening machine, said improved method comprising the steps of

discharging said material so that it falls onto a cup-shaped thrower above the screen,

rotating said thrower at a rate such that said particles are slung upwardly and outwardly from said thrower,

interrupting the travel of the particles thus thrown by the thrower by providing a wall around said thrower on which the particles impinge in flight, said wall causing the particles to drop downwardly as an annular stream,

arresting the fall of said particles from said wall by interposing a roof below the wall and over said screen so that said particles fall onto said roof,

directing the particles in desired angular directions on said roof,

and discharging the particles thus directed from the roof onto the screen.

4,069,147

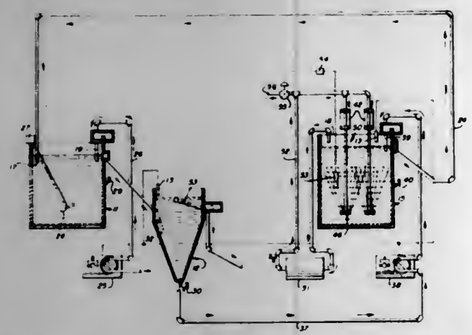
WASTE WATER TREATMENT WITH OXYGEN

Edward Abrams, and Anthony J. Masella, both of Chicago, Ill., assignors to Chemetron Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 507,543, Sept. 19, 1974, abandoned, which is a continuation of Ser. No. 326,441, Jan. 24, 1973, abandoned. This application Aug. 2, 1976, Ser. No. 710,615

Int. Cl.² C02C 1/02

U.S. Cl. 210—6 **14 Claims**



1. A method of reducing the BOD content of BOD-containing waste water which comprises:

contacting influent BOD-containing water in a mixing vessel with an effective amount of a biologically active mass which biologically active mass has metabolized its BOD content, said biologically active mass sorbs BOD from said water to form a BOD-rich biologically active mass and reduces the BOD content of the water without substantial oxygenation of the biologically active mass and with substantially no metabolism of the biologically active mass occurring in said mixing vessel;

transferring the mixture of the BOD-rich biologically active mass and reduced BOD content water to a clarifier;

separating the reduced BOD content water as an effluent from the BOD-rich biologically active mass;

discharging a portion of the BOD-rich biologically active mass from the clarifier;

transferring the remainder of the BOD-rich biologically active mass to a separate oxygenation vessel;

metabolizing the transferred BOD-rich biologically active mass by intimately contacting said biologically active mass in the oxygenation vessel with an oxygen containing gas having an oxygen content of at least 30% by volume to restore the capacity of the sludge to sorb substantial quantities of BOD, and recycling said biologically active mass back to said mixing vessel to contact said BOD-containing water.

4,069,148

INDUSTRIAL WASTE WATER TREATMENT PROCESS

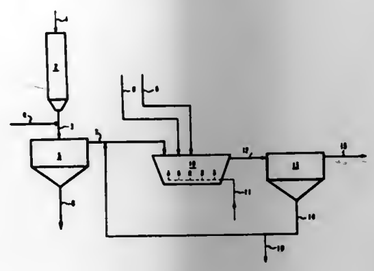
David Glenn Hutton, Newark, and Francis Leonard Robertaccio, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 98,677, Dec. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 2,846, Jan. 14, 1970, abandoned. This application May 27, 1971, Ser. No. 147,398

The portion of the term of this patent subsequent to Sept. 9, 1992, has been disclaimed.

Int. Cl.² C02C 1/06, 5/10

U.S. Cl. 210—11 **8 Claims**



1. A process for continuously purifying industrial waste water containing impurities which inhibit or poison bacterial forms employed in biological treatment of waste water, said process consisting of:

A. contacting in a treatment zone a mixture of

1. industrial waste water which has a pH of between about 4 and 11 and which optionally has been subjected to primary treatment to remove solids,
2. biologically active solids in an amount sufficient to provide a total suspended solids content of the mixture of between about 10 and 50,000 parts per million, and
3. activated carbon added at a rate sufficient to supply between about 4 and about 1,000 square meters of surface area of carbon for every liter of waste water supplied to the treatment zone said carbon having a surface area of at least 100 square meters per gram and a particle size such that it will pass through a 200 mesh per inch sieve,

B. mixing a gas containing molecule oxygen through the mixture for a period of at least about 2 hours, and

C. removing the mixture from the treatment zone.

4,069,149

CONTINUOUS FERMENTATION PROCESS AND APPARATUS

Melbourne L. Jackson, Moscow, Idaho, assignor to Idaho Research Foundation, Inc., Moscow, Idaho

Filed May 14, 1976, Ser. No. 686,297

Int. Cl.² C02C 1/02; C02B 1/28

U.S. Cl. 210—44 **6 Claims**

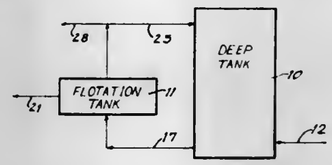
5. An apparatus for continuous fermentation processes involving transfer of gaseous constituents to a liquid material or suspension for biological reaction purposes to produce a solid cellular material and related metabolic products, comprising:

a tall reactor tank exposed to atmospheric pressure;

input means for supplying incoming liquid material or suspension to the interior of the reactor tank;

outlet means for discharging treated liquid suspensions from the interior of the reactor tank at a hydrostatic pressure of at least 13 p.s.i.g.;

a flotation tank exposed to atmospheric pressure and having an inlet;



means operatively connecting the outlet means of the reactor tank and the inlet of the flotation tank for suddenly depressurizing the liquid suspension as it is introduced to the flotation tank;

4,069,150

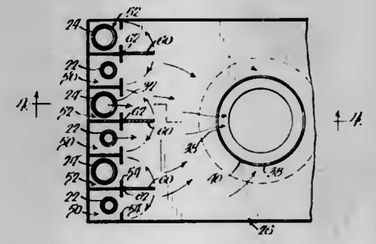
CONTROL DEVICE FOR DUAL FLOW CLARIFIERS

John C. Lodholz, Perkasie, and P. Barry Straus, Hatfield, both of Pa., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 12, 1976, Ser. No. 731,747

Int. Cl.² B01C 21/24

U.S. Cl. 210—112 **15 Claims**



1. A sludge removal mechanism for withdrawing sludge that has settled to the bottom of a tank comprising a movable concentrating means for concentrating the settled sludge in a plurality of localized areas of the tank bottom, a collection zone located above the tank bottom for receiving settled sludge, a pair of conduits leading from each localized area to said collection zone, a movable plate in said collection zone for each of said pair of conduits and movable between positions to control flow from each localized area to said collection zone, and means for simultaneously moving all of said plates between positions so that flow from a plurality of localized areas is varied simultaneously.

4,069,151

THIN POLYCARBONATE MEMBRANES FOR USE IN HEMODIALYSIS

Willard S. Higley, Glendora; Paul A. Cantor, Los Angeles, and Bruce S. Fisher, Covina, all of Calif., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Mar. 31, 1976, Ser. No. 672,354

Int. Cl.² B01D 31/00

U.S. Cl. 128—214 R **7 Claims**

1. An improved membrane prepared by a wet phase inversion technique using an aqueous gelation system, said membrane composed of a polyether-polycarbonate block copolymer containing 5 to 35% by weight of repeating alkylene ether carbonate units and from 95 to about 65% by weight of repeating bisphenol A - carbonate units, said membrane being adaptable for use in a hemodialysis apparatus to preferentially remove middle molecular weight molecules from blood, wherein said membrane has a diffusive permeability to sodium chloride of about 800 to 860 cm/min $\times 10^{-4}$, a diffusive permeability to vitamin B_{12} of greater than 105 cm/min $\times 10^{-4}$, an ultrafiltration rate of less than 4.0 ml/hr/M²/mmHg, both the diffusive permeabilities and ultrafiltration rate measured at 37° C, and a thickness of from about 0.60 mil to about 0.95 mil.

7. A method of dialysing a patient comprising

a. mounting a membrane in a hemodialyzer,

b. connecting said hemodialyzer to a patient so that blood can be removed from the patient, passed through the hemodialyzer and returned to the patient in a closed loop,

c. removing blood from a patient;

d. passing said blood through a hemodialyzer wherein the blood is brought into contact with one face of a membrane mounted within said hemodialyzer while a dialysis liquid is simultaneously circulated through the hemodialyzer in contact with the opposite face of the membrane mounted in the hemodialyzer, the flow rates of the blood and dialysis liquid corresponding to the normal conditions of a hemodialysis process; and returning the dialyzed blood to the patient,

the improvement being the use in the hemodialyzer of a membrane prepared by a wet phase inversion technique using an aqueous gelation system, said membrane composed of a polyether-polycarbonate block copolymer having a molecular weight within the range of from about 200,000 to 500,000 as determined by intrinsic viscosity measurement, containing 5 to 35% by weight of repeating alkylene ether carbonate units and from 95 to about 65% by weight of repeating bisphenol A - carbonate units, said membrane having a diffusive permeability measured at 37° C to sodium chloride of about 800 to 860 cm/min $\times 10^{-4}$, a diffusive permeability to vitamin B_{12} measured at 37° C of greater than 105 cm/min $\times 10^{-4}$, an ultrafiltration rate measured at 37° C less than 4.0 ml/hr/M²/mmHg and a thickness of from about 0.6 mil to about 0.95 mil.

4,069,152

CLARIFICATION OF CLAY CONTAINING WATER

Gerald A. Specken, 10719 Hardisty Drive, Edmonton, Alberta, Canada

Filed Apr. 26, 1976, Ser. No. 680,026

Int. Cl.² C02B 1/20

U.S. Cl. 210—50 **17 Claims**

1. A process for the clarification of clay-containing water, said water being selected from the group consisting of water from processing of bitumnous sands and water from oil or gas well drilling sites, said water containing between about 500 to about 100,000 ppm by weight of suspended clay particles, including treating the water with between about 0.5 to about 500 ppm of an alkali permanganate to cause coagulation and subsequent settling of substantially all said suspended clay particles.

4,069,153

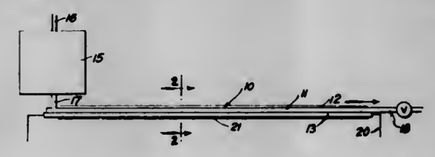
METHOD OF DESTROYING PYROGENS

Donald A. Gunther, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Continuation of Ser. No. 625,821, Oct. 28, 1975, abandoned. This application Nov. 4, 1976, Ser. No. 738,925

Int. Cl.² C02B 3/00

U.S. Cl. 210—64 **2 Claims**



1. A method of providing a continuous flow of physiologically safe water comprising,

providing a continuous flow of water containing lipopolysaccharides known as pyrogens,

treating said water containing said lipopolysaccharides with ultra-violet light of a wave length and dosage sufficient to

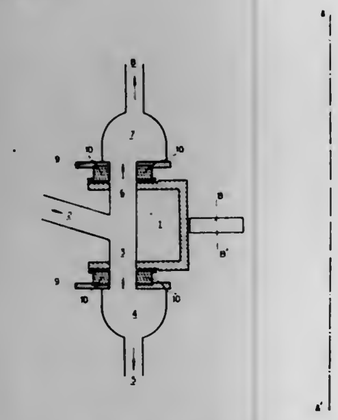
chemically alter substantially all pyrogens in said water to destroy substantially all pyrogenicity of said water,
said ultra-violet light being of a wave length of 1800A to 2000A at a dosage in the order of 100,000 to 300,000 microwatt-seconds per square centimeter of area of said flow path,
with all said water flowing within 6 millimeters of said light, thereby converting a substantial amount of oxygen dissolved in said water to ozone, and
whereby said pyrogen destruction is enhanced and substantially all pyrogenicity of said water is destroyed and said water is safe for physiological use.

4,069,154

VACUUM FILTRATION PROCESS EMPLOYING A CIRCULAR VACUUM BOX

Michel Barloy, Rouen, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Sept. 25, 1975, Ser. No. 616,559
Claims priority, application France, Oct. 3, 1974, 74 33316
Int. Cl.[2] B01D *37/00*
U.S. Cl. 210—66 **6 Claims**



1. A process enabling a mixture of liquid and gas coming from a rotary vacuum filter which is divided into a number of filtration zones for separation of the filtrate to be collected and simultaneously separated, comprising passing the liquid/gas mixture into a vacuum box provided with a generally circular space which rotates about the axis of the filter, and in which the liquid and gas separate, draining the separated liquid via at least one lower opening into a lower fixed space while the separated gas rises via at least one upper opening into an upper fixed space so that the liquid and the gas are collected separately, the moving rotating space being connected to the two adjacent fixed spaces in a liquid-tight and gas-tight manner, the lower fixed space of the vacuum box being divided radially into the same number of compartments as the filtration zone and which includes the step of communicating each compartment with a filtration zone so that each filtrate is separate from the gas.

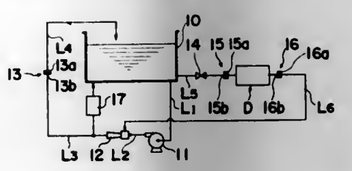
4,069,155

HEMODIALYSIS SYSTEM

Yasuhiro Tsujimoto, Toyonaka; Junichi Azuma, Hirakata; Yoshihiko Matsumura, Kawanishi, and Katsumi Noda, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed June 1, 1976, Ser. No. 692,024
Claims priority, application Japan, May 29, 1975, 50-65105
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—195 R **13 Claims**

1. A dialysate circulating system which can be made into a hemodialysis system by the addition of a dialyzer, said circulating system comprising, in combination:
a source of dialysate;
a fluid circulating circuit having one end connected to said source of dialysate for circulating the dialysate supplied from the source of dialysate along said fluid circulating circuit;
an ejector in said fluid circulating circuit and having an inlet nozzle, a diffuser axially aligned with said inlet nozzle and defining an orifice in cooperation with said nozzle and a suction chamber in communication with said orifice, said ejector being positioned in said circulating circuit for directing the dialysate being circulated from the nozzle into the diffuser for developing a negative gauge pressure in said suction chamber;
first and second mating coupling members in said fluid circulating circuit connectable to each other and being disposed in said circulating circuit downstream of said ejector in terms of the direction of flow of the dialysate;
a fluid circuit means connected between said source of dialysate and said suction chamber of said ejector; and
third and fourth mating coupling members in said fluid circuit means connectable to each other,



said circulating system, when said third and fourth mating coupling members in said fluid circuit means are directly connected to each other, having therein a dialyzer of the type in which blood to be dialyzed is pumped through a blood chamber on one side of a semi-permeable membrane under a positive gauge pressure and dialysate is pumped through a dialysate chamber on the other side of the membrane under a pressure approximating or equal to atmospheric pressure with the opposite ends of the dialysate chamber connected between the first and second mating coupling members in said fluid circulating circuit and when the first and second mating coupling members are directly connected to each other, having therein a dialyzer of the type in which blood to be dialyzed is allowed to flow under the natural pressure thereof through a blood chamber on one side of a semi-permeable membrane and dialysate is caused to flow through dialysate chamber on the other side of the membrane under negative gauge pressure with the opposite ends of the dialysate chamber connected between the third and fourth coupling members in said fluid circuit means.

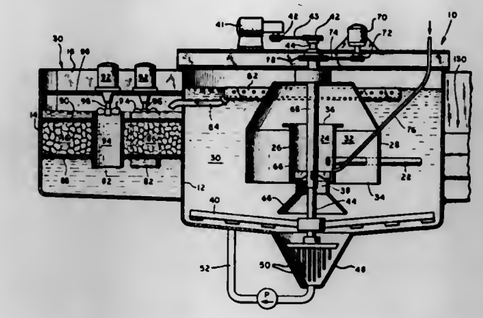
4,069,156

SEWAGE TREATMENT SYSTEM

Donald G. Mason, Overland Park, Kans., assignor to Ecodyne Corporation, Chicago, Ill.

Filed July 5, 1974, Ser. No. 485,899
Int. Cl.[2] C02C *1/04*
U.S. Cl. 210—195 S **6 Claims**

1. Improved apparatus for purifying a liquor containing a biodegradable material comprising: means defining a clarification zone; means for delivering said liquor to said clarification zone; means defining an oxidation/nitrification zone; a first bed of media in said oxidation/nitrification zone, said media comprising a multiplicity of submerged elements freely and randomly stacked on one another to provide interstitial area therebetween, said elements having a high surface area to volume ratio; aeration means in said oxidation/nitrification zone for introducing air into said liquor; means for delivering said liquor from said clarification zone to said oxidation/nitrification zone; means for delivering liquor through said first bed of media; means defining a denitrification zone; a second bed of said media in said denitrification zone; means for delivering said liquor through said second bed of media; means for delivering said liquor from said oxidation/nitrification zone to said



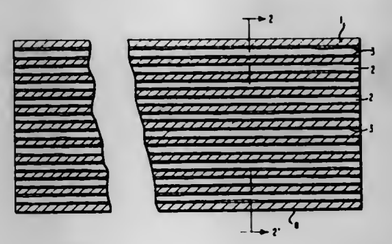
denitrification zone; means for introducing a nutrient into said second bed of media; and means for withdrawing said liquor from said denitrification zone, said oxidation/nitrification zone, said denitrification zone, and said filter means being positioned around the perimeter of said clarification zone to form a single, compact unit.

4,069,157

ULTRAFILTRATION DEVICE

Fred Wayne Hoover, Wilmington, Del., and Robert Earl Roberts, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 20, 1975, Ser. No. 633,836
Int. Cl.[2] B01D *31/00*
U.S. Cl. 210—433 M **8 Claims**



1. An ultrafiltration device comprising an integral support of porous ceramic material having substantially uniformly spaced and axially parallel passageways formed therein and a permselective membrane coated onto the surface of the passageways wherein:
a. the surface area (SA) of the passageways in the porous support is about from 300 to 2,000 square meters per cubic meter of support;
b. the pores in the support have diameters of about from 2 to 20 microns and the decimal proportion of the volume of the pores of the element material to the total volume occupied by the material (PV) is about from 0.30 to 0.60;
c. the decimal proportion of the volume of the support material exclusive of the passageways to the total volume of the support (SV) is about from 0.40 to 0.75; and
d. the permeability factor (PF) of the support, defined as PF = PV × SV/SA, is greater than about 1.0 × 10−4 meter.

4,069,158

FIRE EXTINGUISHING COMPOSITIONS

Rene Bertocchio, Vernaisson, and Louis Foulletier, Oullins, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Apr. 21, 1976, Ser. No. 678,929
Claims priority, application France, Apr. 25, 1975, 75 12981
Int. Cl.[2] A62C *1/00*; B01F *17/30*
U.S. Cl. 252—3 **12 Claims**

1. An aqueous fire-extinguishing composition comprising an aqueous solution of a mixture of (a) from about 5 to 45 percent of a nonionic surface-active agent, (b) from about 5 to 55 percent of a fluorinated amphoteric surface active agent, and (c) from about 30 to 60 percent of a cationic aromatic fluorinated surface-active agent of formula

$$\left[C_nF_{2n+1}-CH_2-CH_2-N\begin{matrix}R'\\R''\\R'''\end{matrix}\right]^+ A^-$$

in which; C_nF_{2n+1} represents a straight or branched perfluoro chain were n is a whole number between 1 and about 20; A is an anion; R', R'' and R''' are defined as follows:
1. R' and R'' may be identical or different, and are alkyl radicals containing 1 to 8 carbon atoms, and wherein R''' is an aryl radical or an arylalkyl radical containing 1 to 8 carbon atoms in the alkyl chain, or the aromatic derivative of a hydroxyalkyl radical containing between 1 and about 8 carbon atoms;
2. R' is an alkyl radical containing 1 to 8 carbon atoms, and R'' and R''' together constitute a divalent radical linked to the nitrogen atom by two single bonds derived from alkyl, alkenyl or dienic groups containing 4 to 9 atoms and carrying or containing aromatic substituents or radical;
3. R', R'' and R''' together constitute the residual part of a tertiary aromatic amine derived from pyridine or pyridine derivatives and containing 5 to 18 carbon atoms.

4,069,159

ANTISTAT AND SOFTENER FOR TEXTILES

Mason Hayek, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 2, 1976, Ser. No. 654,279
Int. Cl.[2] D06M *13/46*
U.S. Cl. 252—8.8 **3 Claims**

1. An antistatic agent for textiles comprising a mixture of:
a. a condensate of stearic acid and diethanolamine quaternized with dimethyl sulfate, and
b. lithium chloride; the weight ratio of (a) and (b) being from 1.0/10 to 10/1.0.

4,069,160

TEXTURING FINISH FOR SYNTHETIC FILAMENTS

Roland L. Hawkins, Spartanburg, S.C., assignor to Hoechst Fibers Industries, Division of American Hoechst Corporation, Spartanburg, S.C.

Filed Jan. 20, 1975, Ser. No. 542,683
Int. Cl.[2] D06M *13/16, 13/20, 13/26*
U.S. Cl. 252—8.9 **16 Claims**

1. A finish composition for synthetic textile filaments comprising:
a. about 40 to about 75 weight percent of a high molecular weight fatty acid ester lubricant characterized by a weight loss of not more than 25 weight percent when subjected to a temperature of 210° C. for 24 hours;
b. about 20 to about 50 weight percent of an emulsifier for said lubricant, said emulsifier having a low fuming propensity and being stable against thermal degradation;
c. about 2 to about 20 weight percent of a neutralized phosphated adduct of an alcohol containing from about 8 to

about 18 carbon atoms and about 4 to about 10 moles of ethylene oxide; and

d. 0 to about 2 weight percent of a thermal stabilizer.

4,069,161

PREPARATION OF AQUEOUS SOLUTIONS OF POLYACRYLAMIDES

Richard J. Pogers, 1570 Detroit, Denver, Colo. 80206

Division of Ser. No. 320,789, Jan. 3, 1973, Pat. No. 3,868,997. This application June 24, 1974, Ser. No. 482,811

Int. Cl.[2] E21B *43/22*; B01F *1/00*

U.S. Cl. 252—8.55 D 5 Claims

1. In a process for the production of aqueous solutions of polymer, the improvement comprising:

a. chilling, until frozen, a gel of a polymer selected from the group consisting of polyacrylamide, hydroxyethyl cellulose, vinyl acetate-crotonic acid polymer, and polyvinyl acetate/polyvinyl pyrrolidone to within a temperature range of about −30 to about −320° F.,

b. grinding the gel while chilled to form frozen particles of the polymer having an average particle size in the range of from about 250 to about 1000 microns,

c. dissolving the ground particles of the polymer gel in water.

4,069,162

HAZE FREE OIL ADDITIVE COMPOSITIONS CONTAINING POLYMERIC VISCOSITY INDEX IMPROVER AND PROCESS FOR PRODUCING SAID COMPOSITIONS

John Brooke Gardiner, Mountainside; Max W. Hill, Westfield, and Jack Ryer, East Brunswick, all of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Nov. 3, 1975, Ser. No. 628,342

Int. Cl.[2] C10M *1/48, 3/42, 5/24, 7/46*

U.S. Cl. 252—32.7 E 7 Claims

1. A process of decreasing haze in a composition comprising:

a major amount of hydrocarbon lubricating oil;

in the range of about 5 to 30 wt. %, based upon the total weight of said composition, of an oil-soluble viscosity index improver polymer which consists essentially of about 30 to 80 wt. % ethylene and propylene, said polymer being formed by a Ziegler-Natta polymerization, said polymer having a M_n in the range from 700 to 500,000 and a M_w/M_n ratio of less than 10; and

a haze forming amount, but less than 1 wt. %, based on the total weight of said composition, of an oil insoluble, haze forming material resulting from the manufacture of said polymer, which material is a disassociable metal salt of a weak organic acid having a pK of more than about 3.8, and wherein said metal is selected from the class consisting of alkaline earth metal, zinc, sodium, potassium, aluminum, vanadium, chromium, iron, manganese, cobalt, nickel, cadmium, lead, bismuth and antimony;

which process comprises adding to said composition about 0.1 to about 2.5 equivalents, per equivalent of metal of said haze forming material, of an oil soluble hydrocarbyl substituted strong acid containing a hydrogen disassociating moiety and having a pK of less than about 2.5, and reacting for about 0.1 to about 20 hours at room temperature to about 250° C. said strong acid with said haze forming material to thereby decrease haze by converting said haze forming material either to an oil soluble weak acid or a volatile product, while converting the metal into an oil soluble strong acid metal salt and/or ionic complex of said strong acid, wherein said strong acid is selected from the group consisting of maleic acid, malonic acid, phosphoric acid, thiophosphoric acids, phosphonic acid, thiophosphonic acids, phosphinic acid, thiophosphinic acids, sulfonic acid, sulfuric acid, and alpha-substituted halo- or nitro- or nitrilo-carboxylic acids; and wherein the oil solubilizing hydrocarbyl group or groups of said strong acid contain from about 6 to about 40 carbon atoms.

4,069,163

LUBRICANT COMPOSITION

Harold E. Kenney, Jenkintown, and Edward T. Donahue, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 30, 1976, Ser. No. 701,057

Int. Cl.[2] C10M *1/48, 3/42, 5/24, 7/46*

U.S. Cl. 252—46.7 10 Claims

1. A lubricant composition comprising a major proportion of a lubricating oil to which has been added from about 0.06 to about 2.0 weight percent of an additive which is a partial phosphorus pentasulfide adduct of a polycyanoethylated keto fatty ester, said adduct prepared by reacting a keto fatty ester selected from the group consisting of methyl-12-ketostearate and a mixed keto ester containing about 85% of methyl 9,10-ketostearate and about 15% of ketones having from 14 to 20 carbon atoms in their chain lengths with acrylonitrile and then reacting the resultant polycyanoethylated keto fatty ester with phosphorus pentasulfide at a molar ratio of about 7 to 1, respectively, at about 100° C for about 1 hour until about one-half of the cyanoethyl groups are reacted.

4,069,164

PROCESS FOR PRODUCING FERROMAGNETIC POWDER

Shin-ichiro Dezawa; Koji Sasazawa, and Tatsuji Kitamoto, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed July 1, 1976, Ser. No. 701,914

Claims priority, application Japan, July 2, 1975, 50-82075

Int. Cl.[2] C01G *49/06, 49/08*; G11B *5/64*

U.S. Cl. 252—62.62 22 Claims

1. A process for producing a cobalt containing ferromagnetic iron oxide which consists essentially of adding an aqueous solution containing Co^{+2} ions, an alkali solution, and an oxidizing agent to a suspension of ferromagnetic iron oxide and heating the resultant mixture at 80° to 150° C to form said cobalt containing ferromagnetic iron oxide;

the amount of Co^{+2} ions in said Co^{+2} ion containing aqueous solution being 0.5 to 10 atomic percent based on the iron present in the ferromagnetic iron oxide; the amount of alkali present in said alkali solution being such that after neutralization of the Co^{+2} ions, the hydroxyl concentration of said mixture is at least 0.5 N; the amount of oxidizing agent, when it is a liquid or solid, being at least about 0.1 equivalent based on the Co^{+2} ions and when it is a gas, said oxidizing agent being added at a rate of at least 0.1/min per liter of said resultant mixture.

17. A process for producing a cobalt containing ferromagnetic iron oxide which consists essentially of adding an aqueous solution containing Co^{+2} ions and at least one cation selected from the group consisting of Cr^{+3}, Cr^{+6}, Mn^{+2}, Ni^{+2} and Zn^{+2}; an alkali solution; and an oxidizing agent to a suspension of ferromagnetic iron oxide and heating the resulant mixture at 80° to 150° C to form said cobalt containing ferromagnetic iron oxide;

the amount of Co^{+2} ions and said cation in Co^{+2} and cation containing solution being 0.5 to 10 atomic percent based on the iron present in the ferromagnetic iron oxide and the ratio of Co^{+2} ion to said catioin being such that at last ½ of said 0.5 to 10 atomic percent is Co^{+2} ion, the amount of alkali in said alkali solution being such that after neutralization of the Co^{+2} ions and aid cation the hydroxyl ion concentration is at least 0.5 N; the amount of oxidizing agent when it is a liquid or solid is at least 0.1 equivalent based on said Co^{+2} ions and when it is a gas it is added at a rate of at least about 0.1 l./min per liter of said resulant mixture.

4,069,165

ELECTRICAL INSULATING OILS

Midori Masunaga, Tokyo; Yoshiki Kohno, Kawasaki, and Kohji Hayashi, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

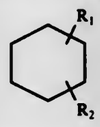
Filed Mar. 31, 1976, Ser. No. 672,375

Claims priority, application Japan, Apr. 9, 1975, 50-42232

Int. Cl.[2] H01B *3/22*

U.S. Cl. 252—63 12 Claims

1. An electrical insulating oil having excellent thermal stability, electrical properties, low pour point and corona resistance, consisting essentially of (1) 50–97 parts by weight of a mineral oil containing not more than 0.35 wt.% of sulphur and being prepared by refining with a solvent for selective dissolution of aromatic compounds a distillate containing at least 80 wt.% of a fraction having a boiling range of 230°–430° C at atmospheric pressure and being obtained by the distillation of a paraffin or mixed base crude oil, said solvent refining also effecting the removal of 30–85 wt.% of the sulphur contained in the distillate, thereby to obtain a raffinate, hydrofining the thus obtained raffinate, and then dewaxing the thus hydrofined raffinate with a solvent for dewaxing, and (2) 3–50 parts by weight of at least one alkylbenzene represented by the formula



in which R_1 and R_2 are each hydrogen or a hydrocarbon residue having 1–20 carbon atoms, and the total of carbon atoms contained R_1 and R_2 is at least 9.

4,069,166

ELECTRICAL INSULATING OILS

Midori Masunaga, Tokyo; Yoshiki Kohno, Kawasaki, and Hiroshi Hasegawa, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed June 15, 1976, Ser. No. 696,249

Claims priority, application Japan, June 20, 1975, 50-74406; Feb. 12, 1976, 51-13152

Int. Cl.[2] H01B *3/22*

U.S. Cl. 252—63 13 Claims

1. An electrical insulating oil consisting essentially of (A) 80–99 parts by weight of a refined oil (I) containing not more than 0.25 wt.% of sulphur and 18–30 wt.% of aromatic compounds, the refined oil (I) being produced by the steps of:

refining with a solvent capable of selectively dissolving aromatic compounds a distillate contained in a fraction having a boiling range of 230°–430° C at atmospheric pressure obtained by the distillation of a paraffin or mixed base crude oil at atmospheric pressure or the distillation at a reduced pressure of a bottom oil obtained by the distillation of the crude oil at atmospheric pressure thereby to obtain a raffinate from said distillate,

hydrofining the raffinate so obtained and

dewaxing the thus hydrofined raffinate with a solvent, and

(B) 1–20 parts by weight of a refined oil (II) having an aromatic content of 14 to 29% and lower than that of the refined oil (I), the refined oil (II) being prepared by treating at least with a solid adsorbent a lubricating oil fraction of a mineral oil having a boiling range of 230°–460° C at atmospheric pressure obtained from a crude oil, to obtain the electrical insulating oil having a total sulphur content of not more than 0.35 wt.% and excellent thermal stability.

4,069,167

LIQUID CRYSTAL COMPOSITION

Takashi Inukai; Hideo Sato, and Tetsuya Ishibe, all of Yokohama, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Sept. 10, 1975, Ser. No. 611,944

Claims priority, application Japan, Sept. 25, 1974, 49-110767; Sept. 25, 1974, 49-110765

Int. Cl.[2] C09K *3/34*; G02F *1/13*

U.S. Cl. 252—299 11 Claims

1. A liquid crystal composition having a liquid crystal temperature range encompassing the range of −10° C to 60° C, comprising in combination

a. at least one component selected from the group consisting of

a_1. 4-cyano-4''-n-pentylterphenyl in an amount within the range of 4 to 8 mol %, and

a_2. 4-cyano-4''-hexylterphenyl, in an amount within the range of 4 to 8 mol%,

b. at least two components selected from the group consisting of

b_1. 4-cyano-4'-n-pentylbiphenyl, in an amount between 10 to 45 mol%,

b_2. 4-cyano-4'-n-heptylbiphenyl in an amount between 10 to 45 mol %, and

b_3. 4-cyano-4'-n-hexylbiphenyl in an amount between 10 to 45 mol %,

the total amount of said at least two components being within the range of 50 to 75 mol %, and

c. at least three components selected from the group consisting of

c_1. 4-cyano-4'-n-propyloxybiphenyl, 3.5–13 mol %,

c_2. 4-cyano-4'-n-butyloxybiphenyl, 3.5 - 13 mol %,

c_3. 4-cyano-4'-n-pentyloxybiphenyl, 3.5 - 13 mol %,

c_4. 4-cyano-4'-n-hexyloxybiphenyl, 3.5 - 13 mol %,

c_5. 4-cyano-4'-n-heptyloxybiphenyl, 3.5 - 13 mol %, and

c_6. 4-cyano-4'-n-octyloxybiphenyl, 3.5 - 13 mol %,

the total amount of said at least three components being within the range of 20 - 38 mol %,

all of the above mol percentages being based on the total composition and the total mol% always being 100.

4,069,168

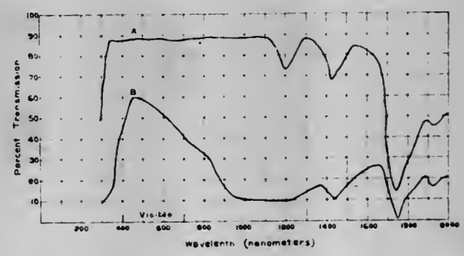
TUNGSTEN HEXACARBONYL IN PLASTIC LENSES

I. Roger Leatherman, Wadsworth, and Michael S. Misura, Barberton, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 1, 1976, Ser. No. 728,561

Int. Cl.[2] G02B *5/23*

U.S. Cl. 252—300 15 Claims



1. A liquid composition comprising a mixture of allyl glycol carbonate monomer and sufficient tungsten hexacarbonyl to provide a photochromic polymerizate that become blue and has substantial infrared absorbance upon exposure to ultraviolet radiation.

5. A solid poly(ally glycol carbonate) photochromic polymerizate article having tungsten hexacarbonyl uniformly incorporated therein, said article becoming blue and having substantial infrared absorbance upon exposure to ultraviolet radiation.

4,069,169

PROCESS FOR PREPARATION OF CATALYST COMPONENT SUPPORTED ON HIGH PERFORMANCE CARRIER

Akinori Toyoda, Ohtake, and Norio Kashiwa, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 634,332, Nov. 24, 1975, abandoned. This application Oct. 4, 1976, Ser. No. 729,236

Int. Cl.² B01J *31/02, 31/12, 27/06*

U.S. Cl. 252—429 B **9 Claims**

1. A process for preparing a catalyst component supported on a carrier, which comprises contacting in a treatment liquid (A) a titanium tetrahalide in the liquid or gaseous phase with (B) a solid in the absence of mechanical pulverization, at a temperature of 40° C to the boiling point of the treatment liquid, to thereby chemically bond the titanium tetrahalide (A) to the solid (B), said solid (B) being obtained by either

1. mechanically pulverizing an adduct of a magnesium dihalide with a monocyclic aromatic monocarboxylic acid ester;
2. mechanically pulverizing a magnesium dihalide and an adduct of a magnesium dihalide with a monycyclic aromatic momocarboxylic acid ester;
3. mechanically pulverizing a monocyclic aromatic monocarboxylic acid ester and at least one magnesium dihalide component selected from the group consisting of magnesium dihalides and adducts thereof with monocyclic aromatic monocarboxylic acid esters;
4. mechanically pulverizing a magnesium dihalide and a complex of a titanium compound of the formula

$$Ti(OR)_nX_{4-n}$$

wherein R is an alkyl radical, or a phenyl radical optionally substituted by a lower alkyl group, X is a halogen atom, and n is an integer of 0 to 4, with a monocyclic aromatic monocaroxylic acid ester;
5. mechanically pulverizing an adduct of a magnesium dihalide with a monocyclic aromatic monocarboxylic acid ester and at least one titanium component selected from the group consisting of titanium compounds of the formula

$$Ti(OR)_nX_{4-n}$$

wherein R is an alkyl radical, or a phenyl radical optionally substituted by a lower alkyl group, X is a halogen atom, and n is an integer of 0 to 4, and complexes thereof with monocyclic aromatic monocarboxylic acid esters;
6. mechanically pulverizing a magnesium dihalide, an adduct of a magnesium dihalide with a monocyclic aromatic monocarboxylic acid ester, and at least one titanium component selected from the group consisting of titanium compounds of the formula

$$Ti(OR)_nX_{4-n}$$

wherein R is an alkyl radical, or a phenyl radical optionally substituted by a lower alkyl group, X is a halogen atom, and n is an integer of 0 to 4, and complexes thereof with monocyclic aromatic monocarboxylic acid esters; or
7. mechanically pulverizing a monocyclic aromatic monocarboxylic acid ester, at least one magnesium dihalide component selected from the group consisting of magnesium dihalides and adducts thereof with monocyclic aromatic monocarboxylic acid esters, and at least one titanium component selected from the group consisting of titanium compounds of the formula

$$Ti(OR)_nX_{4-n}$$

wherein R is an alkyl radical, or a phenyl radical optionally substituted by a lower alkyl group, X is a halogen atom, and n is an integer of 0 to 4, and complexes thereof with monocyclic aromatic monocarboxylic acid esters, wherein the amounts of the magnesium dihalide (a), the monocyclic aromatic monocarboxylic acid ester (b) and the titanium compound (c) of the above formula are selected such that the molar ratio of (a):(b) in (1), (2) and (3) above is 1:10 to 0.005 and the molar ratio of (a):(b):(c) in the case of (4), (5), (6) and (7) above is 1: (10 to 0.005):(100 to 0.001), and wherein when the adduct of magnesium dihalide or the complex of titanium compound is used, the amount of the monocyclic aromatic monocarboxylic acid ester therein is considered as the amount of (b) and wherein said monocyclic aromatic monocarboxylic acid ester (b) is an ester of benzoic acid, hydroxybenzoic acid, alkoxy benzoic acid or alkyl benzoic acid.

4,069,170

FLUIDIZED DEOXYCHLORINATION CATALYST COMPOSITION

Robert J. Blake, Oakland, and Guy W. Roy, Richmond, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 601,744, Aug. 4, 1975, abandoned, which is a continuation of Ser. No. 418,494, Nov. 23, 1973, abandoned, which is a continuation of Ser. No. 212,793, Dec. 27, 1971, abandoned, which is a division of Ser. No. 772,395, Oct. 31, 1968, Pat. No. 3,657,367. This application Dec. 13, 1976, Ser. No. 750,027

Int. Cl.² B01J *27/06*

U.S. Cl. 252—441 **4 Claims**

1. In a fluidized bed oxychlorination catalyst composition disposed upon an alpha-alumina support therefore which comprises a catalytically effective percentage of copper chloride, an oxidation inhibitor selected from the group consisting of sodium chloride and potassium chloride and between about 0.1 and about 12 percent by weight didymium chloride based upon the total weight of catalyst composition and support, the improvement comprising adding to the catalyst composition between about 0.2 to about 6 percent by weight additional lanthanum chloride above and beyond that lanthanum chloride contained in the didymium chloride.

4,069,171

METALLIC FIBROUS SKELETAL CATALYSTS AND PROCESS FOR PRODUCING THEM

Franklin D. Lemkey, Glastonbury, and Gerald S. Golden, Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 12, 1976, Ser. No. 741,831

Int. Cl.² B01J *21/04. 35/06*

U.S. Cl. 252—454 **9 Claims**

1. Active catalytic material which comprises a plurality of porous single crystal metallic fibers of high surface area comprising metals selected from the group consisting of the IB metals, the IVB metals, the VB metals, the VIB metals, the VIIB metals, and the VIII metals.

4,069,172

ADSORBENT FOR AROMATIC HYDROCARBON MIXTURE SEPARATION

Masazumi Kanaoka; Daisuke Ogawa; Kazuyoshi Iwayama, and Makoto Kihara, all of Yokohama, Japan, assignors to Toray Industries, Inc., Nihonbashi-Muromachi, Japan

Filed Mar. 15, 1976, Ser. No. 667,075

Claims priority, application Japan, Mar. 17, 1975, 50-31093

Int. Cl.² B01J *29/06*

U.S. Cl. 252—455 Z **7 Claims**

1. An adsorbent for separating paraisomers from C_8 or C_{10} aromatic hydrocarbons, or mixtures thereof, which is obtained by drying and calcining a faujasite zeolite including: (1) ammonium ions in the range of 2.5 to 25%, based on the total exchangeable cation sites originally present, and (2) ions selected from the group consisting of potassium and barium ions at the residual cation sites.

6. The adsorbent defined in claim 5, wherein said initial faujasite type zeolite contains oxides of sodium, aluminum and silica according to the formula

$$1.1 - 0.7\ Na_2O : Al_2O_3 : 2\text{-}7\ SiO_2 : XH_2O.$$

4,069,173

FIRE RETARDANT POLYISOCYANURATE AND POLYURETHANE FOAMS HAVING REDUCED SMOKE LEVELS AND METHOD FOR PRODUCING SAME

William J. Kauffman, Manheim, and Edwin J. Quinn, Lancaster, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 23, 1976, Ser. No. 679,688

Int. Cl.² C08G *18/28;* C08K *5/09*

U.S. Cl. 260—2.5 AJ **9 Claims**

1. Polyisocyanurate and polyurethane foams characterized by reduced smoke levels when burned comprising

a foam material selected from the group consisting of polyisocyanurate and polyurethane foams, and

an acid incorporated in said foam in an amount sufficient to reduce smoke levels of said foam when said foam is burned, said acid being selected from the group consisting of

a. polycarboxylic cycloaliphatic acids having 3 non-adjacent carboxylic acid groups or any configuration with more than 3 carboxylic acid groups up to and including acids containing one carboxylic acid group per carbon atom,

b. polycarboxylic heterocycloaliphatic acids having 3 non-adjacent carboxylic acid groups or any configuration with more than 3 carboxylic acid groups up to and including acids containing one carboxylic acid group per carbon atom,

c. polycarboxylic naphthalenic acids having 3 non-adjacent carboxylic acid groups or any configuration with more than 3 carboxylic acid groups up to and including acids containing one carboxylic acid group per n-2 carbon atoms, where n = total number of carbon atoms in the ring system, and

d. mixtures of said acids.

4,069,174

CURED OR UNCURED COMPOSITIONS OF HOMO- OR COPOLYMERS OF EPIHALOHYDRINS

Tetsuya Nakata, Ibaragi; Sachio Shimogawa, Amagasaki; Akira Hashimoto, Itami, and Nobuo Yamada, Amagasaki, all of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Filed Feb. 19, 1975, Ser. No. 550,998

Claims priority, application Japan, Feb. 20, 1974, 49-20138

Int. Cl.² C08G *65/32*

U.S. Cl. 260—2 A **28 Claims**

1. A cured or uncured composition consisting essentially of:

I. a polymer which is

A. an epihalohydrin homopolymer, or

B. an epihalohydrin copolymer of:

1. at least 5 mol% of an epihalohydrin monomer; and
2. the remainder being at least one monomer selected from the group consisting of an epihalohydrin other than (1), copolymerizable epoxides other than epihalohydrin, and 5-membered dicarboxylic acid anhydrides; and

II. a curing agent and acid acceptor consisting essentially of, on a basis of 100 parts by weight of polymer I:

A. from about 0.1 to about 100 parts by weight of a cyclic carboxylic acid anhydride;

B. from about 0.1 to about 10 parts by weight of a compound selected from the group consisting of 1,8-diazabicyclo (5,4,0) undecene-7 and salts thereof; and

C. from about 0.5 to about 20 parts by weight of at least one metal compound selected from the group consisting of: the oxide, hydroxide, carbonate and carboxylic acid salt of a metal of Group II of the Periodic Table of elements; and the oxide, basic carbonate, basic carboxylic acid salt and basic phosphite of a metal of Group IV-A of the Periodic Table.

4,069,175

METHOD FOR PRODUCING DIMENSIONALLY STABLE UREA-FORMALDEHYDE FOAMS

William Percy Moore, Hopewell, Va., assignor to Waverly Chemical Co., Hopewell, Va.

Filed Jan. 21, 1977, Ser. No. 761,301

Int. Cl.² C08V *9/30*

U.S. Cl. 260—2.5 F **1 Claim**

1. A method for producing dimensionally stable urea-formaldehyde foam which comprises an aqueous neutral urea-formaldehyde resin having a formaldehyde to urea mol ratio of about 2, a viscosity of about 40 centipoise and a solids content between 40 and 65%, combining the said resin with frothed curing solution containing about 1% sulfuric acid and about 2% surfactant and having an electrical conductivity of at least 0.1 $ohm^{-1}centimeter^{-1}$, continuously blending the combined resin and curing solution foam with a substantially un-ionized liquid suspension having an electrical conductivity lower than 0.00001 $ohms^{-1}centimeter^{-1}$ and containing between 10 and 25% attapulgite clay sized to pass through a 325 mesh Tyler Screen, curing and drying the combined foam at temperatures between 0° C and 35° C.

4,069,176

PROCESS FOR PRODUCING DYED FINELY DIVIDED HARDENED BENZOGUANAMINE RESINS HAVING UNIFORM PARTICLE SIZE AND EXCELLING IN DISPERSIBILITY

Tsuneo Tsubakimoto; Iwao Fuzikawa, both of Toyonaka; Katsumi Uchida, Shimamoto, and Osamu Minamidani, Higashiosaka, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed July 12, 1976, Ser. No. 704,744

Claims priority, application Japan, July 30, 1975, 50-91935

Int. Cl.² C08K *3/36*

U.S. Cl. 260—39 P **11 Claims**

1. A process for producing a dyed finely divided hardened resin of uniform particle size excelling in dispersibility which comprises, in combination, the steps of reacting benzoguanamine with formaldehyde in a ratio of 1.0 mole of the former to 1.2 - 3.5 moles of the latter in an aqueous medium at a pH ranging between 5 and 10 to prepare an aqueous liquid of a soluble and fusible resin having a degree of modified water tolerance of 0 - 150%, preparing an aqueous emulsion of a dyed soluble and fusible resin by using said aqueous liquid, a dye and a protective colloid, adding to the thus prepared aqueous emulsion in a ratio of 1 - 15 parts by weight per 100 parts by weight of the soluble and fusible resin of ultramicroscopic silica of a specific surface area as measured by the Brunauer, Emmett and Teller Method in the range of about 50 m^2/g to about 400 m^2/g and a particle size in the range of about 0.005 to about 0.05 micron, adding a curing catalyst, holding the aqueous emulsion for at least one hour at a temperature in the range of 40° - 60° C., heating the aqueous emulsion at a temperature in the range of 60° - 200° C. at normal atmospheric or superatmospheric pressure to harden the resin thereby preparing a suspension of a dyed finely divided hardened resin, and thereafter separating the hardened resin from the suspension followed by drying and de-aggregating the dried hardened resin.

4,069,177

WATER ABSORBING AND URINE STABLE STEP-WISE GRAFTED STARCH-POLYACRYLONITRILE COPOLYMERS

Theodore Smith, 3305 Mulberry Avenue, Muscatine, Iowa 52761

Filed June 21, 1976, Ser. No. 697,736
Int. Cl.² C08L 3/02
U.S. Cl. 260—17.4 GC 18 Claims

1. An alkali metal carboxylate salt of a starch-polyacrylonitrile graft copolymer produced by saponifying a starch polyacrylonitrile graft copolymer, said copolymer being produced by step-wise grafting of starch by acrylonitrile, the mole ratio of said starch to acrylonitrile being at least 1:6.

4,069,178

PROCESS FOR PREPARATION OF WATER-SOLUBLE, SILICONE MODIFIED ALKYD RESINS

Ryuzo Mikami, Ichihara, and Tsuneo Hanada, Chiba, both of Japan, assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 25, 1976. Ser. No. 661,452
Claims priority, application Japan, Mar. 17, 1975, 50-31169
Int. Cl.² C09D 3/64, 3/82
U.S. Cl. 260—22 S 5 Claims

1. A process for the preparation of water soluble, silicone-modified alkyd resins which comprises

I. forming an alkyd resin (A) by reacting
1. 0 to 70 percent by weight of a drying oil fatty acid,
2. 18 to 70.9 percent by weight of a dicarboxylic acid or its anhydride or a mixture of them, with
3. 19 to 51.7 percent by weight of an aliphatic polyhydric alcohol wherein the percent by weight of (1), (2) and (3) is based on the total combined weight of (1), (2) and (3), the mole ratio of (2) to (3) being in the range of from 1 to 0.6, until the alkyd resin has an acid number of 20 or less, and then

II. reacting with 28 to 92 parts by weight of (A) 5 to 60 parts by weight of a silicone compound (B) represented by the formula

$$(R_nSiX_mP_{(4-m-n)/2})_y$$

wherein R is a monovalent hydrocarbon radical, X is an alkoxy or hydroxy radical, n is a number of from 1 to 2, m is a number of from 0.05 to 3, the sum of $m+n$ does not exceed 4 and y is a number of at least 3, and

III. reacting 3.0 to 18.5 parts by weight of a polyvalent carboxylic acid (C) with the reaction product of (A) and (B) to introduce carboxylic groups into said reaction product until the acid value thereof is from 25 to 70.

4,069,179

COMPOSITIONS AND METHODS RELATING TO TRANSFER PROCESSES

Frederick L. Jones, Dayton, Ohio, assignor to Monarch Marking Systems, Dayton, Ohio

Division of Ser. No. 456,718, April 1, 1974, Pat. No. 3,946,138.
This application Mar. 10, 1976, Ser. No. 665,742
Int. Cl.² B32B 27/30, 27/36; B41M 5/02
U.S. Cl. 260—23 R 11 Claims

1. An oil-in-water emulsion, useful in preparing an image forming transfer element, comprising:

a. a continuous aqueous phase comprising a solubilized partially hydrolyzed polyvinyl acetate polymer, hydrolyzed to the extent of between about 80% and about 95%, having dispersed therein

b. a discontinuous dispersed phase comprising:

i. at least about 40% by weight of a vehicle comprising at least one C_{12} to C_{20} aliphatic alcohol containing an even number of carbon atoms, said vehicle having a freezing point below about 20° C., having dispersed therein

ii. a colorant, which is a dye, a pigment, or a combination thereof, the ratio of polymer to the discontinuous phase (b) being between about 1:1 and 1:3.

4,069,180

HALOGENATED POLYACRYLATE ELASTOMERS

David Calder Chalmers, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed July 30, 1975, Ser. No. 600,449
Claims priority, application Canada, Sept. 26, 1976, 210139
Int. Cl.² C08F 28/00; C08L 91/00
U.S. Cl. 260—23 AR 4 Claims

1. A vulcanizable halogenated elastomeric polymer comprising a copolymer of at least one alkyl acrylate or alkyl methacrylate, the alkyl groups having one to four carbon atoms, and at least one diolefinic hydrocarbon selected from isoprene and ethylidene norbornene, said diolefinic hydrocarbon forming from about 0.1 to about 6 mole percent of the copolymer, said copolymer being halogenated by reaction with a halogen selected from bromine and chlorine such that the amount of halogen in said copolymer is from about 0.1 to about 6 weight percent.

4,069,181

ASPHALT COMPOSITIONS

James Churchill Healy, and Roy Francis Whitaker, both of Avon, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed June 28, 1976, Ser. No. 700,445
Int. Cl.² C08L 95/00
U.S. Cl. 260—28.5 AS 14 Claims

1. An asphalt composition containing 100 parts by weight of an asphalt and from about 1 to about 30 parts by weight of a bound rubber masterbatch consisting of at least one elastomer selected from the group consisting of ethylene-propylene-diene terpolymer and ethylene-propylene copolymer and at least one carbon black having a dibutyl phthalate absorption value greater than 120 wherein said elastomer is first premixed with said carbon black to form a bound rubber masterbatch, and said masterbatch is then mixed with said asphalt, and the quantity of said carbon black that is first premixed with said elastomer is sufficient to increase the specific gravity of the bound rubber masterbatch to a value within 0.2 gram per cubic centimeter of the specific gravity of the asphalt cement.

4,069,182

ELASTOMERIC PAVEMENT REPAIR COMPOSITION

Charles H. McDonald, 3130 W. Pierce St., Phoenix, Ariz. 85009

Continuation-in-part of Ser. No. 589,190, Oct. 21, 1966, abandoned, and Ser. No. 376,919, July 5, 1973, Pat. No. 3,891,585. This application Feb. 7, 1975, Ser. No. 544,651
The portion of the term of this patent subsequent to June 24, 1992, has been disclaimed.
Int. Cl.² C08L 95/00
U.S. Cl. 260—28.5 AS 22 Claims

1. An elastomeric material consisting essentially of paving grade asphalt and non-oil resistant asphalt-soluble rubber; the material being prepared by heating paving grade asphalt to a temperature of from about 300° F to about 500° F to yield hot liquid asphalt; mixing between about one part and about five parts by weight of the hot asphalt with about one part by weight particulate non-oil resistant asphalt-soluble rubber to form a jellied composition.

11. A method of sealing joints and cracks in structures which comprises the steps of:

a. preparing a hot elastomeric material consisting essentially of paving grade asphalt and non-oil resistant asphalt-soluble rubber by heating paving grade asphalt to a temperature of from about 300° F to about 500° F to form hot liquid asphalt, and mixing from about one part to about five parts by weight of the hot asphalt with about one part by weight of particulate non-oil resistant asphalt-soluble rubber to form a jellied composition;

b. injecting the hot elastomeric material into the crevice of a joint or crack to seal and fill the same; and

c. allowing the injected elastomeric material to cool.

4,069,183

AQUEOUS STOVING COATING COMPOSITION COMPRISING N-OXIDE STRUCTURES CONTAINING POLYHYDROXY COMPONENTS

Wolfgang Daimer, Graz, Austria, assignor to Vianova Kunstharz, A.G., Vienna, Austria

Filed Dec. 2, 1975, Ser. No. 637,010
Claims priority, application Austria, Dec. 4, 1974, 9708/74
Int. Cl.² C08L 61/10
U.S. Cl. 260—29.3 9 Claims

1. Aqueous coating compositions characterized in that the resin binder comprises

a. from about 5 – 90 percent by weight of a water-soluble polyhydroxy component containing at least about 1 mole of amine oxide structure in 1000 g of solids, and

b. from about 5 – 90 percent by weight of a polycarboxy component having an acid value of from about 30 to 280 mg KOH/g, the carboxy groups of which are partially or completely neutralized with a nitrogen base;

components (a) and (b) forming a physical blend or a partial condensation product, the degree of said partial condensation not surpassing the solubility stage of the composition.

4,069,184

WATER DISPERSIBLE, LOW MOLECULAR WEIGHT POLYAMIDE RESIN PARTICLES OF UNIFORM SIZES, METHOD OF PREPARING SAME AND COATINGS FORMED THEREFROM

Charles F. Ferraro, Trenton; Richard A. Javick, Princeton Junction, both of N.J., and James A. Robertson, Levittown, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 492,609, July 29, 1974, abandoned, which is a division of Ser. No. 248,063, April 27, 1972, Pat. No. 3,844,991. This application Apr. 30, 1976, Ser. No. 681,852
Int. Cl.² C08J 3/00
U.S. Cl. 260—29.2 N 6 Claims

1. As an article of manufacture, free flowing, spray dried low molecular weight, linear polyamide resin powder having a reduced viscosity of between about 0.1 and about 0.4, consisting essentially of loosely bound agglomerates of loosely packed, randomly oriented, clusters of flaky sheets, the flaky sheets having a mean particle size between 0.03 micron and about 6 microns and the particle size distribution is about $d \pm 0.8d$ where d is the means particle size, the agglomerates having a size within a range of between about 3 microns and about 150 microns and being further characterized in that when dispersed in water the agglomerates disintegrate into loosely packed, randomly oriented, clusters to flaky sheets having particle sizes of approximately the same size and size distribution as the original flaky sheets and form a stable dispersion of flaky sheets.

4,069,185

ANTICOAGULANT COATING COMPOSITION

Kevin J. Sullivan, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 22, 1976, Ser. No. 679,166
Int. Cl.² C08L 39/06
U.S. Cl. 260—29.6 HN 6 Claims

1. An anticoagulant coating solution comprising a solvent and a filler, said filler consisting essentially of

from about 10 percent to about 95 percent by weight of a salt of ethylene diamine tetracetate, and

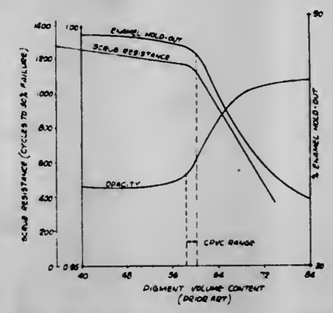
from about 5 percent to about 90 percent by weight of polyvinyl pyrrolidone.

4,069,186

OPACIFIED LATEX PAINT CONTAINING PLASTIC POLYMER PARTICLES

Alex Ramig, Brunswick, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 663,064, March 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 473,287, May 24, 1974, abandoned, which is a continuation-in-part of Ser. No. 345,301, March 27, 1973, abandoned. This application Aug. 26, 1976, Ser. No. 718,049
Int. Cl.² C08L 25/06, 27/06, 33/12
U.S. Cl. 260—29.6 RB 10 Claims



1. An aqueous latex dispersion paint composition which coalesces at an ambient coalescing temperature into a hardened paint film, said latex paint having about 30% to 70% by weight total solids and comprising on a dry solids volume basis:

25% to 70% of a film-forming latex binder having a major weight portion of polymer particles between about 1,000 A and 10,000 A and having a glass transition temperature at least about 5° C. below said coalescing temperature whereby said binder particles will coalesce into a binding matrix, said latex binder being a polymer or a copolymer derived from ethylenically unsaturated monomers;

10% to 60% of solid, non-cellular, non-film-forming polymer particles having a weighted average diameter between about 1,000 A and 10,000 A and having a glass transition temperature at least about 30° C. above the glass transition temperature of said binder, said non-film-forming particles being polymerized ethylenically unsaturated monomers having carbon-to-carbon unsaturation;

5% to 25% opacifying pigment having a refractive index of at least about 1.8 and being in a volumetric proportion less than the volumetric proportion of said non-film-forming polymer particles;

0% to 60% of non-opacifying pigment; and

said latex paint having a pigment-volume-content (PVC) between about 30% to 75% wherein the PVC is greater than the critical-PVC (opacity) as measured by the lower break in the opacity curve.

4,069,187

COATING COMPOSITIONS AND PROCESSES

Russell C. Miller, Chicago, Ill., assignor to J. M. Eltzroth & Associates, Inc., Schaumburg, Ill.

Continuation of Ser. No. 505,212, Sept. 12, 1974, abandoned. This application Apr. 23, 1976, Ser. No. 679,694
Int. Cl.² C08L 33/00
U.S. Cl. 260—29.6 M 3 Claims

1. An emulsion coating composition containing water in the continuous phase and having in the discontinuous phase at least one water insoluble particulate film-forming thermoplastic resin and a water insoluble pigment selected from the group consisting of strontium chromate, calcium silicofluoride and a chromate containing calcium silicofluoride, the weight ratio of said pigment to said resin being within the range of 1:99 to 40:60, the solids content of said composition being within the range of 15–35% by weight, excluding pigmentation, said

composition also containing a substance from the group consisting of ammonium hydroxide, dimethylethanolamine and diethanolamine, the viscosity of said composition being within the range of 25–45 seconds on a Zahn 1 cup and 17–35 seconds on a Zahn 2 cup.

4,069,188

COPOLYMERS OF BUTADIENE AND CARBOXYLATED STYRENE

Pierre Canard, Versailles, and Albert Levy, Orly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Mar. 12, 1976, Ser. No. 666,488
Int. Cl.² C08L 9/08
U.S. Cl. 260—29.7 T **3 Claims**

1. An aqueous composition suitable for coating paper and cardboard for photogravure printing comprising an aqueous latex containing as the essential film-forming ingredient a copolymer of butadiene and carboxylated styrene, consisting essentially of 41 to 45% by weight of butadiene, 45 to 57% by weight of styrene and 2 to 10% by weight of at least one unsaturated carboxylic ethylenic acid, the particles of which have a diameter in the range of 0.08 to 0.14 micron.

4,069,189

CHEMICAL PROCESS AND PRODUCTS

Donald Richard Randell, and Wilfred Pickles, both of Stockport, England, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 586,851, June 13, 1975, abandoned, which is a division of Ser. No. 370,455, June 15, 1973, Pat. No. 3,919,158, which is a continuation-in-part of Ser. No. 74,909, Sept. 23, 1970, abandoned, which is a division of Ser. No. 645,888, June 14, 1967, Pat. No. 3,567,923. This application Mar. 26, 1976, Ser. No. 670,866
Claims priority, application United Kingdom, June 18, 1966, 27316/66
Int. Cl.² C08K 5/52
U.S. Cl. 260—30.6 R **3 Claims**

1. A composition consisting essentially of polyvinylchloride and as a plasticizer therefore, a plasticizing amount of a phosphate ester composition consisting essentially of a phosphorylated tertiary butylated phenol/phenol ester mixture wherein the weight ratio of the tertiary butyl moiety to phenol moiety ranges from 0.076 to about 0.187, which ester is prepared by steps comprising:

a. alkylating at a temperature of about 15° C to 250° C in the presence of a Lewis acid or a Bronsted acid as a catalyst, phenol with isobutylene or diisobutylene to obtain a tertiary butylated phenol reaction mixture, and
b. reacting said tertiary butylated phenol reaction mixture with a phosphorylating agent.

4,069,190

HEAT RESISTANT ETHYLENE-PROPYLENE RUBBER AND INSULATED CONDUCTOR PRODUCT THEREOF

Joseph Edward Vostovich, Bridgeport, Conn., assignor to General Electric Company, New York, N.Y.

Filed May 12, 1975, Ser. No. 576,555
Int. Cl.² C08K 3/04, 3/34
U.S. Cl. 260—31.8 M **8 Claims**

1. A curable ethylene-propylene rubber composition having improved resistance to heat and apt electrical and physical properties, consisting essentially of the combination in approximate parts by weight of:

Ethylene-Propylene Rubber	100
Chlorosulfonated Polyethylene	3– 10
Zinc Oxide	15– 30
Talc	75– 200
Vinyl Silane	1– 3
Carbon Black	10– 30
Antimony Oxide	0– 6
Antioxidant	0.5– 6
Peroxide Curing Agent	2– 8

-continued

Curing Coagent	0– 3.

4,069,191

METAL PATCHING COMPOSITION AND METHOD

John F. Post, Riamede Farm, Chester, N.J. 07930

Division of Ser. No. 474,781, May 30, 1974, abandoned. This application Mar. 1, 1976, Ser. No. 662,435
Int. Cl.² C08L 63/02
U.S. Cl. 260—37 EP **7 Claims**

1. A resinous metal patching material formed by the heat curing of two admixed components, the first component including bisphenol A epoxy resin and a diazo dye, the second component being a polyamide resin having an amine number of between 90 and 350, both components also including a heat insensitive mineral product to increase the thixotropic properties of the components.

4,069,192

LIQUID THERMOSETTING RESINS CONTAINING TITANATE SALTS

Salvatore J. Monte, Staten Island, N.Y., and Gerald Sugerman, Allendale, N.J., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

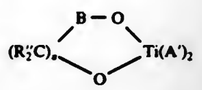
Filed Jan. 30, 1976, Ser. No. 653,773
Int. Cl.² C08K 9/04
U.S. Cl. 260—37 EP **14 Claims**

1. A filled thermosetting resin composition which comprises a resin containing a comminuted filler and organic titanate compound having the formula:

$$(RO)_z Ti(A)_x(OAr)_y \quad (I)$$

$$ROTi(OAr)_3 \quad (II)$$

where R is a monovalent alkyl, alkenyl, alkynyl or aralkyl group having from 1 to about 30 carbon atoms or a substituted derivative thereof; A is a non-hydrolyzable group having the formula —SAr, —OSO_2R', —OSOR', $(R'O)_2P(O)OP(OH)(O)$— or $(R'O)_2P(O)O$—, where R' is hydrogen or an alkyl, alkenyl, aryl, aralkyl or alkaryl group having 1 to 30 carbon atoms or a substituted derivative thereof; Ar is a phenyl or naphthyl group having up to 30 carbon atoms or a substituted derivative thereof; the sum of x, y and z is 4; x and z are 1, 2 or 3; and y is 0, 1 or 2; or



(III)

where A' represents a non-hydrolyzable group as defined above for A or an aroxy group, B is an alkylene group (CR_2'') or carbonyl, R'' is hydrogen or alkyl groups having 1 to 6 carbon atoms and n is 1 to 2; said organic titanate compound being present in amounts sufficient to affect the viscosity of the filled liquid thermosetting resin.

4,069,193

MOULDING COMPOSITIONS INCLUDING UNSATURATED POLYESTERS AND AN AMIDE OF AN UNSATURATED ALIPHATIC CARBOXYLIC ACID

Silvio Vargiu, Casatenovo, Como; Piero Paparatto, Milan; Antonio Parodi, Monza, Milan, and Giorgio Brumat, Verano Brianza, Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Oct. 20, 1976, Ser. No. 734,347
Claims priority, application Italy, Oct. 30, 1975, 28811/75
Int. Cl.² C08G 63/54, 63/68
U.S. Cl. 260—40 R **16 Claims**

1. A granular molding composition suitable for injection molding comprising:

a. from 10 to 50 wt.% of unsaturated polyester A and/or unsaturated polyester B, wherein:

said unsaturated polyester A is the polycondensation product of 2,2'-bis(4-hydroxycyclohexyl) propane or a halogenated derivative thereof, and an ethylenically unsaturated dicarboxylic acid, having the following characteristics:

melting point (at the capillary) > 70° C
acid value (mg KOH/g) < 50
Gardner viscosity (at 25° C in 60 wt.% solution in styrene) from Y to Z_3;

said unsaturated polyester B is the polycondensation product of an alkylene glycol, an ethylenically unsaturated dicarboxylic acid and a saturated dicarboxylic acid, having the following characteristics:

melting point (at the capillary) ≧ 60° C
acid value (mg KOH/g) < 50
Gardner viscosity (at 25° C in 60 wt.% solution in styrene) from U to Z_2;

b. from 0.5 to 10 wt.% of an amide of an ethylenically unsaturated aliphatic carboxylic acid;
c. from 0.2 to 2 wt.% of an organic peroxide having a decomposition temperature above 70° C; and
d. one or more inert fillers.

4,069,194

PROCESS FOR THE SOLID STATE POLYCONDENSATION OF LINEAR POLYESTERS

Werner Gey, Offenbach (Main); Wolfgang Langhauser, Bergen-Enkheim; Helmut Heinze, Frankfurt am Main; Hans-Joachim Rothe, Bischofsheim, and Peter Freund, Bad Vilbel, all of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 7, 1975, Ser. No. 629,806
Claims priority, application Germany, Nov. 12, 1974, 2453577
Int. Cl.² C08K 7/20
U.S. Cl. 260—40 R **4 Claims**

1. Process for solid-state polycondensation of linear polyesters in granulated form comprising moving the granulate in an inert gas stream at temperatures of 30° to 5° C below the melting point of the polymer continuously through a reaction vessel, and preventing agglutination of the granulate by an addition of fine-particle glass as a separating agent, characterized in the prior to entering the reactor there is admixed with the granulate 0.2 to 5% by weight of a glass powder having particles of substantially spherical form with a diameter between about 3 and 30μ.

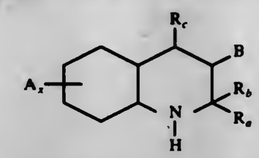
4,069,195

SUBSTITUTED DECAHYDROQUINOLINES AND THEIR USE AS ULTRAVIOLET LIGHT STABILIZER

Robert Wesley Layer, Cuyahoga Falls, and Pyong-Nae Son, both of Akron, Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Filed June 18, 1976, Ser. No. 697,387
Int. Cl.² C08J 3/20
U.S. Cl. 260—45.8 NW **11 Claims**

1. Compositions comprising (A) polymeric plastic materials subject to ultraviolet light degradation and (B) from about 0.05 part to about 10 parts by weight per 100 parts by weight of the plastic material of substituted decahydroquinoline compounds and the dimers thereof having the structural formula



wherein R_a, R_b, and R_c each independently are alkyl groups containing 1 to about 12 carbon atoms, a cyclohexyl group, or cyclohexylalkyl groups containing 7 to about 14 carbon atoms; A is selected from the group consisting of alkyl groups containing 1 to about 24 carbon atoms, hydroxyalkyl groups containing 1 to about 18 carbon atoms, alkoxy groups containing 1 to about 12 carbon atoms in the group, ester groups containing a total of from 2 to about 24 carbon atoms in the group, a cyclohexyl group, cyclohexylalkyl groups containing 7 to about 14 carbon atoms in the group, hydroxy groups, amino groups and aminoalkyl groups and alkyl-substituted amino and aminoalkyl groups wherein the alkyl contains 1 to about 12 carbon atoms; x is 0, 1, 2 or 3; and B is hydrogen, an alkyl group containing 1 to about 12 carbon atoms, a cyclohexyl group, or a cyclohexylalkyl group of 7 to about 14 carbon atoms in the group; and, further, wherein the dimers of the above compounds are essentially two decahydroquinoline compounds of the above structural formula attached to each other at the 4-positions, the 6-positions, the 8-positions, the 4'-, 6'-positions, and the 4'-, 8-positions on the molecule.

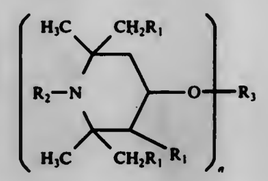
4,069,196

PIPERIDYL ESTERS OF HIGHER DI-TRI-, AND POLYBASIC ALIPHATIC CARBOXYLIC ACIDS AS STABILIZERS FOR POLYMERIC MATERIALS

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 13, 1976, Ser. No. 676,431
Int. Cl.² C07D 11/06; C08K 5/34
U.S. Cl. 260—45.8 N **16 Claims**

1. A piperidyl ester having the formula



wherein R_1 is hydrogen or a lower alkyl group of 1 to 5 carbon atoms,

R_2 is hydrogen, oxyl, alkyl having 1–12 carbon atoms, alkoxyalkyl of 2 to 21 carbons, alkenyl of 3 to 6 carbons, alkinyl of 3 to 6 carbons benzyl or benzyl substituted by alkyl groups of 1 to 4 carbons, or acyl derived from a saturated or unsaturated aliphatic acid of 1 to 4 carbons or aliphatic, cycloaliphatic or aromatic carbamic acid of the formula —CO—NH—R or aliphatic, cycloaliphatic or aromatic carbonic acid half ester of the formula —COOR wherein R is alkyl of 1 to 6 carbons,

n is an integer of 2 or 3;

when n = 2, R_3 is a diacyl group derived from a straight or branched chain aliphatic or alicyclic, saturated or unsaturated carboxylic acid, having 36 carbon atoms

when n is 3, R_3 is a tri-acyl group derived from a straight or branched chain aliphatic or alicyclic saturated or unsaturated carboxylic acid having from 37 to 54 carbon atoms.

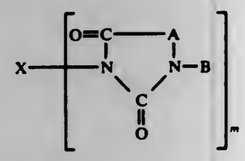
4,069,197

DIONES AND THEIR USE AS POLYMER STABILIZERS

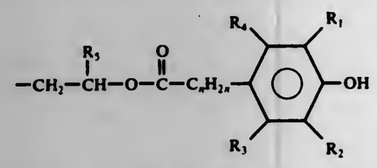
Siegfried Rosenberger, Riehen, and Andreas Schmidt, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 31, 1976, Ser. No. 672,566
Claims priority, application Switzerland, Apr. 10, 1975, 4568/75
Int. Cl.² C07D *233/72*; C08K *5/34*
U.S. Cl. 260—45.8 NE 9 Claims

1. A compound of the formula



wherein A is alkylidene, B is a group of the formula



wherein R_1 and R_2 are alkyl, R_3, R_4 and R_5 are hydrogen or alkyl and n is 0, 1 or 2 and m is 1 or 2, and X is identical to B if m equals 1 or X is methylene if m equals 2.

7. A composition of matter comprising a synthetic organic polymer and from 0.01 to 5% by weight of a stabilizing compound of claim 1.

4,069,198

POLYESTERS AND POLYESTER-URETHANES STABILIZED WITH ISOUREAS OR ISOCYANATE ADDUCTS THEREOF

Arthur Ibbotson, Manchester, England, assignor to Imperial Chemical Industries Limited, Great Britain

Filed June 20, 1975, Ser. No. 588,946
Claims priority, application United Kingdom, July 29, 1974, 33326/74; Oct. 14, 1974, 44402/74
Int. Cl.² C08K *5/21*
U.S. Cl. 260—45.9 KB 5 Claims

1. A composition of matter which comprises a compound containing one or more ester groups selected from the group consisting of polyesters and polyesterurethanes and a stabilizing amount of a stabilizer against hydrolysis selected from the group consisting of isourea and isocyanate adducts thereof the amount of said stabilizer being 0.1 to 10 parts by weight per 100 parts of said ester group-containing compound.

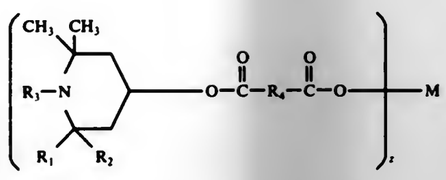
4,069,199

METAL SALTS OF HINDERED PIPERIDINE CARBOXYLIC ACIDS AND STABILIZED COMPOSITIONS

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 429,237, Dec. 28, 1973, Pat. No. 3,939,163. This application Sept. 22, 1975, Ser. No. 615,642
The portion of the term of this patent subsequent to June 21, 1994, has been disclaimed.
Int. Cl.² C07D *211/46*; C08K *5/34*
U.S. Cl. 260—45.75 C 25 Claims

1. A compound of the formula



wherein

R_1 and R_2 independently of each other are straight- or branched-chain alkyl having from 1 to 6 carbon atoms, or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group,

R_3 is hydrogen, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 to 4 carbon atoms, propargyl, benzyl or alkyl substituted benzyl,

R_4 is straight- or branched-chain alkylene having 1 to 4 carbon atoms,

M is a metal selected from the group consisting of barium, magnesium, calcium, sodium, copper, and potassium, and the value of z is the same as the available valence of M.

12. A composition of matter stabilized against ultraviolet deterioration which comprises a synthetic organic polymer normally subject to ultraviolet deterioration containing from 0.005 to 5% of the stabilizing compound of claim 1.

4,069,200

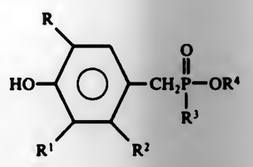
2,3,5-TRIALKYL-4-HYDROXYBENZYLPHOSPHONATES AND PHOSPHINATES

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 492,089, July 26, 1974, Pat. No. 3,962,377, which is a continuation-in-part of Ser. No. 400,601, Sept. 25, 1973, abandoned. This application Mar. 19, 1976, Ser. No. 668,357
Int. Cl.² C08K *5/36, 5/53*
U.S. Cl. 260—45.85 S 7 Claims

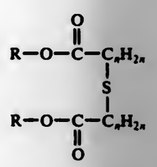
1. A composition of matter comprising a synthetic organic polymer and,

a. from 0.01 to 5% by weight of a stabilizing compound of the formula



wherein R is alkyl of 4 to 8 carbon atoms, R^1 and R^2 are methyl or together are a butylene chain which, together with the phenyl group, forms a tetrahydronaphthyl group, R^3 is alkoxy of 12 to 24 carbon atoms, and R^4 is alkyl of 12 to 24 carbon atoms, and

b. from 0.01 to 2% by weight of a thio co-stabilizer having the formula



wherein R is alkyl of 6 to 24 carbon atoms and n is 1 to 6.

4,069,201

FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 429,164, Dec. 28, 1973, abandoned. This application Dec. 22, 1975, Ser. No. 642,994
Int. Cl.² C08K *5/05*
U.S. Cl. 260—45.95 R 3 Claims

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of an oxocarbon acid additive, said additive being disodium chloranilate.

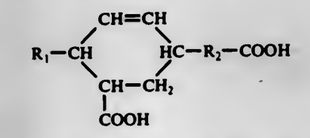
4,069,202

CURABLE POLYEPOXIDE CASTING COMPOSITIONS

James E. Carey, Mantua, N.J., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 17, 1975, Ser. No. 623,523
Int. Cl.² C08G *59/42*
U.S. Cl. 260—47 EC 4 Claims

1. A heat-curable composition comprising (1) 100 parts by weight of a polyepoxide processing more than one 1,2-epoxide group and (2) from 20 to 60 parts by weight of a curing composition comprising (a) 100 parts by weight of a liquid organic dicarboxylic acid of the general formula



wherein R_1 is an alkyl group of up to about 10 carbon atoms and R_2 is an alkylene group of up to 12 carbon atoms and (b) from about 2 to 10 parts by weight of a tertiary amine selected from the group consisting of benzyldimethylamine, tridimethyl amino methyl phenols, and salts thereof.

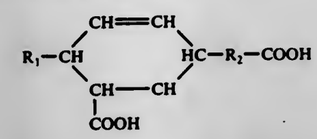
4,069,203

RAPID CURING POLYEPOXIDE COMPOSITIONS

James E. Carey, Mantua, and Lawrence C. Reilly, Cherry Hill, both of N.J., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 17, 1975, Ser. No. 623,522
Int. Cl.² C08G *59/58*
U.S. Cl. 260—47 EC 7 Claims

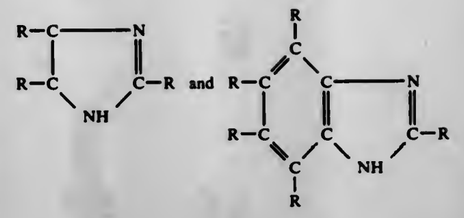
1. A rapid heat-curable composition comprising (1) 100 parts by weight of a polyepoxide having more than 1,2-epoxide group, and (2) from 30 to 70 parts by weight of a composition comprising (a) 100 parts by weight of a liquid organic dicarboxylic acid of the general formula:



wherein

R_1 is an alkyl group of up of about 10 carbon atoms and R_2 is an alkylene group of up to 12 carbon atoms,

and (b) about at least 1.75 parts by weight of an imidazole compound of the general formula:



wherein

R is selected from the group consisting of hydrogen atoms, halogen atoms and hydrocarbon radicals containing no more than 15 carbon atoms.

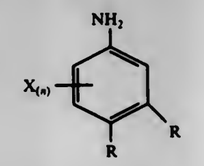
4,069,204

POLYCHLORINATED BENZENE DIAMINES AS CURING AGENTS FOR EPOXY RESINS

Samuel Eugene Susman, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 7, 1976, Ser. No. 693,581
Int. Cl.² C08G *59/50*
U.S. Cl. 260—47 EN 8 Claims

1. A curable epoxide composition comprising: (a) an epoxide resin containing on average more than one 1,2 epoxide groups per molecule, (b) a curing agent for the epoxide resin of the formula:



wherein one R is an amino group and the other is chlorine; X is chlorine and n is an integer of from 1 to 3, said curing agent being present in an amount between about 1 to 100 parts by weight per 100 parts by weight of said epoxide resin.

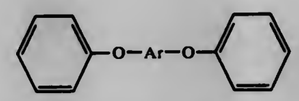
4,069,205

CYCLIC TRI(PHENYLENE DISULFIDE) POLYMERS AND THE PRODUCTION THEREOF

Carl S. Marvel, and Daniel Ting-Man Wong, both of Tucson, Ariz., assignors to University Patents, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 636,801, Dec. 1, 1975, abandoned. This application Sept. 9, 1976, Ser. No. 721,899
Int. Cl.² C08G *75/23, 83/00*
U.S. Cl. 260—49 22 Claims

1. A polymer comprising cyclic tri(phenylenedisulfide) moieties, wherein the sulfur atoms comprising the disulfide linkages are bonded together as —S—S—, and moieties of a polyaryl ether linked together with bivalent radicals selected from the group consisting of isophthaloyl and terephthaloyl radicals, said polyaryl ether being diphenyl ether or an ether of the formula



wherein Ar is bivalent aromatic radical.

4,069,206

NOVEL AROMATIC IMINE POLYMERS AND PROCESS FOR THE PREPARATION THEREOF

Shigeyoshi Hara, Hino; Masao Senoo, Ehime; Koh Mori, and Yutaka Taketani, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 18, 1975, Ser. No. 550,738
Claims priority, application Japan, Feb. 20, 1974, 49-19373
Int. Cl.[2] C08G 73/02, 75/23
U.S. Cl. 260—49 32 Claims

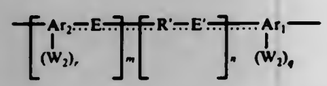
1. An aromatic imine polymer comprising

A. 100 to 20 mol%, based on its entire recurring units, of a recurring unit of the formula (I)



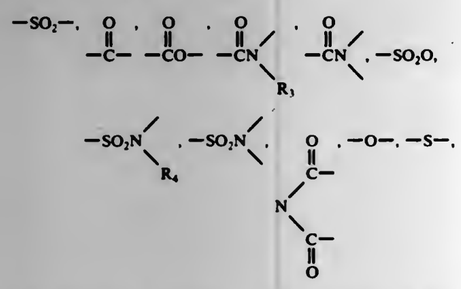
(I)

wherein Z is $-SO_2-$ or $-CO-$; p is 0 or 1; and when p is 0, $-Ar-$ is directly bonded to $-Y_2-$; R is an organic group of 2 to 50 carbon atoms; Ar is a divalent aromatic group not containing a primary or secondary amino group, a hydroxyl group, or a group substantially reactive with said amino and hydroxyl groups and is expressed by the following formula (II)

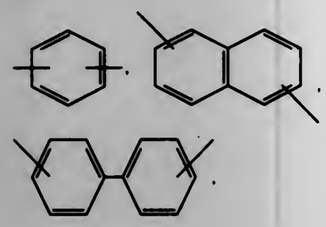


(II)

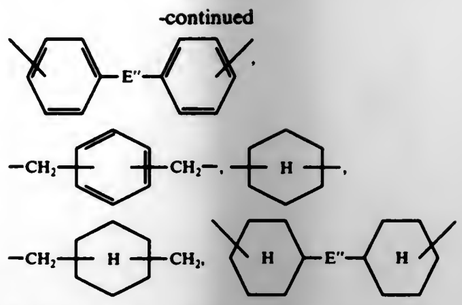
wherein Ar_1 is an aromatic ring group containing 6 to 20 carbon atoms and having a valence of $(q + 2)$ or $(q + 3)$; Ar_2 is an aromatic ring group containing 6 to 20 carbon atoms and having a valence of $(r + 2)$ or $(r + 3)$; W_1 and W_2 are identical or different electron-attracting groups selected from nitro, cyano, sulfonic acid ester, carboxamide, and carboxyl groups; q and r are identical or different and each represent 1, 2, 3, or 4; m and n are 0 or 1, and when m is 0, n is also 0; the symbol . . . represents the presence or absence of a bond; E and E' are identical or different non-aromatic bridging groups selected from the group consisting of



and alkylene groups containing 1 to 6 carbon atoms, R_3 and R_4 being identical or different and representing a hydrogen atom or an alkyl group containing 1 to 3 carbon atoms; and R' is a member selected from the group consisting of



-continued



or an alkylene group containing 2 to 15 carbon atoms, wherein E'' is a non-aromatic bridging group selected from one of the members of the group defining E and E', and the groups R and R' may have an inert substituent; Y_1 and $+Z+_pY_2$ are bonded respectively to the nuclear carbon atoms of the aromatic ring, and when p is 0, Ar has an electron-attracting group capable of causing the nuclear carbon atoms to which Y_1 and Y_2 are bonded to have a Hammet σ constant of substantially at least +1, and when p is 1, Ar has an electron-attracting group capable of causing the nuclear carbon atom to which Y_1 is bonded to have a Hammet σ constant of substantially at least +1; said electron-attracting group being at least one member selected from the group consisting of nitro, cyano, sulfone, sulfonic acid ester, sulfonamide, sulfonic acid, carboxylic acid ester, carboxamide, ketone and aldehyde; and Y_1 represents the group



and Y_2 represents the group



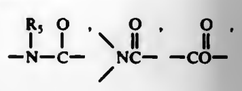
or —O—, in which R_1 and R_2 are identical or different and represent a hydrogen atom or a monovalent or divalent aliphatic hydrocarbon residual group containing 1 to 3 carbon atoms, and when one or both R_1 and R_2 are divalent aliphatic hydrocarbon residual groups containing 1 to 3 carbon atoms, R_1 and/or R_2 can be bonded to R or bonded directly to each other; and when both R_1 and R_2 are a hydrogen atom or a monovalent aliphatic hydrocarbon group, R is a divalent organic group; when one of R_1 and R_2 is a divalent atom or monovalent hydrocarbon group, R is a trivalent organic group; when both of R_1 and R_2 are a divalent hydrocarbon group, R is a divalent or tetravalent organic group; and

B. the remainder (0 to 80 mol%) of the recurring units being a unit expressed by the following formula

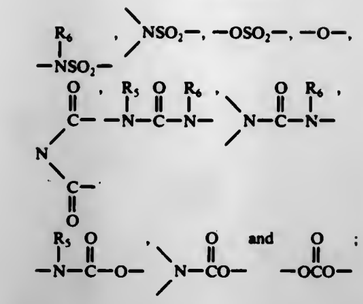


(IV)

wherein R'' is an organic group of 2 to 50 carbon atoms; the symbol . . . represents the presence or absence of a bond; D is an organic group containing 2 to 30 carbon atoms and having a valence of 2 to 4; and Q_1 and Q_2 are identical or different bridging groups selected from the group consisting of

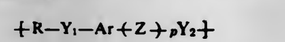


-continued



R_5 and R_6 being identical or different and representing a hydrogen atom or a monovalent or divalent hydrocarbon group having 1 to 3 carbon atoms.

4. A process for preparing a linear aromatic imine polymer containing from 20 to 100 mol% of a recurring unit of the formula



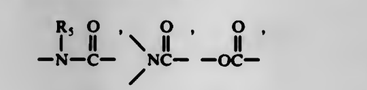
(I)

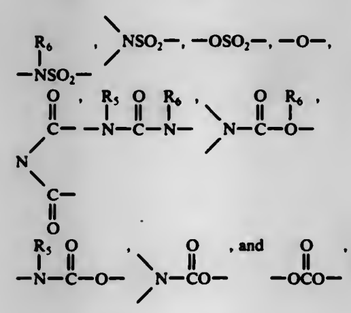
wherein R, Y_1, Ar, Z, p and Y_2 are defined below, and the remainder (0 to 80 mol%) of the recurring units being a unit expressed by the following formula



(IV)

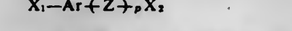
wherein R'' is an organic group; the symbol . . . represents the presence or absence of a bond; D is an organic group containing 2 to 30 carbon atoms and having a valence of 2 to 4; and Q_1 and Q_2 are identical or different bridging groups selected from





R_5 and R_6 being identical or different and representing a hydrogen atom or a monovalent or divalent hydrocarbon having 1 to 3 carbon atoms

which comprises reacting at a temperature of −10° C to 200° C an aromatic dihalogen compound of the formula



wherein X_1 and X_2 are identical or different halogen atoms; Z is $-SO_2-$ or $-CO-$; p is 0 or 1, and when p is 0, —Ar— is directly bonded to X_2; Ar is a divalent aromatic group not containing a primary or secondary amino group, a hydroxyl group or a group substantially reactive with said amino and hydroxyl groups; X_1 and $+Z+_pX_2$ are bonded to the nuclear carbon atoms of the aromatic ring Ar, and when p is 0, Ar has an electron-attracting group capable of causing the nuclear carbon atoms to which X_1 and X_2 are attached to have a Hammet σ constant of substantially at least +1, and when p is 1, Ar has an electron-attracting group capable of causing the nuclear carbon atom to which X_1 is bonded to have a Hammet σ constant of substantially at least +1;

with a difunctional amino-containing compound of the formula

(VI)

wherein

or —O—; R_1 and R_2 are identical or different and represent a hydrogen atom or a monovalent or divalent aliphatic hydrocarbon residual group having 1 to 3 carbon atoms, and when one or both of R_1 and R_2 are divalent aliphatic hydrocarbon residual groups, R_1 and/or R_2 can be bonded to group R or directly to each other; when Y_2 is —O—, it is bonded to the nuclear carbon atom of the aromatic ring of R and therefore, —OH is a phenolic hydroxyl group; and R is an organic group capable of having a valence of 2, 3, or 4 according to the definition of R_1 and R_2 above, when both of R_1 and R_2 are a hydrogen atom or a monovalent aliphatic hydrocarbon group, R is a divalent organic group; when one of R_1 and R_2 is a divalent hydrocarbon group and the other is a hydrogen atom or monovalent hydrocarbon group, R is a trivalent organic group; when both of R_1 and R_2 are a divalent hydrocarbon group, R is a divalent or tetravalent organic group;

in an inert organic solvent in the presence of an acid acceptor.

4,069,207

BROMINATED ESTER-CONTAINING POLYOLS

Howard Paul Klein, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Division of Ser. No. 472,999, May 24, 1974, Pat. No. 3,988,302.
This application Feb. 2, 1976, Ser. No. 654,270
Int. Cl.[2] C08G 63/68
U.S. Cl. 260—75 H 11 Claims

1. A brominated ester-containing polyether polyol prepared by reaction of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide, epichlorohydrin and mixtures thereof and a half-ester in a ratio of said oxide to said half-ester such that said oxide is present in an amount sufficient to reduce the acid number of said brominated ester-containing polyether polyol to 10 ml KOH/g or less and, wherein said half-ester is formed by the reaction of

a. a polyether polyol prepared by the addition of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof to a polyhydric compound selected from the group consisting of ethylene glycol, propylene glycol, the isomeric n-butylene glycols, 1,5-pentanediol, 1,6-hexanediol, glycerol, trimethylolpropane, 1,2,6-hexanetriol, sorbitol, sucrose, alpha-methyl glycoside, pentaerythritol, phosphorus acids and phosphorus acid esters having at least one reactive OH, and

b. 4,5-dibromohexahydrophthalic anhydride or its corresponding acid, wherein the mole ratio of polyether polyol (a) to 4,5-dibromohexahydrophthalic anhydride or its corresponding acid (b) is from 2:3 to about 3:1.

2. The brominated ester-containing polyether polyol of claim 1 wherein the mole ratio of polyether (a) to 4,5-dibromohexahydrophthalic anhydride is about 1:1.

4. The brominated ester-containing polyether polyol of claim 2 wherein the polyether polyol is prepared by the addition of a mixture of propylene oxide and ethylene oxide to trimethylolpropane, said polyether polyol having a molecular weight of from about 500 to about 10,000.

4,069,208
HEAT-ACTIVATABLE POLYURETHANE POWDER COATINGS

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 14, 1975, Ser. No. 622,431
Int. Cl.² C08G 18/12; C08L 75/00; C08J 3/12
U.S. Cl. 260—75 NH 25 Claims

1. In a process for forming a heat-activatable polyurethane powder characterized by low-melt viscosity upon initial melting, and in which powder the particles are generally bead-like in form, the improvement consisting essentially of (1) reacting

a. one mole of polymeric glycol having a number average molecular weight of about 400–4,000,

b. X moles of a diol having a molecular weight less than about 250 wherein X = 0–20,

c. Y moles of an organic diisocyanate wherein Y = 1.03 (1 + X) to 1.60 (1 + X), d. Z moles of a monohydroxy-epoxide wherein Z = 0.0286 (1 + X) to 1.000 (1 + X),

e. 0.7 (2Y-2-X-Z-2) to 1.0 (2Y-2X-Z-2) moles of a short chain diamine, and (2) selecting the amounts of reactants (d) and (e) so that the polyurethane powder formed will contain 0.2 to 1.1 amino groups per epoxy group, and wherein (3) the size and shape of bead particles is achieved by initially emulsifying reactants (a) and (b) in an inert organic solvent with the aid of a surfactant, followed by converting said emulsion to a dispersion of finely-divided polyurethane beads and recovering the latter.

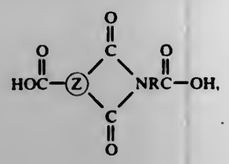
4,069,209
IMINO ACIDS AND RESINS DERIVED THEREFROM

Daniel J. Lange, St. Louis, Mo., assignor to The P. D. George Company, St. Louis, Mo.

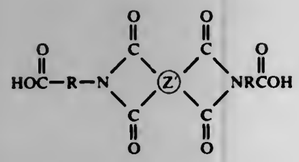
Filed Apr. 12, 1976, Ser. No. 676,550
Int. Cl.² C08G 63/68, 69/44
U.S. Cl. 260—75 N 15 Claims

1. A resin which is a polyester of

A. a dicarboxylic acid component which is a preformed iminodicarboxylic acid of the formula



or



where Ⓩ and Ⓩ' are aromatic moieties, the indicated



group attached to Ⓩ being attached to an aromatic ring of Ⓩ, the



groups linking an N to Z or Z' each being attached to an aromatic ring in Ⓩ or Ⓩ' and being present in a 5 membered imide ring and the moiety R being divalent aliphatic, the N and COOH moieties attached to R being attached to carbons of R, and of a polyhydric alcohol component which is at least one of

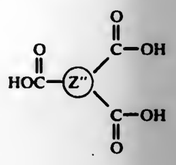
B. a glycol component, and

C. a polyol component containing at least three esterifiable hydroxyl groups, and any further components of said resin being

D. the imide or imide-amide of

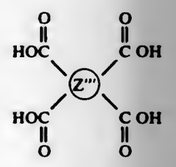
D_1. an aromatic diamine and

D_2. an aromatic tricarboxylic or aromatic tetracarboxylic acid, of the formulae, respectively,



(a)

, and



(b)

two of the COOH groups of the acid (a) and each of the COOH groups of each of the two pairs of such groups of the acid (b) being attached to adjacent carbons of a benzene ring of the Ⓩ'' and Ⓩ''' moieties, respectively, Ⓩ'' and Ⓩ''' being aromatic moieties,

where (A) and at least one of (B) and (C) and (D) are the sole polymer forming components of said resin and only the components (A) and at least one of (B) and (C) are required to be present as polymer forming components.

4,069,210
POLYMERIC PRODUCTS

Karl F. Schimmel, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 30, 1976, Ser. No. 728,368
Int. Cl.² C08G 73/02; C08L 79/02
U.S. Cl. 260—29.2 EP 6 Claims

1. An internally ionized, quaternary ammonium salt group-containing polymer, comprising the reaction product of:

A. an organic polyepoxide,

B. a polyamine containing at least two tertiary amine groups, formed from reacting:

1. a member selected from the class consisting of an organic polyisocyanate, an organic polycarboxylic acid, ester or anhydride, and mixtures thereof,

2. an active hydrogen-containing tertiary amine in which the active hydrogen is selected from the class consisting of hydroxyl, mercapto, primary and secondary amino;

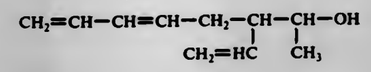
said reaction product being acidified so as to provide a quaternary ammonium salt group-containing polymer in which the salt groups are located along the polymer backbone.

4,069,211
AIR DRYING REACTION PRODUCT OF A DIISOCYANATE AND 1-METHYL-2-VINYL-4,6-HEPTADIENOL

Sadao Nishita, Tokyo; Satoru Enomoto, Fujisawa; Hisayuki Wada; Yutaka Mukaida, both of Tokyo; Mikiro Yanaka, Matsudo, and Hitoshi Takita, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 28, 1976, Ser. No. 700,475
Claims priority, application Japan, June 30, 1975, 50-79978
Int. Cl.² C08G 18/04
U.S. Cl. 260—77.5 MA 7 Claims

1. An air drying reaction product formed by admixing a diisocyanate compound and 1-methyl-2-vinyl-4, 6-heptadienol of the formula



and aging the resultant reaction product in a dry nitrogen atmosphere.

4,069,212
FLAME RETARDANT SPANDEX TYPE POLYURETHANES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John T. Howarth, Reading, Mass.; Suresh Sheth, Somerville, Mass.; Kenneth R. Sidman, Wayland, Mass., and Arthur A. Massucco, Natick, Mass.

Division of Ser. No. 374,421, June 28, 1973, Pat. No. 3,956,233.
This application Feb. 13, 1976, Ser. No. 657,907
Int. Cl.² C08G 18/10
U.S. Cl. 260—77.5 SP 4 Claims

1. A flame retardant spandex type polyurethane resin suitable for forming into fibers and which is formed from a mixture comprising:

a. a diisocyanate selected from the group consisting of arylene diisocyanates, 4,4' diphenylmethane diisocyanate and mixtures thereof,

b. a halogen containing difunctional polyol selected from the group consisting of dibromoneopentyl glycol, polyesters of dibromoneopentyl glycol, esters of the product obtained from the reaction of ethylene oxide and tetrabromophthalic anhydride, esters of the product obtained from the reaction of propylene oxide and tetrabromophthalic anhydride and esters of the product obtained from the reaction of ethylene oxide, propylene oxide and tetrabromophthalic anhydride, said polyol being substantially free of corresponding monofunctional and trifunctional impurities, and

c. a urea producing compound selected from the class consisting of diamines and water,

wherein the composition defined in (b) is first reacted with a stoichiometric excess of the composition defined in (a) to form an isocyanate terminated prepolymer, said halogen containing polyol being present in an amount sufficient to render said prepolymer substantially non-flammable in ambient environments and wherein said prepolymer is then extended by reacting said prepolymer with the composition defined in (c).

4,069,213
CURABLE COMPOSITION

Masao Onizawa, Kunitachi, Japan, assignor to Sanyo Trading Co., Ltd., Tokyo, Japan

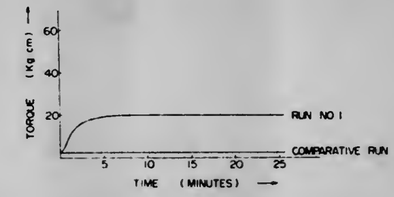
Division of Ser. No. 653,123, Jan. 28, 1976, Pat. No. 4,018,749.
This application Oct. 19, 1976, Ser. No. 733,937
Claims priority, application Japan, Jan. 29, 1975, 75-11407; Dec. 11, 1975, 75-146889
Int. Cl.² C08F 8/08, 8/00, 8/26
U.S. Cl. 260—78 A 5 Claims

1. A curable composition comprising a liquid polybutadiene having bromine bonded to at least one of its ends, a flowable epoxy resin, and at least one amino acid selected from the group consisting of arginine, lysine, hydroxylysine and ornithine, the amount of the epoxy resin being 1 to 2,500 parts by weight per 100 parts by weight of the polybutadiene rubber, and the amount of the amino acid being 0.1 to 60 parts by weight per 100 parts by weight of the polybutadiene rubber and the epoxy resin combined.

4,069,214
NOVEL CURABLE COMPOSITION

Masao Onizawa, Ohmiya, Japan, assignor to Sanyo Trading Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1977, Ser. No. 786,673
Claims priority, application Japan, Apr. 16, 1976, 51-42332
Int. Cl.² C08F 8/00, 8/32
U.S. Cl. 260—78 A 3 Claims



1. A curable composition consisting essentially of

a. an acrylic copolymer consisting of (1) a major proportion of at least one monomer selected from the group consisting of acrylic esters and methacrylic esters and (2) a minor proportion of another monomer copolymerizable therewith, and

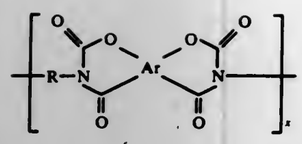
b. at least one curing agent selected from the group consisting of lysine, ornithine, arginine, glutamine, asparagine, citrulline, cystine, hydroxylysine, and salts of these amino acids.

4,069,215
SEMIPERMEABLE MEMBRANES OF SULPHONATED POLYBENZ-1,3-OXAZIN-2,4-DIONES

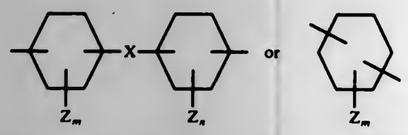
Klaus Elfert; Jürgen Hinz, and Rudolf Binsack, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Aug. 10, 1976, Ser. No. 713,142
Claims priority, application Germany, Aug. 16, 1975, 2536492
Int. Cl.² B01D 39/00; C08J 5/18; C08L 79/04
U.S. Cl. 260—79.3 R 3 Claims

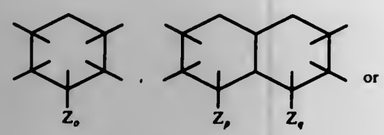
1. A semipermeable membrane of a sulphonated polybenze-1,3-oxazin-2,4-dione, said dione having a relative viscosity of from 0.7 to 3.5 measured as a 0.5% by weight solution of dimethyl formamide at 25° C, an acid number of from 1 to 800 and a structure of the formula

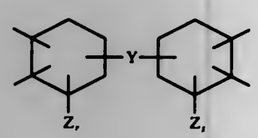


wherein R is



wherein X is a bond, —O—, —S—, $—SO_2—$, $—C(CH_3)_2—$ or $—CH_2—$; Ar is





wherein Y is a bond,

—O—, —S—, $—CH_2—$, $—SO_2—$, or —CO—;

Z is $—SO_3H$, a monovalent radical of a sulphonic acid salt of an alkali metal, of an alkaline earth metal or of an organic amine; *m, n, o, p, q, r* and *s* are the same or different; *m* and *n* are 0 to 4; *o, p* and *q* are 0 to 2; *r* and *s* are 0 to 3 and their sum is greater than 1, and *x* is 10 to 200.

4,069,216

SIMPLIFIED METHODS FOR PREPARATION OF VERY HIGH PURITY FACTOR VIII CONCENTRATE

Edward Shanbrom, Santa Ana, Calif., assignor to Edward Shanbrom, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 586,948, June 16, 1975. This application Jan. 30, 1976, Ser. No. 653,973

Int. Cl.² A23J *1/06*

U.S. Cl. 260—112 B **8 Claims**

1. In a process for preparing Factor VIII concentrate, the improvement comprising the step of holding a buffer solution containing Factor VIII and about 6% polyol at a temperature of from about 0° to about 5° C until precipitation occurs.

4,069,217

SOLUBILIZED LIGNOSULFONATE DERIVATIVES

William John Detroit, Schofield, and Michael Elliot Sanford, Wausau, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Mar. 29, 1976, Ser. No. 671,397

Int. Cl.² C07G *1/00*

U.S. Cl. 260—124 R **28 Claims**

1. A composition comprising:

a lignosulfonate or an alkali metal salt derivative thereof derived from sulfite waste liquor that has been subjected to alkaline oxidation, hydrolysis and partial desulfonation with subsequent resulfonation;

said lignosulfonate prior to resulfonation being characterized by a relative molecular size of substantially within the range of 1,000 to 20.,000 and containing combined organic sulfonic sulfur after partial desulfonation of from about 0.5 weight percent to about 5.0 weight percent and from about 1.5 percent to 15 percent by weight of said total combined sulfur upon completion of said resulfonation.

4,069,218

WATER-SOLUBLE FIBER-REACTIVE DISAZO DYESTUFFS

Gert Hegar, Schonenbuch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

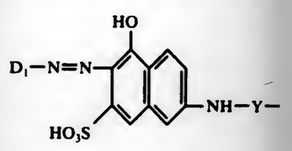
Continuation of Ser. No. 559,853, March 19, 1975, abandoned. This application June 23, 1976, Ser. No. 699,120

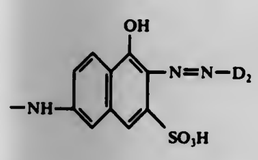
Claims priority, application Switzerland, Apr. 10, 1974, 5068/74

Int. Cl.² C09B *33/12, 33/14, 33/16*

U.S. Cl. 260—153 **2 Claims**

1. An azo dye of the formula





wherein

D_1 and D_2 are monosulfophenyl or disulfophenyl which are substituted by 4-chloro-6-(monosulfophenylamino, disulfophenylamino or sulfo, carboxyphenylamino)-1,3,5-triazin-(2)-ylamino; and

Y is —CO—.

4,069,219

7ξ-(ALKOXYCARBONYL)-6ξ-ALKYL/HALO-17-HYDROXY-3-OXO-17α-PREGN-4-ENE-21-CARBOXYLIC ACID γ-LACTONES AND CORRESPONDING 21-CARBOXYLIC ACIDS, THEIR SALTS, AND ESTERS

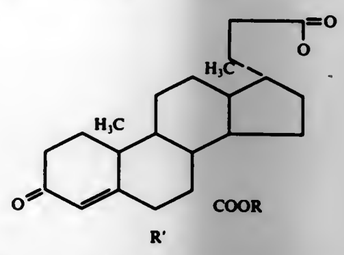
Richard M. Weier, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 27, 1976, Ser. No. 754,136

Int. Cl.² C07J *19/00*

U.S. Cl. 260—239.57 **5 Claims**

1. A compound having the formula



R'

wherein R represents alkyl of fewer than 8 carbons, R' represents halogen of atomic number less than 53, and the wavy lines signify that the substituents in positions 6 and 7 of the steroid nucleus can be in either alpha or beta configuration, alike or different.

4,069,220

PROCESS FOR THE PRODUCTION OF PHENOLIC COMPLEXES OF HEXAMETHYLENETETRAMINE

Henry Philip Orem, Birmingham; David R. Hart, Auburn, and Jerry E. Hill, Springville, all of Ala., assignors to Jim Walter Resources, Inc., Birmingham, Ala.

Continuation-in-part of Ser. No. 500,906, Aug. 27, 1974, abandoned. This application Sept. 21, 1976, Ser. No. 725,240

Int. Cl.² C07D *295/02, 295/08*

U.S. Cl. 544—186 **6 Claims**

1. A method for preparing a complex of a phenolic compound selected from the group consisting of phenol, resorcinol, dihydroydiphenyl sulfone, B-naphthol, p-cresol, p-phenylphenol, m-methoxyphenol, 3,5-xylenol, o-cresol, o-chlorophenol, o-phenylphenol and 2,4-dichlorophenol comprising: mixing the phenolic compound and hexamethylenetetramine and a suitable solvent in which mixture the amount of solvent is insufficient to dissolve all of the hexamethylenetetramine and all of the phenolic compound simultaneously, and drying the mixture at a temperature less than that which would cause decomposition of the complex.

4,069,221

1-(1-NAPHTHOXY)-3-(4-SUBSTITUTED-PIPERIDINO)-2-PROPANOLS

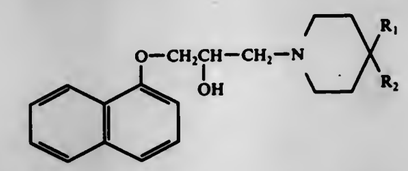
Peter K. Yonan, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 585,355, June 9, 1975, abandoned. This application Nov. 26, 1976, Ser. No. 745,317

Int. Cl.² C07D *211/62, 211/64*

U.S. Cl. 260—293.62 **4 Claims**

1. A compound of the general formula



(I)

wherein R_1 is cyano, or lower alkoxycarbonyl, and R_2 is phenyl, p-chlorophenyl, and, optionally, when R_1 is cyano, R_2 may be hydrogen.

4,069,222

PROCESS FOR PREPARING 2-(2,2-DICYCLOHEXYLETHYL)PIPERIDINE

Stephen W. Horgan; Frank P. Palopoli, both of Montgomery, Ohio, and Edward J. Schwoegler, Munster, Ind., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Apr. 14, 1976, Ser. No. 677,069

Int. Cl.² C07D *211/10*

U.S. Cl. 260—293.52 **5 Claims**

1. A process for the preparation of 2-(2,2-dicyclohexylethyl)piperidine which comprises azeotropically distilling a mixture of finely-divided, porous Raney catalyst in a solvent selected from the group consisting of cyclohexane, pentane hexane, heptane, dioxane or tetrahydrofuran so as to remove all traces of moisture; adding a mixture of 2-(2,2-diphenylethenyl)pyridine in said solvent to said catalyst mixture; reducing said 2-(2,2-diphenylethenyl)pyridine in the presence of hydrogen at a pressure of from 70 to 140 atmospheres and at a temperature of from 160° to 250° C. and recovering the 2-(2,2-dicyclohexylethyl)piperidine obtained therefrom.

4,069,223

4-AMINOMETHYL-1-(3,3,3-TRIARYLPROPYL)-4-ARYL-PIPERIDINE AND DERIVATIVES THEREOF

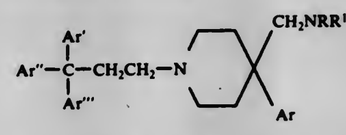
Gilbert W. Adelstein, Evanston, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed May 2, 1977, Ser. No. 792,616

Int. Cl.² C07D *401/06, 211/26*

U.S. Cl. 260—293.76 **7 Claims**

1. A compound of the formula



and the non-toxic pharmacologically acceptable acid addition salts thereof; wherein Ar, Ar' and Ar'' are each phenyl, halophenyl or alkylphenyl wherein alkyl contains from 1 to 4 carbon atoms; Ar''' is phenyl, halophenyl, alkylphenyl wherein alkyl contains from 1 to 4 carbon atoms or pyridyl; R is hydrogen, alkyl having from from 1 to 6 carbon atoms or alkanoyl having from 2 to 6 carbon atoms; and R^1 is hydrogen or alkyl having from 1 to 6 carbon atoms.

4,069,224

NOVEL BENZAMIDES

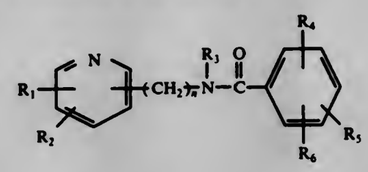
William A. Callahan, Richland Township, Kalamazoo County; Eldridge Myles Glenn, Kalamazoo, and Douglas L. Rector, Parchment, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 428,364, Dec. 26, 1973, abandoned. This application June 25, 1975, Ser. No. 590,032

Int. Cl.² C07D *213/81*

U.S. Cl. 260—295 AM **29 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R_1 and R_2 are each hydrogen, halogen, hydrocarbyl of one to six carbon atoms, inclusive alkoxy of 1 to 12 carbon atoms, inclusive, nitro, amino, alkylamino of 1 to 12 carbon atoms, inclusive, dialkylamino, each alkyl of 1 to 12 carbon atoms, inclusive, acylamino with alkyl of 1 to 12 carbon atoms, inclusive, or trihalomethyl; R_3 is hydrogen, alkyl of 1 to 4 carbon atoms, inclusive, cycloalkyl of 3 to 8 carbon atoms, inclusive, aryl of 6 to 12 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, or aryl of 6 to 12 carbon atoms, inclusive, substituted with halogen, alkoxy of 1 to 4 carbon atoms, inclusive, halogen-substituted alkyl of 1 to 4 carbon atoms, inclusive, or halogen-substituted alkoxy of 1 to 4 carbon atoms, inclusive, R_4 is hydrogen, bromine, fluorine, iodine, hydrocarbyl of 1 to 12 carbon atoms, inclusive, or halogen-substituted hydrocarbyl of 1 to 12 carbon atoms, inclusive; R_5 is nitro, amino, acylamino with alkyl of 1 to 12 carbon atoms, inclusive, alkylamino with alkyl of 1 to 12 carbon atoms, inclusive, dialkylamino with each alkyl of 1 to 12 carbon atoms, inclusive, aryloxy of 6 to 12 carbon atoms, inclusive, or a group R_4 as previously defined; R_6 is chlorine, or a group R_5 as defined above; *n* is an integer of from 1 to 2; provided that when R_4, R_5 and R_6 are each hydrogen or when R_4 and R_5 are hydrogen and R_6 is alkyl of one to twelve carbon atoms, inclusive, amino or nitro, then at least one of R_1 and R_2 is halogen, phenyl, alkoxy of 1 to 12 carbon atoms, inclusive, alkylamino with alkyl of 1 to 12 carbon atoms, inclusive, dialkylamino

with each alkyl of 1 to 12 carbon atoms, inclusive, acylamino with alkyl of one to 12 carbon atoms, inclusive, or trihalomethyl.

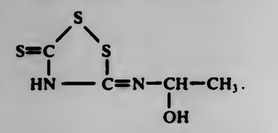
4,069,225

3-(1-HYDROXYETHYL)IMINO-1,2,4-DITHIAZOLIDINE-5-THIONE

Vasily Efimovich Privalov, ulitsa Kostomarovskaya, 5/7, kv. 15; Evgeny Iosifovich Vail, Tobolskaya ulitsa, 52, kv. 36; Andrei Mefodievich Khasin, ulitsa Vesnina, 12, kv. 52; Evgeny Ivanovich Gromov, ulitsa Vesnina, 12, kv. 32; Viktoria Mikhailovna Petropolskaya, ulitsa 23 Avgusta, 29, kv. 45, and Lidia Mikhailovna Agarkova, ulitsa Vesnina, 12, kv. 11, all of Kharkov, U.S.S.R.

Filed May 11, 1972, Ser. No. 252,455
Int. Cl.² C07D *285/00*
U.S. Cl. 260—306.8 R **1 Claim**

1. A compound of the formula



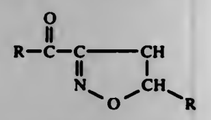
4,069,226

PREPARATION OF ACYLISOXAZOLINES

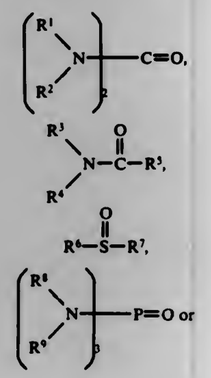
Mahmoud S. Kablaoui, Wappingers Falls, N.Y.; John M. Larkin, Austin, and Robert E. Reid, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 5, 1976, Ser. No. 739,377
Int. Cl.² C07D *261/04*
U.S. Cl. 260—307 F **8 Claims**

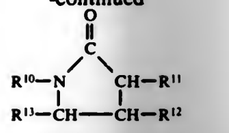
1. A method of preparing an acylisoxazoline or mixtures thereof corresponding to the formula:



where R is an alkyl group having from 2 to 20 carbon atoms which comprises contacting a 1-alkene, or mixtures thereof, of the formula $R—CH=CH_2$ with dinitrogen tetroxide and oxygen in the presence of a denitrating agent that consists of one or more compounds selected from



-continued



where R^1, R^2, R^6, R^7, R^8, R^9 and R^{10} are alkyl of from 1 to 5 carbons and R^3, R^4, R^5, R^{11}, R^{12}, and R^{13} are hydrogen or alkyl of from 1 to 5 carbons and calcium oxide at a temperature of about −10° to 40° C., wherein the mole ratio of alkene to dinitrogen tetroxide to oxygen is from about 1:0.02:0.04 to 1:0.4:30 and the mole ratio of dinitrogen tetroxide to denitrating agent to calcium oxide is from about 1:0.5:0.5 to 1:5:5.

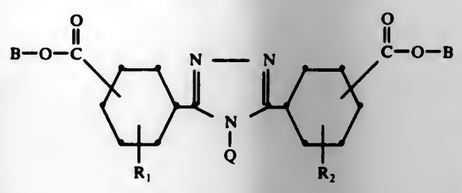
4,069,227

BIS-HETEROCYCLIC BENZOATE ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

Gether Irick, Jr., and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 484,843, July 1, 1974, Pat. No. 3,963,738.
This application Feb. 12, 1976, Ser. No. 657,510
Int. Cl.² C07D *249/08*
U.S. Cl. 260—308 R **2 Claims**

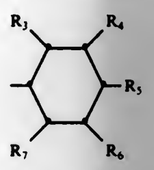
1. A composition of matter having the formula:



wherein

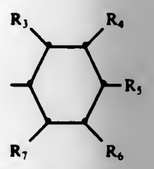
Q is hydrogen, lower alkyl having 1 to 12 carbon atoms, or benzyl;

R_1 and R_2 are hydrogen, chloro, or bromo; and



is attached to the benzenoid ring in either the meta or para position from the carbon atom connected to the heterocyclic ring; and

B is a group having the formula



wherein

at least one R_3 is hydrogen and the other R_3, R_4, R_5, R_6 and R_7 of each B group are hydrogen, or at the most two substituents selected from lower alkyl, hydroxy, chloro and bromo.

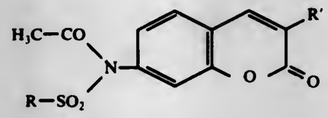
4,069,228

COUMARINS CONTAINING SULPHONYLAMINO GROUPS

Carl Wolfgang Schellhammer, and Florin Seng, both of Schildgen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 23, 1976, Ser. No. 698,925
Claims priority, application Germany, June 27, 1975, 2528698
Int. Cl.² C07D *405/04, 407/04*
U.S. Cl. 260—308 R **7 Claims**

1. A coumarin of the formula



wherein

R is C_1–C_4-alkyl unsubstituted or substituted with halogen; or phenyl unsubstituted or substituted with halogen, C_1–C_4-alkyl, or C_1–C_4-alkoxy; and

R′ is an aromatic heterocyclic radical selected from the group consisting of benzofuran-2-yl, 1,2,4-triazol-1-yl, pyrazol-1-yl, 4-chloropyrazol-1-yl and benzotriazol-2-yl, each of which is unsubstituted or subtituted with C_1–C_4-alkyl or halogen.

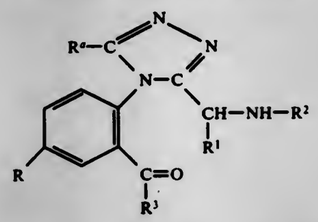
4,069,229

SUBSTITUTED PHENYL KETONES

Cedric Herbert Hassall, Welwyn; William Henry Johnson, Hitchin; Antonin Krohn, London; Carey Ernest Smithen, Welwyn, and William Anthony Thomas, Huntingdon, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 605,580, Aug. 18, 1975, Pat. No. 4,007,219.
This application Nov. 11, 1976, Ser. No. 740,701
Claims priority, application United Kingdom, Aug. 20, 1974, 36567/74; May 21, 1975, 21821/75; Aug. 11, 1975, 36567/75
Int. Cl.² C07D *249/08*
U.S. Cl. 260—308 R **2 Claims**

1. A compound of the general formula



wherein R is selected from the group consisting of a halogen atom, nitro and a trifluoromethyl group; R^1 is a hydrogen atom or a lower alkyl group; R^2 is an acyl group derived from a naturally occurring amino acid; R^3 is selected from the group consisting of phenyl and halophenyl; and R_1 is selected from the group consisting of a hydrogen atom, lower alkyl and a hydroxymethyl group
and the acid addition salts thereof.

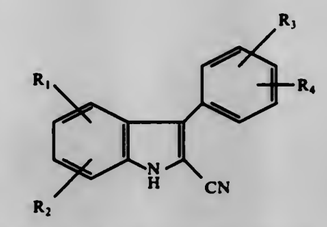
4,069,230

PREPARATION OF INDOLE DERIVATIVES

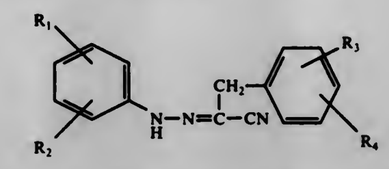
Shigeaki Morooka, Nishinomiya; Katsumi Tamoto, and Akira Matuura, both of Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 1, 1976, Ser. No. 691,777
Claims priority, application Japan, June 4, 1975, 50-67765; June 9, 1975, 50-70056
Int. Cl.² C07D *209/04*
U.S. Cl. 260—319.1 **7 Claims**

1. A process for producing indole derivatives of the formula,



wherein R_1 and R_2 each are hydrogen, halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, nitro, cyano or trifluoromethyl or, when taken together, form methylenedioxy; R_3 is hydrogen, halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, nitro, cyano or dimethylamino; and R_4 is hydrogen or halogen, which comprises cyclizing a hydrazone derivative of the formula,



wherein R_1, R_2, R_3 and R_4 are as defined above, with an acidic condensing agent.

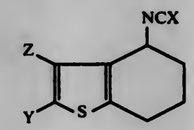
4,069,231

BENZOTHIENYLISOCYANATES AND ISOTHIOCYANATES AND METHOD OF PREPARATION THEREOF

Goro Asato, Titusville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 658,153, Feb. 17, 1976, abandoned, which is a division of Ser. No. 458,272, April 5, 1974, Pat. No. 3,972,895.
This application Oct. 22, 1976, Ser. No. 734,681
Int. Cl.² C07D *333/16, 333/00*; A01N *9/00, 9/12*
U.S. Cl. 260—332.3 P **5 Claims**

1. A compound of the formula:



wherein X is a member selected from the group consisting of sulfur and oxygen; Y is a member selected from the group consisting of cyano, and methyl carbonyl; and Z is hydrogen.

4,069,232

MANUFACTURE OF GAMMA-BUTYROLACTONES FROM 1,3-GLYCOLS AND ESTERS, HALIDES AND METADIOXANES THEREOF

David Horvitz, and William D. Baugh, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 18, 1975, Ser. No. 641,800
Int. Cl.² C07D *307/20*
U.S. Cl. 260—343.6 9 Claims

1. A method of manufacturing gamma-butyrolactones which comprises reacting

a 1,3 difunctional compound selected from the group consisting of 1,3 glycols, the esters, halides and metadioxanes thereof, and mixtures thereof

with carbon monoxide at a partial pressure of 1 to 500 atmospheres and at a temperature of 120° to 325° C.

in the presence of a catalytic amount of from about 0.01 to 10 weight percent, based upon the reaction mixture, of a Group VIII element in the form of the metal or a compound or complex thereof

and in the presence of from about 1.0 to 40 weight percent of an iodine or bromine promoter for said catalyst

said reacting being conducted for a period of between about 5 and 15 hours, sufficient to produce gamma-butyrolactone as a major product, and

isolating and recovering said gamma-butyrolactone.

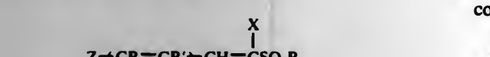
4,069,233

FLUOROALIPHATICSULFONYL SUBSTITUTED ETHYLENES SUBSTITUTED BY FURYL, THENYL, OR 1H-PYRROLYL GROUPS

Robert J. Koshar, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 455,141, March 27, 1974, Pat. No. 3,984,357, which is a division of Ser. No. 300,754, Oct. 25, 1972, Pat. No. 3,932,526. This application May 7, 1976, Ser. No. 684,167
Int. Cl.² C07D *307/38*
U.S. Cl. 260—347.2 5 Claims

1. A fluoroaliphaticsulfonyl ethylene compound especially suited as a catalyst in epoxide, vinyl ether, and N-vinyl monomer polymerization and having the formula



wherein R_f is monovalent, saturated fluoroalkyl radical having from 1 to 18 carbon atoms; X is a monovalent, nonionic, electron withdrawing radical at least as electron withdrawing as a benzoyl radical selected from the group consisting of a cyano, phenylcarbonyl, alkylcarbonyl, perfluoroalkylcarbonyl of 2 to 18 carbon atoms, phenylsulfonyl, perfluoroalkylsulfonyl of 1–18 carbon atoms, nitro, fluorosulfonyl, or chlorosulfonyl group; R is hydrogen, an alkyl group, or a phenyl group; R' is the same as R with at least one being hydrogen; *n* is an integer from 0 to 7 depending on Z; n is 1 to 7 when Z is 2-furyl; *n* is zero when Z is a monovalent unsaturated, conjugated heterocyclic organic radical selected from the group consisting of furyl, thenyl and 1H-pyrrolyl.

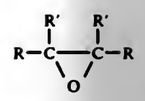
4,069,234

PREPARATION OF VICINAL EPOXIDES

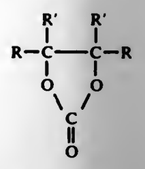
Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 10, 1974, Ser. No. 459,628
Int. Cl.² C07D *301/02*
U.S. Cl. 260—348.16 5 Claims

1. A process for the preparation of a vicinal epoxide having 2 to 30 carbon atoms per molecule of the general formula



wherein each R and each R' are individually selected from the group consisting of hydrogen and hydrocarbyl radical groups having 1 to 10 carbon atoms and wherein R' radicals in said epoxide can represent a divalent aliphatic hydrocarbon radical which together with the oxirane group in said epoxide can form a cycloaliphatic nucleus, which comprises heating the corresponding carbonate ester having the general formula



wherein R and R' are as defined above, in the presence of a catalytic amount amount of a phosphonium halide catalyst having the general formula R''_4PX, wherein R'' is selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, alkenyl, cycloalkenyl and combinations thereof having from 1 to 10 carbon atoms and X is selected from the group consisting of chlorine, bromine and iodine.

4,069,235

METHOD FOR MANUFACTURE OF POLY-FATTY ACIDS

Osamu Suzuki, Yokohama; Keizo Tanabe, Tokyo, and Tetsutaro Hashimoto, Urawa, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jan. 28, 1976, Ser. No. 653,218
Claims priority, application Japan, Jan. 31, 1975, 50-13703; Nov. 19, 1975, 50-138198
Int. Cl.² C08H *3/00*
U.S. Cl. 260—407 4 Claims

1. A method for the manufacture of a poly-fatty acid, which comprises:

continuously flowing and contacting at least one straight chain or branched chain ethylenically unsaturated fatty acid having a 8 to 22 carbon atoms with a synthetic silica-alumina catalyst having a composition of 69 to 72 weight % SiO_2, 27 to 30 weight % Al_2O_3 not more than 1 weight % Fe_2O_3, not more than 1 weight % CaO and not more than 1 weight % MgO and having phosphoric acid supported thereon in an amount of 0.1 to 2.0 milli-equivalent per gram of said synthetic silica-alumina catalyst and maintaining the temperature of the reaction in a range of 150° C to 330° C, whereby said fatty acid is polymerized.

2. The method according to claim 1, wherein the ethylenically unsaturated fatty acid having 8 to 22 carbon atoms is selected from the group consisting of oleic acid, linoleic acid, linolenic acid, α-eleostearic acid, β-eleostearic acid, ricinoleic acid, ricinelaidic acid and fatty acids derived from tall oil, sybean oil, linseed oil, cotton seed oil, safflower oil, castor oil and tung oil.

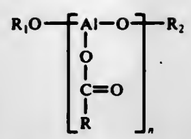
4,069,236

ALUMINUM ACYLOXIDES

Robert B. Hutchison, Cincinnati, Ohio, and C. William Blewett, Fort Mitchell, Ky., assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Oct. 1, 1971, Ser. No. 185,805
Int. Cl.² C11C *1/00*
U.S. Cl. 260—414 4 Claims

1. Aluminum acyloxides having the formula



wherein R is a branched chain, saturated, aliphatic radical containing from about 9 to about 24 carbon atoms, R_1 and R_2 are either lower alkyl groups or acyl groups, and *n* is a whole number of between 5 and 60.

4,069,237

PROCESS FOR MAKING TETRA (METHYL-ETHYL) LEAD COMPOUNDS

Charles Anthony Sandy, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 13, 1976, Ser. No. 731,922
Int. Cl.² C07F *7/26*
U.S. Cl. 260—437 R 10 Claims

1. A process for preparing tetra(methyl-ethyl) lead redistribution compounds comprising reacting tetraethyl lead with about 0.5 to 4 moles of CH_3X per mole of tetraethyl lead, in the presence of a catalytic amount of AlY_3, wherein X and Y are independently chloride, bromide or iodide, at a temperature up to about 130° C, with the proviso that the reaction is conducted in the presence of an iodine-source selected from AlI_3, elemental iodine or C_1 to C_4 alkyl iodide.

4,069,238

MANUFACTURE OF ALIPHATIC ISOCYANATES

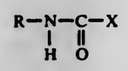
Fritz Zanker, Worms, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 16, 1976, Ser. No. 649,740
Claims priority, application Germany, Jan. 28, 1975, 2503270
Int. Cl.² C07C *118/00*
U.S. Cl. 260—453 P 7 Claims

1. A process for the manufacture of an aliphatic isocyanate of the formula



where R is an aliphatic radical of 1 to 10 carbon atoms, by thermal decomposition of an aliphatic carbamic acid halide of the formula



where R has the above meaning and X is halogen, in the presence of an inert organic solvent, wherein the thermal decomposition is carried out in the presence of the inert organic solvent in a first reaction vessel for not longer than is required to set up the equilibrium of the thermal decomposition reaction, the hydrogen halide eliminated during this stage is removed through a reflux condenser, the carbamic acid halide/isocyanate mixture obtained in the first reaction vessel is transferred into a second reaction vessel, the thermal decomposition of the remaining carbamic acid halide is continued therein whilst passing inert gas through the mixture, the hydrogen halide entrained with the inert gas which is discharged from the second vessel is reacted with isocyanate at a temperature below the decomposition temperature by passing the hydrogen halide and inert gas in contact with an isocyanate of the formula I, thereby producing carbamic acid halide and purifying the inert gas of hydrogen halide, the mixture containing carbamic acid halide thus obtained is introduced into the first reaction vessel and the purified inert gas is recycled to the second reaction vessel.

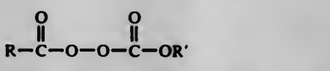
4,069,239

THERMALLY STABLE HIGH MOLECULAR WEIGHT ACYL PEROXYCARBONIC ESTERS

Roger N. Lewis, Martinez; Ronald L. Pastorino, Larkspur, and James F. Wilts, Richmond, all of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 696,463, June 16, 1976, Pat. No. 4,051,310. This application Mar. 7, 1977, Ser. No. 774,833
Int. Cl.² C07C *69/96, 71/00*
U.S. Cl. 260—463 8 Claims

1. Acyl peroxycarbonic esters of the formula:



where R is selected from methyl and ethyl; and R' is an alkyl group which together with R contains a total of 17 to about 25 carbon atoms.

4,069,240

NUCLEAR HYDROGENATION OF N-ARYL CARBAMATES

Russell E. Malz, Jr., Naugatuck, and Harold Greenfield, Watertown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

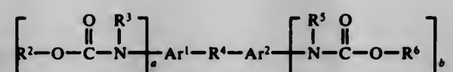
Filed Sept. 4, 1975, Ser. No. 610,359
Int. Cl.² C07C *125/06*
U.S. Cl. 560—115 18 Claims

1. A method of making an N-alicyclic carbamate comprising contacting an N-aryl carbamate with hydrogen in an inert solvent medium in the presence of a metal hydrogenation catalyst selected from the group consisting of rhodium, acid-treated rhodium, ruthenium, palladium, acid-treated palladium, nickel, cobalt and acid-treated platinum catalyst, whereby nuclear hydrogenation of the said N-aryl carbamate takes place to form the said N-alicyclic carbamate, the said N-aryl carbamate being selected from the group consisting of those of the formulas I and II as follows:

I



II



wherein, in formula I: *n* is an integer having a value from 1 to 3; R is alkyl having from 1 to 18 carbon atoms, a cycloalkyl group having from 5 to 8 carbon atoms, an aryl group having from 6 to 12 carbon atoms, an aralkyl or alkaryl group having from 7 to 12 carbon atoms; R^1 is hydrogen, an alkyl group having from 1 to 8 carbon atoms, a cycloalkyl group having from 5 to 8 carbon atoms, or an aryl group having from 6 to 12 carbon atoms; and Ar is an aryl group having a valence of *n* and having from 6 to 18 carbon atoms, containing up to 4 fused rings;

and wherein, in formula II: *a* and *b* are integers having values of 1 or 2; R^2 and R^6 are the same or different and have meanings stated for R in formula I; R^3 and R^5 are the same or different and have meanings stated for R^1 in formula I; R^4 is a single bond, —O—, C_1–C_8 alkylene, C_5–C_8 cycloalkylene, C_2–C_8 alkylidene, or C_2–C_8 alkenylene; and Ar^1 and Ar^2 are the same or different and are divalent or trivalent groups derived from radicals having the meanings assigned to Ar in formula I;

the said method being carried out at a temperature of 25°–200° C and a pressure of 100 to 2500 psi.

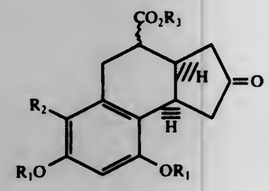
4,069,241

STEROIDAL INTERMEDIATES FROM THE CONDENSATION PRODUCT OF DIMETHYL-3-KETOGLUTARATE AND GLYOXAL

Ulrich Weiss, Bethesda, and Kenner C. Rice, Rockville, both of Md., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed May 26, 1976, Ser. No. 690,361
Int. Cl.² C07C *69/76*
U.S. Cl. 560—53 **6 Claims**

1. A tetrahydrocyclopentano[a]naphthalene compound of the formula



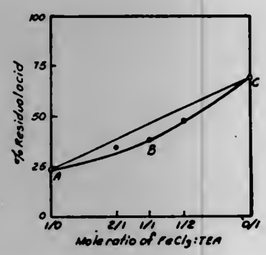
wherein
R_1 is H, acetyl, or methyl;
R_2 is hydrogen or carbomethoxy;
R_3 is hydrogen or methyl.

4,069,242

PROCESS FOR PREPARATION OF β-HYDROXY ESTERS BY REACTION OF ORGANIC CARBOXYLIC ACIDS AND VICINAL EPOXIDES

Arthur E. Gurgiolo, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 797,184, Feb. 6, 1969, abandoned. This application Sept. 9, 1971, Ser. No. 179,166
Int. Cl.² C07C *67/26*
U.S. Cl. 560—93 **16 Claims**



1. In the process of preparing a β-hydroxyester comprising reacting by contacting an organic carboxylic acid and a vicinal epoxide at a temperature between about 60° C and 130° C, the improvement comprising conducting said process in the presence of a catalytic amount of a catalytic composition comprising: (a) a first catalytic compound having at least one amino or ammonium nitrogen atom and selected from the group consisting of ammonia, ethylenediamine, diethylenetriamine, alkylamine, dialkylamine, trialkylamine, trialkanolamine, dialkylarylamine, diarylalkylamine, triarylamine, triaralkylamine, trialkarylamine, dialkylaralkylamine, dialkylalkarylamine, 5- or 6-membered heterocyclic aliphatics which include amino nitrogen within the ring, pyridine, a cross-linked ion-exchange resin bearing a plurality of tertiary amine or quaternary ammonium sites, and tetraalkyl ammonium halides, in combination with (b) a second catalytic compound, which is soluble in each of said acid and epoxide reactants, having an ionizable atom of iron or chromium and is selected from the group consisting of iron halides, chromium halides, ferric alkanoate of 1 to 12 carbon atoms, ferric sulfate, ferric nitrate, ferric alkoxides, and ferric acrylate or methacrylate; the mole ratio of (a) to (b) being from 1:10 to 10:1.

4,069,243

PREPARATION OF TRIFLUOROMETHYLTHIOACETIC ACID AND ITS ESTERS

Robert Michael DeMarinis, King of Prussia, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed May 24, 1976, Ser. No. 689,426
Int. Cl.² C07C *148/00, 149/20*
U.S. Cl. 560—153 **9 Claims**

1. The method of preparing lower alkyl esters of trifluoromethylthioacetic acid comprising reacting a lower alkyl ester of trifluoromethyldithioacetic acid with a tertiary phosphine of the structure:

$$P(R_1)_3$$

in which each R_1 is lower alkyl having not more than 10 carbon atoms, phenyl or benzyl in an aprotic organic solvent in which the reactants are soluble and which is inert under the reaction conditions.

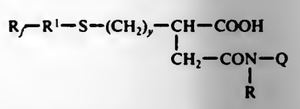
4,069,244

FLUORINATED AMPHOTERIC AND CATIONIC SURFACTANTS

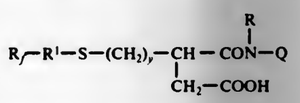
Karl Friedrich Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 3, 1975, Ser. No. 538,432
Int. Cl.² C07C *101/04;* C07D *207/08;* C11D *1/00;* B01F *17/28*
U.S. Cl. 260—501.12 **13 Claims**

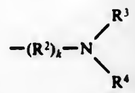
1. A compound of the formula


I

or its amphoteric tautomer or of the formula


II

or its amphoteric tautomer or a mixture thereof wherein
R_f is straight or branched chain perfluoroalkyl of 1 to 18 carbon atoms or said perfluoroalkyl substituted by perfluoroalkoxy of 2 to 6 carbon atoms;
R^1 is branched or straight chain alkylene of 1 to 12 carbon atoms;
Y is 1 or zero;
R is hydrogen, alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 1 to 6 carbon atoms, and
Q is an aliphatic amino group of the formula



wherein
R^2 is a linear or branched alkylene of 2 to 12 carbon atoms;
k is 1 or zero;
R^3 and R^4 are independently of each other hydrogen, alkyl of 1 to 20 carbon atoms or said alkyl substituted by an alkyl group of 1 to 5 carbons.

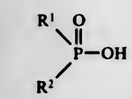
4,069,245

PREPARATION OF PHOSPHONIC AND/OR PHOSPHINIC ACIDS

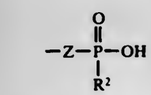
Walter Dursch, Schneidhain, Taunus; Hans-Jerg Kleiner, Kronberg, Taunus, and Horst-Dieter Thamm, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 29, 1975, Ser. No. 609,093
Claims priority, application Germany, Aug. 31, 1974, 2441878
Int. Cl.² C07F *9/30, 9/38;* C07C *27/00*
U.S. Cl. 260—502.4 R **14 Claims**

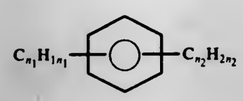
1. A process for the preparation of methyl alcohol and phosphonic and/or phosphinic acids of the formula (I)


(I)

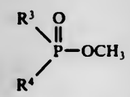
where R^1 is an alkyl radical having from 1 to 20 carbon atoms, an alkenyl radical having from 2 to 20 carbon atoms, an aralkyl radical having from 7 to 12 carbon atoms or an aryl radical having from 6 to 10 carbon atoms, these radicals optionally being mono- to trisubstituted by Cl, Br, alkyl or alkoxy groups each having from 1 to 4 carbon atoms; or R^1 is a radical of the formula (Ia)


(Ia)

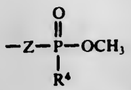
where Z is an alkylene radical having from 2 to 6 carbon atoms, a phenylene, biphenylene, naphthylene radical or a radical of the formula (Ib)


(Ib)

where n_1 and n_2 are identical or different integers of from 1 to 4, and R^2 in the formulae (I) and (Ia) is either as defined for R^1, except the radical of formula (Ia), R^1 and R^2 being either identical or different, or OH; by hydrolytic cleavage of phosphonic and/or phosphinic acid alkyl esters of the formula (II)


(II)

where R^3 is as defined above for R^1 except the radical of formula (Ia), or a radical of the formula (IIa)


(IIa)

where Z is as defined in formula (Ia), and R^4 in formulae (II) and (IIa) is either as defined for R^3 except the radical of formula (IIa), R^3 and R^4 being either identical or different, or OCH_3 or OH; in the presence of the phosphonic and/or phosphinic acid of formula (I), which comprises carrying out the hydrolysis at atmospheric pressure and at a temperature of from 160 to 250° C, with the use of at least a stoichiometric amount of water, and by distilling off the methyl alcohol formed, optionally together with water.

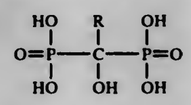
4,069,246

PRODUCTION OF 1-HYDROXY-ALKANE-1,1-DIPHOSPHONIC ACIDS

Helmut Blum, and Karl-Heinz Worms, both of Dusseldorf-Holthausen, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Germany

Continuation-in-part of Ser. No. 525,156, Nov. 19, 1974, abandoned, which is a continuation of Ser. No. 317,663, Dec. 22, 1972, abandoned. This application June 3, 1976, Ser. No. 692,326
Claims priority, application Germany, Dec. 31, 1971, 2165833
Int. Cl.² C07F *9/38*
U.S. Cl. 260—502.4 P **8 Claims**

1. A process for the preparation of 1-hydroxy-alkane-1,1-diphosphonic acid of the formula



wherein R is a member having from 1 to 12 carbon atoms selected from the group consisting of alkyl having 1 to 6 carbon atoms, cyclohexyl, phenyl and phenylalkyl, all having substituents selected from the group consisting of hydrogen, methyl, ethyl, methoxy, ethoxy and halogen, consisting essentially of reacting the corresponding 1-amino-alkane-1,1-diphosphonic acid of the formula



in which R has the above-assigned meaning, with at least the stoichiometric amount of aqueous nitrous acid, at a temperature between 0° and 50° C; and recovering said 1-hydroxy-alkane-1,1-diphosphonic acid.

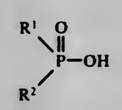
4,069,247

PREPARATION OF PHOSPHONIC AND/OR PHOSPHINIC ACIDS

Hans-Jerg Kleiner, Kronberg, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 29, 1975, Ser. No. 609,080
Claims priority, application Germany, Aug. 31, 1974, 2441783
Int. Cl.² C07F *9/30, 9/38;* C07C *27/00*
U.S. Cl. 260—502.4 R **13 Claims**

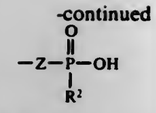
1. A process for the preparation of alkyl alcohols and phosphonic and/or phosphinic acids of the formula (I)


(I)

where R^1 is an alkyl radical having from 1 to 20 carbon atoms, an alkenyl radical having from 2 to 20 carbon atoms, an aralkyl radical having from 7 to 12 carbon atoms or an aryl radical having from 6 to 10 carbon atoms, these radicals optionally being mono- to trisubstituted by Cl, Br, alkyl or alkoxy groups each having from 1 to 4 carbon atoms; or R^1 is a radical of the formula (Ia)

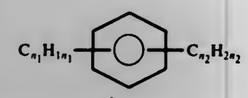

(Ia)

-continued



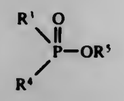
where Z is an alkylene radical having from 2 to 6 carbon atoms, a phenylene, biphenylene, naphthylene radical or a radical of the formula (Ib)

(Ib)



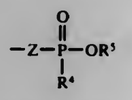
wherein n_1 and n_2 are identical or different integers of from 1 to 4, and R^2 in the formulae (I) and (Ia) is either as defined for R^2, except the radical of formula (Ia), R^1 and R^2 being either identical or different, or OH; by hydrolytic cleavage of phosphonic and/or phosphinic acid alkyl esters of the formula (II)

(II)



where R^3 is as defined above for R^1 except the radical of formula (Ia), or a radical of the formula (IIa)

(IIa)



where Z is as defined in formula (Ia), and R^4 in formulae (II) and (IIa) is either as defined for R^3 except the radical of formula (IIa), R^1 and R^4 being either identical or different, or OR^5 or CH, R^5 being a straight-chain or branched alkyl group having from 2 to 8 carbon atoms, optionally being substituted by chlorine or bromine; in the presence of the phosphonic and/or phosphinic acid of formula (I), which comprises carrying out the hydrolysis at atmospheric pressure and at a temperature of from 170° to 300° C, with the use of at least a stoichiometric amount of water, and by distilling off the alcohol formed, optionally with water.

4,069,248

HYDROLYSIS OF AROMATIC NITRILES TO CARBOXYLIC ACIDS

William D. Vanderwerff, West Chester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 602,613, Aug. 7, 1975, abandoned. This application Dec. 3, 1976, Ser. No. 747,152

Int. Cl.² C07C *51/08*

U.S. Cl. 260—515 P **6 Claims**

1. In the process of a non-catalytic aqueous equilibrium hydrolysis to the corresponding carboxylic acid of an aromatic nitrile obtained by ammoxidation of an alkyl-substituted hydrocarbon, the improvement which consists of increasing the ionic strength of the hydrolysis medium solution by adding to the nitrile prior to said hydrolysis an inert, neutral salt selected from the group of alkali metal sulfates, phosphates, and perchlorates in an amount from about 0.5 to about 2.0 moles per liter of aqueous medium whereby the content of nitrogen impurities in the acid product is reduced.

4,069,249

N,N-DI-(HYDROXYBENZYL)-TRIMETHYLENE DIAMINEDIACETIC ACIDS

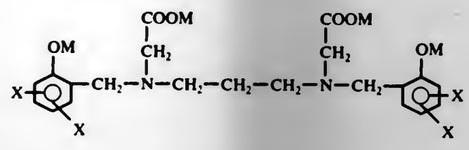
Roger Robert Gaudette, Hudson, N.H.; John Leonard Ohlson, Bedford, and Patricia Marie Scanlon, Arlington, both of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Filed Nov. 11, 1975, Ser. No. 630,792

Int. Cl.² C07C *101/447, 143/67*

U.S. Cl. 260—519 **8 Claims**

1. A compound having the formula



in which:

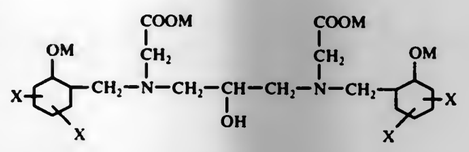
a. each X is a member selected from a first group consisting of (i) hydrogen; (ii) an alkyl group having 1–4 carbon atoms; (iii) $-SO_3M$; and (iv) —COOM;

b. M is a member selected from a second group consisting of (i) a hydrogen ion; (ii) an alkali metal ion; (iii) one-half an alkaline earth metal ion; and (iv) an ammonium ion having the formula



in which each of R_1, R_2, R_3, and R_4 is a member selected from a third group consisting of (A) hydrogen; (B) an alkyl group having 1–4 carbon atoms; and (C) a hydroxyalkyl group having 1–4 carbon atoms.

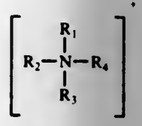
4. A compound having the formula



in which:

a. each X is a member selected from a first group consisting of (i) hydrogen; (ii) an alkyl group having 1–4 carbon atoms; (iii) $-SO_3M$; and (iv) —COOM;

b. M is a member selected from a second group consisting of (i) a hydrogen ion; (ii) an alkali metal ion; and (iii) one-half an alkaline earth metal ion; and (iv) an ammonium ion having the formula



in which each of R_1, R_2, R_3, and R_4 is a member selected from a third group consisting of (A) hydrogen; (B) an alkyl group having 1–4 carbon atoms; and (C) a hydroxyalkyl group having 1–4 carbon atoms.

4,069,250

SUBSTITUTED 2,4,6-TRIIODOISOPHTHALAMIC ACIDS

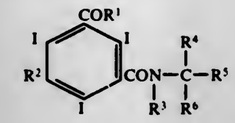
Philip E. Wiegert, St. Louis, Mo., assignor to Mallinckrodt, Inc., Mo.

Continuation of Ser. No. 479,716, June 17, 1974, abandoned. This application Apr. 12, 1976, Ser. No. 676,169

Int. Cl.² C07C *103/32*; A61K *29/02*

U.S. Cl. 260—519 **13 Claims**

1. A compound having the formula:



wherein

R^1 is hydroxy, or OM, M being a pharmaceutically acceptable cation,

R^2 is an acetamido or methoxyacetamido function,

R^3 is hydrogen, R^4 is a methyl or hydroxymethyl function and each R^5 and R^6 is a hydroxymethyl function

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4,069,251

CONTINUOUS PROCESS FOR THE MANUFACTURE OF METHIONINE

Sven Peter Mannsfeld; Arno Pfeiffer, both of Bruhl; Herbert Tanner, Grossauheim; Hans Wagner, Constance, all of Germany, and Erich Liebetanz, deceased, late of Mainz, Germany (by Eva Angela Liebetanz, heiress), assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 328,106, Jan. 30, 1973, abandoned, which is a continuation of Ser. No. 9,458, Feb. 6, 1970, abandoned. This application Aug. 12, 1976, Ser. No. 713,822

Claims priority, application Germany, Feb. 8, 1969, 1906405

Int. Cl.² C07C *149/247*

U.S. Cl. 260—534 S **11 Claims**

1. A continuous process for the production of methionine comprising the steps of

1. hydrolyzing 5-(2-methylmercaptoethyl)hydantoin in an aqueous solution of an alkali-metal carbonate or bicarbonate or mixture thereof at a superatmospheric pressure and at a temperature between 120° and 220° C while
2. removing the ammonia and carbon dioxide formed during the hydrolysis;
3. after completion of the hydrolsis reaction cooling the solution;
4. precipitating the methionine by means of carbon dioxide and separating and recovering the methionine from the remaining mother liquor;
5. replenishing the mother liquor containing the alkali metal carbonate or bicarbonate and residual methionine with fresh 5-(2-methylmercaptoethyl)hydantoin and then
6. recycling the replenished mother liquor including residual methionine for further hydrolysis and treatment as in steps 1 to 5.

4,069,252

PROCESS FOR THE PREPARATION OF CERTAIN ACYL CYANIDE COMPOUNDS

Kurt Findeisen, Odenthal; Wilfried Draber, Wuppertal, and Herbert Schwarz, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

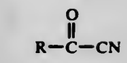
Filed June 4, 1976, Ser. No. 693,827

Claims priority, application Germany, June 25, 1975, 2528211

Int. Cl.² C07C *63/04, 120/04*

U.S. Cl. 260—545 R **13 Claims**

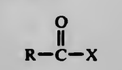
1. In a process for the preparation of an acyl cyanide compound of the general formula



in which

R is alkyl of from 1 to 4 carbon atoms, or phenyl optionally substituted by alkoxy of from 1 to 4 carbon atoms

which process comprises reacting an acid halide of the general formula



in which

R is identified as above and

X represents halogen,

with anhydrous hydrocyanic acid

which improvement comprises carrying out the reaction in the presence of an aliphatic, araliphatic or alicyclic tertiary amine, at a temperature between −70° C and +100° C.

4,069,253

PROCESS FOR THE PRODUCTION OF WATER-FREE MOLTEN UREA

Kazumichi Kanai, Fujisawa; Tetsuo Kimura, Kamakura, and Akito Fukui, Chiba, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated and Toyo Engineering Corporation of Japan, both of Tokyo, Japan

Continuation of Ser. No. 155,230, June 21, 1971, abandoned. This application Feb. 6, 1976, Ser. No. 656,010

Claims priority, application Japan, July 1, 1970, 45-57413

Int. Cl.² C07C *126/00*

U.S. Cl. 260—555 C **6 Claims**

1. A process for concentrating an aqueous urea solution to a substantially water-free molten urea which comprises subjecting said aqueous urea solution to a first evaporation in a first evaporation zone at a temperature of from 40° C to 120° C to form a urea slurry, said slurry comprising urea crystals suspended in a saturated solution of urea, said crystals being from 10 to 60 percent by weight of the weight of said urea slurry, and subjecting said urea slurry to a second evaporation in a second evaporation zone at a temperature above 132.7° C to dissolve the urea crystals and form a substantially water-free molten urea.

4,069,254

ω-(ARYLSULFONAMIDO)-ALKYLAMINE

Hiroyoshi Hidaka, Kasugai; Ikuo Matsumoto, Tokyo; Masaaki Hosoi, Kawasaki, and Nobuo Aoki, Utsunomiya, all of Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo; Hiroyoshi Hidaka, Aichi and Nobuo Aoki, Tochigi, all of, Japan

Filed Oct. 7, 1975, Ser. No. 620,274

Claims priority, application Japan, Aug. 22, 1975, 50-101125

Int. Cl.² C07C *143/78*; A61K *31/18*

U.S. Cl. 260—556 AR **9 Claims**

1. A ω-(arylsulfonamido)alkylamine having the formula

, $R'\text{-}SO_2NH(CH_2)_nNH_2$

wherein R′ is halonaphthyl; and *n* is an integer of 5 - 8.

4,069,255

PREPARATION OF ACRYLAMIDE

Michael Martan, Evanston, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sept. 30, 1976, Ser. No. 728,353

Int. Cl.² C07C *103/133*

U.S. Cl. 260—561 N **11 Claims**

1. A process for the preparation of acrylamide which comprises treating acrylonitrile with water at hydrolysis conditions

in the presence of a catalyst comprising finely divided metallic copper and prepared by volatilizing copper metal, subsequently cooling the copper vapors in contact with an organic solvent and heating to ambient temperature, and recovering the resultant acrylamide.

4,069,256

ANTI-INFLAMMATORY PHENYL-LOWER-ALKYLAMINES

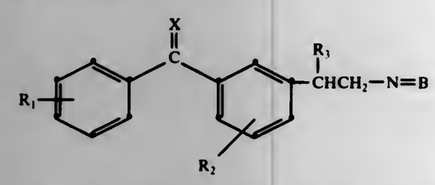
Bernard L. Zenitz, Colonie, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 542,553, Jan. 20, 1973, abandoned. This application Dec. 17, 1975, Ser. No. 641,511

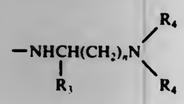
Int. Cl.² C07C *87/28*

U.S. Cl. 260—570 R **4 Claims**

1. A member of the group consisting of (A) compounds having the formula:



where R_1 represents hydrogen or from one to two, the same or different, lower-alkyl, hydroxy, lower-alkoxy, trifluoromethyl, lower-alkylmercapto, lower-alkylsulfinyl, lower-alkylsulfonyl or halogen selected from fluorine, chlorine and bromine; R_2 represents hydrogen, or lower-alkoxy or hydroxy in the 4-position, or lower-alkyl in either of the 2-, 4-, 5- or 6-positions; R_3 represents hydrogen or lower-alkyl; the group $>C=X$ represents $>C=O$; and $N=B$ represents the group



where R_4 represents lower-alkyl and (B) acid-addition salts thereof.

4,069,257

PROCESS FOR PREPARING 2-ACETYL-3-METHYL-1,3-BUTADIENE

Reinhard Lantzsch, and Dieter Arlt, both of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 12, 1975, Ser. No. 631,262

Claims priority, application Germany, Nov. 29, 1974, 2456413; Nov. 29, 1974, 2456514

Int. Cl.² C07C *45/18*

U.S. Cl. 260—595 **6 Claims**

1. A process for preparing 2-acetyl-3-methyl-1,3-butadiene which comprises:

A. contacting mesityl oxide with formaldehyde in the presence of 0.1 to 10 mol percent of a bicyclic amidine per mol of mesityl oxide whereby to obtain 2-methyl-3-hydroxymethyl-pent-1-en-4-one; and B. heating said 2-methyl-3-hydroxymethyl-pent-1-en-4-one at 300° to 600° C until it decomposes.

4,069,258

CYCLOPENTENE DERIVATIVES

Werner Hoffmann, Neuhofen, and Karl von Fraunberg, Bobenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

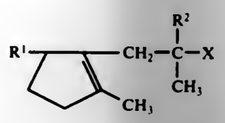
Filed Mar. 15, 1976, Ser. No. 666,630

Claims priority, application Germany, Mar. 29, 1975, 2513996

Int. Cl.² C07C *45/00, 47/40*

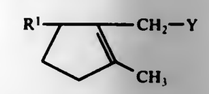
U.S. Cl. 260—598 **1 Claim**

1. A process for the manufacture of a cyclopentene derivative of the formula I



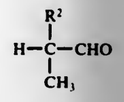
I

where R^1 is isopropyl or isopropenyl, R^2 is alkyl of 1 to 3 carbon atoms, X is CHO which comprises: reacting a compound of the formula II



II,

where Y is halogen with an aldehyde of the formula III



III,

in the presence of an aqueous solution of a strong base and in the presence of a catalytic amount of a quaternary ammonium salt.

4,069,259

PROCESS FOR PREPARING ORGANIC DISULFIDES

Divna Cipris, Morristown, N.J., and Dirk Pouli, Williamsville, N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

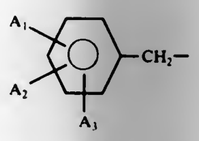
Filed Oct. 19, 1976, Ser. No. 733,727

Int. Cl.² C07C *149/12*; C07D *277/78, 263/58, 235/28*

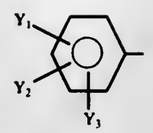
U.S. Cl. 260—608 **11 Claims**

1. A process for preparing organic disulfides free of sulfinic acid hich comprises reacting in the liquid phase an organic sulfonyl halide of the formula, RSO_2X, wherein X is a halogen and R is an organic radical selected from the group consisting of:

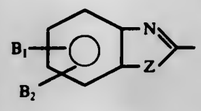
linear or branched alkyl radicals containing 1 to 18 carbon atoms; sutstituted benzyl radicals of the formula:



wherein the substituents A_1 to A_3 are independently selected from hydrogen, halogen and alkoxy containing 1 to 4 carbon atoms; cycloalkyl radicals containing 5 to 8 carbn atoms and 0 to 2 chlorine atoms; aromatic radicals of the formula:



wherein Y_1, Y_2 and Y_3 are independently selected from hydrogen, halogen, alkyl containing 1 to 12 carbon atoms, alkoxy containing 1 to 4 carbon atoms, phenyl and a fused benzene ring formed from two adjacent Y substituents; heterocyclic radicals of the formula:



wherein Z is either oxygen, nitrogen or sulfur, and B_1 and B_2 are independently selected from hydrogen, halogen and alkoxy containing 1 to 4 carbon atoms, with a mercaptan of the formula, R'SH, wherein R' may be the same as R or different and is a member of the group as defined above for R, in a ratio of at least about 5 moles of mercaptan per mole of organic sulfonyl halide.

4,069,260

PREPARATION OF UNSATURATED ALCOHOLS

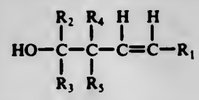
Spencer C. Watson; Dennis B. Malpass, and G. Scott Yeargin, all of Laporte, Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.

Division of Ser. No. 395,888, Sept. 10, 1973, abandoned. This application Aug. 4, 1975, Ser. No. 601,749

Int. Cl.² C07C *29/00, 33/02, 33/06, 33/10*

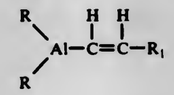
U.S. Cl. 260—632 B **8 Claims**

1. A process of preparing a predominately cis-unsaturated alcohol having the following formula:



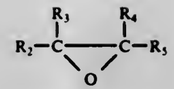
wherein R_1 is a straight or branched chain alkyl group having 1 to 16 carbon atoms, R_2, R_3, R_4 and R_5 can be the same or different and are selected from hydrogen, a straight or branched chain alkyl group having 1 to 12 carbon atoms, an aryl radical having 6 to 10 carbon atoms, said aryl radical can be substituted with an alkyl group having 1 to 6 carbon atoms, an alkoxy radical having 1 to 6 carbon atoms and halogen; comprising the steps of:

a. pre-coordinating a predominately cis-1-alkenyl aluminum dialkyl compound having the following formula:



wherein R can be selected from lower alkyl having 1 to 6 carbon atoms and R_1 has been previously defined; with at least one molar equivalent of a Lewis base,

b. reacting said product of step (a) with an epoxide compound having the following formula:



wherein R_2, R_3, R_4 and R_5 have been previously defined, said reaction being carried out at a temperature of between −80° C. and 130° C.;

c. treating the reaction product of steps (a) and (b) with an aqueous solution of a mineral acid, to yield the cis-unsaturated alcohol compounds.

4,069,261

PROCESS FOR THE PRODUCTION OF POLYHYDRIC ALCOHOLS

Sunao Kyo; Katsuhiko Hayashi; Hidetsugu Tanaka, and Hideaki Oka, all of Ibaragi, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 420,849, Dec. 3, 1973, abandoned. This application Sept. 2, 1975, Ser. No. 609,722

Claims priority, application Japan, Dec. 2, 1972, 47-120964

Int. Cl.² C07C *29/00*

U.S. Cl. 260—635 E **7 Claims**

1. Process for the production of polyhydric alcohols from a substituted 1,3-dioxane containing at least one hydroxy alkyl group in the molecule which comprises heating said 1,3-dioxane or mixtures thereof in contact with boric acid anhydride or a boric acid compound selected from the group consisting of boric acid, metaboric acid, hypoboric acid, tetraboric acid and their esters at a temperature of from about 90° C. to 180° C., blowing water in the form of steam into the reaction system and recovering said polyhydric alcohol.

4,069,262

PREPARATION OF 2-FLUORONITROBENZENE

Robert Allison Kunz, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 7, 1977, Ser. No. 775,038

Int. Cl.² C07C *79/12*

U.S. Cl. 260—646 **13 Claims**

1. A process for preparing 2-fluoronitrobenzene which comprises heating a mixture of 2-chloronitrobenzene potassium fluoride of particle size 1–20 microns and a catalyst in sulfolane for 2–8 hours at 240°–250° C wherein the molar ratio of 2-chloronitrobenzene to potassium fluoride to sulfolane is 1 : 1.1–1.5 : 0.3–1.0.

4,069,263

PROCESS FOR DIRECTED CHLORINATION OF ALKYLBENZENES

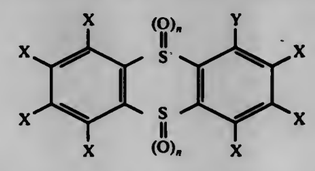
Henry C. Lin, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,449

Int. Cl.² C07C *25/04*

U.S. Cl. 260—650 R **20 Claims**

1. A process for the production of nuclear chlorinated alkylbenzenes comprises reacting, in the liquid phase, alkylbenzene with chlorine in the presence of a Lewis acid catalyst and a co-catalyst comprising a thianthrene compound or mixture of thianthrene compounds characterized by the formula:



where *n* is 0 to 1, y is an electron-withdrawing substituent or an

electron-donating substituent and each x is hydrogen, an electron-withdrawing substituent or an electron-donating substituent; the total number of electron-withdrawing substituents present at the x and y positions is at least one and no more than seven; the total number of electron-donating substituents is at least one and no more than four; no more than three electron-donating substituents are present at the peri-positions; and with the proviso that when electron-withdrawing substituents are present at each of the peri-positions, electron-donating substituents are present at each of the 2, 3, 7 and 8 positions.

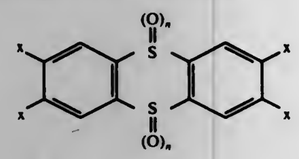
4,069,264

PROCESS FOR DIRECTED CHLORINATION OF ALKYLBENZENES

Henry C. Lin, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,439
Int. Cl.² C07C *25/04*
U.S. Cl. 260—650 R **24 Claims**

1. A process for the preparation of nuclear chlorinated alkylbenzenes which comprises reacting an alkylbenzene with chlorine in the presence of a Lewis acid catalyst and a co-catalyst comprising a thianthrene compound or mixture of thianthrene compounds characterized by the formula:



where each n is 0 to 1 and each x is hydrogen or an electron-withdrawing substituent or an electron-donating substituent with the proviso that at least one x is an electron-withdrawing substituent and at least one x is an electron-donating substituent.

4,069,265

STABILIZATION OF 1,1,1-TRICHLOROETHANE WITH A FOUR COMPONENT SYSTEM

Hermann Richtzenhain, Much-Schwellenbach, and Rudolf Stephan, Troisdorf-Sieglar, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Division of Ser. No. 408,955, Oct. 23, 1973, Pat. No. 3,959,397, which is a continuation-in-part of Ser. No. 60,173, June 29, 1970, Pat. No. 3,787,509, which is a division of Ser. No. 805,923, Jan. 5, 1969, Pat. No. 3,590,088, which is a division of Ser. No. 609,681, Jan. 16, 1967, Pat. No. 3,445,532, which is a continuation of Ser. No. 316,772, Oct. 16, 1963, abandoned. This application Mar. 1, 1976, Ser. No. 662,999
Claims priority, application Germany, Oct. 18, 1962, 40087
Int. Cl.² C07C *17/42*
U.S. Cl. 260—652.5 R **5 Claims**

1. A stabilized 1,1,1-trichloroethane composition consisting essentially of 1,1,1-trichloroethane, 0.05 to 2.0 weight percent of nitrile, 0.05 to 3.0 weight percent of 1,4-dioxane, 0.1 to 2.0 weight percent nitromethane and ethylenediamine, said ethylenediamine being present in an amount of at least 0.01 weight percent, based upon the weight of said 1,1,1-trichloroethane.

4,069,266

PROCESS FOR THE PREPARATION OF FLUORINE-RICH ORGANIC COMPOUNDS CONTAINING ONE OR TWO CARBON ATOMS

Tadaaki Komatsu, Saitama; Hirokazu Takeda, Kamifukuoka; Hideki Oshio; Kimiaki Matsuoka, both of Kawagoe, and Minoru Aramaki, Ube, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jan. 25, 1977, Ser. No. 762,339
Claims priority, application Japan, Jan. 26, 1976, 51-6630
Int. Cl.² C07C *17/20*
U.S. Cl. 260—653 **7 Claims**

1. A process for disproportionating a partially or completely halogenated fluoro derivative of methane containing not more than two fluorine atoms and at least one halogen atom other than fluorine or a completely halogenated fluoro derivative of ethane containing from 2 to 4 halogen atoms other than fluorine and correspondingly from 4 to 2 fluorine atoms, the process comprising contacting said derivative of methane or said derivative of ethane in gas phase and in a substantially moisture-free state under disproportionation conditions of a temperature of 100 to 600° C and a space velocity of from 50 to 1000/hr, with a catalyst substantially composed of from 0.1 to 5.0% by weight, as metal, of a metal salt selected from the group consisting of nickel (II) halides, titanium (III) chloride and titanium (III) fluoride and a balance of a compound selected from the group consisting of activated alumina, silica.alumina and aluminum fluoride.

4,069,267

STABLE DIORGANOMAGNESIUM COMPOSITIONS

Conrad W. Kamienski, Gastonia, N.C.; Bobby Joe McElroy, York, S.C., and Ricardo O. Bach, Gastonia, N.C., assignors to Lithium Corporation of America, Gastonia, N.C.

Filed Oct. 27, 1976, Ser. No. 736,262
Int. Cl.² C07F *3/02*
U.S. Cl. 260—665 R **13 Claims**

1. A stable complex of (a) a di-n-alkylmagnesium in which the alkyl contains from 1 to 4 carbon atoms with (b) a di-n-alkylmagnesium in which the alkyl contains from 6 to 18 carbon atoms.

4,069,268

REGENERATION OF METAL HALIDE CATALYSTS VIA HALOGENATION

Michael Siskin, Maplewood, N.J., and Ronald J. Gillespie, Dundas, Canada, assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Nov. 4, 1975, Ser. No. 628,587
Int. Cl.² C07C *5/28, 3/54*; C10G *35/06*; B01J *27/32*
U.S. Cl. 260—666 P **17 Claims**

1. In a hydrocarbon conversion process which comprises contacting a hydrocabon feedstock with a substantially liquid phase catalyst comprising a metal fluoride selected from the group consisting of tantalum pentafluoride, niobium pentafluoride and mixtures thereof in combination with hydrogen fluoride, thereby forming a hydrocarbon phase and a catalyst phase, at least a portion of said catalyst phase having become deactivated due to the presence of organic contaminants and inorganic separating at least a portion of said catalyst phase from said hydrocarbon phase, the improvement which comprises regenerating at least a portion of said catalyst phase in a regeneration zone by contact therein with a halogen selected from the group consisting of fluorine or chlorine at a temperature between about −30° and about 1000° C. for a period of time sufficient to obtain a catalyst possessing a greater activity for hydrocarbon conversion than that possessed by the deactivated catalyst, at least a portion of said contaminants being converted to halogenated or partially halogenated hydrocarbons and volatilized during said regeneration.

14. The process of claim 8 wherein the regeneration zone is maintained at a temperature ranging from about −30° to about 400° C.

15. The process of claim 14 wherein at least a portion portion of the catalyst phase is hydrolyzed and is contacted with hydrogen fluoride or hydrogen chloride prior to contact with fluorine.

4,069,269

ISOMERIZATION OF NAPHTHENES

Ernest L. Pollitzer, Skokie, and John C. Hayes, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 633,889, Nov. 20, 1975, Pat. No. 4,013,738, which is a continuation-in-part of Ser. No. 522,209, Nov. 8, 1974, Pat. No. 3,960,710. This application Nov. 1, 1976, Ser. No. 737,353
Int. Cl.² C07C *13/08*
U.S. Cl. 260—666 P **15 Claims**

1. A process for isomerizing an isomerizable naphthalene hydrocarbon selected from the group consisting of C_5 to C_9naphthenes which comprises contacting said hydrocarbon at isomerization conditions with a catalyst comprising a porous carrier material containing, on an elemental basis, 0.01 to 2 wt. % platinum group metal, 0.1 to 5 wt. % cobalt, 0.01 to 5 wt. % tin and 0.1 to 10 wt. % halogen, wherein substantially all of the platinum group metal, cobalt and tin are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal and cobalt are present in the elemental metallic state and wherein substantially all of the tin is present in an oxidation state above that of the elemental metal.

4,069,270

ALKYLAROMATIC ISOMERIZATION

Ernest L. Pollitzer, Skokie, and John C. Hayes, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 633,889, Nov. 20, 1975, Pat. No. 4,013,738, which is a continuation-in-part of Ser. No. 522,209, Nov. 8, 1974, Pat. No. 3,959,988. This application Nov. 1, 1976, Ser. No. 737,354
Int. Cl.² C07C *15/08*
U.S. Cl. 260—668 A **14 Claims**

1. A process for isomerizing alkylaromatic hydrocarbons selected from the group consisting of C_8 alkyl aromatics which comprises contacting said hydrocarbon at isomerization conditions with a catalyst comprising a porous carrier material containing, on an elemental basis, 0.01 to 2 wt. % platinum group metal, 0.1 to 5 wt. % cobalt, 0.01 to 5 wt. % tin and 0.1 to 10 wt. % halogen, wherein substantially all of the platinum group metal, cobalt and tin are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal and cobalt are present in the elemental metallic state and wherein substantially all of the tin is present in an oxidation state above that of the elemental metal.

4,069,271

SILVER CATALYSTS

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 580,683, May 23, 1975, Pat. No. 4,005,049. This application July 19, 1976, Ser. No. 706,531
Int. Cl.² C07C *15/00*
U.S. Cl. 260—669 R **3 Claims**

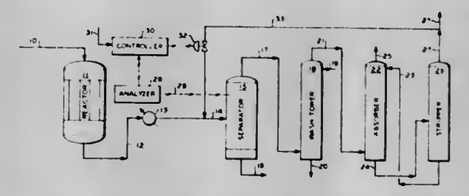
1. A process for dehydrogenating ethylbenzene wherein said ethylbenzene is dehydrogenated at a temperature within the range from about 220° to 300° C in the presence of an oxygen-containing gas and a silver/transition metal catalyst, the transition metal being selected from the group consisting of nickel and cobalt.

4,069,272

OXIDATIVE DEHYDROGENATION EFFLUENT CONTROL

Thomas Hutson, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 25, 1976, Ser. No. 661,456
Int. Cl.² C07C *11/12*
U.S. Cl. 260—680 E **7 Claims**



1. In a process for oxidatively dehydrogenating olefins in the presence of an oxygen-containing gas to produce an effluent containing the corresponding diolefin, unconverted olefins, steam, and oxygen, and cooling of the effluent sufficiently to condense steam leaving a gaseous effluent containing diolefin, unconverted olefins, and oxygen, the improvement for controlling the oxygen concentration below the combustible limit in said gaseous effluent which comprises:

a. measuring the oxygen concentration of said gaseous effluent and producing a signal representative of said concentration, and

b. controlling said oxygen concentration in said effluent responsive to said signal by diluting same with a recycled C_4 hydrocarbon-containing stream introduced into said cooled effluent at a rate sufficient to regulate the residual oxygen concentration in said gaseous effluent to a safe value below 9.5 mole percent.

4,069,273

DIMERIZATION OF LINEAR ALPHA-OLEFINS

Robert G. Komoto, Emeryville, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 24, 1977, Ser. No. 761,916
Int. Cl.² C07C *3/10*
U.S. Cl. 260—683.15 D **4 Claims**

1. A process for dimerizing low-molecular-weight linear alpha-olefins which comprises contacting a C_2 to C_8 linear alpha-olefin or mixture of such olefins with a catalyst prepared by the reaction of bis(1,5-cyclooctadiene) nickel(0) and hexafluoro-2,4-pentanedione, wherein the mol ratio of hexafluoropentanedione to nickel is from about 0.5:1 to about 2:1.

4,069,274

THERMOSETTING ACRYLIC POWDER COATING COMPOSITIONS

Minoru Shibata; Naozumi Iwasawa; Tadashi Watanabe, and Ichiro Yoshihara, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Japan

Filed July 25, 1975, Ser. No. 598,946
Claims priority, application Japan, July 31, 1974, 49-87686
Int. Cl.² C08L *63/00*
U.S. Cl. 260—836 **14 Claims**

1. A thermosetting powder coating composition which comprises:

A. a functional glycidyl group-containing graft copolymer of

i. 10 to 40 percent by weight of a linear polyester having a number average molecular weight of 600 to 3,000 and containing one terminal carboxyl group and

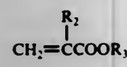
ii. 60 to 90 percent by weight of acrylic copolymer of

ii-a. 6.5 to 60 percent by weight of at least one of glycidyl esters having the formula



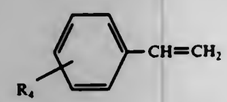
wherein R_1 is hydrogen or methyl,

ii-b. 10 to 93.5 percent by weight of at least one of acrylic monomers having the formula



wherein R_2 is hydrogen or methyl and R_3 is alkyl having 1 to 14 carbo atoms, cyclohexyl or hydroxyalkyl having 1 to 4 carbon atoms, and

ii-c. 0 to 65 percent by weight of additional monomers selected from the group consisting of acrylonitrile, methacrylonitrile and styrenes having the formula



wherein R_4 is hydrogen or alkyl having 1 to 4 carbon atoms,

said graft copolymer having a softening point of 70° to 110° C and a number average molecular weight of 2,000 to 30,000 and containing glycidyl group in an amount of 0.35 to 2.35 moles per kilogram of the graft copolymer; and

B. at least one of polycarboxylic acids and anhydrides thereof in an amount of 0.6 to 1.2 moles in terms of carboxyl group per mole of the glycidyl group contained in the graft copolymer.

4,069,275

POWER PAINT BLEND OF AN EPOXY AND HYDROXY-FUNCTIONAL COPOLYMER AND AN ANHYDRIDE-FUNCTIONAL COPOLYMER

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 426,164, Dec. 19, 1973, Pat. No. 3,959,405. This application Feb. 18, 1976, Ser. No. 659,176
The portion of the term of this patent subsequent to Dec. 25, 1990, has been disclaimed.
Int. Cl.² C08L *63/10*
U.S. Cl. 260—836 **2 Claims**

1. In a thermosettable powder paint which exclusive of pigments, catalysts, antistatic agents, and plasticizers, the same being conventional non-reactive additives to a thermosettable powder paint, consists essentially of a coreactable particulate mixture of

A. an epoxy-functional copolymer of monoethylenically unsaturated monomers consisting essentially of about 5 to about 20 weight percent of a glycidyl ester of a monoethylenically unsaturated carboxylic acid and about 80 to about 95 weight percent of other monoethylenically unsaturated monomers, and having a glass transition temperature in the range of about 40° to about 90° C. and a molecular weight in the range of about 1500 to about 15,000,

B. as crosslinking agent, an anhydride-functional copolymer,

C. 0.05 to about 4 weight percent of a non-reactive polymeric flow control agent based on the weight of said coreactable particulate mixture,

the improvement wherein:

1. said epoxy-functional copolymer is qualitatively difunctional and said other monoethylenically unsaturated monomers consist essentially of difunctional monomers selected from the group consisting of hydroxyethyl acrylates and methacrylates, hydroxypropyl acrylates and methacrylates and hydroxybutyl acrylates and methacrylates in an amount comprising about 2 to about 10 weight percent of said copolymer and monoethylenically unsaturated monomers consisting essentially of monofunctional monomers selected from the group consisting of esters of a C_1 - C_8 monohydric alcohol and acrylic acid, esters of a C_1 - C_8 monohydric alcohol and methacrylic acid and C_8 - C_{12} monovinyl hydrocarbons, and

2. said anhydride-functional copolymer has molecular weight in the range of about 1500 to about 15,000 and is a copolymer of about 5 to about 20, weight percent of an anhydride of an olefinically unsaturated dicarboxylic acid and about 80 to about 95 weight percent of alpha-beta, monoethylenically unsaturated, quantitatively and qualitatively monofunctional monomers selected from the group consisting of esters of a C_1 - C_8 monohydric alcohol and a monocarboxylic acid selected from acrylic acid and methacrylic acid and C_8 - C_{12} monovinyl hydrocarbons, said esters of a C_1 - C_8 monohydric alcohol and a monocarboxylic acid comprising in excess of 50 weight percent of said anhydride-functional copolymer, and is present in said coreactive particulate mixture in an amount that provides about 0.4 to about 1.4 anhydride groups per functional group on said epoxy-functional copolymer.

4,069,276

LOW-PRESSURE, NO-COOL PHENOLIC TYPE RESIN FOR DECORATIVE LAMINATES

Leopold F. Bornstein, Atlanta, Ga., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed May 24, 1976, Ser. No. 689,046
Int. Cl.² C08L *61/26*; C08G *12/12*
U.S. Cl. 260—839 **5 Claims**

1. A laminating resin composition comprising a thermosetting phenolic resin modified with about 5 to about 10 percent by weight of the resin solids of a partially etherified melamine-formaldehyde resin, said partially etherified melamine-formaldehyde resin comprising the reaction product of from about 10 to 25 percent by weight of melamine, from about 5 to 12 percent by weight of formaldehyde on a dry basis, from about 20 to 40 percent of an aliphatic polyol and from about 10 to 30 percent by weight of furfural.

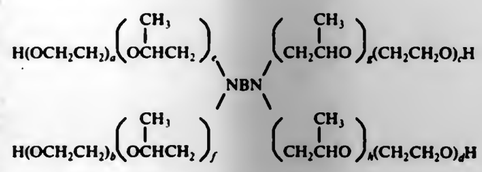
4,069,277

DYEABLE POLYAMIDES CONTAINING AN ANTISTATIC AGENT

Ronald D. Mathis, and James S. Dix, both of Greenville, S.C., assignors to Phillips Fibers Corporation, Greenville, S.C.

Filed Mar. 2, 1976, Ser. No. 663,005
Int. Cl.² C08L *77/00*
U.S. Cl. 260—857 PG **23 Claims**

1. A polyamide composition comprising (A) a polyamide, (B) an antistatic agent comprising the reaction product of (1) at least one tetrol compound of the formula:



where *a, b, c, d, e, f, g,* and *h* are each a whole number and the total of *a, b, c,* and *d* is between 8 and 1,000 and the total of *e, f, g,* and *h* is between 8 and 850 and B is an alkylene radical containing 1 to 13 carbon atoms, wherein the molecular weight of said tetrol compound is between about 1,650 and about 135,000 and said (OCH_2CH_2) moieties make up from about 10 to about 90 weight percent of said tetrol compound, and (2) at least one dicarboxylic acid ester having the formula R'OOC--A-COOR' wherein A is a valence bond or a divalent hydrocarbyl radical having from 1 to 8 carbon atoms and R' is an alkyl group containing 1 to 4 carbon atoms or a hydroxyalkyl group containing 2 to 4 carbon atoms, wherein the two R' radicals may be the same or different; and (C) a zinc dihydrocarbyldithiophosphinate in which the hydrocarbyl group is selected from acyclic alkyl radicals containing 4 to 10 carbon atoms and cycloaliphatic radicals containing from 4 to 10 carbon atoms; said zinc dihydrocarbyldithiophosphinate being present in said polyamide composition in such an amount that when said polyamide composition is dyed the K/S value is greater than that which would be observed if no zinc dihydrocarbyldithiophosphinate were present, and said antistatic agent being present in an amount sufficient to improve the antistatic characteristics of said polyamide.

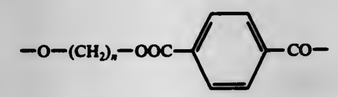
4,069,278

PROCESS OF MAKING A HIGH MELT VISCOSITY BLOCK CO-POLYESTER

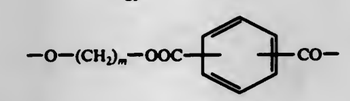
Willem Frederik Hendrik Borman, Evansville, Ind.; Donald Irving Craft, and Mortor Kramer, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 1, 1975, Ser. No. 564,128
Int. Cl.² C08L *67/02*
U.S. Cl. 260—860 **12 Claims**

1. A method of preparing a high melt viscosity thermoplastic polyester blend of at least two different polyesters having repeating units of the formula:



or



wherein *n* and *m* are positive integers between 1 and 10; said method consisting essentially of melt blending at least two low to medium melt viscosity linear polyesters, wherein at least one of the low to medium viscosity linear polyesters is a branched co-polyester that includes from 0.01 to 5 mole percent based on the terephthalate units, of units of branching component which contains at least three ester-forming groups, and thereafter subjecting the melt blended polyesters to a temperature of 10°-50° C. below the melting point of the lowest melting ingredient in the blend until the melt viscosity has increased to at least 10,000 poises at a temperature of 10°-15° C. above the melting point of the blend.

4,069,279

DIALKYLPHENOL PHOSPHORYLATION

Julian William Boyden, Eastwood, England, assignor to Albright & Wilson Limited, Warley, England

Filed Mar. 21, 1973, Ser. No. 343,602
Claims priority, application United Kingdom, Mar. 23, 1972, 13668/72
Int. Cl.² C07F *9/12*
U.S. Cl. 260—975 **24 Claims**

1. A process of manufacturing triaryl phosphate mixtures which comprises:

1. reacting a phosphorylating agent selected from the group consisting of phosphorus oxychloride, phosphorus oxybromide, phosphorus pentoxide, phosphoric acid, phosphorus trichloride and phosphorus pentachloride, with a recycle composition of phenols, the total molar proportion of phenols to atoms of phosphorus in the phosphorylating agent being less than 3:1;

2. reacting the product of stage (1) with a feedstock composition of phenols said feedstock composition comprising phenol, at least one monoalkylphenol, and phenol selected from the group consisting of dialkylphenols and trialkylphenols and being the reaction product obtained by alkylating (i) phenol, or (ii) a mixture of phenols comprising a major molar portion of phenols having less than three alkyl carbon atoms, with (iii) a phenol alkylating agent containing from three to sixteen carbon atoms per molecule, the proportion of feedstock composition added at (2) being such that the molar ratio of the total of phenols fed into the process to phosphorus atoms is at least 3:1 to form a mixture of (a) triaryl phosphates and (b) unreacted phenols which is enriched in said phenol selected from the group consisting of dialkylphenols and trialkylphenols when compared to said feedstock composition;

3. recovering said unreacted phenols which is enriched in said phenol selected from the group consisting of dialkylphenols and trialkylphenols from the stage (2) product which is then said recycle composition of phenols; and

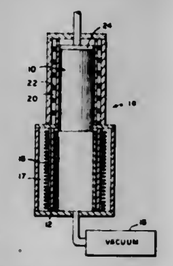
4. recycling said recycle composition to stage (1).

4,069,280

METHOD OF MAKING PLASTIC OPTICAL FIBERS

Raymond W. Kidder, c/o Kidco Incorporated, P.O. Box 278, Medford, N.J. 08055

Filed Oct. 20, 1972, Ser. No. 299,187
Int. Cl.² B29D *11/00*
U.S. Cl. 264—1 **9 Claims**



1. A method of making plastic optical fibers comprising the steps of pre-forming a rod-like core member of plastic, preforming a sheath member of plastic having a longitudinal internal passage shaped like but normally being smaller than the cross-section of said core member at room temperature, said core and sheath members being pre-formed to substantially the same length, said core member having an index of refraction greater than the index of refraction of said sheath member, placing said sheath member and said core member in a vacuum chamber of a Boule forming unit, operating heating units of said Poule forming unit to apply heat to said sheath member placed therein to raise and maintain the temperature of said sheath member above room temperature to enlarge the internal passage thereof such that said core member can be inserted into the internal passage of said sheath member, maintaining said core member at approximately room temperature in said Boule forming unit prior to insertion into said sheath member, thereafter inserting said core member into said internal passage of said sheath member, the internal passage of said sheath member being at said raised temperature at least slightly greater than and being at room temperature less than the external diameter of said core member at room temperature so that the sheath member will shrink onto said core member when said assembly is allowed to return to room temperature, allowing said assembled core member and sheath member to return toward room temperature in said vacuum chamber so that said sheath member will shrink tightly onto said core member homogeneously throughout the length thereof and form a Boule, and drawing said Boule to an increased length to form an optical fiber.

4,069,281

PREFABRICATED ROADWAY MARKING STRIP MATERIAL AND METHOD FOR PRODUCING SAME

Ludwig Eigenmann, Vacallo, Ticino, Switzerland

Filed Sept. 29, 1975, Ser. No. 617,447
Claims priority, application Italy, Sept. 30, 1974, 27881/74
Int. Cl.[2] B29D *11/00*
U.S. Cl. 264—1 2 Claims



1. A method of making a preformed roadway marking strip, comprising the steps of

providing a lower layer of base-forming material which is to be subsequently applied over a roadway surface;

applying a hardenable synthetic plastic material over said lower layer to form thereon an upper layer of such synthetic plastic material;

embedding anti-skid particles in said upper layer prior to hardening of said synthetic plastic material;

applying additional quantities of synthetic plastic material onto said upper layer at longitudinally spaced locations of the same and prior to hardening of the material thereof, so that each such additional quantity forms a protuberance on said upper layer; and

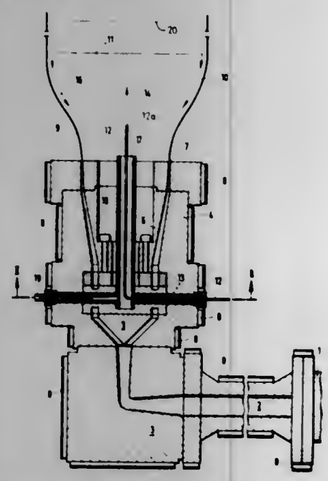
cascading light-reflective particles over said protuberances prior to hardening of the synthetic plastic material thereof, so that upon subsequent hardening said light-reflective particles adhere to said protuberances.

4,069,282

PROCESS FOR THE UNINTERRUPTED MANUFACTURE OF PLASTIC FILM TUBING

Hermann Gutermuth, Linz, and Gerd Hebel, Berlin, both of Germany, assignors to Firma Kohlensaeure-Werke Rudolf Buse Sohn, Bad Hoeaningen, Germany

Filed Feb. 18, 1976, Ser. No. 658,924
Claims priority, application Germany, Feb. 19, 1975, 2507070
Int. Cl.[2] B29F *3/08*
U.S. Cl. 264—28 3 Claims



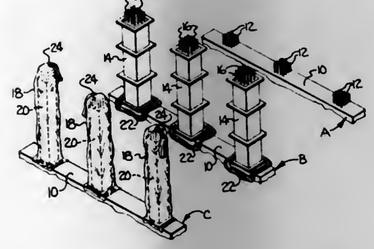
1. A process for the uninterrupted manufacture of plastic film tubing by the blowing up of a continuous film tubing formed by means of an extruder-injector having a nozzle tip and blowing head, including an inner cooling of the film tubing upon extrusion by the use of a gaseous cooling medium which is introduced in a substantially liquid form into an inner space of the film tubing where it is converted to its vaporous or gaseous state through heat absorption, before being discharged through a coolant outlet, characterized by introducing a cooling medium, selected from the group consisting of carbon dioxide, nitrogen, air and fluorized hydrocarbon halides, in its substantially liquid form inside the inner space of the film tubing in such a manner that it creates a coolant stream in a center of the inner space in one direction away from the nozzle tip and blowing head of the extruder until the stream reaches a reversing point, coolant particles in one of liquid or solid form being carried and held in suspension by said stream and the coolant stream fanning out substantially radially at the reversing point before changing into a sinking coolant stream in a falling direction opposite the one direction along the wall of the film tubing up to the coolant outlet of the blowing head; and causing the cooling medium while introducing it inside the inner space to reach the reversing point at such a distance from the nozzle tip and blowing head that the coolant particles in one of liquid or solid form can evaporate before the cooling medium reaches a section of the film tubing which lies below a frost line located within the tubing, whereby the section of the tubing only comes in contact with a sinking or falling vaporous and/or gaseous coolant stream.

4,069,283

METHOD OF CURING AND PROTECTING A CONCRETE COLUMN

Arthur A. Rauchfuss, P. O. Box 25, Patterson, N.C. 28661

Filed Apr. 5, 1976, Ser. No. 673,685
Int. Cl.[2] E04B *1/16*
U.S. Cl. 264—32 5 Claims



1. A method of efficiently curing and protecting a structural concrete column, beam, or the like and characterized by the short duration use of the form to thereby permit an overall reduction in the number of forms required at a particular construction site, and comprising the steps of

assembling a form to define the desired configuration of a columnar structural member at the intended permanent location of the structural member,

filling the assembled form with plastic concrete,

removing the form from the concrete upon the same becoming sufficiently rigid to be self-supporting but prior to the full curing thereof, and then

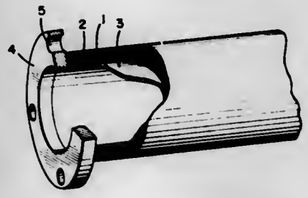
translating a continuous tubular length of sheet material coaxially along the self-supporting concrete so as to be disposed about the entire length thereof and maintaining the same in such position until the concrete is substantially fully cured, the sheet material thereby serving to substantially preclude moisture loss from the concrete while protecting the same from being stained by external substances.

4,069,284

ANTI-VIBRATION HEAT-INSULATION STRUCTURE AND A PROCESS FOR PRODUCTION THEREOF

Itaru Niimi, Nagoya; Yasuhisa Kaneko, Toyota; Fumiyoshi Noda, Toyota, and Yuji Watanabe, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 22, 1973, Ser. No. 325,415
Claims priority, application Japan, Jan. 20, 1972, 47-7861
Int. Cl.[2] B29H *7/20*
U.S. Cl. 264—43 5 Claims



1. A process of manufacturing a vibration resistant heat insulator comprising,

coating foamable silicic acid mineral grains with a bonding agent,

charging said coated mineral grains into a space between two spaced walls,

and heating said coated mineral grains until they are expanded and bonded together by said bonding agent which strengthens the expanded mineral grains.

4,069,285

METHOD AND APPARATUS FOR MAKING FLAT TOP BUNS

Charles W. Morgan, Rolling Hills, Calif., assignor to United Foam Corporation, Compton, Calif.

Filed Oct. 27, 1976, Ser. No. 736,142
Int. Cl.[2] B29D *7/02, 27/04*
U.S. Cl. 264—51 36 Claims



1. In apparatus for obtaining molded products in continuous open molding equipment having a conveyor system defining an open top trough in which is disposed a main film member formed to have a bottom and two side regions to cover the bottom and at least part of the side walls defining the trough onto which foam reactants are dispensed to react in a foaming region to form a continuous bun as the main film member along the conveyor system, the improvement comprising:

supply means for supplying tubular film members, each having at least a tubular portion, adjacent each side of said trough adjacent the region said foam reactants are dispensed;

means for gathering each of said tubular film members adjacent a lower portion of said side regions of said main film member and the respective said side wall defining the trough;

guide means adjacent each side of said conveyor system, each of said guide means being a means for extending into a respective one of said tubular members and for guiding the top thereof along an upwardly inclined trajectory adjacent said foaming region; and

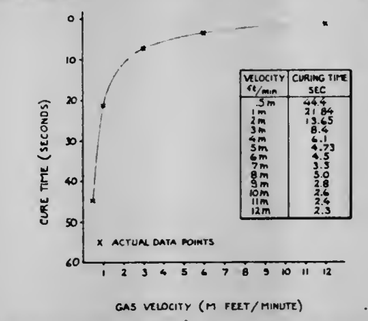
means for opening each of said tubular members adjacent the end of said foaming region to allow separation of said tubular members from said guide means.

4,069,286

METHOD OF THERMALLY CURING POLYMERIC MATERIALS

Milton Sharples Greenhalgh, Fairfield, CT, assignor to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 493,680, Aug. 1, 1974, abandoned, which is a continuation-in-part of Ser. No. 310,636, Nov. 29, 1972, abandoned. This application Feb. 9, 1976, Ser. No. 656,448
Int. Cl.[2] B29C *25/00*
U.S. Cl. 264—85 38 Claims



1. A method of accelerating the rate of effecting a cure in heat curable polymeric compositions by increasing the effectiveness of heat transfer from a gas heating medium to a heat curable polymeric compound, comprising contacting a surface of a body of heat curable polymeric composition with a stream of hot gas heated to a temperature of about 500° F to about 1000° F and flowing in contact over the surface of said body at a velocity of at least 3000 up to about 12,000 feet per minute while said gas is under a pressure of at least about 45 up to about 200 lbs. per square inch within the confines of an elongated curing chamber, and flowing said stream of heated gas moving under pressure at a velocity of at least 3000 up to about 12,000 feet per minute in direct contact over the surface of the body of heat curable polymeric composition for a dwell period sufficient to raise the body of heat curable polymeric composition substantially throughout its mass to its curing temperature and thereby effecting a substantial cure of the polymeric composition.

4,069,287

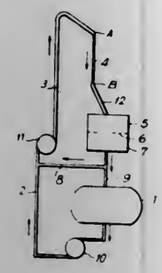
PROCESS FOR THE PRODUCTION OF POLYOLEFIN FIBERS

Joseph Aboulafia; Richard Le Fustec, both of Le Havre, and Claude Schranz, Harfleur, all of France, assignors to Compagnie Francaise de Raffinage and Groupement Europeen de la Cellulose, Paris, France

Continuation-in-part of Ser. No. 545,830, Jan. 21, 1975, abandoned. This application July 23, 1976, Ser. No. 708,067
Claims priority, application France, July 25, 1975, 75 23297; Jan. 31, 1974, 74.3388
Int. Cl.[2] D21F *11/00*
U.S. Cl. 264—140 17 Claims

1. A process for manufacturing polyethylene or polypropylene fibers from a composition of said polyolefin dissolved in a diluent, which is cyclohexane, hexane, pentane, heptane, or mixtures thereof, at a concentration of about 1 to about 5% by weight, which fibers generally have a length of between 0.1 mm and 2 cm and a diameter of bundles of such fibers of between 5 μ and 200 μ, comprising flowing said composition through at least one elongated zone circumscribed by a stationery boundary having a length of about 40 cm to about 10 m and a diameter of about 1.5 mm to about 4 mm, said composition being brought down to a temperature range such that

while in said zone said range is below the temperature of solution of said polyolefin in the molten state and within, but not below, the range of critical temperatures in which said polyolefin would remain dissolved under the given conditions and with the composition at rest but precipitates when subjected to shear; whereby polyolefin fibers are formed in said



diluent, said range of critical temperatures being between about 78° C and about 102° C, said composition in said zone being flowed at a velocity greater than the velocity for the given conditions at which polyolefin powder would be formed with said fibers, and beyond said zone separating the fibers from a suspension in the still-liquid diluent.

4,069,288

METHOD FOR PREPARING FIRE RETARDANT MOLDING COMPOSITIONS

Raymond A. Barkhuff, Jr., Hampden, and William E. Sprenkle, Jr., Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1976, Ser. No. 679,943
Int. Cl.² C08K 5/59
U.S. Cl. 264—141 9 Claims

1. An improved process for compounding fire retardant polystyrene compositions, which comprise a polystyrene component, a metal oxide and a fire retardant halogen additive which method comprises:

A. mixing the metal oxide with a minor amount of the polystyrene component;

B. subjecting the mixture to high intensity mixing at or above the fusion temperature of the polystyrene for a time sufficient to uniformly disperse the metal oxide in the molten polystyrene;

C. comminuting the polystyrene-metal oxide mixture obtained in Step B above;

D. blending the comminuted polystyrene-metal oxide mixture with the other ingredients of the composition;

E. compounding the blend from (D) above at temperatures above 255° C. and below the temperature at which degradation occurs; and

F. comminuting the compounded blend.

4,069,289

METHOD OF FORMING ELEMENTS OF INSULATING MATERIAL ON A BIMETAL STRIP

Fritz Krasser, and William F. Sell, both of Altdorf, Germany, assignors to Elleaberger & Poensgen GmbH, Altdorf, Germany

Filed Apr. 13, 1976, Ser. No. 676,516
Claims priority, application Germany, May 20, 1975, 2520884
Int. Cl.² B29C 6/04
U.S. Cl. 264—157 5 Claims

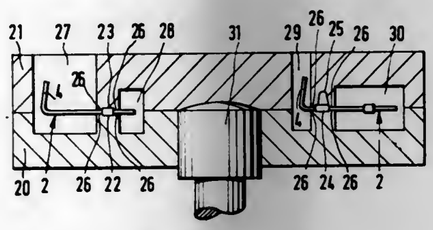
1. A method of forming, by injection moulding, first and second elements of insulating material on each of at least two bimetal strips, with the second element being spaced from the first element, comprising the steps of

a. clamping a respective bimetal strip in an injection mould by means of narrow clamping jaws disposed at either side, as viewed longitudinally of the respective bimetal strip, of a first site on the respective bimetal strip to which the first element is to be formed, so that remaining portions of the respective bimetal strip can bow freely in response to heating of said injection mould,

b. forming the first element on said first site by injection moulding,

c. unclamping the respective bimetal strip after the first element has been formed,

d. clamping the respective bimetal strip in said injection mould by means of narrow clamping jaws disposed at either side, as viewed longitudinally of the respective bimetal strip, of a second site on the respective bimetal strip to which the second element is to be formed so that the remaining portions of the respective bimetal strip can



freely bow in response to heating of said injection mould, and

e. forming the second element on said second site by injection moulding,

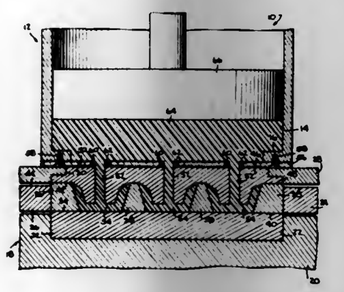
f. said steps (a) through (e) being carried out such that said bimetal strips are clamped in said injection mould with one of said bimetal strips being clamped in a region of said first site and the other of said bimetal strips being clamped in a region of said second site, that after said elements have been injection moulded on said two bimetal strips at their respective sites, said two bimetal strips are mutually exchanged and clamped on either side of said second site and said first site, respectively, and that thereafter the two further elements are produced by a further injection moulding operation.

4,069,290

TRANSFER MOLDING METHOD

Lambert Pasch, Nutheim, Germany, assignor to Uniroyal A.G., Aachen, Germany

Division of Ser. No. 316,164, Dec. 18, 1972, Pat. No. 3,859,023.
This application Aug. 21, 1974, Ser. No. 499,369
Claims priority, application Germany, Apr. 19, 1972, 2219055
Int. Cl.² B29G 3/00
U.S. Cl. 264—297 4 Claims



1. A method of molding elastomeric stock, said method comprising: interposing a multi-apertured, heat-resistant, flexible, insulation plate between a heated mold and an elastomeric stock injection unit, said mold having mold cavities aligned with corresponding ones of said apertures of said insulation plate, said elastomeric stock injection unit including an open ended chamber in which pressure can be exerted against a quantity of elastomeric stock therein at least sufficient to fill said mold cavities, one side surface of said insulation plate confronting said open ended chamber, the other side surface of said insulation plate confronting and forming a parting line with said mold; supporting said insulation plate for movement at least slightly axially into said chamber of said injection unit; moving said mold and said injection unit relative to one another such that engagement by said mold with said insulation plate effects movement of the latter inwardly of said chamber and, thereby, an expulsion of a portion of said elastomeric stock under substantially uniform fluid pressure from said chamber concurrently through each of said apertures in said insulation plate and into said mold cavities; and curing the transferred portion of elastomeric stock in said mold cavities, without separating said mold or said injection unit from said insulation plate or relaxing said fluid pressure, said insulation plate serving to thermally insulate the remaining portion of elastomeric stock in said chamber from said heated mold in order to prevent the curing of said remaining portion of stock with the curing of said transferred portion of stock.

4,069,291

DENSIFICATION OF PARTICULATE POROUS FLUORINATED RESINS

Kunizoh Kidoh; Hideki Wakamori; Genzo Asai, and Kazuo Kusida, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

Filed June 18, 1976, Ser. No. 697,735
Claims priority, application Japan, June 20, 1975, 50-74403
Int. Cl.² B29C 23/00
U.S. Cl. 264—342 R 8 Claims

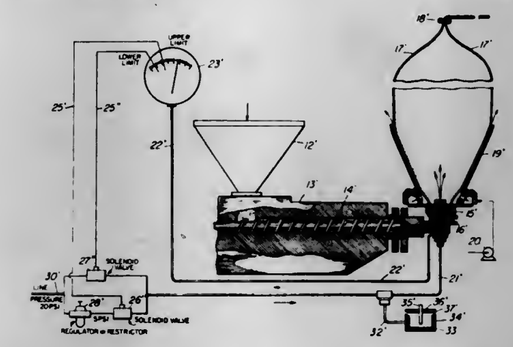
1. A process for increasing the bulk density of a porous particulate fluorinated resin, which comprises preparing a suspension of a particulate porous fluorinated resin in an aqueous medium containing, as a suspension stabilizer, a powder of an inorganic material which is insoluble or slightly soluble in water, and heating the suspension at approximately the melting temperature of the resin, thereby reducing the volume of the particulate fluorinated resin.

4,069,292

PRESSURE CONTROL IN TUBULAR THERMOPLASTIC EXTRUSION

F. John Herrington, Holcomb, and Gordon P. Hungerford, Palmyra, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 501,118, Aug. 28, 1974, abandoned. This application Oct. 17, 1975, Ser. No. 623,235
Int. Cl.² B29D 7/22, 23/04
U.S. Cl. 264—40.3 1 Claim



1. A method for controlling internal air pressure within a tubular thermoplastic film bubble which comprises initially inflating said bubble with air under pressure until a desired internal pressure is achieved, continuously sensing and monitoring said internal pressure by means of a pressure sensor device in communication with the interior of said bubble, said pressure sensor device continuously sending a signal to a pressure control device, and when said pressure falls below a preselected level actuating an air pressure input valve, said valve being in communication with said control device, a source of air under pressure and the interior of said bubble, whereby makeup air pressure is added to said bubble, and when said air pressure within said bubble is above a preselected level, said air pressure is immediately reduced through an exhaust valve in direct communication with said bubble, said exhaust valve being pressure-actuated; and said exhaust valve being responsive to small incremental pressure variations as well as sudden surges of high pressure.

4,069,293

METHOD FOR DISSOLVING PLUTONIUM DIOXIDE

Othar K. Tallent, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 574,977, May 6, 1975, Pat. No. 3,976,775. This application Feb. 20, 1976, Ser. No. 659,826
The portion of the term of this patent subsequent to Aug. 24, 1993, has been disclaimed.
Int. Cl.² C01G 56/00
U.S. Cl. 423—3 3 Claims

1. In a method for dissolving PuO_2 in an aqueous dissolving mixture comprising PuO_2, HNO_3 and an effective catalytic amount of fluoride, the improvement comprising providing oxidizing conditions in said dissolving mixture to oxidize dissolved Pu ions and thereby increase the rate of PuO_2 dissolution.

2. The method of claim 1 wherein said oxidizing conditions are provided electrolytically.

4,069,294

HYDROMETALLURGICAL RECOVERY OF METAL VALUES

Laurence G. Stevens, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 21, 1976, Ser. No. 679,106
Int. Cl.² C01G 3/14, 45/00, 51/12, 53/12
U.S. Cl. 423—32 6 Claims

1. A process for the recovery of metal values from a metal bearing source containing a metal selected from the group consisting of nickel, cobalt, copper and manganese, which comprises the steps of:

1. pretreating a minor portion of said metal bearing source with a hydrogen halide treated tail stream formed as hereinafter set forth and then commingling the pretreated minor portion with the remainder of the metal bearing source;

2. roasting the resultant mixture in a reducing atmosphere at a temperature of from about 550° to about 900° C.;

3. cooling the roasted material and then extracting the same with an ammonium carbonate leaching solution;

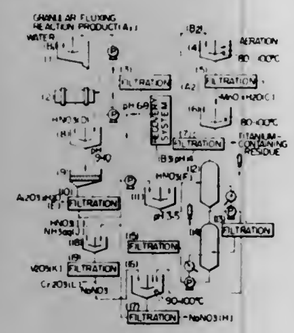
4. scrubbing the hydrogen halide-containing offgas from roasting step (2) with a slurry of at least a portion of the leached tails from step (3) to transfer hydrogen halide from the offgas to the slurry; and

5. supplying resultant hydrogen halide-containing slurry from step (4) to step (1) as said hydrogen halide treated tail stream.

4,069,295
TREATING RAW MATERIALS CONTAINING TITANIUM COMPONENTS

Yujiro Sugahara, Tokyo; Yoshifumi Noshi, Tsuruoka; Hiroyuki Naito, Tsuruoka; Kiyoshi Takai, Tsuruoka, and Noboru Maruyama, Tsuruoka, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 30, 1976, Ser. No. 682,058
Claims priority, application Japan, May 1, 1975, 50-52071; Apr. 8, 1976, 51-38752
Int. Cl.² C01G 45/00, 37/14, 31/00, 23/08
U.S. Cl. 423—49 9 Claims



1. In a method of treating a titanium containing raw material selected from the group consisting of ilmenite, sand iron slag and high titanium slag by heat-treating the raw material in the presence of a flux composed mainly of an alkali metal nitrate or a thermal decomposition product thereof in an amount 2 to 5 times by weight of the amount of raw material in a non-reducing atmosphere to thereby effect a fluxing reaction, and subjecting the resulting fluxing reaction product to a leaching treatment of at least one stage in an aqueous medium to separate the fluxing reaction product into a leaching solution containing at least one metal component selected from the group consisting of Mn, V and Cr and a leaching residue composed of a concentrate of titanium component which is acid-soluble and substantially free of the metal component, the improvement which comprises incorporating said leaching residue in an amount of at least 1.2 times by weight the amount of said raw material into the mixture of said raw material and said flux, shaping the resulting composition into granules, and heat-treating said granules at a temperature of 750° to 950° C for a time within the range of 3 minutes to 2 hours thereby keeping said granules in the substantially non-sticky state throughout the heat treatment.

4,069,296
PROCESS FOR THE EXTRACTION OF ALUMINUM FROM ALUMINUM ORES

Wen H. Huang, Texas A & M University, College Station, Tex. 77843

Filed Oct. 8, 1976, Ser. No. 731,025
Int. Cl.² C01F 7/22
U.S. Cl. 423—127 11 Claims

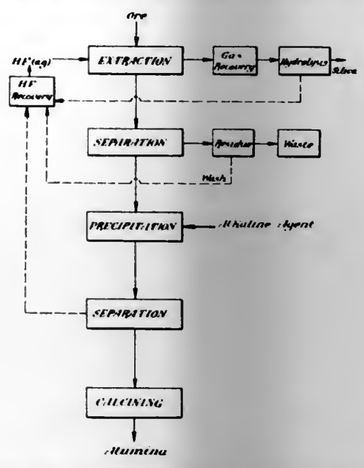
1. A process for the extraction and recovery of aluminum values from an aluminum ore comprising:

a. treating said aluminum ore with a aqueous solution of hydrofluoric acid, said aqueous solution of hydrofluoric acid containing not less than about 2 weight percent of HF;

b. adjusting the temperature of said solution to a value not greater than about 100° C to form an aqueous solution containing a dissolved aluminum ion complex and an insoluble residue;

c. removing said insoluble residue from said aqueous solution containing dissolved aluminum ion complex;

d. increasing the pH of said aqueous solution to a valve of not greater than that at which hydrated aluminum hydroxide precipitates by the addition of an alkaline reagent and removing any non-aluminum hydroxide precipitates;



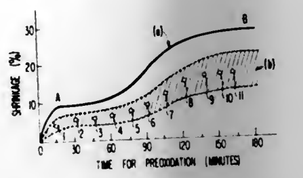
e. mixing said aqueous solution containing dissolved aluminum ion complex with sufficient additional alkaline reagent to precipitate substantially all said aluminum values as hydrated aluminum hydroxide; and

f. recovering said hydrated aluminum hydroxide from said aqueous solution.

4,069,297
PROCESS FOR PRODUCING CARBON FIBERS

Kazuhisa Saito, and Hiroyasu Ogawa, both of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1976, Ser. No. 674,244
Claims priority, application Japan, Apr. 8, 1975, 50-42444
Int. Cl.² D01F 9/12
U.S. Cl. 423—447.6 20 Claims



1. A process for continuously producing carbon fibers which comprises preoxidizing polyacrylonitrile fibers containing at least about 90% by weight of acrylonitrile at a temperature of about 200° to about 300° C in an oxidizing atmosphere while shrinking the fibers about 40 to about 70% based on the free shrinkage of the fibers determined under a load of 1 mg/d with the progress of preoxidation, said preoxidizing being carried out in a continuous fashion using a plurality of rollers, said free shrinkage being determined under the preoxidizing conditions; then carbonizing the preoxidized fibers at about 500° to about 1,000° C in a non-oxidizing atmosphere so that the shrinkage of the fibers finally becomes about 40 to about 70% based on the free shrinkage of the preoxidized fibers determined when said preoxidized fibers are placed under a load of 1 mg/d and heated at 1,000° C for 15 minutes in a nitrogen atmosphere; and thereafter heating the carbonized fibers at constant length at a temperature of up to about 3,000° C.

4,069,298
CARBON BLACK PRODUCING METHOD

Harold R. Hunt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 12, 1976, Ser. No. 704,588
Int. Cl.² C01B 31/02; C09C 1/48
U.S. Cl. 423—456 7 Claims

1. A process of quenching a carbon black manufacturing furnace process, in which a free oxygen-containing gas and a carbon black make hydrocarbon are subjected to partial combustion and pyrolysis in a reaction zone to produce a hot smoke containing carbon black particles, which flows in a vortex path along the reaction zone, comprising solid carbon black particles suspended in off-gas, said process including the steps of:

a. introducing a quench fluid, which is cooler than the hot smoke in the reaction zone, into the reaction zone in a generally tangential direction for initial vortex flow in a direction counterrotational to the direction of vortex flow of the hot smoke.

4,069,299
HYDROXY-ALUMINUM CHLORIDE AND SULFATE POLYMER PRODUCTION

Clive Hodgson, Forest Knolls, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 683,551, May 5, 1976, abandoned. This application Dec. 6, 1976, Ser. No. 747,566
Int. Cl.² C01F 7/00, 7/74, 7/56
U.S. Cl. 423—462 17 Claims

1. A process of preparing hydroxy-aluminum chloride or sulfate which comprises reacting urea and aluminum chloride or aluminum sulfate, wherein the molar ratio of aluminum chloride to urea varies from about 1:0.1 to 1:1.3 and the molar ratio of aluminum sulfate to urea varies from about 1:0.1 to 1:2.6, at a temperature of about 50° to 150° C, in aqueous solution medium of about 1 mol to 1000 mols water per mol of urea.

4,069,300
PROCESS FOR PRODUCING α-TYPE CALCIUM SULFATE HEMIHYDRATE

Hakuichi Akazawa, and Kenichi Nishimura, both of Kakogawa, Japan, assignors to Taki Chemical Co., Ltd., Kakogawa, Japan

Filed Sept. 24, 1975, Ser. No. 616,312
Claims priority, application Japan, Oct. 3, 1974, 49-115006
Int. Cl.² C01F 11/46; C04B 11/02
U.S. Cl. 423—555 5 Claims

1. A process for producing α-type hemihydrate of calcium sulfate by oxidizing calcium sulfite with air or oxygen at a temperature in the range of from 90° C to 130° C in a suspension containing surface active agents, the suspension containing seed crystals of α-type hemihydrate of calcium sulfate and having a pH in the range of from 3 to 6 and the surface active agents being at least one agent selected from the group consisting of (a) anionic surface active agents having a sulfonic acid group as the hydrophilic atomic group and having an alkyl, alkyl-aryl or alkylallyl group as the hydrophobic atomic group; (b) non-ionic surface active agents having a polyoxyethylene chain as the hydrophilic atomic group and having an alkyl or alkylphenoxy group as the hydrophobic atomic group and (c) amphoteric surface active agents of a betaine.

4,069,301
METHOD OF MAKING TITANIUM DISULFIDE

Arthur H. Thompson, New Providence, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Dec. 17, 1975, Ser. No. 641,425
Int. Cl.² C01G 23/00; C01B 17/00
U.S. Cl. 423—565 6 Claims

1. A process for producing titanium disulfide by reacting metallic titanium with elemental sulfur at elevated temperatures which comprises: charging a reaction vessel solely with metallic titanium and elemental sulfur; said sulfur being charged in an amount sufficient to satisfy the stoichiometry of the reaction between metallic titanium and elemental sulfur to form titanium disulfide, to provide a sulfur pressure at least equal to the vapor pressure of elemental sulfur at a reaction temperature between about 630° C and 1040° C and to insure the presence of molten elemental sulfur; maintaining the metallic titanium in contact with the elemental sulfur at a reaction temperature of between 630° C and 1040° C whereby titanium disulfide is produced; and, after the reaction between elemental sulfur and metallic titanium is complete, cooling the products of reaction rapidly from at least 630° C to below 100° C such that formation of titanium trisulfide is minimized.

4,069,302
PURIFICATION OF SULFUR

Morton Meadow, Trenton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

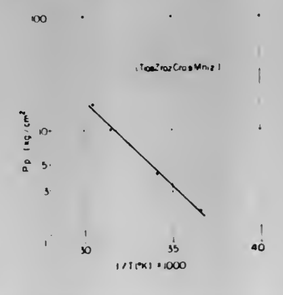
Filed Aug. 30, 1976, Ser. No. 718,952
Int. Cl.² C01B 17/04
U.S. Cl. 423—575 7 Claims

1. The method of removing carbonaceous materials from sulfur produced by the reaction of hydrogen sulfide and sulfur dioxide in the presence of an organic solvent solution of an alkali metal or alkaline earth metal salt of a carboxylic acid at a temperature between about 120° and about 140° C. whereby the sulfur is in liquid state which comprises separating the liquid sulfur from the organic solvent solution, thereafter contracting the sulfur in liquid state with water at a temperature of between about 120° C. and about 140° C. under pressure for a period sufficient so as to reduce the carbonaceous material content of the sulfur to not more than about 0.007% carbon by weight and recovering the sulfur.

4,069,303
ALLOY USEFUL AS HYDROGEN STORAGE MATERIAL

Tokio Yamadaya, and Yasuhiko Machida, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Japan

Filed Feb. 18, 1977, Ser. No. 769,952
Claims priority, application Japan, Feb. 20, 1976, 51-18125
Int. Cl.² C01B 6/02
U.S. Cl. 423—644 4 Claims



4. A complex metal hydride useful as a hydrogen reservoir formed by reaction of hydrogen gas with a quaternary alloy represented by the general formula

$$Ti_{x-y}Zr_yCr_{2-z}Mn_z$$

where $1 \leqq x \leqq 1.3$, $0 < y \leqq 1$, and $0 < z < 2$.

4,069,304

HYDROGEN PRODUCTION BY CATALYTIC COAL GASIFICATION

John A. Starkovich, Redondo Beach, and Jack L. Blumenthal, Los Angeles, both of Calif., assignors to TRW, Redondo Beach, Calif.

Filed Dec. 31, 1975, Ser. No. 645,858
Int. Cl.² C01B 1/02; C01J 3/00
U.S. Cl. 423—648 R **12 Claims**



1. A process for producing hydrogen comprising the steps of:

a. reacting steam, carbonaceous material and lime with a catalyst to produce hydrogen, residual carbon and $CaCO_3$, the catalyst being selected from the group consisting of (1) NaF and (2) a salt of a Group I metal stabilized with a fluoride of a Group II metal;

b. regenerating $CaCO_3$ to lime, converting the residual char to combustion products;

c. reusing the catalyst and regenerated lime for further reaction with steam and carbonaceous material to produce additional hydrogen, and

d. drawing off product, including hydrogen.

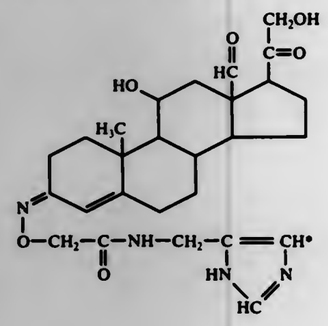
4,069,305

I^{125} IMIDAZOLE STEROID DERIVATIVES

Alan J. Polito, Costa Mesa, and William S. Knight, Laguna Beach, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

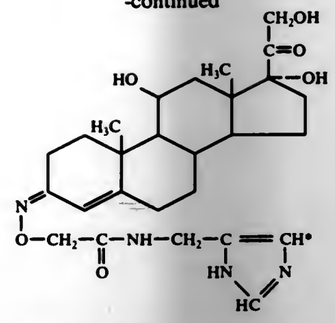
Continuation-in-part of Ser. No. 540,809, Jan. 14, 1975, Pat. No. 4,021,535. This application May 10, 1976, Ser. No. 684,688
Int. Cl.² A61K 43/00; C07J 17/00
U.S. Cl. 424—1 **10 Claims**

1. A radioimmunoassay reagent having a structural formula selected from a group consisting of



and

-continued



wherein the asterisk (*)indicates radioactive labelling.

4,069,306

X-RAY CONTRAST PREPARATION CONTAINING A HYDROPHILIC POLYMER CONTAINING AMINO GROUPS

Ulf Sven Erik Rothman, Bjarred, Sweden, assignor to Pharmacia Aktiebolag, Uppsala, Sweden

Continuation of Ser. No. 555,221, March 4, 1975, abandoned. This application May 21, 1976, Ser. No. 688,820
Claims priority, application Sweden, Mar. 14, 1974, 7403402
Int. Cl.² A61K 29/02
U.S. Cl. 424—4 **8 Claims**

1. An X-ray contrast preparation intended for the X-ray examination of the gastro-intestinal tract, comprising minute particles of a cross-linked hydrophilic polymer containing amino groups suspended in a physiologically acceptable aqueous liquid and finely divided barium sulphate, said polymer being insoluble in water at body temperature and being a polyfunctional amine / or a member selected from the group consisting of dextran, cellulose, starch and pollulan which is substituted with amino groups and optionally with other ionizable groups which give rise to negative surface charges, said polymer having molecules held together to a water-insoluble, but waterswellable three-dimensional network by bridges comprising straight or branched aliphatic saturated hydrocarbon chains substituted by one or more hydroxyl groups and containing 3 - 30 carbon atoms and being non-broken or broken by one or more oxygen atoms and said polymer containing more than 0.1 and less than 15 milliequivalents of amino groups per gram of dry polymer, the swellability of the polymer particles in water being such that one gram of polymer in the presence of water is able to absorb more than 0.5 g and less than 50 g of water, the average particle size of the polymer particles in the presence of water being greater than 0.1 micrometer and smaller than 300 micrometer, and the ratio between the polymer particles and the barium sulphate being 2 to 100 g of said particles per 100 g of barium sulphate.

4,069,307

DRUG-DELIVERY DEVICE COMPRISING CERTAIN POLYMERIC MATERIALS FOR CONTROLLED RELEASE OF DRUG

Takeru Higuchi, and Anwar Hussain, both of Lawrence, Kans., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 281,446, Aug. 17, 1972, Pat. No. 3,903,880, which is a continuation-in-part of Ser. No. 80,531, Oct. 14, 1970, abandoned. This application May 30, 1975, Ser. No. 582,353
The portion of the term of this patent subsequent to Sept. 9, 1992, has been disclaimed.
Int. Cl.² A61K 9/26
U.S. Cl. 424—22 **9 Claims**

1. A shape retaining implant for releasing drug formed of a copolymer compatible with body tissue, the improvement wherein the implant is formed of a matrix of ethylene-vinyl acetate copolymer containing drug, said drug mixed throughout the copolymer which has a vinyl acetate content of 4 to 80% by weight, a melt index of about 0.1 to 1000 grams per ten minutes, is permeable to the passage of the drug by diffusion, and capable of releasing a therapeutically effective amount of drug to body tissue at a predetermined and controlled rate over a prolonged period of time.

4,069,308

PROCESS AND APPARATUS FOR FORMING AEROSOLS OF PESTICIDAL CHEMICALS

Seizo Tanaka, Kanagawa, Japan, assignor to Showa Denko Kabushiki Kaisha and Sanko Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 398,739, Sept. 19, 1973, abandoned, which is a continuation of Ser. No. 148,045, May 28, 1971, abandoned, which is a continuation-in-part of Ser. No. 707,515, Feb. 23, 1968, abandoned. This application Nov. 11, 1975, Ser. No. 630,830
Int. Cl.² A01N 17/02
U.S. Cl. 424—43 **10 Claims**

1. A process for applying an insecticidal or fungicidal chemical to living plants in an enclosed area which comprises:

1. passing superheated steam having a temperature of from 110° C. - 800° C., through a vaporizable solid state insecticidal or fungicidal chemical thereby to evaporate said chemical, said superheated steam being the means employed to heat said chemical;
2. subsequently rapidly releasing the resulting entrained vapor into the air to rapidly cool said vapor and to form an aerosol of the insecticidal or fungicidal chemical in the vicinity of said living plants, and
3. then contacting said living plants with an insecticial or fungicidal amount of said chemical in the form of said aerosol.

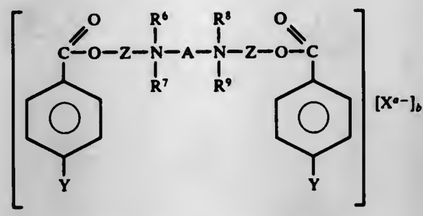
4,069,309

CATIONIC SKIN SUBSTANTIVE SUNSCREEN COMPOSITION AND METHOD

Joseph P. Claudelli, Ramsey, and Gerhart Karg, Pompton Lakes, both of N.J., assignors to Avon Products, Inc., Suffern, N.Y.

Filed Sept. 19, 1972, Ser. No. 290,327
Int. Cl.² A61K 31/42; C07C 101/00
U.S. Cl. 424—47 **7 Claims**

1. A method of protecting human skin from erythema producing ultraviolet radiation which comprises applying to said skin a composition of a cosmetic carrier containing from about 1-10 percent by weight based on the total weight of the composition of a cationic aminobenzoate having the general formula:



wherein Y is a amino radical having the formula



such that R^1 and R^2 are each selected from the group consisting of C_1–C_5 alkyl, aryl, alkaryl, substituted alkyl, substituted aryl, and substituted alkaryl; wherein Z is a bivalent alkyl hydrocarbon containing from 1 to 5 carbon atoms; wherein X is an anion selected from the group consisting of chloro, bromo, fluoro, iodo, sulfate, bisulfate, carbonate, bicarbonate, sulfite, and bisulfite; wherein R^6, R^7, R^8 and R^9 are selected from the group consisting of alkyl, aryl, and alkaryl; wherein A is a bivalent C_1–C_{20} hydrocarbon bridging radical and wherein *a* and *b* are the integers 1 or 2.

4,069,310

METHOD FOR THE MANUFACTURE OF CLEAR DENTIFRICES

Michael Harrison, Ravenshead, England, assignor to Colgate Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 403,985, Oct. 5, 1973, abandoned, which is a division of Ser. No. 197,499, Nov. 10, 1971, abandoned. This application Dec. 12, 1975, Ser. No. 640,123
Claims priority, application United Kingdom, Nov. 27, 1970, 56575/70
Int. Cl.² A61K 7/16
U.S. Cl. 424—49 **6 Claims**

1. A method for the manufacture of a visually clear, bubble-free dentifrice comprising a vacuum deaerated synthetic inorganic complex silicate clay gelling agent of the formula

$$[Si_8Mg_{5.1}Li_{0.6}H_{7.6}O_{24}]^{0.6-}Na^{+}_{0.6},$$

a dentally acceptable substantially water-insoluble polishing agent having a refractive index of about 1.44 to 1.48, water, sorbitol and glycerine, with the proportion of such dentifrice components being about 1 to 5% of such gelling agent, about 5 to 50% of such polishing agent, about 5 to 30% of water, about 20 to 75% of sorbitol and at least 5% of glycerine, with the total of water, sorbitol and glycerine being about 30 to 94%, which comprises high shear mixing said deaerated gelling agent, heated to about 90° C. for about 15 minutes, 40° C. for one hour or unheated at room temperature for 16 hours, with water and sorbitol to produce a clear gel and admixing glycerine with the clear gel to make a clear water-sorbitol-glycerine gel.

4,069,311

ORAL DENTIFRICE CONTAINING UNIFORM PARTICLES OF SPECKLING MATERIAL

Giuseppe Mannara, Rome, Italy, assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 529,665, Nov. 4, 1974, Pat. No. 4,003,971. This application Oct. 20, 1976, Ser. No. 734,052
Int. Cl.² A61K 7/18, 7/22, 7/28, 7/26
U.S. Cl. 424—49 **8 Claims**

1. A powder or extrudible oral dentifrice which contains about 0.1 to 50% by weight of dentifrice speckles of substantially uniform spherical shape and size prepared by the process which comprises:

A. agitating a heated mixture of a speckling material and a dispersing liquid for said speckling material, said speckling material containing a dentifrice component and a binder for such component, at a temperature at which the binder is liquid, to produce a homogeneous dispersion in the dispersing liquid of individual droplets of said speckling material of sizes in the range of about 0.05 to 1 mm. effective diameter; said mixture being of about

I. 1 to 40% by weight of such speckling material, which is

a. about 75 to 99.9% by weight of a normally solid water insoluble organic dentifrice binder selected from the group consisting of thermoplastic resins, gums, gels, paraffins, waxes, polymers, higher fatty acids, higher fatty acid salts, lower alkylene glycol diesters, glyceryl diesters and glyceryl triesters; and

b. about 0.01 to 25% by weight of a dentifrice component selected from the group consisting of fluorine-containing anti-caries agents, polishing agents, antimicrobial agents, ammoniating agents, vitamins, de-

sensitizing agents, enzymes, optical brighteners, astringents, preservatives, flavoring agents and colorants; and

II. about 60 to 99% by weight of a dispersing liquid which has a normal boiling point which is at least 10° C above the solidification point of said binder and below the normal boiling point of said binder and which has a solidification point at least 20° C below the solidification point of the binder, in which dispersing liquid the binder is substantially insoluble, said dispersing liquid being selected from the group consisting of water and aqueous solutions of lower polyhydric alcohols of 2 to 6 carbon atoms; and

B. cooling such mixture of speckling material and dispersing liquid, while continuing agitation thereof, to a temperature below the solidification point of said binder, at which temperature the dispersing liquid remains liquid, to obtain solid dentifrice speckles of the binder and dentifrice component in the dispersing liquid, having substantially uniform spherical shape and sizes in the range of about 0.05 to 1 mm. effective diameter, homogeneously dispersed in said dispersing liquid.

4,069,312

UNIFORM PARTICLES OF SPECKLING MATERIAL FOR INCORPORATION IN ORAL DENTRIFICES

Giuseppe Mannara, Rome, Italy, assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 520,665, Nov. 4, 1974, Pat. No. 4,003,971. This application Oct. 20, 1976, Ser. No. 734,053

Int. Cl.² A61K *7/18, 7/22, 7/28, 7/26*

U.S. Cl. 424—49 **5 Claims**

1. Dentifrice speckles of substantially uniform spherical shape and size prepared by the process which comprises:

A. agitating a heated mixture of a speckling material and a dispersing liquid for said speckling material, said speckling material containing a dentifrice component and a binder for such component, at a temperature at which the binder is liquid, to produce a homogeneous dispersion in the dispersing liquid of individual droplets of said speckling material of sizes in the range of about 0.05 to 1 mm. effective diameter; said mixture being of about

I. 1 to 40% by weight of such speckling material, which is

a. about 75 to 99.9% by weight of a normally solid water insoluble organic dentifrice binder selected from the group consisting of thermoplastic resins, gums, gels, paraffins, waxes, polymers, higher fatty acids, higher fatty acid salts, lower alkylene glycol diesters, glyceryl diesters and glyceryl triesters; and

b. about 0.01 to 25% by weight of a dentifrice component selected from the group consisting of fluorine-containing anti-caries agents, polishing agents, antimicrobial agents, ammoniating agents, vitamins, desensitizing agents, enzymes, optical brighteners, astringents, preservatives, flavoring agents and colorants; and

II. about 60 to 99% by weight of a dispersing liquid which has a normal boiling point which is at least 10° C above the solidification point of said binder and below the normal boiling point of said binder and which has a solidification point at least 20° C below the solidification point of the binder, in which dispersing liquid the binder is substantially insoluble, said dispersing liquid being selected from the group consisting of water and aqueous solutions of lower polyhydric alcohols of 2 to 6 carbon atoms; and

B. cooling such mixture of speckling material and dispersing liquid, while continuing agitation thereof, to a temperature below the solidification point of said binder, at which temperature the dispersing liquid remains liquid, to obtain solid dentifrice speckles of the binder and dentifrice component in the dispersing liquid, having substantially uniform spherical shape and sizes in the range of about 0.05 to 1 mm. effective diameter, homogeneous dispersed in said dispersing liquid.

4,069,313

WATER-IN-OIL ADJUVANT COMPOSITION

Allen F. Woodhour, Horsham, and Maurice R. Hilleman, Lafayette Hill, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 525,149, Nov. 19, 1974, Pat. No. 3,983,228, which is a continuation-in-part of Ser. No. 392,402, Aug. 28, 1973, abandoned, which is a continuation of Ser. No. 233,815, March 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 141,401, May 7, 1971, abandoned. This application Apr. 7, 1976, Ser. No. 674,360

Int. Cl.² A61K *39/18, 39/12, 47/00*

U.S. Cl. 424—89 **11 Claims**

1. An adjuvant composition comprising a physiologically acceptable injectable oil and from about 0.5% to about 10% by volume of a stabilizer consisting essentially of aluminum monostearate, the aluminum monostearate being essentially free of any other fatty acid radical.

5. An adjuvant vaccine composition comprising a physiologically acceptable injectable oil, an antigen and from about 0.5 to 10% by volume of stabilizer consisting essentially of aluminum monostearate, the aluminum monostearate being essentially free of any other fatty acid radical.

4,069,314

GLYCOPEPTIDE EXTRACT

Christopher Adlam, 4A Starts Hill Road, Farnborough, Kent, and David Eric Reid, 90 Queensway, West Wickham, Kent, both of England

Continuation-in-part of Ser. No. 445,309, Feb. 22, 1974, Pat. No. 4,010,257. This application June 19, 1975, Ser. No. 588,313

Claims priority, application United Kingdom, Feb. 23, 1973, 9149/73; Feb. 14, 1974, 6759/74; Aug. 20, 1974, 36522/74

Int. Cl.² A61K *39/02, 35/78*

U.S. Cl. 424—92 **11 Claims**

1. An immunostimulating glycopeptide suitable for use in conferring on mammals or birds a resistance to Sarcoma 180T/G tumour and pathogenic microoganisms which glycopeptide is obtainable from the cell wall of an immunostimulating bacterium belonging to the Actinomycetaceae family of Prevot's classification, which glycopeptide is substantially insoluble in water, physiological saline, methanol, ethanol, phenol, chloroform, dioxan, pyridine, dimethylformamide, diethylene glycol, and hexane; has an absorption in the Infra-red spectrum at 1550 and 1660 cm^{-1} consistent with the presence of peptide; has an absorption in the Infra-red spectrum between 950 and 1100 cm^{-1} with a maximum absorption at 1050 to 1070 cm^{-1} consistent with the presence of carbohydrate; has little or no lipid absorption in the Infra-red spectrum at 2850 to 2950 cm^{-1}; and which glycopeptide, after intravenous administration, increases the liver and spleen weight of mice, and increases the life expectancy of mice with tumours,

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4,069,315

RECOVERY OF ZINC FROM IRON-MAKING OR STEEL-REFINING FURNACE DUST

Armand Wagner, Esch, Alzette; Robert Pixius, Dudelange, and Francois Schoa, Tetange, all of Luxembourg, assignors to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED, Luxembourg, Luxembourg

Filed July 22, 1976, Ser. No. 707,492

Claims priority, application Luxembourg, July 23, 1975, 73039

Int. Cl.² C01G *9/02;* **C22B** *7/02*

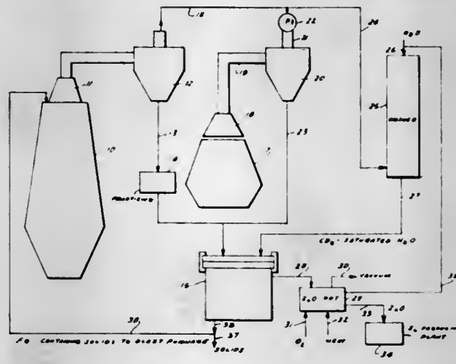
U.S. Cl. 423—105 **9 Claims**

1. A process for recovery of zinc from the dust of a metallurgical plant which comprises the steps of:

a. forming compacts of said dust;

b. saturating water with carbon dioxide; to form a treating solution;

c. treating the compacts of said dust with said water saturated with carbon dioxide for a period and at a temperature sufficient at a pressure of the order of 15 to 40 kg/cm^2 to solubilize zinc from the dust compacts in the water of the treating solution; and



d. precipitating the zinc from said solution by eliminating carbon dioxide therefrom.

4,069,316

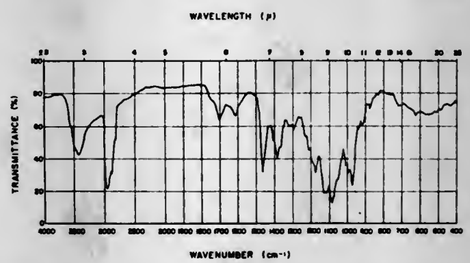
METHOD FOR PRODUCING ANTIBIOTIC T-42082 AND ANTIBIOTIC T-42082

Akira Imada, Nishinomiya; Yukimasa Nozaki, Ikeda; Toru Hasegawa, Kawanishi, and Masahiko Yoneda, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 1, 1976, Ser. No. 737,317

Int. Cl.² A61K *35/00*

U.S. Cl. 424—122 **3 Claims**



1. Antibiotic T-42082 has the following properties:

1. Melting point: 120°–122° C;

2. Elemental analysis: Found 1 C, 62.73; H, 9.23; O, 26.01; 2 C, 62.74; H, 9.36; O, 27.03(%)

3. Molecular weight: 859 (by osmometry):

4. Ultraviolet absorption spectrum; No characteristic absorptions;

5. Infrared absorption spectrum: The dominant absorptions (wave-numbers) measured in KBr disc method are as follows: 2940, 1700, 1462, 1383, 1085, 972 cm^{-1};

6. Thin-layer chromatography; silica gel, ascending method, detected as a brown spot by a spray of 10% aqueous H_2SO_4;

Solvent System	Rf
Ethyl acetate-benzene (1:1)	0.52
Ethyl acetate	0.73
Benzene-acetone (9:1)	0.18
Benzene-acetone (1:1)	0.88
Chloroform-methanol (19:1)	0.87

-continued

Solvent System	Rf
Chloroform-ethyl acetate (2:3) Plate: silica gel plate (kieselgel 60, Merck, Germany)	0.62

7. Color reactions:

Color reagent	
Sulfuric acid	Positive (brown)
Aniline-phthalic acid	Positive (indigo blue)
Vanillin-sulfuric acid	Positive (violet)
Molisch	Negative
Dragendorff	Positive (light orange)
Barton	Negative
Molybdenic acid	Negative
Benzidine	Negative
Ninhydrine	Negative
Alkaline potassium permanganate	Negative

8. Solubilities: Soluble in methanol, ethanol, acetone, ethyl acetate, ethyl ether, chloroform, benzene and carbon tetrachloride; sparingly soluble in cyclohexane; and very hardly soluble in water and petroleum ether;

and a pharmaceutical acceptable salt thereof.

3. A method for producing Antibiotic T-42082 which comprises cultivating *Streptomyces hygroscopius* T-42082 (ATCC 31080) in a liquid nutrient medium, aerobically, until substantial antibiotic activity is obtained in the resultant medium and then harvesting the antibiotic from said medium.

4,069,317

N^2-ARYLSULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Shosuke Okamoto; Akiko Hijikata, both of Kobe; Ryoji Kikumoto, Machida; Yoshikuni Tamao, Yokohama; Kazuo Ohkubo, Machida; Tohru Tezuka, Yokohama, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo and Shosuke Okamoto, both of, Japan

Continuation-in-part of Ser. No. 656,870, Feb. 10, 1976, which is a continuation-in-part of Ser. No. 671,436, March 29, 1976, and Ser. No. 671,568, March 29, 1976, said Ser. No. 671,436, and Ser. No. 671,568, is a division of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Jan. 19, 1977, Ser. No. 760,677

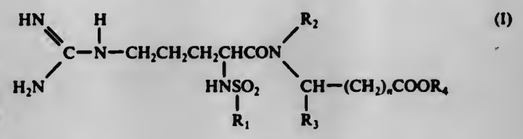
Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635

The portion of the term of this patent subsequent to Sept. 6, 1994, has been disclaimed.

Int. Cl.² A61K *37/00;* **C07C** *103/52*

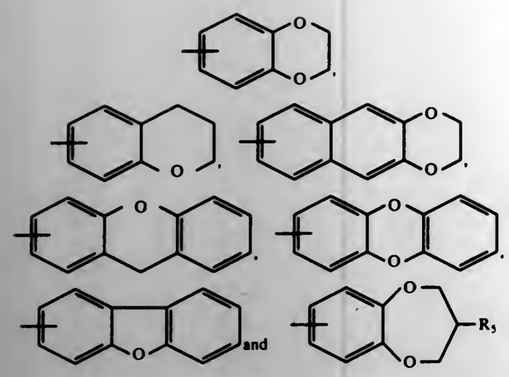
U.S. Cl. 424—177 **9 Claims**

1. N^2-arylsulfonyl-L-argininamides having the formula (I):



(I)

and the pharmaceutically acceptable salts thereof, wherein R_1 is selected from the group consisting of naphthyl, 5,6,7,8-tetrahydronaphthyl, naphthyl substituted with at least one substituent selected from the group consisting of halo, nitro, cyano, hydroxy, C_1–C_{10} alkyl, C_1–C_{10} alkoxy and C_2–C_{20} dialkylamino, phenyl, phenyl substituted with at least one substituent selected from the group consisting of halo, nitro, cyano, hydroxy, C_1–C_{10} alkyl, C_1–C_{10} alkoxy and C_2–C_{20} dialkylamino, C_7–C_{12} aralkyl,



wherein R_5 is hydrogen, C_1-C_{10} alkyl or C_1-C_{10} alkoxy; R_2 is selected from the group consisting of hydrogen, C_1-C_{10} alkyl, C_3-C_{10} alkenyl, C_3-C_{10} alkynyl, C_2-C_{10} alkoxyalkyl, C_2-C_{10} alkylthioalkyl, C_2-C_{10} alkylsulfinylalkyl, C_1-C_{10} hydroxyalkyl, C_2-C_{10} carboxyalkyl, C_3-C_{10} alkoxycarbonylalkyl, C_1-C_{10} haloalkyl, C_7-C_{15} aralkyl, C_8-C_{15} α-carboxyaralkyl, C_3-C_{10} cycloalkyl and C_4-C_{10} cycloalkylalkyl; R_3 is selected from the group consisting of C_1-C_5 alkyl, carboxy, C_2-C_{10} alkoxycarbonyl, phenyl, C_7-C_{12} aralkyl and ring substituted benzyl wherein said substituent is C_1-C_5 alkyl or C_1-C_5 alkoxy; R_4 is hydrogen; and *n* is an integer of 0, 1 or 2.

4,069,318

N²-ALKOXYNAPHTHALENESULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Shosuke Okamoto; Akiko Hijikata, both of Kobe; Ryoji Kikumoto, Machida; Yoshikuni Tamao, Yokohama; Kazuo Ohkubo, Machida; Tohru Tezuka, Yokohama, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo and Shosuke Okamoto, both of, Japan

Continuation-in-part of Ser. No. 646,522, Jan. 5, 1976, which is a continuation-in-part of Ser. No. 671,436, March 29, 1976, which is a continuation-in-part of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Jan. 19, 1977, Ser. No. 760,727

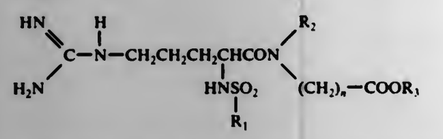
Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635

The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.

Int. Cl.² A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 **4 Claims**

1. N^2-alkoxynaphthalenesulfonyl-L-argininamides having the formula:



and the pharmaceutically acceptable salts thereof, wherein R_1 is naphthyl substituted with at least one C_1-C_5 alkoxy; R_2 is C_7-C_{15} aralkyl; R_3 is C_1-C_{10} alkyl, C_6-C_{10} aryl or C_7-C_{12} aralkyl; and *n* is an integer of 1, 2 or 3.

4,069,319

NOVEL THIADIAZOLES

Jacques Perronnet, Paris, and Laurent Taliani, Les Pavillons-sous-Bois, both of France, assignors to Roussel UCLAF, Paris, France

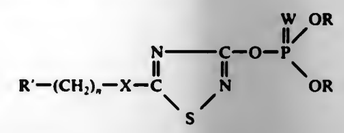
Continuation of Ser. No. 517,379, Oct. 23, 1974, abandoned. This application Sept. 8, 1976, Ser. No. 721,373

Claims priority, application France, Oct. 26, 1973, 73 38223

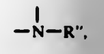
Int. Cl.² A61K *31/425;* C07D *285/08*

U.S. Cl. 424—200 **24 Claims**

1. A compound of the formula



wherein R is alkyl of 1 to 3 carbon atoms, W is selected from the group consisting of oxygen and sulfur, X is selected from the group consisting of —O—, —S— and



R″ is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, *n* is 1,2,3 or 4 and R′ is selected from the group consisting of hydrogen, —CN, alkoxy of 1 to 3 carbon atoms, alkoxycarbonyl of 2 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, phenyl optionally substituted with one member of the group consisting of halogen, alkyl of 1 to 3 carbon atoms and alkoxy of 1 to 3 carbon atoms or substituted with two members of the group consisting of halogen, alkyl of 1 to 3 carbon atoms and alkoxy of 1 to 3 carbon atoms.

22. An insecticidal composition comprising an insecticidally effective amount of at least one compound of claim 1 and a carrier.

23. A method of combatting insects comprising contacting insects with an insecticidally effective amount of at least one compound of claim 1.

4,069,320

SUBSTITUTED DIPHENYL-3-FORMAZANCARBONITRILE INSECTICIDES

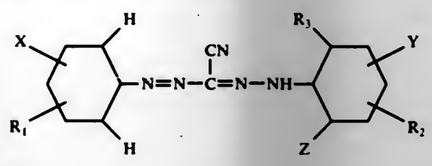
William W. Prichard, Hockessin, and Francis Wilfred Stacey, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 510,546, Sept. 30, 1974, abandoned, which is a continuation-in-part of Ser. No. 487,027, July 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 429,029, Dec. 19, 1973, abandoned. This application Jan. 23, 1976, Ser. No. 651,954

Int. Cl.² A01N *9/20;* C07C *107/00*

U.S. Cl. 424—226 **124 Claims**

1. A compound of the formula



wherein:

X is trifluoromethoxy, trifluoromethylthio, 1,1,2,2-tetrafluoroethoxy, 1,1,2,2-tetrafluoroethylthio, pentafluoroethoxy, pentafluoroethylthio, pentafluorothio, cyano, trifluoromethyl, chlorine, bromine, fluorine or nitro;

Y is hydrogen, trifluoromethoxy, trifluoromethylthio,

1,1,2,2-tetrafluoroethoxy, 1,1,2,2-tetrafluoroethylthio, pentafluoroethoxy, pentafluoroethylthio, pentafluorothio, chlorine, bromine, fluorine, trifluoromethyl, or alkyl of 1–4 carbon atoms;

R_1 is hydrogen, chlorine, bromine, fluorine or trifluoromethyl;

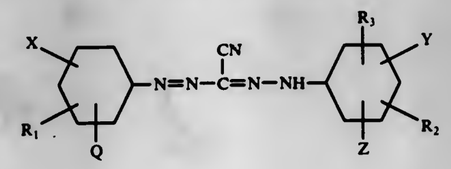
R_2 is hydrogen, chlorine, bromine, fluorine or trifluoromethyl;

R_3 is hydrogen, chlorine, bromine, fluorine, trifluoromethyl, or nitro;

Z is hydrogen, chlorine, bromine, or fluorine, provided

1. when X is nitro at least one of Y or R_3 must be trifluoromethyl;
2. when Y is alkyl of 1–4 carbon atoms, X is trifluoromethyl;
3. when R_3 is nitro, X is trifluoromethyl; and
4. when X is halogen, no more than three of R_1, R_2, R_3, Z and Y can be hydrogen, or an agriculturally suitable salt thereof.

38. A method of controlling insects which consists essentially of applying to the locus of infestation, to the area to be protected, or to the insects themselves, an insecticidally effective amount of a compound of the formula:



wherein:

X is trifluoromethoxy, trifluoromethylthio, 1,1,2,2-tetrafluoroethoxy, 1,1,2,2-tetrafluoroethylthio, pentafluoroethoxy, pentafluoroethylthio, pentafluorothio, cyano, trifluoromethyl, chlorine, bromine, fluorine or nitro;

Y is hydrogen, trifluoromethoxy, trifluoromethylthio, 1,1,2,2-tetrafluoroethoxy, 1,1,2,2-tetrafluoroethylthio, pentafluoroethoxy, pentafluoroethylthio, pentafluorothio, chlorine, bromine, fluorine, trifluoromethyl, or alkyl of 1–4 carbon atoms;

R_1 is hydrogen, chlorine, bromine, fluorine, or trifluoromethyl;

R_2 is hydrogen, chlorine, bromine, fluorine, or trifluoromethyl;

R_3 is hydrogen, chlorine, bromine, fluorine, trifluoromethyl or nitro;

Z is hydrogen, chlorine, bromine, or fluorine, and

Q is hydrogen, chlorine, bromine, or fluorine, provided

1. when Y is alkyl of 1–4 carbon atoms, X is trifluoromethyl;
2. when X is 4-chloro, 4-bromo or 4-fluoro and R_1, Q, and three of R_2, Z, Y and R_3 are hydrogen, then the remainder of R_2, Z, Y and R_3 must be other then 4-chloro, 4-bromo or 4-fluoro;
3. when X is nitro, R_3 is other than hydrogen; and
4. when X is halogen, at least one of R_1, R_2, R_3, Q, Y and Z must be other than hydrogen;

or an agriculturally suitable salt thereof.

4,069,321

BLOCKED CHOLECALCIFEROL AND DIHYDROTACHYSTEROL 3 DERIVATIVES

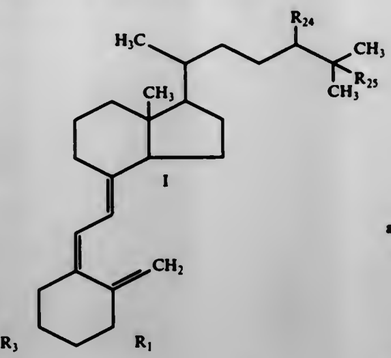
Howard Jones, Holmdel; Shu Shu Yang, Piscataway, and David P. Jacobus, Princeton, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 621,976, Oct. 14, 1975. This application Sept. 13, 1976, Ser. No. 722,443

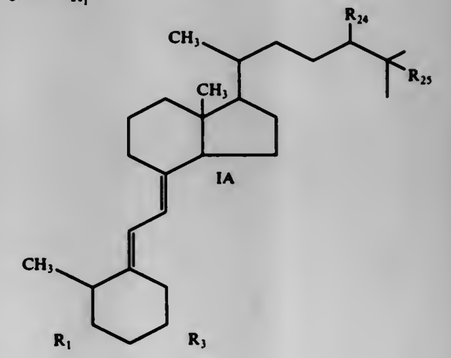
Int. Cl.² A61K *31/59;* C07J *9/00*

U.S. Cl. 424—236 **11 Claims**

11. A method of treating steroid-induced osteoporosis, senile osteoporosis and secondary hyderparathyroidism which comprises administering to a patient a therapeutically effective amount of a compound of the formulae:



and



wherein

R_1 is hydrogen, hydroxy, C_{1-5}alkanoyloxy, substituted C_{1-5}alkanoyloxy, branched C_{3-5}alkanoyloxy, benzoyloxy or p-nitro-benzoyloxy,

R_3, R_{24} and R_{25} are hydrogen, hydroxy, C_{1-5}alkanoyloxy, substituted C_{1-5}alkanoyloxy, branched C_{3-5}alkanoyloxy, benzoyloxy, p-nitro-benzoyloxy, halo or O—C_{1-5}alkyl carbamate with the proviso that R_{25} is halo or O—C_{1-5}alkyl carbamate.

4,069,322

PRO-DRUGS FOR THE IMPROVED DELIVERY OF CERTAIN SELECTED ANTI-INFLAMMATORY STEROIDS

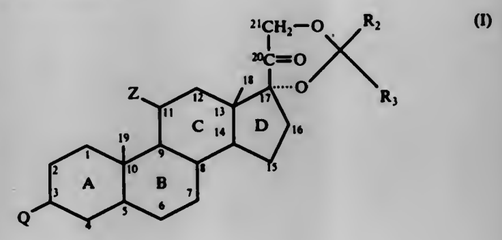
Nicolae S. Bodor, Lawrence, and Kenneth B. Sloan, Eudora, both of Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

Filed Oct. 12, 1976, Ser. No. 731,373

Int. Cl.² A61K *31/58;* C07J *17/00*

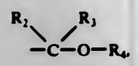
U.S. Cl. 424—241 **37 Claims**

12. A pharmaceutical composition of matter comprising an anti-inflammatory effective amount of a pro-drug compound of the formula:

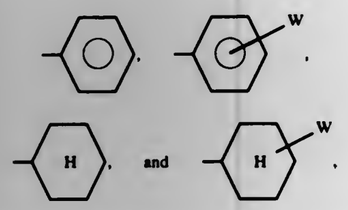


(I)

wherein Z represents a member selected from the group consisting of =O, β—OH and β—O—R_1, wherein R_1 represents



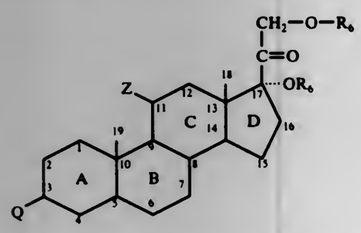
wherein R_4 represents a member selected from the group consisting of H and straight or branched C_1–C_4 alkyl, and wherein R_2 and R_3 which may be the same or different, represent a member selected from the group consisting of H, straight or branched C_1–C_8 alkyl, substituted C_1–C_8 alkyl, wherein at least one of the hydrogen atoms therein is substituted by a member selected from the group consisting of —$N(R_4)_2$, —$CON(R_4)_2$, a halogen atom, —$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2$—S—R_4, wherein R_4 is defined as above, and wherein R_2 and R_3 further represent a member selected from the group consisting of



wherein W represents a member selected from the group consisting of —$N(R_4)_2$, —$CON(R_4)_2$, a halogen atom, —$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2$—S—R_4, wherein R_4 is defined as above, with the proviso that R_2 and R_3 cannot simultaneously be H or wherein R_2 and R_3 taken together further represent a member selected from the group consisting of cyclic alkyl [—$(CH_2)_n$—] and cyclic heteroalkyl, wherein one of the carbon atoms is substituted by a member selected from the group consisting of <N—R_4, <—COR_4 and —CO, wherein n is an integer of 5 to 7 and wherein R_4 is defined as above; wherein Q represents



wherein R_4 is defined as above, and R_5 represents H, $COOR_4$ and —$CON(R_4)_2$, wherein R_4 is defined as above, provided that the C_4–C_5 double bond in formula (I) is subject to migration to the C_5–C_6 position; and wherein with respect to ring (A) in formula (I), the bond between C_1 and C_2 can be a single or double bond.

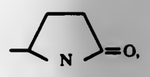


(II)

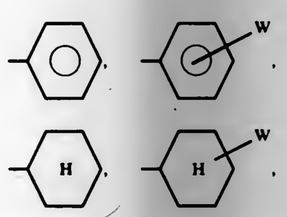
wherein Z represents a member selected from the group consisting of =O and β—OH; wherein R_6 represents a member selected from the group consisting of H and



with the proviso that one of said R_6 is H, wherein R_7 represents a member selected from the group consisting of a C_1–C_{12} straight, branched or cycloalkyl, a C_1–C_{12} straight, branched or cycloalkenyl, a substituted C_1–C_{12} straight, branched or cycloalkyl or alkenyl,



—$(CH_2)_n$—$CON(R_2)_2$, wherein n is an integer of 1 to 6, a 2, 3 or 4 pyridyl, wherein at least one of the hydrogen atoms therein can be substituted by a member selected from the group consisting of —$N(R_4)_2$, —$CON(R_4)_2$, —SOR_4, a halogen atom, —$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2$—S—R_4, wherein R_4 is defined above,



wherein W is defined above; wherein Q represents



wherein R_4 is defined as above and R_5 represents a member selected from the group consisting of H, $COOR_4$ and —$CON(R_4)_2$, wherein R_4 is defined as above; wherein the bond between C_1 and C_2 in ring "A" of formula (II) can be a single or a double bond; and wherein, with respect to ring "A" in formula (II), the double bond between C_4 and C_5 is subject to migration to the C_5–C_6 position.

4,069,323

N^2-SUBSTITUTED-L-ARGININE DERIVATIVES AND THE PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Shosuke Okamoto; Akiko Hijikata, both of Kobe; Ryoji Kikumoto, Machida; Yoshikuni Tamao, Yokohama; Kazuo Ohkubo, Machida; Toharu Tezuka, Yokohama, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo and Shosuke Okamoto, both of, Japan

Continuation-in-part of Ser. No. 671,436, March 29, 1976, which is a division of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application July 8, 1976, Ser. No. 703,704

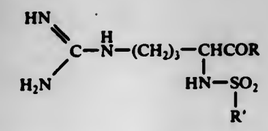
Claims priority, application Japan, Aug. 8, 1975, 50-96417; Sept. 2, 1975, 50-106139; Sept. 11, 1975, 50-110242; Oct. 1, 1975, 50-118525; Oct. 7, 1975, 50-121173; Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635; Mar. 5, 1975, 50-026768; Mar. 11, 1975, 50-029357; Mar. 11, 1975, 50-029358

The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.

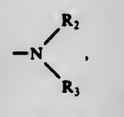
Int. Cl.² A61K *31/445*; C07D *211/16*

U.S. Cl. 424—244 22 Claims

1. N^2-substituted-L-arginine esters and amides having the formula:

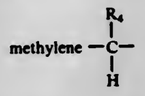


and the pharmaceutically acceptable acid addition salts thereof, wherein R is selected from the group consisting of (1) —OR_1, wherein R_1 is selected from the group consisting of C_1–C_{10} alkyl, C_3–C_{10} cycloalkyl, C_1–C_{10} haloalkyl, C_2–C_{10} alkoxyalkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl and C_7–C_{15} aralkyl,

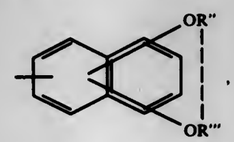


(2)

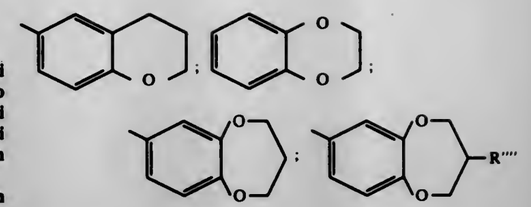
wherein R_2 and R_3 are selected from the group consisting of hydrogen, C_1–C_{10} alkyl, C_7–C_{15} aralkyl, and C_1C_{10} alkyl substituted with a group selected from C_1–C_{10} alkoxy, C_2–C_{10} alkoxycarbonyl and carboxy; and (3) -N Z, wherein Z is a divalent group which consists of at least two groups selected from methylene —CH_2— and monosubstituted



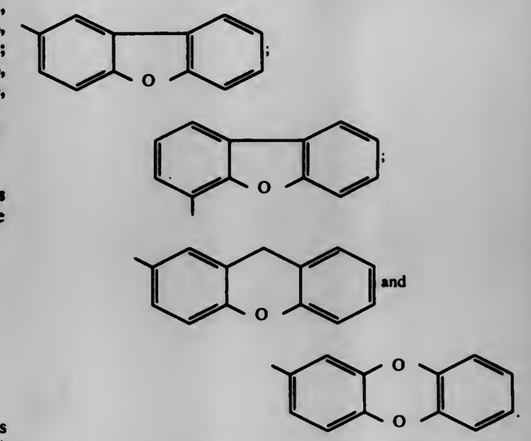
wherein R_4 is selected from the group consisting of C_1–C_{10} alkyl and C_1–C_{10} alkoxy, which are combined in an arbitrary order, the number of the combined groups being up to 20; and R' is selected from the group consisting of



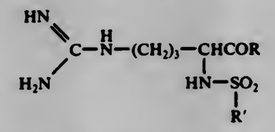
wherein R'' and R''' when considered separately are C_1–C_{10} alkyl, or R'' and R''' when taken together are C_1–C_{10} alkylene;



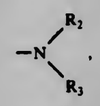
wherein R'''' is C_1–C_{10} alkoxy;



22. A method for inhibiting activity and suppressing activation of thrombin in vivo, which comprises administering to a patient a pharmaceutically effective amount of an N^2-substituted-L-arginine ester or amide having the formula:

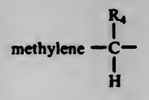


or a pharmaceutically acceptable acid addition salt thereof, wherein R is selected from the group consisting of (1) —OR_1, wherein R_1 is selected from the group consisting of C_1–C_{10} alkyl, C_3–C_{10} cycloalkyl, C_1–C_{10} haloalkyl, C_2–C_{10} alkoxyalkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl and C_7–C_{15} aralkyl;



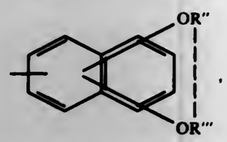
(2)

wherein R_2 and R_3 are selected from the group consisting of hydrogen, C_1–C_{10} alkyl, C_7–C_{15} aralkyl, and C_1–C_{10} alkyl substituted with a group selected from C_1–C_{10} alkoxy, C_2–C_{10} alkoxycarbonyl and carboxy; and (3) -NZ, wherein Z is a divalent group which consists of at least two groups selected from the group consisting of methylene —CH_2— and monosubstituted

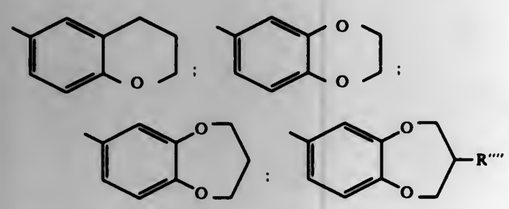


wherein R_4 is selected from the group consisting of C_1–C_{10}

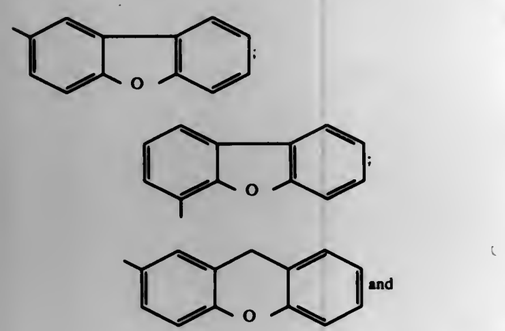
alkyl and C_1–C_{10} alkoxy, which are combined in an arbitraary order, the number of the combined groups being up to 20; and R' is selected from the group consisting of



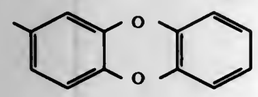
wherein R'' and R''' when considered separately are C_1–C_{10} alkyl, or R'' and R''' when taken together are C_1–C_{10} alkylene;



wherein R'''' is C_1–C_{10} alkoxy;



and



4,069,324

SUBSTITUTED 7(α-AMINO PHENYLACETAMIDO)CEPHEM DERIVATIVES

Rene Wiederkehr, Pfeffingen, and Hans Bickel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 9, 1976, Ser. No. 713,076

Claims priority, application Switzerland, Aug. 20, 1975, 10822/75

Int. Cl.² A61K *31/54*; C07D *501/16*

U.S. Cl. 424—246 **6 Claims**

1. A 7β-[D-2-amino-2-(lower alkylsulphonylamino-phenyl)-acetylamino]-3-R-3-cephem-4-carboxylic acid (I), in which R denotes lower alkoxy or halogen with an atomic number of up to 35, or a pharmaceutically acceptable salt thereof.

5. An antibacterial formulation for the treatment of animals infected with pathogenic bacteria comprising an antibacterially effective amount of a compound of the formula I according to claim 1 and a pharmaceutically acceptable carrier.

6. A method for the treatment of animals infected with pathogenic bacteria which comprises administering to said animals an antibacterial formulation according to claim 5.

4,069,325

3-CARBALKOXYAMINO-1H-2,1,4-BENZOTHIADIAZINE DERIVATIVES

Heinz Loewe, Ke'ltheim, Taunus; Josef Urbanietz, Schwalbach, Taunus; Dieter Duwel, Hofheim, Taunus, and Reinhard Kirsch, Niederjosbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt (Main), Germany

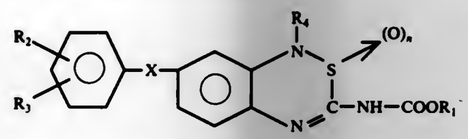
Filed Sept. 17, 1976, Ser. No. 724,246

Claims priority, application Germany, Sept. 19, 1975, 2541742

Int. Cl.² C07D *285/16*; A61K *31/54*

U.S. Cl. 424—246 **7 Claims**

1. A compound of the formula



wherein R_1 is alkyl having 1 to 4 carbon atoms; R_2 and R_3 are the same or different and are each hydrogen, alkoxy having 1 to 4 carbon atoms, halogen, trifluoromethyl, alkyl having 1 to 4 carbon atoms, or cyano; R_4 is hydrogen, alkanoyl having 2 to 4 carbon atoms, or benzoyl; *n* is 0 or 1: and X is —O—SO_2—or —SO_2—O—.

4. The method of combatting helminths in an organism infested therewith, which method comprises administering to said organism an anthelmintically-effective amount of a compound as in claim 1.

4,069,326

MORPHOLINO CONTAINING INDANE ACETIC ACID ESTERS

Jean-Marie Teulon, La Celle Saint-Cloud, France, assignor to Societe Anonyme dite: Societe Hexachimie, Rueil-Malmaison, France

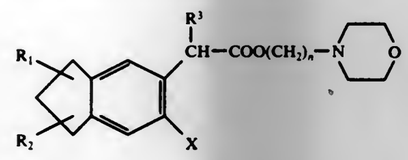
Division of Ser. No. 546,095, Jan. 31, 1975. This application May 27, 1976, Ser. No. 690,391

Claims priority, application United Kingdom, Feb. 7, 1974, 5726/74; Aug. 23, 1974, 37220/74; Dec. 16, 1974, 54292/74

Int. Cl.² C07D *295/14*; A61K *31/535*

U.S. Cl. 424—248.55 **8 Claims**

1. A compound of the general formula



in which:

X represents a hydrogen or halogen atom; R_1 and R_2, which may be identical or different, each represents a hydrogen atom, an alkyl group containing 1 to 5 carbon atoms or a cycloalkyl group containing 3 to 7 carbon atoms; R_3 represents a hydrogen atom or an alkyl group containing 1 to 5 carbon atoms; and *n* is an integer of 1 to 5; or a pharmaceutically acceptable addition salt of said compound.

8. A method of treating inflammations, algias, rheumatisms or pain syndromes in animals which method comprises administering to the animal a therapeutically effective amount of at least one compound as defined in claim 1.

4,069,327

PHARMACOLOGICALLY ACTIVE THIOUREA AND UREA COMPOUNDS AS INHIBITORS OF H-2 HISTAMINE RECEPTORS

Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

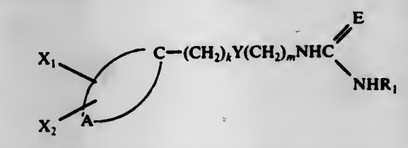
Division of Ser. No. 637,494, Dec. 4, 1975, Pat. No. 4,018,931, which is a division of Ser. No. 451,333, March 14, 1974, Pat. No. 3,950,353, which is a continuation-in-part of Ser. No. 290,584, Sept. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Jan. 5, 1977, Ser. No. 758,291

Claims priority, application United Kingdom, Mar. 9, 1971, 6352/71; July 22, 1977, 34334/71; Aug. 8, 1972, 37015/72; Ireland, Feb. 3, 1972, 136/72

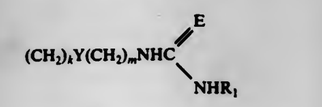
Int. Cl.² A61K *31/495, 31/505*

U.S. Cl. 424—250 **13 Claims**

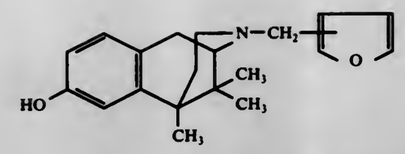
1. A pharmaceutical composition to inhibit H-2 histamine receptors comprising a pharmaceutical carrier and in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic nucleus being a pyrimidine, pyrazine or pyridazine ring; X_1 is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, benzyl, halogen, amino or



X_2 is hydrogen or when X_1 is lower alkyl, lower alkyl or halogen, *k* is 0 to 2 and *m* is 2 or 3, provided that the sum of *k* and *m* is 3 or 4; Y is oxygen, sulphur or NH; E is oxygen or sulphur; and R_1 is hydrogen, lower alkyl, benzoyl or di-lower alkylaminolower alkyl or a pharmaceutically acceptable addition salt thereof.



or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,069,329

N^2-NAPHTHALENESULFONYL-L-ARGININE DERIVATIVES, AND THE PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Shosuke Okamoto, Kobe; Ryoji Kikumoto, Machida; Yoshikuno Tamao, Yokohama; Kazuo Ohkubo, Machida, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo and Shosuke Okamoto, both of, Japan

Continuation-in-part of Ser. No. 671,435, March 29, 1976, which is a continuation-in-part of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Jan. 19, 1977, Ser. No. 760,740

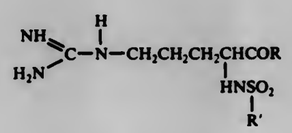
Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635; Mar. 5, 1975, 50-026768; Mar. 11, 1975, 50-029357; Mar. 11, 1975, 50-029358

The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.

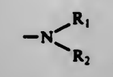
Int. Cl.² A61K *31/445*; C07D *211/16*

U.S. Cl. 424—267 **9 Claims**

1. N^2-naphthalenesulfonyl-L-arginine amides having the formula

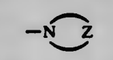


or the acid addition salts thereof with a pharmaceutically acceptable acid wherein R is selected from the class consisting of (1) alkoxy, alkenyloxy, alkynyloxy and cycloalkoxy, respectively containing not more than 10 carbon atoms, aralkyloxy of not more than 15 carbon atoms, tetrahydrofurfuryloxy, and alkoxy of not more than 10 carbon atoms substituted with an alkoxy group of not more than 10 carbon atoms, halogen or nitro;



(2)

wherein R_1 is selected from the class consisting of alkenyl of not more than 10 carbon atoms, and substituted alkyl containing not more than 20 carbon atoms wherein said substituent is a member selected from the class consisting of alkoxy, alkoxycarbonyl, arylcarbamoyl, acyl, acyloxy, N,N-polymethylenecarbamoyl and carboxy; and R_2 is selected from the class consisting of hydrogen; alkyl and alkenyl, respectively containing not more than 10 carbon atoms; and substituted alkyl containing not more than 20 carbon atoms wherein said substituent is a member selected from the class consisting of alkoxy, alkoxycarbonyl, arylcarbamoyl, acyl, acyloxy, N,N-polymethylenecarbamoyl and carboxy; and



(3)

wherein Z is a divalent group containing up to 20 carbon

4,069,328

PHARMACEUTICAL COMPOSITIONS CONTAINING AN N-(FURYL-METHYL)-2'-HYDROXY-5,9,9-TRIMETHYL BENZOMORPHAN AND METHOD OF USE

Adolf Langbein; Herbert Merz; Gerhard Walther, and Klaus Stockhaus, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Division of Ser. No. 599,427, July 28, 1975, Pat. No. 4,010,164, which is a continuation-in-part of Ser. No. 454,964, March 27, 1974, abandoned. This application Oct. 15, 1976, Ser. No. 732,708

Claims priority, application Germany, Mar. 28, 1973, 2315339

Int. Cl.² A61K *31/445, 31/455*

U.S. Cl. 424—266 **12 Claims**

1. An analgesic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective analgesic amount of a compound of the formula

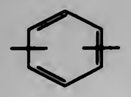
atoms, which consists of more than one group selected from the class consisting of methylene—CH_2—, mono-substituted methylene



wherein R_3 is selected from the class consisting of alkyl, acyl, alkoxy and alkoxycarbonyl, respectively containing not more than 10 carbon atoms, and carbamoyl; and disubstituted methylene



wherein R_4 and R_5 are alkyl groups of not more than 10 carbon atoms, and which may further contain at least one member selected from the class consisting of cycloalkylene of not more than 10 carbon atoms, phenylene



and carbonyl  ;

which may be arranged in any order and complete the

ring together with said methylene, monosubstituted methylene or disubstituted methylene; with the proviso that Z is not polymethylene of 3–10 carbon atoms or polymethylene of 3–10 carbon atoms substituted by one or two alkyl groups of not more than 10 carbon atoms; and R' is 1-naphthyl substituted with a member selected from the class consisting of 2-dialkylamino, 3-dialkylamino, 4-dialkylamino, 6-dialkylamino, 7-dialkylamino, 8-dialkylamino, respectively, containing not more than 20 carbon atoms, and 5-dialkylamino containing 3–20 carbon atoms; or 2-naphthyl substituted with dialkylamino containing not more than 20 carbon atoms.

9. A pharmaceutical composition which comprises an antithrombotically effective amount of a compound of claim 1 and a pharmaceutically acceptable adjuvant.

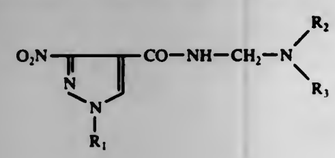
4,069,330

NITROPYRAZOLE COMPOUNDS AND ANTI-MICROBIAL COMPOSITIONS

Herbert Berger, Mannheim-Kafertal; Rudi Gall, Hirschberg-Grossachsen; Max Thiel, Mannheim; Wolfgang Schaumann, Heidelberg, and Wolfgang Vomel, Mannheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Apr. 20, 1976, Ser. No. 678,588
Claims priority, application Germany, May 22, 1975, 2522688
Int. Cl.[2] A61K *31/415*; C07D *231/16*
U.S. Cl. 424—267 **13 Claims**

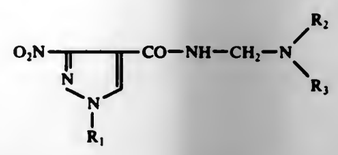
1. Nitropyrazole compound of the formula



wherein
R_1 is alkyl or hydroxyalkyl of up to five carbon atoms
R_2 and R_3, which may be the same or different, are alkyl of up to five carbon atoms or
R_2 and R_3 together represent a 4- or 5-membered alkylene bridge,
and the pharmacologically compatible salts thereof.

9. Therapeutic compositions having anti-microbial activity comprising a pharmaceutically acceptable carrier and, in anti-microbially effective amounts, a compound as claimed in claim 1.

10. Method of combating microbial infections in subject which method comprises administering to the subject anti-microbially effective amounts of a nitropyrazole compound of the formula



wherein
R_1 is alkyl or hydroxyalkyl of up to five carbon atoms
R_2 and R_3, which may be the same or different, are alkyl of up to five carbon atoms or
R_2 and R_3 together represent a 4- or 5-membered alkylene bridge,
and the pharmacologically compatible salts thereof.

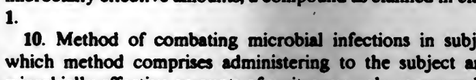
4,069,331

N-(P-FLUOROBENZOYL-N-PROPYL)-4-PIPERIDYLAMIDES AND SALTS THEREOF

Adolf Langbein, Ingelheim am Rhine; Peter Danneberg, Ockenheim, and Franz Josef Kuhn, Bingen am Rhine, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

Continuation-in-part of Ser. No. 664,761, March 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 575,940, May 9, 1975, abandoned. This application Jan. 17, 1977, Ser. No. 760,001
Claims priority, application Germany, May 16, 1974, 2423897
Int. Cl.[2] C07D *211/58*
U.S. Cl. 424—267 **10 Claims**

1. A compound of the formula



wherein R is alkyl of 1 to 4 carbon atoms, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

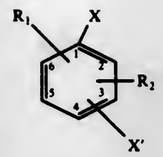
4,069,332

COMPOUNDS, COMPOSITIONS AND METHODS OF USE

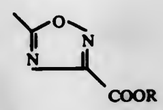
John B. Wright, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sept. 10, 1976, Ser. No. 721,882
Int. Cl.[2] A61K *31/42*; C07D *271/06*
U.S. Cl. 424—272 **13 Claims**

1. A compound of the formula



wherein X' is at the 3 or 4 position, is the same as X and is



wherein
R is selected from the group consisting of hydrogen, alkyl of one to eight carbon atoms, inclusive, and a physiologically acceptable metal or amine cation;
R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, alkyl of one to six carbon atoms, inclusive, alkoxy of one to six carbon atoms, inclusive, phenyl, cyano, nitro, trifluoromethyl, fluoro, chloro and bromo.

4,069,333

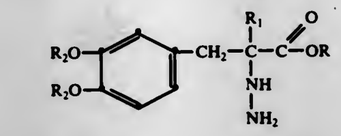
ANTI-HYPERTENSIVE COMPOSITIONS

Clement A. Stone, Blue Bell, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 657,824, Feb. 13, 1976. This application Feb. 8, 1977, Ser. No. 766,636
Int. Cl.[2] A61K *31/42, 31/24, 31/195*
U.S. Cl. 424—272 **5 Claims**

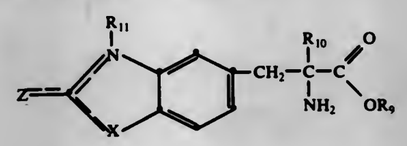
1. A pharmaceutical composition for treating hypertension comprising

A. a decarboxylase inhibitor compound having the formula



wherein R, R_1, R_2 and R_3 are independently selected from hydrogen and C_1–C_4 alkyl, and pharmaceutically acceptable salts thereof and

B. an arylalanine having the formula:



wherein
R_9, R_{10}, and R_{11} are independently selected from hydrogen and C_1–C_4 alkyl,
X is O
Z is = O or —O—R_{13} wherein R_{13} is selected from hydrogen or C_1–C_4 alkyl, and pharmaceutically acceptable salts thereof in an effective amount.

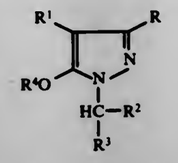
4,069,334

PYRAZOLE DERIVATIVES

Eike Möller; Karl Meng, both of Wuppertal; Egbert Wehinger, Neviges, and Harald Horstmann, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

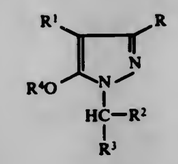
Division of Ser. No. 619,891, Oct. 6, 1975, which is a division of Ser. No. 532,311, Dec. 13, 1974, Pat. No. 4,002,641. This application Mar. 31, 1976, Ser. No. 672,500
Claims priority, application Germany, Dec. 20, 1973, 2363511
Int. Cl.[2] A61K *31/415*
U.S. Cl. 424—273 P **23 Claims**

1. A pharmaceutical composition useful for effecting diuresls and saluresis and for treating hypertension in humans and animals which comprises a diuretically effective amount, a saluretically effective amount or an antihypertensive amount of a compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein
R is hydrogen, trifluoromethyl or lower alkyl;
R^1 is hydrogen, trifluoromethyl or lower alkyl;
R^2 is lower alkyl;
R^3 is phenyl substituted by:
a. one or two of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, and alkoxy of 1 to 6 carbon atoms;
b. cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms or nitro;
c. one substituent selected from the group consisting of cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms and nitro and one or two substituents selected from the group consisting of alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen and trifluoromethyl; or
R^3 is naphthyl; and
R^4 is R^5CO wherein R^5 is phenyl unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms, trifluoromethyl, nitro and halogen,
in combination with a phamaceutically acceptable non-toxic inert diluent or carrier.

13. A method of effecting diuresis or saluresis in humans and animals or treating hypertension in humans and animals which comprises administering to a human or animal in need thereof a diuretically effective amount, a saluretically effective amount or an antihypertensive amount of a compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein
R is hydrogen, trifluoromethyl or lower alkyl;
R^1 is hydrogen or lower alkyl;
R^2 is lower alkyl;
R^3 is phenyl substituted by:
a. one or two of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, and alkoxy of 1 to 6 carbon atoms;

b. cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms or nitro;

c. one substituent selected from the group consisting of cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms and nitro and one or two substituents selected from the group consisting of alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen and trifluoromethyl; or

R^3 is naphthyl; and

R^4 is R^5CO wherein R^5 is phenyl unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of alkyl of 1 to b 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, nitro and halogen,

in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier

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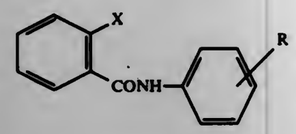
4,069,335

AGRICULTURAL GERMICIDAL COMPOSITION

Seigo Kawada, Fujieda; Nobuya Ohta, and Akira Sakamoto, both of Shizuoka, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

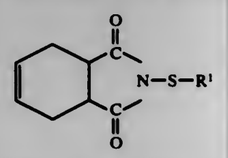
Filed Feb. 25, 1976, Ser. No. 661,152
Int. Cl.[2] A01N *9/22, 9/24*
U.S. Cl. 424—274 8 Claims

1. An agricultural fungicidal composition, which comprises: one part of a benzanilide of the formula:



(I)

wherein X represents halogen or methyl and R represents hydrogen, $C_{1\text{-}5}$ alkyl or a $C_{1\text{-}5}$ alkoxy with from 0.1-10 parts of a phthalimide of the formula:



(II)

wherein R^1 represents trichloromethyl or 1,1,2,2-tetrachloroethyl as active ingredients.

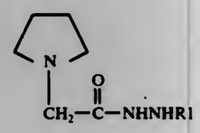
4,069,336

(2-OXO-PYRROLIDINES)-ACETIC HYDRAZIDES

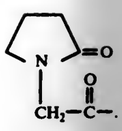
Fritz-Walter Lange, Gauting; Haireddin Jacobi, Leichlingen, Rhineland, and Jens Müller, Gauting, all of Germany, assignors to Chemisches Laboratorium Fritz-Walter Lange GmbH & Co KG, Gauting, Germany

Filed Feb. 25, 1976, Ser. No. 661,138
Int. Cl.[2] A61K *31/40;* C07D *207/26, 403/12*
U.S. Cl. 424—274 5 Claims

1. (2-oxo-pyrrolidine-1) acetic hydrazides of the formula I,



where R1 denotes a group of the formula II,



2. A pharmaceutical preparation useful as a psychopharmacon and for treatment of diseases occurring in the cerebral function region of the brain containing, as an active ingredient, an effective amount of a compound of claim 1, together with suitable pharmaceutical inert carrier and auxiliary substances.

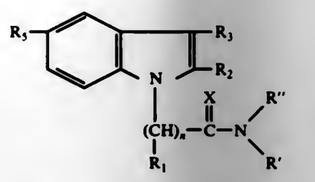
4,069,337

2-SUBSTITUTED-INDOLE-1-LOWER-ALKANECARBOXAMIDES HAVING ANTI-SECRETORY OR ANTI-ULCER ACTIVITY

Malcolm R. Bell, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 624,334, Oct. 21, 1975, Pat. No. 4,021,448.
This application Dec. 1, 1976, Ser. No. 746,516
Int. Cl.[2] A61K *31/40*
U.S. Cl. 424—274 1 Claim

1. A method of reducing gastric secretion and incidence of ulcer formation in humans comprising orally administering thereto an effective anti-secretory or anti-ulcer amount of a 2-R_2-3-R_3-5-R_5-1-indole-lower-alkanecarboxamide having the formula:



where R′ is hydrogen or methyl; R″ is hydrogen, methyl or $(CH_2)_mOH$, where *m* is 0, 2 or 3; R_1 is hydrogen or methyl; R_2 is methyl, ethyl, phenyl or hydroxymethyl; R_3 is methyl, ethyl, hydroxymethyl, trifluoroacetyl or 2,2,2-trifluoro-1hydroxyethyl; R_5 is hydrogen, chlorine or fluorine; X is O or S; and *n* is 0, 1, 2 or 3, n being 0 only when R_5 is chlorine.

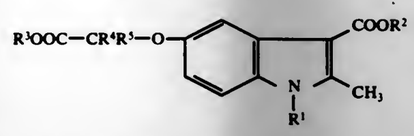
4,069,338

INDOLE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Erich Schacht; Werner Mehrhof; Detlev Kayser, and Zdenek Simane, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Apr. 13, 1976, Ser. No. 676,561
Claims priority, application Germany, Apr. 22, 1975, 2517659
Int. Cl.[2] C07D *209/18;* A61K *31/405*
U.S. Cl. 424—274 15 Claims

1. An indole compound of the formula



wherein R^1, R^2 and R^3 are identical or different and each is H or alkyl of 1–6 carbon atoms; R^4 is H or methyl and R^5 is, phenyl or chlorophenyl, and physiologically acceptable salts thereof.

13. A method of lowering the cholesterol level in the blood of mammals comprising administering to a patient a daily dosage of a compound of claim 1, in admixture with a pharmaceutically-acceptable carrier, effective to lower the cholesterol level.

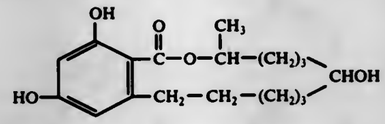
4,069,339

NOVEL METHOD FOR THE DEPRESSION OF FAT DEPOSITION IN SWINE

Donald Lee Ingle, Trenton, and Ronald Howell Dalrymple, Titusville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 22, 1977, Ser. No. 770,483
Int. Cl.[2] A61K *31/365*
U.S. Cl. 424—279 4 Claims

1. A method for the depression of fat deposition in swine comprising the step of: subcutaneously administering to swine by implant an effective amount ranging from 0.0001 mg/kg to 0.20 mg/kg of animal weight of a compound of formula:



wherein said compound is the racemic mixture and the optical isomers thereof.

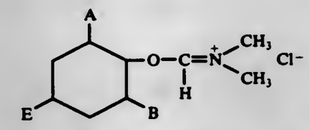
4,069,340

IMMONIUM SALTS AND DERIVATIVES THEREOF

Victor A. Pattison, Clarence Center, and Russell L. K. Carr, Grand Island, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 653,694, Jan. 30, 1976, abandoned, which is a continuation of Ser. No. 663,897, Aug. 28, 1967, abandoned. This application Feb. 26, 1976, Ser. No. 661,681
Int. Cl.[2] C07C *119/00*
U.S. Cl. 424—298 13 Claims

1. The compound of the formula



wherein A, B and E are independently selected from the group consisting of hydrogen, alkyl of 1 to 30 carbon atoms, and α-haloalkyl of 1 to 30 carbon atoms, wherein said halo is independently selected from the group consisting of chlorine, bromine and fluorine.

4,069,341

OXYBIS(4,1-PHENYLENE(2-OXO-2,1-ETHANEDIYL)) THIOCYANATE AND ITS USE AS AN ANTIMICROBIAL AGENT

James K. Pierce, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 18, 1976, Ser. No. 733,608
Int. Cl.[2] A01N *9/18;* C07C *161/04*
U.S. Cl. 424—302 3 Claims

1. Oxybis(4,1-phenylene(2-oxo-2,1-ethanediyl)) thiocyanate.

2. A method of inhibiting the growth of susceptible bacteria and fungi which comprises applying thereto an antimicrobially effective amount of oxybis(4,1-phenylene(2-oxo-2,1-ethanediyl)) thiocyanate.

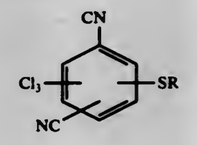
4,069,342

METHOD FOR REGULATING RESTS USING ALKYLTHIOTRICHLORODICYANOBENZENES

Thomas A. Magee, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 423,937, Dec. 12, 1973, abandoned. This application Oct. 30, 1974, Ser. No. 519,343
Int. Cl.[2] A01N *9/12, 9/14;* C07C *121/54*
U.S. Cl. 424—304 2 Claims

1. A method for regulating pests selected from the group consisting of bacteria and fungi which comprises contacting the pest environment with a pesticidally-effective amount of a compound of the formula



wherein R is methyl or ethyl.

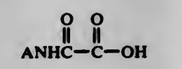
4,069,343

OXAMIC ACID DERIVATIVES FOR THE PREVENTION OF IMMEDIATE TYPE HYPERSENSITIVITY REACTIONS

John H. Sellstedt, Pottstown; Charles J. Guinosso, King of Prussia, both of Pa., and Albert J. Begany, Tucson, Ariz., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 542,465, Jan. 20, 1975, Pat. No. 3,966,965, which is a continuation-in-part of Ser. No. 344,466, March 23, 1973, abandoned. This application Mar. 23, 1976, Ser. No. 669,565
Int. Cl.[2] A61K *31/195*
U.S. Cl. 424—319 14 Claims

1. A process for preventing the release of pharmacological mediators from an immediate hypersensitivity reaction between reaginic type antibodies and an antigen, thereby preventing the symptoms manifest in bronchial asthma, seasonal pollinosis, allergic rhinitis, urticaria, allergic conjunctivities, food allergy and anaphylactoid reactions of a sensitized animal, which comprises prophylactically administering to said animal an effective amount of a compound of the formula:



in which

A is a member selected from the group consisting of α-naphthyl, β-naphthyl, phenyl, 2,6-dichlorophenyl and substituted phenyl moieties containing from one to three substituents in any of the 2,3,4and 5 positions of the phenyl ring, independently selected from the group consisting of lower alkyl, lower alkylthio, lower akylsulfinyl lower alkoxy, hydroxy(lower)alkoxy, 2-(oxalyloxy)ethoxy, benzyloxy, N-mono- and di- lower alkylamino-(lower)-alkoxy, halo, sulfamyl, polyhalo(lower)alkyl, carbamyl, N-lower alkylcarbamyl, nitro, mono- and di-lower alkylamino, carboxy, lower alkylcarbonyl, carb(lower)alkoxy, phenoxy(lower)alkoxy, and oxalamidophenoxy radicals;

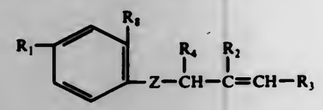
or a pharmaceutically acceptable salt thereof.

4,069,344
INSECTICIDAL SUBSTITUTED PHENYL DERIVATIVES

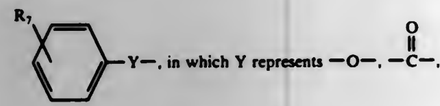
Friedrich Karrer, Basel, Switzerland, assignor to CIBA-GEIGY Corporation, Ardsley, N.Y.

Division of Ser. No. 358,431, May 8, 1973, abandoned. This application Mar. 15, 1976, Ser. No. 667,004
Claims priority, application Switzerland, May 10, 1972, 7011/72; Sept. 29, 1972, 14255/72; Mar. 29, 1973, 4567/73
Int. Cl.[2] A01N 9/20; C07C 103/19
U.S. Cl. 424—324 12 Claims

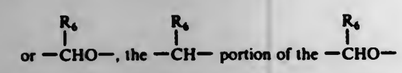
1. A compound of the general formula



wherein R_1 represents cyclohexyl, cyclohexyloxy or the group



or the direct bond, Z represents -O-, or



group being bonded to the phenyl nucleus, R_2 represents hydrogen, or C_1–C_3-alkyl, R_3 represents a carbamoyl group which is mono- or disubstituted by C_1–C_3-alkyl, C_3–C_5-alkenyl or C_3–C_5-alkinyl, R_4 represents hydrogen, methyl, or ethyl, R_6 represents hydrogen or C_1–C_3-alkyl, R_7 represents hydrogen, halogen, C_1–C_5-alkoxy or C_1–C_5-alkyl, and R_8 represents halogen, methyl, or ethyl.

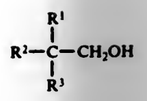
9. An insecticical composition comprising an insecticidally effective amount of a compound of the formula of claim 1, together with a suitable carrier therefor.

4,069,345
COMPOSITIONS HAVING A PHYSIOLOGICAL COOLING EFFECT

John M. Gascoyne, Southall; Roger Hems, Maidenhead, and David J. Spring, Datchet, all of England, assignors to Wilkinson Sword Limited, London, England

Filed Aug. 16, 1974, Ser. No. 498,173
Claims priority, application United Kingdom, Aug. 22, 1973, 39729/73
Int. Cl.[2] A61K 31/045
U.S. Cl. 424—343 4 Claims

1. In a manufactured consumer product for application to or consumption by the human body, said product comprising a topically administrable or orally ingestible vehicle and, as adjuvants in said vehicle, (i) at least one of the following: a flavourant, colourant, perfume, surface active agent or antiseptic, and (ii) a compound capable of stimulating the cold receptors of the nervous system in the surface tissues of the body, or in the mouth, when brought into contact therewith, respectively by topical application or oral ingestion of the said product, the improvement which comprises using as said cold receptor stimulating compound an effective amount of an alcohol of the formula



where
R^1 is C_2–C_6 alkyl;
R^2 is C_2–C_5 alkyl or C_2–C_5 alkenyl;
R^3 is H or C_1–C_5 alkyl;
with the provisos that the total number of carbon atoms in the molecule is from 8–12 and that at least on of R^1 and R^2 has branching in an alpha position.

4,069,346
COMPOSITIONS AND METHODS FOR ANESTHETIZING AN ANIMAL USING DEUTERATED ANALOGUES OF HALOTHANE AND CHLOROFORM

Leslie P. McCarty, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 14, 1977, Ser. No. 768,307
Int. Cl.[2] A61K 31/02
U.S. Cl. 424—350 6 Claims

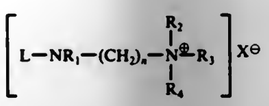
1. The process for anesthetizing an animal which comprises administering to said animal by inhalation an effective anesthetizing amount of the compound 2-bromo-2-chloro-1,1,1-trifluoroethane-d as a general inhalation anesthetic.

4,069,347
COMPOSITIONS OF QUATERNARY AMMONIUM DERIVATIVES OF LANOLIN ACIDS

Justin P. McCarthy, Carteret; Mitchell L. Schlossman, Rockaway, both of N.J., and Lee R. Mores, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Aug. 2, 1976, Ser. No. 711,088
Int. Cl.[2] A61K 7/08
U.S. Cl. 424—358 13 Claims

1. An improved quaternary ammonium composition comprising (a) 35–75 weight percent of an aliphatic, saturated, branched-chain diol having from 5 to 20 carbon atoms with at least three carbon atoms separating the hydroxyl groups and at least two alkyl groups having a total of at least three carbon atoms, one of the alkyl groups being attached to the carbon atom immediately adjacent to one of the hydroxyl groups, and (b) 25–65 weight percent of a quaternary ammonium compound of the formula



where L represents the acyl radicals derived from lanolin fatty acids, R_1 is hydrogen or an alkyl group containing one to four carbon atoms, R_2 and R_3 are C_{1-4} alkyl groups, R_4 is a group selected from the group consisting of alkyl, aralkyl, hydroxyalkyl and unsaturated aliphatic hydrocarbon radicals, X is an anion selected from the group consisting of halide, nitrate, sulfate, alkylsulfate and alkylphosphate and *n* is an integer from 2 to 5.

4,069,348
PACKAGE AND METHOD OF FORMING THE SAME

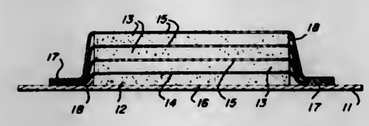
Robert G. Bush, Green Bay, Wis., assignor to L. D. Schreiber Cheese Company, Inc., Wis.

Continuation of Ser. No. 499,788, Aug. 22, 1974, abandoned. This application Oct. 8, 1976, Ser. No. 730,924
Int. Cl.[2] B65D 83/08, 85/76
U.S. Cl. 426—119 25 Claims

1. A sealed package of individually sealed compartments

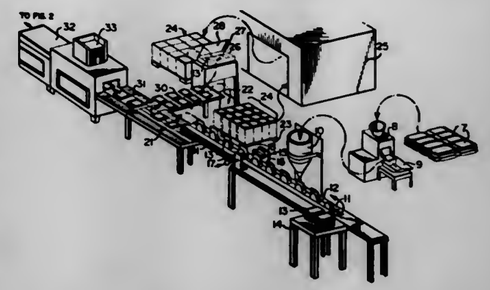
comprising: a backing board, a stack of a plurality of quantities of product, a plurality of interleaf sheets of a material substantially impermeable to oxygen, at least one of said sheets being positioned between respective adjacent quantities of product in said stack, so that said quantities of product and said sheets are disposed alternately in said stack, said interleaf sheets being secured to said backing board by a manually releasable seal that extends completely around the periphery thereof to enclose each product quantity in a sealed substantially oxygen free compartment, said seal being sufficiently strong that said product can be dispensed by manually rupturing the releasable seal and removing a number of interleaf sheets corresponding to the desired number of quantities of product, while the remaining quantities of product are residually contained in sealed compartments provided by the remaining sealed interleaf sheets.

13. A method of forming a hermetically sealed package of individually sealed compartments, which comprises: positioning a backing board which is adapted to receive a stack of a



plurality of quantities of product, placing a quantity of product on said backing board, positioning a first interleaf sheet in face-to-face juxtaposition to said quantity of product such that said interleaf sheet extends beyond the edge of said quantity of product, securing said interleaf sheet to said backing board by a manually releasable seal that extends along a continuous seal outwardly of the edges of the quantity of product to thereby encapsulate said piece of product in a sealed substantially oxygen free compartment, and repeating the steps of placing a piece of product, positioning an interleaf sheet, and securing said interleaf sheet, until the package contains the desired amount of quantities of product encapsulated in substantially oxygen free compartments, said securing steps being performed by imparting sufficient strength to the seals that product may be dispensed by manually rupturing the releasable seals and removing a number of interleaf sheets corresponding to the desired number of quantities of product, while the remaining quantities of product are residually contained in sealed compartments provided by the remaining sealed interleaf sheets.

while leaving a relatively small tortuous passage for the escape of gas from said gas-evolving product, and each tortuous passage is completely sealed during the performance of said hermetically sealing step.



4,069,349
PROCESS FOR VACUUM PACKAGING OF ROASTED, GROUND COFFEE

Fred B. Shaw, Hinsdale, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Continuation of Ser. No. 48,953, June 22, 1970, abandoned, which is a continuation of Ser. No. 555,123, June 3, 1966, abandoned. This application July 2, 1973, Ser. No. 375,648
Int. Cl.[2] B65B 9/00; B31B 31/02
U.S. Cl. 426—395 5 Claims

1. A process of packaging a solid gas-evolving product comprising the steps of providing a plurality of pouches, filling the pouches with said gas-evolving product, transferring the filled pouches to a storage chamber containing oxygen at atmospheric conditions of temperature and pressure, storing the filled pouches in the storage chamber for a predetermined length of time at such conditions and within said oxygen containing atmosphere such that the product is in fluid communication with the surrounding medium until substantially all of the gas capable of evolving from the product has evacuated the pouches, removing the pouches from the storage chamber, thereafter completely hermetically sealing the pouches against oxygen containing atmosphere, said pouch filling step is immediately followed by a partial sealing step for partially sealing each pouch mouth by forming a heat-seal in each pouch mouth

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4,069,350
ANIMAL FEED COMPOSITION FROM WATER HYACINTH PLANT

Godofredo G. Monsod, Jr., 11 Scout Bayoran Street, Quezon City, Philippines

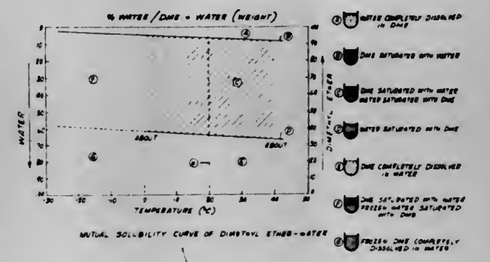
Filed July 13, 1976, Ser. No. 704,953
Int. Cl.[2] A23K 1/00
U.S. Cl. 426—635 11 Claims

1. An animal feed composition consisting essentially of water hyacinth meal derived from the leaves and roots which have been separated from the stems and hyacinth leaf protein concentrate, the water hyacinth meal and concentrate content of the composition being in a major amount and minor amounts of corn meal, fish meal, molasses, bone meal, shell and salt.

4,069,351
EXTRACTING FOODS WITH A DIMETHYL ETHER-WATER MIXTURE

Nobumitsu Yano; Itaru Fukinbara, both of Tokyo, and Mitsuo Takano, Sakai, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 491,228, July 24, 1974, abandoned. This application Feb. 5, 1976, Ser. No. 655,573
Int. Cl.[2] A23L 1/22, 1/221, 1/222
U.S. Cl. 426—650 14 Claims



1. A method for obtaining a mixture containing hydrophilic and lipophilic flavor and odor producing components of food substrates which comprises extracting said foods with a liquid dimethyl ether-water extract mixture, free of solid phase dimethyl ether or water, at a temperature of from about −25° C to 40° C, and thereafter separating the extraction residue and removing at least the dimethyl ether portion of the extraction mixture by evaporation; the weight ratio of dimethyl ether to substrate being from 1:1 to 5:1, the weight ratio of water to dimethyl ether in the extraction mixture being such that in the

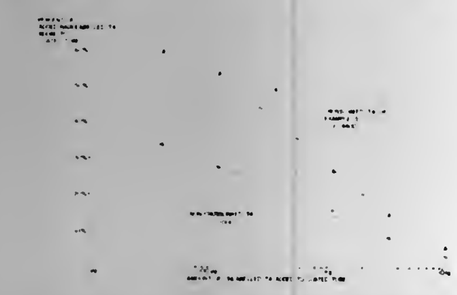
phase diagram of the system shown in FIG. 2 hereof, the amounts of each component are defined as a point in the area C or as a point located along the line B.

4,069,352

IMMUNOADSORBENT POLYMERIC MATERIAL AND METHOD OF MAKING SAME

George H. Parsons, Jr., Arlington, Mass., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed July 2, 1976, Ser. No. 702,298
Int. Cl.[2] G01N *33/16*; G01T *1/16*
U.S. Cl. 427—2 21 Claims



1. A method of making a solid immunoadsorbent for use in immunoassay procedures which comprises cross-linking the gamma globulin content of low titer antiserum, and bringing the cross-linked gamma globulin at pH 8 to 10 into contact with a surface of a solid polymeric material capable of adsorbing gamma globulin to form a coating of cross-linked gamma globulin adsorbed on said surface.

4,069,353

PROCESS FOR PRODUCING DEVELOPER SHEET FOR PRESSURE-SENSITIVE RECORDING PAPER

Hiroharu Matsukawa, and Takao Hayashi, both of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 159,567, July 2, 1971, abandoned. This application Sept. 16, 1975, Ser. No. 613,787
Claims priority, application Japan, July 2, 1970, 45-57910
Int. Cl.[2] B41M *5/16*
U.S. Cl. 427—57 12 Claims

1. A process for producing a developer sheet for a pressure-sensitive recording paper which comprises:

forming an oil-in-water emulsion which consists essentially of an oil-soluble color developer which reacts with a colorless organic compound to form a colored product selected from the group consisting of novolactype phenol resins and phenol acetylene resins, a water-immiscible organic solvent for said oil-soluble color developer, water and at least one member selected from the group consisting of an emulsifier and a protective colloid, by adding said member to water and thereafter adding thereto and emulsifying therein a solution of said color developer in said organic solvent;

coating the resulting oil-in-water emulsion on or incorporating the resulting oil-in-water emulsion in a support; and

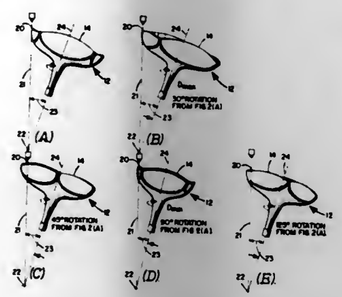
drying to form said developer sheet.

4,069,354

METHOD FOR DISPENSING CEMENT ONTO THE SEAL LAND OF A COLOR CRT FUNNEL

Raymond J. Pekosh, Niles, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 15, 1975, Ser. No. 640,802
Int. Cl.[2] C03C *17/00, 17/04*
U.S. Cl. 427—64 4 Claims



1. In the manufacture of a color cathode ray tube including a faceplate and a mating funnel, the funnel having a seal land defining a convex curved plane, with at least a curved segment of said funnel seal land lying on a predetermined radius, a method for dispensing a cement onto said segment of the seal land of the funnel, comprising:

holding the funnel such that a section of said seal land segment is substantially horizontal and upwardly facing for preventing cement run-off;

providing a substantially stationary cement dispensing nozzle in position over said substantially horizontal section of said seal land segment for applying cement to said seal land; and

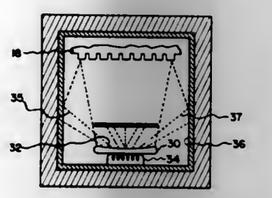
in order to dispense cement on the entirety of said segment, swinging the funnel about an origin of said radius of said seal land segment of the funnel such that said segment passes under the cement dispensing nozzle at a substantially constant predetermined distance beneath the nozzle and in a substantially horizontal attitude.

4,069,355

PROCESS OF MAKING STRUCTURED X-RAY PHOSPHOR SCREEN

Stanley J. Lubowski, Scotia, and Robert K. Swank, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 571,950, April 28, 1975, Pat. No. 4,011,454. This application Aug. 20, 1976, Ser. No. 716,089
Int. Cl.[2] H01J *1/62*
U.S. Cl. 427—70 15 Claims



1. A method for making an improved phosphor screen of the type which absorbs one type of radiation and re-emits a different type of radiation, comprising the steps of:

patterning a generally planar substrate so as to form a large plurality of relatively raised portions, each separated by a relatively recessed portion, throughout a substantial area of said substrate;

vapor depositing a phosphor material on said patterned substrate at substantial angles relative to the normal to said substrate so that only said raised portions are covered by a substantial thickness of said phosphor material and said recessed portions receive substantially none, thereby yielding a phosphor layer comprising columns of phosphor material substantially separated from each other; and

heat annealing said column-type phosphor screen so as to cause the phosphor material thereof to become substantially transparent by substantially eliminating any small bubbles which could otherwise cause radiation scattering within the material,

whereby a phosphor screen including a series of spaced substantially transparent columns of the phosphor material is formed.

4,069,356

METHOD FOR RAPIDLY FORMING PHOTOCONDUCTIVE LAYERS FOR INTEGRATED CIRCUITS

Albert G. Fischer, Dortmund-Hombruch, Germany, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 499,686, Aug. 22, 1974, abandoned. This application Dec. 22, 1975, Ser. No. 643,276
Int. Cl.[2] B05D *5/12*
U.S. Cl. 427—76 6 Claims

1. A method of making a photoconductive layer for a semiconductor device comprising the steps of:

A. mixing at least one powder of a photoconductive material selected from the group consisting of zinc sulfide (ZnS), cadmium sulfide (CdS), cadmium selenide (CdSe), and cadium telluride (CdTe), with a copper halide powder, where the copper halide powder is between about 0.1 and 5.0% by weight of the total mixture;

B. forming at least one cohesive pellet from the powdered mixture;

C. disposing at least one said pellet of said powdered mixture along with a semiconductor substrate prepared for vapor deposition thereon in spaced relationship in a partial vacuum;

D. evaporating material from said pellet to form a vapor and depositing said vapor on the semiconductor substrate at a rate greater than about 10 nanometers per minute to form a photoconductive layer on the semiconductor substrate, said photoconductive layer comprising at least one composition selected from the group consisting of zinc sulfide (ZnS), cadmium sulfide (CdS), cadmium selenide (CdSe), cadmium telluride (CdTe), zinc sulfide selenide (ZnS_xSe_{1-x}), cadmium sulfide selenide (CdS_xSe_{1-x}), and cadmium sulfide telluride (CdS_xTe_{1-x}) wherein x is greater than zero and less than one; and

E. baking the photoconductive layer and substrate in an oxygen-rich atmosphere at a temperature between 300° and 550° C for about 1 to 2 minutes.

4,069,357

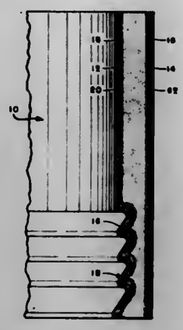
PROCESS FOR DIFFUSING METALLIC COATINGS INTO CERAMICS TO IMPROVE THEIR VOLTAGE WITHSTANDING CAPABILITIES

H. Craig Miller, Clearwater, and Herbert F. Zahr, St. Petersburg, both of Fla., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 9, 1976, Ser. No. 740,339
Int. Cl.[2] H01B *17/42, 17/64, 17/50*
U.S. Cl. 427—123 6 Claims

1. A method for penetratingly covering an alumina ceramic insulator with metal so that the metal is diffused into the surface of the insulator a preselected amount, the method comprising:

coating the insulator with a mixture comprising manganese powder and titanium powder, the manganese and titanium powder mixture ranging from about two parts by metal weight of manganese and five parts by metal weight of titanium to about seven parts by metal weight of manganese and one part by metal weight of titanium, the manganese and titanium together constituting essentially 100%



of the metal present in the mixture; and firing the coated insulator for about 30 to about 90 minutes in about one atmosphere of wet hydrogen at a temperature of from about 1450° to about 1520° C to cause the mixture to penetrate into the ceramic from a depth of from about one tenth millimeter to about three millimeters.

4,069,358

METHOD FOR CLADDING HEAVY GAGE PLATE

Joseph Winter, New Haven, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 28, 1976, Ser. No. 653,094
Int. Cl.[2] C23C *1/10*
U.S. Cl. 427—319 13 Claims

1. A method of cladding plate comprising the steps of:

a. providing a clean, smooth metal substrate in plate form having a thickness of from ½ to 2 inches selected from the group consisting of iron and iron alloys;

b. heating the plate to a temperature between 200° and 1000° C;

c. providing a bath of molten metal cladding material selected from the group consisting of copper and copper base alloys at a temperature above that of the heated substrate plate, wherein the temperature of said metal cladding material ranges from 1100° to 1400° C;

d. forming a standing wave of the molten metal in the bath;

e. contacting at least one surface of the heated substrate plate with the top portion of the standing wave of molten cladding material in at least one pass through the contacting station to form a composite clad plate wherein the cladding thickness ranges from 0.01 to 0.5 inch, wherein the substrate plate contacts the standing wave of cladding material at a speed ranging from 2 to 40 inches per minute; and

f. removing the composite clad plate from the contacting station, to be subsequently formed if desired.

4,069,359

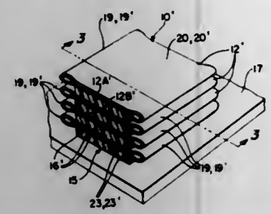
MEANS AND METHOD OF SEPARATING LENGTHS OF FLATTENED FLEXIBLE POLYMERIC TUBE

Ernest W. DeMarse, Tallmadge, and Michael M. Gozdiff, North Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 14, 1976, Ser. No. 696,164
Int. Cl.[2] B65D *85/62, 85/67, 81/02*
U.S. Cl. 428—36 30 Claims

1. In combination with a plurality of lengths of at least one flattened flexible polymeric tube disposed in superposed relation, each said length in cross-section including enlarged

folded edge portions with a flat center portion therebetween each length thereby having a substantially elongated dumbbell configuration, a cellular polymeric foam separator having substantial thickness in relation to the single wall thickness of the tube, supporting the weight of at least a substantial part of



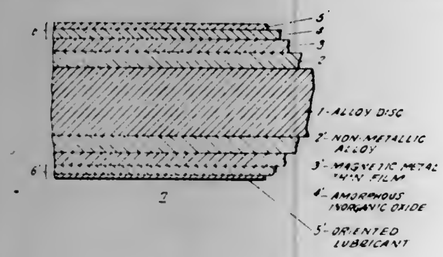
the center portion of each said length to provide a bearing surface to distribute the weight of each said length over at least a substantial part of the flat center portion of the length disposed immediately therebelow and away from the edge portions thereof to thereby prevent the formation of edge creases longitudinally along the edges of the tube lengths.

4,069,360

MAGNETIC RECORD MEMBER AND PROCESS FOR MANUFACTURING THE SAME

Masahiro Yanagisawa, and Yoji Suganuma, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Oct. 22, 1976, Ser. No. 734,962
Claims priority, application Japan, Oct. 31, 1975, 50-132005
Int. Cl.² G11B *5/74*; B32B *3/02*; B05D *5/12*
U.S. Cl. 428—64 **23 Claims**



1. A magnetic record member, comprising:
an alloy disc having a slightly topographical surface of not more than 50 microns in the circumferential direction and not more than 10 microns in the radial direction of said disc;
a non-magnetic alloy layer coated on said surface of said alloy disc, said alloy having a surface polished to a mirror finish;
a magnetic metal thin film medium coated on said polished surface of said non-magnetic alloy layer;
an amorphous inorganic oxide layer coated on said medium;
a silicon containing lubricant layer coated on said surface of said oxide layer and oriented so as to adhere to said oxide layer.

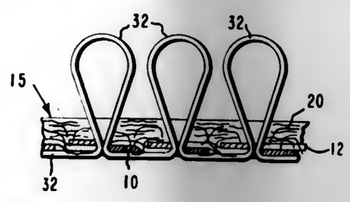
4,069,361

WOVEN CARPET BACKING WITH FUSED STAPLE FIBER NEEDLED LAYER

Vijayendra Kumar, New Castle, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 20, 1975, Ser. No. 606,007
Int. Cl.² B32B *3/02*
U.S. Cl. 428—95 **6 Claims**

1. An improved shear-resistant backing for pile fabrics prepared by needling a batt of staple fiber into a woven fabric of polypropylene yarn of continuous filaments or ribbons and



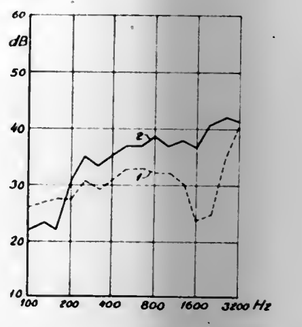
then bonding the structure by fusion of the staple fiber of the batt.

4,069,362

CORE MATERIAL FOR BUILDING ELEMENTS OF SANDWICH TYPE

Jorgen Flemming Ravnkilde, Hornbaek, and Ivar Ostrup, Farum, both of Denmark, assignors to Rockwool International A/S, Hedehusene, Denmark

Filed Oct. 7, 1976, Ser. No. 730,497
Claims priority, application Denmark, Oct. 14, 1975, 4598/75
Int. Cl.² B32B *3/02*
U.S. Cl. 428—194 **1 Claim**



1. In core material useful as filler material between outer boards in sandwich-type building elements for walling or bulkheads, said core material being used to fill interspace between the outer boards of said sandwich-type building elements, the improvement which comprises utilizing as the core material at least two separate layers of bonded mineral wool with surfaces that face and touch each other but are only connected to each other by gluing along edges of said surfaces wherein said separate layers of bonded mineral wool have different thicknesses.

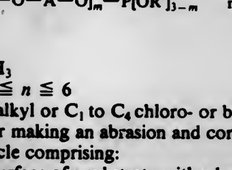
4,069,363

CRIMPABLE NYLON BICOMPONENT FILAMENT AND FABRICS MADE THEREFROM

William Benjamin Segraves, Martinsville, Va., and Kenneth Lee Mulholland, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 581,158, May 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 493,393, July 31, 1974, abandoned. This application July 6, 1976, Ser. No. 702,446
Int. Cl.² D02G *3/00*; D04B *11/00*; D04H *1/00*
U.S. Cl. 428—224 **12 Claims**

1. A fabric comprising yarn of non-precrimped nylon filament consisting essentially of two, continuous, adherent, eccentric components, one component being a sheath consisting essentially of a homopolymer selected from the group consisting essentially of polyhexamethylene dodecanedioamide, polyhexamethylene adipamide, and poly-ε-caproamide, the other component being a core consisting essentially of a random



copolymer of hexamethylene dodecanediomamide and ε-caproamide units, said copolymer consisting about 25–45% by weight of ε-caproamide units, said yarn being made into said fabric without precrimping and is thereafter crimped.

4,069,364

RADIATION POLYMERIZED COATED ARTICLE AND METHOD OF MAKING SAME

Ray A. Dickie, Birmingham, and Joseph C. Cassatta, Taylor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 537,736, Dec. 31, 1974, Pat. No. 3,957,918. This application Dec. 22, 1975, Ser. No. 643,425
Int. Cl.² B32B *15/08, 27/30, 31/28*; B05D *3/06*
U.S. Cl. 428—276 **19 Claims**

1. An article of manufacture comprising a substrate and an adherent layer of a radiation polymerized paint on the surface thereof, said paint, on a non-polymerizable solvent, pigment, initiator and particulate filler-free basis, consisting essentially of the in situ formed polymerization product of a film-forming solution of: (1) betwween about 90 and about 10 parts of a saturated, thermoplastic vinyl polymer having a number average molecular weight ranging from about 2,000 to about 250,000 and being prepared from at least about 85 weight percent of monofunctional vinyl monomers; (2) between about 10 and about 90 parts of vinyl monomer solvent for said polymer up to 90 weight percent of said solvent being monovinyl monomers with the remainder being selected from the group consisting of divinyl monomers, trivinyl monomers, tetravinyl monomers and mixtures thereof; and (3) between about 1.0 and about 15.0 parts per 100 parts of the total of said thermoplastic vinyl polymer and said vinyl solvent monomers of a triester of phosphoric acid bearing one or more sites of vinyl unsaturation and having the formula:

$$[H_2C{=}\underset{\displaystyle R}{\underset{|}{C}}{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}O{-}A{-}O{]}_m{-}\overset{\displaystyle O}{\overset{\|}{P}}[OR']_{3-m} \qquad m=1,\ 2 \text{ or } 3$$

where:
R = H, Cl, CH_3
A = C_nH_{2n}, $2 \leqq n \leqq 6$
R′ = C_1 to C_4 alkyl or C_1 to C_4 chloro- or bromoalkyl.

5. A process for making an abrasion and corrosion resistant plural coated article comprising:
A. Coating of surface of a substrate with a base coat composition;
B. Curing the base coat composition to form a film;
C. Vapor depositing a layer of metal on the surface of said base coat composition film;
D. Coating the metal bearing surface with a top coat composition which, exclusive of non-polymerizable solvents, pigments, initiators and other non-reactive components, consists essentially of: (1) between about 90 and about 10 parts of a saturated, thermoplastic, vinyl polymer prepared from at least about 85 weight percent of monofunctional vinyl monomers; (2) between about 10 and about 90 parts of vinyl solvent monomers for said vinyl polymer, at least about 10 weight percent of said solvent monomers being selected from the group consisting of divinyl monomers, trivinyl monomers, tetravinyl monomers and mixtures thereof; and (3) between about 1.0 and about 15.0 parts per 100 parts of the total of said thermoplastic vinyl polymer and said vinyl solvent monomers of a mono- or diester of phosphoric acid bearing one or more sites of vinyl unsaturation an having the formula:

$$[H_2C{=}\underset{\displaystyle R}{\underset{|}{C}}{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}O{-}A{-}O{]}{-}\overset{\displaystyle O}{\overset{\|}{P}}[OR']_{3-m} \qquad m=1,\ 2 \text{ or } 3$$

where:
R = H, Cl or CH_3
A = C_nH_{2n}, $2 \leqq n \leqq 6$
R′ = C_1 to C_4 chloro- or bromo- alkyl or C_1 to C_4 alkyl
E. Curing the top coat composition to form a film by exposure to radiation.

4,069,365

CATIONIC VINYL PYRIDINE COPOLYMERS AND PRODUCTS THEREOF

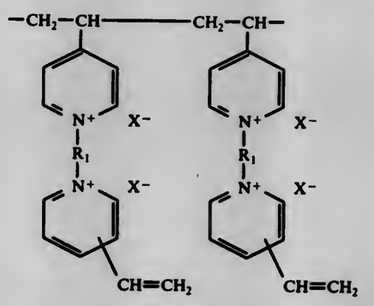
Alan Rembaum, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 102,239, Dec. 28, 1970, Pat. No. 3,754,055, which is a continuation-in-part of Ser. No. 763,938, Sept. 30, 1968, abandoned. This application June 26, 1973, Ser. No. 373,616
Int. Cl.² B32B *27/00*; D02G *3/00*; B32B *21/04, 21/06*
U.S. Cl. 428—262 **8 Claims**

1. A coated article comprising:
an inert substrate having coated thereon:
a polyquaternary, water-insoluble, water-swellable, cross-linked polymer of vinyl pyridine and a dihalo organic compound of the formula:

X—R_1—X

where X is halo selected from the group consisting of bromo, chloro and iodo and R_1 is a divalent organic radical containing 1–20 carbon atoms and being selected from the group consisting of alkylene, alkenylene, alkynylene, arylene, alkarylene and aralkylene; said polymer containing a plurality of structural units of the formula:



the ratio of X^- to N^+ atoms being essentially stoichiometric, the polymer containing residual unsaturation capable of further reaction and the polymer undergoing a reversible color change above and below a pH of 7.

4,069,366

PERMEABLE POLYMERIC LINER ON ABSORBENT PADS

Charles E. Hoey, Marlton, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 562,271, March 26, 1975, which is a division of Ser. No. 394,601, Sept. 5, 1973, Pat. No. 3,901,240, which is a continuation-in-part of Ser. No. 354,062, April 24, 1973, Pat. No. 3,887,408. This application Sept. 24, 1976, Ser. No. 726,716
The portion of the term of this patent subsequent to Aug. 26, 1992, has been disclaimed.
Int. Cl.² B32B 3/26
U.S. Cl. 428—310 7 Claims



2. A flexible, absorbent pad comprising a top layer of polymeric foam material permeable to liquids, an underlying layer of liquid-absorbent material, and a bottom layer of a woven or non-woven gauze, wherein said polymeric foam material is crushed foam of an addition polymer comprising an acrylic monomer, the thickness of the crushed layer being from about 1 mil to about 10 mils and the pore size being less than about 10 mils with approximately 100,000 to 1,000,000 pores per square inch.

4,069,367

MAGNETIC POWDER MATERIAL COMPRISING IRON OXIDE PARTICLES WITH A COPPER-COBALT ALLOY COATING

Shinji Umeki, Saku; Kazuhide Aue, Chiba, and Yasumichi Tokuoka, Saku, all of Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan

Filed Jan. 12, 1973, Ser. No. 323,293
Claims priority, application Japan, Jan. 13, 1972, 47-6040
Int. Cl.² H01F 1/02; C04B 35/00; C22B 1/04
U.S. Cl. 428—403 6 Claims

1. A magnetic powder material comprising magnetic iron oxide particles having a substantially uniform coating of an alloy consisting essentially of Co and Cu, said alloy being deposited on said iron oxide particles in an amount sufficient to provide high coercivity, high magnetic flux density and low electrical resistance, the amount of Co in said alloy being about 3 wt% with respect to the weight of said iron oxide particles and said amount of Cu in said alloy being about 0.4 wt% with respect to the weight of said iron oxide particles.

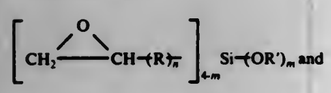
4,069,368

WORKABLE AND CURABLE EPOXY-TERMINATED SILANE FILMS

Frank L. Deyak, Stillwater, and Arthur A. Wegwerth, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

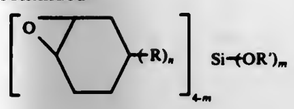
Filed Oct. 1, 1976, Ser. No. 728,859
Int. Cl.² B32B 27/38, 27/08
U.S. Cl. 428—447 10 Claims

1. A partially cured film comprising at least 15% by weight of material derived from epoxy-terminated silanes represented by the formulae:



and

-continued



wherein, each R is independently a non-hydrolyzable divalent hydrocarbon radical of less than 20 carbon atoms, or a divalent radical of less than 20 carbon atoms the backbone of which is C atoms which may be interrupted by individual atoms from the group of N and O, the O atoms in the form of either linkages,

m is 1, 2, or 3,

n is 0, or 1, and

R' is aiphatic hydrocarbon radical of less than 10 carbon atoms, an acyl radical of less than 10 carbon atoms, or a radical of the formula $(CH_2CH_2O)_kZ$ in which *k* is an integer of at least 1, and Z is hydrogen or an aliphatic hydrocarbon radical of less than 10 carbon atoms,

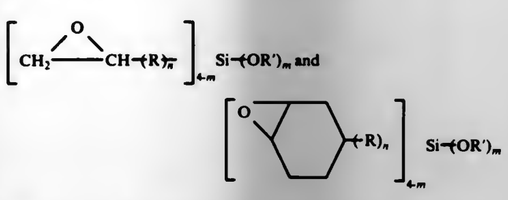
said film cured to a degree such that visually observable dichloromethane attack occurs in not less than 15 seconds and no more than seven-and-one-half minutes when

1. a 4.25 cm diameter circle of filter paper is placed on the film,
2. the paper is wetted thoroughly with dichloromethane,
3. a clear plastic cover is placed over the wetted paper, and
4. the time for visually observable attack on the coating is measured,

said partially cured film further characterized by having

1. a latent catalyst within the film in sufficient amount so that when delatentized the film will cure to a degree so that the partially cured film will not be attacked by dichloromethane under the above conditions within 10 minutes, or
2. a thermoplastic polymer layer directly bonded thereto, said polymer containing sufficient catalyst therein so that upon heating to a temperature sufficient to allow migration of the catalyst to the partially cured film layer, the partially cured film layer will be cured to a degree sufficient so that the then cured film will not be attacked by dichloromethane under the above conditions within 10 minutes.

9. A method of forming a shaped abrasion resistant coated article which comprises applying heat and pressure to a partially cured film bonded to a moldable thermoplastic resin said partially cured film comprising at least 15% by weight of material derived from epoxy-terminated silanes represented by the formulae:



and

wherein, each R is independently a non-hydrolyzable divalent hydrocarbon radical of less than 20 carbon atoms, or a divalent radical of less than 20 carbon atoms the backbone of which is C atoms which may be interrupted by individual atoms from the group of N and O, the O atoms in the form of ether linkages,

m is 1, 2, or 3,

n is 0, or 1, and

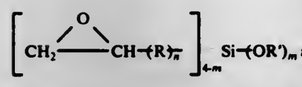
R' is an aliphatic hydrocarbon radical of less than 10 carbon atoms, an acyl radical of less than 10 carbon atoms, or a radical of the formula $(CH_2CH_2O)_kZ$ in which *k* is an integer of at least 1, and Z is hydrogen or an aliphatic hydrocarbon radical of less than 10 carbon atoms,

said film cured to a degree such that visually observable dichloromethane attack occurs in not less than 15 seconds and no more than seven-and-one-half minutes when

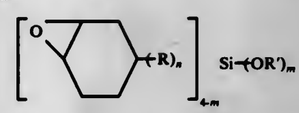
1. a 4.25 cm diameter circle of filter paper is placed on the film,
2. the paper is wetted thoroughly with dichloromethane,
3. a clear plastic cover is placed over the wetted paper, and
4. the time for visually observable attack on the coating is measured,

said partially cured film further characterized by having a latent catalyst within the film in sufficient amount so that when delatentized the film will cure to a degree so that the partially cured film will not be attacked by dichloromethane under the above conditions within 10 minutes and further using means to delatentize said latent catalyst.

10. A method of forming a shaped abrasion resistant coated article which comprises applying heat and pressure to a partially cured film bonded to a moldable thermoplastic resin said partially cured film comprising at least 15% by weight of material derived from epoxy-terminated silanes represented by the formulae:



and



wherein, each R is independently a non-hydrolyzable divalent hydrocarbon radical of less than 20 carbon atoms, or a divalent radical of less than 20 carbon atoms the backbone of which is C atoms which may be interrupted by individual atoms from the group of N and O, the O atoms in the form of ether linkages,

m is 1, 2, or 3,

n is 0, or 1, and

R' is an aliphatic hydrocarbon radical of less than 10 carbon atoms, an acyl radical of less than 10 carbon atoms, or a radical of the formula $(CH_2CH_2O)_kZ$ in which *k* is an integer of at least 1, and Z is hydrogen or an aliphatic hydrocarbon radical of less than 10 carbon atoms, said film cured to a degree such that visually observable dichloromethane attack occurs is not less than 15 seconds and no more than seven-and-one-half minutes when

1. a 4.25 cm diameter circle of filter paper is placed on the film,
2. the paper is wetted thoroughly with dichloromethane,
3. a clear plastic cover is placed over the wetted paper, and
4. the time for visually observable attack on the coating is measured,

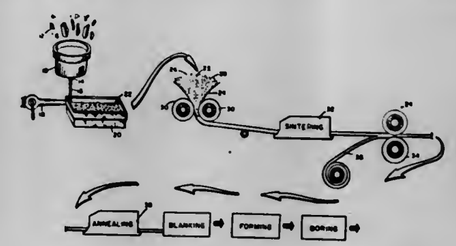
said partially cured film further characterized by having a thermoplastic polymer layer directly bonded thereto, said polymer containing sufficient catalyst therein so that upon heating to a temperature sufficient to allow migration of the catalyst to the partially cured film layer, the partially cured layer will be cured to a degree sufficient so that the then cured film will not be attacked by dichloromethane under the above conditions within 10 minutes, said heat and pressure being sufficient to allow the catalyst to migrate to said partially cured layer and cure said epoxy-terminated silane layer to a degree such that it will withstand dichloromethane attack for more than 10 minutes.

4,069,369

FINE DISPERSION ALUMINUM BASE BEARING

Robert J. Fedor, Westlake, Ohio, and Walter E. Smith, Hingham, Mass., assignors to Gould Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 98,233, Dec. 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 704,678, Feb. 12, 1968, abandoned. This application May 4, 1973, Ser. No. 357,218
Int. Cl.² B22F 7/02, 7/04
U.S. Cl. 428—557 21 Claims



1. A sintered, coherent, multi-layer powder metal composite comprising a powder metal bonding layer, a powder metal bearing layer strongly bonded to said powder metal bonding layer by a sintered transition zone of compacted, intermingled powder particles of said bearing layer and said bonding layer, and a powder metal sacrificial layer bonded to said powder metal bearing layer by a sintered transition zone of compacted, intermingled powder particles of said bearing layer and said sacrificial layer,

said powder metal bonding layer comprising more than 55 weight percent aluminum and the balance material selected from a first group of additives consisting of silicon, copper, manganese, magnesium, nickel, iron, zinc, chromium, zirconium, titanium and mixtures thereof;

said powder metal bearing layer comprising from 55 to about 95 weight percent aluminum, from 5 to 25 weight percent bearing phase material selected from a second group of additives consisting of lead, tin, cadmium, bismuth, antimony and mixtures thereof, and from 0 to about 20 weight percent material selected from said first group of additives, at least all of said aluminum and said bearing phase material of said bearing layer being in pre-alloyed particle form with said bearing phase material dispersed in an intra-particle position relative to said aluminum;

said powder metal sacrificial layer comprising intermixed aluminum particles and bearing phase particles, more than 50 weight percent of said particles comprising aluminum particles and the balance of said particles being selected from said first and second groups of additives, the bearing phase material of said sacrificial layer having an interstitial position relative to said aluminum particles.

4,069,370

ELECTRICAL CONTACT MATERIAL, AND TERMINAL

Nils Harmsen, Bruchkobel, and Franz Sperner, Hanau, both of Germany, assignors to W. C. Heraeus GmbH, Hanau (Main), Germany

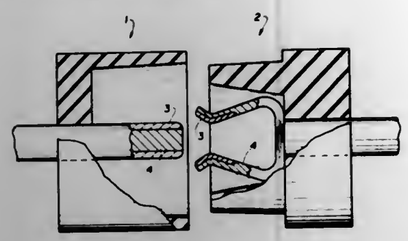
Filed July 16, 1976, Ser. No. 705,918
Claims priority, application Germany, Sept. 13, 1975, 2540956
Int. Cl.² B32B 15/00, 15/04
U.S. Cl. 428—671 2 Claims

1. Electrical terminal, particularly for plug or wiping terminals for use in electronics, comprising a carrier of electrical contact terminal material at least partially coated with a contact material consisting essentially of

20 to 30% palladium,

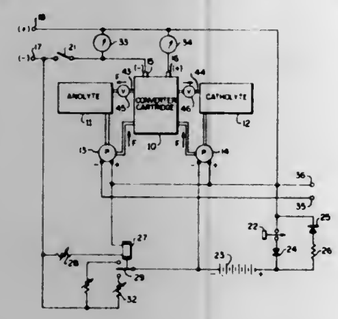
15 to 25% silver,

2.5 to 5% tin,
0.05 to 0.5% iridium,
0.05 to 0.5% ruthenium,



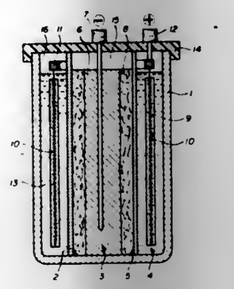
0.05 to 0.5% copper,
0.1 to 2% indium, and remainder gold.

4,069,371
ENERGY CONVERSION
Ralph Zito, Durham, N.C., assignor to GEL, Inc., Durham, N.C.
Filed May 10, 1976, Ser. No. 678,638
Int. Cl.² H01M 8/18
U.S. Cl. 429—21 **13 Claims**



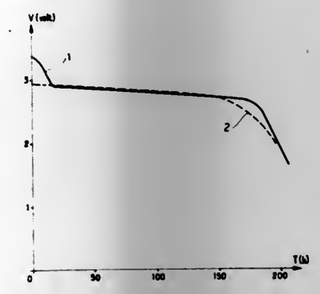
1. Energy conversion apparatus comprising,
means defining at least a single electrolytic cell comprising anolyte and catholyte compartments separated by a diffusion barrier,
means defining anode and cathode plastic carbon composite electrodes, respectively in said analyte and catholyte compartments,
means defining analyte and catholyte liquid recirculating in closed loops which contain said compartments respectively, and recirculating the bulk storage means for said fluids, the fluids being solutions of metal salt which plate out metal on the anode during application of charging potential to the electrodes and deplate metal and redissolve it into the anolyte during discharge of the system and which change valence states within the catholyte without plating,
electrolytic means for maintaining catholyte molarity between 2.0 and 4.0,
means for preventing oxidation of the plating/deplating metal to combat polarization and maintain reversibility over extended charge/discharge cycling.

4,069,372
ELECTRIC ACCUMULATOR WITH A SOLID ELECTROLYTE
Michel Voinov, Geneva, Switzerland, assignor to Battelle Development Corporation, Columbus, Ohio
Filed Nov. 30, 1976, Ser. No. 746,108
Int. Cl.² H01M 6/30
U.S. Cl. 429—104 **16 Claims**



1. In an electric accumulator comprising an anode compartment containing an anode formed from at least one metal selected from the group consisting of metals belonging to Groups I*a*, II*a*, II*b* and III*b* of the periodic table of elements; a cathode compartment containing a cathode formed a conducting member comprising a substance capable of accepting electrons, to form anions by cathodic reduction, and an electrolyte consisting of a substance capable of dissolving the product or products generated during discharge of the accumulator, said electrolyte being maintained in a molten state; the anode compartment and cathode compartment being separated from each other by wall impervious to fluids and formed from a solid mineral electrolyte capable of allowing selective migration of the anode metal in the form of cations; the improvement consisting in that the anode compartment contains a porous matrix adjacent said anode and at least one salt of the anode metal capable of allowing migration of this metal in the form of cations, said salt being maintained in a molten state and permeating said porous matrix, with said salt and said matrix being interposed between the anode and said separation wall.

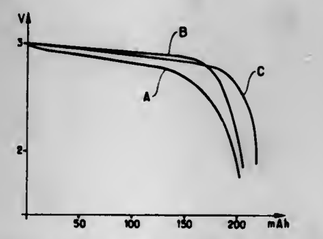
4,069,373
POSITIVE ACTIVE MATERIAL FOR PRIMARY BATTERIES HAVING HIGH ENERGY DENSITY
Jean-Paul Gabano, Poitiers, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France
Filed Aug. 31, 1976, Ser. No. 719,113
Claims priority, application France, Sept. 15, 1975, 75 28230
Int. Cl.² H01M 6/14
U.S. Cl. 429—194 **10 Claims**



1. Primary batteries of high energy density useful as an energizing source for devices requiring substantial uniformity of discharge voltage throughout a relatively long life compris-

ing a negative electrode constituted by lithium, an electrolyte solution comprising an organic solvent having dissolved therein an ion-forming salt and a positive electrode comprising positive active material constituted by a metal salt whose cation is monovalent silver and where complex anion is selected from the group consisting of silver ferrocyanide and silver ferricyanide.

4,069,374
HIGH ENERGY DENSITY ELECTRIC CELLS
Jean-Paul Gabano, Poitiers, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France
Filed Feb. 16, 1977, Ser. No. 769,343
Claims priority, application France, Mar. 9, 1976, 76 06706
Int. Cl.² H01M 6/14
U.S. Cl. 429—197 **9 Claims**



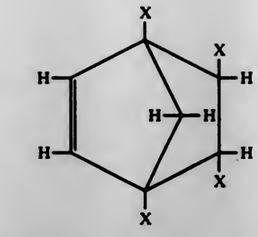
1. An electric cell having lithium as its negative active material, a silver salt or silver oxide as its positive active material and a solution comprising one solute and at least two solvents as its electrolyte, the first of the solvents being selected from the group consisting of carbonate and sulphate esters, and the second solvent of the electrolyte being an aromatic hydrocarbon selected from the group, consisting of benzene and its substituted derivatives.

4,069,375
MANUFACTURE OF GALVANIC ELEMENTS HAVING LITHIUM OR CALCIUM ELECTRODES
Helmut Lauck, Glashutten, Germany, assignor to Varta Batterie Aktiengesellschaft
Filed Sept. 10, 1976, Ser. No. 722,112
Claims priority, application Germany, Oct. 17, 1975, 2546585
Int. Cl.² H01M 4/58
U.S. Cl. 429—218 **12 Claims**

1. A method of manufacturing electrodes of lithium or calcium metal for galvanic elements, comprising the steps of
immersing the electrode metal in an atmosphere of gas which reacts with the electrode metal to form upon the metal surface a thin, continuous, non-hygroscopic covering layer, and
thereafter using the metal in an electrode.
8. The electrode made by the method of claim 1.

4,069,376
PROCESS FOR SUBSTANTIALLY GEL-FREE POLYMERIZATION OF NORBORNENE WITH DICYCLOPENTADIENE
Robert J. Minchak, Parma Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Apr. 17, 1975, Ser. No. 568,898
The portion of the term of this patent subsequent to Jan. 11, 1994, has been disclaimed.
Int. Cl.² C08F 4/44, 32/08, 232/08, 236/00
U.S. Cl. 526—137 **8 Claims**

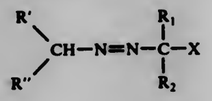
1. A process comprising polymerization of a norbornene-type monomer with about 0% to about 95% by weight of dicyclopentadiene, based upon total polymer weight, said norbornene-type monomer having the formula



where X is hydrogen or an alkyl group containing from 1 to 6 carbon atoms, said polymerization being conducted in the presence of
1. catalyst comprising (a) at least one compound selected from the group consisting of dialkylaluminum iodides, alkylaluminum diiodides and mixtures of trialkylaluminum compounds with elemental iodine wherein each alkyl group contains from 2 to 8 carbon atoms, (b) at least one dialkylaluminum chloride or alkylaluminum dichloride wherein each alkyl group contains from 2 to 8 carbon atoms and (c) at least one tungsten compound soluble in the monomer mixture or in a solvent selected from the group consisting of aliphatic and cycloaliphatic hydrocarbon solvents containing 4 to 10 carbon atoms and liquid or easily liquified aromatic hydrocarbon solvents containing 6 to 14 carbon atoms, wherein the molar ratio of said (a) to said (b) is from about 0.1/1 to about 10/1, the catalytically effective amount of the combined total of said (a) and (b) is from about 0.25 to about 10 millimoles per mole of monomer, said (a) and (b) are charged before said (c), the molar ratio of the combined total of (a) and (b) to (c) is from about 1/1 to about 80/1 moles per mole, and the molar ratio of said elemental iodine to said trialkylaluminum compound is from about 0.25/1 to about 6/1 moles per mole, and
2. at least one nonconjugated acyclic olefin containing from 2 to 12 carbon atoms and having at least one hydrogen on each double-bonded carbon atoms, said acyclic olefin being used in a molar ratio to monomer from about 0.0001/1 to about 0.3/1 mole per mole.

4,069,377
POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS EMPLOYING SECONDARY-ALIPHATIC α-SUBSTITUTED AZOALKANES
Ronald Edward MacLeay, Williamsville, and Chester Stephen Sheppard, Tonawanda, both of N.Y., assignors to Peanwalt Corporation
Division of Ser. No. 453,447, March 21, 1974, Pat. No. 4,025,502. This application June 14, 1976, Ser. No. 695,495
Int. Cl.² C08F 4/04, 12/02, 112/02
U.S. Cl. 526—218 **8 Claims**

1. A process which comprises polymerizing ethylenically unsaturated monomer in the presence of an initiating amount of a compound of the formula



where:
R′ and R″ are separately selected from alkyl of 1–12 carbons, cycloalkyl of 3–12 carbons, and aralkyl of 7–12 carbons, or join to form cycloalkyl of 3–12 carbons, and R″ is further selected from aryl of 6–14 carbons;
R_1 and R_2 are separately selected from alkyl of 1–8 carbons, cycloalkyl of 3–12 carbons and aralkyl of 7–12 carbons or

join to form cycloalkyl of 4–12 carbons, and R_2 is further selected from aryl of 6–14 carbons;

X is selected from —Cl, —Br, —CN, —C(=O)NH_2, —C(=NOH)NH_2, —OH, —OR_3, —OC(=O)OR_3, —OOR_5, —SR_6, —N_3, —SCN, —NCX', —NHC(=X')OR_3, —NHC(=X')$N(R_8)R_9$, —NHC(=X')$NHNHC(=X')R_4$, —NHC(=X')$NHN(R_8)C(=X')N(R_8)R_9$, —NHC(=X')$N(NH_2)R_{10}$, —NHC(=X')$NHNHR_{16}$, —NHC(=X')$NHN(R'_8)R'_9$, —NHC(=X')$NHNHC(=X')X'R_3$, and



X' is oxygen or sulfur;

R_3 and R_4 are separately selected from alkyl of 1–12 carbons, cycloalkyl of 3–12 carbons, aralkyl of 7–12 carbons, and aryl of 6–14 carbons, and R_4 is further selected from hydrogen;

R_5 is tertiary alkyl of 4–12 carbons or tertiary phenalkyl of 9–12 carbons;

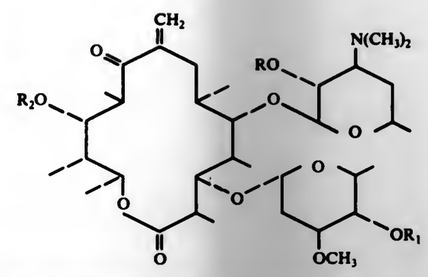
R_6 is selected from alkyl of 1–12 carbons, cycloalkyl of 3–12 carbons, and aryl of 6–14 carbons;

R_8, R_9, R'_8 and R'_9 are separately selected from alkyl of 1–8 carbons, cycloalkyl of 3–12 carbons, aralkyl of 7–12 carbons, and aryl of 6–14 carbons or R_8 and R_9 or R'_8 and R'_9 taken together form alkylene of 3–11 carbons, and R_8 and R_9 are further selected from hydrogen;

R_{10} is primary or secondary alkyl of 1–12 carbons or cycloalkyl of 3–12 carbons;

R_{15} is aryl of 6–10 carbons; and

R_{16} is selected from hydrogen, tertiary alkyl of 4–8 carbons, tertiary aralkyl of 9–12 carbons, and aryl of 6–14 carbons.



and the pharmaceutically acceptable mineral or organic addition salts thereof wherein R is selected from the group consisting of hydrogen, and alkanoyl having from two to three carbon atoms; R_1 is selected from the group consisting of hydrogen alkanoyl having from two to three carbon atoms and tri-(lower-alkyl) silyl; and R_2 is selected from the group consisting of hydrogen, alkanoyl having from two to three carbon atoms, trifluoroacetyl and tri(lower alkyl)silyl.

4,069,378

SELF-EMULSIFYING ANAEROBIC COMPOSITION

JoAnn DeMarco, Southington, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed June 17, 1976, Ser. No. 697,165
Int. Cl.² C08F *20/20*
U.S. Cl. 526—328 **14 Claims**

1. An anaerobic curing composition which is self-emulsifiable upon mixing with water comprising:

a. an anaerobically curing acrylate monomer;

b. a peroxy initiator in sufficient concentration to initiate cure of the monomer upon exclusion of oxygen; and

c. about 0.25 to about 10.0 percent by weight of the total composition of an anionic or nonionic surfactant which is dissolved in the composition and which renders the composition self-emulsifying upon mixing with water.

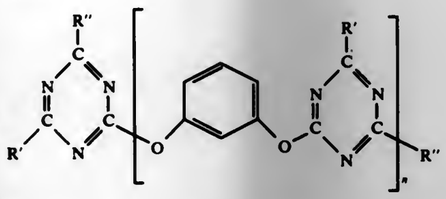
4,069,379

SEMI-SYNTHETIC OLEANDOMYCINS

Frank C. Sciavolino, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

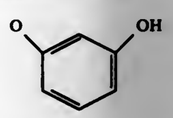
Continuation-in-part of Ser. No. 703,464, July 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 663,467, March 3, 1976, abandoned. This application July 29, 1976, Ser. No. 709,703
Int. Cl.² C07H *17/08*
U.S. Cl. 536—9 **8 Claims**

1. A compound of the formula



(1)

in which n is 1 or 2; each R' is independently NH_2 or Cl and each R'' is independently NH_2 or



(2)

provided that a sufficient number of radicals represented by R' are Cl atoms to provide a chlorine content of at least 3% by weight and at least one of R' and R'' is NH_2.

4,069,380

TRIAZINE COMPOSITIONS

David Crawford Eaton; Benjamin Eric Nicholson, and Barry Williams, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 3, 1976, Ser. No. 720,392
Claims priority, application United Kingdom, Sept. 24, 1975, 39133/75
Int. Cl.² C07D *251/46, 251/52*
U.S. Cl. 544—212 **5 Claims**

1. A condensation product of cyanuric chloride, resorcinol and ammonia consisting primarily of a compound of the formula

(1)

in which n is 1 or 2; each R' is independently NH_2 or Cl and each R'' is independently NH_2 or

(2)

provided that a sufficient number of radicals represented by R' are Cl atoms to provide a chlorine content of at least 3% by weight and at least one of R' and R'' is NH_2.

4,069,381

METHOD FOR PREPARING GLYCOL ESTERS

Wolfgang Gaenzler, Darmstadt-Eberstadt; Klaus Kabs, Seeheim, and Günter Schroeder, Ober-Ramstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed Nov. 12, 1973, Ser. No. 415,453
Claims priority, application Germany, Nov. 20, 1972, 2256847
Int. Cl.² C07C *67/05*
U.S. Cl. 560—1 **11 Claims**

1. In a method for making glycol monoesters and glycol diesters of a carboxylic acid by reacting an olefin with oxygen

in a reaction medium comprising or consisting essentially of a carboxylic acid in the presence of a catalyst, the improvement wherein said reaction is performed at an elevated pressure, above atmospheric pressure, and wherein said catalyst consists essentially of (A) a compound, soluble in said reaction medium, of a catalytic metal of Groups IVB - VIIB of the Periodic Table having an atomic number between 40 and 42 inclusive or between 72 and 75 inclusive or consists essentially of (B) a catalyst as defined in (A) in combination with the compound, soluble in said reaction medium, of a further metal selected from the group consisting of lithium, sodium, potassium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc, aluminum, or silver.

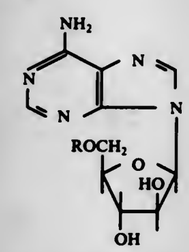
4,069,382

9-(5-O-ACYL-β-D-ARABINOFURANOSYL)ADENINE COMPOUNDS

David Clarkston Baker, and Theodore Herbert Haskell, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed May 17, 1976, Ser. No. 687,272
Int. Cl.² C07H *19/18*
U.S. Cl. 536—26 **9 Claims**

1. A 9-(5-O-acyl-β-D-arabinofuranosyl)adenine compound having the formula



I

where R is a straight chain alkanoyl group having from 2 to 8 carbon atoms or a branched chain alkanoyl group having 4 to 5 carbon atoms.

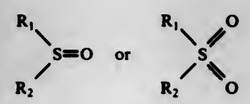
4,069,383

METHOD OF PREPARING MELAMINE FROM CYANAMIDE AND/OR DICYANDIAMIDE

Horst Michaud; Günter Ortenburger; Wilhelm Poschinger; Heinrich Röck, and Josef Seeholzer, all of Trostberg, Germany, assignors to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft, Trostberg, Germany

Filed Aug. 17, 1976, Ser. No. 715,027
Claims priority, application Germany, Aug. 18, 1975, 2536689
Int. Cl.² C07D *251/58*
U.S. Cl. 544—202 **14 Claims**

1. Method of preparing melamine from at least one reactant selected from the group consisting of cyanamide and dicyandiamide by contacting said reactant at approximately atmospheric pressure in an organic solvent at 100° to 250° C, with at least one solvent selected from the group having the formulas



wherein

R_1 and R_2 are alkyl which may be joined together to form an alkylene ring,

in the simultaneous presence of alkali metal hydroxide or alkaline earth hydroxide.

4,069,384

CARBOXYL TERMINATED POLYDIENES

Glen E. Meyer, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 211,124, Dec. 22, 1971, abandoned. This application Nov. 8, 1974, Ser. No. 521,994
Int. Cl.² C07C *67/08*
U.S. Cl. 560—91 **4 Claims**

1. A method of preparing a carboxyl terminated polymer from a hydroxyl terminated polymer which method comprises essentially reacting, at a temperature in the range of about 50° to about 150° C., (I) a cyclic anhydride selected from at least one of maleic, chlorendic, phthalic, nadic methyl, and tetrapropenyl, succinic and succinic anhydride substituted with radicals selected from alkyl and alkylene radicals having 2 to 16 carbon atoms with (II) a hydroxyl terminated polymer having a molecular weight in the range of about 400 to about 30,000 and a viscosity at 30° C. of about 2 to about 10,000 poises selected from at least one of (A) polydienes having a hydroxyl functionality in the range of about 2 to about 4 selected from polymers of 1,3-butadiene or isoprene, and copolymers of 1,3-butadiene or isoprene with styrene or acrylonitrile and (B) polyethers having a hydroxyl functionality in the range of about 1.8 to about 4 selected from polyethylene oxide, polypropylene oxide, copolymers of ethylene oxide and propylene oxide, polytetrahydrofuran, and copolymers of tetrahydrofuran with ethylene oxide or propylene oxide in the presence of (III) a catalyst selected from at least one of (A) quaternary ammonium salts and (B) halogen-acid salts; where the halogen-acid salts of amine are selected from benzylamine hydrobromide, benzylamine hydrochloride, cyclohexylamine hydrochloride, triethylamine hydrochloride, tribenzylamine hydrochloride, tribenzylamine hydrobromide, triethylamine hydrobromide, trimethylamine hydrochloride, trimethylamine hydrobromide, ethylamine hydrochloride and ethylamine hydrobromide, and where the quaternary ammonium salts are selected from:

distearyldimethylammonium chloride,
tetrapentylammonium chloride,
tetraphenylammonium bromide,
trioctylpropylammonium chloride,
trioctylpropylammonium bromide,
cetyldimethylbenzylammonium chloride,
n-alkyldimethylbenzylammonium chloride,
myristyldimethylbenzylammonium chloride,
tetramethylammonium chloride,
tetramethylammonium bromide,
tetraethylammonium chloride,
cetyltrimethylammonium chloride,
laurylpyridinium chloride,
laurylpyridinium bromide,
cetylpyridinium chloride, cetylpyridinium bromide,
n-alkyldimethylnaphthylmethylammonium chloride,
stearyldimethylbenzylammonium chloride,
diisobutylphenoxyethoxyphenyl-dimethylbenzylammonium chloride,
diisobutylcresoxyethoxyethyl-dimethylbenzylammonium chloride.

4,069,385

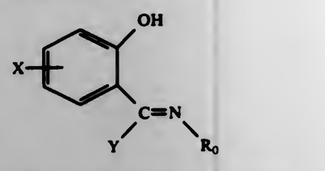
METHOD FOR THE PREPARATION OF OPTICALLY ACTIVE ALLYLIC ESTERS

Masashi Araki, Ibaraki, and Tsuneyuki Nagase, Takatsuki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 3, 1976, Ser. No. 692,510
Claims priority, application Japan, June 3, 1975, 50-67197; June 6, 1975, 50-68843
Int. Cl.² C07C *69/145, 69/24, 69/78*
U.S. Cl. 560—106 **9 Claims**

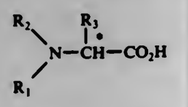
1. In the preparation of olefin derivatives having an ester group at the allylic position which comprises reacting an olefin having at least one hydrogen atom at the allylic position and

which will produce an allylic ester having an asymmetric carbon atom with an organic peroxide in the presence of a copper catalyst, a method for producing optically active allylic esters which comprises using, as the copper catalyst, a catalytic amount of an optically active copper complex prepared by the treatment of a copper compound with an optically active Schiff's base of the formula:



(I)

or an optically active amino acid of the formula:



(II)

wherein R_0 is an optically active moiety selected from the group consisting of C_4–C_{20} alkyl, C_4–C_{20} cycloalkyl and C_8–C_{20} aralkyl which may contain an unsaturated bond and/or a C_1–C_{20} alkoxy group, hydroxy, chlorine or bromine; X and Y are each hydrogen, halogen, C_1–C_4 alkyl, C_5–C_8 cycloalkyl, C_7–C_{15} aralkyl, C_6–C_{12} aryl or C_1–C_4 alkoxy, R_1 and R_2 are each C_1–C_{10} alkyl, C_7–C_{15} aralkyl or C_6–C_{15} aryl which may contain an unsaturated bond and/or halogen, a C_1–C_{10} alkoxy group, cyano or amino, R_3 is C_1–C_{10} alkyl, cyclohexyl, C_7–C_{10} aralkyl or C_6–C_{10} aryl which may contain an unsaturated bond and/or halogen, a C_1–C_{10} alkoxy group, hydroxyl or methylsulfonyl, or when R_3 is linked together with R_2, they form trimethylene or tetramethylene optionally substituted with halogen, hydroxyl or a C_1–C_{10} alkoxy group, and the asterisk (*) indicates an asymmetric carbon atom, the ester moiety in said allylic ester being derived from the organic peroxide and/or the solvent in which the reaction is conducted if a solvent is used, at least one of said organic peroxide and said solvent having an acyl moiety from which to form said ester moiety.

4,069,386

15-ALKYL PROSTAGLANDINS E_1

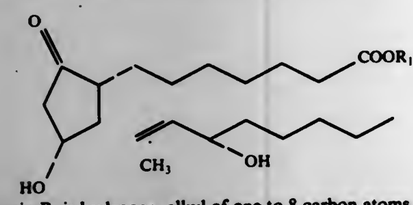
John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 525,692, Nov. 21, 1974, abandoned, which is a continuation of Ser. No. 412,054, Nov. 2, 1973, abandoned, which is a division of Ser. No. 288,618, Sept. 13, 1972, Pat. No. 3,855,270, which is a continuation of Ser. No. 37,308, May 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 648,992, June 26, 1967, abandoned. This application Feb. 6, 1976, Ser. No. 655,796

Int. Cl.² G07C *177/00*

U.S. Cl. 560—121 **3 Claims**

1. An optically active compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,069,387

16-CHLORO-SUBSTITUTED PROSTAGLANDINS AND DERIVATIVES THEREOF

Masaki Hayashi; Seiji Kori, and Katsuichi Shimoji, all of Takatsuki, Japan, assignors to Ono Pharmaceutical Company, Osaka, Japan

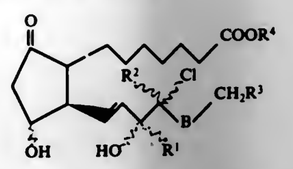
Filed July 29, 1976, Ser. No. 709,847

Claims priority, application United Kingdom, Aug. 8, 1975, 33235/75

Int. Cl.² C07C *177/00*

U.S. Cl. 560—121 **10 Claims**

1. A compound of the formula:



wherein B represents a single bond or a straight- or branched-chain alkylene group containing from 1 to 9 carbon atoms, R^4 represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms, R^1 represents a hydrogen atom or methyl or ethyl group, R^2 represents a hydrogen atom or a methyl or ethyl group and R^3 represents a chlorine atom or a hydroxy group and cyclodextrin clathrates of such acids and esters and, when R^4 represents a hydrogen atom, non-toxic salts thereof.

4,069,388

PREPARATION OF OXALATE ESTERS FROM CARBON MONOXIDE AND AN ALKOXYCYCLOALKENE

Lee R. Zehner, Media, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

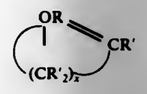
Filed Oct. 22, 1976, Ser. No. 734,799

The portion of the term of this patent subsequent to Dec. 27, 1994, has been disclaimed.

Int. Cl.² C07C *67/36, 69/36*

U.S. Cl. 560—204 **26 Claims**

1. A process for the preparation of oxalate esters which comprises reacting under substantially anhydrous conditions an alkoxycycloalkene having the formula



wherein R is an alkyl, or aralkyl group, R' is hydrogen or a straight or branched chain alkyl group which may be the same or different on the cyclic ring and x is an integer of from 3 to 6, with carbon monoxide, a monohydric saturated aliphatic, alicyclic or aralkyl alcohol, which may contain other substituents which do not interfere with the reaction, and oxygen, at a pressure of between about 500 psig and 3000 psig and at a temperature in the range of about 50° C. to 200° C in the presence of an effective amount of a catalyst selected from the group consisting of palladium, platinum, rhodium, cadmium, cobalt, zinc and copper salt compounds or mixtures thereof, and a catalytic amount of

a. an aliphatic, cycloaliphatic, aromatic or heterocyclic amine or ammonia,

b. a copper (II) or iron (III) oxidant salt compound, and

c. an ammonium or substituted ammonium salt compound, and recovering the desired oxalate ester.

4,069,389

3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-9-DEOXY-9,10-DIDEHYDRO-PGD$_1$ COMPOUNDS

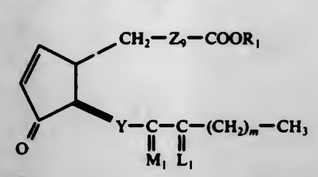
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sept. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 756,110

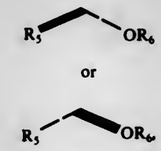
Int. Cl.² C07C *69/76*

U.S. Cl. 560—53 **33 Claims**

1. A prostaglandin analog of the formula

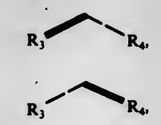


wherein Y is cis-CH=CH—or trans -CH=CH—;
wherein *m* is one to 5, inclusive;
wherein M_1 is

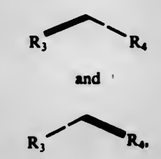


or

wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is mehtyl only when the other is hydrogen;
wherein L_1 is

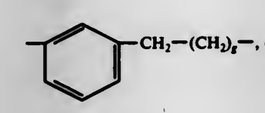


or a mixture of



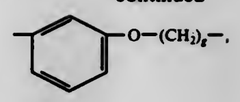
and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one ot 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically accepted cation; and
wherein Z_9 is



(1)

-continued



(2)

wherein *g* is one, 2, or 3.

4,069,390

3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-13,14-DIHYDRO-9β-PGD$_1$ COMPOUNDS

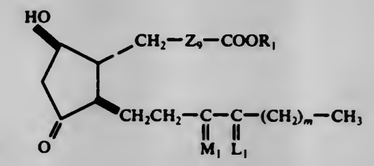
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sept. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 756,102

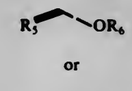
Int. Cl.² C07C *69/76*

U.S. Cl. 560—53 **25 Claims**

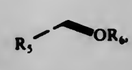
1. A prostaglandin analog of the formula



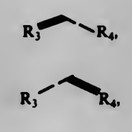
wherein m is one to 5, inclusive;
wherein M_1 is



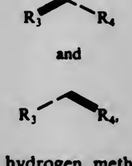
or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of

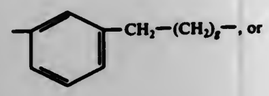


and

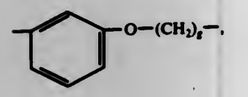
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_9 is



, or



,

wherein g is one, 2, or 3.

4,069,391

PROCESS FOR THE PRODUCTION OF POLY(ALLYL SILICOFURMATE)

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 622,525, Oct. 15, 1975, Pat. No. 4,020,259, which is a continuation-in-part of Ser. No. 551,534, Feb. 21, 1975, Pat. No. 3,956,466, which is a continuation-in-part of Ser. No. 71,628, Sept. 11, 1970, abandoned. This application Jan. 6, 1977, Ser. No. 757,239

Int. Cl.[2] C08F *14/02, 14/16, 114/14, 30/08*

U.S. Cl. 526—17 5 Claims

1. The process for the production of poly(allyl silicoformate) (1) by the following steps:

a. providing a quantity of silicon acid;

b. mixing 1 part by weight of granular silicon acid with 2 parts by weight of an allyl halide;

c. agitating said mixture in a closed system and keeping the temperature between 0° to 100° C for about 20 to 40 minutes at ambient pressure; thereby

d. producing poly(allyl halide) polymer;

e. adding 1 part by weight of sodium carbonate to the mixture of silicon acid and poly(allyl halide) polymer; (2)

f. heating said mixture to 60° to 80° C while agitating for 20 to 40 minutes under ambient pressure, thereby

g. producing poly(allyl silicoformate) polymer and salt;

h. washing said mixture with water;

i. filtering off the salt and water, thereby

j. recovering poly(allyl silicoformate) polymer.

4,069,392

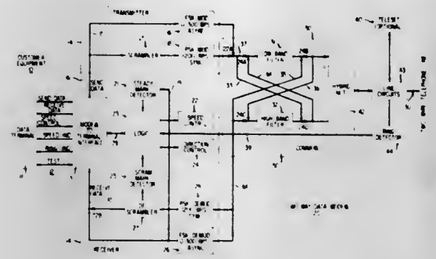
DUAL SPEED FULL DUPLEX DATA TRANSMISSION

Henry Robert Goldenberg, Hazlet; Richard John Peck, Estontown; Shih Yung Tong, Holmdel, and David Allen Webb, Bricktown, all of N.J., assignors to Incorporated Bell Telephone Laboratories, Murray Hill, N.J.

Filed Nov. 1, 1976, Ser. No. 737,789

Int. Cl.[2] H04Q *5/00;* H04M *11/06*

U.S. Cl. 178—58 R 7 Claims



1. In a data transmission system including a two-way point-to-point transmission channel capable of conveying supervisory signals and message-data signals between data stations;

transmitting means at each station selectively operable at more than one data transmission speed and format comprising at least a low-speed asynchronous data modulator, a high-speed synchronous data modulator, and means for connecting said low-speed and high-speed modulators alternatively to said transmission channel;

receiving means at each station selectively operable at more than one data transmission speed and format comprising at least a low-speed asynchronous demodulator compatible with said low-speed modulator, a high-speed synchronous demodulator compatible with said high-speed modulator, and means for connecting said low-speed and high-speed demodulators alternatively between said transmission channel and said station; and

supervisory signaling means at each station for exchanging control signals before message data transmission over said transmission channel between the station first to mark itself as an originating station to cause another station to adapt itself as an answering station to the speed and format of the originating station comprising logic means for controlling the transmission of signals uniquely representing the desired transmission speed and format of an originating station and for recognizing such signals at an answering station.

4,069,393

WORD RECOGNITION APPARATUS AND METHOD

Thomas B. Martin, Burlington; Marvin B. Herscher, Camden, and Robert B. Cox, Cinnaminson, all of N.J., assignors to Threshold Technology, Inc., Delran, N.J.

Continuation of Ser. No. 291,051, Sept. 21, 1972, abandoned. This application Dec. 11, 1974, Ser. No. 531,543

Int. Cl.[2] G10L *1/00*

U.S. Cl. 179—1 SD 27 Claims

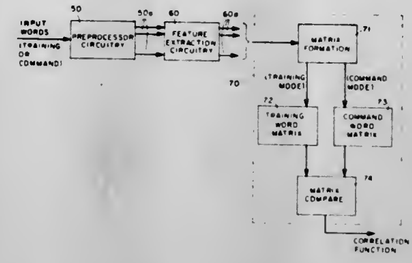
1. Apparatus which receives spoken input training words and a subsequent spoken input command word and generates a correlation function that is indicative of the resemblance of the command word to each training word, comprising:

a. feature extraction means for processing received input words and generating digital feature output signals on particular ones of a number of feature output lines, the particular ones being dependent upon the features present in an input word;

b. means for storing, as a time dependent matrix, the presence or absence status of the feature signals which occur during each training word;

c. means for storing, as a time dependent matrix, the presence or absence status of the feature signals which occur during the command word; and

d. means for comparing, member by member, the command word matrix with each training word matrix and for generating a correlation figure which reflects each matrix comparison, the member comparisons taking account only of the presence of features in the matrices being compared.



4,069,394

STEREOPHONIC SOUND REPRODUCTION SYSTEM

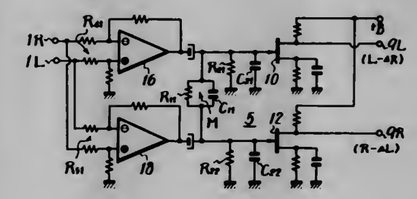
Toshitada Doi, Yokohama, and Hitoshi Wakabayashi, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 2, 1976, Ser. No. 692,108

Claims priority, application Japan, June 5, 1975, 50-67915

Int. Cl.[2] H04R *5/00*

U.S. Cl. 179—1 G 9 Claims



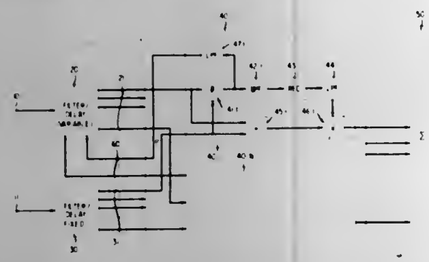
1. In a stereophonic sound reproduction system having a pair of spaced apart left and right loudspeakers and providing stereophonic left and right signals with a level difference therebetween for producing a sound image localized at a position spaced from the midpoint between said loudspeakers when said stereophonic left and right signals are respectively applied to said left and right loudspeakers; a converting circuit comprising left and right input terminals respectively receiving said stereophonic left and right signals, left and right output terminals connected with said left and right loudspeakers, respectively, means for transmitting said left and right signals from said left and right input terminals to said left and right output terminals, respectively, and frequency responsive means for reducing the level difference between said left and right signals, as transmitted to said left and right output terminals, in response to increases in the frequency of said signals so as to improve the localization of the resulting sound image.

4,069,395

ANALOG DEREVERBERATION SYSTEM

Donald Henry Nash, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1977, Ser. No. 791,416
Int. Cl.² G10L *1/00*; H04R *3/00*
U.S. Cl. 179—1 P **9 Claims**



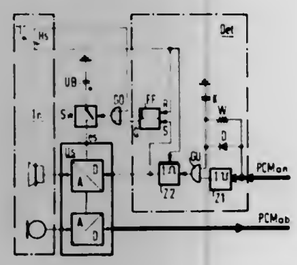
1. An analog dereverberation system comprising:
first filter/delay means for developing a first plurality of variably delayed analog bandpass signals in response to a first input signal and a control signal;
second filter/delay means for developing a second plurality of delayed analog bandpass signals in response to a second input signal;
a plurality of correlator means responsive to corresponding signals of said first and second pluralities of bandpass signals for developing a plurality of nonreverberant bandpass signals and for developing said control signal; and
means for adding said plurality of nonreverberant bandpass signals to form a single analog nonreverberant signal.

4,069,396

POWER SAVING CIRCUIT FOR USE WITH A CONVERTER CIRCUIT IN A TELEPHONE SWITCHING INSTALLATION

Friedemann Vollnhals, Wolfratshausen, and Klaus Wintzer, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 13, 1976, Ser. No. 722,401
Claims priority, application Germany, Sept. 30, 1975, 2543696
Int. Cl.² H04M *11/00*
U.S. Cl. 179—2 A **7 Claims**



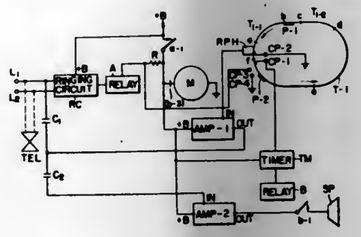
1. In a telephone switching arrangement having a converter circuit connected to a telephone station of a telecommunications network for converting incoming PCM digital signals into analog signals and for converting outgoing analog signals into PCM digital signals, the improvement comprising:
a voltage source;
power switch means connected between said converter circuit and said voltage source for connecting said voltage source to said converter circuit;
pulse regenerator means triggered by at least one pulse of the incoming PCM digital signals for providing regenerated digital signals to said converter circuit;
bistable multivibrator means connected to said pulse regenerator means for actuating said power switch means in the event said pulse regenerator means provides regenerated digital signals to said converter circuit; and
sensing means in said telephone station connected to said power switch means for actuating said power switch means in the event said telephone station is in the operating condition.

4,069,397

AUTOMATIC TELEPHONE ANSWERING DEVICE

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1976, Ser. No. 669,457
Int. Cl.² H04M *11/02*
U.S. Cl. 179—6 R **10 Claims**



1. An automatic telephone answering device operating upon arrival of a calling signal, comprising an answering endless magnetic tape in which answering terms have been prerecorded with a pause interval to provide a blank portion therein so as to allow a calling party to talk for the pause interval, and loudspeaker means for reproducing the voice of the calling party, said device comprising:
a. actuating means fixedly located at the start point of said blank portion of said tape;
b. timer means between said tape and said loudspeaker means, said timer means being preset to make said loudspeaker means operable for a period of time shorter than the pause interval upon energization;
c. pickup means connected to said timer means and disposed to cooperate with said tape for energizing said timer means in cooperation with said actuating means, said pickup means being operated by said actuating means as said tape is moved on to energize said timer means,
whereby the voice of the calling party is audifly reproduced during a period of time less than said pause interval.

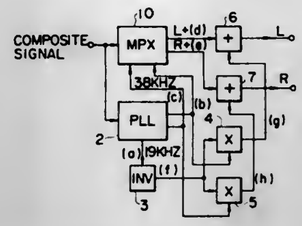
4,069,398

METHOD AND APPARATUS FOR PILOT SIGNAL CANCELLATION IN AN FM MULTIPLEX DEMODULATOR

Seijiro Fujie, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 1, 1976, Ser. No. 719,629
Claims priority, application Japan, Sept. 2, 1975, 50-106393
Int. Cl.² H04H *5/00*
U.S. Cl. 179—15 BT **3 Claims**

1. In an FM multiplex demodulator including means for providing left (L) and right (R) channel output signals from a composite input signal in response to opposite phase switching signals derived from a pilot signal, means for removing unwanted pilot signal components from the L and R output signals, comprising:
a. means for inverting the pilot signal,
b. means for individually multiplying the inverted pilot signal by each of the opposite phase switching signals to produce signals equal in amplitude but opposite in phase to the unwanted pilot signal components, and



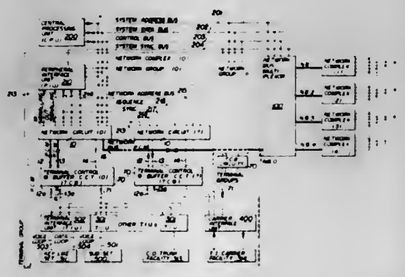
c. means for individually adding the multiplication signals to the respective L and R output signals, whereby the unwanted pilot signal components are effectively cancelled.

4,069,399

TDM PCM COMMUNICATION SYSTEM

Bruce Robert Barrett, Hazeldean, and Alan Stanley John Chapman, Kanata, both of Canada, assignors to Northern Electric Company, Limited, Montreal, Canada

Filed Nov. 17, 1975, Ser. No. 632,548
Int. Cl.² H04J *3/00*
U.S. Cl. 179—15 AL **8 Claims**



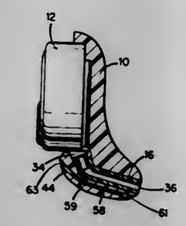
4. In a TDM PCM communication system having a switching network connected to a plurality of user terminals via an incoming path and an outgoing path, a method for exchanging PCM words between one and another of said user terminals, said PCM words each having *m* informtion bits distributed evenly across a frame of *n* channels, the method comprising the steps of:
a. generating sequences of an even number *n* of time slot addresses;
b. receiving a single information bit from the incoming path during the period of each time slot address occurrence;
c. transmitting the received information bits with a delay of *n*/2 time slot address periods;
d. causing the one user terminal, during each occurrence of one of the *n* time slot address to receive one of said transmitted information bits from the outgoing path and to transmit, on the incoming path, an information bit advanced by one in the order of bit significance in the PCM word format relative to the formation bit received from the outgoing path;
e. causing the other user terminal, during each time slot address occurrence delayed from said one time slot address by *n*/2 time slot address periods to receive one of said transmitted information bits from the outgoing path and to transmit, on the incoming path, an information bit advanced by one in the order of bit significance in the PCM word format relative to the information bit received from the outgoing path;
whereby *m* bit PCM words are exchanged bit by bit, between user terminals, in fixed pairs of time slots, which are separated by *n*/2 - 1 time slot periods.

4,069,400

MODULAR IN-THE-EAR HEARING AID

Donald L. Johanson, Wayland, and Thomas S. Chan, Somerville, both of Mass., assignors to United States Surgical Corporation, New York, N.Y.

Filed Jan. 31, 1977, Ser. No. 764,438
Int. Cl.² H04R *25/02*
U.S. Cl. 179—107 E **6 Claims**



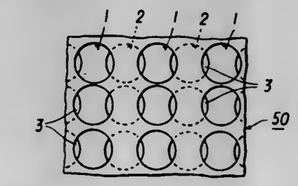
1. An in-the-ear hearing aid comprising:
a modular unit contained within a housing of standardized configuration and providing a wholly operable instrument, said housing including:
a mounting plate for attachment of said housing to an ear mold, and
a coupler for acoustic connection of the receiver of the hearing aid to the exit aperture of the ear mold, said coupler being removably attached to said housing and having an output tube outwardly extending in predetermined angular relation to said housing;
an ear mold adapted to fit the ear cavity of a user and having a recessed area onto which is secured the mounting plate of said housing for attachment of said housing to said ear mold, and a tip portion adapted to extend into the ear canal of a user and having an opening therethrough terminating in an exit aperture;
means for securing said housing to the recessed area of said ear mold; and
a flexible tubing extending through the opening in said tip portion of the ear mold and connected at one end to the output tube of said coupler and terminating at the other end at said exit aperture of the ear mold.

4,069,401

ACOUSTICAL FRICTIONAL RESISTANCE CONSTRUCTION AND APPARATUS FOR MANUFACTURING AN ACOUSTICAL RESISTANCE AND AN ASSOCIATED MAGNETIC SYSTEM

Fritz Vogelsinger, Vienna, Austria, assignor to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Austria

Filed Sept. 30, 1976, Ser. No. 728,288
Claims priority, application Austria, Oct. 2, 1975, 7537/75
Int. Cl.² H04R *1/20, 13/00*
U.S. Cl. 179—115 R **9 Claims**



1. An acoustical frictional resistance for electroacoustical transducers, comprising a thermoplastic sheet having one

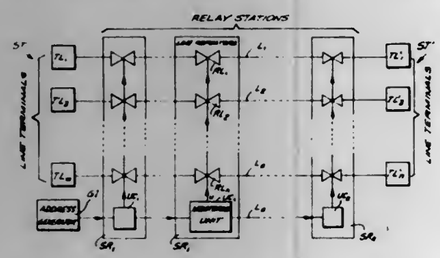
surface with a first plurality of impressions partially extending into said sheet, and having an opposite surface having a second plurality of impressions extending partially into said opposite surface and meeting said first plurality of impressions in said sheet, said first and second plurality of impressions overlapping partially and defining acoustical passages through said sheet at the overlapping areas.

4,069,402

REMOTE-TESTING ARRANGEMENT FOR PCM TRANSMISSION SYSTEM

Pietro Mantovani, San Secondo (Parma), and Silvio Roldi, Milan, both of Italy, assignors to Societe Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed July 28, 1976, Ser. No. 709,445
Claims priority, application Italy, July 28, 1975, 25817/75
Int. Cl.[2] H04B *3/46*
U.S. Cl. 179—175.31 R 10 Claims



1. In a pulse-code-telecommunication system including a pair of head stations interconnected by a set of parallel two-way transmission channels, a set of line terminals at each head station respectively connected to said transmission channels, and a plurality of cascaded relay stations between said head stations, each relay station encompassing a set of line repeaters respectively inserted in said channels, the line terminals of one head station being adapted to transmit over the associated channel a test code for checking a selected line repeater inserted therein, each line repeater being provided with loop-closing means for retransmitting said test code to the originating line terminal,

the combination therewith of:

a service link extending from said one head station to all said relay stations;

a monitoring unit at each relay station connected to said service link;

signal-generating means at said one head station connected to said service link for transmitting thereover an address code identifying the monitoring unit of a relay station containing the selected line repeater;

discriminating means at each monitoring unit responsive to the corresponding address code for delivering a priming signal to all the line repeaters of the relay station so addressed;

receiving means at each line repeater responsive to said test code for emitting a recognition signal; and

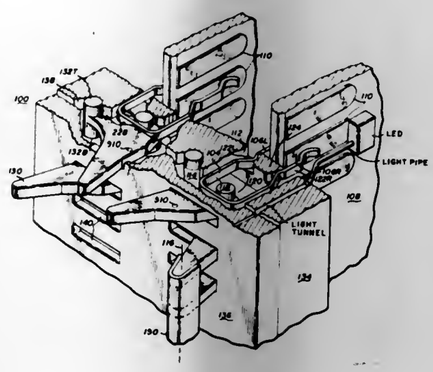
coincidence means at each line repeater connected to said receiving means and to said monitoring unit for operating said loop-closing means under the joint control of said priming and recognition signals.

4,069,403

SWITCHING APPARATUS FOR ELECTRICALLY CONTACTING CONDUCTIVE TERMINALS ON A CIRCUIT-CARRYING BOARD

Real J. Beaudette, San Jose, and Harold Patrick Krieg, Sunnyvale, both of Calif., assignors to The Singer Company, Binghamton, N.Y.

Filed Sept. 13, 1976, Ser. No. 723,252
Int. Cl.[2] H01R *33/54*
U.S. Cl. 200—51.12 9 Claims



1. An electrical switch for contacting edge contact strips on a conductor-carrying medium comprising:

a support member with a channel means therethrough having a floor which defines a plane of motion and two spaced walls;

a resilient, forked, conductive member movably retained within the channel and having at least two prong portions connected by a yoke portion, the prong portions supported by the floor and generally movable along the plane of motion while guided by the spaced walls, and adapted to receive and engage opposed surfaces of the conductor-carrying medium, at least one of the two prong portions adapted to contact a conducting terminal on the conductor-carrying medium proximate the edge thereof;

a toggle member mounted on the support member and pivotal about an axis of pivot;

engaging means carried on the toggle member at a position offset from the axis of pivot for rotatably engaging the forked conductive member;

a lever portion extending from the toggle member and adapted to be externally moved to pivot the toggle member causing the engaging means to move the forked conductive member along a travel path within the channel along the plane of motion in an outward direction away from the conductor-carrying medium or in an inward direction toward the conductor-carrying medium;

camming means on at least one of the prong portions; and

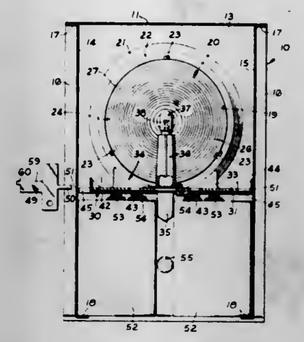
displacing means formed within the channel means by the contour of at least one of the spaced walls for engaging the camming means on the prong portions causing the prong portions of the forked member to move relative to one another to engage and disengage the opposed surfaces of conductor-carrying medium as the forked conductive member moves along the travel path.

4,069,404

SLIDABLE SWITCH USABLE WITH A PORTABLE WARNING LAMP

William Edward Minoprio, Blackburn, and Arthur Kenneth Horsfield, Preston, both of England, assignors to Dorman Smith Traffic Products Limited, Southport, England

Filed Aug. 13, 1976, Ser. No. 714,106
Int. Cl.[2] F21V *23/04*
U.S. Cl. 200—60 11 Claims



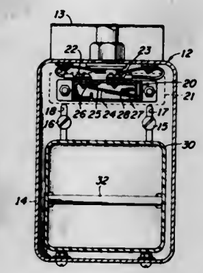
1. An electric lamp having a switch assembly comprising a support carrying a conducting protuberance, and a slidable conductive strip member mounted for longitudinal sliding movement relative to said support and having a bridge portion disposed to register with and form a bridge over said protuberance to provide an "off" condition of the switch, in which there is no contact between the slidable strip member and the protuberance, longitudinal movement of the slidable strip member serving to bring said slidable strip member, adjacent to the bridge portion thereof, into contact with the protuberance to provide an "on" condition of the switch.

4,069,405

SWIMMING POOL ALARM SYSTEM

Raoul Fima, Addison, Ill., assignor to Fima Laboratories, Inc., Oak Brook, Ill.

Filed Mar. 24, 1976, Ser. No. 669,898
Int. Cl.[2] H01H *36/02*
U.S. Cl. 200—84 C 1 Claim



1. For use in a swimming pool, a device for providing a signal in response to a change in the water level at a particular location in said pool, at which said device is mounted, said device comprising

a bracket mounted to a side of said pool,

a housing member slidable mounted to said bracket for adjustable movement in a vertical direction,

fastening means accessible only from within said housing for locking said housing in an adjusted position of said bracket,

a magnetically operated normally closed switch mounted in a fixed position near the top of said housing a substantial distance above said fastening means,

an axially polarized permanent bar magnet,

a float disposed in said housing between an upper position overlying said fastening means and a lower position below said fastening means,

means mounting said magnet at a fixed position in said float whereby said magnet maintains said switch open when said float is in said upper position and permits said switch to close when said float is in said lower position,

a cover member secured to said housing member to prevent access to said float and said fastening means,

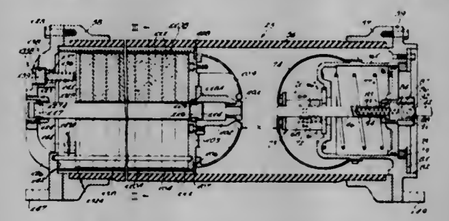
whereby said housing may be positioned whereby said magnet maintains said switch open until the water level in said housing drops a predetermined amount and said switch closes.

4,069,406

CLOSING RESISTOR SWITCH FOR GAS INSULATED CIRCUIT BREAKER

Gerardus J. Meinders, Florence, Miss., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 2, 1975, Ser. No. 636,824
Int. Cl.[2] H01H *33/16*
U.S. Cl. 200—144 AP 9 Claims



1. In a gas insulated circuit breaker having an enclosure containing an insulating gas at a relatively low pressure;

an interrupter within said enclosure and having a pair of contacts movable relative to each other between open and closed positions;

a plurality of independent resistance means connected in parallel with each other, each of said plurality of resistance means including a plurality of individual resistance elements arranged in stacked array, each stack of individual resistance elements being biased into intimate engagement, said stacks of resistance elements being enclosed in a housing;

switch means operable when actuated to a closed position to connect said resistance means in parallel with said interrupter contacts; and,

operating means operably connected to close said interrupter contacts and to actuate said switch means to a closed position just prior to the closing of said interrupter contacts.

4,069,407

UNDERWATER CUTTING ROD

Jerome S. Brower, 2040 N. Towne Ave., Pomona, Calif. 91767

Filed Dec. 10, 1975, Ser. No. 639,289
Int. Cl.[2] B23K *7/00, 9/00*
U.S. Cl. 219—70 6 Claims

1. A cutting torch primarily for underwater use in which electrical current and reactive gas flow are used in combination to cause progressive burning of a metallic electrode, the torch comprising

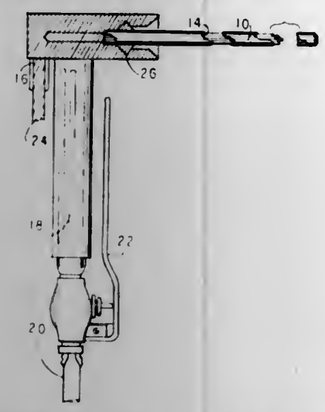
a metallic electrode comprising

a metallic tube;

a plurality of ferrous metal rods within said tube;

at least one rod made of a metal selected from the group

consisting of aluminum, magnesium, titanium and alloys thereof disposed within said tube; and
a layer of insulating material substantially covering the exterior surface of said tube;



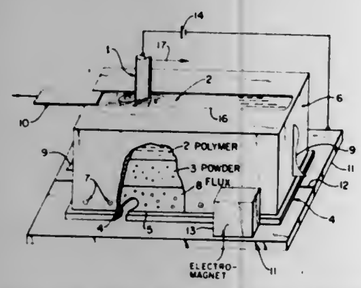
means for connecting a source of electrical current to said tube and for supplying current substantially continuously thereto; and
means for connecting a supply of reactive gas to said tube.

4,069,408

METHOD AND APPARATUS FOR UNDERWATER SUBMERGED ARC WELDING

Koichi Masubuchi, Arlington, and Chon-Liang Tsai, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 7, 1976, Ser. No. 693,576
Int. Cl.² B23K 9/18
U.S. Cl. 219—72 **12 Claims**



1. Apparatus for underwater arc welding comprising:
an enclosure having a perforable bottom,
said enclosure containing layers of welding flux, an insulating powder and a water-insoluble, high-viscosity liquid in that order on said bottom,
a longitudinal slot in the top of said enclosure
whereby an electrode may enter said enclosure through said slot to penetrate said layers to perforate said bottom.

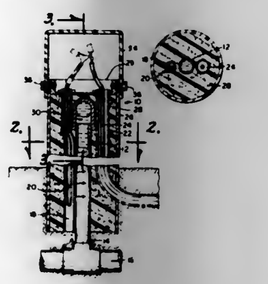
4,069,409

ELECTRICALLY HEATED FLUID COUPLING APPARATUS

Wayne B. Noland, 340 Crescent Drive, Carlisle, Iowa 50047, and Gail L. Noland, 4530 W. 38th St., St. Louis Park, Minn. 55416

Filed July 28, 1975, Ser. No. 599,385
Int. Cl.² H05B 3/02; F16L 53/00; F24H 1/12; A01K 7/00
U.S. Cl. 219—301 **3 Claims**

1. An electrically heated fluid coupling apparatus exposed to severe weather conditions for connecting below the ground a fluid source to an external device for using the fluid comprising:
a fluid conduit adapted at its lower end to be connected to a fluid source below the ground surface;
a hollow heating conduit extended longitudinally in side-by-side heat exchange contact with said fluid conduit, having a length approximate that of said fluid conduit; said heating conduit having an upper end extended above the upper end of said fluid conduit;
an electric resistance heating element disposed within said hollow heating conduit and extending the approximate length thereof, said element having terminals extended outwardly from the upper end of said heating conduit;
electric means for electrically connecting said heating element to a source of electric energy, said electric means comprising an elongated hollow tube extended through substantially the length of said heating conduit, and an electrical cable extended through said tube, said tube extended closely adjacent in side-by-side relationship with said fluid conduit from a point below the ground surface and terminating in an open upper end above said fluid conduit upper end, said cable having an end extended outwardly of said tube upper end;



an outside casing disposed about said fluid conduit, said heating conduit and said electric, means, said casing having at least one aperture formed therein and having a length at least as coextensive with that of said heating conduit, said one or more apertures being above the ground surface, said casing upper end being open through which sole access can be obtained to the open upper ends of said heating conduit and hollow tube;
thermal insulation disposed within said outside casing and substantially filling the space therewithin about said fluid conduit, said heating conduit and said electric means;
coupling means within said casing affixed to said fluid conduit and registered with each of said at least one aperture for providing access to the fluid delivery external devices; and
top means affixed to the upper end of said casing for closing said upper end, said top means removably secured to the upper end of said casing and cooperating with the upper end thereof to provide an enclosure within which the electrical connection between said electric resistance heating element and said electrical cable can be made.

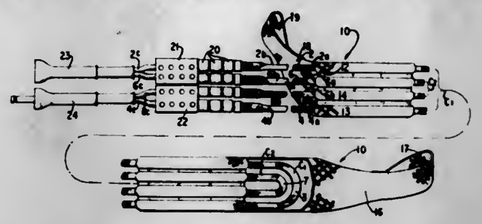
4,069,410

HEAT TREATING APPLIANCE AND CABLE

Henry Keep, Jr., 88 E. Wharf Road, Madison, Conn. 06443

Filed Feb. 12, 1976, Ser. No. 657,452
Int. Cl.² H05B 3/58
U.S. Cl. 219—535 **8 Claims**

1. In an appliance adapted to be coiled about a steel pipe or like structure for heat treating it before or to relieve stresses in it after welding, comprising an elongate reticulate sleeve of interlaced heat and oxidation resistant wire and at least one length of pliable electrical heating cable fixed inside and along said sleeve, said cable comprising a central conductor composed of an electrical resistance alloy and a plurality of contiguous layers of high temperature resistant insulating material covering said conductor and encased in a sheath of interlaced heat and oxidation resistant wire, the improvement which comprises each cable length of said at least one cable length being doubled back along itself to form two heating legs held spaced apart and extending inside said sleeve from a cable loop



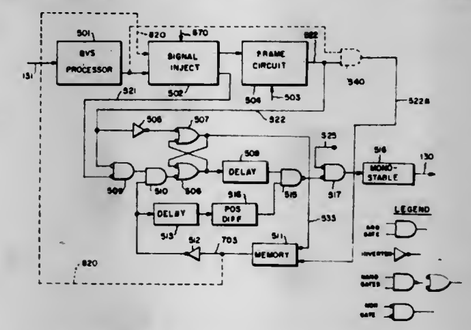
interconnecting them near yet inside one end of the sleeve to and through respective openings in the sleeve near its other end, said legs having terminal portions extending outside said sleeve from said openings for connection with a source of current, said sleeve comprising at each said end a portion thereof extending beyond said at least one cable length therein for securing the appliance in place on the structure to be heat treated.

4,069,411

IMAGE ANALYSIS SYSTEM AND METHOD FOR MINIMIZING PARALYSIS ANGLE

Roger R. Morton, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 636,273, Nov. 28, 1975, which is a continuation of Ser. No. 434,529, Jan. 18, 1974, abandoned, which is a division of Ser. No. 210,278, Dec. 20, 1971, Pat. No. 3,805,028, which is a continuation of Ser. No. 835,673, June 23, 1969, abandoned. This application June 24, 1976, Ser. No. 699,551
Int. Cl.² G06M 11/02
U.S. Cl. 235—92 PC **11 Claims**



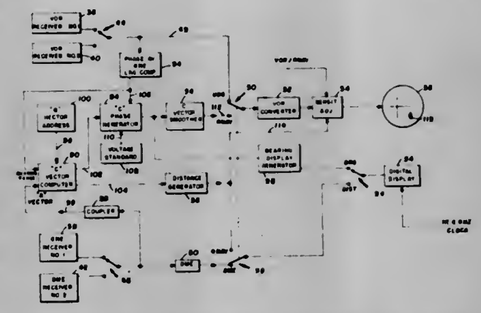
1. In an image analysis system for scanning a feature with an energy beam and providing a current binary video signal having leading and trailing edges corresponding to the leading and trailing edge intercepts of said beam with said feature, and for comparing a given line scan binary video signal, stored for one line scan after the given line scan, with the current binary video signal of the line scan following the given line scan to produce a modified binary video signal having a leading edge corresponding to that of said current binary video signal and a trailing edge corresponding to the last-to-occur of the trailing edges of said current and of said stored video signal, a device for reducing the paralysis angle of the scanned feature to essentially zero, comprising:
means for generating for successive current line scans and successively temporarily storing data corresponding to the X-coordinates of the intercepts of said beam with said feature for each successive current line scan;
means for successively reading those X-coordinates which are currently so temporarily stored and successively selecting, as a function of data derived from successive given and current scan lines, of those X-coordinates so read, for successively storing, data defining the leading edge and trailing edge of said feature; and
means for generating successive said video signals stored for one line scan having values representing the leading and trailing edges corresponding in time to those of the successively selected X-coordinates.

4,069,412

AREA NAVIGATION SYSTEM

George B. Foster, Worthington, and Paul Douglas Gibbs, Blacklick, both of Ohio, assignors to Air Data, Inc., Worthington, Ohio

Filed June 5, 1974, Ser. No. 476,513
The portion of the term of this patent subsequent to Dec. 17, 1994, has been disclaimed.
Int. Cl.² G06G 7/78
U.S. Cl. 364—448 **18 Claims**



1. An area navigation system comprising: first means for receiving station-to-aircraft vector angle signals; processing means including averaging means coupled to said first receiving means for averaging said vector signals, and lag compensation means coupled to said averaging means, said lag compensation means, including means responsive to the amount of phase lag introduced by said averaging means for adjusting the degree of lag compensation; second means for receiving station-to-aircraft magnitude signals; a waypoint-to-aircraft vector computer having said signals from said processing means and said second receiving means coupled thereto; a station-to-waypoint vector generator, also coupled to said computer, to produce an electrical output signal representative of the corresponding waypoint-to-aircraft vector; and means coupled to said computer output signal for developing a display of the value of said aircraft-to-waypoint vector.

4,069,413

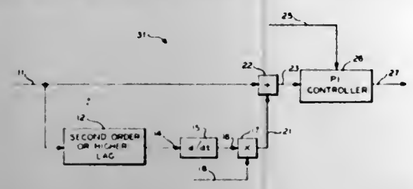
PROCESS MEASUREMENT AND CONTROL

Robert W. Rutledge, and Franklin D. Ganaway, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 29, 1976, Ser. No. 736,905
Int. Cl.² G05B 11/42; G06G 7/57, 7/58
U.S. Cl. 364—118 **27 Claims**

1. Apparatus comprising:
second or higher order lag means for accepting a process measurement signal and delivering in response thereto a lagged process measurement signal;
differentiator means for accepting said lagged process measurement signal and delivering in response thereto a derivative signal representative of the time derivative of said lagged process measurement signal; and

signal combining means for accepting said process measurement signal and said derivative signal and delivering in



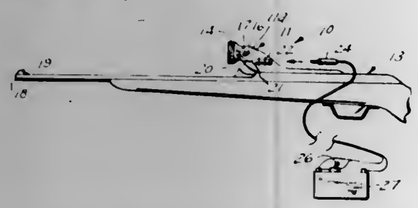
response thereto a process variable signal representative of the weighted sum of said process measurement signal and said derivative signal.

4,069,414

FIREARM SIGHT LIGHT

Arthur O. Bell, 510 E. Wyatt, Herington, Kans. 67449

Filed June 4, 1976, Ser. No. 692,896
Int. Cl.² F21V *33/00*
U.S. Cl. 362—110 **2 Claims**



1. A device for illuminating a target and the front sight of a rifle having conventional open sights and a tapped receiver, comprising: an electric lamp; a U-shaped sheet metal bracket having a pair of lateral protruding ears bent upward to a vertical position with an elongated portion extending out from the base thereof and perpendicular to said ears, said elongated portion forming a located above and parallel to the bore of the rifle supporting said lamp when properly mounted on the receiver with external power supplied through a phone jack attached to said bracket, said bracket having drilled holes properly spaced to coincide with holes in the receiver normally used for mounting a bracket to accommodate a telescopic sight, four drilled holes for wire fasteners to hold said female phone jack securely, and two elongated holes in said vertical ears of said bracket for bolts that support said light and allow adjustment of said light on a horizontal plane, said electric lamp mounted in said bracket by means of bolts with neoprene washers to prevent oscillation but allow adjustment in a vertical plane, said lamp comprised of a case to hold a lens, reflector, a bulb connected electrically through said phone jack, electrical cord, a toggle switch that is mounted physically and electrically to a six volt dry cell battery mounted on the user's belt, said lamp being mounted a sufficient distance above the front and rear sights to allow sighting on the target in a normal manner.

4,069,415

HIGH INTENSITY DISCHARGE LAMP FOR USE IN EXPLOSIVE ATMOSPHERES SUCH AS MINES

Perfecto Dacal, Beckley, W. Va., assignor to Control Products Inc., Beckley, W. Va.

Filed Jan. 7, 1977, Ser. No. 757,637
Int. Cl.² F21L *15/06*
U.S. Cl. 362—263 **8 Claims**

1. A high intensity discharge lamp permissible for use in explosive atmospheres such as mines comprising:

a rectangular bulb housing and a cage-like outer guard assembly therefor;

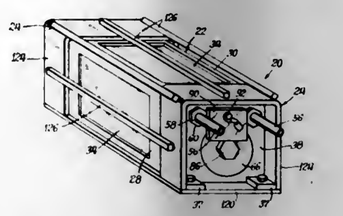
said bulb housing having four sidewalls extending between head and tail endwalls;

one of said sidewalls being substantially imperforate to serve as a mounting base, and window means of transparent material in at least some of the other three of said sidewalls;

said head endwall having electrical power conductor means extending therethrough, and gland means including flanged threaded bushing means on the outside of said head endwall, said bushing means having flange means with a plurality of wrench-engageable flats;

screw-threaded head and tail cover members threadedly engageable with opposite, aligned, screw-threaded openings in the head and tail endwalls respectively;

said head cover member having mounted on the inside surface thereof a bulb socket member in substantially coaxial relation therewith, and a grounding lug in eccentric relation therewith, said head cover member having a central



boss on the outside thereof with a plurality of wrench-engageable flats;

said head cover member having a first locking plate removably fastened to the outside surface thereof and simultaneously engageable with flats on said boss and on said bushing means to prevent rotation and loosening thereof;

a screw-threaded inspection plug threadedly engageable with a threaded access opening in one of said sidewalls, said access opening positioned to provide access to said bulb socket member and grounding lug within the housing, and a second locking plate removably fastened to the outside of the housing abutting a flat on said inspection plug to prevent rotation and loosening thereof;

said outer guard assembly including an elongated support plate, a pair of hoops fastened to the ends of said support plate, and a plurality of bars fastened to said hoops extending parallel to said support plate; and

means for fastening said bulb housing within said outer guard assembly with said one sidewall of said bulb housing supported on said support plate of said outer guard assembly.

4,069,416

LAMP EQUIPPED WITH MAGNETS

Shigeru Suga, Yoyogi 5-20-2, Shibuya, Tokyo, Japan

Filed Mar. 29, 1976, Ser. No. 671,699
The portion of the term of this patent subsequent to Nov. 9, 1993, has been disclaimed.
Int. Cl.² F21V *13/00*
U.S. Cl. 313—161 **7 Claims**

1. An electrically energized illuminating lamp comprising a bulb and a source of light within said bulb and emitting light through a portion of said bulb, and at least one magnet around the exterior wall of the bulb at a position other than the portion of the bulb through which light is emitted for attracting metal vapor and volatile matter generated inside the bulb during operation of the lamp and depositing them onto the interior

wall of the bulb at a position corresponding to that of the magnet, whereby deposits are prevented on the interior wall of



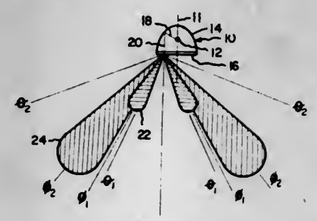
the bulb in light transmission areas thereof to reduce emission of light from the lamp.

4,069,417

LIGHTING PANEL HAVING IMPROVED REFRACTING ELEMENTS

James D. Howe, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 571,171, May 1, 1975. This application Mar. 29, 1976, Ser. No. 671,888
Int. Cl.² F21V *5/00*
U.S. Cl. 362—330 **4 Claims**



1. A lighting panel useable in controlling locally unidirectional light passing therethrough to uniformly radially distribute the light into each of at least two peak lighting intensities within the control range to improve illumination, comprising:

a plurality of light modifying elements for substantially uniformly controlling the radial distribution of locally unidirectional light within a control range,

each element being constructed to critically reflect the incoming locally unidirectional light and then refract the reflected light into at least two uniformly radially distributed peak lighting intensities having substantially uniform radial light distribution within each of the peak lighting intensities within the control range.

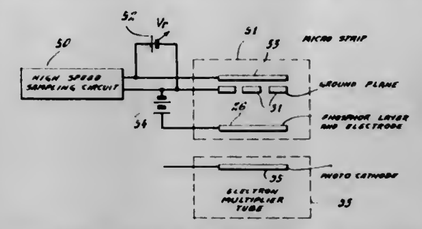
4,069,418

DETACHABLE HIGH-SPEED OPTOELECTRONIC SAMPLING HEAD

Henry Merkelo, Urbana, Ill., assignor to The University of Illinois Foundation, Urbana, Ill.

Filed Mar. 2, 1976, Ser. No. 663,283
Int. Cl.² H01J *39/00, 39/12*
U.S. Cl. 250—207 **11 Claims**

1. A high-speed optoelectronic sampling head comprising a detachable housing for use with a photo amplifying device, said housing defining an evacuated chamber, a photoemissive strip fixedly mounted in said chamber, a ground plane fixedly mounted in said chamber spaced from said photoemissive strip and defining a microstrip ground plane for said photoemissive strip, feedthrough means extending through a wall of said housing for propagating a high-speed sampling potential difference between said photoemissive strip and said ground plane, a phosphor layer in said chamber positioned to receive photoelectrons emitted from said photoemissive strip, said housing having a first window positioned to direct light to be detected



to said photoemissive strip, and a second window transparent to phosphorescent light from said phosphor layer for directing said phosphorescent light from said chamber externally of said housing.

4,069,419

DRY DEVELOPER COMPOSITION FOR DYE PENETRANT INSPECTION AND METHOD FOR EMPLOYING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sept. 8, 1975, Ser. No. 611,292
Int. Cl.² G03K *3/00*
U.S. Cl. 250—302 **18 Claims**

1. A method for detecting cracks and flaws in the surface of an object, which comprises applying to said surface a water washable biodegradable dye penetrant composition which consists essentially of (1) a biodegradable nonionic surfactant selected from the group consisting of (a) straight chain, primary, aliphatic oxyalkylated alcohols, wherein said alcohols can contain from 8 to 20 carbon atoms and the oxyalkyl groups are a mixture of ethylene oxide and propylene oxide groups, and (b) ethoxylates of linear secondary aliphatic alcohols, with the hyroxyl groups randomly distributed, the linear aliphatic portion of said alcohols being a mixture of alkyl chains containing in the range from 10 to 17 carbon atoms, and containing an average of from 3 to 12 moles of ethylene oxide and (2) a small amount of a dye soluble in said surfactant, removing said dye penetrant composition from said surface without removing liquid dye penetrant from said cracks and flaws in said surface, applying to said surface a dry developer composition consisting essentially of about 25 to about 65% talc and about 35 to about 75% of fumed silica, by weight, said fumed silica having a particle size less than the particle size of said talc, said dye penetrant composition in said cracks and flaws being converted to a gel when contacted with said developer composition, removing excess developer and viewing the surface of said object under lighting conditions to obtain colored traces from the dye in said cracks and flaws.

4,069,420

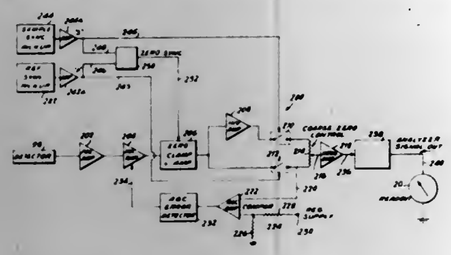
OPTICAL GAS ANALYZER

Thaddeus C. Ross, Santa Barbara, Calif., assignor to Cavitron Corporation, New York, N.Y.

Filed Mar. 8, 1976, Ser. No. 664,464
Int. Cl.² G01N *21/26*
U.S. Cl. 250—341 **44 Claims**

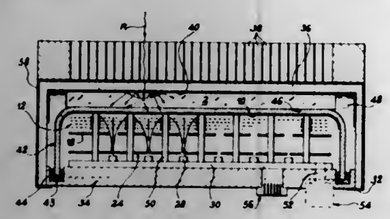
1. In an optical gas analyzer including in combination, a sample chamber, a reference chamber, to provide dual optical paths one for analysis of a sample gas, the other for reference, radiation projector means mounted at one end of said chambers, means for chopping and directing the radiation beams alternately along the two paths, the improvement which comprises radiation detector means positioned at the other end of said chambers comprising:

A. housing means open at the front end thereof and defining a cavity,
B, a reflective surface within said cavity facing the front end of said housing means to reflect energy beams transmitted along said paths,
C. a spectral filter mounted in said cavity in spaced relation to the reflective surface for receiving reflected energy beams,
D. a detector mounted within said cavity adjacent the spectral filter to receive the radiation beams through said spectral filter,



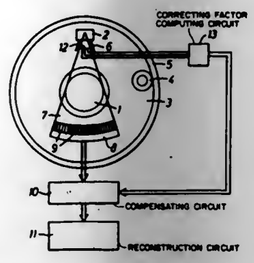
E. sealing means cooperating with said housing means to provide an air tight seal to said cavity and permitting energy beams to enter through the front end of said housing means to engage the reflective surface and be reflected therefrom towards the spectral filter, and
F. masking means contained within said cavity in the form of a spectrally absorbing gas so as to eliminate the effect of an interfering gas that is contained in spectral proximity to the gas of interest in the sample gas such that the gas having spectral absorbing lines which overlap in the region covered by the spectral filter and specifically tuned to the absorption spectrum of the gas of interest is substantially eliminated.

4,069,421
DEVICE FOR LOCALIZING LIGHT PHENOMENA
Jacques Bourdel, St-Martin d'Uriage, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Mar. 12, 1976, Ser. No. 666,450
Claims priority, application France, Mar. 18, 1975, 75 08451
Int. Cl.² G01T *1/20*
U.S. Cl. 250—363 S **15 Claims**



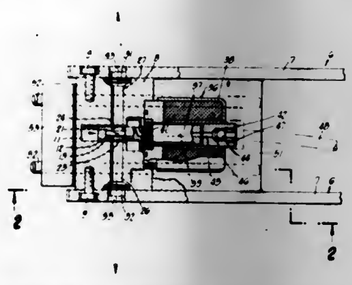
15. A device for localizing radiations comprising:
a photocathode means for converting said radiations to emitted photoelectrons;
nonelectron multiplying means for focusing said emitted photoelectrons in the form of a number of separate beams, each of said beams corresponding to photoelectrons emitted by a well-localized fraction of said photocathode;
means for accelerating photoelectrons of said beams; and
means for detecting and localizing said beams of photoelectrons including a a scintillator placed behind said accelerating means, said scintillator acting as a light guide, said means for detecting and localizing further including four photomultipliers disposed at uniform intervals on the periphery of said scintillator.

4,069,422
APPARATUS FOR EXAMINING OBJECTS BY MEANS OF PENETRATING RADIATION
Godfrey Newbold Hounsfield, Newark, England, assignor to E M I Limited, Hayes, England
Division of Ser. No. 474,767, May 30, 1974, Pat. No. 3,940,625.
This application Feb. 18, 1976, Ser. No. 659,155
Int. Cl.² G01N *23/06*
U.S. Cl. 250—445 T **5 Claims**



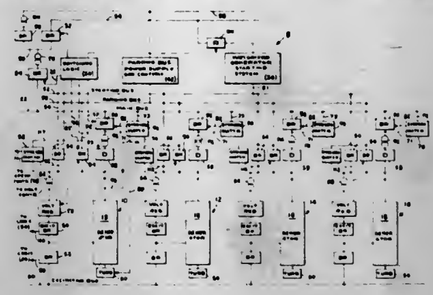
1. A medical radiographic apparatus including,
a. a source, arranged to irradiate a slice of an object with radiation projected in different directions in a substantially planar fan-shaped distribution about a mean direction,
b. detector means, sensitive to the radiation and disposed to receive and to provide output signals indicative of the intensity of radiation emergent from the object in the plane of the distribution,
c. means for moving the source and the detector means, in the plane of the distribution, relative to the object, to irradiate the object from a plurality of different mean directions,
d. means for processing the output signals provided by the detector to derive a representation of the variation of absorption of the radiation in said slice of the object and,
e. means adapted to compensate for variations in the hardness of radiation projected in different directions in the plane of the distribution.

4,069,423
RADIATION SOURCE SHIELDING AND COLLIMATING DEVICE
Roger E. Garrett, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed Sept. 29, 1976, Ser. No. 727,682
Int. Cl.² G21G *4/00*
U.S. Cl. 250—493 **7 Claims**



1. A radiation source shielding and collimating device comprising a body having a chamber therein, means defining a radiation passage from said chamber to the exterior of said body, a source of radiation at atmospheric pressure and in said chamber, means for subjecting said chamber to a subatmospheric pressure, and an indicator responsive to the pressure in said chamber.

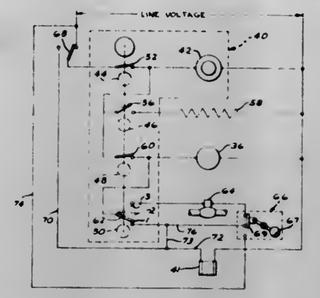
4,069,424
SHAFT TURNING PARKING BUS FOR MULTIPLE UNIT INSTALLATIONS UTILIZING A SINGLE MOTORIZED GENERATOR CONTROL SYSTEM
Jerry D. Burkett, Hopewell Junction, N.Y., assignor to Turbodyne Corporation (Gas Turbine Div.), Saint Cloud, Minn.
Filed May 10, 1976, Ser. No. 684,570
Int. Cl.² H02J *3/00*
U.S. Cl. 307—87 **11 Claims**



3. In an electrical power generating installation of the type including a plurality of turbine-generator sets; a controlled variable frequency starting system; means for connecting the output from said starting system to the generator member of a selected turbine-generator pair for gradually increasing the frequency output of said starting system whereby to drive said generator as a synchronous motor to bring said turbine to a self-sustaining rotational velocity; means for disconnecting said generator from said system upon said turbine becoming self-sustaining; a power feeder network; and synchronization matching means for connecting said generator to said power feeder network upon a phase and frequency match being attained between said generator and power feeder network; the improvement enabling a single said starting system to be utilized in effecting transfer to a selected turbine-generator set to a low-speed turning configuration comprising:
parking bus means;
means for providing a potential to said parking bus means at a relatively constant, low frequency;
switching means for disconnecting a selected turbine-generator set from said power feeder network and for re-connecting said turbine-generator set to said starting system;
means for gradually reducing the frequency of said starting system output to gradually slow rotation of said turbine-generator set;
means for matching the phase and frequency of rotation of said selected turbine-generator set to the corresponding phase and frequency of said parking bus; and
means for switching and connecting the generator member of said selected turbine-generator set to said parking bus, to continue low speed turning of said selected turbine-generator set and for switching and reconnecting the generator member of said selected turbine-generator set to said starting system to bring said turbine-generator set into operating condition for reuse.

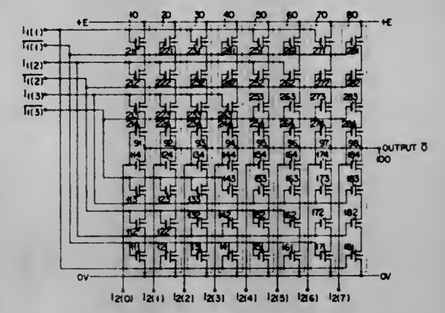
4,069,425
FULL-TIME FLOOD PROTECTION CONTROL FOR DISHWASHER
Donald S. Cushing, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed June 3, 1976, Ser. No. 692,442
Int. Cl.² H01H *35/18*
U.S. Cl. 134—57 D **6 Claims**

1. An automatic dishwasher having a washing enclosure, a pump and motor assembly to circulate water within said enclosure, a dishwasher fill means including a high-impedance solenoid-controlled water inlet valve for supplying liquid to the enclosure, a low-impedance electrical control component to control the flow of liquid from the enclosure, and a control system comprising:
a single-pole, double-throw door interlock switch;
a timer including a motor and three cam-actuated switches, one of said switches controlling the power to the timer motor, another controlling the power to the motor and pump assembly, and the third controlling the power to the solenoid control of the water valve and drain valve;
a water level sensor, independent of the dishwasher fill



means, including a switch, said water level sensor switch being of the single-pole, double-throw type and connecting the high-impedance solenoid and said low-impedance electrical control component in series during normal operation and connecting said motor and pump assembly to a power supply during flooding conditions;
further, said single-pole, double-throw door interlock switch functioning to supply power from said water level sensor switch to said motor and pump assembly when the door is in its unlatched position.

4,069,426
COMPLEMENTARY MOS LOGIC CIRCUIT
Masataka Hirasawa, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan
Filed Oct. 5, 1976, Ser. No. 729,771
Claims priority, application Japan, Oct. 6, 1975, 50-120486
Int. Cl.² H03K *19/08, 19/20, 17/04, 17/60*
U.S. Cl. 307—205 **8 Claims**



1. A complementary MOS logic circuit for obtaining second logic signals corresponding to the state of logic combinations specified by N first logic signals wherein N is greater than 2 which logic circuit comprises a plurality of block series circuits each consisting of a first component series circuit formed of series connected first channel type IG-FET's and a second component series circuit formed of series connected second channel type IG-FET's arranged complementary to said first channel type IG-FET's and having a common output terminal connected to all the component series circuits; said N first logic signals or those complementary thereto being selectively sup-

plied to the gates of the first and second channel type IGFET's to selectively conduct the second logic signals to the output terminal of the complementary MOS logic circuit through a predetermined component series circuit in response to said N first logic signals or those complementary thereto.

4,069,427

MIS LOGIC CIRCUIT OF RATIOLESS TYPE

Kenzo Masuda, Tokorozawa, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 5, 1976, Ser. No. 739,042
Claims priority, application Japan, Nov. 10, 1975, 50-134108
Int. Cl.[2] H03K *19/08, 19/20;* G11C *19/00*
U.S. Cl. 307—205 **9 Claims**



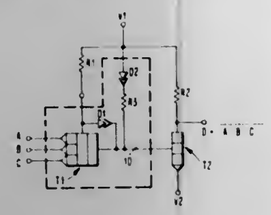
1. An MIS logic circuit of a ratioless type comprising at least one logic block including input and output terminals and at least one MIS FET inherently having a gate-to-source capacitance and a gate-to-drain capacitance, the gate of said FET being connected with said input terminal, and first and second means connected with the drain and source of said FET respectively for suppressing electric energy which tends to be fed back to from said output terminal to said input terminal through said capacitances.

4,069,428

TRANSISTOR-TRANSISTOR-LOGIC CIRCUIT

Dennis Conway Reedy, Stormville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 2, 1976, Ser. No. 719,887
Int. Cl.[2] H03K *19/08, 19/12, 19/36*
U.S. Cl. 307—215 **13 Claims**



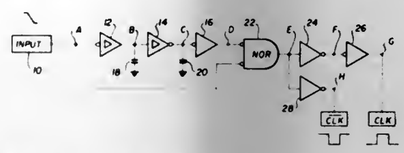
1. An improved monolithically integrated transistor-transistor-logic circuit comprising:
an input transistor having a collector region, a base region, and at least one emitter region connected to an input;
an output transistor having a colletor region, a base region, and at least one emitter region;
an electrical path coupling the base region of said output transistor to the collector region of said input transistor;
a first source of potential electrically coupled by means of a first impedance to the base region of said input transistor and by menas of a second impedance to the collector region of said output transistor;
a second source of potential electrically coupled to the emitter region of said output transistor; and
circuit means electrically coupled to said base region of said output transistor for biasing said output transistor into a first binary state when said inputtansistor malfunctions by failing to provide a current path for biasing said output transistor into a second binary state;
said circuit means electrically coupled to said base region of said output transistor being a high impedance current path comprising a series connected Schottky Barrier Diode and a third impedance.

4,069,429

IGFET CLOCK GENERATOR

William H. White, Indialantic, and Mario A. Lorie, Palm Bay, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Sept. 13, 1976, Ser. No. 722,444
Int. Cl.[2] H03K *5/159, 5/04, 19/08, 19/34*
U.S. Cl. 307—265 **17 Claims**



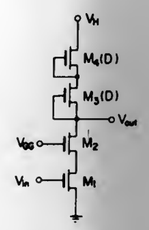
1. A pulse producing circuit comprising:
input means;
output means having a first input connected to said input means and a second input;
three inverter means connected in cascade between said input means and said second input of said output means, two of said inverter means being unbalanced in their response to voltage level changes at said input means each for producing a time delay;
said output means produces a pulse for a specific direction of voltage level change at said input means for a duration determined by said time delays.

4,069,430

MIS SWITCHING CIRCUIT CAPABLE OF ENDURING HIGH VOLTAGE

Kenzo Masuda, Tokorozawa, Japan, assignor to Hitachi, Ltd., Japan

Filed June 29, 1976, Ser. No. 700,745
Claims priority, application Japan, July 2, 1975, 50-80891
Int. Cl.[2] H03K *17/60, 19/40;* H02H *9/00*
U.S. Cl. 307—270 **6 Claims**



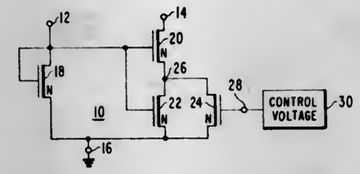
1. An MIS switching circuit capable of enduring a high voltage, comprising a load, at least one protective FET having its drain connected to said load and its gate arranged for connection to a DC bias source, and a switching FET having its drain connected to the source of said protective FET and its source connected to a common potential source and its gate arranged for reception of an input signal to the switching circuit, wherein said load is constituted by a plurality of FETs connected in series with each other between a high voltage source and the drain of said protective FET, the output of the switching circuit being derived from the junction point between said load and said protective FET.

4,069,431

AMPLIFIER CIRCUIT

Nicholas Kucharewski, Lebanon, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 22, 1976, Ser. No. 753,500
Int. Cl.[2] H03K *5/20;* H03F *3/185, 3/45;* H03G *3/30*
U.S. Cl. 307—355 **11 Claims**



1. A current amplifier with controlled current gain comprising:
input, output and common terminals;
a plurality of transistors of a first conductivity type, each having first and second electrodes with a controlled conduction path therebetween and having a control electrode, the conduction of the controlled conduction path of each transistor being controlled responsive to the potential between its second and control electrodes;
the first and second electrodes of the first of the plurality of transistors connected respectively to the input terminal and the common terminal;
the first electrode of the second of the plurality of transistors connected to the output terminal;
the first and second electrodes of the third of the plurality of transistors connected respectively to the second electrode of the second transistor and the common terminal;
direct-coupled feedback means between the first electrode of the first transistor and its control electrode to adjust the potential at the control electrode of the first transistor and condition the first transistor to conduct current, as applied to said input terminal, through its controlled conduction path;
means for applying a potential substantially equal to the potential at the control electrode of the first transistor to the control electrodes of the second and third transistors;
a source of gain-controlling signal;
a controlled impedance means connected between the common and output terminals; and
means for applying the gain-controlling signal to the controlled impedance means to vary, in accordance with the applied signal, the current gain of the amplifier within a range between a predetermined minimum current gain as defined by a ratio of the conductances of the first, second and third of the plurality of transistors and a predetermined maximum current gain as defined by the ratio of the conductances of first and second of the plurality of transistors.

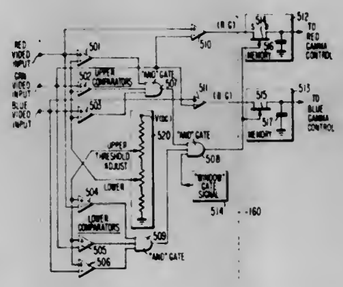
4,069,432

SIGNAL COMPARATOR CIRCUIT

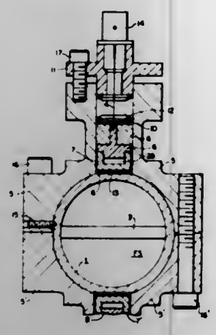
Lucas John Bazin, Stratford, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 563,684, March 31, 1975. This application June 7, 1976, Ser. No. 693,823
Int. Cl.[2] H03K *5/20*
U.S. Cl. 307—357 **4 Claims**

1. A logic circuit for determining when all of a plurality of signals are within a predetermined amplitude range comprising:
first comparing means for developing a first output signal when all of said signals are above an upper predetermined amplitude, saaid first comparing means including:
first, second and third comparators;
threshold voltage means corresponding to one limit of said amplitude range coupled to each of said first, second and third comparators;
means coupling a different one of said signals to each of said first, second and third comparators, each of said comparators being operative to produce a first logic state when the signal applied thereto exceeds said one limit and a second logic state when the signal applied thereto is less than said one limit;
second comparing means for developing a second output signal when all of said signals are below a lower predetermined amplitude;
said second comparing means including:
fourth, fifth and sixth comparators;
threshold voltage means corresponding to another limit of said amplitude range coupled to each of said fourth, fifth and sixth comparators;



an electrical connection being provided for said first electrode through said insulating member and said end plate; and means



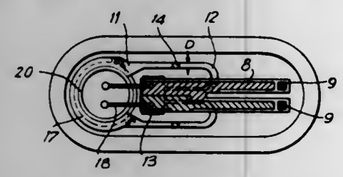
for mechanically connecting said end plate with said second electrode to hold all of said elements together as a unit.

4,069,434

QUARTZ CRYSTAL OSCILLATOR

Masanori Kawai, Tatsuno, and Shinkichi Kobayashi, Chino, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 537,030, Dec. 27, 1974, abandoned. This application Dec. 10, 1976, Ser. No. 749,552
Int. Cl.² H01L 41/04
U.S. Cl. 310—348 11 Claims



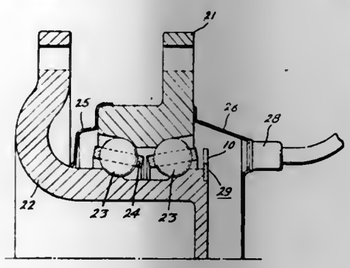
1. A hermetically sealed quartz crystal tuning fork vibrator assembly particularly for use as a time standard in an oscillator circuit comprising in combination a flexural mode tuning fork quartz crystal vibrator having two substantially opposed planar surfaces and being adapted to vibrate in a first vibratory direction substantially parallel to said surfaces, and a mounting plate having a first portion including a flat surface, said flat surface being secured to one of said opposed surfaces at a non-vibtatory portion of said tuning fork vibrator, said mounting plate including a second portion mounted to a reference member, said mounting plate having a resilient portion intermediate said first and second portions, said resilient portion being adapted to vibrate in said first vibratory direction at an angle of about 90° with respect to said first vibratory direction, said resilient portion being formed of two substantially U-shaped spring-like elements, a first leg of each said element being connected to said second portion and the other leg of each U-shaped spring-like elements being connected to said first portion, each leg of each element being formed with a Z-shaped bend away from said opposed surface to which said flat surface is secured so that said other leg of each U-shaped spring-like element connected to said flat surface is in overlapping relationship along the lengthwise extent of said vibrator with said opposed planar surface when said opposed planar surfaces are viewed in plan view to thereby reduce the lateral dimension of said tuning fork vibratory assembly.

4,069,435

DEVICE FOR DETECTING RELATIVE MOTIONS IN A BEARING

Carl Axel Wannerskog, Goteborg, and Sture Leanart Asberg, Savedalen, both of Sweden, assignors to SKF Industrial Trading and Development Company, N.V., Amsterdam W., Netherlands

Continuation-in-part of Ser. No. 463,973, April 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 243,494, May 26, 1972, abandoned. This application Nov. 12, 1975, Ser. No. 630,970
Int. Cl.² H02K 17/42
U.S. Cl. 310—168 8 Claims



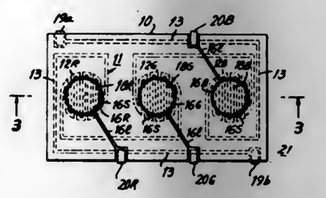
1. In a bearing assembly having at least two relatively rotatable bearing members spaced apart to define an annular space for a plurality of rolling elements, a device having means for generating a magnetic medium and means for sensing variation in the magnetic medium, said bearing assembly including means for inducing variations in the magnetic flux which variations have a frequency proportional to the rotational speed of one member relative to the other member, said means for generating variations being associated with one bearing member and seal means including a circumferentially extending shield at opposite axial ends of said annular space, said sensing means mounted in one of said shield members, each of said shields secured to one of said bearing members and in sealing contact with the other bearing member and enclosing an annular space including said rolling elements and said generating and sensing means thereby providing a sealed environment therefor.

4,069,436

FLAT THERMIONIC CATHODE

Akira Nakayama, Fuchu; Akio Ohkoshi, Tokyo; Shoichi Muramoto, Tokyo; Takehisa Natori, Tokyo; Koichiro Sumi, Inagi; Hideaki Nakagawa, Ebina, and Torao Aozuka, Chofu, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 8, 1976, Ser. No. 693,905
Claims priority, application Japan, June 11, 1975, 50-70653
Int. Cl.² H01J 1/46, 21/10
U.S. Cl. 313—302 12 Claims



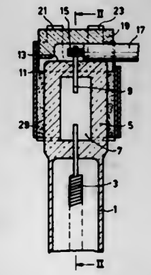
1. A flat thermionic cathode, comprising:
a substrate;
sub-heating means provided on said substrate responsive to an electric current flowing therethrough to substantially define a heating area;
main heating means provided on said substrate within said heating area responsive to an electric current flowing therethrough to produce at least one substantially localized area of heat; and
cathode means disposed at said at least one localized area and including electron emissive material.

4,069,437

INFRARED LAMP WITH HEAT CONDUCTIVE CAP ASSEMBLY AND FIXTURE

Victor Rosallie Notelteirs; Josephus Franciscus Rijcksert, and Johannes Maria Jozef Ritzen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1976, Ser. No. 676,551
Claims priority, application Netherlands, Apr. 16, 1975, 7504501
Int. Cl.² H01K 7/00
U.S. Cl. 313—315 6 Claims



1. An electric infra-red incandescent lamp which comprises a hermetically sealed lamp envelope, at least one extremity of said envelope being sealed by a pinch seal; a current lead through extending outside said pinch seal and said envelope; a current conductor connected outside said pinch to said current lead through; a metal sleeve surrounding in circumferentially spaced relation substantially all of the connection between said current lead through and said current conductor as well as said pinch seal; a mass of a readily heat-conducting material substantially filling all of the space between said pinch seal and the interior of said metal sleeve, an electrically insulating member cooperating with said sleeve at the end thereof remote from the lamp envelope, said member surrounding said connection and closing said sleeve.

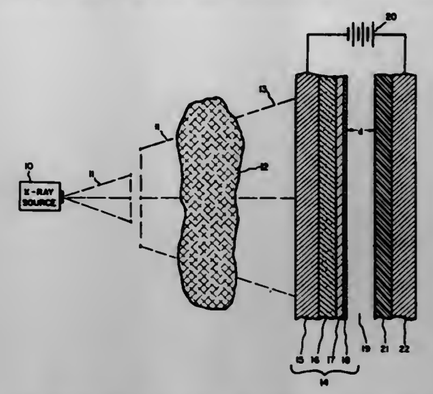
4,069,438

PHOTOEMISSIVE CATHODE AND METHOD OF USING COMPRISING EITHER CADMIUMTELLURIDE OR CESIUM IODIDE

John M. Houston, Schenectady; James R. Young, Rexford, and Nathan R. Whetten, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 511,615, Oct. 3, 1974, Pat. No. 3,940,620. This application Sept. 18, 1975, Ser. No. 614,503
Int. Cl.² H01J 1/14, 19/06; H01K 1/04
U.S. Cl. 313—346 R 6 Claims

1. A photocathode electrode adapted for operation in an oxidizing atmosphere comprising:
a layer of a material selected from the group consisting of cadmium telluride and cesium iodide disposed so as to be impinged on by photons, said photons being substantially



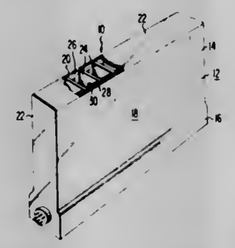
in the ultraviolet spectral region whereby electrons are emitted in response to said photons.

4,069,439

FLAT PANEL DISPLAY WITH BEAM INJECTION CLEANUP

Charles Hammond Anderson, Rocky Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 2, 1977, Ser. No. 765,109
Int. Cl.² H01J 29/08, 29/72, 31/00
U.S. Cl. 313—422 16 Claims



1. In a display device which includes an evacuated envelope having spaced front and back walls, at least one electron beam focusing guide extending substantially parallel to said front and back walls, said focusing guide having walls which serve to confine therebetween a beam of electrons directed into the focusing guide, and means for generating at least one beam of electrons and directing each beam into a separate focusing guide, the improvement comprising,
electron beam clean-up means between said electron beam generating means and said focusing guide for removing from the generated beam the electrons which are so positioned and have such a velocity vector that if allowed to remain in said beam would impinge on a wall of the said focusing guide during the travel along the focusing guide.

4,069,440

RECORDING MATERIAL

Takeshi Takeda; Fumio Muramatsu, both of Kawasaki, and Akinori Watanabe, Komae, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 197,769, Nov. 11, 1971, abandoned. This application Dec. 19, 1973, Ser. No. 426,124

Claims priority, application Japan, Nov. 25, 1970, 45-104235; Feb. 25, 1971, 46-10050

Int. Cl.² H01J 29/12, 29/14

U.S. Cl. 313—465 3 Claims

1. A cathode ray device using a cathodochromic recording material having the chemical composition $M_6Al_6Si_6O_{24}\cdot 2(1-y)MX\cdot yM_2Z$ wherein X is a member selected from the group consisting of F, Cl, Br and I; wherein M is Na or a mixture of Na and at least one element selected from the group consisting of Li and K; wherein Z is selected from the group consisting of WO_4 and mixtures of SO_4 and WO_4 and $0.1 \leqq y \leqq 0.8$.

4,069,441

ELECTRIC GAS DISCHARGE LAMP HAVING TWO SUPERPOSED LUMINESCENT LAYERS

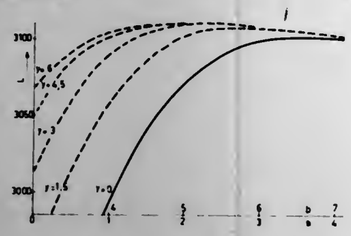
Willem Lambertus Wanmaker, deceased, late of Eindhoven, Netherlands (by Tomas Lammert Willem Reininga, administrator); Lambertus Wilhelmus Johannes Manders, and Johannes Wilhelmus ter Vrugt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 574,348, May 6, 1975, abandoned. This application Sept. 8, 1976, Ser. No. 721,287

Claims priority, application Netherlands, May 6, 1974, 7406035

Int. Cl.² H01J 61/46, 61/48

U.S. Cl. 313—487 8 Claims



1. An electric gas discharge lamp which includes: means for producing ultraviolet radiation comprising a translucent envelope, at least two spaced discharge electrodes sealed in said envelope and an ionized gas disposed within said envelope, said lamp further comprising at least first and second superposed layers carried on said envelope, said first layer being a luminescent material, said second layer being farther from a discharge between said electrodes than said first layer, said second layer consisting of a mixture of luminescent material and a white material which is non-luminescent and has an absorption for ultraviolet radiation of a wavelength of more than 240 nm which is less than 20% of the absorption of this radiation by that constituent of the luminescent material which has the smallest absorption for this radiation, the ratio of the amount of white material to the amount of luminescent material within any one layer versus any other layer increasing with the distance from the discharge.

4,069,442

PULSED CIRCUIT FOR GASEOUS DISCHARGE LAMPS

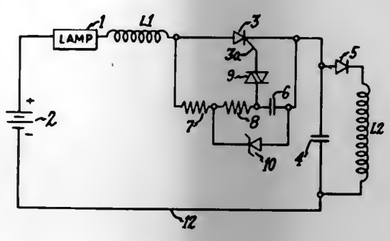
Trasimond A. Solleau, Flat Rock, N.C., assignor to General Electric Company

Filed June 2, 1976, Ser. No. 692,080

Int. Cl.² H05B 41/30

U.S. Cl. 315—208 18 Claims

1. A load operating circuit comprising, in combination, a direct current power source, a first inductor, unidirectional controlled switch means and a capacitor connected in series with each other across said power source, a second inductor of higher inductance than said first inductor connected across said capacitor and forming a discharge loop therewith, means for connecting a load across said power source in series with said first inductor and said unidirectional controlled switch means, and control means connected to said unidirectional



controlled switch means for intermittently turning on the same at predetermined intervals, the ratio of inductance of said second inductor to the inductance of said first inductor being at least about 4:1 to provide for commutation of said unidirectional controlled switch means, whereby pulses may be applied to the load for operation thereof.

4,069,443

INTEGRATED VERTICAL-SWEEP GENERATOR FOR TELEVISION RECEIVER

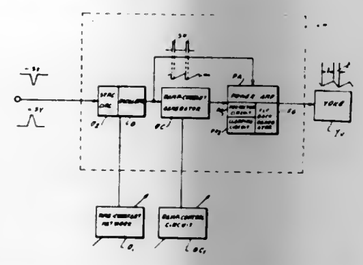
Luigi Venutti, Monza (Milan), Italy, assignor to SGS-ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy

Continuation-in-part of Ser. No. 487,749, July 11, 1974, abandoned. This application July 2, 1976, Ser. No. 702,049

Claims priority, application Italy, July 13, 1973, 26549/73

Int. Cl.² H01J 29/70

U.S. Cl. 315—395 10 Claims



1. A vertical-sweep generator for a cathode-ray tube of a television receiver, comprising:

oscillator means for generating a periodic switching pulse to start a recurrent sweep cycle divided into a relatively short retrace period and a relatively long trace period;

a ramp-current generator connected to said oscillator means for producing an output current returning to a base level in response to said switching pulse and varying monotonically from said level upon the termination of said switching pulse;

a source of direct current;

a scanning circuit including a deflection coil and a sweep capacitor in series, said scanning circuit forming a supply path for the feeding of charging current from said source via said coil to said sweep capacitor and a discharge loop for passing reverse current from said sweep capacitor through said coil;

amplifier means in said scanning circuit for regulating said charging and reverse currents under the control of said output current;

electronic switch means controlled by said oscillator means for temporarily blocking the flow of reverse current in said discharge loop at the end of a sweep cycle and starting the retrace period of a new cycle in response to said switching pulse;

capacitive storage means chargeable by said source and connected to said scanning circuit for receiving residual reverse current from said sweep capacitor in a first part of said retrace period, upon a blocking of said discharge loop by said switch means, and delivering a charging current via said supply path to said sweep capacitor in a second part of said retrace period; and

clamping means responsive to a voltage difference between said source and said storage means for maintaining the blocking of said discharge loop over a period exceeding the duration of said switching pulse until the disappearance of said voltage difference, due to the flow of said charging current, at the end of the retrace period.

4,069,444

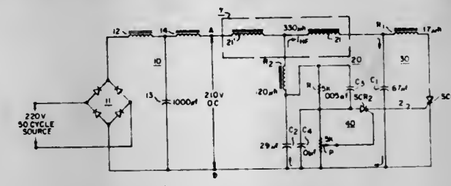
ULTRASONIC POWER GENERATOR

Richard C. Heim, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 1, 1976, Ser. No. 691,675

Int. Cl.² H02K 33/00

U.S. Cl. 318—114 1 Claim



1. In an ultrasonic power generator adapted for operation under a 110 volts, 60 cycle standard power supply comprising a constant current source having input terminals for coupling with said standard 110 volts power supply and output terminals for delivering constant current under a voltage related to the voltage at said input terminals, a switching thyristor responsive to said related voltage, a transducer coil for converting high frequency electrical power into acoustic energy at a desired power output and operating frequency; an LC oscillating network including a main capacitor and the impedance of said transducer coil, the resonant frequency of said oscillating network corresponding to said operating frequency; a resonant charging network including said switching thyristor and said main capacitor and a triggering circuit for gating said switching thyristor to charge said main capacitor at the rate of said high frequency electrical power, the combination of:

said input terminals being adapted for coupling with a standard 220 volts, 50 cycle power supply;

said main capacitor having a capacitance reduced in proportion to the voltage ratio between said related voltage for a standard 110 volt power supply to the related voltage for a standard 220 volt power supply, and increased in proportion to the high frequency circulating current required in said LC oscillating network to cause, under said 220 volt standard power supply, an increase of said related voltage to generate substantially said power output, said increase being within the voltage constraints of said switching thyristor; and

a high Q inductance added to said LC network in order to match the required resonant frequency.

4,069,445

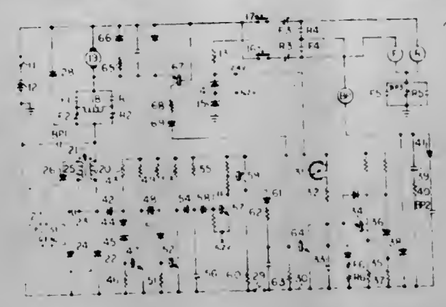
BYPASS CONTROL FOR A SOLID STATE SWITCHING DEVICE

Robert G. Klimo, Parma, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Oct. 28, 1975, Ser. No. 626,504

Int. Cl.² H02P 7/28

U.S. Cl. 318—139 14 Claims



1. In a system for controlling the power delivered from a source of direct current to a load including a silicon controlled rectifier connected in series with said source of direct current and said load, a pulse generator for repeatedly gating the silicon controlled rectifier into conduction at a controlled rate, a commutation circuit for commutating the silicon controlled rectifier at a controlled time after the silicon controlled rectifier is gated into conduction, a by-pass relay having main contacts for connecting said load directly to said source of direct current when said relay is energized, the improvement comprising:

a. a circuit for energizing said bypass relay,

b. means responsive to the state of conduction of said silicon controlled rectifier for disabling said circuit (a) in the event said silicon controlled rectifier fails to be gated into conduction by said pulse generator.

4,069,446

SPEED CONTROL MEANS FOR AC MOTOR

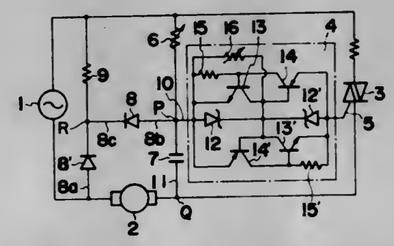
Hiroshi Yonehara, Oizumi, Japan, assignor to Sanwa Chemical Co., Ltd., Japan

Filed Nov. 12, 1975, Ser. No. 631,462

Claims priority, application Japan, Nov. 30, 1974, 49-137933; Sept. 29, 1975, 50-117995

Int. Cl.² H02P 3/02

U.S. Cl. 318—466 5 Claims



1. A speed control means for an AC motor comprising:

a bi-directional rectifier adapted to be connected in series with an AC motor and a power source;

a control circuit connected in parallel with said bi-directional rectifier and having a variable resistance element and a capacitor connected in series, the side of said capacitor opposite the side connected to said variable resistance element being adapted to be connected to one side of said motor;

an unbalanced switching circuit connected between the gate

terminal of said bi-directional rectifier and the junction between said variable resistance element and said capacitor and having different absolute values of positive and negative switching voltages;

a fixed resistance and a first diode connected in series and being adapted to be connected in parallel with said power source, the anode of said first diode being adapted to be connected to the other side of said AC motor; and

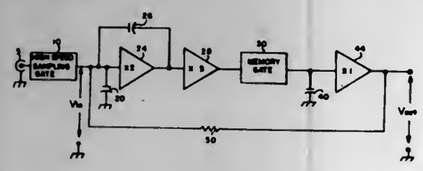
a second diode havng the cathode thereof connected to the junction between said fixed resistance and said first diode and the anode connected to the junction between said variable resistance element and said capacitor, whereby when the speed of rotation of the motor tends to increase, the time during which said bi-directional control rectifier is conductive is reduced, whereas when the speed of rotation of the motor tends to decrease, the time during which said bi-directional control rectifier is conductive is increased, thereby to keep the rotary speed of said motor constant.

4,069,447

STABILIZED HIGH-EFFICIENCY SAMPLING SYSTEM

George Joseph Frye, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 321,877, Jan. 8, 1973, abandoned. This application Aug. 19, 1974, Ser. No. 498,797
Int. Cl.[2] H02J *15/00;* G11C *11/24*
U.S. Cl. 320—1 9 Claims



1. A sampling system comprising:

sampling gate means for collecting instantaneous voltage values of an input signal,

first storage means for first storing said instantaneous voltage values,

first feedback means connected to said first storage means for enabling said first storage means to respond precisely to said instantaneous voltage values,

second storage means for second memory storage of said instantaneous voltage values,

memory gate means for transferring said instantaneous voltage value from said first storage means to said second storage means,

an output terminal connected to said second storage means, and

second feedback means connected between said output terminal and said first storage means for maintaining said first storage means at said instantaneous voltage values.

4,069,448

THREADED FASTENER MOUNTING MEANS

Paul D. Gernhardt, Cedar Falls, Iowa, assignor to Slater Electric Inc., Glen Cove, N.Y.

Continuation-in-part of Ser. No. 624,044, Oct. 20, 1975, abandoned. This application Aug. 3, 1976, Ser. No. 711,146
Int. Cl.[2] H02G *3/08;* F16B *37/02*
U.S. Cl. 220—3.2 40 Claims

1. Threaded fastener mounting means, which comprises:

a screw mounting member including a backwall and generally continuous sidewall means upstanding from said backwall, said sidewall means defining a generally open front face at its front edge opposite said backwall;

boss means formed on at least one portion of said sidewall means, said boss means including:

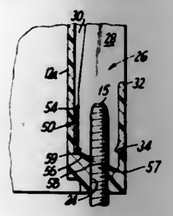
a lug formed essentially at said front end, said lug having an unthreaded borehole extending rearwardly from said front face for receiving a threaded fastener, and

a slotted channel of relatively enlarged width behind said lug, into which said borehole opens, said channel including slot means;

threaded fastener quick-fastening means slidably and lockably receivable in each said slotted channel, said quick-fastening means comprising a generally V-shaped clip member which includes:

a first leg receivable in said slot means,

a second leg forming a generally obtuse angle at the vertex of intersection with said first leg and having an aperture formed therein for receiving said threaded fastener, and



detent means formed on said first leg for lockably securing said clip member in said slot means when said clip member is fully seated in said slot means substantially adjacent said back end of said lug;

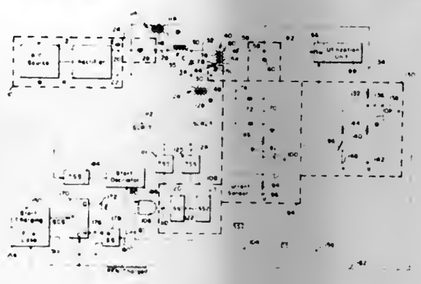
said clip member being lockably seated in place by said detent means, with said vertex substantially abutting said lug and said aperture essentially in registration with said borehole, said second leg being inclined with respect to the axis of said borehole such that when said threaded fastener is inserted into said borehole, said fastener engages two generally opposed edges of said aperture and said second leg yields slightly to permit inward axial movement of said threaded fastener in a ratchet-like manner but said two edges of said aperture wedge against projections of said threaded screw fastener to prevent outward axial movement of the fastener.

4,069,449

FLYBACK TYPE POWER SUPPLY

Robert P. Farnsworth, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 3, 1976, Ser. No. 654,817
Int. Cl.[2] H02M *3/315*
U.S. Cl. 363—28 17 Claims



1. A power supply circuit supplying power to a capacitive load comprising:

a source of current,

a first resonant charging circuit coupled to said source and including first switching means,

a second resonant charging circuit including second switching means coupled to said first resonant circuit, and

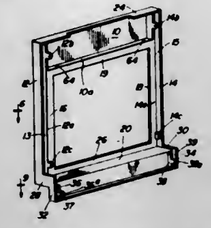
third switching means for coupling energy from said second resonant circuit to said load.

4,069,450

KNOCKDOWN CABINET HAVING A COMBINATION DOOR FRAME AND FRONT WALL

James J. Palka, Arlington Heights, Ill., assignor to General Bathroom Products Corporation, Elk Grove Village, Ill.

Filed Jan. 19, 1977, Ser. No. 760,758
Int. Cl.[2] A47B *47/04*
U.S. Cl. 312—257 R 8 Claims



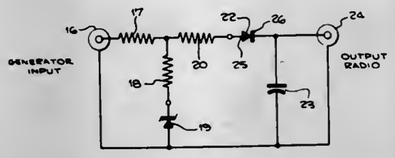
1. A knockdown cabinet having side, rear and bottom walls, a combination one-piece door frame and front wall, and doors for said frame, said combination front wall and door frame being plastic molded in one piece and comprising a narrow top wall, outer side walls and a bottom wall, said bottom wall being wide, inner walls spaced from each of said walls to form grooves whereby the forward free ends of the side walls of the cabinet seat therein, a plurality of spaced perforated ears extending from the free edges of said inner side wall, said cabinet side walls having a series of perforations therein in opposed relationship with the perforations in each of said ears, means to secure said cabinet side walls to said ears, means for pivoting said doors in said frame, and means for positively positioning said doors in closed position and providing for the ready removal and replacement of said doors.

4,069,451

BICYCLE GENERATOR CIRCUIT

Paul S. Rouse, 103 N. Santa Anita Ave., Arcadia, Calif. 91006

Filed Apr. 5, 1976, Ser. No. 673,909
Int. Cl.[2] H02J *7/14*
U.S. Cl. 322—1 4 Claims



1. A regulator circuit for regulating the output voltage from a bicycle generator comprising:

a bicycle generator having an output circuit;

a resistive circuit including at least one resistor coupled in series with the output terminal of said bicycle generator and at least a second resistor, said resistive circuit being operative to limit the output voltage from said bicycle generator;

a zener diode having an anode and cathode terminal with said cathode terminal being coupled to said second resistor of said resistive circuit to reduce the output voltage of said bicycle generator, said zener diode and said second resistor being coupled across said input terminal and being operative to reduce high peaks of the output voltage from the generator;

a rectifier having an anode and cathode with said anode coupled through said resistive circuit to said cathode of said zener diode, said rectifier being operative to rectify the output voltage from the generator; and

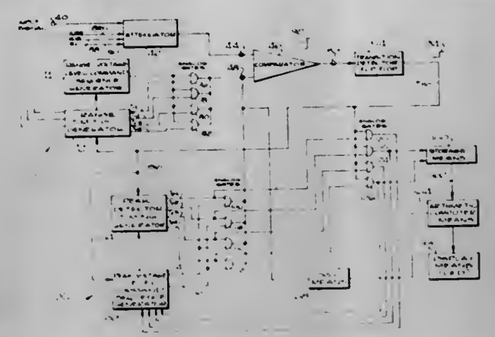
capacitor circuit means coupled to the output of said rectifier circuit means for smoothing and filtering of said output voltage to thereby provide a regulated smooth output voltage.

4,069,452

APPARATUS FOR AUTOMATICALLY DETECTING VALUES OF PERIODICALLY TIME VARYING SIGNALS

Arch W. Conway, Mission Viejo, and Nelson Urdaneta, La Verne, both of Calif., assignors to Dana Laboratories, Inc., Irvine, Calif.

Filed Sept. 15, 1976, Ser. No. 723,393
Int. Cl.[2] G01R *19/16;* H03K *5/20*
U.S. Cl. 324—103 P 15 Claims



1. Apparatus having a plurality of ranges for automatically detecting the peak values of an applied unknown electrical signal the magnitude of which varies as a function of time comprising:

A. comparator means having first and second input terminals and an output terminal;

B. means for applying said unknown signal to said first input terminal of said comparator means;

C. detector means connected to said output terminal for providing detection signals responsive to output signals from said comparator;

D. means for generating a plurality of voltage levels, each representative of a predetermined range of said apparatus, each of said voltage levels having a sequentially changing direct-current voltage, said changes occurring in predetermined equal increments, means for applying said voltage levels to said second input terminal of said comparator, thereby to provide a reference level signal against which said unknown signal is compared;

E. said comparator means providing a first signal at the output terminal thereof in response to a first predetermined relationship between said reference level signal and said unknown signal representative of one peak of said unknown signal and a second signal at the output terminal thereof responsive to a second predetermined relationship between said reference level signal and said unknown signal representative of the other peak of said unknown signal, said voltage level signals being applied to said second terminal of said comparator consecutively from the level representative of the largest range of said apparatus to the level representative of the lowest range of said apparatus in the absence of a detection signal responsive to said first output signal.

4,069,453

TRANSISTOR TEST FIXTURE

Cornelis Teunis Veenendaal, Cornelius, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 23, 1977, Ser. No. 771,233
Int. Cl.[2] G01R *31/22*
U.S. Cl. 324—158 F 8 Claims

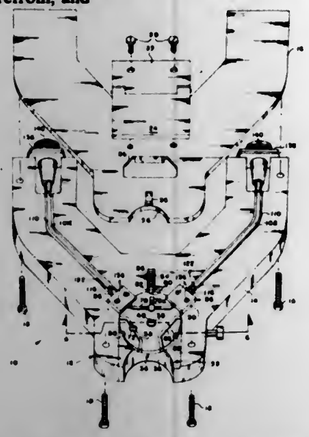
1. A transistor test fixture for testing transistor means, comprising:

housing means having a disc-receiving area;

coaxial connector means provided by said housing means adjacent said disc-receiving area;

disc means having reference circuit means and data circuit means thereon, said disc means positionable within said disc-receiving area;

retaining means provided by said housing means and said disc means for retaining said disc means within said disc-receiving area and to permit said disc means to be removed therefrom; and



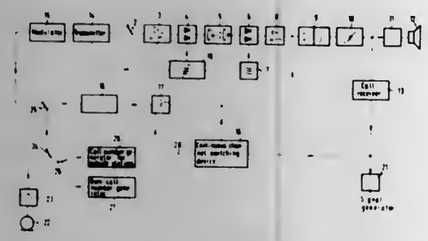
maintaining means provided by said disc means and said housing means for maintaining said disc means in a selected position so that said reference circuit means or said data circuit means is electrically connected to said coaxial connector means.

4,069,454

TRANSMITTER-RECEIVER EMPLOYING AUTOMATIC CHANNEL HUNTING AND SELECTION

Heinz Winkelmann, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 552,638, Feb. 24, 1975, abandoned.
This application Mar. 25, 1976, Ser. No. 670,285
Claims priority, application Germany, Feb. 27, 1974, 2409375
Int. Cl.² H04B *1/40*
U.S. Cl. 325—25 **5 Claims**



1. A channel hunting and selection system for a two-way transmitter-receiver combination of the type wherein the receiver operates over a selected one of a plurality of given RF channels, said receiver having a mixer for receiving RF signals and the output of a variable frequency local oscillator to provide a first IF signal output indicative of said channels, and said receiver having a demodulator for detecting the output of said mixer to provide the information bearing modulation signal of a modulated IF signal, said system comprising, in combination:

a second local oscillator for providing a second IF signal the frequency of which is substantially equal to the frequency of said first IF signal;

means for modulating said second IF signal with a given address signal;

means for coupling said modulated second IF signal with said first IF signal at the output of said mixer and at a predetermined level above the noise level of said first IF signal;

means coupled to the detected output of said receiver for detecting said given address signal and when the level of said second IF signal significantly exceeds the level of said first IF signal for providing an idle-channel output signal indicative thereof; and,

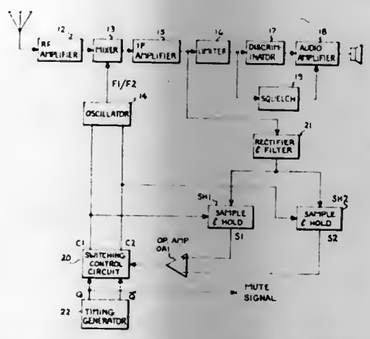
means responsive to said idle-channel output signal for controlling said variable frequency local oscillator to a fixed frequency corresponding to a selected one of said given channels.

4,069,455

ARRANGEMENT FOR MAINTAINING RECEPTION OF A RADIO RECEIVER ON THE STRONGER OF TWO SIGNALS

Ralph R. Sherman, Jr., Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 11, 1976, Ser. No. 740,825
Int. Cl.² H04B *1/32*
U.S. Cl. 325—469 **6 Claims**



1. For use in a radio receiver, an improved arrangement for causing said receiver to be receptive to the stronger of two radio frequency signals, said arrangement comprising:

a. first and second sample and hold circuits having first and second signal inputs for sampling and holding signals indicative of the strength of signals received by said receiver, having first and second outputs, and having first and second control inputs for controlling the sampling times of said first and second sampling inputs respectively;

b. a comparison circuit having first and second inputs connected to said first and second outputs respectively of said sample and hold circuits and having an output for producing a first output signal in response to a signal at said first sample and hold output being greater than a signal at said second sample and hold output, and for producing a second output signal in response to a signal at said second sample and hold output being greater than a signal at said first sample and hold output;

c. a control circuit having an input connected to said comparison circuit output and having first and second outputs for producing repetitive first and second control signals respectively, said first and second control signals alternating with each other and having relative time durations that are controlled as a function of said first and second output signals produced by said comparison circuit;

d. means connected between said control circuit outputs and said sample and hold circuit control inputs for controlling the sampling times as a function of said first and second control signals;

e. means connected between said control circuit outputs and said sample and hold circuit control inputs for controlling the sampling times as a function of said first and second control signals;

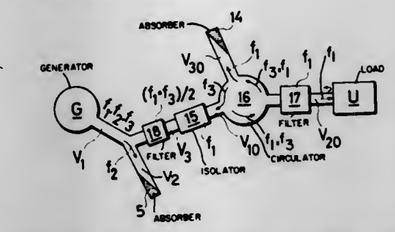
f. and means connected to said control circuit outputs for controlling the frequency and time duration of reception of said radio receiver as a function of said first and second control signals.

4,069,456

MICROWAVE SYSTEMS FOR ELIMINATING SPURIOUS SIGNALS FROM PULSED SOURCE

Andre Bensussan, and Claude Levaillant, both of Paris, France, assignors to C.G.R. MeV, France

Filed Mar. 19, 1976, Ser. No. 668,654
Claims priority, application France, Mar. 21, 1975, 75 08947
Int. Cl.² H03H *7/04*
U.S. Cl. 328—165 **7 Claims**



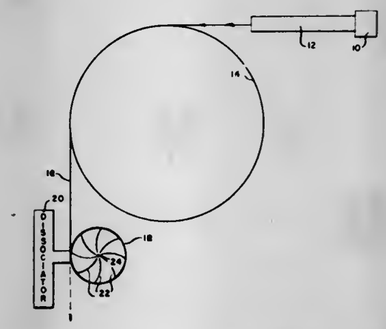
1. A selective transmission system for transmitting pulsed H.F. signals emitted by an H.F. generator and designed for injection into a load device, said H.F. generator being capable of emitting a first signal known as the main signal, of given frequency, and at least one second signal which is a spurious signal, said selective transmission system comprising means for eliminating said spurious signal and selectively transmitting to said load device said first signal and further means for presenting to the H.F. generator a matched load impedance throughout the time of the pulse, said further means comprising at least an hyperfrequency unidirectional element of the isolator type, said selective transmission system further comprising at least a three-channel junction having a first channel receiving said signals of frequency f_1 (main signal) and f_2 (spurious signal) emitted by said generator, a second channel which is equipped at its end with a microwave absorber and means for the selective transmission of the spurious signal of frequency f_2 to said absorber, and a third channel which is provided with a band-pass filter centered on said main frequency f_1, and with said hyperfrequency unidirectional element centred on said main frequency f_1, said third channel being connected to said load device, said second channel being constituted by a waveguide which is a cut-off waveguide in relation to said main signal.

4,069,457

HIGH-ENERGY ACCELERATOR FOR BEAMS OF HEAVY IONS

Ronald L. Martin, La Grange, and Richard C. Arnold, Chicago, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 17, 1977, Ser. No. 769,822
Int. Cl.² G21B *1/00*; H05H *13/04*
U.S. Cl. 328—235 **11 Claims**



1. An apparatus for striking a target with a beam of heavy ions having atomic masses greater than 100, the apparatus comprising:

a. a source of uniquely ionized ions of a mass greater than 100;

b. means for accelerating the uniquely ionized ions to a high energy;

c. means for storing the accelerated ions at the energy; and

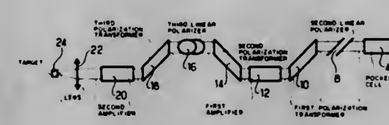
d. means for extracting the accelerated ions into a plurality of beams and directing the beams to arrive substantially simultaneously at the target.

4,069,458

POWER LASER CHAIN

Jean-Claude Farcy, Brils sur Forges; Genevieve Girard, Jouy en Josas, and Maurice Michon, Draveil, all of France, assignors to Compagnie General d'Electricite, Paris Cedex, France

Filed Dec. 1, 1975, Ser. No. 636,497
Claims priority, application France, Jan. 15, 1975, 75.01173
Int. Cl.² H01S *3/10*
U.S. Cl. 330—4.3 **3 Claims**



1. In a laser chain including means for generating a circularly polarized laser beam and a plurality of amplifier elements on the path of the laser beam for passage of said laser beam therethrough, the improvement comprising:

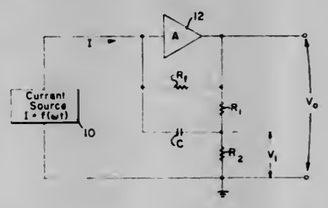
means for optically isolating successive amplifier elements, said optically isolating means comprising in series on the path of the laser beam and between said amplifier elements, a linear polarizer between two passive transformers of the type transforming a linear polarization into a circular one and vice versa.

4,069,459

FEEDBACK CAPACITOR DIVIDER

J. Spencer Lee, Santa Barbara, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Aug. 23, 1976, Ser. No. 716,929
Int. Cl.² H03F *1/36*
U.S. Cl. 330—107 **2 Claims**



1. A compensation network for reducing peaks in the output level versus frequency performance characteristics of an amplifier, comprising the combination:

a first resistor one end of which is connected to the output of the amplifier;

a second resistor one end of which is joined to the other end of the first resistor and the other end of said second resistor is at ground potential; and

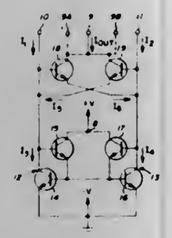
capacitively reactive means, connected between the input of the amplifier and the joined ends of the first and second resistors, for providing a reactance of at least ten times the ohmic value of the first and second resistors in parallel.

4,069,460

CURRENT COMPARATOR CIRCUIT

Don R. Sauer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sept. 30, 1976, Ser. No. 728,110
Int. Cl.[2] H03F 3/45
U.S. Cl. 330—257 5 Claims



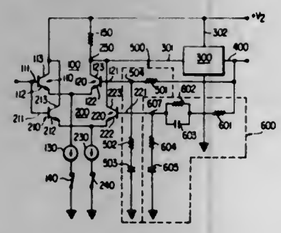
1. A symmetrical current comparator circuit for responding to the difference between first and second current sources, said sources having a common return point, said circuit comprising:
means for coupling first and second nodes of said circuit to said first and second current sources respectively;
current mirror means coupled between said first and second nodes and said common return point, said current mirror including a pair of transistors having their emitters coupled together and to said common return point, their bases coupled together, and their collectors coupled respectively to said first and second nodes, and level shifting means coupled from each of said collectors of said pair to said bases of said pair, said current mirror acting to force equality between the currents flowing in said first and second nodes; and
first and second output transistors each having an emitter, a base, and a collector, the base of said first output transistor and the emitter of said second output transistor being coupled to said first node, the base of said second output transistor and the emitter of said first output transistor being coupled to said second node whereby the collectors of said output transistors constitute the output of said circuit.

4,069,461

AMPLIFIER CIRCUIT HAVING TWO NEGATIVE FEEDBACK CIRCUITS

Jun Sano, Machida, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kanawaga, Japan

Filed Mar. 14, 1977, Ser. No. 777,359
Claims priority, application Japan, Mar. 19, 1976, 51-29296
Int. Cl.[2] H03F 3/45
U.S. Cl. 330—260 4 Claims



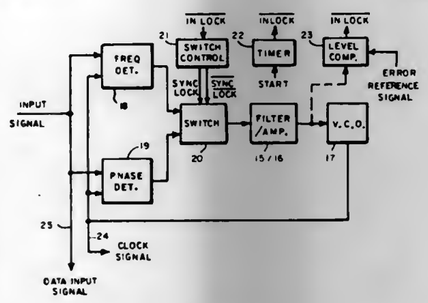
1. An amplifier circuit having two negative feedback circuits of different negative feedback ratios comprising:
an amplifier circuit input terminal;
an amplifier circuit output terminal;
a first semiconductor differential amplifier including first and second transistors, having base, emitter and collector electrodes respectively, the emitter electrodes of the first and second transistors being connected to each other, and the base electrode of said first transistor being connected to said amplifier circuit input terminal; a load resistor; and means for connecting said load resistor between the collector electrode of the second transistor and a reference potential source;
a second semiconductor differential amplifier including third and fourth transistors, having base, emitter and collector electrodes respectively, the emitter electrodes of said third and fourth transistors being connected to each other, the collector electrode of said third transistor being connected to the collector electrode of said first transistor, the collector electrode of said fourth transistor being connected to the connection point between the collector electrode of said second transistor and said load resistor, the base electrode of said third transistor being connected to the base electrode of said first transistor;
an amplifier having an input terminal connected to the connection point between the collector electrode of said second transistor and said load resistor, and an output terminal connected to said amplifier circuit output terminal;
a first negative feedback circuit connected between the output terminal of said amplifier and the base electrode of said second transistor;
a second negative feedback circuit connected between the output terminal of said amplifier and the base electrode of said fourth transistor;
first switching means;
means for connecting said first switching means between the common emitter electrodes of said first and second transistors and a reference potential source;
second switching means; and
means for connecting said second switching means between the common emitter electrodes of said third and fourth transistors and a reference potential source.

4,069,462

PHASE-LOCKED LOOPS

David Dunn, Windham, N.H., assignor to Data General Corporation, Southboro, Mass.

Filed Dec. 13, 1976, Ser. No. 750,288
Int. Cl.[2] H03B 3/04
U.S. Cl. 331—11 8 Claims



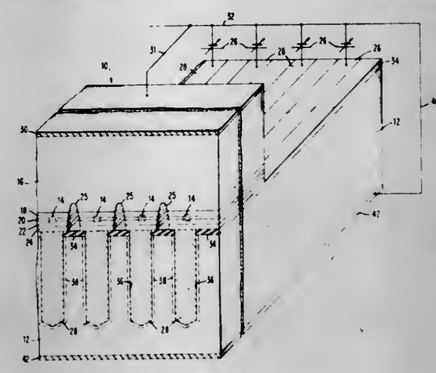
1. A system for providing in phase synchronism between a first signal and a second signal comprising
means for comparing the frequency of a reference signal with the frequency of a feedback signal derived from said second signal to produce a first difference signal representing the frequency difference therebetween;
filter and amplifying means;
switching means between said frequency comparing means and said filter and amplifying means for supplying said first frequency difference signal to said filter and amplifying means, said latter means thereby providing a first control signal representing said frequency difference;
oscillator means responsive to said first control signal for producing said second signal, the frequency of said second signal being controlled by said first control signal so that said frequency difference is minimized so that the frequency of said feedback signal derived from said second signal is in substantial synchronism with the frequency of said reference signal;
means for comparing the phase of said second signal with the phase of said first signal to produce of second difference siganl representing the phase difference therebetween;
means for actuating said switching means to supply said second phase difference signal to said fixed filter and amplifying means and to prevent said first frequency difference signal from being supplied thereto when said substantial frequency synchronism has been achieved, said filter and amplifying means thereby providing a second control signal;
said oscillator means being responsive to said second control signal so that said phase difference is minimized and the phase of said second signal is in substantial in-phase synchronism with the phase of said first signal.

4,069,463

INJECTION LASER ARRAY

James Cleary McGroddy, Putnam Valley, and Peter Stephen Zory, Jr., Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 2, 1976, Ser. No. 719,793
Int. Cl.[2] H01S 3/19
U.S. Cl. 331—94.5 P 6 Claims



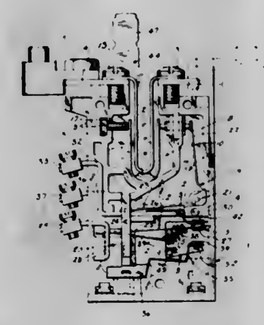
1. An injection laser array package comprising:
a single crystal substrate having in one surface thereof a plurality of generally parallel grooves respectively filled with metallic substance to provide a plurality of electrically conductive heat sinks, the walls of said grooves being defined respectively by intrinsic facet planes in said substrate along which the substrate material is precisely removed and having the property of electrically isolating from each other the heat sinks respectively positioned therein, the depth of each groove being large in comparison with its width, and
an array of injection lasers mounted upon said substrate with the individual lasers of said array respectively contacting said heat sinks directly, each of said lasers having a controllable active side which is in both a thermally and electrically conductive relationship with the respective heat sink.

4,069,464

BIMETAL OVERLOAD RELAY

Parker A. Bollinger, Jr., Franklin, and Norbert F. Frymark, Glendale, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Aug. 19, 1976, Ser. No. 715,681
Int. Cl.[2] H01H 61/02
U.S. Cl. 337—77 3 Claims



1. A bimetal overload relay, the combination comprising:
a case made of an insulating material and defining a first compartment and a second compartment separated by a wall;
a heater unit disposed in said first compartment and being electrically connectable to conduct current in a circuit;
a bimetal disposed in said first compartment and being responsive to changes in temperature therein to change shape;
an electrical switch disposed in said second compartment and being electrically connectable to a second circuit and mechanically operable between an unactuated and an actuated state;
a pin slidably received in an opening formed in said wall to communicate with both of said compartments and to engage said bimetal; and
coupling means disposed in said second compartment and mounted to said case for rotation about an axis to couple the sliding motion of said pin to said electrical switch and to thereby actuate said electrical switch when said coupling means rotates a preselected amount, and
in which said coupling means includes two legs which extend radially outward from said axis to define an angle therebetween and one of said legs is a bimetal which is responsive to temperature, wherein one of said legs engages said pin and the other of said legs is coupled to said electrical switch.

4,069,465

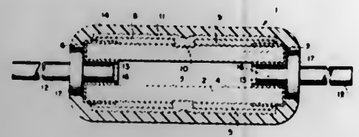
CYLINDRICAL VARISTOR AND METHOD OF MAKING THE SAME

Allan V. Kouchich, Milwaukee, and Robert Marshall, Mequon, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed July 12, 1976, Ser. No. 704,156
Int. Cl.[2] H01C 7/10
U.S. Cl. 338—20 20 Claims

1. A varistor, the combination comprising:
a cylindrical core made of a sintered varistor material, and having openings at its opposite ends and an outer longitudinal surface;
a pair of terminating layers, one being on each end of said core;
an electrode film on the outer longitudinal surface of said core between said terminating layers, said electrode film being divided into a pair of electrode portions by a gap;

each of said electrode portions being in communication with one of said terminating layers; and



a pair of lead wires, each being inserted into an opening of said core at one end of said core and being in electrical contact with one of said terminating layers.

4,069,466

VARIABLE RESISTANCE ELECTRICAL CONTROL UNITS

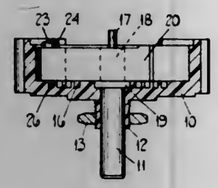
Charles Norman Williams, Solihull, and Hugh Roberts, Whalley near Blackburn, both of England, assignors to R. & D. Instruments Limited, Ramsey, England

Filed Apr. 19, 1976, Ser. No. 678,232

Claims priority, application United Kingdom, Apr. 19, 1975, 16257/75

Int. Cl.² H01C *10/24*

U.S. Cl. 338—147 **7 Claims**



1. An electrical control unit, comprising an electrical circuit portion of a resistive electrically conducting material formed on a support in a spiral configuration, a spindle mounted for rotation about the centre of the spiral and having a non-circular portion, an arm having a longitudinally extending slot non-rotatably engaged on the non-circular portion of the spindle to provide for sliding movement of the arm relative to the spindle and radially with respect to the axis thereof, an electrical contact carried on the arm to move radially therewith, to make contact with said circuit portion, and a spiral guide means aligned with the circuit portion spiral and co-operable with the arm to guide said arm radially so that the electrical contact follows the circuit portion spiral to alter the effective electrical resistance thereof in use.

4,069,467

SUPPRESSION OF OUT-OF-FOCUS ECHOES IN ULTRASONIC SCANNING

Christoph Benedikt Burckhardt, Muttenz; Pierre-Andre Grandchamp, Munchenstein, both of Switzerland, and Heinz Hoffmann, Grenzach, Germany, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

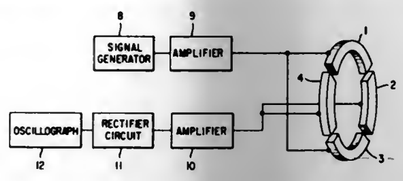
Filed Apr. 7, 1976, Ser. No. 674,465

Claims priority, application Switzerland, Apr. 18, 1975, 4988/75

Int. Cl.² G01S *9/66*

U.S. Cl. 340—1 R **6 Claims**

1. A method of reducing the echoes from reflectors disposed outside the focal line in an echo-sounding process using an ultrasonic field focusing in a focal line, which method comprises transmitting a pulsed ultrasonic wave having a cross-sectional area corresponding to one or more annular segments having a total azimuth angle of less than 360°, receiving echoes from the spatial region corresponding to at least a part of other annular segments which complement the annular segments of the cross-sectional area of the transmitted ultrasonic pulse to form a complete ring, and amplifying echo signals corresponding to the received echoes, rectifying the amplified echo signals and displaying the rectified echo signals, the said steps of amplifying, rectifying and displaying being carried out without any interruption between them.



4,069,468

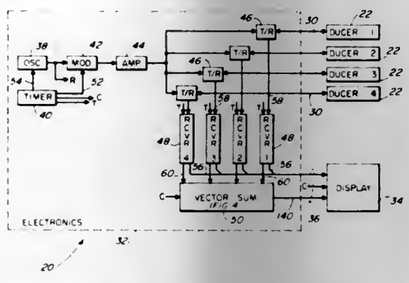
DOPPLER SPECTRAL MEASUREMENT

James F. Bartram, Middletown, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 24, 1976, Ser. No. 726,344

Int. Cl.² G01S *9/66*

U.S. Cl. 340—3 D **5 Claims**



1. A Doppler measurement system comprising:

means for sampling a signal received during a predetermined interval of time, said means providing a predetermined number of samples of said received signal during said predetermined interval of time;

means for obtaining the power spectrum of a set of said samples consisting of said predetermined number of samples;

means coupled to said power spectrum means for forming the logarithm of said spectrum;

means coupled to said logarithmic means for multiplying output signals thereof by orthogonal function factors; and

means coupled to said multiplying means for combining products of said multiplying means to produce a component of a Doppler frequency.

4,069,469

SYSTEM FOR COLLECTING INFORMATION IN WATER

Yosimura Masaharu, Tokyo, Japan, assignor to Oki Electric Industry Company, Ltd., Tokyo, Japan

Filed Sept. 23, 1976, Ser. No. 725,878

Claims priority, application Japan, Oct. 15, 1975, 50-124131

Int. Cl.² H04B *11/00*

U.S. Cl. 340—5 R **4 Claims**

1. A system for collecting information in water comprising a signal cable laid under water connected to a control unit on land, said cable having a plurality of hydrophones at every predetermined length, a submersible which can automatically move under water according to the control of said control unit through said cable, said submersible being acoustically connected to said cable, said submersible having a sensor for collecting the information in water, and said information collected



by the sensor being forwarded to said control unit on land through said cable.

4,069,470

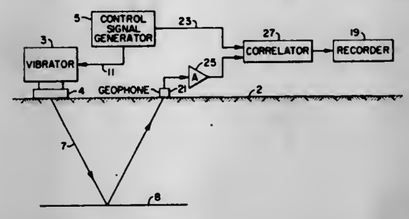
USE OF PERIODIC SIGNALS FOR CONTINUOUS WAVE SEISMIC PROSPECTING

Allen B. Cunningham, and Edward T. Miller, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed July 26, 1976, Ser. No. 708,675

Int. Cl.² G01V *1/14*

U.S. Cl. 340—15.5 TA **6 Claims**



1. In a method of seismic prospecting wherein a vibratory seismic signal is transmitted into the earth from a first location and reflections of the signal from the subsurface are thereafter detected at a second location, the improvement comprising:

transmitting a periodically repetitive seismic signal wherein the signal within each period thereof is nonrepetitive and each period has a time duration not less than the travel time of the seismic signal from the transmitting location to the deepest subsurface location of interest and back to the detecting location, said signal being transmitted continuously until the desired amount of seismic energy has been transmitted at a location;

detecting reflections of the transmitted signal at at least one detecting location;

summing together time segments of the detected signal, said time segments being equal to a period of the transmitted signal; and

recording said summed signal.

4,069,471

METHOD OF DETERMINING WEATHERING CORRECTIONS IN SEISMIC RECORD PROCESSING

Daniel Silverman, Tulsa, Okla., assignor to Geophysical Systems Corporation, Pasadena, Calif.

Filed Mar. 12, 1976, Ser. No. 666,359

Int. Cl.² G01V *1/36*

U.S. Cl. 340—15.5 TC **20 Claims**

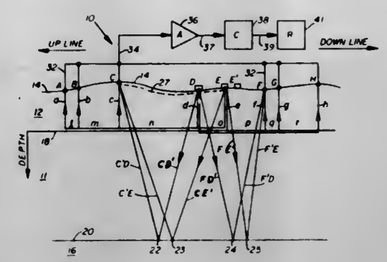
1. In a seismic system having a linear array of receiver positions, A, B, C, and F, G, H, etc. and closely-spaced source positions D, E, therebetween, the method of determining the differential static correction through the weathered layer at source positions D and E, comprising the steps of:

a. recording a first record from source point D to receivers C, upline, and F, downline, from source D.

b. recording a second record from source point E to receivers C, up line, and F, downline, from source E;

c. correlating a first pair of traces DF and EF to provide a first time difference R between said first two traces;

d. correlating a second pair of traces EC and DC to provide



a second time difference S between said second pair of traces; and

e. determining $K_1 = (R - S)/2$, where K_1 is the first value of differential static correction at source points D and E.

4,069,472

FOREGROUND SUBJECT-IDENTIFYING APPARATUS

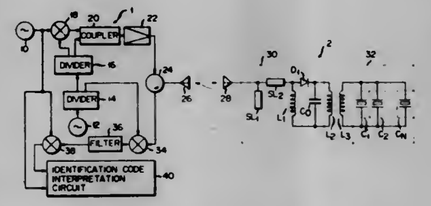
Shohichi Kamata; Yoshinori Kimura, both of Yokohama, and Johji Sakuragi, Hachioji, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 22, 1976, Ser. No. 753,530

Claims priority, application Japan, Dec. 25, 1975, 50-156931; Dec. 25, 1975, 50-156932; Aug. 3, 1976, 51-92456

Int. Cl.² G01S *9/56*

U.S. Cl. 340—146.3 K **13 Claims**



1. A foreground subject-identifying apparatus which comprises a first signal-generating means for producing a first signal having a plurality of frequencies falling within a prescribed range; second signal-generating means for sending forth a second signal having a higher frequency than the first signal; first frequency mixing means for mixing output signals from the first and second signal-generating means and modulating the second signal by the first signal to produce a modulated signal; first transmission and reception means for transmitting an output signal from the first frequency mixing means; second transmission and reception means for receiving a signal sent forth from the first transmission and reception means; coding means provided with at least one resonance circuit to generate a coded signal corresponding to the frequency of said resonance circuit; a nonlinear circuit provided with a nonlinear element, coupled between the second transmission and reception means and coding means, and adapted to detect a signal issued from the second transmission and reception means to supply the coding means with a signal corresponding to the first signal, and modulate a signal corresponding to the second signal by a coded signal from the coding means to deliver a modulated signal to the second transmission and reception means; second frequency-mixing means for mixing an output signal from the second signal-generating means with a signal emitted from the second transmission and reception means and received through the first transmission and reception means; a third frequency-mixing means for mixing a first signal produced from the first signal generating means and an output signal from the second frequency-mixing means, thereby gen-

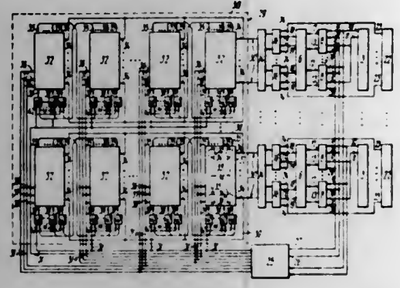
erating a signal corresponding to the coded signal; and a coded signal-interpreting circuit for judging the coded signal from an output signal of the third frequency-mixing means.

4,069,473

ASSOCIATIVE MEMORY

Georgy Viktorovich Vitaliev, ulitsa Vavilova, 39, kv. 17, Moscow; Alexei Davidovich Gvinepadze, ulitsa Lva Tolstogo, 27, kv. 8, Moskovskaya oblast, Ljubertsy; Rem Vasilievich Smirnov, 3 mikroraion Teplogo Stana, korpus 32, kv. 36, and Gury Dmitrievich Soflisky, ulitsa Kazakova, 18, kv. 67, both of Moscow, all of U.S.S.R.

Filed Oct. 14, 1976, Ser. No. 732,202
Claims priority, application U.S.S.R., Oct. 28, 1975, 2181752
Int. Cl.[2] G11C *15/00*
U.S. Cl. 365—49 6 Claims



1. An associative memory designed to perform search and logical operations on attributive information presented in the form of multi-digit associative words which are sets of a given number of binary associative indications, comprising

an input register to receive and store the code of the first operand, which is a given set of binary indications, having control outputs and

flip-flops with an input, a direct output, and an inverse output,

the number of said flip-flops of said input register being equal to the number of binary indications in said code of the first operand,

said flip-flops of said input register being divided into groups;

an interrogation register to receive and store the interrogation code in the form of a given set of binary indications made up of

flip-flops with direct and inverse inputs, and direct and inverse outputs,

the number of said flip-flops of said interrogation register being equal to the number of said flip-flops of said input register,

said flip-flops of said interrogation register being divided into groups equal in number to said groups of said flip-flops of said input register;

coincidence circuits which have first and second inputs and outputs,

said coincidence circuits being arranged in groups, two of said coincidence circuits being in each group,

the number of said coincidence circuits being equal to the number of said flip-flops of said input register,

said first inputs of first and second coincidence dircuits in each said group being connected, respectively, to said direct and inverse outputs of said respective flip-flops of said input register,

said outputs of said first and second coincidence circuits in each said group being connected, respectively, to said direct and inverse inputs of said respective flip-flop of said interrogation register;

interrogation decoders for converting said interrogation code which have inputs and outputs;

OR circuits which have first and second inputs and outputs,

said OR circuits being arranged in groups, two OR circuits being in each group,

the number of said OR circuits being equal to the number of said flip-flops of said input register,

said first inputs of first and second OR circuits of each said group being connected, respectively, to said direct and inverse outputs of said respective flip-flop of said interrogation register,

said outputs of said first and second OR circuits of each said group being connected to respective inputs of said interrogation decoders;

a mask register to receive and store the mask code in the form of a given set of binary indications, which show said indications of said interrogation code irrelevant to the search operation to be performed, with

flip-flops having inputs and direct outputs,

the number of said flip-flops of said mask register being equal to the number of said flip-flops of said input register,

said flip-flops of said mask register making up ring shift registers in a number equal to said groups of said flip-flops in said input register,

said direct outputs of said flip-flops of said mask register being connected to said second inputs of said OR circuits of said respective group;

an operation decoder to control information transfer from said outputs of said flip-flops in said input register to said inputs of said respective flip-flops in said interrogation register in a direct code and inverse code, depending on the logical operation to be performed, having inputs and outputs,

first and second outputs of said operation decoder being connected to said second inputs of, respectively, said first and second coincidence circuit in each said group of said coincidence circuits; and

a data storage unit to perform arithmetic and parallel logical operations on attributive information having interrogation buses and control inputs,

said interrogation buses of said data storage unit being connected to said outputs of said respective interrogation decoders,

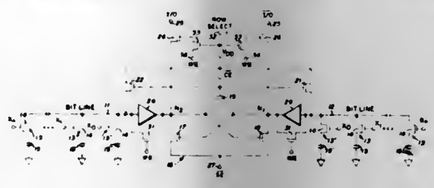
said control inputs of said data storage unit being connected to respective outputs of said operation decoder.

4,069,474

MOS DYNAMIC RANDOM ACCESS MEMORY HAVING AN IMPROVED SENSING CIRCUIT

Charles E. Boettcher, Saratoga; Joel A. Karp, Palo Alto; John A. Reed, Los Altos, and Andrew G. Varadi, Saratoga, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 15, 1976, Ser. No. 677,462
Int. Cl.[2] G11C *7/06, 11/24, 11/40*
U.S. Cl. 365—205 5 Claims



1. In a memory circuit:

bit line means having first and second portions over which electrical potentials representative of data to be stored in the memory are sensed and restored;

memory cell means for storing the electrical potentials representative of data to be read out therefrom and restored thereto in use;

switch means for electrically coupling the electrical potentials, representative of the stored and restored data, between said bit line means and said memory cell means in response to address signals applied to said switch means;

sense amplifier means coupled between first and second portions of said bit line means for sensing the difference in electrical potential therebetween generated in response to electrical potential read from one of said addressed memory cell means onto one of said first and second portions of said bit line means; and

buffer line amplifier means coupled between said sense amplifier means and said bit line means for isolating capacitance of said sense amplifier means from said bit lines means wherein said buffer line amplifier means includes, transistor means having a gate terminal and first and second other terminals, said gate terminal being connected to one of said bit line portions, and said other first and second terminals being connected for source follower amplifier operation relative to input signals received from said bit line means.

4,069,475

MOS DYNAMIC RANDOM ACCESS MEMORY HAVING AN IMPROVED SENSE AND RESTORE CIRCUIT

Charles E. Boettcher, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 15, 1976, Ser. No. 677,463
Int. Cl.[2] G11C *7/06, 11/24, 11/40*
U.S. Cl. 365—205 4 Claims



1. In a memory circuit:

bit line means having first and second portions over which electrical potentials representative of data to be stored in the memory are sensed and restored;

memory cell means for storing the electrical potentials representative of data to be read therefrom and restored thereto in use;

switch means for electrically coupling the electrical potentials, representative of the stored and restored data, between said bit line means and said memory cell means in response to address signals applied to said switch means;

sense amplifier means coupled between said first and second portions of said bit line means for sensing the difference in electrical potential therebetween generated in response to the electrical potential read from one of said addressed memory cell means onto one of said first and second portions of said bit line means;

buffer line amplifier means coupled between said sense ammplifier means and said bit line means for isolating the capacitance of said sense amplifier means from said bit line means;

restore circuit means interconnecting said sense amplifier and a first one of said portions of said bit line means and being disposed in bypassing relation to a first one of said buffer line amplifier means for selectively bypassing electrical signals from said sense amplifier means back around said first buffer line amplifier means to said first portion of said bit line means for restoring an electrical potential read out of one of said addressed memory cells, said restore circuit means including first restore switch means responsive to a restore timing signal for selectively rendering said first switch means conductive for bypassing said first buffer line amplifier means through said first restore circuit means; and

means for deriving said restore timing signal from an electrical state of said sense amplifier means.

4,069,476

ARRANGEMENT FOR PRODUCING A CONSTANT MAGNETIC FIELD

Franz Navratil, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 17, 1976, Ser. No. 667,530
Claims priority, application Germany, Mar. 26, 1975, 2513441
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—6 2 Claims



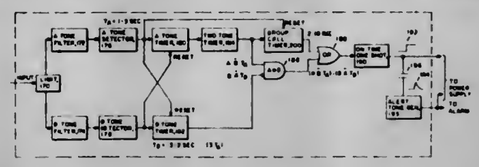
1. An arrangement for generating a constant magnetic supporting field for a magnetic cylindrical domain store, comprising a magnetic matrix of at least two magnetic plates having soft magnetic properties arranged plane-parallel to each other and separated by an interval gap, and two bar-shaped permanent magnets located within said interval gap between said plates and arranged concurrently and substantially apart, said permanent magnets having their longitudinal middle axes parallel to each other and magnetized perpendicularly thereto, at least one of said permanent magnets rotatable about its longitudinal axis, a store carrier for holding said domain store in said supporting field, and a U-shaped carrier comprising a means for mounting and aligning said soft magnetic plates and having magnetically non-conducting properties of only low thermal expansion, wherein each of said bar-shaped permanent magnets is rotatably mounted between the legs of said U-shaped carrier.

4,069,477

TONE ADDRESS DECODER FOR PAGER

James W. Maben, Brookline, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed May 22, 1975, Ser. No. 580,091
Int. Cl.[2] H04B *1/04*
U.S. Cl. 340—311 7 Claims



1. In a paging unit including means for receiving predetermined sequential tone address signals followed by message signals and for actuating the remainder of the pager circuitry to present the message to the recipient in response to receipt of a decoded tone address sequence, the improvement in the address decoding circuitry comprising:

tuned reed actuated tone detectors each generating a signal upon the presence of a predetermined tone;

a first normally-off timing circuit actuated in response to the generation of a signal due to the detection of a first predetermined tone by an associated tone detector;

a second normally-off timing circuit actuated in response to the generation of a signal due to the detection of a second predetermined tone by an associated tone detector;

means for extending the duration of the output of the timing circuit associated with said first predetermined tone to

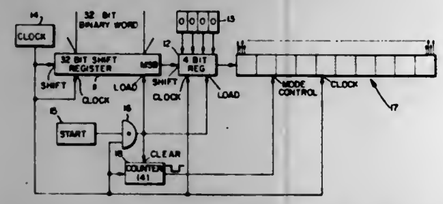
overlap the output from the timing circuit associated with said second predetermined tone;
means for actuating the remainder of the pager circuitry in the simultaneous presence of the outputs from the timing circuits and,
cross inhibiting shock protection means for inhibiting the output of one timing circuit only in the presence of a tone to which the other timing circuit responds such that said address decoding circuitry responds only to AB followed immediately by BA, where A and B designate different tones and A and B designate the absence of the respective tone.

4,069,478

BINARY TO BINARY CODED DECIMAL CONVERTER

Anthony J. Miller, Bethesda, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 12, 1975, Ser. No. 631,341
Int. Cl.[2] H03K *13/24*
U.S. Cl. 340—347 DD 7 Claims



1. Apparatus for converting a binary coded input signal to a binary coded decimal output signal having N decades comprisng N shift registers each having four bit positions, means for sequentially supplying the bits of the input signal to the least significant bit position of the register for the units decade of the binary coded decimal signal, the bits of the input signal being supplied in order to the least significant bit position of the units decade register with the most significant bit of the input signal being applied first, each of said registers having a right shift-parallel load most control input means, and means responsive to the sum of the value stored in each of said registers and the binary value 0011 for: (a) activating the mode control input means to shift the register contents one bit to the right in response to the sum being less than the binary value 1000, (b) activating the mode control input means to load the sum into the register in response to the sum being greater than to 1000, and (c) loading a binary one into the least significant bit position of the register for the adjacent higher decade in response to the sum being greater than 1000.

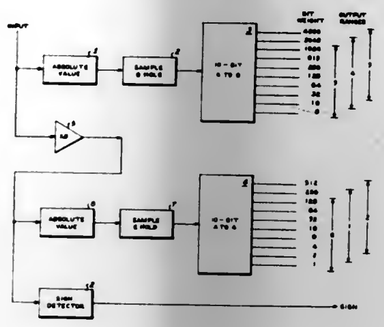
4,069,479

HIGH SPEED, WIDE DYNAMIC RANGE ANALOG-TO-DIGITAL CONVERSION

Robert J. Carpenter, and Kenneth W. Yee, both of Rockville, Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Mar. 3, 1976, Ser. No. 663,401
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 AD 6 Claims

1. An expanded dynamic range analog-to-digital conversion system having a plurality of output ranges of Y-bit resolution comprising,
an input for receiving an analog input signal,
a plurality of separate analog-to-digital converters of X-bit resolution, X being a number greater than Y,
a unit gain signal path between said input and one of said analog-to-digital converters,
amplification means between said input and another of said analog-to-digital converters, said other of said converters corresponding to lower output ranges than said one of said converters,
means for determining the most significant output bit of said converters and for generating a digital signal representative of the identity of said most significant bit, and



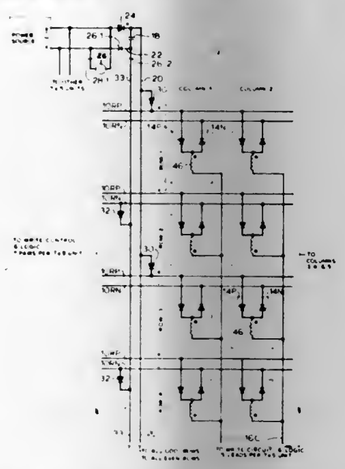
output means for outputting a digital representation of a set of bits comprised of said most significant bit and the (Y−1) bits which are successively numerically beneath said most significant bit, said digital signal which is representative of the identity of the most significant bit also being representative of the output range of said set of bits.

4,069,480

BLANKING CIRCUIT FOR ELECTROMAGNETIC DISPLAY

Christopher Gordon Helwig, Toronto, Canada, assignor to Ferranti-Packard Limited, Toronto, Canada

Filed Jan. 3, 1977, Ser. No. 756,073
Int. Cl.[2] G08B *5/22*
U.S. Cl. 340—373 6 Claims



1. In an electromagnetically operated display comprising groups of rotatably mounted elements having opposed faces of contrasting colors and each carrying a magnet rotatable therewith; the operation of each said element and the choice of contrasting color displayed thereby, being determined by the magnetic field formed by an adjacent reversibly permanently magnetizable field forming member, a winding corresponding to each field forming member located so that a pulse through said winding in a predetermined sense will magnetize said field forming member in a corresponding sense,

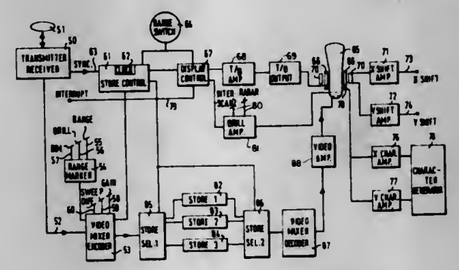
wherein groups of said elements are arranged in rows and columns,
one end of each winding corresponding to elements in the same column in such group being connected to a column lead,
the other end of each winding corresponding to elements in the same row in such group being connected both to a positive row lead by a rectifying means poled to conduct from said positive lead toward said winding and to a negative row lead by a rectifying means poled to conduct from said winding toward said negative lead,
whereby an element may be caused to display a selected one of its contrasting faces by application of a pulse in the proper sense across one of the row leads corresponding to the element and the column lead corresponding to the element,
the windings of elements connected to the same row leads being wound in one sense,
the windings of elements connected to some pairs of row leads being wound in the opposite sense to windings connected to other pairs of row leads,
a capacitor,
a connection to one side of said capacitor connected to each of the positive row leads of the group corresponding to elements with windings in one sense, through a rectifier poled to conduct in the direction from the condenser toward the respective row lead,
a connection to the other side of said capacitor connected to each of the negative row leads with windings in the other sense, through a rectifier poled to conduct in the direction from the respective negative row lead toward the condenser,
means for selectively connecting and disconnecting one of said connections to said capacitor,
means for charging said capacitor.

4,069,481

PULSE RADAR APPARATUS

Maurice Henry Easy, Maidenhead; Harry Donald Cramp; Peter Lambert Hartley, both of New Malden, and Philip David Lane Williams, Banstead, all of England, assignors to Decca Ltd., London, England

Filed Apr. 30, 1975, Ser. No. 573,090
Claims priority, application United Kingdom, May 1, 1974, 19160/74
Int. Cl.[2] G01S *7/06, 7/22*
U.S. Cl. 343—6 TV 12 Claims



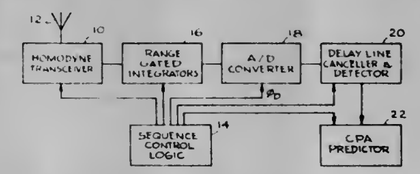
1. Pulse radar apparatus having a receiver for receiving and rectifying incoming radar video signals, wherein there are provided a cathode-ray display tube, a single speed time-base generator providing a time base trace on the screen of the cathode-ray tube, means for scanning the time base trace across the screen of the tube, clock-controlled means for repetitively samplying at a first clock rate and quantizing the amplitude of the received and rectified signals in successive periods between radar pulses, storage means for storing quantized signals from successive ones of said radar pulse periods, clock-controlled means for reading the signals from said store at a second clock rate and applying them as a brightness modulation to said time base, range selector means adapted for selectively adjusting said first clock rate of said sampling means to effect alteration of the relative clock rates, whereby to effect changes of displayed range on the cathode-ray tube screen, and means controlling said reading means to repeat reading the previously read signals from the store in synchronism with said single speed time base generator to provide repeated substantially identical scans on the cathode-ray tube screen until the beginning of the next radar pulse period.

4,069,482

TARGET RANGE SENSOR

Clarence B. Parker, Pomona; Peter M. McCray, Claremont, and L. Lamoyne Taylor, Alta Loma, all of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed July 15, 1976, Ser. No. 705,501
Int. Cl.[2] G01S *9/42, 9/06*
U.S. Cl. 343—7.7 14 Claims



1. A radar system comprising:
a homodyne transceiver including means for directing received radio frequency signals in gated sections to range gated integrating means;
range gated integrating means connected to receive said directed radio frequency signals for integrating the signals over the time period of a gated section, and including means for directing the integrated signal result to analog-to-digital converting means upon actuation by a control pulse;
analog-to-digital converting means for converting the integrated signal result to a digital, pulsed component form upon actuation by a control pulse;
delay line canceller and detector means for removing relatively low frequency, integrated signal digital components and for passing relatively higher frequency, integrated signal digital components to a delay line canceller and detector means output;
digital component processor means coupled to said output for receiving over a period of time the passed relatively higher frequency, integrated signal digital components from the delay line canceller and detector means output and for computing from said received components a predicted position closest to said homodyne transceiver which a selected target object will traverse; and
digital bit pulse control logic means for generating and selectively sending to the homodyne transceiver means, to the range gated integrating means, and to the analog-to-digital converting means control pulses for actuating each respective means in predetermined sequential order.

4,069,483

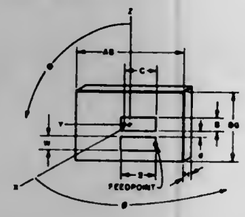
COUPLED FED MAGNETIC MICROSTRIP DIPOLE ANTENNA

Cyril M. Kalol, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 10, 1976, Ser. No. 740,691
Int. Cl.[2] H01Q *00/00, 1/48*
U.S. Cl. 343—700 MS 9 Claims

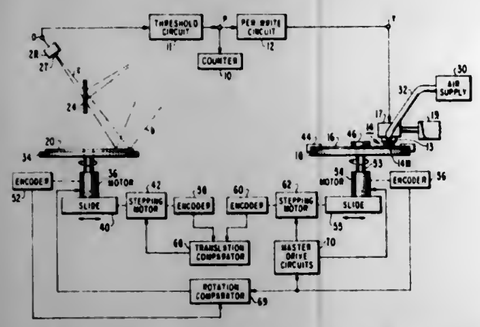
1. A coupled fed magnetic microstrip dipole antenna having low physical profile and conformal arraying capability, comprising:
a. a thin ground plane conductor;

b. a thin rectangular microstrip radiating element and a separate thin rectangular-shaped microstrip nonradiating coupler alongside and spaced apart from said radiating element;
c. said radiating element and non-radiating coupler being parallel to each other in the same plane and equally spaced from said ground plane;
d. said radiating element and nonradiating coupler being electrically separated from said ground plane by a dielectric substrate;
e. said radiating element being shorted to the ground plane at one end of the length thereof;



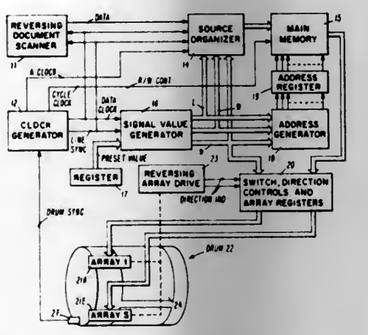
f. said nonradiating coupler being fed from a coaxial-to-microstrip adapter, the center pin of said adapter extending through said ground plane and dielectric substrate to a feed point on said nonradiating coupler;
g. the length of said radiating element determining the resonant frequency of said antenna;
h. the antenna input impedance being variable to match most practical impedances by varying any of the coupler length and the distance between said radiating element and said nonradiating coupler without affecting the radiation pattern of the antenna.

4,069,484
DEFECT PLOTTING SYSTEM
Arthur Herbert Firester, Skillman, and Joseph Paul Walentine, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed May 28, 1976, Ser. No. 691,204
Int. Cl.² G01D *5/39*
U.S. Cl. 346—33 F **5 Claims**



1. A defect plotting system for recording on electrosensitive paper a plot of the locations of significant defects appearing in the groove structure of a spirally grooved disc record; said plotting system comprising:
A. defect detecting means for developing defect data in response to a probing of the grooved surface of said disc record in spiral scanning pattern; and
B. defect plotting means comprising:
1. a turntable having a flat metallic surface upon which said electrosensitive paper is placed;
2. electric pen writing means, including a stylus subject to contact with said electrosensitive paper, for inscribing marks on said electrosensitive paper when actuated;
3. means for establishing relative motion between said turntable and said writing means in a manner causing said stylus to traverse said electrosensitive paper along a spiral path in synchronism with the probing of the grooved surface of said disc record;
4. means, responsive to said defect data, for generating an electrical writing pulse signal indicative of the reception of significant defect data; and an actuating circuit for said electric pen writing means, electrically coupled between said stylus and said turntable surface, and responsive to said writing pulse signal generation.

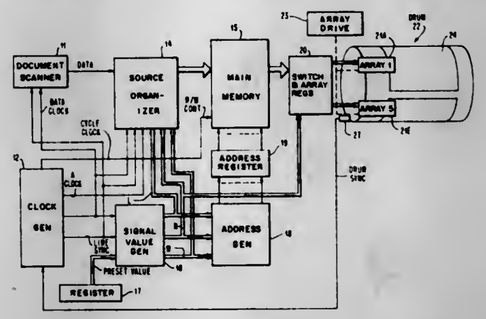
4,069,485
BIDIRECTIONAL INK JET PRINTER WITH MOVING RECORD RECEIVER
Van Clifton Martin, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 22, 1976, Ser. No. 744,223
Int. Cl.² G01D *15/18*; B41J *1/00*
U.S. Cl. 346—75 **12 Claims**



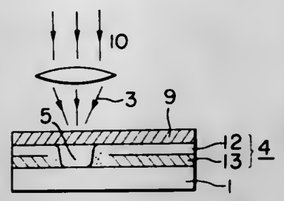
1. In a multiple print element copying apparatus with image scanning means for scanning an original, means for simultaneously translating a receiving medium with respect to the multiple print elements in a first repeating direction and in a second scan direction substantially orthogonal to the first direction to interlace the paths traced by the print elements, and means for supplying data from the scanning means to the print elements in a predetermined order to control the printing of the print elements, the improvement comprising:
means for reversibly operating said image scanning means and said translating means in said second scan direction;
means for indicating said direction of scan of said image scanning means and said translating means; and
gating means responsive to said indication for gating said print data to said print elements in said predetermined order upon said indication of a first scan direction, and for gating said print data to said print elements in a second order upon said indication of a reverse scan direction.

4,069,486
SINGLE ARRAY INK JET PRINTER
Sidney Jared Fox, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 28, 1976, Ser. No. 700,423
Int. Cl.² G01D *15/18*; B41J *1/00*
U.S. Cl. 346—75 **6 Claims**

1. An interlaced multiple element printer mechanism suitable for use in a copier or the like comprising:
a member for supporting a media suitable for receiving indicia on at least one surface thereof;
a support mounted adjacent said at least one surface of said media support member and arranged for relative movement in two substantially orthogonal directions with respect to said media support member;
a plurality of selectively operable marking means mounted on the said support and arranged in a substantially straight line parallel to one of the directions of relative movement between the media support member and the adjacent support, and
selectively operable marking means being spaced from each other by a distance equal to (*k*) resolution elements where a resolution element is equal to the distance between sucessive marks formed on the media in a direction parallel to the line of marking means when all of the marking elements are operable and *k* is an integer which then divided by (N), the total number of selectively operable means, results in an irreducible fraction; and
means for simultaneously causing relative movement in the said two substantially orthogonal directions so that the marking means advance with respect to.the media support in a direction parallel to the line of the marking means N resolution elements while the line of marking means move across the media in the said other direction in its entirety one time.

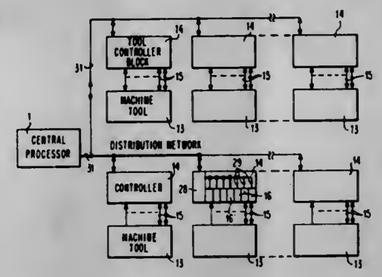


4,069,487
RECORDING MEMBER AND PROCESS FOR RECORDING
Masanao Kasai, Tokyo; Youko Oikawa, Kawasaki; Hiroshi Ito, Yokohama, and Hiroshi Matsuno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1975, Ser. No. 643,171
Claims priority, application Japan, Dec. 26, 1974, 50-2459; Jan. 29, 1975, 50-12072; May 19, 1975, 50-59370
Int. Cl.² G01G *15/34*
U.S. Cl. 346—76 L **4 Claims**



1. A recording member for recording by applying a laser beam to remove a part of a recording layer by melting and/or vaporization whch comprises a support, a recording layer overlying the support, and a protecting layer overlying the recording layer, said recording layer being composed of a laminate including a sulphur compound layer and a metal layer and being about 0.01 - 1 micron in thickness, the metal layer underlying the sulphur compound layer in the direction of application of the laser beam, and said protecting layer being not substantially destroyed by the application of the laser beam for recording.

4,069,488
COMPUTER CONTROLLED DISTRIBUTION APPARATUS FOR DISTRIBUTING TRANSACTIONS TO AND FROM CONTROLLED MACHINES TOOLS
Robert M. Fiorenza, Shelbourne, Vt.; Alan J. Fleming, Poughquag, N.Y.; Ralph J. Gerlach, Austin, Tex.; Larry W. Holmstrom, Boca Raton, Fla., and John C. Pace, Wappingers Falls, N.Y., assignors to IBM Corporation, Armonk, N.Y.
Filed Apr. 2, 1976, Ser. No. 673,011
Int. Cl.² G06F *15/46*
U.S. Cl. 364—474 **22 Claims**



1. A system for controlling a plurality of machine tools comprising
a central processor,
a plurality of tool controllers each operatively associated with a machine tool,
each of said controllers comprising at least one tool control unit, adapted to provide a data output to the associated machine tool for controlling a tool function and/or for receiving from said tool, a data input indicative of a tool condition,
a main multiple channel data bus connected to said central processor for conducting data transactions by transferring parallel bits of digital data to and from the processor,
a plurality of multiple channel unit data buses,
each of said buses being connected to one of said tool control units,
data distribution means coupling said unit data buses to said main data bus comprising
means responsive to a set of distribution signals from said central processor for selectively activating one of said tool control units and for selectively activating only the data path from said main bus through the unit data bus connected to said selected control unit, and
means for maintaining only said activated data path open through said main data bus to said central processor and maintaining all other data paths through unit data buses to unselected tool control units closed until the central processor issues the next set of distribution signals for selectively activating another tool control unit.

4,069,489
AUTOMATIC EXPOSURE CONTROL DEVICES USING BI-DIRECTIONAL TRANSISTORS
Motonobu Matsuda, Izumi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 13, 1976, Ser. No. 676,638
Claims priority, application Japan, Apr. 18, 1975, 50-48047; June 12, 1975, 50-80281[U]
Int. Cl.² G03B *7/08*
U.S. Cl. 354—51 **12 Claims**

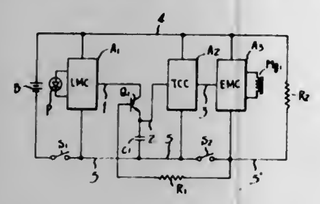
1. An automatic exposure control circuit for a photographic camera including a light measuring circuit for generating an

output signal representative of scene brightness, a storage capacitor for storing the output signal, and an electric timing circuit for controlling exposure time through exposure terminating means in accordance with the stored output signal, comprising:

at least one mechanical switch operated in association with the camera shutter releasing operation;

a bi-directional bi-polar transistor including a collector and emitter connected between said light measuring circuit and said storage capacitor, said bi-directional transistor further including a base and having the capability of conducting current from the collector to the emitter thereof and vice versa when bias potential is applied to said base;

a biasing circuit for generating said bias potential and connected to said at least one mechanical switch and said



base, whereby the application of said bias potential is controlled by said at least one mechanical switch, said biasing circuit includes semiconductor switching means for controlling the application of bias potential to the base of said bi-directional transistor, said semiconductor switching means being controlled by said at least one mechanical switch; and

a power source and a pair of power busses respectively connected to each terminal of said power source, and said biasing circuit further includes a bias resistor serially connected with the emitter-collector of said semiconductor switching means between said pair of power busses, and said base of said bi-directional transistor being connected to the junction of said bias resistor and the collector of said semiconductor switching means.

4,069,490

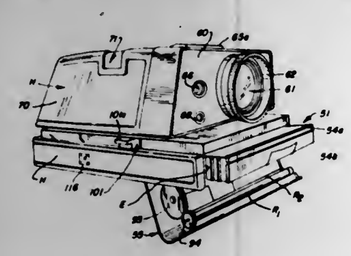
CAMERA CONSTRUCTION

Thomas G. Graham, Point Pleasant Beach; John Maltese, Saddle Brook, both of N.J.; Israel Nesson, Brighton, Mass., and Robert Mitchell, Pequannock, N.J., assignors to Berkey Photo, Inc., Clifton, N.J.

Division of Ser. No. 558,933, March 17, 1975, Pat. No. 3,983,570. This application Apr. 12, 1976, Ser. No. 675,815

Int. Cl.² G03B *17/50*

U.S. Cl. 354—83 **18 Claims**



1. A camera construction comprising a housing with a compartment therein provided with an entry for removably accommodating a cartridge containing a plurality of photographic sheets arranged in superposed relation and with a corresponding surface of each sheet being light sensitive; drive means within the housing for selectively removing a sheet from the cartridge subsequent to the light sensitive surface thereof being exposed; and a door assembly mounted on the housing for movement between open and closed positions with respect to the compartment entry; said drive means having a picker unit mounted within said compartment for reciprocatory movement towards and away from the compartment entry to effect removal of an exposed photographic sheet from an accommodated cartridge, and power means for controlled actuation of said picker unit; said power means being capable of operation when a cartridge is accommodated in the housing, the door assembly is in a closed position and the photographic sheet has been exposed; said picker unit including an elongated member movable in substantially endwise directions and having an outwardly extending first protuberance disposed within an elongated stationary first guide means positioned within the housing adjacent one side of the compartment, an inwardly extending second protuberance spaced from said first protuberance and projecting into the compartment, said second protuberance having a rearwardly extending resilient finger with a depending tongue formed on the rear end thereof for engaging the rear edge of a photographic sheet disposed within an accommodated cartridge and effect edgewise movement of the sheet out of the cartridge towards the door assembly when said picker unit is actuated by said power means in one direction towards the compartment entry.

4,069,491

TIMING MECHANISM FOR PHOTOGRAPHIC SHUTTERS

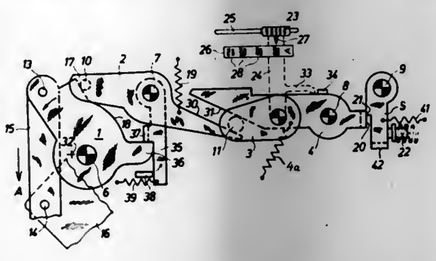
Erwin Scholz, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Feb. 11, 1977, Ser. No. 767,774

Claims priority, application Germany, Feb. 20, 1976, 2606864

Int. Cl.² G03B *9/62, 17/40*

U.S. Cl. 354—267 **12 Claims**



1. Timing mechanism for timing the release of a trailing shutter element with relation to release of a leading shutter element, said mechanism comprising a control member movable in synchronism with a leadng shutter element, a movable release pawl for restraining movement of a trailing shutter element, and lever mechanism responsive to movement of said control member for releasing said release pawl for movement to a released position upon a variable selected extent of movement of said control member, said lever mechanism having its own separate driving power.

4,069,492

ELECTROLUMINESCENT SEMICONDUCTOR DEVICE HAVING A BODY OF AMORPHOUS SILICON

Jacques Isaac Pankove, Princeton, N.J., and David Emil Carlson, Yardley, Pa., assignors to RCA Corporation, New York, N.Y.

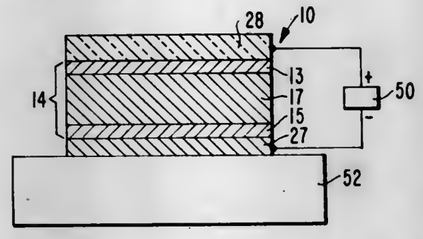
Filed Aug. 23, 1976, Ser. No. 716,532

Int. Cl.² H01L *33/00, 45/00*

U.S. Cl. 357—17 **14 Claims**

1. An electroluminescent semiconductor device comprising: a body of amorphous silicon fabricated by a glow discharge,

said body having a semiconductor junction either at the surface or in said body; and



means for forward biasing said body with a voltage so as to generate radiation in said body.

4,069,493

NOVEL INTEGRATED CIRCUIT AND METHOD OF MANUFACTURING SAME

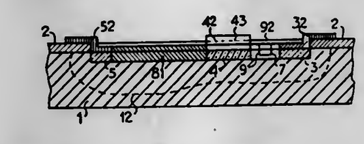
Albert Bobenrieth, Paris, France, assignor to Thomson-CSF, Paris Cedex, France

Continuation of Ser. No. 468,089, May 8, 1974, abandoned. This application Apr. 26, 1976, Ser. No. 680,572

Claims priority, application France, Oct. 2, 1970, 70.35702

Int. Cl.² H01L *29/80, 29/48, 27/02, 29/78*

U.S. Cl. 357—22 **4 Claims**



1. A field effect transistor comprising:

a weakly doped semiconductive substrate of a first conductivity type having a substantially plane surface, and, in said substrate, contiguous to said surface;

a source and a drain region consisting of a first and a second ion implanted regions of a common depth, said common depth being on the order of one micron, said regions being highly doped by impurities of a second conductivity type opposite to said first type;

a channel region consisting of a third ion implanted region of a common depth as said first and second regions and filling the whole space between said regions, said third region being of said second conductivity type but less doped than said first and second regions;

a gate region consisting of a fourth ion implanted region, occupying a portion of said third region situated at equal distance of said first and second regions, said fourth region having a depth on the order of 0.5 micron.

4,069,494

INVERTER CIRCUIT ARRANGEMENTS

David Latham Grundy, Saddleworth, England, assignor to Ferranti Limited, Hollinwood, Lancashire, England

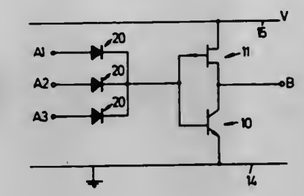
Division of Ser. No. 442,823, Feb. 15, 1974, abandoned. This application Feb. 17, 1976, Ser. No. 658,403

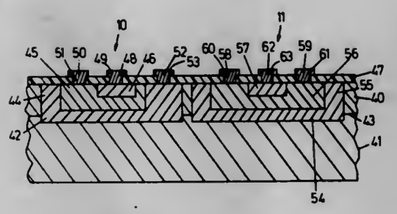
Claims priority, application United Kingdom, Feb. 17, 1973, 07910/73

Int. Cl.² H01L *27/04, 27/02*

U.S. Cl. 357—41 **12 Claims**

1. An inverter circuit arrangement within a monolithic semiconductor body comprising a shallow epitaxial layer of one conductivity type on a substrate of the same conductivity type, the arrangement including at least a pair of circuit elements spaced from each other within the semiconductor body, each circuit element including a defined region of the epitaxial layer, a buried layer of opposite conductivity type at the interface between the defined region of the epitaxial layer and the substrate, a heavily doped isolation barrier of opposite conductivity type, said isolation barrier extending through the epitaxial layer into contact with the buried layer, and the defined region including a surface portion remote from the substrate, said surface portion having a part which is of said opposite conductivity type, one of said pair of circuit elements comprising a bipolar transistor with a collector comprising the combination of the buried layer and the isolation barrier, a base including an unmodified part of the defined region of the epitaxial layer, an emitter comprising the part of said opposite conductivity type of the surface portion of the defined region, the emitter being surrounded by material of said one conductivity type within the semiconductor body, and the bipolar transistor having electrode connections to the collector, the base and the emitter, the other circuit element comprising a field-effect transistor with a channel region including an unmodified part of the defined region of the epitaxial layer, the part of said opposite conductivity type of the surface portion of the defined region is contiguous with the isolation barrier, and bisects the remaining part of said one conductivity type of the surface portion





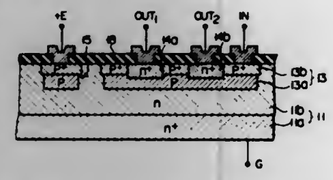
into two regions, the part of said opposite conductivity type comprising the gate of the field-effect transistor, the remaining two regions of the surface portion comprising the source and the drain, and the field-effect transistor having electrode connections to the gate, the source and the drain, there also being provided within the circuit arrangement electrical connections such that the base of the bipolar transistor and the gate of the field-effect transistor are connected in common to receive input signals to the circuit arrangement, the collector of the bipolar transistor and the source of the field-effect transistor are connected in common to provide the output for the circuit arrangement, the drain of the field-effect transistor is connected to a point to be maintained at a first reference potential level, and the emitter of the bipolar transistor is connected to a point to be maintained at a second reference potential level, each input signal to the circuit arrangement to have two possible voltage levels, with one of the two possible input voltage levels causing the bipolar transistor to be switched ON and the field-effect transistor to be switched OFF, and the other of the two possible input voltage levels causing the bipolar transistor to be switched OFF and the field-effect transistor to be switched ON.

4,069,495

SEMICONDUCTOR DEVICE FOR INTEGRATED INJECTION LOGIC

Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1976, Ser. No. 729,772
Claims priority, application Japan, Oct. 13, 1975, 50-123136
Int. Cl.² H01L *27/02, 27/04*
U.S. Cl. 357—46 **6 Claims**



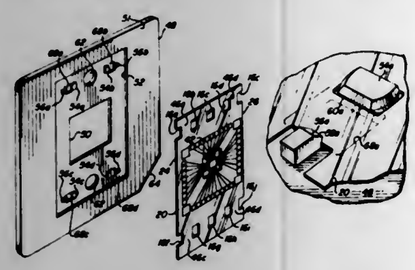
1. A semiconductor device for integrated injection logic comprising a semiconductor substrate of a first conductivity type, a signal input region of a second conductivity type provided in said semiconductor layer of said first conductivity type, at least one signal output region of said first conductivity type formed in said signal input region, a charge injection region of said second conductivity type of high impurity concentration provided closely to said signal input region and forming a pn junction with said semiconductor substrate of said first conductivity type, and electrodes provided for said substrate, signal input region, signal output regions and charge injection region, respectively, whereby an inverted signal of an input signal is obtained by applying a forward bias voltage to said pn junction, said signal input region including a first portion of said second conductivity type having a lower impurity concentration than said charge injection region and a second portion having the same conductivity type as said first portion and having a higher impurity concentration than said first portion, said second portion being adjoined directly to said signal output region and connected to said signal input electrode, and said first portion being adjoined directly to at least the entire under surface of said portion.

4,069,496

REUSABLE FIXTURE FOR AN INTEGRATED CIRCUIT CHIP

John Lawrence Kowalski, Phoenix, Ariz., assignor to Honeywell Iaformation Systems Inc., Phoenix, Ariz.

Filed Dec. 30, 1976, Ser. No. 755,758
Iat. Cl.² H01L *23/48, 23/02;* H02G *13/08;* H01R *13/50*
U.S. Cl. 357—70 **13 Claims**



1. A fixture for a substantially rectangular segment of film having substantially planar surfaces and four edges; said segment having a plurality of sprocket holes arranged in two parallel rows are substantially parallel to opposite edges of the segment, one sprocket hole of each row being a datum sprocket hole, and a pair of sprocket holes of each row being attachment sprocket holes; each segment having four attachment webs, each web forming an edge of an attachment sprocket hole and having a centroid; and means forming a window in said segment, said window having a position fixed relative to the datum sprocket holes; said fixture comprising:

a laminar layer;

means forming an aperture in said laminar layer,

recess means surrounding said aperture, the dimensions of the recess being such as to receive and position a segment relative to said aperture so that said aperture provides access to the window of a segment positioned in said recess means;

means located in said recess means partially overlying the attachment webs of a segment positioned in said recess means for retaining a segment in the recess means;

means forming access openings in said fixture for providing access to the datum sprocket holes of a segment positioned in said recess means; and

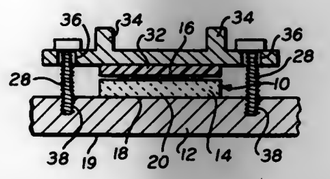
means forming detachment openings through said fixture for providing access to the centroids of the attachment webs of a segment positioned in said fixture.

4,069,497

HIGH HEAT DISSIPATION MOUNTING FOR SOLID STATE DEVICES AND CIRCUITS

Mark Steidlitz, Cherry Hill, N.J., assignor to EMC Technology, Inc., Cherry Hill, N.J.

Filed Aug. 13, 1975, Ser. No. 604,349
Int. Cl.² H01L *23/28, 23/42, 39/02, 23/02*
U.S. Cl. 357—80 **14 Claims**



1. An electronic assembly for enabling enhanced dissipation of heat from a heat generating portion of a solid state device, said assembly comprising said solid state device; a heat dissipation plate supplied externally to said solid state device; and means for mechanically clamping said solid state device to said externally supplied heat dissipation plate; said solid state device comprising an electrically insulating thermally conductive substrate and a current carrying film layer disposed directly on one surface of said substrate without the interposition of any thermal barrier therebetween, said current carrying film layer generating heat as a result of current flow therein; said mechanical clamping means mechanically clamping said solid state device to said externally supplied heat dissipation plate in direct thermally conductive bearing relationship between the thermally conductive substrate surface which is opposite to said one surface and said externally supplied heat dissipation plate for providing a direct thermally conductive heat dissipation path for heat generated in said current carrying layer to said thermally conductive substrate and therethrough to said externally supplied heat dissipation plate for thermal dissipation of said generated heat throughout said heat dissipation plate surface area.

4,069,498

STUDDED HEAT EXCHANGER FOR INTEGRATED CIRCUIT PACKAGE

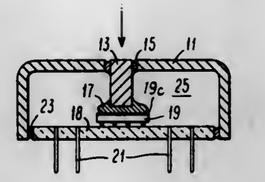
Kailash Chandra Joshi, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1976, Ser. No. 738,783
Int. Cl.² H01L *23/02, 39/02*
U.S. Cl. 357—81 **11 Claims**

1. In and integrated circuit assembly including at least one integrated circuit device suitably mounted on a circuitized substrate with a cap covering the device on the substrate, the improvement comprising:

an opening in said cap, said opening being positioned in said cap to be above said device when said cap covers said device;

a stud member having a high heat transfer coefficient adapted to be mounted in said opening proximate said device; and



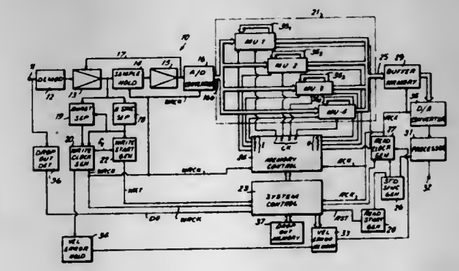
low melt solder in the periphery of said opening surrounding said stud and low melt solder on the tip of said stud proximate said device, whereby upon the application of heat to said assembly, said low melt solder melts and said stud is brought into an intimate heat transfer relationship with said device, and upon cooling the low melt solder solidifies to maintain an air tight enclosure with said cap over said substrate and electrical isolation between the solder on the tip of said stud and said device is established.

4,069,499

WRITE CLOCK PULSE SIGNAL GENERATOR FOR DIGITAL TIME BASE CORRECTOR

Takeshi Ninomiya, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 10, 1976, Ser. No. 694,827
Claims priority, application Japan, June 12, 1975, 50-71209
Int. Cl.² H04N *5/78*
U.S. Cl. 358—8 **11 Claims**



1. In a time base corrector for periodic information signals containing first and second reference signals having relatively low and high frequencies, respectively varying with time base errors in such periodic information signals, and in which the following periodic information signals are converted to digital form and written in a memory at a clocking rate determined by a write clock pulse signal modulated in accordance with time base errors in the incoming signals, whereupon the digitized signals temporarily stored in the memory are read out therefrom substantially at a standard clocking rate and the resulting digitized output from the memory is reconverted to analog form for eliminating the time base errors: a generator for said write clock pulse signal comprising an automatic frequency control circuit including a variable frequency oscillator having an output with a center frequency which is a multiple of said high frequency of the second reference signal, and phase locked loop means receiving said oscillator output and said first reference signal for varying the frequency of said oscillator output in accordance with variations in the frequency of said first reference signal; and

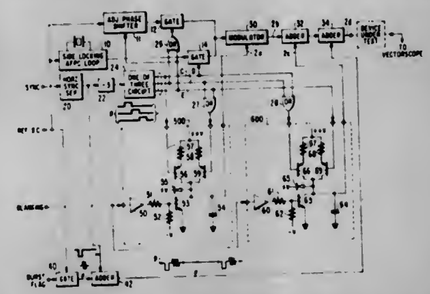
an automatic phase control circuit including variable phase shifting means, means for applying said oscillator output to said variable phase shifting means so as to obtain said write clock pulse signal at the output of said variable phase shifting means, and control means for said variable phase shifting means operative to vary the phase of said write clock pulse signal in dependence on a phase comparison of said second reference signal and said oscillator output.

4,069,500

ARRANGEMENTS FOR TESTING COLOR TELEVISION SYSTEMS

Robert Norman Hurst, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1976, Ser. No. 737,004
Int. Cl.² H04N *9/62*
U.S. Cl. 358—10 **2 Claims**



1. A method of testing color television systems in conjunction with a vectorscope display device for measuring saturation, hue and luminance crosstalk, comprising:

generating a repetitive cyclic test signal corresponding to first, second and third television lines having synchronizing and active line portions for developing first, second and third information traces on said display device;

said first television line active line portion having a constant chrominance amplitude with changing phase for representing variations in hue on said first information trace;

said second television line active line portion having a changing chrominance amplitude with constant phase for representing variations in saturation on said second information trace;

said third television line active line portion having a changing chrominance amplitude with constant phase and increasing luminance amplitude for representing variations in saturation with luminance on said third information trace;

applying said repetitive test signal to television equipment under test; and

measuring crosstalk in the form of hue into saturation, saturation into hue, saturation and luminance into hue as a function of the distortion of said first, second and third information traces.

4,069,501

SOLID-STATE VIDEO CAMERA

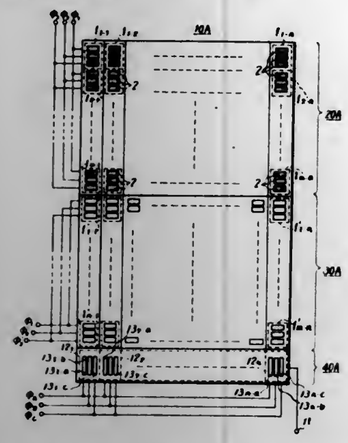
Seisuke Yamanaka, Mitaka, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 11, 1976, Ser. No. 685,362
Claims priority, application Japan, May 13, 1975, 50-56912
Int. Cl.² H04N *9/04*
U.S. Cl. 358—44 **5 Claims**

1. A solid state camera comprising:

a plurality of image sensors, each having a plurality of picture-sensing units spaced apart by an alignment pitch of τ_H,

means for displaying an image simultaneously on each of said image sensors,



means for displacing the image on each sensor by τ_{12} and τ_{13} in a given direction with respect to at least one of said sensors where

$$\tau_{12} = \frac{\tau H}{2\tau} \cos^{-1}\left(\frac{L_3^2 - L_1^2 - L_2^2}{2L_1L_2}\right)$$

$$\tau_{13} = \frac{\tau H}{2} + \frac{\tau H}{2\tau} \cos^{-1}\left(\frac{L_3^2 + L_1^2 - L_3^2}{2L_1L_3}\right)$$

where

τ_{12} is a displaced distance between the images projected on said first sensor and on said second sensor in said given direction,

τ_{13} is a displaced distance between the images projected on said first sensor and on said third sensor in said given direction, and

L_1, L_2 and L_3 are output signals levels from said first, second and third sensors,

means coupled to said picture sensing units for reading said respective images sequentially in said given direction,

means associated with said reading means for shifting the readout time thereof by a phase of the read-out frequency which corresponds to said displaced distances τ_{12} and τ_{13},

means coupled to said reading means for mixing the respective output signals thereof, and

means for deriving an output from said mixing means.

4,069,502

METHODS OF OPERATING PYROELECTRIC CAMERA TUBES

Peter David Nelson, Chelmsford, and Peter Baldwin Banks, Wickford, both of England, assignors to English Electric Valve Company Limited, England

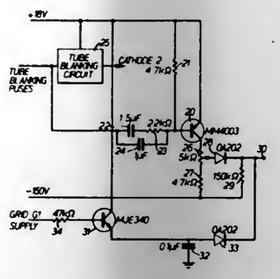
Filed June 14, 1976, Ser. No. 696,035

Claims priority, application United Kingdom, June 28, 1975, 27425/75.

Int. Cl.² H04N *5/33*

U.S. Cl. 358—113 **7 Claims**

1. A circuit arrangement including a pyroelectric camera tube having an electron beam emitting cathode, a control grid G_1 controlling the electron beam and a gas in the interior space of the tube for producing a pedestal potential and pulse generator means for producing a positively-going pulse to the grid



G_1 during each period of line blanking whereby an increased pedestal potential is produced.

4,069,503

APPARATUS FOR RECORDING AND REPRODUCING SIGNALS USING A DISC-LIKE RECORDING MEDIUM

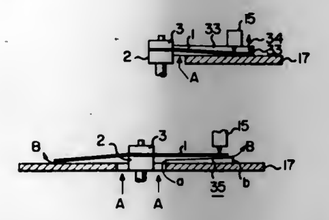
Tadashi Nagaoka, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 316,489, Dec. 19, 1972, abandoned. This application Nov. 5, 1974, Ser. No. 521,153

Claims priority, application Japan, Dec. 20, 1971, 46-105003; Dec. 28, 1971, 47-127; Dec. 29, 1971, 47-275; Dec. 29, 1971, 47-280

Int. Cl.² H04N *5/76*; G11B *15/38, 3/20*

U.S. Cl. 358—128 **6 Claims**



1. An apparatus for recording and reproducing signals, comprising a disc-like recording medium made of flexible material, a base plate, a turntable having an engaging portion which protrudes from the surface of the base plate and engages with the central portion of said recording medium to support said recording medium, driving means coupled to said turntable for rotating said turntable at high speed, an air inlet port formed in said base plate and located in the position corresponding to the central portion of said recording medium supported by said turntable, a pickup device which moves in a radial direction of and makes contact with said recording medium, and a convexity provided on said base plate and located between said recording medium and said base plate, said convexity being located under the radial moving path of said pickup device and extending from near the outer periphery of said recording medium towards the center of rotation of said recording medium, the height of said convexity from the base plate getting gradually smaller towards the center of rotation of said recording medium.

4,069,504

DIGITAL TRANSMISSION METHOD FOR CODED VIDEO SIGNALS

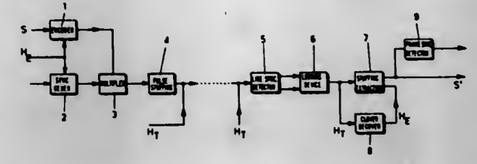
Jean-Claude Jolivet, Saint-Michel-en-Greve, and Francois-Xavier Antoine Stouls, Perros Guirec, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed June 23, 1976, Ser. No. 698,834

Claims priority, application France, July 3, 1975, 75 20865

Int. Cl.² H04N *7/04, 7/08*

U.S. Cl. 358—142 **1 Claim**



1. A method for the digital transmission of coded video signals with a fixed number of binary digits per frame dot, wherein each line of the video signal comprises a line synchronization word multiplexed during the line fly-back period, comprising using as line synchronization-word a pseudorandom sequence the self-correlation function of which is such that the synchronization word can be detected at the receiving equipment within a window of at least 3 binary digits, and stuffing each line of the video signal by eventually adding or substracting one binary digit during the line fly-back period at a fixed location in relation to the line synchronizing word.

4,069,505

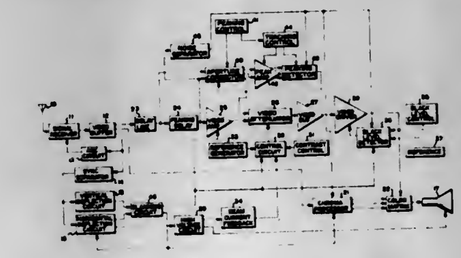
AUTOMATIC PEAKING CONTROL CIRCUITRY FOR A VIDEO PROCESSING SYSTEM

Kenneth J. Burdick, Wyoming; Wilfred L. Hand, Clarence; Robert C. Wheeler, Elba, and Paul G. Wolfe, Batavia, all of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 19, 1977, Ser. No. 760,366

Int. Cl.² H04N *5/14, 5/52*; H03K *1/00*

U.S. Cl. 358—162 **12 Claims**



1. Automatic peaking control circuitry for a video processing system having an aperture correction stage for generating pre-shoot and over-shoot signals comprising:

bias means for providing an adjustable gain control signal to said aperture correction stage;

detecting means connected to said aperture correction stage for detecting the amplitude of said pre-shoot and over-shoot signals in excess of a predetermined threshold; and

gain control means connected to said detecting means and to said bias means for automatically controlling the gain of said aperture correction stage to track said adjustable gain control signal.

4,069,506

CASSETTE INSERTION/EJECTION APPARATUS

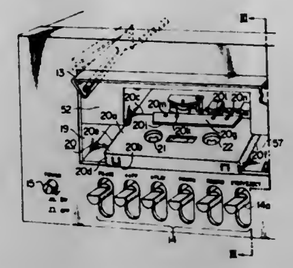
Hideto Ueno, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed May 28, 1976, Ser. No. 691,087

Claims priority, application Japan, May 30, 1975, 50-72160[U]; May 30, 1975, 50-72161[U]; May 30, 1975, 50-72163[U]

Int. Cl.² G11B *15/10, 15/24, 23/04*

U.S. Cl. 360—96 **11 Claims**



1. A cassette insertion/ejection apparatus for positioning a cassette at a proper operation position and ejecting the cassette from the proper operation position, said apparatus using the cassette in the form of a housing comprising a top face, a bottom face, a front side face, a rear side face, a left-hand side face and a right-hand side face, in which a pair of hubs are rotatably supported between said top and bottom faces and a roll of tape wound about one of said hubs is extended near the openings capable of receiving magnetic heads in said front side face and wound about the other hub, and in which a pair of cassette locating holes are cut between said top and bottom faces, wherein said apparatus comprising:

a fixed member supporting a pair of turntables and cassette locating pins for rotatably supporting said pair of hubs;

a magnetic head means disposed on said front side of the cassette, said magnetic head means being away from the cassette and opposite to said openings when the cassette is disposed at said proper operational position;

a group of manipulating levers comprising an eject lever and disposed on said rear side;

a cassette tray means having two holes for penetrating the shafts of two turntables and mounted on a base member so as to swing up the magnetic head side thereof by a certain angle about an axis near said group of manipulation levers, at the swung up position said cassette tray being positioned above the top of said shafts of turntables to thereby situate said cassette carried on said cassette tray on the slope higher at the magnetic heads side than the group of munipulation side, at the non-swung up position, i.e. the proper operation position, said shafts of turntables penetrating through said holes and projecting above said cassette tray to be received in said hubs of said cassette, said cassette tray being transferred from said swung up position to said proper operation position in response to the insertion of said cassette and transferred from said proper operation position to said swung up position in response to the actuation of said eject lever;

a stabilizing means for holding said cassette to said fixed member under the situation of receiving said cassette locating pins mounted on said fixed member into said cassette locating holes when said cassette tray is brought into said proper operation position in response to the insertion of said cassette, said stabilizing means releasing said cassette in response to the actuation of said eject lever; and

a sliding down means for sliding down said cassette from said cassette tray by floating said cassette flow the slope of said cassette tray when said cassette tray is brought into

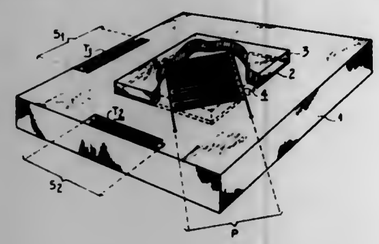
said swung up position in response to the actuation of said eject lever.

4,069,507

DEVICE FOR THE TWO-DIMENSIONAL READING OF OPTICAL IMAGES, USING ELASTIC SURFACE WAVES

Philippe Defranould, and Jean Desbois, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sept. 21, 1976, Ser. No. 725,242
Claims priority, application France, Sept. 26, 1975, 75 29607
Int. Cl.² H04N 5/30
U.S. Cl. 358—213 **14 Claims**



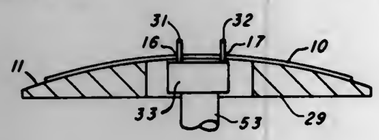
1. A device for the two-dimensional reading of an optical image using elastic surface waves, comprising a first piezoelectric medium at the surface of which elastic waves are capable of being propagated, and a second medium which is both semiconductive and photoconductive and in which the electrical fields associated with said elastic waves are capable of creating nonlinear interactions and where said image is projected, producing therein a spatial variation in conductivity, said first medium carring at least two electromechanical transducers which transmit elastic surface waves having the same frequency, in two separate directions of which the intersection defines a zone of interaction where said nonlinear interactions occur, the intensity of said interactions being modulated by said spatial variation in conductivity, said waves being transmitted respectively by said transducers with a period at least equal to the scanning time of the zone of interaction by an elastic wave and with variable relative delays, said device further comprising means for extracting the time independent signals produced by said nonlinear interaction, said extracting means having a spatial periodicity which corresponds to the one of said time independent signals.

4,069,508

FLEXIBLE MAGNETIC DISC RECORDING SYSTEM

Frank Thomas Bilek, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 25, 1976, Ser. No. 661,228
Int. Cl.² G11B 5/016, 5/76
U.S. Cl. 360—99 **8 Claims**



1. A system for recording and/or reading information on a major surface of a sheet of flexible information storage media having upper and lower opposite major surfaces and at least one opening therethrough comprising:

a. a body having a stationary smoothing plane surface;

b. rotational means having an upper major surface located substantially in or below said smoothing plane surface for rotating said information storage media over said stationary surface with the lower major surface of said information storage media facing said stationary surface and the upper major surface of said rotational means, said rotational means having at least one pin member which mates with said at least one opening for coupling said information storage media to said rotational means, said at least one opening having a larger perimeter than said at least one pin member to the extent that said information storage media is freely laterally movable along said pin member wherein a fluid cushion of optimum thickness is substantially evenly formed between said stationary surface and the lower major surface of said storage media when said information storage media is in rotation over said stationary surface, and also forms, to at least said predetermined thickness, a fluid layer between the upper major surface of said rotational means and the lower major surface of said storage media, said fluid being drawn through said at least one opening to form said cushion and said information storage media being self-positioning along said pin member; and

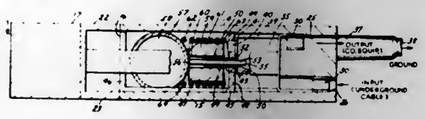
c. a recording and/or reading head mounted in a predetermined position with respect to the stationary surface of said body for recording and/or reading said information on said information storage media when said media is in rotation.

4,069,509

THREE ELEMENT GAS TUBE PROTECTOR MODULE

Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corporation, Syosset, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,545
Int. Cl.² H02H 7/20
U.S. Cl. 361—124 **3 Claims**



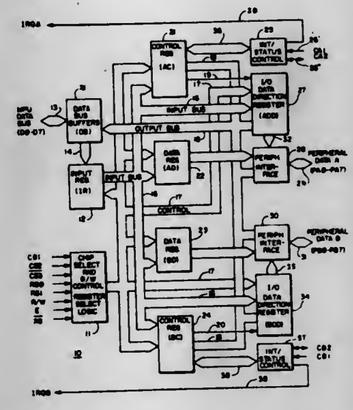
1. An improved telephone line surge protecting device comprising: a casing element having a principal longitudinal axis including a plurality of oppositely disposed side walls defining a cavity; interconnected telephone input and output terminals having inner ends communicating with said cavity; a grounding prong element penetrating said casing element and communicating with said cavity; a temperature sensitive element mounted generally coaxially with respect to said principal axis of said casing element for movement between first and second positions within said cavity; resilient means urging said temperature sensitive element from said first to said second position; said temperature sensitive element including a transversely extending multisection gaseous discharge device having conductive end portions and a medially positioned grounding projection extending laterally therefrom; a generally U-shaped conductive member including a first end portion selectively contacting the conductive ends of said gaseous discharge device, and a second end generally parallel to said first end portion and communicating with said grounding prong element; said second portion mounting a hollow tube element surrounding said grounding projection on said gaseous discharge device and fixed thereto against the action of said resilient means by a meltable material; and a pair of resilient elongated electrically conducting contact members slidably contacting the conductive ends of said gaseous discharge device and the inner ends of said input and output terminals; whereby upon the melting of said meltable material said resilient means serves to move said gaseous discharge device into contact with said first end portion of said U-shaped member, resulting in current being conducted from said inner ends of said input and output terminals through the conductive ends of said gaseous discharge device to said U-shaped member and said grounding prong.

4,069,510

INTERRUPT STATUS REGISTER FOR INTERFACE ADAPTOR CHIP

Earl F. Carlow, Scottsdale, and Michael F. Wiles, Phoenix, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 519,143, Oct. 30, 1974, abandoned.
This application May 24, 1976, Ser. No. 689,212
Int. Cl.² G06F 3/04, 9/18
U.S. Cl. 364—200 **6 Claims**



1. In an interface adaptor for interfacing between a peripheral data bus coupled to a peripheral device and to a system data bus coupled to processor means for executing a plurality of instructions, interrupt circuitry comprising:

an interrupt conductor for conducting an interrupt request signal from said peripheral device;

interrupt circuit means coupled to said interrupt conductor means for receiving said interrupt request signal and generating an interrupt request output signal in response to said interrupt request signal;

an interrupt output conductor coupled to said interrupt circuit means for conducting said interrupt request output signal;

first storage circuit means responsive to said interrupt circuit means and coupled between said interrupt circuit means and said system data bus for receiving and storing interrupt request status information representative of whether or not any interrupt request signal has been received by said interrupt circuit means;

a read conductor responsive to said processor means for conducting a read signal from said processor means to said interface adaptor;

address conductors responsive to said processor means for cnducting address signals representative of the location of said first storage circuit means form said processor means to said interface adaptor means;

address decoding means responsive to said address conductors for decoding said address signals to produce a selection signal; and

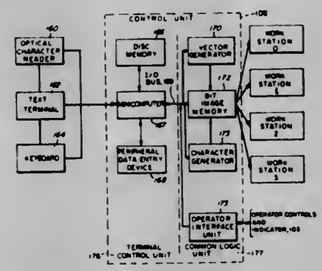
means responsive to said selection signal and to said read signal and coupled to said first storage circuit means and to said system data bus for electrically coupling said first storage circuit means to said system data bus to effect reading said interrupt request status information by said processor means.

4,069,511

DIGITAL BIT IMAGE MEMORY SYSTEM

Helmut Lelke, Southboro, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 1, 1976, Ser. No. 691,686
Int. Cl.² G06F 3/14
U.S. Cl. 364—200 **19 Claims**



1. A bit image memory for use with a visual display comprising in combination:

a semiconductor memory, said memory having at least one digital storage location for each elemental display position upon said visual display; and

means for reading out data from said memory to produce an image upon said visual display, said reading-out means being coupled to address inputs and data outputs of said memory, said memory being refreshed within the refresh time period of said visual display means.

DESIGN PATENTS

GRANTED JANUARY 17, 1978

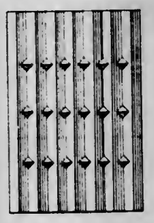
ERRATA

For CLASS	See PATENT NO.
D14–068	246,975

DESIGNS

JANUARY 17, 1978

246,941
TOASTER PRODUCT
Henry W. Kalt, 173 N. Mountain Ave., Montclair, N.J. 07042
Filed Mar. 8, 1976, Ser. No. 665,083
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—23



246,942
T-SHIRT
Cynthia Louise Popiela, 8304 Monroe Ave., Munster, Ind. 46321
Continuation-in-part of Ser. No. 499,149, Aug. 21, 1974, abandoned. This application Aug. 6, 1976, Ser. No. 712,173
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—215



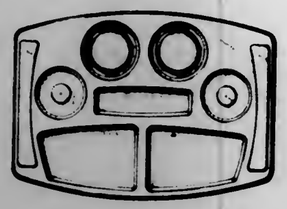
246,943
SHOE
Tatsuo Fukuoka, No. 3, 3-ban, 2-chome, Shin-Minami-Fukushima, Tokushima, Japan
Division of Ser. No. 530,296, Dec. 6, 1974. This application Jan. 5, 1976, Ser. No. 646,528
Claims priority, application Japan, Nov. 1, 1974, 49-38440; Nov. 1, 1974, 49-38438; Nov. 8, 1974, 49-39273; Nov. 8, 1974, 49-39274
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—269



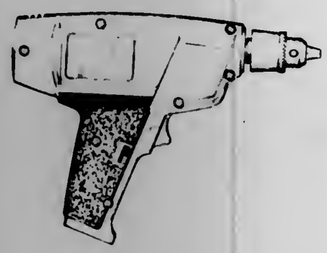
246,944
SHOE
Tatsuo Fukuoka, No. 3, 3-ban, 2-chome, Shin-Minami-Fukushima, Tokushima, Japan
Division of Ser. No. 530,296, Dec. 6, 1974. This application Jan. 5, 1976, Ser. No. 646,529
Claims priority, application Japan, Nov. 1, 1974, 49-38440; Nov. 1, 1974, 49-38438; Nov. 8, 1974, 49-39273; Nov. 8, 1974, 49-39274
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—269



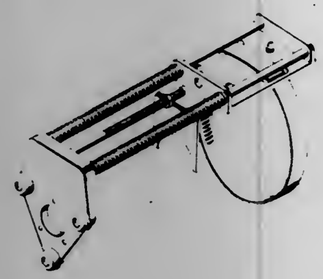
246,945
COFFEE SERVICE TRAY
David N. Shore, Derry, N.H., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed Mar. 15, 1976, Ser. No. 667,131
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—21



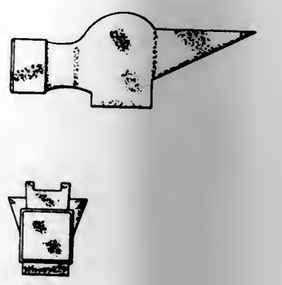
246,946
POWERED HAND-HELD DRILL
William H. Schultz, Northbrook, Ill., assignor to Skil Corporation, Chicago, Ill.
Filed Feb. 13, 1976, Ser. No. 657,852
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—68



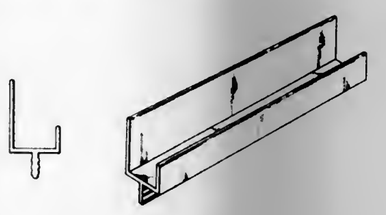
246,947
DRILL ALIGNMENT ATTACHMENT
Robert Lowe Glover, P.O. Box 335, Ash Fork, Ariz. 86320
Filed Oct. 26, 1976, Ser. No. 735,447
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



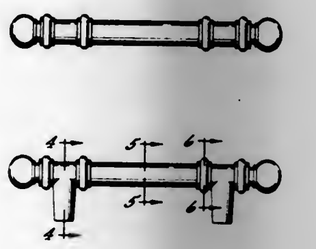
246,948
HAMMER HEAD
Martin V. Cunningham, 712 Cindy Lane, Petaluma, Calif. 94952
Filed Feb. 9, 1976, Ser. No. 657,128
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—79



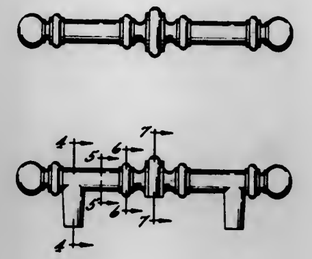
246,949
HANDLE FOR DRAWERS, DOORS, OR THE LIKE
Donald A. Davis, 50 Johnson Road, Winchester, Mass. 01890
Filed Nov. 8, 1976, Ser. No. 739,817
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—300



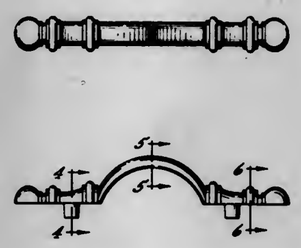
246,950
PULL
James M. Palm, Jr., Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 1, 1976, Ser. No. 746,523
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—316



246,951
PULL
James M. Palm, Jr., Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 1, 1976, Ser. No. 746,525
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—316



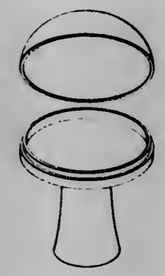
246,952
PULL
James M. Palm, Jr., Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 1, 1976, Ser. No. 746,528
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—317



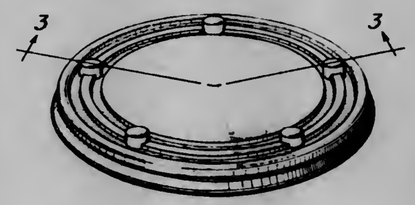
246,953
BOTTLE
William James Britt, Greenville, S.C., assignor to Morton-Norwich Products, Inc.
Filed June 14, 1976, Ser. No. 695,892
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143



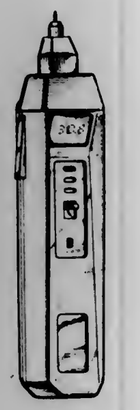
246,954
CONTAINER FOR FASHION ACCESSORY ARTICLES OR THE LIKE
Steven D. L'Europa, 869 Manton Ave., Providence, R.I. 02909
Filed Dec. 31, 1975, Ser. No. 645,827
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—238



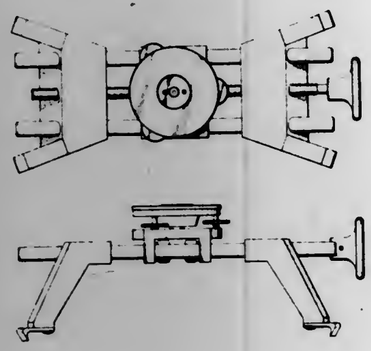
246,955
DISPOSABLE PLASTIC LID
Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed June 17, 1976, Ser. No. 696,934
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—267



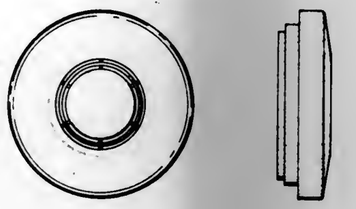
246,956
DIGITAL MULTIMETER OR THE LIKE
Francis O. Perry, Yardley, Pa., assignor to Logical Technical Services Corporation, New York, N.Y.
Filed Apr. 2, 1976, Ser. No. 673,267
Term of patent 3½ years
Int. Cl. D10—*04*
U.S. Cl. D10—78



246,957
WHEEL ALIGNMENT INSTRUMENT CLAMP
Leonard A. Morrison, 1052 W. Altgeld St., Chicago, Ill. 60614; Leo C. Bogaerts, Rte. 2, Box 117, Antioch, Ill. 60002; Robert S. Hampton, Jr., 4901 Morse Ave., Skokie, Ill. 60076, and John Murphy, 3408 Win Haven Drive, Waukegan, Ill. 60085
Filed June 26, 1975, Ser. No. 590,445
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—103



246,958
SMOKE DETECTOR
William J. Rakocy, Nutley, and Masao Tsuji, North Plainfield, both of N.J., assignors to North American Philips Corporation, New York, N.Y.
Filed May 20, 1976, Ser. No. 688,357
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



246,959
BRACELET
Ralph Jesse Guy, 421 Northwood Road, West Palm Beach, Fla. 33407
Filed June 1, 1976, Ser. No. 691,523
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—4





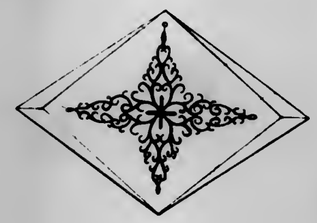
246,960
SLIP-ON BRACELET
Elio Lossini, Johnston, R.I., assignor to Raybeth Tool & Die Co., Inc., Providence, R.I.
Filed June 1, 1976, Ser. No. 692,030
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—4



246,961
JEWELRY PIN OR PENDANT
Patt Buchanan, Ramada Camp Inn, Dewey Rte., Prescott, Ariz. 76301
Filed Apr. 6, 1976, Ser. No. 674,728
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—53



246,962
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 7, 1976, Ser. No. 674,521
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—121



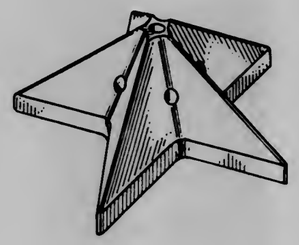
246,963
CHRISTMAS ORNAMENT
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Mar. 1, 1976, Ser. No. 662,741
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—128



246,964
PLAQUE
William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 7, 1976, Ser. No. 674,526
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—139



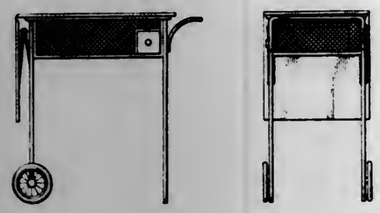
246,965
DISPLAY BASE FOR FLAGS AND THE LIKE
George W. Hughes, 2178 N. Orange Grove, Pomona, Calif. 91767
Filed Jan. 29, 1976, Ser. No. 653,433
Term of patent 14 years
Int. Cl. D11—*99*
U.S. Cl. D11—183



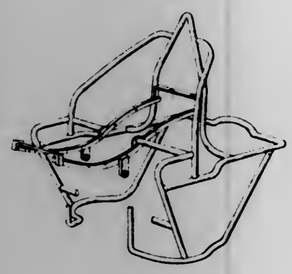
246,966
FOLDING GOLF CART
Edwin A. Nemeth, Martinez, Calif., assignor to P.N. Associates, Inc., Walnut Creek, Calif.
Filed June 30, 1976, Ser. No. 701,460
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—23



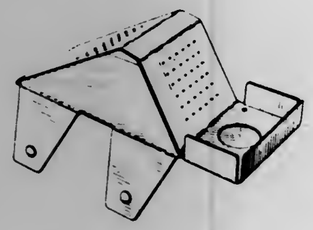
246,967
COMBINED SEWING MACHINE AND TEA CART
Salvatore J. Palazolo, 110 Avon Road, Memphis, Tenn. 38117
Filed July 6, 1976, Ser. No. 702,739
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—33



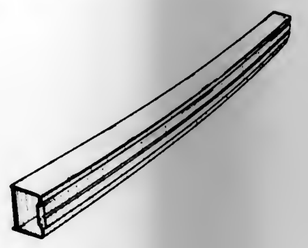
246,968
MOTORCYCLE PASSENGER SUPPORT
Paul Sklodowsky, 108 Hillcrest Road, Warren, N.J. 07060
Filed Mar. 8, 1976, Ser. No. 664,526
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—119



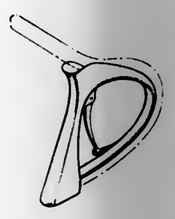
246,969
CB RADIO MOUNTING UNIT FOR AUTOMOBILES
John E. Mease, Kansas City, Mo., assignor to Ayers Plastics Company, Inc., Kansas City, Mo.
Filed July 16, 1976, Ser. No. 706,017
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



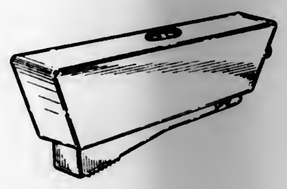
246,970
CAR BUMPER BAR
Michel Tixier, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Aug. 17, 1976, Ser. No. 715,004
Claims priority, application France, Mar. 1, 1976, 74598; Mar. 1, 1976, 74599
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—169



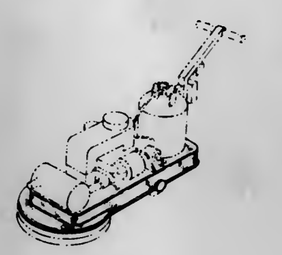
246,971
COMBINED BICYCLE HANDGRIP AND BRAKE LEVER
Terrell A. McKernon, 10083 Stimson Ave., and Thomas A. Krieger, 470 Bluff Drive, both of St. Louis, Mo. 63137
Filed June 10, 1976, Ser. No. 694,767
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—179



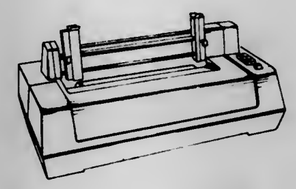
246,972
REMOTE STARTER SWITCH
David E. Maxwell, Cary; James R. Shaffer, Mt. Prospect, and Lee Radtke, Lake Zurich, all of Ill., assignors to Sun Electric Corporation, Chicago, Ill.
Filed Nov. 24, 1976, Ser. No. 744,697
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



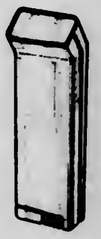
246,973
BUFFER BASE HOUSING
Robert C. Deuchar, 209 Bayview Drive, San Carlos, Calif. 94070, and Gene J. Waitzman, 1055 Avondale St., San Jose, Calif. 95129
Continuation-in-part of Ser. No. 547,623, Feb. 2, 1975, abandoned. This application Apr. 5, 1976, Ser. No. 673,635
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—48



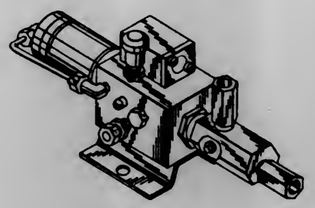
246,974
DATA PRINTER
Stanley E. Thorwaldsen, Grosse Pointe Farms, and David McElroy, St. Clair Shores, both of Mich., assignors to Sycor, Inc., Ann Arbor, Mich.
Filed Apr. 16, 1976, Ser. No. 677,535
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—50



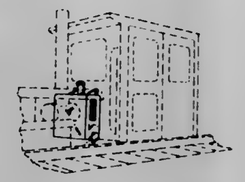
246,975
STAFF LOCATOR
Jan Hampf, Saro, Sweden, assignor to Ara-Bygg AB, Sweden
Filed Nov. 30, 1976, Ser. No. 746,145
Claims priority, application Sweden, June 4, 1976, 76-1215
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



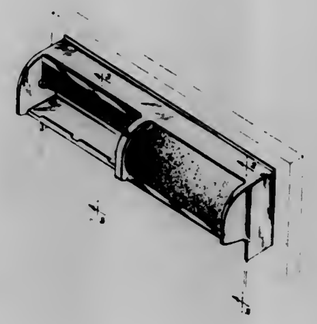
246,976
POSITIVE DISPLACEMENT PUMP
Robert R. Bell, and William H. Alexander, both of Houston, Tex., assignors to Vapor Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 626,464, Oct. 21, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 763,961
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D15—7



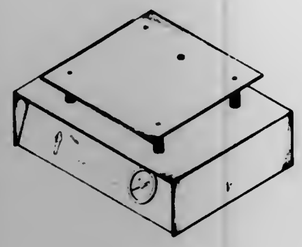
246,977
HYDRAULIC RESERVOIR FOR A TRACK LAYER VEHICLE
Sherrill M. Campbell, P.O. Box 388 S., Dos Palos, Calif. 93665
Filed Oct. 14, 1976, Ser. No. 732,342
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D15—28



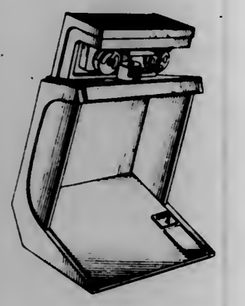
246,978
REFRIGERATOR DOOR COMPARTMENTS
William J. Armstrong, Jeffersontown, Ky., assignor to General Electric Company
Filed Aug. 30, 1976, Ser. No. 718,664
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—89



246,979
INVESTMENT CASTING APPARATUS FOR JEWELERS
David V. Estes, 7255 Richland Road, Fort Worth, Tex. 76118
Filed May 17, 1976, Ser. No. 686,784
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—135



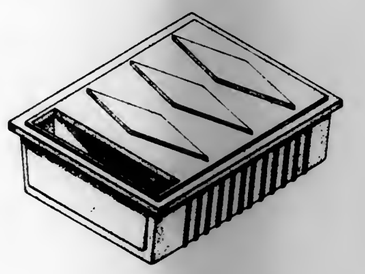
246,980
MICROFILM READER
Moto Shimano, Woodland Hills; Jack M. Duer, Garden Grove, and Edward R. Wadleigh, Hemet, all of Calif., assignors to Bell & Howell Company, Chicago, Ill.
Filed May 27, 1976, Ser. No. 691,044
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—14



246,981
DRAWING COMPASS
Seisho Yamaguchi, Satte; Fujiro Nezu, Yokohama; Atsuko Kamoshida, Tokyo, and Hideaoir Shimizu, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Uchida Yoko
Division of Ser. No. 483,381, June 26, 1974, Pat. No. Des. 240,919.
This application Jan. 9, 1976, Ser. No. 647,747
Claims priority, application Japan, Feb. 1, 1974, 49-3515; Feb. 1, 1974, 49-3516
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—38



246,982
FILING CONTAINER
Jerry H. Hamilton, Route 1, Box 18C, Nine Mile Falls, Wash. 99026
Filed Mar. 8, 1976, Ser. No. 665,088
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92



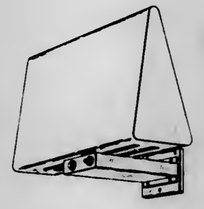
246,983
TELESCOPIC SIGHT MOUNT FOR RIFLES
Daniel L. Bechtel, 4901 Inwood Road, Fort Worth, Tex. 76109
Filed Jan. 17, 1977, Ser. No. 759,938
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



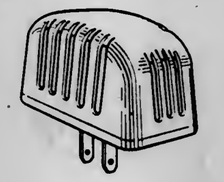
246,984
TELESCOPIC SIGHT MOUNT FOR RIFLES
Daniel L. Bechtel, 4701 Inwood Road, Fort Worth, Tex. 76109
Filed Jan. 17, 1977, Ser. No. 759,939
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



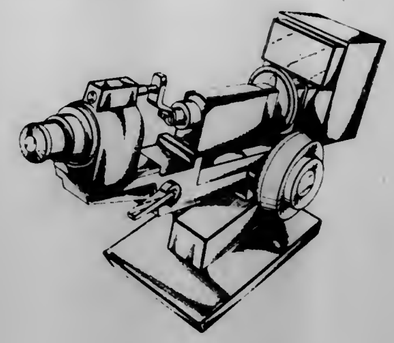
246,985
TOWEL WARMER
Vincent J. Popma, 9010 SW. 15th, and Jerome F. Moskofsky, 9019 SW. 15th, both of Portland, Oreg. 97219
Filed Mar. 22, 1976, Ser. No. 669,181
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77



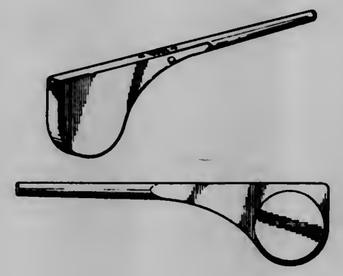
246,986
ELECTRIC VAPORIZER
Hal F. Costello, 4547 Nantucket Drive, Toledo, Ohio 43623
Filed Nov. 22, 1976, Ser. No. 743,711
Term of patent 7 years
Int. Cl. D23—*99*
U.S. Cl. D23—148



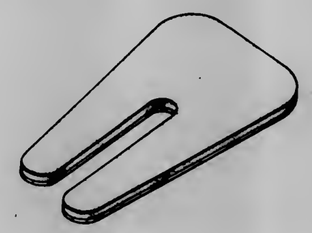
246,987
LENS MEASURING INSTRUMENT
Max Hawkins, Childs Hill Road, Woodstock, Conn. 06281
Filed Dec. 22, 1975, Ser. No. 642,859
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—8



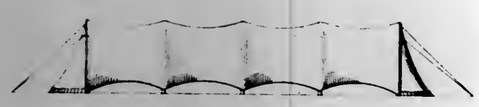
246,988
DENTAL FLOSS DISPENSER
William E. Bennington, 5 Fillmore Drive, Sarasota, Fla. 33577
Division of Ser. No. 367,953, June 7, 1973, Pat. No. Des. 237,498. This application Mar. 26, 1975, Ser. No. 562,193
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D28—64



246,989
SECUREMENT DEVICE FOR NASAL TUBE
Jerome D. Higgins, and Hazel L. Higgins, both of Loveland, Ohio, assignors to Xomed Inc., Cincinnati, Ohio
Filed May 26, 1976, Ser. No. 690,135
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—53



246,990
BUILDING
Lloyd H. Rain, Lexington, Ky., assignor to Irvin Industries Inc., Greenwich, Conn.
Filed Apr. 11, 1975, Ser. No. 567,352
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—21



246,991
BUILDING UNIT TO BE USED FOR MOLDINGS, COLUMNS OR THE LIKE
Robert Franklin Green, Jefferson, Colo., assignor to Johns-Manville Corporation, Denver, Colo.
Division of Ser. No. 465,226, April 29, 1974, Pat. No. Des. 240,915. This application Dec. 22, 1975, Ser. No. 642,855
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



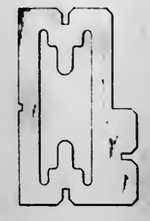
246,992
BUILDING MEMBER TO BE USED FOR MOLDINGS, COLUMNS OR THE LIKE
Robert Franklin Green, Morrison, Colo., assignor to Johns-Manville Corporation, Denver, Colo.
Division of Ser. No. 465,226, April 29, 1974, Pat. No. Des. 240,915. This application Dec. 22, 1975, Ser. No. 642,856
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



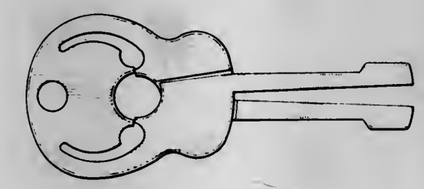
246,993
BUILDING UNIT TO BE USED FOR MOLDINGS, COLUMNS, OR THE LIKE
Robert Franklin Green, Morrison, Colo., assignor to Johns-Manville Corporation, Denver, Colo.
Division of Ser. No. 465,226, April 29, 1974, Pat. No. Des. 240,915. This application Dec. 22, 1975, Ser. No. 642,860
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



246,994
CONCRETE BLOCK
William J. Strader, 16100 Foliage Court, Rosemount, Minn. 55068
Filed June 18, 1976, Ser. No. 697,372
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



246,995
CIGARETTE HOLDER
John Herman, 8264 Gould Ave., Los Angeles, Calif. 90046
Filed June 21, 1976, Ser. No. 697,863
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—02



246,996
LIGHTER OR THE LIKE
Kaname Ichikawa, Tokyo, Japan, assignor to Modern Royal Co., Ltd.
Filed Aug. 18, 1976, Ser. No. 715,509
Claims priority, application Japan, Feb. 25, 1976, 51-6097
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36



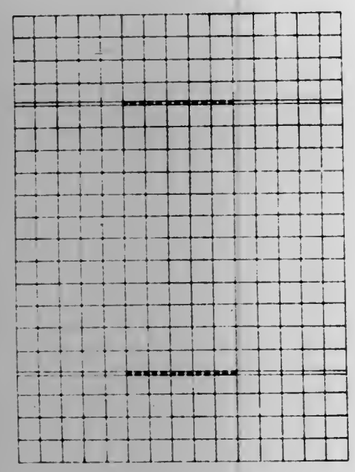
246,997
CIGARETTE GAS LIGHTER
Tomio Nitta, Yokohama, Japan, assignor to Tokai Seiki, Ltd., Yokohama, Japan
Filed Aug. 3, 1976, Ser. No. 711,365
Claims priority, application Japan, June 17, 1976, 51-23016
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



246,998
COMBINED FLUID DISPENSER AND APPLICATOR FOR SCALP
Timothy Lee Hill, 17419 Monica, Detroit, Mich. 48221
Filed May 21, 1976, Ser. No. 688,530
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7



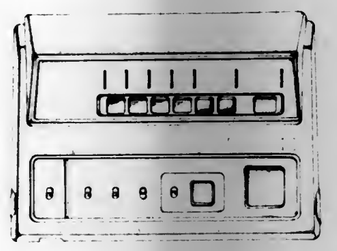
246,999
CHESS FOOTBALL GAME BOARD
Selmer Hjelmeland, 16005 7th Ave. S.W., Seattle, Wash. 98166
Filed Dec. 1, 1975, Ser. No. 636,439
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 FG



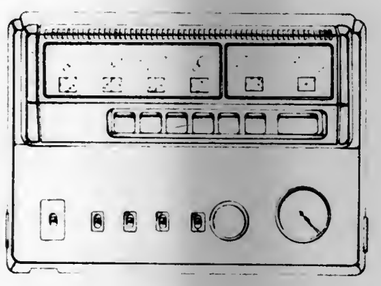
247,000
DOLL OR SIMILAR ARTICLE
Lisa A. Cafolla, Box 86, Waterloo, N.Y. 13165
Filed Apr. 16, 1976, Ser. No. 677,774
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



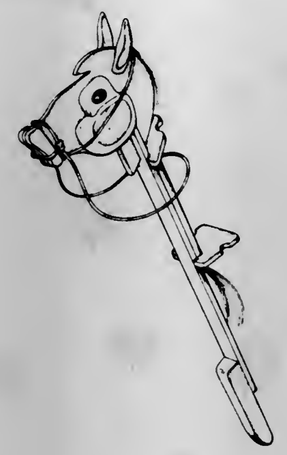
247,001
CONTROL CONSOLE FOR T. V. GAME
Akira Katoh, Tokyo, Japan, assignor to Lloyd's Electronics, Inc.
Filed June 3, 1976, Ser. No. 692,582
Term of patent 3½ years
Int. Cl. C21—*01*
U.S. Cl. D34—5 R



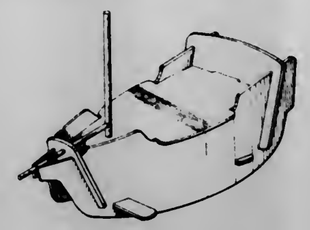
247,002
CONTROL CONSOLE FOR T. V. GAME
Akira Katoh, Tokyo, Japan, assignor to Lloyd's Electronics, Inc.
Filed Aug. 30, 1976, Ser. No. 718,663
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—5 R



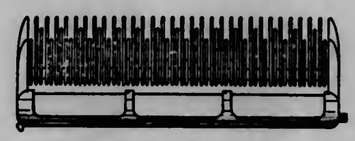
247,003
HOBBY HORSE
Lester E. Walker, 1265 Old Orchard Village, St. Louis, Mo. 63011
Filed Feb. 28, 1972, Ser. No. 230,193
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AE



247,004
TOY BOAT
Eric Kyte, Ilkley, England, assignor to Bulldog Toy Company Limited, England
Filed Dec. 11, 1975, Ser. No. 639,937
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ



247,005
HAIR STYLER ATTACHMENT
Morison S. Cousins, Plainview; Michael A. Cousins, Huntington, both of N.Y., and Greydon A. Rhodes, III, Noroton, Conn., assignors to The Gillette Company, Boston, Mass.
Filed Feb. 23, 1976, Ser. No. 660,620
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—18



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JANUARY, 1978

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Aasgaard, Alvin L. P., III: *See—*
Kimmel, Richard L.; Kamp, Walter B.; and Aasgaard, Alvin L. P., III, 4,068,377, Cl. 30-276.000.

AB Akerlund & Rausing: *See—*
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Abdul-Rahman, Yahia A. K., to Atlantic Richfield Company. Conoidal solids separator with special scraper and separating method. 4,068,759, Cl. 209-112.000.

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Abei, Hiroko. Method for automatic, continuous selective plating on a tape member. 4,069,109, Cl. 204-15.000.

Abei, Hiroko. Apparatus for automatic, continuous selective plating on a tape member. 4,069,126, Cl. 204-224.00R.

Aboulafia, Joseph; Le Fustec, Richard; and Schranz, Claude, to Compagnie Francaise de Raffinage; and Groupement Europeen de la Cellulose. Process for the production of polyolefin fibers. 4,069,287, Cl. 264-140.000.

Abrams, Edward; and Masella, Anthony J., to Chemetron Corporation. Waste water treatment with oxygen. 4,069,147, Cl. 210-6.000.

ACF Industries, Incorporated: *See—*
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Wagner, Armand; Pixius, Robert; and Schon, Francois, 4,069,315, Cl. 423-105.000.

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Anbergen, Henricus J.; and McCabe, Peter, 4,068,838, Cl. 271-173.000.
O'Toole, James F.; and Osberg, Daryl F., 4,068,623, Cl. 118-658.000.

Adelstein, Gilbert W., to G. D. Searle & Co. 4-Aminomethyl-1-(3,3,3-triarylpropyl)-4-arylpiperidine and derivatives thereof. 4,069,223, Cl. 260-293.760.

Adlam, Christopher; and Reid, David Eric. Glycopeptide extract. 4,069,314, Cl. 424-92.000.

Afanasiev, Vladimir Konstantinovich: *See—*
Movshovich, Pavel Mikhailovich; Maximov, Gennady Konstantinovich; Khavkin, Viktor Pavlovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Afanasiev, Vladimir Konstantinovich; Kudryavtseva, Tamara Nikolaevna; and Nezelenov, Sergei Vladimirovich, 4,068,459, Cl. 57-156.000.

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Nyunoya, Mizuo, 4,068,901, Cl. 303-6.00C.
Sakai, Toshimitsu; Kawai, Mitsuo; and Mizuno, Kiyohumi, 4,068,543, Cl. 74-866.000.

Akazawa, Hakuichi; and Nishimura, Kenichi, to Taki Chemical Co., Ltd. Process for producing α-type calcium sulfate hemihydrate. 4,069,300, Cl. 423-555.000.

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Allegheny Ludlum Industries, Inc.: *See—*
Bloom, William M., 4,069,008, Cl. 432-8.000.

Allen-Bradley Company: *See—*
Bollinger, Parker A., Jr.; and Frymark, Norbert F., 4,069,464, Cl. 337-77.000.
Kouchich, Allan V.; and Marshall, Robert, 4,069,465, Cl. 338-20.000.

Allen, John. Method of and apparatus for producing musical instrument keyboard-controlled pitch variation, tone alteration and the like. 4,068,552, Cl. 84-1.060.

Allen, Joseph C., to Texaco Inc. Oil recovery process utilizing aromatic solvent and steam. 4,068,716, Cl. 166-271.000.

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Loomba, Yogendra S.; and Narayan, Surendra D., 4,068,354, Cl. 24-230.00A.
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Briar, Jack, 4,068,376, Cl. 30-276.000.

Allis-Chalmers Corporation: *See—*
Downing, Terry R.; and Herwig, Warren E., 4,068,773, Cl. 214-674.000.
Meinders, Gerardus J., 4,069,406, Cl. 200-144.0AP.
Schaefer, Daniel W.; and Klas, Kenneth H., 4,068,452, Cl. 56-11.600.

Allison, Arthur F.; Christopherson, Dennis C.; Mays, Byron L.; and Reed, Reginald A., to Cutler-Hammer, Inc. Combined ejector-gate means for rotatable table of an article counter-stacker. 4,068,567, Cl. 93-93.00C.

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Casey, Donald James, 4,068,757, Cl. 206-363.000.
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American Hospital Supply Corporation: *See—*
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American Mobile Corporation: *See—*
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AMP Incorporated: *See—*
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Hudson, William Jeffrey, Jr.; and Bahermans, Johannes Cornelis Wilhelmus, 4,068,912, Cl. 339-99.00R.

Amstad, John H. Continuous peeling apparatus. 4,068,574, Cl. 99-587.000.

Anbergen, Henricus J.; and McCabe, Peter, to Addressograph-Multigraph Corporation. Conveyor and three-roller sheet deflector for sheet distributor. 4,068,838, Cl. 271-173.000.

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Anderson, Charles Hammond, to RCA Corporation. Flat panel display with beam injection cleanup. 4,069,439, Cl. 313-422.000.

Anderson, Harald. Apparatus for multicolor dyeing of textile yarns. 4,068,502, Cl. 68-27.000.

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Andersson, Kurt Holger; Ekwall, Carl Gosta Bernhard; and Forsberg, Bo Erik, to Atlas Copco Aktiebolag. Method and device for damping the recoil of a work tool connected to a rock drilling machine. 4,068,727, Cl. 173-1.000.

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Abdul-Rahman, Yahia A. K., 4,068,759, Cl. 209-112.000.
Wunderlich, Donald K., 4,069,140, Cl. 208-251.00H.
Zehner, Lee R., 4,069,388, Cl. 560-204.000.

Atlas Copco Aktiebolag: *See—*
Andersson, Kurt Holger; Ekwall, Carl Gosta Bernhard; and Forsberg, Bo Erik, 4,068,727, Cl. 173-1.000.
Resare, Nils Carl Hakan, 4,068,742, Cl. 188-1.00B.

Attucci, Enrico; and Attucci, Fernando. Apparatus for processing continuously-fed plastics material. 4,068,998, Cl. 425-317.000.

Attucci, Fernando: *See—*
Attucci, Enrico; and Attucci, Fernando, 4,068,998, Cl. 425-317.000.

Aue, Kazuhide: *See—*
Umeki, Shinji; Aue, Kazuhide; and Tokuoka, Yasumichi, 4,069,367, Cl. 428-403.000.

Aulenbacher, Merle W., to International Enterprises, Inc. Casing cutter. 4,068,711, Cl. 166-55.300.

Austin Hoy & Company Limited: *See—*
Proctor, Sidney Ernest, 4,068,896, Cl. 299-83.000.

Automatisme & Technique: *See—*
Bardet, Gerard, 4,068,598, Cl. 104-130.000.

Automobiles Peugeot: *See—*
Lefebvre, Pascal, 4,068,477, Cl. 60-698.000.
Lombard, Claude; and Leichle, Claude, 4,068,631, Cl. 123-117.00D.

Avco Corporation: *See—*
Billing, Rudolph W.; and Castle, George K., 4,069,075, Cl. 156-82.000.
Hill, Amos; Heckley, Warner M.; and Richards, Gerald F., 4,068,453, Cl. 56-14.400.

Avon Products, Inc.: *See—*
Ciaudelli, Joseph P.; and Karg, Gerhart, 4,069,309, Cl. 424-47.000.

Axer, Heinrich: *See—*
Ufermann, Werner; Axer, Heinrich; and Michels, Wolfgang, 4,068,991, Cl. 425-81.000.

Azuma, Junichi: *See—*
Tsujimoto, Yasuhiro; Azuma, Junichi; Matsumura, Yoshihiko; and Noda, Katsumi, 4,069,155, Cl. 210-195.00R.

Azzi, Victor D., to Kingston-Warren Corporation, The. Gravity feed-return pallet storage rack. 4,068,751, Cl. 193-36.000.

B. C. Richards & Co. Pty. Ltd.: *See—*
Richards, Cecil Graham, 4,068,822, Cl. 251-315.000.

B. F. Goodrich Company, The: *See—*
Healy, James Churchill; and Whitaker, Roy Francis, 4,069,181, Cl. 260-28.5AS.
Layer, Robert Wesley; and Son, Pyong-Nae, 4,069,195, Cl. 260-45.8NW.
Minchak, Robert J., 4,069,376, Cl. 526-137.000.

Babbs, Frederick William, to Cox of Watford Limited. Seat mountings. 4,068,887, Cl. 297-216.000.

Babendererde, Siegmund: *See—*
Stuckmann, Dieter; Jutte, Hans; Babendererde, Siegmund; and Bokemeyer, Reinhard, 4,068,485, Cl. 61-85.000.

Baboian, Robert; and Haynes, Gardner S., to Texas Instruments Incorporated. Treatment of beryllium copper surface prior to electroplating. 4,069,110, Cl. 204-29.000.

Babushkina, Natalya Borisovna: *See—*
Movshovich, Pavel Mikhailovich; Maximov, Gennady Konstantinovich; Khavkin, Viktor Pavlovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Afanasiev, Vladimir Konstantinovich; Kudryavtseva, Tamara Nikolaevna; and Nezelenov, Sergei Vladimirovich, 4,068,459, Cl. 57-156.000.

Bach, Ricardo O.: *See—*
Kamienski, Conrad W.; McElroy, Bobby Joe; and Bach, Ricardo O., 4,069,267, Cl. 260-665.00R.

Bacon, David C., to Licata, Bernard M. Clock using alternating current cycle counting. 4,068,465, Cl. 58-50.00R.

Bacon, Roger J., to Gilson Brothers Company. Snowblower discharge guide and control arrangement therefor. 4,068,397, Cl. 37-43.00R.

Baer, John S. Rotary engine or pump construction. 4,068,985, Cl. 418-36.000.

Bahermans, Johannes Cornelis Wilhelmus: *See—*
Hudson, William Jeffrey, Jr.; and Bahermans, Johannes Cornelis Wilhelmus, 4,068,912, Cl. 339-99.00R.

Baker, David Clarkston; and Haskell, Theodore Herbert, to Parke, Davis & Company. 9-(5-O-Acyl-β-D-arabinofuranosyl)adenine compounds. 4,069,382, Cl. 536-26.000.

Baker Perkins Holdings Limited: *See—*
Dacey, Raymond Gwilym; and Verity, Richard Hugh, 4,068,993, Cl. 425-104.000.

Baldassari, Paolo, to Reggiane Officine Meccaniche Italiane S.p.A. Extraction of fertilizer salts and organic substances of high nutritive value from industrial waste waters. 4,069,033, Cl. 71-25.000.

Ball, D. Graham, to Rader Companies, Inc. Method of backfilling pipeline trenches. 4,068,488, Cl. 61-105.000.

Ball, Frank J., to Westvaco Corporation. Cement composition. 4,069,063, Cl. 106-97.000.

Ball, Kirby L.; Nance, Glenn S.; and Turner, Roy J., to Armstrong Cork Company. Bed locking insert plates. 4,068,332, Cl. 5-296.000.

Ballard, David B.; Ogburn, Fielding; and Young, John P., to United States of America, Commerce. Scanning electron microscope micrometer scale and method for fabricating same. 4,068,381, Cl. 33-1.00R.

Balme, Roy; and Perkins, John Francis, to Charles S. Madan & Company Limited. Piston pumps driven by fluid-actuated piston having a constant fluid force against the small area surface. 4,068,983, Cl. 417-401.000.

Band, Pieter: *See—*
Johnson, Ben C.; and Band, Pieter, 4,068,966, Cl. 403-397.000.

Banjulis, Vladas Klemovich: *See—*
Yanushonis, Styapas Styapono; Belyauskas, Bronjus-Vitautas Bronyaus; Sherkuvene, Vida-Katrina Jule; and Banjulis, Vladas Klemovich, 4,069,074, Cl. 148-188.000.

Banks, Peter Baldwin: *See—*
Nelson, Peter David; and Banks, Peter Baldwin, 4,069,502, Cl. 358-113.000.

Banyu Pharmaceutical Co., Ltd.: *See—*
Hidaka, Hiroyoshi; Matsumoto, Ikuo; Hosoi, Masaaki; and Aoki, Nobuo, 4,069,254, Cl. 260-556.0AR.

Bara, Anton: *See—*
Meyer, Walter; and Bara, Anton, 4,068,974, Cl. 401-150.000.

Barchietto, Giacomo: *See—*
Hoegl, Helmut; and Barchietto, Giacomo, 4,069,046, Cl. 96-1.0PC.

Bardet, Gerard, to Automatisme & Technique. Element of vehicle running on railway tracks. 4,068,598, Cl. 104-130.000.

Baringer, B. E., to Kasle Steel Corporation. Unloader for press. 4,068,519, Cl. 72-426.000.

Barker, Sidney Alan; Somers, Peter John; Woodbury, Robin Ross; and Stafford, Geoffrey Harry, to Imperial Chemical Industries Limited. Conversion of aldose to ketose in the presence of oxyanions or mixed oxyanions of tin or germanium. 4,069,104, Cl. 195-31.00F.

Barkhuff, Raymond A., Jr.; and Sprenkle, William E., Jr., to Monsanto Company. Method for preparing fire retardant molding compositions. 4,069,288, Cl. 264-141.000.

Barlow, Gordon A.: *See—*
Kuna, Wayne A.; Kulesza, Ralph J.; and Barlow, Gordon A., 4,068,841, Cl. 272-8.00R.

Barloy, Michel, to Rhone-Poulenc Industries. Vacuum filtration process employing a circular vacuum box. 4,069,154, Cl. 210-66.000.

Barmore, Barbara Ann. Orthopedic toenail device. 4,068,656, Cl. 128-81.00A.

Barnett, James V., II; Mayer, Ernest F.; Pfeiffer, James W.; and Wickwar, Larry D., to Fairchild Camera and Instrument Corporation. Shock resistant wristwatch module. 4,068,464, Cl. 58-50.00R.

Barrett, Bruce Robert; and Chapman, Alan Stanley John, to Northern Electric Company, Limited. TDM PCM Communication system. 4,069,399, Cl. 179-15.0AL.

Bartlett, James L.: *See—*
Nau, Paul R.; Bartlett, James L.; and Gund, Heinz K., 4,068,636, Cl. 123-119.00B.

Bartram, James F., to Raytheon Company. Doppler spectral measurement. 4,069,468, Cl. 340-3.00D.

BASF Aktiengesellschaft: *See—*
Hoffmann, Werner; and von Fraunberg, Karl, 4,069,258, Cl. 260-598.000.
Nett, Robert; Fechner, Wolf Dieter; Jettmar, Werner; Polster, Rudolf; Sappok, Reinhard; and Hartmann, Eduard, 4,069,064, Cl. 106-193.00P.
Zanker, Fritz, 4,069,238, Cl. 260-453.00P.

Bass, Michael; Garmire, Elsa; and McMahon, Thomas R., to University of Southern California. Flexible wave guide for laser light transmission. 4,068,920, Cl. 350-96.0WG.

Battelle Development Corporation: *See—*
Voinov, Michel, 4,069,372, Cl. 429-104.000.

Batts, Robert Lee, to Johns-Manville Corporation. Assembly for applying liquid to elongated material. 4,068,619, Cl. 118-122.000.

Baud, Christian; Raverdy, Yvan; and Hougeot, Henri, to Thomson-CSF. Method for producing microscopic passages in a semiconductor body for electron-multiplication applications. 4,069,121, Cl. 204-129.300.

Baugh, William D.: *See—*
Horvitz, David; and Baugh, William D., 4,069,232, Cl. 260-343.600.

Baum, Sidney J.; and Mayr, Anton J., to Foster Grant Co., Inc. Apparatus for treating plastic film. 4,068,616, Cl. 118-8.000.

Baumgartner, Frank, to Pacon Manufacturing Corporation. Towel tabbing machine and method. 4,069,077, Cl. 156-152.000.

Bausch & Lomb Incorporated: *See—*
Howe, James D., 4,069,417, Cl. 362-330.000.
Morton, Roger R., 4,069,411, Cl. 235-92.0PC.

Baxter Travenol Laboratories, Inc.: *See—*
Parsons, George H., Jr., 4,069,352, Cl. 427-2.000.
Winchell, David A., 4,068,696, Cl. 150-8.000.

Bayer Aktiengesellschaft: *See—*
Ebeling, Wilfried; and Schulte, Klaus, 4,068,831, Cl. 366-156.000.
Elfert, Klaus; Hinz, Jurgen; and Binsack, Rudolf, 4,069,215, Cl. 260-79.30R.
Findeisen, Kurt; Draber, Wilfried; and Schwarz, Herbert, 4,069,252, Cl. 260-545.00R.
Lantzsch, Reinhard; and Arlt, Dieter, 4,069,257, Cl. 260-595.000.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,069,334, Cl. 424-273.00P.
Schellhammer, Carl Wolfgang; and Seng, Florin, 4,069,228, Cl. 260-308.00R.
Simm, Walter; Gosling, Claus; Bonart, Richard; and von Falkai, Bela, 4,069,026, Cl. 55-6.000.

Bazin, Lucas John, to RCA Corporation. Signal comparator circuit. 4,069,432, Cl. 307-357.000.

BBC, Brown, Boveri & Company Limited: *See—*
Beckershoff, Wolfgang, 4,068,958, Cl. 403-8.000.

Beach, Ivan: *See—*
Beach, Roy; and Beach, Ivan, 4,068,969, Cl. 404-98.000.

Beach, Roy; and Beach, Ivan. Gutter attachment for asphalt spreader. 4,068,969, Cl. 404-98.000.

Beaudette, Real J.; and Krieg, Harold Patrick, to Singer Company, The. Switching apparatus for electrically contacting conductive terminals on a circuit-carrying board. 4,069,403, Cl. 200-51.120.

Beck, Heinz; Muller, Klaus; and Erdelen, Gerhard, to Glyco-Metall-Werke Daelen & Loos GmbH. Mounting and holding fixture for electroplating uniform thickness metallic deposits. 4,069,131, Cl. 204-297.00W.

Beck, Richard William, to Deseret Pharmaceutical Co., Inc. Catheter placement assembly improvement. 4,068,660, Cl. 128-214.400.

Becka, Michael M., to International Shoe Machine Corporation. Machine for clamping the heel portion of an upper to the corresponding portion of a form. 4,068,336, Cl. 12-14.400.

Beckerman, Joseph W., to Massey-Ferguson Inc. Transmission control. 4,068,540, Cl. 74-476.000.

Beckershoff, Wolfgang, to BBC, Brown, Boveri & Company Limited. Differentially bolted joint. 4,068,958, Cl. 403-8.000.

Beckman Instruments, Inc.: *See—*
Polito, Alan J.; and Knight, William S., 4,069,305, Cl. 424-1.000.

Begany, Albert J.: *See—*
Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., 4,069,343, Cl. 424-319.000.

Behnke, Edward R.: *See—*
Schreyer, Kenneth D.; and Behnke, Edward R., 4,068,467, Cl. 59-93.000.

BEI Electronics, Inc.: *See—*
Foley, Nelson D., 4,068,556, Cl. 89-1.814.

Belanger, Gerard, to Tecnobec, Inc. Apparatus for lifting the bolster of a railway car truck. 4,068,823, Cl. 254-89.00H.

Bell, Arthur O. Firearm sight light. 4,069,414, Cl. 362-110.000.

Bell, Douglas M., to Handi-Kup Company. Port protective ring in a male mold. 4,068,819, Cl. 249-66.00A.

Bell, Malcolm R., to Sterling Drug Inc. 2-Substituted-indole-1-lower-alkanecarboxamides having anti-secretory or anti-ulcer activity. 4,069,337, Cl. 424-274.000.

Bell Telephone Laboratories, Incorporated: *See—*
Goldenberg, Henry Robert; Peck, Richard John; Tong, Shih Yung; and Webb, David Allen, 4,069,392, Cl. 178-58.00R.
Nash, Donald Henry, 4,069,395, Cl. 179-1.00P.

Bell, Terry Lee; Call, Lyle G.; Dillan, George Omer; Jackson, James Phillip, Jr.; and Johnson, Larry Albin, to International Business Machines Corporation. Component insertion machine. 4,068,373, Cl. 29-741.000.

Beloit Corporation: *See—*
Zink, Stanley C.; and Penrod, William R., 4,069,092, Cl. 156-500.000.

Belyauskas, Bronjus-Vitautas Bronyaus: *See—*
Yanushonis, Styapas Styapono; Belyauskas, Bronjus-Vitautas Bronyaus; Sherkuvene, Vida-Katrina Jule; and Banjulis, Vladas Klemovich, 4,069,074, Cl. 148-188.000.

Benatti, Edmo: *See—*
Schmid, Herbert, Jr.; and Benatti, Edmo, 4,068,559, Cl. 90-11.00D.

Bendix Corporation, The: *See—*
DeBard, James Edward; Borden, Raymond Walter; and Tumpey, John Joseph, 4,068,368, Cl. 29-588.000.
Deem, Brian Charles; and Karon, Marc Alan, 4,068,902, Cl. 303-28.000.
Markert, Matthew Edward, 4,068,744, Cl. 188-73.300.
Watson, Edwin B.; and Brack, Charles V., 4,068,640, Cl. 123-139.0AT.

Bennett, David E.; Trasatti, Terrence S.; and Peterson, Lawrence D., to General Motors Corporation. Engine with noise reducing exhaust valve arrangement. 4,068,630, Cl. 123-75.00C.

Benson, George E., to Industrial Carbide Tooling Incorporated. Stacked disc finger joint cutter assembly. 4,068,688, Cl. 144-90.00A.

Bensussan, Andre; and Levaillant, Claude, to C.G.R. MeV. Microwave systems for eliminating spurious signals from pulsed source. 4,069,456, Cl. 328-165.000.

Benthin, Johannes, to MFB-Neuwerk Mechanische Fensterbehange GmbH. Spraying device for use in toilets. 4,068,325, Cl. 4-7.000.

Berard, Raymond A.: *See—*
DiSalvo, Gail D.; and Berard, Raymond A., 4,068,849, Cl. 273-218.000.

Berger, Herbert; Gall, Rudi; Thiel, Max; Schaumann, Wolfgang; and Vomel, Wolfgang, to Boehringer Mannheim GmbH. Nitropyrazole compounds and anti-microbial compositions. 4,069,330, Cl. 424-267.000.

Berger, Leon H. Retractable heat shield for vehicles. 4,068,885, Cl. 296-78.00R.

Berger, Sol J. Suspension hanger. 4,068,817, Cl. 248-340.000.

Berkey Photo, Inc.: *See—*
Graham, Thomas G.; Maltese, John; Nesson, Israel; and Mitchell, Robert, 4,069,490, Cl. 354-83.000.

Berliner Maschinenbau-AG vormals L. Schwartzkopff: *See—*
Luther, Gerhard, 4,068,358, Cl. 28-272.000.

Berman, Robert A. Intubating pharyngeal airway. 4,068,658, Cl. 128-208.000.

Bernardi, Dario. Awning type sunshade. 4,068,673, Cl. 135-5.00R.

Bernauer, Joachim: *See—*
Frey, Rudolf; Bernauer, Joachim; and Gobel, Pirmin, 4,068,586, Cl. 101-415.100.

Berringer, Robert T.; and Machado, Octavio J., to Westinghouse Electric Corporation. Nuclear core region fastener arrangement. 4,069,102, Cl. 176-87.000.

Bertetto, Donald W.: *See—*
Hanson, Alden B.; Hanson, Chris A.; and Bertetto, Donald W., 4,068,337, Cl. 12-142.00P.

Bertocchio, Rene; and Foulletier, Louis, to Produits Chimiques Ugine Kuhlmann. Fire extinguishing compositions. 4,069,158, Cl. 252-3.000.

Bertus, Brent J.: *See—*
Hessert, James E.; and Bertus, Brent J., 4,068,714, Cl. 166-246.000.
Hessert, James E.; Bertus, Brent J.; and Johnston, Chester C., Jr., 4,068,720, Cl. 166-282.000.

Betts, Robert E., to United States of America, Army. Ignition system used in testing solid propellant compositions for smokelessness. 4,068,591, Cl. 102-70.00R.

Beuchat, Roger, to Mefina S.A. Electronic firing device for projectiles. 4,068,592, Cl. 102-70.20R.

Bewerse, Richard A.; and Joseloff, Stanley. Paper bag opening device. 4,068,451, Cl. 53-385.000.

Beyer, Klaus D.; Das, Gobinda; Poponiak, Michael R.; and Yeh, Tsu-Hsing, to International Business Machines Corporation. Semiconductor fabrication method for improved device yield by minimizing pipes between common conductivity type regions. 4,069,068, Cl. 148-1.500.

Bezemek, Vladislav: *See—*
Machacek, Frantisek; Bezemek, Vladislav; Kudlacek, Dusan; Kliment, Lubomir; Pirek, Arnost; Smejkal, Vladimir; Svoboda, Frantisek; and Vach, Stanislav, 4,068,320, Cl. 2-227.000.

Bickel, Hans: *See—*
Wiederkehr, Rene; and Bickel, Hans, 4,069,324, Cl. 424-246.000.

Bilek, Frank Thomas, to Texas Instruments Incorporated. Flexible magnetic disc recording system. 4,069,508, Cl. 360-99.000.

Billing, Rudolph W.; and Castle, George K., to Avco Corporation. Structural support for char derived from intumescent coatings. 4,069,075, Cl. 156-82.000.

Binder, Josef. Handle for a hand implement such as a rake, a broom, or the like. 4,068,346, Cl. 16-110.00R.

Binsack, Rudolf: *See—*
Elfert, Klaus; Hinz, Jurgen; and Binsack, Rudolf, 4,069,215, Cl. 260-79.30R.

Binstock, Morton H., to Westinghouse Electric Corporation. Flow control for once-through boiler having integral separators. 4,068,475, Cl. 60-646.000.

Bio-Dynamics Inc.: *See—*
Townley, Charles O.; Vegell, Allan; and Eaby, Daniel G., 4,068,324, Cl. 3-1.913.

Bio-Pet Research Company: *See—*
Ramney, Tiberius, 4,068,624, Cl. 119-106.000.

Birks, Cedric Gwilliam, to CCL Systems Limited. Cable or rope clamp. 4,068,962, Cl. 403-212.000.

Bjorshol, Kolbjorn. Apparatus for use in long-line fishing. 4,068,399, Cl. 43-4.500.

Black, Chester A.; and Black, Lester A. Detachable road protecting device for tracked vehicles. 4,068,905, Cl. [illegible]-51.000.

Black, Lester A.: *See—*
Black, Chester A.; and Black, Lester A., 4,068,905, Cl. 305-51.000.

Blaetz, Philip H., to Kraft, Inc. Dasher. 4,068,832, Cl. 366-280.000.

Blake, Robert J.; and Roy, Guy W., to Stauffer Chemical Company. Fluidized deoxychlorination catalyst composition. 4,069,170, Cl. 252-441.000.

Blewett, C. William: *See—*
Hutchison, Robert B.; and Blewett, C. William, 4,069,236, Cl. 260-414.000.

Blomberg, Folke Ivar; and Holst, Jan-Olov Martin. Anti-locking brake apparatus and method. 4,068,904, Cl. 303-115.000.

Bloom, Stewart D.: *See—*
Harney, Robert C.; and Bloom, Stewart D., 4,068,953, Cl. 356-75.000.

Bloom, William M., to Allegheny Ludlum Industries, Inc. Method and apparatus for heating a workpiece. 4,069,008, Cl. 432-8.000.

Blount, David H. Process for the production of poly(allyl silicofurmate). 4,069,391, Cl. 526-17.000.

Bluebird International, Inc.: *See—*
Zehrung, Claude D., Jr.; Urie, Clarence L.; and Martinez, Joseph C., 4,068,455, Cl. 56-344.000.

Blum, Helmut; and Worms, Karl-Heinz, to Henkel Kommanditgesellschaft auf Aktien. Production of 1-hydroxy-alkane-1,1-diphosphonic acids. 4,069,246, Cl. 260-502.40P.

Blumenthal, Jack L.: *See—*
Starkovich, John A.; and Blumenthal, Jack L., 4,069,304, Cl. 423-648.00R.

Bobbe, Richard M., to Xerox Corporation. Variable contrast optical screening system. 4,068,940, Cl. 355-4.000.

Bobbitt, Donald E., to A. B. Chance Company. Lightweight, screw anchor supported foundation and method of installing same. 4,068,445, Cl. 52-743.000.

Bobenrieth, Albert, to Thomson-CSF. Novel integrated circuit and method of manufacturing same. 4,069,493, Cl. 357-22.000.

Bodenseewerk Perkin-Elmer & Co. GmbH: *See—*
Konig, Eberhard, 4,068,529, Cl. 73-423.00A.

Bodinger, Donald C.; Tombers, Paul A.; and Snyder, Richard C., to Pullman Incorporated. Door track construction. 4,068,411, Cl. 49-408.000.

Bodlaj, Viktor, to Siemens Aktiengesellschaft. Contact-free thickness measuring method and device. 4,068,955, Cl. 356-167.000.

Bodor, Nicolae S.; and Sloan, Kenneth B., to INTERx Research Corporation. Pro-drugs for the improved delivery of certain selected anti-inflammatory steroids. 4,069,322, Cl. 424-241.000.

Boehringer Ingelheim GmbH: *See—*
Langbein, Adolf; Merz, Herbert; Walther, Gerhard; and Stockhaus, Klaus, 4,069,328, Cl. 424-266.000.
Langbein, Adolf; Danneberg, Peter; and Kuhn, Franz Josef, 4,069,331, Cl. 424-267.000.

Boehringer Mannheim GmbH: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Schaumann, Wolfgang; and Vomel, Wolfgang, 4,069,330, Cl. 424-267.000.

Boehringer, Wilfred E., to McDonnell Douglas Corporation. Foldable inclined multi-section ramp actuation system. 4,068,770, Cl. 214-85.000.

Boeing Company, The: *See—*
Chatwin, Maurice Stephen; and Porter, George Zell, 4,068,813, Cl. 248-119.00R.

Boettcher, Charles E.; Karp, Joel A.; Reed, John A.; and Varadi, Andrew G., to National Semiconductor Corporation. MOS Dynamic random access memory having an improved sensing circuit. 4,069,474, Cl. 365-205.000.

Boettcher, Charles E., to National Semiconductor Corporation. MOS Dynamic random access memory having an improved sense and restore circuit. 4,069,475, Cl. 365-205.000.

Bogdanov, Eduard Alimovich: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Mainsuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sikharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; Dubov, Yauzhe Markovich; Bogdanov, Eduard Alimovich; Gogoladze, Georgy Trofimovich; Teisheva, Alla Abelevna; Ryzygraeva, Galina Nikolaevna; Melnikov-Eikhenvald, Mikhail Alexeevich; and Rokva, Temuri Valeryanovich, 4,069,116, Cl. 204-96.000.

Boggs, Roger L., to Caterpillar Tractor Co. Vehicle wheel having radially movable impact absorbing rims. 4,068,698, Cl. 152-27.000.

Bokemeyer, Reinhard: *See—*
Stuckmann, Dieter; Jutte, Hans; Babendererde, Siegmund; and Bokemeyer, Reinhard, 4,068,485, Cl. 61-85.000.

Boliden Aktiebolag: *See—*
Gorling, Karl Goran; Edenwall, Ingvar A. O.; Jansson, Jan-Olof; and Mioen, Thomas K., 4,069,041, Cl. 75-101.00R.

Bollinger, Parker A., Jr.; and Frymark, Norbert F., to Allen-Bradley Company. Bimetal overload relay. 4,069,464, Cl. 337-77.000.

Bollmer, Jacob A., to Dayco Corporation. Printing blanket holding apparatus. 4,068,587, Cl. 101-415.100.

Bombara, Dennis Michael: *See—*
Camp, Edward C.; Enos, Ellsworth C.; and Bombara, Dennis Michael, 4,068,412, Cl. 51-5.00D.

Bonart, Richard: *See—*
Simm, Walter; Gosling, Claus; Bonart, Richard; and von Falkai, Bela, 4,069,026, Cl. 55-6.000.

Bond, Desmond H.; Taggart, George W.; and Jaeger, Kurt S., to Ford, Bacon & Davis Texas Inc. Production of reducing gases. 4,069,020, Cl. 23-262.000.

Bonnice, Phillip E., to General Electric Company. Grinding wheel dressing method. 4,068,416, Cl. 51-325.000.

Booth, Eugene E.: *See—*
Smith, Jonathan; Larko, Robert C.; and Booth, Eugene E., 4,069,007, Cl. 432-3.000.

Booth, Richard A.; Weil, Denis C.; and Yanofsky, Daniel N., to Pitney-Bowes, Inc. Document handling device. 4,068,949, Cl. 355-75.000.

Borden, Raymond Walter: *See—*
DeBard, James Edward; Borden, Raymond Walter; and Tumpey, John Joseph, 4,068,368, Cl. 29-588.000.

Borg-Warner Corporation: *See—*
Gatewood, Sidney Ulane, 4,068,750, Cl. 192-111.00A.

Borman, Willem Frederik Hendrik; Craft, Donald Irving; and Kramer, Mortor, to General Electric Company. Process of making a high melt viscosity block co-polyester. 4,069,278, Cl. 260-860.000.

Bornstein, Leopold F., to Georgia-Pacific Corporation. Low-pressure, no-cool phenolic type resin for decorative laminates. 4,069,276, Cl. 260-839.000.

Bortner, Allen A., to Charles Offset Company, Inc. Apparatus for assembling take-one advertising displays. 4,068,835, Cl. 270-53.000.

Bos, Cornelis Arie: *See—*
Buysman, Petrus Johannes; Vermeulen, Gerardus Antonius Wilhelmus; and Bos, Cornelis Arie, 4,069,085, Cl. 156-345.000.

Bottemiller, Merton M., to Homecrest Industries, Inc. Recliner chair. 4,068,888, Cl. 297-317.000.

Bourdel, Jacques, to Commissariat a l'Energie Atomique. Device for localizing light phenomena. 4,069,421, Cl. 250-363.00S.

Bourdon, Leo; Burley, Richard K.; and Kennedy, Clifford F., to Bourdon, Leo; Burley, Richard K.; and Kennedy, Clifford F. Solar heating unit. 4,068,653, Cl. 126-271.000.

Bourgeois, Norbert, to ASA S.A. Interlocking cams. 4,068,498, Cl. 66-57.000.

Bourgeois, Norbert Paul, to ASA S.A. Device for driving needle beds in a circular knitting machine. 4,068,496, Cl. 66-27.000.

Bouton, William J., Jr.: *See—*
Testa, Carmen; and Bouton, William J., Jr., 4,068,873, Cl. 292-101.000.

Boyden, Julian William, to Albright & Wilson Limited. Dialkylphenol phosphorylation. 4,069,279, Cl. 260-975.000.

Boyer, Jo Clara, to Saviano, A.G. Apparatus for forming an end closure in a tubular knitted article. 4,069,090, Cl. 156-498.000.

Brack, Charles V.: *See—*
Watson, Edwin B.; and Brack, Charles V., 4,068,640, Cl. 123-139.0AT.

Brand, Werner; Schillings, Dieter; Geers, Leo; and Pietrowski, Edmund, to Waggonfabrik Uerdingen A.G. Drive arrangement for transport vehicles. 4,068,542, Cl. 74-625.000.

Brandestini, Antonio, to Bureau BBR Ltd. Means anchoring a bundle of wires in a socket. 4,068,963, Cl. 403-268.000.

Brandt, Paul W.; and Somerville, Dean S. Locking puller device. 4,068,365, Cl. 29-261.000.

Braun, Leroy O.: *See—*
Erbert, Virgil; and Braun, Leroy O., 4,068,952, Cl. 356-5.000.

Brax, Jean Albert, to Societe Generale pour l'Emballage. Forehearth for glass furnace. 4,069,032, Cl. 65-337.000.

Breeckner, Gregory P. Motorcycle clutch tool. 4,068,544, Cl. 81-3.00R.

Breitenstein, Charles Thomas; and Holecek, Allen Roland, to Spiral Step Tool Company. Automatic flute grinding machine. 4,068,414, Cl. 51-95.0LH.

Brems, John H.; Kobane, John, Jr.; and Zetner, Wilfred J., to F. Jos. Lamb Company. Transfer bar coupling. 4,068,957, Cl. 403-8.000.

Briar, Jack, to Allied Industries of Kansas, Inc. Flexible cutting line and rotor therefor. 4,068,376, Cl. 30-276.000.

Briggs & Stratton Corporation: *See—*
Nau, Paul R.; Bartlett, James L.; and Gund, Heinz K., 4,068,636, Cl. 123-119.00B.

British Petroleum Company Limited, The: *See—*
Lauder, Brian Tait; and Rolfe, John Robert Kenneth, 4,069,142, Cl. 208-310.00Z.

British Steel Corporation: *See—*
Hetherington, Matthew J.; Lewis, Richard; and Goode, Graham E., 4,068,523, Cl. 73-628.000.
Lewis, Richard; and Parker, Michael J., 4,068,524, Cl. 73-598.000.

Brock, Gregory K.: *See—*
Karna, John D.; Brock, Gregory K.; and Shellhammer, Daniel M., 4,069,018, Cl. 23-232.00E.

Brock, J. Farny. Associating drill chuck keys with drill. 4,068,978, Cl. 408-241.00R.

Brodin, Eric. Automatic ventilation regulating device for windows, doors and the like. 4,068,799, Cl. 236-49.000.

Brois, Stanley J.; Ryer, Jack; and Winans, Esther, to Exxon Research & Engineering Co. Carboxylate esters of 1-aza-3,7-dioxabicyclo[3.3.0] oct-5-yl methyl alcohols, their preparation and use as additives for oleaginous compositions. 4,069,023, Cl. 44-63.000.

Brower, Jerome S. Underwater cutting rod. 4,069,407, Cl. 219-70.000.

Brown, Andrew Graham: *See—*
Kelsey, Christopher George, 4,068,476, Cl. 60-671.000.

Brown, Arthur W.; Goetz, Heinz E.; Morrow, Ronald J.; and Waldhauer, Charles H., Jr., to Honeywell Inc. Bus board connection apparatus. 4,068,910, Cl. 339-18.00P.

Brown, Charles Lester. Engine intake air moisturizer. 4,068,625, Cl. 123-25.00A.

Brown, Gerald V., to United States of America, National Aeronautics and Space Administration. Magnetic heat pumping. 4,069,028, Cl. 62-3.000.

Brown, Maurice H. Terminal forming and installing apparatus. 4,068,367, Cl. 29-564.600.

Browning, Bruce E., Jr.: *See—*
Gray, Edward L.; and Browning, Bruce E., Jr., 4,068,550, Cl. 83-471.200.

Brueske, Ralph H., to Butler Manufacturing Company. Moving work station for use in constructing a building roof. 4,068,446, Cl. 52-747.000.

Brugger, Richard D.: *See—*
Paavola, Oiva A.; and Brugger, Richard D., 4,068,654, Cl. 128-2.05N.

Brumat, Giorgio: *See—*
Varziu, Silvio; Paparatto, Piero; Parodi, Antonio; and Brumat, Giorgio, 4,069,193, Cl. 260-40.00R.

Brummette, Craig: *See—*
Burleson, Finn, 4,068,877, Cl. 293-72.000.

Brummette, Winston P.: *See—*
Burleson, Finn, 4,068,877, Cl. 293-72.000.

Buchel, Arthur, to Interoptik Handelsanstalt. Apparatus for manufacturing tiles. 4,068,992, Cl. 425-91.000.

Buchovecky, Kalman E.; and Rearick, Milton R., to Aluminum Company of America. Method of pressing and forging metal powder. 4,069,042, Cl. 75-208.00R.

Buckley, Jere D.; Markle, David A.; Newell, William H.; and Offner, Abe, to Perkin-Elmer Corporation, The. Optical projection and scanning apparatus. 4,068,947, Cl. 355-72.000.

Buford, Wesley E. Torch. 4,068,833, Cl. 266-48.000.

Bullock, Michael Kermit; Clay, Sherwood Anderson; and Overton, Gregory Bingham, to International Business Machines Corporation. Sheet stacking apparatus. 4,068,839, Cl. 271-180.000.

Bunder Glas GmbH: *See—*
Hennings, Werner, 4,068,661, Cl. 128-215.000.

Bundy Corporation: *See—*
McNeill, Walter W., 4,068,971, Cl. 294-67.00R.

Bunker, Jack E. Tank fabrication apparatus. 4,068,359, Cl. 29-33.00K.

Burckhardt, Christoph Benedikt; Grandchamp, Pierre-Andre; and Hoffmann, Heinz, to Hoffmann-La Roche, Inc. Suppression of out-of-focus echoes in ultrasonic scanning. 4,069,467, Cl. 340-1.00R.

Burdick, Kenneth J.; Hand, Wilfred L.; Wheeler, Robert C.; and Wolfe, Paul G., to GTE Sylvania Incorporated. Automatic peaking control circuitry for a video processing system. 4,069,505, Cl. 358-162.000.

Bureau BBR Ltd.: *See—*
Brandestini, Antonio, 4,068,963, Cl. 403-268.000.

Burge, Theodor, to Sika AG, Vormals Kaspar Winkler & Co. Additive for mortar and concrete. 4,069,062, Cl. 106-93.000.

Burke Company, The: *See—*
Torbet, Philip A.; and Eager, Cyril Thomas, 4,068,879, Cl. 294-89.000.

Burkett, Jerry D., to Turbodyne Corporation (Gas Turbine Div.). Shaft turning parking bus for multiple unit installations utilizing a single motorized generator control system. 4,069,424, Cl. 307-87.000.

Burleson, Finn, to Brummette, Winston P.; and Brummette, Craig, part interest to each. Roller vehicle pushing bumper. 4,068,877, Cl. 293-72.000.

Burley, Richard K.: *See—*
Bourdon, Leo; Burley, Richard K.; and Kennedy, Clifford F., 4,068,653, Cl. 126-271.000.

Burnham, John W.: *See—*
Thorn, Donald J.; and Burnham, John W., 4,068,676, Cl. 137-13.000.

Burroughs Corporation: *See—*
Dixon, Charles Fulton, 4,068,792, Cl. 228-57.000.

Bush, Robert G., to L. D. Schreiber Cheese Company, Inc. Package and method of forming the same. 4,069,348, Cl. 426-119.000.

Bussmann, Egon: *See—*
De Steur, Hubert; Pernegger, Wolfgang; and Bussmann, Egon, 4,068,677, Cl. 137-93.000.

Butler, Farrell G., Jr. Fuel vaporizing method and apparatus. 4,068,638, Cl. 123-122.0AA.

Butler, Gene R.: *See—*
Butler, L. Dennis; Butler, Gene R.; Furtado, Anthony E.; Welker, Jerry W.; and Grey, Donald M., 4,068,804, Cl. 241-101.700.

Butler, L. Dennis; Butler, Gene R.; Furtado, Anthony E.; Welker, Jerry W.; and Grey, Donald M., to Sperry Rand Corporation. Method and machine for tearing apart stacked crop material bales. 4,068,804, Cl. 241-101.700.

Butler Manufacturing Company: *See—*
Brueske, Ralph H., 4,068,446, Cl. 52-747.000.

Butler, Walker; and Krahulec, Fred, to Motorola, Inc. Stabilized platform system. 4,068,538, Cl. 74-5.220.

Buysman, Petrus Johannes; Vermeulen, Gerardus Antonius Wilhelmus; and Bos, Cornelis Arie, to U.S. Philips Corporation. Apparatus for

forming apertures in a thin metal tape such as a shadow mask for a color television display tube. 4,069,085, Cl. 156-345.000.

Byxbe, Morley Ben; Meckley Richard Allan; and Porter, William Hunt, to W. H. Porter, Inc. Panel roof construction with improved joints. 4,068,437, Cl. 52-464.000.

C.G.R. MeV: *See—*
Bensussan, Andre; and Levaillant, Claude, 4,069,456, Cl. 328-165.000.

C. Hager & Sons Hinge Manufacturing Company: *See—*
Peterson, Francis C., 4,068,507, Cl. 70-271.000.

C. R. Bard, Inc.: *See—*
Higley, Willard S.; Cantor, Paul A.; and Fisher, Bruce S., 4,069,151, Cl. 128-214.00R.

Cadwallader, Robert H.; Darves-Bornoz, Yves; Gasparri, Angelo S.; and Racine, Francis A., to International Business Machines Corporation. Apparatus for the printing of ceramic green sheets. 4,068,994, Cl. 425-110.000.

California Institute of Technology: *See—*
Rembaum, Alan, 4,069,365, Cl. 428-262.000.

Call, Lyle G.: *See—*
Bell, Terry Lee; Call, Lyle G.; Dillan, George Omer; Jackson, James Phillip, Jr.; and Johnson, Larry Albin, 4,068,373, Cl. 29-741.000.

Callahan, William A.; Glenn, Eldridge Myles; and Rector, Douglas L., to Upjohn Company, The. Novel benzamides. 4,069,224, Cl. 260-295.0AM.

Callecod, Robert L., to Recreation Systems Co. Child recreation structure. 4,068,842, Cl. 272-113.000.

Camardo, Gaspare. Wall bracing assembly and method. 4,068,427, Cl. 52-127.000.

Camp, Edward C.; Enos, Ellsworth C.; and Bombara, Dennis Michael, to Cincinnati Milacron-Heald Corporation. Grinding machine. 4,068,412, Cl. 51-5.00D.

Campbell, Joseph W.; and Siebert, Ralph, to Campbell, Joseph W.; Siebert, Ralph; and Highkin, Harry R. Automatic food plant production. 4,068,405, Cl. 47-65.000.

Canadian General Electric Company: *See—*
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., 4,068,691, Cl. 141-284.000.

Canard, Pierre; and Levy, Albert, to Rhone-Poulenc Industries. Copolymers of butadiene and carboxylated styrene. 4,069,188, Cl. 260-29.70T.

Canfield, Michael P. Foamed plastic cooler and handle combination. 4,068,779, Cl. 220-94.00R.

Canon Kabushiki Kaisha: *See—*
Kasai, Masanao; Oikawa, Youko; Ito, Hiroshi; and Matsuno, Hiroshi, 4,069,487, Cl. 346-76.00L.
Ohta, Shinichi; Matsumura, Isao; Kobayashi, Kazunobu; and Madate, Haruhisa, 4,068,932, Cl. 351-7.000.
Yokota, Hideo, 4,068,929, Cl. 350-215.000.

Cantarutti, Armindo, to NRM Corporation. Tire curing press. 4,068,989, Cl. 425-38.000.

Cantor, Paul A.: *See—*
Higley, Willard S.; Cantor, Paul A.; and Fisher, Bruce S., 4,069,151, Cl. 128-214.00R.

Carbonoyl Company: *See—*
Metzger, Grant W., 4,069,022, Cl. 44-51.000.

Carey, James E., to Shell Oil Company. Curable polyepoxide casting compositions. 4,069,202, Cl. 260-47.0EC.

Carey, James E.; and Reilly, Lawrence C., to Shell Oil Company. Rapid curing polyepoxide compositions. 4,069,203, Cl. 260-47.0EC.

Carl Hurth Maschinen- und Zahnradfabrik: *See—*
Loos, Herbert, 4,068,558, Cl. 90-1.60A.

Carlow, Earl F.; and Wiles, Michael F., to Motorola, Inc. Interrupt status register for interface adaptor chip. 4,069,510, Cl. 364-200.000.

Carlson, David Emil: *See—*
Pankove, Jacques Isaac; and Carlson, David Emil, 4,069,492, Cl. 357-17.000.

Carpenter, Robert J.; and Yee, Kenneth W., to United States of America, Commerce. High speed, wide dynamic range analog-to-digital conversion. 4,069,479, Cl. 340-347.0AD.

Carpenter Technology Corporation. *See—*
Ackermann, Friedrich W., 4,069,043, Cl. 75-232.000.

Carr, Russell L. K.: *See—*
Pattison, Victor A.; and Carr, Russell L. K., 4,069,340, Cl. 424-298.000.

Carrier Corporation: *See—*
Smith, Richard Seymour; and Hider, Philip Abraham, 4,068,391, Cl. 35-13.000.

Carrier, Vernon J. Caster support structure. 4,068,342, Cl. 16-21.000.

Carrieri, Louis F., to Gulf & Western Manufacturing Company. Cam actuated ejector mechanisms for presses. 4,068,520, Cl. 72-427.000.

Carrow, Guy E., to Phillips Petroleum Company. Apparatus for forming a thick-walled tubular product. 4,069,001, Cl. 425-467.000.

Casey, Donald James, to American Cyanamid Company. Chitin derived powder in sterile surgical element package. 4,068,757, Cl. 206-363.000.

Casey, William J., to AMF Incorporated. Nicotine removal process. 4,068,671, Cl. 131-143.000.

Cassatta, Joseph C.: *See—*
Dickie, Ray A.; and Cassatta, Joseph C., 4,069,364, Cl. 428-276.000.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Heinrich, Ernst; and Ribka, Joachim, 4,069,012, Cl. 8-41.00C.
Hett, Helmut; and Walser, Kurt, 4,069,013, Cl. 8-79.000.

Castle, George K.: *See—*
Billing, Rudolph W.; and Castle, George K., 4,069,075, Cl. 156-82.000.

Caterpillar Tractor Co.: *See—*
Boggs, Roger L., 4,068,698, Cl. 152-27.000.
Little, Joseph P., Jr., 4,068,642, Cl. 123-140.0MP.
Muellner, Donald R., 4,068,876, Cl. 293-69.00R.
Simmons, Gerald Paul; and Grooss, Frank August, 4,068,733, Cl. 180-77.00R.
Trayler, Robert J., 4,068,721, Cl. 172-1.000.

Caulier, Paul W., to General Electric Company. Hotbox detector. 4,068,811, Cl. 246-169.00A.

Cavitron Corporation: *See—*
Ross, Thaddeus C., 4,069,420, Cl. 250-341.000.

CCL Systems Limited: *See—*
Birks, Cedric Gwilliam, 4,068,962, Cl. 403-212.000.

Cecchi, Ronald L., to Dinamode Corporation, a part interest. Injection molding apparatus. 4,069,003, Cl. 425-568.000.

Cellucap Manufacturing Co.: *See—*
Wagenfeld, Gilbert B., 4,068,319, Cl. 2-197.000.

Central Glass Company, Limited: *See—*
Komatsu, Tadaaki; Takeda, Hirokazu; Oshio, Hideki; Matsuoka, Kimiaki; and Aramaki, Minoru, 4,069,266, Cl. 260-653.000.

Ceskoslovenska akademie ved: *See—*
Marek, Miroslav; Toman, Ludek; and Pecka, Jan, 4,069,124, Cl. 204-159.240.
Marek, Miroslav; Toman, Ludek; and Pecka, Jan, 4,069,125, Cl. 204-159.240.

Chachin, Viktor Nikolaevich; Sharin, Jury Efimovich; Zdor, Gennady Nikolaevich; Shaduya, Vladimir Leontievich; and Zhuravsky, Alexandr Julyanovich. Device for electrohydraulic die-forging. 4,068,514, Cl. 72-56.000.

Chagunava, Raul Vladimirovich: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Mainsuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sikharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; Dubov, Yauzhe Markovich; Bogdanov, Eduard Alimovich; Gogoladze, Georgy Trofimovich; Teisheva, Alla Abelevna; Ryzygraeva, Galina Nikolaevna; Melnikov-Eikhenvald, Mikhail Alexeevich; and Rokva, Temuri Valeryanovich, 4,069,116, Cl. 204-96.000.

Chakhunashvili, Temuri Alexandrovich: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Mainsuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sikharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; Dubov, Yauzhe Markovich; Bogdanov, Eduard Alimovich; Gogoladze, Georgy Trofimovich; Teisheva, Alla Abelevna; Ryzygraeva, Galina Nikolaevna; Melnikov-Eikhenvald, Mikhail Alexeevich; and Rokva, Temuri Valeryanovich, 4,069,116, Cl. 204-96.000.

Chalmers, David Calder, to Polysar Limited. Halogenated polyacrylate elastomers. 4,069,180, Cl. 260-23.0AR.

Champion Products Inc.: *See—*
Yellen, Richard C.; and Morrell, Edward A., 4,068,314, Cl. 2-94.000.

Chan, Bock G.: *See—*
Stanley, William L.; Watters, Glenn G.; and Chan, Bock G., 4,069,106, Cl. 195-68.000.

Chan, Thomas S.: *See—*
Johanson, Donald L.; and Chan, Thomas S., 4,069,400, Cl. 179-107.00E.

Chapman, Alan Stanley John: *See—*
Barrett, Bruce Robert; and Chapman, Alan Stanley John, 4,069,399, Cl. 179-15.0AL.

Charchian, Loris Joseph; and Heidenreich, David Charles, to Dana Corporation. Shaft mounted standby drive clutch. 4,068,748, Cl. 192-41.00A.

Chard, William C.: *See—*
Cooke, Claude E., Jr.; Hedden, Walter A.; and Chard, William C., 4,068,718, Cl. 166-280.000.

Charles Offset Company, Inc.: *See—*
Bortner, Allen A., 4,068,835, Cl. 270-53.000.

Charles S. Madan & Company Limited: *See—*
Balme, Roy; and Perkins, John Francis, 4,068,983, Cl. 417-401.000.

Chatwin, Maurice Stephen; and Porter, George Zell, to Boeing Company, The. Vehicle tie-down method and apparatus. 4,068,813, Cl. 248-119.00R.

Chayer, Brigitte S., to Laliberte, Robert. Adjustable pants. 4,068,321, Cl. 2-227.000.

Chemetron Corporation: *See—*
Abrams, Edward; and Masella, Anthony J., 4,069,147, Cl. 210-6.000.

Chemisches Laboratorium Fritz-Walter Lange GmbH & Co KG: *See—*
Lange, Fritz-Walter; Jacobi, Haireddin; and Muller, Jens, 4,069,336, Cl. 424-274.000.

Chevron Research Company: *See—*
Hodgson, Clive, 4,069,299, Cl. 423-462.000.
Komoto, Robert G., 4,069,273, Cl. 260-683.15D.
Toland, William G., 4,068,481, Cl. 61-45.00B.
Unverferth, Jack W., 4,069,133, Cl. 208-11.00R.

Chia, Enrique Calixto: *See—*
Cofer, Daniel B.; and Chia, Enrique Calixto, 4,068,705, Cl. 164-270.000.

Chisso Corporation: *See—*
Inukai, Takashi; Sato, Hideo; and Ishibe, Tetsuya, 4,069,167, Cl. 252-299.000.

Chivers, Thomas R., to Southern Tool Mfg. Co., Inc. Fully concealed door hinge. 4,068,348, Cl. 16-129.000.

Chorosevic, Jerome J.: *See—*
Green, Bernard J.; and Chorosevic, Jerome J., 4,068,532, Cl. 73-462.000.

Christopherson, Dennis C.: *See—*
Allison, Arthur F.; Christopherson, Dennis C.; Mays, Byron L.; and Reed, Reginald A., 4,068,567, Cl. 93-93.00C.

Ciaudelli, Joseph P.; and Karg, Gerhart, to Avon Products, Inc. Cationic skin substantive sunscreen composition and method. 4,069,309, Cl. 424-47.000.

Ciba-Geigy AG: *See—*
Randell, Donald Richard; and Pickles, Wilfred, 4,069,189, Cl. 260-30.60R.

Ciba-Geigy Corporation: *See—*
Hegar, Gert, 4,069,218, Cl. 260-153.000.
Karrer, Friedrich, 4,069,344, Cl. 424-324.000.
Mueller, Karl Friedrich, 4,069,244, Cl. 260-501.120.
Ramey, Chester E.; and Luzzi, John J., 4,069,196, Cl. 260-45.80N.
Ramey, Chester E.; and Luzzi, John J., 4,069,199, Cl. 260-45.75C.
Rosenberger, Siegfried; and Schmidt, Andreas, 4,069,197, Cl. 260-45.8NE.
Spivack, John D., 4,069,200, Cl. 260-45.85S.
Wiederkehr, Rene; and Bickel, Hans, 4,069,324, Cl. 424-246.000.

Cincinnati Milacron-Heald Corporation: *See—*
Camp, Edward C.; Enos, Ellsworth C.; and Bombara, Dennis Michael, 4,068,412, Cl. 51-5.00D.

Cincinnati Milacron Inc.: *See—*
Stackhouse, Theodore Hahn, 4,068,536, Cl. 74-417.000.

Cipris, Divna; and Pouli, Dirk, to Allied Chemical Corporation. Process for preparing organic disulfides. 4,069,259, Cl. 260-608.000.

Clampitt, Richard L.; and Hessert, James E., to Phillips Petroleum Company. Method for acidizing subterranean formations. 4,068,719, Cl. 166-282.000.

Clark Equipment Company: *See—*
Wolfe, Robert W., 4,068,537, Cl. 74-477.000.

Clay, Sherwood Anderson: *See—*
Bullock, Michael Kermit; Clay, Sherwood Anderson; and Overton, Gregory Bingham, 4,068,839, Cl. 271-180.000.

Cline, Harvey E.: *See—*
Anthony, Thomas R.; and Cline, Harvey E., 4,068,814, Cl. 248-176.000.

Clorley, Paul Grahame: *See—*
Crossley, John Alan; Hacker nee Weimer, Valerie Kathryn; and Clorley, Paul Grahame, 4,069,113, Cl. 204-43.00G.

CMI Corporation: *See—*
Rowe, Murray A., 4,068,970, Cl. 404-120.000.

Cofer, Daniel B.; and Chia, Enrique Calixto, to Southwire Company. Forming apparatus with roller guide tube. 4,068,705, Cl. 164-270.000.

Coin Acceptors, Inc.: *See—*
Martin, Bart G., 4,068,752, Cl. 194-1.00H.

Colgate Palmolive Company: *See—*
Harrison, Michael, 4,069,310, Cl. 424-49.000.
Mannara, Giuseppe, 4,069,311, Cl. 424-49.000.
Mannara, Giuseppe, 4,069,312, Cl. 424-49.000.

Coller, James Ray, to AMP Incorporated. Tool for removing and installing connector. 4,068,374, Cl. 29-747.000.

Collins, William J. Device and method for obtaining one or more samples of liquid. 4,068,530, Cl. 73-425.40R.

Collins, William J. Molten metal sampler. 4,068,531, Cl. 73-425.40R.

Colt Industries Operating Corporation: *See—*
Newport, Samuel O., 4,068,644, Cl. 123-185.0BA.

Columbus McKinnon Corporation: *See—*
Schreyer, Kenneth D.; and Behnke, Edward R., 4,068,467, Cl. 59-93.000.

Comalco Aluminium (Bell Bay) Limited: *See—*
Jenkinson, David Charles, 4,068,645, Cl. 123-193.00C.

Combustion Engineering, Inc.: *See—*
Fernandes, John Henry, 4,069,024, Cl. 48-197.00R.
Palmer, David Nelson, 4,069,083, Cl. 156-329.000.

Commissariat a l'Energie Atomique: *See—*
Bourdel, Jacques, 4,069,421, Cl. 250-363.00S.

Compagnie Francaise de Raffinage: *See—*
Aboulafia, Joseph; Le Fustec, Richard; and Schranz, Claude, 4,069,287, Cl. 264-140.000.

Compagnie Francaise des Petroles: *See—*
Jegousse, Michel J., 4,068,490, Cl. 61-108.000.
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,068,491, Cl. 61-110.000.

Compagnie General d'Electricite: *See—*
Farcy, Jean-Claude; Girard, Genevieve; and Michon, Maurice, 4,069,458, Cl. 330-4.300.

Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS): *See—*
Jegousse, Michel J., 4,068,490, Cl. 61-108.000.
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,068,491, Cl. 61-110.000.

Compagnie Maritime d'Expertises: *See—*
Jegousse, Michel J., 4,068,490, Cl. 61-108.000.
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,068,491, Cl. 61-110.000.

Concept Marketing, Inc.: *See—*
Moore, Larry D.; Johnson, Isaiah W.; and Thompson, Charley L., Jr., 4,068,668, Cl. 128-330.000.

Consolidated Packaging Corporation: *See—*
Kullman, Thomas D., Jr., 4,068,796, Cl. 229-49.000.

Container Corporation of America: *See—*
Gardner, Jeffrey M., 4,068,793, Cl. 229-14.00C.

Continental Group, Inc., The: *See—*
Shaw, Fred B., 4,069,349, Cl. 426-395.000.

Continental M.D.M., Inc.: *See—*
Jarman, David J., 4,068,753, Cl. 198-373.000.

Continental Oil Company: *See—*
Wong, Soon Y., 4,069,119, Cl. 204-106.000.

Control Components, Inc.: *See—*
Self, Richard E., 4,068,683, Cl. 137-625.300.

Control Electronics Co., Inc.: *See—*
Goldstein, Harold, 4,068,526, Cl. 73-362.0AR.

Control Products Inc.: *See—*
Dacal, Perfecto, 4,069,415, Cl. 362-263.000.

Conway, Arch W.; and Urdaneta, Nelson, to Dana Laboratories, Inc. Apparatus for automatically detecting values of periodically time varying signals. 4,069,452, Cl. 324-103.00P.

Cook, Earl Charles. Automobile engine economizer. 4,068,639, Cl. 123-127.000.

Cooke, Claude E., Jr.; Hedden, Walter A.; and Chard, William C., to Exxon Production Research Company. Hydraulic fracturing method using sintered bauxite propping agent. 4,068,718, Cl. 166-280.000.

Cooley, Denton A.: *See—*
Sharp, Russell G.; Reed, Charles C.; and Cooley, Denton A., 4,068,664, Cl. 128-276.000.

Cooper, Hal B. H. Process for removing and recovering acidic gases from gaseous mixtures containing them. 4,069,117, Cl. 204-98.000.

Cooper, Martin H., to Westinghouse Electric Corporation. Adsorption seal for nuclear reactors. 4,069,100, Cl. 176-37.000.

Cornacchio, Americo: *See—*
Lodato, Alphonso; Cornacchio, Americo; and Fox, Edward M., 4,068,911, Cl. 339-90.00R.

Corning Glass Works: *See—*
Sullivan, Kevin J., 4,069,185, Cl. 260-29.6HN.

Cosentino, Louis C.; and Fischbach, LeRoy J., to Renal Systems, Inc. Ultrasonic air and blood foam detector. 4,068,521, Cl. 73-19.000.

Cosgrove, Allan Hugh: *See—*
Whitney, John Kimball; Cosgrove, Allan Hugh; and Flick, Roland Edward, 4,068,870, Cl. 285-320.000.

Costa, John. Hand tool for manipulating coil springs. 4,068,363, Cl. 29-227.000.

Cottam, Spencer D., to Midcon Pipeline Equipment Co. Pipe wrapping apparatus. 4,069,088, Cl. 156-392.000.

Coupry, Jean: *See—*
Develay, Roger; and Coupry, Jean, 4,069,072, Cl. 148-32.000.

Couture, Paul A.: *See—*
Anghinetti, Joseph R.; and Couture, Paul A., 4,068,417, Cl. 52-1.000.

Cox, Gary L.: *See—*
Johnson, Bennie R.; and Cox, Gary L., 4,068,347, Cl. 16-112.000.

Cox of Watford Limited: *See—*
Babbs, Frederick William, 4,068,887, Cl. 297-216.000.

Cox, Robert B.: *See—*
Martin, Thomas B.; Herscher, Marvin B.; and Cox, Robert B., 4,069,393, Cl. 179-1.0SD.

Craft, Donald Irving: *See—*
Borman, Willem Frederik Hendrik; Craft, Donald Irving; and Kramer, Mortor, 4,069,278, Cl. 260-860.000.

Craighead, James W. Money buckle. 4,068,787, Cl. 224-26.00E.

Cramp, Harry Donald: *See—*
Easy, Maurice Henry; Cramp, Harry Donald; Hartley, Peter Lambert; and Williams, Philip David Lane, 4,069,481, Cl. 343-6.0TV.

CraneVeyor Corporation: *See—*
Lichti, Robert D., 4,068,965, Cl. 403-313.000.

Cremona, Angelo. Traversing device for wood shearing machine. 4,068,693, Cl. 144-178.000.

Crivello, James V., to General Electric Company. Photocurable epoxy compositions containing group Va onium salts. 4,069,055, Cl. 96-115.00R.

Crivello, James V., to General Electric Company. Photopolymerizable composition containing group Va aromatic onium salts. 4,069,056, Cl. 96-115.00P.

Crooks, Fuller A., to Selzer, Elmer A. Pneumatic motor with muffled exhaust. 4,068,987, Cl. 418-181.000.

Crossley, John Alan; Hacker nee Weimer, Valerie Kathryn; and Clorley, Paul Grahame, to Oxy Metal Industries Corporation. Electroplating gold alloys and electrolytes therefor. 4,069,113, Cl. 204-43.00G.

Crowell, James E. Tamping tool. 4,068,594, Cl. 104-10.000.

Cunningham, Allen B.; and Miller, Edward T., to Exxon Production Research Company. Use of periodic signals for continuous wave seismic prospecting. 4,069,470, Cl. 340-15.5TA.

Cunningham, Cecil R. Cooking oil cleaner and filter system for deep fat fryers. 4,068,571, Cl. 99-408.000.

Curtis, Glenn Howard: *See—*
Parrillo, Henry; Harrington, John Sherman; and Curtis, Glenn Howard, 4,068,356, Cl. 26-91.000.

Cushing, Donald S., to General Electric Company. Full-time flood protection control for dishwasher. 4,069,425, Cl. 134-57.00D.

Cutler-Hammer, Inc.: *See—*
Allison, Arthur F.; Christopherson, Dennis C.; Mays, Byron L.; and Reed, Reginald A., 4,068,567, Cl. 93-93.00C.

Czorniak, Edward S., to Permacrete Products Corporation. Modular mausoleum. 4,068,425, Cl. 52-136.000.

Dacal, Perfecto, to Control Products Inc. High intensity discharge lamp

for use in explosive atmospheres such as mines. 4,069,415, Cl. 362-263.000.

Dacey, Raymond Gwilym; and Verity, Richard Hugh, to Baker Perkins Holdings Limited. Apparatus for moulding confectionery. 4,068,993, Cl. 425-104.000.

Dacor Corporation: *See—*
Kobzan, John, 4,068,657, Cl. 128-142.00R.

Dahlstrom, Reuben O. Machine for rolling newspaper into logs. 4,068,564, Cl. 93-1.00C.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Toida, Takashi, 4,068,923, Cl. 350-160.0LC.

Daicel Ltd.: *See—*
Yokota, Hiromu; Namikoshi, Hajime; Watanabe, Masataka; Kato, Kunio; and Ohnishi, Akio, 4,068,670, Cl. 131-2.000.

Daimer, Wolfgang, to Vianova Kunstharz, A.G. Aqueous stoving coating composition comprising N-oxide structures containing polyhydroxy components. 4,069,183, Cl. 260-29.300.

Dale (Massfield) Limited: *See—*
Dring, Eric, 4,068,894, Cl. 299-45.000.

D'Alessandro, Alfred C., to Aid Pak, Inc. Container. 4,068,663, Cl. 128-232.000.

Dalrymple, Ronald Howell: *See—*
Ingle, Donald Lee; and Dalrymple, Ronald Howell, 4,069,339, Cl. 424-279.000.

Dana Corporation: *See—*
Charchian, Loris Joseph; and Heidenreich, David Charles, 4,068,748, Cl. 192-41.00A.

Dana Laboratories, Inc.: *See—*
Conway, Arch W.; and Urdaneta, Nelson, 4,069,452, Cl. 324-103.00P.

Danneberg, Peter: *See—*
Langbein, Adolf; Danneberg, Peter; and Kuhn, Franz Josef, 4,069,331, Cl. 424-267.000.

Dappen, Glen Marshall: *See—*
Wu, Tai-Wing; and Dappen, Glen Marshall, 4,069,017, Cl. 23-230.00B.

Darves-Bornoz, Yves: *See—*
Cadwallader, Robert H.; Darves-Bornoz, Yves; Gasparri, Angelo S.; and Racine, Francis A., 4,068,994, Cl. 425-110.000.

Das, Gobinda: *See—*
Beyer, Klaus D.; Das, Gobinda; Poponiak, Michael R.; and Yeh, Tsu-Hsing, 4,069,068, Cl. 148-1.500.

Dasher, Wayne G., to Gilbert & Bennett Mfg. Co., The. Box spring grid and method of manufacture. 4,068,331, Cl. 5-267.000.

Da Silva, Edouard, to Instruments S.A. Monochromator having a concave holographic grating. 4,068,954, Cl. 356-100.000.

Data General Corporation: *See—*
Dunn, David, 4,069,462, Cl. 331-11.000.

Davis, Donald A., to Schwamb Corporation, The. Movable partition wall. 4,068,432, Cl. 52-205.000.

Davis, Irwin J.: *See—*
Skoultchi, Martin M.; and Davis, Irwin J., 4,069,123, Cl. 204-159.180.

Dawson, Charles W., to General Electric Company. Blown tube collapse frame assembly. 4,068,999, Cl. 425-392.000.

Day, Stephen W.; and Hutcheson, Daniel M. Composite wall panel assembly and method of production. 4,068,434, Cl. 52-220.000.

Dayco Corporation: *See—*
Bollmer, Jacob A., 4,068,587, Cl. 101-415.100.
Sanna, Waldo A.; and Sand, Carl A., 4,068,394, Cl. 35-50.000.

De luxe General, Incorporated: *See—*
Gyori, Robert Paul, 4,068,943, Cl. 355-38.000.

Dean, Raymond H.; and Roberts, Michael M., to Tempmaster Corporation. Method and device for reducing noise. 4,068,736, Cl. 181-224.000.

DeBard, James Edward; Borden, Raymond Walter; and Tumpey, John Joseph, to Bendix Corporation, The. Closure for semiconductor device and method of construction. 4,068,368, Cl. 29-588.000.

Decca Ltd.: *See—*
Easy, Maurice Henry; Cramp, Harry Donald; Hartley, Peter Lambert; and Williams, Philip David Lane, 4,069,481, Cl. 343-6.0TV.

Deciduous Fruit Board, The: *See—*
Lawrence, Bryan, 4,068,794, Cl. 229-23.00R.

Decoppet, Jean-Pierre, to General Dynamics Corporation. Inside scaffolding for large metallic structures and method of using same. 4,068,419, Cl. 52-40.000.

Deem, Brian Charles; and Karon, Marc Alan, to Bendix Corporation, The. Adaptive braking modulator with electrically activated relay valve. 4,068,902, Cl. 303-28.000.

Deering, Roland F., to Union Oil Company of California. Oil shale retorting process with desulfurization of flue gas. 4,069,132, Cl. 208-11.00R.

Defranould, Philippe; and Desbois, Jean, to Thomson-CSF. Device for the two-dimensional reading of optical images, using elastic surface waves. 4,069,507, Cl. 358-213.000.

Delligatti, Patrick. Sequence numbering code marking device. 4,068,578, Cl. 101-35.000.

De Luca, Paul V., to Porta Systems Corporation. Three element gas tube protector module. 4,069,509, Cl. 361-124.000.

DeMarco, JoAnn, to Loctite Corporation. Self-emulsifying anaerobic composition. 4,069,378, Cl. 526-328.000.

Demaret, Pierre E. Device for mounting cantilever-suspended booms on agricultural vehicles for distributing treatment materials. 4,068,812, Cl. 248-14.000.

DeMarinis, Robert Michael, to SmithKline Corporation. Preparation of trifluoromethylthioacetic acid and its esters. 4,069,243, Cl. 560-153.000.

DeMarse, Ernest W.; and Gozdiff, Michael M., to Goodyear Tire & Rubber Company, The. Means and method of separating lengths of flattened flexible polymeric tube. 4,069,359, Cl. 428-36.000.

Dermy, Rene M.: *See—*
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., .4,068,491, Cl. 61-110.000.

Desbois, Jean: *See—*
Defranould, Philippe; and Desbois, Jean, 4,069,507, Cl. 358-213.000.

Deschler, Kathleen E. Inflatable bathtub. 4,068,326, Cl. 4-150.000.

Descoteaux, Claude; and Wenzel, Chester. Vertical lift assembly. 4,068,534, Cl. 74-27.000.

Deseret Pharmaceutical Co., Inc.: *See—*
Beck, Richard William, 4,068,660, Cl. 128-214.400.
Moorehead, Harvey Robert, 4,068,659, Cl. 128-214.400.

De Steur, Hubert; Pernegger, Wolfgang; and Bussmann, Egon, to Siemens Aktiengesellschaft. Process control circuit for metal-depositing baths. 4,068,677, Cl. 137-93.000.

Detectors, Inc.: *See—*
Rubey, Ulyss Ray, 4,068,613, Cl. 116-114.0AH.

Detroit, William John; and Sanford, Michael Elliot, to American Can Company. Solubilized lignosulfonate derivatives. 4,069,217, Cl. 260-124.00R.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Mannsfeld, Sven Peter; Pfeiffer, Arno; Tanner, Herbert; Wagner, Hans; and Liebetanz, Erich, deceased, 4,069,251, Cl. 260-534.00S.

Develay, Roger; and Coupry, Jean, to Pechiney Ugine Kuhlmann. Aluminum alloy. 4,069,072, Cl. 148-32.000.

Deyak, Frank L.; and Wegwerth, Arthur A., to Minnesota Mining and Manufacturing Company. Workable and curable epoxy-terminated silane films. 4,069,368, Cl. 428-447.000.

Dezawa, Shin-ichiro; Sasazawa, Koji; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Process for producing ferromagnetic powder. 4,069,164, Cl. 252-62.620.

Diamond Shamrock Corporation: *See—*
Magee, Thomas A., 4,069,342, Cl. 424-304.000.

Dickie, Ray A.; and Cassatta, Joseph C., to Ford Motor Company. Radiation polymerized coated article and method of making same. 4,069,364, Cl. 428-276.000.

Difley, Charles R.; Johnson, Milton J.; and McDonald, William R., to Whirlpool Corporation. Refuse compactor with selective spray device. 4,068,575, Cl. 100-45.000.

Dillan, George Omer: *See—*
Bell, Terry Lee; Call, Lyle G.; Dillan, George Omer; Jackson, James Phillip, Jr.; and Johnson, Larry Albin, 4,068,373, Cl. 29-741.000.

Dimitroff, Boris. Apparatus and process for steam generation by solar energy. 4,068,474, Cl. 60-641.000.

Dimopoulos, George H., to Michael Business Machines Corporation. Manual paper collator. 4,068,836, Cl. 270-58.000.

Dinamode Corporation: *See—*
Cecchi, Ronald L., 4,069,003, Cl. 425-568.000.

Dirks, Arthur A.: *See—*
Meyers, William G.; and Dirks, Arthur A., 4,068,860, Cl. 280-432.000.

DiSalvo, Gail D.; and Berard, Raymond A., to Acushnet Company. Solid golf ball. 4,068,849, Cl. 273-218.000.

Dittberner, Wolfgang: *See—*
Nolte, Gert; and Dittberner, Wolfgang, 4,068,899, Cl. 303-6.00A.

Dittman, Melvin M. Combined fuel tank protective cover and thigh grip pad for motorcycles. 4,068,859, Cl. 280-289.00E.

Dix, James S.: *See—*
Mathis, Ronald D.; and Dix, James S., 4,069,277, Cl. 260-857.0PG.

Dixon, Charles Fulton, to Burroughs Corporation. Device for protecting the edge connectors of printed circuit boards during wave soldering. 4,068,792, Cl. 228-57.000.

Dmitrievich, Loschilin Evghenii: *See—*
Santucci, Nicola; Aleksandrovic, Zabotin Aleksandr; Dmitrievich, Loschilin Evghenii; Lvovich, Galperin Aleksandr; and Archakovich, Onikov Eduard, 4,068,685, Cl. 139-188.00R.

Dockerill, Ian Anthony, to Lucas Industries Limited. Method of manufacturing an extruded steel component. 4,068,518, Cl. 72-354.000.

Doerfler, Roger E.; and Willi, Gary A., to Kelsey-Hayes Co. Blend back proportioning brake control apparatus. 4,068,900, Cl. 303-6.00C.

Dofek, Ladislav: *See—*
Dressler, Mirko; and Dofek, Ladislav, 4,068,881, Cl. 294-111.000.

Doherty, John, Jr., to Texas Instruments Incorporated. Thermally responsive valve assembly. 4,068,800, Cl. 236-101.00C.

Doi, Toshitada; and Wakabayashi, Hitoshi, to Sony Corporation. Stereophonic sound reproduction system. 4,069,394, Cl. 179-1.00G.

Donahue, Edward T.: *See—*
Kenney, Harold E.; and Donahue, Edward T., 4,069,163, Cl. 252-46.700.

Dopyera, John. Stringed musical instrument. 4,068,553, Cl. 84-296.000.

Dorland, Herman: *See—*
Tharp, Gordon H.; and Dorland, Herman, 4,068,364, Cl. 29-235.000.

Dorman Smith Traffic Products Limited: *See—*
Minoprio, William Edward; and Horsfield, Arthur Kenneth, 4,069,404, Cl. 200-60.000.

Dorr, Hans-Werner: *See—*
Grosse, Ludwig; and Dorr, Hans-Werner, 4,069,082, Cl. 156-281.000.

Dorschner, Kenneth P.; and Albright, James A., to SCM Corporation. N-haloacyl 4-spirocycloaliphatic oxazolidines. 4,069,036, Cl. 71-88.000.

Dotsko, Martin, to Singer Company, The. Front projection screen. 4,068,922, Cl. 350-126.000.

Douglass, Edward T., Jr. Dust seal for rotatable shaft passing through a bin wall. 4,068,854, Cl. 277-237.00A.

Dow Chemical Company, The: *See—*
Gurgiolo, Arthur E., 4,069,242, Cl. 560-93.000.
McCarty, Leslie P., 4,069,346, Cl. 424-350.000.
Pierce, James K., 4,069,341, Cl. 424-302.000.

Dow Corning Corporation: *See—*
Mikami, Ryuzo; and Hanada, Tsuneo, 4,069,178, Cl. 260-22.00S.

Downing, Terry R.; and Herwig, Warren E., to Allis-Chalmers Corporation. Lift vehicle with fail-safe overload protective system. 4,068,773, Cl. 214-674.000.

Draber, Wilfried: *See—*
Findeisen, Kurt; Draber, Wilfried; and Schwarz, Herbert, 4,069,252, Cl. 260-545.00R.

Draper, Homer L.: *See—*
Gagle, Duane W.; and Draper, Homer L., 4,068,968, Cl. 404-7.000.

Dressler, Mirko; and Dofek, Ladislav, to Vyzkumny ustav lesniho hospodarstvi a myslivosti. Arrangement for automatic regulation of the cable length of a holding cable of grab means. 4,068,881, Cl. 294-111.000.

Dressler, Wolfgang: *See—*
Schraud, Alfred; and Dressler, Wolfgang, 4,068,709, Cl. 165-95.000.

Dring, Eric, to Dale (Massfield) Limited. Mining machine cowl assembly. 4,068,894, Cl. 299-45.000.

Driscoll, James R. Table assembly of molded plastics material. 4,068,600, Cl. 108-111.000.

Drower, Herbert M.; and Rhyner, Edison L., to Sealtran Corporation. Method for protective film lamination with curl control. 4,069,081, Cl. 156-272.000.

Dubois, Jean Claude; Gazard, Maryse; Duchesne, Claude; and Lavenu, Jean Claude, to Thomson-CSF. Method of manufacturing an electron-sensitive resin, and an application of said resin to integrated optics. 4,068,919, Cl. 350-96.0WG.

Dubov, Yauzhe Markovich: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Mainsuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sikharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; Dubov, Yauzhe Markovich; Bogdanov, Eduard Alimovich; Gogoladze, Georgy Trofimovich; Teisheva, Alla Abelevna; Ryzygraeva, Galina Nikolaevna; Melnikov-Eikhenvald, Mikhail Alexeevich; and Rokva, Temuri Valeryanovich, 4,069,116, Cl. 204-96.000.

Duchesne, Claude: *See—*
Dubois, Jean Claude; Gazard, Maryse; Duchesne, Claude; and Lavenu, Jean Claude, 4,068,919, Cl. 350-96.0WG.

Duckworth, Charles England. Internal combustion engine with designated exhaust burning cylinders. 4,068,628, Cl. 123-59.0EC.

Duff, Donald R.; Lamb, James O.; and Pezzolo, Donald E., to Fairchild Camera and Instrument Corporation. Frequency adjustment circuit. 4,068,462, Cl. 58-23.0AC.

Duimstra, Dwight L.: *See—*
Fanning, Larry J.; and Duimstra, Dwight L., 4,068,827, Cl. 254-139.100.

Dunlop, Andrew P., to Quaker Oats Company, The. Apparatus for catalytic gassing in the manufacture of foundry cores and molds. 4,068,703, Cl. 164-160.000.

Dunn, David, to Data General Corporation. Phase-locked loops. 4,069,462, Cl. 331-11.000.

Du Pont de Nemours, E. I., and Company: *See—*
Evans, Arlyn Wayne, 4,069,037, Cl. 71-93.000.
Evans, Robert F., 4,068,915, Cl. 339-176.0MP.
Fickes, Michael Glenn, 4,069,076, Cl. 156-83.000.
Gray, Joseph B., 4,068,830, Cl. 366-174.000.
Hayek, Mason, 4,069,159, Cl. 252-8.800.
Hoeschele, Guenther Kurt, 4,069,208, Cl. 260-75.0NH.
Hoover, Fred Wayne; and Roberts, Robert Earl, 4,069,157, Cl. 210-433.00M.
Hutton, David Glenn; and Robertaccio, Francis Leonard, 4,069,148, Cl. 210-11.000.
Johnson, Alexander Lawrence, 4,069,035, Cl. 71-76.000.
Kumar, Vijayendra, 4,069,361, Cl. 428-95.000.
Kunz, Robert Allison, 4,069,262, Cl. 260-646.000.
Mahler, Walter, 4,068,706, Cl. 165-1.000.
Manos, Philip, 4,068,387, Cl. 34-9.000.
Marder, Milton David; Osmalov, Robert; and Pfeiffer, Gerald P., 4,069,078, Cl. 156-181.000.
Murphy, Charles Vincent, 4,069,122, Cl. 204-158.0HE.
Prichard, William W.; and Stacey, Francis Wilfred, 4,069,320, Cl. 424-226.000.
Rohde, Vernon Carl, 4,068,798, Cl. 233-26.000.
Sandy, Charles Anthony, 4,069,237, Cl. 260-437.00R.
Segraves, William Benjamin; and Mulholland, Kenneth Lee, 4,069,363, Cl. 428-224.000.

Dur, Werner; and Forster, Rene, to Hydrel A.G. System for securing guide rails in machine stand. 4,068,906, Cl. 308-3.00A.

Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Pharmacologically active thiourea and urea compounds as inhibitors of H-2 histamine receptors. 4,069,327, Cl. 424-250.000.

Durham Industries, Inc.: *See—*
Weiser, Hal, 4,068,403, Cl. 46-241.000.

Dursch, Walter; Kleiner, Hans-Jerg; and Thamm, Horst-Dieter, to Hoechst Aktiengesellschaft. Preparation of phosphonic and/or phosphinic acids. 4,069,245, Cl. 260-502.40R.

Duwel, Dieter: *See—*
Loewe, Heinz; Urbanietz, Josef; Duwel, Dieter; and Kirsch, Reinhard, 4,069,325, Cl. 424-246.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Richtzenhain, Hermann; and Stephan, Rudolf, 4,069,265, Cl. 260-652.50R.

Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Mainsuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sikharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; Dubov, Yauzhe Markovich; Bogdanov, Eduard Alimovich; Gogoladze, Georgy Trofimovich; Teisheva, Alla Abelevna; Ryzygraeva, Galina Nikolaevna; Melnikov-Eikhenvald, Mikhail Alexeevich; and Rokva, Temuri Valeryanovich. Electrochemical process for producing manganese dioxide. 4,069,116, Cl. 204-96.000.

Dziedzic, Chester John, to GTE Sylvania Incorporated. Matrix structure and method for making. 4,068,707, Cl. 165-8.000.

E M I Limited: *See—*
Hounsfield, Godfrey Newbold, 4,069,422, Cl. 250-445.00T.

Eaby, Daniel G.: *See—*
Townley, Charles O.; Vegell, Allan; and Eaby, Daniel G., 4,068,324, Cl. 3-1.913.

Eager, Cyril Thomas: *See—*
Torbet, Philip A.; and Eager, Cyril Thomas, 4,068,879, Cl. 294-89.000.

Easter, William M., to Horix Manufacturing Company. Container capping machine. 4,068,450, Cl. 53-331.500.

Eastman Kodak Company: *See—*
Irick, Gether, Jr.; and Kelly, Charles A., 4,069,227, Cl. 260-308.00R.
Wu, Tai-Wing, 4,069,016, Cl. 23-230.00B.
Wu, Tai-Wing; and Dappen, Glen Marshall, 4,069,017, Cl. 23-230.00B.

Easy, Maurice Henry; Cramp, Harry Donald; Hartley, Peter Lambert; and Williams, Philip David Lane, to Decca Ltd. Pulse radar apparatus. 4,069,481, Cl. 343-6.0TV.

Eaton, David Crawford; Nicholson, Benjamin Eric; and Williams, Barry, to Imperial Chemical Industries Limited. Triazine compositions. 4,069,380, Cl. 544-212.000.

Ebeling, Wilfried; and Schulte, Klaus, to Bayer Aktiengesellschaft. Apparatus for the production of foam materials containing a filler material. 4,068,831, Cl. 366-156.000.

Eberhardt, Helmut: *See—*
Friesenborg, Bernd; and Eberhardt, Helmut, 4,069,143, Cl. 209-10.000.

Ebner, John Steven; Pizzeri, Francis Charles; and Sprecher, Charles Grimes, III, to Milgo Electronic Corporation. Swivel joint. 4,068,961, Cl. 403-55.000.

Ecodyne Corporation: *See—*
Mason, Donald G., 4,069,156, Cl. 210-195.00S.

Ecological Systems, Inc.: *See—*
Salemi, Jerry S.; and Pease, Paul Dean, 4,069,127, Cl. 204-229.000.

Edenwall, Ingvar A. O.: *See—*
Gorling, Karl Goran; Edenwall, Ingvar A. O.; Jansson, Jan-Olof; and Mioen, Thomas K., 4,069,041, Cl. 75-101.00R.

Edling, Porter Russell: *See—*
Pease, Floyd Tim; Reusswig, Gerhard Helmut; and Edling, Porter Russell, 4,068,487, Cl. 61-93.000.

Edward Shanbrom, Inc.: *See—*
Shanbrom, Edward, 4,069,216, Cl. 260-112.00B.

Edwards Engineering Corporation: *See—*
Edwards, Ray C., 4,068,710, Cl. 165-111.000.

Edwards, Ray C., to Edwards Engineering Corporation. Vapor condenser for vapor recovery systems. 4,068,710, Cl. 165-111.000.

Eggert, Frank, to Schlegel GmbH. Method and apparatus for producing accumulator plate separator pockets. 4,069,079, Cl. 156-212.000.

Eigenmann, Ludwig. Prefabricated roadway marking strip material and method for producing same. 4,069,281, Cl. 264-1.000.

Ekwall, Carl Gosta Bernhard: *See—*
Andersson, Kurt Holger; Ekwall, Carl Gosta Bernhard; and Forsberg, Bo Erik, 4,068,727, Cl. 173-1.000.

Elder, George E.; Van Horne, Clark A.; and Wu, George C., to VeloBind, Inc. Cutting means for book binding machine. 4,068,997, Cl. 425-305.100.

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Thompson, Lester E., 4,068,585, Cl. 101-114.000.

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Svaty, Vladimir, 4,068,686, Cl. 139-438.000.

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Krasser, Fritz; and Sell, William F., 4,069,289, Cl. 264-157.000.

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EMC Technology, Inc.: *See—*
Steidlitz, Mark, 4,069,497, Cl. 357-80.000.

Emery Industries, Inc.: *See—*
Hutchison, Robert B.; and Blewett, C. William, 4,069,236, Cl. 260-414.000.
McCarthy, Justin P.; Schlossman, Mitchell L.; and Mores, Lee R., 4,069,347, Cl. 424-358.000.

Emmett, John Colin: *See—*
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 4,069,327, Cl. 424-250.000.
English Electric Valve Company Limited: *See—*
Nelson, Peter David; and Banks, Peter Baldwin, 4,069,502, Cl. 358-113.000.
Enomoto, Satoru: *See—*
Nishita, Sadao; Enomoto, Satoru; Wada, Hisayuki; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,069,211, Cl. 260-77.5MA.
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Camp, Edward C.; Enos, Ellsworth C.; and Bombara, Dennis Michael, 4,068,412, Cl. 51-5.00D.
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Jegousse, Michel J., 4,068,490, Cl. 61-108.000.
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,068,491, Cl. 61-110.000.
Equipment Precibec Inc.: *See—*
Poitras, Andre; and Tailleux, Christian, 4,068,582, Cl. 101-76.000.
Erbert, Virgil; and Braun, Leroy O., to Hughes Aircraft Company. Range testing system having simulated optical targets. 4,068,952, Cl. 356-5.000.
Erdelen, Gerhard: *See—*
Beck, Heinz; Muller, Klaus; and Erdelen, Gerhard, 4,069,131, Cl. 204-297.00W.
Erdman, Peter M. Brick saw apparatus. 4,068,648, Cl. 125-13.00R.
Eschweiler, Earl E., Jr.; and Smith, Richard B., to Pitney-Bowes, Inc. Document feeding apparatus. 4,068,946, Cl. 355-64.000.
Eskeli, Michael. Fluid pressurizer. 4,068,975, Cl. 415-80.000.
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Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,068,491, Cl. 61-110.000.
Etudes Petrolieres Marines, Societe: *See—*
Jegousse, Michel J., 4,068,490, Cl. 61-108.000.
Evans, Arlyn Wayne, to Du Pont de Nemours, E. I., and Company. Selective herbicide for pineapple crops. 4,069,037, Cl. 71-93.000.
Evans, Robert F., to Du Pont de Nemours, E. I., and Company. Electrical connector. 4,068,915, Cl. 339-176.0MP.
Excelsior Hardware Co.: *See—*
Testa, Carmen; and Bouton, William J., Jr., 4,068,873, Cl. 292-101.000.
Exxon Production Research Company: *See—*
Cooke, Claude E., Jr.; Hedden, Walter A.; and Chard, William C., 4,068,718, Cl. 166-280.000.
Cunningham, Allen B.; and Miller, Edward T., 4,069,470, Cl. 340-15.5TA.
Exxon Research & Engineering Co.: *See—*
Brois, Stanley J.; Ryer, Jack; and Winans, Esther, 4,069,023, Cl. 44-63.000.
Gardiner, John Brooke; Hill, Max W.; and Ryer, Jack, 4,069,162, Cl. 252-32.70E.
Riley, Kenneth L.; and Pine, Lloyd A., 4,069,139, Cl. 208-216.000.
Siskin, Michael; and Gillespie, Ronald J., 4,069,268, Cl. 260-666.00P.
Thompson, Arthur H., 4,069,301, Cl. 423-565.000.
F. Jos. Lamb Company: *See—*
Brems, John H.; Kobane, John, Jr.; and Zetner, Wilfred J., 4,068,957, Cl. 403-8.000.
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Barnett, James V., II; Mayer, Ernest F.; Pfeiffer, James W.; and Wickwar, Larry D., 4,068,464, Cl. 58-50.00R.
Duff, Donald R.; Lamb, James O.; and Pezzolo, Donald E., 4,068,462, Cl. 58-23.0AC.
Fanning, Larry J.; and Duimstra, Dwight L., to Duimstra, Dwight L. Portable hoist. 4,068,827, Cl. 254-139.100.
Farcy, Jean-Claude; Girard, Genevieve; and Michon, Maurice, to Compagnie General d'Electricite. Power laser chain. 4,069,458, Cl. 330-4.300.
Farnsworth, Robert P., to Hughes Aircraft Company. Flyback type power supply. 4,069,449, Cl. 363-28.000.
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Lang, Armin; and Fassbender, Rolf, 4,068,678, Cl. 137-100.000.
Fassett, John R.; Rondas, Ivan V.; George, Joseph P.; and Sondermann, Claus, to Frontier Inc. Digital electronic alarm watch. 4,068,461, Cl. 58-23.00R.
Fay, Gordon C., to Hendryx Engineers Incorporated. Kiln for ceramic products. 4,069,010, Cl. 432-137.000.
Fay, Robert C., to Milliken Research Corporation. Pre-determined pressure system. 4,068,561, Cl. 91-433.000.
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Nett, Robert; Fechner, Wolf Dieter; Jettmar, Werner; Polster, Rudolf; Sappok, Reinhard; and Hartmann, Eduard, 4,069,064, Cl. 106-193.00P.
Fedor, Robert J.; and Smith, Walter E., to Gould Inc. Fine dispersion aluminum base bearing. 4,069,369, Cl. 428-557.000.
Fegley, Charles R. Electrothermally actuated fluid dispensing device. 4,068,780, Cl. 222-5.000.
Felten, Alain: *See—*
Laurent, Daniel; and Felten, Alain, 4,068,829, Cl. 366-177.000.
Fernandes, John Henry, to Combustion Engineering, Inc. Two-stage gasification system. 4,069,024, Cl. 48-197.00R.
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Grundy, David Latham, 4,069,494, Cl. 357-41.000.
Ferranti-Packard Limited: *See—*
Helwig, Christopher Gordon, 4,069,480, Cl. 340-373.000.
Ferraro, Charles F.; Javick, Richard A.; and Robertson, James A., to FMC Corporation. Water dispersible, low molecular weight polyamide resin particles of uniform sizes, method of preparing same and coatings formed therefrom. 4,069,184, Cl. 260-29.20N.
Ferris, Ray L.: *See—*
Marulic, Walter J.; and Ferris, Ray L., 4,068,410, Cl. 49-370.000.
Ferriss, Lincoln Stark, to Singer Company, The. ESG Reflected impedance pickoff. 4,068,533, Cl. 74-5.60D.
Fiber Industries, Inc.: *See—*
Fischbach, Melvyn Robert, 4,068,460, Cl. 57-157.0TS.
Ficheux, Rene; and Ronsin, Francois, to United Technologies Corporation. Elevator motor control system for A.C. induction motor. 4,068,741, Cl. 187-29.00R.
Fickes, Michael Glenn, to Du Pont de Nemours, E. I., and Company. Liquid lamination process. 4,069,076, Cl. 156-83.000.
Fiedler, Willy A. Fuel control of internal combustion engines. 4,068,626, Cl. 123-30.00D.
Fields, Ellis K., to Standard Oil Company (Indiana). Silver catalysts. 4,069,271, Cl. 260-669.00R.
Fima Laboratories, Inc.: *See—*
Fima, Raoul, 4,069,405, Cl. 200-84.00C.
Fima, Raoul, to Fima Laboratories, Inc. Swimming pool alarm system. 4,069,405, Cl. 200-84.00C.
Findeisen, Kurt; Draber, Wilfried; and Schwarz, Herbert, to Bayer Aktiengesellschaft. Process for the preparation of certain acyl cyanide compounds. 4,069,252, Cl. 260-545.00R.
Fine, Gary J.; Herschler, Michael G.; and Shoop, John C., to Gardner-Denver Company. Compressor startup control. 4,068,980, Cl. 417-282.000.
Fiorenza, Robert M.; Fleming, Alan J.; Gerlach, Ralph J.; Holmstrom, Larry W.; and Pace, John C., to International Business Machines Corporation. Computer controlled distribution apparatus for distributing transactions to and from controlled machines tools. 4,069,488, Cl. 364-474.000.
Firester, Arthur Herbert; and Walentine, Joseph Paul, to RCA Corporation. Defect plotting system. 4,069,484, Cl. 346-33.00F.
Fisch, Irvin S.: *See—*
Peer, Roger L.; and Fisch, Irvin S., 4,069,136, Cl. 208-65.000.
Fischbach, LeRoy J.: *See—*
Cosentino, Louis C.; and Fischbach, LeRoy J., 4,068,521, Cl. 73-19.000.
Fischbach, Melvyn Robert, to Fiber Industries, Inc. Yarn process. 4,068,460, Cl. 57-157.0TS.
Fischer, Albert G., to Westinghouse Electric Corporation. Method for rapidly forming photoconductive layers for integrated circuits. 4,069,356, Cl. 427-76.000.
Fisher, Bruce S.: *See—*
Higley, Willard S.; Cantor, Paul A.; and Fisher, Bruce S., 4,069,151, Cl. 128-214.00R.
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Fiorenza, Robert M.; Fleming, Alan J.; Gerlach, Ralph J.; Holmstrom, Larry W.; and Pace, John C., 4,069,488, Cl. 364-474.000.
Fleming, Paul D.; and Gullekson, Kenneth N., to W & F Manufacturing Inc. Rotary latch mechanism with locking device. 4,068,874, Cl. 292-128.000.
Fleury, Guy J.: *See—*
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,068,491, Cl. 61-110.000.
Flick, Roland Edward: *See—*
Whitney, John Kimball; Cosgrove, Allan Hugh; and Flick, Roland Edward, 4,068,870, Cl. 285-320.000.
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FMC Corporation: *See—*
Ferraro, Charles F.; Javick, Richard A.; and Robertson, James A., 4,069,184, Cl. 260-29.20N.
Lodholz, John C.; and Straus, P. Barry, 4,069,150, Cl. 210-112.000.
Meadow, Morton, 4,069,302, Cl. 423-575.000.
Foeller, James E. Automatic vehicle speed limiting system. 4,068,734, Cl. 180-98.000.
Foley, Nelson D., to BEI Electronics, Inc. Ammunition identification and firing system having electrical identification means. 4,068,556, Cl. 89-1.814.
Folson, Henry J.: *See—*
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Ford, Bacon & Davis Texas Inc.: *See—*
Bond, Desmond H.; Taggart, George W.; and Jaeger, Kurt S., 4,069,020, Cl. 23-262.000.
Ford Motor Company: *See—*
Dickie, Ray A.; and Cassatta, Joseph C., 4,069,364, Cl. 428-276.000.
Labana, Santokh S.; and Theodore, Ares N., 4,069,275, Cl. 260-836.000.
Forrest, Charles Phelps. Place-kicking football receiving target. 4,068,846, Cl. 273-55.00B.
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Andersson, Kurt Holger; Ekwall, Carl Gosta Bernhard; and Forsberg, Bo Erik, 4,068,727, Cl. 173-1.000.
Forster, Rene: *See—*
Dur, Werner; and Forster, Rene, 4,068,906, Cl. 308-3.00A.
Forster, William Edward, to Metal Box Limited. Folded closed carton convertible to open tray. 4,068,795, Cl. 229-31.00R.
Forward, Raymond John, to Steam Vacuum Extraction Limited. Steam and vacuum cleaning apparatus. 4,068,340, Cl. 15-321.000.
Foster, George B.; and Gibbs, Paul Douglas, to Air Data, Inc. Area navigation system. 4,069,412, Cl. 364-448.000.
Foster Grant Co., Inc.: *See—*
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Foulletier, Louis: *See—*
Bertocchio, Rene; and Foulletier, Louis, 4,069,158, Cl. 252-3.000.
Fox, Edward M.: *See—*
Lodato, Alphonso; Cornacchio, Americo; and Fox, Edward M., 4,068,911, Cl. 339-90.00R.
Fox, Sidney Jared, to International Business Machines Corporation. Single array ink jet printer. 4,069,486, Cl. 346-75.000.
Frank, Fred J., to Westinghouse Electric Corporation. Method and apparatus for monitoring flux deviations in a nuclear reactor. 4,069,097, Cl. 176-22.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,068,596, Cl. 104-12.000.
Frenkel, Mark Isaakovich. Cylinder of piston compressor. 4,068,562, Cl. 92-60.500.
Freuler, Fred H. Press roll with bending control device. 4,068,360, Cl. 29-116.0AD.
Freund, Peter: *See—*
Gey, Werner; Langhauser, Wolfgang; Heinze, Helmut; Rothe, Hans-Joachim; and Freund, Peter, 4,069,194, Cl. 260-40.00R.
Frey, Rudolf; Bernauer, Joachim; and Gobel, Pirmin, to Albert Frankenthal AG. Cylinder for clamping printing plates. 4,068,586, Cl. 101-415.100.
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Mandy, Zoltan A., 4,068,981, Cl. 417-310.000.
Friddle, William B.: *See—*
Gross, Nathan; and Friddle, William B., 4,068,329, Cl. 5-255.000.
Friedline, Ernest J., to Kennametal Inc. Cutting insert configuration. 4,068,976, Cl. 407-114.000.
Friedrich Kocks, Firma: *See—*
Wonisch, Rudolf, 4,068,516, Cl. 72-201.000.
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Friesenborg, Bernd; and Eberhardt, Helmut, to Transportbeton-Beratungs-Gesellschaft mit beschrankter Haftung. Purification apparatus for water purification and purification system therefor. 4,069,143, Cl. 209-10.000.
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Frontier Machinery, Inc.: *See—*
Pringle, Ray T.; and Ames, Kenneth R., 4,068,679, Cl. 137-344.000.
Froome, Keith Davy; and Russell, George, to National Research Development Corporation. Distance measuring apparatus. 4,068,951, Cl. 356-5.000.
Frost, Donald L. Heavy-duty swivel arm-wrestler and exerciser. 4,068,843, Cl. 272-118.000.
Frye, George Joseph, to Tektronix, Inc. Stabilized high-efficiency sampling system. 4,069,447, Cl. 320-1.000.
Frymark, Norbert F.: *See—*
Bollinger, Parker A., Jr.; and Frymark, Norbert F., 4,069,464, Cl. 337-77.000.
Fuchs, Francis Joseph, Jr., to Western Electric Company, Inc. Apparatus and methods for forming multiple elongated products. 4,068,512, Cl. 72-41.000.
Fuchs, Francis Joseph, Jr., to Western Electric Company, Inc. Methods and apparatus for forming wire tapes. 4,068,517, Cl. 72-253.00R.
Fuji Electric Co., Ltd.: *See—*
Nagasawa, Ikuo; Mukae, Kazuo; Ishii, Takashi; and Tsuda, Koichi, 4,069,061, Cl. 106-73.200.
Fuji Jukogyo Kabushiki Kaisha: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
Dezawa, Shin-ichiro; Sasazawa, Koji; and Kitamoto, Tatsuji, 4,069,164, Cl. 252-62.620.
Hara, Hiroshi; and Kusaba, Hideyuki, 4,069,050, Cl. 96-60.00R.
Matsukawa, Hiroharu; and Hayashi, Takao, 4,069,353, Cl. 427-57.000.
Tadokoro, Eiichi; Aonuma, Masashi; and Tamai, Yasuo, 4,069,073, Cl. 148-105.000.
Tsubota, Motohiko; Hanai, Sosuke; Oishi, Yasushi; Sera, Hidefumi; and Yamamoto, Nobuo, 4,069,048, Cl. 96-3.000.
Fujie, Seijiro, to Pioneer Electronic Corporation. Method and apparatus for pilot signal cancellation in an FM multiplex demodulator. 4,069,398, Cl. 179-15.0BT.
Fujimura, Shigeru: *See—*
Sato, Fumio; Fujimura, Shigeru; and Urakawa, Toshio, 4,068,583, Cl. 101-93.040.
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Fulk, James B., to Paper Converting Machine Company. Method for manufacture of business forms. 4,068,973, Cl. 270-52.500.
Fullalove, Richard; and Spencer, Frederick, to Henry Simon Limited. Rollermills. 4,068,803, Cl. 241-32.000.
Furman, Edward R.: *See—*
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Furtado, Anthony E.: *See—*
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G. D. Searle & Co.: *See—*
Adelstein, Gilbert W., 4,069,223, Cl. 260-293.760.
Weier, Richard M., 4,069,219, Cl. 260-239.570.
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Gabano, Jean-Paul, to Saft-Societe des Accumulateurs Fixes et de Traction. Positive active material for primary batteries having high energy density. 4,069,373, Cl. 429-194.000.
Gabano, Jean-Paul, to Saft-Societe des Accumulateurs Fixes et de Traction. High energy density electric cells. 4,069,374, Cl. 429-197.000.
Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, to Rohm GmbH. Method for preparing glycol esters. 4,069,381, Cl. 560-1.000.
Gagle, Duane W.; and Draper, Homer L., to Phillips Petroleum Company. Roadway barrier structure and method of making. 4,068,968, Cl. 404-7.000.
Gall, Rudi: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Schaumann, Wolfgang; and Vomel, Wolfgang, 4,069,330, Cl. 424-267.000.
Ganaway, Franklin D.: *See—*
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Ganellin, Charon Robin: *See—*
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Gardiner, John Brooke; Hill, Max W.; and Ryer, Jack, to Exxon Research & Engineering Co. Haze free oil additive compositions containing polymeric viscosity index improver and process for producing said compositions. 4,069,162, Cl. 252-32.70E.
Gardner-Denver Company: *See—*
Fine, Gary J.; Herschler, Michael G.; and Shoop, John C., 4,068,980, Cl. 417-282.000.
Gardner, Jeffrey M., to Container Corporation of America. Cushioning insert. 4,068,793, Cl. 229-14.00C.
Garmire, Elsa: *See—*
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Garner, Lloyd L.; and Harris, Charles Richard, to Smith International, Inc. Extended nozzle and bit stabilizer and method of producing. 4,068,731, Cl. 175-339.000.
Garrett Corporation, The: *See—*
Wood, Palmer R.; and Rhoden, James A., 4,068,468, Cl. 60-39.140.
Garrett, Roger E., to University of California, The Regents of the. Radiation source shielding and collimating device. 4,069,423, Cl. 250-493.000.
Garvey, Edward N.: *See—*
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Gascoyne, John M.; Hems, Roger; and Spring, David J., to Wilkinson Sword Limited. Compositions having a physiological cooling effect. 4,069,345, Cl. 424-343.000.
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Gates, H. Gordon, to Gates & Sons, Inc. Clamping lock for tie rod ends. 4,068,818, Cl. 249-42.000.
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Gatewood, Sidney Ulane, to Borg-Warner Corporation. Automatic adjuster for clutch linkages. 4,068,750, Cl. 192-111.00A.
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, to W. R. Grace & Co. N,N-di-(hydroxybenzyl)-trimethylene diaminediacetic acids. 4,069,249, Cl. 260-519.000.
Gawelko, Leonard: *See—*
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Gaymar Industries Incorporated: *See—*
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Gazard, Maryse: *See—*
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Geers, Leo: *See—*
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GEL, Inc.: *See—*
Zito, Ralph, 4,069,371, Cl. 429-21.000.
Genakis, Joseph M., to Pollack, Benjamin D. Pin tumbler lock with pull resistant plug. 4,068,508, Cl. 70-364.00A.
Genakis, Joseph M., to Pollack, Benjamin D. Pin tumbler lock cylinder. 4,068,509, Cl. 70-364.00A.
General Atomic Company: *See—*
Arya, Satya Prakash, 4,068,692, Cl. 141-392.000.
General Bathroom Products Corporation: *See—*
Palka, James J., 4,069,450, Cl. 312-257.00R.

General Dynamics Corporation: *See—*
Decoppet, Jean-Pierre, 4,068,419, Cl. 52-40.000.
Parker, Clarence B.; McCray, Peter M.; and Taylor, L. Lamoyne, 4,069,482, Cl. 343-7.700.
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Bonnice, Phillip E., 4,068,416, Cl. 51-325.000.
Borman, Willem Frederik Hendrik; Craft, Donald Irving; and Kramer, Mortor, 4,069,278, Cl. 260-860.000.
Caulier, Paul W., 4,068,811, Cl. 246-169.00A.
Crivello, James V., 4,069,055, Cl. 96-115.00R.
Crivello, James V., 4,069,056, Cl. 96-115.00P.
Cushing, Donald S., 4,069,425, Cl. 134-57.00D.
Dawson, Charles W., 4,068,999, Cl. 425-392.000.
Greenhalgh, Milton Sharples, 4,069,286, Cl. 264-85.000.
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Losert, Gerhard K., 4,068,815, Cl. 248-188.200.
Lubowski, Stanley J.; and Swank, Robert K., 4,069,355, Cl. 427-70.000.
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General Motors Corporation: *See—*
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Podolan, Edward G.; Przybysz, Francis C.; and Jozefczak, Thadius F., 4,068,407, Cl. 49-215.000.
Geophysical Systems Corporation: *See—*
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Gernhardt, Paul D., to Slater Electric Inc. Threaded fastener mounting means. 4,069,448, Cl. 220-3.200.
Gerth, William V. Convertible furniture. 4,068,328, Cl. 5-13.000.
Geshner, Robert Andrew; and Sciambi, Louis Joseph, to RCA Corporation. Photomask dryer. 4,068,390, Cl. 34-239.000.
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Gey, Werner; Langhauser, Wolfgang; Heinze, Helmut; Rothe, Hans-Joachim; and Freund, Peter, to Zimmer Aktiengesellschaft. Process for the solid state polycondensation of linear polyesters. 4,069,194, Cl. 260-40.00R.
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Gibson, Harold: *See—*
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Giesecke, Hans D.; and Weems, Sterling J., to Westinghouse Electric Corporation. Steam generator with vertical tubesheets. 4,068,627, Cl. 122-34.000.
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Girard, Genevieve: *See—*
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Giuliani, Chester J., to UOP Inc. Hydrogen-producing hydrocarbon conversion with gravity-flowing catalyst particles. 4,069,135, Cl. 208-65.000.
Glaze, John W., Jr.; and Graves, Billy Mac, to Intech Corporation. Bi-component friction disc for yarn texturing. 4,068,457, Cl. 57-77.400.
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Glover, J. Raymond. Wood-frame glass door unit. 4,068,433, Cl. 52-207.000.
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Goings, Shelby H. Spraying system to control air-borne coal dust. 4,068,802, Cl. 239-419.500.
Goins, Robert R., to Phillips Petroleum Company. Blending of particulate materials. 4,068,828, Cl. 366-136.000.
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Goldenberg, Henry Robert; Peck, Richard John; Tong, Shih Yung; and Webb, David Allen, to Bell Telephone Laboratories, Incorporated. Dual speed full duplex data transmission. 4,069,392, Cl. 178-58.00R.
Goldman, Diana. Article of chidrens protective clothing in combination with an article of use. 4,068,313, Cl. 2-49.00R.
Goldstein, Harold, to Control Electronics Co., Inc. Electronic thermometer. 4,068,526, Cl. 73-362.0AR.
Goldsworthy, William B.; and Karlson, Harald E., to McDonnell Douglas Corporation. Method and apparatus for fabricating open weave scrim cloth. 4,068,357, Cl. 28-101.000.
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Hunter, Edward E., 4,068,617, Cl. 118-50.000.
Meyer, Glen E., 4,069,384, Cl. 560-91.000.
Gordon, Donald W.; and Robinson, Dar A. Disaster evacuation air cushion. 4,068,739, Cl. 182-139.000.
Gorling, Karl Goran; Edenwall, Ingvar A. O.; Jansson, Jan-Olof; and Mioen, Thomas K., to Boliden Aktiebolag. Method of recovering non-ferrous metals from sulphidic materials. 4,069,041, Cl. 75-101.00R.
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Green, Bernard J.; and Chorosevic, Jerome J., to Plumbium Manufacturing Corporation. Electronic wheel balancer apparatus and method. 4,068,532, Cl. 73-462.000.
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Greenwood, Arthur R., to UOP Inc. Hydrogen-producing hydrocarbon conversion with gravity-flowing catalyst particles. 4,069,134, Cl. 208-64.000.

Greenwood, Arthur R. Hydrogen-producing hydrocarbon conversion with gravity-flowing catalyst particles. 4,069,137, Cl. 208-65.000.
Greer, Edward M. Locking ring assembly for the liquid port of a pressure accumulator. 4,068,684, Cl. 138-30.000.
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Grihangne, Andre. Ground-reaction machines. 4,068,735, Cl. 180-128.000.
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Guerit, Pierre; and Pollet, Gilbert, to Servimetal. Method of drawing light metals and alloys at very high speeds. 4,068,513, Cl. 72-42.000.
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Gundelfinger, Richard, to Rheodyne Incorporated. Two position rotary valve for injecting sample liquids into an analysis system. 4,068,528, Cl. 73-422.0GC.
Gunther, Donald A., to American Sterilizer Company. Method of destroying pyrogens. 4,069,153, Cl. 210-64.000.
Gunther, William H., Jr., to Thor Dahl, Inc. Envelope opening machine. 4,069,011, Cl. 432-230.000.
Gurgiolo, Arthur E., to Dow Chemical Company, The. Process for preparation of β-hydroxy esters by reaction of organic carboxylic acids and vicinal epoxides. 4,069,242, Cl. 560-93.000.
Gutermuth, Hermann; and Hebel, Gerd, to Kohlensaeure-Werke Rudolf Buse Sohn, Firma. Process for the uninterrupted manufacture of plastic film tubing. 4,069,282, Cl. 264-28.000.
Gutner, Kenneth H. Canopy frame for bed. 4,068,333, Cl. 5-362.000.
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Harbulak, Edward P., to M & T Chemicals Inc. Electroplating of nickel, cobalt, mutual alloys thereof or ternary alloys thereof with iron. 4,069,112, Cl. 204-43.00T.
Harmon, G. Lamar. Controllable wing sail. 4,068,607, Cl. 114-102.000.
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Harney, Robert C.; and Bloom, Stewart D. Raman scattering method and apparatus for measuring isotope ratios and isotopic abundances. 4,068,953, Cl. 356-75.000.
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Heinlein, Joseph. Swimming pool surface debris skimmer and method. 4,068,327, Cl. 4-172.150.
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Helwig, Christopher Gordon, to Ferranti-Packard Limited. Blanking circuit for electromagnetic display. 4,069,480, Cl. 340-373.000.
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Herbst, Benjamin T. Side dump trailer with retractable chute. 4,068,891, Cl. 298-7.000.
Herold, Robert A., to United Technologies Corporation. Method for positioning a strongback. 4,068,702, Cl. 164-30.000.
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Jarman, David J., to Continental M.D.M., Inc. Shear front feed system. 4,068,753, Cl. 198-373.000.

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Humphrey, Frederick H.; and Jarvis, James J., 4,068,777, Cl. 220-1.00B.
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Ferraro, Charles F.; Javick, Richard A.; and Robertson, James A., 4,069,184, Cl. 260-29.20N.
Jegousse, Michel J., to Compagnie Francaise des Petroles; Etudes Petrolieres Marines, Societe; Ateliers et Chantiers de Bretagne; Compagnie Maritime d'Expertises; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS); and Entreprise de Recherches et d'Activites Petrolieres (E.R.A.P.). Method and apparatus for assembling and laying underwater pipeline. 4,068,490, Cl. 61-108.000.
Jenkinson, David Charles, to Comalco Aluminium (Bell Bay) Limited. Aluminum-silicon alloys, cylinder blocks and bores, and method of making same. 4,068,645, Cl. 123-193.00C.
Jennings, Mansel A.: *See—*
Young, William O., Jr.; and Jennings, Mansel A., 4,068,789, Cl. 226-3.000.
Jerling, Curt; Olsson, Hans; and Veiback, Torgny, to Norbergs Mekaniska Verkstads AB. Method and an apparatus for preparing a platform for bottom casting. 4,068,447, Cl. 52-749.000.
Jettmar, Werner: *See—*
Nett, Robert; Fechner, Wolf Dieter; Jettmar, Werner; Polster, Rudolf; Sappok, Reinhard; and Hartmann, Eduard, 4,069,064, Cl. 106-193.00P.
Jim Walter Corporation: *See—*
Wood, Edward H., 4,068,406, Cl. 49-181.000.
Jim Walter Resources, Inc.: *See—*
Orem, Henry Philip; Hart, David R.; and Hill, Jerry E., 4,069,220, Cl. 544-186.000.
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Batts, Robert Lee, 4,068,619, Cl. 118-122.000.
Johnson, Alexander Lawrence, to Du Pont de Nemours, E. I., and Company. 1-(2-Carboxyaryl)-3-aryl-1,2,4-triazoles and use as herbicides. 4,069,035, Cl. 71-76.000.
Johnson, Ben C.; and Band, Pieter, to Thermon Manufacturing Company. Mounting apparatus. 4,068,966, Cl. 403-397.000.
Johnson, Bennie R.; and Cox, Gary L. Handle hinge to transfer lifting force in a direction parallel and normal to mounting wall. 4,068,347, Cl. 16-112.000.
Johnson, Dennis L. Metered fuel injection apparatus. 4,068,641, Cl. 123-139.00A.
Johnson, George C.; and Schweizer, Albert E., to Mobil Oil Corporation. Phosphate ore recovery. 4,069,144, Cl. 209-11.000.
Johnson, Harvey C., Jr. Utility rack. 4,068,760, Cl. 211-74.000.
Johnson, Isaiah W.: *See—*
Moore, Larry D.; Johnson, Isaiah W.; and Thompson, Charley L., Jr., 4,068,668, Cl. 128-330.000.
Johnson, Larry Albin: *See—*
Bell, Terry Lee; Call, Lyle G.; Dillan, George Omer; Jackson, James Phillip, Jr.; and Johnson, Larry Albin, 4,068,373, Cl. 29-741.000.
Johnson, Milton J.: *See—*
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Johnson, William Henry: *See—*
Hassall, Cedric Herbert; Johnson, William Henry; Krohn, Antonin; Smithen, Carey Ernest; and Thomas, William Anthony, 4,069,229, Cl. 260-308.00R.
Johnson, William R., to Peerless Portable Metal Building. Free standing fireplace stove. 4,068,649, Cl. 126-120.000.
Johnston, Chester C., Jr.: *See—*
Hessert, James E.; Bertus, Brent J.; and Johnston, Chester C., Jr., 4,068,720, Cl. 166-282.000.
Johnston, James D.: *See—*
United States of America, National Aeronautics and Space Administration; Kersten, Leendert; and Johnston, James D., 4,068,763, Cl. 214-1.0CM.
Johnston, Peter J.: *See—*
Rakow, Wallace J.; Millette, Elmer J.; and Johnston, Peter J., 4,068,330, Cl. 5-267.000.
Joice, Richard L. Universal bag-making machine. 4,068,566, Cl. 93-8.00R.
Jolivet, Jean-Claude; and Stouls, Francois-Xavier Antoine, to Societe Anonyme de Telecommunications. Digital transmission method for coded video signals. 4,069,504, Cl. 358-142.000.
Jones, Frederick L., to Monarch Marking Systems. Compositions and methods relating to transfer processes. 4,069,179, Cl. 260-23.00R.
Jones, Howard; Yang, Shu Shu; and Jacobus, David P., to Merck & Co., Inc. Blocked cholecalciferol and dihydrotachysterol 3 derivatives. 4,069,321, Cl. 424-236.000.
Joseloff, Stanley: *See—*
Bewerse, Richard A.; and Joseloff, Stanley, 4,068,451, Cl. 53-385.000.
Joshi, Kailash Chandra, to International Business Machines Corporation. Studded heat exchanger for integrated circuit package. 4,069,498, Cl. 357-81.000.
Jost, Ernest M.; Reenstra, Arthur L.; and Trenkler, George, to Texas Instruments Incorporated. Transducer. 4,068,527, Cl. 73-704.000.
Jozefczak, Thadius F.: *See—*
Podolan, Edward G.; Przybysz, Francis C.; and Jozefczak, Thadius F., 4,068,407, Cl. 49-215.000.
Jutte, Hans: *See—*
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K. E. Ellis Holdings Pty. Ltd.: *See—*
Kelsey, Christopher George, 4,068,476, Cl. 60-671.000.
Kablaoui, Mahmoud S.; Larkin, John M.; and Reid, Robert E., to Texaco Inc. Preparation of acylisoxazolines. 4,069,226, Cl. 260-307.00F.
Kabs, Klaus: *See—*
Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, 4,069,381, Cl. 560-1.000.
Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,068,584, Cl. 101-103.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
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Parkes, David M.; and Shaw, John D., 4,068,755, Cl. 198-557.000.
Kajima Corporation: *See—*
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Kakiuchi, Akio: *See—*
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Kalns, Arvids. Concrete slab forming machine. 4,068,990, Cl. 425-64.000.
Kaloi, Cyril M., to United States of America, Navy. Coupled fed magnetic microstrip dipole antenna. 4,069,483, Cl. 343-700.0MS.
Kamata, Shohichi; Kimura, Yoshinori; and Sakuragi, Johii, to Tokyo Shibaura Electric Co., Ltd. Foreground subject-identifying apparatus. 4,069,472, Cl. 340-146.30K.
Kamei, Siro; Takeda, Kenzo; Takahashi, Mitsunao; and Nakano, Jiro, to Nippon Crucible Co., Ltd.; Teikoku Kako Co., Ltd.; and Nippon Steel Corporation. Monolithic refractory materials. 4,069,057, Cl. 106-55.000.
Kamienski, Conrad W.; McElroy, Bobby Joe; and Bach, Ricardo O., to Lithium Corporation of America. Stable diorganomagnesium compositions. 4,069,267, Cl. 260-665.00R.
Kaminski, Perry W., to Texas Instruments Incorporated. Method of making pushbutton keyboard system. 4,068,369, Cl. 29-622.000.
Kamohara, Hideaki; Nakatui, Toji; Yoshitomi, Yuji; Sasaki, Iwao; and Shimada, Kenji, to Hitachi, Ltd. Tube expander. 4,068,372, Cl. 29-727.000.
Kamp, Walter B.: *See—*
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Kanai, Kazumichi; Kimura, Tetsuo; and Fukui, Akito, to Mitsui Toatsu Chemicals, Incorporated; and Toyo Engineering Corporation of Japan. Process for the production of water-free molten urea. 4,069,253, Cl. 260-555.00C.
Kanaida, Yoshio; Kataoka, Ryuji; and Imai, Kuniji, to Fuji Jukogyo Kabushiki Kaisha. Internal combustion engine. 4,068,632, Cl. 123-117.00A.
Kanaoka, Masazumi; Ogawa, Daisuke; Iwayama, Kazuyoshi; and Kihara, Makoto, to Toray Industries, Inc. Adsorbent for aromatic hydrocarbon mixture separation. 4,069,172, Cl. 252-455.00Z.
Kaneko, Yasuhisa: *See—*
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Kansai Paint Company, Limited: *See—*
Shibata, Minoru; Iwasawa, Naozumi; Watanabe, Tadashi; and Yoshihara, Ichiro, 4,069,274, Cl. 260-836.000.
Karasudani, Yasuo; and Haraikawa, Tetsuo, to Tokico Ltd. Disc brake support structure. 4,068,743, Cl. 188-71.100.
Karg, Gerhart: *See—*
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Karlson, Harald E.: *See—*
Goldsworthy, William B.; and Karlson, Harald E., 4,068,357, Cl. 28-101.000.
Karlsson, Sven Arne Lennart. Apparatus enabling disabled persons to move independently. 4,068,857, Cl. 280-259.000.
Karna, John D.; Brock, Gregory K.; and Shellhammer, Daniel M., to Weyerhaeuser Company. Explosive gas monitoring method and apparatus. 4,069,018, Cl. 23-232.00E.
Karon, Marc Alan: *See—*
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Karp, Joel A.: *See—*
Boettcher, Charles E.; Karp, Joel A.; Reed, John A.; and Varadi, Andrew G., 4,069,474, Cl. 365-205.000.
Karplus, Robert: *See—*
Montgomery, Marshall A.; and Karplus, Robert, 4,068,392, Cl. 35-19.00R.
Karrer, Friedrich, to CIBA-GEIGY Corporation. Insecticidal substituted phenyl derivatives. 4,069,344, Cl. 424-324.000.
Kasai, Masanao; Oikawa, Youko; Ito, Hiroshi; and Matsuno, Hiroshi, to Canon Kabushiki Kaisha. Recording member and process for recording. 4,069,487, Cl. 346-76.00L.
Kashiwa, Norio: *See—*
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Kasle Steel Corporation: *See—*
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Kataoka, Ryuji: *See—*
Kanaida, Yoshio; Kataoka, Ryuji; and Imai, Kuniji, 4,068,632, Cl. 123-117.00A.

Kato, Kunio: *See—*
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Kato, Masayoshi: *See—*
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Kato, Toyohiko: *See—*
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Kauffman, William J.; and Quinn, Edwin J., to Armstrong Cork Company. Fire retardant polyisocyanurate and polyurethane foams having reduced smoke levels and method for producing same. 4,069,173, Cl. 260-2.5AJ.

Kawada, Seigo; Ohta, Nobuya; and Sakamoto, Akira, to Kumial Chemical Industry Co., Ltd. Agricultural germicidal composition. 4,069,335, Cl. 424-274.000.

Kawai, Masanori; and Kobayashi, Shinkichi, to Kabushiki Kaisha Suwa Seikosha. Quartz crystal oscillator. 4,069,434, Cl. 310-348.000.

Kawai, Mitsuo: *See—*
Sakai, Toshimitsu; Kawai, Mitsuo; and Mizuno, Kiyohumi, 4,068,543, Cl. 74-866.000.

Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Nippondenso Kabushiki Kaisha. Ignition system for internal combustion engines. 4,068,633, Cl. 123-117.00A.

Kayser, Detlev: *See—*
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Keep, Henry, Jr. Heat treating appliance and cable. 4,069,410, Cl. 219-535.000.

Kelley Company, Inc.: *See—*
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Kelly, Charles A.: *See—*
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Kelsey, Christopher George, to Brown, Andrew Graham; and K. E. Ellis Holdings Pty. Ltd. Solar driven power unit. 4,068,476, Cl. 60-671.000.

Kelsey-Hayes Co.: *See—*
Doerfler, Roger E.; and Willi, Gary A., 4,068,900, Cl. 303-6.00C.

Kennametal Inc.: *See—*
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Kennard, Dwight Clinton, Jr.; and Kennard, James Clinton. Pickup truck derrick. 4,068,762, Cl. 212-49.000.

Kennard, James Clinton: *See—*
Kennard, Dwight Clinton, Jr.; and Kennard, James Clinton, 4,068,762, Cl. 212-49.000.

Kennedy, Clifford F.: *See—*
Bourdon, Leo; Burley, Richard K.; and Kennedy, Clifford F., 4,068,653, Cl. 126-271.000.

Kenney, Harold E.; and Donahue, Edward T., to United States of America, Agriculture. Lubricant composition. 4,069,163, Cl. 252-46.700.

Kenny, Garry R.: *See—*
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Kenrich Petrochemicals, Inc.: *See—*
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Kernen, Jean-Louis: *See—*
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Kerr-McGee Chemical Corporation: *See—*
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Kervalishvili, Zurab Yasonovich: *See—*
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Kidder, Raymond W. Method of making plastic optical fibers. 4,069,280, Cl. 264-1.000.

Kidoh, Kunizoh; Wakamori, Hideki; Asai, Genzo; and Kusida, Kazuo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Densification of particulate porous fluorinated resins. 4,069,291, Cl. 264-342.00R.

Kihara, Makoto: *See—*
Kanaoka, Masazumi; Ogawa, Daisuke; Iwayama, Kazuyoshi; and Kihara, Makoto, 4,069,172, Cl. 252-455.00Z.

Kikuchi, Takefusa. Automatic drum gripper. 4,068,880, Cl. 294-90.000.

Kikumoto, Ryoji: *See—*
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Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,318, Cl. 424-177.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,323, Cl. 424-244.000.
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; and Tonomura, Shinji, 4,069,329, Cl. 424-267.000.

Kimmel, Richard L.; Kamp, Walter B.; and Aasgaard, Alvin L. P., III. Rotary cutting assembly. 4,068,377, Cl. 30-276.000.

Kimura, Tetsuo: *See—*
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Kimura, Yoshinori: *See—*
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King Baby Corporation: *See—*
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King, Richard J. Two part plastic reel. 4,068,808, Cl. 242-118.400.

Kings Electronics Company, Inc.: *See—*
Iacono, Frederick Della; Trustman, Allen; and LeVine, Donald J., 4,068,916, Cl. 339-177.00R.
Lodato, Alphonso; Cornacchio, Americo; and Fox, Edward M., 4,068,911, Cl. 339-90.00R.

Kingston-Warren Corporation, The: *See—*
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Kirsch, Reinhard: *See—*
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Kito, Hidetoshi, to Rank Xerox Ltd. Variable platen cover. 4,068,950, Cl. 355-75.000.

Klas, Kenneth H.: *See—*
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Klein, Howard Paul, to Texaco Development Corporation. Brominated ester-containing polyols. 4,069,207, Cl. 260-75.00H.

Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Preparation of phosphonic and/or phosphinic acids. 4,069,247, Cl. 260-502.40R.

Kleiner, Hans-Jerg: *See—*
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Kliment, Lubomir: *See—*
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Klimo, Robert G., to Towmotor Corporation. Bypass control for a solid state switching device. 4,069,445, Cl. 318-139.000.

Knight, William S.: *See—*
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Knit-Fin Machinery Ltd.: *See—*
Aronoff, Edward I.; and McLay, William J., 4,068,501, Cl. 68-19.100.

Knutsen, Tryggve Lund; and Osterman, Sven-Olof, to Astra Protein Products AB. Process for removing solvent from proteinaceous material. 4,068,388, Cl. 34-36.000.

Kobane, John, Jr.: *See—*
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Kobayashi, Eiji: *See—*
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Kobayashi, Kazunobu: *See—*
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Kobayashi, Shigeru: *See—*
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Kobayashi, Tohru: *See—*
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Kobzan, John, to Dacor Corporation. Constant volume buoyancy compensation system. 4,068,657, Cl. 128-142.00R.

Koester, Richard H., to Singer Company, The. Filmstrip cartridge with film lock. 4,068,809, Cl. 242-197.000.

Koester, Richard H.; and Hickey, Roy E., to Singer Company, The. Backlash free lens focusing apparatus. 4,068,935, Cl. 353-71.000.

Kohlensaeure-Werke Rudolf Buse Sohn, Firma: *See—*
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Kohno, Yoshiki: *See—*
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Masunaga, Midori; Kohno, Yoshiki; and Hasegawa, Hiroshi, 4,069,166, Cl. 252-63.000.

Kohorn, Alfred O. Knitting machine needle with front and back cutouts and spring. 4,068,500, Cl. 66-123.000.

Koike, Toshihiko: *See—*
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Komatsu, Tadaaki; Takeda, Hirokazu; Oshio, Hideki; Matsuoka, Kimiaki; and Aramaki, Minoru, to Central Glass Company, Limited. Process for the preparation of fluorine-rich organic compounds containing one or two carbon atoms. 4,069,266, Cl. 260-653.000.

Komoto, Robert G., to Chevron Research Company. Dimerization of linear alpha-olefins. 4,069,273, Cl. 260-683.15D.

Konig, Eberhard, to Bodenseewerk Perkin-Elmer & Co. GmbH. Method and apparatus for automatically performing series analyses. 4,068,529, Cl. 73-423.00A.

Konishiroku Photo Industry Co., Ltd.: *See—*
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Mayama, Masayoshi; Kobayashi, Tohru; and Tamura, Masahide, 4,069,053, Cl. 96-87.00A.

Kopachkov, Slavco A., to Rothmans of Pall Mall Canada Limited. Machine for applying liquid to absorbent material. 4,068,614, Cl. 118-6.000.

Koppelman, Edward; and Murray, Robert G., to Koppelman, Edward. Continuous thermal reactor system and method. 4,069,107, Cl. 201-12.000.

Kori, Seiji: *See—*
Hayashi, Masaki; Kori, Seiji; and Shimoji, Katsuichi, 4,069,387, Cl. 560-121.000.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Fluoroaliphaticsulfonyl substituted ethylenes substituted by furyl, thenyl, or 1H-pyrrolyl groups. 4,069,233, Cl. 260-347.200.

Kotani, Yasuhiro, to Sharp Kabushiki Kaisha. Light collector means for irradiating a liquid crystal display device. 4,068,924, Cl. 350-160.0LC.

Kouchich, Allan V.; and Marshall, Robert, to Allen-Bradley Company. Cylindrical varistor and method of making the same. 4,069,465, Cl. 338-20.000.

Kovitch, Frank J.: *See—*
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Kowal, Leonard J.; and Garvey, Edward N., to Gould Inc. Flaring tool. 4,068,515, Cl. 72-115.000.

Kowalski, John Lawrence, to Honeywell Information Systems Inc. Reusable fixture for an integrated circuit chip. 4,069,496, Cl. 357-70.000.

Kraft, Inc.: *See—*
Blaetz, Philip H., 4,068,832, Cl. 366-280.000.

Krahulec, Fred: *See—*
Butler, Walker; and Krahulec, Fred, 4,068,538, Cl. 74-5.220.

Kramer, Daniel: *See—*
Micai, William; and Kramer, Daniel, 4,068,493, Cl. 62-194.000.

Kramer, Daniel E. Power saving capacity control for air cooled condensers. 4,068,494, Cl. 62-196.00B.

Kramer, Mortor: *See—*
Borman, Willem Frederik Hendrik; Craft, Donald Irving; and Kramer, Mortor, 4,069,278, Cl. 260-860.000.

Kramer Trenton Company: *See—*
Micai, William; and Kramer, Daniel, 4,068,493, Cl. 62-194.000.

Krascella, Nicholas Leo: *See—*
Meyerand, Russell Gilbert, Jr.; Krascella, Nicholas Leo; and McMahon, David Gue, 4,069,120, Cl. 204-129.000.

Krasser, Fritz; and Sell, William F., to Ellenberger & Poensgen GmbH. Method of forming elements of insulating material on a bimetal strip. 4,069,289, Cl. 264-157.000.

Krebs, Klaus, to hoechstmass Balzer GmbH & Co. Tape measure reel. 4,068,383, Cl. 33-138.000.

Kreitz, Lloyd D. Extension table for power saws. 4,068,551, Cl. 83-471.300.

Krieg, Harold Patrick: *See—*
Beaudette, Real J.; and Krieg, Harold Patrick, 4,069,403, Cl. 200-51.120.

Krohn, Antonin: *See—*
Hassall, Cedric Herbert; Johnson, William Henry; Krohn, Antonin; Smithen, Carey Ernest; and Thomas, William Anthony, 4,069,229, Cl. 260-308.00R.

Krull, Frank B. Tool for transferring powdered material from one container to another. 4,068,689, Cl. 141-93.000.

Kucharewski, Nicholas, to RCA Corporation. Amplifier circuit. 4,069,431, Cl. 307-355.000.

Kudlacek, Dusan: *See—*
Machacek, Frantisek; Bezemek, Vladislav; Kudlacek, Dusan; Kliment, Lubomir; Pirek, Arnost; Smejkal, Vladimir; Svoboda, Frantisek; and Vach, Stanislav, 4,068,320, Cl. 2-227.000.

Kudryavtseva, Tamara Nikolaevna: *See—*
Movshovich, Pavel Mikhailovich; Maximov, Gennady Konstantinovich; Khavkin, Viktor Pavlovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Afanasiev, Vladimir Konstantinovich; Kudryavtseva, Tamara Nikolaevna; and Nezelenov, Sergei Vladimirovich, 4,068,459, Cl. 57-156.000.

Kuhn, Franz Josef: *See—*
Langbein, Adolf; Danneberg, Peter; and Kuhn, Franz Josef, 4,069,331, Cl. 424-267.000.

Kulesza, Ralph J.: *See—*
Kuna, Wayne A.; Kulesza, Ralph J.; and Barlow, Gordon A., 4,068,841, Cl. 272-8.00R.

Kullman, Thomas D., Jr., to Consolidated Packaging Corporation. Container with integral corner posts. 4,068,796, Cl. 229-49.000.

Kumar, Vijayendra, to Du Pont de Nemours, E. I., and Company. Woven carpet backing with fused staple fiber needled layer. 4,069,361, Cl. 428-95.000.

Kumial Chemical Industry Co., Ltd.: *See—*
Kawada, Seigo; Ohta, Nobuya; and Sakamoto, Akira, 4,069,335, Cl. 424-274.000.

Kuna, Wayne A.; Kulesza, Ralph J.; and Barlow, Gordon A., to Marvin Glass & Associates. Illusion apparatus. 4,068,841, Cl. 272-8.00R.

Kuno, Toshihiko: *See—*
Sato, Kimihiko; Sajima, Yasuo; Kuno, Toshihiko; and Ohbe, Harumi, 4,069,129, Cl. 204-258.000.

Kunz, Robert Allison, to Du Pont de Nemours, E. I., and Company. Preparation of 2-fluoronitrobenzene. 4,069,262, Cl. 260-646.000.

Kuraray Co., Ltd.: *See—*
Kyo, Sunao; Hayashi, Katsuhiko; Tanaka, Hidetsugu; and Oka, Hideaki, 4,069,261, Cl. 260-635.00E.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Kidoh, Kunizoh; Wakamori, Hideki; Asai, Genzo; and Kusida, Kazuo, 4,069,291, Cl. 264-342.00R.
Nishita, Sadao; Enomoto, Satoru; Wada, Hisayuki; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,069,211, Cl. 260-77.5MA.

Kurita, Takaji: *See—*
Kushima, Teizo; Kurita, Takaji; and Mizunoe, Hiroaki, 4,068,936, Cl. 355-1.000.

Kurozu, Toshio; Yamada, Shinjiro; and Miyashita, Norio, to Mitsui Mining & Smelting Co., Ltd.; and Honda Motor Co., Ltd. Seat lock device. 4,068,890, Cl. 297-355.000.

Kusaba, Hideyuki: *See—*
Hara, Hiroshi; and Kusaba, Hideyuki, 4,069,050, Cl. 96-60.00R.

Kushima, Teizo; Kurita, Takaji; and Mizunoe, Hiroaki, to Minolta Camera Kabushiki Kaisha. Optical projection apparatus for image transfer type electrophotographic copiers. 4,068,936, Cl. 355-1.000.

Kusida, Kazuo: *See—*
Kidoh, Kunizoh; Wakamori, Hideki; Asai, Genzo; and Kusida, Kazuo, 4,069,291, Cl. 264-342.00R.

Kyo, Sunao; Hayashi, Katsuhiko; Tanaka, Hidetsugu; and Oka, Hideaki, to Kuraray Co., Ltd. Process for the production of polyhydric alcohols. 4,069,261, Cl. 260-635.00E.

L. D. Schreiber Cheese Company, Inc.: *See—*
Bush, Robert G., 4,069,348, Cl. 426-119.000.

Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Power paint blend of an epoxy and hydroxy-functional copolymer and an anhydride-functional copolymer. 4,069,275, Cl. 260-836.000.

Lai, San-Cheng, to Rockwell International Corporation. Method of electrochemically forming a lithium silicon iron alloy electrode. 4,069,111, Cl. 204-39.000.

Laliberte, Robert: *See—*
Chayer, Brigitte S., 4,068,321, Cl. 2-227.000.

Lamb, James O.: *See—*
Duff, Donald R.; Lamb, James O.; and Pezzolo, Donald E., 4,068,462, Cl. 58-23.0AC.

Lamos, Richard Allen, to International Business Machines Corporation. Paper hold-down device for collector. 4,068,837, Cl. 271-173.000.

Landi, Henry Patrick: *See—*
Meyers, Marion Douglas; and Landi, Henry Patrick, 4,068,928, Cl. 350-160.00R.

Landwehrkamp, Hans, to Schubert & Salzer. Open-end spinning device. 4,068,456, Cl. 57-58.890.

Lane, Noel W., Jr. Float tether terminator. 4,068,479, Cl. 61-5.000.

Lang, Armin; and Fassbender, Rolf, to Zahnradfabrik Friedrichshafen AG. Valve for hydraulic systems. 4,068,678, Cl. 137-100.000.

Langbein, Adolf; Merz, Herbert; Walther, Gerhard; and Stockhaus, Klaus, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing an N-(furyl-methyl)-2'-hydroxy-5,9,9-trimethyl benzomorphan and method of use. 4,069,328, Cl. 424-266.000.

Langbein, Adolf; Danneberg, Peter; and Kuhn, Franz Josef, to Boehringer Ingelheim GmbH. N-(p-fluorobenzoyl-n-propyl)-4-piperidylamides and salts thereof. 4,069,331, Cl. 424-267.000.

Lange, Daniel J., to P. D. George Company, The. Imino acids and resins derived therefrom. 4,069,209, Cl. 260-75.00N.

Lange, Fritz-Walter; Jacobi, Haireddin; and Muller, Jens, to Chemisches Laboratorium Fritz-Walter Lange GmbH & Co KG. (2-Oxo-pyrrolidines)-acetic hydrazides. 4,069,336, Cl. 424-274.000.

Langguth, Harvard H. Machine for uprooting tree stumps and trees. 4,068,396, Cl. 37-2.00R.

Langhauser, Wolfgang: *See—*
Gey, Werner; Langhauser, Wolfgang; Heinze, Helmut; Rothe, Hans-Joachim; and Freund, Peter, 4,069,194, Cl. 260-40.00R.

Langreney, Francois. Apparatus for the continuous crystallization of sugar. 4,069,065, Cl. 127-15.000.

Laniel, Joseph M.: *See—*
Montjallard, Paul Rene; Laniel, Joseph M.; and Gay-Chatain, Guillaume A., 4,068,557, Cl. 89-33.00E.

Lanoie, Paul Emile. Apparatus for producing pieces of eggs. 4,068,570, Cl. 99-353.000.

Lantzsch, Reinhard; and Arlt, Dieter, to Bayer Aktiengesellschaft. Process for preparing 2-acetyl-3-methyl-1,3-butadiene. 4,069,257, Cl. 260-595.000.

Lapp, Robert: *See—*
Olsen, Samuel R.; and Lapp, Robert, 4,068,565, Cl. 93-1.100.

Larkin, John M.: *See—*
Kablaoui, Mahmoud S.; Larkin, John M.; and Reid, Robert E., 4,069,226, Cl. 260-307.00F.

Larko, Robert C.: *See—*
Smith, Jonathan; Larko, Robert C.; and Booth, Eugene E., 4,069,007, Cl. 432-3.000.

Lasko, John A. Pipe joint. 4,068,863, Cl. 285-39.000.
Lauck, Helmut, to Varta Batterie Aktiengesellschaft. Manufacture of galvanic elements having lithium or calcium electrodes. 4,069,375, Cl. 429-218.000.
Lauder, Brian Tait; and Rolfe, John Robert Kenneth, to British Petroleum Company Limited, The. Hydrocarbon separating process. 4,069,142, Cl. 208-310.00Z.
Laurent, Daniel; and Felten, Alain, to Secmer S.A. Head for mixing and discharging at least two ingredients. 4,068,829, Cl. 366-177.000.
Lavenu, Jean Claude: *See—*
Dubois, Jean Claude; Gazard, Maryse; Duchesne, Claude; and Lavenu, Jean Claude, 4,068,919, Cl. 350-96.0WG.
Lawrence, Bryan, to Deciduous Fruit Board, The. Container particularly, but not exclusively for use in shipping perishables. 4,068,794, Cl. 229-23.00R.
Layer, Robert Wesley; and Son, Pyong-Nae, to B.F. Goodrich Company, The. Substituted decahydroquinolines and their use as ultraviolet light stabilizer. 4,069,195, Cl. 260-45.8NW.
Le Joint Francais: *See—*
Anglade, Jacques, 4,068,852, Cl. 277-34.300.
Leather, Richard B. Boat conversion device. 4,068,611, Cl. 115-24.100.
Leatherman, I. Roger; and Misura, Michael S., to PPG Industries, Inc. Tungsten hexacarbonyl in plastic lenses. 4,069,168, Cl. 252-300.000.
Leddy, Jerome R. Automotive ignition tool. 4,068,647, Cl. 123-198.00R.
Ledesma, Thomas. Athletic knee guard. 4,068,312, Cl. 2-24.000.
Lee, J. Spencer, to Santa Barbara Research Center. Feedback capacitor divider. 4,069,459, Cl. 330-107.000.
Leeves, Geoffrey Gordon, to Pandrol Limited. Driving of rail clips in making a railway rail-and-fastening assembly. 4,068,593, Cl. 104-1.00R.
Lefebvre, Pascal, to Automobiles Peugeot. Device for controlling accessories driven by the engine of a vehicle having an assisted steering. 4,068,477, Cl. 60-698.000.
Lefever, Kenneth Winans. Liquid storage systems. 4,068,480, Cl. 61-0.500.
Le Fustec, Richard: *See—*
Aboulafia, Joseph; Le Fustec, Richard; and Schranz, Claude, 4,069,287, Cl. 264-140.000.
Legler, George, to Precision Mfg Inc-Fabrication Precision Inv. Divider screen. 4,068,700, Cl. 160-351.000.
Le Guelennec, Emile. Manure crushing and earth mixing rotary machine. 4,068,722, Cl. 172-123.000.
Lehman, Albert L., to A. Finkl & Sons Co. Method for desulfurization using arc heat under vacuum. 4,069,039, Cl. 75-12.000.
Leibundgut, Max, to Alos AG. Microfilm viewer having enlarged copy production attachment. 4,068,944, Cl. 355-45.000.
Leichle, Claude: *See—*
Lombard, Claude; and Leichle, Claude, 4,068,631, Cl. 123-117.00D.
Leike, Helmut, to Raytheon Company. Digital bit image memory system. 4,069,511, Cl. 364-200.000.
Lemkey, Franklin D.; and Golden, Gerald S., to United Technologies Corporation. Metallic fibrous skeletal catalysts and process for producing them. 4,069,171, Cl. 252-454.000.
LeNir, Victor Louis, to Northern Telecom Limited. Control for wire coating line. 4,068,615, Cl. 118-6.000.
Lenz, Leonard L., to American Mobile Corporation. Safety device for mobile work platform lift. 4,068,737, Cl. 182-63.000.
LeRoy, Pierre L., to New Research and Development Lab., Inc. Surgical retractor and sponge carrying assembly. 4,068,655, Cl. 128-20.000.
Leutheuser, Harold H., to Alson's Corporation. Pulsating jet spray head. 4,068,801, Cl. 239-102.000.
Levaillant, Claude: *See—*
Bensussan, Andre; and Levaillant, Claude, 4,069,456, Cl. 328-165.000.
LeVine, Donald J.: *See—*
Iacono, Frederick Della; Trustman, Allen; and LeVine, Donald J., 4,068,916, Cl. 339-177.00R.
Levy, Albert: *See—*
Canard, Pierre; and Levy, Albert, 4,069,188, Cl. 260-29.70T.
Lewis, Richard; and Parker, Michael J., to British Steel Corporation. Ultrasonic inspection of articles. 4,068,524, Cl. 73-598.000.
Lewis, Richard: *See—*
Hetherington, Matthew J.; Lewis, Richard; and Goode, Graham E., 4,068,523, Cl. 73-628.000.
Lewis, Roger N.; Pastorino, Ronald L.; and Wilts, James F., to Argus Chemical Corporation. Thermally stable high molecular weight acyl peroxycarbonic esters. 4,069,239, Cl. 260-463.000.
Licata, Bernard M.: *See—*
Bacon, David C., 4,068,465, Cl. 58-50.00R.
Lichti, Robert D., to CraneVeyor Corporation. Shaft coupling. 4,068,965, Cl. 403-313.000.
Lichtman, Allan S.; and Lichtman, Rosemary R. Professional malpractice board game apparatus. 4,068,848, Cl. 273-257.000.
Lichtman, Rosemary R.: *See—*
Lichtman, Allan S.; and Lichtman, Rosemary R., 4,068,848, Cl. 273-257.000.
Liebetanz, Erich, deceased: *See—*
Mannsfeld, Sven Peter; Pfeiffer, Arno; Tanner, Herbert; Wagner, Hans; and Liebetanz, Erich, deceased, 4,069,251, Cl. 260-534.00S.
Liebetanz, Eva Angela, heiress: *See—*
Mannsfeld, Sven Peter; Pfeiffer, Arno; Tanner, Herbert; Wagner, Hans; and Liebetanz, Erich, deceased, 4,069,251, Cl. 260-534.00S.
Lillethorup, Ben W., to Reynolds Metals Company. Framing joint construction and clip therefor. 4,068,440, Cl. 52-301.000.
Lin, Henry C., to Hooker Chemicals & Plastics Corporation. Process for directed chlorination of alkylbenzenes. 4,069,263, Cl. 260-650.00R.
Lin, Henry C., to Hooker Chemicals & Plastics Corporation. Process for directed chlorination of alkylbenzenes. 4,069,264, Cl. 260-650.00R.
Lin, Luke C.; and Schrager, Morton, to Xerox Corporation. Transfer of photoelectrophoretic images. 4,069,047, Cl. 96-1.400.
Linner, Hans Rolf Ingemar, to AB Akerlund & Rausing. Carton sealing strip applicator. 4,069,093, Cl. 156-522.000.
Lionetti, Thomas A.; Miller, Kenneth D.; and Parker, Levi C., to Texaco Inc. Process for recovering fuel oil from topped crude. 4,069,141, Cl. 208-309.000.
Liston, Kenneth D., Jr.: *See—*
Lukkarila, Jeffrey Reed; and Liston, Kenneth D., Jr., 4,068,847, Cl. 273-85.00R.
Lithium Corporation of America: *See—*
Kamienski, Conrad W.; McElroy, Bobby Joe; and Bach, Ricardo O., 4,069,267, Cl. 260-665.00R.
Little, Joseph P., Jr., to Caterpillar Tractor Co. Fuel ratio control with manually operated air override. 4,068,642, Cl. 123-140.0MP.
Loctite Corporation: *See—*
DeMarco, JoAnn, 4,069,378, Cl. 526-328.000.
Lodato, Alphonso; Cornacchio, Americo; and Fox, Edward M., to Kings Electronics Company, Inc. Washer and connector assembly. 4,068,911, Cl. 339-90.00R.
Lodholz, John C.; and Straus, P. Barry, to FMC Corporation. Control device for dual flow clarifiers. 4,069,150, Cl. 210-112.000.
Loeber, Frederick W.; and Russo, Louis, to Ameron, Inc. Rear stepper assembly for a pipe handling vehicle. 4,068,764, Cl. 214-1.0PA.
Loewe, Heinz; Urbanietz, Josef; Duwel, Dieter; and Kirsch, Reinhard, to Hoechst Aktiengesellschaft. 3-Carbalkoxyamino-1H-2,1,4-benzothiadiazine derivatives. 4,069,325, Cl. 424-246.000.
Loewenthal, Horst, to SIG Schweizerische Industrie-Gesellschaft. Conveyor with endless chain. 4,068,756, Cl. 198-653.000.
Lohmer, Karl; von Konig, Anita; Schutz, Siegismund; and Stoltefuss, Jurgen, to AGFA-Gevaert Aktiengesellschaft. Color photographic materials with spiro heterocyclic stabilizing agents comprising 2-imidazolidine-4',5'-dione rings. 4,069,052, Cl. 96-76.00R.
Lombard, Claude; and Leichle, Claude, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Internal combustion engine electronic ignition control system. 4,068,631, Cl. 123-117.00D.
Long, Robert A. Vapor recovery liquid dispensing apparatus. 4,068,687, Cl. 141-59.000.
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., to Canadian General Electric Company. Apparatus for injecting elastomeric material. 4,068,691, Cl. 141-284.000.
Loomba, Yogendra S.; and Narayan, Surendra D., to Allied Chemical Corporation. Safety belt buckle. 4,068,354, Cl. 24-230.00A.
Loos, Herbert, to Carl Hurth Maschinen- und Zahnradfabrik. Device for deburring or chamfering of the face edges of gears. 4,068,558, Cl. 90-1.60A.
Lorenze, Robert V., Jr.; and Young, Miriam F., to Honeywell Inc. Method of preparing photodetector array elements. 4,069,095, Cl. 156-632.000.
Lorie, Mario A.: *See—*
White, William H.; and Lorie, Mario A., 4,069,429, Cl. 307-265.000.
Losert, Gerhard K., to General Electric Company. Self locking support mechanism. 4,068,815, Cl. 248-188.200.
Lower, William E., to Rotex, Inc. Distribution of feed onto a screening machine. 4,069,146, Cl. 209-254.000.
Lubowski, Stanley J.; and Swank, Robert K., to General Electric Company. Process of making structured x-ray phosphor screen. 4,069,355, Cl. 427-70.000.
Lucas Industries Limited: *See—*
Dockerill, Ian Anthony, 4,068,518, Cl. 72-354.000.
Orloff, George; Munnoch, Peter Ian; and Thomas, Alan, 4,068,560, Cl. 91-36.000.
Luke, Johannes; Muth, Willy; Riederer, Wolfgang; and Wenzel, Gunter, to Hoechst Aktiengesellschaft. Apparatus for welding articles of thermoplasts. 4,069,087, Cl. 156-391.000.
Lukkarila, Jeffrey Reed; and Liston, Kenneth D., Jr., to Magnavox Company, The. Chroma and luminance signal generator for video games. 4,068,847, Cl. 273-85.00R.
Lundgren, Bengt G. S., to SKF Nova AB. Metal powder suited for powder metallurgical purposes, and a process for manufacturing the metal powder. 4,069,045, Cl. 75-251.000.
Luther, Gerhard, to Berliner Maschinenbau-AG vormals L. Schwartzkopff. Machine for air-jet texturizing of continuous synthetic filaments. 4,068,358, Cl. 28-272.000.
Luzzi, John J.: *See—*
Ramey, Chester E.; and Luzzi, John J., 4,069,196, Cl. 260-45.80N.
Ramey, Chester E.; and Luzzi, John J., 4,069,199, Cl. 260-45.75C.
Lvovich, Galperin Aleksandr: *See—*
Santucci, Nicola; Aleksandrovic, Zabotin Aleksandr; Dmitrievich, Loschilin Evghenii; Lvovich, Galperin Aleksandr; and Archakovich, Onikov Eduard, 4,068,685, Cl. 139-188.00R.
M.A.T. Industries, Inc.: *See—*
Amoroso, Michael J., 4,068,897, Cl. 299-91.000.
M & T Chemicals Inc.: *See—*
Harbulak, Edward P., 4,069,112, Cl. 204-43.00T.
M & W Gear Company: *See—*
Meiners, Elmo R., 4,068,612, Cl. 115-76.000.
Maben, James W., to Sanders Associates, Inc. Tone address decoder for pager. 4,069,477, Cl. 340-311.000.

MacFarland, Charles H.: *See—*
Scott, Ernest R.; and MacFarland, Charles H., 4,068,341, Cl. 15-339.000.
Machacek, Frantisek; Bezemek, Vladislav; Kudlacek, Dusan; Kliment, Lubomir; Pirek, Arnost; Smejkal, Vladimir; Svoboda, Frantisek; and Vach, Stanislav, to Vyzkumny ustav pletarsky. Method of producing knitted slacks. 4,068,320, Cl. 2-227.000.
Machado, Octavio J.: *See—*
Berringer, Robert T.; and Machado, Octavio J., 4,069,102, Cl. 176-87.000.
Machida, Yasuhiko: *See—*
Yamadaya, Tokio; and Machida, Yasuhiko, 4,069,303, Cl. 423-644.000.
Mack, Jules A. Connector device for telephone terminals or housings. 4,068,914, Cl. 339-143.00R.
MacLeay, Ronald Edward; and Sheppard, Chester Stephen, to Pennwalt Corporation. Polymerization of ethylenically unsaturated monomers employing secondary-aliphatic α-substituted azoalkanes. 4,069,377, Cl. 526-218.000.
MacMillan, Kenneth T. Mold for applying pre-cured tread rubber to a tire, preferably utilizing a rubber envelope. 4,069,089, Cl. 156-394.000.
Macmillan, William Robertson, to Tilghman Wheelabrator Limited. Blast impellor wheels. 4,069,025, Cl. 51-434.000.
Macpherson, Roger. Double parallelogram jack. 4,068,825, Cl. 254-124.000.
Madate, Haruhisa: *See—*
Ohta, Shinichi; Matsumura, Isao; Kobayashi, Kazunobu; and Madate, Haruhisa, 4,068,932, Cl. 351-7.000.
Madfis, Alfred W. Rainwater run-off dispersion system. 4,068,424, Cl. 52-94.000.
Maeda, Hidetoshi; and Sasaki, Takehiko, to Sharp Kabushiki Kaisha. Reference signal frequency correction in an electronic timepiece. 4,068,463, Cl. 58-23.0AC.
Magee, Thomas A., to Diamond Shamrock Corporation. Method for regulating rests using alkylthiotrichlorodicyanobenzenes. 4,069,342, Cl. 424-304.000.
Mages, Bernhard: *See—*
Rock, Erich; and Mages, Bernhard, 4,068,349, Cl. 16-131.000.
Magnavox Company, The: *See—*
Lukkarila, Jeffrey Reed; and Liston, Kenneth D., Jr., 4,068,847, Cl. 273-85.00R.
Magnetic Separation Systems, Inc.: *See—*
Sommer, Edward J., Jr.; and Kenny, Garry R., 4,069,145, Cl. 209-212.000.
Mahler, Walter, to Du Pont de Nemours, E. I., and Company. Thermal stabilization of chlorobenzenes. 4,068,706, Cl. 165-1.000.
Maier, Erwin, to Wilhelm Maier & Sohne UNITAS-Maschinenfabrik. Skirt marker and shaping device. 4,068,783, Cl. 223-1.100.
Mailloux, Louis D., to Xerox Corporation. Color transparency reproducing machine. 4,068,939, Cl. 355-4.000.
Mainsuradze, Venera Romanovna: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Mainsuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sikharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; Dubov, Yauzhe Markovich; Bogdanov, Eduard Alimovich; Gogoladze, Georgy Trofimovich; Teisheva, Alla Abelevna; Ryzygraeva, Galina Nikolaevna; Melnikov-Eikhenvald, Mikhail Alexeevich; and Rokva, Temuri Valeryanovich, 4,069,116, Cl. 204-96.000.
Malewicki, Douglas J. Combination motorcycle and hang-glider. 4,068,810, Cl. 244-2.000.
Malkina, Vera Matveevna: *See—*
Podkletnov, Evgeny Nikolaevich, deceased; Malkina, Vera Matveevna; and Podkletnov, Evgeny Evgenievich, administrators, 4,068,621, Cl. 118-620.000.
Mallinckrodt, Inc.: *See—*
Wiegert, Philip E., 4,069,250, Cl. 260-519.000.
Malpass, Dennis B.: *See—*
Watson, Spencer C.; Malpass, Dennis B.; and Yeargin, G. Scott. 4,069,260, Cl. 260-632.00B.
Maltese, John: *See—*
Graham, Thomas G.; Maltese, John; Nesson, Israel; and Mitchell, Robert, 4,069,490, Cl. 354-83.000.
Malz, Russell E., Jr.; and Greenfield, Harold, to Uniroyal, Inc. Nuclear hydrogenation of n-aryl carbamates. 4,069,240, Cl. 560-115.000.
Manabe, Masami: *See—*
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 4,068,633, Cl. 123-117.00A.
Manders, Lambertus Wilhelmus Johannes: *See—*
Wanmaker, Willem Lambertus, deceased; Manders, Lambertus Wilhelmus Johannes; and ter Vrugt, Johannes Wilhelmus, 4,069,441, Cl. 313-487.000.
Mandy, Zoltan A., to Frick Company. Blade-type rotary compressor with full unloading and oil sealed interfaces. 4,068,981, Cl. 417-310.000.
Mangus, James D., to Westinghouse Electric Corporation. Self-compensating level control for sump suction pumps. 4,069,101, Cl. 176-65.000.
Mannara, Giuseppe, to Colgate Palmolive Company. Oral dentifrice containing uniform particles of speckling material. 4,069,311, Cl. 424-49.000.
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Mannsfeld, Sven Peter; Pfeiffer, Arno; Tanner, Herbert; Wagner, Hans; and Liebetanz, Erich, deceased (by Liebetanz, Eva Angela, heiress), to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Continuous process for the manufacture of methionine. 4,069,251, Cl. 260-534.00S.
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Modeen, Marvin O., to IN-Pac Corporation. Small article packaging apparatus. 4,068,448, Cl. 53-131.000.
Molina, Orlando G., to Rockwell International Corporation. Dry developer composition for dye penetrant inspection and method for employing same. 4,069,419, Cl. 250-302.000.
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Jones, Frederick L., 4,069,179, Cl. 260-23.00R.
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Barkhuff, Raymond A., Jr.; and Sprenkle, William E., Jr., 4,069,288, Cl. 264-141.000.
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Montgomery, Marshall A.; and Karplus, Robert, to Rand McNally & Company. Interaction and relativity cart. 4,068,392, Cl. 35-19.00R.
Montjallard, Paul Rene; Laniel, Joseph M.; and Gay-Chatain, Guillaume A. Automatic weapons having a cartridge belt feed. 4,068,557, Cl. 89-33.00E.
Moorby, Donald G.: *See—*
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., 4,068,691, Cl. 141-284.000.
Moore, Alvin Edward. Wall and wall part. 4,068,429, Cl. 52-204.000.
Moore, Larry D.; Johnson, Isaiah W.; and Thompson, Charley L., Jr., to Concept Marketing, Inc. Ear lobe piercing device. 4,068,668, Cl. 128-330.000.
Moore, William Percy, to Waverly Chemical Co. Method for producing dimensionally stable urea-formaldehyde foams. 4,069,175, Cl. 260-2.50F.
Moorehead, Harvey Robert, to Deseret Pharmaceutical Co., Inc. Catheter placement assembly. 4,068,659, Cl. 128-214.400.

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McCarthy, Justin P.; Schlossman, Mitchell L.; and Mores, Lee R., 4,069,347, Cl. 424-358.000.

Morgan, Charles W., to United Foam Corporation. Method and apparatus for making flat top buns. 4,069,285, Cl. 264-51.000.

Mori, Koh: *See—*
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Morooka, Shigeaki; Tamoto, Katsumi; and Matuura, Akira, to Sumitomo Chemical Company, Limited. Preparation of indole derivatives. 4,069,230, Cl. 260-319.100.

Morrell, Edward A.: *See—*
Yellen, Richard C.; and Morrell, Edward A., 4,068,314, Cl. 2-94.000.

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Morrow, Ronald J.: *See—*
Brown, Arthur W.; Goetz, Heinz E.; Morrow, Ronald J.; and Waldhauer, Charles H., Jr., 4,068,910, Cl. 339-18.00P.

Mortoly, John L., to James L. Taylor Manufacturing Company. Clamp with rockable jaw face plate. 4,068,834, Cl. 269-264.000.

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Morton, Roger R., to Bausch & Lomb Incorporated. Image analysis system and method for minimizing paralysis angle. 4,069,411, Cl. 235-92.0PC.

Moser, Louis; and Ruegg, Albert, to Rieter Machine Works Ltd. Bobbin tube clamping device. 4,068,806, Cl. 242-46.400.

Moss, Cyril Herbert. Fire safety systems. 4,068,568, Cl. 98-33.00R.

Motorola, Inc.: *See—*
Butler, Walker; and Krahulec, Fred, 4,068,538, Cl. 74-5.220.
Carlow, Earl F.; and Wiles, Michael F., 4,069,510, Cl. 364-200.000.

Movshovich, Pavel Mikhailovich; Maximov, Gennady Konstantinovich; Khavkin, Viktor Pavlovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Afanasiev, Vladimir Konstantinovich; Kudryavtseva, Tamara Nikolaevna; and Nezelenov, Sergei Vladimirovich. Method of twist-plying a fibrous product. 4,068,459, Cl. 57-156.000.

Moyer, Ernest P., to American Chain & Cable Company, Inc. Conveyor system control circuit. 4,068,597, Cl. 104-88.000.

Mueller Co.: *See—*
Saha, Narayan C., 4,068,866, Cl. 285-105.000.

Mueller, Karl Friedrich, to Ciba-Geigy Corporation. Fluorinated amphoteric and cationic surfactants. 4,069,244, Cl. 260-501.120.

Muellner, Donald R., to Caterpillar Tractor Co. Bumper and counterweight arrangement and method for assembling the same. 4,068,876, Cl. 293-69.00R.

Mukae, Kazuo: *See—*
Nagasawa, Ikuo; Mukae, Kazuo; Ishii, Takashi; and Tsuda, Koichi, 4,069,061, Cl. 106-73.200.

Mukaida, Yutaka: *See—*
Nishita, Sadao; Enomoto, Satoru; Wada, Hisayuki; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,069,211, Cl. 260-77.5MA.

Mulholland, Kenneth Lee: *See—*
Segraves, William Benjamin; and Mulholland, Kenneth Lee, 4,069,363, Cl. 428-224.000.

Muller, Hans. Process for recovering dextrose and dextrins from protein-containing starch products. 4,069,103, Cl. 195-4.000.

Muller, Jens: *See—*
Lange, Fritz-Walter; Jacobi, Haireddin; and Muller, Jens, 4,069,336, Cl. 424-274.000.

Muller, Klaus: *See—*
Beck, Heinz; Muller, Klaus; and Erdelen, Gerhard, 4,069,131, Cl. 204-297.00W.

Munechika, Kazuyoshi, to Nippon Air Brake Company Ltd. Brake cylinder device including means for automatically compensating for brake pad wear. 4,068,746, Cl. 188-196.00A.

Munnoch, Peter Ian: *See—*
Orloff, George; Munnoch, Peter Ian; and Thomas, Alan, 4,068,560, Cl. 91-36.000.

Munsey, George B. Rotary toaster device. 4,068,569, Cl. 99-327.000.

Munson, James T.: *See—*
Mickus, Robert R.; and Munson, James T., 4,068,602, Cl. 111-1.000.

Murakami, Takuzi: *See—*
Ishi, Takashi; Murakami, Takuzi; Kato, Masayoshi; and Nagaoka, Tadahiko, 4,068,862, Cl. 280-740.000.

Muramatsu, Fumio: *See—*
Takeda, Takeshi; Muramatsu, Fumio; and Watanabe, Akinori, 4,069,440, Cl. 313-465.000.

Muramoto, Shoichi: *See—*
Nakayama, Akira; Ohkoshi, Akio; Muramoto, Shoichi; Natori, Takehisa; Sumi, Koichiro; Nakagawa, Hideaki; and Aozuka, Torao, 4,069,436, Cl. 313-302.000.

Murdock Machine & Engineering Company: *See—*
Herbert, John T.; Kovitch, Frank J.; Sullivan, Paul E.; and Vitt, Stanley P., 4,068,864, Cl. 285-49.000.

Murphy, Charles Vincent, to Du Pont de Nemours, E. I., and Company. Molecular-weight reduction of nitrocellulose by electron beam radiation. 4,069,122, Cl. 204-158.0HE.

Murphy, Patrick Joseph. Work positioning table. 4,068,577, Cl. 100-224.000.

Murray, Robert G.: *See—*
Koppelman, Edward; and Murray, Robert G., 4,069,107, Cl. 201-12.000.

Muth, Willy: *See—*
Luke, Johannes; Muth, Willy; Riederer, Wolfgang; and Wenzel, Gunter, 4,069,087, Cl. 156-391.000.

N L Industries, Inc.: *See—*
Hoover, Lonnie Daniel, 4,069,034, Cl. 71-33.000.

Nagaoka, Tadahiko: *See—*
Ishi, Takashi; Murakami, Takuzi; Kato, Masayoshi; and Nagaoka, Tadahiko, 4,068,862, Cl. 280-740.000.

Nagaoka, Tadashi, to Matsushita Electric Industrial Co., Ltd. Apparatus for recording and reproducing signals using a disc-like recording medium. 4,069,503, Cl. 358-128.000.

Nagasawa, Ikuo; Mukae, Kazuo; Ishii, Takashi; and Tsuda, Koichi, to Fuji Electric Co., Ltd. Ceramics having nonlinear voltage characteristics. 4,069,061, Cl. 106-73.200.

Nagase, Tsuneyuki: *See—*
Araki, Masashi; and Nagase, Tsuneyuki, 4,069,385, Cl. 560-106.000.

Naito, Hiroyuki: *See—*
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Takai, Kiyoshi; and Maruyama, Noboru, 4,069,295, Cl. 423-49.000.

Nakagawa, Hideaki: *See—*
Nakayama, Akira; Ohkoshi, Akio; Muramoto, Shoichi; Natori, Takehisa; Sumi, Koichiro; Nakagawa, Hideaki; and Aozuka, Torao, 4,069,436, Cl. 313-302.000.

Nakamura, Kenji; and Seno, Iwao, to Japan Suncrux Co., Ltd. Liquid crystal display device for displaying colored patterns. 4,068,926, Cl. 350-160.0LC.

Nakano, Jiro: *See—*
Kamei, Siro; Takeda, Kenzo; Takahashi, Mitsunao; and Nakano, Jiro, 4,069,057, Cl. 106-55.000.

Nakano, Keita; and Takenouchi, Mutsuo, to Rank Xerox Ltd. Printing using an electrochromic image. 4,068,588, Cl. 101-466.000.

Nakata, Tetsuya; Shimogawa, Sachio; Hashimoto, Akira; and Yamada, Nobuo, to Osaka Soda Co. Ltd. Cured or uncured compositions of homo- or copolymers of epihalohydrins. 4,069,174, Cl. 260-2.00A.

Nakatui, Toji: *See—*
Kamohara, Hideaki; Nakatui, Toji; Yoshitomi, Yuji; Sasaki, Iwao; and Shimada, Kenji, 4,068,372, Cl. 29-727.000.

Nakaya, Akira: *See—*
Uchida, Yoshiaki; Nakaya, Akira; and Saito, Kunitaka, 4,068,486, Cl. 61-85.000.

Nakayama, Akira; Ohkoshi, Akio; Muramoto, Shoichi; Natori, Takehisa; Sumi, Koichiro; Nakagawa, Hideaki; and Aozuka, Torao, to Sony Corporation. Flat thermionic cathode. 4,069,436, Cl. 313-302.000.

Nalco Chemical Company: *See—*
Watson, William R., 4,068,725, Cl. 172-801.000.

Namikoshi, Hajime: *See—*
Yokota, Hiromu; Namikoshi, Hajime; Watanabe, Masataka; Kato, Kunio; and Ohnishi, Akio, 4,068,670, Cl. 131-2.000.

Nance, Glenn S.: *See—*
Ball, Kirby L.; Nance, Glenn S.; and Turner, Roy J., 4,068,332, Cl. 5-296.000.

Narayan, Surendra D.: *See—*
Loomba, Yogendra S.; and Narayan, Surendra D., 4,068,354, Cl. 24-230.00A.

Nash, Donald Henry, to Bell Telephone Laboratories, Incorporated. Analog dereverberation system. 4,069,395, Cl. 179-1.00P.

National Distillers and Chemical Corporation: *See—*
Horvitz, David; and Baugh, William D., 4,069,232, Cl. 260-343.600.

National Research Development Corporation: *See—*
Froome, Keith Davy; and Russell, George, 4,068,951, Cl. 356-5.000.

National Semiconductor Corporation: *See—*
Boettcher, Charles E.; Karp, Joel A.; Reed, John A.; and Varadi, Andrew G., 4,069,474, Cl. 365-205.000.
Boettcher, Charles E., 4,069,475, Cl. 365-205.000.
Sauer, Don R., 4,069,460, Cl. 330-257.000.

National Starch & Chemical Corporation: *See—*
Skoultchi, Martin M.; and Davis, Irwin J., 4,069,123, Cl. 204-159.180.

Natori, Takehisa: *See—*
Nakayama, Akira; Ohkoshi, Akio; Muramoto, Shoichi; Natori, Takehisa; Sumi, Koichiro; Nakagawa, Hideaki; and Aozuka, Torao, 4,069,436, Cl. 313-302.000.

Nau, Paul R.; Bartlett, James L.; and Gund, Heinz K., to Briggs & Stratton Corporation. Thermostatic device for automatic choke control. 4,068,636, Cl. 123-119.00B.

Navratil, Franz, to Siemens Aktiengesellschaft. Arrangement for producing a constant magnetic field. 4,069,476, Cl. 365-6.000.

Neary, Ralph E., to Schlage Lock Company. Double cylinder safety lock. 4,068,510, Cl. 70-379.00R.

Needham, Riley B., to Phillips Petroleum Company. Producing heavy oil from tar sands. 4,068,717, Cl. 166-272.000.

Nelson, Clifford H. Fireplace heating channel. 4,068,650, Cl. 126-121.000.

Nelson, Lawrence E., to Weyerhaeuser Company. Disposable diaper with improved tape fastener. 4,068,665, Cl. 128-287.000.

Nelson, Peter David; and Banks, Peter Baldwin, to English Electric Valve Company Limited. Methods of operating pyroelectric camera tubes. 4,069,502, Cl. 358-113.000.

Nesson, Israel: *See—*
Graham, Thomas G.; Maltese, John; Nesson, Israel; and Mitchell, Robert, 4,069,490, Cl. 354-83.000.

Nett, Robert; Fechner, Wolf Dieter; Jettmar, Werner; Polster, Rudolf; Sappok, Reinhard; and Hartmann, Eduard, to BASF Aktiengesellschaft. Phthalocyanine formulations having high gloss, which are stabilized against recrystallization and against change of modification. 4,069,064, Cl. 106-193.00P.

New Research and Development Lab., Inc.: *See—*
LeRoy, Pierre L., 4,068,655, Cl. 128-20.000.

Newbury, Grant M.: *See—*
Marsh, Ronald W.; and Newbury, Grant M., 4,068,601, Cl. 108-134.000.

Newell, William H.: *See—*
Buckley, Jere D.; Markle, David A.; Newell, William H.; and Offner, Abe, 4,068,947, Cl. 355-72.000.

Newport, Samuel O., to Colt Industries Operating Corporation. Rewind starter pulley assembly. 4,068,644, Cl. 123-185.0BA.

Nezelenov, Sergei Vladimirovich: *See—*
Movshovich, Pavel Mikhailovich; Maximov, Gennady Konstantinovich; Khavkin, Viktor Pavlovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Afanasiev, Vladimir Konstantinovich; Kudryavtseva, Tamara Nikolaevna; and Nezelenov, Sergei Vladimirovich, 4,068,459, Cl. 57-156.000.

Nicholson, Benjamin Eric: *See—*
Eaton, David Crawford; Nicholson, Benjamin Eric; and Williams, Barry, 4,069,380, Cl. 544-212.000.

Nickell, Grason T.; and Alexander, Jack L., Sr., to Air Conditioning Corporation. Energy conservation enthalpy control system and sensor therefor. 4,069,030, Cl. 62-176.00C.

Niemi, Bill Howard, to Stimulation Technology, Inc. Stimulator fault protection circuit. 4,068,669, Cl. 128-419.00R.

Niimi, Itaru; Kaneko, Yasuhisa; Noda, Fumiyoshi; and Watanabe, Yuji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Anti-vibration heat-insulation structure and a process for production thereof. 4,069,284, Cl. 264-43.000.

Ninomiya, Takeshi, to Sony Corporation. Write clock pulse signal generator for digital time base corrector. 4,069,499, Cl. 358-8.000.

Nippon Air Brake Company Ltd.: *See—*
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Nippon Crucible Co., Ltd.: *See—*
Kamei, Siro; Takeda, Kenzo; Takahashi, Mitsunao; and Nakano, Jiro, 4,069,057, Cl. 106-55.000.

Nippon Electric Company, Ltd.: *See—*
Tani, Chizuka; and Ogawa, Fumihiro, 4,068,925, Cl. 350-160.0LC.
Yanagisawa, Masahiro; and Suganuma, Yoji, 4,069,360, Cl. 428-64.000.

Nippon Kuatsu System Co., Ltd.: *See—*
Arai, Tashiro; Sato, Masaaki; and Kobayashi, Eiji, 4,068,378, Cl. 30-382.000.

Nippon Oil Company, Ltd.: *See—*
Masunaga, Midori; Kohno, Yoshiki; and Hayashi, Kohji, 4,069,165, Cl. 252-63.000.
Masunaga, Midori; Kohno, Yoshiki; and Hasegawa, Hiroshi, 4,069,166, Cl. 252-63.000.

Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See—*
Tsubakimoto, Tsuneo; Fuzikawa, Iwao; Uchida, Katsumi; and Minamidani, Osamu, 4,069,176, Cl. 260-39.00P.

Nippon Steel Corporation: *See—*
Kamei, Siro; Takeda, Kenzo; Takahashi, Mitsunao; and Nakano, Jiro, 4,069,057, Cl. 106-55.000.

Nippondenso Co., Ltd.: *See—*
Yamawaki, Masao; Aoki, Katsuo; Oka, Yoshio; Suzuki, Takao; Ina, Osamu; and Hara, Kinihiko, 4,069,009, Cl. 432-122.000.

Nippondenso Kabushiki Kaisha: *See—*
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 4,068,633, Cl. 123-117.00A.

Nishi, Yoshiyuki: *See—*
Maruyama, Kenjiro; Miki, Tsuyoshi; Nishi, Yoshiyuki; and Takao, Masato, 4,068,339, Cl. 15-215.000.

Nishimura, Kenichi: *See—*
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Nishioka, Nobuaki: *See—*
Tanaka, Atsuyuki; and Nishioka, Nobuaki, 4,068,934, Cl. 353-26.00A.

Nishita, Sadao; Enomoto, Satoru; Wada, Hisayuki; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Air drying reaction product of a diisocyanate and 1-methyl-2-vinyl-4,6-heptadienol. 4,069,211, Cl. 260-77.5MA.

Nissan Motor Co., Ltd.: *See—*
Ishi, Takashi; Murakami, Takuzi; Kato, Masayoshi; and Nagaoka, Tadahiko, 4,068,862, Cl. 280-740.000.
Masaki, Kenji, 4,068,473, Cl. 60-282.000.
Sakaki, Yoshihiro, 4,068,708, Cl. 165-9.000.

Nixon, C. Bart: *See—*
Sapp, Lawrence G.; Slappey, James F.; and Nixon, C. Bart, 4,068,599, Cl. 108-55.100.

Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., to Compagnie Francaise des Petroles; Etudes Petrolieres Marines; Ateliers et Chantiers de Bretagne-A.C.B.; Compagnie Maritime d'Expertises; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS); and Entreprise de Recherches et d'Activites Petrolieres (E.R.A.P.). Method and apparatus for connecting the ends of submerged pipes. 4,068,491, Cl. 61-110.000.

Noda, Fumiyoshi: *See—*
Niimi, Itaru; Kaneko, Yasuhisa; Noda, Fumiyoshi; and Watanabe, Yuji, 4,069,284, Cl. 264-43.000.

Noda, Katsumi: *See—*
Tsujimoto, Yasuhiro; Azuma, Junichi; Matsumura, Yoshihiko; and Noda, Katsumi, 4,069,155, Cl. 210-195.00R.

Noland, Gail L.: *See—*
Noland, Wayne B.; and Noland, Gail L., 4,069,409, Cl. 219-301.000.

Noland, Wayne B.; and Noland, Gail L. Electrically heated fluid coupling apparatus. 4,069,409, Cl. 219-301.000.

Nolte, Gert; and Dittberner, Wolfgang, to Massey-Ferguson Services N.V. Braking systems. 4,068,899, Cl. 303-6.00A.

Nomura, Takashi: *See—*
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 4,068,633, Cl. 123-117.00A.

Norbergs Mekaniska Verkstads AB: *See—*
Jerling, Curt; Olsson, Hans; and Veiback, Torgny, 4,068,447, Cl. 52-749.000.

Nordberg, Svein T.; and Shaner, Donald R., to GTE Sylvania Incorporated. Mounting means for a circuit breaker and method of making the same. 4,068,370, Cl. 29-628.000.

Normand, Alfred, to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques. Method for generating a reducing atmosphere for heat-treating installations. 4,069,071, Cl. 148-16.000.

North American Philips Corporation: *See—*
White, Roger Paul, 4,068,927, Cl. 350-160.00R.

Northern Electric Company, Limited: *See—*
Barrett, Bruce Robert; and Chapman, Alan Stanley John, 4,069,399, Cl. 179-15.0AL.

Northern Telecom Limited: *See—*
LeNir, Victor Louis, 4,068,615, Cl. 118-6.000.

Norton Company: *See—*
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Noshi, Yoshibumi: *See—*
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Takai, Kiyoshi; and Maruyama, Noboru, 4,069,295, Cl. 423-49.000.

Notelteirs, Victor Rosallie; Rijckaert, Josephus Franciscus; and Ritzen, Johannes Maria Jozef, to U.S. Philips Corporation. Infrared lamp with heat conductive cap assembly and fixture. 4,069,437, Cl. 313-315.000.

Nozaki, Yukimasa: *See—*
Imada, Akira; Nozaki, Yukimasa; Hasegawa, Toru; and Yoneda, Masahiko, 4,069,316, Cl. 424-122.000.

NRM Corporation: *See—*
Cantarutti, Armindo, 4,068,989, Cl. 425-38.000.

Nuovo Pignone S.p.A.: *See—*
Santucci, Nicola; Aleksandrovic, Zabotin Aleksandr; Dmitrievich, Loschilin Evghenii; Lvovich, Galperin Aleksandr; and Archakovich, Onikov Eduard, 4,068,685, Cl. 139-188.00R.

Nute, Ernest B., Jr., to Armstrong Cork Company. Ceiling runner. 4,068,438, Cl. 52-488.000.

Nyc, Wladimir. Variable-ratio transmission. 4,068,539, Cl. 74-230.180.

Nycoil Company: *See—*
Rodgers, Frank J.; and Gibson, Harold, 4,068,867, Cl. 285-174.000.

Nyunoya, Mizuo, to Aisin Seiki Kabushiki Kaisha. Brake pressure difference warning system for vehicles. 4,068,901, Cl. 303-6.00C.

O. W. Reese, Inc.: *See—*
Reese, Roy C.; and Wehrle, Richard C., 4,068,895, Cl. 299-70.000.

Oce-van der Grinten N.V.: *See—*
Peters, Wilhelmus G. M., 4,068,620, Cl. 118-249.000.
Vola, Mathias J. J. M., 4,068,622, Cl. 118-658.000.
Willemse, Adrianus H.; and Vola, Mathias J. J. M., 4,068,937, Cl. 355-3.0TR.

Ocho, Yoshiaki: *See—*
Watanabe, Hiroo; and Ocho, Yoshiaki, 4,068,884, Cl. 296-28.00F.

Oda, Toshio: *See—*
Takata, Akira; Tanahashi, Toshio; and Oda, Toshio, 4,068,472, Cl. 60-276.000.

Offner, Abe: *See—*
Buckley, Jere D.; Markle, David A.; Newell, William H.; and Offner, Abe, 4,068,947, Cl. 355-72.000.

Offshore Company, The: *See—*
Pease, Floyd Tim; Reusswig, Gerhard Helmut; and Edling, Porter Russell, 4,068,487, Cl. 61-93.000.

Ogawa, Daisuke: *See—*
Kanaoka, Masazumi; Ogawa, Daisuke; Iwayama, Kazuyoshi; and Kihara, Makoto, 4,069,172, Cl. 252-455.00Z.

Ogawa, Fumihiro: *See—*
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Ogawa, Hiroyasu: *See—*
Saito, Kazuhisa; and Ogawa, Hiroyasu, 4,069,297, Cl. 423-447.600.

Ogburn, Fielding: *See—*
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Ohbe, Harumi: *See—*
Sato, Kimihiko; Sajima, Yasuo; Kuno, Toshihiko; and Ohbe, Harumi, 4,069,129, Cl. 204-258.000.

Ohkoshi, Akio: *See—*
Nakayama, Akira; Ohkoshi, Akio; Muramoto, Shoichi; Natori, Takehisa; Sumi, Koichiro; Nakagawa, Hideaki; and Aozuka, Torao, 4,069,436, Cl. 313-302.000.

Ohkubo, Kazuo: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,317, Cl. 424-177.000.

Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,318, Cl. 424-177.000.

Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,323, Cl. 424-244.000.

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Tsubota, Motohiko; Hanai, Sosuke; Oishi, Yasushi; Sera, Hidefumi; and Yamamoto, Nobuo, 4,069,048, Cl. 96-3.000.

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Sakamoto, Masao; Okuda, Ryoichi; Saito, Hitoshi; and Sasazaki, Kenzi, 4,068,541, Cl. 74-607.000.

Okumura, Shonosuke, to Os Screen Co., Ltd. Screen assembly. 4,068,921, Cl. 350-117.000.

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Hudson, Robert M.; Oles, Edward J., Jr.; and Warning, Clair John, 4,069,069, Cl. 148-12.100.
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Olin Corporation: *See*—
Winter, Joseph; and Tyler, Derek E., 4,069,358, Cl. 427-319.000.

Ollinger, James C., to Armstrong Cork Company. Ceiling runner with closure strip. 4,068,444, Cl. 52-731.000.

Olsen, Samuel R.; and Lapp, Robert. Method and apparatus for making business form dummy. 4,068,565, Cl. 93-1.100.

Olson, Stuart William: *See*—
McNair, Hugh Noel; and Olson, Stuart William, 4,068,681, Cl. 137-588.000.

Olsson, Hans: *See*—
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O'Neil, Charles P.; Smorzaniuk, Adam; and Young, James O., to Amerace Corporation. Timing device for fluid valve. 4,068,682, Cl. 137-624.110.

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Onizawa, Masao, to Sanyo Trading Co., Ltd. Novel curable composition. 4,069,214, Cl. 260-78.00A.

Ono Pharmaceutical Company: *See*—
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Orem, Henry Philip; Hart, David R.; and Hill, Jerry E., to Jim Walter Resources, Inc. Process for the production of phenolic complexes of hexamethylenetetramine. 4,069,220, Cl. 544-186.000.

Orloff, George; Munnoch, Peter Ian; and Thomas, Alan, to Lucas Industries Limited. Fluid-powered stepping motor. 4,068,560, Cl. 91-36.000.

Ormco Corporation: *See*—
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Nakata, Tetsuya; Shimogawa, Sachio; Hashimoto, Akira; and Yamada, Nobuo, 4,069,174, Cl. 260-2.00A.

Osberg, Daryl F.: *See*—
O'Toole, James F.; and Osberg, Daryl F., 4,068,623, Cl. 118-658.000.

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Komatsu, Tadaaki; Takeda, Hirokazu; Oshio, Hideki; Matsuoka, Kimiaki; and Aramaki, Minoru, 4,069,266, Cl. 260-653.000.

Osmalov, Robert: *See*—
Marder, Milton David; Osmalov, Robert; and Pfeiffer, Gerald P., 4,069,078, Cl. 156-181.000.

Osterle, Helmut; and Rangger, Herbert, to Hilti Aktiengesellschaft. Power control arrangement for an explosive powder-driven setting gun. 4,068,790, Cl. 227-8.000.

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Ravnkilde, Jorgen Flemming; and Ostrup, Ivar, 4,069,362, Cl. 428-194.000.

Oswald, Fred. Shredding machine. 4,068,805, Cl. 241-159.000.

Otaka, Syoichi: *See*—
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O'Toole, James F.; and Osberg, Daryl F., to Addressograph-Multigraph Corporation. Magnetic feed system for developer mix. 4,068,623, Cl. 118-658.000.

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Harper, Paul W., 4,068,449, Cl. 53-319.000.

Oversohl, Wilhelm, to Wasag Chemie AG. Method for the production of combustible ammunition containers and product thereof. 4,068,589, Cl. 102-43.00R.

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Bullock, Michael Kermit; Clay, Sherwood Anderson; and Overton, Gregory Bingham, 4,068,839, Cl. 271-180.000.

Owens-Illinois, Inc.: *See*—
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Oxy Metal Industries Corporation: *See*—
Crossley, John Alan; Hacker nee Weimer, Valerie Kathryn; and Clorley, Paul Grahame, 4,069,113, Cl. 204-43.00G.

P. D. George Company, The: *See*—
Lange, Daniel J., 4,069,209, Cl. 260-75.00N.

Paavola, Oiva A.; and Brugger, Richard D., to Paavola, Oiva A. Blood pressure measuring apparatus and method. 4,068,654, Cl. 128-2.05N.

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Fiorenza, Robert M.; Fleming, Alan J.; Gerlach, Ralph J.; Holmstrom, Larry W.; and Pace, John C., 4,069,488, Cl. 364-474.000.

Pacon Manufacturing Corporation: *See*—
Baumgartner, Frank, 4,069,077, Cl. 156-152.000.

Palani, Narayanaswami. Method and apparatus for producing heat. 4,069,005, Cl. 431-4.000.

Palka, James J., to General Bathroom Products Corporation. Knockdown cabinet having a combination door frame and front wall. 4,069,450, Cl. 312-257.00R.

Palmer, David Nelson, to Combustion Engineering, Inc. Bonding material and method. 4,069,083, Cl. 156-329.000.

Palmer, Guy V., to Raymond Lee Organization, Inc., The, a part interest. Sealable container device. 4,068,775, Cl. 215-331.000.

Palopoli, Frank P.: *See*—
Horgan, Stephen W.; Palopoli, Frank P.; and Schwoegler, Edward J., 4,069,222, Cl. 260-293.520.

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Pankove, Jacques Isaac; and Carlson, David Emil, to RCA Corporation. Electroluminescent semiconductor device having a body of amorphous silicon. 4,069,492, Cl. 357-17.000.

Panter, Hubert Gerald: *See*—
Lonseth, Palmer; Panter, Hubert Gerald; and Moorby, Donald G., 4,068,691, Cl. 141-284.000.

Paparatto, Piero: *See*—
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Pappanikolaou, George. Inflatable umbrella. 4,068,675, Cl. 135-20.00B.

Papworth, Charles A. Protective sheath for water-eroded wood piling. 4,068,483, Cl. 61-54.000.

Parisi, Dominick, to Spanjer Brothers Inc. Knockdown sign assembly. 4,068,398, Cl. 40-607.000.

Parke, Davis & Company: *See*—
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Parker, Clarence B.; McCray, Peter M.; and Taylor, L. Lamoyne, to General Dynamics Corporation. Target range sensor. 4,069,482, Cl. 343-7.700.

Parker, Levi C.: *See*—
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Parker, Michael J.: *See*—
Lewis, Richard; and Parker, Michael J., 4,068,524, Cl. 73-598.000.

Parkes, David M.; and Shaw, John D., to Kaiser Resources, Limited. Wet belt conveyor. 4,068,755, Cl. 198-557.000.

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Parrillo, Henry; Harrington, John Sherman; and Curtis, Glenn Howard, to Marshall and Williams Company. Tenter guide rail gap crossing mechanism. 4,068,356, Cl. 26-91.000.

Parsons, George H., Jr., to Baxter Travenol Laboratories, Inc. Immunoadsorbent polymeric material and method of making same. 4,069,352, Cl. 427-2.000.

Pasch, Lambert, to Uniroyal A.G. Transfer molding method. 4,069,290, Cl. 264-297.000.

Pastorino, Ronald L.: *See*—
Lewis, Roger N.; Pastorino, Ronald L.; and Wilts, James F., 4,069,239, Cl. 260-463.000.

Patentverwertungs-und Finanzierungsgesellschaft, Serania AG: *See*—
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Pattison, Victor A.; and Carr, Russell L. K., to Hooker Chemicals & Plastics Corporation. Immonium salts and derivatives thereof. 4,069,340, Cl. 424-298.000.

Pearson, John, to United States of America, Navy. Means for controlled fragmentation. 4,068,590, Cl. 102-67.000.

Pease Company: *See*—
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Pease, Floyd Tim; Reusswig, Gerhard Helmut; and Edling, Porter Russell, to Offshore Company, The. Method and apparatus for conducting subaqueous operations in ice conditions. 4,068,487, Cl. 61-93.000.

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Peck, Richard John: *See*—
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Pecka, Jan: *See*—
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Peer, Roger L.; and Fisch, Irvin S., to UOP Inc. Countercurrent hydrocarbon conversion with gravity-flowing catalyst particles. 4,069,136, Cl. 208-65.000.

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Peevey, Robert M., to Standard Oil Company (Indiana). Apparatus for multiple wells through a single caisson. 4,068,729, Cl. 175-8.000.

Pekosh, Raymond J., to Zenith Radio Corporation. Method for dispensing cement onto the seal land of a color CRT funnel. 4,069,354, Cl. 427-64.000.

Pelto, James L.: *See*—
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Pemberton, Bruce W. Coupler apparatus. 4,068,959, Cl. 403-15.000.

Pennwalt Corporation: *See*—
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Penrod, William R.: *See*—
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Penwell, Richard C., to Xerox Corporation. Advanced photoreceptor. 4,068,942, Cl. 355-16.000.

Perkin-Elmer Corporation, The: *See*—
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Perkins, John Francis: *See*—
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Pernegger, Wolfgang: *See*—
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Peters, Wilhelmus G. M., to Oce-van der Grinten N.V. Profiled roller. 4,068,620, Cl. 118-249.000.

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Peterson, O. James, III. Insulation window. 4,068,428, Cl. 52-202.000.

Petropolskaya, Viktoria Mikhailovna: *See*—
Privalov, Vasily Efimovich; Vail, Evgeny Iosifovich; Khanin, Andrei Mefodievich; Gromov, Evgeny Ivanovich; Petropolskaya, Viktoria Mikhailovna; and Agarkova, Lidia Mikhailovna, 4,069,225, Cl. 260-306.80R.

Petrus, George P., to General Electric Company. Method and apparatus for bar temperature determination in a hot strip mill. 4,068,511, Cl. 72-13.000.

Pezzolo, Donald E.: *See*—
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Pfeiffer, Arno: *See*—
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Pfeiffer, James W.: *See*—
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Pharmacia Aktiebolag: *See*—
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Phelps, Robert A. Hidden lock. 4,068,506, Cl. 70-100.000.

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Goins, Robert R., 4,068,828, Cl. 366-136.000.
Hessert, James E.; and Bertus, Brent J., 4,068,714, Cl. 166-246.000.
Hessert, James E.; Bertus, Brent J.; and Johnston, Chester C., Jr., 4,068,720, Cl. 166-282.000.
Hunt, Harold R., 4,069,298, Cl. 423-456.000.
Hutson, Thomas, Jr., 4,069,272, Cl. 260-680.00E.
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Rutledge, Robert W.; and Ganaway, Franklin D., 4,069,413, Cl. 364-118.000.
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Phillips, Raymond M. Mattress having an upper internal material-containing chamber. 4,068,335, Cl. 5-371.000.

Pickard, Frank W., to Stanford, Eleanor D. J., a part interest. Bicycle lock. 4,068,504, Cl. 70-18.000.

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Pierce, James K., to Dow Chemical Company, The. Oxybis(4,1-phenylene(2-oxo-2,1-ethanediyl)) thiocyanate and its use as an antimicrobial agent. 4,069,341, Cl. 424-302.000.

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Pike, John E.; and Schneider, William P., to Upjohn Company, The. 15-Alkyl prostaglandins E_1 4,069,386, Cl. 560-121.000

Pimentel, Daniel R., to Texas Instruments Incorporated. Valve. 4,068,820, Cl. 251-11.000.

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Riley, Kenneth L.; and Pine, Lloyd A., 4,069,139, Cl. 208-216.000.

Pinter, Enzo, to Mezzera S.p.A. Process and apparatus for bleaching temperature-sensitive fibers. 4,069,014, Cl. 8-111.000.

Pioneer Electronic Corporation: *See*—
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Pitney-Bowes, Inc.: *See*—
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Eschweiler, Earl E., Jr.; and Smith, Richard B., 4,068,946, Cl. 355-64.000.

Pitt, William V. Atmospheric resistant doors and method of manufacture. 4,068,431, Cl. 52-204.000.

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Podkletnov, Evgeny Evgenievich, administrators: *See—*
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Podolan, Edward G.; Przybysz, Francis C.; and Jozefczak, Thadius F., to General Motors Corporation. Sliding vehicle door. 4,068,407, Cl. 49-215.000.

Poe, Lloyd Richard, to Hartwell Corporation. Gas leak detector. 4,068,522, Cl. 73-40.50R.

Pogers, Richard J. Preparation of aqueous solutions of polyacrylamides. 4,069,161, Cl. 252-8.55D.

Poitras, Andre; and Tailleux, Christian, to Equipment Precibec Inc. Automatically controlled numbering machine. 4,068,582, Cl. 101-76.000.

Polito, Alan J.; and Knight, William S., to Beckman Instruments, Inc. I^{125} Imidazole steroid derivatives. 4,069,305, Cl. 424-1.000.

Pollack, Benjamin D.: *See—*
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Genakis, Joseph M., 4,068,509, Cl. 70-364.00A.

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Pollitzer, Ernest L.; and Hayes, John C., to UOP Inc. Isomerization of naphthenes. 4,069,269, Cl. 260-666.00P.

Pollitzer, Ernest L.; and Hayes, John C., to UOP Inc. Alkylaromatic isomerization. 4,069,270, Cl. 260-668.00A.

Polster, Rudolf: *See—*
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Poo, Faustino: *See—*
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Poo, Ramon E.; and Poo, Faustino, to Ventura International, Inc. Cylindrical container silk screen printer with coordinated screen height and stroke adjustment indexing mechanism. 4,068,579, Cl. 101-38.00R.

Poponiak, Michael R.: *See—*
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Poschinger, Wilhelm: *See—*
Michaud, Horst; Ortenburger, Gunter; Poschinger, Wilhelm; Rock, Heinrich; and Seeholzer, Josef, 4,069,383, Cl. 544-202.000.

Post, John F. Metal patching composition and method. 4,069,191, Cl. 260-37.0EP.

Pouli, Dirk: *See—*
Cipris, Divna; and Pouli, Dirk, 4,069,259, Cl. 260-608.000.

PPG Industries, Inc.: *See—*
Leatherman, I. Roger; and Misura, Michael S., 4,069,168, Cl. 252-300.000.
Schimmel, Karl F., 4,069,210, Cl. 260-29.2EP.

Precision Mfg Inc-Fabrication Precision Inv: *See—*
Legler, George, 4,068,700, Cl. 160-351.000.

Premo, Kenneth W.: *See—*
Miller, Frank R.; Andreiko, Craig A.; and Premo, Kenneth W., 4,068,379, Cl. 32-14.00A.

Priaroggia, Paolo Gazzana, to Industrie Pirelli Societa per Azioni. Method and apparatus for laying an oil filled cable at depths below the laying equipment. 4,068,489, Cl. 61-105.000.

Prichard, William W.; and Stacey, Francis Wilfred, to Du Pont de Nemours, E. I., and Company. Substituted diphenyl-3-formazancarbonitrile insecticides. 4,069,320, Cl. 424-226.000.

Prince Corporation: *See—*
Marcus, Konrad H., 4,068,930, Cl. 350-277.000.
VanAppledorn, William, 4,068,350, Cl. 17-1.00G.

Pringle, Ray T.; and Ames, Kenneth R., to Frontier Machinery, Inc. Tower drive mechanism for self-propelled sprinkler system. 4,068,679, Cl. 137-344.000.

Privalov, Vasily Efimovich; Vail, Evgeny Iosifovich; Khanin, Andrei Mefodievich; Gromov, Evgeny Ivanovich; Petropolskaya, Viktoria Mikhailovna; and Agarkova, Lidia Mikhailovna. 3-(1-Hydroxyethyl-)imino-1,2,4-dithiazolidine-5-thione. 4,069,225, Cl. 260-306.80R.

Procedyne Corporation: *See—*
Staffin, H. Kenneth; and Staffin, Robert, 4,068,389, Cl. 34-57.00A.

Procter & Gamble Company, The: *See—*
Hindle, Peter; and Welsh, William James, 4,069,066, Cl. 134-6.000.

Proctor, Sidney Ernest, to Austin Hoy & Company Limited. Mineral cutter chains. 4,068,896, Cl. 299-83.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Bertocchio, Rene; and Foulletier, Louis, 4,069,158, Cl. 252-3.000.

Prudhomme, C. R. Dual load trailer. 4,068,772, Cl. 214-505.000.

Przybysz, Francis C.: *See—*
Podolan, Edward G.; Przybysz, Francis C.; and Jozefczak, Thadius F., 4,068,407, Cl. 49-215.000.

Public Storage, Inc.: *See—*
Volk, Kenneth Q., Jr., 4,068,505, Cl. 70-56.000.

Pulda, William F., to Vanguard Machinery Corporation. Stacking of materials. 4,068,765, Cl. 214-6.00G.

Pullman Incorporated: *See—*
Bodinger, Donald C.; Tombers, Paul A.; and Snyder, Richard C., 4,068,411, Cl. 49-408.000.
Marsh, Ronald W.; and Newbury, Grant M., 4,068,601, Cl. 108-134.000.
Marulic, Walter J.; and Ferris, Ray L., 4,068,410, Cl. 49-370.000.

Quaker Oats Company, The: *See—*
Dunlop, Andrew P., 4,068,703, Cl. 164-160.000.

Quanbeck, Sherman H. Floating beam plow. 4,068,723, Cl. 172-267.000.

Quarve, Vernon K., to Graco Inc. Charge control valve and piston assembly for diaphragm pump. 4,068,982, Cl. 417-387.000.

Quinn, Edwin J.: *See—*
Kauffman, William J.; and Quinn, Edwin J., 4,069,173, Cl. 260-2.5AJ.

Quinn, Jerome B.; and Heimark, Edward L., to Philadelphia Gear Corporation. Gear pump assembly. 4,068,740, Cl. 184-6.120.

R. & D. Instruments Limited: *See—*
Williams, Charles Norman; and Roberts, Hugh, 4,069,466, Cl. 338-147.000.

Racine, Francis A.: *See—*
Cadwallader, Robert H.; Darves-Bornoz, Yves; Gasparri, Angelo S.; and Racine, Francis A., 4,068,994, Cl. 425-110.000.

Racine Railroad Products, Inc.: *See—*
McIlrath, William P., 4,068,415, Cl. 51-178.000.

Rader Companies, Inc.: *See—*
Ball, D. Graham, 4,068,488, Cl. 61-105.000.

Rainville, Lucien G. Multi-layered garment for the lower body. 4,068,315, Cl. 2-114.000.

Rakow, Wallace J.; Millette, Elmer J.; and Johnston, Peter J., to Spiller Spring Company. Woven spring unit. 4,068,330, Cl. 5-267.000.

Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Piperidyl esters of higher di-tri-, and polybasic aliphatic carboxylic acids as stabilizers for polymeric materials. 4,069,196, Cl. 260-45.80N.

Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Metal salts of hindered piperidine carboxylic acids and stabilized compositions. 4,069,199, Cl. 260-45.75C.

Ramig, Alex, to SCM Corporation. Opacified latex paint containing plastic polymer particles. 4,069,186, Cl. 260-29.6RB.

Ramney, Tiberius, to Bio-Pet Research Company. Refillable permanent collar for animals. 4,068,624, Cl. 119-106.000.

Rand McNally & Company: *See—*
Montgomery, Marshall A.; and Karplus, Robert, 4,068,392, Cl. 35-19.00R.

Randall, Nathan A., to Grover, Harry E.; and Ruppin, Richard C. Inflatable body support apparatus. 4,068,334, Cl. 5-365.000.

Randell, Donald Richard; and Pickles, Wilfred, to Ciba-Geigy AG. Chemical process and products. 4,069,189, Cl. 260-30.60R.

Rangger, Herbert: *See—*
Osterle, Helmut; and Rangger, Herbert, 4,068,790, Cl. 227-8.000.

Rank Xerox Ltd.: *See—*
Kito, Hidetoshi, 4,068,950, Cl. 355-75.000.
Nakano, Keita; and Takenouchi, Mutsuo, 4,068,588, Cl. 101-466.000.
Robertson, Robert, 4,068,938, Cl. 355-4.000.

Rao, Raman K.: *See—*
Reinberg, Alan R.; and Rao, Raman K., 4,069,096, Cl. 156-643.000.

Rapp, James E., to Owens-Illinois, Inc. Process for forming two different indices of refraction in a glass ceramic. 4,069,031, Cl. 65-33.000.

Rappaport, Alfred A. Catalytic heater or warmer. 4,068,651, Cl. 126-208.000.

Rathbun, Richard H.; and West, Robert F., to Stanley Works, The. Heavy duty retractable blade utility knife. 4,068,375, Cl. 30-125.000.

Rathel, Lori A. Pantyhose mender. 4,068,322, Cl. 2-239.000.

Rauchfuss, Arthur A. Method of curing and protecting a concrete column. 4,069,283, Cl. 264-32.000.

Raverdy, Yvan: *See—*
Baud, Christian; Raverdy, Yvan; and Hougeot, Henri, 4,069,121, Cl. 204-129.300.

Ravnkilde, Jorgen Flemming; and Ostrup, Ivar, to Rockwool International A/S. Core material for building elements of sandwich type. 4,069,362, Cl. 428-194.000.

Ray, David L.: *See—*
Sheets, Kerney T., 4,068,535, Cl. 74-242.11A.

Raymond Lee Organization, Inc., The: *See—*
Haywood, Jay L., 4,068,316, Cl. 2-126.000.
Miller, Nathaniel W., 4,068,875, Cl. 292-206.000.
Palmer, Guy V., 4,068,775, Cl. 215-331.000.

Raytheon Company: *See—*
Bartram, James F., 4,069,468, Cl. 340-3.00D.
Lelke, Helmut, 4,069,511, Cl. 364-200.000.

RCA Corporation: *See—*
Anderson, Charles Hammond, 4,069,439, Cl. 313-422.000.
Bazin, Lucas John, 4,069,432, Cl. 307-357.000.
Firester, Arthur Herbert; and Walentine, Joseph Paul, 4,069,484, Cl. 346-33.00F.
Geshner, Robert Andrew; and Sciambi, Louis Joseph, 4,068,390, Cl. 34-239.000.
Gubitose, Nicholas Francis; Gawelko, Leonard; and Satriano, Robert Joseph, 4,068,788, Cl. 225-1.000.

Hurst, Robert Norman, 4,069,500, Cl. 358-10.000.
Kucharewski, Nicholas, 4,069,431, Cl. 307-355.000.
Pankove, Jacques Isaac; and Carlson, David Emil, 4,069,492, Cl. 357-17.000.
Shaw, Joseph Michael; and Zaininger, Karl Heinz, 4,069,094, Cl. 156-612.000.

Rearick, Milton R.: *See—*
Buchovecky, Kalman E.; and Rearick, Milton R., 4,069,042, Cl. 75-208.00R.

Recreation Systems Co.: *See—*
Callecod, Robert L., 4,068,842, Cl. 272-113.000.

Rector, Douglas L.: *See—*
Callahan, William A.; Glenn, Eldridge Myles; and Rector, Douglas L., 4,069,224, Cl. 260-295.0AM.

Reed, Charles C.: *See—*
Sharp, Russell G.; Reed, Charles C.; and Cooley, Denton A., 4,068,664, Cl. 128-276.000.

Reed, John A.: *See—*
Boettcher, Charles E.; Karp, Joel A.; Reed, John A.; and Varadi, Andrew G., 4,069,474, Cl. 365-205.000.

Reed, Reginald A.: *See—*
Allison, Arthur F.; Christopherson, Dennis C.; Mays, Byron L.; and Reed, Reginald A., 4,068,567, Cl. 93-93.00C.

Reed, Ronald. Scaffolding. 4,068,738, Cl. 182-128.000.

Reedy, Dennis Conway, to International Business Machines Corporation. Transistor-transistor-logic circuit. 4,069,428, Cl. 307-215.000.

Reenstra, Arthur L.: *See—*
Jost, Ernest M.; Reenstra, Arthur L.; and Trenkler, George, 4,068,527, Cl. 73-704.000.

Reese, Roy C.; and Wehrle, Richard C., to O. W. Reese, Inc. Demolition machine for delining a furnace. 4,068,895, Cl. 299-70.000.

Reflectolite Products, Inc.: *See—*
Hauber, Peter Fritz, 4,068,408, Cl. 49-324.000.

Reggiane Officine Meccaniche Italiane S.p.A.: *See—*
Baldassari, Paolo, 4,069,033, Cl. 71-25.000.

Regie Nationale des Usines Renault: *See—*
Lombard, Claude; and Leichle, Claude, 4,068,631, Cl. 123-117.00D.

Reich, Shymon; and Friesem, Albert A., to Yeda Research & Development Co., Ltd. Process for recording holographic information. 4,069,049, Cl. 96-27.00H.

Reid, David Eric: *See—*
Adlam, Christopher; and Reid, David Eric, 4,069,314, Cl. 424-92.000.

Reid, Robert E.: *See—*
Kablaoui, Mahmoud S.; Larkin, John M.; and Reid, Robert E., 4,069,226, Cl. 260-307.00F.

Reif, Robert Bruce, to Hoffmann-La Roche Inc. Novel dosage form. 4,069,086, Cl. 156-378.000.

Reilly, Lawrence C.: *See—*
Carey, James E.; and Reilly, Lawrence C., 4,069,203, Cl. 260-47.0EC.

Reinberg, Alan R.; and Rao, Raman K., to Texas Instruments Incorporated. Silicon etching process. 4,069,096, Cl. 156-643.000.

Reininga, Tomas Lammert Willem, administrator: *See—*
Wanmaker, Willem Lambertus, deceased; Manders, Lambertus Wilhelmus Johannes; and ter Vrugt, Johannes Wilhelmus, 4,069,441, Cl. 313-487.000.

Rembaum, Alan, to California Institute of Technology. Cationic vinyl pyridine copolymers and products thereof. 4,069,365, Cl. 428-262.000.

Renal Systems, Inc.: *See—*
Cosentino, Louis C.; and Fischbach, LeRoy J., 4,068,521, Cl. 73-19.000.

Reneau, Bobby J. Underwater pipeline coupling apparatus. 4,068,492, Cl. 61-110.000.

Resare, Nils Carl Hakan, to Atlas Copco Aktiebolag. Vibration damper for impact tool. 4,068,742, Cl. 188-1.00B.

Restonic Corporation: *See—*
Gross, Nathan; and Friddle, William B., 4,068,329, Cl. 5-255.000.

Reusswig, Gerhard Helmut: *See—*
Pease, Floyd Tim; Reusswig, Gerhard Helmut; and Edling, Porter Russell, 4,068,487, Cl. 61-93.000.

Rey, Laurent C. Attachment device for bracelets and the like. 4,068,355, Cl. 24-265.00R.

Reynolds Metals Company: *See—*
Lillethorup, Ben W., 4,068,440, Cl. 52-301.000.

Rheodyne Incorporated: *See—*
Gundelfinger, Richard, 4,068,528, Cl. 73-422.0GC.

Rhoden, James A.: *See—*
Wood, Palmer R.; and Rhoden, James A., 4,068,468, Cl. 60-39.140.

Rhone-Poulenc Industries: *See—*
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Canard, Pierre; and Levy, Albert, 4,069,188, Cl. 260-29.70T.
Thomas, Maryvonne; and Grosbois, Jean, 4,069,040, Cl. 75-101.0BE.

Rhyner, Edison L.: *See—*
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Ribka, Joachim: *See—*
Heinrich, Ernst; and Ribka, Joachim, 4,069,012, Cl. 8-41.00C.

Rice, Edward K., to Unicon Parking Structures, Inc. Demountable multiple level building structures. 4,068,420, Cl. 52-79.900.

Rice Growers Association of California: *See—*
Mickus, Robert R.; and Munson, James T., 4,068,602, Cl. 111-1.000.

Rice, Kenner C.: *See—*
Weiss, Ulrich; and Rice, Kenner C., 4,069,241, Cl. 560-53.000.

Rice, Roy W.: *See—*
McDonough, William J.; and Rice, Roy W., 4,069,059, Cl. 106-57.000.

Richards, Cecil Graham, to B. C. Richards & Co. Pty. Ltd. Ball valve. 4,068,822, Cl. 251-315.000.

Richards, Gerald F.: *See—*
Hill, Amos; Heckley, Warner M.; and Richards, Gerald F., 4,068,453, Cl. 56-14.400.

Richardson-Merrell Inc.: *See—*
Horgan, Stephen W.; Palopoli, Frank P.; and Schwoegler, Edward J., 4,069,222, Cl. 260-293.520.

Richtzenhain, Hermann; and Stephan, Rudolf, to Dynamit Nobel Aktiengesellschaft. Stabilization of 1,1,1-trichloroethane with a four component system. 4,069,265, Cl. 260-652.50R.

Riecker, Johann Georg, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Apparatus for removing dust-containing gases during coking operations. 4,069,108, Cl. 202-263.000.

Riederer, Wolfgang: *See—*
Luke, Johannes; Muth, Willy; Riederer, Wolfgang; and Wenzel, Gunter, 4,069,087, Cl. 156-391.000.

Riegraf, Gerhard; and Rudolf, Hans, to Gerhard Riegraf KG. Savings bank. 4,068,797, Cl. 232-4.00R.

Rieter Machine Works Ltd.: *See—*
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Riggs, Olen L., Jr., to Kerr-McGee Chemical Corporation. Bipolar electrode and method for constructing same. 4,069,130, Cl. 204-268.000.

Rijckaert, Josephus Franciscus: *See—*
Notelteirs, Victor Rosallie; Rijckaert, Josephus Franciscus; and Ritzen, Johannes Maria Jozef, 4,069,437, Cl. 313-315.000.

Riley, Kenneth L.; and Pine, Lloyd A., to Exxon Research & Engineering Co. Hydrodesulfurization of oil utilizing a narrow pore size distribution catalyst. 4,069,139, Cl. 208-216.000.

Riloga-Werk Julius Schmidt: *See—*
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Ritzen, Johannes Maria Jozef: *See—*
Notelteirs, Victor Rosallie; Rijckaert, Josephus Franciscus; and Ritzen, Johannes Maria Jozef, 4,069,437, Cl. 313-315.000.

Ritzerfeld, Gerhard. Copying apparatus. 4,068,948, Cl. 355-75.000.

Robertaccio, Francis Leonard: *See—*
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Roberts, Hugh: *See—*
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Roberts, Michael M.: *See—*
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Roberts, Robert Earl: *See—*
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Robertson, James A.: *See—*
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Robertson, Robert, to Rank Xerox Ltd. Electrostatic color printing utilizing discrete potentials. 4,068,938, Cl. 355-4.000.

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Rock, Heinrich: *See—*
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Rockwell International Corporation: *See—*
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Rockwool International A/S: *See—*
Ravnkilde, Jorgen Flemming; and Ostrup, Ivar, 4,069,362, Cl. 428-194.000.

Rodgers, Frank J.; and Gibson, Harold, to Nycoil Company. Air hose fitting. 4,068,867, Cl. 285-174.000.

Roeckl, Stefan. Glove. 4,068,317, Cl. 2-169.000.

Rohde, Vernon Carl, to Du Pont de Nemours, E. I., and Company. Method and apparatus for stopper removal. 4,068,798, Cl. 233-26.000.

Rohm GmbH: *See—*
Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, 4,069,381, Cl. 560-1.000.

Rohm and Haas Company: *See—*
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Rokholt, Jorgen, to Maskin A/S K. Lund & Co. Method and arrangement for removing a gas cushion. 4,069,115, Cl. 204-67.000.

Rokva, Temuri Valeryanovich: *See—*
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Romero, Angel L. Utensil for cracking eggs. 4,068,573, Cl. 99-578.000.

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Root, Ernest F., to Itek Corporation. Self-jigging method of fabricating solar collector heat trap from flexible plastic roll material. 4,068,361, Cl. 29-157.30R.

Rosenberger, Siegfried; and Schmidt, Andreas, to Ciba-Geigy Corporation. Diones and their use as polymer stabilizers. 4,069,197, Cl. 260-45.8NE.

Ross, Cray L. Method and a tool for cutting materials. 4,068,548, Cl. 83-1.000.

Ross, Thaddeus C., to Cavitron Corporation. Optical gas analyzer. 4,069,420, Cl. 250-341.000.

Rossetti, Attilio. Tapping head. 4,068,977, Cl. 408-177.000.

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Rothman, Ulf Sven Erik, to Pharmacia Aktiebolag. X-ray contrast preparation containing a hydrophilic polymer containing amino groups. 4,069,306, Cl. 424-4.000.

Rothmans of Pall Mall Canada Limited: *See—*
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Rouse, Paul S. Bicycle generator circuit. 4,069,451, Cl. 322-1.000.

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RSM Co.: *See—*
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Ruegg, Albert: *See—*
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Ruiter, Antonius: *See—*
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Rutledge, Robert W.; and Ganaway, Franklin D., to Phillips Petroleum Company. Process measurement and control. 4,069,413, Cl. 364-118.000.

Ryan, Fred W.; and Webber, Robert J. Internal oil seal for piston. 4,068,563, Cl. 92-157.000.

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Gardiner, John Brooke; Hill, Max W.; and Ryer, Jack, 4,069,162, Cl. 252-32.70E.

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S. C. Johnson & Son Inc.: *See—*
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Gabano, Jean-Paul, 4,069,374, Cl. 429-197.000.

Saha, Narayan C., to Mueller Co. Stab-type joint for smooth end or flareless pipe. 4,068,866, Cl. 285-105.000.

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Saito, Kazuhisa; and Ogawa, Hiroyasu, to Toho Beslon Co., Ltd. Process for producing carbon fibers. 4,069,297, Cl. 423-447.600.

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Sakai, Toshimitsu; Kawai, Mitsuo; and Mizuno, Kiyohumi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Hydraulic transmission control device. 4,068,543, Cl. 74-866.000.

Sakaki, Yoshihiro, to Nissan Motor Co., Ltd. Seal assembly in rotary regenerative heat exchanger. 4,068,708, Cl. 165-9.000.

Sakamoto, Akira: *See—*
Kawada, Seigo; Ohta, Nobuya; and Sakamoto, Akira, 4,069,335, Cl. 424-274.000.

Sakamoto, Kenro: *See—*
Horikoshi, Akira; Sakamoto, Kenro; Koike, Toshihiko; Sadahiro, Yosuke; and Kato, Toyohiko, 4,069,051, Cl. 96-66.00R.

Sakamoto, Masao; Okuda, Ryoichi; Saito, Hitoshi; and Sasazaki, Kenzi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Banjo-shaped axle casing. 4,068,541, Cl. 74-607.000.

Sakuragi, Johji: *See—*
Kamata, Shohichi; Kimura, Yoshinori; and Sakuragi, Johji, 4,069,472, Cl. 340-146.30K.

Salemi, Jerry S.; and Pease, Paul Dean, to Ecological Systems, Inc. Method and apparatus for recovery of metal from liquid. 4,069,127, Cl. 204-229.000.

Sand, Carl A.: *See—*
Sanna, Waldo A.; and Sand, Carl A., 4,068,394, Cl. 35-50.000.

Sanders Associates, Inc.: *See—*
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Sandy, Charles Anthony, to Du Pont de Nemours, E. I., and Company. Process for making tetra (methyl-ethyl) lead compounds. 4,069,237, Cl. 260-437.00R.

Sanford, Michael Elliot: *See—*
Detroit, William John; and Sanford, Michael Elliot, 4,069,217, Cl. 260-124.00R.

Sanko Kagaku Kogyo Kabushiki Kaisha: *See—*
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Sanna, Waldo A.; and Sand, Carl A., to Dayco Corporation. V-belt demonstrator device. 4,068,394, Cl. 35-50.000.

Sano, Fukuzi: *See—*
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 4,068,633, Cl. 123-117.00A.

Sano, Jun, to Tokyo Shibaura Electric Co., Ltd. Amplifier circuit having two negative feedback circuits. 4,069,461, Cl. 330-260.000.

Santa Barbara Research Center: *See—*
Lee, J. Spencer, 4,069,459, Cl. 330-107.000.

Santucci, Nicola; Aleksandrovic, Zabotin Aleksandr; Dmitrievich, Loschilin Evghenii; Lvovich, Galperin Aleksandr; and Archakovich, Onikov Eduard, to Nuovo Pignone S.p.A.; and ZNIKHBI: Tsentralny Nauche - issledevatelsky institut khlopehatobumezhnol promyshlennestl. Supporting members for a revolving comb on a multished weaving loom. 4,068,685, Cl. 139-188.00R.

Sanwa Chemical Co., Ltd.: *See—*
Yonehara, Hiroshi, 4,069,446, Cl. 318-466.000.

Sanyo Trading Co., Ltd.: *See—*
Onizawa, Masao, 4,069,213, Cl. 260-78.00A.
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Sapp, Lawrence G.; Slappey, James F.; and Nixon, C. Bart. Unitizing frame for a pallet. 4,068,599, Cl. 108-55.100.

Sappok, Reinhard: *See—*
Nett, Robert; Fechner, Wolf Dieter; Jettmar, Werner; Polster, Rudolf; Sappok, Reinhard; and Hartmann, Eduard, 4,069,064, Cl. 106-193.00P.

Sargisson, Donald F.; and Adamson, Arthur P., to United States of America, National Aeronautics and Space Administration. Gas turbine engine with convertible accessories. 4,068,470, Cl. 60-226.00R.

Sasaki, Iwao: *See—*
Kamohara, Hideaki; Nakatui, Toji; Yoshitomi, Yuji; Sasaki, Iwao; and Shimada, Kenji, 4,068,372, Cl. 29-727.000.

Sasaki, Takehiko: *See—*
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Sato, Fumio; Fujimura, Shigeru; and Urakawa, Toshio, to Sharp Kabushiki Kaisha. Hammer actuated dot matrix pattern printer. 4,068,583, Cl. 101-93.040.

Sato, Hideo: *See—*
Inukai, Takashi; Sato, Hideo; and Ishibe, Tetsuya, 4,069,167, Cl. 252-299.000.

Sato, Kimihiko; Sajima, Yasuo; Kuno, Toshihiko; and Ohbe, Harumi, to Asahi Glass Company, Ltd. Electrolytic cell. 4,069,129, Cl. 204-258.000.

Sato, Kuniaki, to Kajima Corporation. H-shaped steel column base member and welding thereof. 4,068,436, Cl. 52-298.000.

Sato, Masaaki: *See—*
Arai, Tashiro; Sato, Masaaki; and Kobayashi, Eiji, 4,068,378, Cl. 30-382.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Cartridge-type ink supply device for labeling machines. 4,068,584, Cl. 101-103.000.

Satriano, Robert Joseph: *See—*
Gubitose, Nicholas Francis; Gawelko, Leonard; and Satriano, Robert Joseph, 4,068,788, Cl. 225-1.000.

Sauer, Don R., to National Semiconductor Corporation. Current comparator circuit. 4,069,460, Cl. 330-257.000.

Saunders, Walter Selden: *See—*
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Saviano, A.G.: *See—*
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Sayous, Leon, to Societe Nationale Elf Aquitaine (Production). Device to emit shock waves, with adjustable capacity. 4,069,004, Cl. 431-1.000.

Scanlon, Patricia Marie: *See—*
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, 4,069,249, Cl. 260-519.000.

Schacht, Erich; Mehrhof, Werner; Kayser, Detlev; and Simane, Zdenek, to Merck Patent Gesellschaft mit beschrankter Haftung. Indole derivatives and process for their preparation. 4,069,338, Cl. 424-274.000.

Schaefer, Daniel W.; and Klas, Kenneth H., to Allis-Chalmers Corporation. Mower spindle and spindle drive belt braking arrangement for rotary mower having plurality of mower spindles. 4,068,452, Cl. 56-11.600.

Schaumann, Wolfgang: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Schaumann, Wolfgang; and Vomel, Wolfgang, 4,069,330, Cl. 424-267.000.

Scheler, Holger, to Hagenuk Vormals Neufeldt & Kuhnke GmbH. Method of and apparatus for feeding nonround-section bars to screw machines. 4,068,545, Cl. 82-1.00C.

Schellhammer, Carl Wolfgang; and Seng, Florin, to Bayer Aktiengesellschaft. Coumarins containing sulphonylamino groups. 4,069,228, Cl. 260-308.00R.

Schiaffino, Ubaldo. Self-locking screw nut. 4,068,697, Cl. 151-19.00R.

Schillings, Dieter: *See—*
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Schimmel, Karl F., to PPG Industries, Inc. Polymeric products. 4,069,210, Cl. 260-29.2EP.

Schlage Lock Company: *See—*
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Schlegel GmbH: *See—*
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McCarthy, Justin P.; Schlossman, Mitchell L.; and Mores, Lee R., 4,069,347, Cl. 424-358.000.

Schmid, August, to Patentverwertungs-und Finanzierungsgesellschaft, Serania AG. Bowling pin positioning apparatus. 4,068,845, Cl. 273-42.00A.

Schmid, Herbert, Jr.; and Benatti, Edmo. Tool fastening device. 4,068,559, Cl. 90-11.00D.

Schmidt, Andreas: *See—*
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Schmidt, Arnold; and Sybertz, Hans, to Hombak Maschinenfabrik KG. Cutter shaft for wood machining apparatus. 4,068,694, Cl. 144-230.000.

Schmiel, Mark O.: *See—*
Schmiel, William J.; and Schmiel, Mark O., 4,068,351, Cl. 19-105.000.

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Schmitt, Marvin Glenn, to AMI Industries, Inc. Method and apparatus for stacking and blending bricks or the like. 4,068,766, Cl. 214-6.00A.

Schneider, Ruedi: *See—*
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Schneider, Warren J., to Green Cross Solid State Oxygen, Inc. Oxygen generator. 4,069,021, Cl. 23-281.000.

Schneider, William P.: *See—*
Pike, John E.; and Schneider, William P., 4,069,386, Cl. 560-121.000.

Schnitzler, Danny Louis, to Union Carbide Corporation. Stuffing box seal. 4,068,853, Cl. 277-102.000.

Scholtus, Christiaan Gustaaf Adolf; Hoeboer, Willebrordus Cornelis; and Ruiter, Antonius, to Ultra-Centrifuge Nederland N.V. Holder for a welding head. 4,068,791, Cl. 228-45.000.

Scholz, Erwin, to Rollei-Werke Franke & Heidecke. Timing mechanism for photographic shutters. 4,069,491, Cl. 354-267.000.

Schon, Francois: *See—*
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Schrager, Morton: *See—*
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Schrankel, Heike: *See—*
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Schranz, Claude: *See—*
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Schraud, Alfred; and Dressler, Wolfgang, to Artos Dr.-Ing. Meier Windhorst Kommanditgesellschaft. Device for cleaning and heat recovery from the exhaust gases in heat treatment and drying installations. 4,068,709, Cl. 165-95.000.

Schreyer, Kenneth D.; and Behnke, Edward R., to Columbus McKinnon Corporation. Forged master link for sling chain devices. 4,068,467, Cl. 59-93.000.

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Schubert & Salzer: *See—*
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Schwab, William B.: *See—*
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Schwamb Corporation, The: *See—*
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Schwoegler, Edward J.: *See—*
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Sciambi, Louis Joseph: *See—*
Geshner, Robert Andrew; and Sciambi, Louis Joseph, 4,068,390, Cl. 34-239.000.

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SCM Corporation: *See—*
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Scott, Ernest R.; and MacFarland, Charles H., to Scott & Fetzer Company, The. Transparent belt lifter mounting for vacuum cleaners. 4,068,341, Cl. 15-339.000.

Scott & Fetzer Company, The: *See—*
Scott, Ernest R.; and MacFarland, Charles H., 4,068,341, Cl. 15-339.000.

Scott, Hollis C., to Unadilla Silo Company, Inc. Pre-stressed tension ring structures. 4,068,435, Cl. 52-223.00R.

Scott, Leroy A. Heavy duty lifting devices. 4,068,826, Cl. 254-134.000.

Scriptomatic, Inc.: *See—*
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Sealtran Corporation: *See—*
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Seaman, J. Kenneth. Method and apparatus for cutting wood. 4,068,695, Cl. 144-312.000.

Secmer S.A.: *See—*
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Seeholzer, Josef: *See—*
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Seelye, John F., to Monsanto Company. Apparatus improvements in removing articles from wheel blow molding machines. 4,069,002, Cl. 425-539.000.

Segraves, William Benjamin; and Mulholland, Kenneth Lee, to Du Pont de Nemours, E. I., and Company. Crimpable nylon bicomponent filament and fabrics made therefrom. 4,069,363, Cl. 428-224.000.

Seiderman, Maurice. Fenestrated hydrogels for contact lens use and method for making same. 4,068,933, Cl. 351-160.000.

Seidler, Jack Harold, to Akzona Incorporated. Electrical contact socket. 4,068,917, Cl. 339-258.00R.

Self, Richard E., to Control Components, Inc. High energy loss device. 4,068,683, Cl. 137-625.300.

Selhofer, Henri Othmar, to Scriptomatic, Inc. Selective duplicating machine. 4,068,580, Cl. 101-53.000.

Sell, William F.: *See—*
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Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., to American Home Products Corporation. Oxamic acid derivatives for the prevention of immediate type hypersensitivity reactions. 4,069,343, Cl. 424-319.000.

Selzer, Elmer A.: *See—*
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Seng, Florin: *See—*
Schellhammer, Carl Wolfgang; and Seng, Florin, 4,069,228, Cl. 260-308.00R.

Seno, Iwao: *See—*
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Senoo, Masao: *See—*
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Senter, Jonas. Shoe construction with upper of leather or like material anchored to inner sole and sole structure sealed with foxing strip or simulated foxing strip. 4,068,395, Cl. 36-83.000.

Sera, Hidefumi: *See—*
Tsubota, Motohiko; Hanai, Sosuke; Oishi, Yasushi; Sera, Hidefumi; and Yamamoto, Nobuo, 4,069,048, Cl. 96-3.000.

Servimetal: *See—*
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SGS-ATES Componenti Elettronici S.p.A.: *See—*
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Shaduya, Vladimir Leontievich: *See—*
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Shaffer, B. Jeremiah, to Pease Company. Cut glass panel. 4,068,441, Cl. 52-308.000.

Shanbrom, Edward, to Edward Shanbrom, Inc. Simplified methods for preparation of very high purity Factor VIII concentrate. 4,069,216, Cl. 260-112.00B.

Shaner, Donald R.: *See—*
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Shanks, Forrest E., II, to Vetco Offshore, Inc. Pipe connectors. 4,068,865, Cl. 285-90.000.

Shannon, William J.: *See—*
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Sharp, Everett H. Telescoping universal joints. 4,068,499, Cl. 64-8.000.

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Sharp, Russell G.; Reed, Charles C.; and Cooley, Denton A., to Texas Medical Products, Inc. Surgical suction wand assembly and method. 4,068,664, Cl. 128-276.000.

Shaw, Fred B., to Continental Group, Inc., The. Process for vacuum packaging of roasted, ground coffee. 4,069,349, Cl. 426-395.000.

Shaw, John D.: *See—*
Parkes, David M.; and Shaw, John D., 4,068,755, Cl. 198-557.000.

Shaw, Joseph Michael; and Zaininger, Karl Heinz, to RCA Corporation. Method of manufacturing apertured aluminum oxide substrates. 4,069,094, Cl. 156-612.000.

Shaw, Richard Dudley: *See—*
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Sheets, Kerney T., to Ray, David L. Method and apparatus for controlling the tension of drive belts. 4,068,535, Cl. 74-242.11A.

Sheldon, Robert T. Shade-producing structure and method. 4,068,404, Cl. 47-26.000.

Shell Oil Company: *See—*
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Carey, James E.; and Reilly, Lawrence C., 4,069,203, Cl. 260-47.0EC.

Shellhammer, Daniel M.: *See—*
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Shepherd, George E. Addressing machine. 4,068,581, Cl. 101-53.000.

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Sherman, Ralph R., Jr., to General Electric Company. Arrangement for maintaining reception of a radio receiver on the stronger of two signals. 4,069,455, Cl. 325-469.000.

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Shibata, Minoru; Iwasawa, Naozumi; Watanabe, Tadashi; and Yoshihara, Ichiro, to Kansai Paint Company, Limited. Thermosetting acrylic powder coating compositions. 4,069,274, Cl. 260-836.000.

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Shimoji, Katsuichi: *See—*
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Sika AG, Vormals Kaspar Winkler & Co.: *See—*
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Sikharulidze, Nodar Georgievich: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Mainsuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sikharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; Dubov, Yauzhe Markovich; Bogdanov, Eduard Alimovich; Gogoladze, Georgy Trofimovich; Teisheva, Alla Abelevna; Ryzygraeva, Galina Nikolaevna; Melnikov-Eikhenvald, Mikhail Alexeevich; and Rokva, Temuri Valeryanovich, 4,069,116, Cl. 204-96.000.

Silverman, Daniel, to Geophysical Systems Corporation. Method of determining weathering corrections in seismic record processing. 4,069,471, Cl. 340-15.5TC.

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Simm, Walter; Gosling, Claus; Bonart, Richard; and von Falkai, Bela, to Bayer Aktiengesellschaft. Filter made of electrostatically spun fibres. 4,069,026, Cl. 55-6.000.

Simmons, Gerald Paul; and Grooss, Frank August, to Caterpillar Tractor Co. Control linkage for crossing pivotal joint. 4,068,733, Cl. 180-77.00R.

Simmons, John Robert, to General Electric Company. Variable cycle engine with split fan section. 4,068,471, Cl. 60-262.000.

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Dotsko, Martin, 4,068,922, Cl. 350-126.000.
Ferriss, Lincoln Stark, 4,068,533, Cl. 74-5.60D.
Koester, Richard H., 4,068,809, Cl. 242-197.000.
Koester, Richard H.; and Hickey, Roy E., 4,068,935, Cl. 353-71.000.

Singh, Prithipal, to Syva Company. Lidocaine antigens and antibodies. 4,069,105, Cl. 195-63.000.

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Skaling, Percy E., to Soilmoisture Equipment Corporation. Portable tensiometer for soil moisture measurement. 4,068,525, Cl. 73-73.000.

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SKF Industrial Trading and Development Company, N.V.: *See—*
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SKF Nova AB: *See—*
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Skoultchi, Martin M.; and Davis, Irwin J., to National Starch & Chemical Corporation. Crosslinked pressure sensitive adhesive compositions. 4,069,123, Cl. 204-159.180.

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Machacek, Frantisek; Bezemek, Vladislav; Kudlacek, Dusan; Kliment, Lubomir; Pirek, Arnost; Smejkal, Vladimir; Svoboda, Frantisek; and Vach, Stanislav, 4,068,320, Cl. 2-227.000.

Smirnov, Rem Vasilievich: *See—*
Vitaliev, Georgy Viktorovich; Gvinepadze, Alexei Davidovich; Smirnov, Rem Vasilievich; and Sofiisky, Gury Dmitrievich, 4,069,473, Cl. 365-49.000.

Smit, Elzo; and van Wijk, Keimpe, to U.S. Philips Corporation. Stylus unit for pick-ups and/or cutters. 4,068,850, Cl. 274-37.000.

Smith, Charles V. Latched cabinet structure. 4,068,872, Cl. 292-87.000.

Smith, George H., to Minnesota Mining and Manufacturing Company. Photopolymerizable composition containing a sensitized aromatic sulfonium compound and a cationacally polymerizable monomer. 4,069,054, Cl. 96-115.00P.

Smith International, Inc.: *See—*
Garner, Lloyd L.; and Harris, Charles Richard, 4,068,731, Cl. 175-339.000.

Smith, Jonathan; Larko, Robert C.; and Booth, Eugene E., to Sunbeam Equipment Corporation. Rotary retort furnace. 4,069,007, Cl. 432-3.000.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 4,069,327, Cl. 424-250.000.

Smith, Richard B.: *See—*
Eschweiler, Earl E., Jr.; and Smith, Richard B., 4,068,946, Cl. 355-64.000.

Smith, Richard K. Hand-operated press for baling newspapers. 4,068,576, Cl. 100-219.000.

Smith, Richard Seymour; and Hider, Philip Abraham, to Carrier Corporation. Refrigeration system demonstration device. 4,068,391, Cl. 35-13.000.

Smith, Theodore. Water absorbing and urine stable step-wise grafted starch-polyacrylonitrile copolymers. 4,069,177, Cl. 260-17.4GC.

Smith, Walter E.: *See—*
Fedor, Robert J.; and Smith, Walter E., 4,069,369, Cl. 428-557.000.

Smithen, Carey Ernest: *See—*
Hassall, Cedric Herbert; Johnson, William Henry; Krohn, Antonin; Smithen, Carey Ernest; and Thomas, William Anthony, 4,069,229, Cl. 260-308.00R.

SmithKline Corporation: *See—*
DeMarinis, Robert Michael, 4,069,243, Cl. 560-153.000.

Smorzaniuk, Adam: *See—*
O'Neil, Charles P.; Smorzaniuk, Adam; and Young, James O., 4,068,682, Cl. 137-624.110.

Sneider, Vincent R. Accordion-style syringes, douches and attachments therefor. 4,068,662, Cl. 128-232.000.

Snoy, Joseph B., to Irvin Disc, Incorporated. Multi-plate clutch having means to prevent plate flutter. 4,068,747, Cl. 192-30.00V.

Snyder, Richard C.: *See—*
Bodinger, Donald C.; Tombers, Paul A.; and Snyder, Richard C., 4,068,411, Cl. 49-408.000.

Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Vargiu, Silvio; Paparatto, Piero; Parodi, Antonio; and Brumat, Giorgio, 4,069,193, Cl. 260-40.00R.

Societe Anonyme de Telecommunications: *See—*
Jolivet, Jean-Claude; and Stouls, Francois-Xavier Antoine, 4,069,504, Cl. 358-142.000.

Societe Anonyme dite: Societe Hexachimie: *See—*
Teulon, Jean-Marie, 4,069,326, Cl. 424-248.550.

Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See—*
Normand, Alfred, 4,069,071, Cl. 148-16.000.

Societe Generale pour l'Emballage: *See—*
Brax, Jean Albert, 4,069,032, Cl. 65-337.000.

Societe Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Mantovani, Pietro; and Roldi, Silvio, 4,069,402, Cl. 179-175.31R.

Societe Nationale Elf Aquitaine (Production): *See—*
Sayous, Leon, 4,069,004, Cl. 431-1.000.

Sofiisky, Gury Dmitrievich: *See—*
Vitaliev, Georgy Viktorovich; Gvinepadze, Alexei Davidovich; Smirnov, Rem Vasilievich; and Sofiisky, Gury Dmitrievich, 4,069,473, Cl. 365-49.000.

Soileau, Trasimond A., to General Electric Company. Pulse circuit for gaseous discharge lamps. 4,069,442, Cl. 315-208.000.

Soilmoisture Equipment Corporation: *See—*
Skaling, Percy E., 4,068,525, Cl. 73-73.000.

Somers, Peter John: *See—*
Barker, Sidney Alan; Somers, Peter John; Woodbury, Robin Ross; and Stafford, Geoffrey Harry, 4,069,104, Cl. 195-31.00F.

Somerville, Dean S.: *See—*
Brandt, Paul W.; and Somerville, Dean S., 4,068,365, Cl. 29-261.000.

Sommer, Edward J., Jr.; and Kenny, Garry R., to Magnetic Separation Systems, Inc. Electromagnetic eddy current materials separator apparatus and method. 4,069,145, Cl. 209-212.000.

Son, Pyong-Nae: *See—*
Layer, Robert Wesley; and Son, Pyong-Nae, 4,069,195, Cl. 260-45.8NW.

Sondermann, Claus: *See—*
Fassett, John R.; Rondas, Ivan V.; George, Joseph P.; and Sondermann, Claus, 4,068,461, Cl. 58-23.00R.

Sony Corporation: *See—*
Doi, Toshitada; and Wakabayashi, Hitoshi, 4,069,394, Cl. 179-1.00G.
Nakayama, Akira; Ohkoshi, Akio; Muramoto, Shoichi; Natori, Takehisa; Sumi, Koichiro; Nakagawa, Hideaki; and Aozuka, Torao, 4,069,436, Cl. 313-302.000.
Ninomiya, Takeshi, 4,069,499, Cl. 358-8.000.
Yamanaka, Seisuke, 4,069,501, Cl. 358-44.000.

Southern Tool Mfg. Co., Inc.: *See—*
Chivers, Thomas R., 4,068,348, Cl. 16-129.000.

Southwire Company: *See—*
Cofer, Daniel B.; and Chia, Enrique Calixto, 4,068,705, Cl. 164-270.000.

Spanjer Brothers Inc.: *See—*
Parisi, Dominick, 4,068,398, Cl. 40-607.000.

Spaulding, Charles A., Jr. Playing surface for handball and racquetball courts. 4,068,840, Cl. 272-3.000.

Specken, Gerald A. Clarification of clay containing water. 4,069,152, Cl. 210-50.000.

Speers, Samuel F.; and Pelto, James L., to Hasbro Development Corporation. Carton clip. 4,068,353, Cl. 24-81.0BF.

Spence-Bate, Harry Arthur Hele. Microfiche records. 4,068,941, Cl. 355-5.000.

Spence-Bate, Harry Arthur Hele. Microform editors. 4,068,945, Cl. 355-54.000.

Spencer, Frederick: *See—*
Fullalove, Richard; and Spencer, Frederick, 4,068,803, Cl. 241-32.000.

Sperner, Franz: *See—*
Harmsen, Nils; and Sperner, Franz, 4,069,370, Cl. 428-671.000.

Sperry Rand Corporation: *See—*
Butler, L. Dennis; Butler, Gene R.; Furtado, Anthony E.; Welker, Jerry W.; and Grey, Donald M., 4,068,804, Cl. 241-101.700.
Jacobson, Peter E.; and Allen, Terry S., 4,068,909, Cl. 339-5.00R.
Webb, Bryant F., 4,068,454, Cl. 56-220.000.

Spiller Spring Company: *See—*
Rakow, Wallace J.; Millette, Elmer J.; and Johnston, Peter J., 4,068,330, Cl. 5-267.000.

Spindler, Walter G., to H & H Licensing Corporation. Multi-stage screw-compressor with different tooth profiles. 4,068,984, Cl. 418-9.000.

Spiral Step Tool Company: *See—*
Breitenstein, Charles Thomas; and Holecek, Allen Roland, 4,068,414, Cl. 51-95.0LH.

Spisak, Edward G. Method of forming rings. 4,068,362, Cl. 29-159.00A.

Spivack, John D., to Ciba-Geigy Corporation. 2,3,5-Trialkyl-4-hydroxybenzylphosphonates and phosphinates. 4,069,200, Cl. 260-45.85S.

Sprecher, Charles Grimes, III: *See—*
Ebner, John Steven; Pizzeri, Francis Charles; and Sprecher, Charles Grimes, III, 4,068,961, Cl. 403-55.000.

Sprenkle, William E., Jr.: *See—*
Barkhuff, Raymond A., Jr.; and Sprenkle, William E., Jr., 4,069,288, Cl. 264-141.000.

Spring, David J.: *See—*
Gascoyne, John M.; Hems, Roger; and Spring, David J., 4,069,345, Cl. 424-343.000.

Staalkat B.V.: *See—*
van der Schoot, Jelle, 4,068,882, Cl. 294-116.000.

Stacey, Francis Wilfred: *See—*
Prichard, William W.; and Stacey, Francis Wilfred, 4,069,320, Cl. 424-226.000.

Stackhouse, Theodore Hahn, to Cincinnati Milacron Inc. Manipulator. 4,068,536, Cl. 74-417.000.

Staffin, H. Kenneth; and Staffin, Robert, to Procedyne Corporation. Gas-diffusion plate for fluidized bed apparatus. 4,068,389, Cl. 34-57.00A.

Staffin, Robert: *See—*
Staffin, H. Kenneth; and Staffin, Robert, 4,068,389, Cl. 34-57.00A.

Stafford, Geoffrey Harry: *See—*
Barker, Sidney Alan; Somers, Peter John; Woodbury, Robin Ross; and Stafford, Geoffrey Harry, 4,069,104, Cl. 195-31.00F.

Standard Oil Company (Indiana): *See—*
Fields, Ellis K., 4,069,271, Cl. 260-669.00R.
Peevey, Robert M., 4,068,729, Cl. 175-8.000.

Stanford, Eleanor D. J.: *See—*
Pickard, Frank W., 4,068,504, Cl. 70-18.000.

Stanger, Robert J.; and Siebens, Larry N., to Amerace Corporation. Electrical connector apparatus. 4,068,913, Cl. 339-111.000.

Stanley, William L.; Watters, Glenn G.; and Chan, Bock G., to United States of America, Agriculture. Immobilization of enzymes on keratin. 4,069,106, Cl. 195-68.000.

Stanley Works, The: *See—*
Rathbun, Richard H.; and West, Robert F., 4,068,375, Cl. 30-125.000.

Starkovich, John A.; and Blumenthal, Jack L., to TRW. Hydrogen production by catalytic coal gasification. 4,069,304, Cl. 423-648.00R.

Stauffer Chemical Company: *See—*
Blake, Robert J.; and Roy, Guy W., 4,069,170, Cl. 252-441.000.
Hixson, Elmer L.; and Talkington, Carl M., 4,069,118, Cl. 204-99.000.
Teach, Eugene G., 4,069,038, Cl. 71-95.000.

Steam Vacuum Extraction Limited: *See—*
Forward, Raymond John, 4,068,340, Cl. 15-321.000.

Steidlitz, Mark, to EMC Technology, Inc. High heat dissipation mounting for solid state devices and circuits. 4,069,497, Cl. 357-80.000.

Stephan, Rudolf: *See—*
Richtzenhain, Hermann; and Stephan, Rudolf, 4,069,265, Cl. 260-652.50R.

Sterling Drug Inc.: *See—*
Bell, Malcolm R., 4,069,337, Cl. 424-274.000.
Zenitz, Bernard L., 4,069,256, Cl. 260-570.00R.

Stevens, Laurence G., to UOP Inc. Hydrometallurgical recovery of metal values. 4,069,294, Cl. 423-32.000.

Stimulation Technology, Inc.: *See—*
Niemi, Bill Howard, 4,068,669, Cl. 128-419.00R.

Stockhaus, Klaus: *See—*
Langbein, Adolf; Merz, Herbert; Walther, Gerhard; and Stockhaus, Klaus, 4,069,328, Cl. 424-266.000.

Stoker, Robert J. End plate connection unit for beams. 4,068,964, Cl. 403-272.000.

Stoltefuss, Jurgen: *See—*
Lohmer, Karl; von Konig, Anita; Schutz, Siegismund; and Stoltefuss, Jurgen, 4,069,052, Cl. 96-76.00R.

Stoltz, Jean. Section piece for T-section assembly. 4,068,443, Cl. 52-726.000.

Stone, Clement A., to Merck & Co., Inc. Anti-hypertensive compositions. 4,069,333, Cl. 424-272.000.

Stouls, Francois-Xavier Antoine: *See—*
Jolivet, Jean-Claude; and Stouls, Francois-Xavier Antoine, 4,069,504, Cl. 358-142.000.

Straub, Henrik H., to United States of America, Air Force. Adaptive skid detector threshold apparatus. 4,068,903, Cl. 303-99.000.

Straus, P. Barry: *See*—
Lodholz, John C.; and Straus, P. Barry, 4,069,150, Cl. 210-112.000.

Streeter, Walter E. Line level. 4,068,386, Cl. 33-369.000.

Stuart, Clifford C. Golf peg score card. 4,068,972, Cl. 283-49.000.

Stuckmann, Dieter; Jutte, Hans; Babendererde, Siegmund; and Bokemeyer, Reinhard, to Gewerkschaft Eisenhutte Westfalia; and Hochtief AG. Apparatus for driving tunnels or the like. 4,068,485, Cl. 61-85.000.

Stump, L. G., to Sun Oil Company. Wire-line retrievable, mechanically operated spot valve. 4,068,712, Cl. 166-156.000.

Subrick, Joseph, to United States Steel Corporation. Hydraulic flow divider for a mining vehicle. 4,068,728, Cl. 173-27.000.

Suddarth, Jack M. Adjustable lens grinding apparatus. 4,068,413, Cl. 51-55.000.

Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft: *See*—
Michaud, Horst; Ortenburger, Gunter; Poschinger, Wilhelm; Rock, Heinrich; and Seeholzer, Josef, 4,069,383, Cl. 544-202.000.

Suga, Shigeru. Seal structure for tank lid of spray corrosion tester. 4,069,019, Cl. 23-253.00C.

Suga, Shigeru. Lamp equipped with magnets. 4,069,416, Cl. 313-161.000.

Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Takai, Kiyoshi; and Maruyama, Noboru, to Mizusawa Kagaku Kogyo Kabushiki Kaisha. Treating raw materials containing titanium components. 4,069,295, Cl. 423-49.000.

Suganuma, Yoji: *See*—
Yanagisawa, Masahiro; and Suganuma, Yoji, 4,069,360, Cl. 428-64.000.

Sugerman, Gerald: *See*—
Monte, Salvatore J.; and Sugerman, Gerald, 4,069,192, Cl. 260-37.0EP.

Sullivan, Kevin J., to Corning Glass Works. Anticoagulant coating composition. 4,069,185, Cl. 260-29.6HN.

Sullivan, Paul E.: *See*—
Herbert, John T.; Kovitch, Frank J.; Sullivan, Paul E.; and Vitt, Stanley P., 4,068,864, Cl. 285-49.000.

Sumi, Koichiro: *See*—
Nakayama, Akira; Ohkoshi, Akio; Muramoto, Shoichi; Natori, Takehisa; Sumi, Koichiro; Nakagawa, Hideaki; and Aozuka, Torao, 4,069,436, Cl. 313-302.000.

Sumitomo Bakelite Company Limited: *See*—
Maruyama, Kenjiro; Miki, Tsuyoshi; Nishi, Yoshiyuki; and Takao, Masato, 4,068,339, Cl. 15-215.000.

Sumitomo Chemical Company, Limited: *See*—
Araki, Masashi; and Nagase, Tsuneyuki, 4,069,385, Cl. 560-106.000.
Morooka, Shigeaki; Tamoto, Katsumi; and Matuura, Akira, 4,069,230, Cl. 260-319.100.

Sumner, John S. Roofing for domical shell structure. 4,068,422, Cl. 52-80.000.

Sun Oil Company: *See*—
Stump, L. G., 4,068,712, Cl. 166-156.000.

Sun Oil Company of Pennsylvania: *See*—
Vanderwerff, William D., 4,069,248, Cl. 260-515.00P.

Sunbeam Equipment Corporation: *See*—
Smith, Jonathan; Larko, Robert C.; and Booth, Eugene E., 4,069,007, Cl. 432-3.000.

Super Products Corporation: *See*—
Flynn, Thomas P., 4,068,824, Cl. 254-124.000.

Susman, Samuel Eugene, to American Cyanamid Company. Polychlorinated benzene diamines as curing agents for epoxy resins. 4,069,204, Cl. 260-47.0EN.

Suzuki, Osamu; Tanabe, Keizo; and Hashimoto, Tetsutaro, to Agency of Industrial Science & Technology. Method for manufacture of poly-fatty acids. 4,069,235, Cl. 260-407.000.

Suzuki, Takao: *See*—
Yamawaki, Masao; Aoki, Katsuo; Oka, Yoshio; Suzuki, Takao; Ina, Osamu; and Hara, Kinihiko, 4,069,009, Cl. 432-122.000.

Svaty, Vladimir, to Elitex, koncern textilniho strojirenstvi. Technique for controllably reciprocating the weft insertion portion of a shuttle-type weaving loom. 4,068,686, Cl. 139-438.000.

Svoboda, Frantisek: *See*—
Machacek, Frantisek; Bezemek, Vladislav; Kudlacek, Dusan; Kliment, Lubomir; Pirek, Arnost; Smejkal, Vladimir; Svoboda, Frantisek; and Vach, Stanislav, 4,068,320, Cl. 2-227.000.

Swager, William E. Safety lock for a removable shaft. 4,068,960, Cl. 403-20.000.

Swank, Robert K.: *See*—
Lubowski, Stanley J.; and Swank, Robert K., 4,069,355, Cl. 427-70.000.

Sweet, David L.: *See*—
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,068,769, Cl. 214-83.180.

Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., to American Carrier Equipment. Cargo box. 4,068,769, Cl. 214-83.180.

Sybertz, Hans: *See*—
Schmidt, Arnold; and Sybertz, Hans, 4,068,694, Cl. 144-230.000.

Syva Company: *See*—
Singh, Prithipal, 4,069,105, Cl. 195-63.000.

Taboada, John. Pulsed laser densitometer system. 4,068,956, Cl. 356-205.000.

Tadokoro, Eiichi; Aonuma, Masashi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Process for the production of a ferromagnetic metal powder. 4,069,073, Cl. 148-105.000.

Taggart, George W.: *See*—
Bond, Desmond H.; Taggart, George W.; and Jaeger, Kurt S., 4,069,020, Cl. 23-262.000.

Tailleux, Christian: *See*—
Poitras, Andre; and Tailleux, Christian, 4,068,582, Cl. 101-76.000.

Takahashi, Mitsunao: *See*—
Kamei, Siro; Takeda, Kenzo; Takahashi, Mitsunao; and Nakano, Jiro, 4,069,057, Cl. 106-55.000.

Takai, Kiyoshi: *See*—
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Takai, Kiyoshi; and Maruyama, Noboru, 4,069,295, Cl. 423-49.000.

Takamiya, Bonnosuke, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Multicylinder internal combustion engine. 4,068,637, Cl. 123-119.00A.

Takano, Mitsuo: *See*—
Yano, Nobumitsu; Fukinbara, Itaru; and Takano, Mitsuo, 4,069,351, Cl. 426-650.000.

Takao, Masato: *See*—
Maruyama, Kenjiro; Miki, Tsuyoshi; Nishi, Yoshiyuki; and Takao, Masato, 4,068,339, Cl. 15-215.000.

Takata, Akira; Tanahashi, Toshio; and Oda, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. First and second air feeding means to regulate a/f ratio wherein second air feed requires two signals for actuation. 4,068,472, Cl. 60-276.000.

Takeda Chemical Industries, Ltd.: *See*—
Imada, Akira; Nozaki, Yukimasa; Hasegawa, Toru; and Yoneda, Masahiko, 4,069,316, Cl. 424-122.000.
Tsujimoto, Yasuhiro; Azuma, Junichi; Matsumura, Yoshihiko; and Noda, Katsumi, 4,069,155, Cl. 210-195.00R.

Takeda, Hirokazu: *See*—
Komatsu, Tadaaki; Takeda, Hirokazu; Oshio, Hideki; Matsuoka, Kimiaki; and Aramaki, Minoru, 4,069,266, Cl. 260-653.000.

Takeda, Kenzo: *See*—
Kamei, Siro; Takeda, Kenzo; Takahashi, Mitsunao; and Nakano, Jiro, 4,069,057, Cl. 106-55.000.

Takeshi, Takeshi; Muramatsu, Fumio; and Watanabe, Akinori, to Matsushita Electric Industrial Co., Ltd. Recording material. 4,069,440, Cl. 313-465.000.

Takeda, Yosiaki: *See*—
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 4,068,633, Cl. 123-117.00A.

Takenouchi, Mutsuo: *See*—
Nakano, Keita; and Takenouchi, Mutsuo, 4,068,588, Cl. 101-466.000.

Taketani, Yutaka: *See*—
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,069,206, Cl. 260-49.000.

Taki Chemical Co., Ltd.: *See*—
Akazawa, Hakuichi; and Nishimura, Kenichi, 4,069,300, Cl. 423-555.000.

Takita, Hitoshi: *See*—
Nishita, Sadao; Enomoto, Satoru; Wada, Hisayuki; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,069,211, Cl. 260-77.5MA.

Taliani, Laurent: *See*—
Perronnet, Jacques; and Taliani, Laurent, 4,069,319, Cl. 424-200.000.

Talkington, Carl M.: *See*—
Hixson, Elmer L.; and Talkington, Carl M., 4,069,118, Cl. 204-99.000.

Tallent, Othar K., to United States of America, Energy. Method for dissolving plutonium dioxide. 4,069,293, Cl. 423-3.000.

Tamai, Yasuo: *See*—
Tadokoro, Eiichi; Aonuma, Masashi; and Tamai, Yasuo, 4,069,073, Cl. 148-105.000.

Tamao, Yoshikuni: *See*—
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,317, Cl. 424-177.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,318, Cl. 424-177.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,323, Cl. 424-244.000.

Tamao, Yoshikuno: *See*—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; and Tonomura, Shinji, 4,069,329, Cl. 424-267.000.

Tamoto, Katsumi: *See*—
Morooka, Shigeaki; Tamoto, Katsumi; and Matuura, Akira, 4,069,230, Cl. 260-319.100.

Tamura, Masahide: *See*—
Mayama, Masayoshi; Kobayashi, Tohru; and Tamura, Masahide, 4,069,053, Cl. 96-87.00A.

Tanabe, Keizo: *See*—
Suzuki, Osamu; Tanabe, Keizo; and Hashimoto, Tetsutaro, 4,069,235, Cl. 260-407.000.

Tanahashi, Toshio: *See*—
Takata, Akira; Tanahashi, Toshio; and Oda, Toshio, 4,068,472, Cl. 60-276.000.

Tanaka, Atsuyuki; and Nishioka, Nobuaki, to Minolta Camera Kabushiki Kaisha. Automatic information retrieval device. 4,068,934, Cl. 353-26.00A.

Tanaka, Hidetsugu: *See*—
Kyo, Sunao; Hayashi, Katsuhiko; Tanaka, Hidetsugu; and Oka, Hideaki, 4,069,261, Cl. 260-635.00E.

Tanaka, Minoru; Ishii, Youji; Yagi, Touru; and Otaka, Syoichi, to Honda Giken Kogyo Kabushiki Kaisha. Control system for ignition timing of engine. 4,068,634, Cl. 123-117.00A.

Tanaka, Seizo, to Showa Denko Kabushiki Kaisha; and Sanko Kagaku Kogyo Kabushiki Kaisha. Process and apparatus for forming aerosols of pesticidal chemicals. 4,069,308, Cl. 424-43.000.

Tanaka, Yutaka, to Toytown Corporation. Toy vehicle and trackway. 4,068,402, Cl. 46-216.000.

Tani, Chizuka; and Ogawa, Fumihiro, to Nippon Electric Company, Ltd. Liquid crystal display device. 4,068,925, Cl. 350-160.0LC.

Taniguchi, Susumu, to King Baby Corporation. Shoulder baby bag. 4,068,786, Cl. 224-6.000.

Tanner, Herbert: *See*—
Mannsfeld, Sven Peter; Pfeiffer, Arno; Tanner, Herbert; Wagner, Hans; and Liebetanz, Erich, deceased, 4,069,251, Cl. 260-534.00S.

Tararine, Vsevolod; and Hubert, Jacques. Projectile firing training method and device. 4,068,393, Cl. 35-25.000.

Tateno, Masamitu: *See*—
Iwamitu, Yasuyuki; Uchida, Yoshiaki; Kobayashi, Shigeru; and Tateno, Masamitu, 4,068,484, Cl. 61-85.000.

Taylor, L. Lamoyne: *See*—
Parker, Clarence B.; McCray, Peter M.; and Taylor, L. Lamoyne, 4,069,482, Cl. 343-7.700.

TDK Electronics Company, Limited: *See*—
Umeki, Shinji; Aue, Kazuhide; and Tokuoka, Yasumichi, 4,069,367, Cl. 428-403.000.

Teach, Eugene G., to Stauffer Chemical Company. Acyclic and alicyclic N-substituted halo-2-pyrrolidinones and their utility as herbicides. 4,069,038, Cl. 71-95.000.

Tecnobec, Inc.: *See*—
Belanger, Gerard, 4,068,823, Cl. 254-89.00H.

Teijin Limited: *See*—
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,069,206, Cl. 260-49.000.

Teikoku Kako Co., Ltd.: *See*—
Kamei, Siro; Takeda, Kenzo; Takahashi, Mitsunao; and Nakano, Jiro, 4,069,057, Cl. 106-55.000.

Teisheva, Alla Abelevna: *See*—
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Mainsuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sikharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; Dubov, Yauzhe Markovich; Bogdanov, Eduard Alimovich; Gogoladze, Georgy Trofimovich; Teisheva, Alla Abelevna; Ryzygraeva, Galina Nikolaevna; Melnikov-Eikhenvald, Mikhail Alexeevich; and Rokva, Temuri Valeryanovich, 4,069,116, Cl. 204-96.000.

Tekken Construction Co., Ltd.: *See*—
Iwamitu, Yasuyuki; Uchida, Yoshiaki; Kobayashi, Shigeru; and Tateno, Masamitu, 4,068,484, Cl. 61-85.000.
Uchida, Yoshiaki; Nakaya, Akira; and Saito, Kunitaka, 4,068,486, Cl. 61-85.000.

Tektronix, Inc.: *See*—
Frye, George Joseph, 4,069,447, Cl. 320-1.000.
Veenendaal, Cornelis Teunis, 4,069,453, Cl. 324-158.00F.

Tempel, Gary J. Method and apparatus for a game. 4,068,844, Cl. 273-1.00R.

Tempmaster Corporation: *See*—
Dean, Raymond H.; and Roberts, Michael M., 4,068,736, Cl. 181-224.000.

ter Vrugt, Johannes Wilhelmus: *See*—
Wanmaker, Willem Lambertus, deceased; Manders, Lambertus Wilhelmus Johannes; and ter Vrugt, Johannes Wilhelmus, 4,069,441, Cl. 313-487.000.

Tesan, Riccardo. Ski propulsion poles. 4,068,610, Cl. 115-24.100.

Testa, Carmen; and Bouton, William J., Jr., to Excelsior Hardware Co. Automatically closing lock. 4,068,873, Cl. 292-101.000.

Teulon, Jean-Marie, to Societe Anonyme dite: Societe Hexachimie. Morpholino containing indane acetic acid esters. 4,069,326, Cl. 424-248.550.

Texaco Development Corporation: *See*—
Klein, Howard Paul, 4,069,207, Cl. 260-75.00H.

Texaco Inc.: *See*—
Allen, Joseph C., 4,068,716, Cl. 166-271.000.
Kablaoui, Mahmoud S.; Larkin, John M.; and Reid, Robert E., 4,069,226, Cl. 260-307.00F.
Lionetti, Thomas A.; Miller, Kenneth D.; and Parker, Levi C., 4,069,141, Cl. 208-309.000.
Wu, Ching H., 4,068,715, Cl. 166-251.000.

Texas Alkyls, Inc.: *See*—
Watson, Spencer C.; Malpass, Dennis B.; and Yeargin, G. Scott, 4,069,260, Cl. 260-632.00B.

Texas Instruments Incorporated: *See*—
Baboian, Robert; and Haynes, Gardner S., 4,069,110, Cl. 204-29.000.
Bilek, Frank Thomas, 4,069,508, Cl. 360-99.000.
Doherty, John, Jr., 4,068,800, Cl. 236-101.00C.
Jost, Ernest M.; Reenstra, Arthur L.; and Trenkler, George, 4,068,527, Cl. 73-704.000.
Kaminski, Perry W., 4,068,369, Cl. 29-622.000.
Pimentel, Daniel R., 4,068,820, Cl. 251-11.000.
Reinberg, Alan R.; and Rao, Raman K., 4,069,096, Cl. 156-643.000.

Texas Medical Products, Inc.: *See*—
Sharp, Russell G.; Reed, Charles C.; and Cooley, Denton A., 4,068,664, Cl. 128-276.000.

Tezuka, Tohru: *See*—
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,317, Cl. 424-177.000.
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Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,323, Cl. 424-244.000.

Thamm, Horst-Dieter: *See*—
Dursch, Walter; Kleiner, Hans-Jerg; and Thamm, Horst-Dieter, 4,069,245, Cl. 260-502.40R.

Tharp, Gordon H.; and Dorland, Herman. Resleeving tool. 4,068,364, Cl. 29-235.000.

Theodore, Ares N.: *See*—
Labana, Santokh S.; and Theodore, Ares N., 4,069,275, Cl. 260-836.000.

Thermon Manufacturing Company: *See*—
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Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile ballast tamper. 4,068,596, Cl. 104-12.000.

Thiel, Max: *See*—
Berger, Herbert; Gall, Rudi; Thiel, Max; Schaumann, Wolfgang; and Vomel, Wolfgang, 4,069,330, Cl. 424-267.000.

Thomas, Alan: *See*—
Orloff, George; Munnoch, Peter Ian; and Thomas, Alan, 4,068,560, Cl. 91-36.000.

Thomas, Maryvonne; and Grosbois, Jean, to Rhone-Poulenc Industries Method for recovery of platinum and iridium from catalysts. 4,069,040, Cl. 75-101.0BE.

Thomas, William Anthony: *See*—
Hassall, Cedric Herbert; Johnson, William Henry; Krohn, Antonin; Smithen, Carey Ernest; and Thomas, William Anthony, 4,069,229, Cl. 260-308.00R.

Thompson, Arthur H., to Exxon Research & Engineering Co. Method of making titanium disulfide. 4,069,301, Cl. 423-565.000.

Thompson, Charley L., Jr.: *See*—
Moore, Larry D.; Johnson, Isaiah W.; and Thompson, Charley L., Jr., 4,068,668, Cl. 128-330.000.

Thompson, Lester E., to ElectroPrint, Inc. Electrostatic printer support with controlled electrostatic surface voltage. 4,068,585, Cl. 101-114.000.

Thomson-CSF: *See*—
Baud, Christian; Raverdy, Yvan; and Hougeot, Henri, 4,069,121, Cl. 204-129.300.
Bobenrieth, Albert, 4,069,493, Cl. 357-22.000.
Defranould, Philippe; and Desbois, Jean, 4,069,507, Cl. 358-213.000.
Dubois, Jean Claude; Gazard, Maryse; Duchesne, Claude; and Lavenu, Jean Claude, 4,068,919, Cl. 350-96.0WG.

Thor Dahl, Inc.: *See*—
Gunther, William H., Jr., 4,069,011, Cl. 432-230.000.

Thorn, Donald J.; and Burnham, John W., to Halliburton Company. Method for dissolving polymeric materials in hydrocarbon liquids. 4,068,676, Cl. 137-13.000.

Threshold Technology, Inc.: *See*—
Martin, Thomas B.; Herscher, Marvin B.; and Cox, Robert B., 4,069,393, Cl. 179-1.0SD.

Tilghman Wheelabrator Limited: *See*—
Macmillan, William Robertson, 4,069,025, Cl. 51-434.000.

Timmer, Hendrikus Jacobus Maria, to SKF Industrial Trading and Development Company B.V. Castor fork assembly with protective surface. 4,068,343, Cl. 16-31.00R.

Tippetts, Kenneth Boyd, to Honeywell Information Systems Inc. Transfer mechanism. 4,068,767, Cl. 214-6.0BA.

Tissot, Lucien, to Kernen, Jean-Louis. Coupling device of the back-cover and the middle of a waterproof shaped watch-case. 4,068,466, Cl. 58-90.00R.

Todorovic, Vukasin. Sealing means for radial faces of piston in orbital piston device. 4,068,986, Cl. 418-61.00R.

Toho Beslon Co., Ltd.: *See*—
Saito, Kazuhisa; and Ogawa, Hiroyasu, 4,069,297, Cl. 423-447.600.

Toida, Takashi, to Dai Nippon Insatsu Kabushiki Kaisha. Electro-optical cell. 4,068,923, Cl. 350-160.0LC.

Tokico Ltd.: *See*—
Haraikawa, Tetsuo, 4,068,745, Cl. 188-73.300.
Karasudani, Yasuo; and Haraikawa, Tetsuo, 4,068,743, Cl. 188-71.100.

Tokuoka, Yasumichi: *See*—
Umeki, Shinji; Aue, Kazuhide; and Tokuoka, Yasumichi, 4,069,367, Cl. 428-403.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Hirasawa, Masataka, 4,069,426, Cl. 307-205.000.
Kamata, Shohichi; Kimura, Yoshinori; and Sakuragi, Johji, 4,069,472, Cl. 340-146.30K.
Masuoka, Fujio, 4,069,495, Cl. 357-46.000.
Sano, Jun, 4,069,461, Cl. 330-260.000.

Toland, William G., to Chevron Research Company. Self-retaining roof bolt. 4,068,481, Cl. 61-45.00B.

Toman, Ludek: *See*—
Marek, Miroslav; Toman, Ludek; and Pecka, Jan, 4,069,124, Cl. 204-159.240.

Marek, Miroslav; Toman, Ludek; and Pecka, Jan, 4,069,125, Cl. 204-159.240.
Tombers, Paul A.: *See—*
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Tong, Shih Yung: *See—*
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Tonomura, Shinji: *See—*
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Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,069,318, Cl. 424-177.000.
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Toray Industries, Inc.: *See—*
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Torbet, Philip A.; and Eager, Cyril Thomas, to Burke Company, The. Concrete slab hoisting apparatus. 4,068,879, Cl. 294-89.000.
Toth, Bartholomew L., to UMC Industries, Inc. Hot and cold beverage vendor. 4,068,781, Cl. 222-52.000.
Towmotor Corporation: *See—*
Klimo, Robert G., 4,069,445, Cl. 318-139.000.
Townley, Charles O.; Vegell, Allan; and Eaby, Daniel G., to Bio-Dynamics Inc. Platform supported hip prosthesis. 4,068,324, Cl. 3-1.913.
Toyo Engineering Corporation of Japan: *See—*
Kanai, Kazumichi; Kimura, Tetsuo; and Fukui, Akito, 4,069,253, Cl. 260-555.00C.
Toyoda, Akinori; and Kashiwa, Norio, to Mitsui Petrochemical Industries Ltd. Process for preparation of catalyst component supported on high performance carrier. 4,069,169, Cl. 252-429.00B.
Toyoda-Koki Kabushiki-Kaisha: *See—*
Ito, Teruyuki; and Yamauchi, Tadashi, 4,068,547, Cl. 82-31.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 4,068,633, Cl. 123-117.00A.
Niimi, Itaru; Kaneko, Yasuhisa; Noda, Fumiyoshi; and Watanabe, Yuji, 4,069,284, Cl. 264-43.000.
Sakai, Toshimitsu; Kawai, Mitsuo; and Mizuno, Kiyohumi, 4,068,543, Cl. 74-866.000.
Sakamoto, Masao; Okuda, Ryoichi; Saito, Hitoshi; and Sasazaki, Kenzi, 4,068,541, Cl. 74-607.000.
Takata, Akira; Tanahashi, Toshio; and Oda, Toshio, 4,068,472, Cl. 60-276.000.
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Tanaka, Yutaka, 4,068,402, Cl. 46-216.000.
Transportbeton-Beratungs-Gesellschaft mit beschrankter Haftung: *See—*
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Trasatti, Terrence S.: *See—*
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Trayler, Robert J., to Caterpillar Tractor Co. Bulldozer assembly with locking pin and method. 4,068,721, Cl. 172-1.000.
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Trisa Burstenfabrik AG Triengen: *See—*
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Troutner, Arthur L., to Trus Joist Corporation. Integral truss-supported deck. 4,068,442, Cl. 52-693.000.
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Trus Joist Corporation: *See—*
Troutner, Arthur L., 4,068,442, Cl. 52-693.000.
Trustman, Allen: *See—*
Iacono, Frederick Della; Trustman, Allen; and LeVine, Donald J., 4,068,916, Cl. 339-177.00R.
TRW: *See—*
Starkovich, John A.; and Blumenthal, Jack L., 4,069,304, Cl. 423-648.00R.
Tsai, Chon-Liang: *See—*
Masubuchi, Koichi; and Tsai, Chon-Liang, 4,069,408, Cl. 219-72.000.
Tsubakimoto, Tsuneo; Fuzikawa, Iwao; Uchida, Katsumi; and Minamidani, Osamu, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Process for producing dyed finely divided hardened benzoguanamine resins having uniform particle size and excelling in dispersibility. 4,069,176, Cl. 260-39.00P.
Tsubota, Motohiko; Hanai, Sosuke; Oishi, Yasushi; Sera, Hidefumi; and Yamamoto, Nobuo, to Fuji Photo Film Co., Ltd. Diffusion transfer photographic materials with color developer scavenger. 4,069,048, Cl. 96-3.000.
Tsuda, Koichi: *See—*
Nagasawa, Ikuo; Mukae, Kazuo; Ishii, Takashi; and Tsuda, Koichi, 4,069,061, Cl. 106-73.200.
Tsujimoto, Yasuhiro; Azuma, Junichi; Matsumura, Yoshihiko; and Noda, Katsumi, to Takeda Chemical Industries, Ltd. Hemodialysis system. 4,069,155, Cl. 210-195.00R.
Tucker, Lyndell L. Fireplace closure. 4,068,699, Cl. 160-33.000.
Tumpey, John Joseph: *See—*
DeBard, James Edward; Borden, Raymond Walter; and Tumpey, John Joseph, 4,068,368, Cl. 29-588.000.
Turbodyne Corporation (Gas Turbine Div.): *See—*
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Ball, Kirby L.; Nance, Glenn S.; and Turner, Roy J., 4,068,332, Cl. 5-296.000.
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Winter, Joseph; and Tyler, Derek E., 4,069,358, Cl. 427-319.000.
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Uchida, Yoshiaki; Nakaya, Akira; and Saito, Kunitaka, to Tekken Construction Co., Ltd. Automatic tunnel face hydraulic pressure controlling apparatus in shield type hydraulic tunnel boring system. 4,068,486, Cl. 61-85.000.
Uchida, Yoshiaki: *See—*
Iwamitu, Yasuyuki; Uchida, Yoshiaki; Kobayashi, Shigeru; and Tateno, Masamitu, 4,068,484, Cl. 61-85.000.
Ueno, Hideto, to Hitachi, Ltd. Cassette insertion/ejection apparatus. 4,069,506, Cl. 360-96.000.
Ufermann, Werner; Axer, Heinrich; and Michels, Wolfgang, to G. Siempelkamp & Co. Layer-forming apparatus especially for particle board mats. 4,068,991, Cl. 425-81.000.
Uhricek, Ivan; and Schneider, Ruedi, to Uhricek, Ivan; Schneider, Ruedi; and Vlk, Jaroslav. Adjustable buckle for ski shoes. 4,068,352, Cl. 24-69.0SK.
Ultra-Centrifuge Nederland N.V.: *See—*
Scholtus, Christiaan Gustaaf Adolf; Hoeboer, Willebrordus Cornelis; and Ruiter, Antonius, 4,068,791, Cl. 228-45.000.
UMC Industries, Inc.: *See—*
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Umeki, Shinji; Aue, Kazuhide; and Tokuoka, Yasumichi, to TDK Electronics Company, Limited. Magnetic powder material comprising iron oxide particles with a copper-cobalt alloy coating. 4,069,367, Cl. 428-403.000.
Unadilla Silo Company, Inc.: *See—*
Scott, Hollis C., 4,068,435, Cl. 52-223.00R.
Unicon Parking Structures, Inc.: *See—*
Rice, Edward K., 4,068,420, Cl. 52-79.900.
Union Carbide Corporation: *See—*
Schnitzler, Danny Louis, 4,068,853, Cl. 277-102.000.
Union Oil Company of California: *See—*
Deering, Roland F., 4,069,132, Cl. 208-11.00R.
Uniroyal A.G.: *See—*
Pasch, Lambert, 4,069,290, Cl. 264-297.000.
Uniroyal, Inc.: *See—*
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United Foam Corporation: *See—*
Morgan, Charles W., 4,069,285, Cl. 264-51.000.
United States of America
Agriculture: *See—*
Kenney, Harold E.; and Donahue, Edward T., 4,069,163, Cl. 252-46.700.
Stanley, William L.; Watters, Glenn G.; and Chan, Bock G., 4,069,106, Cl. 195-68.000.
Air Force: *See—*
Straub, Henrik H., 4,068,903, Cl. 303-99.000.
Army: *See—*
Betts, Robert E., 4,068,591, Cl. 102-70.00R.
Commerce: *See—*
Ballard, David B.; Ogburn, Fielding; and Young, John P., 4,068,381, Cl. 33-1.00R.
Carpenter, Robert J.; and Yee, Kenneth W., 4,069,479, Cl. 340-347.0AD.
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Martin, Ronald L.; and Arnold, Richard C., 4,069,457, Cl. 328-235.000.
Miller, H. Craig; and Zuhr, Herbert F., 4,069,357, Cl. 427-123.000.
Tallent, Othar K., 4,069,293, Cl. 423-3.000.
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Weiss, Ulrich; and Rice, Kenner C., 4,069,241, Cl. 560-53.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Howarth, John T.; Sheth, Suresh; Sidman, Kenneth R.; and Massucco, Arthur A. Flame retardant spandex type polyurethanes. 4,069,212, Cl. 260-77.5SP.
Kersten, Leendert; and Johnston, James D. Wrist joint assembly. 4,068,763, Cl. 214-1.0CM.
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Adamson, Arthur P., 4,068,469, Cl. 60-204.000.
Alger, Donald L.; Schwab, William B.; and Furman, Edward R., 4,068,495, Cl. 62-376.000.
Brown, Gerald V., 4,069,028, Cl. 62-3.000.
Miller, Anthony J., 4,069,478, Cl. 340-347.0DD.
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McDonough, William J.; and Rice, Roy W., 4,069,059, Cl. 106-57.000.
Pearson, John, 4,068,590, Cl. 102-67.000.
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U.S. Philips Corporation: *See—*
Buysman, Petrus Johannes; Vermeulen, Gerardus Antonius Wilhelmus; and Bos, Cornelis Arie, 4,069,085, Cl. 156-345.000.
Noteltеirs, Victor Rosallie; Rijckaert, Josephus Franciscus; and Ritzen, Johannes Maria Jozef, 4,069,437, Cl. 313-315.000.
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Wanmaker, Willem Lambertus, deceased; Manders, Lambertus Wilhelmus Johannes; and ter Vrugt, Johannes Wilhelmus, 4,069,441, Cl. 313-487.000.
United States Steel Corporation: *See—*
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Hudson, Robert M.; Oles, Edward J., Jr.; and Warning, Clair John, 4,069,069, Cl. 148-12.100.
Hudson, Robert M.; Oles, Edward J., Jr.; and Warning, Clair J., 4,069,070, Cl. 148-12.100.
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United Technologies Corporation: *See—*
Ficheux, Rene; and Ronsin, Francois, 4,068,741, Cl. 187-29.00R.
Herold, Robert A., 4,068,702, Cl. 164-30.000.
Lemkey, Franklin D.; and Golden, Gerald S., 4,069,171, Cl. 252-454.000.
Meyerand, Russell Gilbert, Jr.; Krascella, Nicholas Leo; and McMahon, David Gue, 4,069,120, Cl. 204-129.000.
Universite Libre de Bruxelles: *See—*
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University of California, The Regents of the: *See—*
Garrett, Roger E., 4,069,423, Cl. 250-493.000.
University of Illinois Foundation, The: *See—*
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University of Southern California: *See—*
Bass, Michael; Garmire, Elsa; and McMahon, Thomas R., 4,068,920, Cl. 350-96.0WG.
University Patents, Inc.: *See—*
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Unverferth, Jack W., to Chevron Research Company. Apparatus and process for reducing particulates in a vaporous stream containing condensable hydrocarbons. 4,069,133, Cl. 208-11.00R.
UOP Inc.: *See—*
Giuliani, Chester J., 4,069,135, Cl. 208-65.000.
Greenwood, Arthur R., 4,069,134, Cl. 208-64.000.
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McGuire, John S., 4,068,713, Cl. 166-233.000.
Peer, Roger L.; and Fisch, Irvin S., 4,069,136, Cl. 208-65.000.
Pollitzer, Ernest L.; and Hayes, John C., 4,069,269, Cl. 260-666.00P.
Pollitzer, Ernest L.; and Hayes, John C., 4,069,270, Cl. 260-668.00A.
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Upjohn Company, The: *See—*
Callahan, William A.; Glenn, Eldridge Myles; and Rector, Douglas L., 4,069,224, Cl. 260-295.0AM.
Morton, Douglas Ross, Jr., 4,069,389, Cl. 560-53.000.
Morton, Douglas Ross, Jr., 4,069,390, Cl. 560-53.000.
Pike, John E.; and Schneider, William P., 4,069,386, Cl. 560-121.000.
Wright, John B., 4,069,332, Cl. 424-272.000.
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Urie, Clarence L.: *See—*
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Vach, Stanislav: *See—*
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Vail, Evgeny Iosifovich: *See—*
Privalov, Vasily Efimovich; Vail, Evgeny Iosifovich; Khanin, Andrei Mefodievich; Gromov, Evgeny Ivanovich; Petropolskaya, Viktoria Mikhailovna; and Agarkova, Lidia Mikhailovna, 4,069,225, Cl. 260-306.80R.
VanAppledorn, William, to Prince Corporation. Article contour follower mechanism. 4,068,350, Cl. 17-1.00G.
Van der Heijden, Johannes, to S. C. Johnson & Son Inc. Glade overcap for tilt valve. 4,068,782, Cl. 222-402.130.
van der Lely, Cornelis. Prefabricated box-shaped structural section. 4,068,430, Cl. 52-79.700.
van der Lely, Cornelis. Agricultural implements with supporting roller. 4,068,724, Cl. 172-552.000.
van der Schoot, Jelle, to Staalkat B.V. Carrier for articles, such as eggs. 4,068,882, Cl. 294-116.000.
Vanderwerff, William D., to Sun Oil Company of Pennsylvania. Hydrolysis of aromatic nitriles to carboxylic acids. 4,069,248, Cl. 260-515.00P.
Vanguard Machinery Corporation: *See—*
Pulda, William F., 4,068,765, Cl. 214-6.00G.
Van Horne, Clark A.: *See—*
Elder, George E.; Van Horne, Clark A.; and Wu, George C., 4,068,997, Cl. 425-305.100.
van Manen, Dick T., to Voplex Corporation. Cartridge making apparatus. 4,069,091, Cl. 156-498.000.
van Spijker, Willem. Device for dividing an angle. 4,068,380, Cl. 33-1.0AP.
Van Veldhuizen, John. Surface effects air vehicle. 4,068,606, Cl. 114-67.00A.
van Wijk, Keimpe: *See—*
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Vargiu, Silvio; Paparatto, Piero; Parodi, Antonio; and Brumat, Giorgio, to Societa' Italiana Resine S.I.R. S.p.A. Moulding compositions including unsaturated polyesters and an amide of an unsaturated aliphatic carboxylic acid. 4,069,193, Cl. 260-40.00R.
Varta Batterie Aktiengesellschaft: *See—*
Lauck, Helmut, 4,069,375, Cl. 429-218.000.
Veenendaal, Cornelis Teunis, to Tektronix, Inc. Transistor test fixture. 4,069,453, Cl. 324-158.00F.
Vegell, Allan: *See—*
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Veiback, Torgny: *See—*
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Velo-Bind, Inc.: *See—*
Elder, George E.; Van Horne, Clark A.; and Wu, George C., 4,068,997, Cl. 425-305.100.
Ventura International, Inc.: *See—*
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Venutti, Luigi, to SGS-ATES Componenti Elettronici S.p.A. Integrated vertical-sweep generator for television receiver. 4,069,443, Cl. 315-395.000.
Verity, Richard Hugh: *See—*
Dacey, Raymond Gwilym; and Verity, Richard Hugh, 4,068,993, Cl. 425-104.000.
Vermeulen, Gerardus Antonius Wilhelmus: *See—*
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Vetco Offshore, Inc.: *See—*
Shanks, Forrest E., II, 4,068,865, Cl. 285-90.000.
Vetco Offshore Industries, Inc.: *See—*
Ohrt, Juergen H., 4,068,868, Cl. 285-263.000.
Vianova Kunstharz, A.G.: *See—*
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Victor Company of Japan, Limited: *See—*
Yamamura, Takashi, 4,068,851, Cl. 274-39.00A.
Vitaliev, Georgy Viktorovich; Gvinepadze, Alexei Davidovich; Smirnov, Rem Vasilievich; and Sofiisky, Gury Dmitrievich. Associative memory. 4,069,473, Cl. 365-49.000.
Vitt, Stanley P.: *See—*
Herbert, John T.; Kovitch, Frank J.; Sullivan, Paul E.; and Vitt, Stanley P., 4,068,864, Cl. 285-49.000.
Vlk, Jaroslav: *See—*
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Vogelsinger, Fritz, to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H. Acoustical frictional resistance construction and apparatus for manufacturing an acoustical resistance and an associated magnetic system. 4,069,401, Cl. 179-115.00R.
Vogt, Hans. Apparatus for heating food. 4,068,572, Cl. 99-447.000.
Voinov, Michel, to Battelle Development Corporation. Electric accumulator with a solid electrolyte. 4,069,372, Cl. 429-104.000.
Vola, Mathias J. J. M., to Oce-van der Grinten N.V. Magnetic roller. 4,068,622, Cl. 118-658.000.
Vola, Mathias J. J. M.: *See—*
Willemse, Adrianus H.; and Vola, Mathias J. J. M., 4,068,937, Cl. 355-3.0TR.
Volk, Kenneth Q., Jr., to Public Storage, Inc. Locking device. 4,068,505, Cl. 70-56.000.
Volkman, Josef F., to Hi-Shear Corporation. Inherently torque-limited nut. 4,068,555, Cl. 85-61.000.
Vollnhals, Friedemann; and Wintzer, Klaus, to Siemens Aktiengesellschaft. Power saving circuit for use with a converter circuit in a telephone switching installation. 4,069,396, Cl. 179-2.00A.
Vomel, Wolfgang: *See—*
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Vostovich, Joseph Edward, to General Electric Company. Heat resis-

tant ethylene-propylene rubber and insulated conductor product thereof. 4,069,190, Cl. 260-31.80M.
Vysokorodov, Nikolai Sergeevich. Marine · propulsive device. 4,068,979, Cl. 416-207.000.
Vyzkumny ustav lesniho hospodarstvi a myslivosti: *See—*
Dressler, Mirko; and Dofek, Ladislav, 4,068,881, Cl. 294-111.000.
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W & F Manufacturing Inc.: *See—*
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W. H. Porter, Inc.: *See—*
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W. R. Grace & Co.: *See—*
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Osborne, Richard Francis, 4,069,080, Cl. 156-272.000.
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Nishita, Sadao; Enomoto, Satoru; Wada, Hisayuki; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,069,211, Cl. 260-77.5MA.
Wade, Elman E., to Westinghouse Electric Corporation. Ex-vessel nuclear fuel transfer system. 4,069,098, Cl. 176-31.000.
Wade, Elman E., to Westinghouse Electric Corporation. Nuclear reactor fuel transfer system. 4,069,099, Cl. 176-31.000.
Wagenfeld, Gilbert B., to Cellucap Manufacturing Co. Chef's hat. 4,068,319, Cl. 2-197.000.
Waggonfabrik Uerdingen A.G.: *See—*
Brand, Werner; Schillings, Dieter; Geers, Leo; and Pietrowski, Edmund, 4,068,542, Cl. 74-625.000.
Wagner, Armand; Pixius, Robert; and Schon, Francois, to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED. Recovery of zinc from iron-making or steel-refining furnace dust. 4,069,315, Cl. 423-105.000.
Wagner, Hans: *See—*
Mannsfeld, Sven Peter; Pfeiffer, Arno; Tanner, Herbert; Wagner, Hans; and Liebetanz, Erich, deceased, 4,069,251, Cl. 260-534.00S.
Wakabayashi, Hitoshi: *See—*
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Brown, Arthur W.; Goetz, Heinz E.; Morrow, Ronald J.; and Waldhauer, Charles H., Jr., 4,068,910, Cl. 339-18.00P.
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Walther, Gerhard: *See—*
Langbein, Adolf; Merz, Herbert; Walther, Gerhard; and Stockhaus, Klaus, 4,069,328, Cl. 424-266.000.
Wanmaker, Willem Lambertus, deceased (by Reininga, Tomas Lammert Willem, administrator); Manders, Lambertus Wilhelmus Johannes; and ter Vrugt, Johannes Wilhelmus, to U.S. Philips Corporation. Electric gas discharge lamp having two superposed luminescent layers. 4,069,441, Cl. 313-487.000.
Wannerskog, Carl Axel; and Asberg, Sture Lennart, to SKF Industrial Trading and Development Company, N.V. Device for detecting relative motions in a bearing. 4,069,435, Cl. 310-168.000.
Ward, Charles Spurgeon, to Allied Chemical Corporation. Method of separating an entrained mist from a vapor. 4,069,027, Cl. 55-95.000.
Ward, Clifford, to Ashland Oil, Inc. Method and catalyst for removing mercaptans and mercaptide compounds from aqueous alkaline solutions and hydrocarbon distillates. 4,069,138, Cl. 208-206.000.
Warning, Clair J.: *See—*
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Warning, Clair John: *See—*
Hudson, Robert M.; Oles, Edward J., Jr.; and Warning, Clair John, 4,069,069, Cl. 148-12.100.
Warren, Harley K. Anchoring apparatus. 4,068,426, Cl. 52-149.000.
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Wasco Products, Inc.: *See—*
Anghinetti, Joseph R.; and Couture, Paul A., 4,068,417, Cl. 52-1.000.
Washburn, Malcolm E., to Norton Company. Porous silicon oxynitride refractory shapes. 4,069,058, Cl. 106-55.000.
Watanabe, Akinori: *See—*
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Watanabe, Hiroo; and Ocho, Yoshiaki, to Honda Giken Kogyo Kabushiki Kaisha. Understructure of an automotive body. 4,068,884, Cl. 296-28.00F.
Watanabe, Masataka: *See—*
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Watanabe, Tadashi: *See—*
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Watanabe, Yuji: *See—*
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Watson, Edwin B.; and Brack, Charles V., to Bendix Corporation, The. Common rail fuel injection system. 4,068,640, Cl. 123-139.0AT.
Watson, Spencer C.; Malpass, Dennis B.; and Yeargin, G. Scott, to Texas Alkyls, Inc. Preparation of unsaturated alcohols. 4,069,260, Cl. 260-632.00B.
Watson, William R., to Nalco Chemical Company. Lubricating system for plow blades. 4,068,725, Cl. 172-801.000.
Watters, Glenn G.: *See—*
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Moore, William Percy, 4,069,175, Cl. 260-2.50F.
Weaks, Bill S. Reflector including light filter for photographic use. 4,068,931, Cl. 350-318.000.
Webb, Bryant F., to Sperry Rand Corporation. Crop gathering reel assembly. 4,068,454, Cl. 56-220.000.
Webb, David Allen: *See—*
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Webb, Paul Dale; and Willover, Larry Neil, to Ingersoll-Rand Company. Positive-displacement, fluid machine. 4,068,988, Cl. 418-189.000.
Webber, Robert J.: *See—*
Ryan, Fred W.; and Webber, Robert J., 4,068,563, Cl. 92-157.000.
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Wegwerth, Arthur A.: *See—*
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Weier, Richard M., to G. D. Searle & Co. 7ξ-(Alkoxycarbonyl)-6ξ-alkyl/halo-17-hydroxy-3-oxo-17α-pregn-4-ene-21-carboxylic acid γ-lactones and corresponding 21-carboxylic acids, their salts, and esters. 4,069,219, Cl. 260-239.570.
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Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Apparatus for controlling water spraying operations in mineral mines. 4,068,893, Cl. 299-43.000.
Weiser, Hal, to Durham Industries, Inc. Finger operated magician simulating animated toy. 4,068,403, Cl. 46-241.000.
Weiss, Ulrich; and Rice, Kenner C., to United States of America, Health, Education and Welfare. Steroidal intermediates from the condensation product of dimethyl-3-ketoglutarate and glyoxal. 4,069,241, Cl. 560-53.000.
Welch, Rafael J. Tail gate apparatus having an offset pivot axis. 4,068,892, Cl. 298-17.00R.
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Werkmeister, Johannes, to Hagenuk Vormals Neufeldt & Kuhnke GmbH. Feed apparatus for screw machine. 4,068,546, Cl. 82-1.00C.
West, Robert F.: *See—*
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Fuchs, Francis Joseph, Jr., 4,068,517, Cl. 72-253.00R.
Westinghouse Electric Corporation: *See—*
Berringer, Robert T.; and Machado, Octavio J., 4,069,102, Cl. 176-87.000.
Binstock, Morton H., 4,068,475, Cl. 60-646.000.
Cooper, Martin H., 4,069,100, Cl. 176-37.000.
Fischer, Albert G., 4,069,356, Cl. 427-76.000.
Frank, Fred J., 4,069,097, Cl. 176-22.000.
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Heim, Richard C., 4,069,444, Cl. 318-114.000.
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McShane, James L., 4,069,433, Cl. 310-325.000.
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Wade, Elman E., 4,069,099, Cl. 176-31.000.

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Whetten, Nathan R.: *See—*
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White, Lawrence Samuel: *See—*
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White, Roger Paul, to North American Philips Corporation. Electrophoresis display with buried lead lines. 4,068,927, Cl. 350-160.00R.
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White, Clarence E., 4,068,409, Cl. 49-367.000.
White, William H.; and Lorie, Mario A., to Harris Corporation. IGFET clock generator. 4,069,429, Cl. 307-265.000.
Whitney, John Kimball; Cosgrove, Allan Hugh; and Flick, Roland Edward, to Gaymar Industries Incorporated. Flexible hose coupling. 4,068,870, Cl. 285-320.000.
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Wiederkehr, Rene; and Bickel, Hans, to Ciba-Geigy Corporation. Substituted 7(α-amino phenylacetamido)cephem derivatives. 4,069,324, Cl. 424-246.000.
Wiegert, Philip E., to Mallinckrodt, Inc. Substituted 2,4,6-triiodoisophthalamic acids. 4,069,250, Cl. 260-519.000.
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Willemse, Adrianus H.; and Vola, Mathias J. J. M., to Oce-van der Grinten N.V. Copier image transfer system. 4,068,937, Cl. 355-3.0TR.
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Williams, Barry: *See—*
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Wilson, William. Void cap. 4,068,778, Cl. 220-66.000.
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Winkelmann, Heinz, to International Standard Electric Corporation. Transmitter-receiver employing automatic channel hunting and selection. 4,069,454, Cl. 325-25.000.
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Wolfe, Robert W., to Clark Equipment Company. Shift control system for a multiple input transmission. 4,068,537, Cl. 74-477.000.
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Wong, Soon Y., to Continental Oil Company. Copper recovery by leaching and ion exchange. 4,069,119, Cl. 204-106.000.
Wonisch, Rudolf, to Friedrich Kocks, Firma. Method and apparatus for handling bar-shaped material. 4,068,516, Cl. 72-201.000.
Wood, Edward H., to Jim Walter Corporation. Side camming balance spring lock. 4,068,406, Cl. 49-181.000.
Wood, Palmer R.; and Rhoden, James A., to Garrett Corporation, The. Starting method and system for a gas turbine. 4,068,468, Cl. 60-39.140.
Woodbury, Robin Ross: *See—*
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Wright, John B., to Upjohn Company, The. Compounds, compositions and methods of use. 4,069,332, Cl. 424-272.000.
Wszolek, Walter R., to W. R. Grace & Co. Plastisol composition and container closure gasket made therefrom. 4,068,776, Cl. 215-349.000.
Wu, Ching H., to Texaco Inc. Method for recovering viscous petroleum. 4,068,715, Cl. 166-251.000.
Wu, George C.: *See—*
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Wu, Tai-Wing; and Dappen, Glen Marshall, to Eastman Kodak Company. Colorimetric assay for bilirubin. 4,069,017, Cl. 23-230.00B.
Wu, Yulin, to Phillips Petroleum Company. Preparation of vicinal epoxides. 4,069,234, Cl. 260-348.160.
Wunderlich, Donald K., to Atlantic Richfield Company. Removing contaminant from hydrocarbonaceous fluid. 4,069,140, Cl. 208-251.00H.
Wyman, Ransome J., to Arnco. Air release regulator. 4,068,690, Cl. 141-95.000.
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Yamadaya, Tokio; and Machida, Yasuhiko, to Matsushita Electric Industrial Company. Alloy useful as hydrogen storage material. 4,069,303, Cl. 423-644.000.
Yamamoto, Nobuo: *See—*
Tsubota, Motohiko; Hanai, Sosuke; Oishi, Yasushi; Sera, Hidefumi; and Yamamoto, Nobuo, 4,069,048, Cl. 96-3.000.
Yamamura, Takashi, to Victor Company of Japan, Limited. Audio/video disc playback apparatus with means for correctly positioning the disc relative to a reference level. 4,068,851, Cl. 274-39.00A.
Yamanaka, Seisuke, to Sony Corporation. Solid-state video camera. 4,069,501, Cl. 358-44.000.
Yamauchi, Tadashi: *See—*
Ito, Teruyuki; and Yamauchi, Tadashi, 4,068,547, Cl. 82-31.000.
Yamawaki, Masao; Aoki, Katsuo; Oka, Yoshio; Suzuki, Takao; Ina, Osamu; and Hara, Kinihiko, to Nippondenso Co., Ltd. Apparatus for transferring semiconductor wafers. 4,069,009, Cl. 432-122.000.
Yanagisawa, Masahiro; and Suganuma, Yoji, to Nippon Electric Company, Ltd. Magnetic record member and process for manufacturing the same. 4,069,360, Cl. 428-64.000.
Yanaka, Mikiro: *See—*
Nishita, Sadao; Enomoto, Satoru; Wada, Hisayuki; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,069,211, Cl. 260-77.5MA.
Yang, Shu Shu: *See—*
Jones, Howard; Yang, Shu Shu; and Jacobus, David P., 4,069,321, Cl. 424-236.000.
Yano, Nobumitsu; Fukinbara, Itaru; and Takano, Mitsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Extracting foods with a dimethyl ether-water mixture. 4,069,351, Cl. 426-650.000.
Yanofsky, Daniel N.: *See—*
Booth, Richard A.; Weil, Denis C.; and Yanofsky, Daniel N., 4,068,949, Cl. 355-75.000.
Yanushonis, Styapas Styapono; Belyauskas, Bronjus-Vitautas Bronyaus; Sherkuvene, Vida-Katrina Jule; and Banjulis, Vladas Klemovich. Method of manufacturing semiconductor devices. 4,069,074, Cl. 148-188.000.

Yeargin, G. Scott: *See—*
Watson, Spencer C.; Malpass, Dennis B.; and Yeargin, G. Scott, 4,069,260, Cl. 260-632.00B.
Yeda Research & Development Co., Ltd.: *See—*
Reich, Shymon; and Friesem, Albert A., 4,069,049, Cl. 96-27.00H.
Yee, Kenneth W.: *See—*
Carpenter, Robert J.; and Yee, Kenneth W., 4,069,479, Cl. 340-347.0AD.
Yeh, Tsu-Hsing: *See—*
Beyer, Klaus D.; Das, Gobinda; Poponiak, Michael R.; and Yeh, Tsu-Hsing, 4,069,068, Cl. 148-1.500.
Yellen, Richard C.; and Morrell, Edward A., to Champion Products Inc. Jacket with back pack. 4,068,314, Cl. 2-94.000.
Yokota, Hideo, to Canon Kabushiki Kaisha. High speed focusing telephoto lens. 4,068,929, Cl. 350-215.000.
Yokota, Hiromu; Namikoshi, Hajime; Watanabe, Masataka; Kato, Kunio; and Ohnishi, Akio, to Daicel Ltd.; and Japan Tobacco & Salt Public Corporation, The. Smoking composition. 4,068,670, Cl. 131-2.000.
Yonan, Peter K., to G. D. Searle & Co. 1-(1-Naphthoxy)-3-(4-substituted-piperidino)-2-propanols. 4,069,221, Cl. 260-293.620.
Yoneda, Masahiko: *See—*
Imada, Akira; Nozaki, Yukimasa; Hasegawa, Toru; and Yoneda, Masahiko, 4,069,316, Cl. 424-122.000.
Yonehara, Hiroshi, to Sanwa Chemical Co., Ltd. Speed control means for AC motor. 4,069,446, Cl. 318-466.000.
Yoshihara, Ichiro: *See—*
Shibata, Minoru; Iwasawa, Naozumi; Watanabe, Tadashi; and Yoshihara, Ichiro, 4,069,274, Cl. 260-836.000.
Yoshitomi, Yuji: *See—*
Kamohara, Hideaki; Nakatui, Toji; Yoshitomi, Yuji; Sasaki, Iwao; and Shimada, Kenji, 4,068,372, Cl. 29-727.000.
Young Engineering, Inc.: *See—*
Young, William O., Jr.; and Jennings, Mansel A., 4,068,789, Cl. 226-3.000.
Young, James O.: *See—*
O'Neil, Charles P.; Smorzaniuk, Adam: and Young, James O., 4,068,682, Cl. 137-624.110.
Young, James R.: *See—*
Houston, John M.; Young, James R.; and Whetten, Nathan R., 4,069,438, Cl. 313-346.00R.
Young, John P.: *See—*
Ballard, David B.; Ogburn, Fielding; and Young, John P., 4,068,381, Cl. 33-1.00R.
Young, Miriam F.: *See—*
Lorenze, Robert V., Jr.; and Young, Miriam F., 4,069,095, Cl. 156-632.000.
Young, William O., Jr.; and Jennings, Mansel A., to Young Engineering, Inc. Method and apparatus for controlling a moving web. 4,068,789, Cl. 226-3.000.
Yunick, Henry. Pressure vent. 4,068,635, Cl. 123-119.00B.
Zahnradfabrik Friedrichshafen AG: *See—*
Lang, Armin; and Fassbender, Rolf, 4,068,678, Cl. 137-100.000.
Zaininger, Karl Heinz: *See—*
Shaw, Joseph Michael; and Zaininger, Karl Heinz, 4,069,094, Cl. 156-612.000.
Zanker, Fritz, to BASF Aktiengesellschaft. Manufacture of aliphatic isocyanates. 4,069,238, Cl. 260-453.00P.
Zdor, Gennady Nikolaevich: *See—*
Chachin, Viktor Nikolaevich; Sharin, Jury Efimovich; Zdor, Gennady Nikolaevich; Shaduya, Vladimir Leontievich; and Zhuravsky, Alexandr Julyanovich, 4,068,514, Cl. 72-56.000.
Zehner, Lee R., to Atlantic Richfield Company. Preparation of oxalate esters from carbon monoxide and an alkoxycycloalkene. 4,069,388, Cl. 560-204.000.
Zehrung, Claude D., Jr.; Urie, Clarence L.; and Martinez, Joseph C., to Bluebird International, Inc. Bag for a lawn comber. 4,068,455, Cl. 56-344.000.
Zemke, Hubert R., Jr., to Hexcel Corporation. Lightweight, flexible ski. 4,068,861, Cl. 280-610.000.
Zenith Radio Corporation: *See—*
Pekosh, Raymond J., 4,069,354, Cl. 427-64.000.
Zenitz, Bernard L., to Sterling Drug Inc. Anti-inflammatory phenyl-lower-alkylamines. 4,069,256, Cl. 260-570.00R.
Zenthoefer, Edwin A. Pulley mounting. 4,068,907, Cl. 308-18.000.
Zetner, Wilfred J.: *See—*
Brems, John H.; Kobane, John, Jr.; and Zetner, Wilfred J., 4,068,957, Cl. 403-8.000.
Zhuravsky, Alexandr Julyanovich: *See—*
Chachin, Viktor Nikolaevich; Sharin, Jury Efimovich; Zdor, Gennady Nikolaevich; Shaduya, Vladimir Leontievich; and Zhuravsky, Alexandr Julyanovich, 4,068,514, Cl. 72-56.000.
Zimmer Aktiengesellschaft: *See—*
Gey, Werner; Langhauser, Wolfgang; Heinze, Helmut; Rothe, Hans-Joachim; and Freund, Peter, 4,069,194, Cl. 260-40.00R.
Zimmerman, James Eldon. Carrier bucket and apparatus for removably attaching the same to a loader bucket. 4,068,771, Cl. 214-313.000.
Zink, Stanley C.; and Penrod, William R., to Beloit Corporation. Odor elimination apparatus for extruded plastic. 4,069,092, Cl. 156-500.000.
Zito, Ralph, to GEL, Inc. Energy conversion. 4,069,371, Cl. 429-21.000.
ZNIKHBI: Tsentralny Nauche - issledovatelsky institut khlopchatobumezhnol promyshlennestl: *See—*
Santucci, Nicola; Aleksandrovic, Zabotin Aleksandr; Dmitrievich, Loschilin Evghenii; Lvovich, Galperin Aleksandr; and Archakovich, Onikov Eduard, 4,068,685, Cl. 139-188.00R.
Zory, Peter Stephen, Jr.: *See—*
McGroddy, James Cleary; and Zory, Peter Stephen, Jr., 4,069,463, Cl. 331-94.50P.
Zuhr, Herbert F.: *See—*
Miller, H. Craig; and Zuhr, Herbert F., 4,069,357, Cl. 427-123.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JANUARY, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Becker, Otto Alfred. Composite wall element for thermal and acoustic insulation. Re. 29,517, Cl. 52-173.00R.
Borg-Warner Corporation: *See—*
Kent, Bryan P., Re. 29,520, Cl. 192-45.100.
Franklin, Ernest, to United Kingdom Atomic Energy Authority. Stirling cycle heat engines. Re. 29,518, Cl. 60-520.000.
Genaro, Beverly Ann, administratrix: *See—*
Genaro, Joseph L., deceased, Re. 29,516, Cl. 15-97.00B.
Genaro, Joseph L., deceased (by Genaro, Beverly Ann, administratrix), to Shur Brite Wax-O-Matic, Inc. Automatic surface polishing system. Re. 29,516, Cl. 15-97.00B.
Kent, Bryan P., to Borg-Warner Corporation. Sprag assembly for one-way clutches. Re. 29,520, Cl. 192-45.100.
Lloyd, Kenneth Henry: *See—*
Scott, George William Pearson; and Lloyd, Kenneth Henry, Re. 29,519, Cl. 91-499.000.
Scott, George William Pearson; and Lloyd, Kenneth Henry, to Severn Pumps Limited. Pumps. Re. 29,519, Cl. 91-499.000.
Severn Pumps Limited: *See—*
Scott, George William Pearson; and Lloyd, Kenneth Henry, Re. 29,519, Cl. 91-499.000.
Shur Brite Wax-O-Matic, Inc.: *See—*
Genaro, Joseph L., deceased, Re. 29,516, Cl. 15-97.00B.
United Kingdom Atomic Energy Authority: *See—*
Franklin, Ernest, Re. 29,518, Cl. 60-520.000.

LIST OF PLANT PATENTEES

Duffett, William E.: *See—*
Jessel, Walter H., Jr.; and Duffett, William E., 4,188, Cl. 74.000.
Holtkamp, Reinhold. African violet plant. 4,189, 1-17-78, Cl. 69.000.
Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,188, 1-17-78, Cl. 74.000.
Mastaler, John, to Schefflera, Unlimited Inc. Schefflera. 4,187, 1-17-78, Cl. 88.000.
Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 4,190, 1-17-78, Cl. 68.000.
Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 4,191, 1-17-78, Cl. 68.000.
Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 4,192, 1-17-78, Cl. 68.000.
Mikkelsens, Inc.: *See—*
Mikkelsen, James C., 4,190, Cl. 68.000.
Mikkelsen, James C., 4,191, Cl. 68.000.
Mikkelsen, James C., 4,192, Cl. 68.000.
Ryan, John J. Impatiens plant—Aztec. 4,193, 1-17-78, Cl. 68.000.
Ryan, John J. Impatiens plant—hopi. 4,194, 1-17-78, Cl. 68.000.
Schefflera, Unlimited Inc.: *See—*
Mastaler, John, 4,187, Cl. 88.000.
Yoder Brothers, Inc.: *See—*
Jessel, Walter H., Jr.; and Duffett, William E., 4,188, Cl. 74.000.

LIST OF DESIGN PATENTEES

Alexander, William H.: *See—*
Bell, Robert R.; and Alexander, William H., 246,976, Cl. D15-7.000.
Amerock Corporation: *See—*
Palm, James M., Jr., 246,950, Cl. D8-316.000.
Palm, James M., Jr., 246,951, Cl. D8-316.000.
Palm, James M., Jr., 246,952, Cl. D8-317.000.
Ara-Bygg AB: *See—*
Hampf, Jan, 246,975, Cl. D14-68.000.
Armstrong, William J., to General Electric Company. Refrigerator door compartments. 246,978, 1-17-78, Cl. D15-89.000.
Ayers Plastics Company, Inc.: *See—*
Mease, John E., 246,969, Cl. D12-155.000.
Ball Corporation: *See—*
Campbell, William B., 246,962, Cl. D11-121.000.
Campbell, William B., 246,963, Cl. D11-128.000.
Campbell, William B., 246,964, Cl. D11-139.000.
Bechtel, Daniel L. Telescopic sight mount for rifles. 246,983, 1-17-78, Cl. D22-7.000.
Bechtel, Daniel L. Telescopic sight mount for rifles. 246,984, 1-17-78, Cl. D22-7.000.
Bell & Howell Company: *See—*
Shimano, Moto; Duer, Jack M.; and Wadleigh, Edward R., 246,980, Cl. D16-14.000.
Bell, Robert R.; and Alexander, William H., to Vapor Corporation. Positive displacement pump. 246,976, 1-17-78, Cl. D15-7.000.
Bennington, William E. Dental floss dispenser. 246,988, 1-17-78, Cl. D28-64.000.
Bogaerts, Leo C.: *See—*
Morrison, Leonard A.; Bogaerts, Leo C.; Hampton, Robert S., Jr.; and Murphy, John, 246,957, Cl. D10-103.000.
Britt, William James, to Morton-Norwich Products, Inc. Bottle. 246,953, 1-17-78, Cl. D9-143.000.
Buchanan, Patt. Jewelry pin or pendant. 246,961, 1-17-78, Cl. D11-53.000.
Bulldog Toy Company Limited: *See—*
Kyte, Eric, 247,004, Cl. D34-15.0JJ.
Cafolla, Lisa A. Doll or similar article. 247,000, 1-17-78, Cl. D34-4.00R.
Campbell, Sherrill M. Hydraulic reservoir for a track layer vehicle. 246,977, 1-17-78, Cl. D15-28.000.
Campbell, William B., to Ball Corporation. Christmas ornament. 246,962, 1-17-78, Cl. D11-121.000.
Campbell, William B., to Ball Corporation. Christmas ornament. 246,963, 1-17-78, Cl. D11-128.000.
Campbell, William B., to Ball Corporation. Plaque. 246,964, 1-17-78, Cl. D11-139.000.
Costello, Hal F. Electric vaporizer. 246,986, 1-17-78, Cl. D23-148.000.
Cousins, Michael A.: *See—*
Cousins, Morison S.; Cousins, Michael A.; and Rhodes, Greydon A., III, 247,005, Cl. D28-18.000.
Cousins, Morison S.; Cousins, Michael A.; and Rhodes, Greydon A., III, to Gillette Company, The. Hair styler attachment. 247,005, 1-17-78, Cl. D28-18.000.
Cunningham, Martin V. Hammer head. 246,948, 1-17-78, Cl. D8-79.000.
Davis, Donald A. Handle for drawers, doors, or the like. 246,949, 1-17-78, Cl. D8-300.000.
Davis, Paul, to Sweetheart Plastics, Inc. Disposable plastic lid. 246,955, 1-17-78, Cl. D9-267.000.
Deuchar, Robert C.; and Waitzman, Gene J. Buffer base housing. 246,973, 1-17-78, Cl. D15-48.000.
Duer, Jack M.: *See—*
Shimano, Moto; Duer, Jack M.; and Wadleigh, Edward R., 246,980, Cl. D16-14.000.
Estes, David V. Investment casting apparatus for jewelers. 246,979, 1-17-78, Cl. D15-135.000.
Fukuoka, Tatsuo. Shoe. 246,943, 1-17-78, Cl. D2-269.000.
Fukuoka, Tatsuo. Shoe. 246,944, 1-17-78, Cl. D2-269.000.
General Electric Company: *See—*
Armstrong, William J., 246,978, Cl. D15-89.000.
Gillette Company, The: *See—*
Cousins, Morison S.; Cousins, Michael A.; and Rhodes, Greydon A., III, 247,005, Cl. D28-18.000.

Glover, Robert Lowe. Drill alignment attachment. 246,947, 1-17-78, Cl. D8-71.000.
Green, Robert Franklin, to Johns-Manville Corporation. Building unit to be used for moldings, columns or the like. 246,991, 1-17-78, Cl. D25-74.000.
Green, Robert Franklin, to Johns-Manville Corporation. Building member to be used for moldings, columns or the like. 246,992, 1-17-78, Cl. D25-74.000.
Green, Robert Franklin, to Johns-Manville Corporation. Building unit to be used for moldings, columns, or the like. 246,993, 1-17-78, Cl. D25-74.000.
Guy, Ralph Jesse. Bracelet. 246,959, 1-17-78, Cl. D11-4.000.
Hamilton, Jerry H. Filing container. 246,982, 1-17-78, Cl. D19-92.000.
Hampf, Jan, to Ara-Bygg AB. Staff locator. 246,975, 1-17-78, Cl. D14-68.000.
Hampton, Robert S., Jr.: *See—*
Morrison, Leonard A.; Bogaerts, Leo C.; Hampton, Robert S., Jr.; and Murphy, John. 246,957, Cl. D10-103.000.
Hawkins, Max. Lens measuring instrument. 246,987, 1-17-78, Cl. D24-0.000.
Herman, John. Cigarette holder 246,995, 1-17-78, Cl. D27-02.000.
Higgins, Hazel L.: *See—*
Higgins, Jerome D.; and Higgins, Hazel L., 246,989, Cl. D24-53.000.
Higgins, Jerome D.; and Higgins, Hazel L., to Xomed Inc. Securement device for nasal tube. 246,989, 1-17-78, Cl. D24-53.000.
Hill, Timothy Lee. Combined fluid dispenser and applicator for scalp. 246,998, 1-17-78, Cl. D28-7.000.
Hjelmeland, Selmer. Chess football game board. 246,999, 1-17-78, Cl. D34-5.0FG.
Hughes, George W. Display base for flags and the like. 246,965, 1-17-78, Cl. D11-183.000.
Ichikawa, Kaname, to Modern Royal Co., Ltd. Lighter or the like. 246,996, 1-17-78, Cl. D27-36.000.
Irvin Industries Inc.: *See—*
Rain, Lloyd H., 246,990, Cl. D25-21.000.
Johns-Manville Corporation: *See—*
Green, Robert Franklin, 246,991, Cl. D25-74.000.
Green, Robert Franklin, 246,992, Cl. D25-74.000.
Green, Robert Franklin, 246,993, Cl. D25-74.000.
Kabushiki Kaisha Uchida Yoko a/k/a Uchida Yoko Company Ltd.: *See—*
Yamaguchi, Seisho; Nezu, Fujiro; Kamoshida, Atsuko; and Shimizu, Hidenoir, 246,981, Cl. D19-38.000.
Kalt, Henry W. Toaster product. 246,941, 1-17-78, Cl. D1-23.000.
Kamoshida, Atsuko: *See—*
Yamaguchi, Seisho; Nezu, Fujiro; Kamoshida, Atsuko; and Shimizu, Hidenoir, 246,981, Cl. D19-38.000.
Katoh, Akira, to Lloyd's Electronics, Inc. Control console for T. V. game. 247,001, 1-17-78, Cl. D34-5.00R.
Katoh, Akira, to Lloyd's Electronics, Inc. Control console for T. V. game. 247,002, 1-17-78, Cl. D34-5.00R.
Krieger, Thomas A.: *See—*
McKernon, Terrell A.; and Krieger, Thomas A., 246,971, Cl. D12-179.000.
Kyte, Eric, to Bulldog Toy Company Limited. Toy boat. 247,004, 1-17-78, Cl. D34-15.0JJ.
L'Europa, Steven D. Container for fashion accessory articles or the like. 246,954, 1-17-78, Cl. D9-238.000.
Lloyd's Electronics, Inc.: *See—*
Katoh, Akira, 247,001, Cl. D34-5.00R.
Katoh, Akira, 247,002, Cl. D34-5.00R.
Logical Technical Services Corporation: *See—*
Perry, Francis O., 246,956, Cl. D10-78.000.
Lossini, Elio, to Raybeth Tool & Die Co., Inc. Slip-on bracelet. 246,960, 1-17-78, Cl. D11-4.000.
Maxwell, David E.; Shaffer, James R.; and Radtke, Lee, to Sun Electric Corporation. Remote starter switch. 246,972, 1-17-78, Cl. D13-32.000.
McElroy, David: *See—*
Thorwaldsen, Stanley E.; and McElroy, David, 246,974, Cl. D14-50.000.
McKernon, Terrell A.; and Krieger, Thomas A. Combined bicycle handgrip and brake lever. 246,971, 1-17-78, Cl. D12-179.000.
Mease, John E., to Ayers Plastics Company, Inc. CB Radio mounting unit for automobiles. 246,969, 1-17-78, Cl. D12-155.000.
Modern Royal Co., Ltd.: *See—*
Ichikawa, Kaname, 246,996, Cl. D27-36.000.
Morrison, Leonard A.; Bogaerts, Leo C.; Hampton, Robert S., Jr.; and Murphy, John. Wheel alignment instrument clamp. 246,957, 1-17-78, Cl. D10-103.000.
Morton-Norwich Products, Inc.: *See—*
Britt, William James, 246,953, Cl. D9-143.000.
Moshofsky, Jerome F.: *See—*
Popma, Vincent J.; and Moshofsky, Jerome F., 246,985, Cl. D23-77.000.
Murphy, John: *See—*
Morrison, Leonard A.; Bogaerts, Leo C.; Hampton, Robert S., Jr.; and Murphy, John, 246,957, Cl. D10-103.000.
Nemeth, Edwin A., to P.N. Associates, Inc. Folding golf cart. 246,966, 1-17-78, Cl. D12-23.000.
Nezu, Fujiro: *See—*
Yamaguchi, Seisho; Nezu, Fujiro; Kamoshida, Atsuko; and Shimizu, Hidenoir, 246,981, Cl. D19-38.000.
Nitta, Tomio, to Tokai Seiki, Ltd. Cigarette gas lighter. 246,997, 1-17-78, Cl. D27-42.000.
North American Philips Corporation: *See—*
Rakocy, William J.; and Tsuji, Masao, 246,958, Cl. D10-106.000.
P.N. Associates, Inc.: *See—*
Nemeth, Edwin A., 246,966, Cl. D12-23.000.
Palazolo, Salvatore J. Combined sewing machine and tea cart. 246,967, 1-17-78, Cl. D12-33.000.
Palm, James M., Jr., to Amerock Corporation. Pull. 246,950, 1-17-78, Cl. D8-316.000.
Palm, James M., Jr., to Amerock Corporation. Pull. 246,951, 1-17-78, Cl. D8-316.000.
Palm, James M., Jr., to Amerock Corporation. Pull. 246,952, 1-17-78, Cl. D8-317.000.
Perry, Francis O., to Logical Technical Services Corporation. Digital multimeter or the like. 246,956, 1-17-78, Cl. D10-78.000.
Popiela, Cynthia Louise. T-shirt. 246,942, 1-17-78, Cl. D2-215.000.
Popma, Vincent J.; and Moshofsky, Jerome F. Towel warmer. 246,985, 1-17-78, Cl. D23-77.000.
Radtke, Lee: *See—*
Maxwell, David E.; Shaffer, James R.; and Radtke, Lee, 246,972, Cl. D13-32.000.
Rain, Lloyd H., to Irvin Industries Inc. Building. 246,990, 1-17-78, Cl. D25-21.000.
Rakocy, William J.; and Tsuji, Masao, to North American Philips Corporation. Smoke detector. 246,958, 1-17-78, Cl. D10-106.000.
Raybeth Tool & Die Co., Inc.: *See—*
Lossini, Elio, 246,960, Cl. D11-4.000.
Regie Nationale des Usines Renault: *See—*
Tixier, Michel, 246,970, Cl. D12-169.000.
Rhodes, Greydon A., III: *See—*
Cousins, Morison S.; Cousins, Michael A.; and Rhodes, Greydon A., III, 247,005, Cl. D28-18.000.
Schultz, William H., to Skil Corporation. Powered hand-held drill. 246,946, 1-17-78, Cl. D8-68.000.
Shaffer, James R.: *See—*
Maxwell, David E.; Shaffer, James R.; and Radtke, Lee, 246,972, Cl. D13-32.000.
Shimano, Moto; Duer, Jack M.; and Wadleigh, Edward R., to Bell & Howell Company. Microfilm reader. 246,980, 1-17-78, Cl. D16-14.000.
Shimizu, Hidenoir: *See—*
Yamaguchi, Seisho; Nezu, Fujiro; Kamoshida, Atsuko; and Shimizu, Hidenoir, 246,981, Cl. D19-38.000.
Shore, David N., to Sweetheart Plastics, Inc. Coffee service tray. 246,945, 1-17-78, Cl. D7-21.000.
Skil Corporation: *See—*
Schultz, William H., 246,946, Cl. D8-68.000.
Sklodowsky, Paul. Motorcycle passenger support. 246,968, 1-17-78, Cl. D12-119.000.
Strader, William J. Concrete block. 246,994, 1-17-78, Cl. D25-80.000.
Sun Electric Corporation: *See—*
Maxwell, David E.; Shaffer, James R.; and Radtke, Lee, 246,972, Cl. D13-32.000.
Sweetheart Plastics, Inc.: *See—*
Davis, Paul, 246,955, Cl. D9-267.000.
Shore, David N., 246,945, Cl. D7-21.000.
Sycor, Inc.: *See—*
Thorwaldsen, Stanley E.; and McElroy, David, 246,974, Cl. D14-50.000.
Thorwaldsen, Stanley E.; and McElroy, David, to Sycor, Inc. Data printer. 246,974, 1-17-78, Cl. D14-50.000.
Tixier, Michel, to Regie Nationale des Usines Renault. Car bumper bar. 246,970, 1-17-78, Cl. D12-169.000.
Tokai Seiki, Ltd.: *See—*
Nitta, Tomio, 246,997, Cl. D27-42.000.
Tsuji, Masao: *See—*
Rakocy, William J.; and Tsuji, Masao, 246,958, Cl. D10-106.000.
Vapor Corporation: *See—*
Bell, Robert R.; and Alexander, William H., 246,976, Cl. D15-7.000.
Wadleigh, Edward R.: *See—*
Shimano, Moto; Duer, Jack M.; and Wadleigh, Edward R., 246,980, Cl. D16-14.000.
Waitzman, Gene J.: *See—*
Deuchar, Robert C.; and Waitzman, Gene J., 246,973, Cl. D15-48.000.
Walker, Lester E. Hobby horse. 247,003, 1-17-78, Cl. D34-15.0AE.
Xomed Inc.: *See—*
Higgins, Jerome D.; and Higgins, Hazel L., 246,989, Cl. D24-53.000.
Yamaguchi, Seisho; Nezu, Fujiro; Kamoshida, Atsuko; and Shimizu, Hidenoir, to Kabushiki Kaisha Uchida Yoko a/k/a Uchida Yoko Company Ltd. Drawing compasse. 246,981, 1-17-78, Cl. D19-38.000.

CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

24	4,068,312
49 R	4,068,313
94	4,068,314
114	4,068,315
126	4,068,316
169	4,068,317
170	4,068,318
197	4,068,319
227	4,068,320
	4,068,321
239	4,068,322
413	4,068,323

CLASS 3

1.913	4,068,324

CLASS 4

7	4,068,325
150	4,068,326
172.15	4,068,327

CLASS 5

13	4,068,328
255	4,068,329
267	4,068,330
	4,068,331
296	4,068,332
362	4,068,333
365	4,068,334
371	4,068,335

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41 C	4,069,012
79	4,069,013
111	4,069,014

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142 P	4,068,337

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71.3	4,068,338

CLASS 15

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215	4,068,339
321	4,068,340
339	4,068,341

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31 R	4,068,343
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94 D	4,068,345
110 R	4,068,346
112	4,068,347
129	4,068,348
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CLASS 19

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CLASS 21

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CLASS 23

230 B	4,069,016
	4,069,017
232 E	4,069,018
253 C	4,069,019
262	4,069,020
281	4,069,021

CLASS 24

69 SK	4,068,352
81 BF	4,068,353
230 A	4,068,354
265 R	4,068,355

CLASS 26

91	4,068,356

CLASS 28

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272	4,068,358

CLASS 29

33 K	4,068,359
116 AD	4,068,360
157.3 R	4,068,361
159 A	4,068,362
227	4,068,363
235	4,068,364
261	4,068,365
527.4	4,068,366
564.6	4,068,367
588	4,068,368
622	4,068,369
628	4,068,370
	4,068,371
727	4,068,372
741	4,068,373
747	4,068,374

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276	4,068,376
	4,068,377
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CLASS 32

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CLASS 35

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25	4,068,393
50	4,068,394

CLASS 36

83	4,068,395

CLASS 37

2 R	4,068,396
43 R	4,068,397

CLASS 40

607	4,068,398

CLASS 43

4.5	4,068,399
53.5	4,068,400

CLASS 44

51	4,069,022
63	4,069,023

CLASS 46

92	4,068,401
216	4,068,402
241	4,068,403

CLASS 47

26	4,068,404
65	4,068,405

CLASS 48

197 R	4,069,024

CLASS 49

181	4,068,406
215	4,068,407
324	4,068,408
367	4,068,409
370	4,068,410
408	4,068,411

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5 D	4,068,412
55	4,068,413
95 LH	4,068,414
178	4,068,415
325	4,068,416
434	4,069,025

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1	4,068,417
2	4,068,418
40	4,068,419
79.7	4,068,430
79.9	4,068,420
80	4,068,421
	4,068,422
86	4,068,423
94	4,068,424
127	4,068,425
149	4,068,426
173 R	Re.29,517
202	4,068,428
204	4,068,429
	4,068,431
205	4,068,432
207	4,068,433
220	4,068,434
223 R	4,068,435
298	4,068,436
301	4,068,440
308	4,068,441
464	4,068,437
488	4,068,438
497	4,068,439
693	4,068,442
726	4,068,443
731	4,068,444
743	4,068,445
747	4,068,446
749	4,068,447

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319	4,068,449
331.5	4,068,450
385	4,068,451

CLASS 55

6	4,069,026
95	4,069,027

CLASS 56

11.6	4,068,452
14.4	4,068,453
220	4,068,454
344	4,068,455

CLASS 57

58.89	4,068,456
77.4	4,068,457
108	4,068,458
156	4,068,459
157 TS	4,068,460

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23 AC	4,068,462
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50 R	4,068,464
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CLASS 59

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39.14	4,068,468
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226 R	4,068,470
262	4,068,471
276	4,068,472
282	4,068,473
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671	4,068,476
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47	4,068,482
54	4,068,483
85	4,068,484
	4,068,485
	4,068,486
93	4,068,487
105	4,068,488
	4,068,489
108	4,068,490
110	4,068,491
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376	4,068,495

CLASS 64

8	4,068,499

CLASS 65

33	4,069,031
337	4,069,032

CLASS 66

27	4,068,496
50 B	4,068,497
57	4,068,498
123	4,068,500

CLASS 68

19.1	4,068,501
27	4,068,502
133	4,068,503

CLASS 70

18	4,068,504
56	4,068,505
100	4,068,506
271	4,068,507
364 A	4,068,508
	4,068,509
379 R	4,068,510

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33	4,069,034
76	4,069,035
88	4,069,036
93	4,069,037
95	4,069,038

CLASS 72

13	4,068,511
41	4,068,512
42	4,068,513
56	4,068,514
115	4,068,515
201	4,068,516
253 R	4,068,517
354	4,068,518
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427	4,068,520

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423 A	4,068,529
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598	4,068,524
628	4,068,523
704	4,068,527

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5.6 D	4,068,533
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242.11 A	4,068,535
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476	4,068,540
477	4,068,537
607	4,068,541
625	4,068,542
866	4,068,543

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101 R	4,069,041
208 R	4,069,042
232	4,069,043
243	4,069,044
251	4,069,045

CLASS 81

3 R	4,068,544

CLASS 82

1 C	4,068,545
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CLASS 83

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471.3	4,068,551

CLASS 84

1.06	4,068,552
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CLASS 85

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61	4,068,555

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1.814	4,068,556
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CLASS 90

1.6 A	4,068,558
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CLASS 91

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CLASS 92

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	4,068,581
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70.2 R	4,068,592

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	4,068,596
88	4,068,597
130	4,068,598

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97	4,069,063
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301	4,068,609

CLASS 115

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CLASS 116

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60	4,068,618
122	4,068,619
249	4,068,620
620	4,068,621
658	4,068,622
	4,068,623

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CLASS 122

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345 4,069,085
378 4,069,084
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392 4,069,088
394 4,069,089
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4,069,091
500 4,069,092
522 4,069,093
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632 4,069,095
643 4,069,096

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4,068,704
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1 4,068,706
8 4,068,707
9 4,068,708
95 4,068,709
111 4,068,710

CLASS 166

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246 4,068,714
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271 4,068,716
272 4,068,717
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282 4,068,719
4,068,720
320 4,068,730

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1 4,068,721
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552 4,068,724
801 4,068,725
802 4,068,726

CLASS 173

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CLASS 175

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CLASS 224

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January 24, 1978 Volume 966 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

National Inventors Day

The Patent and Trademark Office will be sponsoring National Inventors Day in the Public Search Room on Saturday, February 11, from 1:00 p.m. to 5:00 p.m. and Sunday February 12, 1978 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend a formal program at 2:00 p.m. on Sunday.

In order to accommodate the exhibits, it will be necessary to close the Public Search Room at 5:00 p.m. on Friday, February 10, 1978.

We would appreciate the cooperation of all users of the Search Room facilities in removing all personal items and belongings in order to permit the early closing time.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

Dec. 7, 1977

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,031,524, Re. S.N. 855,595, Filed Nov. 28, 1977, Cl. 174/112, COLOR CODED TELEPHONE CABLE, William Trevalyn Hicks, Owner of Record: *Western Electric Company, Incorporated, New York, N.Y.*, Attorney or Agent: S. I. Rosen, et al., Ex. Gp.: 213

3,920,727, Re. S.N. 853,971, Filed Nov. 22, 1977, Cl. 260/471 C, NOVEL N-ARYLCARBAMIC ACID ESTERS, Carl Metzger, et al., Owner of Record: *Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 126

3,921,177, Re. S.N. 852,730, Filed Nov. 18, 1977, Cl. 343/846, MICROSTRIP ANTENNA STRUCTURES AND ARRAYS, Robert E. Munson, Owner of Record: *Ball Brothers Research Corporation, Boulder, Colo.*, Attorney or Agent: John W. Malley, et al., Ex. Gp.: 256

3,922,718, Re. S.N. 853,662, Filed Nov. 21, 1977, Cl. 360/78, DISC DRIVE LINEAR ACTUATOR AND CONTROL SYSTEM THEREFOR, Martin O. Halfhill, et al., Owner of Record: *Xerox Corporation, Stamford, Conn.*, Attorney or Agent: James J. Ralabate, et al., Ex. Gp.: 235

3,924,452, Re. S.N. 851,610, Filed Nov. 14, 1977, Cl. 73/67.8 S, SECTOR SCANNING ULTRASONIC INSPECTION APPARATUS, Edward P. Meyer, et al., Owner of Record: *Picker Electronics, Inc., Longmont, Colo.*, Attorney or Agent: James T. Hoffmann, et al., Ex. Gp.: 244

3,939,671, Re. S.N. 852,141, Filed Nov. 16, 1977, Cl. 66/204, MACHINE FOR KNITTING CORD-LIKE STRUCTURES, Stephen C. Dangel, Owner of Record: *Lawson-Hemphill Inc., Central Falls, R.I.*, Attorney or Agent: William W. Rymer, Ex. Gp.: 352

3,965,875, Re. S.N. 852,281, Filed Nov. 17, 1977, Cl. 123/139 AY, FUEL INJECTION SYSTEM FOR DIESEL ENGINES, Julius P. Perr, Owner of Record: *Cummins Engine Company, Inc., Columbus, Ind.*, Attorney or Agent: C. Frederick Leydig, et al., Ex. Gp.: 342

3,971,891, Re. S.N. 853,069, Filed Nov. 21, 1977, Cl. 179/15 AP, ADAPTABLE TIME DIVISION SWITCH, John R. Wolcott, Owner of Record: *Martin Marietta Corporation, Rockville, Md.*, Attorney or Agent: Julian C. Renfro, et al., Ex. Gp.: 232

4,014,207, Re. S.N. 851,619, Filed Nov. 14, 1977, Cl. 73/67.8 S, SECTOR SCANNING ULTRASONIC INSPECTION APPARATUS, Edward P. Meyer, et al., Owner of Record: *Picker Electronics, Inc., Longmont, Colo.*, Attorney or Agent: James T. Hoffmann, et al., Ex. Gp.: 244

4,015,746, Re. S.N. 850,245, Filed Nov. 9, 1977, Cl. 221/263, FASTENER POSITIONING DEVICE, Edward L. Thomas, Owner of Record: *Inventor,* Attorney or Agent: Ralph Bailey, et al., Ex. Gp.: 311

4,028,187, Re. S.N. 856,057, Filed Nov. 30, 1977, Cl. 195/66 B, METHOD OF OBTAINING UROKINASE, Tsutomu Abe, et al., Owner of Record: *Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 172

PATENT NOTICES

Certificates of Correction for the Week of Jan. 24, 1978

Re. 29,394	4,035,241	4,042,018	4,047,273
3,819,144	4,035,471	4,042,148	4,047,738
3,830,043	4,035,887	4,042,422	4,047,963
3,894,265	4,036,640	4,042,819	4,048,002
3,903,062	4,036,905	4,043,164	4,048,627
3,906,250	4,036,912	4,043,388	4,048,719
3,917,566	4,036,913	4,043,408	4,048,730
3,918,115	4,037,330	4,043,551	4,049,154
3,948,932	4,038,597	4,043,816	4,049,386
3,973,523	4,038,838	4,044,011	4,049,411
3,985,765	4,038,970	4,044,065	4,049,436
3,986,886	4,039,067	4,044,129	4,050,949
4,003,941	4,039,158	4,044,133	4,051,426
4,013,718	4,039,390	4,044,298	4,051,823
4,023,254	4,040,156	4,044,305	4,052,085
4,025,838	4,040,254	4,044,600	4,052,871
4,027,863	4,040,786	4,044,853	4,053,046
4,028,121	4,040,970	4,045,210	4,053,118
4,029,714	4,041,145	4,045,679	4,053,148
4,029,884	4,041,231	4,045,877	4,053,576
4,032,232	4,041,492	4,046,008	4,053,590
4,032,282	4,041,554	4,046,019	4,053,892
4,032,538	4,041,808	4,046,635	4,054,460
4,034,713	4,041,899	4,047,045	

Patents Available for Licensing or Sale

3,790,043. METHOD AND APPARATUS FOR REMOVING WRINKLES FROM SLACKS OR THE LIKE. Elmer R. Hagen, 230 W. Genesee St., Apt. #6, Auburn, N.Y. 13021.

3,798,828. INSECT KILLING DEVICE. Wilbert M. Waltl, 25151 Sea Vista Drive, Dana Point, Calif. 92629.

3,899,157. TACK FASTENER AND STRIPPER. Robert Thomas. 30 West Chicago Ave., Chicago, Ill. 60610.

3,923,117. BUMPER ACTUATED GROUND ENGAGING BRAKE. Marcos E. Valdez, P.O. Box 246, Wapato, Wash. 98951.

3,953,983. REFRIGERATION METHOD AND REFRIGERATION APPARATUS FOR CARYING OUT THE MEHOD. Ernst Sander, Correspondence to: Craig & Antonelli, 909 Watergate Office Bldg., 2600 Virginia Ave. NW., Washington, D.C. 20037.

4,013,316. MECHANICAL STOOL. Winifred Cropper, 25 7th Ave. S. E., Largo, Fla. 33540.

4,029,648. PROCESS OF MAKING GONA-1,2,5(10), 9(11)-TETRAENES. VEB Jenapharm, Postfach 150 69 Jena, (DDR), Germany. Correspondence to: Michael J. Stricker, 360 Lexington Ave., New York, N.Y. 10017.

4,037,581. SCREEN DEVICE FOR STOVE OVENS. Thomas Trifiletti, Albany, N.Y., Correspondence to: Frederick L. Berger, Crystal Square No. 5 1755 Jefferson Davis Hwy., Arlington, Va. 22202.

4,039,089. RADIAL VEHICLE PARKING APPARATUS WITH A PLURALITY PARKING MACHINES. Ume Kochanneck, 81, Neuer Graben, Dortmund, Germany, Correspondence to: Michael J. Striker, 360 Lexington Ave., New York, N.Y. 10017.

4,049,009. APPARATUS FOR TRIMMING THE NAILS. Florian Marchand, Correspondence to: Georges Marchand S.A., Ch. 2738 Court BE, Switzerland.

4,055,863. APPARATUS FOR BATHING PERSONS. Lawrence E. Duval, 219 Chestnut St., P.O. Box 974, Deaham Springs, La. 70726.

The following two patents are offered by John O. Richards, 980 Mill Circle, Apt. #99, Alliance, Ohio 44601.

3,835,507. ROPE HOLDING DEVICE.

3,578,840. REVOLVING REFLECTOR.

The following four patents are offered by Pierre L. LeRoy, M.D., 2401 Pennsylvania Ave., Suite 112, Wilmington, Del. 19806.

4,003,141. INTRACRANIAL PRESSURE MONITORING DEVICE.

4,029,097. SURGICAL SPONGE COLLECTOR AND DRAINAGE SYSTEM.

4,034,747. CERVICAL COLLAR.

3,385,299. WOUND CLIP.

The following nine patents are available for non-exclusive licensing upon reasonable terms by application to the inventor, Earl W. Taut, 8040 Palm Lake Drive, Orlando, Fla. 32811.

3,709,629. INTEGRATED FLOW GAS TURBINE.

3,937,536. ROLLING CONTACT BEARING DEVICES.

3,955,360. INTEGRATED FLOW WASHBOARD TURBINE.

3,969,005. ROLLING CONTACT DEVICES.

3,989,324. ROLLING CONTACT BEARINGS.

3,998,506. TOOTHED ROLLING CONTACT DEVICES.

4,008,982. ROTARY FLUID ENERGY CONVERTER.

4,053,191. ROLLING CONTACT SPRING BEARINGS.

4,056,292. LINEAR ROLLING CONTACT DEVICES.

The General Electric Company is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for licenses may be addressed to the General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind. 46804.

3,786,264. HIGH SPEED LIGHT DETECTOR AMPLIFIER.

Application for should be addressed to: Division Patent Counsel, Space Division, General Electric Company, P.O. Box 8555, Philadelphia, Pa. 19101.

4,056,946. LOW TEMPERATURE COOLER/CONDENSER.

Applications for licenses may be addressed to Patent Counsel, Turbine Operation, Turbine Patent Operation, General Electric Company, 1 River Road, Building 185-5th Floor, Schnectady, N.Y. 12345.

3,158,067. RELAY FOR LOW SPEED SENSING SYSTEM.

Application for license may be addressed to the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,688,375. MACHINE FOR MANUFACTURING HEAT EXCHANGER TUBE.

3,864,986. AUTOMATIC BELT TIGHTENER.

4,015,442. HOUSEHOLD REFRIGERATOR HAVING A DOOR COOLING APPARATUS.

4,019,397. BELT DRIVE MECHANISM.

4,037,490. TWO-STEP CONTROL KNOB OPERATION.

4,038,510. FOOD TEMPERATURE CONTROL CABLE FOR MICROWAVE OVEN.

4,043,158. LIQUID FLOW MECHANICAL DIVERTER VALVE.

4,043,432. COMPACT VIBRATION DAMPER FOR A HERMETIC REFRIGERANT COMPRESSOR.

4,045,974. COMBINATION MOTOR COOLER AND STORAGE COIL FOR HEAT PUMP.

4,045,975. COMBINATION MOTOR COOLER AND STORAGE COIL FOR HEAT PUMP.

4,048,834. APPARATUS FOR FORMING SERPENTINE HEAT EXCHANGERS.

Applications for licenses may be addressed to: Patent Counsel, Motors & Drives Business Div., General Electric Company 1285 Boston Ave. Bldg., 21EE, Bridgeport, Conn. 06602.

3,886,386. CARRON FIBER CURRENT COLLECTION BRUSH.

4,012,606. PLURAL SWITCH SLIDING CAMS ACTUATED BY PREDETERMINED PROGRAM GROOVES ASSOCIATED WITH COMMON DRIVING MECHANISM.

4,038,508. ELECTRICAL SWITCH METHOD OPERATING SUCH AND INDEXING SYSTEM.

Applications for licenses should be addressed to Group Patent Counsel, Lamp Business Group, General Electric Company, Nela Park, Cleveland, Ohio 44112.

3,894,226. PHOTOFLASH LAMP ARRAY HAVING MEANS FOR PREVENTING ELECTRICAL SHORTING.

3,912,442. CONNECTOR FOR PHOTOFLASH ARRAY.

3,935,442. PHOTOFLASH LAMP ARRAY HAVING ELECTRICALLY CONNECTED REFLECTOR.

3,937,946. MULTIPLE FLASH LAMP UNIT.

3,941,992. FLASH ARRAY HAVING SHIELDED SWITCHING CIRCUIT.

3,952,320. MULTIPLE FLASH LAMP UNIT.

3,980,875. MULTIPLE FLASH LAMP UNIT.

3,980,876. PROTECTIVE TERMINAL FOR MULTIPLE FLASH LAMP UNIT.

3,980,877. PHOTOFLASH ARRAY WITH DISCHARGE PATH FOR ELECTROSTATICALLY CHARGED PERSON.

Applications for licenses may be addressed to the General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind. 46804.

3,965,382. ROTOR HAVING BALANCE WEIGHTS.

3,983,621. METHODS OF MAKING FRACTIONAL HORSEPOWER MOTORS.

4,007,605. REFRIGERATION SYSTEM AND CONTROL CIRCUIT.

4,011,498. CONTROLLING CIRCUIT.

ACF Industries is prepared to grant licenses under the following patents upon reasonable terms to domestic manufacturers. Applications for licenses may be addressed to: Patent Department, Carter Carburetor Division, ACF Industries, Inc., 9666 Olive St. Rd., St. Louis, Mo. 63132.

3,561,736. CARBURETOR THROTTLE VALVE.

3,575,390. CARBURETION.

3,578,108. AUTOMATED CRUISE CONTROL SYSTEM HAVING FLUIDIC CONTROL DEVICES.

3,612,008. VACUUM-RESPONSIVE VOLTAGE GENERATOR FOR A FUEL INJECTION SYSTEM.

3,612,010. ELECTRONIC FUEL INJECTION CONTROL CIRCUIT.

3,652,065. FLUIDIC CONTROLLED CARBURETOR.

3,655,170. FLUIDIC CARBURETOR.

3,680,846. STAGED CARBURETOR.

3,710,766. ELECTRONIC FUEL INJECTION SYSTEM.

3,768,449. ELECTRONIC ENERGIZING SYSTEM FOR SOLENOID FUEL INJECTORS.

3,780,711. ELECTRONIC FUEL INJECTION SYSTEM.

3,800,767. THERMO SWITCH ARRANGEMENT FOR CONTROL OF AN INTERNAL COMBUSTION ENGINE.

3,802,671. MEANS PREVENTING THE EXTRACTION OF FUEL FROM THE ACCELERATING PUMP.

3,814,390. CARBURETOR WITH COMBINED PISTON MOTOR AND DIAPHRAGM MOTOR CHOKE VALVE ACTUATION.

3,877,845. ELECTRIC IN-TANK FUEL PUMP.

3,912,423. DIAPHRAGM FUEL PUMP WITH FIELD SERVICEABLE GAS FILTER.

3,913,539. THERMO SWITCH ARRANGEMENT FOR CONTROL OF AN INTERNAL COMBUSTION ENGINE.

3,923,425. FUEL PUMP SHUT-OFF VALVE.

3,937,026. COLD STARTING ENRICHMENT DEVICE.

3,963,670. INTEGRATED IDLE AND BY-PASS SYSTEM.

3,964,259. MULTI CONDITION RELIEF VALVE.

3,964,515. BY-PASS VALVE WITH PRESSURE RELIEF FEATURE.

3,969,041. SHUT-OFF VALVE FOR AUTOMOTIVE FUEL FLOW.

3,971,356. SOLENOID-DASHPOT.

3,972,656. FUEL PUMP HAVING PULSATING CHAMBERS.

3,998,194. SYSTEM FOR CONTROL OF EXHAUST GAS RECIRCULATION.

4,022,179. VACUUM CONTROLLED THROTTLE POSITIONED AND DASHPOT.

4,025,589. METERING ROD SUPPORT FOR CARBURETOR.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y. 10036.

4,052,119. CRYSTALS FOR RECORDING PHASE HOLOGRAMS.

4,052,251. METHOD OF ETCHING SAPPHIRE UTILIZING SULPHUR HEXAFLUORIDE.

4,052,252. LIQUID PHASE EPITAXIAL GROWTH WITH INTERFACIAL TEMPERATURE DIFFERENCE.

4,052,626. FREQUENCY DOUBLER.

4,052,673. COMBINED CONTROLLED OSCILLATOR AND FREQUENCY MULTIPLIER.

4,052,684. HELICAL RESONATOR.

4,052,721. MULTI-TARGET TRACKER FOR TRACKING NEAR CO-RANGE TARGETS.

4,052,725. CATHODE-RAY TUBE SCREENING EXPOSURE METHOD.

4,052,733. PAL FOUR-FRAME SUBCARRIER PHASE DETECTOR.

4,053,161. STYLUS ARM LIFTING/LOWERING APPARATUS FOR A VIDEO DISC PLAYER.

4,053,350. METHODS OF DEFINING REGIONS OF CRYSTALLINE MATERIAL OF THE GROUP III-V COMPOUNDS.

4,053,841. MICROWAVE FREQUENCY DISCRIMINATOR COMPRISING AN FET AMPLIFIER.

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4,054,358. RECORDING A PHASE HOLOGRAM HAVING REDUCED INTERMODULATION DISTORTION.

4,054,454. PHOTOSENSITIVE COPOLYMER ON SILICON SUPPORT.

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4,055,423. ORGANIC MEDIUM FOR THIN-PHASE HOLOGRAPHY.

4,055,750. HEADING SENSOR FOR VEHICLE DEAD RECKONING SYSTEM.

4,055,774. CURRENT SCALING APPARATUS.

4,055,811. TRANSISTOR AMPLIFIERS.

4,055,812. CURRENT SUBTRACTOR.

4,055,830. CHARGE TRANSFER READOUT CIRCUITS

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Inquiries respecting licenses under these patents should be addressed to: Arthur L. Plevy, Patent Counsel, P.O. Box 38, 281 Summerhill Rd., East Brunswick, N.J. 08816.

3,654,579. ELECTROMECHANICAL TRANSDUCERS AND HOUSINGS.

3,706,953. PARTICLE IMPACT PROTECTORS AND ASSEMBLIES THEREOF FOR PRESSURE SENSING TRANSDUCERS HAVING DIAPHRAGMS.

3,748,571. PRESSURE SENSITIVE TRANSDUCERS EMPLOYING CAPACITIVE AND RESISTIVE VARIATIONS.

3,753,196. TRANSDUCERS EMPLOYING INTEGRAL PROTECTIVE COATINGS AND SUPPORTS.

3,800,264. HIGH TEMPERATURE TRANSDUCERS AND HOUSING INCLUDING FABRICATION METHODS.

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National Technical Information Service

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Patent Program Coordinator,
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Washington, D.C. 20545

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Washington, D.C. 20545

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Patent application 806,561. Fluorocarbon Triazine Polymers. Filed June 14, 1977.

Patent application 815,136. Emergency Personnel Lowering Apparatus. Filed July 13, 1977.

Patent application 820,493. Sheet Material Storage Rack. Filed July 29, 1977.

Patent application 825,005. Titanium and Titanium Alloys Ion Plated With Noble Metals and Their Alloys. Filed Aug. 16, 1977.

Patent 4,043,381. Self-Destructive Core Mold Materials for Metal Alloys. Filed Aug. 9, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,043,669. Light Scattering Test Apparatus. Filed May 28, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,043,808. Steel Alloy. Filed Aug. 14, 1972. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,043,926. Lubricant Composition. Filed Apr. 30, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,044,253. Non-Destructive Inspection of Composite and Adhesive Bonded Structures. Filed June 4, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,044,396. Heat Pipe Cooling of Airborne Phased Array Radar. Filed Aug. 14, 1975. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,045,409. Thermally Stable, Highly Fused Imide Compositions. Filed Apr. 19, 1976. Patented Aug. 30, 1977. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 4,001,557. Stored Program Digital Process Controller. Filed Oct. 14, 1975. Patented Jan. 4, 1977. Not available NTIS.

Patent 4,002,729. Method for Thermochemical Decomposition of Water. Filed Apr. 6, 1976. Patented Jan. 11, 1977. Not available NTIS.

Patent 4,002,784. Coating Method for Graphite. Filed Nov. 6, 1975. Patented Jan. 11, 1977. Not available NTIS.

Patent 4,005,184. Thermochemical Process for the Production of Hydrogen Using Chromium and Barium Compounds. Filed July 24, 1975. Patented Jan. 25, 1977. Not available NTIS.

Patent 4,005,233. Filament Wound Structure and Method. Filed Oct. 30, 1975. Patented Jan. 25, 1977. Not available NTIS.

Patent 4,005,750. Method for Selectively Orienting Induced Fractures in Subterranean Earth Formations. Filed July 1, 1975. Patented Feb. 1, 1977. Not available NTIS.

Patent 4,005,990. Superconductors. Filed June 26, 1975. Patented Feb. 1, 1977. Not available NTIS.

Patent 4,006,073. Thin Film Deposition by Electric and Magnetic Crossed-Field Diode Sputtering. Filed Apr. 3, 1975. Patented Feb. 1, 1977. Not available NTIS.

Patent 4,006,107. Method of Producing Ternary Lead Molybdenum Sulfides. Filed Aug. 13, 1975. Patented Feb. 1, 1977. Not available NTIS.

Patent 4,000,444. Passive Radio Frequency Peak Power Multiplied. Filed Aug. 30, 1974. Patented Feb. 22, 1977. Not available NTIS.

Patent 4,011,076. Method for Fabricating Beryllium Structures. Filed Mar. 18, 1976. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,011,133. Austenitic Stainless Steel Alloys Having Improved Resistance to Fast Neutron-Induced Swelling. Filed July 16, 1975. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,011,463. High Voltage Pulse Generator. Filed June 12, 1975. Patented Mar. 8, 1977. Not available NTIS.

Patent 4,012,230. Tungsten-Nickel-Cobalt Alloy and Method of Producing Same. Filed July 7, 1975. Patented Mar. 15, 1977. Not available NTIS.

Patent 4,012,265. Low-Density Microcellular Foam and Method of Making Same. Filed Sept. 2, 1975. Patented Mar. 15, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research—Code 302, Arlington, Va. 22217

Patent application 773,878. Real-Time Optical Mapping System. Filed Mar. 31, 1977.

Patent application 793,218. Transversal Filter Prime Sequence Frequency Synthesizer. Filed May 2, 1977.

Patent application 820,964. Stand-Aid Invalid Wheelchair. Filed Aug. 1, 1977.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent application 785,279. Surface Finishing. Filed Apr. 6, 1977.

Patent application 786,913. Thermal Insulation Attaching Means. Filed Apr. 12, 1977.

Patent application 829,321. Dual Mode Solid State Power Switch. Filed Aug. 31, 1977.

Patent application 830,272. An Interleaving Device. Filed Sept. 2, 1977.

Patent application 831,631. An Interactive Color Display for Multispectral Imagery Using Correlation Clustering. Sept. 8, 1977.

Patent 4,040,807. Solar Cell Shingle. Filed Aug. 24, 1976. Patented Aug. 9, 1977. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 31, 1977

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-9-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-26-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-14-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-10-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-7-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	10-15-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-29-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-7-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-20-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	7-9-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-6-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	4-12-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-3-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-6-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-1-77

Expiration of patents: The patents within the range of numbers indicated below expire during December 1977, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,962,719 to 2,966,680, inclusive
Plant Patents... ..... Numbers 1,991 to 2,008, inclusive

REISSUES

JANUARY 24, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

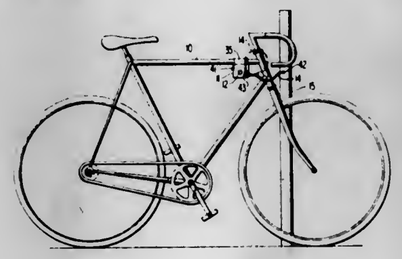
Re. 29,521
LOCKING MEANS FOR BICYCLES AND THE LIKE

David R. Pender, 1018 Marion St., Columbia, S.C. 29201

Original No. 3,910,081, dated Oct. 7, 1975, Ser. No. 467,792, May 7, 1974. Application for reissue Apr. 7, 1976, Ser. No. 674,484

Int. Cl.² B62H *5/00*

U.S. Cl. 70—234 **12 Claims**



1. An anti-theft locking means for bicycles or other portable articles comprising a flexible tether attached to the bicycle and adapted to be extended therefrom, a plug-in latch means on the leading end of the tether adapted to be received by an aperture in a wall of an anchoring member to releasably secure the bicycle to such member, and a key activated means on the bicycle connected with said plug-in latch means of the tether and operable to deactivate the plug-in latch means whereby the same can be removed from said aperture, said tether comprising a hollow flexible tether, said plug-in latch means including spring urged latch elements which normally project radially of the tether to interlock with said aperture, and said key activated means including a flexible control element extending through the hollow flexible tether and being movable axially relative thereto and having a connection with said spring urged latch elements to retract such elements when said flexible control element is moved in one direction.

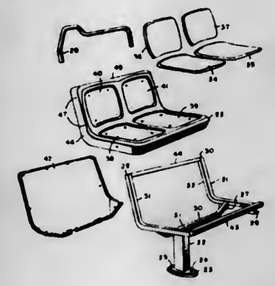
Re. 29,522
TRANSIT SEAT WITH CONTOURED PLASTIC SHELL

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Original No. 3,747,978, dated July 24, 1973, Ser. No. 232,430, Mar. 7, 1972. Application for reissue June 24, 1976, Ser. No. 699,601

Int. Cl.² A47C *1/12, 5/00, 7/00*

U.S. Cl. 297—445 **5 Claims**



1. A transmit seat for accommodating a plurality of passengers side-by-side and having an aisle side and a wall side comprising: a tubular frame including first and second side members formed in the general shape of a L to provide seat and back portions; a first stretcher tube interconnecting the forward ends of said seat portions of said side frame members; a second stretcher tube interconnecting the upper ends of said side frame members; a third stretcher tube connecting said side members at the rear of said seat portion thereof and defining a central recess; a forwardly extending tubular frame member interconnecting said first stretcher tube with the depressed portion of said transverse tubular frame member and located at a position spaced inwardly of the aisle side of said seat; means for securing the side frame member adjacent said wall side of said seat to the wall of a vehicle; a single pedestal connected to said frame for attachment to the floor of a vehicle and extending downwardly from the interconnection of said [depressed portion] *central recess* of said third stretcher tube and a rear end of said forwardly extending frame member; and a single-piece plastic shell *restingly* secured to said frame only at said first and second stretcher tubes; said plastic shell providing individual contoured recesses for receiving inserts and retaining passengers in position during turns.

Re. 29,523
OLEFINIC POLYMERS STABILIZED WITH THIOACYL TRIVALENT PHOSPHORUS COMPOUNDS

Kenneth H. Rattenbury, Parkersburg, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

Original No. 3,773,716, dated Nov. 20, 1973, Ser. No. 282,661, Aug. 22, 1972. Application for reissue Jan. 21, 1977, Ser. No. 761,390

Int. Cl.² C08L *23/02*

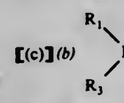
U.S. Cl. 260—45.85 S **20 Claims**

1. A composition comprising a member of the group consisting of solid monolefin polymers containing a stabilizingly effective amount of a compound having one of the formulae:

[(a) $P(S(CH_2)_nCOOR_1)_3$]

[(b)] *(a)* $R_2P(S(CH_2)_nCOOR_1)_2$

[(c)] *(b)*



wherein n is an integer and R_1, R_2 and R_3 are hydrocarbyl or halohydrocarbyl[.] *with the proviso that when the formula is (a) R_2 is alkyl, alkenyl or cycloalkyl.*

Re. 29,524
POROUS LAMINATE AND METHOD OF MANUFACTURE

Andrew R. Spencer, Bloomfield Hills, Mich., assignor to Facet Enterprises, Inc., Tulsa, Okla.

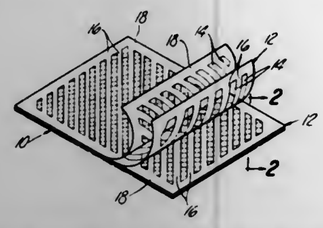
Original No. 3,900,629, dated Aug. 19, 1975, Ser. No. 397,467, Sept. 14, 1973. Application for reissue Aug. 9, 1976, Ser. No. 713,089

Int. Cl.² B32B *3/10, 15/00;* B01D *25/22*

U.S. Cl. 428—134 **8 Claims**

8. A multilayer porous laminate comprising a plurality of lamina, each lamina having a slot pattern formed therein, wherein each slot pattern comprises a series of slots formed in the corresponding lamina, said slots in a lamina defining axes of orientation parallel therebetween, said lamina being stacked in intimate contact with each other, with said slots of adjacent lamina overlaying in abutting relationship and extending with their respective axes of orientation at an angle to each other to provide intersecting slot patterns, the slots in alternate lamina in said stack having

parallel axes of orientation to each other which are at least partially and laterally offset from each other to form lateral flow



passages in said laminate, and means bonding said lamina to each other to form said laminate, whereby said intersecting slot patterns form fluid flow passages through said laminate.

Re. 29,525

DIGITAL RADIO CONTROL

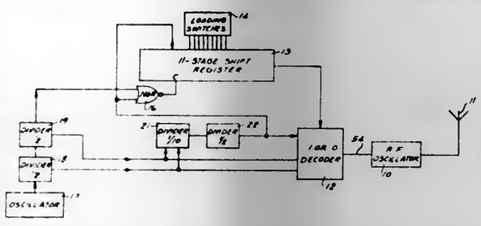
Colin B. Willmott, Des Plaines, Ill., assignor to Chamberlain Manufacturing Corporation, Chicago, Ill.

Original No. 3,906,348, dated Sept. 16, 1975, Ser. No. 389,806, Aug. 20, 1973. Application for reissue Aug. 27, 1976, Ser. No. 718,311

Int. Cl.[2] H04B *1/00*

U.S. Cl. 325—37 **9 Claims**

9. A coding system for a transmitter and receiver so that a selected receiver will respond to a particular transmitter comprising a transmitter capable of transmitting a RF signal in a binary code having pulses, means at said transmitter for setting said binary code to a selected combination, a receiver tuned to said RF signal, and including code comparing means receiving the incoming binary code, means at said receiver for setting a binary code to a selected combination supplying an input to said code comparing means, output means actuated by said comparing means if said means for setting a binary code at the transmitter and receiver are set to the same code combination, wherein said means at said transmitter for setting said binary code include n number of two



position switches to produce 2^n possible codes, a shift register connected to said plurality of two position switches, an oscillator to drive said shift register, divider means connected to said oscillator and to said shift register to reset it, a pulse generator connected to said shift register and to said dividers to produce said binary code and a RF oscillator connected to said pulse generator and keyed thereby to cause it to radiate said binary code and wherein said means at said receiver for setting a binary code includes second n number of two position switches to produce 2^n possible codes.

PLANT PATENTS

GRANTED JANUARY 24, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,195

FLOWERING-FRUITING PEACH TREE

David L. Armstrong, Orange, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Feb. 10, 1977, Ser. No. 767,576

Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree which combines desirable fruit-bearing qualities with attractive ornamental flowering characteristics, substantially as herein shown and described, characterized particularly as to novelty by its combination of large double flowers of a medium red to deep pink coloration with from about 1 to 4 flowers per node and with the nodes relatively closely spaced, giving the tree a distinctive and highly ornamental appearance during the blooming period; large yellow-fleshed, freestone fruit of melting texture, which has a well balanced relatively strong peach flavor and a ripening period generally beginning in mid-July and continuing through early August in the San Joaquin Valley of California, said tree further having foliage which is "wavy and crinkled," corresponding to class 3 of the Meader & Blake system.

4,196

CACTACEAE PLANT

Barnell L. Cobia, Winter Garden, and Stephen H. Griffith, Apopka, both of Fla., assignors to B. L. Cobia, Inc., Winter Garden, Fla.

Filed Jan. 18, 1977, Ser. No. 760,336

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct hybrid plant variety of the Cactaceae family as described and illustrated and which is principally distinguished by a growth habit that combines the following characteristics:

1. A natural tendency to branch during the growth period without the need for inducement by pruning,
2. A fast growth rate which is comparable to the growth rates exhibited by specimens of the 'Kris Kringle' and 'Lavender Doll' varieties,
3. Resistances to nutrient deficiencies, to fungus type diseases, and to flower bed abscission that are comparable to those exhibited by specimens of the 'Kris Kringle' and 'Lavender Doll' varieties, and
4. A flower having a bloom life of from about 6 to about 9 days, a pistil with a style that is translucent white at its proximal end, and at its distal end is in color dominated by purplish red and/or reddish purple hues and with a stigma which is translucent white, and tepals which have marginal blade areas that in color are dominated by purplish red and/or reddish purple hues and which include a sepaloid series of free tepals with inner whorl members having basal areas that in color are dominated by a purplish pink hue, a perianth tube forming series of basally united tepals that form a translucent white vestigal carina at the throat of the tube, and a series of tube laminating tepals which usually number from 5 to 7 in the bloom.

4,197

CACTACEAE PLANT

Barnell L. Cobia, Winter Garden, and Stephen H. Griffith, Apopka, both of Fla., assignors to B. L. Cobia, Inc., Winter Garden, Fla.

Filed Jan. 18, 1977, Ser. No. 760,337

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct plant variety of the Cactaceae family as described and illustrated and which has a growth habit providing specimens that combine the following principal distinguishing characteristics:

1. Upright, compact appearing specimens that in comparison to the 'Lavender Doll' and 'Kris Kringle' varieties have a faster growth rate with a greater natural tendency to branch and produce a larger number of phylloclades without inducement by pruning during the growth period prior to blooming,
2. Phylloclades with commonly smaller width and length dimensions than those of the 'Lavender Doll' variety,
3. A substantially greater resistance to flower bud abscission than the 'Lavender Doll' and 'Kris Kringle' varieties and resistances to nutrient deficiencies and fungus type diseases that are comparable to those of the 'Lavender Doll' and 'Kris Kringle' varieties, and
4. A bloom which commonly occurs from about 1 week to 3 weeks later than those of the 'Lavender Doll' variety and has
   a. A bloom life of from about 6 to about 9 days,
   b. tube laminating and tube forming tepals with marginal blade areas that in color are dominated by reddish purple and/or purplish red hues which penetrate deeply into the center field areas of the tepal blades,
   c. A perianth tube with a basic field that is translucent white and provided with randomly arranged, longitudinally extending streaks that in color are dominated by purplish pink hues,
   d. A carina which has degenerated to a generally superior extension of the perianth tube, and
   e. A style that is generally longer than those of the 'Lavender Doll' and 'Kris Kringle' varieties.

4,198

CACTACEAE PLANT

Barnell L. Cobia, Winter Garden, and Stephen H. Griffith, Apopka, both of Fla., assignors to B. L. Cobia, Inc., Winter Garden, Fla.

Filed Jan. 18, 1977, Ser. No. 760,419

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct variety of the Cactaceae family as described and illustrated and which is principally distinguished by a growth habit that combines the following characteristics:

a. A natural tendency to branch during the growth period preceding blooming without inducement by pruning.
b. A fast growth rate with resistances to nutrient deficiencies, fungus type diseases and flower bud abscission that are comparable to those of the 'Kris Kringle' and 'Lavender Doll' varieties.
c. Specimens with an upright compact appearance having phylloclades with generally shorter midribs than those of the 'Lavender Doll' variety and with generally thicker teeth than those of the 'Kris Kringle' variety,
d. A flower which blooms from about 1 to 3 weeks later than that of the 'Kris Kringle' variety and has a bloom life of from about 6 to about 9 days and which has
   1. A sepaloid series of free tepals with marginal blade areas in the inner and outer whorl members that in color are dominated by reddish purple, purplish red and/or purplish pink hues and with center fields in the inner whorl members that in color are dominated by pink and/or yellowish pink hues in the basal areas of the fields and by pink, red and/or reddish orange hues in the distal areas of the fields,
   2. A perianth tube laminating series of tepals with center fields which extend into the apex areas of the tepal blades and in color are dominated by red, pink, purplish red and/or yellowish pink hues, and with lateral mar-

ginal areas which in color are dominated by reddish purple, purplish red and/or red hues,

3. A perianth tube forming series of basally united tepals that provide a perianth tube with a basic color which is dominated by yellowish pink and/or pink hues and on which is superimposed elongated, circumferentially spaced, stripes that are proximally extending colors found in the blade marginal areas and having blades with marginal areas which in color are dominated by reddish purple and/or purplish red hues that merge inwardly with a center blade field that in color is dominated by pink and/or purplish pin hues, and
4. A style which in color is dominated at its proximal end by a purplish pink hue and at its distal end by a purplish red hue.

4,199

MILKWEED PLANT FAMILY

Barnell L. Cobia, Winter Garden, and Stephen H. Griffith, Apopka, both of Fla., assignors to B. L. Cobia, Inc., Winter Garden, Fla.

Filed Jan. 18, 1977, Ser. No. 760,351
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct variety of the Milkweed Family, substantially as herein shown and described, and which in comparison to the *Hoya Carnosa* 'Krinkle 8' variety is characterized by the following combination of principal distinguishing characteristics:
   1. A predominance of variegated leaf blades which at the upper epidermal side have a solid green center field and an albino marginal area which is frequently discontinuous, and
   2. Leaf petioles which in color are dominated by greenish yellow, yellow green, purplish pink, reddish purple, purplish red, pink and/or red hues.

4,200

CACTACEAE PLANT

Barnell L. Cobia, Winter Garden, and Stephen H. Griffith, Apopka, both of Fla., assignors to B. L. Cobia, Inc., Winter Garden, Fla.

Filed Jan. 18, 1976, Ser. No. 760,352
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct variety of the Cactaceae family substantially as herein shown and described and which has a growth habit providing specimens that combine the following principal distinguishing characteristics:
   1. A fast growth rate as comparable to that of the 'Kris Kringle' variety,
   2. A natural tendency to branch without inducement by pruning during the growth period prior to blooming and which is comparable to that of the 'Kris Kringle' variety,
   3. Resistances to nutrient deficiencies and fungus type diseases that are comparable to those of the 'Kris Kringle' and 'Lavender Doll' varieties,
   4. A substantially greater resistance to flower bud abscission in comparison to the 'Lavender Doll' and 'Kris Kringle' varieties, and
   5. A bloom with less recurve in the tube forming tepals in comparison to the 'Kris Kringle' variety and which commonly occurs from about 2 to 4 weeks earlier than bloom of the 'Peach Parfait' variety, and having
      a. a bloom life of from about 6 to about 9 days,
      b. a shorter style and perianth tube than those of the 'Kris Kringle' and 'Lavender Doll' varieties, and
      c. perianth tube laminating and forming tepals with marginal blade areas that in color are dominated by pink, purplish pink, yellowish pink, red and/or reddish orange hues.

4,201

CACTACEAE PLANT

Barnell L. Cobia, Winter Garden, and Stephen H. Griffith, Apopka, both of Fla., assignors to B. L. Cobia, Inc., Winter Garden, Fla.

Filed Jan. 18, 1977, Ser. No. 760,432
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct plant variety of the Cactaceae family as described and illustrated and which has a growth habit providing specimens that combine the following principal distinguishing characteristics:
   1. A generally "purplish" colored bloom with the color in the marginal blade areas of the perianth tube laminating and forming series of tepals being dominated by reddish purple hue,
   2. A bloom with tepals having generally greater width dimensions in comparison to correspondingly located tepals of the 'Lavender Doll' variety and including perianth tube laminating tepals which emerge generally closer to the distal end of the perianth tube than those of the 'Lavender Doll' variety, whereby the bloom of the new variety appears fuller and with a more compact tepal arrangement than exhibited by the 'Lavender Doll' variety,
   3. A bloom with a perianth tube that is basically translucent white and/or in color dominated by yellowish pink and/or purplish pink hues,
   4. A bloom life of from about 6 to about 9 days,
   5. Stems having fewer branches and generally longer phylloclades with thicker wings in comparison to those of the 'Lavender Doll' variety.

PATENTS

GRANTED JANUARY 24, 1978

ERRATA

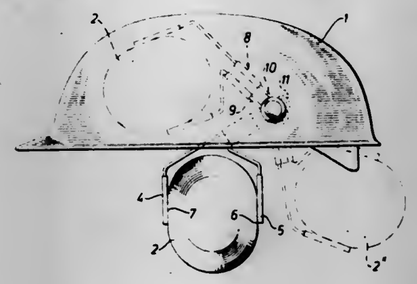
For CLASS	See PATENT NO.
085–047	4,069,730
085–072	4,069,731
116–063 R	4,069,787
366–220	4,069,975
366–159	4,070,008
242–066	4,070,047
548–379	4,070,365
206–524.2	4,070,398
426–002	4,070,487
426–072	4,070,488
426–115	4,070,489
426–533	4,070,490
426–536	4,070,491
364–104	4,070,561
364–426	4,070,562
364–510	4,070,563
364–405	4,070,564
362–369	4,070,566
362–390	4,070,567
362–311	4,070,568
362–352	4,070,569
362–218	4,070,570
365–015	4,070,651
365–157	4,070,652
365–222	4,070,653
365–104	4,070,654
365–156	4,070,655
365–203	4,070,656
365–233	4,070,657
365–036	4,070,658
365–015	4,070,659

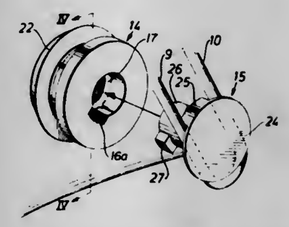
PATENTS

GRANTED JANUARY 24, 1978

GENERAL AND MECHANICAL

4,069,512
LOCATING DEVICE FOR EAR-MUFFS ON HELMETS
Tore Georg Palmaer, Smultronvagen 28, S-331 00, Varnamo, Sweden
Filed May 12, 1975, Ser. No. 576,898
Int. Cl.² A42B 1/06
U.S. Cl. 2—209 **7 Claims**

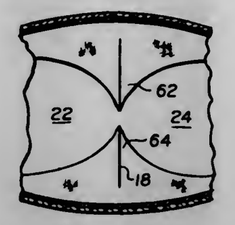




1. An ear cover and helmet combination including means for adjustably attaching said ear cover to the interior of a helmet comprising a shackle attached to said cover and having an extending shank formed by a pair of parallel spaced arms interconnected by an integral loop at their ends, a bearing formed in the side of said helmet, a rotatable pin removably journalled within said bearing and extending into the interior of said helmet between the arms of said shank, the bearing having an axial slot and an undercut circumferential groove within the bearing, the extending portion of the pin having a radial boss movable through said axial slot and adapted to engage the interior frontal edge of said undercut circumferential groove of the bearing to prevent axial displacement of said pin, a pair of lands formed chordally on a member extending from said rotatable pin, said pair of lands cooperating with said shank to secure said shackle for conjoint rotation therewith and for longitudinal displacement thereon, permitting said shackle and said cover being selectively movable into and out of the interior of said helmet while being worn and permitting said pin and shackle to be removed from said helmet.

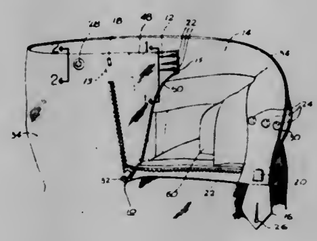
4,069,513
FORM-FITTING TROUSERS
Peggy Shiller, and Sidney Shiller, both of Sleepy Hollow Road, Scarborough, N.Y. 10510
Filed Sept. 16, 1976, Ser. No. 723,689
Int. Cl.² A41D 1/06
U.S. Cl. 2—227 **7 Claims**

1. A two-layered pair of trousers comprising a continuous waistband of sufficient elasticity to be put on by the wearer, an outer trouser layer and an internal body hugging layer made of power net having front and rear sections, and means securing the outer portion to the internal portion approximately about the waistband and longitudinally downwardly from the waistband approximately centrally of at least one of the front and rear sections, the sections being tapered downwardly so as to approach but not reach one another in the crotch area and so



as to define shaped partial legs holes, said downward tapering of said rear panel configuring said panel to closely fit and support the buttocks of the wearer.

4,069,514
BELTLESS SLACKS
John Angelo Palmieri, 7764 B Penrose Ave., Elkins Park, Pa. 19117, and Joseph Michael Palmieri, 261 Batleson Ave., Ambler, Pa. 19002
Filed Dec. 15, 1976, Ser. No. 750,799
Int. Cl.² A41D 1/06; A41F 9/00; A41D 27/20
U.S. Cl. 2—235 **10 Claims**



1. A pair of beltless trousers, having a waist region and fly opening in the front of said waist region, said fly opening having an inner and an outer flap, comprising:

a stiffening element attached to the upper inside edge of said waist region without visible circumferential stitching, said stiffening element having overlapping edges at said fly opening, and said stiffening element obviating the need for a conventional waistband having visible circumferential stitching;

a large, wide inner tab, tapering from a longer vertical side to a shorter vertical side, the length of said shorter vertical side being from ¼ to ½ the length of said longer vertical side, for securing said trousers about the hips of a user; said longer vertical side of said inner tab forming the inner flap of said fly opening; and,

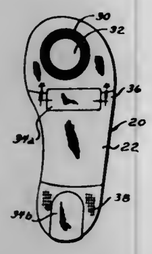
a first means for detachably connecting said shorter vertical side of said inner tab to said stiffening element on the side of said waistband corresponding to the outer flap of said fly opening, said first connecting means providing essentially continuous vertical attachment.

4,069,515

NON-SLIP THERAPEUTIC STOCKING

Roger T. Swallow, Crystal Lake, Ill., and Leonard A. Stanley, Charlotte, N.C., assignors to The Kendall Company, Boston, Mass.

Division of Ser. No. 676,447, April 13, 1976, Pat. No. 4,021,860. This application Nov. 15, 1976, Ser. No. 742,143
Int. Cl.² A41B *11/02*; A61F *13/08*
U.S. Cl. 2—239 2 Claims



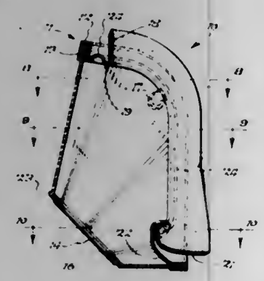
1. A therapeutic foot covering garment for use without shoes comprising, a foot portion for covering the foot of a patient, said foot portion being circumferentially elastic to conform to the shape of the patient's foot, and an elastic strip of non-slip high friction material attached to a region of the foot portion underlying the foot, said strip having sufficient elasticity to prevent impairment of the foot portion elasticity when the stocking is worn, and said strip being located to contact the floor beneath the patient's foot and minimize slippage of the patient on the floor.

4,069,516

BREATHING FACE MASK

Dudley W. Watkins, Jr., Williamsville, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Filed July 21, 1976, Ser. No. 707,221
Int. Cl.² A62B *18/00*
U.S. Cl. 2—428 6 Claims



1. A face seal comprising, in combination with a body having an open side adapted to fit about facial portions of a user, said body defining a facial portion receiving cavity and having a marginal edge portion around said open side thereof, sealing means adapted to form a seal between said body and the face of a user thereof, said sealing means comprising a resiliently flexible perimetrical sealing element conformable in sealing relation with a face, and a resiliently flexible perimetrical connecting web joining said sealing element to said body in spaced relation thereto, said sealing element normally being suspended from said body by said web in inwardly spaced relation to said marginal edge portion therearound whereby said face mask is conformable in sealing relation to the face of a user independently of said body, said web being formed with a bead extending thereabout adjacent to said marginal edge portion, said bead projecting out of the plane of said web in a manner to mechanically load said sealing element upon predetermined buckling of said web.

4,069,517

MIGRATION-RESISTANT PLASTICIZER FOR VINYL HALIDE POLYMERS

Paul R. Graham, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 242,823, April 10, 1972, abandoned. This application May 29, 1973, Ser. No. 364,801
Int. Cl.² A61F *1/24, 1/22*
U.S. Cl. 3—1.4 3 Claims

1. In a process of supplementing or replacing mammalian body organs using means comprising a vinyl chloride polymer, said polymer being in contact with said body, the improvement wherein said polymer contains a phthalate-free polyester plasticizer of the formula

$$T - G - (A - G)_x T$$

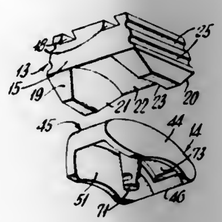
wherein
T represents a 2–18 carbon atom aliphatic, saturated monocarboxylic acid;
G represents a glycol of 2 to 6 carbon atoms;
A represents an aliphatic dicarboxylic acid of 4–10 carbon atoms; and
x is an integer of from 5 to about 15.

4,069,518

TOTAL ANKLE PROSTHESIS

Harry E. Groth, Jr., 3840 SW. Dosch Road, Portland, Oreg. 97201, and Philip J. Fagan, 3480 SW. 106th St., Beaverton, Oreg. 97005

Filed Aug. 31, 1976, Ser. No. 719,228
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.91 8 Claims



1. An ankle prosthesis comprising
a talar member having three adjacent longitudinally and laterally convexly shaped bearing surfaces and means for attaching said member to the talus bone and a tibial member having three substantially complementary longitudinally and laterally concave shaped bearing surfaces and means for attaching said member to the talus bone; wherein said convex surfaces and said concave surfaces are in mutual articulatory bearing engagement and provide medial-lateral support.

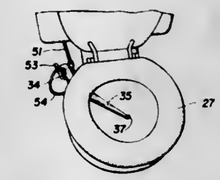
4,069,519

BIDET

Dale W. Alexander, 324 Royal Palm Way, Palm Beach, Fla. 33480

Filed Jan. 21, 1977, Ser. No. 760,925
Int. Cl.² A47K *7/08*
U.S. Cl. 4—7 10 Claims

1. A bidet comprising a stationary disc adapted to be fixed to the bottom of a toilet seat, a body portion rotatably mounted on the disc for movement therearound substantially in the plane of a seat on which the disc is mounted, said body portion having a projecting handle to facilitate rotating it, a spray arm extending from the body portion and hingedly connected therewith for pivotal movement about an axis generally parallel to said plane whereby the spray arm can swing through an arc relative to the body portion while rotating therewith, fluid conduit means connected through said handle, disc and spray arm for delivering a fluid spray upwardly from the free end of said arm when the bidet is in a use position, and a flexible



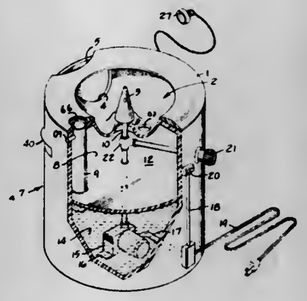
push-pull link connected with the spray arm outwardly of the hinge thereof and connected with said disc at a point eccentric to the centers of the disc and said body portion, in such a manner that said spray arm is rotatable between a non-use position wherein said spray arm is generally parallel to said plane, and a use position wherein said spray arm is inclined downwardly with respect to said disc.

4,069,520

ELECTRIC BIDET

R. Bert Thomas, 445 O'Farrell St. Hotel, San Francisco, Calif. 94102

Continuation of Ser. No. 604,102, Aug. 13, 1975, abandoned. This application Nov. 24, 1976, Ser. No. 744,707
Int. Cl.² A47K *11/08, 3/22*
U.S. Cl. 4—7 11 Claims



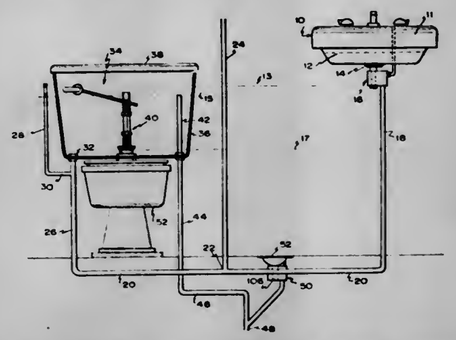
1. A portable bidet comprising in combination:
a. an integral hollow cylindrical structure having a bottom tank and a top tank, said top tank having an open end, said tanks both adapted to contain liquids;
b. a fountain pipe extending upwardly from the bottom tank through the top tank having a distal end proximate the open end of said top tank;
c. a basin structure mounted coaxially within said open end of said top tank, said basin structure having a concave bottom surface with a convex rise, said bottom surface having a hole defined therethrough coaxial with said convex rise, said fountain pipe extending through said hole, said basin structure also having an overflow port defined through its side whereby liquid may overflow from said basin into the top tank;
d. a toroidal seating surface having an inside diameter less than that of said open end of the top tank, said seating surface mounted coaxially on said open end of said top tank;
e. means for introducing a liquid into the bottom tank;
f. electrical means for pumping the liquid contained in the bottom tank through said fountain pipe, to direct a spray of liquid upwardly from the distal end of said fountain pipe proximate the open end of said top tank, said liquid being captured by said basin structure and then overflowing into said top tank.

4,069,521

SYSTEM AND MEANS FOR USING WHITE WATERS IN BUILDINGS

Augusto Cuevas Aleman, Maria de la Luz Bringas No. 44, Colonia del Valle, Mexico 12, Mexico

Filed Dec. 29, 1975, Ser. No. 644,635
Int. Cl.² E03D *1/02, 5/00*
U.S. Cl. 4—300 4 Claims



1. A system for using white waters for flushing toilets in one-stage or multi-staged buildings, comprising at least a subsystem formed by:
at least a toilet and at least a sanitary device capable of producing white waters; said toilet having a water tank with a maximum filling level and a minimum water level;
sanitary connection means between said devices producing white waters and the tank of said toilet or toilets;
every toilet tank having eliminated the inlet or water admitting valve, and being directly connected to the respective sanitary device;
a pressure regulating and filtering means at the sink or outlet of said device or devices producing white waters in order to avoid air columns prone to be formed in said system capable of preventing hydraulic communication between a white waters producing device and the tank in a sub-system;
and overflow means for every toilet tank, located slightly under the maximum filling level of said tank; tank outlet means in fluid communication with said overflow means being capable of connecting with a sewer or with a similar sub-system located at a lower stage of a building;
at least two sub-systems arranged one in a different stage of the same building; there being also incorporated into said system;
a white waters storage tank located above the highest stage of said building, either at top of said building or on top of a different structure;
first tube means connecting said storage tank directly to the tank of a toilet of the top stage sub-system;
second tube means collecting all waters produced at a level under the minimum water level of said tank or tanks of said sub-system, capable of sending the same to a sub-system located at the next lower stage;
said first tube means being in fluid-communication with third tube means connecting said white water producing devices located above the maximum filling level with the first tube means, so that said tank or tanks can be filled by water from said devices or by water from said storage tank, selectively;
said outlet means connecting the overflow of said tank or tanks with the sub-system of the next lower stage; said

subsystem of the next lower stage being in fluid communication with a storage means located under the outlet level of said second tube means of the lowest stage of said building, in order that all water in excess coming from all of the stages is stored at said storage means;

pumping means suitable to transfer water from said storage means into said upper tank to recirculate the same; and

sedimenting means located at the entrance of said storage means, above the maximum water level thereof, which level is constituted by an outlet connecting with a standard sewage system.

4,069,522

BABY COMMODE

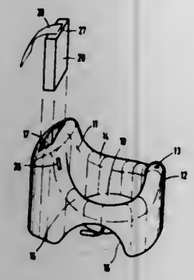
Heinz Messmer, Aurich, and Martin Schwab, Effretikon, both of Germany, assignors to Heimess Heinz Messmer - Haus Baby-Gluck, Aurich, Germany

Filed Apr. 27, 1976, Ser. No. 680,792

Claims priority, application Germany, Oct. 10, 1975, 2545375; Switzerland, May 2, 1975, 005666/75

Int. Cl.² A47K *11/06, 11/02*

U.S. Cl. 4—138 **17 Claims**



1. A portable child's commode, comprising an inner peripherally extending wall having a depending portion defining a central pot;

an outer peripherally extending wall spaced from said inner wall in the lower regions thereof, said inner and outer walls being connected at their upper extremities to thereby form an anatomical seating ring, said inner and outer walls being formed so as to be cooperable to provide therebetween a pocket for releasable retention of selected toiletry articles;

said outer wall terminating in a lower edge, said lower edge and the bottom of said pot defining a base adapted to rest upon a support surface for the commode;

the said inner and outer walls being configured to provide a back rest to the rear of said central pot and an upwardly directed portion forwardly of said central pot to serve as a deflector.

4,069,523

BATHTUB WITH CUSHIONED LINER OF FOAM PLASTIC

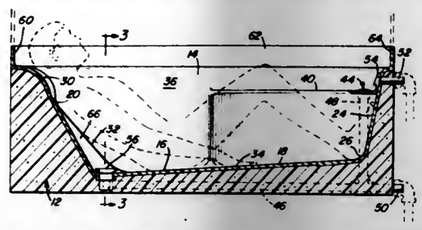
Louis H. Ridgeway, P.O. Box 261, Jonesville, S.C. 29353

Filed Dec. 23, 1974, Ser. No. 535,678

Int. Cl.² A47K *3/12*

U.S. Cl. 4—173 R **11 Claims**

10. A bathtub construction providing improved comfort and safety for a bather comprising a rigid shell having an open top and defining a water-receiving cavity for supportably containing the body of a bather, a portion of the inner surface of the cavity sloping downwardly and inwardly from said open top toward the bottom portion of the cavity for supporting the back of a bather in semi-reclined position in the cavity, and an elongated groove extending upwardly in said sloping surface portion from the bottom of the cavity to receive the vertebrae of a bather when in semi reclined position, and outlet means for draining water from the cavity located in the bottom of the cavity and recessed in said groove to prevent contact of the



body of the bather with said outlet means when supported in said semi-reclined position therein.

4,069,524

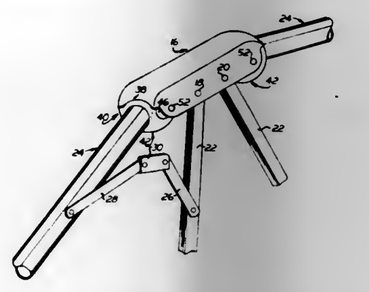
COLLAPSIBLE CHILD PEN WITH IMPROVED HINGE JOINT

Louis David Carlo, Valley City, Ohio, assignor to Century Products Inc., Cleveland, Ohio

Filed Aug. 9, 1976, Ser. No. 712,604

Int. Cl.² A47C *27/08*

U.S. Cl. 5—99 B **7 Claims**



1. In a child pen comprising a collapsible structure having a plurality of structural members which are coupled to one another and which are moveable relative to one another to assemble the structure from a collapsed condition and to collapse the structure from an assembled condition, the improvement comprising a hinge joint comprising a longitudinally extending yoke member including means defining an opening in a longitudinal end thereof, a longitudinally extending rod member having a longitudinal end portion disposed partially within said opening in said yoke, the longitudinal axes of said yoke and said rod member lying in a substantially common plane, means forming a pivot axis extending normal to the longitudinal axis of the rod member, means supporting said pivot axis in a fixed position with respect to said yoke member, said rod member being supported for pivotal movement in a first direction about said pivot axis during assembling of the structure whereby said rod member is brought into longitudinal alignment with said yoke member and in a second direction about said axis during collapsing of said structure, a cap member interconnected with said yoke member and said pivot axis and supported for pivotal movement about said pivot axis during assembly and collapse of said structure, said yoke defining means for resisting movement of said cap member in the direction of said pivot axis, means for interconnecting said cap member and said longitudinal end of said rod member for joint pivotal movement about said pivot axis during assembly and collapse of said structure, said cap member including outer surface means disposed at least partially within said opening and moveable along a path disposed in covering relation to said opening to prevent longitudinal insertion of a human limb such as a finger into said opening during pivotal movement of said rod member from said collapsed condition to said assembled condition.

4,069,525

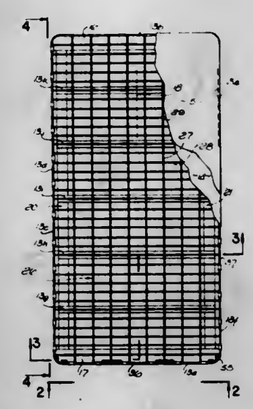
FIRM FOUNDATION UNIT FOR MATTRESSES

Bob S. Valoff, Cerritos, Calif., assignor to Ideal Spring Company, Los Angeles, Calif.

Filed Oct. 7, 1976, Ser. No. 730,528

Int. Cl.² A47C *23/02*

U.S. Cl. 5—247 **15 Claims**



1. A foundation unit for supporting a mattress, comprising:

an essentially horizontal base frame having side rails extending along opposite sides thereof longitudinally of the frame, and having cross members extending transversely between said side rails at head and foot ends thereof and therebetween;

an essentially horizontal upper structure spaced above said frame and including a horizontal mesh of intersecting and interconnected longitudinal and transverse wires, and a peripheral wire of greater strength extending about and connected to the periphery of said mesh;

a plurality of supporting units connecting said upper structure to and supporting it from said frame and each formed of a continuous strip of wire bent to form a series of legs which extend approximately directly vertically from the frame to said upper structure at different locations and are connected at lower ends to the frame and at upper ends to said upper structure, and which are substantially straight for the entire distance from the frame to the upper structure, each of said continuous strips of wire forming a plurality of essentially horizontal connector portions each extending laterally between and integrally interconnecting corresponding ends of two successive legs of the same strip;

certain of said continuous strips extending along said opposite side rails and having alternate connector portions of an individual strip attached to a side rail and said peripheral wire of said upper structure respectively;

others of said continuous strips of wire extending transversely along said cross members at the head and foot ends respectively of the foundation unit and each having alternate connector portions attached to a cross member and said peripheral wire respectively;

additional ones of said continuous strips of wire being disposed along cross members at locations longitudinally intermediate the head and foot ends of said frame and each having alternate connector portions attached to a cross member and said mesh respectively.

4,069,526

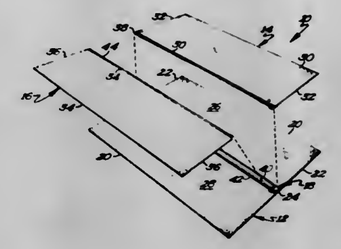
BED COVERING APPARATUS

Theodore Deikel, 27960 Smithtown Road, Shorewood, Minn. 55331

Filed Nov. 26, 1976, Ser. No. 744,971

Int. Cl.² A47C *23/00*; A47G *13/19*

U.S. Cl. 5—343 **7 Claims**



1. Bed covering for use with a bed having a length and a width comprising, in combination: a first blanket member having a length and a width approximately at least equal to the length and width of the bed and having a center section dividing the blanket member substantially into a right half and a left half, with each of the right and left halves having a length equal to the length of the blanket member and a width substantially equal to one half the width of the blanket member; a first coverlet member having a size substantially equal to the right half of the blanket member; a second coverlet member having a size substantially equal to the left half of the blanket member; and means for allowing the first coverlet member to be removably, pivotably attached to the center section of the blanket, for allowing the second coverlet member to be removably, pivotably attached to the center section of the blanket, and for allowing the first coverlet member to be pivoted from a first position adjacent to and resting on the right half of the blanket member to a second postion adjacent to and resting on the second coverlet member and allowing the second coverlet member to be pivoted from a third position adjacent to and resting on the left half of the blanket member to a fourth position adjacent to and resting on the first coverlet member comprising, in combination: a first connector member located on the first coverlet member; a second connector member located on the blanket member within the center section for connecting with the first connector member; a third connector member located on the blanket member wthin the center section; and a fourth connector member located on the second coverlet member for connecting with the third connector member wherein the bed covering can be positioned in a fifth position with the first coverlet member located in its first position and the second coverlet member located in its third position; a sixth position with the first coverlet member located in its first position and the second coverlet member located in its fourth position; and a seventh position with the first coverlet member located in its second position and the second coverlet member located in its third position.

4,069,527

PROTECTIVE BED CANOPY

William C. Harris, Apartado 218, San Pedro Sula, Honduras

Filed Sept. 22, 1976, Ser. No. 725,403

Int. Cl.² A47C *29/00*

U.S. Cl. 5—362 **3 Claims**

1. An overhead protective device for a bed having a bed frame for protecting the occupant of the bed during a catastrophe, comprising:

a. a plurality of reinforced standards having upper end portions projecting upward from said bed frame,

b. an elongated canopy including a framework and a cover member over said framework,

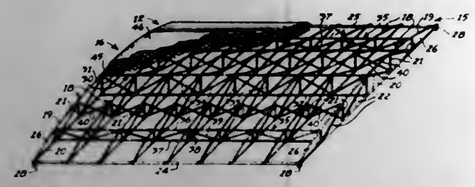
c. said framework comprising a plurality of longitudinally

spaced transverse trusses disposed in transversely extending vertical planes,

d. each of said transverse trusses comprising a continuously and symmetrically arched top strut member convex upward and an elongated bottom strut member connected to said top strut member by intermediate struts,

e. said framework further comprising a plurality of transversely spaced, longitudinal trusses disposed in longitudinally extending vertical planes,

f. said longitudinal trusses intersecting said transverse trusses at right angles, the height of said longitudinal trusses and transverse trusses being equal at their points of intersection,



g. said cover member comprising a layer of heavy-duty, open mesh, wire network engaging and conforming to the top surface of the arched top strut members of said framework,

h. said cover member further comprising a decorative fabric overlaying said open mesh, wire network, and

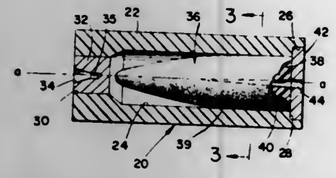
i. connector means on said framework attached to said upper end portions of said standards to support said canopy spaced above said bed frame to longitudinally and transversely span said bedframe to shield the occupant of said bed from overhead falling objects and to deflect falling objects away from said bed.

4,069,528

DART-POINT SHARPENER AND STRAIGHTENING DEVICE

Milton Dwayne Newton, 12113 Beverly Blvd. Q, Whittier, Calif. 90601, and Leo Gaston Willette, 1911 Robinson St., Redondo Beach, Calif. 90278

Filed July 12, 1976, Ser. No. 704,623
Int. Cl.² B25F *1/00*
U.S. Cl. 7—1 R **6 Claims**



1. A dart-point straightening and sharpening device comprising:

an elongated housing having an elongated longitudinal bore;

an abrasive sharpening means arranged to be disposed within said longitudinal bore;

a cap fixedly mounted to one end of said housing and having an aperture centrally disposed therein to receive the point of a dart therethrough to engage said sharpening means; and

a point-straightening means mounted to the housing end opposite the end used for sharpening said dart point, and wherein said housing includes:

an enlarged bore adjacent the one end of said longitudinal bore formed to receive said cap therein; and

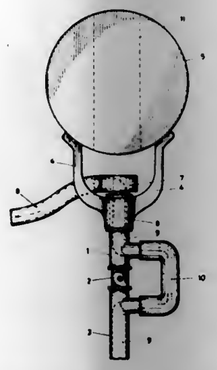
a reduced-diameter bore disposed at the opposite end of said housing wherein said straightening means is affixedly mounted therein.

4,069,529

SINGLE-POINT MOORING BUOY

Willem Jan van Heijst, Monte-Carlo, Monaco, assignor to Single Buoy Moorings, Inc., Fribourg, Switzerland

Filed May 19, 1976, Ser. No. 687,755
Claims priority, application Netherlands, May 23, 1975, 7506107
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 P **7 Claims**



1. A single point mooring buoy, comprising an upright column, an anchor by which the lower end of the column is held to the floor of a body of water, a buoy connected to the upper end of the column, a first swivel joint by which said buoy is interconnected to said column for rotation through 360° relative to said column about an upright axis, a second swivel joint carried by the upper end of said column adjacent the bottom of said buoy, a hose connected to said second swivel joint for rotation of said hose through 360° relative to said column about an upright axis, and at least one conduit extending from adjacent said anchor up along said column through said second swivel joint to said hose connecting means, said first swivel joint being disposed below said second swivel joint.

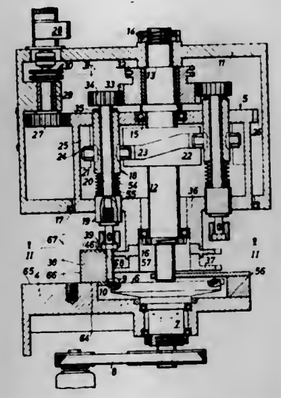
4,069,530

APPARATUS FOR CHAMFERING, POINTING OR THE LIKE OF WORKPIECES HAVING A HEAD OR SHOULDER

Wilhelm Moeltzner, Berlin, Germany, assignor to Angis - Anstalt, Mauren, Furstentum, Liechtenstein

Filed Oct. 21, 1976, Ser. No. 734,401
Claims priority, application Germany, Nov. 14, 1975, 2551804
Int. Cl.² B23G *9/00*
U.S. Cl. 10—9 **10 Claims**

1. An arrangement for chamfering or pointing of cylindrical workpieces having a head or shoulder and a shank comprising: a cutting tool; a rotary table mounted on a support shaft coaxial with said cutting tool; drive means including a drive shaft for rotating said rotary table on said support shaft; workpiece holding units with holding elements for receiving the workpieces, said units being mounted on spindles for rotation on said rotary table, said elements having axes parallel with an axis of said rotary table; a frame; said workpiece holding units being mounted in said frame on said rotary table; ring means fixed to said frame for guiding the workpieces; an entrainment disk rotatable with the rotary table and having holding grooves for the shanks of the workpieces; said ring means having an upper surface for guiding the heads of the workpieces, the shanks of the workpieces being guided by said holding grooves of said entrainment disk along an inside surface of said ring means, said upper surface of said ring means extending between feed and removal positions for said workpieces and having at least one plane inclined in a direction of motion of the workpieces when carried by said rotary table for automatic delivery of the workpieces to said cutting tool; said upper surface of said ring means having an adjacently connecting planar surface for supporting said workpieces horizontally during final cutting; an independent auxiliary drive means for adjustably driving said spindles comprising first drive gears mounted on said drive shaft, said first drive gears being mechanically connected to second drive gears mounted on said



support shaft, said second drive gears being in turn operatively connected to pinions mounted on said holding unit spindles, whereby said spindles may be driven by said auxiliary drive means at a preselected rotational speed independently of the rotational speed of the rotary table effected by said drive shaft to adjust the cutting speed to an optimum value; and means for pressing the workpieces against the upper surface of the ring means whereby the simultaneous pressing of said workpieces against the upper surface of the ring means, the rolling of the shanks against the inside periphery of said ring means, and the rotation of said workpieces by said auxiliary drive means reduces frictional wear during movement of the workpieces along said ring means by the rotation of the table.

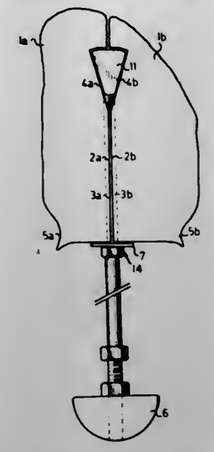
4,069,531

ORTHOPEDIC SHOE TREE

Rene Streich, Bettenstrasse, 64, Allschwil, Switzerland (CH-4123)

Filed Dec. 1, 1976, Ser. No. 746,209
Claims priority, application Switzerland, Dec. 1, 1975, 15695/75
Int. Cl.² A43D *5/00*
U.S. Cl. 12—116.2 **8 Claims**

1. An orthopedic shoe tree for the shoe of persons with a slight foot or toe deformity comprising; two completely separate front foot form halves each of which has in its facing separation face a longitudinal groove opening into a wedge channel, a stretching wedge within said wedge channel in communication with a tightening screw within said longitudinal grooves and having a head portion to the rearward of said form halves, and a longitudinally moveable heel part having an



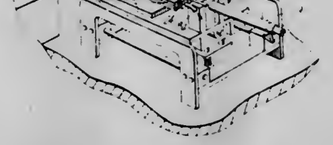
adjustable setscrew which is loosely linked with the head of said tightening screw.

4,069,532

METHODS FOR STIFFENING PORTIONS OF FLEXIBLE MATERIAL

Conrad Rossitto, Andover, and Robert Pierce Follett, Pepperell, both of Mass., assignors to USM Corporation, Boston, Mass.

Filed Sept. 2, 1976, Ser. No. 719,992
Int. Cl.² A43D *00/00; B29B 00/00*
U.S. Cl. 12—146 D **10 Claims**



1. The method for stiffening a flexible workpiece comprising the steps of depositing a layer of fast crystallizing synthetic linear polymer resin substantially free from side chains in molten condition on a transfer surface member, said transfer surface member being at a temperature controlled relative to its heat take-up capability and to the temperature and heat conductivity of the deposited molten resin rapidly to bring the deposited resin at the interface with the surface of said member to a temperature for rapid crystallization, the temperature of said transfer surface member being below the crystallization temperature of said resin but being sufficiently high to avoid supercooling of said resin, solidifying resin by crystallization from molten state at said interface of the resin with said transfer surface member leaving substantially all of the remainder of the thickness of said resin layer in soft molten condition, pressing the resin layer between said transfer surface member and the surface of said workpiece within a time after deposition of said resin on said transfer surface member during which portions of said resin layer away from said interface remain molten with a viscosity low enough for wetting adhesive engagement with and flow into conformity with the surface of said workpiece and separating said transfer surface member from said

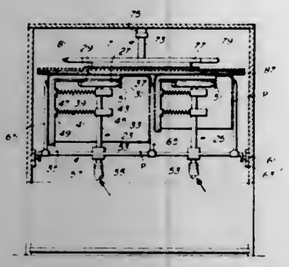
resin layer at a time when crystallized resin has formed adjacent said transfer surface member to an extent sufficient to preserve the integrity of the layer of resin during separation.

4,069,533

WASHING MACHINE FOR CLEANING COOKING POTS OR SIMILAR ARTICLES

Joseph C. Lanzisera, 43 Jackson Ave., Bayville, N.Y. 11709

Filed Apr. 12, 1976, Ser. No. 675,923
Int. Cl.² A46B *13/06*
U.S. Cl. 15—56 5 Claims



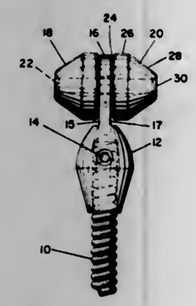
1. A washing machine for cleaning cooking pots comprising:
a. a plurality of upwardly extending washer-scrubber units, each upwardly extending washer-scrubber unit being adapted to support a cooking pot in an inverted position, each upwardly extending washer-scrubber unit including:
   1. a rotatably mounted "T" shaped sprinkler having spray type end nozzles,
   2. a brush mounted on the sprinkler, and
   3. spring means for urging the brush outward against the inside of the cooking pot,
b. means for supporting the washer-scrubber units,
c. means for supplying cleaning fluid under pressure to the rotating sprinklers, the fluid emerging from the spray nozzles producing rotational movement of the sprinkler,
d. a housing, and
e. a pull-out tray mounted within the housing for supporting the means for supporting the washer-scrubber units.

4,069,534

DRAIN OPENER

Arthur Seymon Martin, 2316 French St., Santa Ana, Calif. 92706

Filed July 14, 1976, Ser. No. 705,141
Int. Cl.² B08B *9/02*
U.S. Cl. 15—104.3 SN 3 Claims



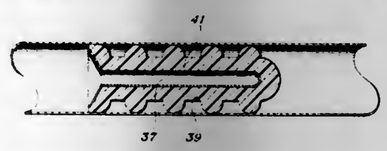
1. A drain opener comprising:
a head for a flexible snake member, said head comprising a nose for attachment onto the flexible snake member, said nose having a forwardly projecting web end having opposed substantially flat surfaces, said web end having a substantially hemicylindrical forward surface, and an opening through said web end substantially normal to said flat surfaces;
a pivot pin extending through said opening;
first and second rollers mounted on said pivot pin respectively adjacent said first and second flat surfaces of said web end so they rotate with respect to said web, said first and second rollers each having a substantially cylindrical outer diameter, each of said rollers having a frusto-conical surface away from said web end, the total included angle of said frusto-conical surface being more than 45° and less than 90 degrees, the total length of said first and second rollers in the direction of said pivot pin when said rollers are located adjacent said web being greater than said cylindrical outer diameter of said rollers, the width of said web and said radius of said forward end of said web being substantially equal to and no larger than said cylindrical outer diameter of said rollers and said rollers lying substantially against said web end so that said web end substantially fills the space between said rollers.

4,069,535

PIPELINE PIG

Bennie D. Cato, 328 Bedford Road, Apt. 116, Bedford, Tex. 76021

Filed May 30, 1973, Ser. No. 365,156
Int. Cl.² B08B *9/04*
U.S. Cl. 15—104.06 R 9 Claims



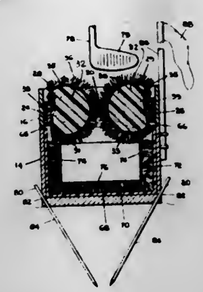
1. A pipeline pig adapted to be propelled through an oil and gas pipeline by fluid pressure injected into the pipeline comprising:
an elongated flexible member having a front end and a rear end,
a plurality of spaced annular flexible rings circumscribing said member at positions spaced inward from said front and rear ends and extending radially outward from said member for contacting the inside wall of a pipeline, all of said plurality of annular rings have substantially the same diameter,
said pig, including said elongated member and said annular rings, being formed of non-metallic flexible material capable of bending or flexing and resuming its original shape,
said elongated member having an elongated central aperture open at its rear end and extending from its rear end forward to a point beyond its midpoint and near the front end thereof for receiving fluid pressure to facilitate movement of the pig through a pipeline,
said front end being defined by a forward projecting wall means which extends forward of the forwardmost annular ring and is smaller in cross section than the cross section of said forwardmost annular ring,
said central aperture having its sidewall closed to the passage of fluid therethrough along its length from the rear end of said member to a point near the front end thereof,
said annular rings being formed of polyurethane foam,
said central aperture being formed by a non-porous liner around which the foam material is bonded.

4,069,536

GOLF CLUB WASHER

Robert E. Hartz, 2898 Westland Road, Muskegon, Mich. 49441, and Charles J. Ries, 3337 Highland, Muskegon Heights, Mich. 49444

Filed Oct. 26, 1976, Ser. No. 735,514
Int. Cl.² A46B *11/00*; A63B *57/00*
U.S. Cl. 15—104.92 13 Claims



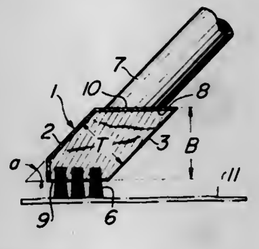
1. A golf club washing apparatus comprising:
a liquid holding casing having an aperture at an upper portion and adapted to hold a quantity of liquid placed at a bottom portion therein;
opposed stationary cleaning pads each including a flexible exterior lining that flexes with any pressure thereon, each lining having means thereon for cleaning a golf club head when said golf club head is rubbed thereagainst and a spongeous resilient interior enclosed by the lining so that the golf club head is cushioned against bangs and nicks as the exterior lining flexes; and
means for mounting the cleaning pads in an upper portion of the casing such that a club can be inserted through the aperture and between the pads, and in so doing be in rubbing contact with the cleaning pads, there being a space between the bottom surface of the casing and a lower surface of the cleaning pads so that the upper surface of the club can be cleaned by rubbing contact with the lower surface of the cleaning pads.

4,069,537

MOP MEANS

Setsuko Matsuo, 954-4, Aza Uoya, Miyaza, Japan

Continuation-in-part of Ser. No. 597,184, July 18, 1975, abandoned. This application Apr. 5, 1977, Ser. No. 784,745
Claims priority, application Japan, Dec. 28, 1974, 50-2640
Int. Cl.² A47L *13/256*
U.S. Cl. 15—228 2 Claims



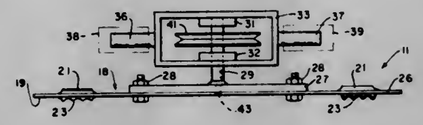
1. A mop comprising:
a parallelepiped body made of a rigid material, said parallelepiped body having a front and a rear surfaces extending downwardly and forwardly;
a plurality of downwardly extending elastic gripping bristles attached to the under surface of the parallelepiped body;
an elongated rod handle secured substantially in the center of the top surface of said parallelepiped body, the central longitudinal axis of which extends in a plane substantially parallel with the front surface of the parallelepiped body; said rod handle having a diameter slightly smaller than the thickness of the parallelepiped body;
a cushion member covering the front, right and left lateral, and top surfaces of the parallelepiped body; and
replaceable wiping means releasably gripped on the bottom surface of the parallelepiped body by pressing said downwardly extending bristles, whereby the mop may be used with tilting of the handle parallel to the floor.

4,069,538

DRIVE DISC AND PAD ASSEMBLY FOR FLOOR BUFFER

Burke R. Fallen, 1315 Buck St., Eugene, Oreg. 97402

Filed July 1, 1976, Ser. No. 701,522
Int. Cl.² A47L *11/14*
U.S. Cl. 15—230.17 3 Claims



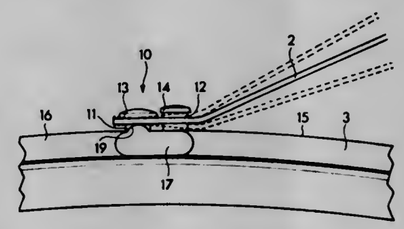
1. In a floor buffing machine,
a rotating pad support structure adapted to secure and mount in contact with a floor to be buffed and to rotationally drive a porous floor buffing pad, said structure comprising a drive plate having a normally horizontal planar position in use with said pad mounted on the underside thereof, said plate being formed with a plurality of openings therethrough providing airways in communication with said pad;
a vane carried by said plate at one side of each of said openings and inducing upon rotation of said plate a normally upward airflow through said pad and openings; and
means depending from said plate at the opposite sides of said openings and piercing said pad for joint movement and for restraining said pad against centrifugal expansion.

4,069,539

WIPER DEVICE FOR WINDSHIELDS AND HEADLIGHT GLASSES

Olle Herbert Klingberg, deceased, late of Lindesberg, Sweden, and by Sven Valfridsson, administrator, Syrenvagen 2, S-772 00 Grangesberg, Sweden

Filed May 17, 1976, Ser. No. 687,129
Claims priority, application Sweden, May 23, 1975, 7505924
Int. Cl.² B60S *1/40*
U.S. Cl. 15—250.32 8 Claims



1. A wiper device for automotive windshields and the like, including a wiper arm and a wiper blade of flexible material, said wiper arm having an oblong opening therein, fastening means on said wiper blade adapted to be received within said opening of the arm, said fastening means comprising two cylindrical projections protruding from the blade and adapted to abut with at least portions of their outer surfaces against first

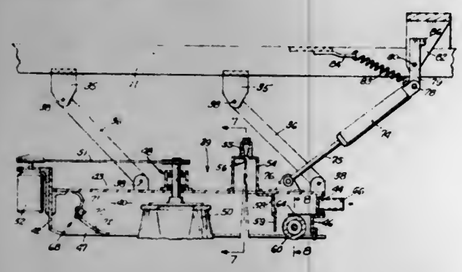
and second arcuate end portions of the opening of the arm when the arm and the blade are assembled, each of said projections having means at its outer end adapted to cooperate with an arcuate end portion of the opening, permitting said wiper arm to swing between extreme positions and to yield when obstacles are encountered.

4,069,540

MACHINE FOR REMOVING PAINTED STRIPES FROM ARTIFICIAL TURF

Frank J. Zamboni, Paramount, Calif., assignor to Frank J. Zamboni & Co., Paramount, Calif.

Filed July 14, 1976, Ser. No. 705,023
Int. Cl.² A47L 7/00
U.S. Cl. 15—320 **4 Claims**



1. A machine for removing stripes or other markings from artificial turf, comprising:

an automotive vehicle having a vacuum tank mounted thereon, into which water is drawn from the turf, a blower connected to said vacuum tank so as to draw air therefrom, and a high-pressure water pump, the intake of which is connected to the bottom of said vacuum tank so as to draw water therefrom;

a conditioner head mounted on the underside of said vehicle so as to slide on the turf, said conditioner head including an open-bottom housing which cooperates with the turf to form an enclosed chamber;

a brush rotatably supported on said housing within said chamber, with its bristles engaging the surface of the turf;

means for driving said brush

a nozzle mounted on said housing, fluidly connected to the outlet of said pump, and directing a high-pressure spray of water down into the turf adjacent said brush;

suction lines connecting the interior of said housing to said vacuum tank;

a roller journaled within said housing adjacent the rear end thereof, said roller bearing downwardly against the turf and acting to roll a wave of water ahead of itself; and

means for confining the flow of air drawn in by said suction lines to a high velocity stream adjacent the surface of the turf ahead of the wave, so that the wave of water is picked up by the high velocity stream of air and is carried thereby.

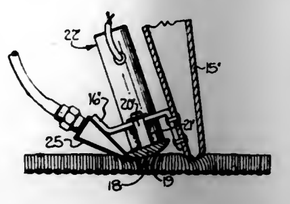
4,069,541

CLEANING METHOD AND APPARATUS

Robert C. Williams, and William R. Kimball, both of Smithfield, N.C., assignors to U.S. Floor Systems, Inc., Raleigh, N.C.

Filed Apr. 23, 1976, Ser. No. 679,735
Int. Cl.² A47L 7/00
U.S. Cl. 15—321 **5 Claims**

2. In a hot water vacuum extraction carpet cleaning apparatus having pump means for supplying a flow of a pressurized solution of hot water and a detergent, vacuum means for inducing a suction flow of air, and cleaning head means for engaging carpet to be cleaned, said cleaning head means having means operatively communicating with said pump means for applying solution to carpet in a wetted zone at a first location, and said cleaning head means further having vacuum nozzle means operatively communicating with said vacuum means for drawing air and solution from a suction zone closely adjacent the carpet and for sucking solution from the carpet at a second location spaced from said first location, improvements which facilitate more thorough cleaning comprising



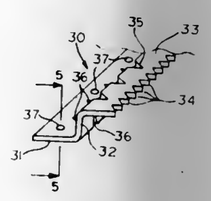
means mounted on said cleaning head means for causing deaerating cavitation of solution on the carpet intermediate the first and second locations by transmitting to the solution mechanical vibration at ultrasonic frequencies, and further wherein said means for applying solution comprises a manifold for applying the solution to carpet in the form of a sheet beneath said deaerating cavitation means.

4,069,542

CARPET SECURING STRIPS

William E. Carder, 838 Smith St., Rochester, N.Y. 14606

Filed Dec. 1, 1976, Ser. No. 746,258
Int. Cl.² A47G 27/04
U.S. Cl. 16—16 **3 Claims**



1. An elongate carpet securing strip, having

a plane base section adapted to be secured to a floor,

a rib section integral with said base section and extending from one edge thereof in a plane inclined to said base section,

a carpet-gripping section integral with, and inclined to, said rib section, and supported by said rib section in offset relation to said base section and any floor on which the latter is secured,

said carpet-gripping section having a longitudinally extending edge over which the edge of a carpet is adapted to be folded, when the strip is in use, and

combined mechanical and adhesive means on said carpet-gripping section engageable with a section of carpet to secure the latter in place,

said means including a layer of material secured to the face of said carpet-gripping section and having an adhesive outer surface, and a plurality of spaced projections on said carpet-gripping section adapted to imbed in a section of carpet when the strip is in use,

said carpet-gripping section being bendable about said rib section relative to said base section, and

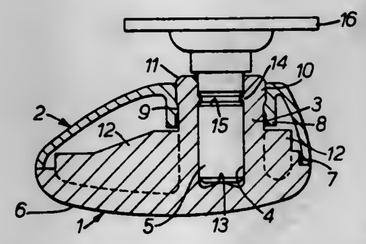
said plurality of spaced projections comprising the pointed ends of a plurality of carpet tacks, said tacks having the heads thereof positioned beneath said layer of material, and having the pointed ends thereof extending through openings in said carpet-gripping section to be forced downwardly through a carpet by bending said carpet-gripping section downwardly relative to said base section, when the latter has been secured to a floor.

4,069,543

GLIDE CASTORS

Michael Joseph James, Cheltenham, England, assignor to Michael Joseph James and William Holroyd Thomas Baggs, both of Cheltenham, England

Filed June 17, 1976, Ser. No. 696,949
Claims priority, application United Kingdom, June 28, 1975, 27417/75
Int. Cl.² A47B 91/06
U.S. Cl. 16—42 R **8 Claims**



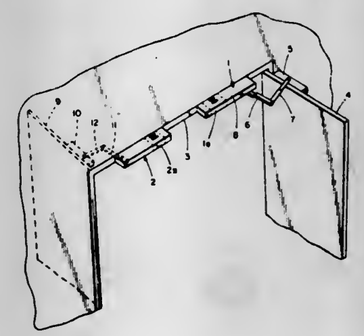
1. A glide castor comprising a lower moulding with a convex bottom ground-engaging surface, said lower moulding having an integral upstanding boss with a bore for a mounting spindle, and an upper cap-like moulding which seats on a peripheral seating on the lower moulding, said upper moulding being formed for snap-on engagement with said upstanding boss of said lower moulding thereby to hold the lower and upper mouldings together as a two-part body assembly; wherein said upper moulding is a shell of substantially uniform thickness apart from a region of the upper moulding surrounding and which snaps on to said upstanding boss fo said lower moulding; and wherein said region of the upper moulding is formed as an interval boss of annular form and constant wall thickness, said interval boss fitting closely around said upstanding bass of said lower moulding.

4,069,544

ELECTRICALLY ACTUATED DOOR HOLDER AND RELEASE

Richard E. D'Hooge, Wood Dale, Ill., assignor to Rixson-Firemark, Inc., Franklin Park, Ill.

Filed Mar. 23, 1977, Ser. No. 780,326
Int. Cl.² E05F 3/00
U.S. Cl. 16—49 **9 Claims**



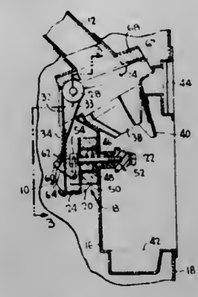
1. An electrically-actuated door holder and release including a rotatable spindle adapted to be connected to a pivoted door which is to be held open at desired hold open angles or points, comprising a spindle gear assembly having a spindle gear with the gear having a circular ring of splineways forming a series of male projecting keys, a cam having a cam lobe defining a detent segment with the cam having a circular hole internally grooved to mate with the projecting keys of the gear, a spring yieldingly holding the cam into a mating position with the spline gear to rotate therewith, an electromagnet, an armature, a pivoted latching lever supporting the armature and carrying a cam roller with energization of the electromagnet attracting the armature to latch the roller into a cam latching position on the detent segment thereby yieldingly latching the spindle gear assembly and the spindle against further rotation to hold a door at a desired open position.

4,069,545

DOOR CONTROL DEVICE WITH CLOSURE REGULATOR

Kenneth M. Holet, Waukesha, Wis., and Luis E. Prada, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 644,329, Dec. 24, 1975, abandoned. This application Oct. 22, 1976, Ser. No. 734,958
Int. Cl.² E05F 3/00
U.S. Cl. 16—49 **13 Claims**



1. Apparatus for controlling opening and closing movement of an ice dispenser duct seal door, said apparatus comprising:

means responsive to manual actuation for opening the door;

means for biasing the door toward its closed position;

a rotatable shaft operatively linked to the door;

a device for substantially slowing and impeding rotational motion;

a one-way clutch interposed between said slowing and impeding device and said shaft, said clutch decoupling said device from said shaft to permit substantially unimpeded rotation of the shaft in a door opening sense and said clutch coupling said device to said shaft to impede rotation of said shaft in a door-closing sense; and

said slowing and impeding device including a rotor coupled to said one-way clutch, said rotor having a rotor non-planar surface, and a viscous fluid positioned adjacent said rotor non-planar surface for impeding the rotation of said rotor.

4,069,546

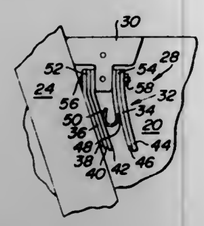
SOFFIT PLATE AND LIMIT STOP FOR USE WITH HYDRAULIC DOOR CLOSER

Stanley B. Reichlin, Wynnewood, Pa., assignor to Reading Door Closer Corporation, Reamstown, Pa.

Filed Aug. 4, 1975, Ser. No. 601,422
Int. Cl.² E05F 5/08
U.S. Cl. 16—85 **9 Claims**

1. For use in combination with a door, a door closer and at least one arm operatively interconnecting said door and said door closer, a soffit plate having thereon a pivot point for said arm and a limit stop adapted to contact said arm to first resiliently and then nonresiliently limit movement of said door, said

limit stop being spaced from said pivot point and comprising a dead stop member disposed in the path of movement of said arm and defining a limit position of the door, and spring means disposed in the path of movement of said arm, said spring means comprising a leaf spring having a first portion thereof coupled to said soffit plate adjacent to said dead stop member and another portion thereof remote from said first portion and



said dead stop member, said arm engaging and deforming said other portion when said arm approaches a position corresponding to a limit position of the door, said spring means being so positioned with respect to said arm and said dead stop member that deformation of said leaf spring permits said arm to engage said dead stop member when said arm reaches a position corresponding to a limit position of the door.

4,069,547

TOGGLE-TYPE DOOR STOP DEVICE IN PARTICULAR FOR AN AUTOMOBILE VEHICLE

Paul Guionie, Cublac, and René Roudier, Brive, both of France, assignors to Paumellerie Electrique, France

Filed Jan. 21, 1977, Ser. No. 760,830
Claims priority, application France, Jan. 22, 1976, 76 01638
Int. Cl.² E05F *5/06*
U.S. Cl. 16—85 19 Claims



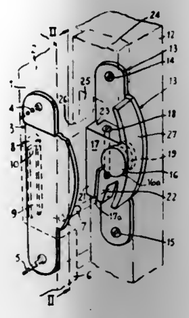
1. A toggle-type door stop device in particular for an automobile vehicle comprising two links for pivotally mounting respectively to a fixed part for example a body, and to a door which is pivotally mounted on the fixed part, the links being interconnected to pivot about a pivot axis so as to be capable of occupying selectively a folded position, corresponding to closure of said door, and an unfolded position corresponding to an opening of said door, a first of said links being extended beyond said pivot axis to form two semi-cams each of which defines at least one stop notch, cam follower means located outside the second of said links for cooperation with the stop notches of said semi-cams and movably mounted on said second link, elastically yieldable means carried by said second link and biasing said cam follower means into contact with said semi-cams, said semi-cams being capable of creating a retention in cooperation with said cam follower means when opening said links, said retention being capable of being overcome in opposition to the action of said elastically yieldable means for allowing said links to return to said folded position of said links.

4,069,548

HINGE FOR USE WITH WINDOW ASSEMBLY

Johannes Harald Bierlich, Oresundshoj 15, Charlottenlund, Denmark

Filed July 7, 1976, Ser. No. 703,296
Int. Cl.² E05D *11/08*
U.S. Cl. 16—140 10 Claims



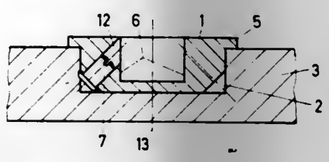
1. A hinge for use in a horizontally pivoted window assembly, said hinge having a pivot member, an eye member cooperable with the pivot member, and means responsive, when the pivot and eye members are assembled, to the weight of a window acting on either of said members to increase the friction therebetween after an initial opening movement of the hinge.

4,069,549

FITTING COMPONENT ANCHORED INTO A SUNK SEAT

Ernst Zernig, Hemer, and Manfred Ruther, Nachrodt, both of Germany, assignors to Richard Heinze

Filed May 21, 1976, Ser. No. 688,715
Claims priority, application Germany, May 21, 1975, 2522393
Int. Cl.² E05D *5/08*; F16B *12/20*
U.S. Cl. 16—158 17 Claims



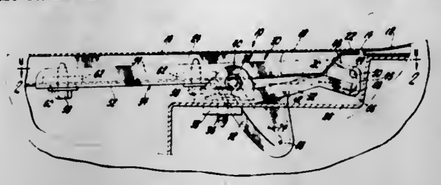
1. A fitting component which can be anchored into an accommodating sunk seat of a piece of furniture or the like and having a central axis and at least one locking element with a cam section provided on the locking element, with the locking element rotatable about a rotating axis from a first position in which the cam section is within the circumferential outline of the fitting component for insertion of the component into the sunk seat, into a second position in which the cam section projects beyond the fitting component circumference for anchoring purposes of the fitting component, characterized in that said rotating axis is inclined to said central axis of the fitting component and that said cam section of said locking element cuts into the piece of furniture when rotated to said second position, with said component inserted and anchored without tilting said component.

4,069,550

CLOSURE PANEL HINGE

Leonard P. Silk, E. Lansing, and Ernest G. Keefer, Grand Ledge, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1976, Ser. No. 738,560
Int. Cl.² E05D *15/58*
U.S. Cl. 16—179 4 Claims



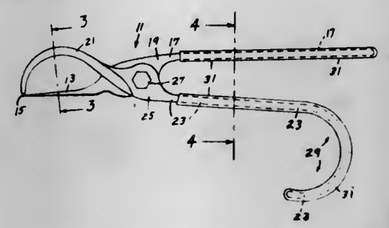
1. A hinge for mounting a closure panel on a vehicle body comprising:
- a body bracket mounted on a vehicle body and having a support surface;
- a panel bracket nonrotatably mounted on the closure panel and having an end portion slidably bearing on the support surface of the body bracket to support the closure panel during pivotal movement between open and closed positions, the point of bearing contact between the panel bracket end portion and the body bracket migrating along the support surface during pivotal movement of the hood, the support surface of the body bracket being inclined relative the horizontal so that pivotal opening movement of the closure panel effects upward vertical movement of the closure panel to avoid interference with the vehicle body.

4,069,551

CATFISH SKINNER

Richard L. Van Dyke, R.R. 7, and Michal A. Cunningham, 2108 N. 9th St., both of Springfield, Ill. 62707

Filed Feb. 10, 1976, Ser. No. 656,857
Int. Cl.² A22C *25/00*
U.S. Cl. 17—68 8 Claims



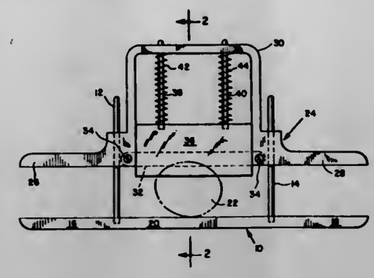
1. A skinning tool comprising: a lower relatively flat jaw member having a rearwardly extending upper handle member integrally connected thereto, an upwardly arched upper jaw member having a rearwardly extending lower handle member integrally connected thereto, a horizontal pivot pin connecting said jaw members and handle members at their crossed integrally connecting portions for pliers-like relative movements, said lower jaw member having a relatively sharp penetrating front edge and said upper jaw member having a downwardly facing blunt front edge for gripping skin between itself and the top surface of said lower jaw member adjacent its front edge, said blunt front edge of said upper jaw member having notches therein defining spaced flat skin-gripping areas on its face.

4,069,552

SHELLFISH OPENING TOOL

Anthony Priggs, 465 Silver Lane, East Hartford, Conn. 06118

Continuation-in-part of Ser. No. 603,688, Aug. 11, 1975, abandoned. This application Aug. 23, 1976, Ser. No. 716,680
Int. Cl.² A22C *29/04*
U.S. Cl. 17—75 16 Claims



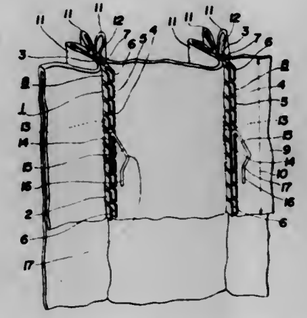
1. A tool for use in the opening of bivalves comprising:
- a first frame member, said first frame member having first and second linearly aligned and spatially displaced handle portions;
- a second frame member, said second frame member having first and second linearly aligned and spatially displaced handle portions;
- means supporting said frame members for relative motion therebetween and with said first and second handle portions on each of said frame members being in registration; and
- a cutting blade mounted on said first of said frame members intermediate the handle portions thereof.

4,069,553

CURTAIN SUSPENDING POSITION MOVER

Ietsugu Takazawa, Bancho-Chidorigafuchi Habitation 901, 3 Sanbancho, Chiyodaku, Tokyo, Japan

Filed July 22, 1976, Ser. No. 707,509
Claims priority, application Japan, Aug. 4, 1975, 50-108002[U]
Int. Cl.² A44B *21/00*
U.S. Cl. 24—73 CH 2 Claims



1. A device for suspending a curtain having pleats along a pleat line with a bent-wire curtain hook having an inserting portion and a turned portion with a bend portion therebetween comprising:
- an elastic plate member having a length and being formed laterally as an H, said H having two pairs of legs and a center portion, the first pair of legs being shorter than the second pair, said first pair of legs together with said center portion of said H defining a concave portion, said second pair of legs in the region of said center portion of said H

forming a U-shaped fitting portion, the remainder of said second pair of legs being an attachment portion, said concave portion and said fitting portion being notched to form cut-out portions along said length of said plate member at regular intervals,

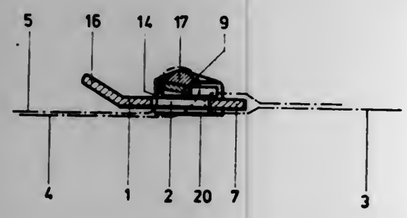
the curtain being suspended by the bent-wire curtain hook being fitted into said plate members such that the inserting portion of the hook is inserted through one of said cut-out portions of said plate member and held in said fitting portion between said second pair of legs, the turned portion of the hook is retained in said concave portion between said first pair of legs, said center portion of said H rests on the bend portion of the hook and said attachment portion is securely sewn to the curtain along the pleat line.

4,069,554

ADJUSTABLE FITTING FOR SAFETY BELT

Horst Minolla, Heidestieg, and Uwe Peters, Hamburg, both of Germany, assignors to Klippan GmbH Hamburg, Hamburg, Germany

Continuation of Ser. No. 468,784, May 9, 1974, abandoned. This application July 15, 1975, Ser. No. 596,134
Claims priority, application Germany, May 11, 1973, 2323870
Int. Cl.² A44B *11/06*
U.S. Cl. 24—196 **2 Claims**



1. Apparatus for the adjustment of belt length, comprising a frame having a longitudinal aperture, thrust means mounted on and displaceable on the frame transversely with respect to the longitudinal aperture, said trust means including a plastic locking cap having a web of substantially semi-circular cross-section extending across said aperture and on an outer surface of said frame and guide jaws mounted over the longitudinal edges of said frame and displaceable with respect to the longitudinal aperture of the frame, said semi-circular surface facing outwardly of said outer surface, and further including a thrust piece loosely mounted in the locking cap and guided thereby and having a transverse web positioned across said aperture between said web and said frame and engageable with said web, said transverse web including an angled locking edge with relation to the main plane thereof and lateral guide panels extending transversely to the locking edge, said guide panels slidably engaging said outer surface of said frame along said aperture, said transverse web having ribs on the surface that face said aperture.

4,069,555

AUTOMATICALLY LOCKING SECURITY SLIDER FASTENER

Werner Toepelt, Old Greenwich, Conn., assignor to Coats & Clark, Inc., Stamford, Conn.

Filed Jan. 31, 1977, Ser. No. 764,057
Int. Cl.² A44B *19/30*
U.S. Cl. 24—205.14 R **3 Claims**

1. An automatically locking security slider for use in a slide fastener including a pair of stringers having mutually interengageable rows of teeth, said slider serving to engage and disengage the same, comprising:

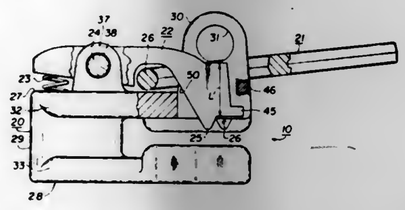
a slider body having a fastener portion for engaging said stringers when said body is pulled in one direction, and for disengaging said stringers when said body is pulled in the opposite direction;

said slider body having first and second protuberances extending therefrom, said protuberances being longitudinally spaced apart on said body in the direction of movement thereof, each of said protuberances having an aperture therein extending in a line transverse to said direction of movement;

a yoke disposed adjacent said slide body, said yoke having a bifurcated end part with the bifurcations thereof disposed on opposite sides of said second protuberance;

a transverse pivot pin passing through the aperture of said first protuberance to rotatably mount said yoke to said slider body at said first protuberance;

spring means for urging said end part of said yoke into said slider body, said end part having a tooth-engaging locking projection on each bifurcation thereof so that when urged against said stringers by said spring means, said projections engage the teeth of respective ones of said stringers to prevent said slider body from moving with respect thereto,



a pull for said slider body, said pull having a transverse crossbar member at least partially extending between said yoke and said slider body between said protuberances, so that when a pulling force is applied to said pull said crossbar member moves against said yoke to cause said yoke to rotate about said pivot pin against the urging of said spring means, moving said projections out of locking engagement with said teeth of said stringers and permitting movement of said slider with respect to said stringers,

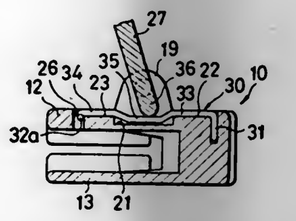
said end part of said yoke disposed in such relationship to said aperture of said second protuberance so that a padlock or the like having a locking bar passing through said aperture of said second protuberance may restrain said yoke so that movement of the projections thereof out of locking engagement with the teeth of said stringers is thereby prevented.

4,069,556

AUTOMATIC LOCK SLIDER

Kibei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Dec. 2, 1976, Ser. No. 746,733
Claims priority, application Japan, Dec. 16, 1975, 50-171161[U]
Int. Cl.² A44B *19/30*
U.S. Cl. 24—205.14 R **6 Claims**



1. An automatic lock slider for a slide fastener comprising:

a. a slider body having a pair of parallel, spaced-apart upper and lower wings interconnected by a neck located centrally of its front end to define a generally Y-shaped guide channel through said slider body for the longitudinal passage of rows of slide fastener elements, said slider body having a slot extending through said upper wing and oriented transversely to the longitudinal centerline of the slider body;

b. a pull tab having a tongue at one end and mounted on said upper wing for pivotal movement relative thereto between flat and uplifted positions; and

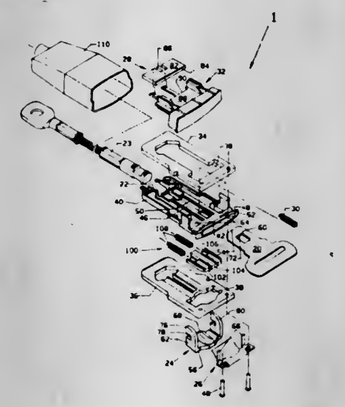
c. a resilient locking spring means mounted on said upper wing, said locking spring means having a locking pawl at one end received in said transverse slot, said locking spring means resiliently engaging said pull tab tongue for operation thereby, said locking spring means being responsive to the pivotal movement of the pull tab whereby the locking spring means twists about an axis parallel to the longitudinal centerline of the slider body to sweep said locking pawl along a curved path oriented transversely to said axis, said locking pawl being extended into said guide channel for locking engagement with the fastener elements when the pull tab is in said flat position, and said locking pawl being retained in said slot out of locking engagement with the fastener elements when the pull tab is in said uplifted position.

4,069,557

SAFETY BELT BUCKLE

Yogendra S. Loomba, Washington, Mich., assignor to Allied Chemical Corporation, Morris Township, N.J.

Filed Mar. 1, 1976, Ser. No. 662,987
Int. Cl.² A44B *11/26*
U.S. Cl. 24—230 AL **6 Claims**



1. A vehicle safety belt buckle comprising:

a. a housing having an opening therein and provided with a cavity extending from said opening to a wall of said housing opposite said opening;

b. inlet means communicating with said cavity for receiving a tongue of a seat belt;

c. connecting means for connecting the housing to an anchorage point on the vehicle;

d. latching means having a raised portion for engaging said tongue and a plurality of shoulders each of said shoulders having a notch therein and a forward face having a corner;

e. first biasing means connected to said housing for biasing said latching means into engagement with said tongue;

f. locking mean slidably mounted on said housing for locking engagement with said latching mean said locking means including a lock bar having a forward face adapted to mate with the notch of each shoulder to form said locking engagement;

g. second biasing means connected to said housing and to said lock bar for biasing said lock bar of said locking means into said locking engagement; and

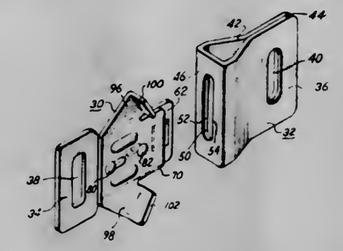
h. release means slidably mounted on said housing for moving said latching means to move said locking means out of locking engagement therewith.

4,069,558

LATCH MECHANISM

Ray Eberhart, 317 E. Jefferson Blvd., Mishawaka, Ind. 46544

Filed Nov. 10, 1975, Ser. No. 630,254
Int. Cl.² A44B *11/25, 21/00*
U.S. Cl. 24—230 R **10 Claims**



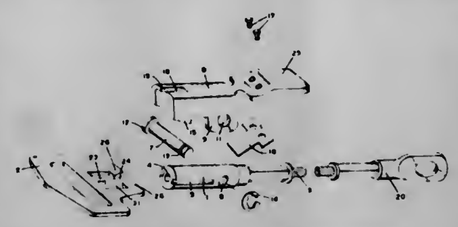
1. A latch mechanism comprising a female portion having two sides and an end joined integrally to form a one-piece structure, a means in said end defining a slot with two opposed edges and with an inner and outer wall surface on opposite sides of said slot edges, and a male portion having a first generally flat, plate-like member with a forward end and shoulder on a face thereof facing oppositely of said forward end for seating on the inner wall surface of said female portion and a second generally flat, plate-like member slidable on said first plate-like member toward and away from the forward end of said first member and into and from said slot when said first member is disposed therein and said shoulder is disposed adjacent said inner wall surface, the combined thickness of said first and second members in said slot and said shoulder being greater than the distance between said slot edges, such that said shoulder cannot be disengaged from said inner surface while both of said members are disposed in said slot.

4,069,559

FERRULE BUCKLE

Per Olof Weman, Hasloh, Germany, assignor to N.V. Klippan S.A., Haasrode, Belgium

Filed Mar. 4, 1976, Ser. No. 663,636
Int. Cl.² A44B *11/26, 11/00*
U.S. Cl. 24—230 A **24 Claims**



1. A buckle and tongue combination comprising:

a. an elongated, substantially cylindrical member having guiding means at one end for guiding a tongue and means at the other end for the attachment of a passenger restraint;

b. a tongue having legs separated by a distance greater than

the width of the elongated member, said legs having engaging means for sliding engagement with the guiding means of the elongated member;

c. a latch member pivotally mounted on the elongated member and having at least one latching tooth to engage the tongue;

d. biasing means mounted on the elongated member for urging the latching tooth into engagement with the tongue; and

e. a release lever attached to the latch member, whereby pressure on said lever in opposition to the biasing means disengages the latching tooth from the tongue, allowing its withdrawl from the buckle.

4,069,560

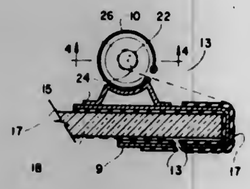
MEASURING APPARATUS

Richard K. Roedel, 14217 N. Bismark Ave., Woodbridge, Va. 22193

Division of Ser. No. 534,055, Dec. 18, 1974, Pat. No. 3,975,827. This application Apr. 22, 1976, Ser. No. 679,401

Int. Cl.[2] A44B *21/00*

U.S. Cl. 24—255 R **1 Claim**



1. Clamping means adapted to engage the edge of a base member having planar surfaces comprising a U-shaped, formable, laminated member, one leg of said U-shaped member having a slit therein extending transverse the longitudinal axis of the clamp leg, a first soft backing between the base member and said U-shaped member when the clamp is applied to the base member, a second soft backing attached exteriorly to said U-shaped member and soft backing bounding said slit whereby a linear means wrapped around the outside of the U-shaped member, threaded through the slit and extended to the edge of the clamp leg contacts only soft backing.

4,069,561

SELVEDGE PROTECTION APPARATUS FOR LOOP PILE FABRIC CUTTING MACHINE

Michael William Gilpatrick, Chesnee, S.C., and Walter Engels, Tryon, N.C., assignors to Millikea Research Corporation, Spartanburg, S.C.

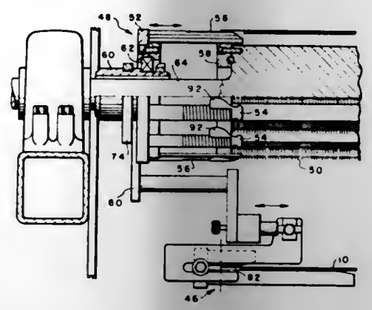
Filed Aug. 13, 1976, Ser. No. 714,100

Int. Cl.[2] D06C *13/08*

U.S. Cl. 26—9 **8 Claims**

1. Apparatus to provide a cut loop pile fabric comprising a rotor, a plurality of rows of cutting means in said rotor, means to rotate said rotor, means to supply a loop pile fabric with a selvedge thereon into contact with said rotor with the loops of the fabric in contact with said cutting means, selvedge protection means on at least one end of said rotor between each of said rows of cutting means to hold the selvedge of the fabric out of contact with said cutting means and means operably associated with the edge of the pile fabric to automatically maintain said selvedge protection means in a predetermined position relative to the fabric being supplied to said rotor.

7. Apparatus to provide a cut loop pile fabric comprising: a rotor having a shaft, a plurality of rows of cutting means in said rotor, a mounting ring connected to said rotor, a plurality of notches in said mounting ring between said rows of cutting means, a stub shaft mounted on said rotor shaft, a collar member rotatably mounted on said stub shaft, a plurality of fingers connected to said collar member and projecting through said notches in said mounting ring, means supplying a loop pile fabric with a selvedge thereon into contact with said rotor and



means responsive to the position of the selvedge to slidably move said stub shaft relative to said rotor to position said fingers relative to the selvedge.

4,069,562

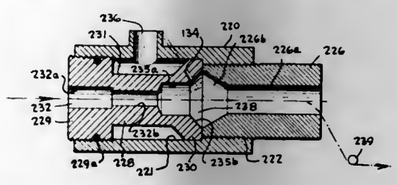
APPARATUS FOR PRODUCING INTERLACED OR ENTANGLED MULTIFILAMENT YARNS

Alexander L. Trifunovic, Burlington, and James Irvin Combs, Gibsonville, both of N.C., assignors to Glen Raven Mills, Inc., Glen Raven, N.C.

Filed June 28, 1976, Ser. No. 700,072

Int. Cl.[2] D02G *1/16, 1/20*

U.S. Cl. 28—273 **11 Claims**



1. Apparatus for interlacing or entangling continuous multifilament synthetic yarn being fed along a feed path by impinging pressurized fluid jets on the yarn to produce repeating sections lengthwise of the yarn having a plurality of interlocking entanglements per inch occurring along the length of the treated yarn, the apparatus comprising an elongated housing to be positioned along the feed path for passage of the yarn with predetermined overfeed therethrough along a yarn feed axis, the housing being in the form of a unitary solid body having upstream and downstream ends and a bore extending longitudinally therebetween shaped to provide a larger diameter first bore section extending from said upstream end to an intermediate region between said ends and a smaller diameter second bore section extending to said downstream end through the remainder of the body, a jet nozzle member supported in said first bore section adjacent the upstream end by means permitting axial adjustment within said bore along the yarn feed axis; said jet nozzle member having a yarn feed passage extending therethrough for passage of the yarn and having a larger diameter cylindrical entrance head corresponding to the first bore section diameter joined to a smaller diameter axially elongated tubular cylindrical midportion joining a conically shaped nozzle head flaring outwardly in a downstream direction to said larger diameter at its downstream end, an axially elongated outlet tube member of tubular cylindrical configuration supported in said bore adjacent said downstream end and extending through said second bore section to a location adjacent said nozzle head for axial adjustment of the tube member relative thereto, said outwardly flaring conically shaped nozzle head

having a central cavity opening through its downstream end shaped to provide a truncated conical cavity portion progressively enlarging toward and opening through its downstream end and a cylindrical cavity portion of larger diameter than the yarn feed passage serially arranged immediately upstream of the conical cavity portion extending upstream therefrom to the yarn feed passage, the cavity and the confronting portion of said tube member defining a turbulence chamber through which the yarn passes from said feed passage to the upstream end portion of said tube member, said heads at the opposite ends of said nozzle member and said midportion thereof defining an annular pressurized air chamber outwardly surrounding said midportion within said first bore section and said nozzle head having inclined air jet passage means between said pressurized air chamber and said turbulence chamber for producing pressurized fluid jet disturbances in the turbulence chamber causing both venturi and vortex action within the turbulence chamber to produce interlocking entanglement of filaments of the yarn a plurality of occurrences per inch, the center axis of each jet passage means being inclined at an angle to the yarn feed axis converging toward the downstream end of the housing and offset slightly sidewise of the yarn feed axis in nonintersecting relation therewith, and means supplying a pressurized fluid to said pressurized chamber surrounding the midportion of the nozzle member.

4,069,563

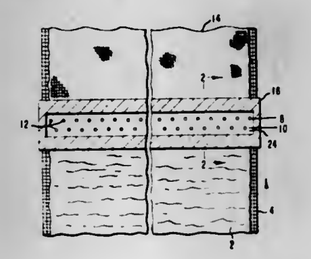
PROCESS FOR MAKING NONWOVEN FABRIC

Rashmikant Maganlal Contractor, Wilmington, and Birol Kirayoglu, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 2, 1976, Ser. No. 673,342

Int. Cl.[2] D04H *18/00, 5/02*

U.S. Cl. 28—105 **9 Claims**



1. In the process of impinging a row of fine columnar streams of liquid onto a fibrous web of staple fibers supported on an apertured support passing therebeneath to produce by fiber entanglement a patterned nonwoven fabric, the improvement comprising impinging said streams onto said web as an array of streams in a plurality of rows in which the streams are staggered from row to row, said streams being spaced apart sufficiently to provide an increase in tensile strength of said fabric and space close enough together to avoid substantially changing the pattern in the fabric, both as compared to when all said streams are in a single row, the spacing between said rows being from 0.254 to 2.032 mm.

4,069,564

PROCESS FOR PRODUCING INTERLACED OR ENTANGLED MULTIFILAMENT YARNS

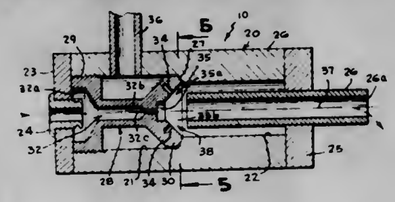
Alexander L. Trifunovic, Burlington, and James Irvin Combs, Gibsonville, both of N.C., assignors to Glen Raven Mills, Inc., Glen Raven, N.C.

Division of Ser. No. 700,072, June 28, 1976. This application Nov. 3, 1976, Ser. No. 740,852

Int. Cl.[2] D02G *1/16*

U.S. Cl. 28—273 **2 Claims**

1. A process for interlacing or entangling plural ends of continuous multifilament synthetic yarn being fed along a feed path by impinging pressurized fluid jets on the yarn to produce repeating sections lengthwise of the yarn having a plurality of interlocking entanglements per inch occurring along the length of the treated yarn, comprising the steps of feeding the plural yarn ends with an overfeed within the range of about three to twenty percent through a rectilinear yarn feed passage of a predetermined diameter concentric with a yarn feed axis to direct the path of the yarn along the yarn feed axis through the feed passage, feeding the yarn from said passage directly into a turbulence chamber concentric with the feed axis formed of a first cylindrical turbulence chamber section at its upstream end of larger diameter than the adjoining feed passage portion and a second truncated conical turbulence chamber section serially arranged immediately downstream of the first chamber section communicating therewith and having a conical boundary surface enlarging in a downstream direction to a greater diameter than the first chamber section and several times the feed



passage diameter and thence feeding the yarn from said turbulence chamber through an axially elongated cylindrical outlet passage concentric with the feed axis of smaller diameter than the maximum diameter of the turbulence chamber, and concurrently directing continuous jets of air under superatmospheric source pressure of about 7 to 30 psi into the turbulence chamber through jet orifices located in said conical boundary surface of the second chamber section and spaced radially inwardly from the largest diameter portion of the chamber to impinge on the yarn being fed therethrough and blow the filaments into interlaced condition without formation of loops, the jets extending along paths within the turbulence chamber which are of small cross section relative to the cross-sectional size of the chamber with the jets convergently angling downstream toward the yarn axis along jet axes which pass in laterally offset spaced non-intersecting relation alongside the yarn axis.

4,069,565

PROCESS AND APPARATUS FOR PRODUCING TEXTURED MULTIFILAMENT YARN

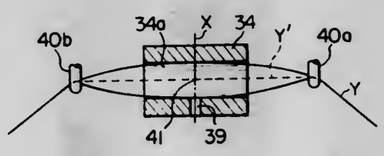
Takao Negishi, and Kazuo Tomita, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 635,230, Nov. 25, 1975. This application June 21, 1976, Ser. No. 698,133

Claims priority, application Japan, Nov. 28, 1974, 49-135886; Dec. 5, 1974, 49-138849

Int. Cl.[2] D02C *1/16*

U.S. Cl. 28—274 **16 Claims**



1. An apparatus for the production of textured multifilament yarns, which comprises an elongated hollow member defining, by the inner surface of its wall, a yarn passage which has a cross-sectional shape having at least two lines of symmetry and

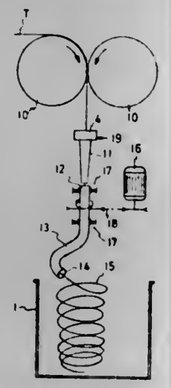
extends along the longitudinal axis of said hollow member, said elongated hollow member being provided with at least one fluid inlet passage extending in a plane perpendicular to the longitudinal axis of said yarn passage and through the wall of said hollow member with one end open to said yarn passage and with the other end communicated with a source of fluid under high pressure, and a pair of bending members respectively located upstream and downstream of said fluid inlet passage for bending the thread-line of the yarn being processed, said fluid inlet passage being located so that the central line of said inlet passage will intersect the thread-line of the yarn being processed and will coincide with one of the lines of symmetry of the cross-sectional shape of the yarn passage.

4,069,566

TAKE-UP METHOD OF CONTINUOUS FILAMENT BUNDLES OF SYNTHETIC FIBERS AND APPARATUS THEREFOR

Norio Sumitomo, and Yoshiki Matsumoto, both of Iwakuni, Japan, assignors to Toyobo Co., Ltd., Osaka, Japan

Filed Mar. 12, 1976, Ser. No. 666,269
Claims priority, application Japan, Mar. 12, 1975, 50-30473
Int. Cl.[2] B65H *54/80*
U.S. Cl. 28—289 13 Claims



1. A method for the take-up of continuous filament bundles of synthetic fibers at a high speed, which comprises introducing the continuous filament bundles discharged from an air jetting device and carried on the air stream into a bent tube provided downstream from the air jetting device, said bent tube being bent in the radial direction toward the tip thereof and in the tangential direction and the outlet thereof is opened in the tangential direction, said bent tube rotating in substantially a reverse direction to that of the continuous filament bundles discharged from the outlet of the bent tube, with the peripheral speed of the outlet being 0.5 to 2.0 times the take-up speed of the continuous filament bundles, and receiving the continuous filament bundles into a receiving device provided downstream from the bent tube.

4,069,567

METHOD OF INSTALLING A COLOR SELECTION ELECTRODE IN A COLOR CATHODE RAY TUBE

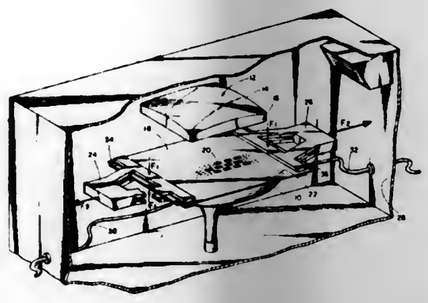
James W. Schwartz, Deerfield, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 28, 1977, Ser. No. 772,406
Int. Cl.[2] H01J *9/18*
U.S. Cl. 29—25.15 4 Claims

1. In the manufacture of a color cathode ray tube of the type having a phosphor screen and spaced therefrom a color selection electrode, a method of installing the electrode such that under normal tube operating conditions, the electrode is held by a holder in a tensed state and is thus capable of withstanding a high electron beam bombardment before relaxing, said method comprising:

forming the electrode from a material which has a significantly higher coefficient of thermal expansion than that of the holder;

tensing the electrode and simultaneously passing an electrical current through it such that the electrode is heated to



a predetermined elevated temperature significantly greater than the temperature of the holder, said electrode thus being caused to thermally expand relative to said holder;

affixing the electrode to the holder; and

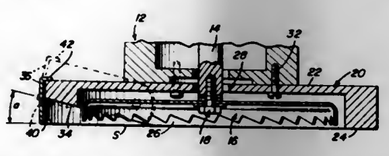
cooling the electrode and holder to room temperature so as to effect a tensing of the electrode due to greater coefficient of thermal expansion of the electrode than the holder.

4,069,568

ROTARY RASPING SURFACE SCARIFYING ATTACHMENT WITH TILTING BASE

Minoru Sakamoto, and Tokuichi Nagato, both of Honolulu, Hawaii, assignors to Shuichi Sakamoto, Honolulu, Hawaii, a part interest

Filed Nov. 10, 1976, Ser. No. 740,719
Int. Cl.[2] B23D *71/00*; B24B *23/00*; B27C *1/00, 1/10*
U.S. Cl. 29—78 3 Claims



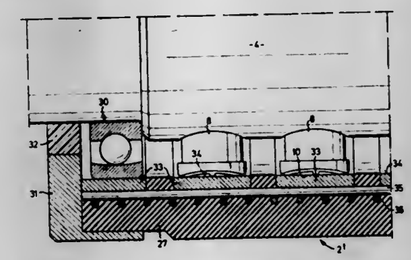
1. An attachment for a rotary cutting tool, comprising a base member having a periphery and affixable on a rotary cutting tool and having a recess receiving a blade of the tool, the recess of the base member forming means for receiving some of a plurality of teeth of the blade and exposing the remainder of the teeth of the blade to an associated work surface, the base member being provided with a pair of faces arranged in planes parallel to one another over a one peripheral portion of the base member, the recess being formed in one of the faces, and the one of the faces being sloped toward the other of the faces at another peripheral portion of the base member, the one of the faces forming a level surface at the one peripheral portion and the sloped portion forming a sloped surface, with the rotary blade being exposed only at the sloped surface, the attachment further including a guard pivotally mounted on the base member for free swinging movement relative to the base member and selectively covering the blade where same is partially exposed to a work surface by the sloped surface of the base member.

4,069,569

DEFLECTION-CONTROLLED ROLL FOR THE PRESSURE TREATMENT OF MATERIALS IN WEB FORM

Werner Meckel, Nienhagen; Werner Kilian, Wettbergen, both of Germany; Rolf Lehmann, Mutschellen, and Armin Siegfried, Zurich, both of Switzerland, assignors to Continental Gummi-Werke A. G. and Escher Wyss Limited, both of Zurich, Switzerland

Filed May 14, 1976, Ser. No. 686,292
Claims priority, application Switzerland, May 15, 1975, 6241/75
Int. Cl.[2] B21B *13/02*
U.S. Cl. 29—116 AD 12 Claims



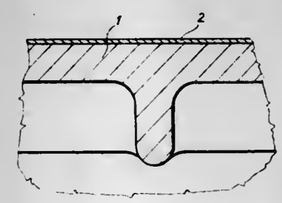
1. A deflection-controlled roll for the pressure treatment of materials in web form comprising a fixed beam, a generally cylindrical roll shell rotatably mounted about said beam and a plurality of hydraulic piston pressure devices disposed along the roll between said beam and said shell for exerting forces therebetween, said pressure devices each having a bearing surface facing the interior of said shell, said roll shell being formed at least substantially of an elastomeric material and having a longitudinally and circumferentially extending stiffener insert for increasing resistance of the shell to deformations during operation embedded in said elastomeric material, the interior regions of said shell adjacent said pressure devices forming bearing surfaces for said pressure devices.

4,069,570

CYLINDERS AND ROLLERS FOR PRINTING MACHINES

Frantisek Pospisil, Brno, and Vaclav Sedlak, Jedovnice, both of Czechoslovakia, assignors to Adamovske Strojirny, narodni podnik, Adamov, Czechoslovakia

Division of Ser. No. 652,778, Jan. 27, 1976. This application Dec. 2, 1976, Ser. No. 746,828
Claims priority, application Czechoslovakia, Jan. 27, 1975, 515/75; Jan. 27, 1975, 512/75; Jan. 27, 1975, 513/75
Int. Cl.[2] B21B *31/08*
U.S. Cl. 29—132 3 Claims



1. An improved cylinder or roller for printing machines, said cylinder or roller having a cylindrical metal core, and an outermost inseparable cylindrical surface layer on the core of said cylinder or roller, said layer consisting of a metal alloy selected from the following group of alloys: nickel-chromium having about 80% by weight of nickel and about 20% by weight of chromium, nickel-chromium-boron-silicon having about 4–20% by weight of chromium, about 1–6% by weight of boron, about 1–6% by weight of silicon, and about 0–10% by weight of the following metals: molybdenum, tungsten, copper and about 0.5 to 8% by weight of iron, the remainder being nickel.

4,069,571

WHEEL CYLINDER PISTON HAVING A FLARED BOSS END AND A METHOD OF FLARING A BOSS END

Richard P. Nelson, Bellbrook, and William H. Roth, Miamisburg, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 26, 1976, Ser. No. 690,110
Int. Cl.[2] B23P *15/10*
U.S. Cl. 29—156.5 R 1 Claim



1. A method of forming a flared end on a boss having an end surface substantially perpendicular to the boss center line, said method comprising the steps of:

(a) making a sintered powdered metal part with a boss to be flared;

(b) providing an axially movable mandrel with an annular flat end surface lying in a plane perpendicular to the axis of mandrel movement;

(c) and striking a peripherally extending surface section of the boss end surface with the mandrel annular flat end surface throughout the area of the peripherally extending surface section in a direction parallel to the boss center line while providing no lateral support to the boss which would tend to prevent flaring of the boss end; the striking action axially compressing a cylindrical portion of the boss under the peripherally extending surface section to create an annular shear fracture extending substantially parallel to the boss center line at the inner edge of the struck peripherally extending surface section to a depth less than the length of the boss as controlled by the striking force and stroke of the mandrel annular surface and the compaction characteristic of the powdered metal part while flaring the sheared cylindrical portion outwardly to form a flared end on the boss.

4,069,572

METHOD OF MAKING CLUTCH PULLEY ASSEMBLY

William C. Pierce; Samuel M. Berry, both of Dallas, and Arthur D. Johnson, Carrollton, all of Tex., assignors to Pitts Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 630,886, Nov. 11, 1975, Pat. No. 4,004,335. This application Oct. 14, 1976, Ser. No. 732,431
The portion of the term of this patent subsequent to Jan. 25, 1994, has been disclaimed.
Int. Cl.[2] B21K *1/42*
U.S. Cl. 29—159 R 14 Claims

1. A method of making a clutch pulley assembly for an electromagnetic clutch comprising the following steps:

a. cutting a short section of tubing from a long piece of tubing to form the hub portion of said assembly,
b. machining one end of said short section of tubing to have an undercut outer edge,
c. press forming a disc of metal to have an outer flange extending substantially perpendicularly from the outer edge of said disc,



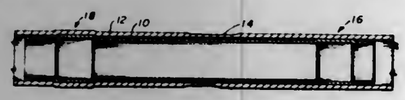
d. punching an aperture in the center of said disc,
e. mounting the aperture of said disc on the undercut edge of said tubing section, and
f. die swaging the end of said tubing section so that the hub section and disc become integral and make a good strong and magnetically efficient joint.

4,069,573

METHOD OF SECURING A SLEEVE WITHIN A TUBE

George Dominic Rogers, Jr., Windsor, and John Merle West, West Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 26, 1976, Ser. No. 670,932
Int. Cl.[2] B23P *17/02*
U.S. Cl. 29—421 R 4 Claims



1. A method of securing a coaxially disposed tubular sleeve within a fluid conduit comprising the steps of:
a. inserting said sleeve into an open end of said conduit;
b. positioning said sleeve in a desired axial position with respect to said conduit;
c. applying a radially outwardly directed uniform force from within said sleeve along a selected axial portion thereof having a magnitude sufficient to cause said portion of sleeve to expand outwardly into contact with the inner wall of said conduit; and
d. applying an additional radially outwardly directed uniform force through a limited distance from within said sleeve along said selected portion having a magnitude sufficient to cause said portion of sleeve and the wall of said conduit in contact therewith to concurrently radially outwardly expand a predetermined and limited distance.

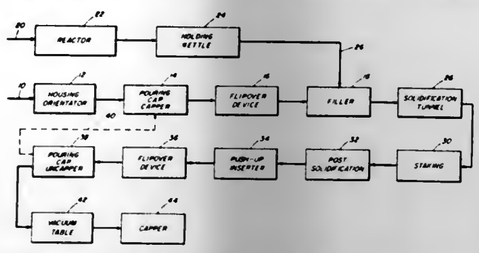
4,069,574

PROCESS FOR THE MANUFACTURE OF A COSMETIC OR PHARMACEUTICAL STICK

Helga Krevald, Tarrytown; Donald Patrick Johnson, Flushing, both of N.Y., and Keith Woodruff, Mountainside, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 15, 1976, Ser. No. 732,633
Int. Cl.[2] B29C *1/00*; B29D *31/00*
U.S. Cl. 29—434 6 Claims

1. A process for the manufacture of a solid, wax-like cosmetic or pharmaceutical stick product, which comprises the steps of attaching a pouring cap closure to the upper portion of a suitable container for said stick, said container being open at the bottom; inverting said container body and filling from the bottom thereof with a premeasured quantity of said cosmetic or pharmaceutical composition in a molten state; cooling said



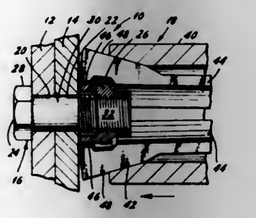
composition to form within the body of said container a solid, wax-like stick, inserting into the bottom portion of said container body, a push-up device, re-inverting the container and removing said pouring cap; moving said stick into contact with said push-up device and affixing a cap to said container.

4,069,575

METHOD AND APPARATUS FOR PRELOADING A JOINT

Jerry A. Sigmund, Willow Grove, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Division of Ser. No. 532,532, Dec. 13, 1974, Pat. No. 3,989,081, This application Sept. 13, 1976, Ser. No. 722,943
Int. Cl.[2] B23P *11/02*; F16B *5/02*
U.S. Cl. 29—446 10 Claims



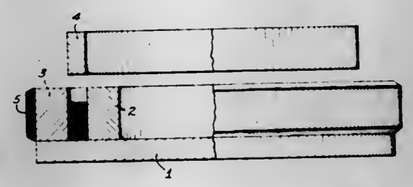
1. A method for assembling a joint comprising a plurality of workpieces having aligned openings formed therein and a selectively reusable fastener assembly including a pin member having an enlarged head and a shank projecting therefrom formed with a threaded portion thereon, said method comprising:
placing said shank of said pin member in said openings in said workpieces;
placing a removable collar member having a deformable outer portion and a relatively hard inner portion including an inner surface, said inner portion being substantially undeformable in a radial direction, about a portion of said shank so that one end of said collar member is adjacent the outer surface of one of said workpieces;
snugging the joint together to eliminate free play in the joint;
deforming said outer portion of said collar member by the application of a radially inwardly directed force which displaces material in the outer portion of said collar member, the radially inward flow of displaced material being resisted by the hardened inner portion of said collar member whereby said displaced material in said outer portion flows axially elongating said collar member to induce a preload in said joint, said inner surface being spaced from said shank before and after deformation of said outer portion, whereby said collar member is removable from said pin member after deformation.

4,069,576

WOUND WIRE REINFORCING BANDS AND METHOD

Pierre Teysseyre, Villejuif, and Joel Vigneau, Evry, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Oct. 7, 1975, Ser. No. 620,356
Claims priority, application France, Oct. 30, 1974, 74 36209
Int. Cl.[2] B22D *11/126*
U.S. Cl. 29—527.2 8 Claims



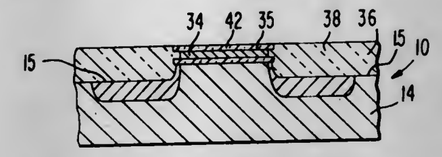
1. A process for fabricating a ring shaped member to be used in high speed rotating machinery which is subject to high centrifical stresses, the process comprising the steps of:
a. winding wire helically on a mandrel to form a single cylindrical layer of wire, each wind being spaced between 0.3 and 2.0 *d* from the next adjacent wind, *d* being the diameter of the wire;
b. depositing matrix material on the layer of wound wire after said winding step;
c. repeating said winding and depositing steps $n-1$ times, where n is the number of layers of wire in the finished product, each repeated winding step providing a single layer of wire over the same axial length as the first layer of wire; said repeated winding and depositing steps forming an annular blank;
d. applying heat and pressure to said blank, said pressure being applied parallel to the axis of rotation of the annular blank and being applied so that no radial stresses occur in the blank, said heat and pressure being selected so that the matrix creeps into and fills the interstices between the wires while the integrity of the wound wire is maintained.

4,069,577

METHOD OF MAKING A SEMICONDUCTOR DEVICE

Andrew Gordon Francis Dingwall, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 385,669, Aug. 6, 1973, abandoned. This application Apr. 22, 1975, Ser. No. 570,433
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 3 Claims



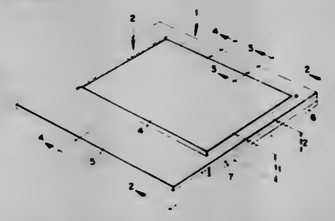
1. A method of making a semiconductor device, comprising the steps of:
forming on a surface of a body of silicon a layered structure comprising a layer of insulating material on said surface, a refractory conductive layer adjacent to said layer of insulating material, and a layer of oxygen-impermeable insulating material on said conductive layer,
selectively removing portions of said layer of oxygen-impermeable insulating material and correspondingly adjacent portions of said conductive layer and said layer of insulating material to expose correspondingly adjacent portions of said surface of said body of silicon,
diffusing conductivity modifiers into said body of silicon through the portions of said surface exposed in the preceding step,
selectively removing other portions of said layer of oxygen-impermeable insulating material, so that the remaining portions thereof overlie those portions of said conductive layer which are to remain in said device, and removing the portions of said conductive layer and said layer of insulating material which are adjacent to said other portions of said oxygen-impermeable insulating layer to expose correspondingly adjacent second portions of said surface of said body of silicon, and thereafter
thermally oxidizing the material of said body of silicon adjacent to said second portions of the surface thereof to grow a silicon dioxide body which extends into said body from said surface and which contiguously surrounds the remaining portions of said conductive layer.

4,069,578

METHOD FOR SEALING BATTERY

Gordon F. Kinsman, Billerica, Mass. assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 24, 1977, Ser. No. 761,650
Int. Cl.[2] H01M *6/00*
U.S. Cl. 29—623.3 5 Claims



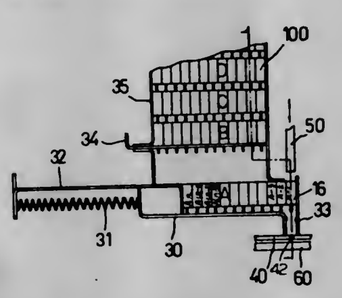
1. The method of sealing a laminar battery, comprising the steps of heating the periphery of the battery, and cooling the central portion, while maintaining the central portion at a higher pressure than the peripheral portion, then cooling the battery while maintaining the same pressure distribution across its surfaces.

4,069,579

METHOD FOR INSERTING RADIAL LEAD ELECTRONIC COMPONENTS

Clark Wen-Hai Liu, No. 25, Alley 8, Lane 18, T'ung-Ho Street, Taipei, China /Taiwan

Filed July 14, 1976, Ser. No. 705,342
Int. Cl.[2] H05K *3/30*
U.S. Cl. 29—626 5 Claims



1. A method for inserting radial lead electronic components into printed circuit boards, comprising the steps of:
filling a storage bin with a plurality of rows of components;
positioning and piloting a printed circuit board in a predetermined position in relation to the storage bin;
pushing a first component at the end of a first of the rows of

components toward the circuit board, such that the leads of the component penetrate preselected holes in the circuit board;

subsequently moving the remaining components of the first row toward the end from which the first component was pushed;

repeating said positioning, pushing and moving steps with further components until a predetermined number of components of the first row remain;

shifting a second row of said components into place in line with the remaining components of the first row, such that a first component of the second row is adjacent the last component of the first row;

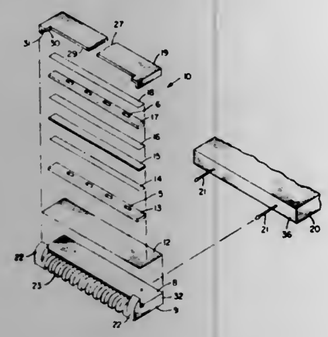
subsequently transferring the remaining rows toward the second row; and repeatedly performing said repeating, shifting, and transferring steps.

4,069,580

SAFETY RAZOR WITH FLEXIBLE BLADE CARTRIDGE

Cyril A. Cartwright, Monroe; James S. Emmett, Ansonia; Arthur E. Michael, Middletown; Anthony J. Peleckis, Trumbull, and Ernest M. Symes, Guilford, all of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 18, 1976, Ser. No. 715,272
Int. Cl.² B26B *21/14*
U.S. Cl. 30—47 **30 Claims**



1. A razor assembly comprising a blade assembly including a seat member and a blade disposed thereon, the seat and blade being bonded together and flexible about an axis substantially parallel to the plane of the blade and perpendicular to its cutting edge, a razor handle for holding the blade assembly, and coupling means for connecting the blade assembly to the razor handle and permitting the blade assembly to flex in both convex and concave directions in response to shaving forces.

4,069,581

MUFFIN SPLITTER

Robert E. Gray, 208 Canavoort St., Fulton, N.Y. 13069

Filed May 21, 1976, Ser. No. 688,527
Int. Cl.² A21C *15/04*
U.S. Cl. 30—114 **6 Claims**

1. Apparatus for splitting muffins, or similar articles, into substantially equal halves comprising:

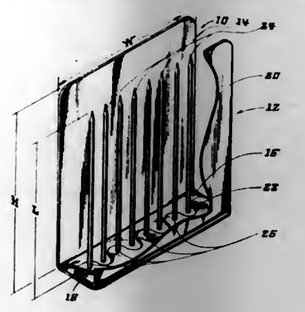
a. a first part having a flat, planar sheet forming a side portion and a base portion extending perpendicularly thereto;

b. a first plurality of elongated tines fixedly attached at one end to said first base portion and extending therefrom in spaced, parallel relation;

c. a second part having a flat, planar sheet forming a side portion and a base portion extending perpendicularly thereto;

d. a second plurality of elongated tines fixedly attached at one end to said second base portion and extending therefrom in spaced, parallel relation; and

e. means connecting said first and second parts for relative movement thereof between a first position wherein said first and second base portions are at least partially juxtaposed, said side portions are in spaced, parallel relation, and all of said first and second plurality of tines are arranged in a single, substantially parallel row lying in a plane substantially midway between and parallel to the



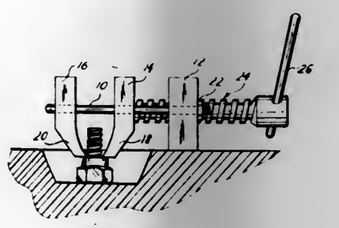
planes of the sheets forming said first and second side portions, at least some of the tines of said first plurality being interspersed in said row between tines of said second plurality, and a second position, wherein the tines of said first plurality lie in a plane spaced from the plane of the tines of said second plurality.

4,069,582

JOHNNY BOLT CUTTER

Paul Kearns, 12009 Judson Road, Wheaton, Md. 20902

Filed Mar. 17, 1977, Ser. No. 778,596
Int. Cl.² B26B *17/00*
U.S. Cl. 30—182 **3 Claims**



1. A cutting tool comprising:

a. a U-bolt frame;

b. a header plate slidably mounted on said U-bolt against the ends of said U;

c. a pair of cutter jaw plates slidably mounted on said U-bolt inwardly of said header plate and having cutter jaws extending laterally therefrom;

d. said U-bolt having stop nuts threaded on its ends, and

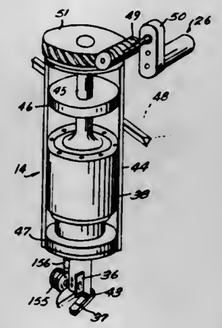
e. a threaded shank threadedly mounted through said header plate with a pin handle bar in its outer end for turning said shank to force the jaw plates together for cutting off the end of a bolt over which the cutter edges may be placed.

4,069,583

SHEET METAL CUTTING

James Henry Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Division of Ser. No. 630,894, Nov. 11, 1975. This application Sept. 8, 1976, Ser. No. 721,590
Int. Cl.² B26B *15/00*
U.S. Cl. 30—228 **3 Claims**



1. A sheet metal cutting tool comprising

an upper blade adapted to be disposed above the surface of a horizontally disposed metal sheet to be cut,

a lower blade adapted to be disposed below the surface of a horizontally disposed metal sheet to be cut, and having leading and trailing edges,

means for moving at least one of said blades with respect to the other blade to effect cutting of said metal sheet,

an arm mounting said lower blade in position below said sheet, and

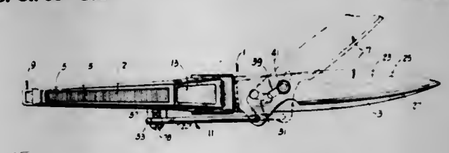
a ball bearing mounted on said arm and having a portion thereof extending upwardly from said arm, said ball bearing being mounted adjacent the trailing edge of said lower blade and for engaging the bottom surface of said metal sheet to allow easier pivoting of said cutting tool during cutting to change the direction of cutting.

4,069,584

GRASS SHEARS

Robert A. Germain, Ashtabula, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Dec. 13, 1976, Ser. No. 749,891
Int. Cl.² A01G *3/06*; B26B *13/26*
U.S. Cl. 30—238 **5 Claims**



1. A pair of grass shears comprising:

a generally flat fixed blade disposed in a plane and having a first cutting edge;

a first handle fixed relative to said first blade;

a movable blade overlying said fixed blade and having a second cutting edge, said movable blade being movable between an open position and a closed position;

a second handle movable relative to said first handle and operatively connected to said movable blade for moving said movable blade across said fixed blade, said second handle being movable between open and closed positions corresponding to the open and closed positions of said movable blade;

a first spring connected to said first and second handles for biasing said second handle to the open position;

a first slot in said fixed blade extending in a direction towards said first handle and a first post fixed in the movable blade and extending through said first slot; said first slot and said first post guiding said movable blade across said fixed blade in the direction of said first handle in response to the movement of said second handle;

a second slot in said movable blade extending in a direction transverse to said first cutting edge and a second post fixed in the said fixed blade and extending through said second slot; a second spring mounted on said second post for biasing said movable blade against said fixed blade, said second slot and said second post guiding said movable blade in a rotational path across said fixed blade in response to the movement of said second handle;

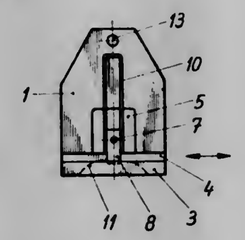
said slots and posts simultaneously drawing said blade towards said first handle and rotating said movable blade across said fixed blade to move said cutting edges across each other, in response to the movement of said handles from their open position to the closed position.

4,069,585

LETTER OPENER

Adolf Kuster, Chutzenweg 11, Arch, Switzerland

Filed Oct. 5, 1976, Ser. No. 729,915
Claims priority, application Switzerland, Nov. 17, 1975, 014833/75
Int. Cl.² B26B *29/00*
U.S. Cl. 30—287 **5 Claims**



1. A letter opener comprising:

i. a handle body having:

a. an elongated guide groove open at both ends, and

b. an aperture opening in one side of said guide groove and

c. a recess opening into the other side of the guide groove opposite said aperture;

ii. a lamellar blade positioned in and extending from said recess across said guide groove and into said aperture, said blade having at each side of its portion which lies within the guide groove and the aperture, a cutting edge defined by a face lying at an oblique angle with respect to the base of the guide groove thereby to urge towards the base of the guide groove a letter moved along the guide groove into contact with the cutting edge;

iii. means pivotably mounting the lamellar blade to the handle body such that the blade may pivot in both directions along the guide groove, and

iv. spring means acting between the handle body and the lamellar blade to urge the blade into a rest position in which it extends across the guide groove.

4,069,586

CENTER PUNCH

Horace C. Skelton, 102 Francis Wyman Road, Burlington, Mass. 01803

Filed May 19, 1976, Ser. No. 688,094
Int. Cl.² B26F *1/00*
U.S. Cl. 30—360 **3 Claims**

1. A center punch comprising a tubular barrel having a

plurality of parallel slots extending from one and thereof thereby to define a plurality of spaced circumferentially-positioned jaws, each of said jaws having a tapered external surface, a punch member having a point at one end thereof, means slidably retaining said punch member for longitudinal move-



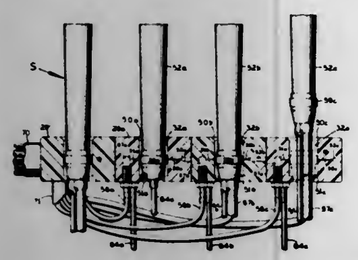
ment within said barrel, and clamping means releasably forcing said jaws inward comprising a collar in threaded engagement with said barrel and in compressive engagement with said tapered surfaces whereby adjustment of said collar causes radial movement of said jaws.

4,069,587

DENTAL HANDPIECE CONTROL APPARATUS

Michael A. Peralta, Miami, Fla., assignor to Simplair Systems, Inc., Hollywood, Fla.

Filed Oct. 20, 1975, Ser. No. 623,618
Int. Cl.[2] A61C *19/02*
U.S. Cl. 32—22 32 Claims



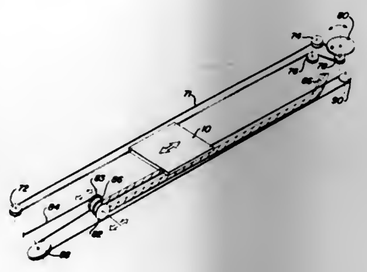
1. In a dental apparatus for use with a dental handpiece supplied with pressure fluid, said apparatus including a pilot-operated valve having:
- a main inlet for receiving pressure fluid;
- a main outlet for passing the pressure fluid from said main inlet to the handpiece;
- normally-closed valve means between said main inlet and said main outlet normally blocking the flow of pressure fluid between them;
- a pilot pressure inlet;
- and means for opening said valve means to connect said main inlet to said main outlet in response to pilot pressure at said pilot pressure inlet;
- the improvement which comprises:
- a holder for the handpiece having means defining a pair of aligned small passages, one for receiving pressure fluid and the other connected to said pilot pressure inlet of said pilot-operated valve for applying pilot pressure thereto;
- and means for blocking the flow of pressure fluid from said one passage to said other passage when the handpiece is in the holder and for passing pressure fluid from said one passage to said other passage when the handpiece is out of the holder;
- said holder having a recess for receiving said handpiece, and said passages opening into said recess on opposite sides of the latter and in alignment with each other;
- and said last-mentioned means comprising the dental handpiece itself which, when received in said recess, blocks said passages.

4,069,588

DIGITIZER

Robert F. Hoppe, Sikeston, Mo., assignor to Melco Industries, Inc., Denver, Colo.

Filed July 30, 1975, Ser. No. 600,339
Int. Cl.[2] G01B *3/00*
U.S. Cl. 33—1 M 12 Claims



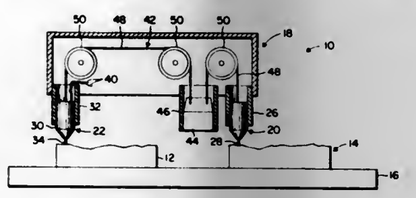
1. An improvement in a digitizer for holding a multiple wire connector in taut condition between stationary computer and a movable carriage in a digitizer which includes a beam, a carriage movable along said beam, a computer attached to one end of said beam, said improvement comprising:
- a multiple wire connector for transmitting information from said carriage and having one end connected to said carriage and the other end connected to said computer;
- a pulley means movable along said beam in response to said movement of said carriage, said multiple wire connector extending from said carriage around said pulley means back past said carriage to said computer; and
- means for moving said pulley means in the same direction as said carriage but only half the distance of the movement of said carriage to hold said multiple wire connector in taut condition during any movement of said carriage along said beam.

4,069,589

WORK-MASTER COMPARISON GAGING METHOD AND INSTRUMENT

William W. Rameson, Santa Monica, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 10, 1976, Ser. No. 684,609
Int. Cl.[2] G01B *5/20, 7/28*
U.S. Cl. 33—174 P 4 Claims



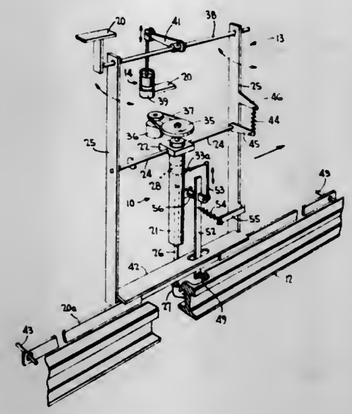
1. A gaging instrument for comparing the surfaces of a master part and a work part comprising:
- a support:
- a master gaging probe including a body defining a longitudinal axis and having a surface engaging tip on said longitudinal axis of the probe body;
- a work gaging probe including a body defining a longitudinal axis and having a surface engaging tip on said longitudinal axis of the probe body;
- means mounting said master probe and said work probe in laterally spaced relation on said support for independent axial movement relative to the support and to each other with said master probe and work probe axes substantially vertical;
- means operatively connecting said master probe and work probe for axial movement thereof in unison relative to said support in such a manner as to maintain a substantially fixed positional relationship between said master probe and work probe in their axial direction;
- said connecting means comprising a pair of relatively longitudinally rigid laterally flexible tension members, one of said members being connected at one end to said master probe and the other of said members being connected at one end to said work probe in a manner such that tension forces in said members produce upward forces on said master probe and work probe in opposition to the gravitational forces on said master probe and work probe, and counterbalance means rigidly connected to the other ends of said tension members and exerting on the latter ends endwise of the members a relatively constant counterbalance force approximating the combined gravitational forces on said master probe and work probe;
- the tip on one probe being stationary relative to its probe body and the tip of the other probe being mounted on its probe body for free axial floating movement relative to the body; and
- said other probe further including a transducer for producing a signal proportional to the axial displacement of its movable tip from a given datum position relative to its body.

4,069,590

RAIL WEAR MEASUREMENT SYSTEM

Robert J. Effinger, Grafton, Va., assignor to Southern Railway Company, Washington, D.C.

Filed July 2, 1976, Ser. No. 702,350
Int. Cl.[2] G01B *7/28*
U.S. Cl. 33—174 L 9 Claims



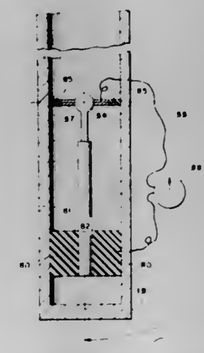
1. A system for measuring rail wear includes an assembly associated wtih a rail of a railroad track, said system including means for moving said assembly along the rail, said assembly comprising means mounting first and second movable displacement pickups to respectively bear upon first and second points on a top surface and on an inner side surface of the rail of said track, said means further mounting a probe element interconnected with said pickups to bear upon an unworn portion of said rail, said probe element being shaped to simultaneously engage top and inner side surfaces of said unworn portion, said pickups including means to generate first and second proportional electrical signals in accordance with the displacement of said first and second points respectively from points relative to said top and inner side surfaces of said unworn portion of said rail, and means connected to said pickups for converting the signals produced thereby to analog voltage levels for display on digital panel meters provided for such display.

4,069,591

ELASTOMERIC INCLINOMETER

Billy W. McArthur, Wallis, Tex., assignor to Sperry-Sun, Inc., Sugar Land, Tex.

Filed Mar. 15, 1976, Ser. No. 666,796
Int. Cl.[2] G01C *9/06;* G01L *1/22;* H01L *10/10*
U.S. Cl. 33—312 13 Claims



1. In a borehole surveying apparatus:
- a toroidal elastomer whose resistance varies with compression;
- a pendulum freely suspended and extending through the toroidal elastomer such that when the apparatus is in a predetermined attitude the pendulum does not compress the elastomer and as said apparatus is inclined from the predetermined attitude said pendulum compresses the elastomer; and
- circuitry for detecting the change in the resistance of said elastomer.

4,069,592

SLOPE MEASURING AND INDICATION MEANS AND THE LIKE

Steven W. Hosac, 4809 Arden Way, Carmichael, Calif. 95806

Filed Dec. 31, 1975, Ser. No. 645,690
Int. Cl.[2] G01C *9/28*
U.S. Cl. 33—387 15 Claims



1. In a slope measuring device for measuring the inclination of a surface, said device having a housing, a control arm pivotally mounted at one end of said housing, the other end being free and non-suspended, and extending into said housing, a level vial mounted in said control arm, the improvement in said device comprising
- a. a rotatable cam mounted in said housing, and having a peripheral spiral surface contacting the free end of said control arm,
- b. a rotatable control wheel interconnected with both said

arm and said spiral cam for continuously changing the radius of said spiral cam,

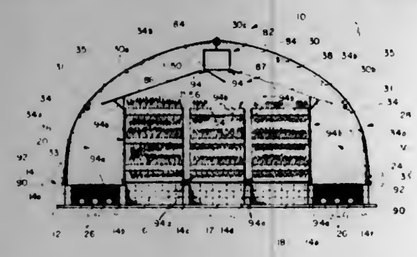
c. a slope scale readout wheel marked off in a type of indicia for measuring inclination and interconnected to said rotatable wheel, said control means, said spiral cam and said slope scale readout wheel being rotatable together on a common axis shaft, said cam, said readout wheel and said control means, all being disposed in said housing, said common axis shaft being aligned in a plane perpendicular to the length of said control arm, wherein said housing includes a pair of foldable sections, said control arm, said vial, said cam, said wheels, and said control means being mounted in the first of said two sections, hinging means mounted between the first section and the second section for folding the second section, and the second of said two sections being removably secured to said first section; said sections, when extended, providing an elongated housing for slope measurement and, when folded, providing a folded housing slope measurement device, wherein said first section includes support means at one end and said second section includes a support means at one end thereof, and the support means of said first section is an inverted generally U-shaped member providing a space therein and the said second section support means is an elongated member movable into the space in said inverted U-shaped member, when said second section is in its folded position.

4,069,593

SOLAR CURING AND DRYING STRUCTURE AND METHOD OF UTILIZING SOLAR ENERGY ASSOCIATED WITH AVAILABLE SOLAR RADIATION IN CURING AND DRYING VARIOUS MATERIALS

Barney K. Huang, 2008 Varnell Ave., Raleigh, N.C. 27612

Filed June 7, 1976, Ser. No. 693,378
Int. Cl.² F26B *19/00*
U.S. Cl. 34—93 **10 Claims**



1. A solar curing and drying structure adapted to utilize solar energy associated with available solar radiation transmitted into the structure for curing and drying material disposed within said structure, said solar curing and drying structure comprising:

A. an outer structural housing including a substantial area of transparent material for transmitting available solar radiation and the energy associated therewith into said structure;

B. collector means disposed interiorly of said outer structural housing for absorbing solar energy transmitted through said transparent material of said outer structural housing;

C. said collector means defining a drying area inwardly thereof and an open area between said collector means and said outer structural housing;

D. a forced air furnace system associated with said structure for forcing air through said material being cured and dried within said drying area, said forced air furnace system including an air intake area and heating means associated therewith for heating air passing through said furnace system as necessary to maintain an appropriate temperature level within said curing and drying structure;

E. opening means formed within said outer structural housing adjacent the open area between said collector means and said outer housing structure; and

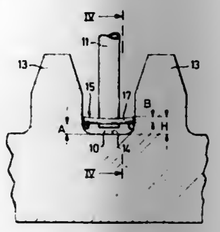
F. means for directing a system of air from outside of said curing and drying structure through said opening means and through a substantial area between said outer structural housing and said collector means where heat associated with collected solar energy may be transferred to said air passing therethrough, said means for directing said system of air further including means for routing said system of air from said open area defined between said collector means and said outer structural housing to the vicinity of said furnace system where said system of air or portions thereof may enter the intake area of said furnace system and be utilized in curing and drying the material within said curing and drying structure.

4,069,594

DRYING CYLINDER

Guntram Feurstein, Weingarten, Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed July 30, 1976, Ser. No. 710,310
Claims priority, application Switzerland, Aug. 6, 1975, 10237/75
Int. Cl.² F26B *11/02*
U.S. Cl. 34—124 **12 Claims**



1. A drying cylinder for a paper making machine comprising

a rotatable cylinder having an internal wall;

a plurality of peripheral grooves formed in said wall, each said groove having a base;

a plurality of discharge tubes secured in said cylinder for rotation therewith, each said tube communicating with a respective one of said grooves to remove condensate therefrom; and

a plurality of turbulence producers disposed in said grooves, each said turbulence producer having at least one transverse part extending transversely of a respective groove in spaced relation to said base of said respective groove to define a gap therebetween.

4,069,595

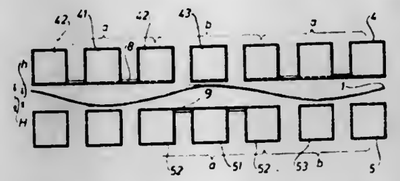
ARRANGEMENT FOR CONVEYING WEB MATERIAL THROUGH A TREATING PLANT

Enar Ahlbert; Karl-Hugo Andersson; Ingemar Karlsson, and Bengt Oldaeus, all of Vaxjo, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Jan. 22, 1976, Ser. No. 651,232
Int. Cl.² F26B *13/02*
U.S. Cl. 34—156 **18 Claims**

1. An arrangement for conveying a web such as a foil of metal, plastics or another material, which upon single curving shows stiffness transverse to the direction of curving, and which preferably is coated on one or both sides, through a treatment plant, comprising a plurality of blower boxes, arranged adjacent each other with perforations providing blow-on apertures in a first plane above and a second plane below the web, said boxes extending transversely to the web, said blow-on apertures having a certain degree of perforation for

blowing a medium, such as air, perpendicularly against the web, and outlet apertures for draining the treating medium between said boxes, characterized in that the blower boxes are arranged in periodically repeated groups located adjacent each other, one group thereof comprising blower boxes with a high perforation degree and the other group comprising blower boxes with a low perforation degree, and that a group with



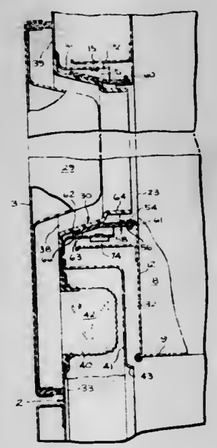
high perforation degree in one plane is located directly in front of a group with low perforation degree in the other plane so that the web assumes a wave shape between the first and second planes, said wave staying with its nodes in definite positions closer to the one plane opposite the highly perforated groups in the second plane, and closer to the second plane opposite the highly perforated groups in the one plane.

4,069,596

AIR SEAL ARRANGEMENT IN A CLOTHES DRYER

Robert R. Sisler, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 24, 1976, Ser. No. 717,354
Int. Cl.² F26B *25/00*
U.S. Cl. 34—242 **5 Claims**



1. An improved air seal arrangement in a clothes dryer having a cabinet structure housing a rotatable drum, said drum having a front wall with a loading opening therethrough, said cabinet having an access opening larger than the drum loading opening, the improvement comprising:

a first outwardly depending flange on the front wall of the drum defining the loading opening,

fixed drum support means,

a second outwardly depending flange circumferentially around the first depending flange, said second depending flange cooperating with the fixed drum support means to support the front of the drum,

a circular seal ring having a circumferential area tapered inwardly, said ring extending from the cabinet front through the access opening of the cabinet and into the loading opening of the drum,

a seal having an area attached to the first depending flange of the front wall of the drum circumferentially around the loading opening and a flexible area extending from the attached area toward the front of the cabinet, and

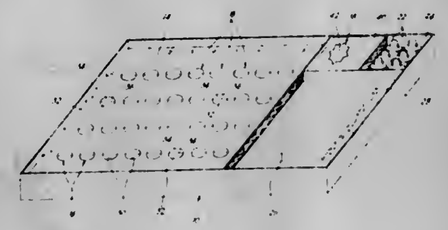
said seal ring and seal cooperating to overlappingly engage each other at the tapered area of the seal ring and flexible area of the seal with the seal ring being inside the seal.

4,069,597

QUESTION AND ANSWER GAME

Gaston Bigorre, 107 rue de Chartres, Bonneval, France (28800)

Filed Apr. 9, 1976, Ser. No. 675,248
Claims priority, application France, Apr. 11, 1975, 75.11434
Int. Cl.² G09B *7/06*
U.S. Cl. 35—9 C **13 Claims**



1. In an educational game, comprising:

a signalling device having two terminals and being operated when a conducting path connects said two terminals,

a plurality of electrically conducting lines connected across said two terminals, and being interrupted at cut-off regions thereof, said cut-off regions being related to respective statements of the educational game, a group of cut-off regions which are in series on the same conducting line defining a correct group of statements, and

contacting means adapted to be selectively brought into contact with any one of said cut-off regions so as to establish an electrical path thereacross, thereby constituting the selection of the statement associated with the corresponding cut-off region,

the improvement being said electrically conducting lines having:

a first end portion comprising at least two first cut-off regions, one side of which is connected in common to one of said terminals, and the other sides of which define a first group of at least two central nodes, respectively;

a second end portion comprising at least two second cut-off regions, one side of which is connected in common to the other of said terminals, and the other sides of which define a second group of at least two central nodes, respectively; and

intermediate cut-off regions being interconnected between themselves and with the central nodes of the said first and second groups thereof,

the interconnection being such that no central node of the first group be directly connected to a central node of the second group, and that there is at least one path via intermediate cut-off regions between two central nodes belonging to the same one of said first and second groups thereof.

4,069,598

SPORT SHOE

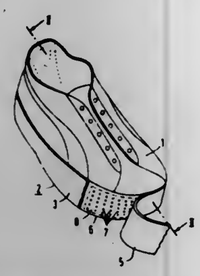
Armin A. Dassler, Ringstrasse 121, D-8522 Herzogenaurach, Germany

Filed Sept. 22, 1976, Ser. No. 725,670
Claims priority, application Germany, Sept. 25, 1975, 2542760
Int. Cl.² A43B *5/00, 13/28*
U.S. Cl. 36—114 **16 Claims**

1. In a sport shoe, wherein shell edge means peripherally engirdle at least a portion of the marginal edge of the shoe

outsole and at least a portion of the shaft material, the improvement comprising:

a plurality of discrete rod-like mechanical gripping members each having an end embedded in the shell edge means and each having a portion of the body of such gripping member within an abutting portion of the shaft material;



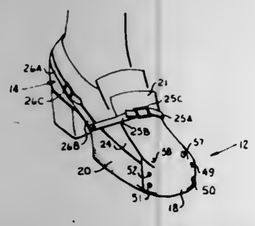
the rod-like gripping members being constructed, so that the body portions thereof located adjacent the ends of the gripping members opposite the ends embedded in the shell edge means are bent downwardly to form barb-like elements for mechanically restraining downward movement of the shell edge means relative to the abutting portions of the shaft material.

4,069,599

SHOE PROTECTOR

Richard S. Alegria, 912 Arguello St., Apt. 3, Redwood City, Calif. 94063

Filed Mar. 28, 1977, Ser. No. 781,926
Int. Cl.² A43B *3/18, 13/22*
U.S. Cl. 36—7.2 **12 Claims**



1. An article adapted for mounting on a shoe for protecting the toe-end portion of the shoe upper and providing a consistent bottom surface for different shoes, comprising

a single sheet of leather-like material having a flat sole portion that is the same shape as at least a major portion of the sole of the shoe forward of the ball of the foot; having a pair of integral side panels extending upward from said sole portion in the same direction and at substantially 90° to said sole portion, the forward portions of said side panels extending beyond the toe end of said sole portion and being severed from the latter over a part of the length thereof; having an integral toe panel extending upward from said sole portion in the same direction as said side panels and at substantially 90° to said sole portion, said forward portions of said side panels being turned in behind said toe panel on the side thereof adjacent to said sole portion; and having an integral tongue portion extending from said toe panel a distance which is greater than the length of said side panels and being adapted to be bent over said sole portion;

said sole portion and said side and toe panels being dimensioned and adapted for fitting around at least the portion of the shoe forward of the ball of the foot;

means securing said forward portions of said side panels to said toe panel; and

first and second strap means fastened to said side panels proximate the ends thereof that are opposite to said forward portions thereof;

said first strap means being adapted to extend away from said sole portion and to fit over said tongue portion to hold it securely adjacent the arch of a foot in the shoe on which the protector is mounted;

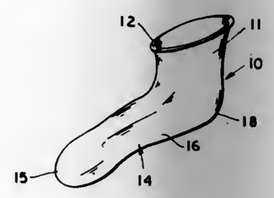
said second strap means being adapted to extend rearwardly from said side panels and to fit around the heel of the foot for retaining the formed sheet in place over the forward part of the shoe.

4,069,600

ATHLETIC FOOT PROTECTOR

Leslie E. Wise, 3069 Highland Drive, Smyrna, Ga. 30080

Filed June 2, 1975, Ser. No. 582,870
Int. Cl.² A43B *17/08, 17/14*
U.S. Cl. 36—10 **3 Claims**



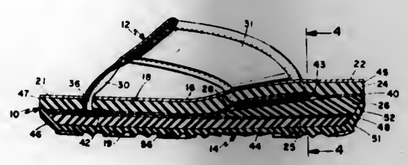
1. A foot protector for protecting a foot having balls of the foot, a heel and toes, said foot protector comprising a sock formed of homogeneously elastomeric material shaped substantially like said foot to extend around said foot, said sock completely covering said balls of said foot, said sock having a length less than the length of said foot and a girth less than the girth of said foot so that said elastomeric material is stretched in order to cover said foot, and said material in the stretched condition has sufficient strength to absorb shear forces that cause trauma to said foot, said sock being further stretched to cover said heel of said foot, said sock defining a plurality of pores therethrough, and further including absorbent means substantially covering the outer surface of said sock.

4,069,601

THONG FOOTWEAR

Thomas Richard Robbins, and Stephen Edson Cunliffe, both of San Clemente, Calif., assignors to Young Californian Shoes, Inc., San Diego, Calif.

Filed Dec. 23, 1976, Ser. No. 753,640
Int. Cl.² A43B *3/12, 13/12, 13/04*
U.S. Cl. 36—11.5 **9 Claims**



1. An article of footwear, comprising:

a platform having a top surface and a bottom surface, and being shaped to define a toe portion and a heel portion, said platform including;

a first layer of uniform thickness extending throughout the toe and heel portion of the platform,

a second layer of uniform thickness extending throughout the toe end and heel portions of the platform, and

a third layer positioned between first and second layers in the heel portion for providing a platform in which the bottom of the platform is relatively flat and the top of the platform is raised in the heel portion;

wherein the first and second layers consist of a flexible foam rubber having a given density, and the third layer consists of a flexible foam rubber having a density greater than said given density; an upper vamp extending from the top surface of the platform, including;

a thong attached to the toe portion of the platform, and f side straps attached to the thong and to opposite sides of the platform; and;

a bottom sole consisting of crepe rubber extending over the bottom surface of the platform and having a bottom surface including a tread for providing a gripping action between the article of footwear and a smooth floor.

4,069,602

JOINING STIFFENING MATERIAL TO SHOE UPPER USING UHF FIELD

Paul Kremer, Grosskrotzenburg; Bernhard Gora, Grossauheim, and Cornelis van Amsterdam, Viersen, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Germany

Division of Ser. No. 362,056, May 21, 1973, abandoned. This application Nov. 14, 1974, Ser. No. 523,856
Claims priority, application Germany, May 23, 1972, 2224967
Int. Cl.² A43B *23/16;* B29C *27/04*
U.S. Cl. 36—45 **28 Claims**

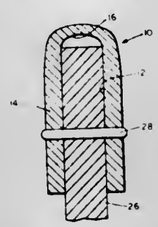
1. A method of joining (1) a stiffening material consisting essentially of a fibrous backing or layer having impregnated into said fibrous backing or layer, a thermoplastic synthetic resin stiffening material containing at least three parts per 100 percent of the thermoplastic synthetic resin of an active substance to produce quick and uniform dielectric heating which active substance is finely divided, homogeneously distributed in the stiffening material and is at least one member of the group consisting of carbon black and graphite to (2) an upper material of leather or synthetic resin which is devoid of such active substance without significantly heating the upper material comprising rapidly heating the stiffening material to the temperature at which it becomes soft and adhesive by subjecting the stiffening material and adjacent upper material to an ultra high frequency field.

4,069,603

BINDING STRIP FOR SHOES

Harold F. Davenport, St. Petersburg, Fla., assignor to The Alger Corporation, Abington, Mass.

Filed Nov. 10, 1976, Ser. No. 740,601
Int. Cl.² A43B *23/00*
U.S. Cl. 36—57 **1 Claim**



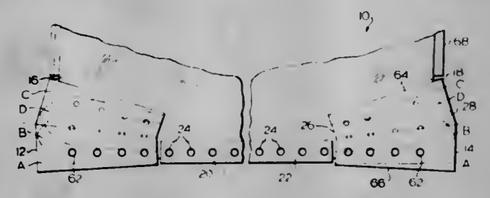
1. A binding strip for shoes, comprising a long strip of leather having a grain side and a flesh side, said flesh side being provided with a continuous laterally arcuate groove cut therein to remove a portion of the fibers therefrom and disposed intermediate the margins of the strip and extending throughout the length of the strip, said cut arcuate groove providing a zone of reduced thickness and facilitating the overfolding of the strip, the fibers of the leather lying beneath said cut arcuate groove being crushed, broken and compressed and the fibers adjacent but beyond said groove being uncrushed so that the strip may be overfolded about the margin of an element of a shoe upper to provide a wrinkle-free binding of pleasing appearance.

4,069,604

END WEAR BIT FOR EARTHMOVING EQUIPMENT BLADES

Visvaldis A. Stepe, Willow Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 31, 1977, Ser. No. 783,102
Int. Cl.² E02F *9/28;* A01B *35/22*
U.S. Cl. 37—141 T **5 Claims**



1. An end wear bit for earthmoving equipment blades, comprising:

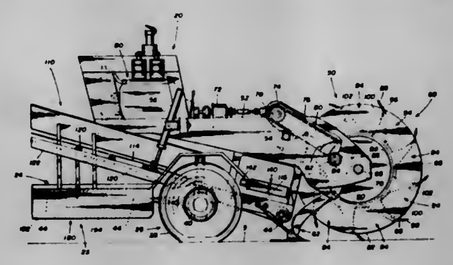
a reversible plate having a first short edge, an opposed second relatively longer edge, first and second opposite wear edges, first and second symmetrical halves, and a plurality of rows of apertures divergent relative to each other and divergent relative to the first and second opposite wear edges and extending between the first short edge and the second longer edge.

4,069,605

CONVEYOR FOLDING AND MOLDBOARD OPERATION FOR EXCAVATING AND LOADING SYSTEMS

Charles R. Satterwhite, Dallas, Tex., assignor to Unit Rig & Equipment Co., Tulsa, Okla.

Division of Ser. No. 544,671, March 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 400,043, Sept. 24, 1973, Pat. No. 3,897,109, which is a continuation-in-part of Ser. No. 238,089, March 28, 1973, abandoned. This application Feb. 18, 1976, Ser. No. 658,860
Int. Cl.² E02F *3/24*
U.S. Cl. 37—190 **31 Claims**



1. An excavating and loading system comprising:

a vehicle, a main frame and subframe on the vehicle;

means supporting the main frame of the vehicle for movement over a surface;

excavating wheel means rotatably supported from the subframe in front of the main frame;

means for selectively varying the relative positioning of the

subframe and main frame whereby the excavating wheel can be selectively raised or lowered to excavate along on an upgrade or a downgrade;

said excavating wheel means including a plurality of digging buckets each having a cutting edge which extends to a stationary wall, and a wall mounted for pivotal movement from a material receiving position to a material dumping position, said excavating wheel assembly having a width at least equal to the widest portion of the remainder of the system;

drive means for rotating the excavating wheel means;

means responsive to rotation of the excavating wheel means and located in the margins thereof for positively positioning the movable wall in the material dumping position when the bucket is in the upper and rearward position of the path;

blade means positioned adjacent to and to the rear of the excavating wheel means for crowding material forward;

means for supporting the blade means from the vehicle and means for changing the position of the blade with respect to the vehicle;

bearing plate means for contacting the surface of the soil and for providing vertical support for the excavating wheel means; and

means supporting the bearing plate from the vehicle to contact the surface of the soil between the excavating wheel means and the vehicle comprising members connected to the main frame and members connected to the subframe;

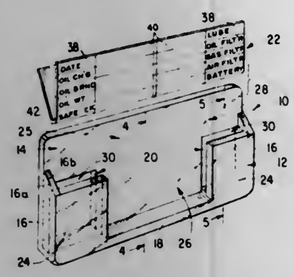
said bearing plate being positioned on said members wherein the movement of said subframe with respect to the main frame moves said members whereby said bearing plate is lowered when said system operates along a downgrade and is raised when said system operates along an upgrade.

4,069,606

DISPLAY CARD HOLDER

Jack R. Shevin, Skokie, and Seymour Fohrman, Chicago, both of Ill., assignors to Jack R. Shevin, Skokie, Ill.

Filed Aug. 6, 1976, Ser. No. 712,142
Int. Cl.² G09F *3/18*
U.S. Cl. 40—10 A **2 Claims**



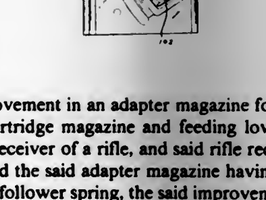
1. A holder for removably retaining a card and the like having information thereon, said holder comprising spaced apart transparent front wall sections defining an open space therebetween, a rear wall section spaced from said front wall sections and interconnected therewith at the bottom and sides thereof to form a pocket of substantially thin cross-sectional dimension between said front and rear wall sections, spaced apart apertures in said rear wall section coextensive in dimensions and in registry with said front wall sections, said rear wall section extending upwardly of said front wall section and formed therewith and with said bottom and sides as one piece, and adhesive fastening means on said rear wall section opposite said front wall section for mounting said holder to a substantially flat automobile surface.

4,069,607

.22 CALIBER RIMFIRE ADAPTER SYSTEM FOR M16 TYPE RIFLE

Julius V. Jurek, 2046A Corsair Drive, Bethel Manor, Langley AFB, Va. 23665

Division of Ser. No. 720,468, Sept. 3, 1976. This application Mar. 17, 1977, Ser. No. 778,760
Int. Cl.² F41C *15/00*
U.S. Cl. 42—25 **2 Claims**



1. A rimmed cartridge extractor system for the bolt face of a rifle comprising:

a. a hooked lever arm extractor;

b. a case rim retainer positioned on the bolt face approximately opposite the said lever arm extractor; and

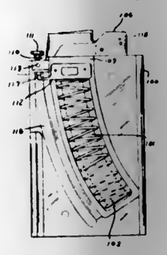
c. an undercut of approximately twenty degrees in the said rim retainer.

4,069,608

.22 CALIBER RIMFIRE ADAPTER SYSTEM FOR M16 TYPE RIFLE

Julius V. Jurek, 2046A Corsair Drive, Bethel Manor, Langley AFB, Va. 23665

Division of Ser. No. 720,468, Sept. 3, 1976. This application Mar. 14, 1977, Ser. No. 777,754
Int. Cl.² F41C *25/00*
U.S. Cl. 42—49 A **2 Claims**



1. The improvement in an adapter magazine for replacing a high power cartridge magazine and feeding low power cartridges into a receiver of a rifle, and said rifle receiver having a bolt catch and the said adapter magazine having a cartridge follower and a follower spring, the said improvement comprising;

a. means including a lifter spring attached to the said adapter magazine for cooperating with the said rifle bolt catch; and

b. means cooperating with the said adapter magazine follower for coupling the said magazine follower spring to the said lifter spring when the said adapter magazine is empty.

4,069,609

CASTING LURE

Nicholas G. Demy, P.O. Box 38, East Hampton, N.Y. 11937

Filed June 17, 1976, Ser. No. 696,892
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.06 **11 Claims**



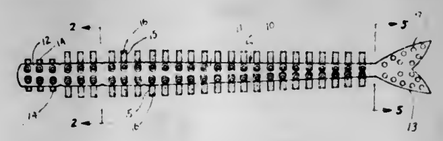
1. A fishing lure comprising a substantially cone-shaped tube, said tube being of larger diameter at its anterior portion and having a multiplicity of apertures in at least the sides and bottom thereof, said apertures having a size and shape such that sand may be retained within the tube when the lure is cast through the air and said sand may be dispersed from the tube when said lure strikes water.

4,069,610

STUD WORM FISHING LURES

Herman P. Firmin, 11325 Granberry St., Baton Rouge, La. 70811

Filed Oct. 18, 1976, Ser. No. 733,527
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.24 **11 Claims**



1. As an article of manufacture, a worm type aquatic fishing lure for use with a rod, line and hook, by virtue of which the lure can be attached via the line to the rod and used in casting, comprising

a slender, elongated, soft, elastic material, constituting a solid head portion, hollow body, and tail portion, which generally resembles a worm, and

a plurality of hollow studs which extend perpendicularly outwardly from said body,

whereby on casting the worm into water the studs vibrate and create simulated movement, and bubbles of air are released as the worm sinks or is drawn through the water, the release of air creating life-like appearance and sounds.

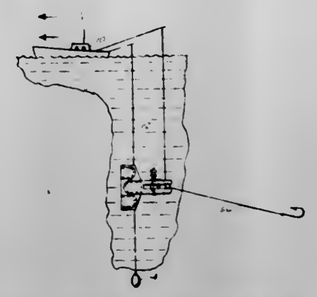
4,069,611

DOWNRIGGER FOR TROLLING

Jerry G. Dusich, 4898 Washington St., Gary, Ind. 46408, and Willard Basco, 1009 E. 61st Place, Merrillville, Ind. 46410

Continuation of Ser. No. 606,922, Aug. 22, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,255
Int. Cl.² A01K *91/00*
U.S. Cl. 43—43.12 **5 Claims**

1. A downrigger device for trolling comprising: a bracket body for engaging a weighted downline; a vertically bifurcated body extending from said bracket body providing laterally spaced arms; one of said laterally spaced arms being horizontally bifurcated providing vertically spaced tines; a pin member for releasably holding a fish line, said pin member pivotally connected at one end thereof to the distal end of the other of said spaced arms; receiving means provided at the distal ends of said tines to releasably retain therebetween the other end of said pin member; and a resilient member between said laterally



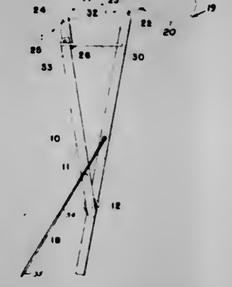
spaced arms for contacting the body of said pin when said other end thereof is received between the distal ends of said tines.

4,069,612

ANIMAL SNARE ASSEMBLY

Lawrence Edward King, General Delivery, Clarkleigh, Canada (R0C 0R0)

Filed Aug. 23, 1976, Ser. No. 716,426
Int. Cl.² A01M *23/34*
U.S. Cl. 43—87 **13 Claims**



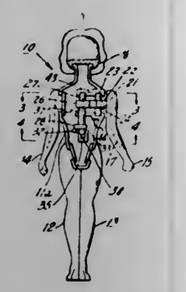
1. A snare type trap, said trap having a locked position, a set position, and a sprung position, said trap comprising in combination a first elongated member, a second elongated member pivotally secured by one end thereof to one end of said first elongated member in a substantially V-shaped formation when in said set position and in said locked position, spring means reacting between said first and second members normally urging the upper ends thereof apart from one another, a flexible snare wire assembly having a running noose formed therein and a standing part extending therefrom, guide means on the other end of said first member, said standing part freely extending through said guide means, and a trigger assembly on the other end of said second member, said standing part being operatively connected to said trigger assembly, said trigger assembly including a lever pivoted by adjacent one end thereof to adjacent the other end of said second member and a setting and locking member pivotally secured by one end thereof to adjacent the other end of said first member and engaging around said second member and said lever when said trap is in the set position and around said second member only when said trap is in the locked position.

4,069,613

ACTIVITY DOLL

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840, and William B. Nutting, 829 Feorgia St., Imperial Beach, Calif. 92032

Continuation of Ser. No. 376,466, July 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 297,451, Oct. 13, 1972, Pat. No. 3,758,982. This application Feb. 24, 1976, Ser. No. 660,804
Int. Cl.² A63H *13/04*
U.S. Cl. 46—120 13 Claims



1. An animation toy representing a human figure including a body portion having a longitudinal axis, a limb representing an arm of said figure and pivotally supported by said body portion about an axis substantially parallel to and spaced from the longitudinal axis of said body portion for pivotal movement about the shoulder joint of the arm relative to said body portion to permit said arm to swing in a path in front of and laterally across said body portion, an operator supported for guided movement on said body portion and having a first section extending into said body portion and a second section accessible from externally of said body portion for the operation of said operator from a first to a second position by application of a force thereto, an operating mechanism disposed within said body portion and connected to be engaged and operated by the movement of said operator, said arm being connected to said mechanism, said mechanism, when actuated, pivoting said arm from a normal position at one side of said body to another position after swinging across said body, biasing means urging said operator to said first position and said arm to return to said normal position after the force is released against said operator, said operator first section being in operative engagement with said mechanism to actuate the latter upon operation of said operator from said first towards said second position, said mechanism providing a driving connection between said arm and said operator as the latter moves from said first towards said second position whereby energy for moving said operator towards said second position is transmitted through said mechanism to operate said arm to cause it to pivotally swing across said body towards said another position and including means for breaking said driving connection when said operator reaches said second position whereby said biasing means operates said limb to said normal position while said operator is held in said second position.

4,069,614

EARLY GROWTH ALTERATION TO INCREASE CORN GRAIN YIELD

Dale R. Hicks, and R. Kent Crookston, both of St. Paul, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed June 14, 1976, Ser. No. 695,778
Int. Cl.² A01G *1/00*
U.S. Cl. 47—58 10 Claims

1. A method for increasing the grain yield of genotypes of *Zea mays*, the flowering of which is responsive to the night length in the growing zone, comprising the steps of:

a. growing a relatively short-season corn line in a relatively longer-season growing zone, which corn line is a said genotype, to obtain short-season corn plants with extended leaves;

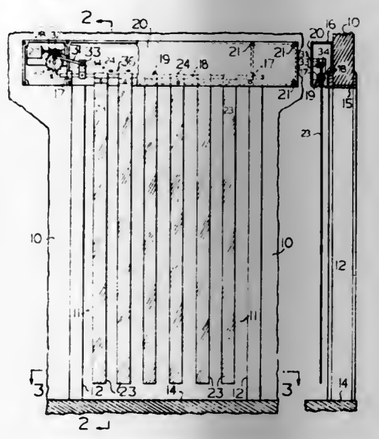
b. deliberately inhibiting leaf function of at least some of the extended leaves of said short-season corn plants, said deliberately inhibiting step being commenced prior to stalk elongation and about in the period of initiation and development of the reproductive primordia.

4,069,615

SCREEN FOR DETERRING FLYING INSECTS

Donald E. Gilbert, Box 2188, Jonesboro, Ark. 72401

Filed Nov. 22, 1976, Ser. No. 743,957
Int. Cl.² E06B *9/52*
U.S. Cl. 49—58 5 Claims



1. A screen assembly for deterring entry of flying insects into a closed environment, comprising a plurality of flexible tapes, means for suspending said tapes over the entry of said environment, a prime mover, and means including a shaft responsive to the operation of said prime mover and acting at said point of suspension for initiating fluctuation of said tapes, said last-named means including a leveraged connection between said shaft and said prime mover for imparting rotary movement from the latter to the former.

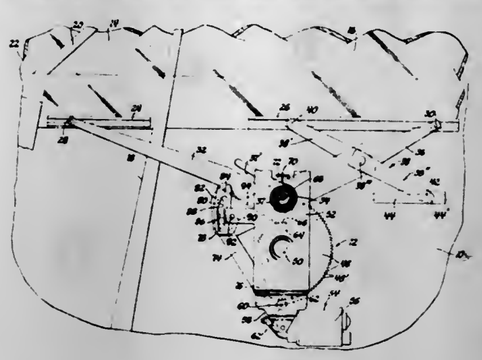
4,069,616

WINDOW REGULATOR

Juozas Doveinis, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1976, Ser. No. 744,999
Int. Cl.² E05F *5/12*
U.S. Cl. 49—103 3 Claims

1. A vehicle window regulator mechanism for sequentially operating a vent panel and a window panel between open and closed positions relative to a door panel, said window regulator mechanism comprising: rotative drive means pivotally supported by the body panel for selective rotation through a first range of rotative movement and subsequently through a second range of rotative movement; a first regulator arm; means supporting the first regulator arm to permit pivotal and bodily shifting movement relative to the drive means and body panel including a slot and shaft connection therebetween whereby the shaft rotates at one end of the slot during said first range of rotative movement and the shaft slides along the slot during said second range of rotative movement; means mounting the first regulator arm for pivotal and bodily shifting movement relative to the drive means; a second regulator arm operably connected to said window panel; means operably connecting the second regulator arm for movement by the drive means only during rotation of the drive means through the second range of rotational movement of the drive means; connecting means between the drive means and the first regulator arm including gear teeth displayed in an arc about said one end of said slot to effect pivotal movement of the first regulator arm during the first range of rotative movement of the drive means to raise and lower the vent panel and including gear teeth



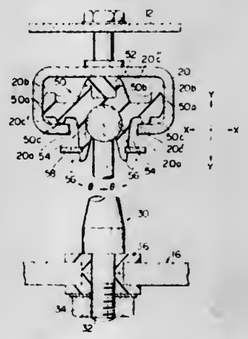
displayed in a direction parallel to the elongated dimension of the slot to effect bodily shifting movement of the first regulator arm relative to the vent panel and drive means during the second range of rotative movement of the drive means to maintain the vent panel in the open position during operation of the window panel by the second regulator arm.

4,069,617

VEHICLE WINDOW GUIDE ASSEMBLY

Syouichi Koike, Seki, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 26, 1976, Ser. No. 690,120
Claims priority, application Japan, May 29, 1975, 50-64522
Int. Cl.² E05D *13/02*
U.S. Cl. 49—428 4 Claims



1. The combination of a vehicle body window pane and a window guide assembly for guiding movement of the vehicle body window pane between a raised, closed position and a lowered, open position comprising:

an elongated guide channel element extending substantially in the direction of the raising and lowering movement of the window pane and having a top base wall, two side walls and a bottom base wall with an opening,

at least one substantially tapezoidal, resilient guide following element slidably reciprocably received within said guide channel and having a slide surface facing the top base wall of said guide channel,

a resilient damping block embedded in said slide surface of the guide following element and being in constant engagement with the top base wall, said damping block being of higher resiliency than that of the guide following element,

a shaft element having two ends, one of said ends being fastened to said window pane,

ball joint means provided at the other of said ends of the shaft element, and

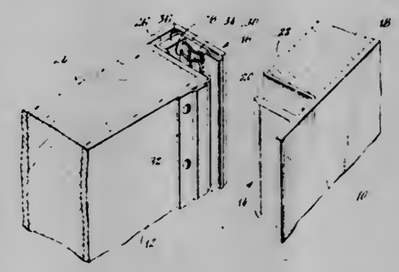
socket means provided substantially at the center portion of the guide following element for detachably receiving said ball joint to thereby establish a ball joint connection between the shaft element and said guide following element.

4,069,618

RADIANT RESISTANT CLOSURE ASSEMBLY

Charles Geiss, Bayport, N.Y., assignor to All-Shield Enclosures, Inc., Westbury, N.Y.

Continuation-in-part of Ser. No. 541,457, Jan. 16, 1975, abandoned. This application Sept. 8, 1976, Ser. No. 721,557
Int. Cl.² E06B *7/22*
U.S. Cl. 49—483 9 Claims



1. A radiation resistant closure assembly for joining a door and its frame, comprising first and second closure members, one of said members secured to the frame of said door, the other to the frame adapted to receive said door, said first and second members each including a pair of walls spaced from each other and defining a slot, each outer wall of said pair being insertable into the slot formed by the pair of walls on the opposing closure member, said walls thereby forming a pair of slots between said door and said frame, a first finger contact positioned in a first of said pair of slots along one of said walls, a second finger contact positioned in the second of said pair of slots along another of said walls, said first and second finger contacts opposed to one another and each having a bowed portion displaced from one another along the path defined by said pair of slots, said bowed portions of each of said finger contacts being resiliently urged against an opposing wall of a respective slot to apply a pressure against said opposing wall, thereby holding said door and door frame in relatively rigid fixed relationship.

4,069,619

RESURFACING DEVICE FOR SCREWDRIVERS AND LIKE TOOLS

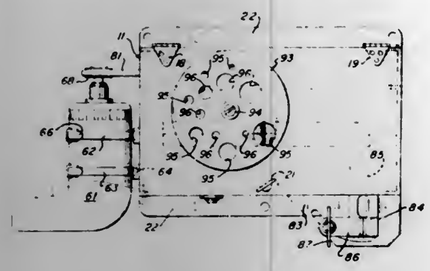
Abraham S. Escamilla, 1824 10th Ave., Scottsbluff, Nebr. 69361

Filed Aug. 9, 1976, Ser. No. 712,497
Int. Cl.² B24B *3/60, 23/00*
U.S. Cl. 51—3 18 Claims

1. In a resurfacing device for screwdrivers and like tools, the combination comprising:

two sets of rotary grinding members having grinding portions disposed along two intersecting planes at right angles to one another, a first of said sets being rotatable about a first common axis of rotation having a first pair of opposed grinding portions and a second of said sets being rotatable about a second common axis of rotation having a second pair of opposed grinding portions, said first and second pairs of opposed grinding portions being disposed along one of said intersecting planes, said rotary grinding

members of each set being movable toward and away from one another and yieldably urged toward one another and separable against the yieldable urging away from said one of said intersecting planes upon the insertion of a tool therebetween to be resurfaced, the rotary grinding members having a third pair and a fourth pair of opposed



grinding portions along the other of said intersecting planes,

means for rotating said sets of rotary members in opposite directions; and

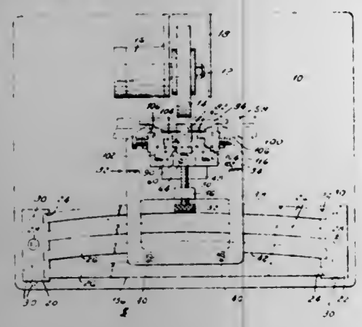
guide means for positioning a tool along an axis defined by said intersecting planes for guided engagement of selected surfaces of said tool with said grinding portions.

4,069,620

ICE SKATE SHARPENER

Glenn Sakcriska, 1714 Abbott, Ann Arbor, Mich. 48103

Filed Nov. 26, 1976, Ser. No. 745,362
Int. Cl.² B24B *9/04, 1/00*
U.S. Cl. 51—100 R **27 Claims**



1. In an ice skate sharpening fixture for retaining an ice skate therein, the ice skate including at least two struts extending upwardly from the ice skate blade and a center location equidistant from the struts,

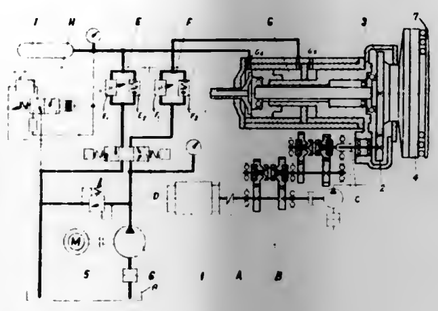
the improvement comprising means to center the ice skate lengthwise in the fixture with respect to both ice skate struts such that the center location remains the same relative to the fixture regardless of the distance between the struts.

4,069,621

APPARATUS FOR MACHINING BEARING ROLLS

Dumitru Gheorghe, Brasov; Mihail Renghes, Ploiesti; Gheorghe Serban, Ploiesti, and Vasile David, Ploiesti, all of Romania, assignors to Intreprinderea "Mecanica" Plopeni, Plopeni, Romania

Filed June 17, 1976, Ser. No. 697,226
Int. Cl.² B24B *11/06*
U.S. Cl. 51—117 **2 Claims**



1. An apparatus for machining bearing balls, comprising:

a fixed machining disk;

a rotatable machining disk spacedly juxtaposed with said fixed machining disk and adapted to machine bearing balls between said disks;

a ring gear connected to said rotatable disk;

a pinion meshing with said ring gear;

a telescoping-shaft coupling connected to said pinion for rotating same, said pinion and said ring gear being axially connected to said rotatable disk for movement therewith;

a gearbox having an output shaft connected to said telescoping-shaft coupling and an input shaft;

an electric motor having a motor shaft; and

an elastic coupling connecting said motor shaft to the input shaft of said gearbox whereby said motor rotates said rotatable disk.

4,069,622

IMPROVEMENTS IN OR RELATING TO AN ABRASIVE WHEEL

Daniel Swarovski, Wattens, Austria, assignor to Tyrolit-Schleifmittelwerke Swarovski K.G., Schwaz, Austria

Continuation of Ser. No. 523,553, Nov. 13, 1974, abandoned, which is a continuation of Ser. No. 347,668, April 4, 1973, abandoned. This application Sept. 8, 1976, Ser. No. 721,551
Claims priority, application Austria, May 15, 1972, 4199/72
Int. Cl.² B24D *5/06, 5/08*
U.S. Cl. 51—206.5 **4 Claims**



1. An abrasive wheel of the consumable type comprising:

a circular blade mountable on a grinding machine;

a plurality of abrasive segments positioned around the periphery of said circular blade, each of said abrasive segments including a segment formed of a bonded abrasive material of the type consumable during a grinding operation, a securing plate having a portion imbedded in said segment only a portion of the radial height thereof and a portion not imbedded in said segment, the thickness in the axial direction of said securing plate being uniform throughout the radial height thereof and less than the thickness in the axial direction of said segment, each of said segments and plates having lateral edges forming extensions of radii of said circular blade, the radial portion of said segment having no plate imbedded therein forming a plate-free abrasive portion, and a pair of webs of fibrous core material located only in said segment and extending through said segment over the total radial height thereof on opposite sides of said securing plate in planes parallel to the plane of said securing plate;

said circular blade having an annular groove extending radially inwardly from the outer periphery thereof, said annular groove defining two separate axially spaced blade portions;

said securing plate portions not imbedded in said segments extending into said annular groove between said spaced blade portions;

each said securing plate portion within said groove having therethrough a securing hole;

said spaced blade portions having a plurality of pairs of axially aligned tapered fixing bores therethrough;

each pair of axially aligned fixing bores being axially aligned with a securing hole of a respective one of said securing plate portions;

at least a first fixing bore of each said pair of fixing bores having a tapered insertion therein, said insertion having a threaded opening therethrough; and

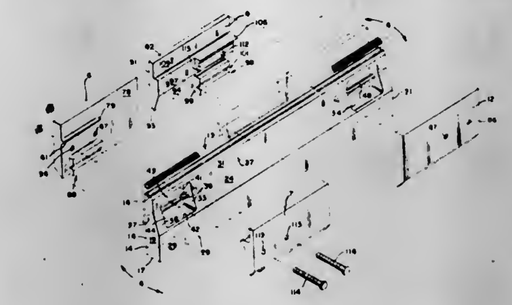
a plurality of retainer means, each of said retainer means having a tapered first portion positioned within a second fixing bore of a respective pair of fixing bores and a threaded second portion threaded into said opening of said insertion, for selectively removably securing and detaching said securing plate portions not imbedded in the respective segments to said securing plate.

4,069,623

WORK REST BLADE FOR CENTERLESS GRINDER

Van Q. Maxey, 17765 Casa Lane, Morgan Hill, Calif. 95037

Filed Sept. 9, 1975, Ser. No. 611,651
Int. Cl.² B24B *41/06*
U.S. Cl. 51—238 GG **13 Claims**



1. A work rest assembly for centerless grinders comprising:

a. a generally elongated flat body including an elongated edge having a crown therein;

b. a work rest blade supported on the crowned edge of the body; and

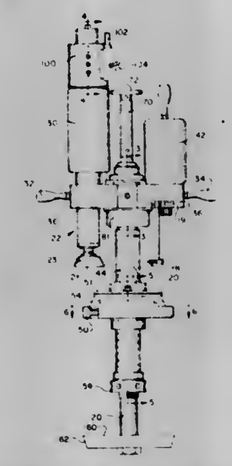
c. clamp means at opposite ends of the elongated body engaging the work rest blade to simultaneously clamp the work rest blade to the crowned edge of the support body and impose torque on said work rest blade.

4,069,624

PORTABLE GRINDING MACHINE FOR RESURFACING CYLINDER HEAD RETAINERS

Rufus A. Henry, Jr., Roanoke, Va., assignor to Stanray Corporation, Chicago, Ill.

Filed Feb. 19, 1976, Ser. No. 659,418
Int. Cl.² B24B *19/00*
U.S. Cl. 51—241 B **3 Claims**



1. A portable grinding apparatus for the in situ refinishing of an out of square engine crankcase retainer seat and insertable in a cylinder thereof, having at least two substantially rigid positioning discs, said positioning discs being axially attached in spaced vertical arrangement to a central shaft, each of said positioning discs having a diameter closely approximating and slightly smaller than the interior diameter of said cylinder, the lower of said discs serving to initially orient and center said apparatus within said cylinder and an upper disc having expansion slits which cause the periphery of said disc to expand when said disc is forced upon a tapered portion of said central shaft, said expanded disc periphery thereby orienting and immovably securing said apparatus within said cylinder parallel to the axis of the cylinder bore, said positioning discs rigidly securing said apparatus about the periphery of said cylinder at at least one position and locating said apparatus at a fixed attitude perpendicular to the plane of the retaining seat at at least two positions about the periphery of said cylinder, a powered grinder tool rotatably attached and adjustable for vertical travel on said central shaft, for the rotation of the grinder tool about the central shaft, thereby grinding the seat to a desired depth and resulting in a finished surface on the seat substantially perpendicular to the axis of the cylinder bore.

4,069,625

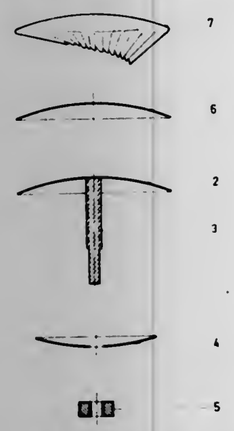
GRINDING HEAD FOR CARRYING A REPLACEABLE ABRASIVE SHEET

Karl Reiling, and Reinhold Reiling, both of 9 Grundeltorstrasse, D-7531 Kampfelbach-Ersinger, Germany

Filed Mar. 22, 1976, Ser. No. 668,830
Claims priority, application Germany, Apr. 10, 1975, 2515737
Int. Cl.² B24D *9/08*
U.S. Cl. 51—379 **4 Claims**

1. A grinding head for carrying replaceably an abrasive sheet and for detachable and driving connection to a portable rotary power unit, said head consisting of a flattened plate-shaped support member having a convex outer face and a concave inner face; a sheet of thin hardened padding secured

to the outer face of said support member, and taking the form thereof, said padding sheet having substantially the same dimensions as said outer face of said support member; a shank having an inner end secured to and projecting centrally from the inner face of said support member; and having a screw-threaded inner end portion, and an outer end portion adapted to be detachably and drivingly connected to a portable rotary power unit; on said shank, a flattened plate-shaped clamping member of smaller diameter than that of said support member



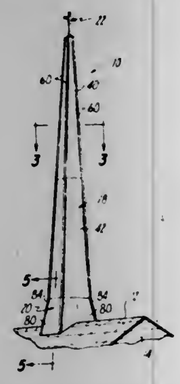
and having an inner concave face facing the inner face of said support member, an outer convex face, and a central hole through which said shank passes, the peripheral edge of said clamping member being clamped to the inner concave face of said support member; and a clamping nut on said screw-threaded portion of said shank; whereby marginal edge portions of an abrasive sheet applied to the outer face of said sheet of thin hardened padding, and overlapping the latter, can be folded between said support member and said clamping member and be clamped between same by tightening said nut.

4,069,626

STEEPLE

Heinz G. Schuette, Mount Clemens, Mich., assignor to Yarema Die & Engineering Co., Troy, Mich.

Filed Mar. 26, 1976, Ser. No. 670,857
Int. Cl.[2] E04B 7/00, 5/52
U.S. Cl. 52—57 **7 Claims**



1. A steeple adapted to be mounted to a roof, said steeple comprising:

a plurality of inclined leg members, the lower ends of which are laterally spaced from each other a greater distance than the upper ends of said leg members;

a plurality of connecting members;

means fastening said connecting members to said leg members to define a rigid frame, the leg members defining corners of the frame and the lower ends of said leg members being adapted to be attached to a roof;

an upright support rod rigidly secured to and extending upwardly from the upper end of said frame;

an outer skin structure having a contour that is complementary to the shape of said frame, said skin being telescopically received over said frame;

means connecting the upper portion of said outer skin structure to said support rod to urge said outer skin structure downwardly into a snug-fitting relationship with said frame;

said skin structure comprising a plurality of panel members, each panel member being proportioned to overlie one side of the frame and being tapered conformably to the inclination of said leg members, said panel members having bent lengthwise edges defining a bead along each longitudinal edge thereof positioned adjacent the lengthwise bead of an adjacent panel member;

a plurality of channeled moldings have oppositely inbent lengthwise edges defining opposed converging flanges, the opposed flanges of each molding being slideably received by adjacent beads of said adjacent panel members and engaging said beads to secure said adjacent panel members to each other;

horizontal inbent flanges carried at the upper ends of said panel members;

a horizontal connection plate;

means rigidly connecting said inbent flanges to said connecting plate, said connecting plate being received by said support rod;

threadable fastening means carried by said support rod and bearing against said connecting plate for urging said plate and panel members toward said snug-fitting relationship with said frame;

the skin structure being shorter than the total length of the frame and rod and the maximum internal cross section of the skin structure being less than the maximum external cross section of the frame, whereby the skin structure attains said snug-fitting relationship while spaced above the bottom of the frame;

a spire releasably attachable to the lower edge of said outer skin structure for concealing the lower portion of said frame; and

means for attaching the lower edge of said spire to a roof.

4,069,627

BUILDING STRUCTURE

Owen Christopher Pegg, R.R. #1, Grafton, Ontario, Canada (K0K 2G0)

Filed Mar. 29, 1976, Ser. No. 671,162
Claims priority, application Canada, Mar. 27, 1975, 223578
Int. Cl.[2] E04B 7/04
U.S. Cl. 52—92 **11 Claims**

1. A building structure comprising

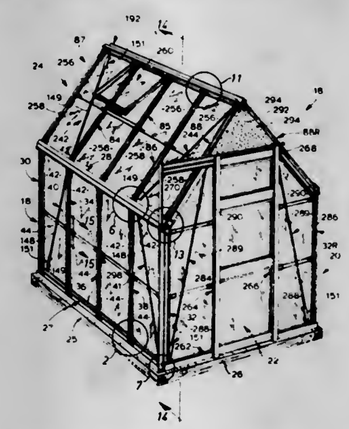
a first elongated and essentially rigid rail comprising a web and integrally fromed therewith inner and outer flanges projecting transversely from said web,

a second elongated and essentially rigid rail generally parallel to said first rail, mutually spaced apart therefrom in a first principal plane containing said web of said first rail and in turn comprising: a first web disposed in said first principal plane; first inner and outer flanges integrally formed with said first web and projecting transversely therefrom; a second web integrally formed with said first web and disposed in a second principal plane angularly disposed with respect to said first principal plane; and second inner and outer flanges integrally formed with said second web and projecting transversely therefrom;

a third elongate and essentially rigid rail generally parallel to said second rail, spaced apart therefrom in said second principal plane and in turn comprising a web disposed in said second principal plane and integrally formed therewith inner and outer flanges projecting transversely from said web;

a first pair of elongated, mutually spaced and essentially rigid cross members each comprising a base and extending between said first and second rails generally in said first principal plane and being slidably received in rectangular openings provided in said inner flange of said first rail and in said first inner flange of said second rail and terminally abutting said outer flange of said first rail and said first outer flange of said second rail so as essentially to prevent movement of said first and second rails toward each other and movement of the ends of said cross members of said first pair both in the longitudinal direction of said first and second rails and transversely relative to said first principal plane;

a second pair of elongated, mutually spaced and essentially rigid cross members each comprising a base and extending between said second and third rails generally in said second principal plane and being slidably received in openings provided in said inner flange of said third rail and in said second inner flange of said second rail and terminally abutting said outer flange of said third rail and said second



outer flange of said second and third rails toward each other and movement of the ends of said cross members of said second pair both in the longitudinal direction of said second and third rails and transversely relative to said second principal plane;

two generally diagonally extending bracing members mutually angularly disposed and terminally interconnecting said first and second rails to maintain those rails and said first pair of cross members in interfitting assembled configuration in a predetermined angular orientation;

two generally diagonally extending bracing members mutually angularly disposed and terminally interconnecting said second and third rails to maintain those rails and said second pair of cross members in interfitting assembled configuration in a predetermined angular orientation;

each said bracing member including a length-adjusting mechanism whereby, after assembly of said rails, said cross members and said bracing members, the lengths of said bracing members can be reduced by operation of said length-adjusting mechanism for adjusting and maintaining said rails and cross members in said predetermined angular orientations;

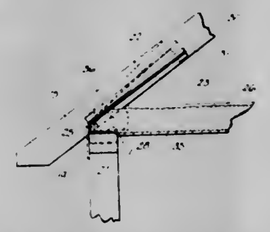
each said cross member also comprising a flange extending from said base thereof relative to a respective one of said first and second principal planes, and terminally received in aligned notches provided in longitudinally extending lips provided on respective ones of said rails and projecting inwardly of said outer flanges of respective ones of said rails so as to restrict relative pivotal movement of said rails and said cross members in respective ones of said first and second principal planes prior to connection of said bracing members to sail rails.

4,069,628

EAVE THERMAL BAFFLE FOR INSULATION

Charles Clement Kreimer, Cincinnati, Ohio, assignor to Pease Company, Hamilton, Ohio

Filed May 5, 1976, Ser. No. 683,493
Int. Cl.[2] E04B 1/74; F24F 7/00
U.S. Cl. 52—94 **10 Claims**



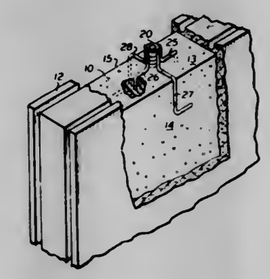
1. An eave thermal baffle comprising a bottom panel to rest on and be secured to the top face of a top plate of an exterior wall of a building, or to be placed against and to be secured to the exterior face of the exterior wall of a building and the like; a rear panel extending upwardly from said bottom panel adjacent the outer edge of said top plate, or adjacent the exterior face of the exterior wall; and a top panel extending from the top of said rear panel and from said botton panel inwardly of said building; said baffle being of a width adapted to just nicely span the distance between adjacent roof framing members or other framing as may be appropriate; whereby air and the like is prevented by said rear panel and said top panel from passing from the eave-soffif area into contact with or under insulation disposed within said building against said baffle.

4,069,629

ANCHORED COMPOSITE BUILDING MODULE

Matthew R. Piazza, Nichols, Conn., assignor to Maso-Therm Corporation, Bridgeport, Conn.

Filed Feb. 18, 1977, Ser. No. 770,258
Int. Cl.[2] E04C 2/04, 5/18
U.S. Cl. 52—125 **17 Claims**



1. A composite building module comprising:

a rigid foam core;

at least one anchoring means for attaching the module to an external support structure each comprising a base disposed on one face of said core and having one end extending outwardly therefrom, at least one positioning member connected to the base having a portion extending along said one face and at least two load bearing members con-

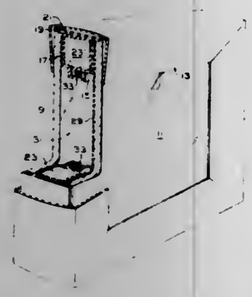
nected to said base and each having a portion extending along a face of the core contiguous with said one face; and a reinforced shell of cementitious material encapsulating said core and the anchoring means wherein the one end of the base is substantially flush with the outer surface of the shell.

4,069,630

HEAT REFLECTING WINDOW

James S. Chess, Pittsburgh; James A. Davis, Apollo, and Robert G. Spindler, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 31, 1976, Ser. No. 672,562
Int. Cl.[2] E06B 5/20; H05B 1/00; E04C 2/54
U.S. Cl. 52—172 8 Claims



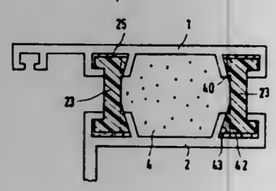
1. A multiple-glazed window mounted in a building wall comprising a pair of glass sheets, an exterior sheet of colored, heat-absorbing glass facing the outside environment and an interior sheet, disposed in substantially parallel, spaced relation to each other, a heat reflective, transparent tin oxide-containing coating disposed over substantially all of the inside face of the exterior sheet of glass which faces the interior sheet of glass, a spacer disposed about the inside marginal edges of the pair of sheets to maintain them in spaced relation with a dessicant disposed in the spacer, and a frame about the outside marginal edges of the pair of sheets wherein the margins of the sheets and the spacer are bonded together forming a hermetically sealed space between the sheets of glass.

4,069,631

BODY ASSEMBLED FROM AT LEAST TWO COMPONENT BODIES

Helmar Nahr, Nurnberger Strasse 54, D-8530 Neustadt-Aisch, Germany

Filed Mar. 3, 1976, Ser. No. 663,422
Claims priority, application Germany, Mar. 7, 1975, 2510060; Oct. 1, 1975, 7531106[U]
Int. Cl.[2] E04G 21/00; E04C 2/26
U.S. Cl. 52—309.5 3 Claims



1. In a body assembled from at least two component profiled-section metal bodies, having connecting heat-insulating profiled rails arranged between the component bodies each of which in cross section has a stem part and two end thickenings, the latter when pushed with play into undercut grooves of the component bodies form a cavity enclosed between the component bodies and the rails filled with a filling composition exerting an expansion pressure whereby the connecting rails are subjected to tension stress lengthwise of the stems thereof, said rails having stop faces on the end thickenings extending substantially perpendicularly of the tension direction and intended to abut on complementary groove undercuttings, the improvement comprising a stop face formed in the metal section groove opposite said stop face on the end thickenings and oriented at an oblique angle to such tension direction,

said end thickening on the said connecting rail having a surface laying at substantially the same oblique angle to such tension direction as said obliquely arranged metal section stop face for engaging same when the perpendicularly arranged stop face and complementary groove undercutting engage,

said perpendicularly arranged stop faces and obliquely arranged stop faces being on opposite sides of said connecting rail end thickening to wedge said connecting rail and metal sections together against lateral bending of the rails out of interlocked position with said sections,

said end thickenings only partially filling said undercut grooves in the component bodies to provide small recesses between said end thickenings and the groove wall of the component bodies,

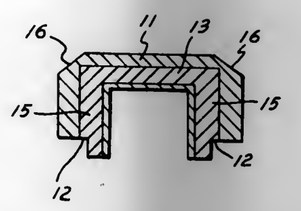
the connecting profiled rails are provided in the region of the end thickenings with recesses and projections permitting the entry of filling composition from the cavity into the small recesses between the groove wall and the end thickenings for further retaining said stop faces and oblique surfaces of the end thickenings abutting on the complementary groove undercutting and oblique stop face of the metal bodies.

4,069,632

SHUTTERING MEMBER

Gerald Bode, Llanfrecha, near Cwmbran, and Roy Worrall, Newport, both of Wales, assignors to Monsanto Limited, London, England

Filed Oct. 30, 1973, Ser. No. 411,133
Claims priority, application United Kingdom, Nov. 6, 1972, 51049/72
Int. Cl.[2] E04C 1/00
U.S. Cl. 52—309.7 4 Claims



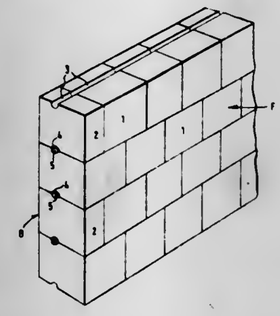
1. A shuttering member comprising a foamed resin block having rabbets along at least two opposed longitudinal edges of the major surface of the block and having internal strengthening rods across the width of the block, in which the rabbeted face has a longitudinal channel cut into it over at least a part of the length of the block, the rods have legs at their extremities that extend at right angles to the rods and parallel to the side of the channel.

4,069,633

REFRACTORY WALL STRUCTURES

Charles Frank Cooper, Stourport on Severn, and Robert Greer, Appleton, both of England, assignors to Morgan Refractories Limited, England

Continuation of Ser. No. 529,243, Dec. 3, 1974, abandoned. This application Apr. 19, 1976, Ser. No. 678,234
Claims priority, application United Kingdom, Dec. 4, 1973, 56173/73
Int. Cl.[2] E04C 1/10
U.S. Cl. 52—586 5 Claims



1. A refractory wall structure built of refractory blocks and keys as a dry wall and comprising, in combination:

a. a plurality of blocks of pre-formed refractory material, said pre-formed refractory material being dried but not fired and having sufficient strength for transportation and building, said blocks being rectangular in basic outline shape and having as high a weight as is convenient for manipulation by one operative;

b. said blocks being arranged in a wall structure in which the blocks are laid in mutual contact in a plurality of horizontal courses with overlapping of blocks in vertically successive horizontal courses and with the blocks of each upper course resting on the blocks of the next lower course;

c. the upper and lower faces of the blocks having complementary grooves within said faces, said grooves being mutually opposed between said vertically successive horizontal courses to form, conjointly, a horizontal tubular key-way extending along and within the wall between each of said plurality of vertically successive horizontal courses;

d. a plurality of discrete rod-like keys of fired refractory material extending end to end horizontally through each of said tubular key-ways with a clearance but occupying respective mutually opposed grooves of adjacent blocks sufficiently to lock the respective blocks against sliding out of the plane of the wall, said keys being elongate and extending across a plurality of blocks in each course and resting with a clearance in the groove in the upper faces of the blocks of a respective lower course but projecting above said groove into the complementary groove in the lower face of the blocks of a respective upper course by a substantial part of the thickness of the keys.

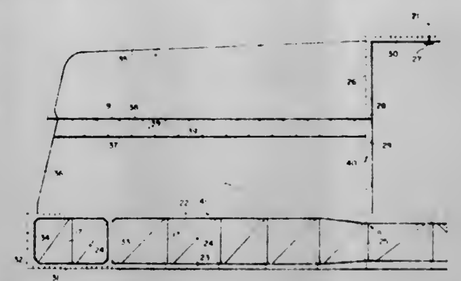
4,069,634

GROUND EFFECT VEHICLE STRUCTURE

Roger Jean Bouter, and Robert Rene Jaffre, both of Lorient, France, assignors to Etat Francais, Paris, France

Filed Apr. 8, 1976, Ser. No. 675,060
Claims priority, application France, Apr. 11, 1975, 75 11304
Int. Cl.[2] B60V 1/00
U.S. Cl. 52—648 9 Claims

1. Ground effect vehicle structure comprising a platform constituted by a rectangular grid frame formed by a plurality of longitudinal girders crossing a plurality of transverse beam crosspieces, each girder and crosspiece comprising an upper beam portion and a lower beam portion bound together by uprights, two of said girders being main girders, and an upstanding longitudinal caisson formed of upstanding transverse rectangular frames interconnected by a continuous system of



sheets, each frame having side segments and an upper segment, the lower segment of each frame of the caisson being constituted by the upper beam portion of a crosspiece, and the lower longitudinal edges of the caisson being integrated with the upper beam portions of said two main girders.

4,069,635

TRUSS STRUCTURE WITH CLEVIS ASSEMBLY JOINTS

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.

Filed Jan. 10, 1977, Ser. No. 758,061
Int. Cl.[2] E04C 3/292
U.S. Cl. 52—693 10 Claims



1. A truss having upper and lower wood chords, each chord having outer and inner faces, and a plurality of tubular metal web members having openings formed in their ends extending between said chords, the joint connection between said chords and webs comprising:

a. said upper and lower chords are formed with a plurality of slots spaced along the length thereof and extending through said chords from said inner to said outer faces;

b. a plurality of clevis members formed with first and second leg members integrally joined at one end by an end portion, and said leg members have distal ends which are not attached to each other and are therefore free for lateral movement;

c. said clevis leg members are formed with aligned openings;

d. said clevis end portions are adapted for close fitting abutment with the ends of said slots;

e. said clevis members are formed with inside face flanges integrally connected at right angles to the inner edges of said legs and adapted for engagement with the inner faces of said chords;

f. means for attaching said inside face flanges to said inner faces of said chords;

g. said clevis members are formed with an end flange inte-

grally connected to the inner edge and at right angles to said end portion and are adapted for engagement with the inner faces of said chords;

h. means for connecting said end flanges to said chords;

i. said clevis members are formed with outside face flanges integrally connected at right angles to said legs and adapted for engaging the outer faces of said chords;

j. said chords are formed with cross bores extending from the inner faces of said slots outwardly toward said chord edges; and

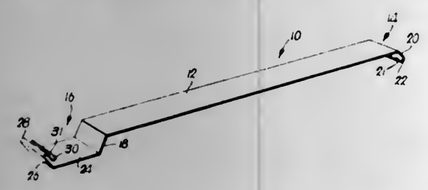
k. an elongated pin member dimensioned for extending through said openings in said web members through said openings in said legs of said clevis members and extending into said cross bores in said chords.

4,069,636

INSULATION SUPPORTING STRAP

James E. Kessler, 3007 W. 82nd Terrace, Leawood, Kans. 66206

Filed Dec. 20, 1976, Ser. No. 752,018
Int. Cl.² E04B *1/38*; E04C *3/16*
U.S. Cl. 52—712 **8 Claims**



1. An insulation supporting strap for supporting insulation located between spaced, adjacent purlins secured to the underside of a roof, said purlins having a projecting flange adjacent the end thereof remote from said roof, said strap comprising:

an elongated web section of length to substantially span the distance between first and second adjacent purlins and configured for supportively engaging said insulation located therebetween;

a first end section secured to the end of said web section proximal to said first purlin and including a female portion engageable with the flange of the first purlin and presenting a recess; and

a second end section secured to the remaining end of said web section proximal to said second purlin and including a male portion configured to fit and be secured within the female portion of another of said straps in engagement with said second purlin and extending in a direction away from said strap and second purlin, said purlin flanges including segments which are oblique relative to the main body of the purlins depending from said roof and extending toward the latter, said female portion being complementally oblique and in depending relationship from said web section, said male portion including a generally U-shaped segment configured to fit over the uppermost edge of the oblique flange segment of the second purlin, and a segment extending from the uppermost leg of said U-shaped segment and complementally fitting within the obliquely oriented female portion of the other of said straps.

4,069,637

TUBULAR SECTION BOOM

Arthur Bevan Midgley Braithwaite, Ickleton, near Saffron Walden, England, assignor to Caterpillar Tractor Co., Peoria, Ill.

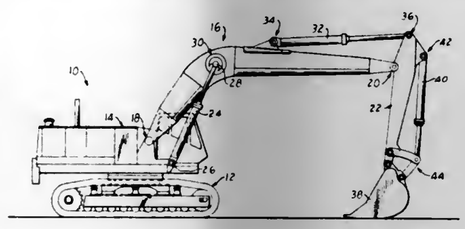
Filed Aug. 9, 1976, Ser. No. 712,555
Int. Cl.² E04H *12/00*
U.S. Cl. 52—726 **10 Claims**

1. A boom comprising:

an elongated tubular body having first and second ends and a circular cross section throughout said body between said ends;

first connecting means secured to said body for connecting said boom to mounting means for supporting said boom; and

second connecting means secured to said body and located between the first and second ends thereof for connecting



manipulating means for manipulating said boom, said tubular body including tapered portions extending longitudinally away from a maximum diameter in the vicinity of said second connecting means to lesser diameters of the first and second ends thereof; and

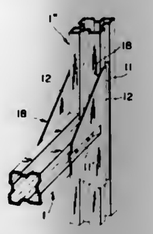
an elbow-shaped casting connected intermediate said tapered portions.

4,069,638

STRUCTURE OF LIGHTWEIGHT BARS AND CONNECTOR MEANS THEREFORE

Stig Ernst Allan Hasselqvist, Mjolby, and Anders Victor Thoreson, Rimforsa, both of Sweden, assignors to Scanovator AB, Linkoping, Sweden

Continuation-in-part of Ser. No. 580,483, May 22, 1975, abandoned. This application Aug. 13, 1975, Ser. No. 604,150
Claims priority, application Sweden, June 5, 1974, 7407353
Int. Cl.² E04C *3/32*
U.S. Cl. 52—726 **8 Claims**



1. A structure comprising:

a. a first hollow, elongated member having a plurality of faces, composed of a single piece of sheet metal having its longitudinal edges joined together to close the cross-section of said member, each of said faces having a longitudinally extending channel, at least one of said channels comprising a base and a pair of substantially planar sides, said sides being mutually inclined as viewed in transverse cross-section such that the width of the channel increases in a direction extending outwardly of said member from the base of said channel;

b. a second hollow, elongated member having faces and channels as in said first member; and

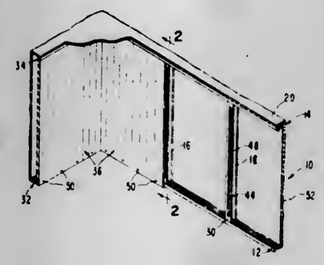
c. a connector connecting together said first and second members, said connector comprising a base of substantially the same width as the base of said one of said channels and a pair of substantially planar sides which are mutually inclined at a slightly different angle than the sides of said channel, said connector's planar sides frictionally engaging at least one channel in each of said first and second members.

4,069,639

WALL ASSEMBLY

Robert L. Lindner, 225 Clyde Drive, Walnut Creek, Calif. 94598, and Luther E. Marshall, 21 Viewridge Road, Novato, Calif. 94947

Division of Ser. No. 406,446, Oct. 15, 1973, which is a continuation of Ser. No. 262,860, June 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 174,843, Aug. 25, 1971, abandoned. This application Mar. 15, 1976, Ser. No. 666,986
Int. Cl.² E04B *1/00*
U.S. Cl. 52—745 **1 Claim**



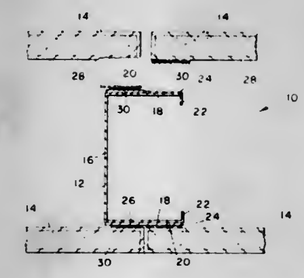
1. In a method of constructing a wall: providing a generally upright stud and a wall panel; providing a pair of tapes between the stud and the wall panel with the tapes having adhesive thereon and capable of being releasably and adhesively bonded together; and moving the wall panel toward and into an operative position adjacent to the stud with the tapes engaging each other and being adhesively bonded together and with one tape being bonded to the stud and the other tape being bonded to the wall panel, whereby the tapes couple the wall panel to the stud, the bonding strength between the two tapes being less than that between the wall panel and the other tape, whereby the other tape will adhere to said wall panel and separate from said one tape when the wall panel is moved away from the stud.

4,069,640

METHOD OF MOUNTING AND DEMOUNTING A WALLBOARD WALL

Jack A. Dawdy, Kenmore, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.

Filed Oct. 20, 1976, Ser. No. 734,180
Int. Cl.² E04B *2/74*
U.S. Cl. 52—746 **3 Claims**



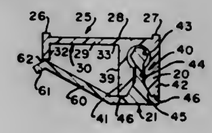
1. The method of mounting and demounting a paper-covered gypsum wallboard wall comprising the steps of applying a thin material to the face of a wall stud receptive to adhesion thereto of a bead of wallboard adhesive and having a weak plane parallel to said stud face within a space of from said face to within said material, applying a bead of wallboard adhesive to said material, applying said wallboard to said bead of adhesive, permitting a bond to develop of said material to said bead of adhesive and said bead of adhesive to said wallboard, and subsequently dismounting said wall by removing said wallboard from said stud and removing said bead of wallboard adhesive from both said stud and said wallboard, said removal of said adhesive bead from said stud being by separating at least a part of said material from said stud at said weak plane.

4,069,641

STORM WINDOW FRAMING

Theodore M. DeZutter, House Springs, Mo., assignor to K-S-H, Inc., St. Louis, Mo.

Filed Nov. 19, 1976, Ser. No. 743,176
Int. Cl.² E04C *2/38*
U.S. Cl. 52—202 **8 Claims**



1. In a storm window wherein a pane is held in extruded frame members mounted to a window by adhesive, the improvement comprising, along at least two sides of said pane, a tape frame having a pane channel defined in part by an upstanding inner wall and one external surface of a boss at an outer edge of said tape frame, said boss including a pair of spaced jaws defining between them a channel, keyhole shaped in transverse cross section and with an outwardly opening, outwardly flaring mouth; an adhesive strip on one face of said tape frame; and a glazing frame, said glazing frame having a root portion at an outer edge of said glazing frame, said root portion of said glazing frame including mounting means cooperable with said boss for rendering said glazing frame mountable on and selectively demountable from said tape frame, said glazing frame mounting means comprising a tenon strip with a head and a neck adapted to fit in the keyhole shaped channel in said boss, said mounting means providing a single position interlock between said tape frame and said glazing frame, and, integral with and cantilevered from said root portion, a pane biasing leaf strip, extending at an angle toward the upstanding inner wall of the tape frame, the free end of said leaf strip having an out-turned lip, the arris between said lip and the edge of the leaf defined thereby engaging and extending along said upstanding inner wall of said tape frame when no pane is mounted in said frame members, the free end of said leaf strip holding said pane to said upstanding inner wall of the tape frame, said glazing frame being made entirely of stiffly resilient plastic, the resiliency of said leaf strip being sufficient to hold panes ranging in thickness from 0.040 inches to 0.125 inches in tight contact with said upstanding inner wall of said tape frame.

4,069,642

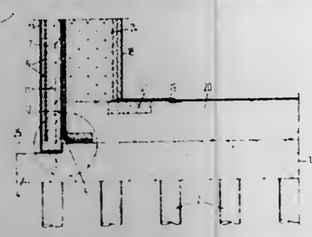
STORAGE TANK HAVING A PROTECTIVE WALL CONSTRUCTION

Nicolaas Arie Hendriks, Rotterdam, Netherlands, assignor to Bouwmaatschappij Nederhorst B. V., Gouda, Netherlands

Filed Dec. 15, 1975, Ser. No. 640,536
Claims priority, application Netherlands, Aug. 19, 1975, 7509841
Int. Cl.² E04B *2/02*
U.S. Cl. 52—224 **4 Claims**

1. A storage tank for storing liquefied gas, such as natural gas, ethylene, propylene, ammonia, at low or cryogenic temperatures, comprising a base plate; a side wall structure supported on said base plate including an outer wall and an inner wall spaced from and surrounded by the outer wall; thermal insulation material filling the interspace between said walls,

said outer wall being a reinforced concrete wall, tensioned wires in said outer wall for circumferentially pre-stressing said wall, said outer wall resting on said bottom plate, the inner side of the outer wall being coated with a layer of a foam of a polyurethane type, said layer merging at its lower end into an annular horizontal layer of the same material coating a portion



of said base plate, an annular concrete layer covering said horizontal layer; sealing means inserted between said outer wall and said plate providing a liquid-tight connection between said wall and plate, said sealing means being a mortar of a bonding type; vertically tensioned wires being anchored in said outer wall and in said base plate for tensioning said outer wall with respect to said base plate.

4,069,643

APPARATUS AND METHOD OF PACKAGING LARGE ITEMS

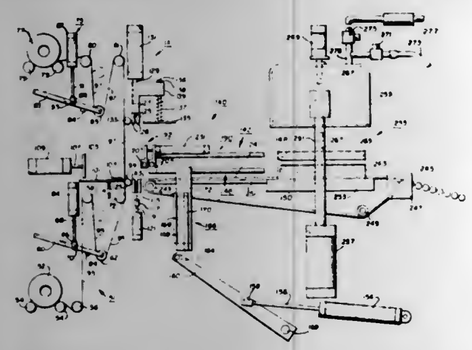
William E. Young, Atlantic Highlands; Robert O. Wolfelsperger, Fairfield, and William R. Pasco, Cream Ridge, all of N.J., assignors to William E. Young, Atlantic Highlands, N.J.

Filed Apr. 27, 1977, Ser. No. 791,644

The portion of the term of this patent subsequent to May 24, 1994, has been disclaimed.

Int. Cl.[2] B65B *31/02, 9/02*

U.S. Cl. 53—22 A **10 Claims**



6. A method for packaging large products which may have irregular surfaces and voids, the method utilizing a film which has sealing capabilities with said method including the steps of providing and delivering to a product enclosing station a tubular portion of film open at both ends; placing a product to be packaged in this tubular film with and while both ends of the film are in open condition; positioning oppositely disposed pairs of spreader probes so that each pair of probes enter an open end of a tubular film, the pair of probes in a close together condition and to a position near the ends of the product; carrying each pair of probes in a probe support freely movable on a track and with entry of the spreader probes in the close together condition into the open end of the tubular film; disconnecting the probe supports so the probes are free to move along the track; moving the speader probes apart after entering the ends of the tubular film, the free movement of the probes allowing one probe to engage the inside of the tubular film whereupon the other probe begins movement to provide a self-centering in the tubular end of the film and to cause the ends of the film to be formed into narrow mouths, with these mouth openings and the spreader probes being substantially equal distant from the theoretical center line of the tubular film; limiting the apart movement of each pair of spreader probes so as to produce a controlled stretch and force to each of the tubular ends of the film; releasing the apart force on the probes and withdrawing the spreader probes from the strtched elongated ends of the tubular film; sealing the elongated openings of the tubular film as and after the probes have been at least partially removed from the ends of the film; removing the now packaged product from the apparatus, the improvement further including the step of heating that tubular film around the product as the film encased product and the probes in the ends thereof are transported from the product enclosing station to the sealing of the ends.

4,069,644

PACKING MACHINE FOR FISH

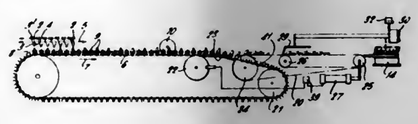
Odd Danielsen, Stavanger, Norway, assignor to Chr. Bjelland & Co. A/S, Stavanger, Norway

Filed Apr. 25, 1977, Ser. No. 790,380

Claims priority, application Norway, May 7, 1976, 761583

Int. Cl.[2] B65B *57/20, 35/44, 35/56*

U.S. Cl. 53—59 R **9 Claims**



1. A packing machine for packing whole fish in tins, especially brisling, young herring, sardines or the like, comprising a first conveyor having a receiving position and a discharge position and carrying a plurality of holders spaced apart therealong for receiving respective fish and holding said fish in a uniform orientation with respect to the transport direction of the first conveyor as they are conveyed to the discharge position, means defining a packing station at which groups of fish are placed in respective tins, a second conveyor for receiving fish successively from the discharge position of the first conveyor and transferring the fish to the packing station, drive means for driving the first conveyor and for driving the second conveyor at a lower speed than the first conveyor whereby the fish received successively by the second conveyor from the discharge position of the first conveyor are positioned closer together on the second conveyor than they were on the first conveyor, and pusher means for pushing a plurality of fish together on the second conveyor whereby the fish are delivered in groups to the packing station.

4,069,645

VACUUM PACKAGING MACHINE FOR THE PRODUCTION OF SEALED PACKAGES

Arthur Vetter, Gronenbach, Germany, assignor to Multivac Sepp Haggenmueller KG, Wolfertschwenden, Germany

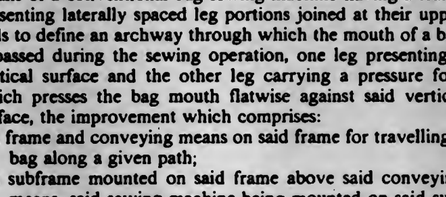
Filed July 25, 1975, Ser. No. 599,233

Claims priority, application Germany, Aug. 1, 1974, 7426246[U]

Int. Cl.[2] B65B *43/08*

U.S. Cl. 53—112 A **10 Claims**

1. In a vacuum packing machine for producing sealed packages from a web of packing material, wherein a continuous chain drive is provided for moving the web, at least one working station is positioned adjacent the web on the chain drive for processing the web, means are provided for moving the chain drive, and means are provided for reciprocating the working station, whereby the web is processed by the working station while the web is being moved by the chain drive; the improvement wherein said means for moving said chain drive comprises rack means, said work station reciprocating means comprising a piston cylinder drive directly connected to reciprocate said rack means, a pair of gears positioned to mesh with the teeth of said rack means, a pair of sprockets connected to drive said chain drive, overrunning coupling means coupling each of said gears to a separate sprocket of said sprockets, whereby said sprockets drive said chain drive during times of opposite directions of movement of said rack means and said chain drive is substantially continuously driven in one direc-



tion, with each of said sprockets driving said chain drive only during one movement direction of said rack means, said means for reciprocating said working station comprising means directly connecting said rack to said working station for directly driving said working station to reciprocate synchronously with said rack means, whereby said working station is moved with the same speed as said chain drive by the same piston cylinder drive in response to a continuous square wave type application of the driving force by said piston cylinder drive, whereby all moving elements are driven in a locked manner and a sinus wave type application of force is avoided.

4,069,646

DEVICE FOR GUIDING SEAMS OF BAGS

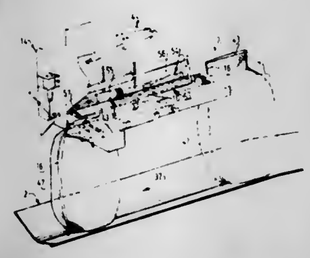
Jan Slomp, and Marius Grisnich, both of Emmeloord, Netherlands, assignors to Machinefabriek Grisnich B.V., Emmeloord, Netherlands

Filed Apr. 30, 1976, Ser. No. 681,841

Claims priority, application Netherlands, Oct. 10, 1975, 7511968

Int. Cl.[2] B65B *7/06*

U.S. Cl. 53—139 **9 Claims**



1. A machine for sewing closed the open mouth of a bag by means of a conventional bag sewing machine having a frame presenting laterally spaced leg portions joined at their upper ends to define an archway through which the mouth of a bag is passed during the sewing operation, one leg presenting a vertical surface and the other leg carrying a pressure foot which presses the bag mouth flatwise against said vertical surface, the improvement which comprises:

a frame and conveying means on said frame for travelling a bag along a given path;

a subframe mounted on said frame above said conveying means, said sewing machine being mounted on said subframe to allow the open mouth of a bag to pass through said archway as the bag is moved by said conveying means;

a first worm roller rotatably mounted on said subframe and extending horizontally from a point spaced from said sewing machine in the upstream direction of the travel of said conveying means and extending therefrom into said archway above said pressure foot and closely adjacent said vertical surface;

a second worm roller rotatably mounted on said subframe and extending horizontally into said archway closely adjacent said vertical surface and in substantially vertical registry with and above said first roller to define a nip therewith which lies in a substantially horizontal plane;

means for driving said rollers in opposite directions to feed a bag mouth in the direction of bag travel while pulling the bag mouth over said first roller in said substantially horizontal plane with the bag mouth portion immediately below said first roller substantially flatwise against said vertical surface and between it and said pressure foot;

said second roller commencing at a point closer to said sewing machine than said point at which said first roller commences whereby an upstream end portion of said first roller projects beyond said second roller.

4,069,647

DEVICE FOR CRIMPING PROJECTING EDGES OF WRAPPING SHEET IN COIN PACKAGING MACHINE

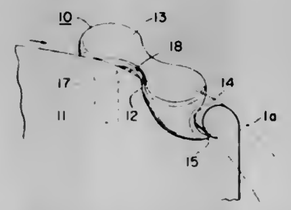
Shozo Horie, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Japan

Filed Feb. 14, 1977, Ser. No. 768,318

Claims priority, application Japan, Feb. 14, 1976, 51-15314

Int. Cl.[2] B65B *11/32, 49/02*

U.S. Cl. 53—212 **7 Claims**



1. In a coin packaging machine operating to wrap a piece of wrapping sheet material around the cylindrical surface of a coin stack and to fold or roll crimp projecting edges of the sheet material at the ends of the coin stack thereby to form a tightly wrapped coin package, a pair of crimping devices each having at least a main crimping hook comprising a shank position, during crimping, alongside and substantially parallel to the wrapped coin stack and a curved head joined at a proximal part thereof integrally to an outer end of the shank and extending substantially perpendicularly therefrom to a distal end, the curved head having an inner guide surface of twisted shape including a convolute groove-shaped slide surface and adapted to straddle obliquely across a respective one of said projecting edges undergoing rotation together with the coin stack during crimping, whereby said projecting edge is compelled, when pressed by the inner guide surface, to slide against and along said slide surface thereby to be curled and crimped inward toward the centerline of the coin stack and to be formed into an annular bead.

4,069,648

TOBACCO HARVESTER

Miller Taylor; Jimmy N. Taylor, and Oren M. Taylor, all of Highway 701 South, Elizabethtown, N.C. 28337

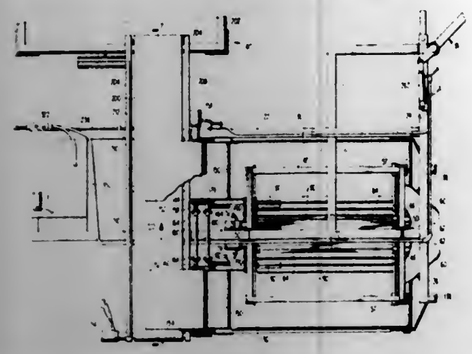
Filed Mar. 16, 1976, Ser. No. 667,321

Int. Cl.[2] A01D *45/16*

U.S. Cl. 56—27.5 **7 Claims**

1. A tobacco harvester comprising wheeled main frame means adapted to move along a row of tobacco plants, support

means connected to said frame means, a pair of parallel elongated and longitudinally disposed defoliating means movably mounted on said support means and conveying means for moving leaves harvested by said defoliating means away from



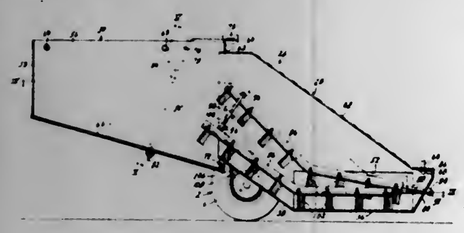
said defoliating means, said defoliating means comprising a pair of parallel spaced apart rods, one on each side of said row, and means for moving said rods transversely of the axes thereof in substantially vertically disposed parallel planes for engaging and removing selected leaves on said plants.

4,069,649

GRASS AND LEAF COLLECTOR AND COMPACTOR ATTACHMENT FOR MOWERS

David L. Mullet, Hesston; Raymond J. Rilling, Moundridge, and Elmer D. Voth, Newton, all of Kans., assignors to Excel Industries, Inc., Hesston, Kans.

Filed Apr. 15, 1976, Ser. No. 677,408
Int. Cl.[2] A01D *35/22*
U.S. Cl. 56—202 6 Claims



1. In combination with a power propelled mower having cutting blades disposed beneath a hood and operable to eject cuttings through a side opening of said hood, an attachment for collecting said cuttings comprising:

a. a hollow chute attached to said mower at the side thereof, having a side opening generally registering with the side opening of said hood to receive said cuttings therein, and being elongated rearwardly from said side opening,

b. a receptacle supported by said mower rearwardly of said chute, and into which the open rearward end of said chute projects, and

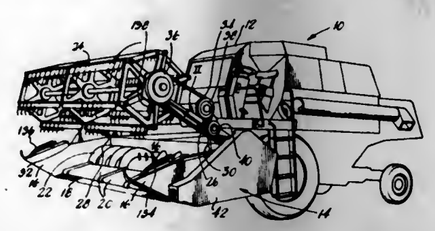
c. power operated mechanical impelling means disposed within said chute and operable when driven to impel cuttings rearwardly from said chute side opening, through said chute and into said receptacle, said impelling means comprising a paddle bar extending generally longitudinally through said chute and a series of paddles affixed to said paddle bar generally transversely thereof, and in spaced relation along the length of said paddle bar, the rearmost of said paddles being disposed generally in the open rearward end of said chute, mounting means for said paddle bar whereby it may be pivoted vertically about a horizontal transverse axis at the forward end of said chute, and moved longitudinally of itself within said chute, said mounting means comprising a guide rod pivoted at its forward end in the forward end of said chute on a horizontal transverse axis, and extending rearwardly in said chute, said paddle bar being mounted for coaxial sliding movement on said guide rod, and means connecting a point of said paddle bar spaced rearwardly from the pivot of said guide rod to a power-driven member having an orbital path lying in a vertical plane, and power-operated means for moving said member, whereby said paddles sweep rearwardly along the floor of said chute in the lower portions of their orbits, and move forwardly in spaced relation above said chute floor in the upper portions of their orbits.

4,069,650

CROP GATHERING APPARATUS

Marc Moutanari, Fresnes, and Jean C. Van Dest, Risorangis, both of France, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands

Filed Sept. 27, 1976, Ser. No. 727,206
Claims priority, application United Kingdom, Oct. 15, 1975, 42159/75
Int. Cl.[2] A01D *57/04*
U.S. Cl. 56—221 11 Claims



1. Crop gathering apparatus comprising:

a crop gathering platform;

a crop gathering reel; and

a pair of reel support arms, one arm at each end of the crop gathering reel, the reel being mounted on the crop gathering platform by said reel support arms, said reel support arms extending forwardly with respect to the direction of usual forward motion of the crop gathering apparatus, said reel support arms also being length-adjustable to provide forward and rearward adjustment of the position of the reel relative to the platform;

characterized in that

at least one of said reel support arms comprises first and second sliding members forming part of a piston and cylinder assembly actuable by hydraulic fluid; and that

load bearing lands are formed within said piston and cylinder assembly on one of said sliding members, said load bearing lands being spaced apart axially with respect to the longitudinal axis of the piston and cylinder assembly; and that

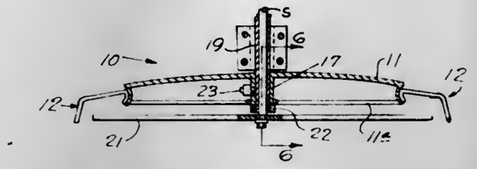
the piston of said piston and cylinder assembly is slidably supported on said load bearing lands for movement relative to the cylinder thereof without changing the axial spacing of said lands whereby said lands can support bending loads imposed on the piston and cylinder assembly by the weight of the reel.

4,069,651

REVOLVING PROTECTIVE BLADE ENCLOSURE

Richard S. Steffen, 401 N. Wood St., Forrest, Ill. 61741

Continuation-in-part of Ser. No. 536,421, Dec. 26, 1974, abandoned. This application May 4, 1976, Ser. No. 682,898
Int. Cl.[2] A01D *35/26*
U.S. Cl. 56—320.1 3 Claims



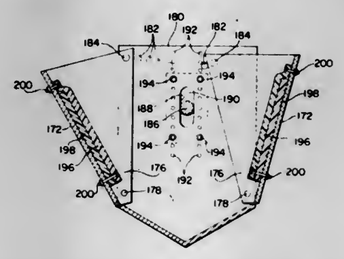
1. A lawn mower comprising a blade, a powered shaft to drive said blade, said shaft surrounded by a stationary shaft housing, a freely rotatable blade enclosure journalled on said shaft housing and supported by a collar which is attached to a lower portion of said shaft housing, said blade enclosure including a shield member radiating outwardly from said shaft housing and terminating in a peripheral edge which supports outwardly and downward disposed fingers which are inclined from the verticle and extend downwardly below the plane of said blade and which serve to isolate said blade from an area outside of said shield and causes said enclosure to revolve by the reaction of said fingers against grass.

4,069,652

HARVESTING APPARATUS

Roy S. Carlson, 1204 N. Mcdonald, Deland, Fla. 32720

Filed Mar. 4, 1974, Ser. No. 447,988
Int. Cl.[2] A01D *46/00*
U.S. Cl. 56—328 R 6 Claims



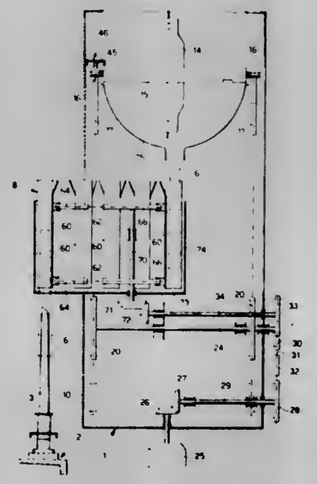
1. Harvesting apparatus for picking fruit from a limb, or the like, comprising opposed members forming a passageway with a converging entrance and a diverging exit and therebetween a nip portion and said members collectively defining a path through said nip portion from said entrance to said exit, said nip portion being of substantially less length along said path than the width of said path at said nip portion, means mounting said members spaced apart across the width of said nip portion for grasping the fruit in said passageway, said means further mounting said members with one of said members movable along said path and relative to a substantially operatively fixed one of the members, and said means including means for adjusting the width of said nip portion between the movable and fixed members to accommodate various size fruit, and means for moving the movable member along said path in a direction from said entrance to said exit for rotating the fruit and removing the fruit from the limb as the fruit is moved through said passageway.

4,069,653

DEVICE FOR LOADING YARN COLLECTION TUBES ONTO THE SPINDLE FACES OF SPINNING MACHINES AND TWISTING FRAMES

Giuseppe Inverardi, and Natale Chiari, both of Cologne Bresciano (Brescia), Italy, assignors to Edera Officina Meccanica Tessile S.p.A., Milan, Italy

Filed Mar. 4, 1977, Ser. No. 774,603
Claims priority, application Italy, Mar. 23, 1976, 21496/76
Int. Cl.[2] D01H *9/10*
U.S. Cl. 57—53 9 Claims



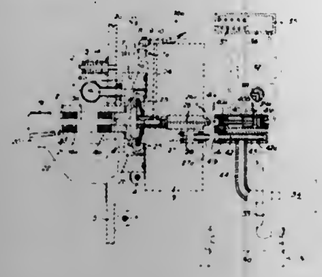
1. Device for loading yarn collection tubes onto the spindle faces of spinning machines and twisting frames, comprising a carriage mobile horizontally at a constant speed from one end of the spindle face to the other, and a magazine having an inclined base disposed on said carriage and designed to contain the empty tubes in a substantially horizontal position, a first conveyor formed from a succession of cup elements open at their ends, made to move along a vertical path passing in front of the outlet of said magazine to collect said tubes one at a time and convey them into a predetermined discharge position, means associated with said first conveyor to rotate said cup elements into the vertical position to discharge the tubes by free fall when they reach said discharge position, means sensitive to the orientation of the tubes in said cup elements which cause said rotation means to rotate said cup elements into the vertical position in one direction or the other according to the orientation sensed, a second conveyor formed from a succession of vertical seats for housing individual tubes and made to move, at a speed relative to the carriage equal to the relative speed between the carriage and the spindle face, along a horizontal path, said second conveyor comprising a first tube collection portion which passes below said discharge position of the first conveyor and a second tube delivery position passing above the spindle face and provided with motion in a direction opposite to that of the carriage so that it is at rest relative to the spindle face, and means associated with said second conveyor to retain the tubes in said seats at said first path portion and until the beginning of the second portion and then release them and allow them to fall onto the spindles at said second portion.

4,069,654

CLEANING DEVICE FOR OPEN END SPINNING UNITS

Christian Roehrich, Chaillevette, France, assignor to Nuova San Giorgio S.p.A., Genoa-Sestry, Italy

Filed Nov. 10, 1976, Ser. No. 740,607
Claims priority, application Switzerland, Nov. 24, 1975, 15185/75
Int. Cl.[2] D01H *11/00, 1/12*
U.S. Cl. 57—56 2 Claims



1. A cleaning device for a set of open end type of spinning units each of which includes a rotor having a fiber collecting surface, said cleaning device comprising at least one blowing nozzle associated with each spinning unit located adjacent the fibre collecting surface of the rotor and a pressure fluid supply, a first duct means for connecting said pressure fluid supply to the blowing nozzle; a suction inlet located in front of the rotor, a suction supply, and a second duct means for connecting said suction supply to said suction inlet; carriage means moveable along said spinning units, said carriage means carrying said pressure fluid supply and said suction supply; each of said first and second duct means including a duct portion fixed to a respective spinning unit and a duct portion moveably supported by said carriage means and connectable with a respective duct portion fixed to a spinning unit; control means for connecting the duct portions carried by said carriage with the respective duct portions fixed to a selected spinning unit; a duct portion fixed to a respective spinning unit and forming part of said second duct means including a check valve, the opening of which is controlled by vacuum built up by said suction supply when the duct portion is interconnected with the associated duct portion on said carriage means.

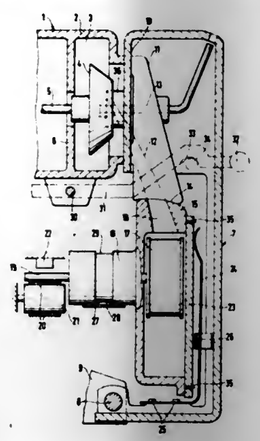
4,069,655

OPEN END SPINNING ASSEMBLY WITH AN OPENER ROLL

Fritz Stahlecker, Josef-Neidhart-Str. 18, D-7341 Bad Uberkingen, and Hans Stahlecker, Haldenstrasse 20, D-7334 Sussen, both of Germany

Filed Nov. 5, 1976, Ser. No. 739,035
Claims priority, application Germany, Dec. 5, 1975, 2554716
Int. Cl.[2] D01H *1/12, 7/00, 13/26*
U.S. Cl. 57—58.91 20 Claims

1. Spinning assembly apparatus comprising:
an opener roll housing,
an opener roll disposed in said housing and being rotatably supported by bearing means at said housing,
and detachable connecting means for detachably connecting said opener roll housing and opener roll as a structural unit to other spinning machine structures, wherein said connecting means includes a support shaft and a removable cover plate, said cover plate being configured to cover said spinning chamber, and wherein said cover plate is engageably with said opener roll housing to hold said



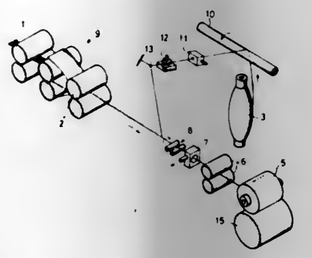
opener roll housing in an operative position with said support shaft extending into a portion thereof.

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COMPOSITE SPUN YARN AND PROCESS FOR PRODUCING THE SAME

Yoshiyasu Arai, Toyonaka; Toshiaki Hokudo, and Masanori Saka, both of Takatsuki, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed June 30, 1975, Ser. No. 591,894
Claims priority, application Japan, June 28, 1974, 49-74449
Int. Cl.[2] D02G *3/38*
U.S. Cl. 57—160 9 Claims



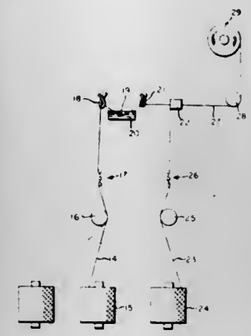
1. A process for producing a composite spun yarn which comprises feeding a sliver or roving of short fibers to a drafting apparatus to prepare a continuous core bundle of short fibers, false-twisting said core bundle in one direction by passing the same through a subsequently situated single gas false twisting member, feeding a multifilament yarn below 50 denier through and in contact with a surface of a friction rotary body to the core bundle path upstream of the false twist member at a sufficiently low tension and at a speed faster by 50 to 90% than the spinning speed of the core bundle of short fibers, the core bundle being fed at a sufficient tension to prevent ballooning thereof, and reciprocating the feed point of the multifilament yarn back and forth for a length over 50 mm along the false-twisted bundle of short fibers, whereby the core bundle of short fibers is substantially untwisted after passage through the false twisting member and the core bundle of short fibers is restrained along its periphery by the multi-filament yarn.

4,069,657

YARN TEXTURING PROCESS

Laurence N. Bascom, Signal Mountain, Tenn.; Franklin G. Parker, Glen Mills, Pa., and James W. Rogers, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 18, 1975, Ser. No. 597,139
Int. Cl.[2] D02G *3/12*
U.S. Cl. 57—160 1 Claim



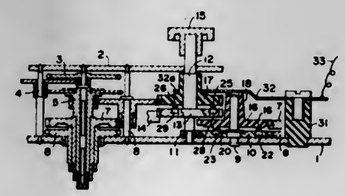
1. In the preparation of nylon core/effect yarn by an air-jet texturing process wherein multifilament core yarn is fed to the jet at a speed that is 5 to 8 percent greater than the take-off speed from the jet, and multifilament effect yarn is fed to the jet at a speed that is about 25 percent greater than the take-off speed from the jet; the improvement which comprises feeding core yarn prepared by a process in which polyhexamethyleneadipamide is melt spun at a speed of less than 1000 yards per minute and which includes cold-drawing at least 2.5× to a break elongation of 20 to 40 percent, and feeding effect yarn prepared by a process in which polyhexamethyleneadipamide is melt spun at a speed greater than 2000 yards per minute and is not cold-drawn and the yarn has a break elongation of 70 to 100 percent.

4,069,658

ALARM SETTING DEVICE FOR TIMEPIECES

Hiroshi Ito, Showamachi, Japan, assignor to Rhythm Watch Co. Ltd., Tokyo, Japan

Filed Dec. 20, 1976, Ser. No. 752,320
Claims priority, application Japan, Dec. 22, 1975, 50-153807
Int. Cl.[2] G04B *29/04*
U.S. Cl. 58—16 R 5 Claims



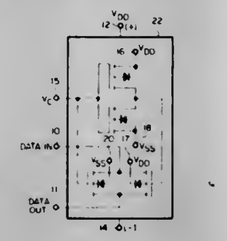
1. An alarm setting device for timepieces comprising:
a primary alarm setting wheel which engages with an alarm-hand wheel;
a primary time wheel provided on the same shaft as said primary alarm setting wheel, said primary time wheel being superjacent said primary alarm setting wheel and slidably movable relative thereto, said primary time wheel being driven by a wheel train of said timepiece;
a primary cam mechanism comprising projections provided on said primary time wheel and corresponding slots provided in said primary alarm wheel;
a secondary setting wheel engaging with said primary alarm setting wheel;
a secondary time wheel provided on the same shaft as and superjacent said secondary alarm setting wheel, said secondary time wheel being slidably movable relative to said secondary alarm setting wheel and being driven at a higher rate than said primary time wheel by a wheel train of said timepiece;
a secondary cam mechanism comprising projections provided on said secondary time wheel and corresponding slots in said secondary alarm setting wheel; and
a contact means responsive to both said primary and secondary cam mechanisms whereby said contact means is turned on when both said projections in said primary and secondary time wheels engage with and drop into said slots in said primary and secondary alarm setting wheels.

4,069,659

ELECTRONIC SWITCH ACTIVATED BY CURRENT FLOW THROUGH THE HUMAN BODY

Phillip A. Harris, 521 N. Camden Drive, Beverly Hills, Calif. 90210, and Charles W. Rutledge, 5003 N. Ardsley Drive, Temple City, Calif. 91780

Filed Jan. 19, 1976, Ser. No. 650,310
Int. Cl.[2] G04B *37/12;* G06C *7/02;* G06F *7/38;* G08B *21/00*
U.S. Cl. 58—152 R 15 Claims



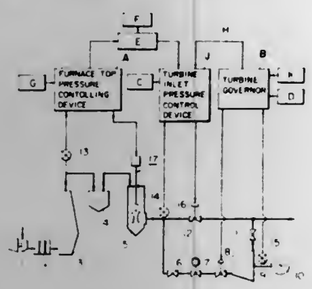
1. An electronic circuit having two states, at least one of which is stable for permitting information to pass from one terminal to the other, said circuit comprising:
a. an electronic switch;
b. a voltage source having two terminals for energizing said switch;
c. said circuit having a data input terminal and a data output terminal;
d. said electronic switch having a conductive member adapted to be in contact with the body of a wearer;
e. said voltage source having one of its terminals connected to said conductive member;
f. said electronic circuit having a control contact for activating it and for switching said circuit from one of its states to the other, the other terminal of said voltage source being connected to said control contact through a first resistor of large resistance; and
g. an additional resistor connected between said control contact and an output terminal, a junction point being defined between said resistors and said control contact, whereby when the wearer of the electronic switch contacts said output terminal a very small current will flow through the wearer to activate said circuit and switch it from one state to the other.

4,069,660

CHEMICAL REACTION FURNACE SYSTEM

Masanobu Inubushi, and Yoshiaki Toyoda, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 3, 1976, Ser. No. 711,504
Claims priority, application Japan, Aug. 8, 1975, 50-96970
Int. Cl.[2] F02C 9/02; F02G 3/00
U.S. Cl. 60—39.25 6 Claims



1. A chemical reaction furnace apparatus employing a reaction furnace, a reaction gas main flowpath for conducting reaction gas away from the top of the reaction furnace, and a reaction gas scrubbing device (5) installed in said main flowpath and having a function of controlling the pressure of the reaction gas in the top of the reaction furnace, said apparatus comprising an expansion turbine provided in the gas main flowpath downstream from said scrubbing device and being operable to utilize energy in the reaction gas, a gas bypass flowpath branched from said main flowpath at a point thereof between said scrubbing device and said turbine and bypassing the turbine, a bypass valve installed in said bypass flowpath, a turbine inlet pressure detector for detecting inlet gas pressure of the turbine, turbine inlet pressure control means receiving a signal from said pressure detector to control said bypass valve thereby to maintain the inlet gas pressure of the turbine at the highest possible value at which the scrubbing performance of said scrubbing device can be maintained, a turbine speed regulating valve installed in said main flowpath between said pressure detector and said turbine, a speed detector for detecting the rotational speed of the turbine, and a turbine governor receiving signal from said speed detector to control said speed regulating valve.

4,069,661

VARIABLE MIXER PROPULSION CYCLE

Dan Joseph Rundell, Milford; Donald Patrick McHugh, Cincinnati; Tom Foster, Cincinnati, and Ralph Harold Brown, Cincinnati, all of Ohio, assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed June 2, 1975, Ser. No. 583,055
Int. Cl.[2] F02K 3/06; F02C 3/04
U.S. Cl. 60—204 20 Claims



1. An improved gas turbine engine of the type having an inlet for supplying a gas flow to a core engine and duct means for bypassing a portion of the inlet gas flow around the core engine wherein the improvement comprises:

means for modulating the bypass ratio of airflow through the duct means

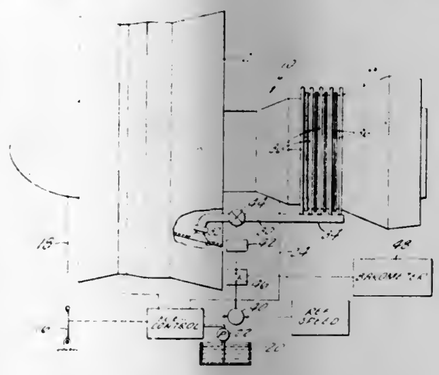
a mixer for injecting the bypass stream into the core engine exhaust stream including multiple position means for selectively varying the cross-sectional area through which the bypass stream is injected into the core engine exhaust stream and matching the static pressure of the bypass stream to the static pressure of the core engine exhaust stream prior to mixing the two streams and means for moving said cross-sectional area varying means to a plurality of different area positions in each of which the static pressure of the bypass stream is equalized with the static pressure of the core engine exhaust stream and the two streams thereafter mixed whereby the static pressures of the core and bypass streams may be matched at a plurality of different bypass ratios.

4,069,662

CLEARANCE CONTROL FOR GAS TURBINE ENGINE

Ira H. Redinger, Jr., Vernon; David Sadowsky, and Philip S. Stripinis, both of South Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 5, 1975, Ser. No. 638,131
Int. Cl.[2] F02C 7/16
U.S. Cl. 60—226 R 11 Claims



1. For a turbine type power plant having an engine case and a rotating machinery section rotatably supported therein and seal means adjacent the tip of the rotating machinery and attached to said engine case, means for controlling the gap between the tip of the rotating machinery and said seal means, said means includes means for squirting cool air on said engine case for impingement cooling thereof, and control means for turning on and off said cool air squirting means.

7. For a turbine type of power plant as claimed in claim 1 including a fan discharge duct and connection between said fan discharge duct and said cool air squirting means.

4,069,663

THRUST REVERSER FOR BY-PASS GAS TURBINE ENGINE

Leslie Richard Harper, Bristol; William James Lewis, Winscombe; David Roberts McMurtry, Wotton-under-Edge; Lance Peter Bell, Avon, and John Matthew Hall, Backwell, near Bristol, all of England, assignors to Rolls-Royce (1971) Limited, Great Britain

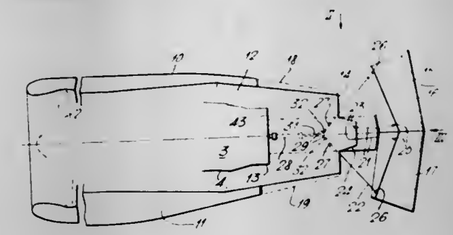
Filed June 28, 1976, Ser. No. 700,477
Claims priority, application United Kingdom, July 15, 1975, 29574/75
Int. Cl.[2] F02K 1/20, 3/06
U.S. Cl. 60—226 A 9 Claims

1. In the combination of a bypass gas turbine engine with a thrust reverser wherein said gas turbine engine comprises

a core engine containing a casing and a nozzle, the end of said nozzle defining a first exit plane through which a relatively hot exhaust gas produced by said core engine flows,

a bypass casing surrounding said core engine and defining with said core engine casing an annular bypass flow passage which terminates in a second nozzle, the end of said second nozzle defining a second exit plane located in the region of said first exit plane through which a relatively cooler bypass air produced by a compressor means flows,

said core engine, bypass casing and compressor means cooperating to produce a substantially unmixed exhaust gas stream in which a cylindrical sheath of said relatively cool bypass air surrounds a core of said relatively hot exhaust gas and in which the total pressure of said relatively cool bypass air is greater than the total pressure of said relatively hot exhaust gas, and wherein said thrust reverser comprises



a flow deflecting surface for altering the direction of flow of said unmixed exhaust gas, and

means for deploying said flow deflecting surface to a position downstream of said gas turbine engine to intercept said unmixed exhaust gas, the improvement wherein

said core engine, bypass casing and compressor means produce a total pressure of said relatively cooler bypass air which exceeds the total pressure of said relatively hot exhaust gas to a sufficient extent that said relatively cooler bypass air forms a relatively cooler barrier layer over said flow deflecting surface when said flow deflecting surface is deployed, said barrier layer serving to isolate said flow deflecting surface from said hot exhaust gas, said flow deflecting surface being made predominantly of a material which has a safe working temperature which is lower than the temperature of said relatively hot exhaust gas existing at the time said flow deflecting surface is deployed.

4,069,664

MONOPROPELLANT THRUSTER

M. Edmund Ellion, Arcadia, and Philip A. Donatelli, Manhattan Beach, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

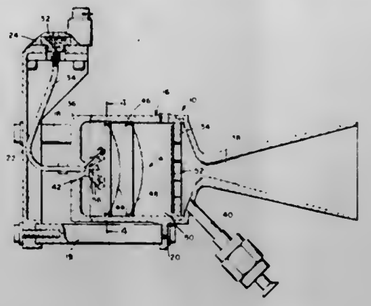
Continuation-in-part of Ser. No. 436,564, Jan. 24, 1974, abandoned. This application Mar. 22, 1976, Ser. No. 669,370
Int. Cl.[2] F02K 9/02; B01J 10/00
U.S. Cl. 60—258 29 Claims

1. A monopropellant thruster comprising:

a thruster body having a thrust chamber therein for containing a monopropellant dissociation catalyst for exothermic monopropellant dissociation;

means for injecting monopropellant into the catalyst, said means comprising a plurality of imperforate injector tubes each having an outlet port at its outlet end extending into said thrust chamber, each of said injector tubes having a flow passage of substantially uniform cross-sectional area therethrough extending to said outlet port;

a screen positioned over the outlet end of each of said flow passages in each of said injector tubes, said screens having openings therein of such size as to break up flow out of said flow passages into streams having a size at least as large as the size of the catalyst in said thrust chamber and means is provided for holding said screens in place.



4,069,665

GAS IONIZING APPARATUS FOR IMPROVING THE OPERATION OF AN INTERNAL COMBUSTION ENGINE

Robert E. Bolasny, Boulder, Colo., assignor to Scientific Enterprises, Inc., Broomfield, Colo.

Division of Ser. No. 384,464, Aug. 1, 1973, Pat. No. 3,943,407. This application Nov. 24, 1975, Ser. No. 634,638
Int. Cl.[2] F02B 75/10
U.S. Cl. 60—275 7 Claims



1. In apparatus for improving the operation of an internal combustion engine having an exhaust system inclusive of a manifold and an exhaust pipe for discharging the products of combustion, an ignition system including contacts and an ignition cam that opens and closes the contacts as the engine is rotated, and a coil for producing a spark in a combustion chamber including a primary winding and a secondary winding wound on a common core, and a power source on the vehicle for providing electric power to the coil, the combination comprising:

control circuit means coupled between the power source and primary winding of the coil to alternately couple and uncouple the electric power to the primary winding to produce continuous oscillations of repetitive positive and negative pulses of electric energy at a voltage sufficiently low to avoid the production of ozone, said control circuit means having a voltage divider including a potentiometer having a tap, said potentiometer being connected across said battery, a first transistor and a second transistor each having emitter base and collector electrodes, said first transistor and second transistor being cascaded between the voltage divider and the primary winding, the base of the first transistor being connected to a tap on a potentiometer in the voltage divider and the base electrode of the second transistor being connected to the contacts

whereby to alternately open and close the contacts to conduction and non-conduction of the transistors, and

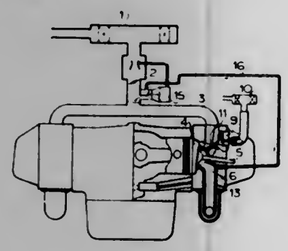
an ionizing electrode assembly in proximity to the exhaust gases including at least one ionizing electrode coupled to the secondary winding together with a ground electrode spaced from the ionizing electrode for applying said electric energy to the exhaust gases to generate ions in the stream of exhaust gases substantially free of ozone to break up the products of combustion.

4,069,666

INTERNAL COMBUSTION GASOLINE ENGINE

Hiroyuki Nakamura, Higashiyamato, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 16, 1975, Ser. No. 596,522
Claims priority, application Japan, Nov. 26, 1974, 49-136488
Int. Cl.² F02M *25/06;* F01N *3/10*
U.S. Cl. 60—278 4 Claims



1. An exhaust gas purification system for an internal combustion engine having at least two cyclinders each having a displacement volume, comprising

an exhaust valve for each of said cylinders,

an exhaust passage comprising two branch passages each communicating with a corresponding of said exhaust valves, and an exhaust pipe having a substantially constant cross-section communicating with said two branch passages of said at least two cylinders, respectively,

said exhaust pipe having an opening end means for providing negative reflected waves,

passageway means communicating with said branch passages, respectively, and with a source of secondary air for introducing the secondary air into said exhaust passage, and including a check valve means operatively disposed in said passageway means and responsive to pulsation pressures in said exhaust passage for operatively opening and closing said passageway means.

heat insulation means in a predetermined zone of said exhaust passage extending from said exhaust valves of said at least two cylinders, respectively, for preventing the lowering of exhaust gas temperature in said predetermined zone below a predetermined temperature so as to cause sufficient self-reaction oxidation in said predetermined zone in order to have a HC concentration below 10 ppm and CO concentration below 0.1 percent, the volume of said predetermined zone being at least 2.5 times the displacement volume of said at least two cylinders, respectively,

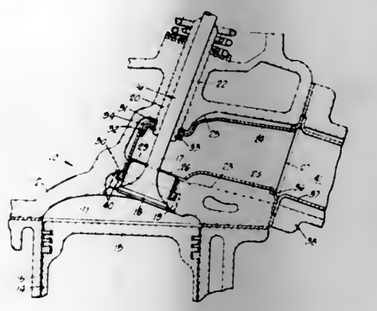
said two branch passages of said at least two cylinders, respectively, plus said exhaust pipe defining a second volume from said exhaust valves to said opening end means being at least equal to 2.5 times the displacement volume of said at least two cylinders, respectively, and less than four times the displacement volume of said at least two cylinders, respectively, and having a cross-sectional area less than three times the total maximum opening area of said exhaust valves corresponding to said exhaust passage, whereby a necessary and sufficient amount of secondary air is substantially uniformly introduced to cause the concentration of HC and CO to be below 10 ppm and 0.1 percent, respectively.

4,069,667

ENGINE EXHAUST PORT LINER

Tasuku Date, Tokyo; Shuichi Yamazaki, and Shinichi Shimada, both of Kasuifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1976, Ser. No. 677,666
Claims priority, application Japan, Apr. 22, 1975, 50-54075; Apr. 22, 1975, 50-54076
Int. Cl.² F01N *7/14, 7/18*
U.S. Cl. 60—282 2 Claims



1. In an internal combustion engine having an exhaust valve and valve seat operatively interposed between a combustion chamber and walls forming an exhaust port, the improvement comprising, in combination: an elongated exhaust port liner positioned within the exhaust port and spaced from the walls thereof, said liner having an entrance opening at one side through which the valve extends, said liner being shaped for insertion into operative position through the discharge end of the exhaust port, a stationary cylindrical sleeve extending downstream from said valve seat and positioned to direct exhaust gases into said entrance opening, said sleeve being fixed to a heat insulating ring abutting said valve seat, said liner having a discharge opening, and means supporting said liner near its discharge opening.

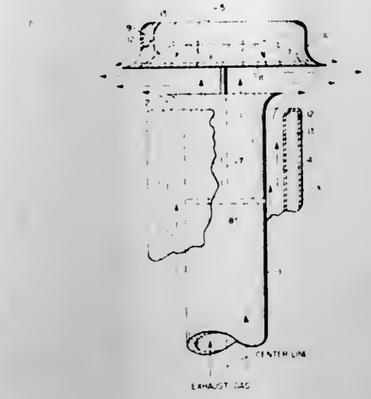
4,069,668

DISPERSION EXHAUSTER FOR ENGINES AND COMBUSTION HEATERS

Oscar Oldberg, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 22, 1976, Ser. No. 698,659
Int. Cl.² F01N *3/02;* F23L *17/00*
U.S. Cl. 60—317 5 Claims

1. A dispersion exhauster for engines and combustion heaters comprising: a vertically extending exhaust pipe having a selected center line and having an outwardly flaring upper end, an insulated tube member mounted concentrically and outwardly of said exhaust pipe so as to form a passage therebetween, said tube member having a selected cross sectional area and having an inlet for cooling air in a lower portion and an open upper end spaced from said exhaust pipe and corresponding in shape to said flared end of said exhaust pipe, and an insulator cap member, said cap member having a substantially planar configuration with a lower planar surface with a surface area greater than said selected cross sectional area of said tube member, said cap member connected to said exhaust pipe in spaced relation with said lower planar surface perpendicular to said center line of said exhaust pipe, said cap member containing a sound attenuating and heat insulating material and adapted to cause exhaust gases passing from the upper end of said exhaust pipe to draw cooling air up from said passage as well as down across the cap so as to mix with the exhaust gases



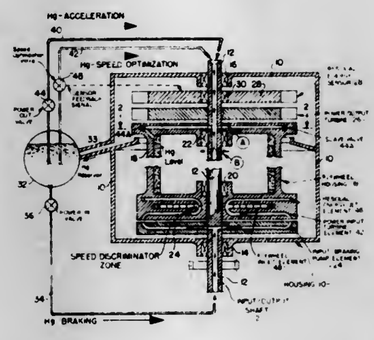
thereby cooling and dispersing them and camouflaging the engine or heater from infrared detection.

4,069,669

INERTIAL TURBINE ENERGY STORAGE BRAKING AND POWER TRANSMISSION SYSTEM

Alan R. Pitkanen, 3120 Ocean Drive, Manhattan Beach, Calif. 90266

Filed Aug. 18, 1976, Ser. No. 715,240
Int. Cl.² F16D *33/00;* F16F *15/30*
U.S. Cl. 60—325 17 Claims



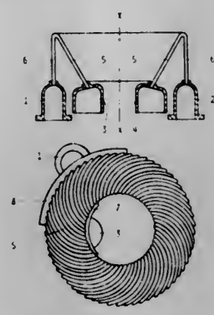
1. An energy storage and transmission system comprising: a flywheel housing defining an inner compartment; means rotatably supporting said flywheel housing for rotation about an axis; means for introducing a working fluid into the interior of the flywheel housing; an output shaft; means including turbine means establishing a fluid coupling between the flywheel housing and the output shaft; and means for removing the working fluid from the interior of the flywheel housing during operation of the system and directing the removed fluid to the turbine means thereby to transmit an acceleration torque to the output shaft.

4,069,670

HOT GAS ENGINE HEATER HEAD

Jan Christer Bratt, Malmo; Stefan Istvan Lorant, Oxie; Bengt-Ove Moody Moodysson, Akarp, and Nils Kaj Gunnar Rosenqvist, Malmo, all of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Aug. 2, 1976, Ser. No. 710,745
Claims priority, application United Kingdom, Mar. 9, 1976, 9281/76
Int. Cl.² F02G *1/04*
U.S. Cl. 60—517 9 Claims



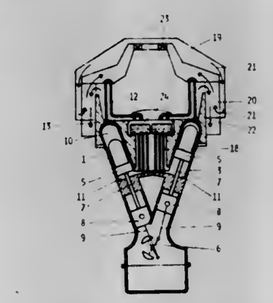
1. A multiple cylinder hot gas engine heater head wherein a single heater passes hot gases over a plurality of heater pipes generally connecting respective cylinders with corresponding regenerator housings, characterized in that, the heater pipes have a curved portion of a shape which corresponds substantially to the shape of an involute curve upon a conical surface with the curved portions of a plurality of the heater pipes being disposed uniformly side-by-side and equi-spaced.

4,069,671

STIRLING ENGINE COMBUSTION ASSEMBLY

John Osvald Berntell, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed July 2, 1976, Ser. No. 702,092
Int. Cl.² F02G *1/00*
U.S. Cl. 60—525 4 Claims



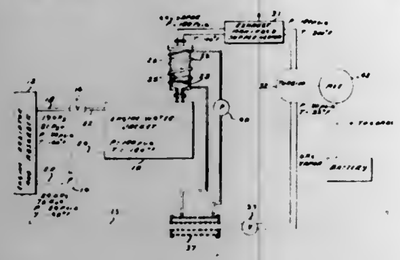
1. A multiple-cylinder double-acting hot gas engine having a single burner unit having a plurality of regenerator-cooler units interconnected with respective ones of said cylinders by heater pipes wherein the burner unit has a heater head disposed about a central axis to direct combustion gases toward said heater pipes, wherein said cylinders are disposed about said central axis with said regenerator-cooler units clustered around said central axis inside said cylinders, and wherein the regenerator-cooler units are mounted in a common housing.

4,069,672

WASTE HEAT CONVERTER FOR AN INTERNAL COMBUSTION ENGINE

Robert W. Milling, 831 Richmond Hill Drive, Marietta, Ga. 30067

Filed Nov. 24, 1976, Ser. No. 744,496
Int. Cl.² F01K *23/06, 23/10*
U.S. Cl. 60—618 **3 Claims**



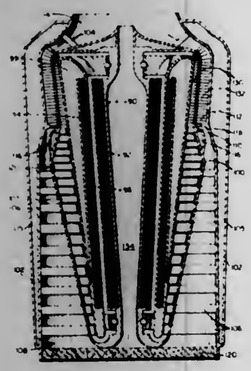
1. A waste heat recovery system for an internal combustion engine; comprising: an engine cooling system including a water jacket and a radiator; a coolant mixture in said cooling system; said coolant mixture including water and ammonia; said cooling system including a high pressure system including said water jacket and a low pressure system including said radiator; a pressure regulator valve connected between said high pressure system and said low pressure system for limiting the pressure in the low pressure system; a turbine engine; means for supplying ammonia vapor from said water jacket to said turbine engine; said means for supplying ammonia vapor to the turbine engine including means for superheating the ammonia vapor with the exhaust gas from the internal combustion engine; a return line connected between the turbine engine and said radiator for returning the ammonia vapor to the radiator for absorption by the water ammonia mixture in the radiator; a pump connected between said radiator and said water jacket for returning coolant from the radiator to the water jacket.

4,069,673

SEALED TURBINE ENGINE

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Oct. 1, 1975, Ser. No. 618,514
Int. Cl.² F03G *7/02*
U.S. Cl. 60—641 **11 Claims**



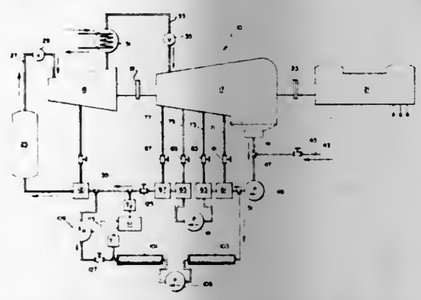
1. A turbine comprising:
a hermetically sealed housing;
a stator affixed within said housing;
a rotor coaxially disposed with respect to said stator within said housing;
means for mounting said rotor for rotation about said stator;
said means including a plurality of ball bearing housings supporting outer and inner races affixed respectively to said bearing housing and said stator; and
a corresponding plurality of blade sets affixed to and extending inward from said rotor and affixed to said bearing housings to define openings between said rotor and said bearing housings to permit passage of working fluid;
a first plurality of vanes affixed to and extending outward from said rotor toward the inside wall of said housing;
a second plurality of vanes affixed to and extending inward from said housing and disposed in cooperative disposition with said first plurality of vanes;
the confronting surfaces of said housing, stator and rotor defining a closed path within said housing; and
a working fluid disposed in said closed path whereby under the influence of thermal energy applied to said housing along a portion of said path, said working fluid evaporates and expands through said vanes to cause said rotor to rotate about said stator.

4,069,674

POWER PLANT

Glenn B. Warren, 1361 Myron St., Schenectady, N.Y. 12309

Filed Jan. 14, 1977, Ser. No. 759,328
Int. Cl.² F03G *7/02*; F01K *7/34*
U.S. Cl. 60—641 **7 Claims**



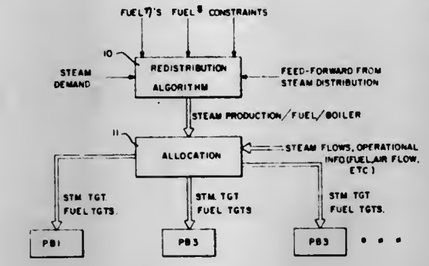
1. A power plant comprising a steam turbine which drives a load, a steam generator providing steam to said steam turbine and a feedwater preheating system for supplying preheated feedwater to said steam generator, said feedwater preheating system comprising:
an extraction branch including at least one preheater, said preheater being fluidly connected to said turbine through a steam extraction line whereby feedwater may be preheated by extraction steam;
a solar branch at least one solar heat exchanger, said solar heat exchanger providing a heat exchange relationship between available solar heat and the feedwater whereby feedwater may be preheated by solar heat;
a first flow divider junction upstream from said extraction branch inlet and said solar branch inlet whereby feedwater is divided between at least two branches;
a second flow junction downstream from said extraction branch outlet and said solar branch outlet whereby the feedwater flow is rejoined upstream from said steam generator; and,
means for proportioning the feedwater flow between said extraction branch and said solar branch whereby the solar branch flow is increased and the extraction branch flow is decreased during periods when solar heat is available.

4,069,675

METHOD OF OPTIMIZING THE PERFORMANCE OF A MULTI-UNIT POWER

Louis S. Adler, San Jose, and S. Keith Swanson, Saratoga, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Filed Mar. 16, 1976, Ser. No. 667,347
Int. Cl.² F01K *13/02*
U.S. Cl. 60—667 **4 Claims**



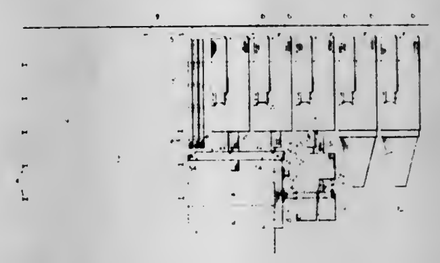
1. A method of optimizing the performance of a multi-unit power plant which produces steam energy from a plurality of different fuels where said steam energy used for independent purposes is a significant fraction of the total energy produced by said power plant and where input perturbations to the system affecting its performance cannot be directly and accurately measured said method comprising the following steps: determining by bump tests the read time incremental efficiency of the units of said power plant including the step of sensing a change in the steam energy output of said units in response to a change in fuel input; determining the incremental index of performance of each of said units by utilizing said incremental efficiency determination and the costs of said fuels; and reallocating the energy outputs of said units by changing the fuel inputs in accordance with said indices of performance.

4,069,676

MINE PACKING EQUIPMENT

Norman Albert Plumpton, Burton-on-Trent, England, assignor to Coal Industry (Patents) Ltd., London, England

Filed June 22, 1976, Ser. No. 698,365
Claims priority, application United Kingdom, July 11, 1975, 29220/75
Int. Cl.² E02D *15/00*
U.S. Cl. 61—35 **7 Claims**



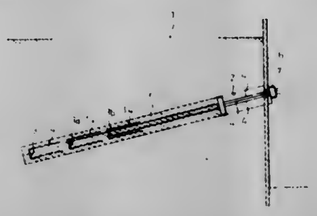
1. Mine packing equipment for retaining flowable packing material within a packhole comprising two connected sections for defining boundaries of the packhole, each section including a base, a roof engaging assembly for engaging the mine roof, a telescopic guide arrangement connected intermediate the base and the roof engaging assembly, a piston and cylinder device connected for controlling movement of the telescopic guide arrangement, and a flexible sheet interconnected along its upper and lower edges to the roof engaging assembly and the base, respectively.

4,069,677

ANCHOR AND METHOD FOR CONSTRUCTING SAME

Kunimitsu Yamada, Tokyo, and Hitaka Kanematsu, Komae, both of Japan, assignors to Kabushiki Kaisha Nitto Tekuno Group, Tokyo, Japan

Filed June 16, 1976, Ser. No. 696,480
Claims priority, application Japan, June 20, 1975, 50-76247; Dec. 24, 1975, 50-155503
Int. Cl.² E02D *5/74*
U.S. Cl. 61—39 **12 Claims**



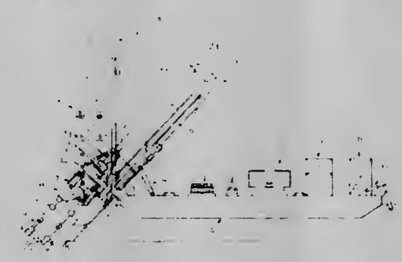
1. For use in an earth bore, an earth anchor to be placed in said earth bore comprising: a steel tension member; a pressure bearing plate secured to one end of said steel tension member by means of a gripping sleeve non-rotatably secured to and encasing said one end and adapted to be linearly disengaged therefrom when a linear force exceeding a predetermined linear gripping force of said sleeve is applied to said steel tension member; a sheath encasing said steel tension member; and a hollow cylindrical interlocking means concentrically placed between said one end of said steel tension member and said gripping sleeve, said interlocking means being adapted to fail in shear when said linear force is applied to said steel tension member.

4,069,678

DEVICE FOR SOLIDIFYING SLUDGY MATERIAL IN A SURFACE LAYER

Mitsuo Miura, Tokyo; Yasuo Sugibayashi, Hiroshima; Akio Suzuki, Kashiwa; Yoshinori Kukino, Tokyo; Hayao Aoyagi, Funabashi; Fuminobu Tanifuji, Yachiyo, and Jiro Ishii, Tokorozawa, all of Japan, assignors to Takenaka Komuten Co., Inc., Osaka, Japan

Filed Sept. 29, 1976, Ser. No. 727,843
Claims priority, application Japan, Oct. 16, 1975, 50-125193
Int. Cl.² E02D *3/12*; E02F *3/00*
U.S. Cl. 61—63 **10 Claims**



1. A device for solidifying sludgy material in a surface layer comprising:
a working barge;
an agitator assembly mounted on said working barge at its stern, said assembly including
a plurality of agitating shaft means having agitating blades at the lower portion of each of said shafts,

means for driving the agitating shaft means including a motor and reduction gears, and

a support frame for joining and supporting said agitating shaft means and said means for driving the agitating shaft means;

a mast hingedly mounted on said barge slidably suspending said support frame;

hydraulic jack means for controlling the inclination of said mast;

guide rails along both sides of and parallel to said mast for slidably guiding said support frame;

winch means mounted on said barge for winding and unwinding wire rope to lift and lower said support frame on said mast;

means for distributing a chemical hardener, including injection pipes for carrying the chemical hardener into the sludge layer adjacent said blades, said pipes being slidably mounted on said mast; and

means for sliding said pipes along said mast;

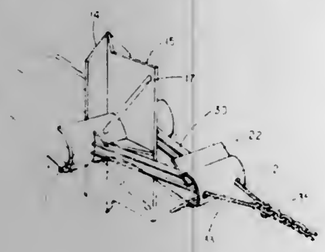
wherein said agitating blades are arranged such that the range of agitation formed by each blade extends in both the vertical and horizontal directions.

4,069,679

UNDERSEA PLOW

Robert B. Manley, Jr., Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Oct. 27, 1976, Ser. No. 735,880
Int. Cl.² F16L *1/00*; E02F *5/02*
U.S. Cl. 61—72.4 **5 Claims**



1. An undersea plow for digging a trench having a longitudinal axis by towing the plow by towing means along the floor of a body of water, comprising:

excavation means for cutting said trench, raising soil therefrom, and dispersing said soil away from said trench, said excavation means having a vertical plane which in operation is perpendicular to said longitudinal axis of said trench;

a rigid pilot means having at least a partially cylindrical surface for connecting to said towing means and spaced from said excavation means and positioned at the leading end of said plow for maintaining proper attitude of said excavation means; and

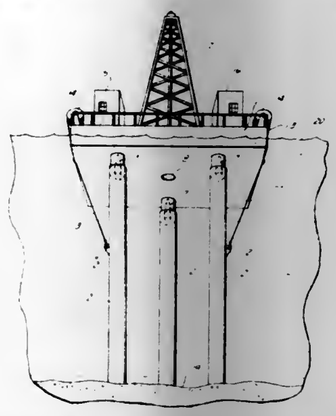
at least one connecting member rigidly connecting said pilot means and said excavation means in a fixed position so that the axis of said cylindrical surface of said pilot means in operation is perpendicular to the vertical plane of said excavation means.

4,069,680

METHOD OF AND APPARATUS FOR THE ANCHORING OF DRILLING AND PRODUCTION PLATFORMS ON A STRUCTURE SUNK ON A SEA BOTTOM

Eckart Erler, Essen-Bredeney, Germany, assignor to HOCHTIEF AG fur Hoch-und Tiefbauten vorm. Gebr. Helfmann, Essen, Germany

Filed Mar. 7, 1977, Ser. No. 775,401
Claims priority, application Germany, Mar. 10, 1976, 2609823
Int. Cl.² E02D *21/00*
U.S. Cl. 61—86 **10 Claims**



1. A system for the securing of a semi-submersible platform to a plurality of upright posts disposed in the sea and anchored therein, said system comprising:

respective upwardly-open sockets formed at the upper ends of each of said posts;

respective plungers projecting downwardly from said platform and receivable with clearance in the respective sockets;

means forming sand bunkers surrounding each of said plungers; and

remote-control closures for each of said bunkers openable to discharge a granular material having a specific gravity greater than that of water around the respective plunger and into the respective socket to support the respective plunger therein, said plungers and the respective sockets forming vertically extensible piston-and-cylinder arrangements.

4,069,681

OFFSHORE STRUCTURE FOR DELTAIC SUBSTRATES

George E. Mott, Metairie, La., assignor to Texaco Inc., New York, N.Y.

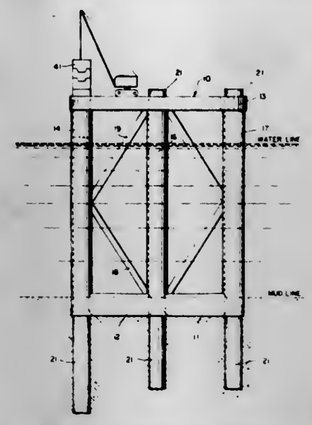
Filed Feb. 2, 1976, Ser. No. 654,135
Int. Cl.² F02D *25/02*; E02B *17/00*
U.S. Cl. 61—89 **9 Claims**

1. A marine vessel (10) adapted to be fixedly anchored on the floor of a body of water, which floor is characterized by an unconsolidated substrate, said vessel having a controlled buoyancy hull (11), a superstructure extending upwardly from said hull and including upstanding support columns (14, 16 and 17) adapted to support a deck (13) above and spaced from said hull,

at least one foundation leg (21) guidably positioned within a support column of said superstructure, said leg being adapted for longitudinal movement within said column whereby to be controllably retracted upwardly into said hull or extended downwardly therefrom to enter the substrate beneath said hull,

said foundation leg comprising an elongated cylindrical member defining an internal compartment (23) having an access opening at the lower end thereof, and having substantially liquid tight walls,

a jetting system carried on said marine vessel including conduit means having one end communicated with a pressurized source of a jetting fluid, and having discharge apertures (27) at the other end thereof disposed about said



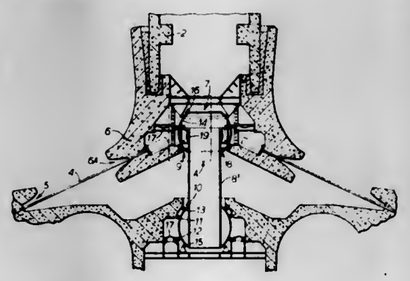
access opening for directing high pressure streams of jetting fluid into the substrate beneath the foundation leg as the latter is lowered into said substrate and elongated conduit (37) extending downwardly through said foundation leg and terminating adjacent to said access opening (24) for removing substrate which has been fluidized, from said internal compartment.

4,069,682

ARTICULATED JOINTS FOR DEEP WATER INSTALLATIONS

Reginald Sidney Taylor, Gerrards Cross, and Reginald Edward Dowton Burrow, Hatch End, both of England, assignors to Taylor Woodrow Construction Limited, England

Filed July 16, 1976, Ser. No. 705,934
Claims priority, application United Kingdom, July 17, 1975, 30124/75
Int. Cl.² E02B *17/00*
U.S. Cl. 61—95 **17 Claims**



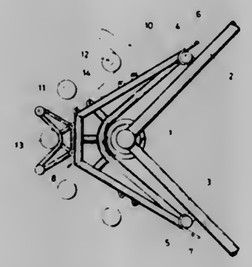
1. An articulated joint for a deep water installation in which two hollow structural members are connected so as to afford limited pivotal movement between the members; the joint comprising flexible tendons connecting the structural members with a clearance between the members, and a hollow convoluted shaft permitting access of men or materials from one of the structural members to the other through the joint, this shaft being sealed in fluid-tight manner to each of the members and being formed by spaced-apart plates connected in fluid-tight manner by members of substantially toroidal form able to withstand hydrostatic pressure in the form of hoop stress and bending stresses resulting from relative motion of the two members.

4,069,683

METHOD AND DEVICE FOR SECURING A SUPPORT STRUCTURE ONTO THE OCEAN FLOOR

Joost W. Jansz, The Hague, Netherlands, assignor to Hollandsche Beton Groep N. V., Rijswijk, Netherlands

Filed Oct. 19, 1976, Ser. No. 733,826
Claims priority, application Netherlands, July 5, 1976, 7607405
Int. Cl.² E02D *7/00*
U.S. Cl. 61—98 **7 Claims**



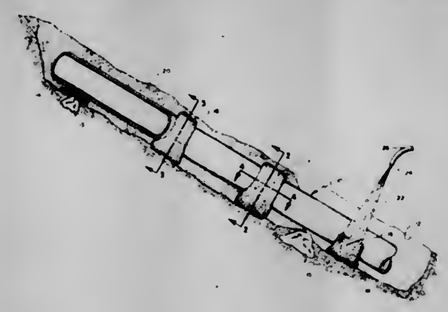
1. In a method for securing a platform support structure, such as a framework in the form of a truncated pyramid, onto the ocean floor with the aid of piles, including the steps of providing said support structure at the region of the corners with guide bushings through which the piles are inserted, and driving into the ground said piles by a ram disposed on the top of the pile, and which during the process of pile driving supporting the piles transversely by guide elements provided on the corner columns of the framework, the improvement comprising providing near each pile at least one guide element for supporting the pile at the region where the chance of bending and/or collapse is most likely and that during the process of pile driving the step of moving the guide element along said region to continuously support said pile as it is driven downwardly at said region of likely bending.

4,069,684

PIPELINE RETARD, SUPPORT AND PROTECTION METHOD

Ernest I. Wilson, 192 S. First West, Nephi, Utah 84648

Continuation-in-part of Ser. No. 595,973, July 14, 1975, which is a continuation-in-part of Ser. No. 413,747, Nov. 7, 1973, abandoned. This application Feb. 12, 1976, Ser. No. 657,434
Int. Cl.² B29D *27/04*; E04B *1/16*
U.S. Cl. 61—105 **10 Claims**



1. A method for forming a retard for a pipeline in a trench comprising the steps of:

obtaining the ingredients for an expandable, fast-setting, organic spray foam;
mixing the ingredients together while expelling the mixed ingredients under pressure from a spray apparatus;
directing the spray of mixed foam ingredients into a trench in the void existing between a pipeline and the trench surface and for an incremental distance in the void along the length of the pipeline and thereby building at least a first layer of foam in the trench; and
forming additional layers of foam on the first layer of foam in the trench until the void between the pipeline and the trench and for said incremental distance in the void along the length of the pipeline has been filled with a foam retard structure fabricated from a plurality of layers of foam, said forming step being performed in the absence of a form structure for the foam.

8. A method for protecting a pipeline in a trench comprising the steps of:
excavating a trench;
obtaining the ingredients for an expandable, fast-setting, organic spray foam material;
transferring the foam ingredients to a foam spray apparatus;
mixing and spraying the foam ingredients from the spray apparatus;
directing the spray into a trench and forming a first layer of organic foam material in the trench;
allowing the foam material to expand and at least partially cure;
forming at least a second layer of foam on the first layer to build a support pad for the pipeline, the support pad having a length transecting the width of the bottom of the trench and having a width which is an incremental distance of the longitudinal axis of the trench;
building a plurality of support pads at spaced locations in the trench with each support pad separated a discrete distance from the other by repeating the directing, allowing, and forming steps at said spaced locations along the trench;
lowering the pipeline in the trench onto the support pads, the support pads supporting the pipeline above the bottom of the trench;
fabricating a plurality of retards in the trench to impede the longitudinal percolation of water through an earthen backfill in the trench, each retard filling a discrete increment of the length of the void in the trench between the pipeline and the trench surface, each retard being prepared by spraying a plurality of layers of foam material into the trench while permitting each layer to at least partially cure thereby building each retard in situ in the trench in the absence of forming structures; and
backfilling the remaining void between spaced retards in the trench with earth, each retard thereby being separated from each adjacent retard by an earthen backfill each retard thereby serving to inhibit water from percolating longitudinally through the earthen backfill along the length of the pipeline.

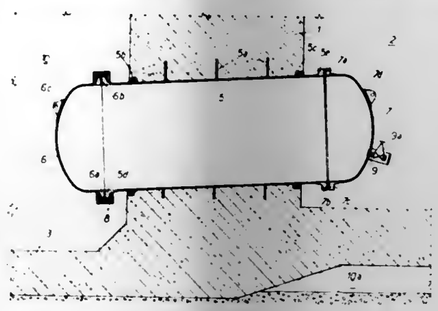
4,069,685

METHOD OF AND DEVICE FOR FORMING A FLUIDTIGHT DUCT TRANSITION THROUGH A WALL

Jacques Edouard Lamy, Fontenay-aux-Roses, France, assignor to C. G. DORIS (Campagnie Generale pour les Developpements Operationnels des Richesses Sous-marines), Paris, France

Continuation-in-part of Ser. No. 573,759, May 1, 1975. This application Nov. 12, 1976, Ser. No. 741,526
Claims priority, application France, May 17, 1974, 74 17243; Aug. 13, 1976, 76 24777
Int. Cl.² F16L *1/04*; E02D *27/38*
U.S. Cl. 61—107 **8 Claims**

1. A method of executing the transition of a duct across a wall between a first space in which a first pressure prevails and a second space normally subjected to a second pressure differing from the first pressure, comprising the steps of: forming a passage across the wall, mounting a pair of annular inflatable seals in axially spaced relation in the passage temporarily closing the passage by a pressure-differential method which utilises the difference between the first pressure and the second pressure, subjecting the second space to the first pressure, re-opening the passage, passing the duct through the passage, temporarily sealing the passage around the duct by inflating the inflatable seals, restoring the second pressure in the second space, and finally sealing the passage around the duct by injecting an adhesive cement between the inflatable seals and into the inflatable seals.

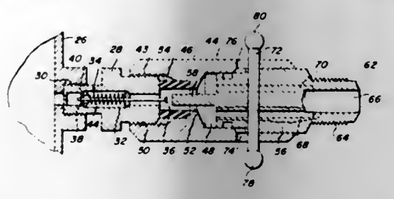


4,069,686

COUPLING FOR USE IN SERVICING AIR CONDITIONING SYSTEMS

Walter A. Hoelman, 777 Quince Orchard Blvd., Gaithersburg, Md. 20760

Filed Sept. 7, 1976, Ser. No. 720,987
Int. Cl.² F25B *45/00*; F25D *19/00*; F16K *43/00*; B65B *1/04*
U.S. Cl. 62—292 **10 Claims**



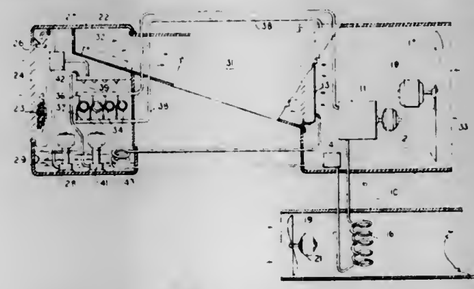
1. A coupling for use in connecting service equipment to an air conditioning system equipped with a valve positioned in a nipple leading to the refrigerant line, and having a movable needle member which is depressed to open the valve, the coupling including
a. an outer tubular housing having a longitudinal bore extending therethrough,
b. means on one end of said tubular housing for connecting the housing to the nipple of the air conditioning system,
c. an inner cylindrical body member positioned within said outer tubular housing with the outer periphery of said inner cylindrical body member proximate the inner periphery of said outer tubular housing,
d. one end of said inner cylindrical body member having a central extension for engaging and actuating the needle member of the air conditioning system valve,
e. the opposite end of said inner cylindrical body member being provided with a tubular extension having an axial bore,
f. means on said tubular extension for connecting the latter to the service equipment,
g. ducts extending longitudinally through said inner cylindrical body member and in communication with the axial bore of said tubular extension, and
h. an arm extending diametrically through said inner cylindrical body member,
i. said outer tubular housing being provided with opposed slots adapted to receive the ends of said arm, whereby said inner cylindrical body member may be slid longitudinally of said outer tubular housing to actuate the needle member and open the valve.

4,069,687

REFRIGERATION EVAPORATIVE BOOSTER COMBINATION

Raoul M. Larriva, 5020 E. First St., Tucson, Ariz. 85711

Filed Nov. 22, 1976, Ser. No. 744,282
Int. Cl.² F28D *5/00*; F25D *17/06*
U.S. Cl. 62—305 **4 Claims**



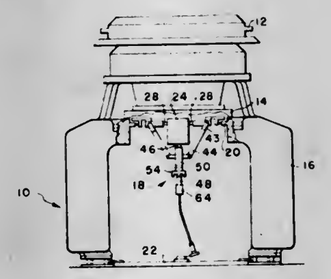
1. A refrigerative evaporative booster combination comprising:
a refrigerative air cooler containing a fluid refrigerant and a condenser, said condenser containing a refrigerant pipe unit having a pipe input and a pipe output;
a condenser fan passing air through said condenser;
an evaporative air cooler containing at least one water-dampened cooler pad, containing a water-cooled pipe unit and containing a sump collecting excess water from said at least one pad and from the water-cooled pipe unit;
pipes containing a refrigerant, said pipes interconnecting said refrigerative air cooler and said evaporative air cooler; and
air duct means interconnecting said refrigerative air cooler and said evaporative air cooler whereby air moved by said condenser fan passes successively through said at least one cooler pad and said condenser.

4,069,688

CIRCULAR KNITTING MACHINE DEVICE

John Randolph Sanders, Spartanburg, S.C., assignor to Milliken, Research Corporation, Spartanburg, S.C.

Filed Dec. 10, 1976, Ser. No. 749,389
Int. Cl.² D04B *37/02, 15/88*
U.S. Cl. 66—1 R **5 Claims**



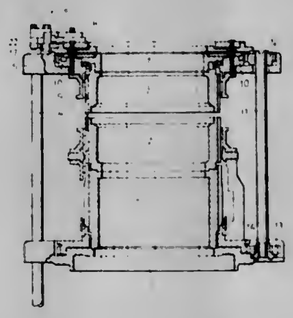
1. Apparatus to measure the centering and levelness of the baseplate of a take-up mechanism for a circular knitting machine comprising: a support member, a first slider member mounted on said support member, at least three slider members located substantially perpendicular to said first slider member, means pivotally securing said first slider member to each of said three slider members, means connected to said support member to adjustably secure said first slider member in position on said support member, a second support member rotably supported on said support member and indicator means connected to said second support member and adapted to contact the baseplate of a take-up mechanism for a circular knitting machine.

4,069,689

RACKING MECHANISM FOR DOUBLE-CYLINDER REVOLVING CAM-BOX CIRCULAR KNITTING MACHINE

Kazue Takigawa, Shimizumachi, Japan, assignor to Daitoseiki Company Limited, Japan

Continuation of Ser. No. 505,034, Sept. 11, 1974, abandoned. This application Aug. 10, 1976, Ser. No. 713,094
Claims priority, application Japan, Sept. 18, 1973, 48-109639
Int. Cl.² D04B *9/10*
U.S. Cl. 66—14 **2 Claims**



1. A double-cylinder revolving cam-box circular knitting machine including two cylinders of substantially equal diameter each having an axis of generation positioned adjacent each other with their axis of generation congruent, which cylinders are mounted for at least limited rotation relative to each other about their axis of generation, racking device means operably connected between the cylinders for rotating the cylinders in either direction about their axis of generation with respect to each other, an annular plate mounted adjacent one of the cylinders having an axis of generation which is congruent with the axis of generation of the circular cylinders, means for continually rotating the annular plate about its axis of generation, and cam means secured to the annular plate operably associated with the racking device for controlled actuating of the racking device.

4,069,690

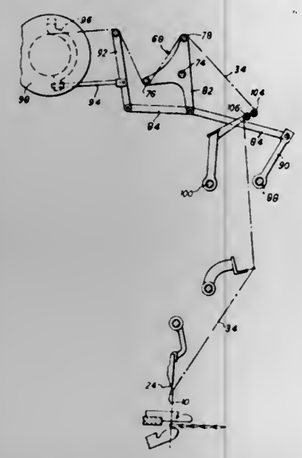
KNITTING APPARATUS

Donald Smith, Ilkley, England, assignor to I.W.S. Nominee Company Limited, London, England

Filed June 25, 1976, Ser. No. 700,053
Claims priority, application United Kingdom, June 30, 1975, 27580/75
Int. Cl.² D04B *9/32, 15/60*
U.S. Cl. 66—135 **4 Claims**

1. Apparatus for making a weft-knit fabric comprising a straight bar knitting machine, having a plurality of single beard needles and said knitting machine being provided with conventional lacing bars characterized by associating with the lacing bars auxiliary feeders arranged to feed warp yarn from a supply thereto to selected needles, means for moving said auxiliary

feeders backwards during the knitting cycle past the single beard needles and then forward and means for simultaneously racking said auxiliary feeders sideways one or more needle



positions, and yarn tensioning means operable in timed relationship with the knitting cycle is adapted to tension the warp yarn so that loops thereof cover the weft loops on the face of the fabric.

4,069,691

GARMENT HANGER LOCK DEVICE

Burnard W. Simpson, 1134 Inverness, Wichita, Kans. 67218

Filed Feb. 28, 1977, Ser. No. 772,867
Int. Cl.² E05B *73/00*
U.S. Cl. 70—59 **6 Claims**



1. A garment hanger lock device, the device receiving a cable ring attached to the end of a cable, the cable threaded through the sleeve of a garment and attached to a garment hanger, the device comprising:

a horizontal base;

a plurality of vertical elongated posts attached to the top of said base and extending upwardly therefrom, said posts receiving the cable ring therearound;

a vertical support attached to said base and extending upwardly therefrom;

a cover having a hollow center portion, said cover hingeably attached to the top of said vertical support, said cover having apertures therein for receiving the top portions of said posts when said cover is lowered to a horizontal position; and

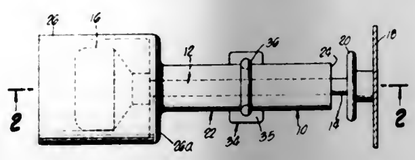
lock means attached to said vertical support and received in the hollow center portion of said cover when said cover is lowered to a horizontal position, said lock means for securing said cover to the top portions of said posts and preventing the cable ring from being removed therefrom.

4,069,692

AIRCRAFT ANTI-THEFT DEVICE

Robert L. Hemphill, 140 E. Rosewood, Rialto, Calif. 92376

Filed Apr. 23, 1976, Ser. No. 679,768
Int. Cl.² B60R *25/04*; E05B *13/00*
U.S. Cl. 70—207 **6 Claims**



1. An aircraft anti-theft device for use with an instrument panel-mounted engine control of the type typically found in light aircraft having a control shaft provided with a hand-grip knob at one end thereof, said shaft being mounted for telescopic movement relative to said instrument panel from an extended engine-inoperable position to a depressed engine-operable position, said device comprising:

a. a generally cylindrical rigid member having a longitudinally extending slot therein of a width sufficient to closely receive the control shaft when the latter is in the engine-inoperable position, said member being adapted to substantially enclose said control shaft to prevent access thereto by a cutting tool;

b. a hollow cylindrical rigid housing integral with said cylindrical member to form a rigid single-piece engine control enclosure, said housing being open at one end and substantially closed at the opposite end, and having a longitudinally extending slot formed in the periphery thereof and a radially-extending slot formed in the closed end thereof to facilitate positioning said housing over the hand-grip knob; and

c. locking means for locking said cylindrical member in position over said control shaft.

6. An aircraft anti-theft device for use with an instrument panel-mounted engine control of the type typically found in light aircraft having a cylindrically shaped control shaft provided with a hand-grip knob at one end thereof, said shaft being mounted for telescopic movement relative to said instrument panel from an extended engine-inoperable position to a depressed engine-operable position, said device comprising:

a. an elongated generally tubular shaped rigid member having an enlarged diameter portion adapted to closely receive the hand-grip knob of the engine control and an integrally formed smaller diameter portion adapted to closely receive the control shaft, said smaller diameter portion being of a length substantially coextensive with the control shaft in its extended position, said member having a slot extending the entire length thereof said slot being of a width substantially equal to the diameter of the control shaft to facilitate positioning of said member over the engine control, whereby when said member is in operable position over the control shaft, telescopic movement of the engine control is prevented; and

b. locking means for locking said member in an operable position over the control shaft.

4,069,693

CYLINDER LOCK ASSEMBLY

George T. Spalding, Rte. 1, Monroe City, Mo. 63456

Continuation-in-part of Ser. No. 536,452, Dec. 26, 1974, abandoned. This application Mar. 8, 1976, Ser. No. 664,987
Int. Cl.² E05B *15/08, 17/18, 29/04*
U.S. Cl. 70—364 R **15 Claims**

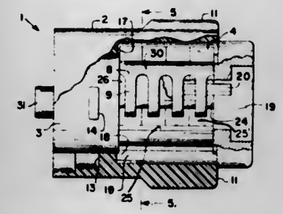
1. A lock assembly comprising:

a. a housing having a bore therein,

b. a barrel rotatably received in said bore,

c. walls in said barrel defining a tumbler slot,

d. a plurality of key receiving tumblers in said tumbler slot and respectively positioned in face to face sliding relation with at least one adjacent tumbler; said tumblers substantially filling said tumbler slot and at least partially defining a key receiving slot, said tumblers being generally "C" shaped whereby said key receiving slot is open sided,



e. a key guide projecting from one of said barrel walls and extending along and within said key receiving slot, interruptions positioned along said key guide, providing relief for insertion of said tumblers into said barrel past said key guide, and

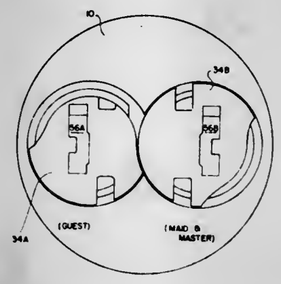
f. resilient means contacting said barrel and having arms resiliently engaging said tumblers.

4,069,694

RESETTABLE LOCK ASSEMBLY FOR HOTELS, AND THE LIKE

James W. Raymond, Newport, and James A. Millett, Fountain Valley, both of Calif., assignors to James W. Raymond, Costa Mesa, Calif.

Filed Sept. 27, 1976, Ser. No. 726,975
Int. Cl.² E05B *35/10*
U.S. Cl. 70—337 **11 Claims**



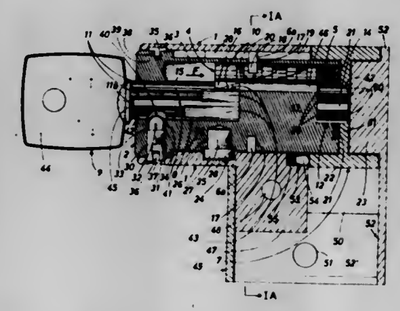
1. A lock assembly including: a housing having first and second cylindrical-shaped barrels therein extending longitudinally adjacent to one another from the front of the housing to the rear thereof; first and second plugs rotatably mounted in the respective barrels of the housing; a latch-controlling member rotatably mounted in the housing; means coupling the latch-controlling member to the first and second plugs to permit independent actuation of the latch-controlling member by the individual rotation of the plugs in the housing by first and second keys inserted therein; resettable tumbler means mounted in said first plug, said first plug being turnable in said first cylindrical-shaped barrel to a resettable position in which said resettable tumbler means may be reset by the insertion into the first plug of a key different from said first key; and first and second cam members respectively mounted on the first and second plugs in coaxial relationship therewith and having respective peripheral configurations to engage with one another and prevent the first plug from being turned to its resettable position until the second plug has been turned to a reference position.

4,069,695

BAR-TUMBLER TYPE SAFETY LOCK

Roger Frank, rue General Ferrie, 74300-Cluses, France

Division of Ser. No. 428,820, Dec. 27, 1973, Pat. No. 3,945,229. This application Feb. 5, 1976, Ser. No. 655,445
Claims priority, application France, Dec. 29, 1972, 72.46867
Int. Cl.² E05B *27/08*
U.S. Cl. 70—363 **3 Claims**



1. A method for coding a bar-tumbler safety lock of the type including a plurality of tumbler bars extending longitudinally and slidable longitudinally in recesses in a barrel, said barrel being mounted in a body for rotation relative thereto to operate the lock, said method comprising the following steps:

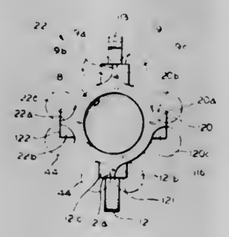
engaging a key fully into the barrel with the barrel extracted from the body, and with the said longitudinal recesses equiped with unnotched tumblers, and, with said key fully engaged into said barrel, forming operative notches in the tumblers which determine the longitudinal positions of the tumblers that permit rotation of the barrel to operate the lock, said key maintaining the tumblers exactly in their longitudinal positions relative to the barrel for subsequent operation of the lock so that the coding of the lock is thus achieved quickly and very accurately directly from the characteristics of the key, said barrel including about the outer periphery thereof an annular groove located at approximately the middle portion of the barrel and the step of forming the notches including turning the barrel and cutting the notches in the tumblers through the annular groove.

4,069,696

AXIAL SPLIT-PIN TUMBLER-TYPE LOCK AND KEY THEREFOR

Robert L. Steinbach, Chicago, Ill., assignor to Chicago Lock Co., Chicago, Ill.

Filed Aug. 20, 1976, Ser. No. 716,157
Int. Cl.² E05B *27/08*
U.S. Cl. 70—363 **14 Claims**



1. In combination, an axial split-pin tumbler-type lock and a key therefor, said lock comprising:

a lock cylinder,

a barrel assembly secured within said cylinder and having a longitudinal axis extending between front and rear ends thereof,

said barrel assembly including a forwardly disposed operating part rotatable about said axis, a key guide post mounted on and extending axially forwardly from the operating part, and a rearwardly disposed stationary part adjoining the operating part at a transverse interfacial plane,

said operating part having a planar front face surrounding said guide post and said guide post being adapted to resist application of lock-picking torque,

means forming longitudinal bores in said operating and stationary parts and disposed radially outwardly of said post at equal radii from said axis, said bores in respective parts being movable into and out of alignment upon rotation of said operating part,

means providing a spring-pressed ball detent-and- groove connection between said operating and stationary parts, the width of the groove exceeding the diameter of the detent in said connection thereby to provide a camming action for bringing said parts into alignment of said bores therein,

tumblers having separate driver and follower elements carried by said bores in adjoining relation when in aligned bores, and

spring means yieldingly urging said tumblers in aligned bores forwardly to positions wherein said interfacial plane is bridged by said follower elements to secure the operating and stationary parts against relative rotation,

said driver elements extending forwardly out of said bores in the operating part for engagement of their front ends with bittings on said key;

and said key comprising:

a shank having a socket adapted for receiving said guide post therein,

bittings on the outer periphery of said shank adapted for endwise engagement with said driver elements, whereby rearward movement of the key moves said tumblers in aligned bores rearwardly to positions wherein said interfacial plane coincides with the joints between said driver and follower elements to free said operating part for rotation,

a drive tooth on the outer periphery of said shank and adapted for sidewise engagement alternately with two of said driver elements, for driving said operating part alternately in opposite directions of rotation when the key is turned in such directions, while said bittings serve to free said operating part for rotation, and

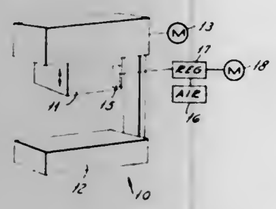
a torque-applying handle fixed on said shank.

4,069,697

AUTOMATIC COUNTERBALANCE CONTROL CIRCUIT

James J. Morrison, Windsor, Canada, and Berlyn E. Baringer, West Bloomfield, Mich., assignors to Kasel Steel Corporation, Detroit, Mich.

Filed Nov. 10, 1976, Ser. No. 740,518
Int. Cl.² B21J *9/20*
U.S. Cl. 72—19 **5 Claims**



1. In a press operated by an electric motor having up and down strokes as is conventional and an air operated cylinder for automatically counterbalancing the press by regulating the air in the cylinder the improvement comprising:

switch means to differentiate between the upstroke of the press and the downstroke of the press;

means to detect changes in the current of the press motor; and

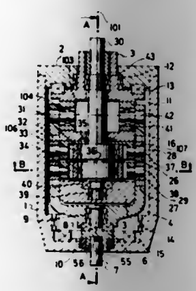
means to increase counterbalancing only if the press is under counterbalanced on the upstroke and to decrease counterbalancing only if the press is over counterbalanced on the downstroke.

4,069,698

ARRANGEMENT FOR FORMING FORM PIECES BY POINT ROLLING

Jozef Dragoun, Nove Mesto nad Vahom, Czechoslovakia, assignor to VUMA Vyskumny ustav mechanizacie a automatizacie, Nove Mesto nad Vahom, Czechoslovakia

Continuation-in-part of Ser. No. 629,582, Nov. 6, 1975, abandoned. This application Jan. 14, 1976, Ser. No. 648,958
Claims priority, application Czechoslovakia, Nov. 6, 1974, 7551/74
Int. Cl.² B21J *15/16*
U.S. Cl. 72—67 **4 Claims**



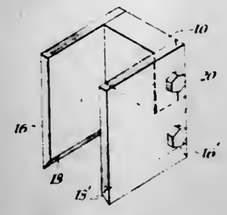
1. In an apparatus for shaping a surface on a workpiece by point rolling of an active contact surface of an overlying forming tool along the surface, an elongated hollow case having a first axis, an elongated hollow body extending downwardly through the case and supported for rotation about the first axis, the body having disposed therein a first relatively long guide path extending transversely through the first axis and a second relatively short guide path disposed above the first guide path and extending transversely through the first axis, first guide means supported for transverse movement in the body along the first guide path, second guide means supported for movement in the body along the second guide path, a rocking element disposed substantially within the case below the body and having at least one integral extension projecting upwardly in the case along the body, means for connecting an intermediate portion of the integral extension to the first guide means, means for connecting an upper portion of the integral extension to the second guide means, a shaft extending downwardly through the body concentric with the first axis and supported for rotation about the first axis, whereby the body and the shaft may be independently rotated, cam means affixed to the shaft within the body and engageable with the first guide means for reciprocating the first guide means, and imparting a rocking motion to the element through the first axis, in response to a rotation of the shaft, and means for coupling the forming tool to the lower portion of the rocking element.

4,069,699

APPARATUS FOR STABILIZING STRUCTURAL STUDS

David M. Robinson, 6710 NW. 8th St., Margate, Fla. 33063

Filed Mar. 25, 1976, Ser. No. 670,435
Int. Cl.² B21D *31/02*
U.S. Cl. 72—325 **6 Claims**



1. An apparatus for stabilizing structural studs in a track, which track has two lateral walls and a bottom, comprising:

a first sidewall having one side of its lower edge beveled to form a first knife edge,

a second sidewall having the opposite side of its lower edge beveled to form a second knife edge, and

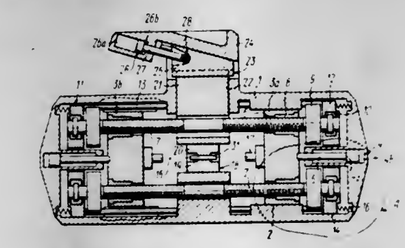
a center post for holding said first sidewall and said second sidewall parallel to each other and at a distance from each other of not greater than the sum of the width of said stud plus twice the thickness of said trackwalls, such that the beveled lower edges of said sidewalls form inwardly tapering knife edges to cut and bend of the track lateral wall against opposite sides of the stud and into securing contact therewith.

4,069,700

SCREW PRESS

Jury Alexandrovich Bocharov, ulitsa 15 Parkovayo 18, Korpus 1, kv. 109; Anatoly Vasilievich Safonov, Sevastopolsky prospekt 51, kv.11, both of Moscow; Anatoly Sergeevich Grigorenko, ulitsa Tovstukho 1, kv. 21, Omsk; Jury Antonovich Moroz, ulitsa Fugenfirova 11, kv. 91, Omsk; German Nikolaevich Kuznetsov, ulitsa Romanenko 8, kv. 46, Omsk, all of U.S.S.R., and Anatoly Ivanovich Zimin, deceased, late of Moscow, U.S.S.R. by Zimina, administratrix; Elizaveta Konstantinovna,

Filed Nov. 2, 1976, Ser. No. 738,069
Int. Cl.² B21J *9/18*
U.S. Cl. 72—407 **3 Claims**



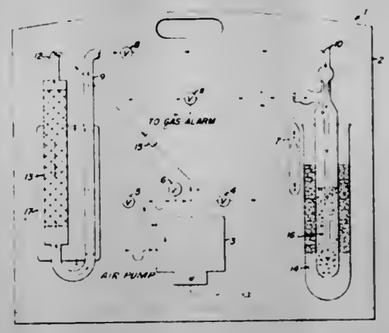
1. A screw press comprising: a frame; slides mounted in the frame coaxially with one another for reciprocation in opposite directions; means for moving said slides along a stamping axis; nuts connected to said slides; motion screws mounted in said frame for cooperation with said nuts of the slides, said screws having right-hand and left-hand threads at the ends thereof, flywheels secured to said motion screws; said motion screws being mounted in said frame for axial movement under the action of a force developed during stamping; means for returning said motion screws back into an initial position; a stamping die consisting of two dies which is arranged in said frame between said slides in such a manner that a splitting plane thereof is aligned with the stamping axis; one die of said stamping die being fixed to the frame; guides of said frame extending perpendicularly to the stamping axis; a slide mounted in said guides; the other die of said stamping die being secured to said slide; a mechanism for clamping said dies during stamping; means for moving said slide with the other die of said stamping die.

4,069,701

PORTABLE AGENT GENERATOR

Frederick C. Baldauf, Bel Air, and Kwok Y. Ong, Aberdeen, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 7, 1976, Ser. No. 720,543
Int. Cl.² G01N *31/00*
U.S. Cl. 73—1 G **11 Claims**



1. A self-contained system for generating a dilute agent vapor of desired concentration for use in calibrating and testing the sensitivity of an agent point-source alarm by the agent vapor consisting essentially of an air supply source for providing an air flow to the system; valves for regulating said air flow; a drierite column and charcoal filtering means for purifying said air flow; a flowmeter to regulate the flow of said purified air to a bubbler means, the bubbler means containing a dilute liquid agent solution through which said air flow is bubbled to produce an agent vapor; cooling means attached to said bubbler for maintaining the liquid agent solution within the bubbler at a constant temperature; a interconnected means for adding a regulated flow of air to said agent vapor to produce a dilute agent vapor of desired concentration and a means for flowing said dilute agent vapor from the system to a point-source agent alarm.

4,069,702

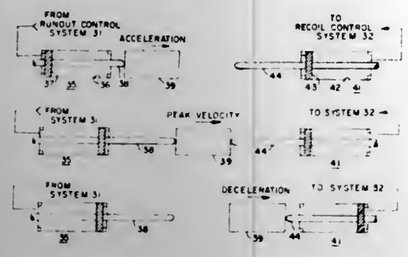
METHOD AND APPARATUS FOR TESTING THE RUN-OUT AND RECOIL CONTROL SYSTEMS OF A GUN

Paul F. Hayner, Gilford, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 4, 1977, Ser. No. 765,715
Int. Cl.² G01M *19/00*
U.S. Cl. 73—11 **26 Claims**

1. The method of testing the runout and recoil control systems for a gun comprising the steps of accelerating a body having a mass representative of the mass of the moving parts of

the gun to a predetermined velocity, decelerating the body under control of the recoil control system under test and measuring and recording the position of the body as a function of time.

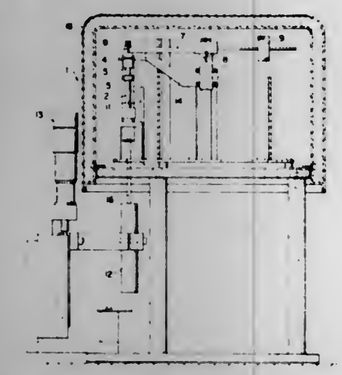


4,069,703

PLASTIC ORIENTATION MEASUREMENT INSTRUMENT

Norman W. Standish, Shaker Heights, and Herbert Talsma, East Cleveland, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Aug. 26, 1976, Ser. No. 718,153
Int. Cl.² G01N *25/16*
U.S. Cl. 73—16 **4 Claims**



1. An apparatus for measuring dimensional change at elevated temperature in a sample of oriented thermoplastic material comprising means for holding said sample means for heating said sample, sensing means attached to a ring-like structure which is supported by a knife edge at the end of a beam balance which in turn is supported on a knife edge, said means having an essentially zero loading value and being connected to said holding means for sensing and tracking changes in the dimensions of said sample which may take place during the heating of said sample.

4,069,704

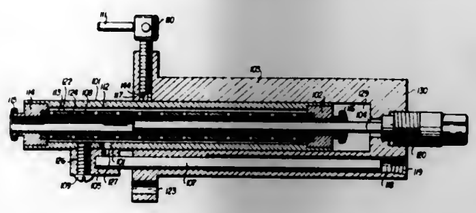
VARIABLE LENGTH ENCAPSULATING PRESSURE DROP TESTER

James William Grant, Jr., and Scott Brown Coble, Jr., both of Charlotte, N.C., assignors to Celanese Corporation, Charlotte, N.C.

Filed May 25, 1976, Ser. No. 689,756
Int. Cl.² G01M *3/02*; G01N *15/08*
U.S. Cl. 73—38 **8 Claims**

1. A variable length encapsulating pressure drop tester for measuring the pressure drop across the length of variable length tobacco smoke filters and similar variable length fluid permeable rod-shaped articles comprising

a. a housing member having a longitudinal bore communicating with opposite ends of said housing,
b. a first elongated apertured hollow member, which serves as a variable length rod holder, adjustably and slideably mounted in one end of said longitudinal bore,
c. an extensible, air impervious sleeve mounted in said first hollow member,
d. a second hollow member stationarily mounted in the second end of said longitudinal bore and extending into



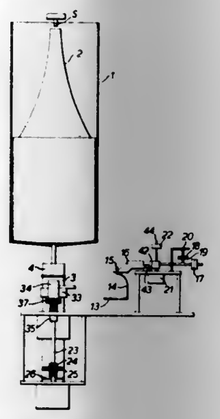
said bore and into said sleeve mount in said first hollow member,
e. vacuum source means communicating with the outer surface of said air impervious sleeve, to expand said sleeve, whereby a rod-shaped article may be inserted into said sleeve,
f. said vacuum source means communicating with said second hollow member, and
g. means for measuring pressure drop interposed between said vacuum means and said second hollow.

4,069,705

ANALYSIS OF MATERIALS

Kenneth John Burr, and Stephen Ross Holland, both of St. Austell, England, assignors to English Clays Lovering Pochin & Co. Ltd., St. Austell, England

Continuation of Ser. No. 612,750, Sept. 12, 1975, abandoned, which is a continuation of Ser. No. 430,530, Jan. 3, 1974, abandoned. This application Apr. 23, 1976, Ser. No. 679,568
Claims priority, application United Kingdom, Jan. 11, 1973, 1623/73
Int. Cl.² G01N *9/18*
U.S. Cl. 73—61 R **8 Claims**



1. A device suitable for obtaining from a fluid mixture of first and second component materials a quantity thereof which contains a fixed weight of said first component material, the density of said second component material being known and the mixture containing the two component materials in unknown proportions, which device comprises a cylindrical container, a float, and means for indicating, during use of the device, when the float has reached a fixed height above the bottom of the container, the float having a cylindrical lower portion contiguous with an upper portion, the upper portion being shaped so that its cross-sectional area a_x at a height x above the lower portion is defined by the formulae

$$\frac{a_x = D_{max} v_c}{D_x^2} \cdot \frac{dDx}{dx} \tag{2}$$

$$D_x = \frac{D_f(A_x + v_c) + D_{max}(v_c + v_x) + \sqrt{[(A_x + v_c)D_f + (v_c + v_x)D_{max}]^2 - 4(v_x + v_c + A_x)v_c D_f D_{max}}}{2(v_x + v_c + A_x)} \tag{3}$$

$$\frac{dD_x}{dx} = \frac{A}{2(v_c + v_x + A_x)^2} \cdot \left\{ v_x D_f - D_{max}(v_c + v_x) + \frac{D_f(v_x + v_c + A_x)[D_f(v_c + A_x) + D_{max}(v_x - v_c)]}{\sqrt{[D_f(v_c + A_x) + D_{max}(v_c + v_x)]^2 - 4(v_x + v_c + A_x)v_c D_f D_{max}}} - \sqrt{[D_f(v_c + A_x) + D_{max}(v_c + v_x)]^2 - 4(v_x + v_c + A_x)v_c D_f D_{max}} \right\} \tag{4}$$

wherein:
A is the known cross-sectional area of the cylindrical container;
a_x is the cross-sectional area of the float at a height x above the junction of the cylindrical lower portion and the shaped upper portion of the float;
v_c is the known volume occupied by the cylindrical lower portion of the float;
D_x is the density of a fluid mixture in which the float floats with the surface of the fluid mixture at a height x above the junction of the cylindrical lower portion and the shaped upper portion of the float
D_{max} is the known density of the fluid mixture in which the float floats with the surface of the fluid mixture level with the junction between the cylindrical lower portion and the shaped upper portion of the float, i.e. when $x = 0$;
v_x is the known volume of the fluid mixture of density D_{max} in the container when the float floats and is at the fixed height above the bottom of the container;
D_f is the known density of the second component, i.e. the suspending liquid;
D_s is the density of the first component, i.e. the fine particulate solid; and
W is the weight of said first component per unit volume of fluid mixture.

whereby, when a volume of the fluid mixture containing said fixed weight of the first component material has been introduced into the container, the float, over a range of proportions of said first and second component materials, will float at said fixed height above the bottom of the container independently of the relative proportions, within said range of proportions, of the first and second component materials in the fluid mixture.

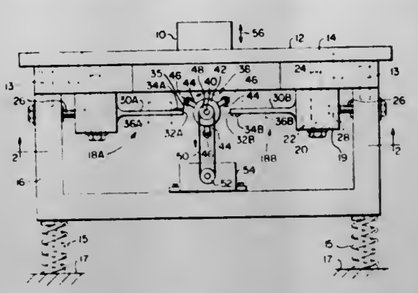
4,069,706

COMPLEX VIBRATION TESTER

Philip Marshall, Lexington; Albert Paul Laber, Revere, and Ugo Cauteruccio, West Roxbury, all of Mass., assignors to MRAD Corporation, Woburn, Mass.

Filed Nov. 18, 1976, Ser. No. 742,872
Int. Cl.² G01N *3/32*; B06B *1/10*
U.S. Cl. 73—666 **23 Claims**

1. Apparatus for vibration testing a work piece adapted to be positioned on a test surface comprising:
a substantially rigid support structure including said test surface;
means for generating vibrations including at least one resonator assembly mounted on said structure, said resonator assembly comprising an elongated cantilever beam including a fixed end and a free end respectively; and
means mounted on said structure for setting said cantilever beam into free vibration to cause said resonator assembly to vibrate substantially at its own resonant frequency;



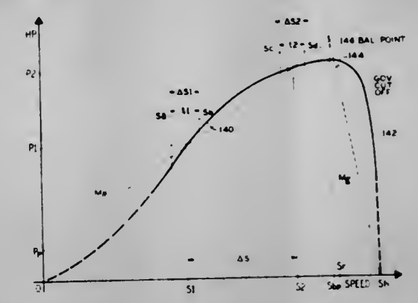
whereby the vibrations of said resonator assembly are adapted to be imparted to said test surface through said support structure.

4,069,707

BALANCE POINT DIAGNOSTICS FOR INTERNAL COMBUSTION ENGINE

James A. Cook, Feeding Hills, Mass.; Henry J. Mercik, Jr., and Lee R. Armstrong, both of Enfield, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 25, 1977, Ser. No. 781,093
Int. Cl.² G01M *15/00*
U.S. Cl. 73—116 **6 Claims**



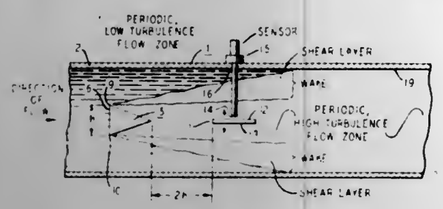
1. In a method of determining the balance point speed of the governor of an internal combustion engine while mounted on the engine with the engine running, the steps of:
providing an empirically-determined governor cutoff slope for an engine of the type under test;
accelerating the engine from a low speed to high idle speed with the engine loaded only by its own inertia, drag and accessories, and measuring two indications of power and corresponding speeds which define two points on the increasing power portion of the power/speed characteristic of the engine as it accelerates;
measuring the high idle speed of the engine after it accelerates; and
determining the balance point speed of the governor as the speed at which a first line defined by said two points on the power/speed characteristic intersects with a second line emanating from the high idle speed point along the zero power speed abscissa of the power/speed characteristic of the engine and defined by said empirically-determined governor cutoff slope.

4,069,708

FLOWMETER PLATE AND SENSING APPARATUS

Theodore John Fussell, Jr., Bridgewater Township, Somerset County, N.J., assignor to Neptune Eastech, Inc., Edison, N.J.

Filed Nov. 12, 1975, Ser. No. 631,048
Int. Cl.[2] G01F *1/32*
U.S. Cl. 73—194 VS 30 Claims



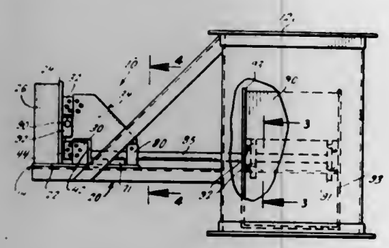
1. In combination,
means for generating staggered trails of vortices in a fluid flow streamwise in a conduit and
a thin plate mounted a prescribed distance downstream from said generating means for maintaining said staggered trails of vortices in separation and said plate having upper and lower surfaces defining a site in said conduit for sensing staggered and separated trails of said vortices,
said conduit comprising means defining an inner wall,
said generating means comprising a bluff body having a first surface including a prescribed height dimension and having second surfaces extending streamwise from said first surface toward said plate, and
said plate comprising a frontmost surface mounted downstream from said second surfaces at a distance substantially two to three times the height dimension of said first surface.

4,069,709

FLOW RATE SENSOR

Joseph A. Volk, Florissant, and Joseph A. Volk, Jr., St. Louis, both of Mo., assignors to Beta Corporation, St. Louis, Mo.

Filed Sept. 7, 1976, Ser. No. 720,883
Int. Cl.[2] G01F *1/28*
U.S. Cl. 73—228 26 Claims



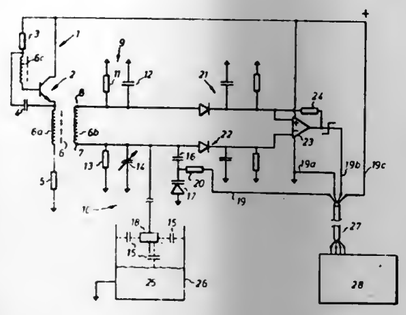
1. A sensor for measuring the flow rate of a material comprising a support member and a pivotal member, means for mounting said pivotal member to said support member for pivotal movement thereabout, means responsive to the rate of flow of a material for pivotally deflecting said pivotal member, the degree of deflection being proportional to the rate of flow, said pivotal mounting means further comprising a thin shim, means for securing said shim to said pivotal and support members providing flexing of said shim over a section thereof located between said pivotal and support member, the width of the section of said shim over which said shim flexes being approximately that of the shim thickness.

4,069,710

APPARATUS FOR THE CAPACITATIVE MEASUREMENT OF THE SURFACE LEVEL OF FLUID MEDIA IN VESSELS

Otto Treier, 4317 Wegenstetten, Herrweg, 8756 Mitlodi, Switzerland

Filed Jan. 21, 1977, Ser. No. 761,309
Claims priority, application Germany, Jan. 28, 1976, 2603185
Int. Cl.[2] G01F *23/26*
U.S. Cl. 73—304 C 10 Claims



1. Apparatus for the measurement of the surface level of a fluid medium in a vessel, comprising a vessel, a high-frequency electrical generator, a high-frequency transmitter having inductively coupled primary and secondary portions, means connecting said generator and said transmitter for the supply of high frequency electric current to said primary portion, first and second terminal connectors with said secondary portion connected therebetween to provide a high-frequency induced current between said terminal connectors, a first capacitor, means earthing said first terminal connector by way of said first capacitor, a probe mounted on said vessel to provide a second capacitor providing a capacitance between said probe and fluid medium in said vessel, said capacitance depending on the surface level of fluid medium in said vessel, means earthing said second terminal connector by way of said second capacitor, rectifier means, and means connecting said rectifier means to said first and second capacitors for the rectification of alternating voltages present on said capacitors, thereby providing direct-current voltage outputs respectively from said first and second capacitors, and means having two inputs respectively connected to receive said voltage outputs and itself providing an output corresponding to said capacitance and, therefore, to said surface level.

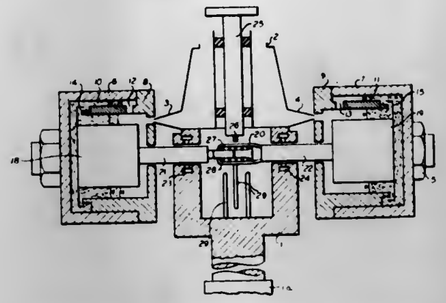
4,069,711

METHOD AND APPARATUS FOR MEASURING THE GRAIN-SIZE OF FINE POWDERS

Edgar Muschelknautz, Leverkusen; Armin Bürkholz, Cologne, and Wolfgang Richter, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 468,627, May 9, 1974, abandoned. This application Jan. 19, 1976, Ser. No. 650,392
Claims priority, application Germany, May 15, 1973, 2324421
Int. Cl.[2] G01N *31/02 33/16*
U.S. Cl. 73—61.4 15 Claims

1. In a centrifuge suitable for measuring particle size distribution of powder in a liquid dispersion, by sedimentation in the centrifugal field comprising:
a. a rotatable spindle having a sedimentation vessel fixedly mounted thereon for rotation therewith for holding and centrifuging of a specimen of the dispersion,
b. a settling plate disposed in the sedimentation vessel for receiving sediment of the powder, a connector for the settling plate, the settling plate being secured to the connector and the connector being mounted on the spindle for radial displacement of the settling plate in dependence on the centrifugal force acting on the settling plate due to accumulation of sediment thereon,
c. gauge means for measuring said displacement as a measure of said particle size distribution,
the improvement which comprises:



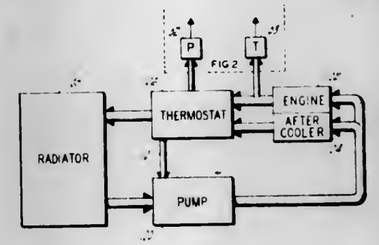
d. buoyancy means attached to the connector for movement therewith for generating a force by buoyancy counteracting said centrifugal force and limiting said radial displacement of the connector so that the connector assumes a balanced position in dependence on the amount of sediment accumulated on the settling plate, said gauge means being for measuring the balance position.

4,069,712

THERMOSTAT SETTING DIAGNOSTICS FOR INTERNAL COMBUSTION ENGINE

Lee R. Armstrong, Enfield; Henry E. Goetsch, Broadbrook, and Henry J. Mercik, Jr., Enfield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 25, 1977, Ser. No. 781,091
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—118 25 Claims



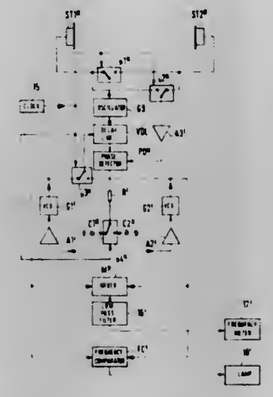
1. Apparatus for measuring the operation of the thermostat mounted in an engine cooling system with the engine running, comprising:
pressure sensor means adapted to be disposed to sense the pressure of the coolant of the cooling system, and providing a pressure signal in response thereto;
temperature sensor means adapted to be disposed to sense the temperature of the coolant in said cooling system and provide a temperature signal in response thereto; and
processing apparatus comprising means operative in response to said temperature and to said pressure signals with all of said sensor means disposed as described hereinbefore for determining a variation in either of said signals indicative of thermostat operation.

4,069,713

ARRANGEMENT FOR DETERMINING LIQUID AND GAS FLOW RATES

Gerhard G. Gassmann, Esslingen-Berkheim, Germany, assignor to International Telephone and Telegraph Industries, New York, N.Y.

Filed Apr. 14, 1976, Ser. No. 677,052
Claims priority, application Germany, Apr. 18, 1975, 2517117
Int. Cl.[2] G01F *1/66*
U.S. Cl. 73—194 A 3 Claims



1. An arrangement for determining fluid flow rates, said arrangement comprising: a pair of transducers mounted at respective upstream and downstream positions; a constant frequency main oscillator; first switch means connected from said main oscillator to said transducers to cause each of said transducers to act alternately as a sound generator and a sound pickup; a phase detector, said first switch means also always connecting the sound pickup to said phase detector; a variable delay line; first and second voltage controlled oscillators having first and second respective variable output signal frequencies; second switch means alternately connecting said first and second oscillators to said variable delay line to provide respective input signals therefrom to said phase detector to cause said first and second oscillators to be driven in a manner such that the frequencies of said first and second oscillators are driven to the point where the phases and frequencies of the input signals to said phase detector are substantially the same; and an exciting oscillator connected to alternately excite one of said transducers at a time as a sound generator, the signal received by the other sound transducer, which transducer acts as the sound pickup, being applied to one input of said phase detector as aforesaid, said phase detector having another input to which is applied said exciting oscillator output signal through said variable delay line, the output signal of said phase detector being alternately stored in one of two storage capacitors, the frequencies of said first and second oscillators alternately adjusting the delay of said delay line responsive to the charging voltages of said storage capacitors, said first and second oscillator frequencies being readjusted in such a manner that the output signal of the phase detector is reduced to a minimum.

4,069,714

METHOD FOR MEASURING PHYSICAL DATA BY MAGNETIC MEANS

Sandra Spewock, Franklin Township, Cambria County, and David C. Phillips, Pean Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

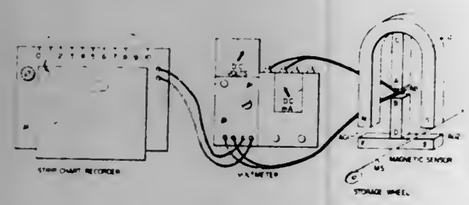
Filed Feb. 5, 1976, Ser. No. 655,350
Int. Cl.[2] G01K *7/38*; G01N *31/12*; G01R *33/16*
U.S. Cl. 73—339 R 4 Claims

1. A method of measuring physical data relative to an indus-

trial process involving a plurality of physical variables and a chemical agent, comprising the steps of exposing to said process at least one face of a probe in the form of a strip of known thickness and of material consisting of a composition including as chemical constituent a chemical element having an affinity for said chemical agent when exposed thereto under said physical variables, whereby said strip is permanently altered in a direction normal to said face by the chemical reaction between said chemical element and said chemical agent to an extent depending upon time of exposure and the conditions of said physical variables, said altered material having magnetic properties different from the unaltered material;

sensing the magnetic properties of said strip after exposure;

correlating the sensed magnetic properties with the alterations of said strip relative to said known thickness to



derive a calibration of said magnetic properties in direct correlation with the time of exposure and the condition of said process physical variables in terms of a selected one of said process physical variables;

exposing to said process a second strip of material of identical dimension and composition to cause similar alterations under predetermined time of exposure and conditions of said process physical variables except said selected one;

sensing the magnetic properties of said second strip after said exposure; and

reading physical data relative to the magnitude of said selected physical variable from said second sensing step by correlation with said earlier calibration;

with said selected one of said process physical variable being temperature, and with said reading of physical data being a temperature measurement.

4,069,715

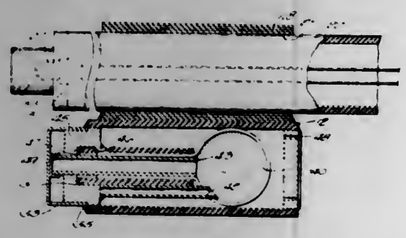
MOLTEN METAL SAMPLER WITH OFFSET CONNECTOR

Richard A. Falk, 519 Westminster Drive, Waukesha, Wis. 53186

Filed Nov. 24, 1976, Ser. No. 744,481

Int. Cl.² G01N *1/12*

U.S. Cl. 73—354 **5 Claims**



1. Molten metal sampling apparatus comprising a first paperboard sleeve, a sample mold in said first sleeve, means defining a fill passage for delivery of molten metal to said sample mold, a second paperboard sleeve, fastening means for securing said first and second sleeves in side by side relationship, a handle, and means for detachably connecting said handle to said second sleeve.

4,069,716

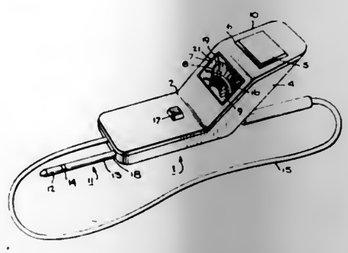
APPARATUS AND METHOD FOR USE IN DETERMINING CONDITIONS RELATED TO A PLANT

Salvatore Vanasco, Huntington, N.Y., and Wayne Chou, Stamford, Conn., assignors to LMC Data, Inc., Ronkonkoma, N.Y.

Filed Feb. 5, 1976, Ser. No. 655,443

Int. Cl.² G01N *33/18*

U.S. Cl. 73—432 R **13 Claims**



1. An apparatus for determining the conditions related to a plant comprising:

a first sensing means for generating a first electrical signal corresponding to a first condition related to said plant;

a second sensing means for generating a second electrical signal corresponding to a second condition related to said plant;

an indication means comprising a common galvanic meter;

a coupling means for selectively coupling said first and second signals to said galvanic meter, whereby said galvanic meter is made selectively responsive to said first and second signals and selectively converts said first and second signals into indications of said first and second conditions, respectively;

a first reference source for relating said indication of said first condition to a first preselected reference for said first condition;

and a second reference source for relating said indication of said second condition to second preselected reference for said second condition.

4,069,717

MOLTEN METAL STREAM SAMPLER AND CLAMP

Richard A. Falk, 519 Westminster Drive, Waukesha, Wis. 53186

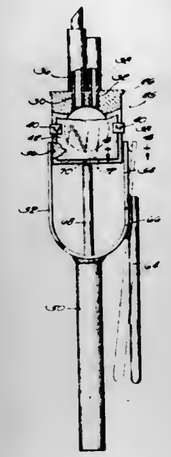
Filed Nov. 5, 1976, Ser. No. 739,217

Int. Cl.² G01N *1/12*

U.S. Cl. 73—425.4 R **3 Claims**

1. A sampler for taking a sample of molten metal comprising a pair of mold halves, each of said mold halves having wall means defining a peripheral boundary wall for an open faced cavity, said boundary wall having flat interior and exterior surfaces, grooves extending from the outer margin of the boundary wall to the cavity, a fill tube, and closure means for enclosing said open faces, and means for clamping said closure

means against said exterior faces and said mold halves together with said grooves in registry and in clamping engagement with



a portion of said fill tube with the split line between said mold halves providing an air vent.

4,069,718

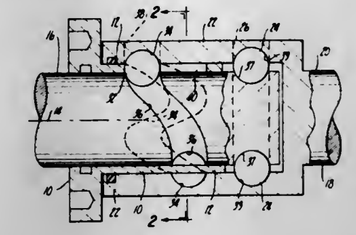
SPEED CHANGE DEVICE

Erwin F'Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 13, 1976, Ser. No. 722,998

Int. Cl.² F16H *13/04*

U.S. Cl. 74—206 **8 Claims**



1. A speed change device comprising drive and driven members arranged on a common rotational axis; and a force-transmitting connection between said member; said force-transmitting connection comprising a first sinuous cam surface associated with the drive member, a second sinuous cam surface associated with the driven member, and cam follower means simultaneously tracking each cam surface; the lead angles on the sinuous cam surfaces being different, whereby the rotational speeds of the drive and drived members are different.

4,069,719

CHAIN TENSIONER FOR CHAIN DRIVES

Philip S. Cancilla, 342 Ann Darling Drive, San Jose, Calif. 95133

Filed June 18, 1976, Ser. No. 697,352

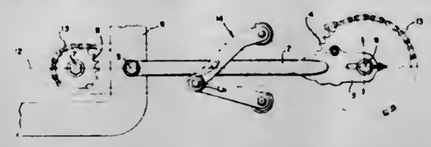
Int. Cl.² F16H *7/12, 7/10*

U.S. Cl. 74—242.11 B **14 Claims**

1. A chain tensioner for chain drives having upper and lower reaches revolving on drive and driven sprockets, comprising:

a. means forming a support for the drive and driven sprockets; and

b. means on said support engaging the upper and lower reaches of said chain adjacent said driven sprocket and



operating to increase the wrap of said chain about the driven sprocket to eliminate slack in said chain.

4,069,720

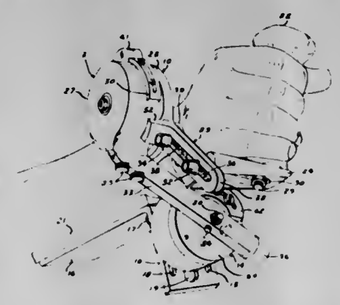
TWO AXIS SIDE CONTROLLER FOR AIRCRAFT

Wayne A. Thor, 6546 Glen Ivy Drive, Dayton, Ohio 45424

Filed Nov. 5, 1976, Ser. No. 734,062

Int. Cl.² G05G *9/00*

U.S. Cl. 74—471 R **5 Claims**



1. A two axis side controller for use in a manned aircraft, comprising: an arm rest adapted to support the forearm of the aircraft pilot; a first controller, having an input shaft, adapted to provide a roll control for the aircraft; means for supporting said first controller adjacent the forward end of said arm rest, with the axis of the input shaft of the controller positioned a predetermined distance below the center of the arm rest at the forward end; a second controller, having an input shaft, adapted to provide a pitch control for said aircraft; means for connecting said second controller to the input shaft of said first controller; said means for connecting said second controller to the input shaft of the first controller including means for positioning the axis of the second controller at a position with respect to the arm rest adapted to correspond to the physiological center of rotation of the hand of the pilot about the wrist; a hand grip; means for connecting said hand grip to the input shaft of said second controller.

4,069,721

MECHANISM FOR JOINING A CABLE TO A LINK LEVER

Toshi Ezaki, and Hisahalu Mineda, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 21, 1976, Ser. No. 678,892

Claims priority, application Japan, Apr. 28, 1975, 50-56783[U]

Int. Cl.² F16C *1/14*

U.S. Cl. 74—501 R **7 Claims**

1. A mechanism for joining a cable to a link lever which may be pivoted about its pivotal point by a control lever for a parking brake, said cable being connected to a brake element, said mechanism comprising a groove provided in said link lever at a position away from said pivotal point, said groove having a substantially semi-circular portion, a wall portion connected to said semi-circular portion at the near

side of said pivotal point and lying substantially perpendicular to the longitudinal surface of said link lever, and a flat portion connected to said semi-circular portion at the far side of said pivotal point and lying substantially parallel to said longitudinal surface,

a cylindrical cable anchoring member rigidly attached to a free end of said cable and being engageable with said semi-circular portion of said groove, and



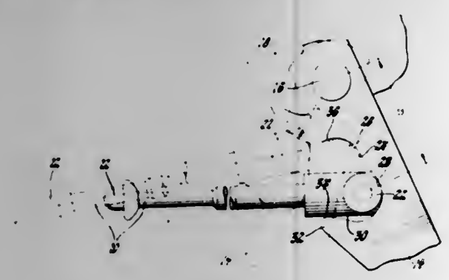
a spring retaining member for retaining said cable anchoring member in said semi-circular portion of said groove, one end of said retaining member being securely mounted on said link lever and a free end portion thereof extending over said groove including said flat portion and defining with respect to said flat portion a predetermined angle whereby said cylindrical cable anchoring member can be easily engaged in said groove by inserting the cable anchoring member between said free end portion of the retaining member and said flat portion.

4,069,722

VARIABLE RATIO BRAKE PEDAL LEVER ASSEMBLY

Dennis P. Derrick, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 11, 1976, Ser. No. 665,901
Int. Cl.² G05G *1/04*
U.S. Cl. 74—516 **2 Claims**



1. A variable ratio brake pedal lever system comprising:

a push rod pivotally mountable at one end and adapted to be moved axially to actuate a brake system;

a pivotally mounted brake pedal lever movable between brake release and full brake system actuating positions;

a first cam follower on the other end of said push rod;

a cam surface on said lever engaged in camming relation with said first cam follower and extending generally along an edge of said lever from a first point spaced from the pivot mounting of said lever to a second point spaced further from the pivot mounting of said lever than said first point;

a second cam follower on said push rod adjacent said other end and extending axially along the push rod;

a cam formed on said lever at said cam surface second point and extending from said lever to engage said second cam follower and provide a fulcrum point for said push rod;

and a cam follower stop formed on said lever at said cam surface first point;

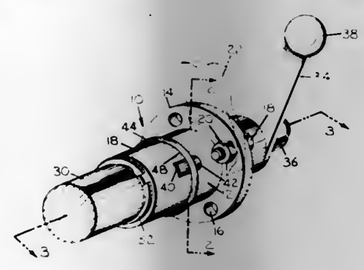
said first cam follower engaging said cam surface adjacent said second point and said cam engaging said second cam follower when the lever is in the brake release position, movement of the lever for brake actuation causing said push rod to move axially and said cam to move axially along said second cam follower and force said push rod other end to move pivotally about said push rod one end in the plane of lever movement to move said first cam follower along said cam surface toward said first point, thereby increasing the effective pedal lever ratio as brake actuating movement increases, said first cam follower engaging said cam follower stop upon full brake actuating movement of said lever.

4,069,723

DETENT POSITIONING DEVICE

Frank S. Payerle, Akron, Ohio, assignor to Incom International Inc., Pittsburgh, Pa.

Continuation of Ser. No. 497,849, Aug. 16, 1974, abandoned. This application Oct. 8, 1975, Ser. No. 620,892
Int. Cl.² G05G *5/06, 1/00*
U.S. Cl. 74—528 **10 Claims**



1. A detent positioning device comprising a housing with a shaft rotatably mounted therein, said housing having a longitudinally extending portion with at least one recess therein so sized to accommodate a single roller, a circular spring member disposed on said longitudinally extending portion engaging said roller and applying a biasing force thereto, said roller in engagement with the outer surface of said shaft, at least one longitudinally extending detent on the outer surface of said shaft in the region of said recess to accommodate a portion of said roller; said shaft being positioned relative to said housing when said detent is in alignment with said recess and said roller is biased into said detent by said spring member, said spring member being an annular circular spring encircling said longitudinally extending portion of said housing and engaging said roller at its inner annular surface, there being a control handle fixedly attached to said shaft and positioning means fixing the longitudinal position of the shaft with respect to said housing.

4,069,724

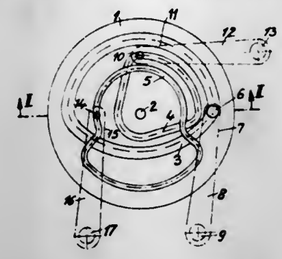
FLAT CURVE CAM AND FOLLOWER CONSTRUCTION

Reinhard Sobotta, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Mar. 15, 1977, Ser. No. 777,834
Claims priority, application Germany, Mar. 27, 1976, 2613181
Int. Cl.² F16H *53/06, 25/08*
U.S. Cl. 74—569 **4 Claims**

1. A cam and follower construction comprising a flat plate having a plurality of curved cam grooves therein, said grooves intersecting each other, and a plurality of cam followers engaged in said grooves, characterized by the fact that at least a portion of a second groove is of lesser width and greater depth than the width and depth, respectively, of a first groove, and that at least a portion of the cam follower in the first groove is

of sufficient width so that it can not enter the second groove, and at least a portion of the cam follower in the second groove



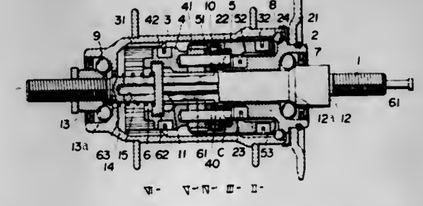
extends in that groove to a depth greater than the depth of the first groove so that it can not enter the first groove.

4,069,725

THREE SPEED TRANSMISSION HUB

Takashi Segawa, Osaka, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jan. 19, 1976, Ser. No. 650,352
Claims priority, application Japan, Jan. 23, 1975, 50-10816; Jan. 7, 1975, 50-18021
Int. Cl.² F16H *3/44, 57/10*
U.S. Cl. 74—750 B **4 Claims**



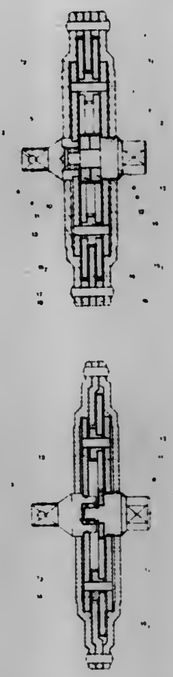
1. A three speed transmission hub for a bicycle, comprising; a hub shaft with a sun gear; a gear frame having planetary gears always in mesh with said sun gear and supported in a relation of being rotatable and axially movable with respect to said hub shaft; a ring gear including inner teeth always in mesh with said planetary gears at said gear frame and adapted to be movable together with said gear frame in the axial direction of said hub shaft; a drive member having a sprocket wheel and rotatably supported to said hub shaft; a hub shell rotatably supported to said drive member and said hub shaft; and a control for axially moving said gear frame and ring gear, said gear frame being provided with low-speed-transmitting pawls, said ring gear being provided with medium-and high-speed-transmitting pawls, said hub shell being provided at the inner surface of axially both ends thereof with ratchet teeth engageable with said low-speed-transmitting pawls and said medium- and high-speed transmitting pawls respectively, between said drive member and said gear frame being provided a clutch means engageable only in the high speed transmission, and between said drive member and said ring gear being relay pawls and ratchet teeth in mesh with each other at least in the medium and the low speed transmission.

4,069,726

TIGHTENING AND RELEASING TOOL

Michel Jean Garconnet, 22, rue du Docteur Viter, Saint Nicolas d'Aliermont, France

Filed Apr. 13, 1976, Ser. No. 676,611
Claims priority, application France, Apr. 14, 1975, 75 11579
Int. Cl.² B25B *17/02*
U.S. Cl. 74—785 **2 Claims**



1. A tightening and releasing tool comprising an input shaft to which a tightening or releasing force is applied: an output shaft arranged to be applied to a member to be tightened or released; said shafts being rotatably mounted on a support having an internal gear; blocking means on said support for preventing rotation of the support when performing a tightening or releasing operation; a first pinion rigid with one shaft; and a pair of cheek plates rigid with the other shaft; said tool being characterized in that a pair of pinions of different diameter from, and rigid with, one another are arranged freely rotatable between the two cheek plates, one of these pinions meshing with said first pinion while the other of these pinions meshes with said internal gear; and said pair of pinions is subdivided and forms a symmetrical construction with the internal gear so that the internal gear and the pinions in said pair of pinions are imbricated one inside the other.

4,069,727

SEPARATION OF LABEL TAPE INTO LABELS

Charles E. Sparks; J. G. Templeton, and Melvin E. Larson, all of Grand Rapids, Mich., assignors to Rospatch Corporation, Grand Rapids, Mich.

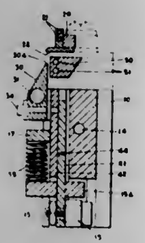
Continuation of Ser. No. 527,876, Nov. 27, 1974, abandoned, which is a continuation-in-part of Ser. No. 436,175, Jan. 24, 1974, abandoned. This application Jan. 21, 1977, Ser. No. 761,436
Int. Cl.² B26D *7/10;* D03D *47/50*
U.S. Cl. 83—16 **1 Claim**

1. A method of separating a label tape of a thickness in the range of about 0.004 to 0.015 of an inch and formed of oriented

thermoplastic polymer fibers, into individual labels having wash-durable ends, comprising the steps of:

forcing a double beveled hot blade having a substantially flat leading edge against one face of the label tape while continuously maintaining the temperature of the blade edge above the melting temperature of the polymer fibers to melt a localized transverse zone of the label tape polymer fibers progressively from one face of the tape to the opposite face while progressively forcing the molten polymer in a direction both longitudinally of the tape and toward said opposite face into the interstices between the unmolten oriented fibers through to said opposite face, and along said opposite face, and restraining the opposite face





of the label tape with a cold platen, said cold platen having a surface supporting said opposite face of said label tape, with its said surface being located directly opposite said flat leading edge of said hot blade towards which said hot blade is forced, while continuously maintaining the temperature of the platen substantially below the melting temperature of the polymer fibers with cooling means to rapidly chill and resolidify said molten polymer along said opposite face into an anchor bonded to said polymer in the interstices, to thereby create wash-durable ends on the individual label; followed by removing said blade from contact with said label tape while said blade is still hot and said platen is still cold.

4,069,728

SHEET SLITTING APPARATUS

James E. McCrea, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1977, Ser. No. 773,577
Int. Cl.² B26D *19/00*; B65H *5/08*
U.S. Cl. 83—409 **5 Claims**

1. Sheet slitting apparatus comprising:

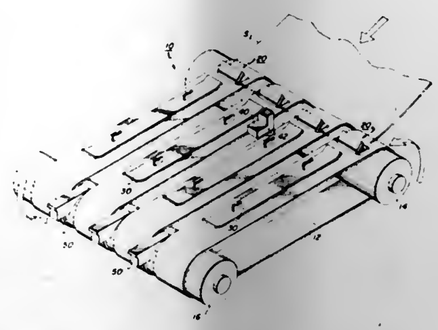
a pluarlity of belt members for receiving sheets to be slit, each of said belt members including at least one clamping means receiving the leading edge of the sheet,

drive means for moving said belt means to pull the sheet along a predetermined path past a slitting station,

guide means arranged along the sheet path to force said clamping means to close securely at the leading edge of the sheet received therein prior to the sheet arriving at said slitting station,

slitting apparatus positioned in the sheet path at the slitting station to effect slitting of the moving sheet while being pulled by said belt members and clamping means,

said guide means extending for a predetermined extent past the slitting station whereby said clamping means are released upon continued advance of said belt members to



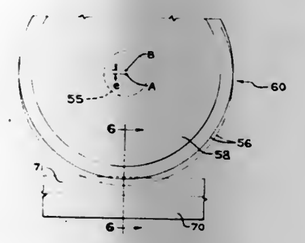
release the sheet therefrom after completion of the slitting operation.

4,069,729

FABRIC CUTTER

Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sept. 17, 1976, Ser. No. 724,138
Int. Cl.² B23D *19/02*; B26D *1/20*
U.S. Cl. 83—488 **5 Claims**



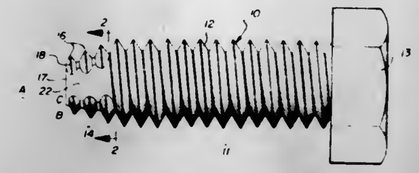
1. A bias cutting apparatus for cutting rubberized fabric comprising a support frame, a carriage mounted on said support frame for reciprocal movement, drive means connected to said carriage for reciprocating said carriage, a cutter support member pivotally secured to said carriage, a cutter means journaled eccentrically on said cutter support member for rotation thereon, power means mounted on said carriage operatively connected to said cutter means for continuously rotating said cutter means eccentrically, said cutter means having a circular cutting edge, said circular cutter having a pair of spaced side portions, said cutting edge tapering towards one of said side portions, a guide bar secured to the lower portion of said support frame over which fabric is moved and under which a conveyor belt travels, anvil means mounted on said cutter support member for movement therewith, said anvil means having a linear cutting edge, said circular cutting edge having a portion of the other of said side portions adjacent to said linear cutting edge of said anvil means, and power operated means interconnecting said carriage and said cutter support member for pivoting said cutter support member on said carriage to move said cutter support member and anvil away from said guide bar to facilitate the movement of fabric while said cutter support member and carriage are moved back for a subsequent cutting of the fabric.

4,069,730

THREAD-FORMING SCREW

Charles E. Gutshall, Rockford, Ill., assignor to Wales-Beech Corporation, Rockford, Ill.

Filed June 3, 1976, Ser. No. 692,470
Int. Cl.² F16B *25/00*
U.S. Cl. 85—47 **7 Claims**



1. A thread-forming screw comprising:

an elongated shank including a substantially cylindrical main body portion having a continuous thread formed thereon;

means at one end of said body portion cooperable with a tool for turning said screw;

a work-entering tapered thread-forming pilot portion at the other end of said body portion;

said pilot portion comprising a conical core having a substantially circular cross-section and a plurality of elongated tapping lobes extending outwardly from the surface of said core, each of said lobes having a sharp, fully formed outer ridge along its entire length, the sharp outer ridge on each of said lobes beginning and ending at the juncture of said lobes with said core;

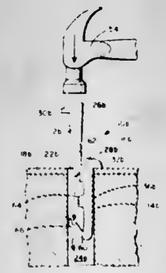
said lobes being disposed transversely on said core and spaced so that the outermost point on each of said sharp lobes falls on a helix having the same pitch as the thread on said main body portion and a diameter which increases from a minimum at the work-entering end of said screw to a maximum at the juncture of said pilot portion and said main body portion.

4,069,731

WEDGING DEVICE

Michael O. Stang, 7757 Greenly Drive, Oakland, Calif. 94605

Continuation-in-part of Ser. No. 559,329, March 17, 1975, Pat. No. 3,974,621. This application Feb. 3, 1976, Ser. No. 654,765
The portion of the term of this patent subsequent to Aug. 17, 1993, has been disclaimed.
Int. Cl.² F16B *5/00*
U.S. Cl. 85—72 **7 Claims**



1. A fastening device to connect a first body to a second body, the first body having an opening aligned with an opening in the second body comprising:

a. first member having a projection at one end for holding a portion of the first body against the lip of the opening in the second body, said first member having an inclined surface and an opposite end portion;

b. second member having a projection at one end for holding a portion of the first body to the lip of the opening in the second body, said second member having an inclined surface and an opposite end portion angularly disposed back toward said one end of said second member and angularly away from said inclined surface of said second member, and said second member's opposite end portion having a terminus disposed adjacent the wall of said aligned openings and both members being positioned within the aligned openings such that impact on said members causes said inclined surfaces to slide upon one another and causes said opposite end portion of said first member to engage said opposite end portion of said second member adjacent the terminus thereof and to push said end portion of said second member angularly away from said one end and from said inclined surface of said second member, thus urging said angularly disposed end portion laterally against the wall of the aligned openings, said first and second members singly fitting within said aligned openings with said projections firmly holding the first body to the second body.

4,069,732

ELECTRIC GUITAR

Jacob F. Moskowitz, Brookline, and Ogden H. Hammond, III, Arlington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sept. 8, 1975, Ser. No. 611,048
Int. Cl.² G10H *3/00*
U.S. Cl. 84—1.16 **17 Claims**



1. A stringed musical instrument comprising,

a plurality of electrically conducting strings,

means for processing the electrical signal produced by each string,

a magnet for providing at least one concentrated region of magnetic field in which each string is located, a body for securing said magnet,

said magnetic field being substantially parallel to said body and the plane of said strings at least over the width of the strings,

said magnet extending at least to each outermost string,

wherein said magnet comprises,

a base member and two vertical members of high coercive force permanent magnet material oriented so that the N magnetic field pole of one member is adjacent to the S field pole of the adjacent member,

ferrous corner pieces of high magnetic permeability at the corners where said members meet to bind the magnetic field at each corner,

the combination of the members and corner pieces forming a U-shaped magnet whose magnetic field lines are essentially parallel to the base member.

4,069,733

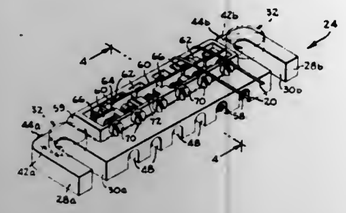
COMBINED BRIDGE AND STRING ANCHORING DEVICE FOR STRINGED MUSICAL INSTRUMENTS

Glen D. Quan, 152 Jules St., San Francisco, Calif. 94112

Filed Nov. 16, 1973, Ser. No. 418,123
Int. Cl.² G10D *3/04, 3/12*
U.S. Cl. 84—299 **3 Claims**

1. A combined bridge and string-anchoring device for stringed musical instruments comprising a bar having a top surface, a front edge area, a rear edge area and opposite end areas, a series of string-supporting bridge sections mounted in juxtaposition upon said top surface for movement in a direction longitudinally of the strings of the instrument to which the bar is attached, means operable from the front edge area of said bar for individually adjusting the position of said bridge sections,

and means in said front edge area for retaining the beaded ends of the strings, while allowing the strings to pass to said rear



edge area to be folded over said rear edge area and engaged over said bridge sections.

4,069,734

MOISTURE TRAP FOR CLARINETS

Flammarion R. Colaianni, 25 Franklin St., Milford, Mass. 01757

Filed Nov. 9, 1976, Ser. No. 740,104
Int. Cl.² G10D 7/06
U.S. Cl. 84—382 6 Claims



1. In a clarinet having a barrel including a centrally disposed bore with counterbores formed on each end thereof for operatively interconnecting a mouthpiece to the clarinet body, the improvement comprising:

a. a pocket formed in the side wall of the barrel in communication with the bore having means forming an opening extending generally radially to the axis of the bore with one end communicating with said pocket and the opposite end with the exterior of the barrel;

b. a moisture release valve pivotably mounted on the barrel with biasing means operatively connected thereto for continually urging said valve to a first position for closing said opposite end of said opening; and

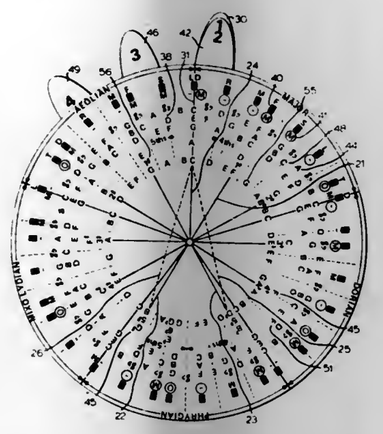
c. means connected to said valve for selectively moving the latter from said first position to a second position for opening said opposite end and clearing said pocket and opening of moisture accumulated therein from the bore and introduced from the mouthpiece.

4,069,735

MUSIC TEACHING AND COMPUTATION DEVICE

Howard William Bertram, 55 Kingsway, Toronto, Canada

Filed Jan. 22, 1976, Ser. No. 651,367
Claims priority, application United Kingdom, Jan. 27, 1975, 3449/75
Int. Cl.² G09B 15/02
U.S. Cl. 84—474 5 Claims



1. A music teaching and computation device comprising:

a first relatively movable display part divided into at least four sectors, each sector representing a given, different mode of music selected from the group of modes consisting of major (Ionian), Dorian, Phyrygian, Mixolydian and Aeolian modes, and each sector bearing a first series of indicia representing the notes of diatonic scales of the mode of music represented thereon;

the indicia of the first series being spaced from one another a first distance representative of a musical interval of pitch of a tone or a second distance substantially half the first distance, and representative of a musical interval of pitch of a semitone, the sequence of first distances and second distances between adjacent notes corresponding to the tone — semi-tone sequence characteristic of the mode of music represented thereby;

a second relatively movable display part bearing a second series of indicia representing in sequence the notes of a musical keyboard, the distances between adjacent indicia of the second series being proportional to the musical interval of pitch between the notes represented by the respective indicia, the distance representing a musical interval of one tone in the second series of indicia being substantially the same as the distance representing a musical interval of one tone in the first series of indicia;

the first and second relatively movable display parts being angularly movable with respect to one another about a common pivot to allow the first and second series of indicia to be moved into registry with one another;

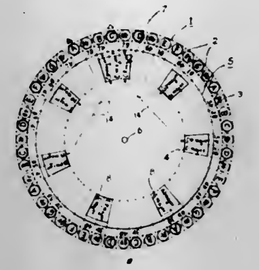
the first display part also including fifth indicia comprising a series of equiangularly spaced notations, separated by an angular distance representing two and one half tones, and the second display part including sixth indicia for registration with the fifth indicia, the sixth indicia representing notes of a musical keyboard and separated from one another by an angular distance representing the appropriate musical interval of a tone or a semi-tone, the progression of notes according to fourth intervals and fifth intervals being denoted by the coincidences of the fifth indicia and the sixth indicia, in the appropriate mode of music.

4,069,736

MUSIC LEARNING DEVICE

Toshio Amemiya, 385 Nakami-cho, Akishima, Tokyo, Japan

Filed Mar. 24, 1976, Ser. No. 669,911
Claims priority, application Japan, Apr. 19, 1975, 50-043672
Int. Cl.² G09B 15/02
U.S. Cl. 84—474 2 Claims



1. A device for learning musical concepts comprising:

a basic disc divided into 48 sectors, said sectors having therein indicia of musical notes to form a circular arrangement of four octave chromatic scales so that keys with sharp and flat key-signatures are in adjoining relationship,

a second disc smaller in diameter than said first disc rotatably attached concentrically to said first disc provided with spaced apart windows to reveal selected portions of said first disc

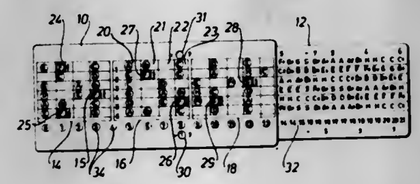
and a third disc rotatably attached concentrically to said first and second discs, said third disc having a diameter smaller than the window arrangement of said second disc and bearing indicia for a do-re scale.

4,069,737

DEVICE FOR TRANSFER OF A CONVENTIONAL NOTE SYSTEM INTO A SYSTEM INDICATING THE POSITION OF THE HAND WHEN PLAYING STRING INSTRUMENTS

John O. Andersson, Ugglevagen 15 B, S-130 10 Ektorp, Sweden

Filed Jan. 26, 1976, Ser. No. 652,316
Claims priority, application Sweden, Jan. 30, 1975, 7501049
Int. Cl.² G10B 15/00
U.S. Cl. 84—485 SR 7 Claims



1. A guide for a musical string instrument of the type having a fingerboard and frets for producing tones, and which directly indicates where the fingers of the hand are to be located along the individual strings of the instrument so that various tones shall be produced, comprising

a slotted slider, and

an elongate slide member movably housed in said slider, said slider and said slide member being slidably displaceable relative to one another in a direction extending longitudinally of said slide member.

said slide member being provided with mutually parallel, longitudinally extending rows of pairs of conventional tone denoting characters, the number of said rows equalling the number of strings of the instrument, and successive pairs of characters in each of said rows being placed according to corresponding successive tone positions on a corresponding one of said strings,

the slider having on one side thereof a plurality of spaced parallel fret denoting lines at least one series of openings devised selectively to register with and selectively to display, groups of characters, each of which groups is selected from among a predetermined plurality of successive pairs of said characters in each row thereof,

the characters in each of said rows representing all tones, including full tones and half tones playable by the associated string, beginning from the key tone of said associated string and rising in scale over at least one octave, and each of said full tones and half tones in each octave being represented twice in immediate sequence on said slide member by one of said pairs of characters, and

said series of openings being disposed in said slider in such manner that each group of characters displayed thereby incudes at least one basic key tone and all of the additional tones and half tones required to denote the scale for at least two octaves in said basic key tone.

4,069,738

INSULATION RETAINER AND ATTACHMENT METHOD THEREFOR

Randall D. McClure, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 9, 1976, Ser. No. 656,761
Int. Cl.² F16B 13/06
U.S. Cl. 85—70 10 Claims



1. In combination, a retainer holding a sheet of relatively soft material such as insulation against a plate of a relatively rigid material such as metal, comprising:

a linearly extending member of a hard but deformable material having flange means extending outwardly adjacent a first end thereof bearing against a first side of said relatively rigid plate with the remainder of said member extending through a hole in said plate and a bore extending longitudinally in said member from said first end towards a second end thereof, said second end being upset to define an enlarged portion bearing against a second side of said relatively rigid plate, said bore terminating at a chamber of larger orthogonal dimension than said bore, said chamber terminating short of said second end of said member;

a rod fitting within and extending outwardly from said bore and having at a first end thereof a head of larger orthogonal dimension than said bore, said head fitting within said chamber said rod initially having a weak portion positioned outside said bore with an extension of said rod being frangibly connected thereto by said weak portion, said extension being broken off after upset of said second end of said member;

a stud extending at least about twice the thickness of said plate to project from said second side of said plate having a tapered end, said tapered end piercing said sheet of soft material which is pushed against it, said stud projecting longitudinally from said retainer after said rod

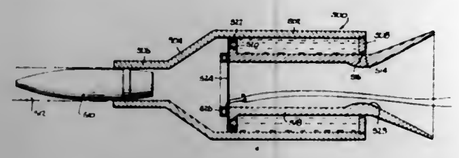
means on said stud retaining said sheet of soft material thereon is broken at said weak portion thereof; and

4,069,739

LIQUID PROPELLANT WEAPON SYSTEMS

Eugene Ashley, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Division of Ser. No. 469,507, May 13, 1974, abandoned. This application July 20, 1976, Ser. No. 707,143
Int. Cl.[2] F41F *15/00, 1/04*
U.S. Cl. 89—1.704 1 Claim



1. A weapon system comprising:
a gun having a firing bore;
a round of ammunition disposed in said firing bore including:
a longitudinally extending cartridge case having a forward end, and an aft end having a transverse base plate with a central bore;
a relatively high mass projectile means held in and closing said forward end of said cartridge case;
a relatively low mass piston longitudinally slidable within and sealed to the interior wall of said cartridge case and disposed aft of said projectile means and forward of said base plate;
said piston having a first face of relatively large cross-sectional area and a second face of relatively small cross-sectional area, a central bore longitudinally extending between said first and second faces, an additional passageway communicating said second face with said first face, and a pressure sensitive obturating means obturating said additional passageway and adapted to open said additional passageway upon a predetermined pressure being provided on said first face;
a converging/diverging nozzle fixed and sealed to said piston about said bore of said piston and journaled through and sealed to said bore of base plate; and
a burstable diaphragm fixed and sealed to said piston, obturating said bore of said piston;
said cartridge case, said projectile means and said first face of said piston and said diaphragm defining a combustion chamber;
said cartridge case, said base plate, said second face of said piston and said nozzle defining a liquid propellant storage chamber.

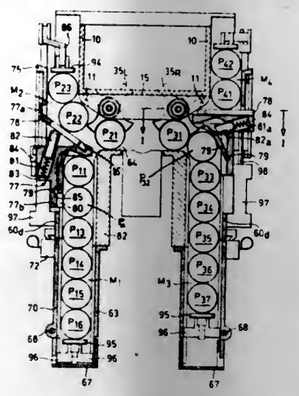
4,069,740

AUTOMATIC WEAPON EQUIPPED WITH AT LEAST TWO CARTRIDGE MAGAZINES

Conrad Hottinger, Zurich; Albert Wüst, Oberengstringen, and Pierre Jenzer, Wallisellen, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed July 30, 1976, Ser. No. 710,225
Claims priority, application Switzerland, Aug. 14, 1975, 10603/75
Int. Cl.[2] F41D *9/02*
U.S. Cl. 89—33 SF 6 Claims

1. An automatic firing weapon comprising at least two cartridge magazines, a common discharge channel, said two cartridge magazines containing loose cartridges for conveyance into the common discharge channel, means for switching the delivery of cartridges from one cartridge magazine to the other cartridge magazine, said switching means comprising mechanism selectively adjustable into two positions independent of the emptying of one of the cartridge magazines, said mechanism in one position feeding the cartridges out of one cartridge magazine into the discharge channel and at the same time blocking the cartridges in the other cartridge magazine, a switching wheel located in the discharge channel, a hydraulic-mechanical feed device for delivering the loose cartridges from the cartridge magazine opened by said adjustable mechanism to said switching wheel, said switching wheel bringing the cartridges into a central position substantially coaxial with the lengthwise axis of the weapon.

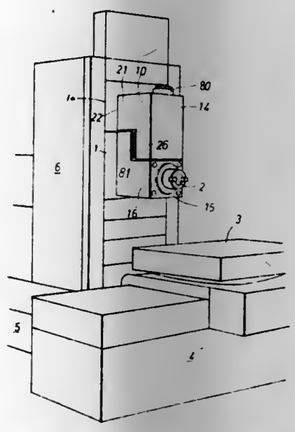


4,069,741

VERTICAL TOOL HEAD FOR HEADSTOCK OF HORIZONTAL DRILLING-MILLING MACHINES

Norbert Ewertowski, Dietzenbach-Steinberg, Germany, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Oct. 26, 1976, Ser. No. 735,689
Claims priority, application Switzerland, Nov. 13, 1975, 14710/75
Int. Cl.[2] B23C *1/12;* B23B *39/16*
U.S. Cl. 90—17 14 Claims



1. A horizontal drilling-milling machine comprising:
a machine frame;
a headstock displaceably mounted in substantially vertical direction at the machine frame;
said headstock including a headstock projection having a headstock clamping surface for clamping thereat a vertical tool head;
a horizontal tool spindle rotatably mounted in said headstock projection;
a vertical tool head having a front face;
support means for pivotably and displaceably mounting the vertical tool head in a position above and for movement substantially parallel to the horizontal tool spindle;

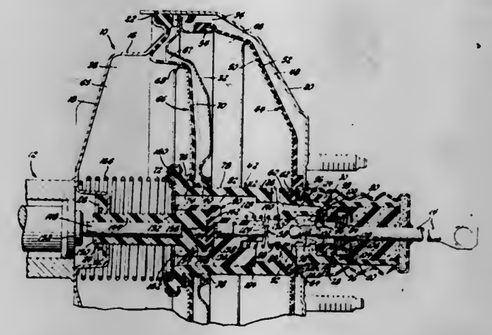
means cooperating with said support means for displacing said vertical tool head between a park position and a work position;
means for clamping said vertical tool head in said work position at said headstock clamping surface of said headstock projection;
said vertical tool head, when in said work position, being drivable by said horizontal tool spindle mounted in said headstock projection;
said displacing means including means for shifting the vertical tool head during its movement into the park position and into the work position each time through two predetermined different length thrust movements which are directed opposite to one another while performing a pivotal movement of said vertical tool head through an angle of about 180° about an axis disposed above and substantially parallel to the horizontal tool spindle;
said support means fixedly clampingly urging said vertical tool head, when in its work position, against said headstock clamping surface of said headstock projection;
said vertical tool head containing a vertical tool spindle having a tool chucking device located at an end of said vertical tool spindle;
said tool chucking device, in the park and work positions of the vertical tool head, being located in front of the support means;
said vertical tool head when in its park position being disposed above said headstock projection with its front face located substantially in a vertical plane containing said headstock clamping surface.

4,069,742

POWER BRAKE BOOSTER SYSTEM

Robert L. Gephart, Spring Valley, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed June 21, 1976, Ser. No. 697,953
Int. Cl.[2] F01B *19/00;* F15B *9/10*
U.S. Cl. 91—369 A 4 Claims



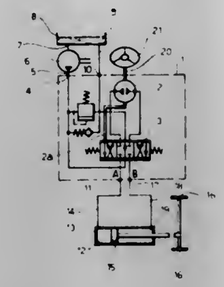
1. In a power brake assembly having a housing, an input member, a pair of movable power walls in said housing, a control valve mechanism for selectively controlling differential air pressure acting on said power walls to operate said assembly in accordance with movement of said input member, an output member for transmitting actuating force to a master cylinder, and reaction means for transmitting a portion of the actuating force reaction to said input member:
a unitary, generally cylindrical, power piston having formed therein a control valve chamber containing said control valve mechanism and a reaction means chamber containing said reaction means, and including as integral portions thereof mounting means for said power walls and support and guide sections for supporting and guiding said piston in axial movements in said housing;
one of said mounting means for one of said power walls being at one end of the piston and of greater diameter than the other mounting means for the other of said power walls and having no part thereof, over which said one power wall must pass during assembly, of lesser diameter and axially closer to said piston one end than any other part thereof, one of said support and guide sections being axially between said one and said other mounting means and of no lesser diameter than said other mounting means, the other of said support and guide sections extending from said other mounting means axially away from said one mounting means and of lesser diameter than said other mounting means, said other mounting means having no part thereof, over which said power walls must pass during assembly, of lesser diameter and axially closer to said piston one end than any other part thereof, said control valve chamber being radially inward of said other support and guide section, said reaction means chamber being radially inward of said one support and guide means, said chambers being separated by a wall having an aperture therethrough sealingly and reciprocably receiving a force transmitting member forming a part of said control valve mechanism and mechanically operatively connecting said input member and said output member through said reaction means when said power brake assembly is actuated.

4,069,743

CONTROL UNITS FOR VEHICLE POWERSTEERING MECHANISMS

Battista Bertanza, Segrate (Milan), Italy, assignor to Riva Calzoni S.p.A., Milan, Italy

Filed July 6, 1976, Ser. No. 702,678
Claims priority, application Italy, July 11, 1975, 25338/75
Int. Cl.[2] F15B *9/10*
U.S. Cl. 91—375 R 1 Claim



1. A control unit for vehicle powersteering mechanism comprising:
a housing having an inlet for connection to a source of hydraulic fluid under pressure and an outlet for returning hydraulic fluid to said source;
a pair of ports for connection to a double chamber hydraulic servomotor the movement of which controls the steering of dirigible wheels of the vehicle;
a hydraulic motor provided with a rotatable element and a follower element;
a distributor valve means provided with at least one displaceable body, in the form of a sleeve, angularly displaceable with respect to a neutral position, said distributor valve means being operable on rotation of a control shaft connected thereto to divert hydraulic fluid flowing from said inlet through said housing to said outlet to one of said ports and thus to its associated chamber of said servomotor, via said hydraulic motor, the hydraulic fluid being exhausted from the other chamber of the servomotor to said outlet via said other port;
means adapted to form a direct connection of said rotatable element of the motor to said control shaft;
means adapted to form a mechanical connection of said

follower element of the motor to the sleeve like displaceable body of said rotatable distributor valve means;

means adapted to limit the displacement of said sleeve like displaceable body with respect to the stationary part of said distributor valve means, and with respect to said neutral position;

a plurality of circumferentially spaced longitudinally extending passages provided in said sleeve like displaceable distributor body to feed hydraulic fluid from said inlet, via said motor, to one or the other of said ports when said sleeve like displaceable distributor body is in its displaced position with respect to the neutral position;

first passages in said housing communicating with said inlet and with said longitudinally extending passages;

second passages in said housing emanating from each of said ports and communicating with said longitudinally extending passages; and

radially extending passages in said sleeve like displaceable distributor body communicating with said first passages in said housing, for feeding hydraulic fluid arriving from said inlet to said distributor valve means.

4,069,744

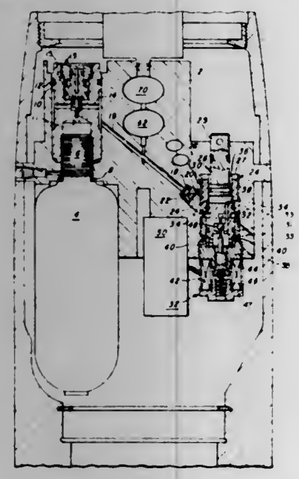
GAS METERING ORIFICE FOR DECREASING GAS CONSUMPTION OF PNEUMATIC ACTUATOR

Larry Gordon Taylor, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 545,460, Jan. 30, 1975, abandoned. This application Aug. 18, 1976, Ser. No. 715,757

Int. Cl.² F15B *15/17, 13/044*

U.S. Cl. 91—417 R **5 Claims**



1. A guidance control surface pneumatically operated actuator for guided missiles or the like comprising:

a. a pressurized source of compressible fluid;

b. a pressure regulator connected to the pressurized source for metering the compressed fluid at a desired pressure;

c. a conduit in communication with the pressure regulator;

d. a restriction means in said conduit for restricting the flow of fluid through the conduit;

e. a first and second chamber means including a first chamber in continuous communication with the conduit for receiving fluid from the restriction means continuously at a pressure reduced proportionally to the rate of gas flow through the restriction means, a second chamber capable of communicating with the restriction means, and a piston separating the first chamber from the second chamber, said piston having opposing sides forming two fluid responsive areas and a stem means attached to one of the opposing sides of the piston, the stem extending upwardly through the first chamber and reducing the fluid responsive area of said one side with respect to that of the opposing side of the piston;

f. a guidance control means connected to the piston stem means for actuation in response to piston movement;

g. a vent passage capable of communicating with the second chamber;

h. a valve means including a ball member connected between the restriction means and the second chamber and between the second chamber and the vent passage, said valve operative to shut off the emission of fluid to the second chamber while venting the second chamber and closing the vent passage while admitting fluid to the second chamber; and

i. a valve control means including a spring biased, solenoid operated valve for selectively driving the valve whereby the piston is capable of being centered, extended and retracted with minimum gas consumption.

4,069,745

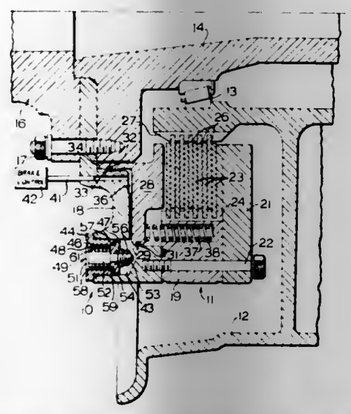
MOISTURE EJECTOR

Robert A. Stinson, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 2, 1976, Ser. No. 737,643

Int. Cl.² F15B *11/08, 13/042*

U.S. Cl. 91—442 **6 Claims**



1. A moisture ejector in combination with the actuating chamber of a pressure fluid actuated device, said moisture ejector comprising:

an axle housing;

an anchor member fixedly connected to the housing including a moisture collecting pocket formed therein connected to the lowest portion of said actuating chamber;

a threaded body portion sealingly mounted in the pocket including a bore formed therethrough;

a valve stem mounted in the threaded body portion;

an external valve connected to a first end of the stem;

an internal valve connected to a second end of the stem; and

resilient means in the bore of the threaded body between the internal and external valves for normally urging the external valve into seated engagement with the threaded body and for simultaneously normally urging the internal valve out of seated engagement with the threaded body, and said internal valve being movable by pressure fluid introduced into said actuating chamber to a closed position blocking the flow path each time pressure fluid is introduced into said actuating chamber, whereby said external valve is opened.

4,069,746

CONTROL ARRANGEMENT FOR A HYDRAULIC POWER TRANSMISSION

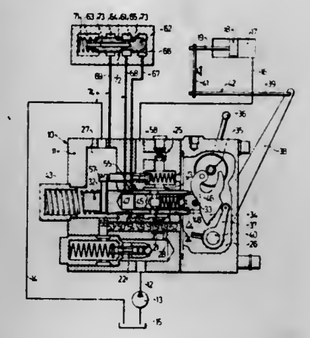
Günter Schwerin, Moglingen, and Werner Reitz, Ottersweier, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 25, 1977, Ser. No. 781,460

Claims priority, application Germany, Apr. 17, 1976, 2617008

Int. Cl.² F15B *13/04, 13/06*

U.S. Cl. 91—448 **8 Claims**



1. In a control arrangement for a hydraulic power transmission, a combination comprising housing means; a pressure channel formed in said housing means; a pump communicating with one end of said pressure channel; cylinder-and-piston means communicating with the other end of said pressure channel; main control valve slide means and precontrol valve slide means cooperating therewith for controlling flow of fluid through said pressure channel; control conduit means branching off from said pressure channel; a first throttle in said control conduit means; a bore in said housing having a first and a second pressure chamber at opposite ends and forming with said pressure chambers part of said control conduit means; auxiliary valve slide means axially movable in said bore between two end positions for controlling flow of fluid through said control conduit means; a spring in one of said pressure chambers urging said auxiliary valve slide means to one of said end positions, said auxiliary valve slide means being moved to the other of said end positions when the fluid pressure in the other pressure chamber exceeds a force imparted to said auxiliary valve slide means by the fluid pressure in said one pressure chamber and the spring, said precontrol valve slide means and said auxiliary valve slide means forming a pair of adjustable throttles arranged in said control conduit means in such a manner that when the throttling action produced by one of said adjustable throttles increases, the throttling action produced by the other adjustable throttle decreases, and vice versa; said control conduit means including a section between said two adjustable throttles which communicates with said first pressure chamber.

4,069,747

CYLINDER CONSTRUCTIONS

James Edward Forry, Monmouth, and Robert Gordon Neer, Salem, both of Oreg., assignors to Towmotor Corporation, Mentor, Ohio

Filed June 28, 1976, Ser. No. 700,272

Int. Cl.² F16J *15/18, 1/00*

U.S. Cl. 92—166 **3 Claims**

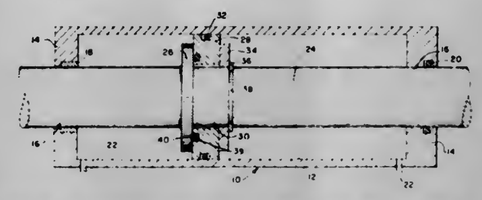
1. A fluid cylinder comprising:

a housing defining a cylinder bore and having aligned piston rod openings at opposite ends thereof and nominally coaxial with said bore;

a piston rod within said bore and extending through both said openings;

a piston within said bore including a central opening receiving said rod and having a shape complementary to that of said rod and being slightly larger than said rod so that said piston may move radially on said rod;

means fixing the axial position of said piston on said rod including at least one annular element defining a shoulder abutted by said piston and further including a retaining ring on said rod and flanking said piston to sandwich said piston against said shoulder;



sealing means interposed between said piston and said shoulder to preclude the leakage of a working fluid therebetween; and

an axially opening, annular groove at the interface of said piston and said annular shoulder, said groove being spaced radially outwardly of said opening and separated therefrom by a land;

said sealing means including a sealing ring in said groove interengaging only said piston and said shoulder.

4,069,748

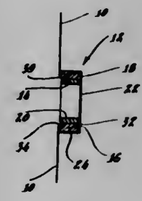
METHOD OF FORMING A NOZZLE OUTLET IN THE STRETCHABLE FLEXIBLE WALL FOR A CONTAINER

Carl A. Frank, River Vale, N.J., assignor to Claire D. Frank; Gerald A. Frank and G. Kendall Parmelee

Division of Ser. No. 633,618, Nov. 20, 1975, Pat. No. 4,017,020. This application Nov. 17, 1976, Ser. No. 742,451

Int. Cl.² B31B *49/04*

U.S. Cl. 93—35 R **2 Claims**



1. A method of forming a nozzle outlet in the stretchable, flexible wall portion of a container, said wall portion being entirely of stretchable, flexible material comprising the steps of:

providing rigid inner and outer sleeves, said inner sleeve having a passage extending therethrough,

providing an exterior conical surface on said inner sleeve tapering at a small angle and converging toward a first end of the inner sleeve,

providing an interior conical surface on said outer sleeve tapering at a corresponding angle to said exterior conical surface and diverging toward a first end of this outer sleeve,

stretching the stretchable, flexible wall portion around the first end of the inner sleeve by forcing the first end of the outer sleeve over the first end of the inner sleeve in telescoping relationship with said wall portion therebetween, and

firmly locking the two sleeves together with said outer sleeve over said inner sleeve in taper-interlocked relationship with the stretched wall portion sandwiched therebetween,

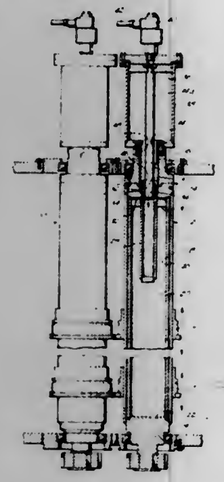
whereby said permanently taper-interlocked sleeves with the stretched plastic wall portion form a permanent nozzle outlet in the wall portion.

4,069,749

EXPANSIBLE DRIVE SHAFT TOOL MECHANISM

John H. Olsen, Vashon, and Albert C. Saurwein, Seattle, both of Wash., assignors to Flow Research, Inc., Kent, Wash.

Filed Aug. 6, 1976, Ser. No. 712,200
Int. Cl.² B26D *1/12*
U.S. Cl. 93—58.1 **10 Claims**



1. The combination comprising an elongated shaft, bearing means rotatably supporting said shaft at longitudinally spaced points thereon, at least one tool element slidably surrounding and movable to different operating positions on said shaft between said bearing means, said shaft comprising, between said bearing means, an elongated resiliently expansible cylindrical outer sleeve member and a cylindrical inner member closely surrounded by and extending longitudinally and coaxially within said outer sleeve member, means forming sealed connections between said members at longitudinally spaced points to define an annular elongated pressurizable chamber therebetween of a thickness radially of said shaft constituting a minor fraction of the average diameter of said chamber, a variable hydraulic fluid pressure source, connecting means placing said source in communication with said chamber, said source being operable to selectively increase pressure in said sealed chamber and thereby expand the diameter of said sleeve member into forcible holding engagement with said tool element.

4,069,750

BREWER WITH TIMER MOUNT

Charles L. Kemp, Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.

Filed Mar. 2, 1977, Ser. No. 773,708
Int. Cl.² A47J *31/44, 31/52*
U.S. Cl. 99—280 **6 Claims**

1. An electric brewing apparatus for coffee and like beverages including a heated base supporting a receptacle and coffee basket therebetween, means to store, heat, and deliver water to said basket, the improvement wherein said base comprises,

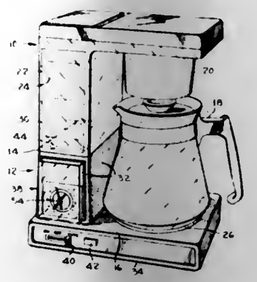
a single molded plastic box-shaped housing with an access opening only at one end and the other end and side walls being integrally formed,

a first set of bosses on said other end spaced from a side wall,

a standard timer having spaced mounting means for securing on a flat inner side wall for adjustment,

second boss means on said side wall disposed adjacent said one end,

all said bosses directed towards and molded from said one end, and



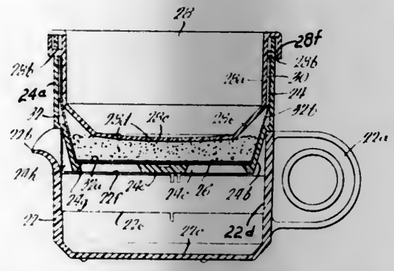
wedging means between the timer and first bosses whereby the timer is dropped into the access opening to wedge at the first bosses and is then secured to the second boss means for flat mounting on the wall surface with substantially only axial access to said opening.

4,069,751

COFFEE BREWING APPARATUS

Jerry P. Gronwick, Park Ridge, and Robert J. Augustine, Downers Grove, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jan. 10, 1977, Ser. No. 758,226
Int. Cl.² A23F *1/00*
U.S. Cl. 99—306 **10 Claims**



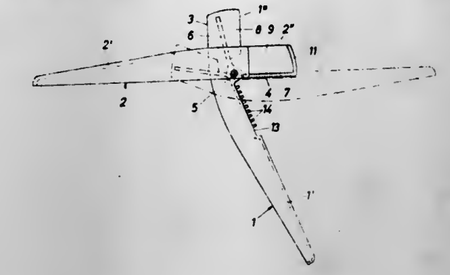
1. A coffee making apparatus comprising a coffee basket having a cup-shaped configuration with the bottom wall thereof being formed with coffee discharge openings, filter means extending across said openings to block the discharge of coffee grounds, a basket liner having a shape complementary to said basket and being formed to be telescopically received within said basket to form a brewing chamber between the bottom of said liner and the upper surface of the bottom of said basket, assembly means on said basket and said liner to lock said basket and liner against relative movement, said basket liner having cylindrical side walls and a flat bottom formed with spaced apertures to provide a spreader plate for hot water delivered to said liner, said spreader plate metering the flow of water to said brewing chamber, a cup-shaped disposable filter having a flat bottom and corrugated side walls, said disposable filter being positioned within said brewing chamber with said flat bottom of said disposable filter coextensive with said filter means and said walls of said disposable filter being received between said liner side walls and said basket side walls.

4,069,752

HAND PRESS

Reinhard Ahner, 25, Wolfganggasse, A-1120 Vienna, Austria

Filed May 21, 1976, Ser. No. 688,725
Int. Cl.² B30B *9/02*
U.S. Cl. 100—112 **4 Claims**



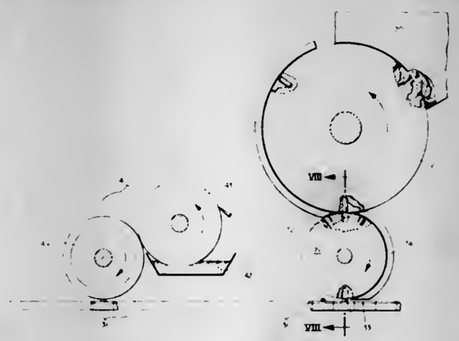
1. A hand press for a vegetable, herb, spice or fruit, comprising two pivotally connected levers, each of which has two arms of unequal length, the longer arms of the two levers serving as levers which are jointly operable with one hand, the shorter arms of the two levers defining during a movement toward each other a pressing chamber adapted to receive a vegetable, herb, spice or fruit to be squeezed out, the size of which is of the order of magnitude of a clove of garlic, said pressing chamber being defined by at least two side walls, an end wall, which is disposed opposite to the pivotal connection between the two levers, a sieve bottom formed by a sieve member on one of the shorter arms, and a top wall acting as a pressing member on the other of the shorter arms, and a pinned plate on the lever carrying said pressing member, said plate carrying pins that protrude from the plate in the same number and the same pattern as the holes in the sieve bottom and are positioned such that they will enter the sieve openings when the levers are rotated in a direction opposite to the direction of rotation of the pressing operation.

4,069,753

APPARATUS AND METHODS FOR THE RANDOM SPIN PRINTING OF CAPSULES

Edward M. Ackley, deceased, late of Stone Harbor, N.J. by Edward Michael Ackley, co-executor, and by James Brian **Ackley, co-executor, Cambridge, Ill., assignors to Hartnett Company, Philadelphia, Pa.**

Continuation-in-part of Ser. No. 399,817, Sept. 24, 1973, Pat. No. 3,931,884. This application Dec. 22, 1975, Ser. No. 643,177
The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.
Int. Cl.² B41F *17/36;* B65G *47/14*
U.S. Cl. 101—40 **9 Claims**



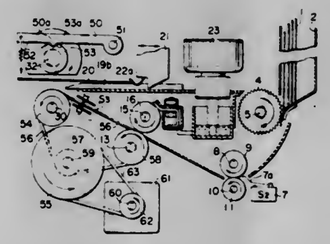
9. In a method of printing capsules which are randomly arranged in a container, said capsules having body portions and cap portions which are of greater transverse dimension than said body portions, the steps which comprise: separating the capsules from one another, arranging them with their axes disposed radially in an annulus and moving them in a path along said annulus, turning the capsules while moving along said path to an orientation with their axes in an axial direction with respect to said annulus, containing said capsules in said path while swinging them through an arc of 180°, releasing said capsules after they have moved through said arc onto a moving support, maintaining said capsules in a rotatable condition in said axial direction on said support, and then contacting said capsules with a printing surface which is moving in the same direction but faster than the speed of movement of the capsules, thereby rotating said capsules while they are being printed.

4,069,754

TRANSFER-PRINTING APPARATUS

Kenzo Araya; Takashi Hashimoto, and Yoshitaka Fukui, all of Tokyo, Japan, assignors to Tanaka Seiki Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1975, Ser. No. 618,338
Claims priority, application Japan, May 13, 1975, 50-57630
Int. Cl.² B41L *21/00, 47/18, 47/56*
U.S. Cl. 101—53 **4 Claims**



1. A transfer-printing apparatus including: workpiece advancing rollers which remove workpieces one by one from a workpiece hopper wherein workpieces are stacked and advance each workpiece to a printing station along a path, means for moistening each workpiece with solvent during the path of advancement of the workpieces; a transfer-printing mechanism having two cooperating rotatable press rollers with rotation axles parallel to those of the workpiece advancing rollers, a first press roller of the two press rollers having a surface consisting of a flat portion and a cylindrical pressing portion; the flat portion serving to create a gap between said first and second press rollers when the flat portion is located adjacent the second roller for inserting therethrough a master card with printed materials thereon, the cylindrical pressing portion cooperating with said second press roller to press together the workpiece and the master card to transfer-print the printed materials and to remove the master card together with the workpiece in a direction opposite to the direction of insertion of the master card; a master card postiion detector which generates a signal when the leading edge of a master card is manually inserted through the gap to a predetermined position; a workpiece position detector provided along the path for generating a signal when the leading edge of the workpiece reaches a predetermined point; a driving mechanism for driving the workpiece advancing rollers and for driving the transfer-printing mechanism for one rotation to transfer-print and to orient the first press roller flat portion adjacent the second roller to recreate said gap between the flat portion and the second press roller after completion of the transfer-printing; and a driving mechanism control circuit for controlling the driving mechanism so that the workpiece advancing rollers move the workpiece in accordance with the signal from the

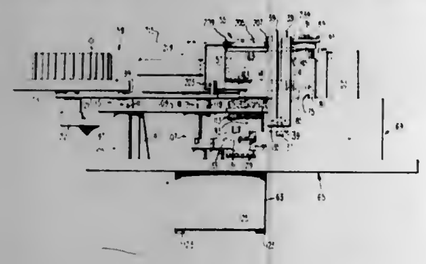
master card position detector and so that the transfer-printing mechanism begins operation after a predetermined time interval after the signal is generated from the workpiece position detector.

4,069,755

RIBBONLESS ENDORSER FOR PRINTING BOTH FIXED AND VARIABLE INFORMATION ON MOVING DOCUMENTS

Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 20, 1976, Ser. No. 650,707
Int. Cl.² B41J *3/46*
U.S. Cl. 101—93.12 **26 Claims**



1. A printer for printing both fixed and variable information on documents moving along a transport path in a document processor, said printer comprising:

a. first printing means disposed on opposite sides of said transport path for printing said variable information, said first means including activatable impact producing means rotatable impact receiving means,

b. second printing means disposed on opposite sides of said transport path for printing said fixed information, said second means including rotatable impressing means and biased back-up means,

c. adjustable means for transferring ink to said impact receiving means of said first printing means and to said impressing means of said second printing means, and

d. drive means for controllably rotating said impact receiving means of said first printing means and said impressing means of said second printing means at a speed proportional to the speed of travel of said documents along said transport path, said controlled rotation of said impact receiving means in cooperation with the actlvation of said impact producing means being effective to print said variable information on a said document in controlled spaced relationship, and said controlled rotation of said impressing means in cooperation with said biased back-up means being effective for printing said fixed information on a said document in predetermined relationship with said variable information.

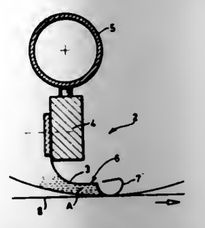
4,069,756

SQUEEGEE DEVICE

Jacobus Gerardus Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen, Netherlands

Continuation-in-part of Ser. No. 453,812, March 22, 1974, abandoned. This application Dec. 19, 1975, Ser. No. 642,343
Claims priority, application Netherlands, Apr. 5, 1973, 7304774
Int. Cl.² B41F *15/44*
U.S. Cl. 101—120 **4 Claims**

1. A squeegee device for a cylindrical stencil of a screen printing machine comprising a flexible squeegee strip comprising a thin metal strip for applying compressive force against the inner wall of the stencil, one edge of said strip being secured in a fitting and the other free edge of the strip protruding from the fitting, means on the free edge of the strip at least a portion of which bears directly against the inner wall of the stencil for rigidifying said free edge so the flexures of the free



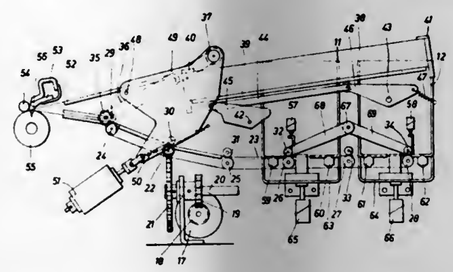
edge during printing are avoided and uniform contact of the free edge with the stencil is obtained.

4,069,757

PROGRAMMED OPERATION OF ROTARY DUPLICATOR MACHINE CAPABLE OF WHOLE-PAGE, PARAGRAPHWISE AND LINEWISE PRINTING UPON WHOLE-PAGE SHEETS AND SMALLER-FORMAT CARDS OR SLIPS

Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33, Germany

Filed Apr. 20, 1977, Ser. No. 789,434
Claims priority, application Germany, Apr. 26, 1976, 2618659
Int. Cl.² B41L *11/08*
U.S. Cl. 101—132.5 **12 Claims**



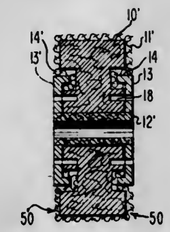
1. In a rotary duplicator machine of the type provided with a rotary printing drum, an image transfer location, a printing form mounted on the drum and bearing a transferrable image in the form of a text comprised of a plurality of successive lines, a counterpressure element and activatable means operative when activated for moving the counterpressure element into and out of operative position to effect transfer of the whole text, individual lines or groups of lines to sheet material transported between the printing drum and the counterpressure element, infeed rollers located upstream of the image transfer location for feeding sheet material to the image transfer location, activatable sheet feeding means operative when activated for removing whole-page sheets onto which the entire text of the printing form is to be transferred from a stack of such sheets and feeding such whole-page sheets to the infeed rollers, activatable card feeding means operative when activated for feeding to the infeed rollers cards of smaller format than the whole-page sheets and onto which only preselected portions of the text on the printing form are to be transferred, a delivery station downstream of the printing drum, an outfeed transport means for transporting printed whole-page sheets and smaller-format cards from the printing location towards the delivery station along an outfeed path having two branches, the first branch leading directly to the delivery station, the second branch including a turnover means for turning over printed cards to cause them to be deposited at the delivery station each one printed-side-down upon the back of the previously printed card, adjustable diverting means operative when activated for diverting cards transported along the outfeed path into the second branch, and activatable marking means located intermediate the printing drum and delivery station and operative when activated for providing routing markings on the printed whole-page sheets and smaller-format cards, in combination therewith, programmable control means automatically operative for activating preselectable ones of said activatable means preselectable numbers of times in preselectable sequences.

4,069,758

INK ROLL WITH FABRIC COVER RETENTION AND PROTECTION DEVICE

Russell William Docteur, Canadaigua, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 29, 1976, Ser. No. 681,541
Int. Cl.² B41F *31/26*
U.S. Cl. 101—348 **5 Claims**



1. A fabric ink roll comprising,

a cylindrical core roll having a smaller measurement across the width of the outer exposed surface than the diameter, said roll being covered with a fabric sock drawn taut about the outer exposed surfaces thereof, a pair of retaining washers, one on each flat side of said cylindrical core roll, each washer having an outer peripheral lip or rim extension bearing means extending into the core roll for distributing load applied to the outer exposed surface and for clinching the fabric sock into the core roll to clamp and retain the fabric sock taut about the outer surface of the core roll, said peripheral lip or rim extension bearing means being positioned in said core roll closer to the outer diameter of the core roll than to the center of the cylinder cylindrical core roll

and said retaining washers each having a plurality of apertures formed therein and the core roll has corresponding recesses punched therein which are adapted to allow ink to penetrate the core roll.

4,069,759

LIGHT AND HEAT FORMATION OF CONDUCTIVE IMAGE PRINTING PLATE

Ichiro Endo, Yokohama; Hajime Kobayashi, Mitaka, both of Japan, and Kikuo Kinjo, deceased, late of Tokyo, Japan by Ayako Kinjo, legal representative, assignors to Canon Kabushiki Kaisha, Japan

Filed July 25, 1975, Ser. No. 599,061
Claims priority, application Japan, July 27, 1974, 49-86384; Aug. 16, 1974, 49-94366
Int. Cl.² G03C *1/42*; G03G *5/026, 5/028*
U.S. Cl. 101—467 **35 Claims**

1. A process for electrostatic printing comprising the steps of:

A. providing a member having an insulating photosensitive layer including an organic silver salt compound, a reducing agent and an insulating medium, wherein said member, when treated by a process including exposure to image light from an original, provides in the layer a conductive metallic silver grain image corresponding to said image light,

B. employing said treated member as a master by forming an electrostatic latent image thereon,

C. developing said image and

D. transferring said developed image to a transfer material, whereby the durability of said master and the resolution of said developed image are unexpectedly enhanced.

13. A process for electrostatic printing comprising the steps of:

A. providing a member having an insulating photosensitive layer formed by dispersing a silver salt compound in an insulating medium, wherein said member, when treated by a process including exposure to image light from the



original, provides in the layer a conductive metallic silver grain image corresponding to said image light, said silver grain image having a specific resistance ρ_1 less than 10^{13} ohm-cm, the remaining portion of said layer having a specific resistance ρ_2 more than 10^{11} ohm-cm, and ρ_1 is less than ρ_2 by a factor of two powers of ten or more;

B. employing said treated member as a master by forming an electrostatic latent image thereon,

C. developing said image and

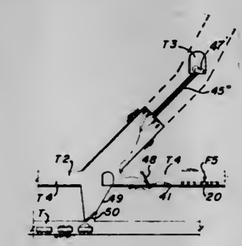
D. transferring said developed image to a transfer material, whereby the durability of said master and the resolution of said developed image are unexpectedly enhanced.

4,069,760

METHOD FOR DRIVING A SHAFT WITH SHAPED CHARGES

Robert E. Eckels, 2104 Youngfield St., Golden, Colo. 80401

Filed Mar. 1, 1976, Ser. No. 662,508
Int. Cl.² F42D *1/02, 3/04*
U.S. Cl. 102—23 **12 Claims**



1. A method for forming a shaft of a large cross-section of a variable predetermined shaped at any depth through earth material by incremental explosions, comprising the steps:

a. placing an array of a plurality of individual, and separate from each other, shaped charges at a desired stand-off adjacent to and spaced from the surface of the to-be extended end of the shaft, said charges being positioned and variably spaced apart in a predetermined spaced array, so as to effect a predetermined size of breakage of the material essentially in the predetermined shaped cross-section, for depth of each explosion,

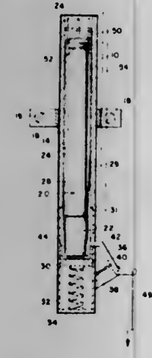
b. essentially simultaneously detonating said spaced shaped charges,
c. placing mucking equipment in position to muck the broken material,
d. mucking the broken material to expose the surface of the end of the shaft, and
e. repeating the steps until the desired depth of shaft is attained.

4,069,761

VEHICLE FLARE ASSEMBLY AND LAUNCHER

Fernando Jimenez, 649 Jackson Ave., Elizabeth, N.J. 07201

Filed Jan. 3, 1977, Ser. No. 756,285
Int. Cl.² F42B *4/26*
U.S. Cl. 102—37.4 **7 Claims**



1. A pyrotechnic signal device comprising:
a flare assembly including
a base,
a flare inserted in said base,
a plurality of legs pivotably mounted on said base, and
a tube for launching said flare assembly from a vehicle including
means on said tube for mounting said tube on a vehicle,
a cup-shaped pusher element slidably mounted in said tube receiving the base of said flare assembly,
compressed spring means between said pusher element and tube for sliding said pusher element in said tube to catapult said flare assembly onto a roadway,
stop means in said tube for limiting the amount of sliding movement of said pusher element,
trigger release means extending through said tube adapted to overly said pusher element, said trigger release means being actuated from within the interior of a vehicle, and
flare ignition means on said flare in frictional engagement with the interior of said tube for igniting said flare as said flare is catapulted and launched from said tube by said pusher element.

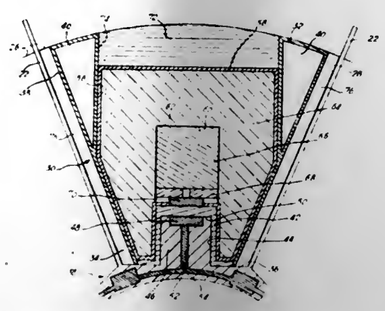
4,069,762

EMISSIVE DECOYS

Louis Maury, Toulouse, France, assignor to Societe E. Lacroix, Muret, France

Filed Jan. 26, 1976, Ser. No. 652,348
Claims priority, application France, Jan. 29, 1975, 75 02725
Int. Cl.² F42B *4/26*
U.S. Cl. 102—90 **6 Claims**

1. An elementary emissive decoy intended to be set in operation in an attempt to protect a vehicle such as a surface ship from the threat constituted by an infra-red guided missile, comprising a water-tight casing provided with float means, including a first compartment and a second compartment a portion of which extends within the said first compartment, a liquid aerosol enclosed within the said first compartment, a pyrotechnic composition having a high calorific effect enclosed within the said second compartment, and means for controlling the ignition of the pyrotechnic composition,



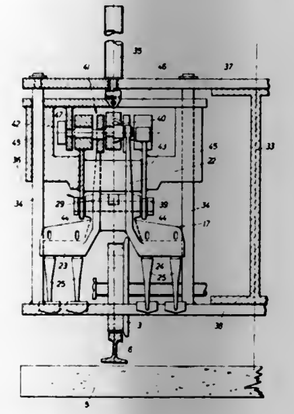
whereby ignition of the pyrotechnic composition forms a cloud of droplets of the aerosol while giving it considerable calorific energy before dispersion.

4,069,763

MOBILE TRACK TAMPER

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed June 14, 1976, Ser. No. 695,733
Claims priority, application Austria, Feb. 20, 1976, 1238/76
Int. Cl.² E01B *27/16*
U.S. Cl. 104—12 **8 Claims**



1. A mobile track tamper comprising a frame arranged for mobility on a track consisting of a multiplicity of ties and two rails fastened to the ties, a tamping head vertically movably mounted on the frame in vertical alignment with a respective one of the rails, and a power drive for vertically moving the tamping head, the tamping head including a pair of ballast tamping tool implements arranged for reciprocation in the direction of track elongation towards and away from each other and capable of tamping ballast under respective ones of the ties upon vertical downward movement of the tamping head and immersion of the tamping tool implements in the ballast adjacent the respective ties, a carrier whereon the ballast tamping tool implements are mounted, and drive means for vibrating and reciprocating the tamping tool implements mounted on the carrier and connected to the implements, wherein each ballast tamping tool implement is constituted by a rigid unit consisting essentially of
1. a tamping tool holder having
a. an arm having a longitudinal plane of symmetry and

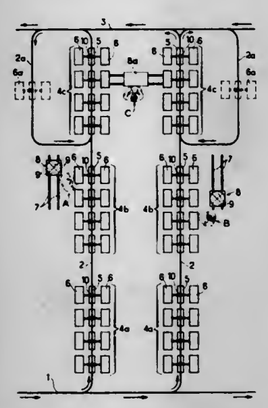
mounted on the carrier for pivoting in a plane vertical to the track and passing through the rail, the longitudinal plane of symmetry of the tamping tool holder arm extending in the vertical plane and the holder arm being connected to the drive means, and
b. two arms rigidly connected to, and extending transversely of the track from, the vertically extending arm to the left and to the right of the vertical plane, and
2. at least one stationary tamping tool mounted on each of the transversely extending holder arms and extending vertically downwardly from the holder arms for immersion in the ballast to the left and to the right of the rail.

4,069,764

MANUFACTURING PRODUCTION LINE AND METHOD

Jean-Pierre Teyssedre, Bretigny-sur-Orge, France, assignor to Regie Nationale des Usines Renault, France

Continuation-in-part of Ser. No. 560,262, March 19, 1975, abandoned. This application Aug. 25, 1975, Ser. No. 607,633
Claims priority, application France, Mar. 28, 1974, 74 10841
Int. Cl.² B61B *13/00*
U.S. Cl. 104—88 **6 Claims**



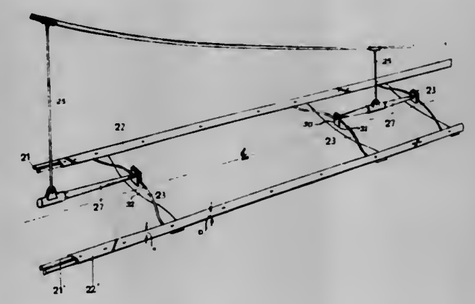
1. In a manufacturing production line of the type employing a conveyor system including a supply line for supplying work handling elements to a plurality of individual treatment stations and a discharge line for removing the work handling elements from said treatment stations, the improvement wherein said individual treatment stations each comprises:
two short parallel treatment conveyor lines connected between said supply line and said discharge line;
two work stations located one along each of said short conveyor lines and adapted to receive a plurality of said work handling elements in a first group and to retain the said first group for individual treatment of articles supported by said work handling elements;
a tests station located between said two short conveyor lines, said tests station being adapted to receive two groups of work handling elements after treatment of each of said groups one at each of said work stations and to retain said groups for testing of articles supported by said work handling elements on said two short conveyor lines;
a plurality of carriages for holding a supply of components employed in the treatment of articles supported on said work handling elements;
means mounting said carriages one adjacent each treatment conveyor line for movement parallel thereto; and
a workshop floor having formed therein a gutter containing a receiving tank mounted for pivotal movement around a hinge, and a grating mounted for pivotal movement around a second hinge to cover said tank;
said two short parallel treatment conveyor lines at each treatment station being located sufficiently close together to enable the testing at said tests station of said two groups of articles thereon to be performed by a single operator placed therebetween.

4,069,765

CABLEWAY SYSTEM AND PARTICULARLY SUPPORT SYSTEM THEREFOR

Gerhard Muller, Zipfelwiesenstrasse 7, Dietlikon, Switzerland

Filed Dec. 4, 1975, Ser. No. 637,675
Claims priority, application Switzerland, Dec. 10, 1974, 16393/74; Sept. 9, 1975, 11663/75
Int. Cl.² B61B *12/02*; E01B *25/18*
U.S. Cl. 104—123 **9 Claims**



1. Support system for a cableway or cable car system to transport a movable load (5) thereover comprising
a plurality of pylons (3);
a catenary or support cable (1) supported on the pylons (3);
a tensioned carrier cable (2) on which the movable load (5) is suspended for movement along the carrier cable (2) while being supported thereby, said carrier cable (2) including at least two individual cables (2, 2'; 21, 21');
cross ties (23) connecting the two individual cables, spaced from each other, whereby two individual cables form a trackway,
connecting rods (27) located intermediate the individual cables, connecting two adjacent cross ties and pivotally connected to said cross ties;
spacers (4) suspending and supporting the carrier cable (2) from the support cable (1), said spacers being dimensioned to maintain the carrier cable in upwardly bowed condition when unloaded, and to assume an approximately straight or level state when loaded by the load (5) and being pivoted to said connectings rods (27) to support said connecting rods, and hence said cross ties (23), and hence the trackways;
the tension in the carrier cable (2) being at least twice the tension in the support or catenary cable (1), and the sum of all tensions in the spacers (4) between adjacent pylons (3) being approximately equal to the weight of the carrier cable (2) plus the weight of the average load, whereby a downwardly directed force will arise at the pylons with respect to the carrier cable and which corresponds approximately to the average load,
the cables (1, 2) being relatively so tensioned and arranged that, in side view, the curve formed by the support or catenary cable (1) and the curve formed by the carrier cable (2) touch each other midway between the pylons to provide for equalization of tension in said cables;
at least one force equalization plate (13) located intermediate the pylons (3) at the touching location;
and clamping means (14, 15; 16, 17) secured to said force equalization plate (13) and in clamping engagement with both said support cable (1) and said carrier cable (2)
and clamped to and connecting together both the support cable (1) and the carrier cable (2) to prevent relative

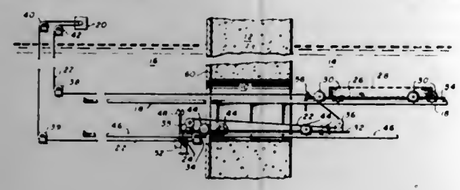
longitudinal displacement of said support cable (1) and said carrier cable (2) with respect to each other.

4,069,766

FUEL TRANSFER MACHINE

Irving Bernstein, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 28, 1975, Ser. No. 636,347
Int. Cl.² B61B 9/00
U.S. Cl. 104—173 R **8 Claims**



1. A telescoping nuclear fuel transfer system for transferring fuel bundles from the near side to the far side of a barrier, said transfer system comprising:

a. a first path extending from the near side to the far side of the barrier;

b. an elongated fuel transfer carriage translatable in the direction of its longitudinal axis along said first path from said near side to said far side, said carriage having near and far ends corresponding to the near and far sides of the barrier and said carriage having means for receiving fuel assemblies and for carrying the fuel assemblies in a position substantially parallel to the direction of said carriage's longitudinal axis;

c. a second path substantially parallel to said first path;

d. an elongated shuttle translatable along said second path in the direction of said carriage's longitudinal axis, said shuttle having near and far ends corresponding to the near and far sides of the barrier;

e. a first sheave fixedly located at the near side of the barrier;

f. a second sheave secured to said near end of said shuttle;

g. a third sheave secured to said far end of said shuttle;

h. a drive cable serially passing over said first, second, and third sheaves, in that order, and thereafter being affixed to said near end of said fuel transfer carriage; and

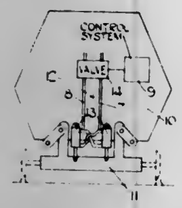
i. means operating on said cable for driving said cable.

4,069,767

PNEUMATICALLY CONTROLLED HYDROMECHANICAL RAILWAY CAR STABILIZING APPARATUS

Stanley George Glaze, Brierley Hill, England, assignor to Lucas Aerospace, Birmingham, England

Continuation of Ser. No. 412,628, Nov. 5, 1973, abandoned. This application July 25, 1975, Ser. No. 598,942
Int. Cl.² B61F 3/00, 5/12, 5/24, 5/44
U.S. Cl. 105—164 **14 Claims**



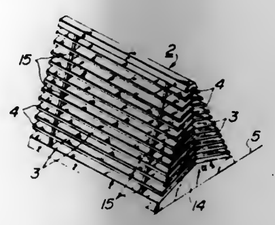
1. A control system for a stabilising for a rail vehicle body which is provided with jacks for controlling the tilt of the body with respect to a bogey, comprising the combination of an angular accelerometer which is responsive to the angular velocity of the body about the longitudinal axis thereof and which comprises a balanced mass, a lateral accelerometer which is responsive to acceleration of said body in a directional normal to said longitudinal axis, first and second hydro-mechanical servo-mechanisms having input members driven by said angular and lateral accelerometers respectively and output members, a control valve for selectively applying a fluid pressure to said tilting jacks, means, responsive to movement of said output members of said servo-mechanisms, for moving a control part of said control valve so that in use, lateral acceleration sensed by the lateral accelerometer causes the movable parts of the control valve to be moved in one direction to cause angular movement to be applied to the body by the tilting jacks, such angular movement being sensed by the angular accelerometer to cause movement of the movable part of the control valve in the opposite direction.

4,069,768

DEVICE FOR CONTROLLING A PROPAGATION DIRECTION OF NOISE

Massyasu Matsumoto, Zushi; Kazuyoshi Iida, Yokohama; Yoshikazu Kondo, Yokohama; Keiichiro Mizuno, Yokohama; Sadao Nomoto, Yokohama; Noriaki Murayama, Kawasaki, and Kei Watanabe, Yokohama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 14, 1976, Ser. No. 686,338
Claims priority, application Japan, May 28, 1975, 50-63683; May 28, 1975, 50-63684; June 2, 1975, 50-66157; Dec. 29, 1975, 51-157979; Dec. 29, 1975, 51-157980; Feb. 18, 1976, 51-16687; Apr. 14, 1976, 51-41318
Int. Cl.² B61D 17/00; B61K 13/00
U.S. Cl. 105—452 **12 Claims**



1. A device for controlling a propagation direction of noise, comprising a hollow structural body composed of a plurality of elongate hollow passages superimposed one upon the other and spaced apart from each other, said passages being arranged in a propagation direction of noise emitted from a noise source, and adjacent passages located at least on a line perpendicular to said propagation direction and being different in length from each other, said noise emitted from said noise source passing through said adjacent passages of different length and refracted by all of said passages and lagged in phase with respect to direct propagation sound emitted from said noise source and passed over the upper edge of said hollow structural body to produce a sound reducing region.

4,069,769

TABLE STRUCTURE

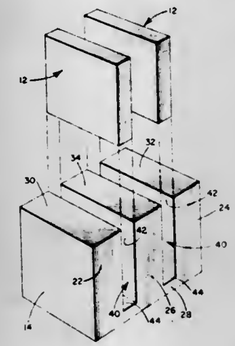
Marilyn M. Abrams, 3440 Beret Lane, Silver Spring, Md. 20906

Continuation-in-part of Ser. No. 593,215, July 7, 1975, abandoned. This application Aug. 3, 1976, Ser. No. 711,225
Int. Cl.² A47B 7/02
U.S. Cl. 108—11 **17 Claims**

1. A table structure comprising:

a main table having a substantially planar main table top surface broken by at last one slotted opening having a slot width and a slot length measured in the plane of said main table top surface,

an auxiliary table having an auxiliary table top surface, a skirt extending from said auxiliary table top surface and having a substantially planar first skirt surface extending outwardly at an angle to said auxiliary table top surface along at least a portion of the perimeter of said auxiliary table top surface for a distanc substantially equal to said slot width, and retractable leg means attached to said



auxiliary table, said leg means being movable between an extended position for supporting said auxiliary table and a storage position within an envelope defined by said auxiliary table top surface and said skirt, and

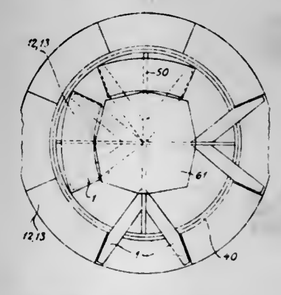
means for removably supporting said auxiliary table in said slotted opening with said first skirt surface substantially in alignment with said main table top surface when said leg means are in said storage position.

4,069,770

TABLE WITH AN UNDIVIDED TABLE-TOP

Henry Filso Bertelsen, Kibaek Mobelfabrik, DK-6933 Kibaek, Denmark

Filed Apr. 30, 1976, Ser. No. 682,155
Claims priority, application Denmark, May 5, 1975, 1941/75
Int. Cl.² A47B 1/05
U.S. Cl. 108—66 **3 Claims**



1. A table comprising

an undivided circular table top having a downwardly facing peripheral edge;

a frame below said table top;

a cross-member carried in said frame and having radiating arms;

a bottom plate carried below said cross-member, said bottom plate being of less extent than said table top;

a top plate carried above said cross-member in spaced relation to said bottom plate, said top plate being of less extent than said table top;

a plurality of pairs of extension leaves; and

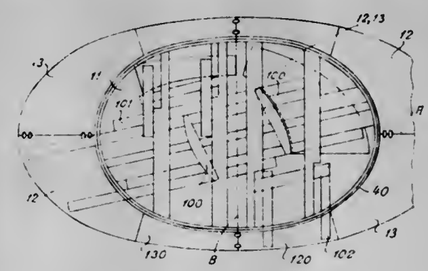
a plurality of pairs of sliding bars slidably mounted between said plates, each pair of said sliding bars supporting a pair of said extension leaves, each said pair of sliding bars being slidable between an inserted position and an extended position relative to said plates to selectively position a respective pair of extension leaves under said table top in a concealed manner and astride said table top, each said sliding bar having a free end slidable along an arm of said cross-member whereby said pairs of sliding bars are disposed on said frame and under said top plate in said extended position and between said plates in said inserted position.

4,069,771

OVAL TABLE WITH UNDIVIDED TABLE TOP

Henry Filso Bertelsen, Kibaek Mobelfabrik, DK-6933 Kibaek, Denmark

Filed Apr. 30, 1976, Ser. No. 682,154
Claims priority, application Denmark, May 5, 1975, 1942/75
Int. Cl.² A47B 1/05
U.S. Cl. 108—66 **2 Claims**



1. An oval table having

an undivided oval shaped table top having a major longitudinal axis and a minor transverse axis and a downwardly facing peripheral edge;

a frame disposed below said table top for supporting said table top thereon;

four pairs of hinged leaves for selective disposition in an extended position peripherally about said table top and a retracted position below said table top and on said frame, each said pair of leaves being disposed in unfolded relation in said extended position to increase the surface area of the oval table and being disposed in folded relation on each other in said retracted position, said pairs of leaves being disposed in a common horizontal plane in said retracted position, said leaves having two pairs of leaves disposed on said major axis and two pairs of leaves disposed on said minor axis with said leaves on said major axis being larger in surface area than said leaves on said minor axis; and

sliding bars slidably mounted on said frame and secured to said pairs of leaves for moving said leaves between said positions, said sliding bars secured to said pairs of leaves on said major axis being disposed at an acute angle to said major axis and said sliding bars secured to said pairs of leaves on said minor axis being disposed parallel to said minor axis.

4,069,772

TIER SUPPORT SYSTEM FOR FANCY CAKES

Ray Haapala, Rte. 3, Box 76, Dassel, Minn. 55325

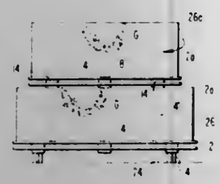
Filed Sept. 22, 1976, Ser. No. 725,579
Int. Cl.² A47B 11/00
U.S. Cl. 108—94 **1 Claim**

1. In a knock-down pallet support system for multi-tiered cakes,

a first flat pallet having a central hole and a plurality of radially spaced angularly disposed holes therethrough,

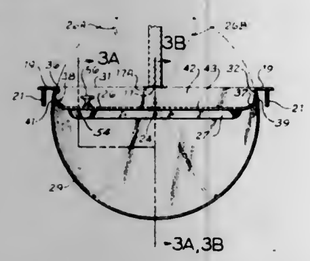
a spike having a lower end removably engageable in said central hole and having a shank extending upwardly from the upper surface of said first pallet,

a plurality of leg members adapted to support said first pallet spaced above a horizontal supporting surface, each leg member having
a neck for engaging through one of said other holes,
an enlarged collar below the neck for engaging against the under side of said first pallet,
an enlarged head removably engaged on the upper end of the neck for holding the first pallet between the collar



and head and providing a bearing for a superior pallet, and a shank depending from the collar and having a lower free end for resting on said supporting surface,
and a second flat pallet disposed above and rotatably supported by the first flat pallet, said second flat pallet having
a central hole adapted to rotatably accommodate the shank of the spike and
a lower surface adapted to slidably rest upon the heads of said leg members.

4,069,773
COMBINATION PASS-THROUGH AND DEAL TRAY FOR TELLERS
Larry G. Clark, 5532 Hollister Drive, Indianapolis, Ind. 46224
Filed June 17, 1976, Ser. No. 697,066
Int. Cl.² E05G *7/00*
U.S. Cl. 109—19 **6 Claims**



1. A combination pass-through and deal tray comprising:
an upwardly opening housing having a front margin and a rear margin;
closure means in the upper portion of said housing, and normally closing the opening in the top of said housing, said closure means being operable to open the top of said housing to the bottom of said housing adjacent said front and rear margins alternately;
said housing being semi-cylindrical and having a front, rear, and bottom inner wall defined by an inner cylindrical surface having a horizontal cylindrical axis at a location between and spaced from the front and rear margins;
and said closure means including a plate mounted in the top portion of the housing and pivotable on said axis to open the space from the top of the housing to the bottom of the housing at the front of said axis and, alternatively, at the rear of said axis to permit passage of items under said plate; the top of said housing being above the horizontal plane containing said axis, said plate being below the top of said housing and having upwardly projecting front and rear end portions, said end portions being spaced below the top of said housing, and said upwardly projecting end portions cooperating with said front and rear inner walls to facilitate manual removal of thin flat objects from said plate when said plate is disposed horizontally and serving as a deal tray.

4,069,774
DIGGING AND PLANTING MACHINE HAVING PLURAL SURFACE DETECTING AND SIGNALLING MEANS
Stig-Gunnar Lofgren, and Bo Gunnar Ekeborg, both of Jarved, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden
Filed June 17, 1976, Ser. No. 697,097
Claims priority, application Sweden, June 27, 1975, 7507379
Int. Cl.² A01C *11/00*
U.S. Cl. 111—3 **17 Claims**

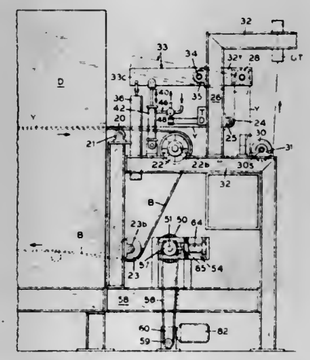


1. A digging and planting machine comprising, in combination, a vehicle, and, carried on the vehicle, a digging and planting tool including a tubular member movable between a lower position partially embedded in the ground and an upper position above the ground, and having an open digging and planting tip end, for digging a hole and conveying a plant to the hole; means for moving the tubular member between its lower and upper positions; at least two surface-detecting and signalling means arranged on two opposed sides of and adjacent to the tubular member, for sensing the surface of the ground on said opposed sides adjacent to the digging tip end of the tubular member and signalling a control means; said control means operatively connected to each surface-detecting means and said means for moving said tubular member, said means for moving said tubular member continuing digging movement of the tubular member until at least said two surface-detecting means have contacted the ground surface, thereby gauging the lay of the surface of the ground on opposed sides of the tubular member between the surface-detecting means to provide a hole of the desired depth according to the lay of the ground.

4,069,775
YARN TENSION COMPENSATING MECHANISM
Clifford Aldene Bryant, and Mark Floyd Jarrell, both of Dalton, Ga., assignors to West Point-Pepperell, Inc., West Point, Ga.
Filed Aug. 30, 1976, Ser. No. 718,572
Int. Cl.² D05C *15/26*
U.S. Cl. 112—79 A **40 Claims**

1. In apparatus wherein stretchable material is fed from one treating stage to another,
means for feeding the material through said stages in a predetermined
movable means to divert the material from said path creating a surplus in said path during operation of the apparatus,
means dependent upon continued operation of the apparatus to maintain said movable means in a certain position of predetermined diversion of said path while the apparatus is running, and
means dependent upon stoppage of the apparatus exercising control of the rate of withdrawal of material from said surplus in order to compensate for shrinkage and increased tension on the material which occurs on stoppage of the apparatus.

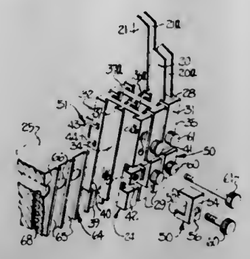
33. Apparatus for dyeing yarn ends individually at predetermined positions along their lengths and manufacturing tufted carpets therefrom to produce a predetermined multicolored complex pattern therein, the dyeing apparatus comprising
means to apply different colored dyes to individual yarn ends at spaced predetermined positions along their lengths according to a pattern,
a draw roll around which a sheet of yarn ends from a supply is trained and fed to said dye applying means,
pattern control means controlling the application of said different dyes at said predetermined positions,
a drying chamber through which the sheet of yarns passes subsequent to the last dye bath,
a tufting machine having needles in which the individual yarn ends are threaded, and by which the yarn ends are needled through a backing sheet to reproduce the desired pattern,



said tufting machine having at least one pair of cooperating feed rolls,
means to drive said tufting machine feed rolls and said draw roll in synchronism and moveable means between said drying chamber and said tufting machine to divert said sheet of yarns from its path to said tufting machine creating a surplus in said path during operation of the apparatus,
means dependent upon continued operation of the apparatus to maintain said movable means in a certain position of predetermined diversion of said path while the apparatus is running, and
means dependent upon stoppage of the apparatus exercising control of the rate of withdrawal of yarn from said surplus in order to compensate for shrinkage and increased tension on the yarn which occurs on stoppage of the apparatus.

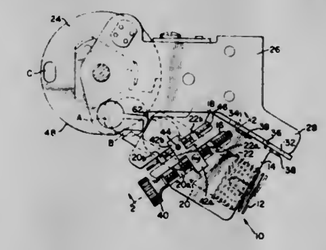
4,069,776
KNIFE BLOCK FOR CUT PILE TUFTING MACHINE
Paul M. Cobble, Chattanooga, Tenn., assignor to B & J Machinery Company, Inc., Dalton, Ga.
Filed Aug. 23, 1976, Ser. No. 716,955
Int. Cl.² D05C *15/24*
U.S. Cl. 112—79 R **12 Claims**

1. A knife block for a cut pile tufting machine having provision for accurately mounting a pair of knives which are adapted to operatively engage a looper in the formation of high-low cut pile fabric or the like, and comprising
a solid body member having opposite ends and defining a longitudinal direction from end to end, opposite edge faces and defining a lateral direction from edge face to edge face, and opposite side faces,
at least one of said side faces including a pair of laterally spaced apart and longitudinally directed channels, with each channel extending at least a substantial portion of the longitudinal length of said body member and communicating with at least one of said ends, and
means for releasably securing a knife in each of said channels,



whereby a knife may be secured within each of said pair of channels with the knives being laterally spaced apart so as to be adapted to concurrently engage a single looper in a tufting machine.

4,069,777
BUTTON GUIDE ASSEMBLY
Yoichiro Ishikawa, Villa Park, Ill., assignor to Union Special Corporation, Chicago, Ill.
Filed Feb. 4, 1977, Ser. No. 765,492
Int. Cl.² D05B *3/22*
U.S. Cl. 112—113 **11 Claims**



1. Apparatus for a sewing machine being a movable clamp means, said clamp means having a series of station means for receiving, orientating, and sewing buttons in sequence, and a button feed path having a centerline passing through at least two of said stations, said apparatus comprising:
a support means secured to said clamp means;
first and second guide track means carried by said support means; and
adjustment means for varying the distance between said first and second track means in a direction tangent to said receiving station means.

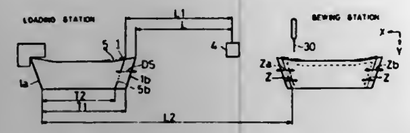
4,069,778
NUMERICALLY CONTROLLED SEWING MACHINE
Tetsuo Kozawa, Toyoake, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed June 1, 1976, Ser. No. 685,701
Int. Cl.² D05B *21/00*
U.S. Cl. 112—121.12 **7 Claims**

1. A numerically controlled sewing machine for forming a seam, the shape of which is similar to that of a basic standard seam to be formed in a basic standard piece, in a workpiece having a contour similar to that of said basic standard piece comprising:
a. means for holding said workpiece in a predetermined position at a loading station spaced from a sewing station in which sewing instrumentalities are disposed;
b. driving means connected with said holding means for

feeding said workpiece in the feeding direction from said loading station to said sewing station, and then intermittently transferring said workpiece in predetermined transferring directions relatively to said sewing instrumentalities in order to form said seam therein;

c. first means for storing first information including at least the pulse number (N1) necessary to feed said basic standard piece held by said holding means from said loading station to said sewing station, and information necessary to form said basic standard seam in said basic standard piece at said sewing station, which includes second information representative of the direction and length of stitch in said basic standard seam and third information representative of the number of the same stitches to be successively formed in said basic standard seam, and for generating pulse signals according to said information in relationship with the position of a needle of said sewing instrumentalities;

d. second means for generating driving-signals in timed relationship with said pulse signals, and applying said driving signals to said driving means;



e. selecting means capable of manually selecting a standard size closest to an actual size of said workpiece from among said basic standard size and a variety of standard sizes which are respectively predetermined so as to be different from said basic standard size;

f. means for detecting the first difference between said actual size and said basic standard size in said feeding direction during feeding said workpiece from said loading station to said sewing station;

g. means for compensating the pulse number necessary to feed said workpiece in said feeding direction by summing up a half value of the pulse number (N2) corresponding to said first difference, a half value of the pulse number (N5) corresponding to the second difference between the standard size selected by said selecting means and said basic standard size, and said pulse number (N1); and,

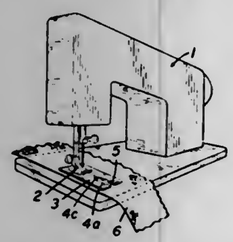
h. means for changing the number of stitches to be formed in said workpiece in at least one transferring direction by summing up said number of stitches in said third information and the number of stitches corresponding to said second difference.

4,069,779

BUTTON HOLDER

Alice V. Klein, 2535 Homehurst Ave., Pittsburgh, Pa. 15234

Filed Nov. 15, 1976, Ser. No. 742,290
Int. Cl.² D05B *35/00*
U.S. Cl. 112—136 **2 Claims**



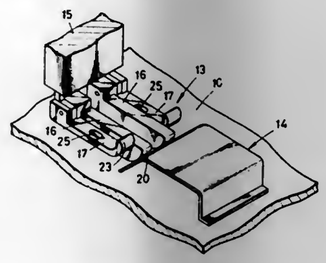
1. A button holder for use in a sewing machine having a vertically reciprocable needle and presser foot, a button holder comprising a strip of flexible sheet material having at least one cut-out portion conforming to the shape of a button to be held thereby and of slightly larger diameter, while the strip is fed underneath the presser foot and on top of the garment to which the button is to be sewed by said machine, and a slit extending from the end of said cut-out portion and being open from the cut-out to the end edge of the strip for allowing removal of the strip after sewing of the button onto said garment without cutting the thread.

4,069,780

SEWING MACHINE WITH MEANS FOR STITCHING SLIDE FASTENER STRINGERS ONTO A RELATIVELY THICK ARTICLE

Tadashi Minami, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed May 3, 1976, Ser. No. 682,260
Claims priority, application Japan, May 9, 1975, 50-55758
Int. Cl.² D05B *29/06, 35/06*
U.S. Cl. 112—150 **5 Claims**



1. In a sewing machine for stitching a stringer tape onto an article, wherein the sewing machine is of the type having a needle movable up and down through a throat plate, the improvement comprising:

a. A presser foot supported above said throat plate, said presser foot comprising:

1. a main portion having a bottom surface spaced sufficiently from said throat plate to permit the stringer tape to pass therebetween, said main portion also having a front surface sloping forwardly from said bottom surface, said main portion having a lateral surface adjoining said bottom surface thereof; and

2. a wing projecting laterally from said main portion, said wing having a bottom surface higher than said bottom surface of said main portion by a distance approximately equal to twice the thickness of the article, said wing also having a front surface sloping forwardly from said bottom surface thereof, said front surface of said wing being disposed rearwardly of said front surface of said main portion and being spaced therefrom a distance approximately equal to twice the thickness of the article, said bottom surface of the wing adjoining said lateral surface of the main portion and cooperating with said main portion lateral surface and the throat plate to accommodate passage under the presser foot of a folded edge portion of an article secured to the stringer tape, with overlapped parts of said folded edge portion and an adjoining portion of the stringer tape being confined between the throat plate and bottom surface of the wing, to accommodate stitching together said overlapped parts and the stringer tape; and

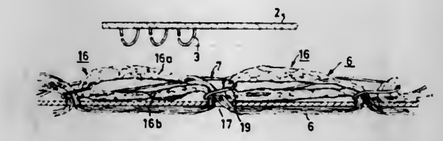
b. guide means on said throat plate for providing a sloping guide surface in opposed relationship to said front surfaces of said main portion and said wing of said presser foot, said guide surface being spaced sufficiently from said front surface of said main portion to permit the stringer tape to pass therebetween.

4,069,781

PROTECTIVE COVER, PARTICULARLY AN ANTIMACASSAR

Karl Gosta Bertil Andersson, Halmstad, Sweden, assignor to Duni Bila AB, Halmstad, Sweden

Filed Feb. 11, 1976, Ser. No. 657,170
Claims priority, application Sweden, Feb. 20, 1975, 7501917
Int. Cl.² D05B *93/00*
U.S. Cl. 112—438 **7 Claims**



1. An inexpensive disposable protective cover of fibre material such as non-woven material, intended to be applied as a protective cover on a substructure such as those intended for sitting or lying, e.g. as an antimacassar for seats, there being at least one row of stitching running across the cover and sewn into the cover in double chain stitching fashion with such thread structure that it forms an attachment for the hooks of a burr strip attached to the surface of the aforesaid substructure, characterized in that an upper thread and a lower thread are used to form the stitching, the upper thread of the double chain stitching consists of a relatively highly elastic thread of multifilament type having crimped filaments which are loosely arranged to form a fluffy thread, the upper thread being sewn through the cover and forming consecutive loops on the lower side of the cover and consecutive portions on the upper side of the cover, while the lower thread of the double chain stitching consists of a cotton or cotton-synthetic thread which is relatively unelastic in relation to the upper thread, and that the tension in the upper thread is less than the tension in the lower thread to that the upper thread assumes its fluffy and voluminous condition on the lower side of the cover to thereby form an easily entanglable fastening for the hooks of the burr strip.

4,069,782

SHIP STRUCTURE

Frank Broes, 1351 Airport Entrance Road, Jacksonville, Fla. 32218

Division of Ser. No. 431,132, Jan. 14, 1974, Pat. No. 3,908,573, which is a continuation-in-part of Ser. No. 249,595, May 2, 1972, Pat. No. 3,786,772. This application Sept. 25, 1975, Ser. No. 616,597
Int. Cl.² B63B *1/12*
U.S. Cl. 114—61 **5 Claims**



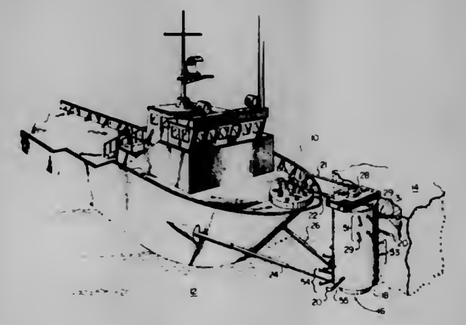
1. A ship structure comprising a pair of spaced, generally parallel, generally transversely aligned, elongated hull forms, a bow secured between the hull forms and having a front portion transversely spaced from each of the hull forms and partially defining a pair of water-receiving passageways respectively on opposite sides thereof, the bow extending rearwardly for only a portion of the length of the hull forms, an elongated platform structure disposed between the hull forms aft of the bow, and cooperative guide means at the inner sides of the hull forms and at opposite sides of the platform structure operatively connecting the platform structure to the hull forms for vertically reciprocal movement relative thereto, the bow including a generally flat bottom plate partially defined by a pair of convergent straight edges meeting substantially at a point, and the bow also including a first pair of generally triangular substantially identical side plates having base edges substantially collinear and coextensive respectively with the convergent edges of the bottom plate and each having a first side edge convergent with a respective one of the convergent edges of the bottom plate and substantially collinear and coextensive with a corresponding first side edge of the other.

4,069,783

METHOD OF AND APPARATUS FOR DISAGGREGATING PARTICULATE MATTER

George W. Morgan, Dallas, Tex., assignor to Sun Oil Company Limited, Calgary, Canada

Filed Nov. 11, 1976, Ser. No. 740,896
Int. Cl.² B63B *35/12*
U.S. Cl. 114—42 **8 Claims**



1. A system for disaggregating particulate matter comprising:

a cylindrical drum adapted for engagement and rotative abutment with particulate matter;

an array of teeth extending generally radially outwardly from said drum and including:

first and second circumferentially oriented rows of sledging teeth adapted for cutting generally parallel serrations in the particulate matter and forming a laterally isolated ridge of matter therebetween as said drum is rotated, each of said rows of sledging teeth including a first, leading tooth and a second, trailing tooth, which second tooth extends outwardly further from said drum than said first tooth such that said second tooth engages and deepens the serrations made by said first tooth in the particulate matter;

a slugging tooth oriented generally axially between said first and second rows and circumferentially trailing said second teeth of both said first and second rows for striking said ridge formed by said sledging teeth proximate the base thereof, thereby imparting shear fracture thereto as said drum is rotated;

means for supporting said drum such that its axis is generally vertically oriented; and

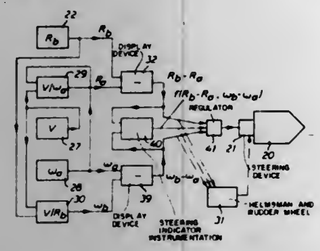
means for rotating said drum in engagement with the particulate matter and imparting sufficient force thereto for the disaggregation thereof.

4,069,784

METHOD AND DEVICE FOR PRODUCING SUBSTANTIALLY KINEMATIC STEERING OF A VESSEL

Bror Folke Hedström, Stockholm, and Per Thorvald Persson, Sundbyberg, both of Sweden, assignors to Kockums Automation AB, Malmo, Sweden

Filed Dec. 11, 1975, Ser. No. 639,886
Claims priority, application Sweden, Dec. 11, 1974, 74-15523
Int. Cl.[2] B63H *25/04*
U.S. Cl. 114—144 E 37 Claims



1. A method for substantially producing kinematic steering of a vessel in a yaw path having a given radius of curvature conforming with a predetermined control law, comprising the steps of: determining, in a path model, the set of values of one of the quantities radius of path curvature R_b and path angular rate $\omega_b = V/R_b$ of the vessel; determining the actual value of the path angular rate ω_a and the radius of path curvature $R_a = V/\omega_a$ of the vessel, V being a measure at least approximately of the speed over ground of the vessel; generating a control signal from the values thus determined, which is a function of a quantity which represents the difference R_{b-Ra}, and effecting in dependence thereon a change of a rudder position of said vessel required for minimizing said control signal.

17. A device for substantially producing kinematic steering of a vessel in a yaw path having a given radius of curvature conforming with a predetermined control law, comprising: means for determining the actual value of the path angular rate ω_a and the actual value of the radius of path curvature $R_a = V/\omega_a$ of the vessel, V being a measure at least approximately of the speed over ground of the vessel; means for generating a control signal from said actual values and from the set value of one of the quantities: radius of path curvature R_b and path angular rate $\omega_b = V/R_b$, R_b and ω_b being determined by means of a preselected path model, said control signal being a function of a quantity of which represents the difference $R_b - R_a$, and means for utilizing said control signal for adjusting a rudder position of the vessel.

4,069,785

SHIP OF SIMILAR FLOATING INSTALLATION EQUIPPED FOR THE ASSEMBLY OF APPARATUS AND FOR LOWERING SAME INTO THE WATER

Cornelis Bordes, Massland, Netherlands, assignor to N.V. Industriecle Handelscombinatie Holland, Rotterdam, Netherlands

Filed Aug. 11, 1976, Ser. No. 713,360
Claims priority, application Netherlands, Aug. 11, 1975, 7509546
Int. Cl.[2] B63C *1/02*
U.S. Cl. 114—47 2 Claims

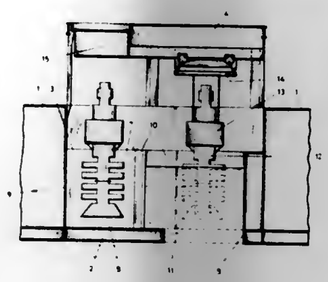
1. A ship for the storage, assemblage and movement of underwater apparatus comprising

a floating hull provided with a bottom, said bottom having an opening therein for the movement of said underwater apparatus;

an intermediate deck in said hull above the bottom, said intermediate deck having an opening therein in vertical alignment with the opening in the hull and of an area greater than the opening in the bottom so as to overlie a portion of the bottom adjacent the opening in the bottom;

walls forming a dock compartment on said portion of the bottom adjacent the opening in the bottom and beneath the opeining in the intermediate deck;

gates between the dock compartment and space above the opening in the bottom for closing communication between



the dock compartment and the space above the opening in the bottom and for providing access between said compartment and said space over the opening in said bottom for the movement of apparatus from the dock compartment to said space above the opening in the bottom, and

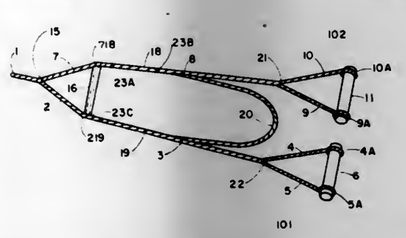
a working deck carried by said ship above the intermediate deck.

4,069,786

WATER SKI TOWING MEANS

Richard John La Botz, 5084 Cocoa Palm Way, Fair Oaks, Calif. 95628

Filed July 12, 1976, Ser. No. 704,241
Int. Cl.[2] A63C *11/10;* B63B *21/56*
U.S. Cl. 115—6.1 16 Claims



1. In a water ski towing device of the type for towing a person on a ski(s) from an initial pull-out position to a planing position, a tow line assembly including a tow line adapted to be secured to a prime mover, a pair of trace-reins each connected on one end to said tow line, and on the opposite end connected to handle means, a splitter connected at its opposite ends to each of said trace-reins, each end of said splitter being equidistant from said tow line, and spaced apart from said handle means, and means connected at the opposite ends thereof to each of said trace-reins, being releasably engageable with a stop block(s) on said ski(s), said means being substantially longer than said splitter and having an arcuate portion therein.

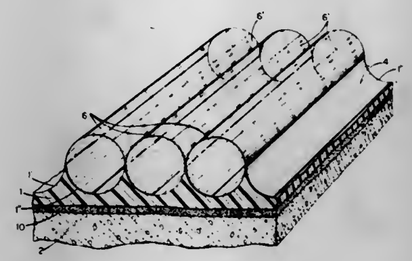
4,069,787

DIRECTION-INDICATING SURFACE MARKER AND THE LIKE

Charles W. Wyckoff, 85 Pine St., Needham, Mass. 02192

Filed Apr. 11, 1975, Ser. No. 567,262
Int. Cl.[2] E01F *9/04;* G02B *5/126*
U.S. Cl. 116—63 R 2 Claims

1. A direction-indication surface marker having, in combination with a road surface, a thin substantially planar self-sustaining strip of plastic material secured to said road surface by adhesive and sufficiently flexible to permit the strip to conform to the road surface, said strip having successive contiguous transverse wedges of saw-tooth cross-sectional configuration throughout the strip, each wedge having one surface inclining upwardly and its other surface inclining downwardly; at least one surface of each wedge upon which light impinges being integrally covered by retroflective means comprising, conjointly, a reflective layer and a cooperating refractive cylinder



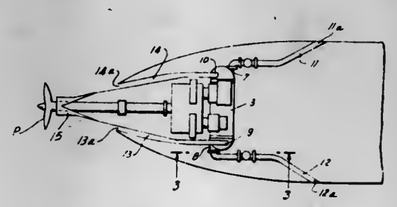
means extending transversely of said strip in the space between said downwardly and upwardly inclining surfaces of successive wedges; said refractive cylinder means extending above the associated wedges so that light impinging on said one surface of each wedge is refracted by a cooperating cylinder means and returned by retroreflection in a direction substantially opposite to the incident direction, at least a portion of said refractive cylinder means being provided with transparent predetermined colored means for presenting a predetermined color to incident light refracted by said cylinder means.

4,069,788

METHOD AND APPARATUS FOR CONDUCTING WATER THROUGH SHIPS

Leopold Nitzki, Bremen, Germany, assignor to Aktien-Gesellschaft "Weser", Bremen, Germany

Continuation of Ser. No. 607,956, Aug. 26, 1975, abandoned, which is a continuation of Ser. No. 443,154, Feb. 15, 1974, abandoned. This application Apr. 28, 1976, Ser. No. 681,033
Claims priority, application Germany, Feb. 17, 1973, 2307979
Int. Cl.[2] B63H *23/32*
U.S. Cl. 115—76 11 Claims



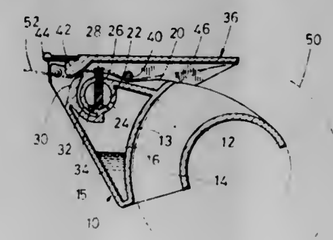
1. A method of improving the propulsion characteristics of a powered ship having an only partly submerged hull provided with a partially submerged stern of upwardly divergent cross section and an upper part of which projects rearwardly beyond a lower part thereof, and a propeller located rearwardly of said lower part of said stern, comprising the steps of withdrawing water from the bilge vortex area of the ship's hull in the region where the parallel hull sides begin to taper toward the stern of the hull, so as to reduce turbulence in this region; conducting the withdrawn water through the hull; and discharging the withdrawn water at opposite sides of the lower part of the stern rearwardly and in directions which intersect the axis of rotation of the propeller so that the discharged water enters into a dead water area which is created by rotation of the propeller adjacent to and defined by the stern of the hull and the entrance angle of inflowing water, in order to fill said dead water area with the water withdrawn from the bilge vortex area and improve the propulsion furnished by said propeller and decrease vibrations resulting from its operations.

4,069,789

WATER APPLICATOR FOR WETTABLE TAPE

Susumu Fukagawa, Tama, and Hisashi Sasaki, Tokyo, both of Japan, assignors to Asahi Kakoushi Kabushiki Kaisha et al, Osaka and Saitama, Japan

Filed Apr. 26, 1976, Ser. No. 680,172
Claims priority, application Japan, Feb. 14, 1976, 51-15125; Aug. 14, 1975, 50-111501; Oct. 4, 1975, 50-40079
Int. Cl.[2] B05C *1/06*
U.S. Cl. 118—43 9 Claims



1. A water applicator for wetting adhesive tape including a tape support member for rotatably supporting a roll of the tape, a water absorbing member disposed to the front of the tape support member, and a cutting blade disposed adjacent the water absorbing member so that the tape is withdrawn in sliding contact with the top of the water absorbing member to apply water to the adhesive layer on the rear side of the tape, comprising:

a. an enclosed main water reservoir connected to the tape support member,

b. an auxiliary water reservoir disposed in an upper portion of the main water reservoir and communicating with the main water reservoir,

c. the water absorbing member having a lower portion inserted into the auxiliary water reservoir through an opening in the top wall of the auxiliary water reservoir and an upper portion extending into a path for the tape,

d. a cover having a front end pivotably mounted on the front of the auxiliary water reservoir in front of the water absorbing member, and

e. the cutting blade projecting from the front end of the holding cover in front of the water absorbing member.

4,069,790

EQUIPMENT FOR SURFACE TREATMENT

Stefan Oh Witte, Lindasvagen 106, S-430 181 Blidal, Sweden

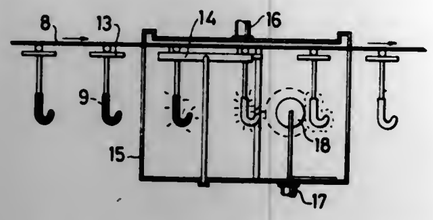
Filed Nov. 2, 1976, Ser. No. 738,005
Claims priority, application Sweden, Nov. 12, 1975, 7512675
Int. Cl.[2] B05C *13/02*
U.S. Cl. 118—70 5 Claims

1. Equipment for surface treatment of the type comprising, metallic supporting elements for objects subjected to treatment and a conveyor for moving the supporting elements through treatment and cleaning stations, in combination with

a heating filament disosed inside each of the metalic supporting elements, and

an insulating layer separating said heating filament from

each of the metallic supporting elements, said heating filament forming part of an electrical circuit for heating of the supporting elements and burning off any coating material that adhered thereto at the treatment station.

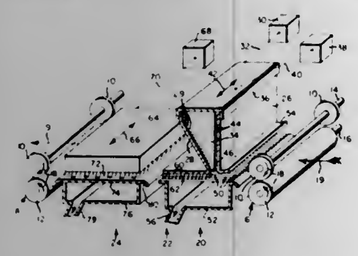


4,069,791

AUTOMATIC TONING DEVICE

Herbert Albert Tobias, East Brunswick, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 1, 1976, Ser. No. 728,735
Int. Cl.² B05C *11/02*
U.S. Cl. 118—120 20 Claims



1. In apparatus for uniformly developing an image defining tacky surface with particulate material, said apparatus having a dispenser for dispensing said particulate material above said surface, an applicator for embedding said particulate matter in said surface, a cleaner for removing excess particulate matter from said surface, and means for moving said tacky surface in a first sense past said dispenser, said applicator, and said cleaner, the improvement wherein:

said dispenser includes a hopper having an independently movable side wall, and

first means to oscillate said side wall laterally of said first sense, thereby to supply said particulate material to said surface at a uniform, controlled rate.

4,069,792

ELECTROSTATIC FLUIDIZED BED COATING UNIT

Douglas C. Nethersole, Laval; Michael A. Dudley, Toronto, and Mellapalayam R. Parthasarathy, Verdun, all of Canada, assignors to Canada Wire And Cable Limited, Toronto, Canada

Filed May 6, 1976, Ser. No. 683,774
Claims priority, application Canada, Feb. 26, 1976, 246617
Int. Cl.² B05C *19/02*
U.S. Cl. 118—629 13 Claims

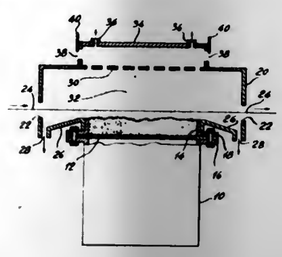
1. An electrostatic fluidized bed coating unit for applying charged powder particles continuously onto discrete or elongated objects comprising:

a. a plenum chamber with means for ingress of a gas under a greater than atmospheric pressure;

b. a porous top plate for said plenum chamber extending to the limits of the containing walls of said plenum chamber;

c. containing walls for powder immediately above the porous plate and forming essentially a continuation of the plenum chamber walls;

d. a coating chamber secured to said powder containing walls; and



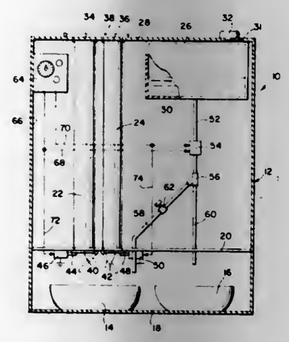
e. an exhaust system means for effecting a substantially uniform fluidizing gas and powder removal across the entire area essentially directly above the porous plate.

4,069,793

AUTOMATIC PET FEEDER

Samuel Gower, 1 Green Place, Setauket, N.Y. 11785

Filed May 24, 1976, Ser. No. 689,355
Int. Cl.² A01K *5/02*
U.S. Cl. 119—51.13 2 Claims



1. Pet feeding apparatus comprising:

a cabinet having a top wall, a bottom wall, and a pair of side walls extending between said top and bottom walls,

a horizontal partition in said cabinet between said side walls extending generally parallel to said top and bottom walls, closer to said bottom wall than said top wall,

a dry pet food bowl and a water bowl in said cabinet beneath said horizontal partitions,

a plurality of food tubes mounted in said cabinet extending from said top wall to said horizontal partition to feed dry pet food into said dry pet food bowl positioned in said cabinet therebeneath in the space between said horizontal partition and said bottom wall,

a water tank mounted in said cabinet,

conduit means connected to said water tank extending between said tank and said horizontal partition for draining water from said water tank into both said dry pet food bowl and said water bowl positioned therebeneath in the space between said horizontal partition and said bottom wall, said conduit means including a main drain pipe and branch drain pipe connected to said main drain pipe extending above each of said bowls,

a freely pivotable door associated with each of said food tubes to prevent the dispensing of dry pet food from said tubes when closed and to permit the dispensing of dry pet food from said tubes when opened,

electrical relay means associated with each of said pivotable doors having a retractible plunger in sliding contact with the bottom of each of said doors and normally retaining each said door closed, but responsive to a periodic electrical signal for sequentially retracting said plungers to alternately disengage each of said doors, said doors thereby opening responsive to the force of gravity,

electrical timer apparatus in said cabinet for supplying said periodic sequential electrical signal to said electrical relay means, and

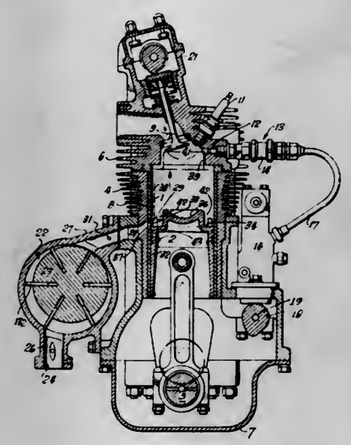
electrically-operated solenoid valve means in said main drain pipe responsive to the same periodic electrical signal received by said electrical means to sequentially retract each of said plungers for sequentially opening and closing each branch pipe of said conduit means for a predetermined timed interval to drain water from said tank into said dry pet food bowl and said water bowl.

4,069,794

POSITIVE POWER CONTROL INTERNAL COMBUSTION ENGINE

Robert Denney Jordan, 9020 Barcelona St., NRMC, Oakland, Calif. 94605

Filed Aug. 10, 1976, Ser. No. 713,161
Int. Cl.² F02B *19/16;* F02D *19/00;* F02F *3/26;* F02B *33/34*
U.S. Cl. 123—25 A 16 Claims



1. An internal combustion engine comprising:

an elongate combustion cylinder formed with a longitudinal bore closed at its upper end and having a full diameter lower portion extending the major part of its length and a reduced diameter upper portion,

a driven piston reciprocably mounted in said bore for providing an upward compression stroke from a bottom dead center position to a top dead center position and a return power stroke,

said piston also having full and reduced diameter portions corresponding dimensionally to said bore portions whereby during said compression stroke an annular volume is formed between said reduced diameter piston portion and said full diameter bore portion,

said reduced diameter portions of the bore and piston having shaped upper end surfaces facing one another at top dead center for providing a shaped combustion chamber volume having an attenuated communication with said annular volume,

an air supply means communicating with said full diameter bore portion during the first part of said compression stroke,

fuel supply means,

ignition means, and

exhaust gas venting means,

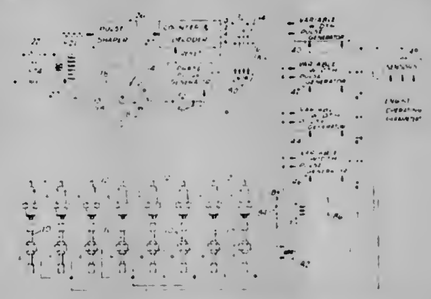
said fuel supply ignition and venting means being disposed in operable communication with said shaped combustion chamber volume whereby during said compression stroke the compressed air supplied to said annular volume mixes intimately with the fuel supply in said combustion chamber volume for enabling rapid ignition and substantially complete burning within said latter volume with any final burning occurring during the initial part of said return stroke in said annular volume.

4,069,795

START-UP CONTROL FOR FUEL INJECTION SYSTEM

E. David Long, and Keith C. Richardson, both of Elmira, N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Nov. 6, 1975, Ser. No. 629,350
Int. Cl.² F02B *3/02*
U.S. Cl. 123—32 EA 11 Claims



1. In a fuel injection system for an internal combustion engine including injector means associated with each of the engine cylinders and a first means for operatively providing actuating pulses to the injector means to cause said injector means to actuate once during each engine cycle during normal operation of the engine; the improvement of a start-up control comprising a second means for providing an electrical start-up signal during start-up operation of the engine, said start-up signal modifying said actuating pulses to said injector means to shorten the pulse width of said actuating pulses during start-up operation relative to the width of the actuating pulses provided during normal operation of the engine; a third means comprising an electronic gate conditioned by said start-up signal during start-up operation of the engine for causing each of the injector means to actuate a plurality of times during each engine cycle during said start-up operation; and including an electronic combinor connected to said first means for receiving first trigger pulses sequentially from said first means and providing second trigger pulses serially to said electronic gate; and a fifth means for modulating said shortened actuating pulses provided during start-up operation as a function of engine temperature during start-up operation, whereby said shortened temperature-dependent actuating pulses during start-up operation effectively scan a range of air to fuel ratios provided to the engine.

4,069,796

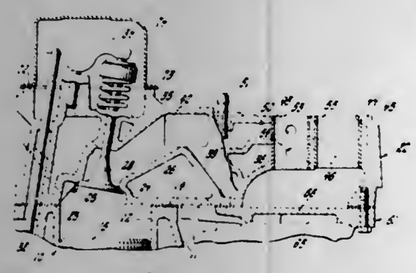
ENGINE MANIFOLD WITH AIR GAP INSULATOR CARBURETOR MOUNTING

Richard L. Balsley, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 27, 1976, Ser. No. 726,605
Int. Cl.² F22B *9/06*
U.S. Cl. 123—75 B 6 Claims

1. An intake manifold means for an internal combustion engine having a cylinder block with a plurality of cylinders therein defining in part the combustion chambers of the engine, a carburetor and, an exhaust manifold, said intake manifold means having an intake mixture receiving plenum positioned to be heated by engine exhaust gases discharged into the exhaust

manifold, a mounting pad for the carburetor on the opposite side of said intake manifold means from said mixture receiving plenum and positioned above said mixture receiving plenum, intake passage means in said intake manifold means extending from said mounting pad into communication with said mixture receiving plenum, intake flow passage means in said intake manifold means connecting said mixture receiving plenum and connectable to the combustion chambers of the engine, said intake manifold means having wall means therein defining an exhaust chamber directly above said mixture receiving plenum at least partly surrounding said intake passage means and in



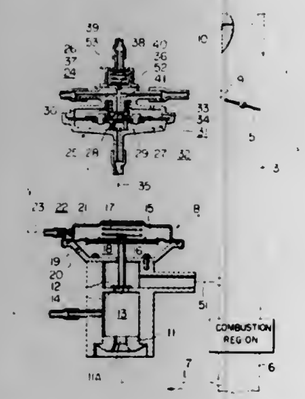
communication therewith, said exhaust chamber being connectable to a source of engine exhaust gases for the recirculation of exhaust gases into the mixture receiving plenum via said intake passage means and further defining an air chamber between said exhaust chamber and said mounting pad, said air chamber surrounding said intake passage means and being in fluid flow communication therewith and said air chamber being connectable to a source of induction fluid whereby said mounting pad is air cooled by induction fluid flowing through said air chamber and wherein said air chamber serves as an air gap insulator between said exhaust chamber and said mounting pad.

4,069,797

APPARATUS FOR RECIRCULATING EXHAUST GASES

Hidetaka Nobira, and Masaaki Tanaka, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 22, 1976, Ser. No. 669,267
Claims priority, application Japan, June 24, 1975, 50-078039
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **8 Claims**



1. An apparatus for recirculating exhaust gases, comprising:
exhaust gas recirculating passage means for providing communication between the intake and exhaust passages of an internal combustion engine, said passage means having the inlet end thereof communicating with said exhaust passage, and the outlet end of said passage means communicating with said intake passage at a location disposed downstream of the throttle plate;
constriction means provided in said passage means;
control valve means for controlling the recirculation of exhaust gases through said passage means, said control valve means including a movable control valve provided in said passage means downstream of said constriction means, said control valve means also including actuator means for controlling the movement of said control valve between opened and closed positions, said actuator means including a fluid pressure chamber having a movable actuator member associated therewith and interconnected to said control valve;
a negative control pressure passage connected between a port in the intake passage and the fluid pressure chamber for introducing negative control pressure to the control valve means;
pressure chamber means interposed between said constriction means and said control valve, said pressure chamber means having a pressure therein which is substantially equal to atmospheric pressure when the control valve is opened and to that in the exhaust passage when the control valve is closed;
first operating valve means for opening said negative control pressure passage to the atmosphere when the pressure in said chamber means becomes substantially atmospheric and the rate of exhaust gas recirculation is substantially proportional to the rate of intake air flow;
said first operating valve means including a movable valve element associated with a controlling chamber, a first controlling passage providing communication between said pressure chamber means and said controlling chamber, a second controlling passageway providing communication between the negative control pressure passage and the atmosphere, and said valve element when in a closed position closing off said second controlling passageway; and
second operating valve means, responsive to the amount of sucked air flowing through the intake passage, for opening said negative control pressure passage to the atmosphere when the pressure in the intake passage exceeds a predetermined negative pressure level;
said second operating valve means being independent of said first operating valve means and including a movable valve member associated with a control chamber, a first control passage communicating between said control chamber and said intake passage, and a second control passage providing communication between said negative control pressure passage and the atmosphere, said movable valve member coacting with said second control passage for controlling the flow therethrough.

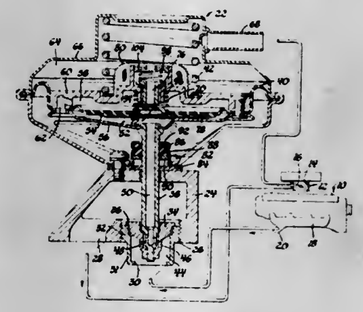
4,069,798

PRESSURE TRANSDUCER AND EXHAUST GAS RECIRCULATION CONTROL VALVE USING SAME

William F. Thornburgh, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1976, Ser. No. 745,128
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **3 Claims**

1. For use on an internal combustion engine having an induction passage for air flow to the engine, a throttle in said induction passage for controlling air flow therethrough, and an exhaust passage for exhaust gas flow from the engine: a pressure transducer for converting the variable pressure in said exhaust passage to variable vacuum signal, said transducer including a reciprocable pressure responsive diaphragm, said diaphragm having a valve member reciprocable therewith, a first housing member secured on one side of said diaphragm to form an exhaust pressure chamber therebetween, a second housing member secured on the other side of said diaphragm to form an atmospheric pressure chamber therebetween, said first housing member having means for subjecting said exhaust pressure chamber to the pressure in said exhaust passage, said second housing member having means for subjecting said atmospheric pressure chamber to atmospheric pressure, said second housing further having means defining a region outside said atmospheric pressure chamber adapted to be subjected to the vacuum in said induction passage downstream of said throttle, said second housing member also having an orifice opening from said atmospheric pressure chamber to said region, and wherein the improvement comprises an orifice mem-



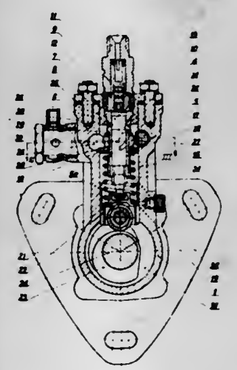
ber disposed in said orifice and biased into engagement therewith to obstruct flow through said orifice about said orifice member, said orifice member having an air bleed extending therethrough, said valve member being associated with said air bleed for varying air flow from said atmospheric pressure chamber into said region to thereby vary the pressure in said region in accordance with variations in the exhaust passage pressure, said valve member being adapted to disengage said orifice member from said orifice when said exhaust passage pressure exceeds a certain level to thereby permit air flow from said atmospheric pressure chamber through said orifice about said orifice member into said region.

4,069,799

INJECTION PUMP

Andrzej Kraiński; Krzysztof Lendzion; Andrzej Lojek, and Jerzy Wewiór, all of Warsaw, Poland, assignors to Warszawskie Zaklady Mechaniczne "Deltawzm", Warsaw, Poland

Continuation-in-part of Ser. No. 481,397, June 20, 1974, abandoned. This application May 13, 1976, Ser. No. 686,803
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 B **5 Claims**



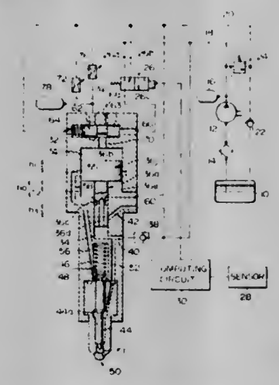
1. A multiple plunger injection pump for an internal combustion engine comprising, plungers arranged in alignment in one line, governor means, a housing common with said governor means, said housing having chambers all filled with fuel, said chambers holding said governor means, fuel supply means for supplying said fuel to said chambers under pressure to lubricate and cool the moving parts, pump barrels, said housing having bores holding said pump barrels and plungers, flange sleeves for mounting said barrels and plungers in said bores, said plungers moving in said barrels, a control rod linked to said barrels for rotational movement of the plungers in the barrels, said control rod regulating metering of the pump, a driving shaft, a cam on said driving shaft, a spring in one of said bores, expandable ring means for enclosing said spring in said hole, tappets pressed against said cam by said spring for reciprocal movement of said plungers, a passage supplying fuel to said fuel supply means, said plungers having spring discs in proximity of said passage supplying fuel to said fuel supply means, driving means having a driving chamber, said supply means being spaced from said driving chamber of said driving means by said spring discs, said spring discs having gaps, said supply means being connected to said driving chamber of said driving means through the gaps of said spring discs, part of the fuel supply to said supply means flowing to the driving chamber of said driving means through said gaps.

4,069,800

FUEL INJECTION APPARATUS

Fumio Kanda; Nobuhiro Kaibara; Seibi Ohki; Kazuo Okamoto, and Akira Suzuki, all of Higashi Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1976, Ser. No. 651,855
Claims priority, application Japan, Jan. 24, 1975, 50-9827
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 A **20 Claims**



1. A fuel injection apparatus comprising:
a body;
a piston member slidable in the body to define therewith a variable volume pressure chamber;
an injection valve means exposed to a fuel pressure in the pressure chamber and slidable in the body to control communication between the pressure chamber and a fuel injection nozzle;
the body further defining a spring chamber communicating with the injection valve member;
a spring disposed in the spring chamber urging the injection valve member to block communication between the pressure chamber and the fuel injection nozzle;
drive means to move the piston member in an inlet stroke to increase a volume of the pressure chamber and in an injection stroke to decrease the volume of the pressure chamber;
first valve means to communicate the pressure chamber with a fuel supply passageway during the inlet stroke;
the fuel pressure in the pressure chamber increasing during a first portion of the injection stroke so as to move the

injection valve member against a force of the spring to communicate the pressure chamber with the fuel injection nozzle;

second valve means to communicate the spring chamber with the fuel supply passageway during a second part of the injection stroke so that a fuel pressure in the spring chamber acts on the valve member in a same direction as the force of the spring;

third valve means to communicate the spring chamber with a fuel return passageway during the inlet stroke; and

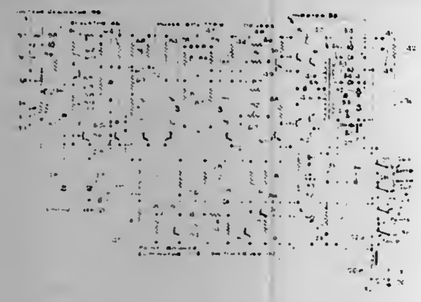
fourth valve means to communicate the pressure chamber with the fuel supply passageway during a third portion of the injection stroke.

4,069,801

ELECTRONIC IGNITION SYSTEM

Carlile R. Stevens, 468 El Rio Road, Danville, Calif. 94526

Filed Feb. 17, 1976, Ser. No. 658,516
Int. Cl.² F02P *3/06*
U.S. Cl. 123—148 DS **13 Claims**



1. An electronic ignition system for an engine having an ignition coil and points through which battery power normally is switched to the ignition coil primary, comprising:

circuit transfer means for connecting said battery, said points and said ignition coil primary to said electronic ignition,

an energy storage capacitor,

charging means, utilizing power from said battery, for charging said capacitor to a level sufficient to excite said ignition coil,

switch means, responsive to operation of said points, for discharging said capacitor across said ignition coil primary each time said points are actuated, said discharged energy causing said ignition coil to provide its normal output, so that said ignition coil is operated without switching high battery current to said ignition coil primary via said points,

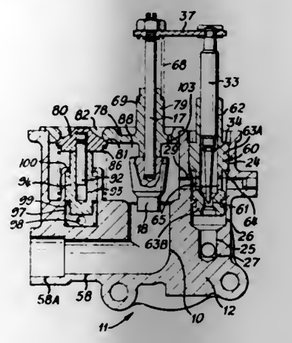
said circuit transfer means comprises a relay actuated when the ignition switch of said engine is closed, said relay in the deactuated state connecting said battery to said ignition coil primary via said points for conventional ignition operation, said relay in the actuated state connecting said battery to said charging means, connecting said points to said switch means and connecting said ignition coil to said capacitor and switch means, thereby facilitating electronic ignition operation, said electronic ignition having a fuse in series with the coil of said relay so that in the event of an electronic ignition failure that causes said fuse to blow out, said relay will be deactuated and said engine will operate in the conventional ignition mode.

4,069,802

COLD STARTING DEVICES

Gary Ernest Donald Ross, Stanmore, England, assignor to The Zenith Carburetter Company Limited, Stanmore, England

Continuation-in-part of Ser. No. 505,227, Sept. 12, 1974, Pat. No. 3,967,610. This application July 2, 1976, Ser. No. 702,206
Claims priority, application United Kingdom, Sept. 12, 1973, 42888/73; Sept. 11, 1974, 39665/74; Mar. 9, 1976, 9387/76
Int. Cl.² F02N *17/00*
U.S. Cl. 123—179 G **13 Claims**



1. A cold start device for an internal combustion engine, the cold start device comprising a body; a gas supply passage formed in the body; one end of the gas supply passage being for connection to the inlet manifold of an internal combustion engine so that gas can be drawn through said gas supply passage by the action of engine suction when the device is installed on an internal combustion engine; a valve for controlling gas flow into said gas supply passage; means upstream of said gas flow controlling valve for varying the supply of air to said gas supply passage so as to control the depression established within the gas supply passage between said varying means and said valve, means resiliently biassing said varying means to a position of minimum air supply, said biassing means acting in opposition to the effect of a depression established within the gas supply passage between said varying means and said valve to increase the air supplied by said varying means; and a fuel valve to control flow of fuel from a fuel supply system to said gas supply passage between said varying means and said valve, said fuel control valve being responsive to a depression in the gas supply passage between said varying means and said valve, wherein the improvement comprises plunger means, at least part of said resilient biassing means acting through said plunger means, means exposing a surface of said plunger means to the pressure at the inlet manifold of an internal combustion engine so that, when the device is installed on an internal combustion engine, the biassing effect of said resilient biassing means upon said air supply varying means is reduced by the thrust due to the action of a depression which is substantially that which is established in the inlet manifold of the engine upon said plunger.

4,069,803

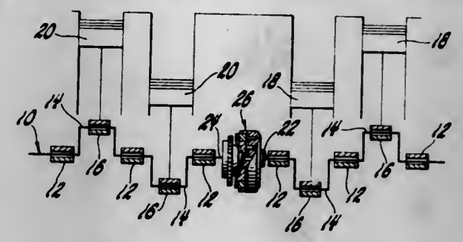
SYNCHRONIZING AND INDEXING CLUTCH

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 17, 1977, Ser. No. 759,996
Int. Cl.² F02B *75/18*
U.S. Cl. 123—198 F **4 Claims**

1. In an engine having a crankshaft split at an intermediate point therealong with one crankshaft portion continuously rotating and the other crankshaft portion adapted to being rotated or remaining inactive, and at least one engine piston

operatively connected to each crankshaft portion; a synchronizing and indexing clutch comprising an input member secured to the inner end of the continuously rotating crankshaft portion; an output member secured to the adjacent inner end of the other crankshaft portion; an annular piston including inner and outer concentric rings slidably mounted on said input member; means for circumferentially retaining said annular piston on said input member for rotation therewith; cooperating cone clutch surfaces formed on adjacent faces of said inner ring and said output member; cooperating sets of tapered indexing teeth formed on adjacent portions of said outer ring and said output member and having a predetermined number of unequally spaced, variable width, matching teeth and spaces



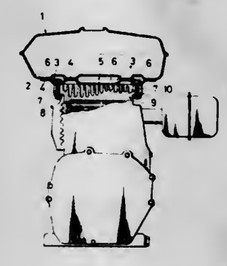
formed therearound; and a source of fluid under pressure for selectively urging said annular piston toward said output member and bringing said cone clutch surface on said inner ring into slipping engagement with said cone clutch surface on said output member, thereby causing the speed of said output member to approach the speed of said input member prior to said indexing teeth on said outer ring contacting said indexing teeth on said output member, and then meshing therewith in one predetermined circumferential position when the unequally spaced, variable width matching teeth and spaces on said outer ring and said output member become aligned for actuating said other crankshaft portion in phase with said continuously rotating crankshaft portion, so as to produce a predetermined firing order for said engine.

4,069,804

APPARATUS FOR ATTACHING A FUEL TANK IN AN INTERNAL COMBUSTION ENGINE

Takeo Ogano, Kawagoe, and Mitsuru Noguchi, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 25, 1976, Ser. No. 699,965
Claims priority, application Japan, June 30, 1975, 50-90749[U]
Int. Cl.² F02M *59/00*; F28F *13/00*
U.S. Cl. 123—198 E **3 Claims**



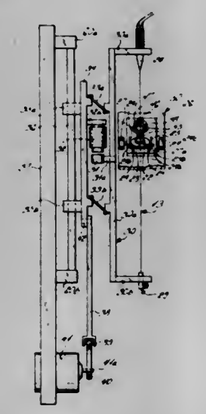
1. An apparatus for attaching a fuel tank to an internal combustion engine, said engine being provided with a body, said fuel tank having a bottom plate, the apparatus comprising a wave-like seat plate including an assembly with alternately curved concavities and convexities therein, said seat plate being applied at said convexities on the opposite outside portions thereof to a lower surface of said bottom plate of the fuel tank and positioned by fastening means having respective head portions disposed in respective concavities, for attachment to said engine body; spaces formed above said concavities and between said seat plate and said bottom plate defining adiabatic spaces, said assembly being secured with said set plate to an upper surface of said engine body.

4,069,805

WIRE APPARATUS FOR ABRASIVE POWDER MACHINING

Philip Sherman, 4817 Crisp Way, San Diego, Calif. 92117

Filed Jan. 25, 1977, Ser. No. 762,556
Int. Cl.² B28D *5/00*
U.S. Cl. 125—30 WD **5 Claims**



1. Apparatus for machining a work piece constituted of a hard material by contacting the material with a moving wire, comprising means for holding a length of the wire in an extended, tensioned condition, means for transmitting ultrasonic energy into the wire, means for vibrating the wire at frequencies lower than ultrasonic while ultrasonic energy is being transmitted into the wire, means for reciprocating the wire lengthwise while ultrasonic energy is being transmitted into the wire and the wire is being vibrated and means for holding the work piece in contact with the wire while ultrasonic energy is being transmitted into the wire, the wire is being vibrated at frequencies lower than ultrasonic and the wire is being reciprocated lengthwise.

4,069,806

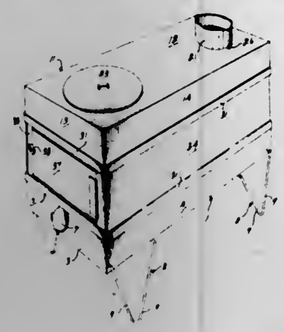
COLLAPSIBLE CAMP STOVE ASSEMBLY

Jean Landry, 124 Marie Victorin Blvd., Cote St. Catherine, County of Laprairie, Canada

Filed Oct. 20, 1976, Ser. No. 734,259
Int. Cl.² F24C *1/16, 15/00*
U.S. Cl. 126—9 R **2 Claims**

1. A collapsible camp stove assembly comprising a sheet metal bottom unit having operatively upstanding side flanges and an open top, a sheet metal top unit having an open bottom and downwardly projecting side flanges fitting in lateral overlapping engagement with said upstanding side flanges in the closed position of the top unit over the bottom unit, sheet metal side units operatively defining bottom and top edges each cooperatively forming a lap and groove joint with one of said side flanges, and auxiliary fine sections and stove components collapsibly fitting with the sheet metal side units in the internal space cooperatively confined by said bottom unit and top unit upon resting of the latter in closed position over the bottom unit, said top unit including a rectangular shape smoke outlet aperture with straight opposite longitudinal side edges and arc-shaped opposite coaxial transverse side edges, one of said flue sections having one end provided with a pair of diametri-

cally opposite axial lugs defining intermediate end edge portions of said flue section, said flue section, when connected to said smoke outlet aperture, having said end edge portions abutting against said top unit, said lugs non-rotatably engaging with said smoke outlet aperture and fitting against the arc-



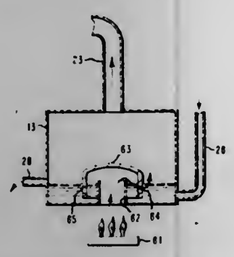
shaped transverse side edges of said aperture, said lugs each provided with a cicumferentially extending slit made therein and above the level of said top unit and latches pivotally carried by said top unit and each including a flat projection removably engaging into said slit respectively to releasably fix said one flue section within said smoke outlet aperture.

4,069,807

HOT AIR HEATER

Martval John Hartig, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 12, 1976, Ser. No. 675,765
Int. Cl.² F24H *3/06*
U.S. Cl. 126—110 R **7 Claims**



1. A heater comprising a burner, means to conduct combustion products into contact with a liquid comprising water, said means being sized to provide combustion products at a temperature of from about 175° F to about 190° F, a blower adapted to transport from said burner through said liquid and urge said combustion products through a heat exchanger, which is made from a thermoplastic resin, which has from 3 to 10 square feet of air surface per 1,000 Btu per hour burner capacity, which heat exchanger is adapted to exchange the heat from said combustion products with forced air.

4,069,808

APPARATUS AND METHOD FOR COMBUSTION

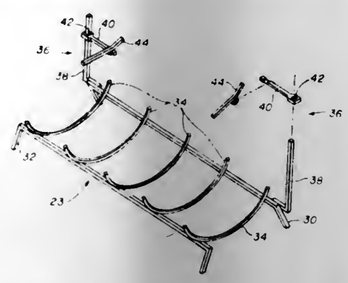
Lawrence Cranberg, 1205 Constant Springs Drive, Austin, Tex. 78746

Filed Aug. 18, 1975, Ser. No. 605,290
Int. Cl.² F23H *13/00*
U.S. Cl. 126—164 **11 Claims**

1. A method for achieving controlled and efficient combustion from combustible materials, comprising the steps of:

selecting pieces of combustible materials whose lengths are substantially greater than their cross-sectional dimension;

arranging said pieces of combustible materials in general contact along their longest dimensons, said pieces of material being substantially parallel to one another;



positioning said pieces of material in a geometric configuration defining a slot formed by said pieces, said slot extending substantially parallel to said pieces of combustible material, and said slot opening predominantly toward the region in which thermal radiation is desired; and

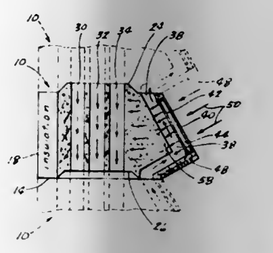
igniting a fire in said slot formed by said combustible materials.

4,069,809

SOLAR HEAT COLLECTING POROUS BUILDING BLOCKS

Lyle L. Strand, 2606 Fremont St., Marshalltown, Iowa 50158

Filed July 19, 1976, Ser. No. 706,796
Int. Cl.² F24J *3/02*; F24D *3/00*; E04B *5/04*
U.S. Cl. 126—270 **13 Claims**



1. A solar heat collecting building block comprising a cast block of porous heat sink material having top, bottom, front, back and side surfaces,

said block having at least one vertical passage extending therethrough from said bottom surface to said top surface,

said top surface having an upper portion which dwells generally above the plane of said top surface,

said bottom surface having a recessed portion which dwells in a plane recessed from the plane of said bottom surface,

said upper portion of one block being capable of matingly being received in said recessed portion of another block,

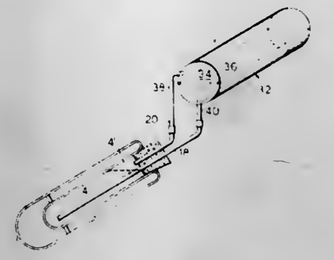
said front surface having at least one transparent member embedded therein to allow solar rays to pass therethrough and strike interior portions of said block.

4,069,810

VACUUM SOLAR COLLECTORS

Harry Zvi Tabor, 13 Hameyasdim Street, Jerusalem, Israel

Filed Apr. 8, 1976, Ser. No. 674,948
Claims priority, application Israel, Apr. 24, 1975, 47167
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **1 Claim**



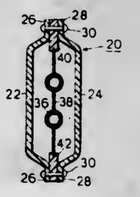
1. A solar collector, comprising: a tubular housing of radiation-transparent material hermetically closed at one end; a smaller-diameter tubular absorber having a radiation-absorber surface, the absorber being coaxially disposed within the tubular housing and hermetically closed at one end; the opposite ends of the tubular housing and absorber being sealed together by a fused seal, and the space between the two being evacuated; a plug inserted into said opposite end of the tubular absorber where sealed by the fused seal to the tubular housing; an inlet tube passing through an opening in said plug for introducing a heat-exchange medium into the interior of the tubular absorber; an outlet tube passing through an opening in said plug for removing the heat-exchange medium from the interior of the tubular absorber; means for mounting the collector at a tilt to the horizontal plane, with said opposite end of the tubular absorber carrying the plug being at a higher level than said one end; said inlet tube extending through the plug into the interior of the tubular absorber for substantially the complete length of the absorber; said outlet tube extending through the plug only into the upper end of the tubular absorber; and a boiler mounted at a higher elevation than the solar collector; the boiler including a vapour-phase zone connected to said outlet tube of the absorber, and a liquid-phase zone connected to the inlet tube of the absorber, the heated solar collector and boiler constituting a vapour pump whereby heat is transferred from the solar collector to the boiler without the need for a mechanical pump.

4,069,811

SOLAR COLLECTORS

Harry Zvi Tabor, 13 Hameyasdim Street, Jerusalem, Israel

Filed Apr. 8, 1976, Ser. No. 674,949
Claims priority, application Israel, Apr. 24, 1975, 47166
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **8 Claims**



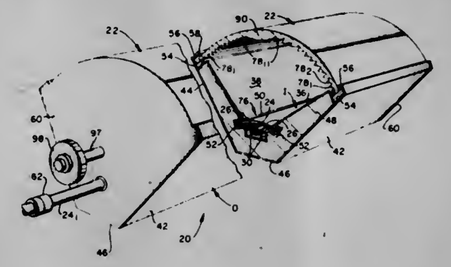
1. A solar collector including an absorber having at least one channel for conducting a fluid receiving the heat absorbed, a housing enclosing the absorber and having radiation-transparent windows covering and spaced from both of the opposite faces of the absorber, and partition members disposed between the absorber and the housing, said absorber being of smaller width and length than the housing, said partition members thermally insulating the absorber from the housing and bridging the spaces between the housing and the absorber along its length and width to block the circulation of air flowing in the space between one face of the absorber and the housing from flowing to the space between the other face of the absorber and the housing, to thereby reduce convection losses from the absorber.

4,069,812

SOLAR CONCENTRATOR AND ENERGY COLLECTION SYSTEM

Mark J. O'Neill, Dallas, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Filed Dec. 20, 1976, Ser. No. 752,688
Int. Cl.² F24J *3/02*; G02B *3/08*
U.S. Cl. 126—271 **40 Claims**



1. A radiant energy concentrator comprising: a prismatic lens having a plurality of prisms arranged to direct incoming light to a common focal area, each of the prisms having a front face, a back face, and a bottom face which joins the front and back faces, each prism further having the front and back faces of the prism oriented such that the angle of incidence of the light passing through the front face is equal to the angle of incidence of the light passing through the back face; an energy receiving means spaced from said prismatic lens, said energy receiving means coinciding with the focal area of said prismatic lens; and support means for supporting said prismatic lens, and energy receiving means.

10. A solar energy collector comprising a support means having an opening formed in the upper end thereof, said support means adapted to support the collector; an energy-receiving means positioned in the lower portion of the interior of said support means; a curved prismatic lens spaced from said energy receiving means, said lens being secured to the upper end of said support means, said lens comprising a plurality of prisms arranged to direct light to a common focal area, each prism having a front face which forms the outer surface of the lens, a back face and a bottom face which form the interior surface of the lens, the improvement comprising: the front and back faces of each prism being oriented such that the angle of incidence of the light passing through the front face is equal to the angle of incidence of light passing through the back face.

4,069,813

METHOD AND APPARATUS FOR APPLYING STRESS FOR KNEE ARTHROGRAPHY AND THE LIKE

Louis A. Gilula, St. Louis, Mo., assignor to Jean Y. Barbier, St. Louis, Mo., a part interest

Filed Oct. 26, 1976, Ser. No. 735,189
Int. Cl.² A61B *5/00*
U.S. Cl. 128—2 R **8 Claims**

1. The method of widening the spaces at the medial and lateral sides of a limb joint for studying them alternately, comprising the steps of

positioning the limb, whose joint is to be so studied, on a study table with one side so to be studied nearer to one edge of the table and the other side nearer to its other edge,

looping a strap having a sliding hook member about the limb above the joint and so adjusting its loop length that the hook member may grasp either table edge,

then alternately widening the joint spaces at and studying the medial and the lateral sides of said joint by:

a. extending the strap toward that edge of the table nearer to the side of the joint to be first studied,

b. grasping said edge with said hook member,

c. applying to the limb below said joint a force in the direction opposite to the extension of the loop,



whereby stress is applied sufficient to permit study of that side of the joint in whose direction the loop extends, and then studying said side,

d. releasing the force so applied below the joint, and releasing the grasp of the hook member, and then, for studying the opposite side,

e. extending the strap loop toward the opposite edge of the table,

f. grasping with the hook member the table edge toward the strap loop so extends,

g. applying to the limb below said joint a force in the direction opposite that to which the strap loop extends,

whereby stress is applied sufficient to permit study of that side of the joint, and

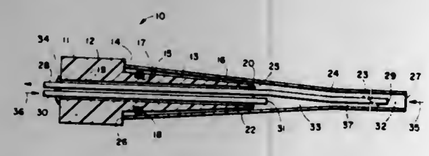
after such study releasing the force so applied, releasing the hook member and removing the strap loop.

4,069,814

DOUBLE LUMEN CANNULA APPARATUS

Anton Hubert Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 6, 1976, Ser. No. 683,642
Int. Cl.² A61B 5/14
U.S. Cl. 128—2 F **7 Claims**



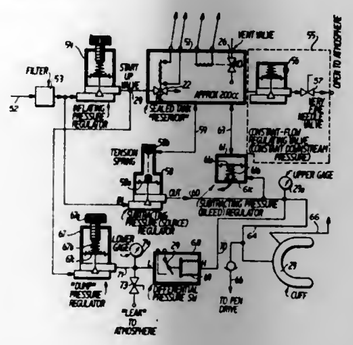
1. A double lumen cannula apparatus for blood sampling comprising in combination a body member comprising a base and an extension projecting from said base, said extension having a frustoconical shaped portion; a cannula sheath of generally funnel shape having frustoconical portion of larger diameter than and coaxially surrounding that of said extension, said frustoconical portion of said sheath terminating at its reduced diameter end in a cylindrical tubular end portion; means affording an annular fluid-tight seal between said extension and said sheath; first conduit means traversing and having a fixed positional relationship with respect to said body member, said conduit means terminating in a tubular end portion spaced substantially coaxially within said reduced diameter tubular end portion of said sheath and having an end spaced a predetermined distance axially inwardly from the end of the surrounding reduced diameter sheath portion; cooperable abutment means on said body member and sheath defining said predetermined distance between said ends of said first conduit means and sheath; and second conduit means traversing said body member and opening into the space between said extension and the frustoconical portion of said sheath.

4,069,815

METHOD OF DETECTING AND RECORDING A SUCCESSION OF TIME-SPACED BLOOD FLOW SURGES

Arnold S. J. Lee, Engelwood, N.J., assignor to Milstein Medical Research Foundation, Inc., New York, N.Y.

Division of Ser. No. 617,175, Sept. 26, 1975, Pat. No. 4,027,662, which is a continuation of Ser. No. 378,167, July 11, 1973, abandoned. This application Apr. 21, 1976, Ser. No. 679,075
Int. Cl.² A61B 5/02
U.S. Cl. 128—2.05 A **1 Claim**



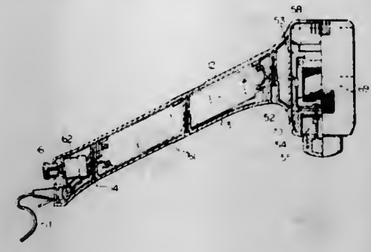
1. In a method of detecting and recording a succession of time-spaced blood flow surges occurring while a variable external pressure applied to a patient's artery is decreased over a first range including the systolic to diastolic pressure range of the patient, the steps of coupling an inflatable cuff to the patient to apply the external pressure to the artery, initially inflating the cuff to a pressure value higher than the patient's systolic pressure, depressurizing the inflated cuff at a constant rate, generating a succession of first electrical pulses corresponding to the blood flow surges caused by successive arterial movements of the patient while the cuff is being depressurized, integrating the first pulses to form second pulses of variable amplitude, converting the variable amplitude second pulses into third pulses each having a duration corresponding to the amplitude of the associated second pulse, scanning a recording web along a first axis at the constant depressurization rate of the cuff, and marking spaced portions of the first axis during the constant-rate scan with linear indicia in synchronism with the occurrences of successive third pulses with the length of the successive indicia corresponding to the duration of the successive third pulses.

4,069,816

SHOULDER PATTING INSTRUMENT

Yukio Yamamura; Shojiro Kawaguchi; Otohiko Terashima; Tutomu Ichinomiya, and Shinpei Otuka, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 15, 1976, Ser. No. 666,758
Claims priority, application Japan, Apr. 12, 1975, 50-44668
Int. Cl.² A61H 1/00
U.S. Cl. 128—41 **4 Claims**



1. In a shoulder patting instrument, the combination comprising a housing having an aperture formed therein and including a handle on one side thereof, an electromagnet having a relatively weighty stator and coil stationarily mounted within the housing and having a relatively lighter movable armature cooperating therewith movable between a retracted position and an energized position, a plunger fixed to the armature and generally centered with respect to the aperture in the housing, a pad on the end of the plunger projecting outwardly of the housing for pressing against a body surface upon guidance by the handle, means for applying pulses of current intermittently to the coil, the electromagnet being oriented so that when a pulse of current is applied to the coil the armature is attracted by the stator for thrusting of the plunger relatively outwardly with respect to the housing so that the housing and weighty stator are thrust relatively away from the body surface, the inertia of the stator and housing providing a reaction force which is applied by the plunger to the body in the form of a pat, the plunger being free upon cessation of current to return to its retracted position resulting in a slight bouncing movement of the stator and housing with respect to the body surface, resilient means interposed between the stator and armature for cushioning the movement of the armature into its energized position, the handle being elongated and extending generally perpendicularly to the direction of plunger movement and having a grip portion at the end thereof for pressing the instrument lightly against the body surface while accommodating the slight bouncing movement of the housing.

4,069,817

BODY WASTE DETECTING DEVICE

Joseph E. Fenole, 2014 Jamestown Way, Oxnard, Calif. 93030; Jerry E. Wells, P.O. Box 5796, Oxnard, Calif. 93031, and Bernard C. Chicoine, P.O. Box 1435, Ventura, Calif. 93001

Filed Aug. 25, 1976, Ser. No. 717,478
Int. Cl.² A61B 19/00
U.S. Cl. 128—138 A **3 Claims**

1. A body waste detecting device including, in combination:

a. an elongated flexible electrically insulating plastic strip having a length L, width W and thickness T, wherein L is at least 15 W and W is at least 20 T;

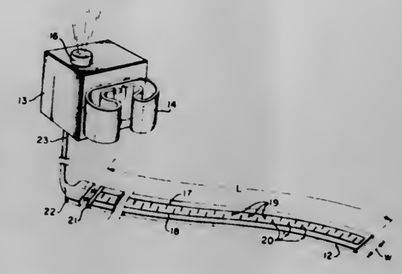
b. a first conductive longitudinal path on the surface of said strip running adjacent to and parallel with one longitudinal edge of the strip;

c. a second conductive longitudinal path on said surface of said strip adjacent to and running parallel with the opposite longitudinal edge of said strip, each of the conductive paths having a plurality of connected conductive transverse paths extending towards the other longitudinal path in a staggered manner and terminating short of the other path to define inter-digitated fingers insulated from each other;

d. a protective conductive coating overlying each of the conductive paths;

e. a casing incorporating a directional light source, a battery, and circuit means connected between the battery and light source;

f. manually attachable fastening means on the exterior of said casing for supporting the casing to a frame portion of a wheelchair or bed; and,



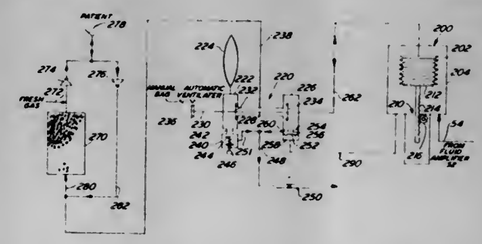
g. electrical connecting means for connecting said first and second conductive longitudinal paths to said circuit means in said casing, said circuit means being responsive to a change in resistance resulting from body waste contacting a surface portion of said strip in a manner to bridge any portion of the first and second conductive longitudinal paths and corresponding conductive transverse paths to energize said light source, whereby said casing may be easily attached to a wheelchair or bed frame and said strip disposed beneath a patient in said chair or bed, energization of said light source providing a discreet indication of the presence of body waste from said patient.

4,069,818

FLUIDIC CONTROLLED VENTILATOR

Peter J. Schreiber, Zionsville, Pa., assignor to N.A.D., Inc., Telford, Pa.

Division of Ser. No. 557,745, March 12, 1975, Pat. No. 4,007,736. This application Aug. 27, 1976, Ser. No. 718,287
Int. Cl.² A61M 16/00
U.S. Cl. 128—145.6 **1 Claim**



1. In a ventilator having an automatic power and timing circuit which is connected by a first fluid path to a patient and a manual power unit which is connected by a second fluid path to said patient, a switching mechanism, said switching mechanism including an elongated slidable rod having a pair of fluid stopping means and walls about said first and second fluid path, a first of said stopping means being engageable with the wall of said first fluid path between said automatic circuit and said patient to stop fluid flow therebetween, the second of said fluid stopping means being engageable with the wall of said second fluid path between said manual unit and said patient to stop fluid flow therebetween, only one of said fluid stopping means being engageable at a time so that movement of said rod to a

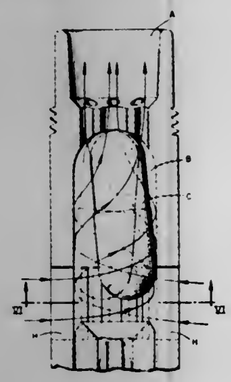
first position enables fluid flow only between said automatic circuit and said patient while said second stopping means prevents fluid flow between said manual unit and said patient while movement to a second position stops fluid flow between said automatic circuit and said patient while permitting fluid flow between said manual unit and said patient, a first chamber including a wall portion having an opening therein through which said switching mechanism extends and a second chamber including a wall portion having an opening therein through which said switching mechanism extends, said openings in said wall portions of said first and second chambers being connected via a fluid connecting path through which said rod extends, said first and second stopping means being provided on said rod and within said first and second chambers, respectively, and cooperating with each wall portion about said opening to close said opening thereby causing one end or the other of said fluid path to be closed in accordance with the position of said elongated rod so that selection of said automatic or manual ventilation is enabled, said first chamber including a first relief valve and said second chamber including a second relief valve, said fluid path between said first and second chambers being connected via a fluid path to said patient, said first chamber being connected via a fluid path to said automatic unit and said second chamber being connected to said manual unit.

4,069,819

INHALATION DEVICE

Luigi Valentini, and Michele Maiorano, both of Milan, Italy, assignors to Societa Farmaceutici S.p.A., Milan, Italy

Continuation of Ser. No. 576,204, May 9, 1975, abandoned, which is a continuation of Ser. No. 414,214, Nov. 9, 1973, abandoned. This application Aug. 5, 1976, Ser. No. 711,962
Claims priority, application Italy, Apr. 13, 1973, 22968/73
Int. Cl.² A61M *15/08*
U.S. Cl. 128—206 **5 Claims**



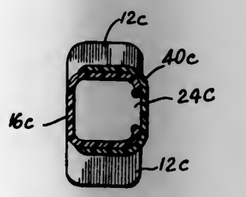
1. A pen-shaped pocket-size inhalation device of relative slight bulk and of elongated generally cylindrical form for the administration upon inhalation via a persons' nose or mouth of a medicament in finely-divided form contained within a capsule disposed in the interior of the device, said device including a generally cylindrical wall structure having a centrally unobstructed axially-extending nebulization chamber adapted to contain said capsule, said nebulization chamber having dimensions slightly larger than, and adapted to loosely hold, a capsule of smaller dimensions containing mediament therein in substantially axial position with respect to said nebulization chamber said device having air passage means extending through said wall structure adjacent one end of said nebulization chamber for the flow of air through said wall structure and into said nebulization chamber for setting in vortical motion air flowing through the device solely by inhalation, thereby causing the loosely held capsule disposed within the slightly larger nebulization chamber, under the action of the flowing air, to make random movements of rotation, precession and vibration about and along its longitudinal axis while loosely held and freely movable within the nebulization chamber, unitary spring-biased means including at least one capsule-perforating needle disposed at one end of said cylindrical structure and in an axially retracted manner with respect to said cylindrical structure, said needle disposed adjacent one end of the nebulization chamber and including means actuatable manually by the person whereby the end of the capsule may be readily perforated for release of the contained medicament into the air flowing with a vortical motion through the nebulization chamber and at least one discharge hole in said cylindrical structure communicating with the nebulization chamber at the opposite end thereof for releasing finely-divided medicament dispersed in the air from the nebulization chamber into the person's nose or mouth.

4,069,820

INTUBATING PHARYNGEAL AIRWAY

Robert A. Berman, 501 Cedar Hill Road, Far Rockaway, N.Y. 11691

Division of Ser. No. 708,274, July 23, 1976. This application Mar. 15, 1977, Ser. No. 777,642
Int. Cl.² A61M *16/00*
U.S. Cl. 128—208 **2 Claims**



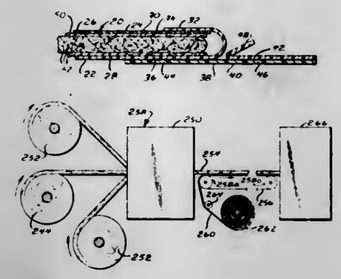
1. An intubating airway, comprising:
a. a tubular longitudinally extending body member said body member having a longitudinally extending side opening, defined therein,
b. said member having a distal end for insertion into the mouth and throat of a patient and a proximal end for location at the mouth of the patient, and
c. a cap closure member, said cap closure member comprising a U-shaped channel removably engaged and secured over said body member at said side opening to cover said longitudinally extending side opening.

4,069,821

ABSORBENT ARTICLE

Harry G. Fitzgerald, Green Bay, Wis., and Donald Patience, Barrington, Ill., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 603,071, Aug. 8, 1975, Pat. No. 3,976,074. This application Mar. 22, 1976, Ser. No. 668,757
The portion of the term of this patent subsequent to Aug. 24, 1993, has been disclaimed.
Int. Cl.² A61F *13/16*
U.S. Cl. 128—290 P **4 Claims**



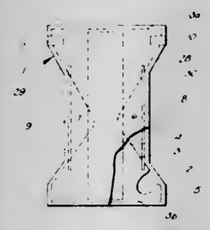
1. An absorbent article comprising, an absorbent pad having a loosely formed mass of fibers, said pad mass being at least partially formed from a comminuted supply feed roll material containing at least some waste absorbent material.

4,069,822

POROUS FIBROUS WEB TO A SUBSTRATE AND ARTICLES THEREFROM

Kenneth B. Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 30, 1975, Ser. No. 627,406
Int. Cl.² A61F *5/42*
U.S. Cl. 128—294 **7 Claims**



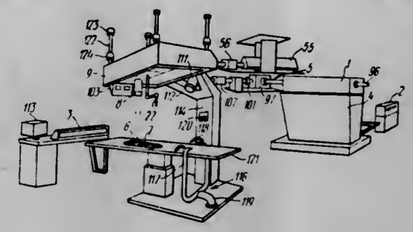
1. An integral disposable diaper comprising a fluid porous, fibrous topsheet, a fluid impermeable backsheet and an absorbent core element therebetween, said topsheet having a surface overlying said core element and portions of said backsheet, said surface of said topsheet being defined by a plurality of individual fibers and fiber junctions, said topsheet being bonded directly to at least one of said core element and said portions of said backsheet by globules of hot-melt adhesive located at some at least of said individual fibers and fiber junctions defining said topsheet surface.

4,069,823

APPARATUS FOR LASER THERAPY

Viktor Leonidovich Isakov, ulitsa Fedorova, 1, kv. 67; Yan Yakovlevich Popov, ulitsa Yakira, 16/18, korpus 2, kv. 70; Boris Grigorievich Khlyvnjuk, ulitsa Moskovskaya, 5, kv. 38; Rostislav Evgenievich Kavetsky, ulitsa Vladimirskaya, 51/53, kv. 44; Nikolai Fedorovich Gamaleya, ulitsa Entuziastov, 3, kv. 153; Khadzhi Aminovich Baratov, ulitsa Fedorova, 9, kv. 5; Gennady Dmitrievich Krazhan, bulvar Lepse, 43, kv. 55; Ilya Romanovich Lazarev, prospekt 40-letia Oktyabrya, 126, kv. 88; Ivan Parfenovich Dedkov, ulitsa Kreschatik, 15, kv. 12; Alexei Ivanovich Krivenko, ulitsa Kamenyariv, 76/37, kv. 1; Vladimir Nikolaevich Dudnichenko, ulitsa Pushkinskaya, 41, kv. 2, all of Kiev, U.S.S.R.; Ivan Vasilievich Kudryavtsev, deceased, late of Kiev, U.S.S.R., BY Galina Antonovna Kudryavtseva, administratrix, ulitsa Suvorova, 13, kv. 108, Kiev, U.S.S.R.

Filed Apr. 19, 1976, Ser. No. 678,052
Int. Cl.² A61B *17/36*
U.S. Cl. 128—303.1 **16 Claims**



1. An apparatus for laser therapy, comprising:
at least one laser for emission of laser energy;
an emitting head of said laser;
a power unit of said laser designed for excitation of said head of said laser;
a control system of said power unit of said laser;
a support mounting said laser;
a scanning device positioned after said laser downstream of the laser beam permitting control of the laser beam in the operation area; said scanning device comprising two reflecting members: a horizontal longitudinal travel platform with one of said reflecting members placed thereupon and a horizontal transverse travel platform with the second reflecting member placed thereupon; perpendicularly arranged rails for said platforms to run upon;
the forementioned elements of said scanning device permitting travel of the laser beam along the optical axis of the scanning device whatever the position of said barrel in the operation area;
a barrel focusing the laser beam at a prescribed point of the operation area, positioned upon said horizontal longitudinal travel platform;
said laser, scanning device and barrel making up a channel of the laser beam emission action.

4,069,824

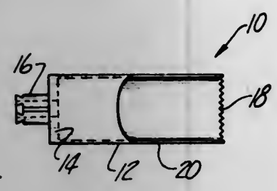
METHOD OF AND APPARATUS FOR FORMING A CRESCENTIC JOINT IN A BONE

Robert E. Weinstock, 19230 Mack, Grosse Pointe Farms, Mich. 48236

Filed July 12, 1976, Ser. No. 704,451
Int. Cl.² A61B *17/14*
U.S. Cl. 128—317 **8 Claims**

1. A saw adapted to form a crescentic joint in a bone at a section having a width W, comprising: a blade having a circular base section of a diameter slightly greater than W, an arcuate cutting end of the same diameter, the end having a serrated edge forming an arc of approximately 180°—N° formed on a circular semi-tubular section having the same arc, the other end of the semi-tubular section being connected to an intermediate tubular section that fairs out in arcuate extent from a full

circle at the base to the semi-tubular section; a bit affixed centrally to the base and projecting therefrom axially in a direction opposite to the cutting end; and a rotationally oscillating drive adapted to receive the bit and oscillate through an arc of substantially N°, whereby the saw is adapted to form a crescentic osteotomy having a bearing surface of approximately 180°.



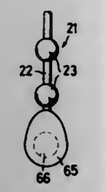
8. The method of performing an arcuate osteotomy in a bone section having a width W, comprising: sawing the bone section with a right, circular, cylindrical tubular blade having a diameter slightly greater than W and an arcuate cutting end formed on the same diameter and having an arcuate extent of substantially 180°−N°, by rotationally oscillating the blade through an arc of N°.

4,069,825

SURGICAL THREAD AND CUTTING APPARATUS FOR THE SAME

Taichiro Akiyama, 19-23 Shimoochai 2-chome, Shinjuku, Tokyo, Japan

Filed Jan. 28, 1976, Ser. No. 653,243
Int. Cl.² A61L *17/00*
U.S. Cl. 128—335.5 **9 Claims**



1. A surgical thread comprising a thread-like body and a plurality of integrally molded projections formed at intervals in said thread-like body, a needle member attached to one end of said thread-like body, and a threading member formed on another end of said thread-like body, said threading member comprising a ring-shaped body, a thin film formed around said threading member, said film extending over said ring-shaped body, said needle member being adapted to pierce said film to form an opening through said ring-shaped body through which said needle member, said thread-like body and said projections can pass to form a loop around an object, one of said projections being secured by said ring-shaped body when said object is held by said loop.

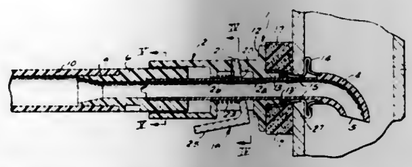
4,069,826

SURGICAL TUBE ADAPTER CLAMP

Robert William Sessions, Hinsdale, and Jerome Jeslis, Chicago, both of Ill., assignors to Barlow Mfg. Corporation, Hinsdale, Ill.

Filed Sept. 3, 1976, Ser. No. 720,252
Int. Cl.² A61M *25/00, 5/00*
U.S. Cl. 128—348 **7 Claims**

1. A surgical tube adapter clamp for effecting a tube connection to a blood vessel, the combination of a relatively rigid hollow tubular member having a free end constructed for insertion in a blood vessel, the opposite end adapted to be operatively connected to the cooperable end of a tube, a first relatively deformable member encircling said tubular member at a point spaced from said free end thereof and adapted to engage the adjacent external wall surface of a blood vessel following insertion therein of said free end, a second relatively deformable member, in the form of a tubular sleeve adapted to be expanded in a radial direction by relative axial movement of its free end portions toward one another, which sleeve encircles an intermediate portion of said tubular member and extends axially outwardly from said first deformable manner, whereby the outer end portion of said second deformable member may also be disposed in such a blood vessel, a body member in which said tubular member is supported for longitudinal movement, one end of said tubular sleeve being engaged with said body member and the opposite end engaged with said



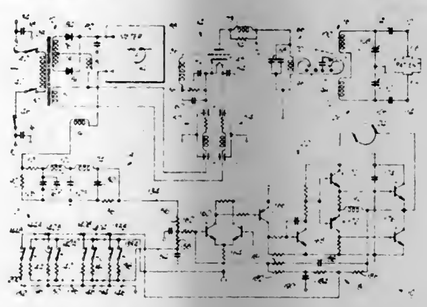
tubular member, whereby longitudinal movement of said tubular member relative to said body member is operable to effect expanding movement of said sleeve, for effecting a deformation of said sleeve to increase the effective diameter thereof within the blood vessel and thereby clamp the adjacent wall of such a vessel between the two deformable members to secure the clamp to the vessel, and releasable means engageable with said body and tubular member for retaining said tubular member in sleeve-expanding position relative to said body member, said releasable means comprising a lever, pivotally movable relative to said body member, and having an opening therein through which said tubular member extends, and resilient means for urging said lever in a direction to retain said tubular member in such retaining position.

4,069,827

DIATHERMY APPARATUS

Francis I. Dominy, Janesville, Wis., assignor to The Burdick Corporation, Milton, Wis.

Filed Aug. 20, 1975, Ser. No. 605,988
Int. Cl.² A61N *1/40*
U.S. Cl. 128—422 **8 Claims**



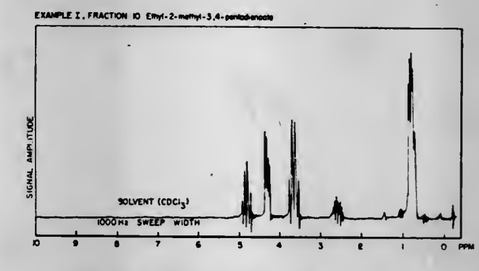
1. In a diathermy apparatus, the combination comprising:
an oscillator including a controlled conduction device having a pair of output electrodes;
a tank circuit connected in circuit with said device output electrodes;
means for applying direct current to said controlled conduction device, said current applying means including means for sensing the magnitude of the direct current applied to said controlled conduction device and providing a control signal indicative of said current, said control signal being indicative of the magnitude of the oscillations provided by said oscillator;
a pair of output terminals adapted to be coupled to a patient;
a reactive coupling circuit for coupling electrical energy from said tank circuit to said output terminals;
adjustable means for varying the tuning of said coupling circuit;
an output level selecting circuit including means for providing a reference signal corresponding to a desired output level;
and an output amplifier having an output connected to said adjustable means and inputs connected to both said sensing means and said selecting circuit for operating said adjustable means in response to variance of said control signal relative to said reference signal.

4,069,828

FLAVORED TOBACCO ARTICLE

John B. Hall, Rumson; Denis E. Hruza, Brick Town; Manfred Hugo Vock, Locust; Joaquin Vinals, Red Bank, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 566,118, April 8, 1975, Pat. No. 3,978,239.
This application May 5, 1976, Ser. No. 683,302
Int. Cl.² A24B *3/12*
U.S. Cl. 131—17 R **1 Claim**



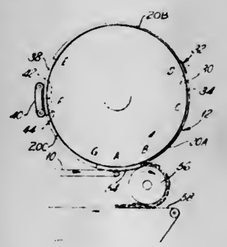
1. A tobacco article comprising tobacco, one or more C_1-C_6 alkyl-2-methyl-3,4-pentadienoates, and as a flavor adjuvant a compound selected from the group consisting of ethyl butyrate, ethyl valerate and maltol.

4,069,829

MANUFACTURE OF CIGARETTES AND THE LIKE

Desmond Walter Molins, London, England, and Francis Auguste Maurice Labbe, Neuilly sur Seine, France, assignors to Molins Limited, London, England

Filed Sept. 22, 1972, Ser. No. 291,495
Claims priority, application United Kingdom, Sept. 24, 1971, 44755/71
Int. Cl.² A24C *5/18*
U.S. Cl. 131—84 C **16 Claims**



3. A cigarette making machine for forming a cigarette filler stream from an elongated carpet of particulate material, part along one side thereof consisting of particulate core material and the remainder consisting of particulate normal tobacco, said core material having a different composition than said particulate normal tobacco, said machine comprising:
a. an elongated air-pervious conveyor having a surface for supporting and conveying said carpet along a path to a position at which formation of said filler stream is completed,
b. stationarily mounted trough means arranged obliquely across said surface of said elongated air-pervious conveyor and having an open side thereof spaced from and confronting said surface;
c. air jet means arranged to project air through said air-pervious conveyor into said trough means for progressively rolling said carpet in said trough means while said carpet is being conveyed along said path and commencing at the side supporting said core material to form a filler stream comprising rolled particulate core material surrounded by an annulus of rolled particulate normal tobacco,
d. stationarily mounted means for trimming excess particulate core material from the rolled core material at a trimming station along said path at said one side supporting said rolled core material and before the annulus of particulate normal tobacco is rolled about said rolled core material, and
e. pneumatic means for retaining the unrolled portion of said carpet on said conveyor while said carpet is being rolled by said air jet means and said excess core material is trimmed.

4,069,830

APPARATUS FOR CONDITIONING TOBACCO

Willi Thiele, Geesthacht; Gerd-Joachim Wendt, and Werner Heyden, both of Hamburg, all of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Division of Ser. No. 491,867, July 25, 1974, Pat. No. 3,978,868.
This application June 7, 1976, Ser. No. 693,371
Int. Cl.² A24B *3/04*
U.S. Cl. 131—135 **9 Claims**



1. Apparatus for reducing the moisture content of a stream of tobacco particles, comprising a conveyor defining an elongated conditioning zone having first and second ends; means for feeding a stream of moist tobacco particles into said first end; means for receiving dried tobacco particles at said second end; means for heating said conveyor; means for circulating through said zone a current of heated gaseous fluid in a direction from said second toward said first end so that the particles of tobacco in said zone are heated by said conveyor and by said current and release moisture which is entrained by the fluid, including a duct communicating with said ends and having a first opening for evacuation of a portion of moisture-laden fluid leaving said zone and means for conveying the non-evacuated fluid into the second end of said zone, said duct having a second opening for admission of drier fluid which replaces the evacuated portion of moisture-laden fluid and is mixed with non-evacuated moisture-laden fluid prior to entering said zone by way of said second end whereby the quantity of fluid entering said second end of said zone is at least substantially constant; adjustable means for controlling the rate of flow of fluid

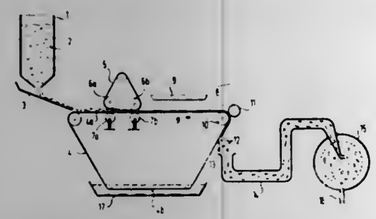
through at least one of said openings; means for measuring the moisture content of dried tobacco particles; means for comparing the measured moisture content with a predetermined moisture content; and means for adjusting said controlling means as a function of deviations of measured moisture content from said predetermined moisture content.

4,069,831

APPARATUS FOR USE IN THE PREPARATION OF SMOKABLE PRODUCTS

Laszlo Egri, Basel, Switzerland, assignor to Tamag Basel AG, Birsfelden, Switzerland

Division of Ser. No. 533,779, Dec. 18, 1974, Pat. No. 3,986,515. This application May 25, 1976, Ser. No. 689,788
Claims priority, application Germany, Dec. 20, 1973, 2363640
Int. Cl.² A24B *3/14*
U.S. Cl. 131—138 **6 Claims**



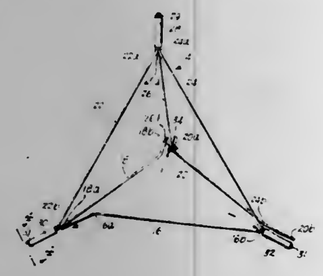
1. Apparatus for producing a smokable, flake-like, or leaf-like reconstituted tobacco comprising:
   a. a belt for transporting a wetted mixture of tobacco particles,
   b. means for distributing said wetted mixture to said belt,
   c. a second belt disposed in close confronting relationship to said transport belt and movable in the same direction as said transport belt but at a different speed therefrom, said second belt being adapted to spread said mixture upon said transport belt and form a layer of said wetted mixture,
   d. means downstream from said second belt and adapted to be in contact with said layer of said wetted mixture, said means being adapted to at least partially cut said layer into irregularly shaped particles,
   e. means for removing said irregular shaped particles from said transport belt, said removing means being downstream from said cutting means, and
   f. means for drying and separating said irregular shaped particles.

4,069,832

COLLAPSIBLE ROD AND JOINT STRUCTURE FORMING A TETRAHEDRAL OR SIMILAR FRAME

Andrew M. Bingham, 12 Walnut St., W. Hempstead, N.Y. 11552

Filed Aug. 18, 1976, Ser. No. 715,381
Int. Cl.² A45F *1/16*
U.S. Cl. 135—3 R **7 Claims**



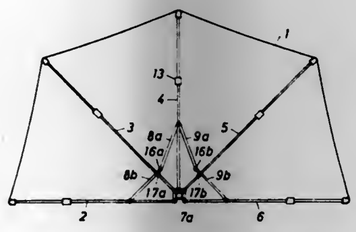
1. A collapsible enclosure frame including a rod and sleeve joint structure for construction of tent enclosures and the like comprising:
   a. a plurality of rods each having a short arm portion serving as part of the joint structure and a long rod portion serving as straight frame elements of the enclosure; said long rod portion and said arm portion being angularly off set from one another; and
   b. at least one sleeve portion forming a corner of the enclosure said sleeve portion including at least three parallel longitudinal pockets having parallel axes, each pocket receiving one of said arm portions for axial pivotal movement about said arm such that said rod portions may be rotated about said arm portions from a parallel relationship comprising the collapsed condition of the frame to a mutually diverging relationship comprising the erected condition of said enclosure frame.

4,069,833

COLLAPSIBLE WIND AND/OR SUNSHADE SCREEN

John Valter Johansson, 33 Amynnesvagen, 890 10 Bjasta, Sweden

Filed Jan. 19, 1976, Ser. No. 650,503
Claims priority, application Sweden, Feb. 26, 1975, 7502070
Int. Cl.² A45F *1/16*
U.S. Cl. 135—4 R **7 Claims**



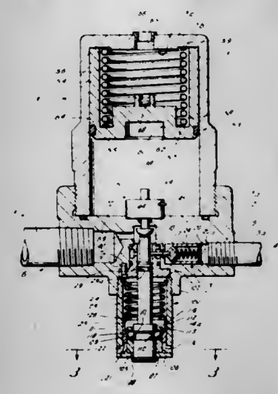
1. A collapsible wind and/or sunshade screen comprising:
a cover,
a stand supporting said cover including
two outer ribs mounted for movement to an opened up position in which said outer ribs are located in a common plane which is at least substantially perpendicular to said cover,
at least one intermediary rib positioned between said outer ribs,
said ribs being secured to said cover for positioning the same in a collapsed condition and in stretched condition forming a screen,
said ribs having axles at their one end,
a hub receiving said axles for holding said ribs together at said one end thereof to extend radially from said hub,
said axles being approximately perpendicular to the portion of said cover near said hub,
said ribs being pivotally movable about said axles received in said hub for movement relative to one another for moving said cover from the collapsed condition to the stretched condition,
means interconnected between said outer ribs and said intermediary rib for moving said ribs to a separated position to maintain said cover in said stretched condition,
and an elongated screen support for holding the screen in an upright position on a foundation and to counteract the upsetting thereof,
said screen support being arranged to penetrate into said hub and to extend on an axis approximately perpendicular to the portion of said cover near said hub,
said screen support penetrating said hub at approximately the same level as the axles of said outer ribs,
said screen support having portions extending a substantial distance on both sides of said cover,
said screen support comprising two portions pivotally connected with the hub, the pivoting axles of said portions being at least approximately parallel inter se and perpendicular to said axles of the ribs.

4,069,834

THERMAL SAFETY VALVE

Edward C. Bern, Upper Saddle River, and Donald B. Gemeinhardt, Montague, both of N.J., assignors to Baker Cac, Inc., Belle Chasse, La.

Filed Apr. 26, 1976, Ser. No. 679,974
Int. Cl.² F16K *17/38*
U.S. Cl. 137—75 **20 Claims**



1. A thermally activatable safety valve apparatus comprising:
   a. a housing;
   b. a timing assembly within said housing;
   c. valve means operationally associated with said timing assembly;
   d. first and second fluid transmission means through said housing, one of said first and second fluid transmission means being isolatable by activation of said timing assembly; and
   e. thermally activatable trigger means for initiating closure of the valve means operationally associated with said timing assembly.

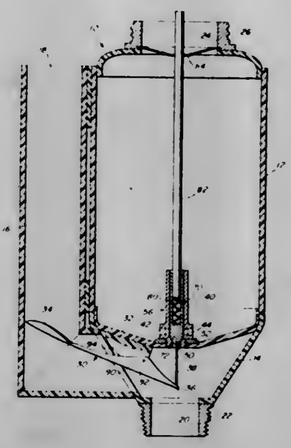
4,069,835

FUEL AND LUBRICANT MIXER

Rigo Stadler, 65 Hillside Ave., New York, N.Y. 10040

Filed July 21, 1976, Ser. No. 707,393
Int. Cl.² G05D *11/00*
U.S. Cl. 137—114 **3 Claims**

1. A fluid mixing device for the proportionate mixing of lubricant to fuel upon the addition of fuel to a fuel storage tank of a two cycle engine comprising:
   a substantially cylindrical lubricant supply container;
   a funnel-like mixing chamber immediately below said lubricant container;
   a columnar fuel inlet pipe, secured to and abutting a surface of said lubricant container, perpendicularly angled at its base to merge with and direct fuel flow into said mixing chamber;
   a butterfly lever, axially secured within said mixing chamber upon the bottom surface of the base of said lubricant container, having a contoured and curved spoon-like end extending within the base of the vertical portion of said fuel inlet pipe and an opposing squared end and flanged sides;
   a concentric aperture within an inward and downwardly sloping surface of said base of said lubricant container;
   a washer-like retainer member having a threaded hollow cylindrical base resting upon and extending though said base aperture;
   a hollow metallic sleeve having a lower threaded portion to screwably mate with said threaded washer-like retainer and having opposing apertures near to upper extent of said threaded portion;
   a needle valve member having a rounded conical base from which a thin needle pin extends downward and rests upon said butterfly lever squared end and having a rectangular upper body portion containing a hollowed cylindrical aperture for the majority of length thereof;
   a spring within said cylindrical hollowed aperture of said needle valve member;
   a main piston shaft having one end within said cylindrical hollowed needle valve aperture abutting said spring, said shaft extending to the neck of said lubricant container;
   a metallic strip retainer having an aperture at its midpoint to slidably retain said shaft, said strip being secured to the inner surface of said neck.

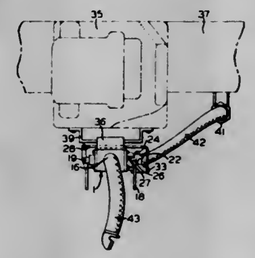


4,069,836

BRAKE PIPE END COCK WITH DOUBLE-ENDED HANDLE TO PERMIT OPERATION FROM EITHER SIDE OF THE CAR

Raymond M. Sowinski, Apollo, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Apr. 15, 1976, Ser. No. 677,155
Int. Cl.² B61G *5/06*
U.S. Cl. 137—348 **1 Claim**



1. A brake pipe end valve device interposable between the end of a brake pipe and a brake pipe coupling hose of a railway car for controlling communication therebetween, said brake pipe end valve device comprising:
   a. a valve body mounted between the lateral limits of the car

with the axis thereof disposed perpendicularly to the longitudinal center line of the car, and including a valve element selectively rotatably operable about said axis of said valve body to an open position, in which said communication is open, or to a closed position, in which said communication is closed;

b. a pair of operating handles, one each being operably disposed on opposite sides of the valve body, each of said handles being accessible from the respective side of the car on which it is disposed;

c. a crossover member rigidly connecting said handles to each other for causing unitary movement thereof, notwithstanding that only one of the handles is manipulated from one side of the car;

d. respective key members interposed between said opposite sides of said valve element and the respective operating handles for transmitting rotating movement of the handles to the valve element;

e. locking means cooperatively interposed between one of said operating handles and said valve body for locking said one of said operating handles and, therefore, said valve element against rotation and in the selected position until deliberately operated to the other of said open or closed position;

f. a hinge connection by which said one of said operating handles is connected at one end to the adjacent key member and is pivotable thereabout for unlocking the handle against rotation; and

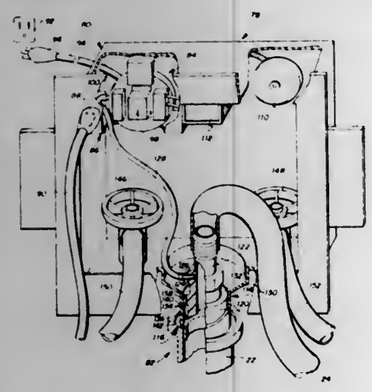
g. a fulcrum connection connecting the other of said operating handles, between the ends thereof, to the other of said key members, said other of said operating handles having one end pivotally connected to the adjacent end of said crossover member for transmitting pivotal movement of said other of said operating handles, through said crossover member, to said one of said operating handles for effecting movement of the latter about said hinge connection and consequent unlocking thereof.

4,069,837

WASHING MACHINE OVERFLOW CONTROL MEANS

James D. Jirasek, 109 S. 31st St., Temple, Tex. 76501

Filed Mar. 23, 1976, Ser. No. 669,676
Int. Cl.² E03C *1/12*; H01H *35/24*
U.S. Cl. 137—360 **15 Claims**



1. An overflow control valve for connecting a washing machine drain hose to a stand-pipe comprising:

a. cylindrical plug means having a central axially extending passageway therethrough, one end of said plug means being connected to the upwardly extending end portion of the stand-pipe, the other end of said plug means being connected to the drain hose of the washing machine; and,

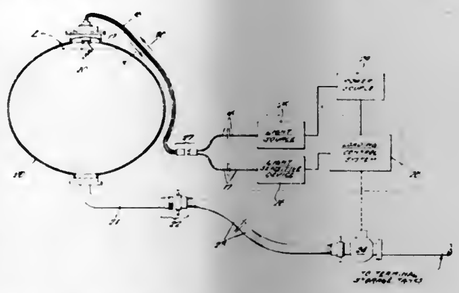
b. by-pass valve means positioned within a sidewall of said cylindrical plug means, said by-pass valve means having an open position for connecting said axially extending passageway with the atmosphere when said washing machine is not in a drain cycle and a closed position when said washing machine is in a drain cycle.

4,069,838

FIBER OPTIC LIQUID LEVEL SENSOR

William B. Hansel, Media, and Paul B. O'Connell, Huntingdon Valley, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed May 26, 1976, Ser. No. 690,323
Int. Cl.² F16K *21/18*
U.S. Cl. 137—392 **6 Claims**



1. A system for detecting liquid reaching a predetermined level in a container, and comprising:

a. an optic tubing extending in the container at an angle inclined to the vertical such that as the level of liquid in the container around the tubing rises or falls different sections of the optic tubing will be covered or uncovered by the liquid, said optic tubing having a gapped section having a gap which liquid in the container may fill with the geometric arrangement of the gap and the angle inclined to the vertical being such that light normally passes through said optic tubing and through said gap when the liquid level in the container is not in said gap but when the liquid level in the container rises into the gap, radiation which normally passes through the gap and remains in the tubing is deflected out of the gap and out of the tubing because of the different indices of refraction of the air and the liquid in the gap;

b. a light source providing light at a first end of said optic tubing, whereby light passes into said optic tubing; and

c. light sensitive means at the second end of said optic tubing for detecting the presence of light at the second end of the optic tubing, whereby the interruption of light detected by said light sensitive means signifies the liquid level being at the level of the gap in the optic tubing.

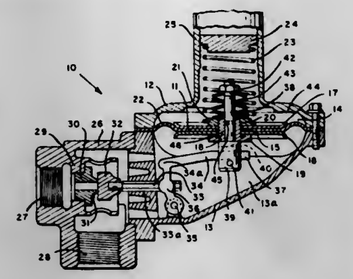
4,069,839

GAS PRESSURE REGULATOR

George C. Hughes, Anderson, Ind., assignor to Textron Inc., Providence, R.I.

Filed May 14, 1976, Ser. No. 687,301
Int. Cl.² F16K *31/12*
U.S. Cl. 137—505.46 **4 Claims**

1. A pressure regulator having a housing and a cover therefor; a flexible diaphragm clampled therebetween and forming a gas pressure chamber and an atmospheric pressure chamber; spring means, said diaphragm being responsive, against the force of said spring means, to the gas pressure in said gas pressure chamber; stop means for arresting the movement of said diaphragm in response to predetermined excess pressure in the gas pressure chamber; means connected to the diaphragm for regulating the flow of gas to said gas pressure chamber and including a flow control valve and actuating means therefor connected to said diaphragm, said actuating means including a lever and a push-pull sliding connection including auxiliary spring means for operatively connecting said diaphragm and said lever, stop means for arresting the movement of said lever in response to excessive pressure in said pressure chamber, said auxiliary spring means yielding in response to excess gas pressure in the pressure chamber on said diaphragm after the lever has been arrested by its said stop means to protect said diaphragm and said lever from damage, said stop means for arresting the movement of the diaphragm comprises a first metal plate carried by the side of the diaphragm in the atmospheric pressure chamber and having peripheral edge portions positioned to engage stationary parts of said cover, a second metal plate engaging the side of the diaphragm in the gas pressure chamber; and means connecting said plates together with the diaphragm sandwiched between them comprising a bushing extending through aligned holes in said diaphragm and said plates, said bushing having a flange engaging said second metal plate and a nut engaging the first-named plate and said auxiliary spring means being interposed between said nut on said bushing and a nut on the end of said push-pull sliding connection.

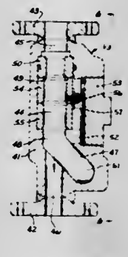


4,069,840

BALL CHECK VALVE

Cicero C. Brown, deceased, late of Houston, Tex., by Joe R. Brown, executor, P. O. Box 19236, Houston, Tex. 77024

Filed Jan. 30, 1976, Ser. No. 653,939
Int. Cl.² F16K *15/04*
U.S. Cl. 137—533.11 **2 Claims**



1. A check valve for permitting fluid flow in one direction and preventing fluid flow in the reverse direction comprising:

a. a tubular body having a longitudinal flowbore therethrough with inlet and outlet;

b. a removable annular seat within said flowbore facing in said one direction, and removable seat retainer means for constraining said seat in said flowbore;

c. a cylindrical pocket communicating with said flowbore through an opening, the axis of which pocket is inclined relative to the axis of said flowbore;

d. a ball member carried by said body and movable, by fluid flow, into said pocket, when fluid flows through said valve in said one direction, to permit flow therethrough, and movable, under the influence of gravity, into sealing engagement with said seat in said flowbore, to block reverse fluid flow therethrough;

e. deflection means within said flowbore for guiding said ball member between said pocket and said flowbore including a cylindrical guide path formed by the intersection of said flowbore with the cylindrical projection of said pocket, said flowbore downstream of said intersection being of a diameter smaller than the diameter of said ball member; and

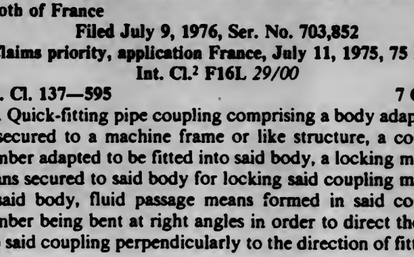
f. a side port in said body, and closure for said port, said side port extending from the exterior of said body to said flowbore, and permitting, upon removal of said closure, removal of said ball, seat retainer means and seat through said side port.

4,069,841

FUEL SUPPLY SYSTEM

Lewis D. Bartlett, P.O. Box 786, Hopewell, Va. 23860

Filed Sept. 3, 1976, Ser. No. 720,442
Int. Cl.² E03B *7/07*
U.S. Cl. 137—568 **1 Claim**



1. In a system for the transfer and consumption of a liquid fuel comprising a storage reservoir for said fuel, a suction pipeline communicating with said reservoir and adapted to convey fuel away from said reservoir through a filter and to a fuel consuming means, a return pipeline adapted to convey unconsumed fuel back to said storage reservoir, and a pump having a suction port and return port, said suction port being coupled with said suction pipeline, the improvement comprising a holding tank interposed in said return pipeline in a manner such that unconsumed fuel emerging from the return port of said pump enters said tank, a float valve mechanism located within said tank and adapted to open drain means when fuel is present in said tank, said drain means communicating with said suction pipeline at a location between said filter and said fuel consuming means, and an overflow outlet in an upper portion of said tank communicating with said return pipeline, the respective elevations of said pump, holding tank and storage reservoir being such that there is a greater negative hydrostatic pressure between the reservoir and pump than between the holding tank and pump, and the path of least resistance for fuel to travel to said suction port is from said holding tank, not said storage reservoir.

4,069,842

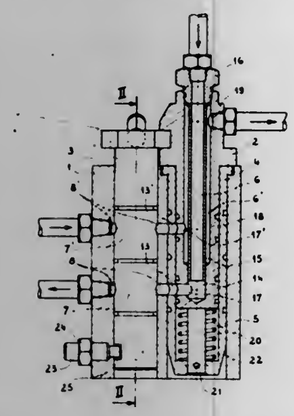
QUICK-FITTING PIPE COUPLING

Guy Steydle, and Bernard Poisson, both of Boulogne Billancourt, France, assignors to Regie Nationale des Usines Renault, Boulogne Billancourt and Automobiles Peugeot, Paris, both of France

Filed July 9, 1976, Ser. No. 703,852
Claims priority, application France, July 11, 1975, 75 21814
Int. Cl.² F16L *29/00*
U.S. Cl. 137—595 **7 Claims**

1. Quick-fitting pipe coupling comprising a body adapted to be secured to a machine frame or like structure, a coupling member adapted to be fitted into said body, a locking member means secured to said body for locking said coupling member to said body, fluid passage means formed in said coupling member being bent at right angles in order to direct the fluid into said coupling perpendicularly to the direction of fitting of

said coupling member in said body, said coupling member being adapted to be fitted into said body and comprising an inner member and locking means including a socket adapted to slide on said inner member, said socket opening the fluid passage means when said coupling member is fitted into said body and closing said passage when it is released therefrom, said locking member means including valve means interposed between a part of said body and said coupling member permitting the flow of fluid through itself when locking said coupling member in said body and permitting the release of said coupling member from said body only when said fluid passage means is blocked by said valve means, said fluid passage means comprising a pair of separate fluid circulation paths concentric to each other and to the longitudinal axis of said coupling member, each path communicating via a different port formed through the wall of said sliding socket with two series of superposed passages substantially parallel to each other, which superposed and parallel passages are formed in said body and said locking member means including said valve means, thus permitting simultaneous connection of double fluid circuits by using a single coupling member.

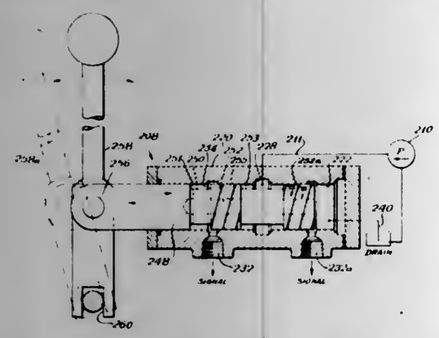


4,069,843

CLUTCH CYLINDER CIRCUIT AND CHARGING VALVE THEREFOR

Probir K. Chatterjea, Evanston, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 2, 1973, Ser. No. 347,096
Int. Cl.² F16K *3/26, 47/12*
U.S. Cl. 137—625.69 **2 Claims**



1. Operator-operated cylinder type, servo pressure controlling, hydropotentiometer for fixing the pressure of plural subchambers in a comparator,

the hydropotentiometer having therein a spool element having a central bore in one end portion, an external annular groove, first and second spool members at said one end portion, separated by an intervening groove and arranged in tandem, and securing means, the second member being spaced apart from the first member at their mutually adjacent ends so that the second member is less remote to the extremity of said one end portion of the spool element, and said external annular groove being on the relatively outer one of the ends of the first member so as to be relatively more remote than the latter to the extremity of said one end portion of the spool element, side openings in said end portion of the spool element interconnecting said external annular groove and central bore, and lever means for causing movements of, and secured by the securing means to, the spool element;

the hydropotentiometer having spaced apart, controlled pressure, cylinder outputs each for a different comparator subchamber and each converable by a different one of the members concerned, each member including a formed orifice forming a passage to the concerned output;

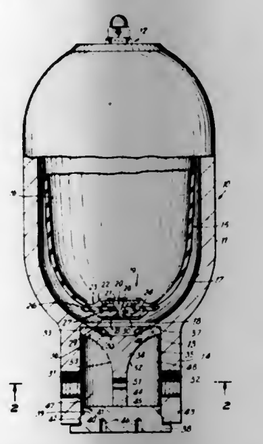
the hydropotentiometer having cylinder inlet means and cylinder outlet means, disposed one intermediate the members in communication with said intervening groove and one at their outer end in communication with said external annular groove and connecting a source of high and low pressure separately to adjacent ends of the members and to the outer ends of the members during their movements to various positions by the lever means, the formed orifices being formed by helical grooves in the exterior of the respective members affording an arrangement with an effective groove length on the members variable linearly in accordance with the movement thereof to cause the output concerned to vary linearly between and substantially to the high and low pressure; and with one cylinder pressure output decreasing linearly during one movement toward neutral of the member concerned in a direction at least approaching uncovering of same, and one cylinder pressure output decreasing linearly during opposite movement toward neutral of the member concerned in a direction at least approaching uncovering of same.

4,069,844

PRESSURE DAMPENER DEVICE

Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Sept. 28, 1976, Ser. No. 727,467
Int. Cl.² F16L *55/00*
U.S. Cl. 138—30 **3 Claims**



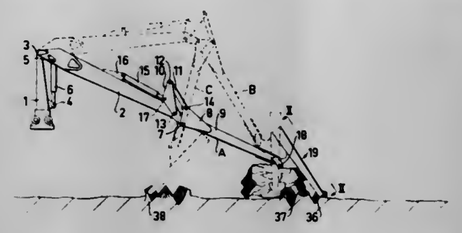
1. A low turbulence pressure pulse dampener device comprising a rigid pressure vessel including a gas charging port at one end and an oil port at the other end, a bladder assembly disposed within said vessel and dividing the same into two chambers in communication, respectively, with said gas port and said oil port, valve means carried by said bladder assembly disposed in opposed relation to said oil port and positioned to be shifted into sealing and unsealing relation to said port responsive, respectively, to expansion and contraction of said bladder, a hollow cylindrical skirt portion surrounding and in coaxial alignment with said oil port, said skirt having a depending open mouth portion in spaced relation to said port, a threaded portion adjacent said mouth portion and an annular shoulder surrounding said port and facing said mouth portion, a pair of diametrically opposed, coaxially aligned oil passages formed in said skirt, the common axis of said passages being normal to the central axis of said oil port, an insert member disposed within said skirt and including a head portion engaged against said shoulder, a depending partition portion interposed between and normal to the axis of said oil passages, said partition dividing said skirt into first and second flow passages directed axially of said skirt, said insert including an under surface portion facing said open mouth, first and second aperture means formed in said head portion connecting said first and secong passages, respectively, with said oil port, a by-pass aperture formed in said partition, said by-pass aperture being aligned with the common axis of said oil passages, and a retainer plug memeber including an upper face portion directed toward said port, said plug member including an external threaded peripheral portion threadedly engaged with said threaded portion of said skirt to seal said mouth portion, said upper face portion of said plug member being disposed in clamping engagement with said under surface of said insert member thereby to support said insert member between said shoulder and said plug, said plug forming the sole means supporting said insert member in said skirt, whereby a second insert member may be substituted for said insert member by removing said plug.

4,069,846

DEVICE FOR EXTRACTING TREE STUMPS

Erik Torsten Forslund, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden

Filed Oct. 5, 1976, Ser. No. 729,674
Claims priority, application Sweden, Oct. 8, 1975, 7511256
Int. Cl.² A01G *23/08*
U.S. Cl. 144—2 N **1 Claim**



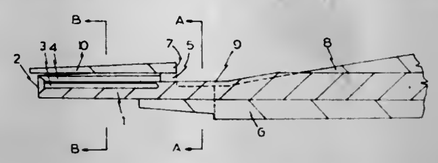
1. A device for extracting tree stumps split into several parts, comprising a vehicle-carried crane boom having an adjustable effective length, and a gripping unit rigidly connected to the end of said crane boom for pulling out such stumps with associated roots, one by one, from the earth in a direction substantially corresponding to the extension of the roots, said unit also containing means for shaking the pulled-out stump parts and means for cutting the associated roots, and wherein said unit comprises a flat frame in which are mounted a first hydraulic jack, a swing arm pivoted in said frame to be actuated by said first jack for urging such stump part against a fixed counter-arm for firmly clamping such stump part so that it can be pulled out from the earth, a second hydraulic jack having a longitudinally vibrating piston acting on said swing arm for shaking such pulled-out stump part and rubbing it between said swing arm and said fixed counter-arm, a third hydraulic jack, and a knife pivoted in said frame to be actuated by said third jack for cutting off roots of such pulled-out stump part.

4,069,845

WIRE WRAPPING APPARATUS

Derek Ward, 11 Tui Vale Road, Auckland, New Zealand

Filed June 24, 1976, Ser. No. 699,231
Int. Cl.² B21F *15/00*
U.S. Cl. 140—124 **9 Claims**



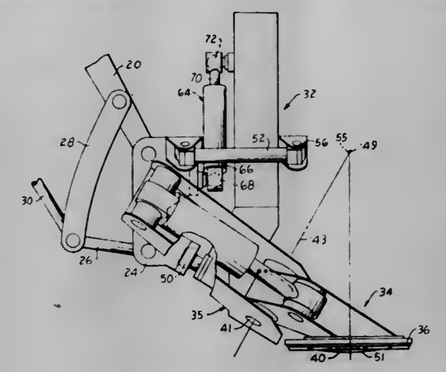
1. A tool for stripping insulated wire and wrapping that wire around a terminal tag, said tool comprising a bit having a longitudinal aperture at the end thereof adapted to engage said terminal tag, the mouth of said aperture being located in a recessed portion in the end of said bit, and wire locating means adapted to locate and support a length of insulated wire in said bit said wire locating means comprising an offset hole or bore in said bit having one end terminating in the side of said recessed portion so as to form a cutting edge between the wall of said offset hole or bore and the side of said recessed portion, so that when a length of insulated wire is placed in said wire locating means and said aperture is engaged with said terminal tag, rotation of said bit will cause the insulation on said wire to be severed by the interaction of a corner of ridge on said terminal tag with said cutting edge and the wire core to be withdrawn from the insulation which is retained in said wire locating means and wrapped about said terminal tag.

4,069,847

TREE SHEAR WITH SPHERICAL BLADES

Leon A. Wirt, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 13, 1976, Ser. No. 731,965
Int. Cl.² A01G *23/08*
U.S. Cl. 144—34 E **4 Claims**



1. A tree cutting apparatus comprising:

frame means;

a first blade pivotally mounted relative to the frame means so as to be pivotable relative thereto about a first axis;

a second blade pivotally mounted relative to the frame means so as to be pivotable relative thereto about a second axis;

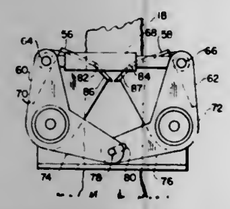
the blades being movable to open and closed positions through said pivoting thereof;
the first and second axes intersecting at a point of intersection spaced above the cutting planes of said first and second blades;
the first and second blades defining respective blade portions the blade portions being configured as respective sphere portions;
the centers of the respective sphere portions being coincident, the radii of the respective sphere portions being equal;
the centers of the respective sphere portions lying at the point of intersection of the first and second axes.

4,069,848

TREE SHEARING DEVICE

Joseph Coatta, 560 Raymur Avenue, Vancouver, British Columbia, Canada (V6A 3L2)

Filed May 3, 1976, Ser. No. 682,603
Claims priority, application Canada, A .. 26, 19[illegible] 251043
Int. Cl.[2] A01G *23* [illegible]
U.S. Cl. 144—34 E 12 Claims



1. A tree shearing device comprising:
a. a frame adapted to be mounted on a selected woodland vehicle;
b. a pair of blade means pivotally mounted on said frame for pivotal reciprocal motion around a pair of substantially parallel axes extending on opposite sides of the tree between an open and a closed position, each of the blade means having an elongated blade edge which abuts the other blade edge in the closed position at a point spaced above said pivot axes;
c. power means operatively connected to the blade means to move the blade means in opposite directions between the open and closed positions, and
d. means interconnecting the blade means to ensure the blade means move concurrently; whereby the blade edges are moved from open positions on opposte sides of a tree trunk inwardly downwardly through arcs to the closed position to shear the tree trunk and then returned to the open position to receive the next tree trunk therebetween, the arcs formed by movement of the blade edges extending in opposed relationship with their greatest inclination to horizontal where the arcs join, being the point where the blade edges abut.

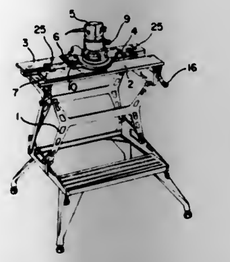
4,069,849

ARRANGEMENT FOR CUTTING CONTOURS IN A WORKPIECE

James Keaneth O'Grady, Toronto, Canada, assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 12, 1976, Ser. No. 713,634
Int. Cl.[2] B27C *5/10*; B25H *1/00*
U.S. Cl. 144—134 D 22 Claims

1. An arrangement for cutting contours in a workpiece with a router comprising:
a supporting structure;
a pair of elongated vise members mounted on said supporting structure and disposed in side by side relation to each other, at least one of said vise members defining a substantially smooth upper surface upon which the workpiece can be placed and at least one of said vise members being mounted on said supporting structure so as to be movable relative to the other one of said vise members;
an elongated fence member adapted for insertion between said vise members;
clamping means for adjusting said one movable vise member toward or away from the other one of said vise members to clamp said fence member therebetween;



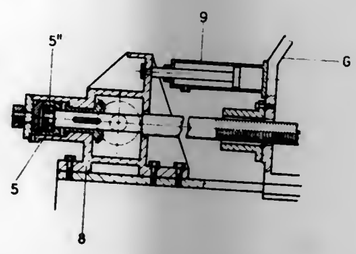
a mounting structure mounted on said fence member so as to extend out over said upper surface when said fence member is clamped between said vise members; said mounting structure, said fence member and said upper surface conjointly defining a path for passing the workpiece therealong; and,
router mounting means for mounting the router on said mounting structure so as to cause the cutting bit of the router to extend into said path.

4,069,850

TOOL FEEDING DEVICE FOR USE IN A WORK FORMING MACHINE

Angelo Cremona, V. le Lombardia, 275, Monza, Italy (20052)

Filed May 17, 1976, Ser. No. 686,839
Claims priority, application Italy, June 26, 1975, 24799/75
Int. Cl.[2] B27L *5/06*
U.S. Cl. 144—178 12 Claims



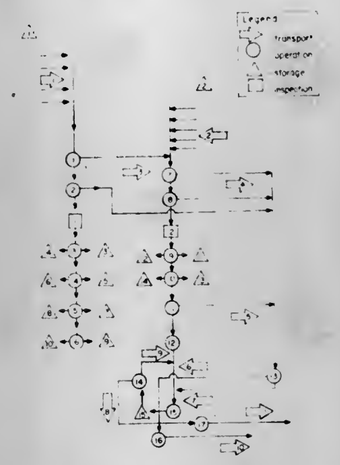
1. A shearing machine comprising a blade holding and bar carrying unit mounted for movement relative to a work piece for effecting a cutting operation on the work piece, a feed means for moving said unit relative to said work piece, said feed means including a feed screw connected to said unit, drive means connected to said feed screw to effect the rotation of said screw for determining the axial feeding motion of said unit during the cutting operation, and said feed means further including hydraulic actuating means connected to said feed screw for effecting a rapid retraction and advancement of said unit relative to said work piece between cutting operations.

4,069,851

METHOD AND APPARATUS FOR PROCESSING LOGS

David R. Bibler, Russellville, Ark., assignor to Bilber Brothers Inc., Russellville, Ark.

Filed Sept. 18, 1975, Ser. No. 614,656
Int. Cl.[2] B27B *1/00*
U.S. Cl. 144—312 13 Claims



1. A method for processing incoming logs to a mill, comprising the steps of:
providing a first processing line, a second processing line and a third processing line;
separating the incoming logs into a first group having greater than a predetermined diameter and a second group of lesser than said predetermined diameter;
transporting said first group to said first processing line;
transporting said second group to said second processing line;
processing said first group of logs in said first processing line by the steps of:
cutting the logs in said first group to desired lengths;
transporting short pieces to said third processing line; and
sorting the logs of desired lengths according to a first group of predetermined characteristics;
transporting undesirable pieces from said second group to said third processing line; and
processing the pieces in said third processing line to form material suitable for use as fuel and paper pulp.

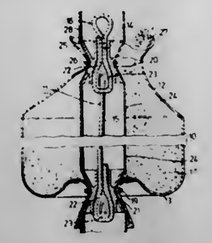
4,069,852

CONTAINERS

Gustaf Gerhard Lofberg, Landskrona, Sweden, assignor to Supra Aktiebolag, Landskrona, Sweden

Filed Dec. 14, 1976, Ser. No. 750,551
Claims priority, application Sweden, Jan. 13, 1976, 7600295
Int. Cl.[2] B65D *33/14*
U.S. Cl. 150—1 6 Claims

1. A container comprising a casing having an upper portion and a bottom, and an elongate member which is attached at one end to said upper portion and part of which extends through an opening in said upper portion and through the container space, with the other end of the elongate member being anchored to the bottom of the casing, the elongate member extending from the area of attachment to the upper portion of the casing and upwardly beyond said opening to form a loop by which the container may be lifted, said container further comprising a protective device extending through said container space such as to shield in a liquid-tight fashion the container space from that part of the elongate member extending through said container space between said opening and its anchorage point at the bottom of the casing.

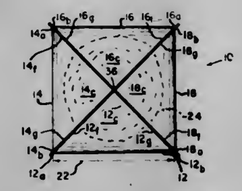


4,069,853

PROTECTIVE COVER FOR WIGS

Gisele A. Surabian, 57 Essex St., Saugus, Mass. 01906

Filed Jan. 31, 1977, Ser. No. 760,245
Int. Cl.[2] B65D *85/18*
U.S. Cl. 150—52 R 7 Claims



1. A protective cover for placement over a wig carried on a wig stand resting on a flat surface comprising:
a. thin flexible material walls of similar shape with each wall having two opposed sides and two opposed ends,
b. each of the opposed sides of each of the walls being substantially parallel and joined to an associated one of the opposed sides of an adjacent wall in manner such that one end of each of the walls is in substantially the same plane,
c. the walls being of a width to form a self standing enclosure about the wig with none of the walls touching the wig and with the one end of each of the walls resting on said flat surface,
d. the other end of each of the walls terminating in an isosceles triangular shaped portion,
e. the equal sides of the triangular shaped portions having contiguous edges fixed together to form a pyramid over said wig, and
f. said contiguous edges being fixed together in manner to form beams for providing rigidizing framing for said cover to enhance the self standing capability of said enclosure.

4,069,854

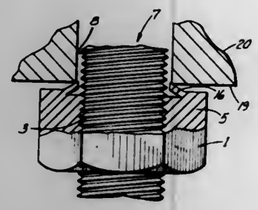
LOCKNUT WITH SEGMENTAL LOCKING ELEMENTS

Robert N. Heighberger, Pepper Pike, Ohio, assignor to Jos. Dyson & Sons, Inc., Eastlake, Ohio

Filed July 14, 1975, Ser. No. 595,705
Int. Cl.[2] F16B *39/28*
U.S. Cl. 151—21 C 7 Claims

1. In locknut construction of the class described, in combination, a mating member and a nut body, said nut body having a threaded section and a locking portion, said portion comprising a series of radial segments of substantially constant thickness extending angularly inwardly and upwardly out of the plane of the body and integrally connected thereto, wherein

the free ends of the segments initially terminate in a cylindrical plane substantially coinciding with the theoretical root of threads in the threaded section of the body, the said segments having spaced upper and lower surfaces, the longest radial dimension of the segments being such that when the segments are flattened for locking engagement with the ends of the



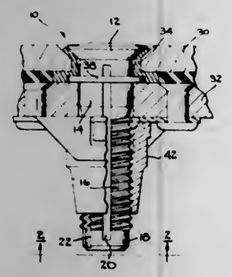
mating member by deforming such mating member threads and the ends of the nut body segments extend to the root diameter of the threads of such member, removal of said nut body thereafter requiring greatly increased effort resulting in further deforming of the threads of each part, said effort being substantially increased over that availed of to effect locking action.

4,069,855

CAPTIVE PANEL FASTENER

George Petroshanoff, Torrance, Calif., assignor to Tridair Industries, Torrance, Calif.

Filed Mar. 4, 1977, Ser. No. 774,404
Int. Cl.² F16B *43/00*
U.S. Cl. 151—69 12 Claims



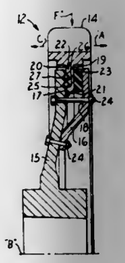
1. A captive panel fastener comprising:
a. a stud-like member having a shank at least a portion of which is threaded and an enlarged head;
b. two or more keyways extending longitudinally along a portion of the length of said stud-like member but intermediate the ends thereof;
c. two or more installation slots extending longitudinally along a portion of the length of said stud-like member and through the leading end thereof, said installation slots and keyways spaced alternately about the periphery of said stud-like member;
d. a cross-channel interconnecting each keyway with an adjoining installation slot, the distance between each keyway and its adjoining interconnected installation slot being substantially equal;
e. a retaining ring with integral tabs for retaining said stud-like member to a panel, said integral tabs of said retaining ring slidably carried within said keyways;
f. said integral tabs of the retaining ring slidably receivable within said cross-channels and installation slot, and said installation slot, cross-channels and keyways suitably interconnected with one another to provide an access path through which said tabs may enter said keyways during installation of the retaining ring without deformation of the ring; and
g. blocking means for blocking retrograde reentry of said tabs within said installation slots.

4,069,856

CRAWLER-TYPE VEHICLE WHEELS HAVING IMPACT ABSORBING RIMS WITH RESILIENT BIASING MEANS

John W. Sogge, Cedar Rapids, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 9, 1976, Ser. No. 712,567
Int. Cl.² B62D *55/12*
U.S. Cl. 152—27 7 Claims



1. A track wheel for a crawler-type tractor comprising:
a hub;
a rim spaced a preselected distance from the hub;
first and second spaced apart panels for connecting the hub to the rim, said second panel being connected to the first panel and spaced from the hub;
a holding element having first and second opposed sides and extending from the rim to a preselected location between the panels;
first means for biasing the rim holding element in a first direction generally parallel to the axis of the hub in response to a force of a preselected magnitude being subjected onto the rim in a direction toward the hub while generally maintaining said rim said preselected distance from the hub at the location where the force is applied; and
second means for biasing the rim holding element in a second direction, said second direction being opposed to said first direction and generally parallel to the axis of the hub, said second means being a preloaded deformable resilient elastomeric element.

4,069,857

ROMAN SHADE AND METHOD FOR MAKING SAME

Phillip L. Brookshire, Cincinnati, Ohio, assignor to Clopay Corporation, Cincinnati, Ohio

Filed Apr. 12, 1976, Ser. No. 676,347
Int. Cl.² E06B *3/94*
U.S. Cl. 160—84 R 9 Claims

1. A thermoplastic Roman shade having a top portion and bottom portion and a plurality of spaced horizontally extending pleats therebetween, said pleats comprising portions of said

shade folded upon and heat sealed directly to itself throughout said portions to form a horizontal pleat, and at least some of



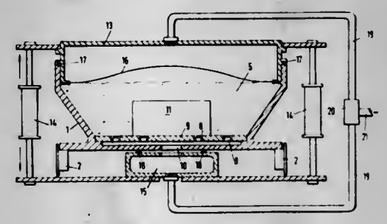
said pleats having at least one aperture for receiving a shade pull string.

4,069,858

MANUFACTURE OF FOUNDRY MOULDS AND CORES

Albert Edwards, Peterborough, England, assignor to Baker Perkins Holdings Limited, England

Filed July 11, 1975, Ser. No. 595,232
Claims priority, application United Kingdom, July 15, 1974, 31325/74
Int. Cl.² B22D *17/08, 23/00*
U.S. Cl. 164—7 6 Claims



1. The method of preparing a sand-based mould comprising the steps of introducing a sand mixture into a mould box having an open upper end; sealing said upper end of said box by fitting a flexible diaphragm to said box with one side of said diaphragm overlying and confronting said mixture; and compacting said mixture solely by the application of suction to said box to evacuate the latter sufficiently to draw said diaphragm against said mixture while maintaining the opposite side of said diaphragm in communication with atmosphere.

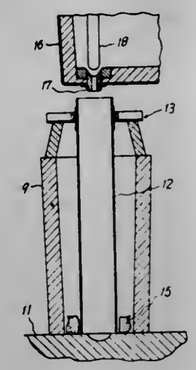
4. Apparatus for preparing sand-based moulds comprising a mould box adapted to receive and contain a moulding sand mixture and having an open upper end and means defining vent openings in the lower end of said box, a diaphragm head movable into sealing engagement with the upper end of said box, a flexible diaphragm defining the lower side of said diaphragm head and adapted when said head is in sealing engagement with said box to have its lower side lie against the upper surface of a moulding sand mixture contained in said box, vacuum head means sealingly engageable with the lower end of said mould box and operable when so engaged to apply suction to said vent openings to draw said diaphragm against the upper surface of said sand mixture, and means communicating with said diaphragm head at a level above that of said diaphragm for venting said diaphragm head to atmosphere during the application of suction to said vent openings.

4,069,859

DIRECT POURING METHOD USING SELF-FLUXING HEAT-RESISTANT SHEETS

Susumu Nagai; Nobutaka Kanamori, both of Tokyo; Yasuo Sawayanagi, Yokohama, and Takashi Nakagawa, Chigasaki, all of Japan, assignors to Sato Technical Research Laboratory Ltd., Fujisawa, Japan

Filed Feb. 24, 1976, Ser. No. 660,816
Claims priority, application Japan, Mar. 3, 1975, 50-26330; Mar. 3, 1975, 50-26331; Feb. 7, 1976, 51-12519
Int. Cl.² B22D *27/20*
U.S. Cl. 164—56 25 Claims



1. A method of directly pouring molten metal into a mold to make a metal ingot comprising; fixing on the top portion of the mold a hollow long body of self-fluxing heat-resistant sheet consisting of 50–90% by weight of at least one of an inorganic fiber, 1–10% by weight of a binder and 10–50% by weight of a silicate filler suspending into the said mold to reach the mold bottom; placing a casting powder on the mold bottom outside the said hollow long body; pouring the molten metal from the mold top through the said hollow long body and controlling the softening and fusion temperatures and rates of the said hollow long body so as to be fused and consumed under such conditions that the bottom end of the said hollow long body is constantly submerged into a given depth below the molten metal surface, with rise of the said molten metal surface in the said mold, wherein said inorganic fibers are selected from the three groups consisting of ceramic fiber, silicate fiber, boron fiber and carbon fiber with fusion temperatures greater than 1,300° C; of rock wool and slag wool with fusion temperatures of 1,100° – 1,300° C; and of glass fiber and asbestos fiber with fusion temperatures of 800°–1,100° C; and blended so as to provide the blend with fusion temperatures of greater than 800° C and said self-fluxing heat-resistant sheet has a thickness of 0.2–5mm.

4,069,860

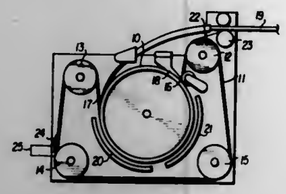
ABLATIVE BAND FOR A CASTING MACHINE

George C. Ward, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Nov. 24, 1975, Ser. No. 634,382
Int. Cl.² B22D *11/06*
U.S. Cl. 164—87 5 Claims

1. In a method of continuously casting molten metal by the substantially complete solidification of the metal in an arcuate mold defined by a groove in the periphery of a rotating casting wheel which is closed over a portion of its length by a movable endless flexible belt, including pouring the molten metal into the mold, applying a liquid coolang against the surfaces of the belt and the wheel to cool the metal in the mold and substantially completely solidify the metal into a cast bar and extracting the cast from the mold;
the improvement comprising increasing the heat-transfer rate from the molten metal in the mold by providing a belt

comprising a foraminous member having transverse openings extending therethrough, continuously applying an ablative material between said foraminous member and the molten metal, permitting the molten metal to char the ablative material as it comes in contact therewith, and applying a coolant through the openings in said member



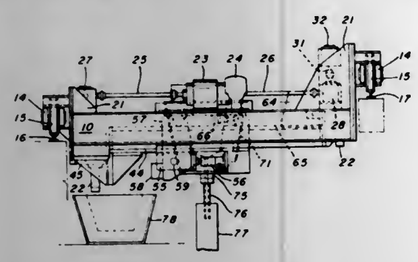
directly against the ablative material, said charring of the ablative material effecting a transfer of heat from the molten metal which together with the application of the coolant through the openings in said member results in the rapid formation of a solidified surface skin on the metal adjacent the inner surface of the member.

4,069,861

CONTINUOUS CASTING INSTALLATION INCLUDING TUNDISH CAR WITH TILTING CRADLE

Harry H. Britcher, Jr., Johnstown, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed June 1, 1976, Ser. No. 691,745
Int. Cl.² B22D *11/10*
U.S. Cl. 164—438 **5 Claims**



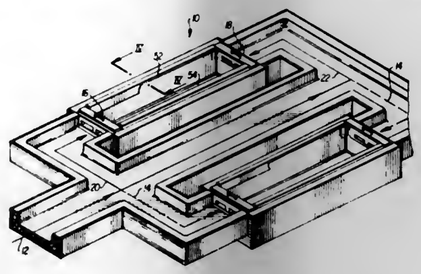
1. In a tundish car which comprises:
- a frame formed of transverse members and low-side and high-side longitudinal members fixed at opposite ends of said transverse members;
- a pair of opposed transverse lift beams adjacent the respective transverse members of said frame; and
- means carried by said frame operatively connected with said lift beams for supporting and raising and lowering them,
- the combination therewith of an improved mechanism for supporting a tundish and tilting it to dump its contents, said mechanism comprising:
- a cradle having a pair of end walls and longitudinal means connecting said end walls;
- means pivotally supporting said cradle on said lift beams on an off-center axis nearer said low-side longitudinal member and near the lower edge of the end walls;
- means on said cradle for receiving and supporting a tundish; and
- motive means pivoted to aid lift beams near said high-side longitudinal member and to said end walls near the upper edges thereof for tilting said cradle and a tundish carried thereby from an upright position toward said low-side longitudinal member.

4,069,862

CONTINUOUS CASTING MOLD WITH HORIZONTAL INLET

John W. Carson, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Oct. 1, 1976, Ser. No. 728,770
Int. Cl.² B22D *11/10*
U.S. Cl. 164—439 **15 Claims**



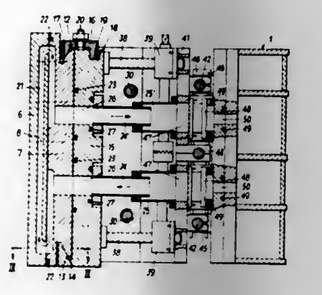
1. A continuous casting mold for vertical casting, having a horizontal inlet through the side of the mold for introducing molten metal, said inlet being defined by a body having a passageway therethrough, means for insulating said body from adjacent chilled portions of the mold, an interior surface of the mold against which the molten metal is initially to be frozen to form an ingot, said surface extending around the mold beneath said inlet-forming body and upwardly on both sides of said inlet-forming body, means to chill said interior surface of the mold, and means to apply coolant directly to the ingot as it emerges from the mold, said means to chill said interior surface of said mold for freezing the ingot initially along the upper interior surface of the mold on the sides of said inlet-forming body, while freezing the ingot at a lower level along said surface beneath said body.

4,069,863

PLATE MOULD FOR CONTINUOUSLY CASTING STEEL STRANDS

Reinhard Hargassner, Leonding, and Günter Holleis, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Jan. 21, 1977, Ser. No. 760,998
Claims priority, application Austria, Jan. 27, 1976, 529/76
Int. Cl.² B22D *11/12, 33/04*
U.S. Cl. 164—436 **7 Claims**



1. In a plate mould for continuously casting steel strands of the type including a carrying frame, side and end walls provided with cooling means, said walls delimiting the mould cavity and being supported in the carrying frame, at least one of the side walls being movable transverse to the mould axis to form a loose side, the end walls each being comprised of a holding plate, a supporting plate and a cooled copper plate and

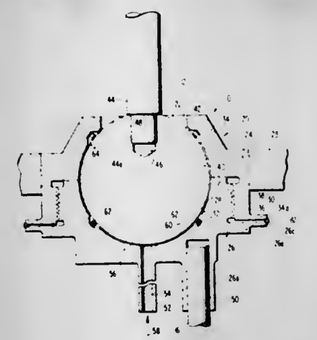
being capable of being clamped between the side walls, the improvement comprising:
- a wedge-shaped upper nose provided at the upper edge of the supporting plate and a wedge-shaped lower nose provided at the lower edge of the supporting plate of each end wall,
- a wedge-shaped groove provided in the pertaining holding plate for engagement with the wedge-shaped lower nose,
- a clamping piece backing up the wedge-shaped upper nose and securing the upper nose to the respective holding plate,
- spring clamping means for clamping the end walls between the side walls, and
- a separate means for moving the at least one movable side wall forming the loose side, said separate means being supported on the carrying frame.

4,069,864

GAS FILLED SWIVEL JOINT FOR CRYOGENIC HEAT PIPES

Robert John Novoryta, and Frederick Wilbur Dawson, both of Littleton, Colo., assignors to Martin Marietta Corporation, Rockville, Md.

Filed June 28, 1976, Ser. No. 700,366
Int. Cl.² F28F *5/00*
U.S. Cl. 165—86 **10 Claims**



1. A movable heat conductive joint structure for an assembly subjected to vacuum and low temperature conditions, said joint structure comprising:
- first and second heat pipes,
- interengaging, relatively movable heat conductive heat pipe support members defining a gap of from 0.0012 inches to 0.0024 inches therebetween and being fixed respectively to said heat pipes, and
- means for maintaining a gas at a pressure of about 30 torr within said gap to effect a low impedance heat path across said gap and between said relatively movable, interengaging heat pipe support members, without impedance to relative movement of said support members.

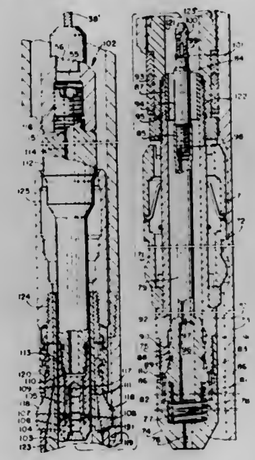
4,069,865

BOTTOM HOLE FLUID PRESSURE COMMUNICATING PROBE AND LOCKING MANDREL

Imre I. Gazda, Saginaw, and Albert W. Carroll, Dallas, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 612,780, Sept. 12, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 764,082
Int. Cl.² E21B *33/12, 49/00*
U.S. Cl. 166—113 **60 Claims**

1. A well hole fluid pressure communicating probe structure for measuring well pressure below a well packer seal located between a mandrel and the well casing bore including, lower structure means with downward travel limit means; probe means connectable to a chamber adapted for containing a fluid pressure sensing device; fluid passage means in said lower structure means in fluid communication with well space below the well packer; fluid passage means in said probe means connectable to said chamber; cooperative telescoping projection means and opening means included with said lower structure means and said probe means having fluid passage openings positionable for establishing fluid communication between said fluid passage means in said lower structure means and said fluid passage means in said probe means; spaced upper seal structure



means and lower seal structure means positioned in said cooperative telescoping projection means and opening means structure to be, respectively, above and below said fluid passage openings when they are positioned for establishing fluid communication between said fluid passage means in said lower structure means and said fluid passage means in said probe means; and wherein said cooperative telescoping projection means and opening means are, respectively, with the projection means a part of said lower structure means, and with said opening means in said probe means.

4,069,866

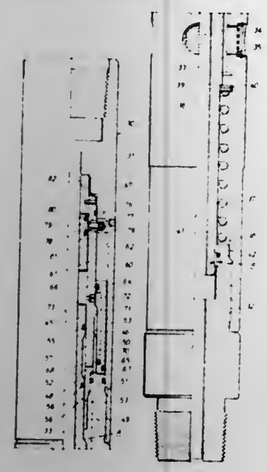
PRESSURE APPORTIONING VALVE APPARATUS FOR USE WITH MULTIPLE PACKERS

James M. Upchurch, Sugar Land, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 15, 1976, Ser. No. 750,929
Int. Cl.² E21B *33/13, 43/00*
U.S. Cl. 166—147 **15 Claims**

1. Apparatus for use in apportioning a pressure differential to spaced packers adapted to seal off the annulus between a pipe string and a well conduit wall, comprising: a tubular housing adapted to be connected between spaced packers, said housing having a flow passage leading from the exterior to the interior thereof; a valve mandrel sealingly slidable and movable longitudinally within said housing between first and second positions; valve means on said mandrel and said housing enabling a flow of fluid from the exterior to the interior of said housing in said second position and blocking said flow in said first position; said mandrel having a stepped outer diameter providing first transverse surface means subject to the pressure of fluids externally of said housing and second resultant transverse surface means subject to the pressure of fluids internally of said

housing; and bias means for applying bias force to said mandrel that acts to move said mandrel to said first position at a predetermined difference in the pressure of fluids acting on said surface means.

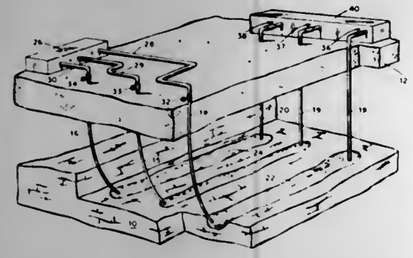


4,069,867

CYCLIC FLOW UNDERGROUND COAL GASIFICATION PROCESS

Larry A. Bissett, Morgantown, W. Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 17, 1976, Ser. No. 751,624
Int. Cl.² E21C *43/00*
U.S. Cl. 166—256 **5 Claims**



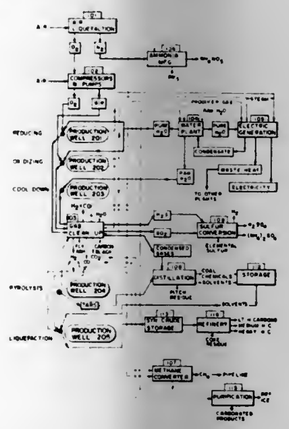
1. A method for increasing the concentration of carbon monoxide in the gaseous product resulting from the in situ gasification of coal in a subterranean coal bed, comprising the steps of providing a pair of boreholes penetrating the coal bed at locations spaced from one another a distance sufficient to establish a combustion zone in each borehole, initiating an exothermic combustion reaction in both of said boreholes to establish combustion zones therein, supporting the combustion of the coal to provide a temperature in each combustion zone of about 2000° F by conveying combustion-supporting medium into and discharging the resulting gaseous products of combustion from each combustion zone, maintaining the flow of combustion-supporting medium to the first combustion zone while interrupting the flow of combustion-supporting medium to the second combustion zone, maintaining the discharge of the gaseous products from the second combustion zone while interrupting the discharge of the gaseous products from the first combustion zone, said steps of maintaining and interrupting the flow of the combustion-supporting medium and the discharge of the gaseous products causing the gaseous products from the first combustion zone to pass through the coal bed disposed between the boreholes in a forward burn configuration into the second combustion zone where carbon dioxide in the gaseous products reacts endothermically with hot carbon defining the walls of the second combustion zone to effect the conversion of carbon dioxide to carbon monoxide.

4,069,868

METHODS OF FLUIDIZED PRODUCTION OF COAL IN SITU

Ruel C. Terry, Denver, Colo., assignor to In Situ Technology, Inc., Denver, Colo.

Filed July 14, 1975, Ser. No. 595,335
The portion of the term of this patent subsequent to Apr. 6, 1993, has been disclaimed.
Int. Cl.² E21B *43/24*
U.S. Cl. 166—258 **8 Claims**



1. A method of producing coal in situ wherein the coal is disposed in at least two blocks with a first block overlying a second block and wherein the said first block is separated from the said second block by a layer of a different material comprising the steps of:

gasifying in situ the said second coal block,

pyrolyzing the said first coal block with the heat generated by the gasification of the said second block, and

recovering the products of gasification and pyrolysis at the surface.

4,069,869

PLUGGING HIGH PERMEABILITY ZONES OF RESERVOIRS HAVING HETEROGENEOUS PERMEABILITY

Burton B. Sandiford, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 11, 1977, Ser. No. 767,844
Int. Cl.² E21B *33/138, 43/22*
U.S. Cl. 166—270 **30 Claims**

1. A method for reducing the permeability of the higher permeability strata or channels of a heterogeneous subterranean reservoir penetrated by a well comprising simultaneously injecting through said well and into said reservoir about 5 to 500 barrels per vertical foot of strata to be treated of a mixture of the following compositions:

a. about 10 to 90 percent by volume of an aqueous solution or dispersion of a relatively high molecular weight polymer selected from the group consisting of acrylic acid-acrylamide copolymers, polyacrylamides, partially hydrolyzed polyacrylamides, polyalkyleneoxides, carboxyalkylcelluloses, hydroxyethylcelluloses and heteropolysaccharides obtained by the fermentation of starch-derived sugar,

b. a cross-linking amount of an aqueous solution of a cross-linking agent for polymer selected from the group consisting of mixtures of a compound of a multivalent metal and a reducing agent, a low molecular weight watersoluble aldehyde, and a water-soluble salt of a polyvalent cation which reacts in solution to form a colloidal hydroxide,

c. about 90 to 10 percent by volume of an aqueous solution of an alkali metal silicate, and

d. a gelling amount of an aqueous solution of a gelling agent for silicate selected from the group consisting of acid and acid-forming compounds, watersoluble ammonium salts, lower aldehydes, aluminum salts and alkali metal aluminates, and

shutting in the well until a mixed polymer-silicate plug has formed.

4,069,870

METHOD OF CEMENTING WELL CASING USING A HIGH TEMPERATURE CEMENT SYSTEM

Julius P. Gallus, Anaheim, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed June 28, 1976, Ser. No. 700,387
Int. Cl.² E21B *33/14*
U.S. Cl. 166—293 **7 Claims**

1. A method for cementing a casing in a well bore by placing cement in an annular space between the walls of the well bore and said casing, the method comprising:

forming a high temperature cement system comprising oil well cement and carbon-containing cement additive, said cement additive having not more than about 15 wt.% of volatile material and being present in said cement system in at least an amount effective to improve the resistance to degradation of the ultimate permeability and compressive strength of said system due to high temperature and up to 20 wt.% of said cement system;

adding a liquid vehicle to said cement system to form a hardenable slurry; and

introducing said slurry into the annular space between the casing and the wall of the well bore whereby upon hardening, said cement resists degradation of its ultimate compressive strength and permeability when exposed to temperatures of on the order of 400° F.

4,069,871

DEEP WELL SAFETY VALVE

John S. Page, Jr., 10424 Echo River Court, Fountain Valley, Calif. 92708

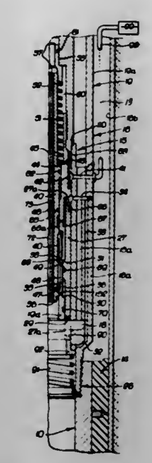
Continuation-in-part of Ser. No. 567,376, March 11, 1975, Pat. No. 4,005,751. This application Dec. 13, 1976, Ser. No. 749,825
Int. Cl.² E21B *43/12*
U.S. Cl. 166—321 **27 Claims**

17. In combination,

a. a tubing string in a well,

b. a main valve in said string to control flow of production fluid therethrough,

c. a pilot valve in the well operatively connected with the main valve to control operation thereof between open and closed positions, the pilot valve vertically spaced below the main valve,



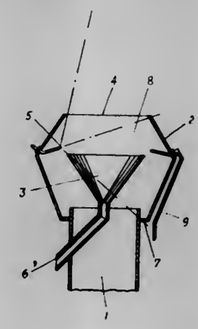
d. and a packer carried by the tubing string below the pilot valve to seal off against a well bore.

4,069,872

METHOD OF AND DEVICE FOR EXTINGUISHING BURNING GASES

Harry Lassen, Kiel, Germany, assignor to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Kiel, Germany

Filed Feb. 28, 1977, Ser. No. 773,049
Claims priority, application Germany, Mar. 3, 1976, 2608670
Int. Cl.² A62C *3/12*
U.S. Cl. 169—47 **9 Claims**



1. A method of extinguishing burning gases forming by evaporation of a low-temperature liquid gas stored in tank spaces and ignited upon entering atmosphere by random effects, comprising the steps of

a. introducing a halogenated hydrocarbon selected from the group consisting of CF_2ClBr CF_3Br and mixtures thereof as an extinguishing agent into burning low-temperature gases underneath the root of the flame for achieving a chemical reaction with the burning low-temperature gases, and

b. reliably gasifying the extinguishing agent by the radiation energy of the flame.

3. A device for extinguishing burning gases forming by evaporation of a low-temperature liquid gas stored in tank spaces and ignited upon entering atmosphere by random effects, comprising a tubular gas duct having a free gas-discharge

end and being arranged to guide gases forming by evaporation of a low-temperature liquid gas in a tank space from said tank space into the atmosphere, and inlet sockets arranged at a point downstream from the gas-discharge end of the tubular gas duct and adapted to eject halogenated hydrocarbon serving as an extinguishing agent.

4,069,873

APPARATUS FOR FIRE EXTINGUISHING SYSTEM FOR FLOATING-ROOF TANKS

William F. McClure, SRA Box 1707, Anchorage, Alaska 99507

Filed Apr. 6, 1976, Ser. No. 674,172
Int. Cl.[2] A62C *13/34, 37/34*
U.S. Cl. 169—51 **6 Claims**



1. A fire extinguishing system comprising:
a source of pressurized expellant fluid;
an agent container containing fire extinguishing agent, said agent being normally unpressurized;
said agent container including an expellant inlet, an agent outlet and a fill port;
expellant conduit means for conducting expellant fluid from said expellant source to said expellant inlet of said agent container;
control valve means in said expellant conduit means, said valve means including a movable gate blocking communication between said expellant source and said agent container until a fire is sensed;
a sprayer duct connected to said agent outlet of said agent container and extending into an area being protected;
a plurality of sprayers connected to said sprayer duct, said sprayers having unblocked outlet means;
fire sensing means comprising a heat sensitive pilot conduit connected between said expellant conduit means and said control valve means, said pilot conduit being normally pressurized by expellant pressure to maintain said gate closed, said pilot conduit extending along said area being protected so as to be ruptured by a fire to relieve the pressure at said control valve means, thereby allowing said gate to open and admit expellant fluid to said agent container to pressurize the agent and discharge it through the sprayer duct and said sprayers;
pressure regulating means for maintaining fluid in said pilot conduit at less pressure than the fluid in said expellant conduit means; and
means for exposing said agent fill port to allow replenishment of said agent container by the addition of unpressurized agent.

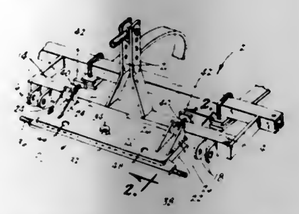
4,069,874

SWIVEL HITCH FOR CHISEL PLOWS

Wayne Buck, and Vernon I. Waterman, both of Melbourne, Iowa 50162

Filed June 28, 1976, Ser. No. 700,314
Int. Cl.[2] A01B *59/043, 63/116*
U.S. Cl. 172—450 **5 Claims**

1. In combination,
an agricultural implement having a transversely extending frame member, said frame member including means for connection to the upper arm of a tractor three-point hitch,
and a swivel hitch assembly operatively secured to said frame member,
said swivel hitch assembly comprising upper and lower spaced-apart plates having rearward and forward ends and opposite ends, said plates being secured at their rearward ends to said frame member; a substantially horizontally disposed and transversely extending flat bar received



between said plates and pivotally secured at its center length thereto, about a substantially vertically disposed axis located centrally of the plates; said bar being as long as said plates permit said plates to resist vertical pivoting of said bar with respect to said plates and having means at its opposite ends for connection to the lower arms of the three-point hitch whereby said implement may pivot with respect to said tractor three-point hitch as said tractor is turning.

4,069,875

ROLLING RING

Franky D. Mills, Plainview, Tex., assignor to The Hamby Company, Plainview, Tex.

Filed Mar. 1, 1976, Ser. No. 662,729
Int. Cl.[2] A01B *29/04*
U.S. Cl. 172—548 **3 Claims**



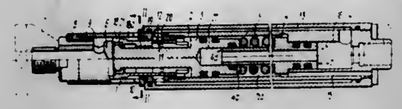
1. In a loose ring packer-mulcher having
a. an elongated frame,
b. draft means on the frame for pulling it in a direction of draft over a field, and
c. a shaft on the frame normal to the direction of draft;
d. the improved rolling ring, a plurality of which are loosely mounted on the shaft, comprising:
e. an inner and outer peripheral face,
f. two parallel radial faces normal to the peripheral faces,
g. the diameter of the inner peripheral face is greater than twice the diameter of the shaft,
h. a plurality of spurs projecting from the outer peripheral face, and
j. a perforation in the peripheral face for each spur from which the spur was projected,
k. the spurs are each V-shaped when viewed diametrically,
m. the V-shaped spurs each present a point on the periphery of the ring,
n. each of said points is a distance from the outer peripheral face of approximately twice the thickness of the ring.
p. the width of the base of the "V" is about ⅗rds the width of the peripheral faces and
q. the width of the base of the "V" is about 4/5ths the length of the spur.

4,069,876

HYDRAULIC PERCUSSIVE MACHINE

Vasily Borisovich Pototsky, 4 Linia, 208, Alma-Ata, and Nikolai Radionovich Petrenko, bulvar Ryabinova 49, kv. 17, Irkutsk, both of U.S.S.R.

Filed Sept. 18, 1975, Ser. No. 614,551
Int. Cl.[2] E21C *1/12*
U.S. Cl. 173—119 **2 Claims**



1. A hydraulic percussive machine, comprising: a housing with fluid passages having an axial cylindrical chamber at the rear portion thereof; a stepped hammer piston adapted to move axially in said housing, resiliently urged with its smaller diameter end portion against the front portion of the machine and reciprocating under the action of pressurized fluid to effect forward and return strokes and to apply impacts during said forward strokes against a tool mounted in said housing at the front portion of the machine, the larger diameter end portion facing the rear portion of the machine has an axial cylindrical chamber whose section area is smaller than the larger diameter end face effective area; a hollow plunger adjoining the rear portion of said machine, having a diameter smaller than that of said hammer piston and being telescopingly associated therewith, and said plunger arranged in said housing so as to be axially movable therein and to effect reciprocations to increase power of impacts applied to said tool during said forward strokes of said hammer piston, said hollow plunger having a first hollow cylinder at one end thereof and said first hollow cylinder being arranged to be axially movable in said cylindrical chamber of said hammer piston, and a second hollow cylinder at the other end of said hollow plunger adapted to move axially in said cylindrical chamber of the housing, the section area of said cylindrical chamber of said housing being smaller than the area of the under-hammer-piston space, the area of the second hollow cylinder end face located in the cylindrical chamber of the housing exceeding the area of the end face of the first hollow cylinder arranged in the cylindrical chamber of the hammer piston; resilient means arranged between said hammer piston and said plunger being adapted to be compressed during the return stroke of said hammer piston and expanded at the forward stroke thereof to act on said hammer piston thereby increasing the power of the impact thereof; said housing having passages for admitting and discharging the pressurized fluid and passages for passing said fluid in the walls thereof; and a pressure difference stepped ring valve fitted concentrically around said hammer piston and also reciprocating to distribute the pressurized fluid through said passages of said housing between the return space and the atmosphere.

4,069,877

MECHANISM FOR TENSIONING FLUID HOSES ON A ROCK DRILL FEED

Charles A. Durand, Aurora, Colo., assignor to Gardner-Denver Company, Dallas, Tex.

Filed Nov. 9, 1976, Ser. No. 741,911
Int. Cl.[2] B23Q *5/027*
U.S. Cl. 173—152 **3 Claims**

1. In a portable drilling apparatus the combination comprising:
an elongated feed support;
a fluid actuated drill motor mounted on said feed support for linear traversing movement along said feed support;
at least one flexible fluid conductor means connected at one end thereof to said drill motor;
conductor guide means mounted on said feed support and adapted to have said flexible fluid conductor means trained reversely therearound;
support means on said feed support and supporting fluid cylinder means;
a piston disposed in said cylinder means and being movable therein, said piston including portions projecting from



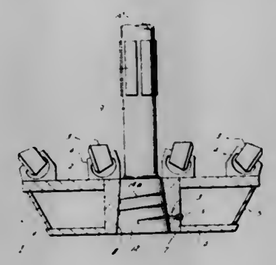
opposite ends of said cylinder means, said portions being adapted to be connected respectively to said flexible fluid conductor means and further fluid conductor means, and said piston including conduit means therein for conducting pressure fluid from one of said fluid conductor means to the other of said fluid conductor means; and,
means for introducing pressure fluid into said cylinder means to act on said piston to control the tension in said flexible fluid conductor means between said piston and said drill motor.

4,069,878

RAISE DRILLING BIT WITH DETACHABLE STEM

Byron W. Chitwood, and Thomas E. Winship, both of Houston, Tex., assignors to Reed Tool Company, Houston, Tex.

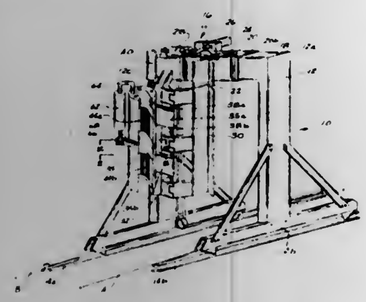
Filed Mar. 8, 1976, Ser. No. 664,851
Int. Cl.[2] E21C *23/00*
U.S. Cl. 175—53 **3 Claims**



1. A rotary raise drill bit for producing a raise bore by disintegrating the earth formation surrounding a pilot hole comprising:
a drill head having an upper mounting member,
a plurality of cutters secured to said upper mounting member,
a drill stem,
a supporting sub secured to said upper mounting member and having a vertical passage tapered outward toward its lower end portion for receiving said drill stem,
said drill stem having an upper portion smaller in size than the passage in said sub and operable to pass therethrough during assembly and a lower portion larger in size than said passage prior to assembly and tapered to fit said passage when expanded,
the outer tapered surface of the lower portion of said drill stem and the lower tapered surface of said passage being of a shape to mate with a longitudinally sliding fit during assembly, and
means extending through the wall of said sub to apply force into said passage to expand the same during longitudinal

sliding assembly to provide a compression fit of said passage on said lower portion of said drill stem after relaxation of said force, and the difference in size and the taper of said passage in said sub and said drill stem lower portion being such that said compression fit is in excess of the maximum torque encountered in drilling.

4,069,879
PIPE HANDLER
Cicero C. Brown, deceased, late of Houston, Tex., and by Joe R. Brown, executor, P.O. Box 19236, Houston, Tex. 77024
Filed Oct. 15, 1976, Ser. No. 732,997
Int. Cl.² E21B *19/16*
U.S. Cl. 175—57 **41 Claims**



1. Apparatus for manipulating elongate tubular members comprising:

a. guide means, selectively engagable with said tubular members, for substantially constraining motion of said tubular members, relative to said guide means, to longitudinal motion and rotation about their axes of cylindrical symmetry;

b. first power means for selectively moving said guide means into and out of engagement with said tubular members;

c. way means, oriented generally perpendicular to said guide means when said guide means is so engaging one said tubular member;

d. clamp means, selectively engagable with a said tubular member, constrained to movement along said way means, for selectively engaging a said tubular member and moving said tubular member between a first position, wherein said tubular member may be engaged and substantially constrained by said guide means, and a second position, wherein saib tubular member is clear of said guide means;

e. second power means for selectively moving said clamp means, and any said tubular member engaged thereby, along said way means between said first position and said second position;

f. torque means, selectively engagable with said tubular member in said first position, for selectively applying torque to said tubular member about its axis of cylindrical symmetry; and

g. third power means for selectively activating said torque means to apply said torque to said tubular member.

38. A method of manipulating pipe members, having threaded ends, in operating on a well comprising the steps of:

a. providing lift means supported from mast means having a floor level;

b. providing manipulating means supported substantially at said floor level;

c. extending said pipe members above said floor level;

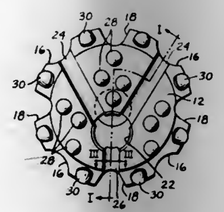
d. attaching said lift means to said pipe members, and elevating said pipe members thereby, while receiving said pipe members by said manipulating means;

e. guiding said pipe members by said manipulating means while further elevating said pipe members by said lift means by moving said manipulating means parallel to said floor level, thereby positioning said pipe members over said well and orienting them essentially vertically;

f. contacting said pipe members to a drill string extending above the bore of said well; and;

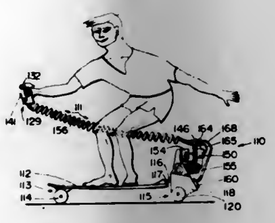
g. applying torque to said pipe members, by said manipulating means, to rotate said pipe members with respect to said drill string, thereby threadedly joining said pipe members to said drill string.

4,069,880
EXCAVATION TOOL
David C. Johnstone, Claysburg RD, and John F. Kita, Bedford, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Filed May 24, 1973, Ser. No. 363,654
The portion of the term of this patent subsequent to Apr. 24, 1993, has been disclaimed.
Int. Cl.² E21C *13/00*
U.S. Cl. 175—410 **4 Claims**



1. In a bit for drilling in earth formations; a body, a planar working face on one end of the body perpendicular to the longitudinal axis of the body, hard wear resistant inserts carried by said body and protruding axially from said working face in distributed relation, a single passage extending longitudinally through said body and terminating in a single port in the plane of said working face for the supply of fluid to said working face, axial flutes formed in the periphery of said body and extending therealong from said working face, and generally radial grooves formed into said working face and leading from the working face end of said passage to respective ones of said flutes, said working face of the bit being disposed in a single plane which is interrupted only by said grooves and said port.

4,069,881
CONTROL SYSTEM FOR A SKATEBOARD TYPE DEVICE
Samuel Shiber, Mundelein, Ill., assignor to Saroy Engineering, Wheaton, Ill.
Continuation-in-part of Ser. No. 587,342, June 16, 1975, Pat. No. 3,966,010. This application May 5, 1976, Ser. No. 683,481
The portion of the term of this patent subsequent to June 29, 1993, has been disclaimed.
Int. Cl.² B62M *29/00*
U.S. Cl. 180—1 G **8 Claims**



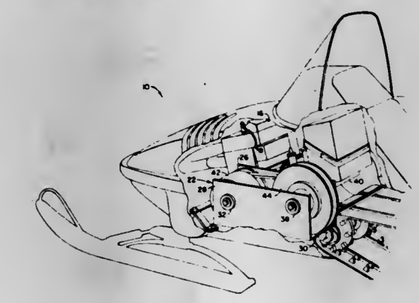
1. In a skateboard type device, a hand operated control system for transmitting a signal from a user's hand to a running gear of said device, comprising in combination;

a. a hydraulic master cylinder having an output port, for displacing fluid through said output port in response to a mechanical signal from a user's hand,

b. a hydraulic slave cylinder connected to said running gear, having an input port for receiving said fluid and translating it to a mechanical signal for effecting said running gear, and

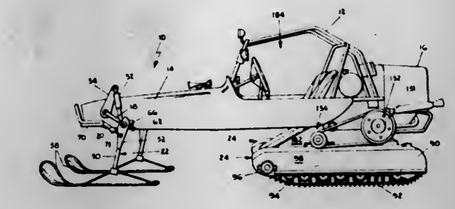
c. a resilient helically coiled self-storing tube assembly connecting said input and output ports while allowing said master cylinder to be freely moved relative to said slave cylinder without interfering with said signal.

4,069,882
SNOWMOBILE DRIVE ASSEMBLY
Ronald Keith Leonard, and John E. Hoffman, Jr., both of Horicon, Wis., assignors to Deere & Company, Moline, Ill.
Filed Dec. 17, 1976, Ser. No. 751,655
Int. Cl.² B62M *27/00*
U.S. Cl. 180—5 R **2 Claims**



1. A snowmobile drive assembly, comprising: a support frame; a prime mover having a drive shaft; vibration isolation mounts connecting the prime mover to the frame; first and second parallel shaft means; first and second bearing means respectively rotatably supporting the first and second shaft means on the frame with the first shaft means substantially axially aligned with the drive shaft; variable speed primary and secondary clutches respectively mounted on the first and second shaft means; a drive belt trained about and establishing a driving connection between the clutches; and flexible coupling means including torsional damping means connecting the drive shaft with the first shift means.

4,069,883
SNOW VEHICLE
Richard L. Cousineau, P.O. Box 222, Big Rapids, Mich. 49307
Filed Dec. 22, 1976, Ser. No. 753,607
Int. Cl.² B62D *55/04*; B62M *27/02*
U.S. Cl. 180—5 A **10 Claims**



1. Apparatus for converting a conventional, powered vehicle from street use to snow or rough terrain use, said vehicle being of the type having a frame, steering means including front wheel spindle mounting means having a pair of trailing arms and steering tie rods connectable to the front wheel spindles, a pair of rear axle assemblies, each including an axle housing, an axle rotatable within said housing and connectable to a source of power through a differential, an axle flange on said axle housing normally adapted to mount a shock absorber between said flange and the vehicle frame, and a driven hub rotated by said axle and including wheel mounting studs, said apparatus comprising:

a pair of ski assemblies, each securable to said trailing arms and including a strut mounted on the inside of said trailing arms upon removal of the conventional front wheels spindles, a ski shaft extending through said strut, a tie rod connected at the top end of said ski shaft, a ski non-rotatably mounted on the lower end of said ski shaft;

a pair of endless track assemblies each including a tunnel, an endless flexible track, a forward drive shaft and a plural of bogie wheels mounted within said tunnel, said track being driven by said forward drive shaft, said endless track assemblies each further comprising:

a first vertical mounting plate adjustably secured to the top of said tunnel intermediate the ends thereof and secured to an axle flange;

a second vertical mounting plate secured to the top of said tunnel between the forward end of said tunnel and said first vertical mounting plate and adjustably secured to said vehicle frame, said mounting plates positioned so that each of said tunnels is positioned generally under said vehicle and said hubs are positioned above and intermediate the ends of said tunnels, said apparatus further comprising:

a rigid link secured at one end to said vehicle frame and at the other end to said axle so that said tunnel is rigid with said vehicle frame;

a drive member mounted on said hub at said wheel mounting studs;

a driven shaft rotatably mounted on the top of said tunnel;

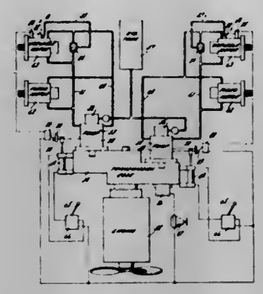
first endless, flexible drive transmission means for connecting said drive member to said tunnel mounted driven shaft;

second endless, flexible drive transmission means for connecting said tunnel mounted driven shaft to said endless track forward drive shaft;

a gusset secured to said vehicle frame forward of said second vertical mounting plate; and

an elongated, adjustable tension member extending from said gusset to said second vertical mounting plate, said tension member absorbing shock loads imparted to the forward end of said tunnel.

4,069,884
SELF-PROPELLED DRIVE MECHANISM
James G. Morrow, Sr.; David J. Pech, and Norman J. Kutz, all of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.
Continuation-in-part of Ser. No. 571,303, April 24, 1975, Pat. No. 4,000,784. This application May 12, 1976, Ser. No. 685,689
Int. Cl.² B60G *25/00*
U.S. Cl. 180—9.2 R **5 Claims**



1. A self-propelled drive mechanism for a load handling

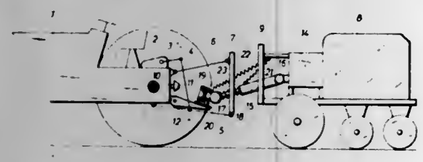
vehicle having a central body portion, a pair of side frames and a crawler assembly mounted on each of the side frames, comprising in combination, hydraulic drive means for each crawler assembly including a drive sprocket around which a crawler track is trained, hydraulic pump means mounted on said body portion and detachably connected to said respective drive means for supplying hydraulic fluid thereto, said drive means each including two hydraulic motors coupled to said drive sprocket, one of said motors being a fixed displacement type, the other being a variable displacement type and both being connected in parallel to said pump means, control means for selectively reversing the flow of hydraulic fluid supplied by said pump means to said respective drive means to independently drive said tracks in forward and reverse directions as desired, and means for regulating the displacement of said variable displacement motor to effectively alter the combined driving torque and speed imparted by said motors to said sprocket.

4,069,885

TRACTOR-IMPLEMENT ARRANGEMENT FOR ESTABLISHING FRICTIONAL ENGAGEMENT THEREBETWEEN

Arno Gego, Aachen, and Gerhard Fussinger, Porz-Eil, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Continuation of Ser. No. 562,139, March 26, 1975, abandoned.
This application Oct. 29, 1976, Ser. No. 737,146
Claims priority, application Germany, Mar. 27, 1974, 2414715
Int. Cl.[2] B60D *1/00*
U.S. Cl. 180—14 B **5 Claims**



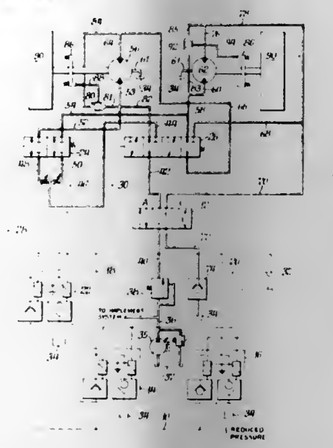
1. In the combination of a tractor and implement to be towed by said tractor, including means for connecting said tractor to said implement, a take-off shaft on said tractor having a drive coupling on its rear end, a Cardan shaft on said implement having a driven coupling on its forward end for driving engagement with said drive coupling, said Cardan shaft being extensible and including spring means to hold it resiliently extended and two pivotal joints, including a pivotal joint adjacent its forward end, connecting said driven coupling to said shaft, and a second joint adjacent said implement for vertical pivotal movement of said shaft, a guiding element pivotally connected to said tractor below said take-off shaft and inclined downwardly and rearwardly, a nonrotatable guiding shoe located on said drive coupling for rotatably supporting said driven coupling, resilient means supporting said Cardan shaft against vertical downward movement and in position for said shoe to engage said guiding element, so that said guiding element guides said shoe and driven coupling into engagement with said drive coupling when said tractor moves toward said implement for connecting to said implement, said pivotal joints being spaced on said shaft, and said resilient means supporting said Cardan shaft support said shaft against downward movement about the rearward pivotal joint and also support said driven coupling against downward movement about the forward pivotal joint.

4,069,886

AUXILIARY HYDROSTATIC FRONT WHEEL DRIVE SYSTEM

John J. Campbell, Decatur; Joseph E. Dezelan, Joliet, both of Ill., and Cullen P. Hart, Tokyo, Japan, assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 432,969, Jan. 14, 1974, Pat. No. 3,997,017.
This application July 15, 1976, Ser. No. 705,728
Int. Cl.[2] B60K *25/00*
U.S. Cl. 180—44 F **2 Claims**



1. In a vehicle having a fluid motor associated with a wheel thereof, a fluid pump and a fluid supply associated therewith, inlet conduit means connecting the pump and motor for supplying fluid under pressure from the pump to the motor, outlet conduit means extending from the motor and through which fluid flows from the motor, the fluid passing through the motor to drive the motor, and clutch means engageable upon application of fluid pressure thereof to effect a driving connection between the motor and wheel and disengageable to disconnect the motor and wheel, the improvement which comprises means for applying the greater of the fluid pressures in the inlet and outlet conduit means to the clutch means for inducing engagement thereof, and blocking the lesser of the fluid pressures in the inlet and outlet conduit means from the clutch means, and further comprising means for providing a degree of fluid back pressure buildup in the outlet conduit means, comprising check valve means.

4,069,887

STEERABLE DRIVE SHAFT

Josef Koepfli, Wil, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Feb. 14, 1977, Ser. No. 768,490
Claims priority, application Switzerland, Feb. 17, 1976, 1889/76
Int. Cl.[2] B60K *17/30*
U.S. Cl. 180—44 R **3 Claims**

1. A steerable drive shaft for motor vehicles having wheels driven through the agency of a respective double-universal joint, comprising:

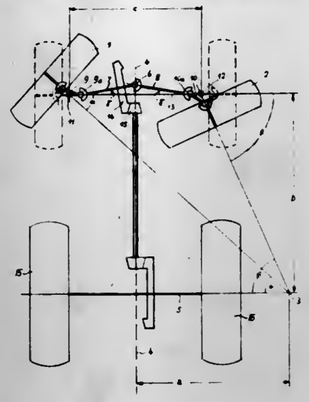
a pair of wheels each of which is arranged to one respective side of the longitudinal center line of the vehicle;

a respective double-universal joint provided for each wheel of said pair;

each of said double-universal joints includes an inner and an outer joint;

a single-universal joint arranged substantially at the longitudinal center line of the vehicle and in spaced relationship forwardly of a connection line extending through the inner joints of the double-universal joints;

a respective drive shaft for connecting said single-universal joint with each of the double-universal joints;



each of said drive shafts enclosing, with said connection line, an angle which is of the same magnitude at both sides of the longitudinal center line of the vehicle.

4,069,888

TRAFFIC SYSTEM, ESPECIALLY PUBLIC LOCAL PASSENGER TRAFFIC SYSTEM

Gerhard Wolters, Gaggenau, and Paul Strifler, Dettingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Apr. 23, 1976, Ser. No. 679,684
Claims priority, application Germany, Apr. 24, 1975, 2518120
Int. Cl.[2] B60K *27/00*
U.S. Cl. 180—98 **18 Claims**



1. A traffic system comprising:

a roadway including at least one separate, single lane;

a land vehicle for moving along said lane and having a central longitudinal vertical plane;

steerable wheels on said vehicle;

means for actuating said steerable wheels;

energy reflector means mounted along said lane;

energy-transmitting-and-reflection-receiving means mounted on said vehicle for distance-determining detection of said reflector means;

means for controlling said steerable wheel actuating means in response to said detection;

said reflector means including at least one reflector arranged at each side of said lane at least at bifurcations and mergers of said lane;

said transmitting-receiving means including transmitter-receivers mounted on both sides of said central longitudinal vertical plane of said vehicle; and

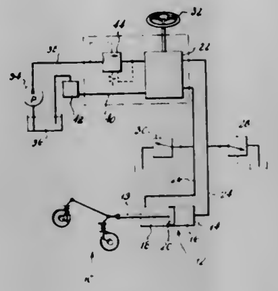
switching means on said vehicle for switching said controlling means from being responsive to said detection of said transmitter-receiver on one side of said plane to be responsive to said detection of said transmitter-receiver on the other side of the plane.

4,069,889

STEERING SYSTEMS

Robert Ernest Yapp, Solihull, and Derek John Smith, Sutton Coldfield, both of England, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands

Filed Nov. 26, 1976, Ser. No. 745,513
Claims priority, application United Kingdom, Dec. 4, 1975, 49758/75
Int. Cl.[2] B62D *5/08*
U.S. Cl. 180—132 **3 Claims**



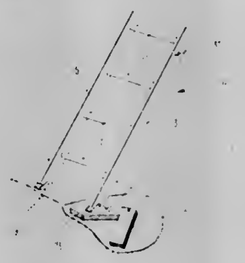
1. A steering system comprising a source of pressurised fluid, a steering control unit connected to said source by means of a hydraulic conduit and controlling flow to hydraulic motor means to cause movement thereof in one of two directions, said hydraulic conduit having valve means for sensing a pressure differential in said hydraulic conduit and preventing flow from said source to said steering unit below a predetermined pressure level and preventing flow in the opposite direction, said predetermined pressure level being greater than the pressure generated by said source when using an aerated mixture of fluid.

4,069,890

DEVICE FOR LEVELING A LADDER

Lenius H. Gottliebsen, 1237 Berwyn-Paoli Road, Berwyn, Pa. 19312

Filed Apr. 20, 1976, Ser. No. 678,468
Int. Cl.[2] E06C *7/44*
U.S. Cl. 182—108 **5 Claims**



1. A device for leveling a ladder which has at least first and second legs and which has the lower end of said first leg located a certain distance above the base upon which said second leg is resting, said device formed to be inserted under said first leg to simulate a base located at the same height as the base upon which said second leg is resting comprising in combination: a plurality of shim-like members, each of which has an aperture formed therein; intercoupling means formed to be

disposed into said apertures to couple said shim-like members into a stack to be inserted under said first leg; said intercoupling means and said apertures further formed and disposed so that said shim-like members can be rotated off said stack to be inserted under said first leg whereby the height of said stack can be decreased or increased for approximate said certain distance.

4,069,891
OBSERVATION STAND
Thomas Arthur McClung, Rte. 5, Circle Hill Drive, Dallas, Ga. 30132
Filed Feb. 11, 1976, Ser. No. 657,073
Int. Cl.[2] A47C *9/10*
U.S. Cl. 182—187 10 Claims



1. An observation stand for installation in a tree comprising:
a. a supporting frame for removable installation to the trunk of a tree;
b. a housing mounted to said frame, said housing being rotatable about a vertical axis; and
c. means on said frame and connected to said housing for supporting said housing for rotation about said vertical axis;
d. said support frame including a bracket and a plate, said plate being adapted to be mounted against the trunk of the tree, said bracket extending outwardly from said plate in cantilever fashion, a strut supporting said bracket from said plate, said bracket being rotatably connected to said housing and supporting said housing for its rotation about said vertical axis, a second bracket extending from said plate above said housing and engaging the upper end of said housing for cooperation with the first mentioned bracket for supporting said housing by its upper and lower ends for rotation about said vertical axis, said strut and each of said brackets being removable from each other so as to be capable of being separately transported, and means for removably securing said bracket to a tree.

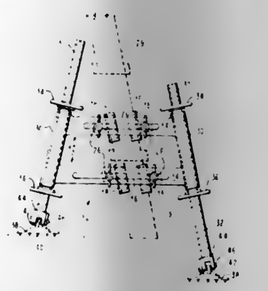
4,069,892
LADDER
Tor Lynne, Kjellergaten 37; Egil Martinsen, Elvegt 30, both of 2000 Lillestrom, and Arvid Sydtveit, Elgeveien 6, 1830 Ytre Enebakk, all of Norway
Filed June 9, 1976, Ser. No. 694,301
Claims priority, application Norway, Aug. 20, 1975, 752896
Int. Cl.[2] E06C *9/02, 7/08*
U.S. Cl. 182—189 3 Claims

1. A ladder for installation against and parallel to a wall or the like comprising:
a central rod, a plurality of rungs carried by said central rod at longitudinally spaced intervals therealong and extending in opposite directions therefrom, said rungs lying in a first common plane one with the other, means carried by said central rod for fastening said ladder to the wall or the like, at least a predetermined number of the rungs having transverse distance pieces at their outer ends extending in a direction generally normal to said first common plane for engagement against the wall or the like, said distance pieces having end portions lying in a second common plane generally parallel to said first common plane, each of the rungs of said predetermined number thereof having



a portion extending from its outer end to the distance piece carried thereby in a direction generally parallel to said first common plane and said central rod and toward one end of said central rod, said rungs, rung portions, and distance pieces being formed of unitary rod material, said one rod being formed to extend out of said first common plane on the same side thereof as said distance pieces, said fastening means being at least in part carried by the free end of said one rod end.

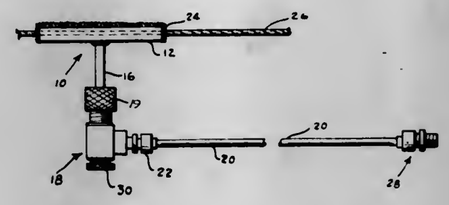
4,069,893
LADDER STABILIZER AND LEVELER
Charles David Blackstone, R.R. 2, Red Cloud, Nebr. 68970
Filed Nov. 18, 1976, Ser. No. 742,886
Int. Cl.[2] E06C *7/44*
U.S. Cl. 182—200 6 Claims



1. A detachable bipod attachment for attachment to one leg of a ladder for stabilizing a ladder comprising:
a rigid frame means;
a pair of extensible legs supporting said frame means, said legs individually extensible with respect to said frame and carrying thereon an adjustment and load bearing member;
pivotable foot means attached to one end of each of said extensible legs;

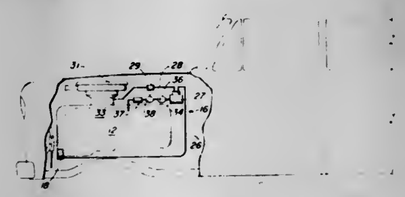
said pivotal foot means having non-slip surfaces on the support surface thereof;
means for rigidly attaching said frame means to one leg of a ladder in a plane substantially perpendicular to the plane of the legs of said ladder, thereby supporting said extensible legs to engage a surface upon which said ladder and said attachment will rest.

4,069,894
LUBRICATING TOOL FOR CONTROL CABLES
Clyde A. Black, 101 Seymour, Fort Worth, Tex. 76114
Filed Oct. 29, 1976, Ser. No. 737,118
Int. Cl.[2] F16N *7/36*
U.S. Cl. 184—15 R 1 Claim



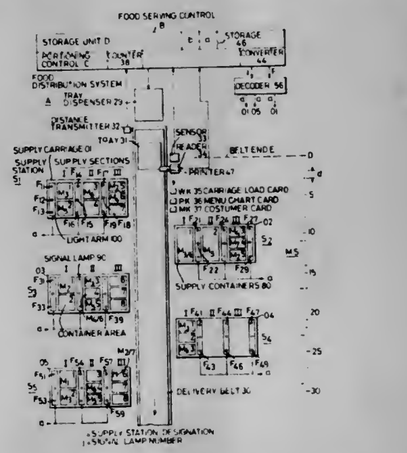
1. A tool for lubricating a cable comprising a member of semi-circular configuration capable of encompassing and being moved along the length of said cable, a sponge-like material located within said semi-circular member, said semicircular member having an aperture located therein adjacent said sponge-like material, a first tube being connected at one end thereof to said semi-circular member, said first tube being in operative alignment with said aperture, a swivel assembly being operatively connected to the other end of said first tube, a second tube being operatively connected at one end thereof to said swivel assembly and said swivel assembly having an auxiliary inlet therein whereby a lubricant source can be attached either to said other end of said second tube or directly to said auxiliary inlet of said swivel assembly thereby enabling lubricant to be fed through said swivel assembly to said first tube and said sponge-like material in said semi-circular member and onto said cable while said lubricating tool is being moved along the length of said cable.

4,069,895
OIL LEAK SCAVENGER APPARATUS
James M. Beach, 4509 Foothill Dr., Hutchinson, Kans. 67501, and Elbert R. Eastin, 629 N. Main, Newkirk, Okla. 74647
Continuation-in-part of Ser. No. 572,414, April 28, 1975, abandoned. This application May 10, 1976, Ser. No. 685,099
Int. Cl.[2] F16N *31/02, 31/00*
U.S. Cl. 184—106 5 Claims



1. An oil scavenger apparatus for collecting oil drippings from an oil containing unit of a vehicle which comprises:
a. an oil collector means for collecting oil leaking from the oil containing unit, said collector means being configured to sealingly mate with the external surfaces of the oil containing unit in a fluid tight relationship, said oil collector means having a discharge port whereby the oil collected therein is removed therefrom;
b. an oil separator reservoir means fluidly communicating with said oil collector means through said discharge port, said oil separator reservoir means receiving the oil from said oil collector means; and
c. a vacuum source means fluidly communicating with said oil collector means through said oil separator reservoir means for moving the oil from said oil collector means to said oil reservoir means.

4,069,896
METHOD OF SIGNALING MENU COMPONENTS WHICH ARE TO BE SERVED OUT FROM SUPPLY CONTAINERS OF SUPPLY CARRIAGES ASSOCIATED WITH SUPPLY STATIONS
Werner Rottmann, Frankfurt am Main; Reinhard Seyer, Hainhaussen, and Hans-Eberhard Siebert, Neu-Isenburg, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Germany
Filed Sept. 15, 1976, Ser. No. 723,226
Claims priority, application Germany, Sept. 17, 1975, 2541334
Int. Cl.[2] E04H *3/04*
U.S. Cl. 186—1 B 8 Claims



1. In a method of signaling menu components which are to be served out from supply containers of supply carriages associated with respective supply stations having respective assigned station numbers, and positioned along both sides of an endless delivery belt for menu-component-receiving trays, and utilizing an electronic food service control, the improvement comprising, in a first step, determining and storing, in the control, the position of each tray and reading-in and storing in the control a menu request; in a second step, determining from the initial position of each tray and the predetermined positions of the supply stations along the endless delivery belt, the travel of the trays past the stations and the respective assigned station numbers; and, responsive to coincidence of tray position data and supply station data, retrieving from the control through a menu request address, the respective stored menu request which has been associated with each tray in the initial position of the associated tray on the endless delivery belt.

4,069,897
ELEVATOR SYSTEM
Frederick Solymos, Glenridge, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 26, 1976, Ser. No. 717,963
Int. Cl.[2] B66B *5/28*
U.S. Cl. 187—29 R 5 Claims

1. An elevator system comprising:
an elevator car mounted for vertical movement in the hoistway of the building;

drive means for moving said elevator car in said hoistway;
control means for operating said drive means;
a self-restoring buffer having a plunger, said buffer being disposed in said hoistway below said elevator car such that overtravel of said elevator car operates said plunger from a restored position to a retracted position;
a switch, operable between first and second conditions, disposed in said hoistway adjacent to said buffer, said switch being electrically connected to said control means;



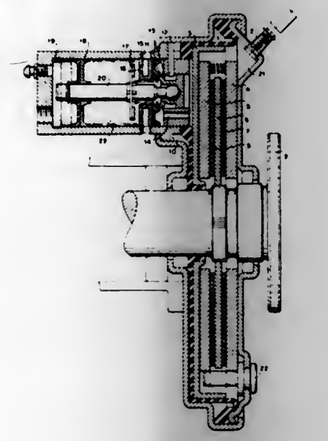
self-aligning connecting means, operably connected between said switch and said plunger, such that said switch is operated between its first and second conditions when said plunger moves between its restored and retracted positions, whereby normal operation of said drive means is permitted only when said switch is in its first condition, corresponding to said plunger being in its restored position.

4,069,898
ELEVATOR SYSTEM
Larry P. Tosato, Millburn, and Robert W. Koob, Hopatcong, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 2, 1976, Ser. No. 710,970
Int. Cl.² B66B *13/24*
U.S. Cl. 187—29 R **8 Claims**



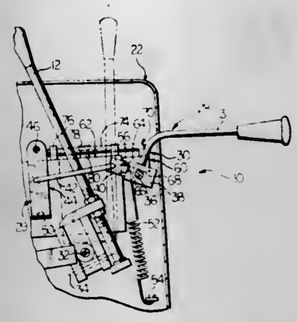
1. An elevator system, comprising:
a movable component,
guide means for guiding said movable component in a vertical travel path,
motive means for driving said movable component,
at least one elongated member disposed along the travel path of said movable component,
severing means responsive to a predetermined horizontal movement of said movable component for severing said at least one elongated member,
and detector means responsive to the integrity of said elongated member,
said detector means modifying the operation of the elevator system when said at least one elongated member is severed.

4,069,899
VACUUM SUSPENDED DISC BRAKE
Cletus McLane, 2520 Quitman St., Denver, Colo. 80212
Filed Aug. 11, 1976, Ser. No. 713,385
Int. Cl.² F16D *55/224*; B60T *13/60*
U.S. Cl. 188—72.1 **2 Claims**



1. A disc brake and actuator assembly comprising:
a housing;
diaphragm means separating said housing into two chambers;
rotor and stator disc means supported in one chamber of the housing;
means for producing a differential pressure in said housing including a vacuum and pressure source, said vacuum acting in said one chamber to move the rotor and stator disc means into braking engagement and said pressure source, including atmospheric air received through an intake port, acting in the other of said chambers;
a double acting valve movable for selectively connecting said chambers either together or the second chamber with the inlet port;
fluid actuated piston means acting in a cylinder and connected to said valve to provide said movement;
whereby, in one valve position, the vacuum acts on both said chambers while communication to said inlet port is closed, in a second valve position the vacuum acts on said one chamber while said other chamber communicates with the atmosphere through the inlet port, and in a third valve position the vacuum acts on said one chamber, the inlet port is closed and the atmospheric air trapped in the cylinder between the piston and other chamber is compressed for additional force on the diaphragm area in said other chamber.

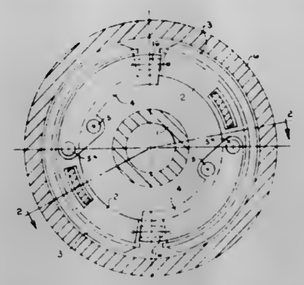
4,069,900
COMBINATION TRANSMISSION NEUTRALIZER AND POWER TRAIN INTERLOCK SYSTEM
Robert L. Stamate, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed July 12, 1976, Ser. No. 704,132
Int. Cl.² F16H *57/10*; B60K *28/00, 41/26*
U.S. Cl. 192—4 A **1 Claim**



1. A transmission neutralizer and power train interlock system associated with a vehicle power train having a transmission and a rotatable member, the system comprising:
a control console;
a gear shift lever having projection thereon, said gear shift lever being movable on said control console between a plurality of gear positions and controlling said transmission, said gear positions including a neutral position;
an actuator mechanism having an actuating lever movable between an inactive position at which the mechanism is positioned away from said gear shift lever and a locking position at which the mechanism retains said gear shift lever in said neutral position, said gear shift lever being moved to said neutral setting in response to movement of said actuating lever to said locking position;
a normally disengaged interlock positioned adjacent said rotatable member;
a fluid operated interlock engaging device having a valve assembly actuated by an input control plunger, a source of pressurized fluid to said valve assembly, a normally retracted load piston assembly in contact with said interlock, and a supply conduit connected between said valve assembly and said load piston assembly; and
a mechanical motion translating device having a rod member and a cam surface on said rod member, said rod member being pivotally mounted on said control console and of a construction sufficient for moving said input control plunger in response to movement of said actuating lever to said locking position and corresponding movement of said projection against said cam surface, causing said valve assembly to direct pressure fluid from said source through said conduit to said load piston assembly, extending said load piston assembly, and engaging said interlock with said rotatable member of the power train.

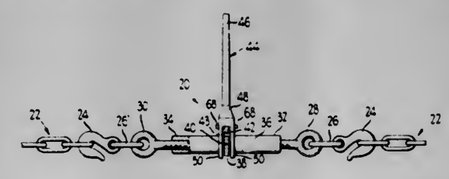
4,069,901
MOMENTUM TYPE ELECTRICALLY CONTROLLED TORQUE PRODUCING DEVICES
John A. Sessler, 1600 W. Townline Road, Milton, Wis. 53563
Filed June 30, 1976, Ser. No. 701,359
Int. Cl.² F16D *13/18, 27/10*
U.S. Cl. 192—35 **3 Claims**

1. An improved friction torque producing device for use with a rotary drum, the combination of, a driven member, a driving member mounted to a torque conveying shaft, rigid arcuate shoes arranged in end to end relationship around the outer periphery of said driving member and inside of the inner diameter of said driven member, springs, each stretched between adjacent ends of said shoes and normally urging the same away from engagement with the driven member, eccentrically shaped connecting links, anchored by means of pins or the like located around and parallel to the axis of the driving member and the respective shoes, a pilot clutch comprised of an armature centered about the driving member and driven



member, a bearing mounted stationary electrical field and inner pole of a modified "U" shaped magnet, a torque arm holding said electrical field against rotation, an outer pole of said magnet attached to and a part of said driven member, and a coil holder held concentric with driving and driven members by concentrically positioned bearings.

4,069,902
REVERSIBLE RATCHET LOADBINDER
Brian D. Zdeb, Round Lake Park, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.
Filed May 3, 1976, Ser. No. 682,736
Int. Cl.² F16D *11/00*
U.S. Cl. 192—43 **2 Claims**



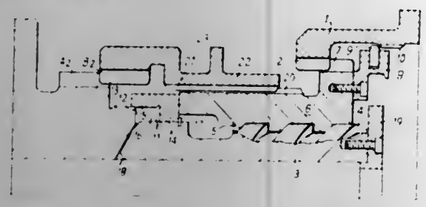
1. In a ratchet-type load binder of the type having a screw threaded barrel, a ratchet gear rigidly fixed intermediate the ends of the barrel, and a handle operable by oscillating movement to rotate the barrel, the improvement comprising: an arcuate slot integrally defined on the load binder's handle; bearing recess means formed at each end of said arcuate slot; a cam surface defined on said slot intermediate said bearing recess means; selectively reversible pawl means freely carried by said handle and operable to be selectively positioned adjacent either bearing recess means, said pawl means being characterized by having tab means, extending into said slot, operable to forcibly engage a selected said bearing recess means during working stroke handle movements, said pawl means being further characterized by heel means extending towards said toothed ratchet gear; and spring means carried by said handle operable to resiliently bias said pawl means to urge engagement of said heel means with said ratchet gear and to urge engagement of said tab means with said cam surface during indexing stroke handle movements thereby preventing the movement of said tab means from one bearing recess means to the other during said indexing stroke.

4,069,903

SYNCHRONOUS SELF-SHIFTING TOOTHED CLUTCH

Herbert Arthur Clements, Weybridge, and Robert Howard Heybourne, East Molesey, both of England, assignors to S.S.S. Patents Limited, London, England

Filed Oct. 8, 1975, Ser. No. 620,587
Claims priority, application United Kingdom, Oct. 11, 1974, 44276/74
Int. Cl.² F16D 23/02
U.S. Cl. 192—67 A 3 Claims



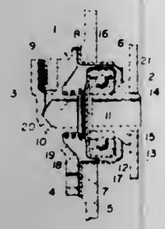
1. A synchronous self-shifting toothed clutch of the type comprising first and second rotary clutch parts, coacting sets of clutch teeth and mechanism operative, upon passage of said first and second rotary clutch parts through synchronism in one direction of relative rotation, to initiate engagement of the clutch, and having means operable, when the said coacting clutch teeth are fully interengaged, to lock the clutch in the fully engaged condition, the improvement comprising means selectively operable, when the coacting clutch teeth are in a predetermined partially interengaged condition, to lock the clutch against disengagement from the partially engaged condition.

4,069,904

HYDRAULIC CLUTCH RELEASE MECHANISM FOR MOTOR VEHICLES

Roy Peter Garrett, Felstead Way; Derek Ray Parkins, Leafields, both of England; Manfred Brandenstein, Aschfeld, and Armin Olschewski, Schweinfurt, both of Germany, assignors to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Continuation of Ser. No. 349,298, April 9, 1973, abandoned. This application Jan. 26, 1976, Ser. No. 652,245
Int. Cl.² F16D 25/08
U.S. Cl. 192—85 CA 6 Claims



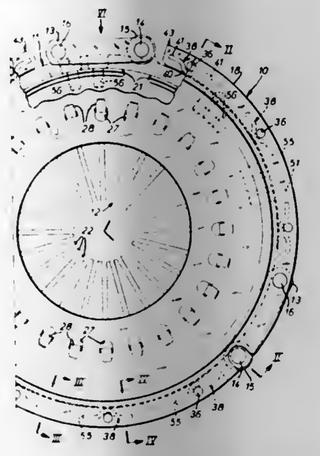
1. A hydraulic release mechanism for automotive clutches and the like comprising a cylindrical housing open at one end, a bearing assembly located within said housing at said open end and comprising a non-rotating outer race ring having a cylindrical surface spaced from said housing, a rotatable race ring adapted to be connected to an operating element for said clutch and a plurality of rolling elements arranged therebetween, a flexible elastomeric wall secured to said bearing assembly and to said housing and being folded within the space between said outer race ring and said housing to engage the cylindrical surfaces of said housing and said non-rotating race ring for axially slidable movement and radially floating movement with respect thereto, said wall defining with said housing a chamber for receiving fluid under pressure, the force of which is transmitted through the end of the non-rotating race ring, said rolling elements, and rotating race ring to said clutch operating element.

4,069,905

ASSEMBLY UNIT FOR A CLUTCH, ESPECIALLY FOR THE CLUTCHES OF AUTOMOBILE VEHICLES

Gerard de Gennes, Senlis, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Feb. 9, 1976, Ser. No. 656,740
Claims priority, application France, Feb. 13, 1975, 75.04432; Jan. 23, 1976, 76.01779
Int. Cl.² F16D 13/56
U.S. Cl. 192—112 33 Claims



1. In a clutch assembly unit comprising an annular cover member and a pressure plate fixed to said cover member for rotation with and relative axial movement with respect to said cover member, resilient means interposed between said cover member and said pressure plate and normally tending to urge said pressure plate away from said cover member, a friction disc disposed between said pressure plate and a flat type reaction plate to be clamped therebetween; the improvement residing in said cover member for said flat type reaction plate essentially including a cover portion which may be fitted directly on a skirted reaction plate for enclosing a clutch assembly; and spacing members fixed along the periphery of said cover portion at spaced intervals and extending between the cover portion and said reaction plate generally parallel to the axis of rotation, said spacing members having supporting surfaces which bear against and are secured to said reaction plate.

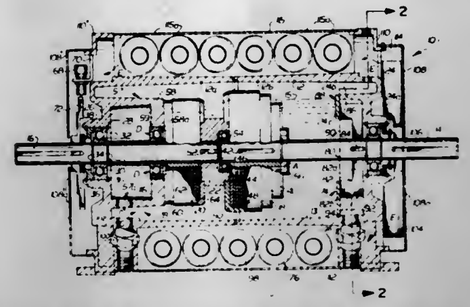
4,069,906

FLUID DRIVE COOLING APPARATUS

Kenneth E. Handke, 2034 Mayview Ave., Cleveland, Ohio 44109

Filed Jan. 27, 1977, Ser. No. 763,146
Int. Cl.² F16D 13/60, 13/72
U.S. Cl. 192—113 B 16 Claims

1. A drive of the type having a housing containing a sump for a fluid which is heated by the generation of heat energy in said fluid during torque transmission comprising torque transmitting means and fluid cooling means, said torque transmitting means including relatively movable torque transmitting members operably connected between an input shaft and an output member for torque transmission therebetween with the generation of heat energy in said fluid, said fluid cooling means including pump means located within said housing for directly drawing fluid from said sump and circulating the fluid externally of said housing through heat exchanger means for cooling the fluid and dissipating heat energy, and fluid channeling means for returning the cooled fluid to said sump, said pump means comprising a centrifugal pump including a pump intake port extending about said input shaft below the level of fluid in



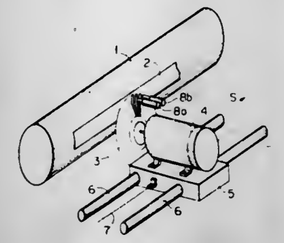
said sump and radially extending vanes operably connected to said input shaft for rotational fluid pumping movement therewith upon rotation of the input shaft in either angular direction.

4,069,907

HIGH SPEED PRINTER HAVING SPOKES WITH A PLURALITY OF SECTIONS CONNECTED TOGETHER AT AN ANGLE GREATER THAN ZERO

Minoru Isobe, Tokyo, and Akiumi Kuriyama, Kodaira, both of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1976, Ser. No. 742,999
Claims priority, application Japan, Nov. 21, 1975, 50-139247
Int. Cl.² B41J 1/30
U.S. Cl. 197—53 4 Claims



4. A high speed printing apparatus comprising a rotary wheel having a plurality of groups of type characters on the surface of one side, the groups of characters being arranged in concentric circles on the rotary wheel, the axis of each character of one group of characters being offset at a predetermined angle greater than zero from the axis of each character of another group of characters, means for rotating said wheel during each cycle of line printing in a plane parallel to the printing line, a plurality of horizontally aligned print hammers one print hammer being provided for each character group and spaced by an integer multiple of a unit space of a printed character for striking selected characters causing said characters to be printed on a recording medium, and means for transporting said wheel and hammers relative to a record medium along a predetermined line of printing.

4,069,908

SIDE PUSH DIVIDER

Lloyd Douglas Johnson, and Kenneth Ernest Kroeber, both of Portland, Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed July 6, 1976, Ser. No. 702,713
Int. Cl.² B65G 47/84
U.S. Cl. 198—437 16 Claims



1. In an apparatus for dividing irregularly shaped objects from single file configuration into discrete lanes on a take away conveyor, the improvement comprising

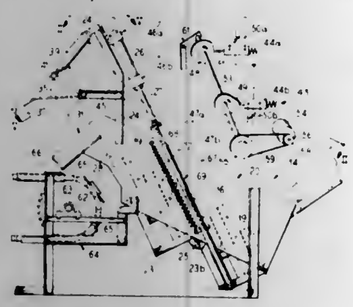
a. means defining a path for the objects and for feeding them in spaced relationship, at least a portion of said path being oriented longitudinally alongside the take away conveyor,
b. side push conveyor means on the opposite side of said longitudinal path defining means from the take away conveyor and movable in said longitudinal direction,
c. transversely oriented tracks on said side push conveyor, and pushers slidably mounted in said tracks for transverse movement in said tracks, said pushers having upwardly projecting cam followers associated therewith,
d. superstructure above said side push conveyor means, and defining a plurality of cam tracks for moving said cam followers diagonally to cause the ends of said pushers to project over said path defining portion,
e. fixed side push conveyor support structure including means for yieldably mounting said superstructure thereto and allowing limited transverse movement of said superstructure relative to said fixed support structure, and
f. switching means operated by said transverse movement of said superstructure, said switching means serving to shut down at least said side push conveyor in response to transverse movement of said superstructure in a direction away from said longitudinal path.

10. In an apparatus for dividing irregularly shaped objects from single file configuration into discrete lanes on a take away conveyor, the improvement comprising

a. means defining a path for the objects and for feeding them in spaced relationship, at least a portion of said path being oriented longitudinally alongside the take away conveyor,
b. side push conveyor means on the opposite side of said longitudinal path defining means from the take away conveyor and movable in said longitudinal direction,
c. transversely oriented tracks on said side push conveyor, and pushers slidably mounted in said tracks for transverse movement in said tracks, said pushers having upwardly projecting cam followers associated therewith,
d. superstructure above said side push conveyor means, and defining a plurality of cam tracks for moving said cam followers diagonally to cause the ends of said pushers to project over said path defining portion,
e. fixed side push conveyor support structure including means for yieldably mounting said superstructure thereto and allowing limited transverse movement of said superstructure relative to said fixed support structure, and
f. said means defining said path for feeding objects in spaced relationship to one another including an intermediate conveyor alongside said side push conveyor,
g. said tracks and associated pushers are arranged in groups, and each group having an associated cam track defined in said superstructure for receiving said cam followers associated with said pushers in said each group, and a guide pusher associated with each group, said guide pushers having their associated cam followers entrained in a cam track so defined in said superstructure that said guide

pushers project beyond said pushers in said associated group so that one side edge thereof will guide the objects during at least a segment of the path of the objects on said intermediate conveyor.

4,069,909
FRUIT FEEDER
James E. Altman, and Eston Altman, both of Gray, Ga. 31032
Filed Mar. 16, 1977, Ser. No. 777,963
Int. Cl.[2] B65G *47/12*
U.S. Cl. 198—446 **17 Claims**



1. A fruit feeder comprising:

A. a plurality of first shelf members in spaced, parallel relationship to one another, each individual one of such first shelf members being offset from adjacent such first shelf members so that said first plurality defines a diagonal stair-step arrangement, the upper edge of each one of such first shelf members having defined therein a plurality of laterally adjacent first recesses, such first recesses being so arranged spatially on adjacent such first shelf members that they define a plurality of longitudinally extending, laterally spaced, parallel rows thereof,

B. first stationary frame means fixedly holding each individual one of said first shelf members in such spaced, parallel, diagonal relationship,

C. a plurality of second shelf members in spaced, parallel, diagonal relationship to one another, one of such second shelf members being interdigitated between a different adjacent pair of said first shelf members, the upper edge of each one of such second shelf members having defined therein a plurality of laterally adjacent second recesses, such second recesses being so arranged spatially on adjacent such second shelf members that they are respectively aligned with such first recesses in such plurality of rows, such second shelf members each being slidably movable transversely relative to such first shelf members,

D. second frame means fixedly holding each individual one of such second shelf members in such relationship, said second frame means being reciprocatorily movable transversely relative to said first frame means, and including bearing means, and further being adapted to slidably reciprocatorily move each one of such second shelf members an equal distance,

E. support means generally upstanding in the region of the uppermost one of said first shelf members, said support means being fixedly associated with said first frame means,

F. first fluid cylinder means functionally associated with said support means and having extensible and retractable first rod means terminably functionally associated with said second frame means, said first rod means being adapted during operation of said first cylinder means to reciprocatorily move said second frame means to an extent sufficient to translate the upper edge of each one of such interdigitated second shelf members between upper and lower positions of general prechosen alignment with the respective adjacent upper edges of such adjacent respective upper and lower first shelf members, said first cylinder means including first valve means for regulating ingress and egress of a cylinder operating fluid thereinto and therefrom, respectively,

G. plate means fixedly associated with said first frame means and interposed slidably adjacent the back side of the uppermost one of said second shelf members,

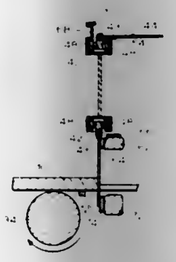
H. a raceway joined across the top edge of said plate means and downwardly inclined therefrom, including upstanding generally longitudinally extending wall members defining therebetween a plurality of passageways corresponding to the number of said rows, and being generally aligned with respective side portions thereof at said top edge,

I. gate means disposable across the lower end region of said raceway,

J. second fluid cylinder means functionally associated with said support means and having an extensible and retractable second rod means terminably functionally associated with said gate means for reciprocal raising and lowering of said gate means to respectively alternately open and close such lower end region, said second cylinder means including second valve means for regulating ingress and egress of a cylinder operating fluid thereinto and therefrom, respectively, and

K. flow control means functionally associated with at least one of said fluid cylinder means for regulating the dwell time of the said rod means thereof at one end of such reciprocal movement thereof.

4,069,910
APPARATUS AND METHOD FOR CENTER POSITIONING LUMBER AND THE LIKE
Arnold F. Faley, 510 W. Mill Plain Blvd., Suite 2-C, Vancouver, Wash. 98661, and Frederick J. Davis, 1903 E. 9th St., Vancouver, Wash. 98660
Filed Apr. 22, 1976, Ser. No. 679,387
Int. Cl.[2] B65G *47/30*
U.S. Cl. 198—456 **8 Claims**



1. An apparatus for center positioning lumber and like elements being transported transversely on a conveyor having a plurality of carrier elements with spaced, raised lugs mounted thereon for engaging the lumber, prior to sorting or other similar handling, comprising:

a. first displacement means interposing the carrier elements of the conveyor in a manner for engaging the lumber being carried on the conveyor,

b. said first displacement means being configured for displacing the lumber being engaged thereby, laterally with respect to the conveyor in a first direction without interferring with its transportation on the conveyor,

c. a mechanical stop located adjacent to the edge of the conveyor for engaging one end of the lumber being displaced by the first displacement means, even ending said lumber and preventing its further displacement in the first direction.

d. sensing means located across the conveyor downstream of the first displacement means for sensing the length of each piece of lumber relative to the mechanical stop after it has been even ended,

e. second displacement means interposing the carrier elements of the conveyor downstream of the sensing means in a manner for engaging the lumber being carried on the conveyor,

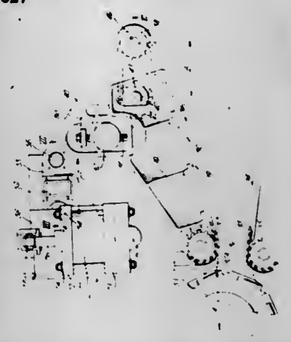
f. said second displacement means being configured for displacing the lumber located thereon laterally with respect to the conveyor in a second direction, 180° opposed to the first direction, without interference with its transportation on the conveyor,

g. at least two lumber engagement means interimposing the carrier elements adjacent to the second displacement means,

h. said lumber engagement means being positionable between engagement positions for engaging the pieces of lumber being displaced by the second displacement means, preventing their further displacement in the second direction, and retracted positions allowing the pieces of lumber to be displaced further by the second displacement means, and

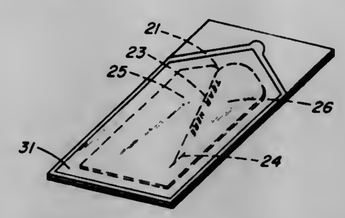
i. said lumber engagement means being positionable in their engagement positions responsive to a signal from the sensing means for engagement only with selected individual pieces of lumber while allowing other pieces of lumber to pass.

4,069,911
BAND CONVEYOR
Eric Thomas Ray, Andover, England, assignor to AMF Incorporated, White Plains, N.Y.
Filed Apr. 7, 1976, Ser. No. 674,468
Claims priority, application United Kingdom, Apr. 17, 1975, 15838/75; Apr. 17, 1975, 15837/75
Int. Cl.[2] B65G *15/16*
U.S. Cl. 198—627 **1 Claim**



1. A conveyor comprising a plurality of identical slats, means for connecting said slats together in an articulated manner so as to form an endless belt, a plurality of sprocket wheels supporting said endless belt, said sprocket wheels being formed with alternate sprocket teeth and pockets each tooth having a substantially flat slat engaging face, a support plate positioned closely adjacent at least a portion of a straight run of said endless belt between said sprockets, each of said slats being formed with a plurality of extensions extending in the longitudinal direction of movement of the belt and a plurality of recesses formed between said extensions adapted to receive the extensions of the next adjacent slat, said extensions each being provided with a substantially flat portion on the sprocket engaging side of each slat, a sprocket tooth engaging surface on each slat whereby the slats are supported on said sprocket wheels said flat surface of each extension held out of contact with said sprocket wheel, and said flat portions contacting said support plate and holding said sprocket tooth engaging surface on each slat out of contact with said support plate; a further conveyor arranged in converging relationship to the first conveyor for feeding tobacco to the cutter drum of a tobacco cutting machine, a cutting machine casing supporting said further conveyor, drive means for said first conveyor and including a input drive shaft positioned in fixed relationship relative to the cutting machine casing, a carriage supporting said first conveyor, a first link pivoted at a first pivot point on said cutting machine casing and pivoted at a second pivot point on said carriage and a second link pivoted at a first piovt point on said input drive shaft and pivoted at a second pivot point on said carriage, said first and second links being parallel and the distance between said first and second pivot points of said first link being equal to the distance between said first and second pivot points of said second link to form a parallelogram linkage and means for moving said carriage relative to said other conveyor to vary the converging relationship between said conveyors; and a further shaft connected to one of said belt supporting sprocket wheels so as to rotate therewith, an intermediate shaft carried by said carriage, said second link being pivoted on said intermediate shaft, a first further sprocket wheel fixed to said further shaft, a double sprocket wheel mounted on said intermediate shaft and adapted to rotate freely, a second further sprocket wheel fixed to said input drive shaft and chain drives between said first further sprocket wheel and said double sprocket wheel and between said second further sprocket wheel and said double sprocket wheel, thereby to transfer drive from said input drive shaft to said first conveyor.

4,069,912
SUTURE PACKAGE
Seymour Black, West Hartford, and David C. MacRitchie, New Milford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Mar. 15, 1977, Ser. No. 777,791
Int. Cl.[2] A61L *17/02*
U.S. Cl. 206—63.3 **6 Claims**



1. A direct dispensing surgical suture label comprising

a back panel;

a strand cover flap adjacent said back panel;

two side flaps adjacent opposite sides of said back panel containing inner and outer score lines and at least one side flap containing a needle retention slit;

a label cover flap having rounded corners adjacent said back panel and opposite said strand cover flap;

a needle protection flap adjacent said back panel and said label cover flap having rounded corners and having a diagonal cut adjacent said label cover flap forming a notch between said needle protection flap and said label cover flap;

whereby when said strand cover flap is folded over said back panel and said side flaps are folded over said strand cover flap and a surgical suture strand is contained between said back panel and said strand cover flap with the end of said surgical suture placed over and in said needle retention slit and said label cover flap and said needle protection flap are folded over said side flaps such that when said needle protection flap is lifted, the end of said surgical suture in said needle retention slit is directly dispensed from said label.

4,069,913
SURGICAL GLOVE PACKAGE AND FIXTURE
Roy M. Harrigan, Bromley Mountain Road, Manchester, Vt. 05254
Filed Aug. 11, 1975, Ser. No. 603,698
Int. Cl.² B65D 85/18
U.S. Cl. 206—278 6 Claims



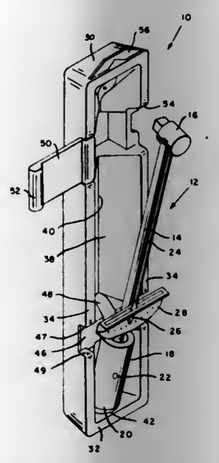
1. A package comprising:
a resilient, sterile glove having a wrist portion and a hand portion,
a ring member which holds the wrist portion of said glove in an open position, releasably fastened to the wrist portion of said glove with the hand portion of said glove extending from said ring member, and
a flexible protective member completely enclosing and sealed around said resilient glove and being fastened to said ring member so that said resilient glove may be separated from said ring member while maintaining said flexible protective member fastened to said ring member, said flexible protective member having its surface in contact with said sterile glove also in a sterilized condition.

4,069,914
SHIPPING, STORAGE AND HANDLING DEVICE FOR CONVOLUTELY WOUND MAGNETIC TAPE ASSEMBLIES
Arnold M. Damsky, 821 83rd St., Miami Beach, Fla. 33141
Filed Oct. 29, 1976, Ser. No. 736,730
Int. Cl.² B65D 85/67, 85/671, 85/672
U.S. Cl. 206—303 4 Claims



1. A shipping, storage and handling device for commercial magnetic tape supplied as long lengths thereof convolutely wound about the peripheral edge of a flat, annular central core defining a central core opening and having a plurality of through openings, symmetrically disposed about a common coaxial circle, comprising, in combination, a flat, annular base support member defining a central through opening, a plurality of pins upstanding from one side of said base support member, a corresponding plurality of openings in said base support member, said pins and said openings being symmetrically arranged about a common concentric circle so that, upon concentric vertical stacking of the devices, the pins of each lower device will be received within the openings of the next successive device, said pins being so located on said base support member as to fit through said core openings upon one or more of said cores being concentrically sandwiched between successive ones of said stacked devices, said central opening of said annular base support member being substantially equal in diameter to the diameter of the central core opening of the magnetic tape unit to be handled, the individual lengths of said pins being greater than the thickness of the central core but no greater than the combined thickness of the central core and the thickness of said base support member.

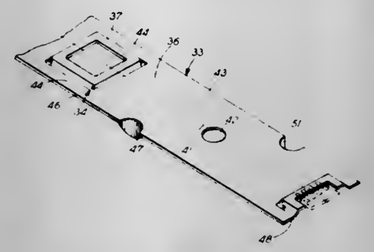
4,069,915
TOOL CASE
Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.
Filed Sept. 30, 1976, Ser. No. 728,274
Int. Cl.² B65D 85/20, 85/54
U.S. Cl. 206—305 7 Claims



1. A case for a tool which includes an elongated shaft, having a free end and an extreme end axially opposed to the free end, said case comprising:
a body formed with
1. an elongated tool shaft accepting recess;
2. socket means extending axially from said recess formed to receive at least a portion of the free end of the shaft;
3. abutment means extending generally perpendicularly from said recess formed to abut the extreme end of the shaft; and
4. means for preventing disengagement of a tool shaft extreme end from said recess to thereby prevent removal of the tool from said case, said preventing means comprising a strap hinged to said body for pivoted movement between positions closed over said recess and open away from said recess;
whereby the free end of a tool shaft may be received in said socket means and the extreme end of a tool shaft may abut said abutment means to prevent axial movement of a tool stored in the case, and whereby a tool may only be removed from said case by first disengaging the extreme tool shaft end from abutment with said abutment means and then disengaging the free end of the tool shaft from said socket means.

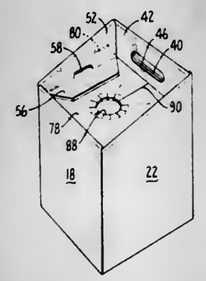
4,069,916
TAPE FOR HOLDING ELECTRONIC ARTICLES
William H. Fowler, Allentown, and David P. Ludwig, Whitehall, both of Pa., assignors to Western Electric Co., Inc., New York, N.Y.
Filed June 1, 1976, Ser. No. 691,798
Int. Cl.² B65D 85/30
U.S. Cl. 206—330 1 Claim

1. A tape for retaining electronic articles which comprises
a longitudinal zone located in symmetry with a longitudinal centerline on one major surface of the tape;
periodically recurring embossments located along the centerline within the longitudinal zone and extending above the one major surface of the tape, each embossment forming a pedestal for mounting one of the articles, each pedestal having a central aperture of a shape similar to the planar extent of a body of the article to be mounted to the pedestal, the walls of the aperture having rounded corners at the junction with a planar mounting surface of the pedestal, the mounting surface capable of supporting extensions from the body to position the body of the article with at least the extensions of such articles extending above the surface of the pedestal, such planar mounting surface being capable of applying uniform pressure against the extensions during a transfer of the article to a substrate; and



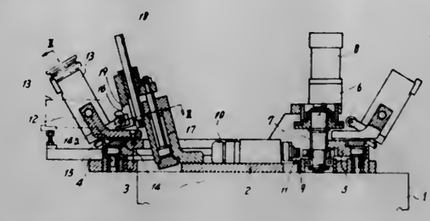
lugs extending from the other major surface of the tape with walls formed perpendicular to such surface in areas laterally offset from the zone and alternately on one peripheral edge of the tape and then on the other in a pattern the spacing of which is equal to that of the pedestals in positions longitudinally offset from the positions of the pedestals, the lugs having a predetermined height above said other major surface of the tape, said height being greater than that of the portion of each such article above said one major surface of the tape, whereby an overlying layer of the tape is held out of contact with the extending portion of the articles mounted to the pedestals.

4,069,917
CONTAINER
Ray Harold Stollberg, Antioch, and James Vernon Boling, Walnut Creek, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Apr. 14, 1977, Ser. No. 787,414
Int. Cl.² B65D 85/52
U.S. Cl. 206—423 8 Claims



1. A blank of sheet material for formation into a container adapted to receive nursery plants and the like comprising a front panel, a back panel and two side panels interconnected along spaced fold lines, securing means associated with at least one of said panels adapted to secure said panels into a tubular configuration, at least one bottom panel secured to one of the aforesaid panels, a front reinforcement panel hingedly secured to said front panel, a top closure panel hingedly secured to said front reinforcement panel, a side reinforcement panel hingedly secured to each of said side panels, a top shoulder panel hingedly secured to each of said reinforcement panels along a hinge line, each said hinge line being interrupted by a positioning tab extending from the hinge line.

4,069,918
TOOL STORAGE MAGAZINE
Katsuo Inoue, Nagoya, and Yoji Kamiya, Anjo, both of Japan, assignors to Toyoda-Koki Kabushiki Kaisha, Japan
Filed May 18, 1977, Ser. No. 797,820
Int. Cl.² A47F 3/08
U.S. Cl. 211—1.5 4 Claims



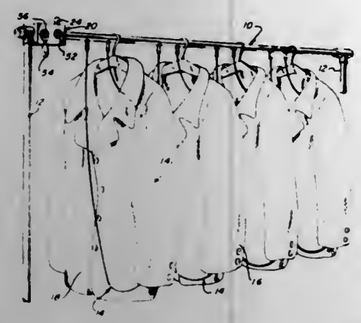
1. A tool storage magazine for a machine tool with an automatic tool change apparatus comprising:
a magazine base;
a magazine plate rotatably supported on said magazine base;
drive means for rotating said magazine plate;
a plurality of holding blocks mounted on said magazine base in a circumferential direction;
each holding block having bores on opposite sides thereof;
a spherical bearing member received in each bore of said each holding block;
a plurality of tool sockets to be pivotally supported in equispaced relationship with each other in a circumferential direction for holding tools;
each tool socket being arranged between two adjacent holding blocks and having bores on opposite sides thereof;
a support pin fitted at one end thereof into said spherical bearing member to be pivotable relative to the associated holding block and fitted at the other end thereof into the bore of the associated tool socket;
first means for holding tool sockets in outwardly inclined positions;
second means for rendering said first means inoperative at a tool change position; and
third means for moving any one of said tool sockets positioned at the tool change position from the inclined position to a horizontal position for an automatic tool change operation.

4,069,919
SECURITY SYSTEM FOR MERCHANDISE DISPLAY
Francis W. Fernbaugh, 92 S. Newland Court, Lakewood, Colo. 80226
Filed Oct. 8, 1976, Ser. No. 730,957
Int. Cl.² E05B 73/00
U.S. Cl. 211—4 16 Claims

1. A security system for releasably securing a plurality of articles of merchandise in a display, comprising:
an elongate tubular member provided with a plurality of longitudinally spaced apertures extending through its wall;
locking means mounted within the tubular member including a plurality of outward opening receivers spaced longitudinally to correspond with the spacing of the apertures and to lie in registry with them;
a plurality of individual elongate flexible guard members, each provided with an enlarged head at each end, adapted to be passed through a closed loop portion of an article of merchandise with the heads entering through a selected

pair of apertures in the tubular member and into the corresponding registered receivers; and

an actuating means to change the relative position of the tubular member and at least a portion of the locking means by displacing at least that portion of the locking means



which includes the receivers, and positively transfering the guard member heads to off-center positions with respect to the apertures to prevent removal of the heads from the tubular member;

the operation of the actuating means being reversible to release the heads.

4,069,920

NESTING WALL BRACKETS

Abraham Ross, 7 Felice Lane, Plainview, N.Y. 11803

Filed Sept. 17, 1976, Ser. No. 726,514
Int. Cl.² A47F 5/08
U.S. Cl. 211—87 **3 Claims**



1. A wall bracket hanger system comprising:

a plurality of rings, each of said rings being provided with a plurality of holes therethrough spaced about its periphery; and

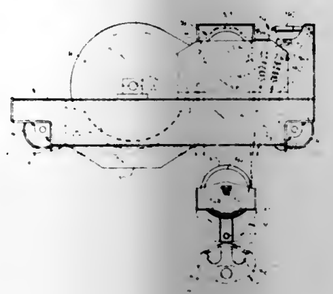
at least one hook adapted to be selectively mounted on each of said rings to support an article, said hook including a shank portion adapted to be inserted through one of the holes on said ring, and means on said shank portion for retaining said hook on said ring in said hole, said means on the shank portion of said hook including a pair of resilient prongs having substantially flat laterally extending lip portions which are snapped together to insert said shank through said hole and then released to retain said hook on said ring, a selected one of said rings including at least a pair of spaced arcuate slots on their front surfaces forming together spaced sections of a continuous circle for receiving another one of said rings in nested relationship said arcuate slots including one of said holes in registration with a similar hole on the periphery of said nested ring to receive a hook therethrough to lock said rings together.

4,069,921

OVERHEAD CRANE INCLUDING A SINGLE FAILURE PROOF HOIST

I. Edward Raugulis, Milwaukee; L. Clark Smith, Wauwatosa, and Raymond de C. Meyler-Warlow, Brookfield, all of Wis., assignors to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Jan. 30, 1976, Ser. No. 653,741
Int. Cl.² B66C 17/06
U.S. Cl. 212—18 **10 Claims**



1. An overhead crane comprising:

a support frame;

a rotatable hoist drum rotatably supported by said support frame;

an upper sheave block assembly supported by said support frame and comprising two pairs of upper sheaves; a load bearing hook;

a lower sheave block assembly for supporting said load bearing hook and comprising four pairs of lower sheaves;

an equalizer assembly for compensating for variances in length between two ropes and supported by said support frame and comprising at least two equalizer sheaves which are movable with respect to each other and with respect to said lower sheave block assembly about plural axes of movement;

and a pair of ropes wound around said drum in side-by-side parallel relationship, each rope having its opposite ends secured to spaced apart points on said drum;

each rope being reeved around one pair of said upper sheaves, around two pairs of said lower sheaves, and around one of said equalizer sheaves;

each rope of said pair being independently capable of supporting said lower sheave block assembly in balanced relationship.

4,069,922

PORTABLE CRANE WITH HOIST MOUNTING AND OUTRIGGER SUPPORT APPARATUS

Wallace H. Hawkins, Rte. 7, Buncombe Road, Greenville, S.C. 29609

Filed Nov. 6, 1975, Ser. No. 629,588
Int. Cl.² B66C 23/06
U.S. Cl. 212—59 R **5 Claims**

1. Apparatus for mounting a hoist on a frame of a wheeled pickup truck vehicle, said hoist having an upright support column carrying an outwardly boom with load engaging means adjacent an outer end thereof comprising:

means mounting said support column in fixed relation to said vehicle frame;

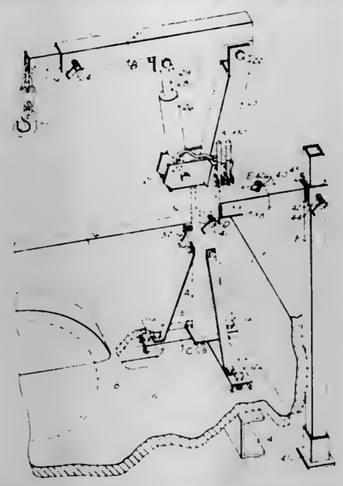
means for rotatably mounting said boom on said column about a vertical axis;

a collar mounted on said column for oscillatory movement thereon adjacent an upper end thereof about said vertical axis;

a laterally extending arm fixedly carried adjacent one end thereof by said collar;

a substantially vertical housing carried by said arm adjacent the other end thereof;

a substantially vertical support leg carried for vertical adjustment in said housing outboard of said vehicle; and



means for laterally adjusting said housing relative to said arm;

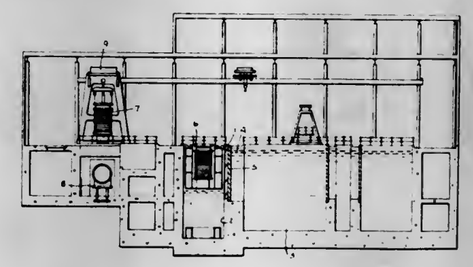
whereby a load supported by said load engaging means is transmitted to said leg which is selectively positionable to a plurality of load supporting positions by rotation of said collar thereby providing a supplemental support for the load which may be readily dismantled and placed within the vehicle.

4,069,923

BUOYANCY ELEVATOR FOR MOVING A LOAD IN AN INDUSTRIAL FACILITY SUCH AS A NUCLEAR POWER PLANT

Leif Blumenau, Brooklyn, and Frank John Pignata, Jr., Staten Island, both of N.Y., assignors to Ebasco Services Incorporated, New York, N.Y.

Filed Dec. 16, 1974, Ser. No. 533,186
Int. Cl.² B65G 65/30; G21C 19/32
U.S. Cl. 214—17 B **49 Claims**



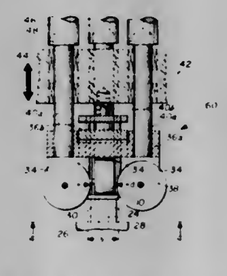
1. A cask handling system for transporting a nuclear fuel shipping cask between upper and lower elevations in a nuclear facility comprising shaft means for containing liquid therein extending between said elevations; a buoy disposed in the shaft having a cavity formed therein for receiving and for transporting the cask between said elevation in said shaft, removable sealing means for sealing said cavity when the cask is in place in said buoy to prevent penetration of the liquid of said shaft into said cavity during the travel of said buoy between said elevations, said removable sealing means comprising a removable annular seal cap which is fastenable seal-tight to the cask; structual means mounted on said buoy and disposed in surrounding relation to said annular seal cap; and annular seal means for sealing said structure means with respect to said seal cap; and, buoyancy control means for controlling the buoyancy of said buoy to cause it to ascend and descend in the shaft means.

4,069,924

METHODS AND APPARATUS FOR POSITIONING AN ARTICLE LATERALLY ON A SUPPORT

Richard A. McCorkle, Allentown, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Nov. 18, 1976, Ser. No. 742,930
Int. Cl.² B65G 35/00
U.S. Cl. 214—1 R **4 Claims**



1. A method of positioning an article on a support, which comprises the steps of:

a. placing the article on a support having an article support surface the article being movable laterally on the surface for precise positioning;

b. moving a plurality of rotatable and symmetrically disposed locating members, which are mounted in predetermined location in relation to the support, toward the support to engage said members with the article to position said article on said support surface at said predetermined location; and

c. urging the article against the support surface with a yieldingly mounted pressure member to hold said article on the support surface while disengaging said rotatable locating members therefrom.

4,069,925

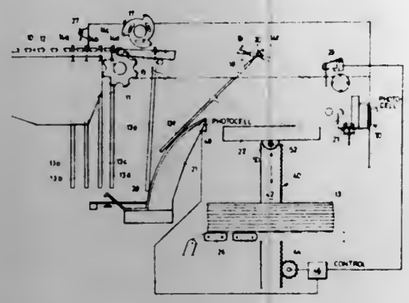
APPARATUS FOR STACKING HANGING PLATES

Pentti Ahokas, Santtio, and Matti Lallo, Rauma, both of Finland, assignors to Lonnstrom Oy, Finland

Filed Apr. 12, 1976, Ser. No. 675,899
Claims priority, application Finland, Apr. 14, 1975, 751100
Int. Cl.² B65G 57/14
U.S. Cl. 214—6 H **17 Claims**

1. In an apparatus for forming a stack of plates, such as cathode plates produced in an electrolytic refining process, from a series of hanging plates which respectively hang from rods conveyed by a rod-conveyer means one after the other along a predetermined path, toothed conveyer means having a portion situated at said path, said toothed conveyer means receiving said rods one after the other from said rod-conveyer means and having teeth which engage each rod arriving at said toothed conveyer means to transport the rod with a plate hanging therefrom beyond said rod-conveyer means along a plate-turning path, turning means situated in the path of movement of each plate as each rod is conveyed by said toothed conveyer means along said plate-turning path for engaging each plate and turning the latter from a substantially upright

hanging attitude to a substantially horizontal attitude with said toothed conveyer means transporting each rod with a plate connected thereto for advancing each plate beyond said plate-turning means after each plate has been turned by the latter at least substantially into said horizontal attitude, stack-forming table means situated beyond said plate-turning means beneath a plate which has been turned thereby substantially to a horizontal attitude for receiving the plates one after the other while a stack is formed therefrom on said table means, and means situated at a region of said toothed-conveyer means distant from said rod-conveyer means for receiving each rod while said toothed-conveyer means continues to operate and after the plate connected to the latter rod has formed part of a stack on said table means.

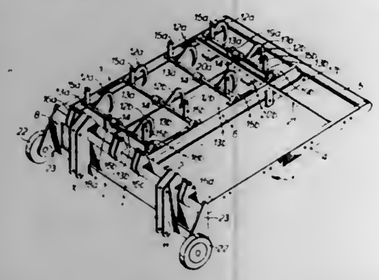


4,069,926

BALE COLLECTORS

Michael Vivian Jackson, Hethersett, and James Kendall Avis, North Lopham, both of England, assignors to Farmhand (U.K.) Limited, Wymondham, England

Filed Dec. 1, 1975, Ser. No. 636,708
Int. Cl.² A01D *87/12*; B65G *57/32*
U.S. Cl. 214—6 B 10 Claims



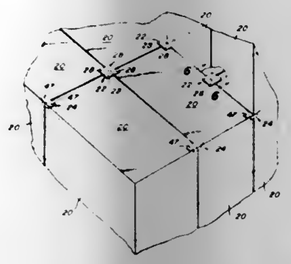
1. A loose bale accumulator comprising in combination:
a. structure defining a plurality of bale-receiving areas,
b. a set of bale entry points, equal in number to the number to bale-receiving areas, at which bales may enter the accumulator,
c. in association with said bale-receiving areas a set of bale guide members each of which is constructed and adapted to separately execute a vertical component of movement between a guiding and a non-guiding position during an accumulation operation,
d. a grapple-hook gripping means constructed and adapted to grip an accumulated array of bales for a loading operation, and
e. sensor means responsive to bale engagement operatively connected to actuate said gripping means, said sensor means being so arranged that in use, when the machine is in an inclination out of the horizontal, said sensor means will not normally engage bales lying on the ground, but when returned to the horizontal it will engage such bales.

4,069,927

ANCHOR MEMBER FOR UNITIZING A PLURALITY OF CONTAINERS

Charles F. Taylor, 2160 El Cajonita Drive, La Habra, Calif. 90631

Filed Apr. 21, 1976, Ser. No. 679,090
Int. Cl.² B65G *1/14*
U.S. Cl. 214—10.5 R 15 Claims



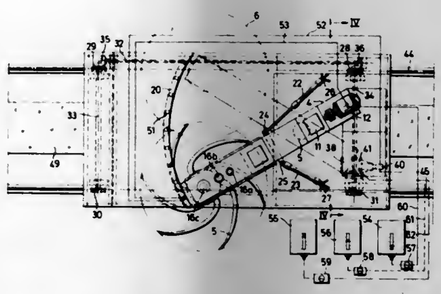
1. An anchor member for unitizing a plurality of containers including:
a. substantially flat body for placement at the juncture between a plurality of laterally adjacent containers having flat surfaces disposed in substantially the same plane, one face of said flat body being engaged with a portion of the flat surfaces of adjacent containers,
b. wall means extending outwardly from said face of the substantially flat body for engagement with portions of adjacent containers proximate the flat surfaces engaged by said flat body, to hold the anchor member in position, and
c. means projecting outwardly from said face of the flat body for grippingly engaging portions of the flat surfaces of the adjacent containers to prevent relative movement thereof.

4,069,928

MACHINE FOR CLEARING BULK MATERIAL

Fritz Teske, Industriestr. 28, and Lothar Teske, Industriester. 30, both of 505 Porz, Germany

Filed Aug. 4, 1975, Ser. No. 601,425
Claims priority, application United Kingdom, Aug. 14, 1974, 35876/74
Int. Cl.² B65G *65/42, 65/46*
U.S. Cl. 214—17 DC 7 Claims



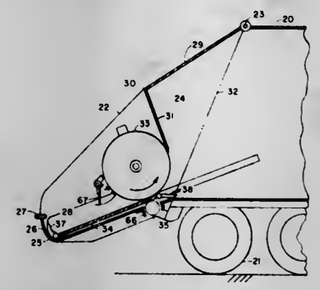
1. A machine for clearing bulk material comprising a movable support, first drive means for moving said support along a bin table upon which bulk material is supported, a clearing wheel carried by said support, second drive means for rotating said clearing wheel contiguous the bin table whereby bulk material is removed therefrom, control means automatically responsive to operational conditions of said second drive means for automatically controlling the operation of said first drive means, said control means additionally automatically controls the operation of said second drive means, said first and second drive means each include a hydraulic motor, a hydraulic circuit in part defined by said hydraulic motors, said control means is automatically responsive to operational conditions of pressure within said hydraulic circuit for automatically controlling said first drive means, means mounting said clearing wheel for pivotal movement upon said movable support in directions toward and away from said bin table, means for increasing and decreasing the operation of said second drive means hydraulic motor during respective pivoting of said clearing wheel away and toward said bin table to respectively increase and decrease the rotational speed of said clearing wheel, means for increasing and decreasing the operation of said first drive means hydraulic motor during respective increasing and decreasing operation of said second drive means hydraulic motor to thereby increase and decrease the speed of movement of said movable support respectively during increase and decrease of the rotational speed of said clearing wheel, said hydraulic circuit includes first and second reversing valve means, said first reversing valve means being disposed between said first drive means and said movable support for reversing the direction of movement thereof, and said second reversing valve means being disposed between said second drive means and said clearing wheel for increasing or decreasing the pivotal movement thereof.

4,069,929

MECHANISM FOR COMPACTING MATERIAL

Ralph J. Harker, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 584,180, June 5, 1975, abandoned. This application May 21, 1976, Ser. No. 688,779
Int. Cl.² B65F *1/00*
U.S. Cl. 214—83.14 33 Claims



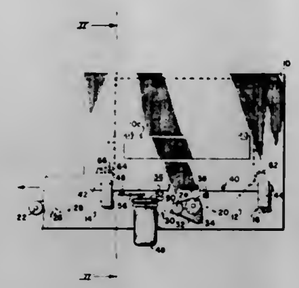
1. In a material handling apparatus for handling large volumes of refuse having a storage body and a hopper in communication with said body, means interposed between said hopper and storage body to move material from said hopper into said storage body comprising a planar material-holding tray mounted for translation beneath a cylindrical roller in material compacting relationship therewith, whereby at least part of said material is compacted by the nip pressure of rolling action during movement from said hopper with said body and said storage body is loaded with refuse by successive translations of said holding tray.

4,069,930

APPARATUS FOR HANDLING ROD-SHAPED ARTICLES

Charles Gary Atwell, Mechanicsville; Steven F. Spiers, and William H. Smick, III, both of Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Apr. 12, 1976, Ser. No. 676,106
Int. Cl.² B65G *47/52*
U.S. Cl. 214—302 11 Claims



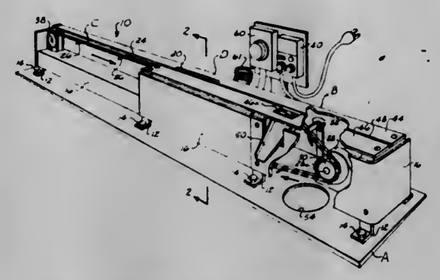
1. Apparatus for handling rod-shaped articles comprising a hopper having an inlet for receiving said articles and an outlet, conveyor means supported in article-receiving relation to said hopper outlet, agitator means supported for translation in said hopper in the direction of movement of said conveyor means for providing a substantially flat profile for articles in said hopper in facing relation to said hopper inlet, support means for receiving a storage tray containing said articles and supporting said tray in article-issuing relation to said hopper inlet, detector means in said hopper for providing output indication when said articles in said hopper in facing relation to said hopper inlet are disposed at a predetermined level therein, and interrupting means selectively engageable by said storage tray and thereupon preventing said detector means from providing said output indication.

4,069,931

CAPACITOR REMOVAL DEVICE AND METHOD

James P. Saylors, Rte. 1, Pelzer, S.C. 29669

Filed Sept. 30, 1976, Ser. No. 728,267
Int. Cl.² B65B *69/00*
U.S. Cl. 214—310 11 Claims



1. A capacitor removal device for removing capacitors from a holder strip on which the capacitors are secured with a body portion of the capacitor extending above the holder strip, said removal device comprising:
a frame
conveyor means including an endless traveling conveyor member carried by said frame for transporting said holder strip with said capacitors carried thereon along a first path and rotating drive means for driving said conveyor member along a continuous path including said first path;
elongated guide means carried by said frame extending

adjacent a substantial length of said conveyor means for engaging said body portion of said capacitors and guiding said capacitors along a second path; and

said first and second paths being divergent relative to each other causing said capacitors guided along said second path to separate completely from said holder strip transported along said first path at a removal zone facilitating removal of said capacitors therefrom.

11. A method for removing capacitors and the like from a holder strip on which the capacitors are secured with a main body portion thereof extending above the holder strip and, comprising the steps of:

providing an endless conveyor member;

rotating said conveyor member about a continuous closed path;

providing attachment means on said conveyor member to which said holder strips may be removably fastened to said conveyor member;

conveying said holder strip on said conveyor member along a first path with such capacitors carried thereon;

providing a pair of elongated flat guide bars having a space defined therebetween;

engaging the body portion of said capacitors and guiding the body portion in a second path divergent to said first path whereby said capacitors are separated completely from said holder strip; and

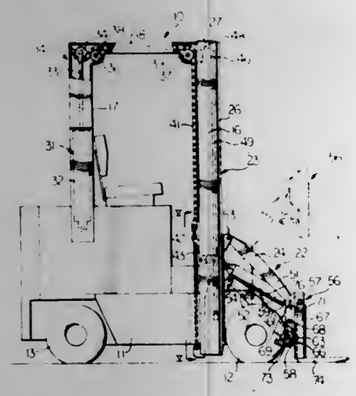
removing said holder strip from said conveyor member.

4,069,932

FORK LIFT TRUCK

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 20, 1976, Ser. No. 752,770
Int. Cl.² B66F *9/14*
U.S. Cl. 214—730 **5 Claims**



1. A fork lift truck comprising:

a longitudinally extending frame having an operator's station;

an operator's protective structure extending in front, over, and in back of said operator's station in the form of an overhead guard having an upwardly extending channel member having its lower end portion fastened to a first portion of the frame, an upwardly extending hollow post having its lower end portion fastened to a second portion of the frame, and a longitudinally extending hollow beam extending between and secured to the upper end portions of the channel member and the post;

a load supporting device including forks mounted for up and down movement along the channel member;

a hydraulic lift jack disposed within and completely surrounded by the post and having a first element anchored to the post and a second element movable relative to the first element;

a first sheave rotatably attached to the second element;

a second sheave rotatably mounted within the passageway formed by the post and beam at a location adjacent the post;

a third sheave rotatably attached to the protective structure adjacent the channel member; and

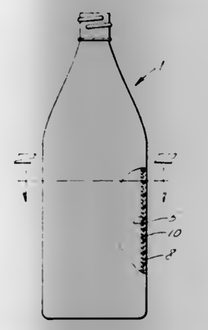
an elongated flexible element connected to the load supporting device and extending upwardly therefrom around the third sheave, through the beam, around the second sheave, downwardly and around the first sheave and anchored to the post.

4,069,933

POLYETHYLENE TEREPHTHALATE BOTTLE FOR CARBONATED BEVERAGES HAVING REDUCED BUBBLE NUCLEATION

Charles Wesley Newing, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 24, 1976, Ser. No. 726,376
Int. Cl.² B65D *25/14*
U.S. Cl. 215—1 C **4 Claims**



1. A polyethylene terephthalate bottle for liquid carbonated beverages having an interior liquid-contacting surface containing an effective wetting amount of oleic acid to reduce carbon dioxide bubble nucleation and carbonation loss.

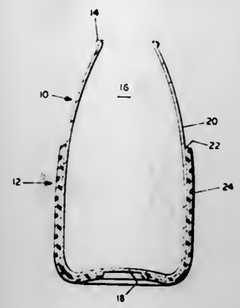
4,069,934

CONTAINER WITH IMPROVED HEAT-SHRUNK CELLULAR SLEEVE

James A. Karabedian, Garden City, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 505,646, Sept. 13, 1974, abandoned.
This application Oct. 26, 1976, Ser. No. 735,553
The portion of the term of this patent subsequent to Sept. 7, 1993, has been disclaimed.
Int. Cl.² B65D *1/02, 11/16*
U.S. Cl. 215—12 R **26 Claims**

1. In an article of manufacture comprising a container having a sidewall and further including a polymeric sleeve disposed circumferentially outwardly of said sidewall and in snug heat shrunk engagement therewith, the improvement wherein said polymeric sleeve is a composite structure of a closed cellular polymeric layer preponderantly of polystyrene having incorporated therein, in an amount from zero weight percent up to compatible amounts, a copolymer of ethylene and vinyl acetate, or a copolymer of ethylene and an alkyl ester of an alpha-beta monethylenically unsaturated carboxylic acid, or a copolymer of ethylene and an alpha-beta monoethylenically unsaturated carboxylic acid, or mixtures thereof, and a noncellular polymeric layer having preponderantly ethylene moieties and incorporated therein moieties of vinyl acetate or an alkyl ester of an alpha-beta monoethylenically unsaturated carboxylic acid, or an alpha-beta monoethylenically unsaturated carboxylic acid, or a mixtures thereof, the amount of said incorporated moieties in said non-cellular layer being sufficient



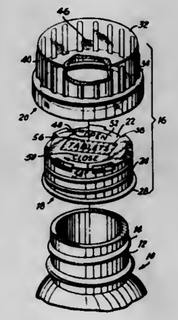
to promote the adhesion of said layers, said non-cellular layer being disposed outwardly of said cellular layer and in adhering engagement therewith.

4,069,935

CHILD RESISTANT CLOSURE

Alfred H. Hampel, Woodside, N.Y., assignor to Ferdinand Gutmann & Co., Brooklyn, N.Y.

Filed May 6, 1977, Ser. No. 794,662
Int. Cl.² B65D *55/02, 85/56;* A61J *1/00*
U.S. Cl. 215—203 **7 Claims**



1. A screw-on, child-resistant, double-cap closure for a container having a neck with a male thread thereon, said closure comprising:

A. an inner screw cap having
- I. a crown,
- II. a skirt and
- III. a bead,
- IV. the inner surface of the skirt including a female thread that matches the male thread on the container, and

B. a cover having
- I. a crown and
- II. a skirt,
- III. said cover including an annular groove adjacent the bottom of the skirt,

C. said cap being disposed concentrically within said cover, with said bead within said groove so that said cap is captive within said cover,

D. a selectively engageable normally disengaged torque transmitting coupling constituting two halves of which one half is a part of the cover and the other half is a part of the cap, said coupling being engageable upon the application of an auxiliary force to the cover whereby to render the coupling drivingly engageable to transmit to the cap torque imparted to the cover,

said closure including an improvement comprising:

E. the transparency of at least the crown of the cover so that the exterior surface of at least the crown of the cap is visible therethrough, and

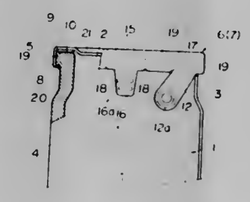
F. non-uniform, non-concentric printing on the exterior surface of the crown of the cap, which printing is viewable through the crown of the cover, whereby the user instinctively, by viewing the printing on the cap as he manipulates the cover, becomes aware of the proper manner of applying forces including a twisting force and an auxiliary force to the cover in order to screw the closure on or unscrew the closure from the container.

4,069,936

CAP FOR A BEVERAGE CONTAINER

Yoshihiro Ota, Tokyo, Japan, assignor to Shibazaki Seisakisho Ltd., Tokyo, Japan

Filed June 21, 1976, Ser. No. 697,795
Claims priority, application Japan, Sept. 1, 1975, 50-120583[U]
Int. Cl.² B65D *41/42*
U.S. Cl. 215—256 **7 Claims**



1. A cap, for securing on a container having an upper side wall portion communicating with an upper edge defining the container's mouth, said cap comprising:

a. a top wall for locating above said upper edge defining the container's mouth;

b. a skirt depending from the top wall so as to surround said upper side wall portion of the container;

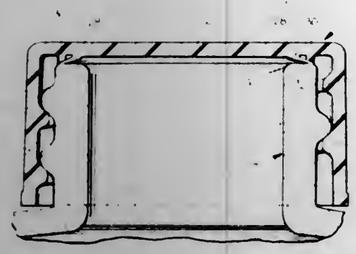
c. a first score having a parallel section formed substantially parallel with the lower edge of the skirt over the angular range of about 180° to 250° and two oblique sections formed from both ends of the parallel section to the lower edge portions of the skirt so as to incline at an obtuse angle;

d. a first bendable tab provided at the lower edge of the skirt in such a manner that its upper edge extends from one oblique section of the first score;

e. a spaced pair of second scores extending from the bottom edge of the skirt to the top edge of the skirt, said second scores extending from the top edge of the skirt toward the center of the cap and terminating in inner end portions for positioning slightly inside said upper edge of the container, a portion of the top wall between said inner end portions providing a bending line spaced radially inwardly from said upper edge; and

f. a second bendable tap provided at that lower edge portion of the skirt which is positioned at substantially the middle between the second scores, said cap being removable from the container, upon the skirt portion of the cap beneath the first score being first torn away by means of the first bendable tab, and then the cap portion defined by the second scores being torn by means of the second bendable tab to introduce air into the container thereby to enable easy removal of the cap.

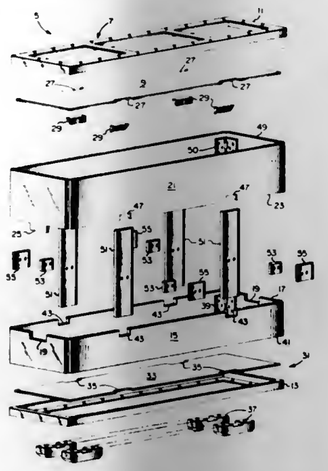
4,069,937
LINERLESS CLOSURE
Ned J. Smalley, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 28, 1977, Ser. No. 763,476
Int. Cl.² B65D *41/04*
U.S. Cl. 215—344 2 Claims



1. A linerless closure for use with a container having externally threaded neck portion terminating at its end in an annular rim defining the periphery of an open mouth, said linerless closure comprising a top panel, an internally threaded skirt depending from said top panel and adapted to engage the threaded neck portion of said container, said skirt being substantially parallel to the longitudinal axis of said closure, an annular resilient sealing fin depending downwardly and outwardly from the inside surface of said top panel, said annular sealing fin adapted to sealingly engage said annular rim of the neck portion of the container, and an annular wedge member depending downwardly from the inside surface of said top panel at a location radially outwardly from said annular sealing fin, said annular wedge including a pair of unequal length sidewalls substantially parallel to the longitudinal axis of said closure and connected by a substantially flat, inwardly inclined lower surface, the width of said annular wedge being substantially equal to the length of the longer of said sidewalls, said inwardly inclined lower surface adapted to bias said annular sealing fin into sealing engagement with said annular rim of the neck portion of the container upon application of said linerless closure to said container.

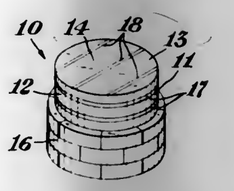
4,069,938
RETURNABLE SHIPPING CONTAINER
Kenneth F. Palte, and Joseph M. Kurtz, both of Ottawa, Ohio, assignors to GTE Sylvania Incorporated, Stamford, Conn.
Filed Mar. 14, 1977, Ser. No. 777,017
Int. Cl.² B65D *9/18, 7/28, 19/40*
U.S. Cl. 217—13 12 Claims

1. A returnable shipping container comprising:
top and bottom closure members having a longitudinal axis, an inner surface with a pair of indentations spaced along on opposite sides of said axis, and an outer surface with an affixed metal member forming a slot surrounding the perimeter of the closure members;
a first body member having a pair of side members and a pair of end members detachably affixed and normal thereto, said side and end members having a lower edge formed for reception by said slot of said bottom closure member with said side members having an upper edge with notches aligned with said indentations and said end members each having an upper edge with a notch;
a second body member having a pair of side members and a pair of end members detachably affixed and normal thereto, said side and end members having an upper edge formed for reception by said slot of said top closure member with said side members having a lower edge with a notch aligned with said indentations and said end members each having a tongue member aligned with said notch of said end member of said first body member; and
a stabilizing insert for each of said indentations in one of said top and bottom closure members, said insert having opposite ends formed for reception by said indentations, a first block member affixed thereto and formed for compatable



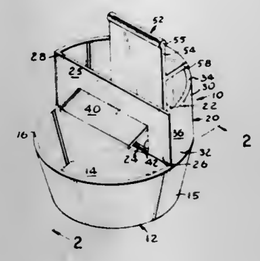
reception by a notch of said first and second body members and a second block member affixed to said first block member and forming a slot with said stabilizing insert for receiving said first and second body members.

4,069,939
INSULATED STRUCTURE
Robert B. Bennett, Freeland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 514,682, Oct. 15, 1974. This application Aug. 19, 1976, Ser. No. 715,781
Int. Cl.² B65D *25/34*
U.S. Cl. 220—9 A 6 Claims



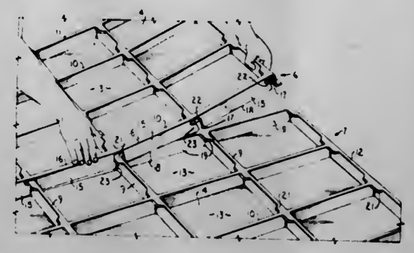
1. An improved insulated structure, the structure comprising an inner structure having a convex curved surface, a plurality of sheet metal bands secured to the convex curved surface by a plurality of band retaining means affixed to the convex curved surface, at least some of the bands being disposed in generally parallel relationship, at least some of the bands having disposed thereunder malleable sheet metal blanks containing regions where the blanks are bent to form legs extending away from the surface, a plurality of insulating panels disposed on and generally conforming to the convex curved surface, the legs of said blanks being bent over adjacent insulating panels thereby retaining said insulating panels in position.

4,069,940
CRISPY-MIX BOWL
John A. Naimoli, 939 Daly St., Philadelphia, Pa. 19148
Filed Feb. 22, 1977, Ser. No. 770,518
Int. Cl.² B65D *1/24*
U.S. Cl. 220—20 4 Claims



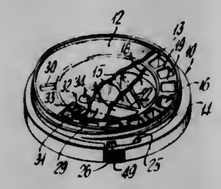
1. A bowl for use in eating cereal or the like, comprising:
a. a lower compartment including a bottom wall and a side wall extending upwardly from said bottom wall and terminating in an upper end, said lower compartment adapted to receive therein a liquid, and cereal or the like for consumption by the user,
b. an upper compartment extending upwardly from said lower compartment, said upper compartment comprising:
1. a partition extending in substantially a horizontal plane for partially enclosing upper end of said lower compartment and forming the base of said upper compartment, said area of said partition being smaller than the area of said upper end of said lower compartment such that access to said lower compartment is obtainable,
2. a transversely upwardly extending front panel secured at the lower end thereof to said partition and terminating in an upper free end,
3. a circumferentially upwardly extending rear panel secured at the lower end thereof to said partition and terminating in an upper free end, said rear panel joined to said front panel at each of both ends thereof, said upper compartment adapted to receive therein a supply of cereal or the like, and
c. a cover on said panel for movement between an open position in which cereal or the like may be manually dispensed into said lower compartment of the bowl on an intermittent basis, to a closed position retaining the cereal or the like within said upper compartment,
d. hinge means connecting said cover to said front panel for movement between said respective positions,
e. said hinge means includes a pivot element extending outwardly from each end of said cover and adapted to be received in a complimentary recess in said front panel on each side of said cover,
f. a sweeping element mounted within said upper compartment in spaced relationship to said cover for manually dispensing the cereal or the like through the cover opening,
g. said sweeping element extending vertically and adapted to be reciprocated within said upper compartment for engagement with said cereal or the like, and
h. said sweeping element having a top extending above said upper free end of said upper compartment.

4,069,941
ENGAGEABLE CARD RACKS
William T. Popplewell, Jr., Prairie Village, Kans., and Timothy C. Driller, Kansas City, Mo., assignors to Plastic Sales & Mfg. Co., Inc., Kansas City, Mo.
Filed Mar. 3, 1977, Ser. No. 773,824
Int. Cl.² A47F *7/00*
U.S. Cl. 220—23.4 11 Claims



1. A card rack comprising:
a. a first tray section with elongated, spaced dividers that separate compartments therein,
b. a second tray section having a downwardly projecting flap attached along an edge thereof, said flap having a plurality of slots at spaced intervals along its length, the spacing of said intervals corresponding to that of said dividers in the first tray section, and
c. wherein said flap is emplaced inside said first tray with said dividers inserted into said slots of the flap.

4,069,942
CHILD-RESISTANT PILL DISPENSER
Francis G. Marshall, Meriden, and Edward F. Klimeck, Waterbury, both of Conn., assignors to Eyelet Specialty Co., Inc., Wallingford, Conn.
Filed July 12, 1976, Ser. No. 704,690
Int. Cl.² B65D *83/04*
U.S. Cl. 221—4 19 Claims



1. A pill-dispensing container with safety closure, comprising: a circular base member including an upstanding body wall with external thread formations, a circumferentially and downwardly extending skirt integrally connected to said body wall at an axial location beneath said threads, said base member having an angularly distributed plurality of upwardly open individual pill compartments radially within said body wall, the open ends of said compartments terminating at an axial location short of the upper end of said body wall; a pill-dispensing lid member rotatably mounted to and axially retained by said base member to close said compartments within the upper limit of said body wall, said lid member having unit-pill dispensing means in radial register with one of the pill compartments for each of a selectable plurality of angular positions thereof; and a closure-cap member including a skirt with internal threads for selective engagement with said body-wall threads; said closure-cap member and said lid member having rotation-resistant engagement when said closure-cap member is thread-engaged to said body wall, said cap-member skirt having plural radially-inwardly directed ratchet teeth axially

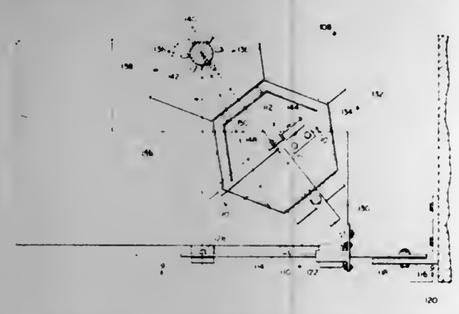
beneath the threads thereof, said base-member skirt having at one angular location a radially inwardly compliant portion whereby said inwardly compliant portion may be transiently and resiliently inwardly displaced, and a ratchet-locking tooth formation carried by said compliant portion and having (a) ratchet-escaping engagement with cap-member teeth in the thread-on direction of cap-member threaded engagement with said base member and (b) ratchet-locking engagement with said cap-member teeth in the thread-off direction of such threaded engagement.

4,069,943

AUTOMATIC CAROUSEL VENDOR FOR STACKED ARTICLES

Michael E. Fawcett, 315 Wilson Mills Road, Chardon, Ohio 44024

Filed Aug. 11, 1977, Ser. No. 715,168
Int. Cl.² B65G 59/06
U.S. Cl. 221—5 **6 Claims**



1. An automatic vendor for storing at least a plurality of a first article and a plurality of a second article and for individually dispensing the articles, comprising:

a base;

a carousel for storing the articles rotatably mounted on said base;

motor means for rotating said carousel;

a plurality of elongate, vertically disposed chambers mounted on said carousel, one of said chambers storing a stack of the first articles and one of said chambers storing a stack of the second articles;

an elongate finger pivotably mounted on each chamber, a portion of said finger extending into each chamber when said finger is in a support position for supporting the articles stacked thereinabove;

means for sensing the location of said chambers as the carousel rotates and for producing a signal upon sensing a preselected chamber;

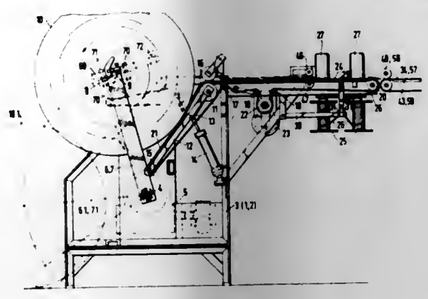
means for dispensing one of the articles stacked in the preselected chamber, said means including a selection arm pivotally mounted to said base and a means responsive to said signal for pivoting said arm to a dispensing mode just prior to the preselected chamber's rotating past said arm, said arm being maintained in a non-dispensing mode when the non-selected chambers are rotated past said arm, said arm when in said dispensing mode urging said finger of said selected chamber when rotated past said arm, to pivot from under the stack of articles, releasing one of the articles, said arm in a non-dispensing mode allowing said support fingers to remain in the support position while rotating past said arm.

4,069,944

APPARATUS FOR SEPARATING AND SUPPLYING VALVED SACKS TO FILLING MACHINES

Fritz Achelpohl, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed June 11, 1976, Ser. No. 695,113
Claims priority, application Germany, June 13, 1975, 2526432
Int. Cl.² B65B 9/02
U.S. Cl. 221—72 **26 Claims**



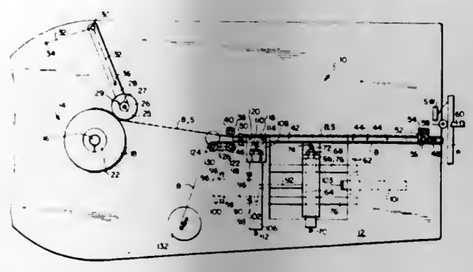
1. Apparatus for separating valved sacks stored in overlapping formation on reels and supplying same to means for conveying them to filling machines, the improvement comprising: a stand provided with bearings for receiving the reel, the stand comprising a frame carrying rollers at opposite ends, that a driven endless belt passes over the rollers and the frame can be applied to the reel or the reel to the frame so that the endless belt presses on the reel periphery for driving same, and that the stand is provided with spools for coiling the holding bands that are pulled off together with the overlapping sacks during unreeling thereof and with a supply belt downstream of the endless reel-driving belt for transporting the overlapping valved sacks, the supply belt being followed by conveyor means which separate the overlapping valved sacks and successively lead same at a faster speed to the means for conveying them to the filling machine.

4,069,945

STICKER APPLICATOR

Gary L. Smith, Hickory, and Walter T. Cockrell, Newton, both of N.C., assignors to J.P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 520,719, Nov. 4, 1974, Pat. No. 3,953,278.
This application Jan. 26, 1976, Ser. No. 652,591
Int. Cl.² B65H 5/28
U.S. Cl. 221—73 **9 Claims**



1. A dispenser for dispensing a supply of stickers or other material having an adhesive on at least one surface releasably attached to a continuous backing strip comprising:

support means;

quide means mounted to said support means for directing said continuous strip along a path having an abrupt change of direction for causing said sticker to separate from said continous backing strip;

first means for intermittently engaging said backing strip along said path after said abrupt change; and

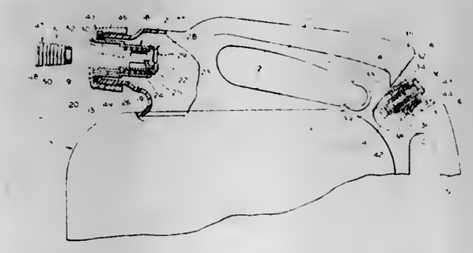
second means connected to said first means for linearly reciprocating said first means along said path to intermittently advance said stickers by pulling said continuous backing strip.

4,069,946

CONSUMER SAFETY CONTAINER FOR INFLAMMABLES

Frank S. Flider, Mattoon, Ill., assignor to Justrite Manufacturing Company, Des Plaines, Ill.

Filed Jan. 3, 1977, Ser. No. 756,369
Int. Cl.² A47G 19/14
U.S. Cl. 222—1 **17 Claims**



1. An improved consumer safety container for the storage and dispensing of flammable liquids which comprises:

liquid receptacle means having a hollow chamber for containing said flammable liquids,

said chamber having formed therein one or more openings for filling of said container, the pouring from said container, and venting of said container;

spring-loaded compression closure means fixedly attached to at least one of said one or more openings to provide an effective liquid seal of said openings from within said container;

release insertion means for disengaging said spring-loaded compression closure means; whereby flammable liquid may be alternatively filled into or dispensed from said container,

said release insertion means detachable from said spring-loaded compression closure means when not in use so as to be unobtrusive; and

closure attachment means for securely and restrainably attaching said spring-loaded compression closure means within said container in said one or more openings, and allowing removability of said spring-loaded compression closure means from said container as desired.

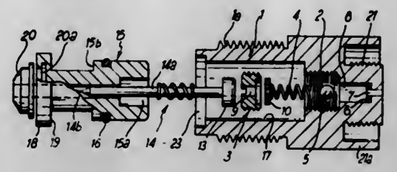
4,069,947

ADAPTORS

Malcolm Campbell Oakes, Wilmslow, England, assignor to Taymar Limited, Stockport, England

Filed Dec. 17, 1975, Ser. No. 641,380
Claims priority, application United Kingdom, Dec. 19, 1974, 55328/74; May 30, 1975, 23562/75
Int. Cl.² B67B 7/24
U.S. Cl. 222—5 **17 Claims**

1. An adaptor for use with gas cartridges comprising a main body part defining a through passage, a valve member which may be moved from a position in which the through passage is closed to a position in which this passage is open, means for urging the valve member in a first direction into a closed position, a piercing member for puncturing the gas cartridge in a direction opposite said first direction, means for creating a seal between the adaptor and the gas cartridge, including external screw threads located on the main body part, and a housing for receiving the gas cartridge and co-operable with



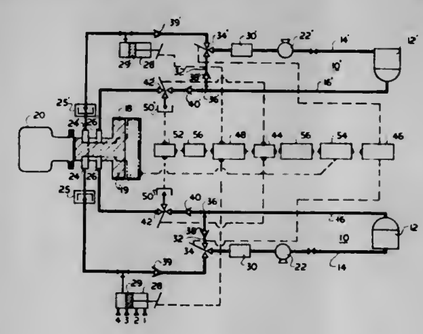
the external threads for urging the adaptor and the gas cartridge together.

4,069,948

METHOD AND APPARATUS FOR CALIBRATING A REACTION INJECTION MOLDING MACHINE

Samir N. Saaty, Orange, and Edward J. Thompson, Watertown, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 9, 1976, Ser. No. 656,137
Int. Cl.² B67D 5/60; G01F 25/00
U.S. Cl. 222—134 **8 Claims**



1. In a closed loop reaction injection molding system for combining under high pressure at least two reactive liquid polymeric components and injecting them into a closed mold, wherein said system comprises for each component to be admixed a supply reservoir; a pump for pumping each component from said reservoir; a mixing head having sets of inlet and outlet ports equal in number to the number of components, said head further having injection/recirculate means shiftable therein between component recirculation and injection positions and an injection port exposed in the injection position of said injection/recirculate means for connecting said mixing head to a closed mold; means for controlling the shifting of said injection/recirculate means; volumetric metering and pressurizing means comprising a metering cylinder and piston assembly for each component; a feed duct into which said last means is tapped to connect it between said reservoir and pump and said mixing head inlet port; and a return duct connecting said metering head outlet port to said reservoir; the improvement which comprises:

a calibration valve disposed in each of said return ducts and conditioned normally to direct all component flow back to the respective reservoirs but shiftable to an alternate flow-diverting condition;

a calibration receiver associated with each calibration valve to receive diverted flow from said valve;

means ganging said calibration valves together for simultaneous shift from normal to diverted flow conditions, and actuator means to produce said shift;

means for overriding said mixing head control, upon initiation in the system of an injection cycle, to prevent said

mixing head injection/recirculate means being shifted to injection position, while simultaneously actuating said volumetric metering and pressurizing means and said calibration valve actuator means, to thereby cause the amount of each separate component discharged into its respective calibration receiver to be equal to that present in the admixture of said components ejected at the injection port of the head during a normal injection cycle;

a bypass valve in the feed duct of each component between said pump and said metering assembly tap, said bypass valve having a first position allowing component to pass from said pump to said metering assembly and to said mixing head, said bypass valve having an alternate position diverting all flow therethrough;

a bypass duct connected to receive the diverted flow from said bypass valve and to return it to said return duct between said calibration valve and supply reservoir without passing through said mixing head and calibration valve;

means ganging all of said bypass valves together for simultaneous operation; and

control means for coordinating the shifting of said bypass valves with said other control means to provide a shortened component recirculation route during a calibration cycle.

5. A method of calibrating a closed loop reaction injection molding system for combining under high pressure at least two reactive liquid polymeric components and injecting them into a closed mold, wherein said system comprises for each component to be admixed a supply reservoir; a pump for pumping each component from said reservoir; a mixing head having sets of inlet and outlet ports equal in number to the number of components, said head further having injection/recirculate means shiftable between component recirculation and injection positions, and an injection port exposed in the injection position of said head injection/recirculate means for connecting said mixing head to a closed mold; means for controlling the shifting of said injection/recirculate means; volumetric metering and pressurizing means comprising a metering cylinder and piston assembly; a feed duct into which said last means is tapped to connect it between said reservoir and pump and said mixing head inlet port; a return duct connecting said metering head outlet port to said reservoir; a bypass valve in the feed duct of each component between said pump and metering assembly tap, said bypass valve having a first position allowing component to pass from said pump to said metering assembly and to said mixing head, said bypass valve having an alternate position diverting all flow therethrough; and a bypass duct connected to receive the diverted flow from said bypass valve and to return it to said return duct between said calibration valve and supply reservoir without passing through said mixing head and calibration valve, and means ganging all of said bypass valves together for simultaneous operation; the improvement in said method which comprises the steps of:

utilizing a calibration valve, disposed in each of said return ducts and conditioned normally to direct all component flow back to the respective reservoirs, to simultaneously divert all return flow away from said return ducts into calibration receivers for each of said components,

overriding the control of said mixing head injection/recirculate means to maintain it in recirculate position while coordinating the actuation of said volumetric metering and pressurizing means with shift of said calibration valves and further coordinating the shift of said bypass valves with the shift of said calibration valves to cause the amount of each separate component diverted to its respective calibration receiver to be equal to that present in the admixture of said components ejected at the injection port of the head during a normal injection cycle; and

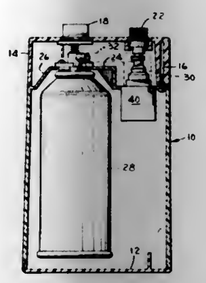
collecting such metered amounts of components in said calibration receivers.

4,069,949

APPARATUS FOR HEATING AND DISPENSING FLOWABLE MATERIAL

William D. Ryckman, Jr., Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.

Filed Dec. 17, 1975, Ser. No. 641,674
Int. Cl.² B67D 5/62
U.S. Cl. 222—146 HA 6 Claims



1. In an apparatus for electrically heating and dispensing flowable material from a pressurized container with an outlet and including a housing supporting the container, heat exchange means connected to receive material dispensed through a valve assembly, and means effecting temperature control of said material, the improvement in the housing and valve assembly comprising,

a single universal valve assembly member supported on and passing through and permanently and fixedly secured to said housing to prevent relative motion therebetween,

means on said member extending within the housing to lockingly engage and support a container through a rolled flange on said container,

a tubular passage in said member having spaced seals therewith and fixedly receiving the container outlet telescopically through one end of the passage,

an actuator stem sealingly and spacedly disposed in the other end of the passage for telescopic movement through the passage against the container outlet to release and dispense material, and

a side passage in said member substantially between the spaced seals of said stem and outlet and connected to said exchanger,

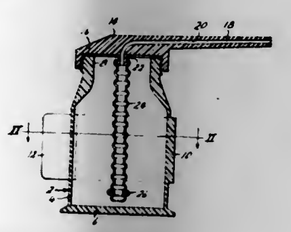
whereby said fixed member functions as substantially the sole container support and universal valve assembly for selectively dispensing controlled, heated, and measured material.

4,069,950

LIQUID DISPENSER

Farley J. Archer, 11621 Holmes Point Drive, Kirkland, Wash. 98033

Filed June 16, 1976, Ser. No. 696,581
Int. Cl.² B65D 37/00
U.S. Cl. 222—210 4 Claims



1. A liquid dispenser comprising:

a. a hollow body member adapted to contain liquid to be dispensed, and formed of resiliently flexible material,

b. a cap applied removably to said body member in sealing relation thereto and including a tubular, outwardly directed spout,

c. a discharge tube connected to said cap in communication with the internal passage of said spout and extending therefrom into the interior of said body member, being of such length as to extend to closely spaced apart relation from the wall of said body member opposite from said cap, and

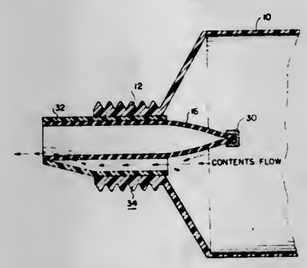
d. manual constricting means operable to constrict and compress said body member, whereby to reduce the internal volume thereof, said constricting means comprising a band of resiliently flexible material partially encircling said body member, its ends being disposed in angularly spaced apart relation, and a handle affixed to each end of said band and extending radially therefrom, whereby movement of said handles toward each other will constrict the internal area of said band, said body member, constricting band and handles being of one-piece integral construction, said constricting band and said handles being of greater wall thickness, as compared to said body member, to provide increased stiffness thereof.

4,069,951

CLOSURE ASSEMBLY FOR COLLAPSIBLE TUBE DISPENSERS, AND THE LIKE

Emil H. von Winckelmann, 7731 Amestoy Ave., Van Nuys, Calif. 91406

Filed June 21, 1976, Ser. No. 698,010
Int. Cl.² B65D 35/40
U.S. Cl. 222—494 8 Claims



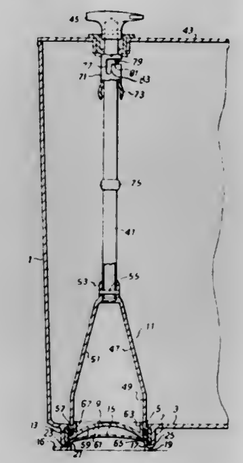
1. In combination a collapsible dispenser, and a closure assembly to control the discharge of fluids and soft solids from the dispenser, said dispenser having a neck with an elongated hollow tubular-shaped inner surface through which the fluids and soft solids are dispensed, and said closure assembly including: a resilient sleeve having an elongated tubular-shaped surface, and having a closed inner end of a width greater than the inner diameter of the neck, said sleeve being mounted coaxially within said neck with its external surface pressed against the inner surface of the neck in intimate contact therewith along the length of the neck to form an air-tight seal therewith, said sleeve being retained within said neck solely by its engagement with said neck and without any external supporting means, whereby squeezing pressure applied to the dispenser causes the fluids and soft solids to be forced between the resilient sleeve member and the inner surface of the neck to displace the resilient sleeve radially inwardly so as to permit the fluids and soft solids to pass through the resulting space between the outer surface of the sleeve and the inner surface of the neck to be dispensed through the end of the neck.

4,069,952

CONTAINERS FOR NOXIOUS SUBSTANCES

Edward Rankine Martin, Brierley Hill, England, assignor to Judge International Limited, Brierley Hill, England

Filed Oct. 14, 1976, Ser. No. 732,385
Claims priority, application United Kingdom, Oct. 22, 1975, 43421/75
Int. Cl.² B67D 3/00, 5/06; E03D 1/16, 1/06
U.S. Cl. 222—510 12 Claims



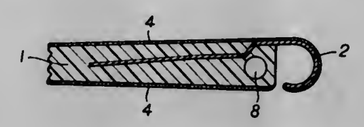
1. A portable container for noxious substances comprising a chamber formed by upper, lower and side walls, a discharge orifice provided in the lower wall and in the form of a bore having a lower end and an upper end which opens into the chamber, a closure cap in sealing engagement with the lower end of the bore, a plunger extending within the chamber through the upper wall and means for moving the plunger longitudinally between first, second and third positions, the plunger in the first position thereof being disposed within and sealing the bore and being movable from its first position to either the second position in which the plunger is retracted within the chamber to enable gravity discharge of the contents of the chamber through the discharge orifice, or the third position located within the bore adjacent the end thereof engaged by the closure cap, movement of the plunger to the third position thereof effecting removal of the cap from its closure position.

4,069,953

WATCH STRAPS

Gunther Vetter, Spernbauerstrasse 5, A-4560 Kirchdorf, Austria

Filed May 25, 1976, Ser. No. 689,847
Int. Cl.² A44C 5/14
U.S. Cl. 224—4 E 10 Claims



1. A multi-layered watch band having two strap portions for attachment to a watch case, each said strap portion comprising:

a plastic core having an elastically deformable end portion;

a clip including an extended shank portion at least partially embedded in said plastic core and a rigid hook-shaped end

portion extending frm and adjacent to said elastically deformable end portion;

said rigid hook-shaped end portion being adaptable to engage watch case attachment means by deformatin of said elastically deformable end portion whereby said elastically deformable end portion is bent away from the open side of said rigid hook-shaped end portion to permit said clip to be hooked, and said elastically deformable end portion being adapted to form a lock with said hook-shaped end portion by closing said open side while said clip remains hooked to said watch case attachment means.

4,069,954

GOLFER'S WRIST BAND FOR CARRYING TEES AND BALL POSITION MARKERS

Frank E. Rauch, 7240 S. Millard Ave., Chicago, Ill. 60629

Filed Aug. 12, 1976, Ser. No. 713,708
Int. Cl.[2] A45F *5/00*; A45C *11/00*
U.S. Cl. 224—5 C **16 Claims**



1. A golfer's device for carrying golf tees which have pointed cylindrical shanks with enlarged heads and a golf ball position marker consisting of a disc with an integral stud to penetrate the turf of a green, said device comprising, in combination:

a wrist band of limp material;

means for securing said band snugly about wrists of different sizes;

a web secured to said band along a plurality of parallel lines to define loops positioned side by side which snugly receive the shanks of several golf tees with the enlarged head of each tee projecting from an end of a loop;

and a pair of elastic tapes which are slightly longer than the diameter of a ball position marker disc and have their ends secured to the band, said elastic tapes having substantially abutting edges so that a ball position marker disc may be inserted beneath the tapes by spreading them apart and is then confined beneath the tapes with its stud projecting between the tapes.

4,069,955

DISPOSABLE CARRIER FOR CARDIAC TELEMONITOR TRANSMITTER

Richard S. Noyes, Convent Station, N.J., assignor to Laser Systems & Electronics, Inc., Tullahoma, Tenn.

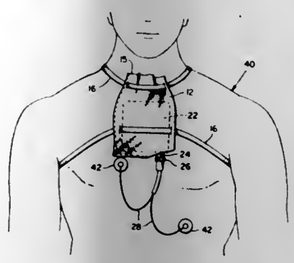
Filed Aug. 2, 1976, Ser. No. 710,523
Int. Cl.[2] A45C *11/00*
U.S. Cl. 224—5 H **3 Claims**

1. A carrier for a cardiac telemonitoring transmitter which comprises:

a substantially rectangular envelope of open-pored fabric, said envelope being open across a first lateral edge to provide full access to the interior thereof;

b. said envelope being normally closed along the three remaining edges thereof but for a vent opening at one end of the second lateral edge providing limited access to the interior thereof thereby to accommodate an outwardly extending connector terminal of said transmitter;

c. at least two pairs of slits through said envelope, the slits comprising each such pair being disposed substantially equidistant from a lateral edge of said envelope with each one of said slits of each pair being closely adjacent and substantially parallel to a different one of the respective longitudinal edges of said envelope; and



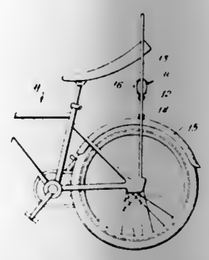
d. a plurality of ribbons of which each is threaded through a pair of said at least two pairs of slits to thereby overlie substantially the whole lateral width of said envelope, said plurality of ribbons being adapted to be affixed about the body of a cardiac patient.

4,069,956

BALL CARRIER ADAPTED TO BE MOUNTED ON A BICYCLE

David Shearer, Sr., 131 Maplehurst Blvd., and David Shearer, Jr., 30 Eaton St., both of Battle Creek, Mich. 49017

Continuation-in-part of Ser. No. 597,315, July 21, 1975. This application Aug. 18, 1976, Ser. No. 715,415
Int. Cl.[2] B62J *11/00*
U.S. Cl. 224—37 **5 Claims**



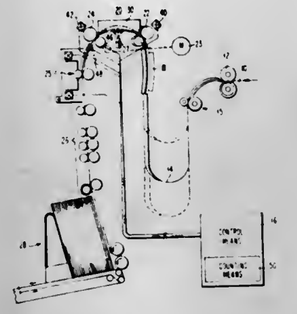
1. A ball carrier adapted to be mounted on a bicycle or other vehicle and to engage and retain a baseball therein and wherein the baseball may be readily disengaged therefrom, comprising a unitary wire-form structure generally in the form of a Figure-8 and comprising a first wire loop having a pair of arcuate members and having a distal portion and a proximal portion, and being of a diameter smaller than that of the ball to be engaged and terminating in free ends, the free ends of the arcuate members being provided with means for mounting on said bicycle, the proximal portion of said arcuate members converging to form a constriction, and a second wire loop having a proximal portion and a distal portion formed of arcuate members diverging from said constriction at the proximal portion of said second loop and being continuous with each other at the distal portion thereof, the plane of the Figure-8 structure being sufficiently bent to conform to the curvature of said ball and to retain said ball between the jaws defined by said first and second loops.

4,069,957

BURSTER METHOD

John Stuart Moffitt, San Jose, CA, assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 627,713, Oct. 31, 1975, Pat. No. 4,025,023.
This application Aug. 18, 1976, Ser. No. 715,489
Int. Cl.[2] B26F *3/02*
U.S. Cl. 225—5 **2 Claims**



1. The method for bursting into sheets a continuous form web having pre-weakened transverse lines as it is fed along a curved path comprising the steps of:

feeding a continuous form web having pre-weakened areas along a curved path with a first feeding means at a predetermined speed;

selectively feeding said continuous form web with a second feeding means at a speed substantially faster than said predetermined speed;

defining the outer curvature of said curved path extending between said first and said second feeding means so that the slack along one edge of said web is greater along one edge than the other edge;

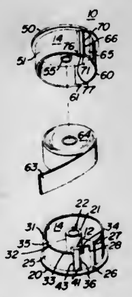
producing an electrical control signal at a predetermined time and activating said second feeding means with said control signal to draw said web taut between said feeding means to separate said web into sheets at said pre-weakened transverse lines as a result of the differential slack between said one edge and the other edge of said web and the faster speed of said second feeding means.

4,069,958

DISPENSER

William Strauss, 2051 Clinton Road, Huntingdon Valley, Pa. 19006

Filed Apr. 21, 1977, Ser. No. 789,356
Int. Cl.[2] B26F *3/02*
U.S. Cl. 225—16 **7 Claims**



1. A dispenser for dispensing a predetermined length of tape or labels from a roll which comprises

an inner shell member which includes

a disc,

a cylindrical member extending from said disc and having a track portion extending around a part of said member,

a connecting member extending from said disc,

an outlet opening in said cylindrical member adjacent one end of said track portion,

a friction lock member movable along said track portion,

an outer housing member which includes

a disc,

an outer tubular member extending from said disc,

and having a portion providing a cavity to contain said friction lock,

said tubular member having an outwardly offset portion,

an outlet opening from said cavity, and

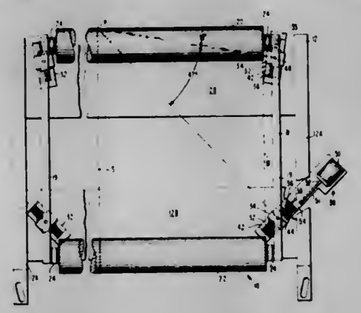
a connecting member extending from said outer housing disc which is engaged with said connecting member from said inner shell disc.

4,069,959

WEB GUIDE APPARATUS

Ronald A. Barteli, Sudbury; George F. Corcoran, Wellesley, and Donald H. Fuller, Foxboro, all of Mass., assignors to Butler Automatic, Inc., Canton, Mass.

Filed Oct. 27, 1976, Ser. No. 736,215
Int. Cl.[2] B65H *25/26*
U.S. Cl. 226—21 **4 Claims**



1. Web guide apparatus for laterally guiding a travelling web comprising:

A. a stationary support frame;

B. a steering frame for receiving the travelling web including first and second spaced parallel side members and entering and exiting spaced steering rollers mounted between said side members near the ends thereof and rotatable about spaced, parallel axes extending transversely of the web;

C. means for supporting said steering frame on said support frame for relative pivotal movement about a pivot axis corresponding to the centerline axis of the web approaching the entering roller, said supporting means comprising

i. four linear bearings each including a bushing and a linear guide rod along which said bushing is movable in a linear path;

ii. means fixedly mounting the bushings in said bearings to the side members near the ends of said steering rollers and,

iii. means pivotally mounting the guide rods in said bearings to the support frame so that the linear path of each bearing is in a plane parallel to the plane defined by the rotational axes of said rollers, and

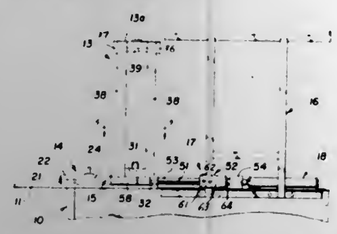
D. means for controlling the angular position of said steering frame about its pivot axis, thereby adjusting the lateral position of the web leaving said steering frame.

4,069,960

APPARATUS FOR INSERTING STICKS INTO ARTICLES

Thomas F. Lowrance, 3601 Security St., Garland, Tex. 75040

Filed Dec. 7, 1976, Ser. No. 748,169
Int. Cl.[2] B27F *7/00*
U.S. Cl. 227—120 14 Claims



1. Apparatus for inserting elongated sticks into articles comprising

an article holder having a plurality of chambers, each dimensioned to receive a single article; said chambers being disposed in side-by-side relation;

a stick box including means defining a plurality of feed grooves at the base thereof, disposed in parallel side-by-side relation and in longitudinal alignment with respective article chambers, and means for supporting stacked sticks overlying each feed groove;

a push rod assembly comprising a push bar and a plurality of elongated push rods, said push rods being supported by said push bar in parallel side-by-side relation and in alignment with respective feed grooves; means for reciprocating said push rod assembly to reciprocate said push rods in said feed grooves;

said feed grooves each having a T-shaped cross-section including a bar portion and a stem portion; said push rods each having a T-shaped cross-section including a bar portion and a stem portion, said push rods being dimensionsed to be received in said feed grooves with a free sliding clearance fit;

said push bar comprising the assembly of an elongated holder bar and clamp bar having contiguous faces; parallel holder grooves formed in at least one of said bars opening to its contiguous face; each holder groove having T-shaped cross-section, including a bar portion and a stem portion, and being dimensioned to fully receive a push rod with a clearance fit;

said clamp bar being secured to said holder bar in overlying relation to enclose said holder grooves;

said push bar having bearing means for engagement with the proximal ends of said push rods, and retaining means for retaining said push rods within said holder grooves.

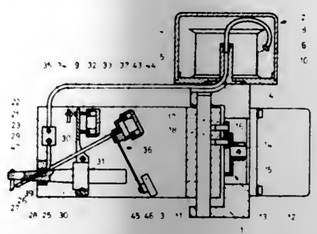
4,069,961

CONTACTING HEAD FOR FORMING A WIRE CONNECTION ON AN INTEGRATED CIRCUIT

Karl Nicklaus, Steinhausen, and Miroslav Tresky, Thalwil, both of Switzerland, assignors to Esec Sales S.A., Zug, Switzerland

Filed Dec. 15, 1976, Ser. No. 750,896
Claims priority, application Switzerland, Dec. 23, 1975, 16751/75
Int. Cl.[2] B23K *21/02;* H01L *21/607*
U.S. Cl. 228—1 R 13 Claims

1. A contacting head for making a wire connection on an integrated circuit comprising: an encapsulated wire supply spool; wire guiding means; a contacting arm having a contacting tool and means for supplying energy thereto for forming a connection with said wire; said contacting tool having gripper means for effecting a feed or clamping of the wire during movement of said contacting arm; driving means for threading the wire through said wire guiding means and through said contacting tool and for controlling tension in said wire, said driving means producing a gas stream in said wire guiding means; and magnetic means including a permanent magnet and



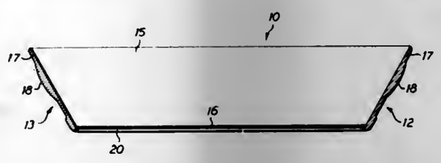
a nonferrous core for electrodynamic contact pressure control of said contacting arm and for control of said gripper means.

4,069,962

METHOD OF MAKING A COMPOSITE BAKING MOLD

Magnus Allan Holmqvist, Amanuensvagen 2-114, S-104 05 Stockholm, Sweden

Continuation-in-part of Ser. No. 531,003, Dec. 9, 1974, Pat. No. 3,971,118. This application Apr. 8, 1976, Ser. No. 674,691
Claims priority, application Sweden, Dec. 13, 1973, 7316830
The portion of the term of this patent subsequent to July 27, 1993, has been disclaimed.
Int. Cl.[2] B23P *17/00*
U.S. Cl. 228—170 8 Claims



1. A method of making a composite baking mold having a plurality of individual mold spaces, said method comprising the steps of extruding light metal to form an elongated bar, extruding light metal to form an elongated section, cutting said bar at an angle to its longitudinal axis to form a plurality of bars having the same longitudinal dimensions, said longitudinal dimension corresponding to the length of said composite baking mold, cutting said section at an angle to its longitudinal axis to form a plurality of sections having substantially the same longitudinal dimension, said longitudinal dimension corresponding to the width of said composite baking mold, affixing said sections to said bars at their engagement in a configuration such that said bars are spaced and are substantially parallel to each other and said sections are spaced and are substantially parallel to each other, said sections being disposed substantially perpendicular to said bars and engaging said bars at each end thereof.

4,069,963

ELECTRICALLY CONDUCTIVE ALLOY

Janniah S. Prasad, Norwalk, Conn., assignor to Consolidated Refining Company, Inc., Mamaroneck, N.Y.

Division of Ser. No. 521,393, Nov. 6, 1974, Pat. No. 3,981,724. This application Aug. 9, 1976, Ser. No. 712,468
Int. Cl.[2] H01L *21/60*
U.S. Cl. 228—179 2 Claims

1. A method of making a permanent connection across at least two terminals for flow of electrical current therebetween comprising affixing a lead bonding wire in electrical contact with said terminals, said wire consisting essentially of silver and at least one additive taken from the class consisting of the metals gold, platinum and palladium, each said additive metal

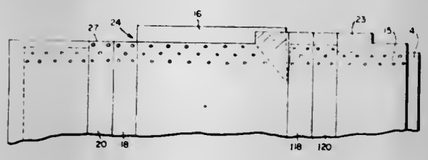
present being in an amount of from 0.0 to 1.0% by weight of said alloy, the total amount of said additive being at least 0.05% by weight of said alloy.

4,069,964

GUSSETED PINCH BOTTOM VALVED BAGS

George L. Willet, Gretna, La., and William D. Mushet, Wellsburg, W. Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Feb. 25, 1977, Ser. No. 772,329
Int. Cl.[2] B65D *31/14*
U.S. Cl. 229—62.5 14 Claims



1. A gusseted, valved multiwall pinch style bag having a tubed body formed from a plurality of plies of flexible sheet material, said plies comprising at least one inner ply and at least one outer ply each comprising a front wall, a pair of first gusset panels foldably connected to said front wall along a first pair of fold lines, a pair of second gusset panels foldably connected to said first gusset panels along a second pair of longitudinal fold lines and a rear wall foldably connected to said second gusset panels along a third pair of longitudinal fold lines, the terminal edges of the plies at each end of the tubed body being stepped with respect to one another to provide stepped end closures, the improvement comprising means associated with said bag for forming a valve in one end thereof characterized by:

a. at least one cut line in an outer ply of said tubed body located along a fold line between one of the walls of said bag and a gusset panel of said bag at one side of said tubed body; and,

b. a uniformly applied spot adhesive application between said inner and outer plies except in the region adjacent to said cut line.

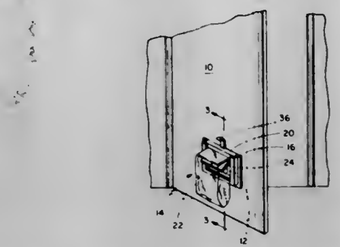
4,069,965

MAIL SLOT POUCH ASSEMBLY

Herman H. Maddox, Jr., 439 W. 55th St., Chicago, Ill. 60621

Filed Dec. 24, 1975, Ser. No. 644,129
Int. Cl.[2] A47G *47/12*
U.S. Cl. 232—19 6 Claims

1. A mail slot pouch assembly for attachment to a planar surface surrounding a mail slot in a door or wall of a building, said assembly comprising a supporting bracket having a generally u-shape, having a mounting flange extending about the U and having a portion outstanding from said flange configured to form a slot with the planar surface of the door, means for detachably fixing said bracket to the planar surface surrounding the mail slot, an elongate, flexible, translucent or transparent bag made from a plastic polymer material, a framework which is secured to the upper open end of said bag, which is configured to mate with and be removably supported in said slot formed by said bracket and which has a central open space which mates with and surrounds the mail slot, a tongue extending outwardly from said framework into said bag to maintain the bag open in the area thereof behind the mail slot for receiving mail, and said bag being sufficiently deep so that most items of mail received through the mail slot will be fully received within said bag and out of reach of a hand inserted into the mail slot.



4,069,966

CENTRIFUGE WITH CHATTER SUPPRESSION

Herbert L. Crosby, Plainville, and Jacob P. Den Hartog, Concord, both of Mass., assignors to Bird Machine Company, Inc., South Walpole, Mass.

Filed Oct. 14, 1976, Ser. No. 732,315
Int. Cl.[2] B04B *1/20*
U.S. Cl. 233—1 C 16 Claims



1. In a solids-liquid separating centrifuge of the type which includes an assembly of a rotary bowl member, a rotary conveyor member mounted coaxially therein, and speed change gearing connected between said members so that rotationally driving one of them rotationally drives the other in the same direction at a differential speed, and a torque-transmitting external connection between said gearing and a holder means, the torque on said external connection being relatively low compared to the torque on the connections between said gearing and said bowl and conveyor;

the improvement for suppressing chatter of said assembly wherein:

said external connection comprises spring and mass means which is torsionally resilient about the axis of said external connection such that it will vibrate about said axis during chatter of said assembly at the same frequency and has a spring rate lower than that of any torque transmitting component of said assembly; and

separate damping means acting in parallel with said spring and mass means to apply resistance to the torsional vibration motion thereof and thereby irreversably extract energy therefrom.

4,069,967

CENTRIFUGE WITH CHATTER SUPPRESSION

Herbert L. Crosby, Plainville, and Jacob P. Den Hartog, Concord, both of Mass., assignors to Bird Machine Company, Inc., South Walpole, Mass.

Filed Oct. 14, 1976, Ser. No. 732,316
Int. Cl.² B04B *1/20*
U.S. Cl. 233—1 C **11 Claims**



1. In a solids-liquid separating centrifuge of the type which includes an assembly of a rotary bowl member, a rotary conveyor member mounted coaxially therein, and speed change gearing connected between said members so that rotationally driving one of them rotationally drives the other in the same direction at a differential speed, and a torquetransmitting external connection between said gearing and a holder means, the torque on said external connection being relatively low compared to the torque on the connections between said gearing and said bowl and conveyor;

the improvement for suppressing chatter of said assembly wherein:

said external connection comprises spring and mass means which is torsionally resilient about the axis of said external connection such that it will vibrate about said axis during chatter of said assembly at the same frequency; and

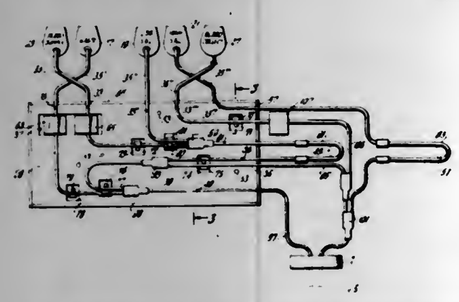
the spring of said spring and mass means has a spring rate within the range of +40% to −25% of the spring rate at which said spring and mass means will vibrate in resonance with the vibration of said assembly during chatter.

4,069,968

DISPOSABLE TUBING HARNESS FOR USE WITH BLOOD WASHING APPARATUS

Wallace Unto Herman, Stamford, Conn., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 1, 1976, Ser. No. 737,607
Int. Cl.² B04B *15/02*
U.S. Cl. 233—14 R **2 Claims**



1. In combination with a blood washing apparatus having a (i) a housing member supporting a horizontal array of packages adapted to contain blood, saline solution and blood washing waste liquid (ii) a pair of adjacent peristaltic pump shafts located below and to the side of said array of packages (iii) a rotatable enclosure member arranged below said array of packages adapted to receive blood and saline solution from selected packages of said array and adapted to provide washed blood and waste liquid for transmission to selected packages of said array, a tubing harness arrangement for providing fluid paths between the packages of said array and said rotatable enclosure comprising

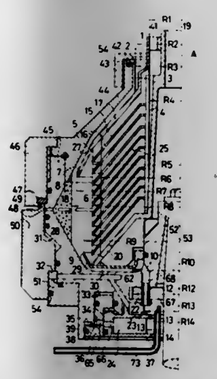
a. a board-like member removably vertically mounted on said housing member below said array of packages and adjacent said pair of peristaltic pump shafts in a common plane with a cross-section of said shafts, said board-like member having a plurality of grooves extending from its upper horizontal side adjacent said array of package to a vertical side adjacent said pair of peristaltic pump shafts and an additional groove extending from said vertical side to a selected one of said plurality of grooves, a plurality of flexible tube members engaged in said grooves and respectively connected to a selected package of said array adjacent the upper side of said board-like member and providing fluid paths from said array of packages to said rotatable enclosure member, two of said plurality of flexible tube members being formed in a loop adjacent said vertical side of said board-like member which are respectively engaged to a said peristaltic pump shaft, the flexible tube member of one of said loops being doubled back to engage in said additional groove in saidboard-like member to firmly engage said board-like member to said peristaltic pump shaft.

4,069,969

AUTOMATIC THREE STAGE CENTRIFUGAL SLUDGE SEPARATOR

Yasuhisa Tanaka, Miyoshi, Japan, assignor to Mitsubishi Kakoki Kaisha, Ltd., Tokyo, Japan

Filed Sept. 28, 1976, Ser. No. 727,562
Int. Cl.² B04B *11/00*
U.S. Cl. 233—20 A **9 Claims**



1. In an automatic, three stage, sludge discharging centrifugal separator for separating a primary liquid into sludge, heavy liquid and light liquid components, and including a primary liquid inlet (19), a plurality of nested separator plates (15), a light liquid outlet (1), a heavy liquid outlet (2), sludge outlet means (48), generally cylindrical casing means (44, 45) surrounding and defining said inlet and outlets, a valve cylinder (50) slidable on said casing means between a raised position at which said sludge outlet means are closed and a lowered position at which said sludge outlet means not open, a first expandable pressure chamber (32) for raising said valve cylinder, a second expandable pressure chamber (31) for lowering said valve cylinder, means (17) defining a heavy liquid discharge passage (27) between said casing means and said separator plates, and drive means (52, 53) for rotating all of the above structure, the improvements characterized by:

a. a first reservoir (24) for heavy liquid,

b. first passage means (66, 65, 35, 61) communicating between said reservoir and said second pressure chamber,

c. piston means (36) slidably mounted in said casing means and including valve means (38, 39) controlling said first passage means,

d. a heavy liquid level sensing chamber (30),

e. a first operating chamber (33) for said piston means, and

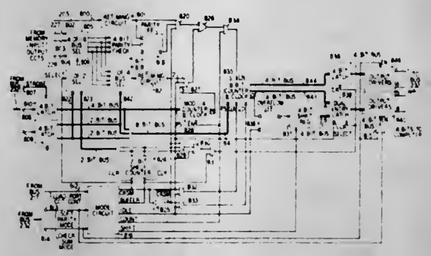
f. overflow passage means (69, 22, 21) communicating between said sensing chamber and said first operating chamber, whereby when the sludge accumulates in the casing means to a predetermined level it blocks the heavy liquid discharge passage, the heavy liquid level builds up in the sensing chamber and flows through the overflow passage means into the first operating chamber, the piston means is moved to open the valve means, heavy liquid flows from the first reservoir into the second pressure chamber, the valve cylinder is lowered, and the sludge outlet means are opened.

4,069,970

DATA ACCESS CIRCUIT FOR A MEMORY ARRAY

Clair Alan Buzzard, Lincroft; Richard Cyril Gifford, Holmdel; Frank William Lescinsky, Middletown, and Robert Michael Zachok, Toms River, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 24, 1976, Ser. No. 699,423
Int. Cl.² G11C *29/00*; G06F *11/10*
U.S. Cl. 235—312 **15 Claims**



1. A data access circuit for storing a string of successive binary bits in a memory array, the memory array including a plurality of intersecting rows and columns, each row and each column intersection consisting of a binary storage cell, each storage cell storing one binary bit, characterized by

means responsive to the application of the string of bits to the data access circuit for producing repetitive loading sequences, each loading sequence being associated with an individual column of the memory array,

means responsive to the producing means and operative during each of the loading sequences for reading out the bits stored in successive rows of the memory array, and

means responsive to the reading out means and operative each time a successive row of bits is read out from the memory array for replacing the bit read out from the column associated with a particular repetitive loading sequence with a successive one of the bits in the string of bits and for writing the read out row of bits and the replaced bit back into the row.

4,069,971

SOLAR AIR CONDITIONING SYSTEM

David A. Swanson, 1217 W. 4th St., Tempe, Ariz. 85281

Filed Nov. 10, 1975, Ser. No. 630,292
Int. Cl.² F24J *3/02*
U.S. Cl. 237—1 A **2 Claims**

1. An air conditioning system utilizing solar and conventional energy for use in combination with a building structure having an interior space defined by walls and roof, said system comprising:

a. an air conditioning unit for providing temperature regulated air;

b. primary air duct means for receiving air from said air conditioning unit and for discharging air into said interior space;

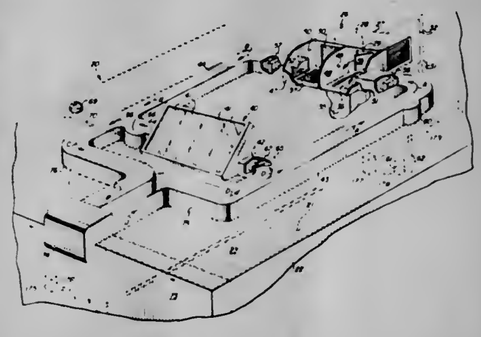
c. air return means communicating between said interior space and said air conditioning unit;

d. a solar collector for elevating the temperature of air therein;

e. secondary duct means for the circulation of air between said solar collector and said primary duct means;

f. air mover means for the movement of air through said primary duct means and through said secondary air duct means;

g. thermostat means connected with said air conditioning unit and with said solar unit whereby said solar heated air is first used to raise the temperature in said space and said air conditioning unit heated air is supplementally used when the required heated air exceeds the capacity of said solar unit;



h. air flow and storage means integral with one of said walls and including air inlet and outlet passages associated therewith;

i. tertiary air duct means for the circulation of air between said solar collector and said storage wall;

j. tertiary air mover means drawing air from said solar collector and directing said air through said tertiary duct means in the direction of the inlet passage of said storage wall;

k. means responsive to the solar energy available to said solar collector for disengaging said tertiary air mover when said solar energy falls below a predetermined value; and

l. a normally closed air flow gate in said tertiary air duct means and opening in response to activation of said tertiary air mover.

4,069,972

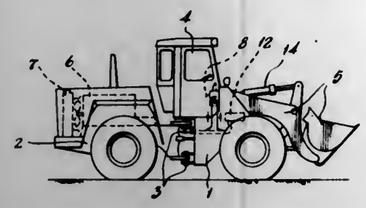
HEAT SYSTEMS FOR VEHICLES

Winfried Hausmann, Klein-Lobke, Germany, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Aug. 16, 1976, Ser. No. 714,678
Claims priority, application United Kingdom, Aug. 16, 1975, 34183/75
Int. Cl.² B60H *1/02*
U.S. Cl. 237—12.3 R **3 Claims**

1. A vehicle having an engine and a chassis formed in two parts which are connected by a joint for pivotal movement about a vertical axis, a hydraulic circuit supplied with oil from a pump driven by said engine, and an operators enclosure

including a heat exchanger, said heat exchanger being supplied with fluid from said hydraulic circuit, said engine being located



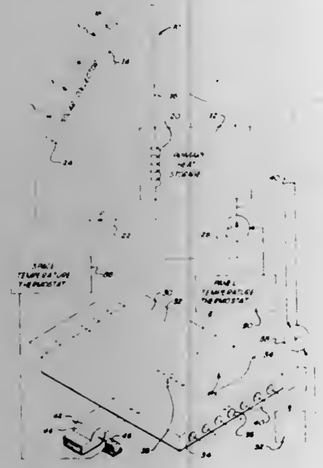
on one of said parts and said operators enclosure being located on another of said parts.

4,069,973

THERMAL DISTRIBUTION AND STORAGE SYSTEM FOR SOLAR AND OTHER HEATING AND COOLING

Douglas W. Edwards, 5176 Lukens Road, Grove City, Ohio 43123

Filed Nov. 17, 1975, Ser. No. 632,525
Int. Cl.² F24D 5/10; F24H 9/08
U.S. Cl. 237—69 11 Claims



1. An improved thermal distribution and storage apparatus comprising:

a. a panel means having opposite face surfaces and formed with a plurality of hollow cores generally parallel to said face surfaces, at least one of said cores having an outlet port and having an inlet port spaced therefrom in air communication with a space adjacent a face surface of said panel means; and

b. a liquid conducting conduit extending through said cores and connected in heat transfer connection to a thermal energy source, said conduit containing a heat transfer liquid and forming a closed loop for transferring heat between said thermal energy source and said panel means, the exterior of the portion of the conduit which is within a ported core being spaced from the wall of its core to form an air flow passageway and the exterior of the major portion of the conduit which is within a core but not within an air flow passageway extending substantially to the core wall; wherein heat may be transferred between a panel face surface and said adjacent space by radiation and conduction and by the flow of air from said outlet port into said adjacent space.

6. An improved thermal distribution and storage apparatus comprising:

a. a panel means having opposite face surfaces and formed with a plurality of hollow cores generally parallel to said face surfaces, at least one of said cores having an outlet port and having an inlet port spaced therefrom in air communication with a space adjacent a face surface of said panel means; and

b. a fluid conducting conduit extending through said cores and connected in heat transfer connection to a thermal energy source, said conduit containing a heat transfer fluid and forming a closed loop for transferring heat between said thermal energy source and said panel means, the exterior of the portion of the conduit which is within a ported core being spaced from the wall of its core to form an air flow passageway;

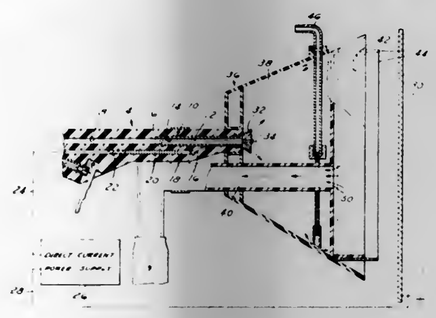
wherein heat may be transferred between a panel face surface and said adjacent space by radiation and conduction and by the flow of air from said outlet port into said adjacent space; and wherein a fluid pump is provided in said conduit and is controlled by a switching means which is responsive to the temperature of said panel means.

4,069,974

ELECTROSTATIC POWDER COATING APPARATUS

Chester W. Zawacki, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 29, 1976, Ser. No. 755,301
Int. Cl.² B05B 5/02
U.S. Cl. 239—15 14 Claims



1. An apparatus for electrostatically applying powder coating material to a grounded substrate comprising:

A. means for dispensing from an orifice a pressurized mixture of powder coating particles bearing an electrostatic charge and a gas which is inert to said particles;

B. a shroud having (i) a rearward boundary which is attached to and surrounds said orifice such that said mixture may be dispensed into said shroud, and (ii) a forward section having an opening adapted to be disposed in a position relative to said substrate such that powder particles issuing from said opening are attracted to said substrate;

C. a mixing chamber disposed within said shroud between said forward section and said rearward boundry and being adapted to receive said pressurized mixture from said orifice;

D. at least two slotted openings connecting said mixing chamber with said forward section such that said pressurized mixture may pass from said chamber through said slotted openings into said forward section and through said opening in said forward section toward said substrate;

E. field electrode means disposed in the vicinity of said slotted openings being in electrical connection with said means for dispensing said pressurized mixture, said field electrode means being adapted to create an electrostatic field such that said charged particles are repelled therefrom in the direction of said substrate; and

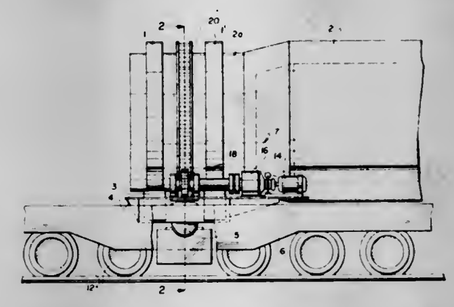
F. an intake port which is disposed in the vicinity of said opening in said forward section between said slotted openings and which is connected to a source of subatmospheric pressure such that eddies of said pressurized mixture flowing from said slotted openings in the direction of said port are created and said powder not attracted to said substrate is collected at said port.

4,069,975

MIXER TRUCK FOR SHIPPING MOLTEN METALS

Winfried Laubach; Kienbaum, both of Oberhausen, and Rolf Thomas, Bottrop, all of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Germany

Filed Nov. 22, 1976, Ser. No. 743,917
Claims priority, application Germany, Dec. 9, 1975, 2555198
Int. Cl.² B28C 5/18
U.S. Cl. 366—220 2 Claims



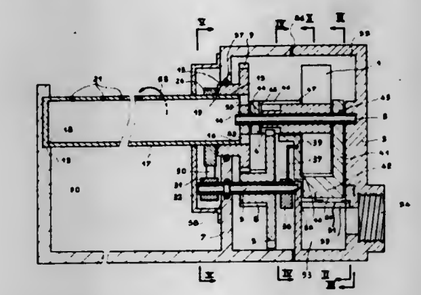
1. An apparatus for transporting molten metals, comprising a wheeled truck, a frame plate girder universally pivotally mounted on said truck, first and second longitudinally spaced sets of transversely separated rollers mounted on said frame plate girder, a longitudinally elongated cylindrical vessel having an end section with longitudinally spaced rings extending therearound engaged on the respective roller sets on said frame plate girder, and drive means on said frame plate girder including a driving gear, said vessel having a driven gear member thereon between said rings engaged by said driving gear.

4,069,976

OSCILLATING SPRINKLING DEVICE

Michel Chauvigné, Cluses, France, assignor to Etablissements CARPANO & PONS, France

Filed July 15, 1976, Ser. No. 705,444
Claims priority, application France, July 22, 1975, 75 22856
Int. Cl.² B05B 3/16
U.S. Cl. 239—242 8 Claims



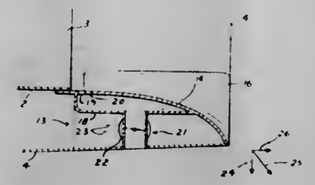
1. An oscillating sprinkling device, comprising; a rotary driving element rotatable by a sprinkling liquid alternately in one direction of rotation and the other; a sprinkler element mounted for oscillating rotation and permanently kinematically connected to the rotary driving element, the sprinkler element pivoting about an approximately horizontal axis alternately in one direction of its oscillating rotation and the other, according to the rotation of the rotary driving element; control means for effecting at the end of the pivoting of the sprinkler element in either direction, a change of the direction of rotation of the rotary driving element; and duct means defining a duct for supplying the rotary driving element with a jet of sprinkling liquid under pressure, the duct means having a movable outlet part; the control means comprising an element for deviating the jet of liquid from the movable outlet part of the duct alternately in first and second directions, each corresponding to one of the directions of rotation of the rotary driving element, the deviating element cooperating with the movable outlet part of the duct to move the element in first and second directions of deviation of the jet.

4,069,977

JET ENGINE TAIL PIPE FLOW DEFLECTOR

John C. Vaughan, III, Poquoson, Va., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 11, 1976, Ser. No. 685,210
Int. Cl.² B63H 25/46; B64C 15/10
U.S. Cl. 239—265.23 3 Claims



1. In combination with a jet engine having a tail pipe terminating in an orifice through which a jet stream exits, a deflecting device for producing a component of thrust at right angles to the jet stream direction, said device comprising: means providing a transversely practically flat longitudinally curved surface, having a uniform width that is a small fraction of the circumference of said orifice and bounded by plane side walls normal to the surface, starting at the edge of the tail pipe orifice in a position of tangency to the jet stream and making an increasing outward angle with the jet stream direction, a series of control ports extending across said surface at the point of tangency; a normally open air valve connecting the control ports to outside ambient air; and means for closing said air valve to produce said component of thrust; said plane said walls extending radially into and beyond the inner radius of the tail pipe orifice and into the jet stream existing therefrom, thus defining the amount of jet stream to be deflected when the air valve is closed and shielding the portion of the jet stream to be deflected from the influence of the remainder of the jet stream on the outer sides of said plane side walls.

4,069,978

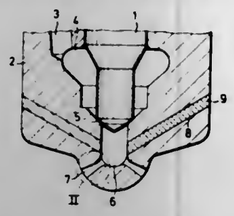
FUEL INJECTION VALVE

Wadid El Moussa, Cologne, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Dec. 17, 1976, Ser. No. 751,695
Claims priority, application Germany, Dec. 20, 1975, 2557772
Int. Cl.² B05B 1/30; B21D 53/00
U.S. Cl. 239—533.2 5 Claims

1. A fuel injection valve, which includes: a valve body having a needle bore and also being with at least one nozzle bore, a valve needle reciprocably mounted in said needle bore

for controlling the admission of fuel to said at least one nozzle bore, the elongation of the longitudinal axis of said nozzle bore intersecting the elongation of the longitudinal axis of said needle bore while being inclined thereto, said valve body also



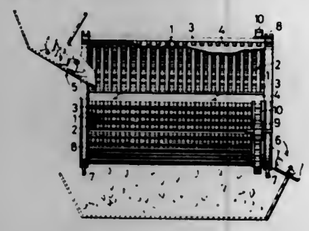
being provided with auxiliary passage means substantially in axial alignment with said at least one nozzle bore for facilitating the machining of the latter, and stopper means sealing said auxiliary passage means.

4,069,979

METHOD AND APPARATUS FOR BREAKING UP AND SEPARATING WASTE GLASS TO OBTAIN CULLET

Kaneji Morita; Akio Sugie, both of Nishinomiya, and Kunio Ishioka, Kobe, all of Japan, assignors to Yamamura Glass Kabushiki Kaisha and Junzo Shimoiizaka, both of Japan

Filed Nov. 12, 1976, Ser. No. 741,490
Int. Cl.² B02C *19/12*
U.S. Cl. 241—5 **1 Claim**



1. A method of breaking up and separating waste glass to obtain cullet with use of a lattice comprising a grizzly made up of parallel bars arranged at a spacing smaller than the minimum width of projection of three-dimensional extraneous matter and auxiliary parallel bars disposed over one surface of the grizzly and arranged at right angles to the bars, the diagonal dimension of the openings of the lattice being smaller than the maximum width of projection of planar extraneous matter, the method comprising dropping the waste glass onto the grizzly surface of the lattice to break up the waste glass on the grizzly under gravity and to separate the waste glass into an undersize portion of the waste glass passing through the lattice and an oversize portion containing large pieces of waste glass and various kinds of unbroken extraneous matter, and repeatedly subjecting the oversize portion to the aforesaid operation to remove the resulting extraneous oversize material from the undersize glass material.

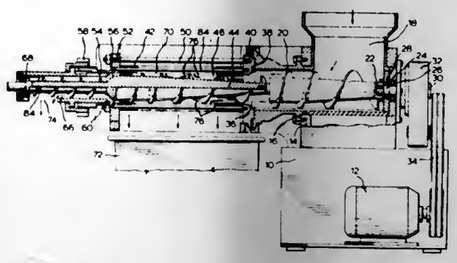
4,069,980

PROCESS AND APPARATUS FOR MECHANICAL SEPARATION OF A COMBINATION OF MEAT AND BONE INTO USEFUL FRACTIONS

Joseph Yarem, Puslinch, and Werner Poss, Oakville, both of Canada, assignors to Chemetron Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 636,424, Dec. 1, 1975, Pat. No. 4,025,001. This application Mar. 1, 1977, Ser. No. 773,352
Int. Cl.² B02C *23/16*
U.S. Cl. 241—24 **11 Claims**

9. In a process for mechanical separation of a combination of meat and bone into useful fractions, of a type comprising the steps of conveying the combination through a screen, which constitutes a portion of an elongated cylindrical conduit, and expressing softer components of the combination by the screw through the screen, while containing harder components of the combination by the screen, an improvement wherein (a) the process comprises the steps of expressing softer components outwardly through a series of arcuate slots respectively defined on two sides by flexible walls of the screen, while containing major amounts of harder components of the combination by the screen, and flexing the walls to allow minor



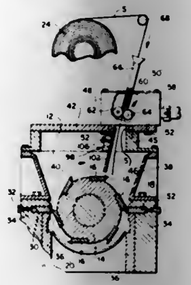
amounts of harder components of the combination to be expressed outwardly through the slots if too small to be effectively contained by the screen without consequent blockage of the slots, wherein (b) the flexing of the walls is limited by an integral spacing element extending across each slot from one wall of the walls defining such slot, and wherein (c) any sinews tending to become ensnared around said element are presented to sharp corners provided on said element and designed to cut such sinews.

4,069,981

METHOD OF FEEDING A FILM GRANULATOR

Sunil C. Shah, Cranston, R.I., assignor to Leesona Corporation, Warwick, R.I.

Division of Ser. No. 641,827, Dec. 17, 1975, Pat. No. 4,028,779. This application Jan. 24, 1977, Ser. No. 762,466
Int. Cl.² B02C *18/22*
U.S. Cl. 241—30 **7 Claims**



1. The method of feeding sheet material to a granulator including a chamber, a rotor mounted for rotation about an axis within said chamber, cutting means affixed on said rotor, bed knife means mounted for projection into said chamber at least on the downstroke side thereof for cooperative cutting relationship with said cutting means as said rotor is driven, means forming a lower portion of the boundary of said chamber whereby material reduced in size by said cooperative cutting relationship passes through said means and is discharged from said chamber, said chamber being substantially closed except for means for introducing said material in the top thereof, said means for introducing said material extending longitudinally along said axis and opening into said chamber on the downstroke side of said rotor, comprising,

at least partially filling said chamber with partially granulated material and

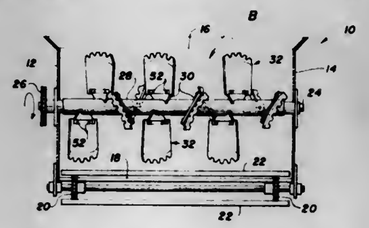
thereafter forcing further sheet material into said closed chamber in a generally radial direction towards said rotor on the downstroke side thereof and simultaneously diverting a major portion of said partially granulated material carried by the rotational movement of the rotor from contacting said sheet material so as to prevent possible deflection of such sheet material away from said rotor.

4,069,982

ENGAGING AND DISTRIBUTING PADDLE FOR A MANURE SPREADER

Warren H. Brackbill, Paradise, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Nov. 18, 1976, Ser. No. 742,976
Int. Cl.² B02C *18/18*
U.S. Cl. 241—291 **9 Claims**



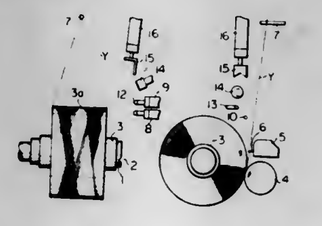
1. A material engaging and distributing paddle, comprising an inwardly curved main body portion and an inwardly curved upper peripheral edge portion integrally formed with the main body portion and curved inwardly along the same axis of curvature as said main body portion, said upper edge portion further being inclined toward said axis of curvature of said main body portion, said paddle having a centerline about which said main body and upper edge portions are substantially symmetrical.

4,069,983

METHOD AND DEVICE FOR FORMING A BUNCH WINDING ON A FRESH BOBBIN AT THE TIME OF A DOFFING AND DONNING OPERATION

Masahiro Muramatsu; Katsutoshi Taniguchi, and Katsuhiko Murase, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 14, 1976, Ser. No. 676,869
Claims priority, application Japan, Apr. 17, 1975, 50-45790; May 6, 1975, 50-53124; May 6, 1975, 50-53125; June 17, 1975, 50-72743
Int. Cl.² B65H *54/02*
U.S. Cl. 242—18 PW **19 Claims**



1. In a method of forming a bunch winding on each fresh bobbin mounted on a bobbin holder rotatably mounted on a takeup unit provided with a traverse guide disposed at a position corresponding to each fresh bobbin at the time of carrying out a doffing and donning operation, wherein a supplying thread via a thread guide disposed above said corresponding thread guide is firstly introduced into an aspirator disposed at an outside position of said bobbin holder, when a yarn package formed on said bobbin mounted on said bobbin holder becomes a predetermined full size, next a thread portion between said full size yarn package and said aspirator is cut, and thereafter said full size yarn package is doffed from said bobbin holder and a fresh bobbin is mounted on said bobbin holder at the position where said full yarn package was doffed said bunch winding forming method comprising:

1. a step of introducing a portion of a supplying thread via said thread guide into said aspirator to a position adjacent to a free end of said bobbin holder where said thread portion is capable of contacting said free end of said bobbin holder;
2. a step of catching a part of said thread portion by said free end of said bobbin holder;
3. a step of displacing the point of introduction of said supplying thread onto said bobbin from said free end of said bobbin holder to a particular position where the distance between said thread guide and said fresh bobbin is minimum so that a helical winding is formed on said fresh bobbin;
4. a step of forming an initial portion of a bunch winding on said fresh bobbin at said particular position;
5. a step of eliminating said helical winding after an initial portion of said bunch winding is firmly formed;
6. a step of forming the remainder of said bunch winding; and
7. a step of commencing a normal traverse motion of said supplying thread with respect to said fresh bobbin after completion of forming an entire portion of said bunch winding.

4,069,984

APPARATUS FOR PACKAGING LINEAR MATERIAL

Jerome P. Klink, and Arnold J. Eisenberg, both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed June 26, 1975, Ser. No. 590,736
Int. Cl.² B65H *54/02*
U.S. Cl. 242—18 G **4 Claims**



1. A winder for the collection of continuous glass strand into a wound package comprising a driven rotatable collet upon which strand is collected as a package is a package collection region, the collet including a temporary collection region adjacent the package collection region, the collet having in the temporary collection region a circumferential groove defined by converging surfaces, and a projection extending from one surface defining the groove and inclined toward the axis of the collet, the projection having a relatively smooth surface substantially free of sharp strand cutting edges, the projection

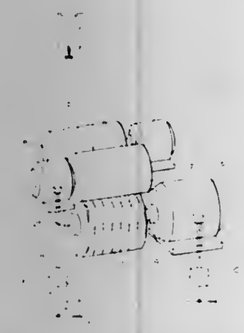
terminating adjacent the other surface of the groove providing a space between the terminus of the projection said other surface whereby during rotation of the collet prior to package formation strand extended along a path disposed in generally crossing relationship to the axis of rotation of the collet is moved laterally of the path in a direction axially of the collet along said other surface through the space between said other surface and the projection so that the strand is turned on the projection for catching engagement of the strand by the projection to move the strand with it and thereby to begin temporary collection of the strand in the temporary collection region prior to package formation.

4,069,985

WINDING MACHINES WITH CONTACT ROLLER DRIVEN BY SYNCHRONOUS MOTOR OR ASYNCHRONOUS MOTOR

Hans Lobest; Erich Leuk, and Peter Illg, all of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Germany

Filed Aug. 6, 1976, Ser. No. 712,330
Claims priority, application Germany, Aug. 8, 1975, 2535457; Feb. 16, 1976, 2606093
Int. Cl.² B65H *59/38*
U.S. Cl. 242—45 **19 Claims**



1. A winding machine adapted for the winding of synthetic polymer filaments on a bobbin mounted on a winding spindle which comprises a winding spindle driven by a rate of rotation-controllable axial drive motor, a contact roller adapted to be in frictional contact with the surface of the forming winding, said roller being driven by a synchronous electric motor at a constant circumferential speed, and electric circuit conrtol means operatively connecting said motors and regulating the rate of rotation of said axial drive motor in dependence on the measured effective power absorption of said synchronous motor when said contact roller is rotating in frictional contact with said surface of said winding.

4,069,986

FLYING TRANSFER WINDER DRIVE

Richard A. Carlsen, Somerset, N.J., assignor to Egan Machinery Company, Somerville, N.J.

Filed Nov. 2, 1976, Ser. No. 737,999
Int. Cl.² B65H *19/26, 19/28*
U.S. Cl. 242—56 A **7 Claims**

1. Winder apparatus for winding a continuously moving web of material delivered from a supply source and transferring the web from a first winding core to a second winding core comprising:

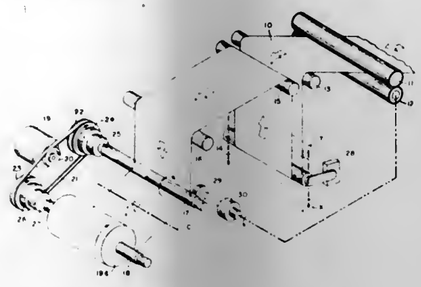
a rotatable winder turret supporting the first and second winding cores;

a dancer roll located between the supply source and the winder turret and capable of movement between upper and lower positions, in response to tension in the web;

a single drive motor responsive in speed to the position of the dancer roll;

winder drive means from the drive motor to the cores including a disconnect clutch and an overrunning clutch in the drive to each core, the overrunning clutch allowing free rotation of the cores in one direction;

an auxiliary core drive means to drive the second winding core during transfer of a peripheral speed slightly less than the web speed;



the auxiliary core drive means including an overrunning clutch effective to allow free rotation of the second winding core in one direction;

transfer means to transfer the web from a wound roll on the first winding core to the second winding core, and

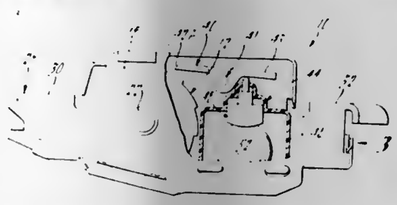
the winder drive means and the auxiliary core drive means cooperating to provide a smooth and controllable movement of the dancer roll from the upper position to the lower position during transfer of the web from the first winding core to the second winding core.

4,069,987

INERTIA LOCKING SEAT BELT RETRACTOR

Robert C. Fisher, 580 E. Long Lake Road, Bloomfield Hills, Mich. 48013

Division of Ser. No. 385,315, Aug. 3, 1975, Pat. No. 4,014,480. This application Nov. 24, 1976, Ser. No. 744,640
Int. Cl.² A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A **3 Claims**



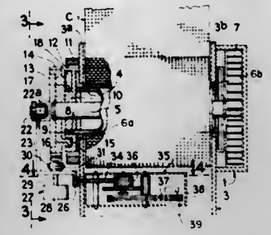
1. In a mechanism for locking a safety belt retractor comprising a frame, a belt spool having a pair of spaced flanges with ratchet teeth on the periphery thereof, respectively, mounted for rotation on said frame, a single unitary pawl supported for rotation on and relative to said frame about an axis spaced from and parallel to the axis of rotation of said spool between a locked and unlocked position with respect to said spool, and means for moving said pawl into locking engagement with said spool, the improvement comprising a pair of teeth on said pawl disposed in fixed relation to each other and engageable with the ratchet teeth on said spool flanges, respectively, the spacing between one of the teeth on said pawl and the teeth on the flange on said spool with which it cooperates being less than the spacing between the other tooth on said pawl and the teeth on spool with which it cooperates whereby said one tooth engages its respective ratchet teeth on said spool prior to engagement of the other tooth with its ratchet teeth.

4,069,988

RETRACTING DEVICE FOR A SAFETY BELT

René J. Pouget, Levallois-Perret, France, assignor to Aciers et Outillage Peugeot, Audincourt, France

Filed May 19, 1975, Ser. No. 578,898
Claims priority, application France, May 24, 1974, 74.18043
Int. Cl.² A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A **8 Claims**



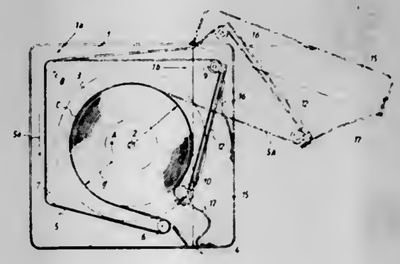
1. A retractor for a safety belt, in particular for an automobile vehicle, comprising means defining a support, a mandrel mounted to be rotatable relative to the support about an axis, the belt being wound around the mandrel, a return spring combined with the mandrel for biasing the mandrel to rotate in a direction for winding the belt onto the mandrel, locking means combined with the mandrel for preventing rotation of the mandrel, a rocker freely pivotably suspended from the support, an acceleration detector suspended on said rocker and responsive to acceleration exerted on said retractor so as to actuate said locking means upon detection of acceleration, a first pendular mass rigid with said rocker so as to offset the centre of gravity of said rocker below the axis of rotation of said mandrel whereby said first pendular mass maintains said rocker in a given position irrespective of variations of the attitude of said retractor, said retractor further comprising a damping device mounted on said support and operatively connected to said rocker for preventing immediate movement of said rocker when acceleration of said retractor occurs.

4,069,989

CARTRIDGE FOR STRIP-SHAPED RECORD CARRIERS

Josef Pfeifer, Unterhaching; Wilfried Hofmann, Taufkirchen, and Traugotte Liermann, Unterhaching, all of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

Filed June 10, 1976, Ser. No. 694,612
Claims priority, application Germany, June 13, 1975, 2526483
Int. Cl.² G03B *1/04;* G11B *15/32*
U.S. Cl. 242—195 **14 Claims**



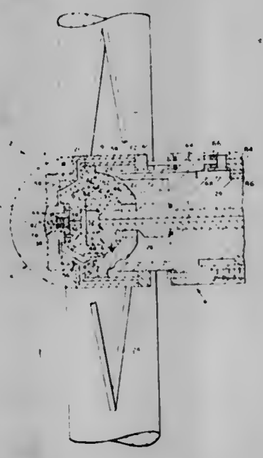
10. A cartridge of the type in which strip-shaped record carriers, particularly microfilm strips, are spooled onto and off a rotatable hub, comprising a housing forming a chamber in which a hub is rotatably mounted and having an opening for ingress and egress of a strip-shaped record carrier on an open side provided with a pivotable cover portion; an endless band arranged in said chamber for travel in a path in which it embraces the periphery of said hub from a first to a circumferentially spaced second location at which it respectively runs onto and off said hub, said band being advanced in said path in response to rotation of said hub; means mounting said band for said travel thereof, including an arm having an end portion pivoted to said housing on another end portion, a band-guiding element on said other end portion and about which said band is trained, and means biasing said other end portion with said band-guiding element towards said periphery; and a flexible strip member having one end secured to said housing adjacent said opening and another end secured to said other end portion of said arm.

4,069,990

RING-WING CANARD SPIN-UP CONTROL MECHANISM

Aubrey Rodgers, Huntsville, and Rayburn K. Widner, Arab, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 14, 1977, Ser. No. 777,372
Int. Cl.² F42B *13/00*
U.S. Cl. 244—3.23 **5 Claims**



1. Apparatus for imparting spin to a member comprising:

a. a housing having a stator secured thereto, said stator having a chamber therein, an axial inlet for directing air to said chamber, an axial outlet for directing air axially out of said chamber, and, radially extending passages for directing air to the outer surface of said stator;

b. a rotor disposed for rotation about said stator, said rotor having an inner surface adjacent said outer surface of said stator for providing an air bearing between said rotor and said stator in response to air flow from said chamber through said radially extending passages,

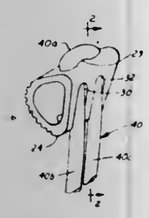
c. a rotatable assembly secured to said rotor for rotation therewith, said assembly including a forward spherical portion and a rear cylindrical portion having passages therein in communication with the air between said stator and rotor and the distal edge of said cylindrical portion;

d. spin-up nozzle means communicating with a second air source and with said rotor for impingment of air thereon for rotation thereof;

e. point contact means disposed for actuation by said air exhausting from said axial outlet to align said rotating assembly in a plane with said spin-up nozzles; and,

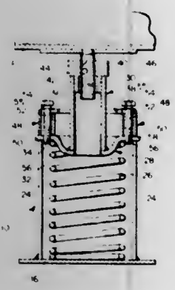
f. caging means for caging and uncaging said rotating assembly responsive to rotation thereof.

4,069,991
CHOCK FOR ROCK CLIMBING
Thomas C. Saunders, and James R. Clark, both of Kirkland, Wash., assignors to Seattle Manufacturing Corporation, Bellevue, Wash.
Filed Dec. 9, 1976, Ser. No. 749,074
Int. Cl.² A47G 29/00
U.S. Cl. 248—1 12 Claims



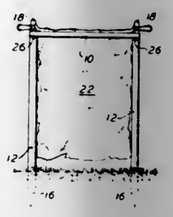
1. A chock for use with a loop sling in rock climbing comprising:
a body having end faces and having side faces and a nose each extending between the end faces, one of said side faces being a convex curved face located opposite said nose for engaging one rock face of a crack with the nose contacting the opposite rock face of the crack, said convex curved face having side borders at the opposite sides thereof which extend between said end faces, one of said side borders of the convex face being spaced further from said nose than the other said side border thereof so that the distance from the rock engaging portion of the convex face to the nose is variable by rocking the body on its convex face to wedge the nose against said opposite rock face, and
a pair of sling passage means in said body separated by a bridge located closer to said nose than said convex face for receiving the bight of a loop sling whereby a load on the sling pulls on said bridge and forces said nose against said opposite rock face with said convex face engaging said one rock face.

4,069,992
TRAVEL STOP
Walter Lada, Cranston, R.I., assignor to Corner & Lada Co., Inc., Cranston, R.I.
Filed Sept. 13, 1976, Ser. No. 723,042
Int. Cl.² F16F 1/06
U.S. Cl. 248—54 R 12 Claims



1. A spring support device adapted to support installed piping and similar loads which are movable over a range of travel during changes in operating conditions thereof, comprising a casing having upper and lower end plates and at least two longitudinally orientated side slots, terminating at said upper plate, a longitudinally compressible spring positioned within said casing between said end plates and bearing at its lower end against said lower plate, a spring plate having outwardly projecting ears laterally extending into said side slots and disposed upon the top of said spring and normally movable therewith towards and away from said upper plate, and load carrying means engaging said spring plate and extending through an opening in one of said end plates for connection with the load to be supported, longitudinally orientated spacer means disposed proximal said side slots between said top plate and said spring plate for maintaining said spring under a minimum predetermined compression, means separate from said spacers adapted for longitudinal disposition between and engagement with said top plate and said spring plate for laterally retaining said spacers in position and for simultaneously limiting a predetermined maximum compression of said spring, when engaged with said spring plate, both said spacer and spacer retaining means, being laterally shiftable through said side slots for entrance and removal from said casing when said spacer retaining means is disengaged with said spring plate.

4,069,993
BAG SUPPORTING MEANS
Donald L. Shanks, 46 Baywood Ave., Clearwater, Fla. 33515
Continuation of Ser. No. 576,318, May 12, 1975, abandoned.
This application June 11, 1976, Ser. No. 695,204
Int. Cl.² B65B 67/12
U.S. Cl. 248—97 8 Claims

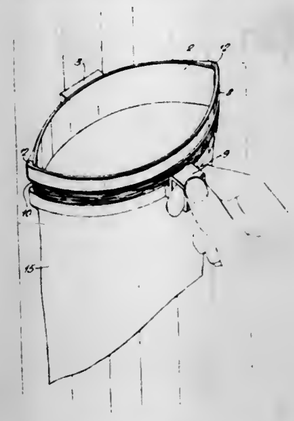


1. Bag supporting means comprising bag holding means, including bag gripping means for gripping a marginal portion of the mouth of the bag, said bag supporting means including a plurality of pegs having threaded fastener means for securing said pegs to a support, said support including a frame having a plurality of apertures, said plurality of pegs being engageable with selected ones of said apertures for locating said pegs in accordance with the size of the bag, a plurality of resilient locking rings having inside diameters less than the diameter of said pegs and adapted to be moved over said peg with a portion of the bag spread over said pegs to hold the portion of the bag upon said pegs, and anchor means affixing said locking rings to one of said bag holding means or said support.

4,069,994
BAG HOLDER
Martin John Wharmby, London, England, assignor to English Glass Company Limited, Leicester, England
Filed Dec. 10, 1975, Ser. No. 639,593
Claims priority, application United Kingdom, Sept. 9, 1975, 37141/75; Jan. 21, 1975, 2514/75
Int. Cl.² B65B 67/12
U.S. Cl. 248—101 17 Claims

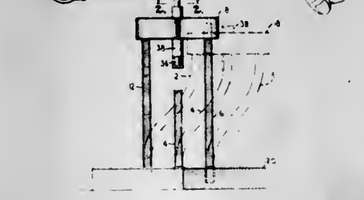
1. A bag holder comprising an articulatable frame for removably receiving around it an out-turned mouth of a bag, which frame is a closed figure constituted of two elongated flexible cooperable elements, each of said elements being substantially rectangular in cross section taken transversely to the length of said elements, means articulatingly connecting the elements to each other at their ends for enabling relative pivotal movement therebetween, means for attaching one of said elements to a support and handle means on the other of said elements by which traction may be exerted, both of said elements being pre-bowed in the same direction in a bag closing

configuration, both being concave with respect to the support, both of said elements being movable through an overcenter snap position to a bag-opening configuration by traction on said handle means in which in the bag-opening configuration the elements at their middle portions are spaced apart and in



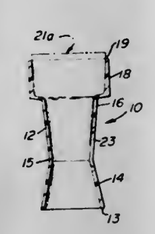
which the element having said attaching means is given a reverse bow in opposite direction to be bowed convexly with respect to the support, the other element remaining bowed concavely with respect to the support, and means resiliently biasing the frame to the bag closing configuration.

4,069,995
DYNAMIC COLUMN SUPPORT FOR FEEDER PAN
Leland D. Miller, R.R. 1, Tonganoxie, Kans. 66086
Filed Nov. 16, 1976, Ser. No. 742,514
Int. Cl.² B43L 15/00
U.S. Cl. 248—118.1 9 Claims



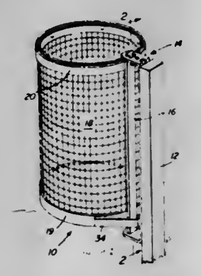
1. A limb support comprising:
a base;
a table spaced above said base and having a normal position relative thereto;
a tray on said table adapted to receive an individual's limb; and
laterally deflectable column means on said base extending therefrom to said table, and including at least three laterally resilient, spaced column members arranged in a polygonal array and mounting the table in a predetermined attitude for movement in any horizontal direction up to a maximum, substantial displacement away from said normal position,
said column members being longitudinally incompressible, yieldably biasing said table toward said normal position, and maintaining said table in substantially said attitude as the table is selectively shifted in any desired horizontal direction away from said normal position in a smooth, natural motion with minimum vertical displacement.

4,069,996
ICE CREAM CONE PACKING JACKET AND HOLDER
Leon W. Koziol, 1925 Virginia Ave., Beach Haven, N.J. 08008
Filed Oct. 19, 1976, Ser. No. 733,756
Int. Cl.² A47G 23/02
U.S. Cl. 248—146 3 Claims



1. An ice cream cone packing jacket and holder comprising an elongate open ended tubular body, said body tapering conically from one end toward a medial region having the same internal taper as the external taper of a conventional sugar cone for conformably receiving a conical sugar cone, a radially outstanding shelf extending circumferentially about the other end of said body, and a generally cylindrical wall extending circumferentially about the perimeter of said shelf and combining therewith to define a cup opening centrally into the other end of said body, said cup having generally the same internal dimension as the external dimension of the enlarged head of a conventional cake cone to conformably receive the enlarged head of a cake cone with the tail thereof in said body, whereby sugar and cake cones are adapted to be supportively received for packing with ice cream without breakage, said one body end terminating in a plane generally normal to the longitudinal direction of said body for stable resting engagement with a supporting surface with said cup uppermost, and said cylindrical wall having its distal edge lying in a plane generally normal to the longitudinal direction of said body for stable resting engagement with a supporting surface with said one body end uppermost, whereby filled sugar and cake cones are adapted to be stably supported in upright position, said body and cup being integral and substantially rigid to resist cone deformation, and said medial region being formed with an unobstructed through finger opening sized to pass a finger for dislodging a received ice cream cone.

4,069,997
WASTE RECEPTACLE CAM LOCK WITH LOCKING PROJECTION
Sam Weiss, 14th & Laurel Sts., Pottsville, Pa. 17901
Filed Oct. 7, 1976, Ser. No. 730,640
Int. Cl.² B65F 1/00
U.S. Cl. 248—203 3 Claims



1. In a waste receptacle securable to a support structure, the

waste receptacle having a bar secured thereto, the bar having spaced recesses formed in opposite sides thereof at the upper end of said bar, the support structure having a wall bracket mounted thereon, the wall bracket having upper and lower legs projecting therefrom, an opening being formed in the lower leg for removably receiving the lower end of the bar, an opening being formed in the upper leg and including a relatively wide slot portion and a relatively narrow portion, the upper end of the bar being removably receivable within the relatively wide slot portion of the opening in the upper leg, the relatively narrow slot portion of the opening in the upper leg being adapted to receive the upper end of the bar thereinto, the recesses in the upper end of the bar engaging and receiving wall portions of the relatively narrow slot portion of the opening thereinto, spaced support flanges mounted to the wall bracket between said wall bracket and the bar, a locking device mounted on said support flanges and including a cam member mounted for rotation between the support flanges by a key shaft, said key shaft being rotatable to present a first lobe of the cam member against the bar to position and maintain said bar within the relatively narrow slot portion of the opening in the upper leg, the key shaft being further rotatable to present a second lobe of said cam member into opposed relation to the bar to allow the bar to be moved into the relatively wide slot portion of the opening in the upper leg to permit removal of the bar from the openings in the upper and lower legs and thus removal of the waste receptacle from secured relation to the wall bracket and support structure, the improvement comprising:

a projection formed on the upper surface of the cam member, the cam member being carried on the key shaft for rotation therewith;

an enlarged flange member formed on the upper end of the key shaft and spaced from the upper surface of the uppermost support flange secured to the wall bracket, the upper surface of the flange member forming a pressure receiving surface; and,

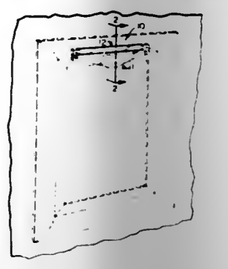
a spring mounted about the key shaft between the upper surface of the uppermost support flange and the lower surface of the enlarged flange member and biasing thereagainst, the spring biasing the projection on the cam member against a side portion of the uppermost support flange when the key shaft and cam member are rotated to present the first lobe of said cam member against the bar, the projection thereby positively locking the bar within the relatively narrow slot portion of the opening in the upper leg, the spring being compressed by pressure exerted against the pressure receiving surface of the enlarged flange member of the key shaft to displace the projection on the cam member downwardly to allow rotation of the key shaft and cam member to present the second lobe of said cam member into opposed relation to the bar to unlock the bar from the wall bracket.

4,069,998
PICTURE HANGER
James R. Rytting, 3575 S. 20 East, Salt Lake City, Utah 84109
Filed Oct. 26, 1976, Ser. No. 735,424
Int. Cl.² A47G *1/24*
U.S. Cl. 248—476 **1 Claim**

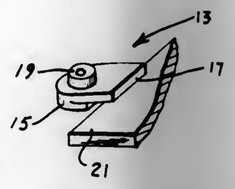
1. A picture support hanger comprising

a support bar including a pair of end spacers, each with a flat upper surface and interconnected by a flat connecting link;

a hooking bar including a pair of end blocks, each having a flat lower surface to mate with the flat upper surfaces of the end spacers, and a flat depending bar interconnecting the end blocks and projecting downwardly below the end blocks to be between the end spacers, the combined thickness of the flat connecting link and flat depending bar being slightly less than the thickness of either the end spacers or the end blocks; and the length of the flat depending bar being such that it is movable between the end spacers while the end blocks slide on the end spacers.



4,069,999
SPRING TYPE DOGGING DEVICE
James A. Rew, Glen Burnie, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Nov. 10, 1976, Ser. No. 740,530
Int. Cl.² B25B *5/08*
U.S. Cl. 248—507 **2 Claims**



1. A spring type dogging device for releasably attaching a workpiece to a heat sink and the like comprising, a flat substantially circular body portion fabricated of flat resilient metal, a clamping lip forming a portion of the outer edge of said body portion and extending outwardly therefrom, said clamping lip arranged to engage an edge of the workpiece, a central opening in said body portion for receiving a screw member therethrough, and a spiral slot formed by removing a strip of resilient metal around a substantial portion of said central opening, said spiral slot being closed at the inner end and open at the outer end, the open outer end of said curved slot being located in the area of said clamping lip such that the remaining metal of the body portion forms a spiral configuration and operates to apply a uniform, predictable and repeatable downward force on the workpiece when the screw member in the central opening is fully tightened to hold the central section of the body portion securely against the surface of the heat sink.

4,070,000
FLUID OPERATED VALVE
Norman F. Prescott, Wenham, Mass., assignor to Atwood & Morrill Co., Salem, Mass.
Continuation of Ser. No. 504,926, Sept. 11, 1974, abandoned.
This application Aug. 9, 1976, Ser. No. 713,209
Int. Cl.² F16K *31/122*
U.S. Cl. 251—26 **4 Claims**

1. A fluid operated valve comprising:

an inlet chamber;

an outlet chamber;

a main valve seat separating said inlet chamber and said outlet chamber;

an auxiliary cylindrical chamber above and coaxial with said main valve seat;

a main piston, the upper portion of said piston being movable, positioned within said auxiliary chamber,

said main piston having a lower portion adapted to seat on said main valve seat and being of a smaller diameter than said upper portion so that the top of said main piston has a greater effective area than the area defined by said main valve seat;

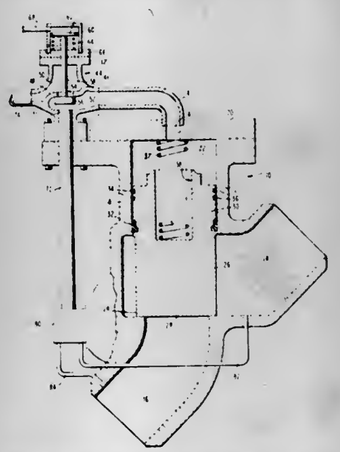
a shuttle valve comprising:

a shuttle valve chamber, one end of said shuttle valve chamber being in fluid communication with said inlet chamber, the other end of said shuttle chamber being in fluid communication with said outlet chamber, a shuttle element slidably positioned within said shuttle valve chamber preventing pressure equalization between said inlet chamber and said outlet chamber and movable by fluid pressure within said shuttle valve chamber;

a first fluid line, free of any means capable of obstructing flow, connected to said shuttle valve chamber at a location between said one end and said other end of said shuttle valve chamber;

a second fluid line, free of any means capable of obstructing flow, connected with said auxiliary chamber above said piston;

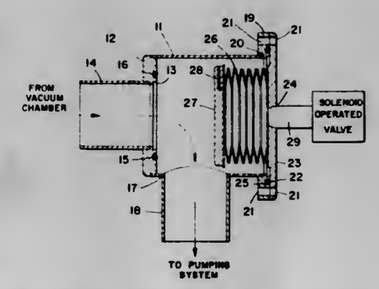
a control valve connected to said first fluid line and said second fluid line, and having a flow chamber connected



between said first line and said second fluid line, a first valve seat between said flow chamber and said one fluid line, and a second valve seat coaxial with said first valve seat in communication with the atmosphere, a control valve closure member movable to seat selectively against said first valve seat and said second valve seat; a control valve air chamber, a control valve piston within said control valve air chamber, a valve stem connected to said control valve piston and to said control valve closure member, a compression spring urging said control valve closure member into engagement with said second valve seat:

whereby when air pressure within said control valve air chamber urging said control valve piston against said compression spring is released, said control valve piston will be moved by said compression spring to cover said first valve seat to vent said auxiliary chamber to the atmosphere and said control valve air chamber can be pressurized to actuate said control valve piston to cover said second valve seat and uncover said first valve seat and thereby place said auxiliary chamber in communication with said shuttle valve through said one fluid line so that when said piston is seated on said main seat and said control valve is actuated to vent said auxiliary chamber to the atmosphere, the pressure of fluid on said main piston will cause said main piston to unseat and whereby when said control valve is actuated to place said auxiliary chamber in communication with said shuttle valve at a time when said inlet chamber contains fluid at a pressure greater than the pressure of fluid in said outlet chamber, said shuttle member will be moved by pressure from said inlet chamber to said other end of said shuttle valve chamber to prevent pressure equalization between said inlet chamber and said outlet chamber but to allow communication between said inlet chamber and said one fluid line and whereby when said control valve is actuated to place said auxiliary chamber in communication with said shuttle valve at a time when said outlet chamber contains fluid at a pressure greater than the fluid in said inlet chamber, fluid under pressure from said outlet chamber will move said element to said one end of said shuttle valve chamber to prevent communication between said shuttle valve chamber and said inlet chamber but allow communication between said outlet chamber and said one fluid line so that fluid will flow through said one fluid line to said auxiliary chamber to move said main piston onto said valve seat to shut said valve.

4,070,001
VACUUM SAFETY VALVE
Ronald R. Musgrove, 1914 Republic Ave., San Leandro, Calif. 94577
Filed July 6, 1976, Ser. No. 702,527
Int. Cl.² F16K *51/02*
U.S. Cl. 251—46 **6 Claims**

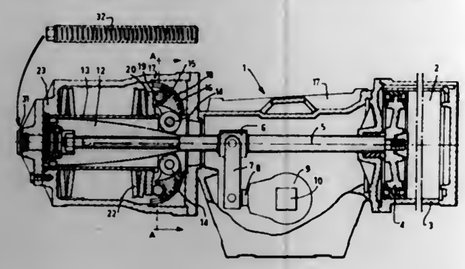


1. A vacuum safety valve, comprising a valve body having an inlet port and an outlet port, valve seating means disposed about said inlet port on the interior of said valve body, extendable bellows secured within said valve body and including means for engaging said seating means and sealing said inlet port when said bellows means is fully extended; said valve body including a bellows port communicating with the interior of said extendable bellows and with a valve means which selectively opens to ambient air, said means for engaging said seating means including a plate secured in sealing fashion to the distal free end of said bellows, and further including a bleed port extending from said interior of said bellows through said plate to the peripheral edge thereof, said bleed port extending in constant, limited flow communication between said interior of said valve body and said interior of said bellows.

4,070,002
VALVE ACTUATORS
Maurice Bonafous, Oloron, France, assignor to Applications Mecaniques et Robinetterie Industrielle A.M.R.I., Paris, France
Filed Mar. 17, 1976, Ser. No. 667,500
Claims priority, application France, Mar. 17, 1975, 75 08304
Int. Cl.² F16K *31/122, 31/50*
U.S. Cl. 251—58 **10 Claims**

1. An actuator for a valve comprising a rectilinearly movable, motion-transmitting member, a mechanical valve-operat-

ing system connected to said member and connectible to a valve, a driving device connected to said member to move same in one direction of valve operation, and a return-movement arrangement connected to said member to move it in an opposite and return direction of valve operation, the arrangement including a ramp connected to the member for movement



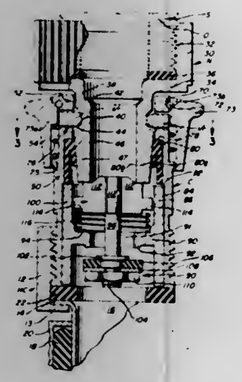
therewith, a movable resilient energy storing cushion arranged about said ramp for effecting said return movemnt of the member and roller transmission means including a movable arcuate member continguous with the ramp and operatively associated with the cushion to effect movement thereof for energy storage and dissipation depending on the direction of movement of the output member.

4,070,003

COUPLER WITH AUTOMATIC SHUT-OFF

Sidney J. Shames, Briarcliff Manor; Harold Shames, Ardsley, both of N.Y., and John F. Logan, Pequannock, N.J., assignors to Sidney J. Shames and Harold Shames, both of Passaic, N.J.

Filed July 19, 1976, Ser. No. 706,390
Int. Cl.² F16L *29/00, 37/28*
U.S. Cl. 251—149.6 **8 Claims**



1. In a coupler that includes: elongated tubular body means having upstream and downstream ends, the upstream end being arranged to telescopically receive thereinto an exteriorly grooved nipple to which coupling is to be effected; and a plurality of radially movable, arcuately shaped, interference members carried by said body means, each interference member having arcuate inner and outer edges and being movable radially between an outer, inoperative position, and an inner position where a portion of said interference members enter the nipple's groove to hold the nipple within the body means by interfering with withdrawal of the nipple from the tubular body means; and means for selectively moving the interference members between said outer and inner positions; the improvement comprising, in combination:

the elongated tubular body means being an elongated, unitary, tubular body part of molded plastic constructed to provide thereon an upstream annular section that is apertured transversely of the body's longitudinal axis to provide upstream attachment means adapted for effecting securement with said nipple, the upstream attachment means including a plurality of holes each of generally rectangular cross-section extending through the wall of the tubular body part to provide in the tubular body part a pair of end walls, located in planes that are substantially at right angles to each other, and a pair or parallel top and bottom walls spaced apart a fixed amount axially of said elongated tubular body;

the interference members each being constructed and arranged for substantially only radial slide-type movement in the space defined between the parallel walls of an associated one of said holes extending through said tubular body part, said interference members each being an arcuately, elongated molded plastic part provided with arcuate inner and outer edges and upper and lower parallel sides, and with ends transverse to said arcuate edges and parallel sides and located in planes that are substantially at right angles to each other; and

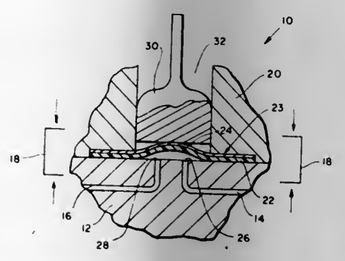
an actuator sleeve surrounding the tubular body part and being freely slidably movable, axially in opposite directions relative to said body part, the sleeve having a cam means defined interiorly thereof and positioned to normally maintain the interference members in their inner position, the sleeve being selectively manually slidable to a second sleeve position, at which the interference members may move to their outer inoperative position.

4,070,004

DIAPHRAGM VALVE

David R. Friswell, Holliston, Mass., assignor to Waters Associates, Inc., Milford, Mass.

Filed Mar. 1, 1976, Ser. No. 662,345
Int. Cl.² F16K *7/14*
U.S. Cl. 251—331 **13 Claims**



1. In a diaphragm valve of the type wherein a diaphragm is adapted to be moved by an actuator means for an open position into a closed position, in which closed position said diaphragm has a sealing face forming means to interrupt flow between an inlet port and an outlet port, the improvement wherein

A. said diaphragm is formed of a thin sheet of fluorocarbon polymer characterized by

1. a compressive strength of about 5000 to 10,000 psi,
2. a tensile elastic modulus of from about 100,000 to 400,000 psi;

B. a metal support sheet forms means to moderate the rate at which said sheet of polymer moves away from said ports when said diaphragm is moved to a open position, said support sheet being positioned between said actuating means and said diaphragm, and

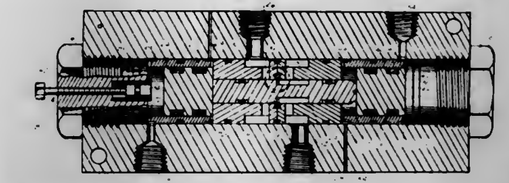
C. wherein extended annular portions of said support sheet and said diaphragm are compressed together by the structure of said valve with said sealing face of the diaphragm mounted parallel to and, in its closed position, in sealing contact with said inlet and outlet ports.

4,070,005

VALVE HAVING AN IMPROVED SEAT

Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif. 90274

Continuation of Ser. No. 498,257, Aug. 19, 1974, abandoned.
This application Jan. 19, 1976, Ser. No. 650,495
Int. Cl.² F16K *25/04, 1/46*
U.S. Cl. 251—333 **9 Claims**



1. In a valve of the type having a linearly displaceable poppet, an inlet port, an outlet port, a channel on the poppet for communicating the inlet and outlet ports in an open position of the valve, means to open the valve by moving the poppet to a position with the channel opening into the inlet and outlet ports, and means to close the valve by moving the poppet to a position where the channel does not open into the outlet port, an improvement comprising:

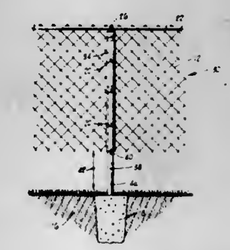
a. a pair of abutting poppet sleeves in the valve and receiving the poppet in a bore defined by the sleeves;
b. means compressively loading the poppet sleeves;
c. an annular dovetail groove defined by both poppet sleeves at their abutting intersection and having a mouth opening into the bore;
d. an annular seal in the groove, the seal being of soft and inelastic material, the cross-sectional area of the seal being larger than the cross-sectional area of the groove so that the poppet sleeves extrude the seal through the mouth annularly inward of the bore, the width of the mouth being sufficient to prevent shearing of the seal; and
e. means on the poppet to engage the extruded portion of the seal in the valve closed position to prevent communication between the inlet and the outlet ports.

4,070,006

FENCE PRACTICE

Jack L. Storie, 3305 SW. 27th, Oklahoma City, Okla. 73108

Filed Apr. 16, 1976, Ser. No. 677,691
Int. Cl.² E04H *17/00*
U.S. Cl. 256—1 **6 Claims**



1. An improvement in fence structure of the type having spaced vertical support members affixed to the earth's surface for the purpose of supporting a continuous expanse of fencing material along a preselected fence row, the improvement comprising:

a hollow elongated tubing member of greater cross-sectional area than said fence vertical support member and approximately the same length as said vertical support member for insertion downward thereover to receive said fencing material in secure affixure thereto, the uppermost end of said tubing being swaged to provide a reduced topmost outside diameter which is equal to the outside diameter of the topmost portion of said vertical support member;

top cap means having a lower opening of cross-sectional shape to be received securely downward on the upper swaged end of said tubing member, said top cap means having a retaining eye formed integrally therewith on the upper side thereof;

longitudinal bar means retained within said retaining eye along the uppermost portion of said fence structure; and

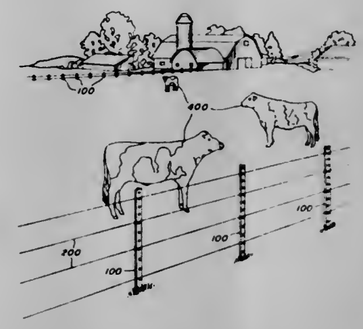
means for locking the lower end of said tubing member at a preselected upper extremity of said vertical upright member after said tubing member has been raised to a preselected height.

4,070,007

PLASTIC FENCE POSTS AND ENCLOSURES

Dale R. Minor, Washington Township, Pickaway County; Byron W. Rose, Circleville Township, Pickaway County, and William R. Vivian, Jackson Township, Franklin County, all of Ohio, assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1975, Ser. No. 627,401
Int. Cl.² E04H *17/14*
U.S. Cl. 256—19 **12 Claims**



1. In a fence post having an integral anchor plate in its bottom section and being a thermoplastic member, the improvement comprising a plurality of integrally molded wire engagement lugs disposed on the front of said post, said lugs being shaped elements having a width which is narrow adjacent the front face and gradually increase to a wider width at a point extending forwardly from the front face, the relative increase in width being sufficient to cause the sides of said lug toward said front face to have a depth to frictionally engage one full turn of wire about said lug for securing said wire against said post.

4,070,008

HIGH PRESSURE MIXING HEAD

Alfred Schlieckmann, Lindau, Germany, assignor to Admiral Maschinenfabrik GmbH, Leuchtenbergweb, Germany

Filed Feb. 23, 1977, Ser. No. 771,403
Claims priority, application Germany, Feb. 25, 1976, 2607641
Int. Cl.² B01F *15/02*
U.S. Cl. 366—159 **9 Claims**

1. In a high pressure mixing head for producing a chemically reactive mixture of at least two plastics components and other mixtures, comprising

a mixing chamber which has inlet ports for the individual plastics components and an outlet port for the plastics component mixture,

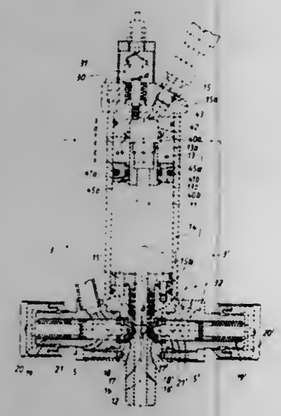
an expulsion piston arranged in the mixing chamber and having the same cross-section as it,

a drive cylinder,

and a drive piston arranged in the drive cylinder and adapted to be driven by pressure medium, the drive piston being connected with the expulsion piston for moving the latter between a rear end position leaving the inlet ports uncovered and a position in the vicinity of the front inlet port, the inlet ports being simultaneously shut off from the mixing chamber

the improvement which resides in that

the drive piston comprises firstly an inner piston part rigidly connected with the expulsion piston and secondly an annular outer piston part arranged on the inner piston part and adapted to move between two abutment surfaces on the inner piston part, the outer annular piston part being sealed off internally with respect to the inner piston part and externally with respect to an inner surface of the drive



cylinder, an end of the inner piston part in the form of a plunger piston-like projection adapted to fit into a recess in an end of the drive cylinder having the same shape and cross-section as the projection shortly before and at the end position of the drive piston,

two connections are provided for connecting the pressure medium with the drive cylinder and one of these connections is connected with the recess,

and the longitudinal extent, measured in the direction of the piston movement, of the recess is in a range lying below and just including the relative axial movement between the inner and outer piston parts and is in a range larger than and just including the axial distance between the expulsion piston end face in its rear position and the remote end of the inlet ports.

4,070,009

TILTABLE METALLURGICAL VESSEL ARRANGEMENT

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

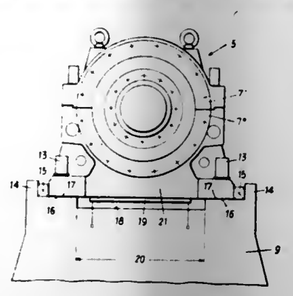
Filed Jan. 31, 1977, Ser. No. 764,210

Claims priority, application Austria, Feb. 3, 1976, 728/76

Int. Cl.² C21C *5/46*

U.S. Cl. 266—99 **4 Claims**

1. In a tiltable metallurgical vessel arrangement, in particular a converter to be used in a steel making plant, of the type including carrying trunnions for carrying the vessel and bearings accommodating the carrying trunnions, one of the bearings being a fixed bearing and one of the bearings being an expansion bearing, the bearings being arranged in bearing housings having supporting faces, and a base-supported supporting construction having counter supporting faces, the supporting faces resting on the counter supporting faces, the improvement which is characterized in that the bearing housing of at least one of the bearings has two supporting faces provided at a distance from each other, and that a strain measuring means is provided and connected to said bearing housing between the two supporting faces to indicate a sagging of



said bearing housing between its two supporting faces under load.

4,070,010

VICE FOR A MACHINE TOOL BED

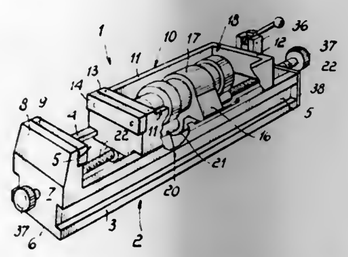
Carlo Brasca, Via Puccini, 13, Locate Triulzi (Milan), Italy

Filed Dec. 8, 1976, Ser. No. 748,808

Claims priority, application Italy, Dec. 19, 1975, 30603/75

Int. Cl.² B25B *1/18*

U.S. Cl. 269—27 **2 Claims**



1. In a vice including a hollow base having a longitudinal extension, a fixed jaw rigid therewith and arranged near one end thereof, a movable box-like frame slidable along said base in the direction of said longitudinal extension, a movable jaw rigidly supported by said frame, a fluid operated actuator for said movable jaw and arranged in the interior of said box-like frame and movable therewith, a pre-positioning jack-like actuator for pre-positioning said fluid operated actuator and adapted to act in said direction of longitudinal extension of said base, the combination of said base with said fluid operated actuator, said jack-like actuator and said movable box-like frame, comprising spaced apart parallel guides on said base and coextensive with said longitudinal extension thereof, said guides having each a T-like cross-section with a web portion and a flange portion, spaced apart parallel gib formations on said box-like frame in slidable engagement with said guides over a substantial length thereof, said gib formations having a U-like cross-section surrounding at least partially said flange portion of the guides to provide a positive slidable engagement therewith, an elongated recess in an intermediate portion of at least one of said gib formations at an inwardly facing side thereof with respect to said box-like frame to expose thereto an intermediate longitudinal exposed portion of said flange formation in slidable engagement therewith, lateral shoes rigid with said fluid operated actuator and in slidable engagement with said exposed portion of said flange formation of said guide to guide said fluid operated actuator therealong and to prevent rotation thereof about an axis parallel to said longitudinal extension.

4,070,011

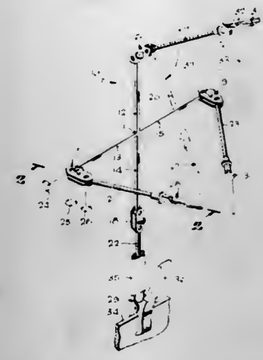
ARTICULATED TOOL

Louis S. Giesser, P.O. Box 3517, Redding, Calif. 96001

Filed Mar. 18, 1977, Ser. No. 779,096

Int. Cl.² B25B *1/20*

U.S. Cl. 269—45 **3 Claims**



1. A tool holder for supporting a plurality of articles in a selected orientation comprising:

a base of cruciform configuration having a plurality of outwardly projecting arms from a central area in common;

an extension associated with each of said arms so as to be in coextensive relationship;

a universal joint movably interconnecting adjacent and opposing ends of said associated extensions and arms;

closure means carried on the free terminating end of each of said extensions adopted to releasably engage with an article of said plurality;

a selected one of said closure means providing an anchoring means for detachably supporting said base onto a mounting structure;

said base includes at least four rigid arms arranged at 90° angles with respect to each other;

said closure means are self-biasing clips having intermeshing toothed grips;

said universal joints comprise a ball and socket joint;

said adjacent and opposing ends of said arms and extensions carry spherical balls and said joint includes a pair of plates having coaxial openings for rollably receiving said balls; and

said selected one of said closure clips constituting said anchoring means having a pair of broad flat closure elements and a finger gripping portion covered with a soft resilient material.

4,070,012

ADAPTOR FOR MACHINE TOOL FIXTURE

Lawrence La Rocco, 826 N. Grant St., Addison, Ill. 60101

Filed Apr. 1, 1976, Ser. No. 672,734

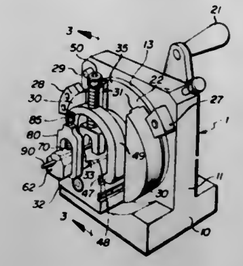
Int. Cl.² B23Q *3/06*

U.S. Cl. 269—287 **6 Claims**

1. A tool holding device adapted for use with a fixture having a seat therein and a locking means normally adapted for maintaining a tool in position in said fixture seat, said tool holding device comprising:

a first portion comprising means for mating with said fixture seat to enable said fixture locking means to lock and maintain said device in said fixture seat;

a second portion connected to and extending outwardly from said first portion and comprising means for seating at least a portion of a tool in a position whereby said tool portion is spaced from said fixture to allow a machining operation to be performed on said tool portion; and



said first portion includes a top and a pair of said walls wherein said side walls are V-shaped.

4,070,013

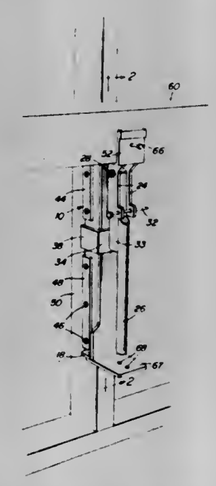
STUD GRIPPING CLAMP

Jack R. Sickler, P.O. Box 20803 Pioneer Station, Billings, Mont. 59104

Filed Jan. 25, 1977, Ser. No. 765,619

Int. Cl.² B25G *3/36*

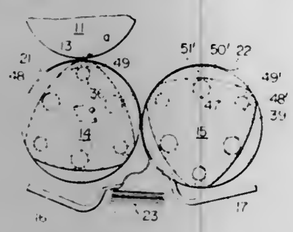
U.S. Cl. 269—321 S **16 Claims**



1. A lumber clamp comprising an elongated channel-shaped body including a pair of generally parallel opposite side longitudinal flanges and an elongated bight portion extending between one pair of corresponding longitudinal edge portions of said flanges, one of said flanges being rigidly supported from said bight portion and the other flange being pivotally supported from said bight portion for oscillation relative thereto about an axis extending longitudinally of said body and adjacent the adjacent marginal edges of said other flange and bight portion, for oscillation of said other flange between a closed position with the adjacent sides of said flanges substantially parallel and an open position with the free edge of said other flange remote from said bight portion swung away from the corresponding free edge of said one flange, and clamp actuator means shiftably supported from said body for movement between active and inactive positions and including portions engageable with said flanges intermediate their opposite ends for camming said other flange toward said closed position and bracing said one flange against flexure away from said other flange upon movement of said clamp actuator means to said active position, said clamp actuator means, when in said inac-

tive position, being shifted to an out of the way position for movement of said other flange toward said open position.

4,070,014
WEB FOLDING APPARATUS
Shokichi Takahashi, Kawanoe, Japan, assignor to Kawanoe Zoki Kabushiki Kaisha, Kawanoe, Japan
Filed July 28, 1975, Ser. No. 599,420
Int. Cl.² B41L *1/32*
U.S. Cl. 270—39 7 Claims



1. Apparatus for folding cut pieces of web material supplied in pairs comprising a pair of rotatable suction rolls each having at least one circumferential groove transitioning into at least one axially oriented land portion and a pair of web peeling and folding means each operatively associated with said groove of either roll, said circumferential groove dividing the surface of said roll into circumferentially extending land portions which merge with said axial land portion,

said suction rolls each having web delivering openings provided therein substantially along a generating line thereof running on said axial land portion and web folding openings provided substantially along an axial line thereof running across said groove,

said web delivering openings and said web folding openings being circumferentially spaced with respect to each other so when the pair of rolls are rotated in opposing directions the web delivering openings of either roll and the web folding openings of the other roll come substantially into mating relation at a first point of rotation of the rolls,

said web delivering openings of either roll providing means applying suction to said cut piece of the material web continuously from a point of rotation of the roll at which they receive thereon said cut web piece to said first point of rotation of rolls,

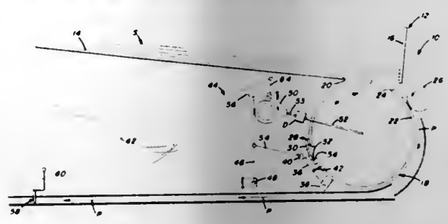
said web folding openings of the other roll providing means applying suction to the cut web piece continuously from said first point of rotation to a further point of rotation of the roll at which the cut pieces of the web are peeled off the roll surface and folded by one of said pair of web peeling and folding means.

4,070,015
SHEET FEEDING APPARATUS
Richard Stephen Muka, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 26, 1976, Ser. No. 735,233
Int. Cl.² B65H *3/10*
U.S. Cl. 271—100 5 Claims

1. In an oscillating vacuum feeder for feeding sheets seriatim from a sheet stack along a sheet travel path, said oscillating vacuum feeder including a tubular housing having at least one port through the wall of said housing, means for oscillating said tubular housing along said sheet travel path between a first position wherein said one port is located adjacent to said sheet stack and a second position remote from said first position, and wherein a sheet is tacked to said tubular housing by pneumatic forces created by a vacuum applied to the inside of said tubular housing when said tubular housing is in said first position, whereby during at least a portion of the oscillating movement of said tubular housing from the first position to its second position, the tacked sheet is moved along said travel path, and a vacuum vent port located through the wall of said housing, a control valve operatively associated with said vacuum vent port, said control valve comprising:

a movable valve shoe mounted on said tubular housing for opening and closing said vacuum vent port;

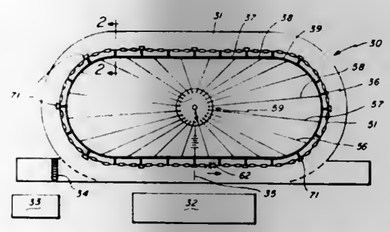
means for resiliently urging said valve shoe to a first position in which said vacuum vent port is closed;



linkage means for moving said valve shoe to a second position in which said vacuum vent port is open; and

control means for actuating said linkage means to open the vent port and relieve the vacuum within said tubular housing during the movement of said housing from said second position to said first position, thereby releasing the tacked sheet for further movement along said sheet travel path.

4,070,016
NON-MECHANICAL LURE FOR DOG RACING
Bruce G. Dumas, Box 86, East Derry, N.H. 03041
Filed Apr. 26, 1976, Ser. No. 679,978
Int. Cl.² A63K *1/02*
U.S. Cl. 272—4 4 Claims



1. A race course for greyhounds of the type having a closed loop track with an inner periphery fence; an outer periphery fence; a start line, a finish line, light means spaced around the track to lure the greyhounds and electric control means for successively illuminating the light means, said race course characterized by:

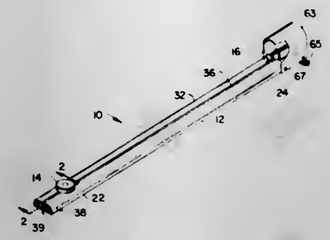
said inner periphery fence including a plurality of spaced identical posts, each having an upstanding vertical lower portion; and integral upper portion inclined outwardly over the inner portion of said track and terminating in an upper tip;

a common electric conductor supported on the tips of said posts and extending continuously around the inner periphery of said track at a spaced distance thereabove;

and said light means comprising a series of groups of about five exposed light bulbs, each group being elongaged and spaced about two feet from adjacent groups, said series being mounted on said conductor

whereby the individual and successive illumination of said spaced groups of light bulbs, from start line to finish line, above the level of the inner portion of said track, creates an easily visible, advancing, light beam lure for said greyhounds.

4,070,017
HOCKEY PRACTICE SHOOTER
Ralph Lombard, 167 Sheldon Ave., Toronto, Canada
Filed June 24, 1976, Ser. No. 699,270
Claims priority, application Canada, July 15, 1975, 231510
Int. Cl.² A63B *69/00*
U.S. Cl. 273—1 B 3 Claims



1. A hockey puck practice shooting device comprising:

a. puck means including a practice puck and a wheeled puck carriage, and connection means for rotatably mounting said practice puck above said puck carriage;

b. elongated track means having a width less than about twice the width of said practice puck and comprising a first shooting end and a second return end and adapted to be located in a desired position on a substantially horizontal surface, said track means having a substantially uniform cross-section and defining a longitudinal channel having an upwardly opening longitudinal slot, the track means in cross-section having rounded upper outer corners, said corners having a radius of curvature which is of the general order of magnitude of the height of said track means, said channel wider than said puck carriage, said slot narrower than said puck carriage, said channel defined in part by substantially flat webs extending the length of said slot on either side thereof, sand channel engagingly receiving said puck carriage to restrict travel thereof to travel along said track means, said practice puck slightly spaced above said track means, said connection means extending through said longitudinal slot, whereby as the puck carriage moves along the longitudinal channel in the track means the puck is rotatably carried in a horizontal plane slightly spaced above the track means simulating movement of a puck on an ice surface; said track means made of extruded plastic and permitting said webs and said entire track means to flex to absorb the force of blows upon said puck means and upon said track means; and

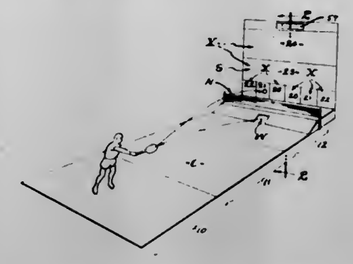
c. return means attached to the track means adjacent the second end of the track means to engage a puck which has been shot from said first end to said second end to return the puck to said first end,

d. stop means attached to the track means adjacent the first end of the track means to prevent a returned puck means from passing out of said track means,

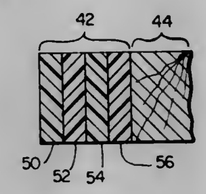
said puck means, said track means and said return means cooperating to quickly return a shot puck to its starting position for practice puck shooting in rapid succession.

4,070,018
BALL IMPACT TARGET WITH BALL IMPACT SENSOR
Kenneth M. Hodges, 3750 Grandview Blvd., Los Angeles, Calif. 90066
Filed Oct. 12, 1976, Ser. No. 731,114
Int. Cl.² A63B *61/00*
U.S. Cl. 273—29 A 10 Claims

1. A scoring device for sensing the impact of balls and including, a flexible damping screen of supple sheet material hung as a curtain in a vertical plane to moveably yield to and thereby absorb the impact of balls impinging thereagainst, at least one electrically conductive contact bar suspended by the curtain, at least one substantially resilient, electrically conductive switch rod suspended by the curtain in spaced opposition to said at least one bar, means normally holding said at least one bar and rod in said spaced opposition, said at least one rod being stabilized by its inertia and freely swingable to be engaged by said at least one bar moved thereagainst by impact of a ball against said damping screen, and electrical sensor means responsive to engagement of said at least one bar with said at least one rod to indicate ball impact against said damping screen.



4,070,019
LAMINATED GAME RACKETS AND METHOD OF CONSTRUCTING SAME
Charles L. Segal; Michael G. Anderson, and David N. Vincent, all of San Diego, Calif., assignors to Groves-Kelco Sales, Inc., Minneapolis, Minn.
Filed Dec. 8, 1975, Ser. No. 638,743
Int. Cl.² A63B *49/10*
U.S. Cl. 273—73 F 33 Claims



27. A game racket frame comprising:

a shaft portion;

a throat portion;

a head portion in the form of a curvilinear rim member having two portions at the bottom thereof, said portions being integral with the top of said throat portion;

a handle coupled to the bottom of said shaft portion; and

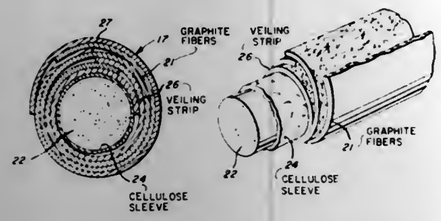
support means, coupled at least to said throat portion, for reinforcing said frame,

said head portion comprising a plurality of adhesively bonded, distinct strips of material, said strips being arranged perpendicular to the faces of said racket, at least one of said strips comprising preformed, precured fiber reinforced thermosetting resin.

4,070,020
COMPOSITE HIGH STRENGTH TO WEIGHT STRUCTURE WITH FRAY RESISTANCE
Pol Dano, Camarillo, Calif., assignor to Fansteel Inc., North Chicago, Ill.
Filed July 7, 1976, Ser. No. 703,135
Int. Cl.² A63B *49/10*
U.S. Cl. 273—73 F 19 Claims

9. In a tennis racket frame having a handle and an ellipsoid head attached to one end of said handle and a grip element at

the opposite end of said handle, an improved construction wherein said frame comprises an elongated structural member of high strength to weight ratio comprising a core of an expanded porous resinous material integrally bonded to a shell comprising at least one layer of resin-coated unidirectionally



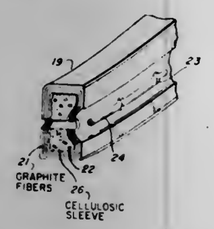
oriented graphite fibers, said shell completely encasing said core at any cross section transverse to the length of said member with a veiling strip of lightweight, loose construction of a material other than graphite wrapped around said core beneath the innermost of said layers and covering the leading edge of said innermost layer.

4,070,021

COMPOSITE HIGH STRENGTH TO WEIGHT STRUCTURE HAVING SHELL AND SLEEVED CORE

Andrew W. Cecka, Thousand Oaks; Pol Dano, Camarillo, and Paul G. Pawling, Oxnard, all of Calif., assignors to Fansteel Inc., North Chicago, Ill.

Filed July 7, 1976, Ser. No. 703,136
Int. Cl.[2] A63B *49/10*
U.S. Cl. 273—73 F **16 Claims**



8. In a tennis racket frame having a handle and an ellipsoid head attached to one end of said handle and a grip element at the opposite end of said handle, an improved construction wherein said frame comprises a structural member of high strength to weight ratio comprising a core of an expanded porous resinous material integrally bonded to a shell comprising at least one layer of resin-coated unidirectionally oriented graphite fibers, said shell completely encasing said core at any cross section transverse to the length of said member with a seamless sleeve made of a thin, flexible cellulosic film between said core and said shell.

4,070,022

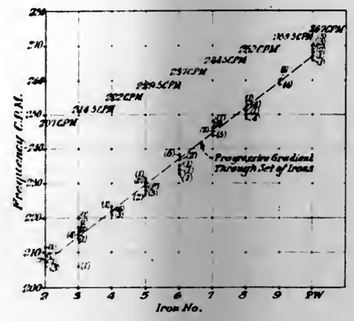
MATCHED GOLF SHAFTS AND CLUBS

Joseph M. Braly, Kennett Square, Pa., assignor to Con-Sole Golf Corporation, Kennett Square, Pa.

Filed Apr. 14, 1976, Ser. No. 676,905
Int. Cl.[2] A63B *53/12*
U.S. Cl. 273—77 A **7 Claims**

1. A method of producing matched golf clubs comprising the steps of establishing a predetermined frequency gradient formed by a plot of shaft frequency and shaft length such that the gradient is a substantially straight line that increases as shaft length decreases and the frequency increments between successive shaft lengths along the gradient are substantially equal, determining under similar conditions the frequency of each golf club shaft of a plurality of shafts at each given shaft length, selecting a shaft at each given shaft length whose frequency falls on the predetermined gradient, and securing selected club heads to the selected shafts.

4. Matched golf club shafts comprising a series of at least four shafts of successive lengths, and each shaft of the series



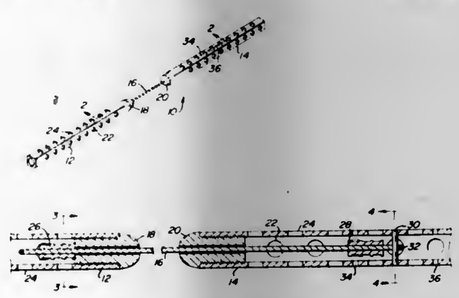
having a different but predetermined frequency that falls along a predetermined frequency gradient formed by a plot of shaft frequency and shaft length such that the gradient is a substantially straight line that increases as the shaft length decreases and the frequency increments between successive shaft lengths along the gradient are substantially equal.

4,070,023

NUNCHAKU

Jerome J. Cutler, Philadelphia, Pa., assignor to Strong Design Research and Sales Corporation, Philadelphia, Pa.

Filed July 23, 1976, Ser. No. 707,966
Int. Cl.[2] F41B *15/02*
U.S. Cl. 273—84 R **10 Claims**



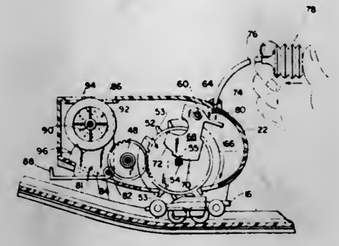
1. A hand weapon comprising first and second hollow members of metal, said metal members having transverse perforations, a discrete threaded adapter threaded in one end of each of said members, the transverse dimensions of said adapters being not greater than the transverse dimensions of their associated metal member, each adapter having a central bore, a flexible member extending through said bores and interconnecting said metal members, means associated with the free ends of said flexible member for preventing the flexible member from being withdrawn through the bore of its associated adapter, means associated with one end portion of said flexible member and its hollow metal member for adjusting the length of the flexible member exposed between said adapters, the exposed end portion of said adapters being conical or semispherical, and said metal members having a plurality of flat faces thereon.

4,070,024

CONTINUOUS RACETRACK HAVING VEHICLE ACCELERATING DEVICE

Nobuo Hamano, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Oct. 7, 1976, Ser. No. 730,683
Claims priority, application Japan, Feb. 2, 1976, 51-11135[U]
Int. Cl.[2] A63F *9/14*
U.S. Cl. 273—86 D **6 Claims**



1. A continuous racing game, comprising:
a trackway;
means defining separate paths within said trackway;
a vehicle associated with each of said paths;
propulsion means for applying force to said vehicles to propel same along said paths, including pluralities of resilient spokes corresponding to said paths, the spokes of each of said pluralities being arranged to extend in a radial direction into each of said paths to engage said vehicle in said path to propel same along said path, and means rotating said resilient spokes; and
additional propulsion means operable in conjunction with said propulsion means for applying still further force to said vehicles individually and in response to remote signals the players, said additional propulsion means including a shaft associated with each of said pluralities of said spokes, means mounting said pluralitites of said spokes to said shafts, means permitting said shafts to move in relation to said paths so as to permit said pluralitites of said spokes associated therewith to move toward their associated path, and operating mechanisms associated with said pluralities of said spokes, means mounting said operating mechanisms for rotation, camlike surfaces provided on said operating mechanisms and resting in engagement against said shafts such that as said operating mechanisms are rotated said cam-like surfaces urge said shafts toward said paths such that in response to said remote control signal each of said pluralities of said spokes moves closer to its associated path to apply additional force to said vehicles.

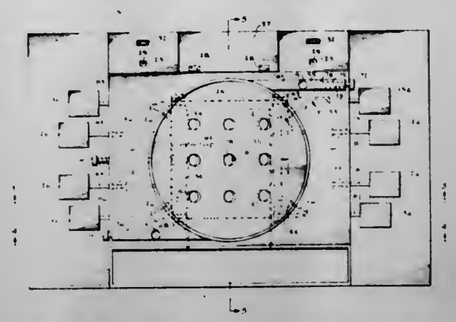
4,070,025

TILTABLE GAME SURFACE DEVICE

John A. Wiser, P.O. Box 192, Liberty, Tex. 77575

Continuation-in-part of Ser. No. 625,843, Oct. 28, 1975, Pat. No. 4,023,806. This application Feb. 7, 1977, Ser. No. 766,208
Int. Cl.[2] A63F *7/10*; A63B *67/14*
U.S. Cl. 273—110 **10 Claims**

1. A tiltable game surface device comprising:
a housing
a game surface member having a plurality of holes therein and seated in said housing,
a retaining wall located about said game surface and seated on said housing,
a plurality of biasing means connecting said game surface member to said housing and biasing said game surface downward in said housing against four vertical rods, two each of said rods being affixed at opposite ends of two vertically movable beams located below said game surface member in said housing, and
at least a first four adjacent levers pivotally mounted in said housing and extending from said housing and into said housing, two each of said levers being located below one



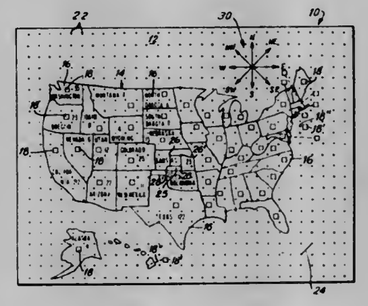
of each of said beams to separately contact opposite ends of said beams for individually raising said beams.

4,070,026

BOARD GAME APPARATUS

Nicholas A. Cambardella, 3660 Crest Road, Wantaugh, N.Y. 11793

Filed Aug. 20, 1976, Ser. No. 716,194
Int. Cl.[2] A63F *3/04*
U.S. Cl. 273—254 **15 Claims**

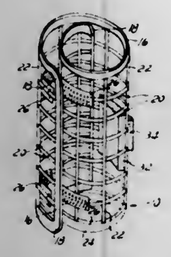


1. A game for two or more players comprising: a game board having a top surface and a bottom surface, said top surface having a map formed thereon, said map being divided into a plurality of individual territorial entities; a plurality of game pieces for movement along said map in discrete steps, one game piece for each player; and game piece control means for controlling the movement of said game pieces along said map, said game piece control means determining the distance moved along a portion of said map and the direction of movement of a game piece along said map, said top surface of said game board also having means thereon for guiding said game pieces therealong in the direction and distance determined by said game piece control means, each of said territorial entities of said map having formed thereon a number indicating its value for the game, said value being determined by a formula relating a general characteristic of all the territorial entities to each territorial entity, so that a ranking thereof may be derived.

4,070,027
LIMB STIFFENING DEVICE

Harry P. Kifferstein, 27250 Harvard Road, Southfield, Mich. 48076, and Warren M. Kifferstein, 29632 Middlebelt, Farmington Hills, Mich. 48024

Filed July 19, 1976, Ser. No. 706,627
Int. Cl.² A63B 69/36; A61F 3/00
U.S. Cl. 273—189 A 7 Claims

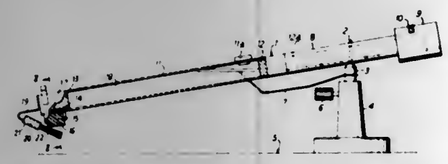


1. A stiffening device for a limb joint comprising a single length of tough flexible non-elastic material of open lattice pattern having a continuous edge provided with radiused corners, said open lattice pattern having a plurality of integral web members extending from edge to edge in criss-cross arrangement, each of said web members and said edge being substantially curvilinear in cross section, and means for attaching opposite ends of said length of material in overlapped fashion when wrapped around a limb joint, wherein the overlapped ends of said length of material are disposed at the crook of said limb joint and said length of material is formed with a bow causing said material to tend to curl upon itself lengthwise and about said limb.

4,070,028
CLEANSING OF CONTAMINANTS FROM GRAMOPHONE RECORDS

Percy Wilson, Oxford, England, assignor to Metrosound Audio Products Ltd., England

Continuation of Ser. No. 327,396, Jan. 29, 1973, abandoned. This application June 29, 1976, Ser. No. 700,986
Claims priority, application United Kingdom, Mar. 29, 1972, 14750/72
Int. Cl.² G11B 3/58
U.S. Cl. 274—47 5 Claims



1. A cleaning device, for use on a record player including a deck and a turntable, for the removal of contaminants from the grooves of a micro-groove gramophone record carried on said turntable, comprising:

i. a mounting for disposition on said deck, said mounting including pivot means

ii. an arm supported adjacent one of its ends on said pivot means and pivotable thereon for lateral movement of its other end with respect to the deck and for lifting and lowering movement of its other end with respect to the deck,

iii. supporting means on the other end of said arm

iv. a rod-like bunch of bristles constituting a scouring element and having a longitudinal axis and a first end and a second end, said bunch of bristles being resiliently bendable transversely to said axis, said bunch of bristles being secured by its first end to said supported means, said bunch of bristles having its second end extending away from the supporting means with its axis having a first component of direction away from said arm and a second component of direction towards said mounting such that said bunch of bristles lies, when the device is in use on the gramophone record, at an angle within the range 20° through 60° with respect to the plane of the gramophone record and extends in the direction against the rotation of the gramophone record, said second end of said bunch of bristles being adapted to pass down into the groove of the gramophone record at least partially towards the base of said groove,

v. a receptacle for supplying cleansing liquid to said bunch of bristles,

vi. means defining a flow path for said liquid from said receptacle to said bunch of bristles, and

vii. said mounting having a lower end for placing on said deck, and an upper end at which said pivot means is disposed, said arm being positioned when the bunch of bristles is in use on a gramophone record, at an inclination upwardly from said one end thereof towards said other end thereof, whereby an increase of drag resistance occurring between the bunch of bristles and the record surface results in an increase of force urging the bunch of bristles down into the groove of the record.

4,070,029
ROLLER SKATE

Albert J. Panarelli, 8 Trowbridge Circuit, Worcester, Mass. 01603

Filed Apr. 9, 1976, Ser. No. 675,288
Int. Cl.² A63C 17/26
U.S. Cl. 280—11.19 4 Claims



1. A roller skate for use in playing hockey with a puck, comprising:

a. a shoe,

b. a front wheel assembly having an axis and being attached to the front of the shoe,

c. a rear wheel assembly having an axis and being attached to the rear of the shoes to define a space between the rear wheel assembly and the front wheel assembly,

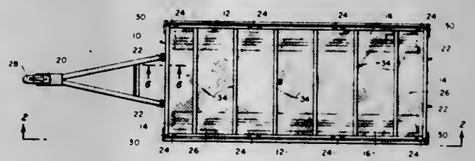
d. a solid blocking element lying in the said space and having a lower edge located a substantial distance below the axes of both wheel assemblies, the distance from the said lower edge to the ground being less than the thickness of the puck, a rigid support structure being fastened to the shoe, the first wheel assembly, the second wheel assembly, and the blocking element being separately attached to the support structure, the support structure being in the form of an I-beam whose upper flanges are attached to the shoe and whose lower flanges are attached to the wheel assemblies and the blocking element, the blocking element being a generally rectangular plate arranged vertically with one side edge constituting the said lower edge, with the upper edge lying adjacent the lower flanges of the support structure, and with the end edges lying adjacent the wheel assemblies, and

e. a clamp mounted on the upper edge of the blocking element to grasp the lower flanges of the support structure, the clamp consisting of two opposed concave elements each of which engages the edge of a flange, the elements lying on opposite sides of the plate and are drawn together to clamp the flanges by a plurality of bolts passing through the elements and the plate.

4,070,030
COMBINATION SLED AND RAMP

Bob J. Clark, 467 E. Anderson, Idaho Falls, Idaho 83401

Filed May 10, 1976, Ser. No. 684,997
Int. Cl.² B62B 13/16
U.S. Cl. 280—24 9 Claims



1. A dual-purpose sled comprising:

a frame forming a bed;

skid means attached to the underside of said frame;

towing means attached to an end of said frame;

changeable sides and ends on said frame;

said changeable sides including adjustable means for adjusting them flat with said frame;

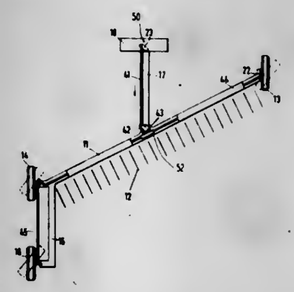
said changeable ends including means for displacing said ends to a non-obstructing position whereby said frame may be used as a ramp; and

convertible means for converting said frame into a loading ramp.

4,070,031
STEERING LINKAGES

Donald George MacLeod Whittaker, Silver Creek,, Union Mills, Isle of Man

Filed Apr. 5, 1976, Ser. No. 673,431
Claims priority, application United Kingdom, May 13, 1975, 20070/75
Int. Cl.² B62D 7/00; A01B 69/08
U.S. Cl. 280—103 4 Claims

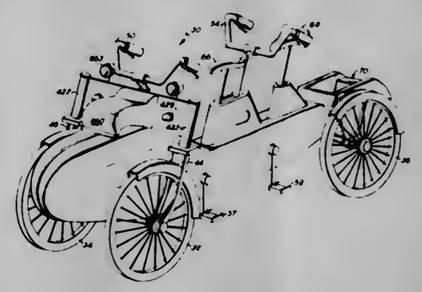


1. In a steering linkage for a trailer vehicle or implement comprising a frame and steerable wheels mounted on the frame wherein the improvement comprises a transverse frame member, a bar slidably mounted in the said transverse frame member, a rack formed on the said bar, a pinion rotatably mounted in the transverse frame member in mesh with the said rack, means for rotating said pinion comprising a link rod, said link rod interconnected with said pinion, the rotation of the pinion imparting sliding motion to the bar, and means for linking the bar and the steerable wheels whereby sliding motion of the bar provides rotary motion to the steerable wheels, a forwardly extending frame member, means for connecting said forwardly extending frame member to said transverse frame at the midpoint of said transverse frame, a cross-member adapted to be connected to a trailer hitch, and means for pivotally connecting said forwardly extending frame member to said crossmember.

4,070,032
FOUR WHEEL PEDAL DRIVEN VEHICLE

William W. Cunningham, 7129 W. Mariposa St., Phoenix, Ariz. 85033

Filed June 16, 1975, Ser. No. 587,055
Int. Cl.² B62M 1/02
U.S. Cl. 280—231 3 Claims



1. A four wheel vehicle having tandem operator position comprising:

a. a unitary, longitudinal, integral frame including front and rear handle bar housings, front and rear seat mast housings, front and rear crank housings, and a rear clamp member;

b. a front yoke assembly having its mid-section rigidly secured to said front handle bar housing, said yoke assembly including right and left fork housings at its right and left ends respectively;

c. right and left forks pivotally mounted in said right and left fork housings respectively;

d. right and left front wheels mounted on said right and left forks respectively;

e. a vertical post pivotally mounted in said front handle bar housing, front handle bars mounted on the upper end of said vertical post, a horizontal U-shaped member integral with the lower end of said vertical post;

f. right and left arms mounted on said right and left forks respectively, cross link members pivotally connected between the horizontal legs of said U-shaped member and said right and left arms respectively;

g. an upright post pivotally disposed in said rear handle bar housing, rear handle bars mounted on the upper end of said upright post, a cross member rigidly connected to the lower end of said upright post;

h. parallel cables connected between said U-shaped member and said cross member respectively whereby steering is provided from either or both of said tandem operator positions;

i. front and rear pedal sprockets disposed in said front and rear crank housings respectively, front and rear seats disposed in said front and rear seat mast housings respectively;

j. a rear framework connected to said rear clamp member, right and left axles rotatably mounted in said rear framework, right and left rear wheels mounted on said right and left axles respectively;

k. a multiple speed transmission means mounted on said rear framework, said transmission means including an input

drive sprocket and output means drivingly connected to said right and left axles, operator control means for shifting said transmission means;

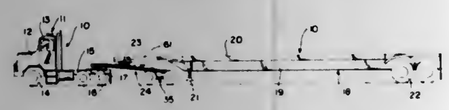
l. a continuous, single loop drive chain engaging said front and rear pedal sprockets and said input drive sprocket, whereby said vehicle can be pedal driven and steered from either or both of said tandem operator positions.

4,070,033

TRANSPORT SYSTEM OF HIGHWAY VEHICLES

Gary L. Weir, Denton, and Velmo Johnson, Mabank, both of Tex., assignors to Pullman Incorporated, Chicago, Ill.

Filed July 15, 1976, Ser. No. 705,742
Int. Cl.² B62D *53/00*
U.S. Cl. 280—423 A **2 Claims**



1. In a vehicle transport system including a highway tractor having a first running gear and first fifth wheel,

a trailer vehicle having a deck and a supporting second running gear and including a first king pin, the improvement of a dolly for interconnecting said tractor and trailer vehicle comprising,

a frame,

said frame including a forward portion having a second king pin connected to said first fifth wheel,

said frame including a rearward portion having a third running gear connected thereto,

said frame including a portion extending in downwardly inclined relation from said forward portion to said rearward portion,

a second fifth wheel on said frame connected to said first king pin,

means adjustably mounting said second fifth wheel on said inclined frame portion whereby said second fifth wheel and first king pin connection may be moved to a plurality of locked positions on said frame,

guide means on said frame adapted to be engaged by said trailer vehicle for guiding said first king pin into locked position with respect to second fifth wheel,

said guide means including a pair of longitudinally extending guide members, connected in transversely spaced relation on said inclined portion of said frame,

each of guide members having a first upper guide portion,

each of said guide members having a second upper guide portion extending rearwardly of said second fifth wheel and downwardly in inclined relation,

said second fifth wheel having a king pin receiving jaw facing rearwardly with respect to said frame, and

said second upper inclined portions of said guide members being positioned rearwardly of said king pin receiving jaw,

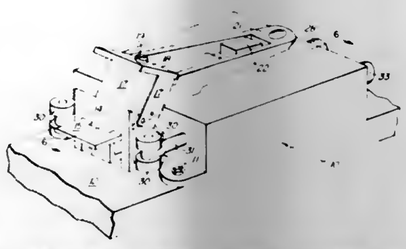
said means adjustably mounting said second fifth wheel being disposed below the level of said first upper guide portions, each of said first upper guide portions being spaced laterally outward from said means adjustably mounting, and said second upper guide portions being wider than said first upper guide portions and extending inwardly thereof and being disposed athwart and in shielding relation to said means adjustably mounting said second fifth wheel.

4,070,034

ADJUSTABLE RELEASE HEEL SKI BINDING

Glen R. Swenson, 3152 Valley, Salt Lake City, Utah 84109

Continuation-in-part of Ser. No. 571,513, April 25, 1975, Pat. No. 3,992,032. This application July 26, 1970, Ser. No. 708,917
Int. Cl.² A63C *9/08*
U.S. Cl. 280—625 **10 Claims**



1. An adjustable release ski binding comprising in combination:

a housing for attachment to a ski;

means for attaching said housing to a ski;

clamp means extending outwardly from said housing to engage the top surface of the heel of a ski boot when the boot is in position on a ski, said clamp means having a clamp member arranged to pivot vertically from a normally horizontal attitude;

biasing means disposed in said housing for urging said clamp means in a horizontal attitude with respect to a ski surface;

means for adjusting the biasing force exerted by said biasing means to maintain said clamp means in the normally horizontal attitude;

a pair roller means extending outwardly from said housing respectively on each side of said clamp means to engage the rearward curved end portion of said ski boot heel for resiliently resisting lateral displacement of the heel when in position on a ski;

biasing means disposed in said housing for urging said roller means against said rearward curved end portion of said ski boot heel; and

separate means for adjusting the biasing force exerted by said biasing means against said roller means.

4,070,035

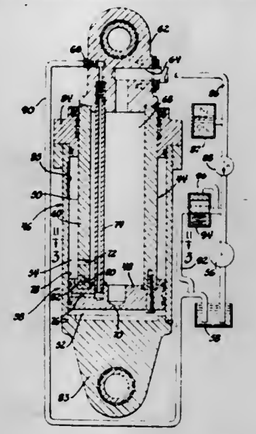
RIDE STRUT FOR VEHICLE SUSPENSION SYSTEM

Robert J. Pelouch, Brecksville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 11, 1976, Ser. No. 740,957
Int. Cl.² B60G *11/26*
U.S. Cl. 280—709 **2 Claims**

1. A ride strut for a vehicle having a frame and at least one wheel rotatably suspended therefrom, said ride strut adapted to be positioned between the frame and the wheel, said ride strut including relatively movable piston and cylinder members, said piston member comprising a piston head fixed with a rod at extends out of one end of said cylinder member, said piston member dividing said cylinder into first and second variable volume chambers for hydraulic fluid, said piston head having a passage formed therein that opens at the inner side wall of the cylinder member, said rod having a fixed volume chamber formed therein, a first orifice in said piston head for fluidly connecting said fixed volume chamber with said first variable volume chamber, a first port in the outer end of said rod communicating with said first variable volume chamber through said fixed volume chamber and said first orifice, a second port in the outer end of said rod communicating with said passage formed in said piston head, a hydraulic circuit for supplying pressurized hydraulic fluid to said ride strut, and circuit including a pump connected to said first port, an accumulator located between said pump and said first port and

adapted to be charged by said pump and receive hydraulic fluid from said first variable volume chamber when said ride strut is compressed, a reservoir connected to said second port, a recess formed in the inner side wall of said cylinder member whereby said pump and accumulator are adapted to be connected to the reservoir via said recess and said passage in the piston head so as to position and maintain the piston member at



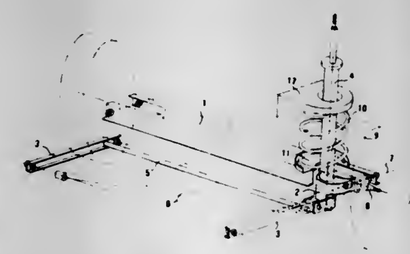
a predetermined point relative to the cylinder member and thereby provide leveling of the wheel, and a second orifice formed in the inner end of said rod adjacent the piston head for connecting the fixed volume chamber with the second variable volume chamber so as to restrict fluid flow therebetween during rebound and thereby provide dampening of the ride strut.

4,070,036

REAR AXLE FOR MOTOR VEHICLE

Georges Decouzon, Boulogne Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed July 15, 1976, Ser. No. 705,580
Claims priority, application France, July 22, 1975, 75 22783
Int. Cl.² B60G *11/26*
U.S. Cl. 280—710 **7 Claims**



1. Rear axle for a motor vehicle comprising:

a rigid axle member extending transversely to the longitudinal axis of the vehicle;

stub-axle brackets positioned at each end of said rigid axle member;

substantially horizontal pivot pins extending parallel to the longitudinal center line of the vehicle for pivotally mounting each end of said rigid axle member to a respective one of said stub-axle brackets;

longitudinally-extending tie-rods associated with each of said stub-axle brackets, one end of each of said longitudinally-extending tie-rods being connected to a respective one of said stub-axle brackets and the other end being secured to the body of the vehicle;

a tie-rod extending obliquely to the longitudinal axis of the vehicle, one end of said tie-rod being connected to one of said longitudinally-extending tie-rods close to the connection of the tie-rod to said stub-axle bracket and the other end being secured to the body of the vehicle; and

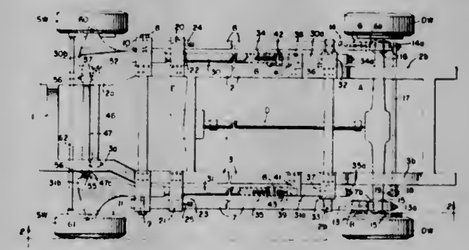
vertical shock absorbers surrounded by coil compression springs for connecting each of said longitudinally-extending tie-rods to the body of the vehicle.

4,070,037

SUSPENSION FOR VEHICLES

Arnold Royse, Jr., Rte. 1, Box 158, Flemingsburg, Ky. 41041

Filed Aug. 19, 1976, Ser. No. 715,950
Int. Cl.² B62M *1/00*
U.S. Cl. 280—719 **10 Claims**



1. A suspension for a vehicle having elongated side frame members and having a pair of rear wheels and a pair of steered wheels, comprising:

a pair of first hanger brackets mounted on the side frame members forward of the longitudinal center of the frame and extending transversely therefrom in opposite directions;

rear suspension means including a pair of rearwardly extending cantilever arms offset from and extending substantially parallel to the side frame members and supported at their forward ends in transversely disposed horizontal pivots carried by said first hanger brackets;

transverse axle means carrying said rear wheels and carried by said rearwardly extending cantilever arms near their rearward ends;

rear suspension spring means coupled between each rearwardly extending cantilever arm and the frame, and operative to support the frame on the rear suspension.

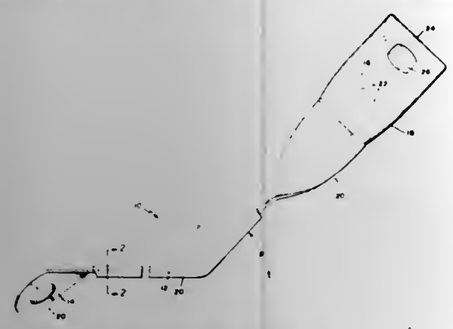
a pair of second hanger brackets mounted on the side frame members to the rear of the longitudinal center of the frame and extending transversely therefrom in opposite directions;

forward suspension means including a pair of forwardly extending cantilever arms offset from and extending substantially parallel to the side frame members and to said rearwardly extending cantilever arms and supported at their rear ends in transversely disposed horizontal pivots carried by said second hanger brackets, each forwardly extending cantilever arm having at its front end a steering joint mounting a steered wheel outwardly of the frame;

forward suspension spring means coupled between each forwardly extending cantilever arm and the frame, and operative to support the frame on the rear suspension; and

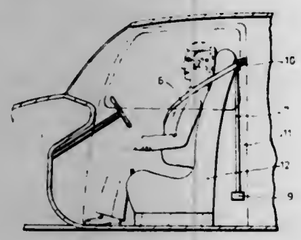
a front axle coupled to the front of each front suspension cantilever arm and extending inwardly of the frame therefrom, each front axle extending across the center of the frame and being mounted in a horizontal longitudinal pivot in the side frame member opposite the arm to which it is attached.

4,070,038
SAFETY BELT CONNECTOR COVER
Kenneth A. Bergman, Washington, and Robert J. Bishop, Rochester, both of Mich., assignors to Allied Chemical Corporation, Morris Township, N.J.
Filed Feb. 2, 1976, Ser. No. 654,481
Int. Cl.² B60R 21/10
U.S. Cl. 280—744 16 Claims



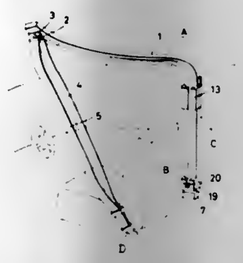
1. Safety belt connector, comprising:
a. elongated means composed of a metal plate;
b. said elongated means having a first terminus adapted to be secured to the vehicle by a mechanical fastening means and a second terminus adapted to fixedly support a first fastening means for receiving the tongue of a seat belt; and
c. cover means composed of plastic material coating a major portion of the exterior surface of said elongated means, said cover means including as an integral part thereof a chamber having an open botton and a closed top, said chamber being adapted to cover each of the first terminus and the mechanical fastening means.

4,070,039
PASSIVE VEHICLE SAFETY BELT APPARATUS
Günter Hoffmann, Gifhorn, and Wilfried Köpke, Sulfeld, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Germany
Filed Jan. 30, 1976, Ser. No. 654,054
Claims priority, application Germany, Feb. 13, 1975, 2505971
Int. Cl.² B60R 21/02
U.S. Cl. 280—745 3 Claims



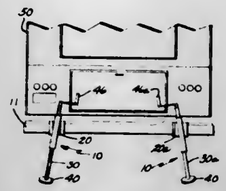
1. A passive vehicle safety belt apparatus, useable in connection with a vehicle seat adjacent to a vehicle door, comprising:
a belt winding device mounted to said vehicle door;
a belt diverting device arranged adjacent to said vehicle door at a level corresponding to the shoulder height of a vehicle occupant;
a manually operable latch interconnecting said belt diverting device with said vehicle door;
and a diagonal shoulder belt having one end mounted adjacent said seat on the side away from said door, extending across said seat and passing through said belt diverting device to said belt winding device;
whereby when said latch is activated to release the connection between said diverting device and said vehicle door said belt extends across said seat in a slackened condition.

4,070,040
SEAT BELT SYSTEM
Harutoshi Igeta, No. 17-24, 3-chome, Kirennishi, Hirano, Osaka, Japan
Filed Dec. 10, 1975, Ser. No. 639,611
Claims priority, application Japan, Sept. 17, 1975, 50-127980
Int. Cl.² B60R 21/00
U.S. Cl. 280—745 4 Claims



1. A seat belt system for an occupant seated on a seat in a motor vehicle, said system comprising:
first seat belt means fastened at one end to the lower side of said seat for crossing over the lap of said occupant on said seat;
second seat belt means fastened at one end to the lower side of said seat for crossing over the torso of said occupant on said seat;
a continuous rail positioned above said seat and extending straight downward along the inside wall of said motor vehicle beside said seat on the side of said seat opposite the side where said first and second seat belt means are fastened, said rail being slightly curved in shape above said seat, and having at least one continuous groove therein;
first carriage means movably contained in said groove in said rail and connected to said first seat belt means for moving said first seat belt means along and down said rail and across the lap of said occupant on said seat;
second carriage means movably contained within said groove in said rail and connected to said second seat belt means for moving said second seat belt means along and down said rail and across the torso of the said occupant on said seat;
a first flange connected to said first carriage means outside of said groove;
a second flange connected to said second carriage means outside of said groove, said second flange being wider than said first flange;
first locking means positioned along the portion of said rail extending downward along the sidewall of said motor vehicle for receiving and retaining therein said second flange, said first locking means being sufficiently large enough to allow said first flange to pass therethrough, while retaining said larger second flange therein;
second locking means positioned at the bottom of said rail extending downward along the sidewall of said motor vehicle for receiving and locking therein said first flange, said second locking means having a spring-biased and solenoid controlled locking bar for locking said first flange, and thus said first seat belt means, therein;
reversible motor means connected to said first carriage means for moving said first carriage means back and forth along said groove in said rail; and
fastening means attached to said first and second flanges for releasably fastening said flanges together, whereby moving said first carriage means by said motor means also moves said second carriage means.

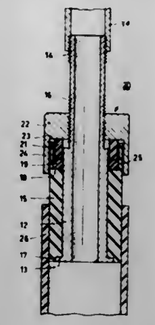
4,070,041
VEHICLE STABILIZER
Robert C. Brammer, Suttens Bay P.O., Suttens Bay, Mich. 49582
Filed Nov. 10, 1976, Ser. No. 740,397
Int. Cl.² B60S 9/02
U.S. Cl. 280—763 12 Claims



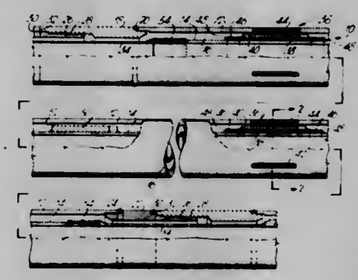
1. A self-storing vehicle stabilizer adapted for attachment to an elongated, horizontal structural member of a vehicle such as a bumper, comprising:
a jack assembly having an elongated body of adjustable length;
a ground engaging foot attached to the extremity of said jack assembly;
means for rotatably mounting said assembly on the structural member such that said assembly is swingable about an axis extending above the lowermost surface of the structural member on which it is adapted to be mounted, said assembly being swingable between a storage position in which it is generally parallel to the longitudinal axis of the structural member and an operational position in which said foot is adapted to contact the ground;
said jack assembly being adjustable to a length so that said foot is aligned with the end of the structural member in the storage position, the adjustability being sufficient so that at a first length said foot clears the end of the structural member and at a second length, shorter than said first length, said foot engages the structural member; and
said foot being sized to extend from said jack assembly beyond an edge of the structural member so as to engage the end of the structural member when said assembly is rotated to its storage position and then shortened thereby stabilizing said assembly in said storage position.

4,070,042
HIGH-STRENGTH COUPLING OF PLASTIC PIPE TO METAL PIPE
Petrus Marinus Acda, Enkhuizen, Netherlands, assignor to Polva Nederland B.V., Enkhuizen, Netherlands
Filed Oct. 27, 1976, Ser. No. 736,175
Claims priority, application Netherlands, Oct. 17, 1975, 7512189
Int. Cl.² F16L 47/02
U.S. Cl. 285—21 5 Claims

1. A high strength coupling device for coupling an end of a plastic pipe to an end of a metal pipe, comprising a tubular metal connecting piece having an external screw thread along at least part of the length of the piece, the connecting piece having an end having means for coupling to a metal pipe end, and an other end having a stop; a cylindrical plastic coupling member surrounding the portion of the length of the connecting piece, retained by abutment against said stop, and having an annular recess adjoining the connecting piece and adapted for welding to plastic pipe; a sealing ring disposed in said recess for sealing between said connecting piece and the coupling member; and a hold-down element having an internal screw thread engaging said external screw thread such that rotation of the hold-down element moves it axially along said member, and an end facing the member;
wherein the coupling member has an end facing the hold-down element, said annular recess being open at said coupling member end so that axial movement of the hold-down member toward the coupling member applies force directly on the sealing ring.



4,070,043
DOUBLE-WALLED PIPE CONSTRUCTION
Floyd W. Becker, Calgary, Canada, assignor to Drill Systems Inc., Calgary, Canada
Filed Jan. 21, 1977, Ser. No. 761,185
Claims priority, application Canada, Apr. 12, 1976, 250031
Int. Cl.² F16L 47/00
U.S. Cl. 285—133 A 6 Claims



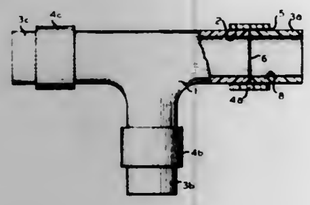
1. In a length of double-walled pipe for a reverse-circulation drill string including an outer pipe and an inner pipe concentrically disposed to provide a flow passage of annular cross-section between said pipes, the improvement for mounting said inner pipe within said outer pipe comprising, adjacent each end of said inner pipe: an annular bushing slidably received on said inner pipe; a plurality of circumferentially spaced locating straps positioned between said bushing and the inner wall of said outer pipe, said locating straps being fixed to said bushing and to said inner wall; and a pair of annular locating sleeves fixed to the outer surface of said inner pipe, each of said sleeves being positioned adjacent a corresponding end of said bushing; whereby said inner pipe is restrained from axial movement relative to said outer pipe by interaction between said sleeves and said bushing, while being free to rotate in said bushing.

4,070,044

POLYMER PIPE CONNECTION AND METHOD TO MAKE IT

Guy E. Carrow, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 22, 1976, Ser. No. 651,311
Int. Cl.[2] F16L *41/00, 47/02*
U.S. Cl. 285—156 6 Claims



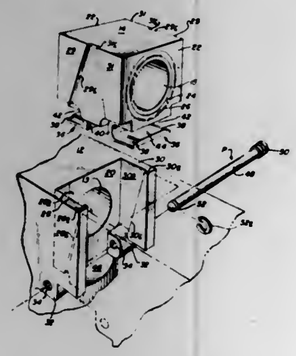
1. A modified multiple-outlet pipe fitting which comprises
a. a base pipe fitting formed of a crosslinked polymer and having at least three outlets,
b. at least three segments of conduit having a first end and a second end and being formed of a non-crosslinked polymer, so positioned that each first end of each segment of conduit is positioned adjacent one outlet of said base fitting and wherein each segment of conduit is essentially of the same internal diameter as that outlet of said base fitting to which it is positioned adjacent,
c. a heat-deformed sleeve member disposed around each of said outlets of said base fitting and said first end of each segment of conduit, each said member having been formed from a heat-deformable polymer and being sealably connected to each said fitting outlet and segment of conduit by
d. a seal formed of an in situ crosslinked polymer material having been disposed between the inner surface of each sleeve member and the outer surface of each outlet of said base fitting and each first end of each segment of conduit abutted thereto.

4,070,045

SEPARABLE CONNECTION FOR CONDUIT SEGMENTS CONVEYING A FLUID UNDER PRESSURE

John S. Colter, Topsfield, Mass., and Alfred J. Schommer, E. Hampstead, N.H., assignors to Watts Regulator Company, Lawrence, Mass.

Filed Aug. 2, 1976, Ser. No. 710,416
Int. Cl.[2] F16L *19/02*
U.S. Cl. 285—325 19 Claims



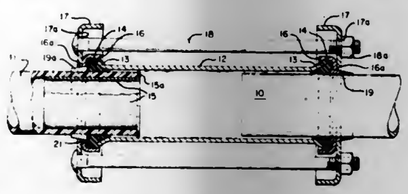
1. In a separable connection between a pair of elongate conduit members, through which extend longitudinal flow passageway means for conveying a fluid under pressure, the flow passageway means in the conduit members requiring substantially precise alignment and a fluid-tight seal between conduit members when they are properly connected; the improved separable connection comprising, in combination:
the adjacent ends of the pair of conduit members each including an abutment face lying transverse to the axis of the flow passageway means and surrounding a terminus of the flow passageway means;
a compressible seal means surrounding a terminus of the flow passageway means in one of the pair of conduit members at each separable connection defined between a pair of conduit members;
flange means and socket means, on respective adjacent ends of the pair of conduit members, arranged to effect initial telescoping therebetween to planarly align the axes of the flow passageway means in the pair of conduit members, with the abutment faces spaced apart slightly and the seal means uncompressed;
and cam means on said adjacent ends of the pair of conduit members for simultaneously forcing the planarly aligned axes of the flow passageway means into substantially precise axial alignment while axially compressing the compressible seal means between the abutment faces on the pair of conduit members, to provide a fluid-tight seal for the flow passageway means at the separable connection,
said cam means including a bored sleeve means provided on one of the pair of conduit members, the longitudinal axis of the bored sleeve means lying parallel to the abutment face of the one conduit member and lying skew of, but in a plane perpendicular to, the axis of the flow passageway means; the other of said pair of conduit members providing an abutment leg with a cam surface thereon that is positionable laterally adjacent the bored sleeve means; and an elongated drive pin arranged for selective slidable entry into the bore of said bored sleeve means and arranged to be selectively forced laterally into sliding and driving engagement with the cam surface on the abutment leg, to thereby move the abutment leg and said other conduit member relative to the one conduit member.

4,070,046

PIPE AND TUBING CONNECTING SLEEVE

Charles E. Felker, and Paul F. Rieffle, both of Pittsburgh, Pa., assignors to Coupling Systems, Inc., Pittsburgh, Pa.

Filed Nov. 1, 1976, Ser. No. 737,700
Int. Cl.[2] F16L *17/00*
U.S. Cl. 285—337 10 Claims



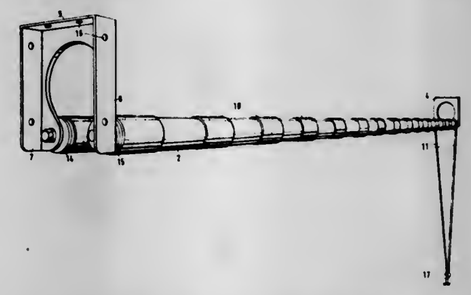
1. A coupling for joining two spaced coaxial pipes comprising an elongate sleeve adapted to receive coaxially two opposing pipe ends to be connected, said sleeve having frusto-conical enlarged ends opening outwardly, a pair of cylindrical elastomeric gaskets having frusto-conical end portions adapted to fit in the frusto-conical ends of said sleeve in sliding engagement around the pipe ends to be connected, a follower member bearing on each of said gaskets to force them into the sleeve ends, a frusto-conical opening in each follower member around the pipe ends being connected, said opening in each follower member having its large end opening toward the large end of the frusto-conical ends of the sleeve, a plurality of generally triangular jaws regularly spaced apart around each pipe end to be connected within the frusto-conical opening in the follower member, said jaws around each pipe end abutting the adjacent gasket and pressing against said gasket coaxially of said pipe, toothed surface engaging means on the face of each triangular jaw in engagement with the pipe to be connected and tightening means acting on the follower means to move the followers axially together whereby the gaskets are forced into the frusto-conical ends of the sleeve in sealing engagement with said ends and the pipe ends to be connected and simultaneously the triangular jaws are forced into tight radial engagement with the exterior of the pipe ends to be connected so as to prevent the pipe ends being moved axially out of the sleeve, said gasket and jaws coacting with each other by bearing against each other.

4,070,047

DEVICE FOR THE UNWINDING AND WINDING UP OF A WEB ROLL

Bjorn Tage Lindelow, Korshammarsvagen 8384, 430 41 Kullavik, Sweden

Filed May 5, 1976, Ser. No. 683,491
Int. Cl.[2] B65H *17/08*
U.S. Cl. 242—66 4 Claims



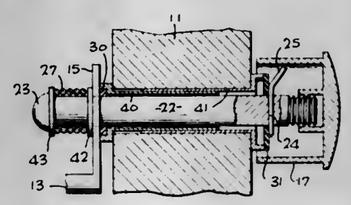
1. A device for unwinding and rewinding a background web roll for photographing purposes and comprising pairs of support rollers which are rotatable about parallel axles and journaled in axially interspaced holders common for each pair of said support rollers, at least one of said holders being U-shaped and being provided with U-leg portions having an interspace between them exceeding the diameter of said web roll in order to allow extension of the web roll through said holder.

4,070,048

RELEASABLE WINDOW GUARD

Philip Young, 1734 N. Frederic, Burbank, Calif. 91505

Filed July 6, 1976, Ser. No. 702,910
Int. Cl.[2] E06B *3/68*
U.S. Cl. 292—179 1 Claim



1. A mounting device comprising the combination of:
a window frame;
a window guard;
detachable mounting means releasably securing said window guard to said window frame;
each of said mounting means including a headed bolt having a shank passing through said guard and said frame so as to project outwardly from the interior surface of said frame;
pin means removably carried by said bolt shank for retaining said bolt on said frame to support said window guard;
resilient means forcibly and yieldably retaining said pin means engaged with said bolt shank;
a pair of sleeves arranged in telescoping relationship about said bolt shank and each of said sleeves having an enlarged flange exposed adjacent to and bearing against the exterior and interior surfaces respectively of said frame;
said resilient means compressively disposed between the head of said bolt and said window guard;
said bolt being responsive to withdrawal of said pin means to move out of said sleeves in response to expansion of said resilient means;
said bolt shank includes a threaded tip;
a cap threadably engageable with said tip for covering said pin means;
said pin means comprises a straight pin insertably engaged with a registered hole in said bolt shank so as to bear against said sleeve flange opposite to said sleeve flange closest to said window guard; and
said pin covered by said cap preparatory to use for releasing said window guard and disposed in close proximity to the interior of said window frame.

4,070,049

SECURITY DOOR GUARD

Jack J. Brewer, 5012 Oak Timbers Court, Grapevine, Tex. 76051

Filed Jan. 5, 1976, Ser. No. 646,873
Int. Cl.[2] E05C *17/34*
U.S. Cl. 292—263 3 Claims



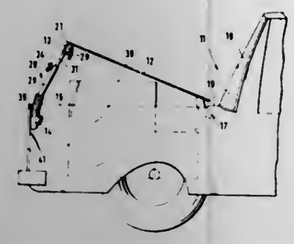
1. A security door guard to preclude unauthorized entry through a door comprising: a first tubular section; a second tubular section; means providing a hinge connection between said first and second sections at adjacent ends thereof; locking means for rigidly securing said first and second sections together against folding comprising a sleeve movable within said sections at said connected adjacent ends; means for permitting said door guard to be reduced in length a predetermined amount for partially opening said door while holding said door against further opening; means for securing a free end of one of said sections with a face of a door; and means for securing a free end of the other of said sections with a supporting surface spaced from said door.

4,070,050

HOLDER FOR ANCHORING THE TRUNK LID OF A CAR

Wilfried Glock; Josef Ruppert, and Jorg Korecki, all of Liebenzeller Strasse 11/1, 7032 Sindelfingen, Germany

Filed Nov. 5, 1976, Ser. No. 739,061
Claims priority, application Germany, Sept. 28, 1976, 2643694
Int. Cl.[2] E05C *17/30*
U.S. Cl. 292—339 14 Claims



1. A holder for anchoring the trunk lid of a car in a predetermined open position, for a trunk which is lockable by means of a snap-locking trunk lock, a first half of which is arranged on the trunk lid and a second half on a wall of the trunk,

comprising

a bracing bar which is provided with a tube section and a bar section telescopically, removably inserted in said tube section, and a locking means for anchoring said bar section in drawnout position,

said bracing bar being provided at its tube section and at its bar section with first and second fastening members for securing the said holder to the trunk lid and the trunk wall, respectively,

at least one of said fastening members of the bracing bar being adjustably mounted with respect to the longitudinal axis of said bracing bar,

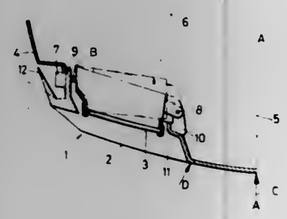
said fastening members of said bracing bar being arranged at the opposed free ends of the tube section and of the bar section and adapted to positively engage with respective ones of the trunk lock halves, the bracing bar being provided with a flexible end portion to which the one of said fastening members is secured, to permit the positive interconnection of said fastening members with cooperating trunk lock halves.

4,070,051

BUMPER FOR MOTOR VEHICLE

Dietmar Peter, Stuttgart-Feuerbach, Germany, assignor to Porsche AG, Germany

Filed Sept. 27, 1976, Ser. No. 726,559
Claims priority, application Germany, Sept. 26, 1975, 2542920
Int. Cl.[2] B60Q *1/04*
U.S. Cl. 293—69 R 4 Claims



2. In a bumper arrangement for a vehicle, particularly a motor vehicle, having a form-stiff support, an elastic covering forming an end portion of the vehicle and a light attached to said covering,

the improvement comprising:

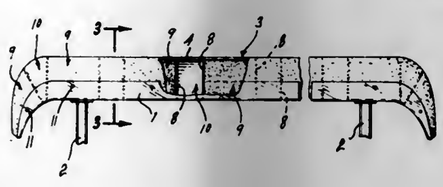
means for pivotally connecting said light to said elastic covering about a vertical axis in a manner that will cause said light to swing inwardly about said vertical axis upon deformation of said covering due to an impact there against.

4,070,052

RESILIENT VEHICLE BUMPER

Chun Wing Ng, 12,262 Clement Ader St., Riviere des Prairies, Canada (HIE IXI)

Filed Nov. 15, 1976, Ser. No. 742,527
Int. Cl.[2] B60R *19/08*
U.S. Cl. 293—71 R 5 Claims



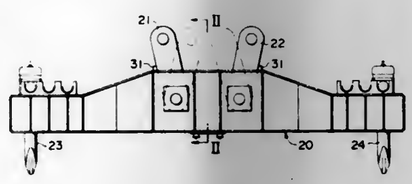
1. A resilient vehicle bumper comprising a rigid channel member of U shape transverse cross section, defining an open side and an opposite side securable to a vehicle body, a resilient membrane mounted in said channel member, projecting from said open side thereof, and integrally forming a series of closed cells serially arranged along said channel member, and including at least one filled call and at least one empty cell, granular material filling each filled cell, and each filled cell being adjacent to said at least one empty cell on at least one side for lateral bulging of each said filled cell into each adjacent empty cell upon impact against the resilient membrane.

4,070,053

SUSPENSION APPARATUS

Takehiko Tsujii, Yokohama, and Shunsuke Kutsuzawa, Seki, both of Japan, assignors to Kabushiki Kaisha Nippon Kijuki Seisakusho, Tokyo, Japan

Filed Oct. 6, 1976, Ser. No. 729,989
Claims priority, application Japan, Oct. 7, 1975, 50-136922[U]
Int. Cl.[2] B66C *1/10*
U.S. Cl. 294—81 R 3 Claims



1. A suspension apparatus including a beam assembly, a pair of movable shackles pivotally mounted on the beam assembly and rotatable between a reset position in which they are removed from each other and a set position in which they close with each other, and a control unit for automatically engaging or disengaged or disengaged the shackles with or from the hook of a crane as the latter moves downward and upward; characterized by the provision of drive means supported on the beam assembly intermediate the pair of movable shackles so as to be movable in the vertical direction, the drive means being

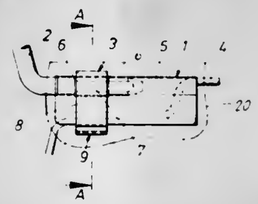
controlled between its inoperative and its operative position in response to a downward and an upward movement of the hook, connection means for operatively connecting the drive means with the pair of movable shackles, spring means for urging the drive means to its inoperative position for normally maintaining the pair of movable shackles in their reset position, and locking means for locking the drive means at a locked position intermediate the inoperative and the operative position thereof and for unlocking the drive means at a release position which corresponds to the locked position, an initial downward movement of the hook being effective to drive the drive means from its inoperative to its operative position the resilience of the spring means to thereby drive the pair of movable shackles from their reset to their set position, a subsequent upward movement of the hook being effective to cause the locking means to lock the drive means at the locked position, a following downward movement of the hook being effective to move the drive means from its locked to its operative position, and a next following upward movement of the hook being effective to cause the locking means to unlock the drive means at the release position, thereby allowing the spring means to drive the pair of movable shackles from their set to their reset position.

4,070,054

BEARING FOR A SUN VISOR BODY OF A MOTOR VEHICLE

Kurt Cziptschirsch, Wuppertal, Germany, assignor to Gebr. Happich GmbH, Germany

Filed Sept. 23, 1976, Ser. No. 725,798
Claims priority, application Germany, Nov. 18, 1975, 2551633
Int. Cl.[2] B60J *3/02*; F16C *17/00*
U.S. Cl. 296—97 K 15 Claims



1. A bearing for a sun visor body, comprising:

a spindle about which the visor body is pivotable; a bearing body wrapped about said spindle; a bearing spring; means in said body for receiving said bearing spring and for permitting access by said spring to said spindle;

said spring comprising:

a U-shaped length of material having two legs; said spring receiving said spindle between its said legs;

a hook on one said spring leg; a hookable member on the other said spring leg; said hookable member being shaped and positioned such that as said spring legs are brought toward each other, said hook and said hookable member snap together, thereby to hold said legs tightly against said spindle therebetween.

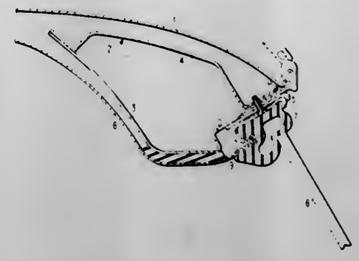
4,070,055

FASTENING OF INNER ROOF COVERING OF MOTOR VEHICLES

Eugen Fleisch, Rottenburg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Mar. 24, 1976, Ser. No. 669,768
Claims priority, application Germany, Mar. 26, 1975, 2513300
Int. Cl.[2] B62D *25/06*
U.S. Cl. 296—137 A 16 Claims

1. A fastening arrangement of an inner roof covering of motor vehicles, characterized in that an edge area of the roof covering is joined with a mounting rail means, which is configured so as to be retainably engaged with a mounting bar means, said mounting bar means being secured at an inner roof edge area of the vehicle, the mounting bar means including angularly bent flange means receiving an edge area of said roof



covering and an elastic means simultaneously serving as a positional retention means for the received edge area of the roof covering with said edge area being received between said elastic means and said flange means and as a window seal.

4,070,056

UTILITY VEHICLE DOOR AND SEAL

Kim Michael Hickman, Colorado Springs, Colo., assignor to White Automotive Corporation, Colorado Springs, Colo.

Filed June 11, 1976, Ser. No. 695,169
Int. Cl.[2] B60J *5/04*
U.S. Cl. 296—148 11 Claims



1. In an automotive utility vehicle, the combination of:

a vehicle door frame defining an opening for ingress and egress and a door pivotally mounted on the vehicle about a vertical axis and movable between first and second positions to provide access and to close the opening;

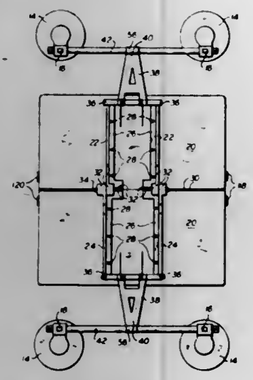
the door frame being of predetermined size and outline and having a sill, a lintel, and forward and rear uprights to form a closed figure;

the door being of substantially the same size and outline as the door frame and comprising a skeletal framework of resilient material including a border structure having upper and lower portions, and a fabric covering secured to the framework;

the lower portions of the forward and rear marginal sections of the framework lying in a substantially vertical plane to mate with corresponding sections of the door frame, and the upper portions of the marginal sections being angled upwardly and inwardly out of said vertical plane and toward the door frame sufficiently to cause interference contact of the upper marginal portion of the door with the door frame in advance of complete closure of the lower portion of the door;

the resilience of the framework being sufficient to permit complete closing and latching of the door and to yieldingly force the upper marginal portion of the door into tight sealing relation with the door frame.

4,070,057
COMBINED FOLDING TABLE AND SEAT ASSEMBLY
William C. Jones, Midland, Mich., assignor to Franklyn M. Markus, Cote St. Luc, Canada
Filed July 20, 1976, Ser. No. 707,111
Int. Cl.² A47B 39/00
U.S. Cl. 297—159 21 Claims



1. In a collapsible combined table and seat assembly of the type comprising a table, a seat disposable adjacent one end of and below the plane of said table, and leg means, wherein the improvement comprises:
- a cross-piece non-rotatably fixed to and supporting said seat;
- a bracket pivotally mounted at one end to said table for movement between an open position in which said bracket extends downwardly away from said table and a closed position in which said bracket is in close confronting relation with said table;
- means for preventing pivotal movement of said bracket away from said closed position beyond said open position thereof;
- said cross-piece being pivotally mounted on the other end of said bracket, whereby said seat can be moved into close confronting relation with said table upon the movement of said bracket between its open and closed position without pivoting said seat relative to said cross-piece;
- means for pivotally mounting said leg means on said cross-piece for movement about the longitudinal axis of said cross-piece between an open position in which said leg means extends downwardly from said cross-piece and a closed position in which said leg means is in a plane substantially parallel to the plane of said seat; and
- means for releasably holding said leg means in said open position, whereby said one end of said table is supported in an elevated position when said leg means and said bracket are in their respective open positions.

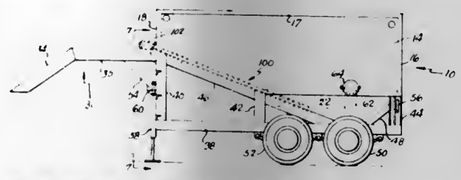
4,070,058
INFINITE POSITION SEAT BACK RECLINER
Anthony A. Muehling, 14583 Maddelein, Detroit, Mich. 48205
Filed Oct. 15, 1976, Ser. No. 732,681
Int. Cl.² A47C 1/027
U.S. Cl. 297—374 14 Claims

1. A seat recliner comprising: seat back and cushion supports connected to each other for movement about a pivotal axis; a housing fixed to one of the supports and including a pair of locking surfaces extending about the pivotal axis on opposite sides thereof; a pair of cam members pivotal with respect to the housing and each other about the pivotal axis; said cam members having respective cam surfaces on opposite sides of the pivotal axis; a pair of locking slides mounted on the other support in a pivotally fixed manner for sliding movement with respect thereto; each of said slides having a first end slidably engaged with a respective locking surface on the housing and a second end slidably engaged with a respective cam surface on the opposite side of the pivotal axis from its first end; the locking and cam surfaces engaged with one of the slides having configurations that wedge said one slide therebetween to prevent relative pivoting of the supports in one direction; the locking and cam surfaces engaged with the other slide having configurations that wedge said other slide therebetween to prevent relative pivoting between the supports in the other



direction; and spring means operatively associated with the cam members to normally maintain the wedged condition of the locking slides between the locking and cam surfaces to prevent relative pivoting of the supports in either direction while permitting selective releasing of the slides from the wedged condition to permit such pivoting and consequent infinite position adjustment of the pivotal location of the supports with respect to each other.

4,070,059
GRAIN TRAILER
Nick Ksenych, 1130 Skyline Drive, Watertown, S. Dak. 57201
Filed Apr. 2, 1976, Ser. No. 672,883
Int. Cl.² B60P 1/58
U.S. Cl. 298—1 V 14 Claims

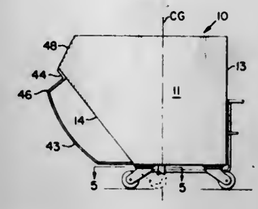


1. A material carrier, which comprises:
- a container for material which includes a bottom wall inclined so as to substantially gravity feed the contents of said container to an opening formed in the lower portion thereof, and vibrator means mounted on the interior surface of said inclined bottom wall for assisting in the emptying of said material through said opening, said vibrator means comprising an elongated vibrator bar attached to the interior surface of said inclined bottom wall, a motor having a driven shaft, a drive shaft extending longitudinally between said vibrator bar and said inclined bottom wall, means for coupling said driven shaft with said drive shaft and eccentric weight means mounted to said drive shaft for causing same to vibrate when rotating and bearing means for coupling the vibratory motion of said drive shaft to said vibrator bar.

4,070,060
DUMP TRUCK
William E. Howard, West Hartford, Conn., assignor to Materials Handling Systems, Inc., West Hartford, Conn.
Filed Sept. 29, 1976, Ser. No. 727,706
Int. Cl.² B62B 3/08
U.S. Cl. 298—2 2 Claims

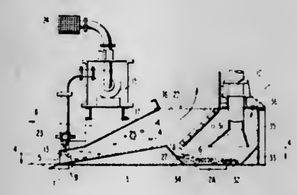
1. A manually operable dump truck comprising a truck body having a longitudinally extending bottom member intersecting

at its front end with an upwardly and forwardly extending front wall, the center of gravity of the truck body being rearwardly of the intersection of the front wall and bottom member, rear supporting means for the truck including wheel means mounted on the bottom member rearwardly of the center of gravity, forward supporting means for the truck comprising a pair of laterally spaced apart casters mounted on the bottom member between the intersection of the front wall



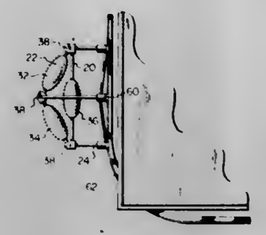
and bottom member and the center of gravity, said casters having wheels offset from the axes of the casters and being adopted to swivel in response to movement of the dump truck in a rearward direction to bring the wheels forwardly to a stabilizing position away from the center of gravity and in response to movement of the dump truck in a forward direction to bring the wheels rearwardly to a dumping position nearer the center of gravity, and manually controllable means for latching both casters in the forward stabilizing position.

4,070,061
METHOD AND APPARATUS FOR COLLECTING MINERAL AGGREGATES FROM SEA BEDS
Vsevolod Obolensky, Brussels, Belgium, assignor to Union Miniere, Brussels, Belgium
Filed July 9, 1976, Ser. No. 703,880
Int. Cl.² E02F 7/00
U.S. Cl. 299—8 48 Claims



1. Apparatus for collecting mineral aggregates from sea beds, including: means to transport said apparatus across and to support it at the surface of the sea bed; means for dislodging aggregates and accompanying silt from the sea bed; adjacent said dislodging means, an inlet leading into a duct including a slowing passage which undergoes a substantial increase in cross-sectional area in the direction in which nodules, silt, and water pass through said duct; means downstream of the slowing passage for separating nodules from the aforementioned stream by causing divergence of silt and nodules into separate paths in which the nodule path is relatively below the silt path; a final outlet by which silt and water depart said apparatus; and means for causing the nodules to depart from the duct upstream of said final outlet.

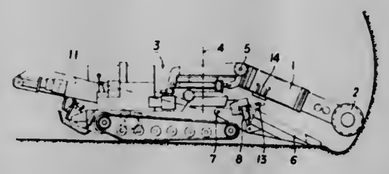
4,070,062
METHOD OF AND APPARATUS FOR DISAGGREGATING PARTICULATE MATTER
George W. Morgan, Dallas, and Joseph E. Zupanick, Richardson, both of Tex., assignors to Sun Oil Company Limited, Calgary, Canada
Filed Nov. 11, 1976, Ser. No. 740,895
Int. Cl.² B63B 35/12
U.S. Cl. 299—10 13 Claims



10. A method of disaggregating particulate matter comprising:
- serrating the particulate matter with a plurality of generally parallel cuts to form ridges therebetween by: providing a first body of revolution having teeth extending therefrom adapted for cutting and chipping matter engaged thereby; and
- rotating said first body of revolution with said teeth forming circular paths therearound, a portion of which engages the particulate matter and forms serrations therein; and

striking the ridges at an oblique angle with a plurality of blows to break and shatter the engaged portion thereof by:
- providing a second body of revolution having teeth extending therefrom adapted for cutting and chipping matter engaged thereby; and
- rotating said second body of revolution with said teeth forming circular paths therearound, which paths lie at an oblique angle to said circular paths of said first body of revolution.

4,070,063
DIVIDING CUTTING MACHINE
Peter Kogler, Knittelfeld, and Arnulf Kissich, Zeltweg, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria
Filed Aug. 31, 1976, Ser. No. 719,155
Claims priority, application Austria, Sept. 2, 1975, 6769/75
Int. Cl.² E21C 27/20, 35/20
U.S. Cl. 299—64 5 Claims



1. A dividing cutting machine comprising a machine frame, a cutter boom pivotable relative to the frame about a horizontal axis and about a vertical axis, at least one cutter head disposed on the cutter boom, a loader deck below the boom hingedly connected to the frame of the dividing cutting machine for movement about only a horizontal axis relative to the frame, said deck being provided with conveying means and with movable gathering arms for continuously sweeping the

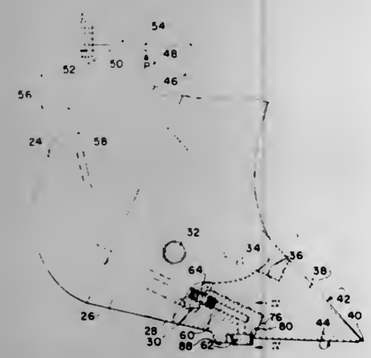
mined material upwardly over the loader deck to the conveying means, separate independent stop means mounted on the cutter boom and on the loader deck at a distance from their respective horizontal pivot axes and having a height which by virtue of engagement of the stop means with each other precludes physical contact between the cutter boom and the gathering arms in each and every mutual pivotal position of the boom and deck.

4,070,064

COOLING SYSTEM FOR ROCK RIPPER TIP

Delwin E. Cobb, Peoria, Ill.; Nathan Gutman, Londonville, N.Y., and Richard E. Livesay, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 4, 1976, Ser. No. 693,066
Int. Cl.² E02F 5/02
U.S. Cl. 299—81 **10 Claims**



1. In an impact rock ripping machine having an elongated and downwardly extending ripping shank with a forwardly extending rip mounted on said machine for receiving intermittent impact blows for driving the shank and tip in a forward direction at intermittent high speed intervals the improvement comprising:

cooling means for distributing a flow of coolant to said tip for controlling the temperature thereof comprising a spray head mounted beneath said shank and disposed intermediate lateral sides thereof and behind said tip and having a plurality of spray openings positioned thereon to direct a spray pattern of coolant to an underside of said tip and fully thereacross;

an adapter having a first socket receiving a forwardly extending projection of said shank in mounting relationship therein and a second socket having said tip detachably mounted therein; and

spray head mounting means on said adapter mounting said spray head thereon, adjacent to said tip.

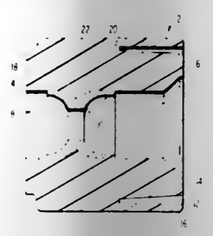
4,070,065

WHEEL FOR SKATEBOARDS AND ROLLER SKATES

Vernon Heitfield, P.O. Box 722, Purcellville, Va. 33143

Filed July 8, 1976, Ser. No. 703,676
Int. Cl.² A63C 17/22
U.S. Cl. 301—5.3 **2 Claims**

1. A wheel of molded plastic material having inboard and outboard end portions adapted to be inwardly and outwardly disposed on a vehicle and a central cylindrical aperture extending axially from end-to-end therethrough with a bearing member therein and a cylindrical tread surface around the outer periphery of the wheel, and annular groove means extending inwardly from the outboard end of the wheel for about three-eighths of the axial length of the wheel and providing a relatively thin flexible band of material between the groove means and the tread surface which in normal use will yield and flatten out against the ground to thereby increase the amount of tread upon the ground, the material between the groove means and the central aperture underlying the entire length of the thin flexible band of material and being substantially thicker, as



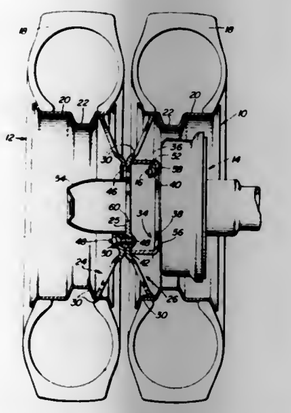
measured radially, than the thin flexible band of material, the material of said wheel between said tread surface and said central aperture, save for said groove means and said central aperture, being solid.

4,070,066

DUAL WHEELS

Merlyn Ralph Reppert, Rancho Palos Verdes, and James Albert Leslie, Carson, both of Calif., assignors to W. R. Grace & Co., New York, N.Y.

Filed June 8, 1976, Ser. No. 693,755
Int. Cl.² B60B 11/00
U.S. Cl. 301—36 R **10 Claims**



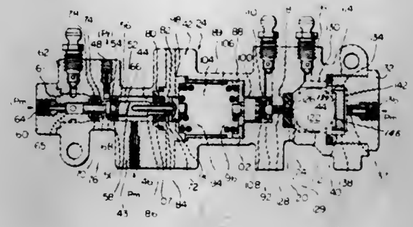
1. An inner wheel for use with dual vehicle wheels comprising a tire rim and wheel center, said rim having a drop center portion defining a shallow side of said rim, a single member integrally mounted on said inner wheel having a radially extending wall portion located in spaced relation to a middle portion of said inner wheel center, said radially extending wall portion being formed with a set of openings to receive the wheel mounting studs on a vehicle hub, and nuts on said studs for securing said inner wheel via said radially extending wall portion to said vehicle hub, said middle portion being provided with a set of openings equal in number to and aligned with said set of openings in said member; whereby access for a tool may be had through said inner wheel center openings to said nuts securing said inner wheel on the vehicle hub studs; means for mounting an outer wheel on said inner wheel comprising a set of wheel mounting studs on said inner wheel middle portion, and said wheel mounting studs on said inner wheel being equal in number to and spaced one between each two openings of said set of openings in said middle portion.

4,070,067

FLUID PRESSURE CONTROL DEVICE

Sadao Katoh, and Tsuneo Kouno, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 26, 1976, Ser. No. 670,593
Claims priority, application Japan, Mar. 28, 1975, 50-40681
Int. Cl.² B60T 13/06
U.S. Cl. 303—6 C **5 Claims**



1. A fluid pressure control device for a motor vehicle hydraulic braking system, said device comprising:

a. a housing defining therein a first chamber into which an input fluid pressure is delivered through an inlet and a second chamber into which an output fluid pressure is generated and having an outlet for said output fluid pressure,

b. a first valve movably located in said first and second chambers and having a first position in which an input fluid pressure is less than a critical fluid pressure and an output fluid pressure is equal to said input fluid pressure and a second position in which said input fluid pressure is greater than said critical fluid pressure and said output fluid pressure is less than said input fluid pressure,

c. first valve control means comprising biasing means, first and second fluid chambers, a second valve, an end plug, and a valve supporter,

d. said biasing means urging said first valve away from said first fluid chamber,

e. said first fluid chamber being defined in said housing and receiving a second fluid pressure equal to said input fluid pressure for controlling the force of said biasing means,

f. said second fluid chamber being defined in said housing and communicating with said first fluid chamber and having an open end,

g. said second valve being disposed in said second fluid chamber and operable in response to a predetermined deceleration rate to separate said first fluid chamber from said second fluid chamber to maintain the pressure of fluid in said first fluid chamber at a predetermined value,

h. said end plug being fixedly secured to said housing to close said open end and including a bore opening into said second fluid chamber,

i. said end plug being formed therethrough with first passage means opening into said bore for conducting said second fluid pressure into said bore,

j. said valve supporter being located in said bore of said end plug to support said second valve, and

k. means for fixedly attaching said valve supporter to an internal wall of said bore unmovably relative to said end plug,

l. said valve supporter lacking an aperture which penetrates said valve supporter and opens into said second fluid chamber from said valve supporter at a portion confronting said second valve,

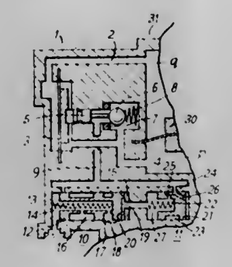
m. said valve supporter being formed outside said portion confronting said second valve with second passage means providing communication between said first passage means of said end plug and said second fluid chamber.

4,070,068

VEHICLE BRAKING CONTROL APPARATUS

David John Wickham, London, England, assignor to Westinghouse Brake & Signal Co. Ltd., London, England

Filed Jan. 12, 1977, Ser. No. 758,830
Claims priority, application United Kingdom, Feb. 7, 1976, 04866/76
Int. Cl.² B60T 17/04
U.S. Cl. 303—82 **10 Claims**



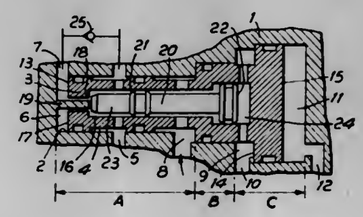
1. In fluid pressure controlled apparatus for a vehicle braking system controlled by pressures in a brake pipe, valve apparatus for improved continuous quick service operation, comprising a reference pressure signal input port and a brake pipe pressure signal input port, pressure difference sensing means for continuously sensing and responding to pressure differences between the pressure signals at said signal input ports, pulsating means operative when energized to discharge repetitive pulses of air from the brake pipe, and means responsive to sensed attainment of a predetermined pressure difference by said sensing means to effect energization of said pulsating means so long as said sensed predetermined difference continues.

4,070,069

PRESSURE CONTROL ARRANGEMENT FOR HYDRAULIC BRAKE SYSTEMS

Juan Belart, Walldorf, and Alfred Birkenbach, Hattersheim, both of Germany, assignors to ITT Industries, Incorporated, New York, N.Y.

Filed Sept. 22, 1976, Ser. No. 725,896
Claims priority, application Germany, Oct. 3, 1975, 2544172
Int. Cl.² B60T 8/04
U.S. Cl. 303—115 **10 Claims**



1. A pressure control arrangement for hydraulic brake systems comprising a plunger piston in a sealed slidable relationship in a bore which defines a first chamber connecting with at least one wheel brake cylinder, said first chamber being connected with a brake pressure source through a first valve which is kept in the open position by a mechanical means when said plunger piston is in its end position wherein the volume of said first chamber is its smallest, said plunger piston being displaceable into said end position by pressure supplied by an auxiliary pressure source, said auxiliary pressure being controllable for affecting anti-skid control for which purpose the

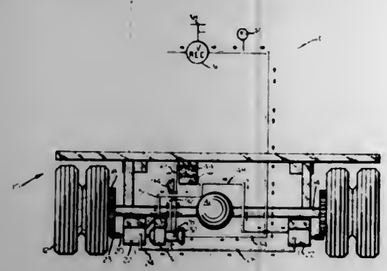
auxiliary pressure source is connected with a control chamber lying opposite said first chamber through at least one auxiliary valve, a control piston positioned in an axial bore in said plunger piston joined to a closure member of said first valve having a first end acted on by the pressure from said brake pressure source in the opening direction and a second end acted on by the auxiliary pressure in the closing direction, said acted on ends being dimensioned so that said closure member is always preloaded in the closing direction when auxiliary pressure is available.

4,070,070

VEHICLE WHEEL SPEED RETARDING SYSTEM

Frederick S. Eggers, 3961 Altadena Lane, San Jose, Calif. 95127

Filed Aug. 6, 1976, Ser. No. 712,206
Int. Cl.² B60T *8/02*
U.S. Cl. 303—116 **5 Claims**



1. A vehicle wheel speed retarder system comprising;
a positive displacement fluid pump;
a liquid reservoir-connected to said pump;
a positive drive means for said pump, with the driving element thereof adapted to be mounted on, and to rotate with, the wheel drive of a vehicle;
a valve housing having a flow passageway therethrough;
duct means connecting the output of said pump to said flow passageway;
a valve member moveable in said housing from a full open through progressively more restrictive positions;
a speed-responsive device adapted to be driven by said vehicle wheel drive and conditioned to move said valve member through said more restrictive positions in response to increases in vehicle wheel speed; and
manually adjustable means resisting said movement of the valve member comprising:
a casing;
a pressure-responsive member sealed across said casing;
means on said pressure-responsive member engaging said valve member to bias it towards said open position;
a source of pressure fluid; and
conduit means for directing fluid from said source to bias said pressure-responsive member.

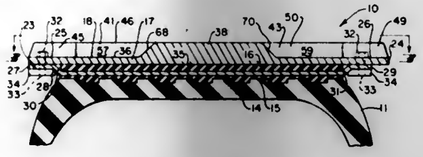
4,070,071

TRACTION ELEMENT FOR REMOVABLE TRACK

Vito A. Caravito, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 9, 1976, Ser. No. 656,530
Int. Cl.² B60S *1/62*
U.S. Cl. 305—13 **10 Claims**

1. A track for an annular resilient tire comprising a flexible belt, a plurality of substantially rigid elongated shoes extending transversely over axial edges of said belt and being mounted on said belt at spaced-apart positions along said belt, each of said shoes having a belt-engaging surface, a generally flat ground-engaging surface, side edges, end edges, end portions adjacent said end edges, a central portion between said end portions, a plurality of raised end bars positioned on said ground-engaging surface at each of said end portions, a raised central bar positioned on said ground-engaging surface at said central portion and extending generally parallel with said end bars in a direction from one of said end portions to the other of said end portions, said central bar being connected to said end bars by connecting bars, said central bar, said connecting bars and said end bars having generally the same height above said ground-



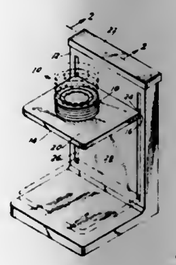
engaging surface, said end bars at each of said end portions extending generally in a direction from one of said end edges to said central portion and the distance between at least one of said end bars and one of said side edges being less than the distance between said central bar and said one of said side edges so that the end portions are reinforced by the end bars and a central flex area is provided between the central bars of adjacent traction shoes for ejecting soil from the track.

4,070,072

SELF LEVELING DISPENSER

Hans George Skaller, 8 Forage Ave., Cherry Hill, N.J. 08003

Filed Sept. 8, 1976, Ser. No. 721,526
Int. Cl.² A47F *1/00*
U.S. Cl. 312—71 **12 Claims**



1. A self leveling dispenser for dispensing a stack of articles comprising, a frame, an article support platform extending horizontally from said frame for supporting said stack of articles, means in said frame for guiding the support platform in vertical movement between upper and lower vertically spaced positions; at least one constant torque spring means mounted in said frame and operatively connected to said platform for balancing the weight of said platform with a force of constant value; and at least one counterbalance spring having a constant spring ratio operatively connected between said frame and said platform for counterbalancing the weight of articles placed on the platform with a predetermined uniform weight to spring extension gradient along the entire path of travel of the support platform whereby the weight of the stack is supported only by said counterbalance spring while the weight of said platform is supported only by the constant torque spring and the top of the stack of articles is maintained at a predetermined level regardless of the height of the stack.

4,070,073

FILING DEVICE FOR PAPERS

Karl-Heinz Schudy, Espelkamp, and Heinz Kleinert, Lubbecke, both of Germany, assignors to Robert Krause KG, Espelkamp, Germany

Division of Ser. No. 551,802, Feb. 20, 1975, Pat. No. 3,993,374.
This application June 25, 1976, Ser. No. 699,773
Claims priority, application Germany, Sept. 24, 1974, 2445451; Jan. 17, 1975, 2501721
Int. Cl.² A47B *63/00*; B42F *15/00, 3/04*
U.S. Cl. 312—184 **14 Claims**



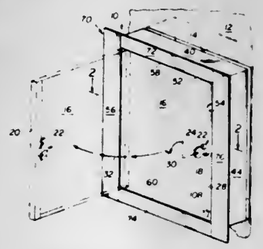
1. A filing device comprising a ring binding mechanism for attachment to the inside of a protective file cover having upper and lower edges, said ring binding mechanism having a sprung cover, ring carrying elements, and ring components carried pairwise by said ring elements for rocking movements thereby allowing said ring binding mechanism to be opened and closed, a slide disposed at each longitudinal end of said ring binding mechanism, each of said slides being slidably mounted for limited longitudinal displacement along said ring binding mechanism between an extended operative and a withdrawn inoperative position, and a locking element on said slide engageable with said ring carrying elements to secure said ring components of said ring mechanism against opening when said slide is displaced to said extended operative position, said locking element being disengaged from said ring carrying elements when said slide is disposed in said withdrawn inoperative position such that said ring binding elements are free to be opened, suspension means, mounting means mounting said suspension means on said slide and providing for relative movement between said suspension means and said slide, said suspension means being movable relative to said slide to an extended position, said suspension means having a support portion extending beyond the corresponding longitudinal end of said ring mechanism and beyond said edges of said protective file cover when said slide is in said extended operative position and said suspension means is in said extended suspension position, thereby enabling the device to be suspended from spaced carrier rails of a file carrier, said suspension means being movable relative to said slide to a retracted non-suspension position disposed substantially within said protective file cover when said slide is in said withdrawn inoperative position.

4,070,074

TAMPER-PROOF CABINET

George Rohme, College Point, N.Y., assignor to Superior Steel Door & Trim Co., Inc., College Point, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,333
Int. Cl.² A47B *81/00*; E05D *15/56*; E06B *3/50*
U.S. Cl. 312—245 **5 Claims**



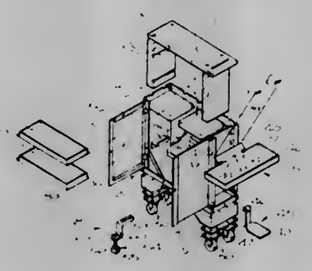
1. An improved tamper-proof cabinet comprising a cooperating arrangement of upper, lower and opposite side walls bounding a storage compartment for said cabinet having a first rectangular opening thereinto, a frame bounding an inner second rectangular opening of a selected smaller size than said first opening and of a selected external size larger than said cabinet disposed in surroundng relation about said first opening so that said frame presents a surface extending in overhanging relation along at least one vertically oriented side of said first opening, a cabinet door member having vertically oriented pivot pins extending in opposite directions therefrom operatively mounted for pivotal opening and closing movements relative to said second opening and sized slightly larger in its horizontal dimension than said second opening so that in said closed position thereof an edge thereon is in latched relation behind said vertically oriented overhanging surface of said frame, and spring means connected in spanning relation between said cabinet housing walls and said pivot pins in positions masked from view behind cooperating upper and lower horizontally oriented overhanging surfaces of said frame, whereby said door pivotal opening movement is required to be preceded by an unlatching door sliding movement in the plane of said second opening as permitted by the expansion of said spring means wherein each said upper and lower cabinet wall is recessed to accommodate a cooperating one of said spring means and thereby present a rectangular shaped profile, whereby said cabinet is adapted to be mounted in an opening of a support wall having a corresponding rectangular shape.

4,070,075

AMMUNITION LOADING BENCH

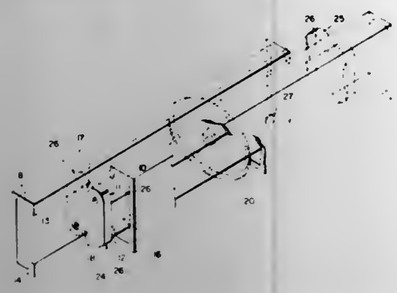
Robin H. Morgan, 2526 W. 18 St., Los Angeles, Calif.

Filed Oct. 23, 1975, Ser. No. 625,269
Int. Cl.² A47B *91/00, 88/00, 35/00*; A47G *29/00*
U.S. Cl. 312—250 **27 Claims**



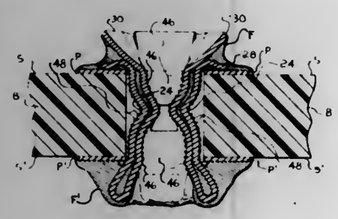
1. A gun ammunition loading bench comprising:
a cabinet adapted to be supported by a floor surface or the like and to project upwardly therefrom and having walls extending upwardly about a space within the interior of the cabinet;
a rigid generally horizontal top plate extending across the top of said cabinet and adapted to mount an ammunition loading press and supported by said cabinet, with the load of the top plate being transmitted to the cabinet at a predetermined upper level near the top of the cabinet;
a plurality of weights at the underside of said top plate and within said cabinet and spaced horizontally apart and having a mass sufficient to effectively resist displacement of said top plate by very substantial forces exerted thereagainst upon actuation of said loading press; and
connector means attaching said weights at upper ends thereof to said top plate in depending relation, with the mass of said weights being suspended from the top plate and hanging downwardly therefrom to a level well below said upper level at which the load of the top plate is taken by said cabinet.

4,070,076
DRAWER SLIDING DEVICE
Daniel Zwillinger, New Boston, N.H., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed May 5, 1977, Ser. No. 794,087
Int. Cl.[2] F16C 29/02, 21/00
U.S. Cl. 312—350 15 Claims



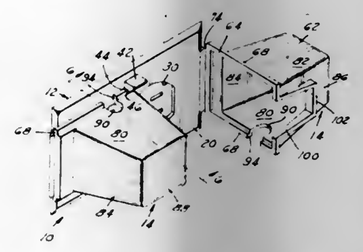
1. A sliding device for selectively sliding a member into and out of a support, said member having spaced opposite sides and said support having a chamber therein accommodating said member and having spaced opposite sides, said sides being parallel, said member sliding device comprising
- a pair of member channel members each affixed to a corresponding side of the member and opening outward toward the support;
- a pair of support channel members each affixed to a corresponding side of the support in the chamber and opening inward toward the member and positioned adjacent the corresponding member channel member, said channel members being positioned in parallel;
- a pair of extension bars each slidably positioned between a corresponding one of the member channel members and the adjacent support channel member, each of the channel members and each of the extension bars being shaped in a manner whereby each of said extension bars restrains the corresponding member channel member and support channel member in sliding next-adjacent relation;
- bores formed through the extension bars; and
- rollers rotatably mounted in the bores through the extension bars at predetermined angles of inclination with the sides of the member and the chamber of the support, said rollers extending beyond said bars, and each of said rollers abutting and rolling on part of a member channel member and part of the corresponding support channel member.

4,070,077
CIRCUIT BOARD EYELET
Stephen Larry Clark, Rossville, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed June 1, 1976, Ser. No. 691,765
Int. Cl.[2] H05K 1/02
U.S. Cl. 339—17 C 14 Claims



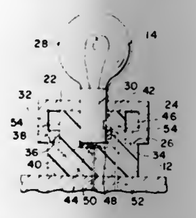
1. An eyelet for flexibly interconnecting conductive patterns on opposite surfaces of a circuit board comprising a flanged end, an annular body connected to said flanged end, and a plurality of staking legs extending from said annular body, said body having spaced inner and outer walls presenting an annular solder flow channel between said staking legs and said flanged end, an annulet formed therein between said staking legs and said flanged end and a layer of solder resist adherent the interior of said inner wall.

4,070,078
SAFETY COVER FOR AN ELECTRICAL OUTLET
Anthony Chrones, Warwick, R.I., assignor to Reliance Products Corporation, Woonsocket, R. I. 02895
Filed Mar. 2, 1977, Ser. No. 773,643
Int. Cl.[2] H01R 13/44
U.S. Cl. 339—44 R 16 Claims



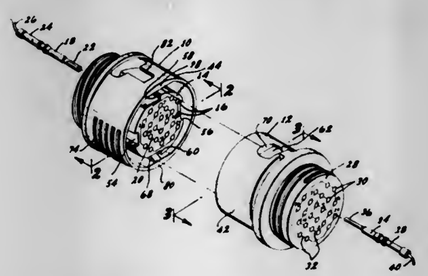
1. A safety cover for an electrical outlet having at least one electrical socket for receiving the plug end of an electrical cord, said cover comprising a plate adapted to be mounted against the electrical outlet, said plate having a front surface, a back surface and an opening extending through said surfaces for exposing the socket, the front surface of said plate having a pair of spaced apart latching elements, and a hollow closure element connected to said plate and extending across the front surface of said plate and the exposed socket, said closure element having thereon a pair of spaced apart abutments engageable with said latching elements for securing said closure element on said plate and thereby enclosing the socket, said closure element being provided at one edge thereof with an integral flexible hinge which includes an extension engageable with the back surface of said plate, said extension and said plate including means for removably connecting said closure element at the back surface of said plate.

4,070,079
LAMP SOCKET AND CLAMPING DEVICE
Anthony Barone, 225-27 112th Road, Queens Village, N.Y. 11429
Filed Sept. 27, 1976, Ser. No. 726,646
Int. Cl.[2] H01R 13/54
U.S. Cl. 339—91 L 5 Claims



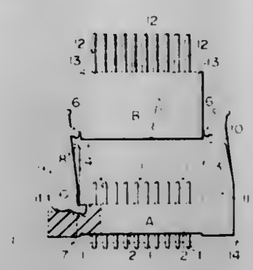
1. A lamp socket and clamping device comprising a resilient rubber like cylindrical block having a whole located at one end thereof, the longitudinal axis of the hole being co-axially aligned with the longitudinal axis of the block, at least a pair of electrical contacts being within the hole, the exterior cylindrical surface of the block having a pair of semi-annular grooves therewithin, the pair of grooves defining a plane, the plane extending normal to the longitudinal axis of the block, a plate fixedly secured to a lamp and extending radially outwardly therfrom, a pair of arms fixedly secured to the plate, the lamp having a light emitting portion and a terminal portion, the plate being located intermediate the light emitting portion and the terminal portion of the lamp, the pair of arms extending normal to the plate and parallel to and outwardly from the terminal portion of the lamp, the free end of each of the pair of arms being directed towards one another and extending substantially parallel to the plate, the free ends of the arms being captured within the semi-annular grooves and at least the pair of electrical contacts in touching electrical engagement with the terminal portion of the lamp.

4,070,080
CIRCULAR CONNECTORS
Barden E. Eshleman, and George S. Johnson, both of Canoga Park, Calif., assignors to Viking Industries, Inc., Chatsworth, Calif.
Filed Dec. 27, 1976, Ser. No. 755,090
Int. Cl.[2] H01R 13/54
U.S. Cl. 339—91 R 8 Claims



1. An electrical connector including a plug member having a body portion including openings for receiving first contact members and an outer shell surrounding and spaced from the body member,
- a receptacle member having a body portion including openings for receiving second contact members corresponding to and mating with the first contact members and with the receptacle including a shell portion extending from the body portion and with the shell portion of the receptacle received within the space between the outer shell and the body portion of the plug when the plug and receptacle are mated,
- the outer shell of the plug including at least one internal tab and with the thickness of the outer shell increased in the area of the internal tab and including a cutout area behind the internal tab and with all corner portions of the cutout area radiused,
- the shell portion of the receptacle including at least one undercut portion on the outer surface and with the undercut portion including a front face extending across the undercut, and
- the internal tab locking in the undercut portion at the front face when the plug and the receptacle are mated.

4,070,081
COUPLING MECHANISM FOR MALE AND FEMALE CONNECTORS
Toru Takahashi, Yokohama, Japan, assignor to Yamaichi Electric Mfg., Co., Ltd., Tokyo, Japan
Filed Sept. 27, 1976, Ser. No. 727,379
Claims priority, application Japan, Oct. 13, 1975, 50-139238[U]
Int. Cl.[2] H01R 13/54
U.S. Cl. 339—91 R 2 Claims



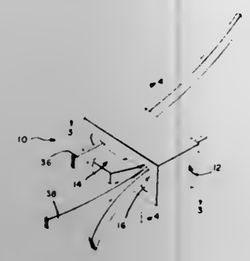
1. A coupling mechanism for a male connector and a female connector, said mechanism comprising:
- a male connector having:
  - a base portion;
  - a plurality of male terminals extending upward from said base portion;
  - a pair of vertical spaced end plates symmetrically positioned at each end of said base;
- a female connector having a plurality of female terminals removably positioned over said male terminals on said base between said pairs of vertical, spaced end plates and having indentations on the upper surface thereof adjacent said end plates;
- a lever means rotatably mounted between each pair of end plates engagable with said indentations on said female connector for locking said female connector to said male connector and for lifting said female connector away from said male connector, said lever means comprised of:
  - a pair of levers opposite each other pivotably mounted between said end plates and rotatable in opposite directions,
  - engaging latches at the upper inner surface of each lever engagable with said indentations in the top surface of said female connector when said lever is rotated toward said female connector, whereby said female and male connector are locked together, and
  - lifting fingers at the bottom end of each lever beneath said female connector when said female and male connectors are locked together, whereby rotating said lever causes said engaging latches to move away from the top surface of said female connector, thereby unlocking said connectors, and whereby the rotation of said lever causes said lifting fingers beneath said female connector to force said female connector away from said male connector.

4,070,082
INSULATION PIERCING TAP FOR FLAT WIRE
Walter Myers Werner, Downingtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 13, 1977, Ser. No. 759,204
Int. Cl.[2] H01R 7/04
U.S. Cl. 339—98 2 Claims

1. A device for mechanically retaining and electrically interconnecting two insulated wires, comprising:
- a. a body member of conductive material having an opening with parallel sides therethru with at least one inwardly

projecting ridge on each side thereof running the length of the opening, said ridges having a sharp point thereon; and

b. a wedge member of conductive material having a beveled front section and a straight rear section and adapted to be



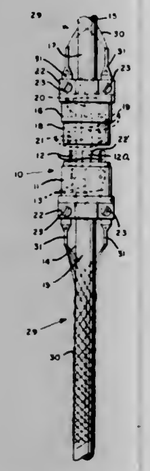
driven into the opening of the body member so that the straight rear section squeezes the wires which may be positioned therein against the ridges whereby the sharp points thereon cut thru the insulation and make electrical contact with the underlying conductors.

4,070,083

ELECTRICAL POWER LINE EXTENSION

Joseph DiPalma, 98 North Ave., Westport, Conn. 06880

Filed Jan. 31, 1977, Ser. No. 763,922
Int. Cl.² H01R *13/58*
U.S. Cl. 339—104 **7 Claims**



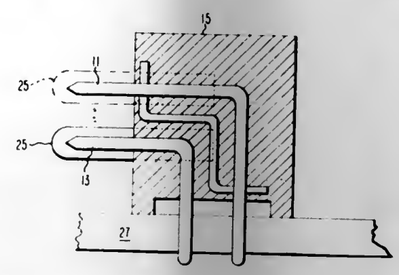
1. An electrical power line extension comprising an attachment plug having a body of insulating material having on one end a plurality of projecting contact prongs; a cable comprising a flexible cover containing a plurality of insulated wires selectively connected to said projecting contact prongs; clamping means on the body for securing said cable against axial removal from said body, the portion of the cable extending from said clamping means being bendable arcuately with relation to the axis of the body; and strain relieving means comprising a contractible sleeve of stiff interlaced wires surrounding said cable and at one end being secured to said clamping means, said sleeve being long enough and sufficiently stiff considering the bendability of cable to resist sharp bending of the cable adjacent its connection to said clamping means, the ends of the interlaced wires being gathered in two groups and there is a lug secured to the end of each of said groups of wires for attachment to said body.

4,070,084

CONTROLLED IMPEDANCE CONNECTOR

Robert V. Hutchison, Oceanside, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 20, 1976, Ser. No. 688,185
Int. Cl.² H01R *3/06*; H05R *1/08*
U.S. Cl. 339—143 R **13 Claims**



1. A multiple signal connector comprising:

a rectangular strip of conductive foil folded along its longitudinal axis to form a right angle and having a first conducting surface and a second conducting surface for providing a fixed reference potential over its conducting surfaces;

a plurality of conductors of predetermined configuration for carrying signals of varying potentials with respect to the fixed reference potential established by said conductive foil, said plurality of signal carrying conductors arranged in two rows with said conductive foil separating said first row from said second row, said first row of conductors associated with said first conducting surface and said second row of conductors associated with said second conducting surface, each of said conductors being dielectrically separated from said associated conducting surfaces by a predetermined distance which is constant for a substantial portion of the path of each conductor;

means for connecting said conducting surfaces and said conductors to apparatus external of the multiple signal connector; and

a dielectric medium surrounding said conductive foil and said signal carrying conductors for cooperating with the configuration of said conductors and the predetermined distance between said conductors and said associated conducting surfaces whereby a characteristic impedance of the multiple signal connector is established by the distances separating said plurality of conductors from said associated conducting surfaces of the reference potential establishing conductive foil.

4,070,085

FAST TORQUE DYNA-MATE ATTACHMENT MEANS

Fred E. Nelson, Cranston, R.I., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 572,793, April 29, 1975, abandoned. This application Nov. 1, 1976, Ser. No. 737,871
Int. Cl.² H01R *33/06*
U.S. Cl. 339—196 R **1 Claim**

1. A connector comprising

a cable termination having a first insulating plastic housing having an outer wall portion and containing electrical contacts and wire terminals for connection of the wires of the cable which is held in a clamp part of said connector,

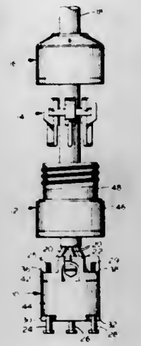
a cable clamp including a second insulating plastic housing having a cable opening therethrough,

said clamp including means for securing said second housing to a cable passing therethrough,

said cable termination including a set of peripheral unthreaded fastener ports extending through the outer wall portion of said first insulating housing, and extending

through the length of the first housing generally parallel to the axis of the first housing,

said cable clamp having a set of unthreaded fastener sockets extending into the second insulated housing thereof at outer wall locations matching and aligned with the outer wall locations at which fastener ports are located in the first insulating cable terminal housing,



and fasteners extending through said fastener ports of said first housing into said fastener sockets of said second housing and holding said cable termination housing and said cable clamp housing together,

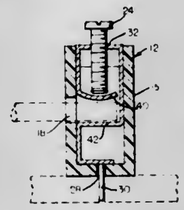
said fasteners having slotted heads to receive tools to apply torque to said fasteners and said fasteners having a non-threaded shank and a threaded end portion with the thread aligned at a lead angle which is steep relative to the lead angles of less than 10° of conventional screws.

4,070,086

VARIABLE LENGTH ELECTRICAL CONNECTOR

Larry F. Trafford, Chatsworth, Canada, assignor to General Signal Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 435,801, Jan. 23, 1974, abandoned. This application June 11, 1975, Ser. No. 585,916
Int. Cl.² H01R *9/02, 9/10*
U.S. Cl. 339—198 H **8 Claims**



1. Electrical connector means comprising in combination:

an elongate electrically conductive conductor clamping element defining a longitudinal bore extending therein from one end and also a transversely extending bore,

securing means in said longitudinal bore and movable along the axis of said longitudinal bore for bearing against a conductor inserted into said transverse bore,

a pin projecting axially from said element at its other end,

an elongate electrically insulating housing having an internal elongate substantially blind bore extending from one end for slidably receiving said element in the direction of the axis of said blind bore and with said axis of said blind bore being parallel to said longitudinal bore, said housing defining therein a bore transverse to said axis and extending through one sidewall thereof so as to communicate with said internal blind bore of said housing and being also aligned with said transverse bore in said element,

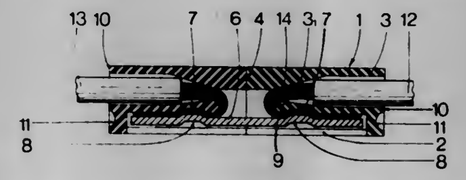
an axial aperture in the other end of said housing extending into said blind bore in said housing through which projects said pin when said conductor clamping element is slidably inserted into said internal bore of said housing to permit external electrical connection thereto and thus to a conductor inserted into the aligned transverse apertures in said housing and said element.

4,070,087

CONNECTING DEVICE FOR ENSURING STABLE ELECTRICAL CONNECTIONS

Gerard Paul Louis Dumesnil, Epinay, France, assignor to Electronic & Technology, Boulogne, France

Filed Oct. 7, 1976, Ser. No. 730,636
Claims priority, application France, Oct. 13, 1975, 75 31247
Int. Cl.² H01R *11/28*
U.S. Cl. 339—205 **7 Claims**



1. A connecting device for establishing electrical connection between at least two conductors, comprising:

a. a pair of terminal elements each having a flat front face (4) for juxtapositioning with and connecting to the other terminal element, and a cylindrically-shaped longitudinal tubular guide (3) in which one of the conductors (12) is to be inserted;

b. a longitudinal flat sleeve (2) adjacent each said longitudinal cylindrically-shaped guide to receive the bared end (14) of one conductor (12) after it has been folded in a hairpin turn, each sleeve (2) having at least one cavity (8) therein; and,

c. a tongue (6) of conductive material which partly penetrates the sleeves (2) of said terminal elements when the faces thereof are juxtapositioned for producing the electrical junction between the conductors inserted in the two juxtapositioned terminal elements, said tongue (6) having at least two retaining points (8) which cooperate with and are complementary to said cavities (8) so that the tongue while achieving electrical connection also ensures the locking of the conductors by clipping together opposed terminal elements.

4,070,088

CONTACT CONSTRUCTION

James L. Vaden, Simi Valley, Calif., assignor to Microdot, Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 602,015, Aug. 5, 1975, abandoned. This application May 18, 1976, Ser. No. 687,626
Int. Cl.² H01R *13/06*
U.S. Cl. 339—252 R **6 Claims**



1. A contact pin structure intended for removable insertion in a contact socket, said pin structure comprising a body portion, integral pin-defining means comprising a supporting arm projecting longitudinally from the body portion to a nose area spaced from the body portion and folded back at said nose area

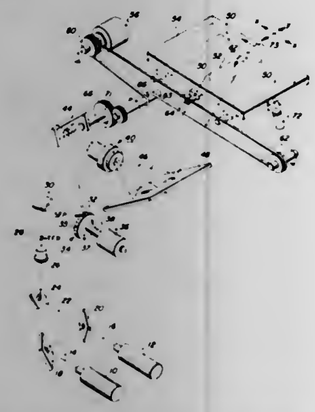
to define an integral return arm spaced from the supporting arm, said return arm having a free end which overlies the body portion, both of said arms being medially bowed oppositely outwardly away from each other and being longitudinally channeled, with the concave sides of the channels facing each other, said pin-defining means being formed of resilient electrically conductive material, and a pair of coacting abutment portions one of which is formed on the body portion and the other of which is carried by the free end of the return arm, said abutment portions being urged together laterally, the abutment portion on the return arm being rockable and slidable relatively to the body portion, when the pin-defining means is pushed into a socket which forces the medial portions of the arms toward one another, and a covering part on the body portion extending transversely of and around the free end of the return arm and outspaced from the free end of the return arm.

4,070,089

TWO DIMENSIONAL LASER SCANNER WITH MOVABLE CYLINDER LENS

David A. Grafton, Santa Monica, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed July 1, 1976, Ser. No. 701,473
Int. Cl.² G02B *27/17*; G03G *15/32*
U.S. Cl. 350—7 **8 Claims**



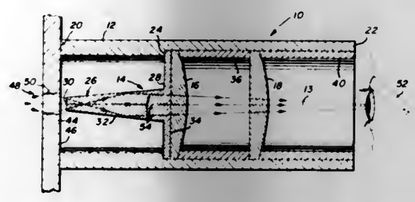
1. A flying spot scanning system comprising:
means for generating a beam of coherent light,
a rotatable mirror,
a rotatable polygon scanner located between said light generating means and said rotatable mirror and in the path of said beam for scanning said beam onto said rotatable mirror,
a stationary mirror positioned adjacent said rotatable mirror,
lens means interposed between said rotatable mirror and said stationary mirror whereby the beam reflected from said rotatable mirror is directed to said stationary mirror through said lens means,
a generally planar document support member,
a movable cylinder lens movable in a first direction and positioned adjacent said document support member, said stationary mirror reflecting said beam to said document support member through said cylinder lens, said cylinder lens extending in a direction whereby the beam will be scanned across a document placed on said document support member in a second direction and orthogonal to said first direction, and
means for controlling the rotation of said rotatable mirror and the movement of said cylinder lens such that the light reflected from said rotatable mirror is always incident on said cylinder lens as the cylinder lens moves in said first direction whereby said document is completely scanned.

4,070,090

OPTICAL INSTRUMENT EMPLOYING A TRUNCATED PRISM HAVING ITS DISTAL END DISPOSED PROXIMATE A PLANAR END OF AN OPAQUE TUBULAR HOUSING

Robert C. Farr, and Alfred Hametner, both of San Jose, Calif., assignors to Hametner-Farr Company, Inc., Santa Clara, Calif.

Filed June 28, 1976, Ser. No. 700,490
Int. Cl.² G02B *13/06*; G01N *21/00*
U.S. Cl. 350—21 **4 Claims**



1. An optical instrument for use in examining the internal wall of an aperture in a work material comprising:
a generally tubular housing formed from a material that is opaque to light and having a central axis and first and second ends, said first end having an annular surface that lies in a plane substantially normal to said central axis;
a first lens mounted within said housing intermediate said first and second ends, said first lens including opposed first planar and convex surfaces and being capable of focusing and magnifying an image incident on said first planar surface;
a light directing member formed from a transparent material and having a longitudinal axis that is coincident with said central axis, said member including a reflectig portion having a shape in the form of an elongated frustum of a right rectangular pyramid and a mounting portion that is disposed in an abutting relationship relative to said first planar surface, said reflecting portion including a third end having a first rectangular dimension, a fourth end having a second rectangular dimension that is larger than said first dimension, and four faces extending between said third and fourth ends, each said face being capable of internally reflecting light passing through said member and incident on said face, said mounting portion being mounted within said housing intermediate said first and second ends such that said third end terminates within said housing proximate said first end;
a second lens mounted within said housing intermediate said second end and said first lens, said second lens including a second planar surface disposed in a facing relationship relative to said first convex surface and an opposed second convex surface and being capable of focusing and magnifying an image passing through said first lens;
a generally tubular spacer disposed between said first convex surface and said second planar surface for maintaining a predetermined spacing between said lenses; and
a generally tubular retaining ring disposed between said second convex surface and said second end, and serving to maintain said second lens within said housing, whereby when said first end is placed against said work material with said axes in substantial alignment with the center of said aperture, and said second end is placed in front of the eye of a viewer, ambient light reflected off said internal wall passes through said third end and is reflected internally by said faces so as to provide images representative of corresponding portions of said internal wall, and whereby said first and second lenses serve to focus and magnify said images so as to permit the viewer to observe the physical appearance of said internal wall.

4,070,091

OPTICAL FIBRE WITH ENHANCED SECURITY

John Charles Wood Taylor, Alymer, and Felix Paul Kapron, Richmond, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 16, 1976, Ser. No. 677,759
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96 WG **14 Claims**



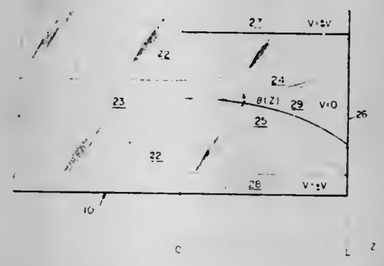
1. An optical fibre comprising:
a light conducting core having a predetermined minimum refractive index and forming a first light conducting path;
a first, light conducting, cladding layer surrounding said core and having a constant refractive index lower than said minimum refractive index of said core and forming with said core a second light conducting path;
a second cladding layer over said first cladding layer and having a constant refractive index lower than the refractive index of the first cladding layer;
whereby a first signal will propagate only in the core and a second signal will propagate in both the core and the first, light conducting, cladding layer.

4,070,092

ACTIVE WAVEGUIDE BRANCH WITH VARIABLE SYNCHRONISM

William K. Burns, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 22, 1976, Ser. No. 725,904
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96 C **4 Claims**



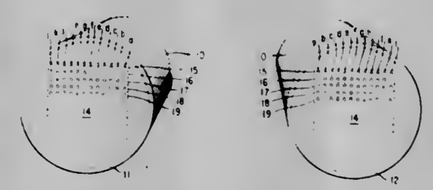
1. An active optical waveguide for modulation or switching of optical power which comprises:
a main waveguide section which propagates only a single local normal mode,
said main waveguide branching into first and second diverging branching waveguide sections in a geometrically symmetrical manner with said branches lying in a horizontal plane with a spacing between said branching waveguide sections,
said branching waveguide sections having a small included angle which is sufficiently small that optical modes will propagate adiabatically;
first and second axially symmetric electrodes extending along said branching waveguide sections opposite their outer faces,
said first electrode positioned opposite said first branching waveguide section,
said second electrode positioned opposite said second branching waveguide section;
a third electrode covering the spacing between said first and second branching waveguide sections and so positioned that the distances between the outer faces of said third electrode and the inner faces of said first and second electrodes are axially symmetrical and decrease along the length of said first and second branching waveguide sections in the direction away from said main waveguide; and
means for applying a voltage to said electrodes such that said third electrode is made positive or negative in voltage with respect to said first and second electrodes thereby electro-optically raising the index of refraction of one branching waveguide section and lowering by the same amount the index of refraction of the other branching waveguide section,
whereby optical power is directed to one branching waveguide section during application of one polarity potential and to the opposite branching waveguide section during application of the opposite polarity potential.

4,070,093

MINIMIZING TRANSMISSION PATH DISABLING DUE TO DEFECTIVE TRANSMISSION MEMBERS OF A COMMUNICATIONS CABLE

Morton I. Schwartz, Atlanta, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 26, 1976, Ser. No. 718,082
Int. Cl.² H01B *11/02*
U.S. Cl. 350—96 B **16 Claims**



1. A communications cable comprising a core of transmitting members defined as a complete set including one or more defective members, CHARACTERIZED IN THAT the ends of the defective members are rearranged to appear only in a defined subset of adjacent end positions.

4,070,094

OPTICAL WAVEGUIDE INTERFEROMETER MODULATOR-SWITCH

William E. Martin, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

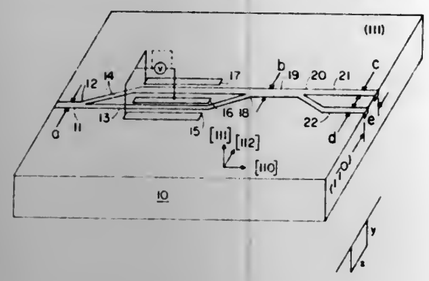
Filed Aug. 25, 1975, Ser. No. 607,172
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96 WG **8 Claims**

1. An optical waveguide interferometer modulator comprising:
an optical waveguide for transmitting single mode optical energy;
first and second single mode optical waveguide branches defined by electro-optically responsive material converging at a common connection to said optical waveguide, and diverging along a substantially co-extensive distance to reconverge for providing first and second single mode light paths of substantially identical optical length;
a light path connecting with said first and second single mode optical waveguide branches at their reconvergence;
conductive electrodes disposed contiguous to a portion of at

least one of said single mode optical waveguide branches between its points of divergence and reconvergence;

a source of electrical energy; and

switch means controlling connection of said electrodes with said source of electricl energy to selectively change the optical properties of at least one of said single mode optical waveguide branches by impressing an electric field thereacross causing relative phase shift between the optical energy transmitted through said branches, and producing destructive optical interference in said light path at the reconvergence of said first and second single mode optical waveguide branches.

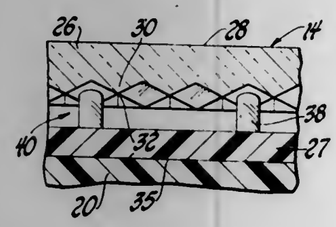


4,070,095

PAVEMENT MARKER AND REFLECTOR ASSEMBLY

Donald C. Suhr, Farmington Hills, Mich., assignor to ITL Industries, Inc., Newark, Ohio

Filed Feb. 2, 1976, Ser. No. 654,121
Int. Cl.² G02B 5/124
U.S. Cl. 350—103 6 Claims



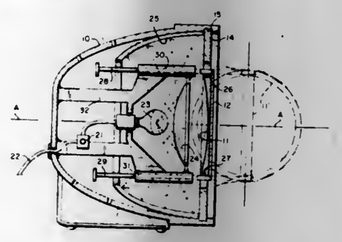
1. A reflector assembly comprising: first and second unitary plate-like members; said first plate-like member comprising a reflector of light transmitting material, one face of said first plate-like member comprising a smooth, light receiving surface and the other face thereof comprising a light reflecting surface; a plurality of retrodirective reflector elements formed on said other face; each of said reflector elements having a base at the plane of said other face and projecting outwardly therefrom to an apex; each of said reflector elements having an axis passing through the apex thereof, said axis extending at an acute angle with respect to the normal to said one face; said second member having an inner face and an outer face; said first and second members being secured together throughout their peripheries to define an enclosed air space therebetween with the inner face of said second member being disposed in opposed relationship with said other face of said first member; and a plurality of elongated support pegs each having a transverse cross-section in a plane parallel to said plate-like members that is smaller than said reflector elements; each of said support pegs having an inner end formed integral with one of said other face and inner face of said first and second members, respectively; each of said support pegs extending from its inner end across said air space to an outer free end in abutting engagement with the other of said other face and inner face of said first and second members, respectively, such that one end of each support peg is in contact with at least one of said reflector elements; said support pegs being spaced from the secured together peripheries of said first and second members and from each other in all directions such that each support peg is surrounded by a cluster of reflector elements out of contact with any of the support pegs and such that said support pegs provide support for the portions of said members spanning the distance between the secured together peripheries of said members; and each support peg having a length such that the apices of said reflector elements are held by said support pegs in spaced relationship with respect to said inner face of said second member.

4,070,096

POLARIZED COSMETIC MIRROR

Joseph Jasgur, 7673 Melrose Ave., Los Angeles, Calif. 90046

Filed Aug. 2, 1976, Ser. No. 710,369
Int. Cl.² F21V 33/00; G02B 27/28, 5/08
U.S. Cl. 350—156 2 Claims



1. A cosmetic mirror including, in combination:

a. a casing structure;

b. a circular mirror supported by said casing structure and having a flat mirror on its front surface polarized in a first direction and a concave mirror on its rear surface polarized in said same first direction, said casing structure supporting said circular mirror in a manner for rotation about a diameter corresponding to said first direction of polarization whereby said circular mirror may be rotated about said diameter 180° so that said concave mirror surface faces forwardly and provides a magnifying mirror;

c. an annular window coaxially surrounding the circular periphery of said mirror and supported by said casing structure for rotation in its own plane about its axis, said annular window having a surface polarized in a second direction different from said first direction;

d. a single light source supported in said casing structure behind said circular mirror on the axis of said circular mirror;

e. a primary mirror on the axis of said circular mirror between said circular mirror and light source for directing light rearwardly and upwardly; and

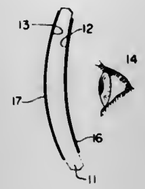
f. a secondary mirror of annular configuration positioned to intercept said rearwardly and upwardly directed light from said primary mirror and pass it through said annular window to illuminate a subject in front of said flat mirror surface whereby the light falling on said subject is polarized in said second direction and whereby changing the rotative position of said annular window will vary the difference angle between said first and second directions of polarization.

4,070,097

OPHTHALMIC ANTIREFLECTION COATINGS WITH METAL, DIELECTRIC, SUBSTRATE, METAL, DIELECTRIC IN SEQUENCE

Robert M. Gelber, Healdsburg, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 540,793, Jan. 14, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 739,478
Int. Cl.² G02B 1/10
U.S. Cl. 350—165 10 Claims



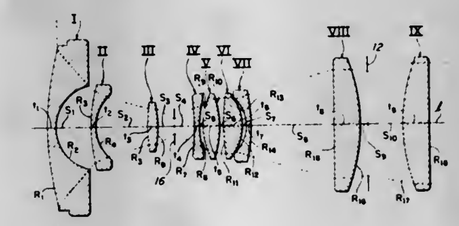
1. An ophthalmic anti-reflection coating structure for use on spectacles for the eyes of a wearer having at least one lens comprised of a convex surface and a concave surface having a first coating on the convex surface and a second coating on the concave surface, each coating surface and a second concave surface consisting of a metal layer and a dielectric layer having a low index of refraction in the range of 1.38 to 1.45, the reflection of each coating being asymmetric on opposite sides and being lower than the transmission on both sides the metal layer being nearer the convex surface than the dielectric layer on the convex surface and the dielectric layer being nearer the concave surface than the metal layer on the concave surface.

4,070,098

FISHEYE PROJECTION LENS SYSTEM FOR 35MM MOTION PICTURES

Richard A. Buchroeder, Tucson, Ariz., assignor to The University of Arizona Foundation, Tucson, Ariz.

Filed Apr. 28, 1976, Ser. No. 681,117
Int. Cl.² G02B 13/06, 9/64; G03B 37/00; G03C 1/76
U.S. Cl. 350—198 10 Claims



1. A fisheye lens system having the design parameters, normalized for an 8mm focal length, F_8, represented in the following table:

ELEMENT	n_d	ν	RADIUS	THICKNESS	SEPARATION
I	1.607	56.7	$R_1 = 8.853$ $R_2 = 1.181$	$t_1 = .220$	$S_1 = 1.037$
II	1.607	56.7	$R_3 = 4.463$ $R_4 = 1.181$	$t_2 = .150$	$S_2 = 1.486$
III	1.620	36.4	$R_5 = 5.798$ $R_6 = 3.308$	$t_3 = .300$	$S_3 = 1.062$
IV	1.620	36.4	$R_7 = 6.869$ $R_8 = 2.536$	$t_4 = .150$	$S_4 = .100$
V	1.607	56.7	$R_9 = 2.018$ $R_{10} = 2.638$	$t_5 = .500$	$S_5 = .100$
VI	1.607	56.7	$R_{11} = 6.440$	$t_6 = .550$	$S_6 = .100$
VII	1.755	27.6	$R_{12} = 1.309$ $R_{13} = 1.113$ $R_{14} = 4.728$	$t_7 = .150$	

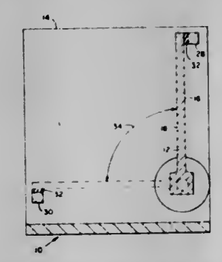
wherein the Roman numerals I–VII identify the respective lens element from the long conjugate side to the short conjugate side, n_d is the refractive index; ν_d is the dispersion number, R_1–R_{14} represent the radii of successive surfaces from the long conjugate side to the short conjugate side, and t_1–t_7 and S_1–S_6 represent the thicknesses of lens element and air spaces, respectively, from the long conjugate side to the short conjugate side, with all dimensions being expressed in inches, and wherein the design parameters may be renormalized to any other focal length, F_n, by multiplying each of the surface radii, thicknesses and air spaces by the ratio F_n/F_8.

4,070,099

FAST SHUTTER MECHANISM FOR HIGH POWER THERMAL RADIATION

Roderick D. Swift, Belmont, and Alfred R. DeCaprio, Randolph, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 22, 1976, Ser. No. 679,281
Int. Cl.² G05D 25/00
U.S. Cl. 350—269 1 Claim



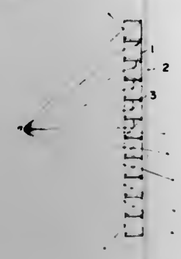
1. A shutter mechanism for use in a high power thermal radiation system comprising: a supporting yoke; a pair of rotary motion electrical solenoids connected on opposite sides of said supporting yoke; a shaft connected with each solenoid; a shutter plate carried by said shafts whereby actuation of one of said solenoids cause rotation of the plate in one direction and actuation of the second solenoid causes rotation of the plate in an opposite direction, one side of said shutter plate being highly reflective to withstand high power densities and the opposite side of the plate is blackened for cooling purposes; a plurality of stop bars provided on said supporting yoke to limit rotation and said stop bars being padded by a resilient material for contact with said shutter plate.

4,070,100

FILTER FOR PARTIALLY TRANSMITTING LIGHT

Katsuyuki Akiyoshi, 821, Oaza-Shimotobaru, Taihei, Chikujo, Fukuoka, Japan

Filed Sept. 1, 1976, Ser. No. 719,865
Int. Cl.² G02B 27/00
U.S. Cl. 350—276 R 15 Claims



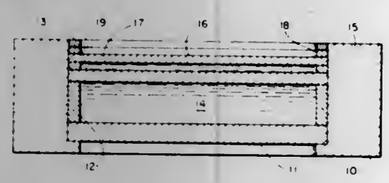
~~10.~~ A filter according to claim 1, wherein said filter units are ring-shaped units which are concentrically and arcuately assembled to form a spherical filter device.

4,070,101

NARROWBAND WIDE FIELD OF VIEW OPTICAL FILTER

William E. Richards, El Cajon, and John A. Trias, La Mesa, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 2, 1976, Ser. No. 719,779
Int. Cl.² G02B 1/10, 5/24
U.S. Cl. 350—312 5 Claims



1. A wide-angle optical filter for restricting transmittance of light energy substantially to a narrow band 520 nanometer wavelength spectral region comprising:

a body member for supporting and containing multiple absorption materials in a common optical path;

a bandpass glass color filter supported in said body member for restricting transmission along said common optical path to wavelengths of light energy substantially within a 340–600 nanometer spectral range;

a concentrated solution of amino coumarin dye supported in said body member for absorbing substantially all shorter wavelengths of light energy transmitted along said common optical path below 510 nanometers within said spectral range; and

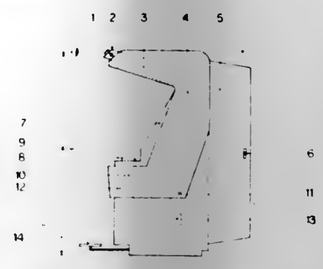
a concentrated solution of a selected rare earth salt supported in said body member for absorbing substantially all light energy transmitted along said common optical path within a 530–550 nanometer wavelength band of said spectral range.

4,070,102

APPARATUS FOR SENSORY CONTROL OF A PERSON UNDERGOING TEST

Frederic Lelouch, 25 rue d'Estienne d'Orves, Vincennes 94300, France

Filed Jan. 5, 1976, Ser. No. 646,658
Claims priority, application France, Jan. 23, 1975, 75 02066
Int. Cl.² A61B 3/02, 5/16
U.S. Cl. 351—18 1 Claim



1. In an instrument for testing sensory control to determine the visual acuteness as well as the reflexes of a person, said instrument having:

a. a focusing optical instrument with a defined object focus;

b. a figure image device with figures including step-by-step parade means, supplying a step-by-step laterally moveable parade of figure images to the optical instrument on a rotating disc having figure supports thereon, motor means coupled to the disc to rotate the disc and speed reducing means coupled between the disc and the motor;

c. electronic means rnd a command module coupled to said optical instrument and said figure image device, operating means to operate the command module by the person tested including a coin box coupled to said command module having starter means responsive to start when provided with at least one coin and reject means to reject incorrect coins;

d. an energy feeding device coupled to the command module and the figure image device; and,

e. a result display device coupled to the command module to display the results of the test; in combination:

f. an eyepiece in said optical instrument near the object focus at which location there is support means to hold the figures to be seen, said eyepiece providing vertical images situated at a predetermined distance from the eye of the person whose senses are to be tested, said eyepiece being located between said support and location of the eye of the person being tested, such that the image focus coincides with the Helmholtz point of the schematic ametropic eye, and light means to light up the figures laterally moveable, fed by said energy feeding devices;

g. a frosted glass in said optical instrument disposed between the light means and the figure support, said support being mounted on the step-by-step parade means and a transparent blade-like protection means with parallel faces disposed between the eye-piece and the eye location of the person tested;

h. a display recorder of the test structurally coupled to the command module having a pre-printed paper roll turned by a motor, said roll being divided into successive frames defined by black band transverse limit means cooperating with an electrical photocell to indicate the start of the frame to the command module, each frame having at least two zones graduated in a scale of 1/10 to 10/10, each corresponding to the visual acuteness of the person tested and writing means, actuated by an electro-magnet to record the measurement of visual acuteness of the person tested when the command is given by the command module operated by the person, said writing means tracing a continuous curve on the face of the pre-printed paper roll as it unrolls, the interpretation of the curve opposite to one of the graduations of the roll defining the visual acuteness of the person tested; and,

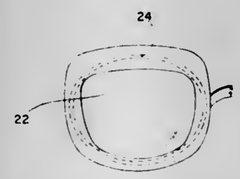
i. a frequency chronometer structurally coupled to the electronic command module so disposed as to measure the time lapse between the appearance of a given figure, designed to test the reflexes of the person tested and brake means coupled to the apparatus actuated by the person tested upon seeing said figure.

4,070,103

SPECTACLE FRAME WITH ATTACHABLE ONE-PIECE SLIDE-ON RIM

Martha C. Meeker, 5768 North Ewing, Indianapolis, Ind. 46220

Continuation-in-part of Ser. No. 468,666, May 10, 1974, abandoned. This application Jan. 23, 1976, Ser. No. 651,842
Int. Cl.² G02C 11/02, 9/04
U.S. Cl. 351—52 22 Claims



1. A spectacle frame combination including:

a. a pair of lens rims;

b. a pair of lenses supported by said lens rims;

c. a nose bridge connecting said lens rims;

d. a pair of temple members being attached to said lens rims;

e. a minimum of one pair of lens rim covers, said pair of lens rim covers including two separate lens rim covers, each of said two lens rim covers being individually attachable to one lens rim of said pair of lens rims, each of said lens rim covers being continuous around the perimeter of an opening, said opening permitting unobstructed visibility, said covers including continuous side walls extending circumferentially around the outermost surface of said rims;

f. wherein said nose bridge and said temple members are attached to the rear surfaces of said lens rims; and

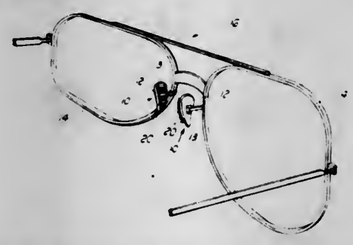
g. wherein the innermost surface of said side walls of said covers includes a tape receiving groove.

4,070,104

NOSE PAD FOR EYEGLASSES

Woodrow R. Rice, 2219 Mohawk Lane, Wichita, Kans. 67203

Filed Dec. 6, 1976, Ser. No. 748,049
Int. Cl.² G02C 5/12
U.S. Cl. 351—138 8 Claims



1. A nose pad for a nose piece on a pair of eyeglasses, the nose pad comprising:

a padded base with one side of said base having a pressure sensitive adhesive coating thereon for securing said base to the nose piece; and

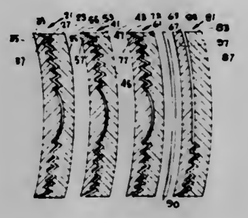
a plurality of spaced parallel tubing mounted on the opposite side of said base, said tubing being compressed against the sides of the nose for providing an air cushion when the eyeglasses are in use.

4,070,105

LAMINAR FRESNEL REDUCED OPHTHALMIC LENS CONSTRUCTION

Marzouk Youssef Marzouk, 503 S. Fifth St., San Jose, Calif. 95112

Filed Mar. 5, 1976, Ser. No. 664,154
Int. Cl.² G02C 7/02
U.S. Cl. 351—159 14 Claims



1. An ophthalmic lens comprising,

a first optical element having a front, convex, side defining a first preselected curved shape, a rear side defining a second preselected curved shape which is toric and reduced in thickness by a first plurality of Fresnel echelons and made of a material having a preselected first index of refraction,

a second optical element having a rear, concave, side defining a third preselected curved shape identical to said first preselected curved shape, a front side defining a fourth, curved, preselected shape, which is toric and reduced in thickness by a second plurality of Fresnel echelons mating with said first plurality of Fresnel echelons and made of a material having a preselected second index of refraction, and

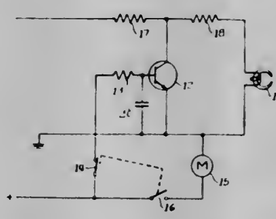
a first bonding means for bonding said first and second optical elements together.

4,070,106

SHORT CIRCUIT FOR RECORDING HEAD OF SIMULTANEOUS RECORDING CINE CAMERA

Fumio Saito, Kawaguchi, Japan, assignor to Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.), Higashimurayama, Japan

Filed Apr. 13, 1976, Ser. No. 676,582
Claims priority, application Japan, Apr. 22, 1975, 50-54848[U]; Apr. 23, 1975, 50-56310[U]
Int. Cl.² G03B 31/02
U.S. Cl. 352—27 1 Claim



1. Improvements in a sound motion picture camera having film transporting motor for moving an elongated film in the camera; and a sound recording circuit including an amplifier and a recording head relative to which film is moveable for simultaneous recording of sound as images are recorded on the

film in response to the actuation of a camera start button, the improvement in the sound recording system comprising:

a transistor coupled in parallel with the recording head for selectively shunting audio signals around the recording head;

a first switch means operable between open and closed conditions for rendering said transistor conductive when closed and non-conductive when opened;

a condenser coupled in circuit with said transistor for delaying the change of states of said transistor between a non-conductive state and a conductive state;

a second switch means operable between open and closed conditions and disposed in series circuit with the film transporting motor for selectively actuating and deactuating the motor;

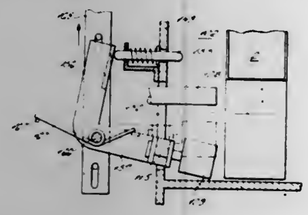
said first and second switch means being adapted to operate simultaneously in opposite condition in cooperation with one another responsive to actuation of the camera start button but subsequent to the energization of the amplifier, whereby when said second switch means is in a closed condition, said first switch means is in an open position, the film transporting motor is actuated and said transistor is rendered gradually non-conductive to provide a sound fade-in which begins only after the amplifier is energized.

4,070,107

CINE CAMERA

Otto Freudenschuss; Otto Kantner, and Peter Revy von Belvard, all of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Continuation-in-part of Ser. No. 460,136, April 11, 1974, abandoned. This application Mar. 22, 1976, Ser. No. 669,338
Claims priority, application Austria, Apr. 16, 1973, 3383/73; Apr. 19, 1973, 3485/73; May 24, 1973, 4565/73
Int. Cl.² G03B *23/02*
U.S. Cl. 352—72 **10 Claims**



1. In a cine camera, in combination:

a casing having a chamber adapted to accommodate a sound-film cassette, said casing being provided with an exposure gate and sound-recording means;

sensing means in said casing for detecting the presence of a sound-film cassette in said chamber;

drive means in said casing for transporting a sound film past said exposure gate and said sound-recording means, said drive means including a continuously rotatable capstan and a pinch roller adapted to clamp said sound film therebetween;

energizing means for said drive means including manually operable trigger means;

relatively displaceable support means for said pinch roller and said capstan; and

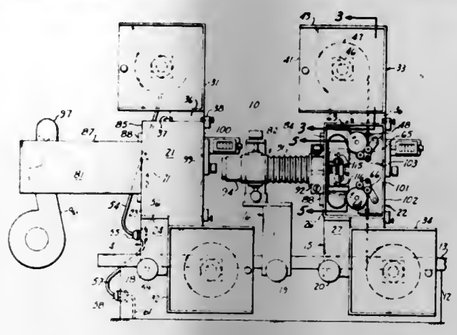
actuating means in said casing coupled with said support means and controlled by said sensing means for relatively displacing said pinch roller and said capstan from a more widely separated normal position into a relatively closely spaced alternate position, preparatorily to operation of said trigger means, in the presence of a sound-film cassette in said chamber.

4,070,108

OPTICAL IMAGE PRINTER

Harold A. Scheib, Encino, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Feb. 13, 1976, Ser. No. 657,340
Int. Cl.² G03B *27/48, 19/24, 1/04*
U.S. Cl. 355—50 **22 Claims**



1. In an optical image printer wherein images are copied from a first film onto a photographically sensitive second film, the improvement comprising in combination:

a projector having a first apparatus including a first housing for receiving said first film and first means in said first housing for positioning said received first film, said first means including means defining a first image aperture and means for mounting said first image aperture defining means at a first side of said first housing, said projector including means operatively associated with said first apparatus for illuminating said positioned first film and forming a luminous image, and said projector including means on said first side for mounting said illuminating means on said first side of said first housing; and

a camera operatively associated with said projector and having a second apparatus including a second housing for receiving said second film and second means in said second housing for positioning said received second film, said second means including means defining a second image aperture and means for mounting said second image aperture defining means at a first side of said second housing, said camera including means operatively associated with said second apparatus for receiving said luminous image from said projector and projecting said received luminous image onto said positioned second film, and said camera including means on said second side for mounting said luminous image receiving and projecting means on said first side of said second housing;

said first and second housings being of identical elementary construction; and

said image printer including means for orienting and mounting said projector and said camera with said first sides of said first and second housings facing in the same direction.

4,070,109

PROCESS FOR MAKING CHANGES ON PHOTOPRINT FILM

Arnold O. Ihlenfeld, Berlin, and Heribert Morgott, Munich, both of Germany, assignors to Firma H. Berthold AG, Berlin, Germany

Filed June 26, 1975, Ser. No. 590,843
Claims priority, application Germany, July 11, 1974, 2433823
Int. Cl.² G03B *27/32*; G03C *5/04*
U.S. Cl. 355—77 **5 Claims**

1. In a process for photographically changing positive film material having indicia thereon and employed in photoprinting, the steps of first photographically projecting only certain portions of a first film onto certain portions of a photographically unexposed blank area in the remaining unprojected portion of said second film, thereafter photographically projecting a third film onto said blank area of said second film, and developing said double exposed second film, the improvement comprising the steps of identifying an area of the indicia to be changed on said first film and covering said area with a red color mask impenetrable to a photographic exposure short wave length light while leaving the covered indicia visible, photographically projecting said first film onto said second film to have said red colored area of said first film leave said blank area on said second film, making said third photographic film with a photographic light-penetrable section thereon having new indicia to be substituted for said area to be changed on said first film, said section being of a size larger than the size of said area covered with said red color mask to extend fully beyond the boundaries of said covered area, visually aligning on a viewing screen said third film in an alignment for photographically projecting onto said second film to match the projection position of said first film onto said second film to thereby fully cover said blank area of said second film with said light-penetrable section of said third film by positioning said third film onto said first film in the projecting position in which the second film had been photographically exposed relative to said first film, photographically exposing only said third film onto said second film to have said new indicia of said third film exposed in said blank area of said second film to thereby produce said second film with a composite of said first film and said third film.

4,070,110

AUTOMATIC PLATEMAKING PROCESS AND APPARATUS

John Wright Ott, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 585,290, June 9, 1975, abandoned. This application Mar. 9, 1977, Ser. No. 776,031
Int. Cl.² G03B *27/30*
U.S. Cl. 355—100 **1 Claim**



1. Apparatus for making a photopolymer printing plate from a photo transparency comprising:

a transparent plate;

at least one photo transparency positioned on said transparent plate;

carriage means movable over said transparent plate in one pass, said carriage means including cover film applicator means to cover said photo transparency with a continuous transparent cover film, photopolymer resin applicator means to apply photopolymer resin evenly over the continuous cover film, backing sheet supply means to roll a continuous transparent backing sheet onto said photopolymer resin at a predetermined height above said transparent plate, and back exposure lamp means to provide actinic radiation to polymerize the photopolymer resin adjacent said continuous backing sheet;

a vertically movable flattening platen connected to said carriage means, said flattening platen being vertically movable with respect to said transparent plate and floatable upon said continuous backing sheet to maintain a constant thickness of said continuous backing sheet and photopolymer resin when said flattening platen is in its lowered position;

main exposure lamp and reflector means positioned below said transparent plate to provide actinic radiation through said transparent plate and photo transparency to selectively polymerize the photopolymer resin when said flattening platen floats upon said continuous backing sheet;

movable gripper means connected to said flattening platen to grip and move said continuous backing sheet and photopolymer resin from said transparent plate;

cover film stripper positioned adjacent said transparent plate to strip said continuous cover film away from said photopolymer resin and said continuous backing sheet as they are moved from their position on said transparent plate;

severing means connected to said carriage means to sever said continuous backing sheet and photopolymer resin;

spray washout means positioned adjacent said transparent plate to receive said continuous backing sheet and photopolymer resin after they are severed by said severing means and moved by said movable gripper means to remove nonpolymerized photopolymer resin; and

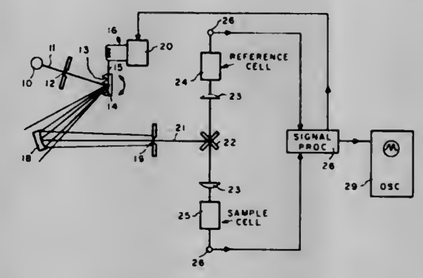
postexposure means positioned adjacent said spray washout means to further expose to actinic radiation said continuous backing sheet and photopolymer resin after severing and washout.

4,070,111

RAPID SCAN SPECTROPHOTOMETER

Nicolas James Harrick, Croton Dam Road, Ossining, N.Y. 10562

Filed June 10, 1976, Ser. No. 694,496
Int. Cl.² G01J *3/42, 3/12*
U.S. Cl. 356—83 **4 Claims**



1. A spectrophotometer capable of rapid wavelength scanning comprising an optical path including a light source and spaced entrance and exit slits, means for imaging the entrance slit on the exit slit, means in the optical path for dispersing the light beam and sweeping the dispersed beam across the exit slit, and means for utilizing the beam emerging from the exit slit, said dispersing and sweeping means comprising a low inertia reflective grating and means for rapidly vibrating the reflective grating over a short arc within a period of 0.01 sec or less, said vibrating means comprising a galvanometer having a vibratable output shaft, the reflective grating being mounted directly on the said output shaft.

4,070,112

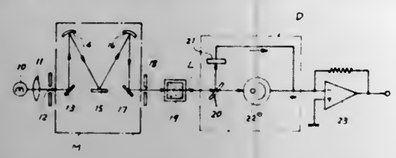
SPECTROPHOTOMETER

Yoshio Tsunazawa; Shosuke Tezuka, and Rikuo Hira, all of Kyoto, Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed June 17, 1976, Ser. No. 696,901
Claims priority, application Japan, July 22, 1975, 50-101886
Int. Cl.² G01J *3/42*
U.S. Cl. 356—96 **14 Claims**

1. A spectrophotometer comprising: means for providing a monochromatic light at a sequence of wavelengths over a predetermined spectral range; a sample containing portion; a light measuring device including a first photoelectric element designed for use in the long wavelength portion of said spectral range, a second photoelectric element designed for use in the short wavelength portion of said spectral range; means for

amplifying the electrical outputs from said first and second photoelectric elements and optical means for directing said monochromatic light through said sample containing portion to said light measuring device, said light measuring device



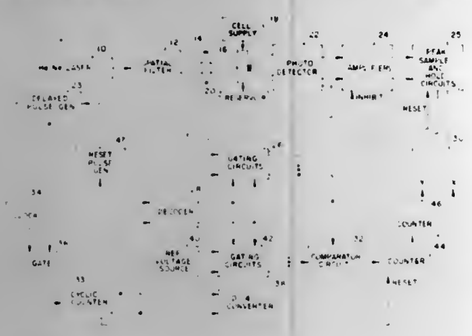
comprising means for optically dividing the light from said sample containing portion into a first and a second portion and simultaneously projecting said first and second portions onto said first and second photoelectric elements, respectively.

4,070,113

COHERENT OPTICS BLOOD CELL CLASSIFICATION SYSTEM

Robert E. Frazer, La Canada, Calif., and Marylou Ingram, Los Alamos, N. Mex., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 5, 1976, Ser. No. 683,267
Int. Cl.² G01N *21/00, 33/16;* H01J *39/12*
U.S. Cl. 356—104 **12 Claims**



1. A system for identifying particulate matter, such as a cell, comprising

means for producing coherent light,

flow-through means for passing a supply of particulate matter therethrough,

means for focusing light from said coherent light means through said flow-through means to produce a diffraction pattern wherein the light is scattered by particles of said particulate matter at angles characteristic of said matter,

means positioned to receive said light scattered at characteristic angles for sensing light scattered at different angles and for producing a set of angle characteristic signal voltages in response thereto,

pulse generating means responsive to scattered light for detecting the presence of a scattering particle in said beam and for producing a delayed pulse,

peak sample and hold means responsive to said delayed pulse for sampling the peak output voltages of said light sensing means in response to the one scattering particle, wherein each peak output voltage is proportional to the peak intensity of light scattered at a different angle,

means establishing a set of reference voltages representative of the characteristic set of peak output voltages produced by particulate matter desired to be identified, and

means for comparing the set of characteristic peak output voltages produced by said sample and hold means with the set of reference voltages, and for producing an output when there is an identity between the set of characteristic peak voltages and the set of reference voltages.

4,070,114

DETECTOR OPTICS FOR USE IN FABRIC INSPECTION

Sergei Michael Fomenko, Woodland Hills, Calif., assignor to Greenwood Mills, Inc., Greenwood, S.C.

Filed Mar. 1, 1976, Ser. No. 662,955
Int. Cl.² G01B *9/02;* G02B *27/38*
U.S. Cl. 356—111 **7 Claims**



1. A detector optics system for receiving and processing at least one side lobe region in a diffraction pattern developed from a coherent light beam wherein astigmatic conditions result in an elongation of at least one lobe in said region in an imaging plane, comprising:

optical means for intercepting and directing the image of at least said one elongated lobe in said one region of said imaging plane, and

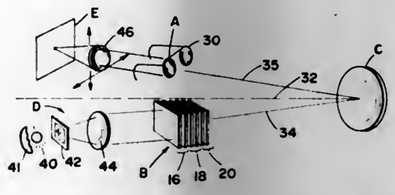
optical squeezing means positioned to receive each so directed elongated lobe image and to squeeze same for removing the elongation and providing a focused lobe which may be readily detected and analyzed.

4,070,115

LENS METER

William Edwin Humphrey, Orinda, Calif., assignor to Humphrey Instruments, Inc., San Leandro, Calif.

Filed Mar. 26, 1976, Ser. No. 670,773
The portion of the term of this patent subsequent to Mar. 30, 1993, has been disclaimed.
Int. Cl.² G01D *9/00*
U.S. Cl. 356—125 **36 Claims**



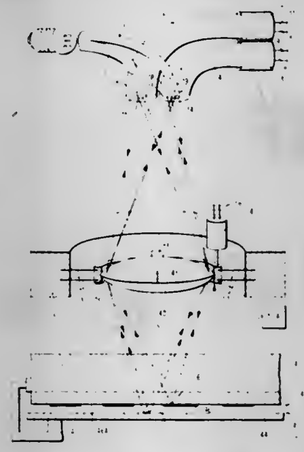
1. A process for measuring power of a suspect optical system in at least one component of cylinder including the steps of: mounting said suspect optical system in a light path; projecting light including an image of at least one first straight line target of first arbitrary preselected angular alignment without regard to any suspected principal axis of the suspect optical system along said light path; providing in said light path variable optics for movement to a power of sphere and cylinder substantially equal and opposite to components of sphere and cylinder in said suspect optics, said variable optics including variable spherical optics to vary the spherical component of light projected there through and variable cylinder optics for varying the astigmatic lens power along first intersecting diagonals at substantially equal and opposite angles from the preselected angular alignment of said first straight line target; projecting an image of said straight line target from said light passing through said variable optics and said suspect optics; and, varying said spherical optics and said first astigmatic optics to optimize the image of said projected straight line target.

4,070,116

GAP MEASURING DEVICE FOR DEFINING THE DISTANCE BETWEEN TWO OR MORE SURFACES

Albert Frosch, Herrenberg; Walter Mannsdorfer, Aidlingen, and Claus Scheuing, Lorch, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 11, 1976, Ser. No. 695,293
Claims priority, application Germany, June 23, 1975, 2527908
Int. Cl.² G01B *9/00*
U.S. Cl. 356—156 **9 Claims**



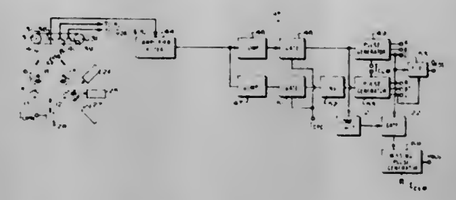
1. In an apparatus for measuring the distance between a semiconductor device mask superimposed over a semiconductor substrate in spaced object planes with said mask having transparent portions therein to permit light passage therethrough to said substrate, said apparatus comprising: an imaging means spaced from said mask and said substrate; light-emitter means for projecting light through said imaging means and forming spaced image planes of at least a portion of said mask and said substrate; focus detector means adjacent said light-emitter means; means for oscillating said image planes in the optical axis of said imaging means, alternately into and out of coincidence with said detector; means associated with said focus-detector means for generating an electrical signal indicative of coincidence of said image planes with said detector position indicating means for generating an electrical output corresponding to the amplitude and frequency of said oscillation and signal processing means for receiving said electrical signals from said position indicating means and from said focus detector means for supplying an electrical signal output proportional to the difference in distance between said object planes.

4,070,117

APPARATUS FOR THE AUTOMATIC ALIGNMENT OF TWO SUPERIMPOSED OBJECTS, E.G. A SEMICONDUCTOR WAFER AND MASK

Karl-Heinz Johannsmeier, Mountain View; Paul E. Stoft, Menlo Park, and Tor G. Larsen, Cupertino, all of Calif., assignors to Kasper Instruments, Inc., Sunnyvale, Calif.

Division of Ser. No. 305,861, June 12, 1972, Pat. No. 3,955,072, which is a continuation of Ser. No. 126,597, March 22, 1971, abandoned. This application Jan. 21, 1976, Ser. No. 650,976
Int. Cl.² G06F *15/46;* H05K *13/00*
U.S. Cl. 356—172 **20 Claims**



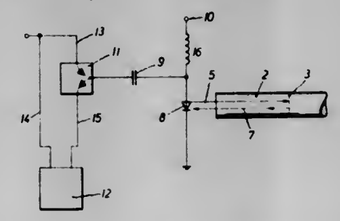
1. A system for aligning first and second relatively movable objects, where the first object has an alignment pattern thereon, the second object has a corresponding alignment pattern thereon, and the alignment pattern on the first object is disposed in a preselected alignment position relative to the corresponding alignment pattern on the second object when the first and second objects are aligned, said system comprising first means operable for repetitively determining the angular and the coordinate displacement between the alignment pattern on the first object and the preselected alignment position relative to the corresponding alignment pattern on the second object, and second means operable following each such determination by the first means for moving the first object relative to the second object through an angle and a distance based on that determination to incrementally bring the alignment pattern on the first object into the preselected alignment position relative to the corresponding alignment pattern on the second object.

4,070,118

METHOD AND AN ARRANGEMENT FOR FAULT LOCATION IN A GLASS FIBRE OPTICAL WAVEGUIDE

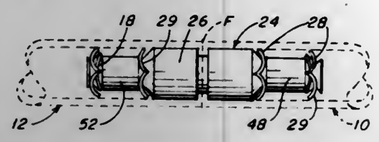
Stefan Maslowski, Aufheim, and Oskar Krumpholz, Ulm, Danube, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 4, 1975, Ser. No. 637,745
Claims priority, application Germany, Dec. 7, 1974, 2457930
Int. Cl.² G01N *21/16, 21/32*
U.S. Cl. 356—237 **19 Claims**



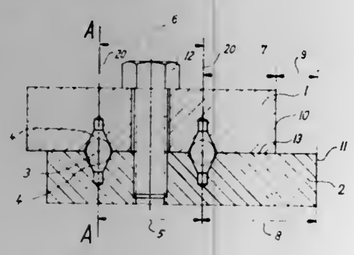
1. A method of fault location in glass fibre optical waveguides comprising producing light pulses by means of a laser device, passing said light pulses into a glass fibre with a fault, passing the light pulses reflected by said fault into the laser device to vary their character and determining the physical location of the fault from the known propagation time of the reflected pulses.

4,070,119
TUBE JOINTS
Gregory F. Duer, P.O. Box 175, Western Springs, Ill. 60104
Filed Aug. 16, 1976, Ser. No. 714,296
Int. Cl.[2] F16B *1/00*
U.S. Cl. 403—12 4 Claims



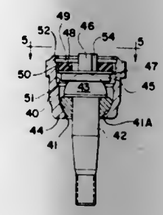
1. Fastener means for joining two tubes in end-to-end butted relationship comprising a stud having an intermediate body portion and respective tapered end surfaces which enable the concave sides of a set of toothed locking elements of concave-convex cross section to be respectively nested against each end surface, said locking elements being so nested, and the body portion of said stud having a keying surface centered mid-way of the length to enable a complemental key surface of a jig to be separably keyed to the mid-section of the stud for supporting the inside diameter of respective tubes having their ends pressed against the opposed sides of said jig, and including an additional set of locking elements, means affording shanks outward of said tapered ends, and spacer sleeves adapted to be mounted on said shanks to space the sets of locking elements.

4,070,120
POSITIONING DEVICE
Hubert Bald, Dornenstrasse 26, 5820 Gevelsberg, Germany, and Wulf Witte, Hans-Luther-Allee 17, 4300 Essen, both of Germany
Filed Aug. 6, 1976, Ser. No. 712,296
Claims priority, application Germany, Aug. 21, 1975, 2537146
Int. Cl.[2] B25G *3/00*
U.S. Cl. 403—13 2 Claims



1. A positioning device for positioning two components relative to one another in each of three mutually perpendicular co-ordinate directions, said device comprising a first component having at least one bore therein, said bore having an opening in a substantially planar outer surface portion of said first component and having a substantially conical wall surface portion disposed symmetrically with respect to an axis extending substantially perpendicularly of said outer surface portion and passing through said bore, said substantially conical wall surface portion being of increasing cross-section towards said opening, and a second component provided with a positioning element having a free end portion thereof extending outwardly from a substantially planar outer surface portion of said second component and received within said bore by way of said opening, said free end portion of said positioning element having a substantially spherical centering portion of reducing cross-section towards the outer extremity of said free end portion and having an axis of symmetry alignable with said first mentioned axis of symmetry, the major diameter of said inserted portion being less than that of said opening, whereby — on said first and second components being urged towards one another to cause said positioning element to enter said bore — said substantially planar outer surface portions of said first and second components are brought into mutually abutting relationship to define an interface between said first and second components whilst only said substantially spherical centering portion of said positioning element is brought to bear against said substantially conical wall surface portion of said bore, said substantially conical wall surface portion being tapered to include at said axis an angle smaller than that subtended thereat by any two notional tangents to said substantially spherical centering portion at points thereon disposed symmetrically relative to said axis and inwardly of said bearing surfaces, said conical wall surface portion extending outwardly from said bearing surfaces to be spaced apart from the surface portion of said positioning element facing said conical wall surface portion, said substantially spherical centering portion being brought to bear with sufficient force to cause material deformation of at least one of said substantially conical wall surface portion and said substantially spherical centering portion thereby to enlarge at least one of said bearing surfaces and to positively locate said positioning element in said bore free of play in a first of said co-ordinate directions parallel with said axis and in each of two further ones of said co-ordinate directions.

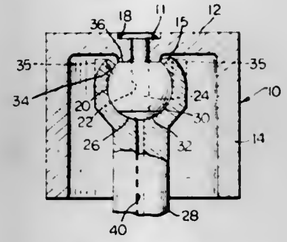
4,070,121
WEAR INDICATING BALL JOINT
John P. Graham, Creve Coeur, Mo., assignor to Moog Automotive, Inc., St. Louis, Mo.
Filed Dec. 20, 1976, Ser. No. 752,541
Int. Cl.[2] F16C *11/06*
U.S. Cl. 403—27 9 Claims



1. A ball joint comprising: a housing having two openings thereto; a bearing seated adjacent one housing opening; a stud having a headed end carried within said housing and said bearing and a shank extending axially through said bearing to the exterior of said housing through said one opening; a perforated closure fixed to said housing at said second opening; and wear indicator means operatively disposed in said housing on said headed end of said stud, a portion of said wear indicator projecting through said perforation in said closure to the exterior to indicate the internal wear of said ball joint, and said wear indicator means projecting through said perforation with sufficient radial clearance so as to be movable relative to said closure in a direction axially of said stud shank and tranversely of said axial direction, whereby two conditions of predetermined excessive wear in said ball joint can be independently indicated at the exterior of the ball joint.

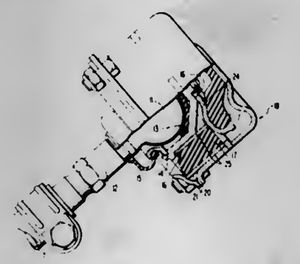
4,070,122
BALL AND SOCKET JOINT AND METHOD OF MAKING
Ronald R. Wisner, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Sept. 13, 1976, Ser. No. 723,013
Int. Cl.[2] F16C *11/06*
U.S. Cl. 403—39 7 Claims

1. In a piston and rod assembly including a piston having a top wall and a skirt dependent therefrom and a connecting rod, a ball and socket joint for connecting said piston and connecting rod comprising: a generally spherical ball on the underneath side of said top wall of the piston, said ball having a truncated end providing a contiguous surface extension of a thickened portion on said top wall a hole in said ball and in said top wall, a rivet extending through said holes in said ball and piston top wall, said rivet having an enlarged head on one end



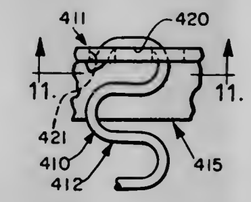
in engagement with said ball and being expanded on its other end on the side of said piston top wall which faces away from said ball and into a counterbase aligned with said thickened portion, and a socket in one end of said connecting rod in which said ball is captured including means permitting universal swivelling movement of said ball therein.

4,070,123
BALL JOINT
Walter Willingshofer, Hofingen; Gerhard Hopsch, Obersulm, and Karlheinz Böse, Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany
Filed Jan. 13, 1975, Ser. No. 540,341
Claims priority, application Germany, Jan. 19, 1974, 2402506
Int. Cl.[2] F16C *11/06*
U.S. Cl. 403—132 25 Claims



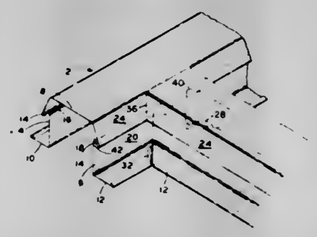
1. A ball joint comprising:
strut means including a member extending along an axis,
a ball pin and ball connected with and carried by the strut means, said ball pin adjoining said strut means at an end of said member, and extending along said axis,
bearing means engaged directly with the ball,
ball housing means directly supporting the bearing means, said ball housing means including abutment surface means,
outer housing means spaced from and at least partially surrounding the ball housing means,
and first and second rubber spring element means interposed between said outer housing means and said abutment surface means for elastically absorbing and transferring forces during relative movement of said ball pin and ball with said outer housing means,
wherein said first and second rubber spring element means include a series connection of first and second rubber spring elements of different types, said first rubber spring element being constructed and disposed for elastically absorbing and transferring both tension and compression loads in said strut means during relative movement of said ball pin and ball with said outer housing means, said second rubber spring element being constructed and disposed for elastically absorbing primarily only compression loads in said strut means during relative movement of said ball pin and ball with said outer housing means.

4,070,124
SPRING CONNECTION
Lawton H. Crosby, Lake Bluff, Ill., and Thomas H. Keane, Morristown, Tenn., assignors to Morley Furniture Spring Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 501,155, Aug. 28, 1974, Pat. No. 3,971,082. This application May 24, 1976, Ser. No. 689,081
Int. Cl.[2] F16G *11/00*
U.S. Cl. 403—208 2 Claims



1. An attachment assembly for attaching a sinuous spring band to a steel rail in a furniture frame or the like, wherein the rail includes a vertical flange, comprising:
a. a pair of openings formed in said flange between the upper and lower edges of the flange in spaced relationship longitudinally of the flange,
b. one of said openings being elongated longitudinally a predetermined distance and the other of said openings being elongated longitudinally a distance greater than said predetermined distance, and
c. a free end of the sinuous spring band being threaded through said one opening from front to back of the flange and then through said other opening from back to front of said band to connect said band to said flange in pivotable relationship relative thereto.

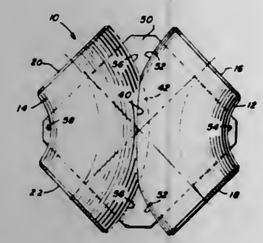
4,070,125
SUSPENDED CEILING RUNNER
James C. Ollinger, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Mar. 23, 1977, Ser. No. 780,417
Int. Cl.[2] E04C *2/42*
U.S. Cl. 403—230 2 Claims



1. A ceiling suspension system comprising at least two runners, each runner having an elongated sheet metal body with a generally inverted U-shaped configuration, said runner having two side walls connected together at their one ends with a flat top member, the opposite ends of the sides having horizontal flanges which extend outwardly from the body of the runner to support ceiling boards on either side of the runner, said side

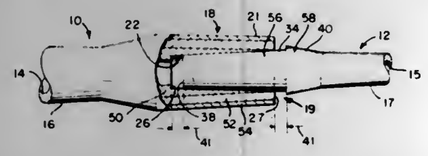
walls having grooves therein, said grooves extending outwardly from the side walls to form two parallel ledges inside the U-shaped body configuration, said grooves extending below and outwardly of the parallel ledges to form the outside of the side wall with an overhang having a recess therebelow, the end of one runner abutting the side of a second runner, said runner having its side and adjacent flange partly cut away, said end of the other runner having a portion of the end cut away to form two hook elements on said side walls, and said hook elements engage the recess below the overhang on the outside of the side walls just above the cutaway portion in the side wall and flange.

4,070,126
GUSSETED CONNECTORS
Henry Howard George, Louisville, Ky., assignor to Chemetron Corporation, Chicago, Ill.
Filed Sept. 15, 1976, Ser. No. 723,391
Int. Cl.[2] B25G *3/34*
U.S. Cl. 403—271 **7 Claims**



1. A structural connector comprising: a pair of hollow elements having coplanar but non-parallel centerlines, one of said pair of elements having non-parallel open ends facing away from the second of said pair of elements, said second element having a pair of open ends and an elongated opening therebetween, said one element having a portion of its outer periphery extending into said opening and substantially closing same, said second element being rigidly joined to said one element around said opening, said second element also having a slot extending longitudinally in both directions from said opening and said one element having a slot in said portion of its outer periphery and extending therefrom in both directions and aligned with said slot of said second element, said one element also having a slot in its inner periphery, and a plate located in said slot of said second member and extending inwardly therefrom and in both slots of said first member, said plate being rigidly joined to said second and said one member about their respective slots.

4,070,127
FERRULE JOINT FOR SECTIONAL FISHING ROD
Gary A. Loomis, Woodland, and Albert A. Fosha, Bellevue, both of Wash., assignors to Lamiglas Corporation, Woodland, Wash.
Filed Aug. 11, 1975, Ser. No. 603,738
Int. Cl.[2] F16B *7/02*
U.S. Cl. 403—334 **14 Claims**



1. A fishing rod blank which comprises at least two flexible tapered reinforced resin hollow core shafts, an end of one shaft constituting a ferrule having a tapered bore extending inwardly from said one shaft end and an end of the other shaft providing an element insertable in said ferrule to frictionally interlock the shafts together, said ferrule including an outer concentric layer reinforcement made up of fiber reinforced resin superimposed on said one shaft about said bore as an external reinforcement to resist bending and prying forces to which said ferrule may be subjected, said element consisting of a hollow core end portion of said other shaft, an outer concentric layer enlargement made up of fiber reinforced resin superimposed on said other shaft adjacent said other shaft end portion, and an outer tapered contact surface formed by said other shaft end portion and said concentric layer enlargement for frictionally engaging said bore, the wall thickness between said outer contact surface and the hollow core of said other shaft progressively decreasing from said outer concentric layer enlargement toward said other shaft end but exceeding a minimum wall thickness sufficient to withstand applied forces without interior reinforcement, while permitting said ferrule and said element to flex with said shafts when interlocked together.

4,070,128
MULTIPLE-GROOVER FOR PAVEMENTS
Harry F. Garrison, 7470 Gerald, Warren, Mich. 48092
Filed Mar. 25, 1976, Ser. No. 670,187
Int. Cl.[2] E01C *23/02*
U.S. Cl. 404—89 **1 Claim**

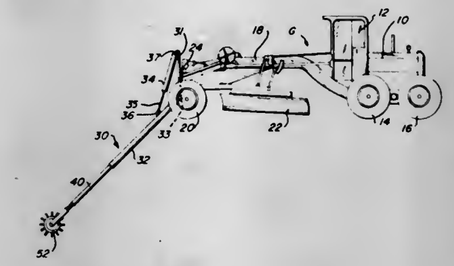


1. A multiple-groover for simultaneously forming uniform multiple parallel grooves in pavements, comprising:
an elongated approximately plate-shaped support having on its under side a multiplicity of elongated boat-shaped grooving members disposed in spaced parallel relationship transverse to said support,
said grooving members being of approximately V-shaped cross-section with upturned forward and rearward ends and of substantially the same configuration in comparison with one another,
a handle attachment element secured to the upper side of said support,
and a handle secured to said attachment element,
said handle being disposed at an acute angle of inclination to said support.

4,070,129
EARTH COMPACTING EQUIPMENT
Frank Fred Moench, Sr., 4209 San Pedro NE., Albuquerque, N. Mex. 87109
Filed July 12, 1976, Ser. No. 704,498
Int. Cl.[2] E01C *19/26*
U.S. Cl. 404—127 **5 Claims**

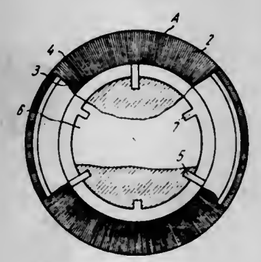
1. Earth compaction apparatus for attachment to a motor grader having front and rear wheels connected by a frame and a grader blade suspended downwardly from the frame between the wheels, for compacting back fill in deep, narrow ditches, the improvement comprising:
a. narrow extensible boom means pivotally secured to the frame between the front wheels of the grader at about axle level of said front wheels and spaced closely to the axle, said boom means extending forwardly of said front wheels, and being arranged to pivot upwardly and downwardly below the front wheels, said boom means being sufficiently narrow as to move in a ditch without touching the ditch walls;

b. means for pivoting said boom means about said pivotally secured attachment to thereby change the angle of the boom relative to a horizontal line, said means for pivoting said boom including a pair of spaced hydraulic cylinders connected between an upper portion of the grader frame disposed generally above said pivotal connection of said boom means with said frame, and a location on said boom means spaced from said pivotal connection, said pivoting means being arranged to pivot said boom means between a retracted, elevated position, and a lowered, operative position wherein the front wheels of said grader are elevated from the ground;



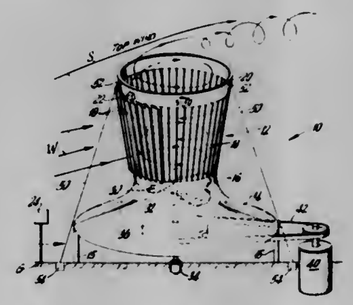
c. said boom means being formed of at least an outer member and an inner member reciprocably mounted in said outer member;
d. joining means between said boom means members for reciprocating the inner in relation to the outer member to thereby change the length of said boom means, said joining means and said pivoting means being operable in cooperation with each other to change the angle and the length of said boom means to adjust the moment arm between the end of said boom means and the rear wheels of said grader, to thereby control the compression of material in said ditch occurring because of the weight of the elevated front end of said grader exerted on said boom means; and
e. rotary compacting means mounted at the end of said inner boom member having a width at least as wide as the width of the boom.

4,070,130
ROTARY CUTTING TOOL
Viktor Samsonovich Salukvadze, 5 Parkovaya ulitsa, 42, kv. 53, Moscow, U.S.S.R.
Filed Aug. 4, 1976, Ser. No. 711,520
Claims priority, application U.S.S.R., Aug. 4, 1975, 2166354
Int. Cl.[2] B26D *1/12*
U.S. Cl. 407—31 **5 Claims**



1. A rotary tool comprising, an arbor rotatably driven in use, said arbor having peripheral, axial slots circumferentially spaced angularly, sets of cutting elements comprising arcuate sectors disposed circumferentially of said arbor, each cutting element having mounting means received in said slots for mounting individually said cutting elements in position axially and circumferentially for jointly with similar cutting elements circumferentially enclosing said arbor along an axial length thereof, each said cutting element comprising a plurality of wires each having an end fixed together and an opposite free end, said mounting means of each cutting element being secured to the fixed ends of the corresponding plurality of wires, the free ends of the wires being densely packed and defining a cutting surface.

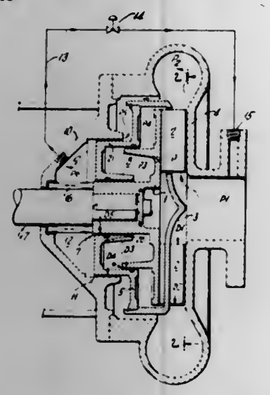
4,070,131
TORNADO-TYPE WIND TURBINE
James T. Yen, Westbury, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Jan. 20, 1975, Ser. No. 542,421
Int. Cl.[2] F03D *7/00, 9/00*
U.S. Cl. 415—3 **15 Claims**



1. Apparatus for generating electric power from atmospheric wind comprising: a generally tubular shaped, open ended tower structure, including means for selectively admitting wind into said tower along a substantial vertical length thereof, the interior surface of said tower defining a convolute chamber to cause said admitted wind to flow in a vortex flow regime having a low pressure core; means for permitting atmospheric air to be drawn into the bottom of said tower and accelerated by the core; turbo machine means located at the lower end of said tower structure and adapted to be driven by the air drawn in through the bottom of the tower.

10. Apparatus for generating electric power from atmospheric wind comprising: an open ended, tower structure including a plurality of generally vertically extending vanes, said vanes forming a substantial portion of the vertical height of said tower structure; means for rotatably mounting each of said vanes; means for sensing the direction of said atmospheric wind; control means operatively coupled to said sensing means for opening the vanes facing in the direction of said wind to admit said wind into said tower, the interior surface of said tower defining a convolute chamber to cause said admitted wind to flow in a vortex flow regime having a low pressure core; means for supporting said tower in spaced relationship from ground; and turbomachine means including a generator and a turbine blade assembly adapted and arranged to rotate in a horizontal plane and drive said generator, said assembly being located within said tower adjacent the lower end thereof, said assembly being adapted to be driven by air drawn into said low pressure core.

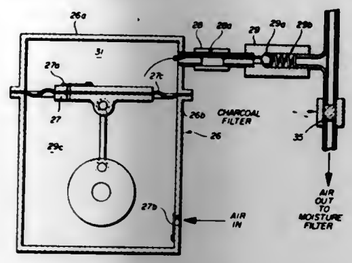
4,070,132
VARIABLE PERFORMANCE PUMP
Charles Thomas Lynch, Berkeley, Calif., assignor to Baltimore Aircoil Company, Inc., Jessup, Md.
Filed Nov. 2, 1976, Ser. No. 737,964
Int. Cl.² F01D 7/00
U.S. Cl. 415—48 3 Claims



1. A variable width impeller centrifugal pump comprising a. a rotatable impeller having vanes thereon and holes therethrough and having two concentric cylindrical fits on the back side thereof; b. an impeller shroud having slots thereon through which the vanes of said impeller pass. c. a pump housing having an inlet and outlet section encompassing the impeller and impeller shroud, said pump housing having one cylindrical fit integral with said housing, said housing having an opening therein on the back side thereof; d. a piston arrangement integral with said impeller shroud adapted for axial and rotatable movement having two extending means thereon to axially move within the three cylindrical fits said extending means being movable between the cylindrical fit on said housing and one of said cylindrical fits on said impeller, the others of said extending means being movable within the other of said cylindrical fits on said impeller so that an area on the impeller side of said piston is sealed by said impeller cylindrical fits, said area communicating with said inlet by means of said holes through said impeller, said piston also being partially sealed by said cylindrical fit on said housing so that leakage through said fit on said housing provides pressure to the piston on the side opposite said impeller; e. means for controlling the pressure on the piston side away from the impeller, said means communicating with the inside of said housing through the opening in the rear of said housing.

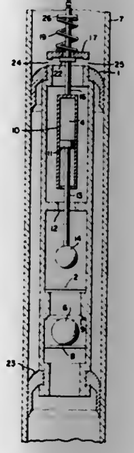
4,070,133
PUMP COMPRESSOR UNIT FOR USE WITH PUMPING DRAFT BEER
Homer McCormick, 5645 Emerson, Morton Grove, Ill. 60053
Filed Feb. 9, 1976, Ser. No. 656,185
Int. Cl.² F04B 49/00; B67D 1/12, 1/04
U.S. Cl. 417—38 5 Claims

1. A portable, compact air supply unit for providing a controlled amount of pressurized air in the dispensing of beverages or fluids, and including:
- a container adapted to be portably transported; and having disposed therein the following:
- a compressor;
- air distribution line means connected to said compressor means for feeding pressurized air to at least one outlet means located on said container;
- a check valve located in a first portion of the distribution line means and having means for allowing air flow in one direction and preventing air flow in the opposite direction through the check valve;
- air bleed means including an opening upstream of the check valve for releasing residual pressure from the first portion of the air distribution line means;
- pressure switch means located in a second portion of the distribution line means and including means electrically coupled with the compressor to cycle the compressor on



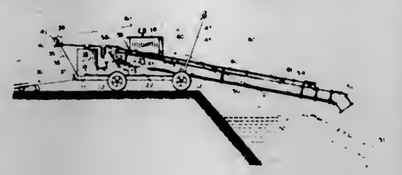
and off in response to air pressure in the air distribution line means; and
- filter means located in a third portion of the air distribution line means and having means for removing moisture from the pressurized air.

4,070,134
GAS POWERED SWABBING DEVICE
William Dwight Gramling, 5144 Newport Ave., Chevy Chase, Md. 20016
Continuation-in-part of Ser. No. 569,056, April 17, 1975, abandoned, which is a continuation of Ser. No. 431,910, Jan. 9, 1974, abandoned. This application May 19, 1976, Ser. No. 687,916
Int. Cl.² F04B 47/12
U.S. Cl. 417—56 6 Claims



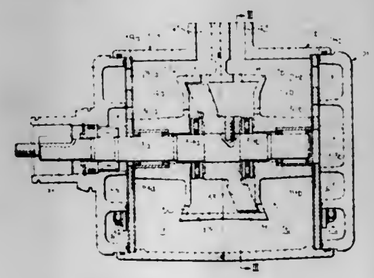
1. Means for removing fluid from wells which produce both gas and liquid which comprises a swab means for being receiving in the well casing and being slidable in the well casing, said swab means including cup sealing means bearing against said casing and performing the function of selectively providing a seal between the casing below said swab means and above said swab means and reducing friction at the bearing surfaces between said swab means and said casing, said swab means having a vertically disposed fluid passage therethrough, a valve seat in said passage and an upwardly sealing valve therein, resilient means tending to hold said valve normally opened, said valve being closed by liquid pressure when submerged a predetermined depth, a pressure relief mechanism included across said passage for selectively relieving the pressure differential below and above said swab means within said casing.

4,070,135
MOBILE PUMPING APPARATUS
J. Marlin Eller, 204 NE. 8 Terrace, Deerfield Beach, Fla. 33441
Filed Jan. 21, 1977, Ser. No. 760,833
Int. Cl.² F04B 21/00
U.S. Cl. 417—234 27 Claims



1. In a movable pumping apparatus for pumping water out of a body of water in the ground, the combination of:
- a submersible pumping unit comprising an elongated, rigid discharge pipe having an intake end for insertion down into the body of water and an opposite discharge end, said discharge pipe containing a hydraulic motor-driven pump for pumping the water up through the pipe from its intake end to its discharge end;
- a wheeled cart for holding the discharge pipe near the body of water;
- a power-operated winch on said cart, and a cable operated by the winch and attachable to the discharge pipe for raising and lowering the intake end of the discharge pipe and suspending the pipe in the body of water;
- a pipe support supporting the discharge pipe from below near its discharge end;
- and means horizontally pivoting said pipe support on the cart for angular adjustment in unison with the discharge pipe as its intake end is lowered or raised by the winch-operated cable.

4,070,136
APPARATUS FOR LUBRICATING A SWASH PLATE COMPRESSOR
Shozo Nakayama; Masayuki Kurahashi, and Kimio Kato, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Japan
Continuation of Ser. No. 465,268, April 29, 1974, Pat. No. 3,955,899. This application Feb. 25, 1976, Ser. No. 661,305
Claims priority, application Japan, May 11, 1973, 48-55910
Int. Cl.² F04B 27/08
U.S. Cl. 417—269 2 Claims

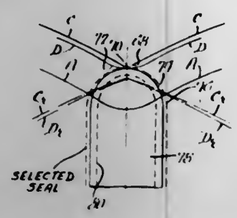


1. A swash plate type compressor comprising: a pair of horizontal axially-aligned cylinder blocks forming a combined block having at least one inlet port for introducing a refrigerant gas together with oil particles suspended therein from the exterior of the compressor into the combined block, a plurality of oil separating passageways extending in opposite axial directions of the combined block and communicating with the inlet port for separating the oil particles from the introduced refrigerant gas; a swash plate chamber defined in the middle portion of said combined block, a drive shaft extending through said swash plate chamber, a swash plate in said swash plate chamber rotatably supported on said drive shaft, a plurality of compressor pistons and a plurality of cylinder bores in said combined block in which said compressor pistons are mounted on said swash plate causing reciprocal motion of compressor pistons retained in cylinder bores of said combined block; a pair of cylinder heads positioned at the ends of said combined block each said head having a suction chamber connected to each said oil separating passageway; valve plates interposed between said cylinder blocks; and an axially extending bottom chamber separated from said swash plate chamber by a lower partition wall provided at the bottom part of said combined block for receiving the separated oil particles,
- the improvement wherein the swash plate chamber is separated from said oil separating passageways by an upper partition wall provided in said combined block, a portion of said partition wall extending orthogonally with respect to the flow of oil and refrigerant through said inlet port in a position opposite said inlet port whereby the flow of oil and refrigerant makes a right angle bend along said partition wall, means located in the path of the refrigerant flowing from the inlet port to the oil passageways and proximate the portion of the partition wall where the oil and refrigerant make the right angle bend for drawing a flow of oil and refrigerant into said swash plate chamber containing a larger proportion of oil to refrigerant than said flow of oil and refrigerant passing into said combined block through said inlet port at a substantially centrally located portion of said swash plate chamber,
- said drawing means comprises a corresponding plurality of inlet through-holes formed in said upper partition wall, each inlet through-hole substantially being in alignment with said refrigerant gas inlet port and communicating with one of said separting passageways of said combined block thereby enabling the part of said oil particles suspended in said refrigerant gas to flow by inertia into said swash plate chamber, the oil particles entering said swash plate chamber thereby lubricating both sides of said swash plate, said swash plate chamber communicating with said suction chambers of said cylinder heads through through-outlet holes in said axially extending bottom chamber whereby said refrigerant gas introduced into said swash plate chamber through said drawing means is discharged toward said suction chambers during operation of the compressor, said outlet through-holes being oriented in a direction substantially parallel to said drive shaft and being spaced apart from said inlet through-holes with respect to the axis of said shaft.

4,070,137
ROTARY MECHANISM WITH A CONTINUOUS CURVE AT THE CHAMBER WAIST
Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 7, 1976, Ser. No. 730,494
Int. Cl.² F01C 1/02, 19/04; F04C 17/02; F02B 55/14
U.S. Cl. 418—61 A 3 Claims

1. A rotary mechanism comprising:
- a housing including a chamber having a wall configuration based on a predetermined geometric shape including at least one lobe, said lobe being defined by a continuous curve;
- a shaft journalled in the housing and having an eccentric within the chamber;
- a rotor journalled on said eccentric for rotation and translation within said chamber, said rotor having plural apexes, each being provided with an apex seal receiving groove;
- said wall deviating from said predetermined geometric shape by being spaced outwardly from the envelope of said predetermined geometric shape and by being generally

spaced inwardly from the envelope of a closed geometric figure spaced outwardly of and parallel to said predetermined geometric shape and having a sharp transition point(s) at said lobe(s), said wall at said lobe(s) being defined by a continuous curve substantially encompassing said sharp transition point(s) and extending to both sides thereof; and



apex seals within said grooves having arcuate crowns sealingly engaging said wall, said crowns being relieved on both sides of the midpoints thereof from the theoretical shape required to ensure good sealing engagement with a wall configured in the form of said closed geometric figure with minimal movement within the grooves;

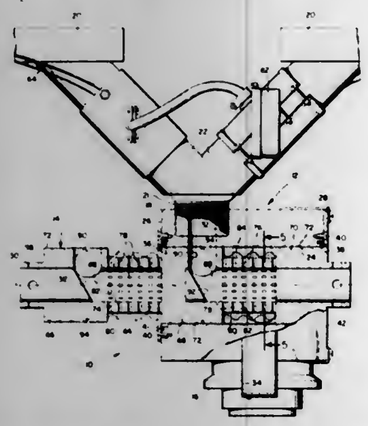
whereby said seals are wider than in conventional rotary mechanisms and provide a greater area of contact with said wall to decrease the wear rate.

4,070,138

SCREEN CHANGER APPARATUS

David A. Stanwood, West Covina, Calif., assignor to Plastiflex Company, Inglewood, Calif.

Filed July 17, 1975, Ser. No. 596,913
Int. Cl.² B29F *3/00*
U.S. Cl. 425—144 **19 Claims**



1. A screen changer assembly for improved screening out of particulate matter in a flow of fluid comprising:

a screen having a mesh size sufficient for preventing the particulate matter from passing therethrough and configured substantially as a closed tube generally disposed on an axis;

a support of generally tubular shape supporting said screen and comprising means defining an interior flow path, and said support having a perforate wall enclosing said interior flow path means; and

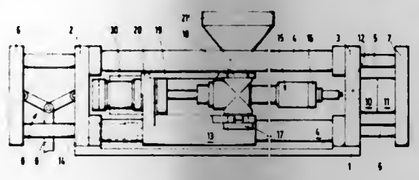
means urging the flow of the fluid in a generally unidirectional rotational direction around the exterior of said screen and thence through said screen, said perforate wall, and said interior flow path means, while the particulate matter is screened out, said urging means thereby moving the particulate matter around the screen exterior.

4,070,139

MOLDING MACHINE

Joachim Linde, Leiselheim, and Wolfgang Späth, Lahr, both of Germany, assignors to Klockner - Werke AG, Duisburg, Germany

Filed Nov. 21, 1975, Ser. No. 634,339
Claims priority, application Germany, Nov. 21, 1974, 2455088
Int. Cl.² B28B *17/00*; B29B *1/06*
U.S. Cl. 425—188 **9 Claims**



6. In a molding machine, a combination comprising a stationary frame including a stationary plate, a stationary platen, and a plurality of tubular beams distributed about and parallel to an axis and interconnecting said stationary plate and platen to surround a space therewith; a movable frame including a plurality of beams mounted in said tubular beams for axial movement and having ends which extend out of said tubular beams, a movable plate connected to those of said ends which extend beyond said stationary plate, and a movable platen connected to the remaining ends which extend beyond said stationary platen; a split mold having two mold parts each of which is interchangeably mounted on one of said platens in axial alignment with the other mold part and together defining a molding cavity; means arranged between and acting on said plates and operative for moving said movable frame axially of said stationary frame to thereby open and close said mold; and means for introducing molding material into said cavity of said closed mold, including a passage through said stationary platen and the mold part mounted thereon and having an inlet port coaxially communicating with said space and an outlet port communicating with said cavity, feed screw means arranged in said space and having a rotary axis, means for mounting said screw means on said stationary frame for pivoting about a pivot axis substantially normal to said rotary axis between an operating position in which said rotary axis coincides with said axis and said screw means communicates with said inlet port and at least one servicing position in which said rotary axis encloses an angle with said axis, drive means for rotating said screw means about said rotary axis and mounted on said stationary frame, and coupling means for disengageably connecting said drive means with said screw means in said operating position and for releasing said screw means for said pivoting between said positions only upon disengagement.

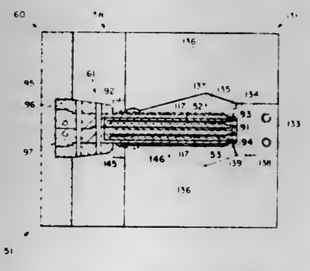
4,070,140

APPARATUS FOR MAKING PRECISELY PARTITIONED BULBOUS-SHAPE CONTAINER

Malcolm Bramel Lucas; Theodore Paul Merz, and Robert Henry Van Coney, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 31, 1974, Ser. No. 493,307
Int. Cl.² B29D *23/03*
U.S. Cl. 425—533 **2 Claims**

1. An improved injection-blow molding apparatus for injection molding a relatively deep preform of thermoplastic material and for blow mold converting such a preform into a closed-bottom container, said apparatus including a butt plate assembly, a male mandrel which is cantilevered from said butt plate assembly so that it has an unsupported distal end and which mandrel has a sufficiently large slenderness ratio that its cantilevered strength is insufficient to substantially obviate displacement of its distal end when subjected to unevenly distributed pressure during injection molding cycles, an injection molding body, an injection head assembly, a blow molding body, means for associating the butt plate assembly, the male mandrel, the injection molding body and the injection head assembly to form an injection mold cavity, means for injecting thermoplastic material into the injection mold cavity to form a said preform, means for disassociating the injection molding body and the injection head assembly from the butt plate assembly and the mandrel and for associating the blow molding body with the butt plate assembly and the mandrel so that a blow molding cavity is formed about said preform, means for conducting a blow molding medium into said preform so that said preform is converted into said container, and means for



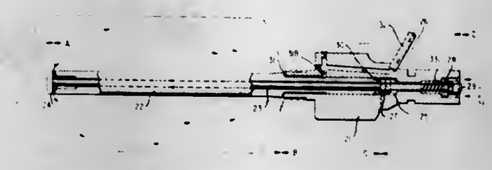
removing said container from said apparatus, said improvement comprising a blow-molding-medium passageway in the mandrel which terminates at a hole in the distal end of the mandrel, an improved injection head assembly, and an improved blow molding body, said improved injection head assembly comprising means for sealing said hole in the distal end of the mandrel and for mechanically supporting the distal end of the mandrel to substantially obviate displacement thereof while said preform is being injection molded, and means for defining a tubular extension of said injection mold cavity adjacent said hole in the distal end of the mandrel so that said preform has a hollow tubular extension on its bottom end, said improved blow molding body comprising means for pinching said tubular extension closed as it is being associated with the butt plate assembly and the mandrel so that said container has a closed bottom end.

4,070,141

APPARATUS FOR INJECTION BLOW MOLDING

Leonard Benoit Ryder, 5 Sharon Drive, Whippany, N.J. 07981

Filed Nov. 26, 1976, Ser. No. 744,951
Int. Cl.² B29D *23/03*
U.S. Cl. 425—535 **2 Claims**



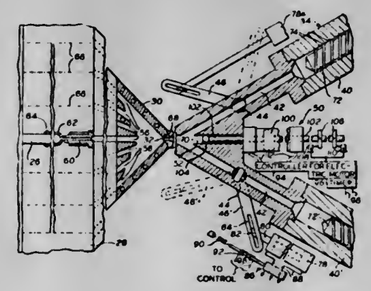
1. Core rod assembly for circulating blowing air through an injection blow molded article including an elongated core rod body having an axis and a hollow axially slideable core rod head mounted therein, the core rod head having air passage slots machined into the end thereof, and a core rod stem having a core rod tip mounted within said core rod head, the core rod stem being fitted with adjustable locking nuts, a star locking nut having grooves machined therein which permit air to pass from an air source into the core rod body then through the air passage slots in said core rod head into a space between said stem and head, and a cam nut, each of which nuts permit limited axial movement of said core rod stem, a spring member which biases said core rod stem in a direction along said axis, and means for moving said core rod stem and core rod head with respect to said core rod body such that said adjustable locking nuts are locked in a position whereby said core rod stem has moved the core rod tip to a position spaced from said core rod head and a portion of the core rod head previously in abutment with the core rod body is now spaced from the core rod body thereby creating an air supply channel between the core rod tip and the core rod head and an air exhaust channel between the core rod body and said portion of the core rod head so that air can be passed to and exhausted from a blown article simultaneously.

4,070,142

INJECTION OF PLASTIC IN MOLDING MACHINE

John J. Farrell, Greenbrook, N.J., assignor to Farrell Patent Company, Greenbrook, N.J.

Continuation of Ser. No. 658,103, Feb. 17, 1976, abandoned, which is a division of Ser. No. 427,337, Dec. 21, 1973, Pat. No. 3,940,223. This application Jan. 26, 1977, Ser. No. 762,819
Int. Cl.² B29F *1/02, 1/06*
U.S. Cl. 425—555 **3 Claims**



1. An injection blow molding apparatus comprising, an injection mold, a core rod disposed in the injection mold and onto which a thermoplastic parison is injection molded, a first plasticizer and a second plasticizer, a first passage and a second passage through which each of the plasticizers respectively communicate with the injection mold, pump means comprising a piston in common communication with said passages and said injection mold, first and second valve means disposed in said first and second passage means respectively for selectively shutting off communication of each respective plasticizer, control means to actuate the pump means in timed relationship with each of the valve means, so that said first plasticizer first charges the injection mold, said control means shuts off the first valve means and starts the piston to move thermoplastic material to the mold so as to compensate for any shrinkage of the thermoplastic in the mold, said first plasticizer then undergoing recovery, and wherein the control means actuates said second valve means so that said second plasticizer is in communication with the injection mold for the next parison formation prior to completion of recovery of the first plasticizer.

4,070,143

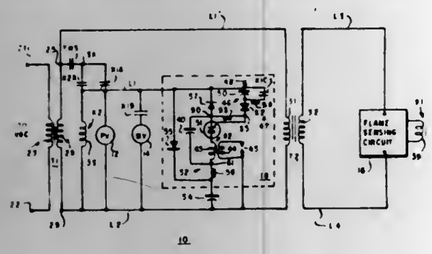
FUEL IGNITION SYSTEM INCLUDING AN IGNITER PROVIDING A LINGERING SPARK

Gerald Edward Dietz, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed June 21, 1976, Ser. No. 698,161
Int. Cl.² F23Q *9/08*
U.S. Cl. 431—43 **12 Claims**

1. In a fuel ignition system including a pilot valve means operable when energized to supply fuel to a fuel outlet for

ignition to establish a pilot flame, main valve means operable when energized to supply fuel to a main burner apparatus for ignition by the pilot flame, and flame sensing means responsive to the pilot flame to effect energization of said main valve means, a control arrangement comprising activate means responsive to a request signal to complete an energizing path for said pilot valve means, igniter means connected to said energizing path and operable when enabled to provide sparks in the proximity of said outlet for igniting fuel supplied to said outlet



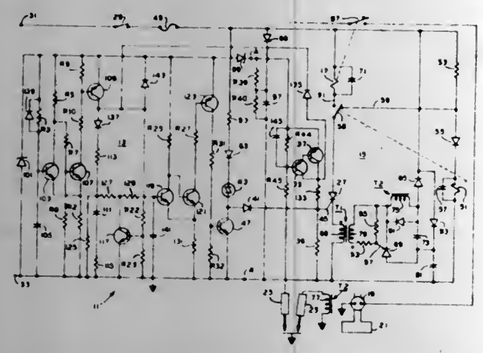
to establish a flame, and switching means controlled by said flame sensing means to be normally disabled in the absence of a pilot flame for enabling said igniter means to provide sparks, and to be enabled when a pilot flame is established to cause the igniter means to be disabled, said igniter means including timing means effective when said switching means is enabled to maintain said igniter means enabled for a predetermined time interval after said switching means is enabled, permitting said igniter means to continue to provide sparks during said time interval.

4,070,144

CONTROL SYSTEM

Alvin D. Wyland, Morrison, Ill., and Jaykishan C. Patel, Liverpool, N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jan. 30, 1976, Ser. No. 653,803
Int. Cl.² F23N *5/08*
U.S. Cl. 431—79 **13 Claims**



1. A control system for a fuel burner having a fuel flow control valve and adapted to be operative from a power source comprising:
- means for actuating the control valve to effect flow of fuel from the burner;
- means for igniting fuel emitted from the burner;
- means for indicating the presence of a flame at the burner;
- a controlled switching device;
- means for connecting said actuating means and said controlled switching device to the power source to effect energization of said actuating means when said controlled switching device becomes conductive;
- means responsive to said indicating means and the indication of the presence of a flame at the burner for continuously enabling said controlled switching device;
- means for selectively supplying enabling pulses to said controlled switching device; and
- timing means for selectively preventing the application of the enabling pulses to said controlled switching device.

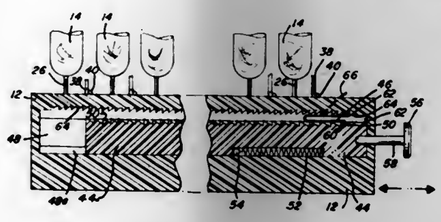
7. In a control system for a fuel burner having fuel flow control valve enabling means, a controlled switching device, means for energizing a fuel igniting system adapted to be connected in series to an electrical source, and a control circuit; the improvement wherein said control circuit comprises means for selectively supplying enabling pulses to said controlled switching device to energize said fuel igniting system, and timing means for selectively preventing the application of the enabling pulses to said controlled switching device.

4,070,145

SELECTIVE ACTUATING MECHANISM FOR SIGNAL DEVICE USING PERCUSSIVE FLASHLAMPS

Harold H. Hall, Jr., Marblehead, and Andre C. Bouchard, Peabody, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 14, 1976, Ser. No. 695,991
Int. Cl.² F21K *5/02*
U.S. Cl. 431—93 **15 Claims**



1. A selective actuating mechanism for a signal device intended for hand operation; said signal device including a support member, a plurality of percussively ignitable flashlamps mounted in a row on said support member, and a plurality of preenergized strikers mounted on said support member and releasable to fire said flashlamps; the selective actuating mechanism comprising, in combination:
- a longitudinal channel in said support member located parallel to said row of flashlamps;
- a spring loaded ratchet bar retained in said channel and adapted to be directly actuated by hand;
- a single slidable member retained in said channel in releasable engagement with said ratchet bar; and,
- a single means provided on said slidable member for sequentially releasing all of said preenergized strikers to fire respective ones of said flashlamps in response to successive hand actuation of said ratchet bar and the resulting indexing of the slidable member releasably engaged therewith along said channel.

4,070,146

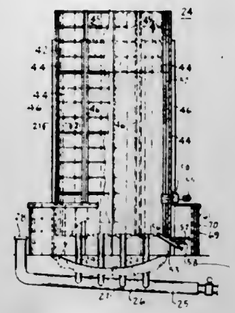
FLARE BURNER FOR WASTE COMBUSTIBLE GAS

John F. Straitz, III, Jenkintown, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.

Filed Mar. 18, 1975, Ser. No. 559,492
Int. Cl.² F23D *13/20*
U.S. Cl. 431—202 **16 Claims**

1. A flare gas burner for combustible waste gas comprising
- a vertical combustion chamber open at the top and spaced upwardly at the bottom for induction of air thereinto for combustion,
- means for supplying combustible waste gas to the bottom of said combustion chamber through a plurality of burners.

said combustion chamber comprising a plurality of vertical panels each having an outer metallic panel wall and parallel thereto an inwardly facing exposed noise absorbent alumina-silica ceramic fiber blanket of a density of the



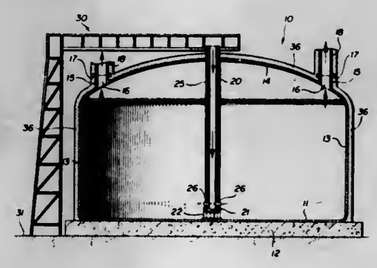
order of eight pounds per cubic foot having continuous elongated inner and outer faces secured at a plurality of spaced locations to the inner face of said metallic panel wall with said faces parallel to said panel wall.

4,070,147

METHOD AND APPARATUS FOR POST-WELD HEAT TREATING A TANK

Orwill Granger Sikora, Houston, and Donald Sheneman, Spring, both of Tex., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Apr. 1, 1976, Ser. No. 672,733
Int. Cl.² F27D *1/00*
U.S. Cl. 432—5 **12 Claims**



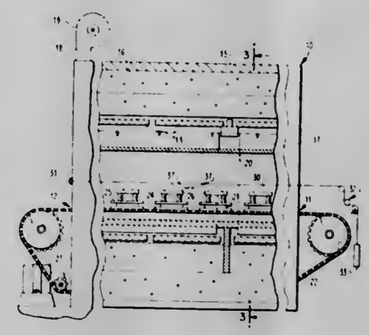
1. A method of heating a closed metal shell defining a tank having top and bottom portions, comprising:
- positioning a substantially vertical metal tube to extend upwardly from about the bottom interior space of the tank at least to an opening in a top portion of the tank,
- placing insulation on the interior surface of the tube for substantially retarding heat flow from the tank interior space into the tube interior space,
- providing the tank top portion with a plurality of hot gas exhaust ports communicating with the tank upper interior space and the atmosphere,
- positioning a burner in the bottom portion of the tube, firing the burner with a fuel and directing the resulting flame and hot combustion gases from the burner away from the tube to heat the metal shell,
- placing insulation on the exterior surface of the metal shell, before firing the burner, to retard heat loss, and
- controllably venting hot gases from the tank through the exhaust ports to the atmosphere by a natural-draft stack-effect thereby reducing the pressure in the tube and inducing atmospheric air to flow downwardly into and through the tube to the burner to supply oxygen for combustion of the fuel.

4,070,148

APPARATUS FOR MONITORING PRODUCT TEMPERATURE IN AN OPEN ENDED, SECONDARY EMISSION, PRODUCT CARRYING CONVEYOR FURNACE

Frank John Campagna, Hopewell Junction, and Gary Frank Pavlovic, Beacon, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 14, 1976, Ser. No. 695,604
Int. Cl.² F27D *19/00*
U.S. Cl. 432—50 **6 Claims**



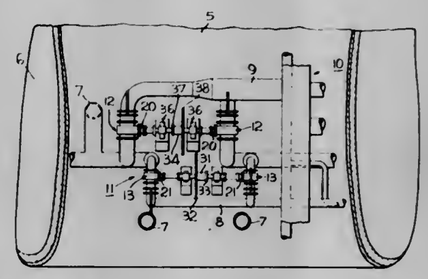
1. In an open ended furnace of the secondary emission type having a plurality of serially arranged heating zones therein, said furnace including a conveyor passing therethrough for carrying product therein through said furnace and means for adjusting the temperature in said zones; the improvement comprising: apparatus for monitoring product temperature within said furnace; said apparatus comprising at least one temperature sensor holder passing through said furnace, superimposed of said conveyor; a plurality of temperature sensing means on said holder and serially arranged therealong, means connecting each of said temperature sensing means externally of said furnace to provide external monitoring thereof.

4,070,149

CONTROLLABLE DISTRIBUTION SYSTEM FOR ROTARY KILN

Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed July 23, 1976, Ser. No. 708,135
Int. Cl.² F27B *7/36*
U.S. Cl. 432—109 **1 Claim**



1. A rotary kiln comprising:
- an elongated cylindrical ore reduction chamber;
- a nozzle supported by and rotating with said kiln in fluid communication with said chamber;
- fuel and gas conduit means supported on said kiln for rotation therewith;
- gas valve means associated with said nozzle and said gas

conduit means selectively operable to permit and interrupt the flow of gas from said gas conduit through said nozzle into said chamber;

fuel valve means associated with said nozzle and said fuel conduit means selectively operable to permit and interrupt the flow of fuel from said fuel conduit through said nozzle into said chamber;

axially spaced gas "on" and "off" cams supported on said kiln connected together and to said gas valve for selective "on" and "off" operation thereof as said cams are rotated:

axially spaced fuel "on" and "off" cams supported on said kiln connected together and to said fuel valve for selective "on" and "off" operation thereof as said cams are rotated, said fuel "on" and "off" cams being axially spaced from said gas "on" and "off" cams;

four trip means supported about said kiln in axially spaced planes coincident with the planes of said "on" and "off" cams for selective engagement by and rotation of a co-planer cam as said kiln rotates, said cam and said trip means being arranged whereby each connected "on" and "off" cam must sequentially engage its associated trip to index the other connected cam to engage its associated trip; and

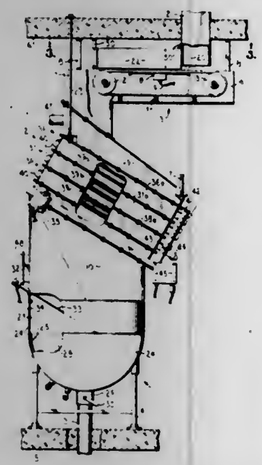
means connected to each of said trip means operable to selectively move said trip means into and out of position for engagement by its associated cam.

4,070,150

CONTINUOUS MELTING DEVICE

Marvin Katz, Roeland Park, and William J. Becicka, Overland Park, both of Kans., assignors to Top-Scor Products, Inc., Kansas City, Kans.

Filed Apr. 1, 1976, Ser. No. 672,595
Int. Cl.² F27B 3/00
U.S. Cl. 432—210 **13 Claims**



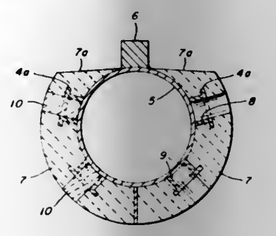
1. A melter which comprises a melting means for melting solid particles of a substance, a containing means for receiving said substance in molten form from said melting means, said melting means having a plurality of heatable plates that are spaced apart from each other in a side-by-side relationship with the sides of the plates oriented at least substantially transversely with respect to the path followed by said solid particles as they approach the plates, and wherein the sides of some of said plates overlie the sides of other of said plates, and the path followed through said melting means by said solid particles is a tortuous path.

4,070,151

METALLURGICAL FURNACE WITH WATER-COOLED WORK SUPPORT

Paul V. Suey, 1043 Block Forest Road, Pittsburgh, Pa. 15235

Continuation of Ser. No. 633,214, Nov. 19, 1975, abandoned.
This application June 13, 1977, Ser. No. 805,821
Int. Cl.² F23M 5/00; E04B 1/38; E04C 1/40
U.S. Cl. 432—234 **4 Claims**



1. The combination with a metallurgical furnace having a water-cooled tubular work supporting structure thereon on which heavy slabs and other heavy metal objects are supported and progressively moved from a charging end to an exit, the supporting structure comprising upright and horizontal tubes through which said metal objects constituting several tons are intermittently moved under conditions creating violent impact and mechanical shock and vibration in the work supporting structure, the invention comprising a heat insulating covering of preformed refractory tiles wherein the tiles comprise a pair of complementary sections with the pairs placed end to end along the exterior of said tubes, each of the said tiles of a pair having a longitudinally extending groove extending along its inner surface which, when the pair is placed about a tube, snugly fits about and encloses the length of tube along which it extends, each tile of a pair having at least one radial opening therethrough near each end of the section, there being a fastening having a tubular shank open at each end in each radial opening and having its inner end welded to the water-cooled tube after placement of the tile section on the said tube, the tubular shank being of a length less than the depth of the radial opening in the tile, said shank having a laterally extending flange at its outer end with the body of the tile fitting around the tubular shank and confined between said flange and the water-cooled tube so that the tube, the fastening and the tile are fixed against relative motion when the water-cooled tube receives impact or shock, and a body of insulation over the flange and filling the radial opening.

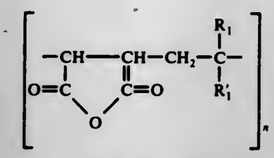
4,070,152

TEXTILE TREATING COMPOSITIONS FOR INCREASING WATER AND OIL REPELLENCY OF TEXTILES

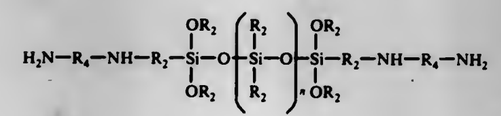
Lipot Pentz, Baton Rouge, La., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 12, 1976, Ser. No. 648,604
Int. Cl.² D06M 9/00; C08L 43/04
U.S. Cl. 8—115.6 **12 Claims**

1. A composition comprising a) from about 0.02 weight % to about 2.0 weight % of a textile treating resin which is a fluorine-containing polymer of any polymeric or polymer-forming perfluoroalkyl-group-containing compound, sufficient to impart oil or water repellency to a textile fabric and b) from about 0.15 weight % to about 10 weight % of a copolymer of (I) a maleic-anhydride copolymer of the formula



wherein each of R_1 and R_1' is hydrogen, lower alkyl, lower alkoxy, or aryl, and n is an integer from 2 to 30, (II) an amine derived from fatty acid and of the formula $CH_3—(CH_2)_p—NH_2$, wherein p is an integer from 7 to 28, and (III) an aminoorganopolysiloxane of the formula



wherein R_2 is lower alkyl, R_3 and R_4 are each lower alkylene, and n is an integer from 5 to 28.

4,070,153

PREPARATION OF SERUM STANDARD FOR RADIOASSAY OF THYROXINE

Karen L. Travis, Corning, and Frank B. Ward, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 564,068, March 28, 1975, abandoned. This application June 18, 1976, Ser. No. 697,401
Int. Cl.² G01N 33/16
U.S. Cl. 23—230.6 **7 Claims**

1. A method of preparing a serum standard useful for radioassays of thyroxine, the method comprising: contacting a human serum containing thyroxine binding globulin and thyroxine with finely-divided alumina particles to remove a major portion of the thyroxine, and then reacting the serum at an acidic pH with an anion exchange resin for a period of time sufficient to extract substantially all thyroxine binding globulin and the remaining thyroxine.

4,070,154

METHOD AND APPARATUS FOR DETERMINING THE ALCOHOL CONTENT OF FUELS

Werner Mascher, Bismarckstr. 6, 1000 Berlin 41; Wolfgang Kretschmer, Kaiserdamm 15, 1000 Berlin 19, and Gerhard Schmidt, Wesserstr. 155/156, 1000 Berlin 44, all of Germany

Filed Feb. 16, 1977, Ser. No. 769,023
Claims priority, application Germany, Feb. 27, 1976, 2608062
Int. Cl.² G01N 31/22, 33/22
U.S. Cl. 23—230 R **9 Claims**

1. A method for determining the alcohol content of fuels from a chemical color reaction comprising the steps of:

a. preparing a first mixture by saturating an emulsion material with sodiumvanadiate and water;

b. preparing a second mixture which is uniform in color by adding a solution of 8-Hydroxyquinoline, acetic acid and an organic solvent which is insoluble in water and free of OH-group chemicals to said first mixture; and

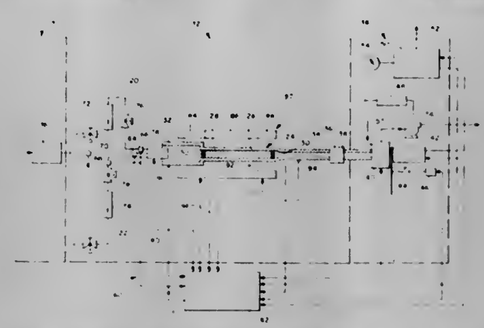
c. adding the fuel to be tested to said second mixture, thereby causing a discoloration of a portion of said second mixture indicating the alcohol content of said fuel.

4,070,155

APPARATUS FOR CHROMATOGRAPHICALLY ANALYZING A LIQUID SAMPLE

Freeman W. Fraim, Lexington, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Jan. 19, 1977, Ser. No. 760,605
Int. Cl.² G01N 31/08
U.S. Cl. 23—230 PC **14 Claims**



14. A method of chromatograph analysis of nitrogen containing organic compounds comprising the steps of:

a. chromatographically separating constituents of a liquid sample and discharging the separated constituents in timewise distribution;

b. reacting in a converter organic nitrogen compound containing liquid effluent from said chromatograph with oxygen approximately in the temperature range 600° to 1800° C to produce nitric oxide;

c. discharging chromatographic effluent into the converter in the timewise distribution established in said chromatograph; and

d. discharging oxygen in said converter in a plurality of streams surrounding the chromatographic effluent for atomizing the effluent; and

e. detecting the nitric oxide produced.

4,070,156

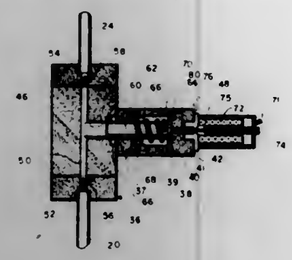
REAGENT DISPENSING SYSTEM IN AN AUTOMATIC CHEMICAL ANALYZER

John J. Moran; Carl O. Gelienthin, and James R. Eseke, all of Houston, Tex., assignors to Hycel, Inc., Houston, Tex.

Filed Sept. 21, 1976, Ser. No. 725,238
Claims priority, application United Kingdom, Mar. 17, 1976, 10685/76; Mar. 17, 1976, 10686/76
Int. Cl.² G01N 1/14, 1/18
U.S. Cl. 23—253 R **10 Claims**

1. In a chemical testing apparatus in which reaction containers are indexed through various positions, test samples and reagents ar dispensed into reaction tubes and the contents of the tubes are incubated and analyzed, the improvement of means for providing reagents for injection into the tubes comprising: a block assembly having a first bore extending therethrough and having forward and rear surfaces defining a reagent path therebetween, inlet and outlet means at respective opposite ends of said first bore for respectively communicating with a reagent source and a reagent dispensing line, a second bore communicating with said first bore at a forward surface of

said first bore and extending forwardly thereof and defining a cylinder, a piston received in said cylinder, said piston having an end facing a rear surface of said first bore and being axially and reciprocally movable between a position in which said end is housed in said second bore and a position in which said piston extends into said first bore and said end is adjacent to



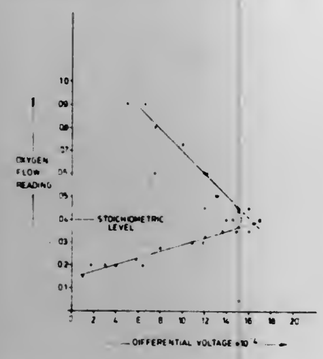
said rear surface of said first bore, sealing means mounted coaxially with said second bore for surrounding said piston in said second bore, actuating means mounted to said block assembly for operating said piston, and stop means cooperating with said piston for limiting the travel of said piston in the transverse direction.

4,070,157

TEMPERATURE-RESPONSIVE DEVICE

Gerald Sidney Iles, London, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed Sept. 3, 1976, Ser. No. 720,394
Int. Cl.² G01N *25/36, 25/30*
U.S. Cl. 23—254 E **4 Claims**



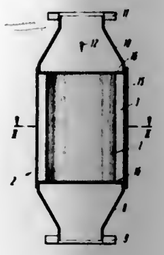
1. Apparatus for detecting changes in the composition of a stream of gas resulting from contact with a catalyst, said apparatus comprising first and second composite film electrical resistance thermometers which are connected in series and means for monitoring the voltage difference between said thermometers, said first thermometer including a coating of said catalyst and the two thermometers being arranged in side-by-side relationship in a holder with the resistive track of the second thermometer and the catalyst coating of the first mentioned thermometer facing outwardly of the holder for exposure to said gas stream.

4,070,158

CATALYST FOR CATALYTIC PURIFICATION OF EXHAUST GASES

Johann Siebels, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Apr. 30, 1975, Ser. No. 573,143
Claims priority, application Germany, July 16, 1974, 2434102
Int. Cl.² B01J *8/02, 35/04;* F01N *3/15*
U.S. Cl. 23—288 FC **1 Claim**



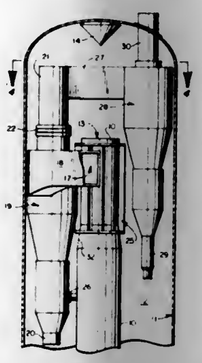
1. In a catalytic purification of exhaust gases from an internal combustion engine, said unit comprising a housing adapted to be connected in an exhaust gas line, a monolithic carrier body provided with a catalytic agent and arranged in said housing, and an intermediate layer arranged in compression between the circumferential surface of the carrier body and the housing; the improvement wherein said intermediate layerexerts a pressure on the surface of said carrier body in the range of 20 to 80 N/cm^2 created by said housing compressing said intermediate layer against said carrier body.

4,070,159

APPARATUS FOR SEPARATING SOLID DISPERSOIDS FROM GASEOUS STREAMS

George D. Myers; Paul W. Walters, both of Ashland, and Robert L. Cottage, Catlettsburg, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 753,231, Dec. 20, 1976, abandoned, which is a division of Ser. No. 561,625, March 24, 1975, abandoned. This application May 26, 1977, Ser. No. 800,780
Int. Cl.² B01J *8/18;* B01D *45/00*
U.S. Cl. 23—288 E **4 Claims**



2. Apparatus for conducting the fluidized catalytic cracking of petroleum hydrocarbons and the separation of catalyst particulates from the converted hydrocarbon products which comprises the combination of:

a disengaging chamber serving as a reservoir for the separated catalyst particulates in which there is essentially no net flow of gases while effecting separation;

a generally vertically positioned elongated tubular reaction zone of substantially less cross-sectional area than that of said chamber and having an upstream

and downstream end, the latter in open communication with said chamber via an unrestricted axial opening;

means for effecting essentially cocurrent flow of the catalyst particulates and vaporous hydrocarbons from the upstream end of said reaction zone toward the downstream end; and

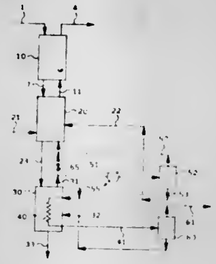
cyclone separator means having an inlet laterally communicating with the tubular reaction zone near said downstream axial opening thereof and adapted to discharge catalyst particulates separated therein into said disengaging chamber and to vent the converted hydrocarbon products through the outlet thereof outside said disengaging chamber.

4,070,160

GASIFICATION PROCESS WITH ZINC CONDENSATION ON THE CARBON SOURCE

John E. Cottle, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 9, 1977, Ser. No. 794,421
Int. Cl.² C10J *3/06*
U.S. Cl. 48—197 R **11 Claims**



1. In a process for gasifying a solid carbon source wherein said solid carbon source is contacted wit zinc oxide at a temperature of 900° C to 1650° C to form a carbon monoxide and zinc-comprising gas and wher in said zinc is separated from said gas, oxidized and recycled into contact with the carbon source and wherein a carbon monoxide-comprising gas is recovered as a product of the pr ess,

the improvement comprising

a. passing said carbon source sequentially through a preheater zone, a zinc oxidizing zone and a gasification zone,

b. contacting said solid carbon source in said preheating zone with at least a portion of the gas produced in the gasification zone and condensing zinc on said solid carbon source,

c. introducing the preheated solid carbon source, and zinc and steam into said zinc oxidation zone such as to form a mixture comprising said carbon source, zinc and steam,

d. reacting said mixture such as to form solids comprising said solid carbon source and zinc oxide, and hydrogen, and

e. passing said solids into said gasification zone and reacting said solids to form said carbon monoxide and zinc-comprising gas.

4,070,161

DOUBLE SEAL GATE VALVE STRUCTURE

Donald J. Harter, Holmdel, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed June 17, 1976, Ser. No. 696,874
Int. Cl.² F16K *3/02, 3/18;* C10J *3/06*
U.S. Cl. 48—210 **27 Claims**

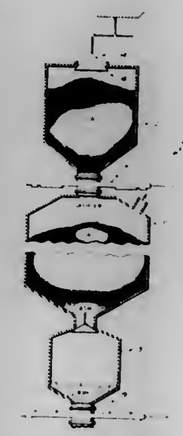
1. A gate valve structure comprising:

an elongate slide member disposed within an elongate housing therefor;

said housing having first and second aligned openings through opposite longitudinally-extending walls of said housing;

means attached to said slide member for moving said slide member longitudinally of said housing and controlling the flow of divided solid material through said housing via said openings;

said slide member comprising a longitudinally-extending valve body having opposed faces, first and second annular



seals spaced apart along the length of said valve body and a bore extending through said valve body at a location between said annular seals;

said annular seals and said bore being arranged along said valve body so as to be selectively registerable with said first opening by linear movement of said slide member;

the diameter of each of said annular seals being greater than the diameter of said first opening and

said slide member being movable laterally in said housing whereby either of said annular seals may be selectively urged into contact with surface area around said first opening.

4,070,162

METHOD OF AGGLOMERATING PARTICLES IN GAS STREAM

Alfred E. Kober, Hopatcong, and Ira Kukin, West Orange, both of N.J., assignors to Apollo Chemical Corporation, Whippany, N.J.

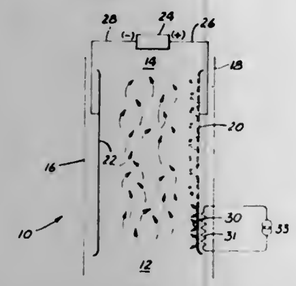
Filed Aug. 2, 1976, Ser. No. 710,650
Int. Cl.² B03C *3/01*
U.S. Cl. 55—5 **14 Claims**

1. A method of conditioning a particle-laden gas comprising the step of forming a mixture of the particle-laden gas and a conditioner comprising finely divided urea, said mixture being at a temperature of at least 150° C., said conditioner being present in an amount sufficient to produce agglomeration of said particles.

4,070,163
METHOD AND APPARATUS FOR ELECTROSTATIC PRECIPITATING PARTICLES FROM A GASEOUS EFFLUENT

Alan C. Kolb, Solana Beach, and James E. Drummond, Coronado, both of Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 502,103, Aug. 29, 1974, abandoned. This application Aug. 8, 1975, Ser. No. 603,157
Int. Cl.² B03C 1/00
U.S. Cl. 55—11 18 Claims

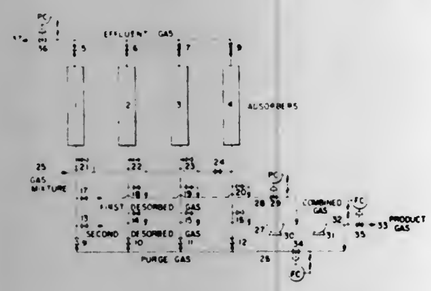


1. A method of electrostatically precipitating particles from a gaseous medium carrying the same, comprising:
passing the medium through a channel in an electrostatic precipitating station wherein said particles are brought into a region containing ions of only one sign, said region including substantially the entire volume in said channel between an ion emitter and a collection electrode;
generating said supply of ions of one sign in said region by thermionic ion emission from a thermionic ion emitter material comprising the beta phase of $Li_2O \cdot Al_2O_3 \cdot 2 SiO_2$ heated to a temperature sufficient to cause ion emission;
subjecting said medium to a generally uniform, strong electric field to drive said ions of one sign onto said particles;
said electric field causing attraction of said charged particles to one or more electrodes having a charge of opposite polarity to thereby precipitate said particles out of the medium.

4,070,164
ADSORPTION-DESORPTION PRESSURE SWING GAS SEPARATION

Kishio Miwa; Kazuo Tsunoi, both of Kamakura, and Yoshio Noguchi, Chita, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 13, 1976, Ser. No. 704,958
Claims priority, application Japan, Feb. 18, 1976, 51-15762
Int. Cl.² B01D 53/04
U.S. Cl. 55—26 16 Claims

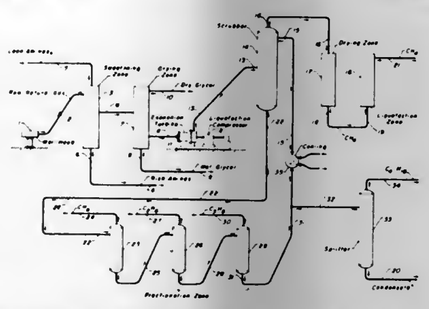


1. In a process for separating a selectively adsorbable gas component from a gas mixture by means of pressure swing adsorption technique which includes an adsorption step accompanied by pressure elevation and a desorption step accompanied by pressure reduction, in which adsorption columns are used which are packed with an adsorbent having capacity to adsorb said selectively adsorbable gas component, the improvement comprising:
a. performing said desorption step in a first desorption step and a second desorption step separately in at least three adsorption columns simultaneously;
b. recovering a first desorbed gas by pressure reduction from a region of relatively high pressure to a region of intermediate pressure;
c. recovering a second desorbed gas from said desorption step by pressure reduction from a region of said intermediate pressure to a region of relative low pressure;
d. combining said second desorbed gas with a portion or all of said first desorbed gas to produce a combined gas; and
e. gradually increasing the flow rate of a portion or all of said first desorbed gas prior to being combined with said second desorbed gas whose flow rate is substantially uncontrolled and gradually decreased with pressure reduction so that said combined gas is caused to flow at a substantially constant rate.

4,070,165
PRETREATMENT OF RAW NATURAL GAS PRIOR TO LIQUEFACTION

John W. Colton, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 15, 1975, Ser. No. 641,119
Int. Cl.² B01D 53/14; F25J 3/08
U.S. Cl. 55—30 2 Claims

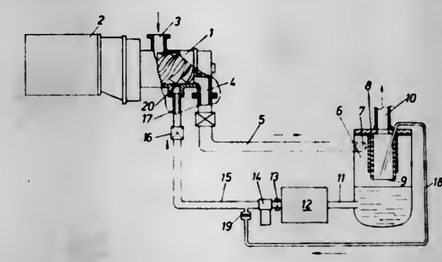


1. A process for the treatment of raw natural gas prior to liquefaction which comprises:
a. passing a stream of raw natural gas having a pressure above 800 psig. through a sweetening zone operated at conditions effective to remove carbon dioxide and hydrogen sulfide therefrom and to thereby effect the formation of a stream of sweetened natural gas;
b. passing the stream of sweetened natural gas through a first drying zone operated at conditions effective to remove water therefrom and to effect the formation of a stream of dried natural gas having a dew point below −20° F.;
c. depressurizing the total stream of dried natural gas in an energy recovery means developing shaft horsepower to a pressure under 300 psig.;
d. contacting said total stream of dried natrual gas possessing a pressure of less than 300 psig. with a lean liquid hydrocarbon stream in a scrubbing zone operated at conditions effective to cause the transfer of substantially all hydrocarbons having more than two carbon atoms per molecule into the lean liquid hydrocarbon stream and to effect thereby the formation of a methane-rich gas stream and a rich liquid hydrocarbon stream;
e. passing the methane-rich gas stream into a solid desiccant drying zone operated at conditions effective to remove water from the methane-rich gas stream and to effect the formation of a dry gas stream having a dew point below about −240° F.;
f. passing the rich liquid hydrocarbon stream into a fractionation zone operated at conditions effective to separate streams rich in methane, ethane and propane respectively from the rich liquid hydrocarbon stream and to effect thereby the formation of a C_4-plus liquid hydrocarbon stream; and,
g. dividing the C_4-plus liquid hydrocarbon stream into two portions and passing one of the portions into the scrubbing zone as the lean liquid hydrocarbon stream.

4,070,166
METHOD AND DEVICE FOR DRIVING LIQUID FROM A LIQUID SEPARATOR

Kaj Bengt Ingemar Emanuelsson, Wilrijk, Belgium, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jan. 12, 1976, Ser. No. 648,053
Claims priority, application Sweden, Jan. 24, 1975, 7500808
Int. Cl.² B01D 19/00
U.S. Cl. 55—41 7 Claims



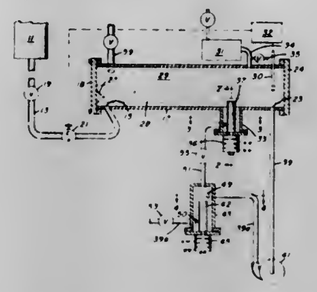
1. The method of separating the liquid phase from the mixture of compressed gas and liquid and returning the separated liquid phase to the compressor in a liquid injected system, said method comprising:
a. passing a stream of the compressed gas and liquid mixture from the compressor into a closed container;
b. subjecting said mixture to a primary separation step in said container, whereby a major portion of the liquid phase is separated off and collected at the bottom of the container and maintained under the pressure prevailing thereon, passing a stream of the thus separated liquid as primary injection liquid from said container through a primary passage to the compressor by the pressure prevailing in the container;
c. subjecting the partly separated mixture to a secondary separating zone within said container, from which the liquid-freed compressed gas is discharged while the separated-off liquid is collected under the prevailing pressure in said secondary separating zone at a location spaced from the liquid level in said container;
d. passing the stream of the liquid collected in said secondary separating step by the pressure prevailing in said secondary separating zone in a passage merging with said primary passage and injecting the merged liquid streams under controlled force into the compressor through a common passage.

4,070,167
SONIC APPARATUS FOR REMOVING GAS FROM PHOTOGRAPHIC EMULSION

Eugene Hartzell Barbee, East Rochester, and Robert Cushman Brown, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1976, Ser. No. 664,831
Int. Cl.² B01D 19/00
U.S. Cl. 55—192 7 Claims

1. Apparatus for removing gas from a liquid comprising, in combination, a closed container having inlet and outlet for liquid flow in and out of said container;
a well in the bottom of said container;
an acoustic transducer having a horn located in said well in spaced relation to a wall thereof and having an end projecting into said container;
first conduit means leading from said outlet;
pump means in said first conduit means;

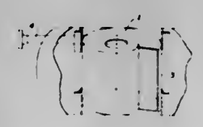


means for creating a vacuum in said container for withdrawing released gas therefrom;
second conduit means connecting said first conduit means to said well for selectively recycling to said container, through said well, liquid leaving said outlet; and
valve means for controlling the flow of liquid in said second conduit means.

4,070,168
INLET ASSEMBLY FOR AN OIL SEPARATOR

David Lloyd George Beattie, Edmonton, Canada, assignor to Porta-Test Manufacturing Ltd., Edmonton, Canada

Filed Dec. 2, 1976, Ser. No. 747,036
Int. Cl.² B01D 53/22, 53/24, 53/26, 53/28
U.S. Cl. 55—205 2 Claims



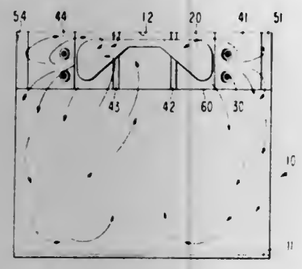
1. In a separator vessel for separating gas from liquid, an inlet assembly comprising:
a structure, mounted within the vessel, having a generally spiral wall closed in by end walls, said walls combining to form a generally spiral outwardly divergent flow path means having an outlet at the outer end of the sprial wall and an inlet at the inner end of the spiral wall; and
tubular inlet means communicating with the inlet of said flow path means for delivering liquid containing gas under pressure from a source outside the vessel, said inlet means causing said liquid to outwardly, divergently flow through said flow path means;
whereby gas separates from the relatively rapidly moving liquid in the inner portion of said flow path means and the velocity of the degassified liquid is diminished in the outer portion of said flow path means before it is discharged through the outlet.

4,070,169

CHROMATOGRAPHIC COLUMN OVEN

Kumiy Roy Iwao, Lafayette, and Fritz Hunt Henshaw, Danville, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 28, 1977, Ser. No. 772,612
Int. Cl.² B01D *15/08*
U.S. Cl. 55—267 4 Claims



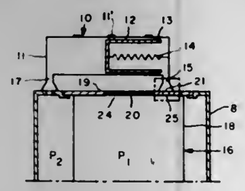
1. A chromatographic column oven comprising walls to enclose an interior oven volume, a fan mounted at substantially the geometric center of a first one of said walls, a second one of said walls facing toward said first wall, said second wall comprising a door for providing access to said interior oven volume, an elongate heating element mounted on said first wall, said heating element substantially surrounding the periphery of said fan, a plurality of baffles mounted on said first wall, said baffles extending generally perpendicularly from said first wall and being symmetrically disposed around the periphery of said fan.

4,070,170

COMBINATION DUST CONTAINER FOR VACUUM CLEANER AND SIGNALLING DEVICE

Karl Eric Leinfelt, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Sweden

Filed Aug. 18, 1976, Ser. No. 715,340
Claims priority, application Sweden, Aug. 20, 1975, 7509298
Int. Cl.² B01D *46/04*; G01L *19/12*
U.S. Cl. 55—274 4 Claims



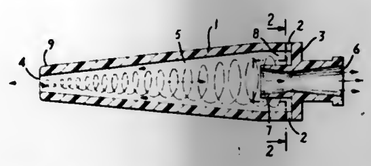
1. A combination of a vacuum cleaner, dust container and a signalling device for indicating the amount of dust and dirt filling in said dust container comprising: said dust container having a relatively rigid attachment plate and an air pervious part secured thereto, said attachment plate having an inlet opening for dust laden air, said signalling device having at least a partially transparent cylinder, a member in said cylinder, a first channel communicating one end of the cylinder with the interior of said dust container through the air pervious part of said attachment plate, a second channel communicating the other end of said cylinder with a location at the exterior of said dust container, said member being movable in said cylinder by the action of the pressure difference between the interior and exterior of said dust container, series of markings visible on the exterior of said vacuum cleaner relative to said member which visually indicate the amount of filling of said dust container at any given time, said attachment plate having at least one through hole through which said first air channel communicates with the interior of said dust container, said through hole being spaced from the inlet opening in said attachment plate, and a portion of said air pervious part being in the air flow path from the interior of said dust container to said first channel, said portion of the air pervious part of the dust containter being folded inwardly toward said inlet opening, said hole being located above said folded-in portion, and said portion forming an abutment surface with the undersurface of said attachment plate.

4,070,171

APPARATUS FOR THE SEPARATION OF GAS MIXTURES INTO COMPONENT FRACTIONS ACCORDING TO THEIR MOLECULAR OR ATOMIC WEIGHT

Nils A. L. Wikdahl, Bravallavaglen 42, 182 64 Djursholm, Sweden

Continuation-in-part of Ser. No. 655,045, Feb. 4, 1976, abandoned, which is a continuation of Ser. No. 522,805, Nov. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 353,288, April 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 53,712, July 10, 1970, abandoned, and a continuation-in-part of Ser. No. 353,148, April 20, 1973, abandoned, which is a division of Ser. No. 53,712, July 10, 1970, abandoned, and a continuation-in-part of Ser. No. 72,951, Sept. 17, 1970, Pat. No. 3,747,306. This application Mar. 31, 1976, Ser. No. 672,377
The portion of the term of this patent subsequent to July 24, 1990, has been disclaimed.
Int. Cl.² B01D *45/12*
U.S. Cl. 55—419 18 Claims



1. A vortex separator for separating gaseous mixtures into component fractions according to their molecular or atomic weight, comprising a housing having a separator chamber therein that is cone-shaped at least in part, and in the cone-shaped portion is circular in cross-section, has an apex end and a base end, has an end wall at the base end, and side walls extending therefrom to the apex end; has a diameter at the base end of at most 5 mm, and a diameter at the apex end of at least 0.01 mm; has a length of at least 0.1 mm and not greater than 200 mm, and has a cone angle within the range from 1° to 90°; at least one gas inlet through the housing at the base end of the chamber, arranged for tangential flow of gas from outside the housing into the chamber, to establish a vortical gas flow in the chamber from the base end towards the apex end, with the gaseous components distributed towards the periphery of the vortex with increasing molecular or atomic weight, and towards the core of the vortex with decreasing molecular or atomic weight; an outlet through the housing in axial alignment to the chamber at the base end of the chamber; and an outlet at the apex end of the chamber; the apex end outlet receiving peripheral vortical gas flow from the chamber and the base end outlet receiving core vortical gas flow from the chamber; the ratio of the diameter of the separator chamber at the base of the cone to the diameter of the separator chamber at the apex outlet $D_{base}/D_{apex\ outlet}$ being within the range from about 1.3 to about 3.5, and the ratio of the diameter of the separator chamber at the base of the cone to the diameter of the separator chamber at the core outlet $D_{base}/D_{core\ outlet}$ being within the range from about 1.3 to about 3.5.

4,070,172

PRESSURE RESPONSIVE FRACTIONATION CONTROL

Dexter E. Smith; Russel A. Buss, and William S. Stewart, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1976, Ser. No. 745,719
Int. Cl.² F25J *3/02*
U.S. Cl. 62—21 21 Claims



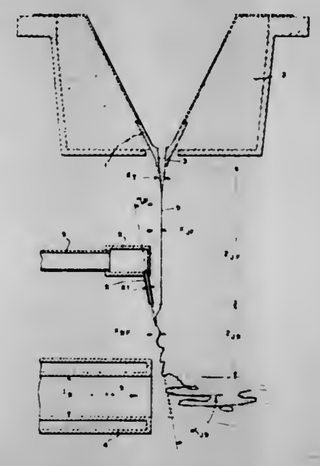
1. Apparatus comprising:
fractionation column means for receiving at least one feed material stream and delivering an overhead product stream from the top portion thereof and a bottom product stream from the bottom portion thereof;
heating means for providing heat to said bottom portion of said fractionation column means;
temperature transducer means for sensing a column bottom temperature within said fractionation column means adjacent the bottom thereof and delivering a bottom temperature signal representative of the thus sensed temperature;
temperature controller means for controlling the amount of heat flow delivered to said bottom portion of said fractionation column means by said heating means in response to a comparison of said bottom temperature signal with a bottom temperature set point signal;
pressure transducer means for sensing the pressure at a preselected location within said fractionation column means and delivering a column pressure signal representative of the thus sensed pressure;
signal conversion means for accepting said column pressure signal and delivering in response thereto a temperature requirement signal representative of the value of said column bottom temperature required to provide a preselected value of a constituent ratio in said bottom product stream at the column pressure represented by said column pressure signal;
analyzer means for analyzing said bottom product stream and delivering an analysis signal representative of the analyzed value of said constituent ratio within said bottom product stream;
analysis controller means for delivering, in response to comparison of said analysis signal with a constituent ratio set point signal, a temperature requirement adjustment signal representative of the adjustment of said temperature requirement signal necessary to compensate for the difference between said preselected value of said constituent ratio and the analyzed value of said constituent ratio; and
correction means for applying said temperature requirement adjustment signal to said temperature requirement signal to produce said bottom temperature set point signal.

4,070,173

METHOD AND APPARATUS FOR FIBERIZING ATTENUABLE MATERIALS

Marcel Levecque, Birchrunville, Pa.; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 762,789, Jan. 25, 1977, which is a continuation-in-part of Ser. No. 676,755, April 14, 1976, which is a continuation-in-part of Ser. No. 557,282, March 11, 1975, Pat. No. 4,015,964, which is a continuation-in-part of Ser. No. 353,984, April 24, 1973, Pat. No. 3,885,940. This application Mar. 24, 1977, Ser. No. 780,589
Claims priority, application France, Feb. 9, 1976, 76 03416; Feb. 18, 1975, 75.04970; Mar. 30, 1973, 73 11525; Dec. 16, 1976, 76 37884
Int. Cl.² C03B *37/06*
U.S. Cl. 65—5 7 Claims



4. A process for forming fibers from attenuable material, characterized by generating a gaseous jet, generating a gaseous blast in a path intercepting the jet, the cross sectional dimension of the jet being smaller than that of the blast in a direction transverse to the blast and the jet being of velocity in the range of from substantially lower than that of the blast to not substantially higher than that of the blast but also being of temperature sufficiently below that of the blast to provide a density and thus a kinetic energy per unit of volume higher than that of the blast and thereby provide for penetration of the jet into the blast to produce a zone of interaction of the jet and blast, and delivering a stream of attenuable material into said zone of interaction.

4,070,174

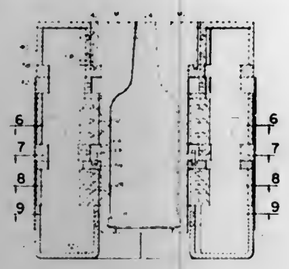
GLASSWARE FORMING MACHINE OF THE I.S. TYPE WITH IN-LINE MOLD MOTION

Hermann Nebelung, Zurich, and Edward Charles Christopher, Zollikon, both of Switzerland, assignors to Emhart Industries, Inc., Hartford, Conn.

Continuation-in-part of Ser. No. 593,752, July 7, 1975, Pat. No. 4,009,018. This application Dec. 6, 1976, Ser. No. 747,985
Int. Cl.² C03B *9/38*
U.S. Cl. 65—229 10 Claims

1. In a glassware forming machine of the type having several side-by-side sections with components operable in timed relationship to one another, each such section including a blank and blow mold station and wherein at least one such station includes generally cylindrical split mold segments individually mounted on movable mold holder means, the improvement comprising chambers defined by each of said mold holder means, means for providing cooling air to said chambers, each of said mold holder means including vertically spaced mold

holder arms, middle chamber defining mold holder structure mounted between said arms, said mold holder structure having an inner wall defining nozzle openings which are oriented



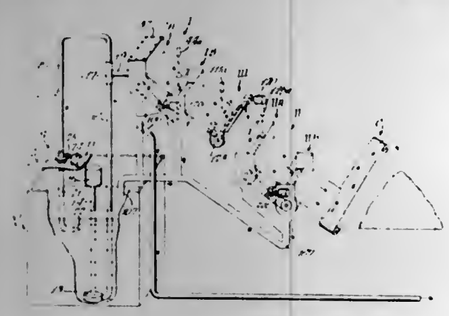
generally tangential to the cylindrical outside surface of said mold segments, and thereby create a circulatory flow of cooling air around the cylindrical split mold segments.

4,070,175

METHOD OF PROCESSING CATTLE EXCREMENT

Roger Swanson, Geneva; Duncan M. Thompson, Riverside, and Robert J. Shulick, St. Charles, all of Ill., assignors to Babson Bros. Co., Oak Brook, Ill.

Division of Ser. No. 576,188, May 9, 1975, Pat. No. 3,971,720. This application May 13, 1976, Ser. No. 685,785
Int. Cl.² C05F *3/00*
U.S. Cl. 71—12 **18 Claims**



1. A method of separating from ruminant animal feces the undigested fibrous material that is preponderantly short pieces which consist of bundles of capillary tubes, said method comprising the steps of:

First, forming a supply of slurry that contains ruminant animal feces and added liquids including urine and water;

Second, agitating said supply of slurry to make it substantially homogeneous;

Third, pumping a portion of said supply of generally homogenous slurry to a processing area;

Fourth, subjecting said portion of said slurry to a first stage of heavy mechanical pressure which compresses the capillary tubes of the fibrous pieces to express the majority of the liquid and finer solids therefrom while constantly separating therefrom a filtrate consisting preponderantly of liquid and finer solids, thereby providing a filter mass consisting preponderantly of said short fibrous pieces;

Fifth, subjecting said filter mass to a second stage of mechanical pressure which is several times heavier than said first stage to further compress the capillary tubes to express additional liquid and finer solids therefrom while continuously separating therefrom a second filtrate consisting preponderantly of said additional liquid and finer solids, thereby providing a cleansed filter mass consisting preponderantly of said fibrous pieces;

and then collecting said cleansed filter mass.

3. The method of claim 2 in which a portion of the filtrate from the first stage is discharged to a storage means for use as liquid fertilizer and the balance is returned to the supply of slurry.

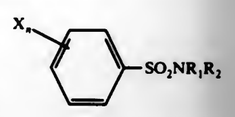
4,070,176

METHOD FOR CONTROLLING THE GROWTH OF PLANTS

Hiromichi Oshio; Hiroyuki Konishi; Shiunzi Matsumura; Kikuichi Ishikawa, and Eiichi Yoneyama, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sept. 26, 1975, Ser. No. 616,995
Claims priority, application Japan, Oct. 8, 1974, 49-116639; July 2, 1975, 50-82157; July 30, 1975, 50-93578
Int. Cl.² A01N *9/14*
U.S. Cl. 71—103 **18 Claims**

1. A method for regulating the elongation of plants so as to increase their resistance to lodging, characterized by applying a plant growth regulator containing as active ingredient a benzenesulfonamide derivative represented by the general formula,



wherein X is a halogen atom, alkyl group having 1 to 5 carbon atoms, nitro group, amino group, alkoxy group having 1 to 5 carbon atoms, alkylthio group having 1 to 5 carbon atoms, alkylsulfonyl group having 1 to 5 carbon atoms, or a group of the formula R_3CONH— (where R_3 is alkyl group having 1 to 5 carbon atoms); n is an integer of 0 to 5; R_1 is hydrogen or alkyl group having 1 to 5 carbon atoms, and R_2 is hydroxyalkyl group having 1 to 5 carbon atoms.

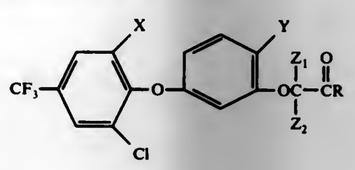
4,070,177

HERBICIDAL PHENOXY-PHENOXY ALKANE CARBOXYLIC ACID DERIVATIVES

Ryuzo Nishiyama, Takatsuki; Ryohei Takahashi, Tokyo; Kanichi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Itaru Shigehara, Kusatsu, and Nobuyuki Sakashita, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Sept. 10, 1976, Ser. No. 722,327
Claims priority, application Japan, Sept. 27, 1975, 50-115982; Mar. 5, 1976, 51-23084; Mar. 17, 1976, 51-28189
Int. Cl.² A01N *9/20, 9/24*; C07C *69/76, 121/75*
U.S. Cl. 71—105 **9 Claims**

1. A compound having the formula



wherein

X represents H or Cl;

Y represents halogen or cyano;

Z_1 represents —H or methyl;

Z_2 represents —H, methyl or ethyl and R represents hydroxy, —O—$^{(-)}$ cation group,

C_1-C_4 alkoxy, C_1-C_4 alkoxy-C_1-C_4 alkoxy; and

C_2-C_4 alkenyloxy or C_2-C_4 alkynyloxy.

7. A herbicidal composition, which comprises: the compound of claim 1 and an agriculturally acceptable adjuvant.

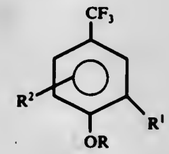
4,070,178

HERBICIDAL DIPHENYL ETHERS

Wayne O. Johnson, Warminster, and Roy Y. Yih, Doylestown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 610,481, Sept. 3, 1975. This application July 30, 1976, Ser. No. 710,073
Int. Cl.² A01N *9/20*; C07C *121/75*
U.S. Cl. 71—105 **13 Claims**

1. A compound of the formula

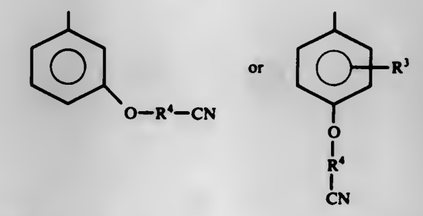


wherein

R^1 is a hydrogen atom or a halogen atom,

R^2 is a hydrogen atom, a halogen atom or a cyano group, and

R is a group of the formula



wherein

R^3 is a hydrogen atom, a halogen atom, a nitro group, a (C_1-C_4)alkyl group, or a (C_1-C_4)alkoxy group, and

R^4 is a divalent (C_1-C_3)alkylene group.

9. A herbicidal composition comprising a compound of claim 1 and an agronomically-acceptable carrier.

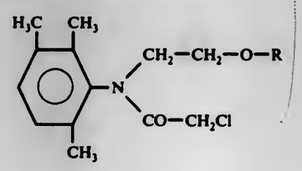
4,070,179

PLANT GROWTH REGULATION WITH N-(2-ALKOXY-ETHYL)-N-CHLOROACETYL-2,3,6-TRIMETHYL-ANILINES

Christian Vogel, Binningen, and Rudolf Aebi, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 602,341, Aug. 6, 1975, abandoned, which is a continuation of Ser. No. 438,519, Jan. 13, 1974, abandoned. This application Oct. 7, 1976, Ser. No. 730,392
Claims priority, application Switzerland, Feb. 7, 1973, 1757/73
Int. Cl.² C07C *103/375*
U.S. Cl. 71—118 **4 Claims**

1. A compound of the formula I



(I)

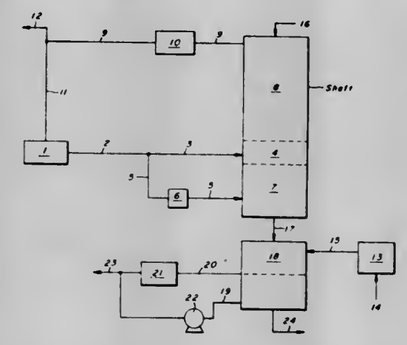
wherein R represents methyl, ethyl or isopropyl.

4,070,180

PROCESS FOR THE PASSIVATION OF SPONGE IRON UTILIZING REDUCING GASES CONTAINING FREE OXYGEN

Stephen Waslo, Penn Hills Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1976, Ser. No. 716,398
Int. Cl.² C23F *7/04, 9/02*
U.S. Cl. 75—0.5 BA **10 Claims**



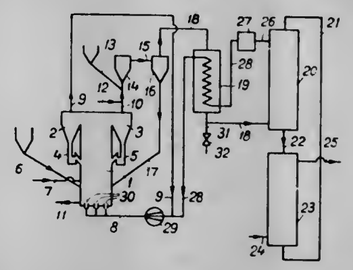
1. A process for the passivation of sponge iron which comprises, contacting the sponge iron at a temperature within the range of 200° to 600° F with a passivation atmosphere consisting essentially of 25 to 80% H_2, 15 to 70% CO and 0.5 to 4% O_2, for a time of about 1 to 3 hours, and wherein the time employed is greater than about 1.5 hours when said O_2 concentration is below about 0.8%.

4,070,181

METHOD FOR REDUCTION OF FINELY DIVIDED METAL OXIDE MATERIAL

Björn Widell, Vasteras, Sweden, assignor to Stora Kopparbergs Bergslags AB, Falun, Sweden

Filed Nov. 20, 1975, Ser. No. 633,845
Claims priority, application Sweden, Dec. 12, 1974, 7415578
Int. Cl.² C22B *5/14*
U.S. Cl. 75—91 **3 Claims**



1. Method for reduction of finely divided material containing metal oxide in the presence of carbonaceous material in a reactor, comprising the steps of:

supplying material containing metal oxide and carbonaceous material and a gas containing molecular oxygen to the reactor;

removing from the reactor a reduction product of the material containing metal oxide and a gas mixture including carbon monoxide, hydrogen, carbon dioxide and water;

returning a portion of said gas mixture to said reactor;

treating the remaining portion of said gas mixture with water-steam causing the carbon monoxide in said gas

mixture to react to form carbon dioxide and hydrogen; and

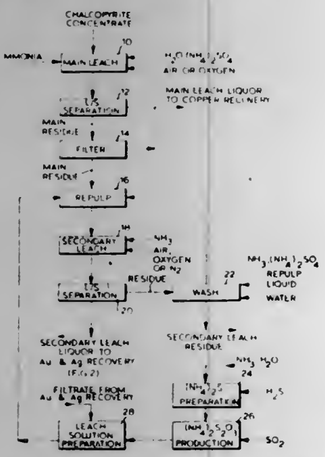
removing carbon dioxide from the treated gas mixture and returning the remaining gas mixture to said reactor.

4,070,182

RECOVERY OF PRECIOUS METALS FROM METAL SULPHIDES

Roman M. Genik-Sas-Berezowsky; Verner B. Sefton, both of Edmonton, and Lynton S. Gormely, North Vancouver, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Aug. 13, 1976, Ser. No. 714,060
Claims priority, application Canada, Feb. 20, 1976, 246274
Int. Cl.² C22B *11/04, 15/10*
U.S. Cl. 75—103 **29 Claims**



1. A process for the recovery of gold as well as copper values from copper bearing sulphidic material containing gold, including subjecting the copper bearing sulphidic material to a main leach under oxidizing conditions to provide a copper containing main leach liquor and a main residue, and subjecting said copper bearing sulphidic material before said main leach or said main leach residue from said main leach to a secondary leach with ammonium thiosulphate solution to provide a gold containing secondary leach liquor and a secondary residue, and separating said gold containing secondary leach liquor from the secondary residue.

4,070,183

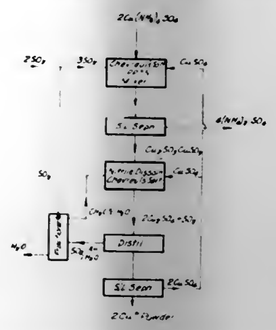
METHODS OF SEPARATING AND RECOVERING COPPER FROM MATERIALS CONTAINING COPPER

Alan James Parker, South Perth, and David Michael Muir, Palmyra, both of Australia, assignors to Anumin Pty. Ltd., Canberra, Australia

Filed July 14, 1976, Ser. No. 705,100
Claims priority, application Australia, July 15, 1975, 2367/75
Int. Cl.² C22B *15/12*
U.S. Cl. 75—117 **8 Claims**

1. A method for preparing cuprous sulphate solutions, said method comprising dissolving copper sulphites, such as Chevreul's salt and cuprous ammonium sulphite, in acetonitrile-water or 2-hydroxycyanoethane-water mixtures containing cupric sulphate, the amount of acetonitrile or 2-hydroxycyanoethane being sufficient to stabilize the resulting cuprous sulphate solution.

7. A method of recovering copper from sulfide bearing copper ores, concentrates or chalcopyrite comprising roasting the ore or other copper containing material to produce a calcine containing copper salts, leaching the calcine with water and/or dilute acid to produce a solution of cupric sulphate, treating the cupric sulphate solution with a soluble sulphite salt or with sulphurous acid to produce Chevreul's salt, separating the Chevreul's salt from the supernatant liquor and dissolving it in an acetonitrile-water or 2-hydroxycyanoethane-water



mixture containing cupric sulphate to produce a cuprous sulphate solution at a pH of less than 4, and thermally or electrochemically disproportionating the cuprous sulphate solution to produce copper.

4,070,184

PROCESS FOR PRODUCING REFRACTORY CARBIDE GRADE POWDER

William Scheithauer, Jr., Athens, and Joseph E. Ritsko, Towanda, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Sept. 24, 1976, Ser. No. 726,305
Int. Cl.² B22F *3/00;* C22C *29/00*
U.S. Cl. 75—203 **5 Claims**

1. A process suitable for producing a refractory metal carbide grade powder, said process comprising:

a. forming a first aqueous slurry consisting essentially of water and solids in a weight ratio of from about 1:2 to about 1:4, said solids consisting essentially of a refractory metal carbide and a metal selected from the iron group of metals and alloys of the iron group of metals,

b. attritor milling said slurry for a period of time of from about 1 to about 10 hours,

c. removing the slurry from the attritor mill and forming a second aqueous slurry having a solids concentration of from about 70% to about 90% by weight,

d. adding from about 1 to about 3% by weight, based upon said solids of said slurry, of a water soluble, relatively long chain polyglycol to said slurry, and

e. spray drying said second slurry at a temperature sufficient to remove said water to form a refractory metal carbide grade powder consisting essentially of said solids and said polyglycol.

4,070,185

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY HAVING A SINGLE PHOTOSENSITIVE LAYER

Akira Kato; Akira Itoh, and Tohru Uchida, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Hachioji, Japan

Filed Nov. 10, 1975, Ser. No. 630,412
Claims priority, application Japan, Nov. 22, 1974, 49-135295
Int. Cl.² G03C *5/08, 5/04;* H01C *13/00*
U.S. Cl. 96—1.8 **5 Claims**

1. A photosensitive article for electrography having a conductive substrate and a coating of a single layer of photosensitive material comprising photoconductive powder and a binder, the particle size of said photoconductive powder adjacent to the surface of the coating in contact with the substrate being smaller than 0.5μ and the particle size of said photoconductive powder adjacent to the outer surface of the article opposite said substrate being at least 0.5μ.

4,070,186

TRIBO MODIFIED TONER MATERIALS VIA SILYLATION AND ELECTROSTATOGRAPHIC IMAGING PROCESS

Harry W. Gibson, Penfield, and Franklin D. Saeva, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1974, Ser. No. 500,768
Int. Cl.² G03G *9/10*
U.S. Cl. 96—1 SD **22 Claims**

1. An electrostatographic imaging process comprising the steps of providing an electrostatographic imaging member having a recording surface, forming an electrostatic latent image on said recording surface, and contacting said electrostatic latent image with a developer mixture comprising finely-divided toner particles electrostatically clinging to the surface of solid carrier particles, said toner particles having an average particle diameter of less than about 30 microns and comprising a colorant and a copolymer selected from the group consisting of styrene-alkylmethacrylate and styrene-alkylacrylate wherein said copolymer has been modified to contain active hydrogen containing constituents and then exposed to silylation to provide toner particles characterized as having controlled and optimum triboelectric charging properties between said toner particles and said carrier particles whereby at least a portion of said finely-divided toner particles are attracted to and deposited on said recording surface in conformance with said electrostatic latent image.

4,070,187

COLOR DISPLAY OF DATA

Emmett J. Klein, Jr.; Clyde W. Hubbard, Jr., both of Houston, Tex., and Lloyd R. Chapman, Sevenoaks, England, assignors to Seiscom Delta Inc.

Continuation of Ser. No. 441,012, Feb. 11, 1974, abandoned. This application Apr. 1, 1976, Ser. No. 672,618
Int. Cl.² G03C *5/04*
U.S. Cl. 96—27 R **4 Claims**

1. In forming color graphic displays directly from a sequence of input digital data values, wherein differing colors at data display points in the color displays are quantitatively indicative of differing values or ranges of values of the digital data, and processed input digital data to be displayed at the data display points having numerical codes assigned thereto from an assignment table, with the assignment table comprised of a set of numerical codes referenced as a two-dimensional matrix, one dimension of the matrix representing sample values of the data to be displayed, each sample value representing an assigned range from a plurality of ranges into which the input data values are partitioned, and the other dimension of the matrix representing a plurality of component displays, one component display for each component color in the color displays to be formed, and further with the numerical codes of the set specifying the visual image densities to be formed at data display points of the component displays and further specifying the relative density of each component color in the colors associated with such data display points according to the sample values thereof, and further with the numerical codes assigned to the data display points organized into output sequences for each of the component displays, the improved method of forming component color displays comprising the steps of:

a. plotting the output sequences of numerical codes assigned to data display points by light exposure to produce corresponding film transparencies having image densities at the data display points according to the numerical codes assigned to the sample values;

b. developing the exposed film transparencies to produce positive images whose image densities at the data display points vary according to the numerical codes of the output sequences for each of the plotted film transparencies for such output sequences;

c. sequentially depositing a polymer coating for each of the plotted output sequences over previously deposited coatings according to the image densities of the positive images formed for each of the plotted film transparencies, by performing the steps of:

1. placing a sheet of photopolymer laminate on a display backing;
2. placing one of the developed positive images having image density variations above the sheet of photopolymer laminate;
3. placing an optical screen above the image;
4. exposing each of the polymer coatings to ultraviolet light through one of the positive images to deposit the polymer coating according to the density of the positive images at data display points; and
5. changing the alignment of each of the positive images with respect to the optical screen prior to said step of exposing to thereby angle screen the ultraviolet light to different angles for each of the polymer coatings during said step of exposing; and

d. applying a color toner to each of the deposited polymer coatings to thereby form component color displays for a color graphic display directly from the digital data values.

4,070,188

ONE BATH TYPE SILVER DYE BLEACHING AND SILVER BLEACHING

Takashi Nakamura, and Shigeru Watanabe, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed June 23, 1976, Ser. No. 699,121
Claims priority, application Japan, June 23, 1975, 50-77945
Int. Cl.² G03C *7/00, 5/32*
U.S. Cl. 96—53 **12 Claims**

1. In a positive-positive silver dye bleaching process which comprises the steps of a black-and-white development, a dye bleaching, a silver bleaching and a fixing, the improvement which comprises the combination of the dye bleaching and silver bleaching steps by utilizing a one bath solution having a pH of below 1.5 which comprises the following components:

a. at least one compound which forms a salt or a complex with silver selected from the group consisting of water soluble organic halides, water soluble inorganic halides, thiourea, thiourea derivatives, mercapto compounds, alkali metal salts of sulfur, alkaline earth metal salts of sulfur, urea, cystein, guanidine, aminoguanidine, cyanides and thiocyanides in an amount of from about 5 to about 150g/liter;

b. at least one acid selected from sulfamic acid, aliphatic and aromatic sulfonic acids, aliphatic and aromatic sulfinic acids, phosphoric acid and sulfuric acid in an amount of from about 10 to about 120 g/liter, and

c. at least one organic acid having at least one carboxyl group in the molecule in an amount from about 2 to about 60 g/liter and

d. at least one ferric salt in an amount of from about 2 to about 60 g/liter, or a complex of said organic acid c) and said ferric salt d) in an amount of from about 4 to about 120 g/liter instead of said organic acid c) and said ferric salt d) in separate form.

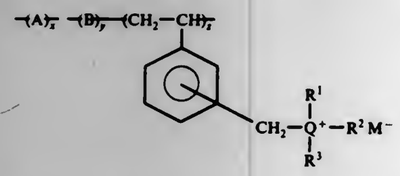
4,070,189

SILVER HALIDE ELEMENT WITH AN ANTISTATIC LAYER

Richard Norman Kelley, Fairport, and Gerald Allan Campbell, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,554
Int. Cl.² G03C 1/78, 1/96
U.S. Cl. 96—87 A 9 Claims

1. A photographic element comprising a support having coated on one side a radiation sensitive silver halide layer or layers and coated on the other side an antistatic layer comprising:



wherein:

A represents units of an addition polymerizable monomer containing at least two ethylenically unsaturated groups;
B represents units of a copolymerizable α,β-ethylenically unsaturated monomer;
Q is N or P;
R^1, R^2 and R^3 are independently selected from the group consisting of carbocyclic and alkyl groups;
M is an anion;
x is from about 0.1 to about 20 mole percent;
y is from about 0 to about 90 mole percent; and
z is from about 10 to about 99 mole percent and a polymeric hydrophobic binder wherein the weight ratio of said hydrophobic binder to said antistatic polymer is about 5:1 to 2:1 and wherein the total coverage of said antistatic polymer and said binder is about 0.25 g/m² to 20 g/m².

4,070,190

PROCESS FOR PRODUCING PHOTOGRAPHIC SILVER HALIDE EMULSIONS HAVING A CORE/SHELL STRUCTURE

Wolfgang Friedrich, Urberach; Horst Friedel, Frankfurt am Main, and Erhard Jury, Nieder-Morlen, all of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 496,853, Aug. 12, 1974. This application Aug. 23, 1976, Ser. No. 716,469
Claims priority, application Germany, Sept. 3, 1973, 2344331
Int. Cl.² G03C 1/02
U.S. Cl. 96—94 R 6 Claims

1. A process for producing a light-sensitive lithographic silver halide emulsion with a core/shell structure exhibiting improved halftone dot quality and increased photographic speed, comprising: (1) precipitating a silver chloride emulsion in a protective colloid, (2) converting said silver chloride emulsion into a silver bromide emulsion, and (3) precipitating a silver chloride shell on the surfaces of the silver bromide grains.

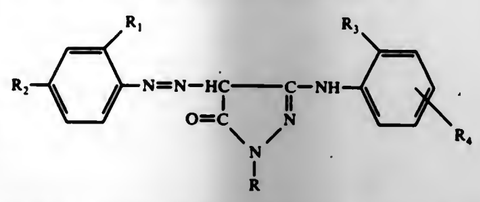
4,070,191

SILVER HALIDE EMULSION CONTAINING COLORED MAGENTA COUPLER FOR PHOTOGRAPHY

Hiroyuki Imamura; Shui Sato; Tamotsu Kojima, and Takaya Endo, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1974, Ser. No. 455,121
Claims priority, application Japan, Mar. 31, 1973, 48-36178
Int. Cl.² G03C 1/40
U.S. Cl. 96—100 R 3 Claims

1. A photo-sensitive silver halide color photographic material having a support and a photo-sensitive silver halide emulsion layer coated thereon, comprising a colored magenta coupler represented by the following general formula:



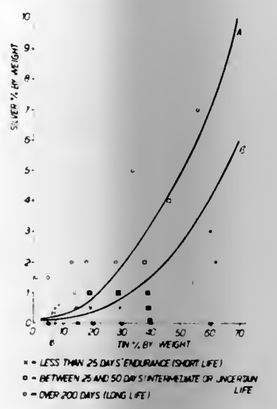
wherein R is phenyl having a substituent or substituents selected from chlorine, alkyl, alkoxy and acylamino; R_1 and R_2 are individually hydrogen, halogen, hydroxyl, alkyl, alkoxy or acylamino provided that one of R_1 and R_2 is hydroxyl and that the other is not hydroxyl; R_3 is hydrogen, halogen, alkyl, alkoxy, nitro or acylamino; and R_4 is hydrogen, halogen or a monovalent organic residue selected from alkoxy, acylamino, carbamoyl, sulfamoyl, alkylsuccinimido, alkoxycarbamido, alkoxycarboalkylamino, aralkoxycarboalkylamino, alkylaminocarboalkylamino, arylaminocarboalkylamino, aralkylaminocarboalkylamino, or nitro.

4,070,192

ALUMINIUM SOLDERING COMPOSITION

Gordon Francis Arblb, and Bernard Michael Allen, both of Hemel Hempstead, England, assignors to Multicore Solders Limited, England

Filed Aug. 19, 1975, Ser. No. 605,811
Claims priority, application United Kingdom, Aug. 19, 1974, 36461/74; Oct. 30, 1974, 47048/74
Int. Cl.² C09D 5/08
U.S. Cl. 106—1.05 12 Claims



1. A fluxed solder composition for use in soft soldering aluminium or aluminium alloys, said composition comprising in association (a) a soft solder alloy having a melting point of less than 300° C, said alloy consisting essentially of at least 35% by weight of lead, not less than 10% by weight of tin, from 0 to 3% by weight of copper, and silver with the relative amounts of silver and tin in said alloy being such that said amounts of silver and tin are within the area above the curve AA′ in FIG. 2 of the drawings, and (b) a flux suitable for use in aluminium soldering selected from organic fluxes and reaction fluxes.

4,070,193

CORROSION RESISTANT METAL SEALING FORMULATION

James Mackey Tucker, Decaturville, Tenn., assignor to Kaddis Mfg. Co., Rochester, N.Y.

Filed Sept. 19, 1975, Ser. No. 614,753
Int. Cl.² C09D 5/08
U.S. Cl. 106—14 1 Claim

1. Aqueous solution for sealing a bright metal finish on copper and copper alloy metal articles consisting essentially of a mixture of about 1 to 3 pounds of sodium bichromate, about ¼ to 1 ounce of chromic acid, about 1 to 25 milliliters of sulfuric acid for each 2 gallons of water.

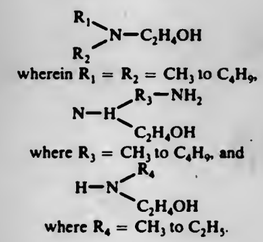
4,070,194

INK FOR MARKING

Kenji Arakawa, Suita, Japan, assignor to Kinki Aerosol Industrial Co., Ltd., Osaka, Japan

Filed Feb. 13, 1976, Ser. No. 658,016
Int. Cl.² C09D 3/40; D06H 1/02
U.S. Cl. 106—30 5 Claims

1. A time disappearing marking ink comprising a solution including a phthalein indicator as color and from 1 to 8% by weight of sodium carbonate having water of crystallization of at least seven molecules, from 10 to 50% by weight of at least one lower alcohol having from one to four carbon atoms, about 2% by weight of a thickener comprising a shellac, and from 0.5 to 10% by weight of at least one ethanolamine selected from the group consisting of



4,070,195

PROCESS FOR FABRICATING FOUNDRY SHAPES

Richard H. Toeniskoetter, Worthington, and John J. Spiwak, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 581,912, May 29, 1975, Pat. No. 3,968,828, which is a division of Ser. No. 415,852, Nov. 14, 1973, Pat. No. 3,930,872, which is a continuation of Ser. No. 351,903, April 17, 1973, Pat. No. 3,923,525. This application Apr. 14, 1976, Ser. No. 676,728
The portion of the term of this patent subsequent to Dec. 2, 1992, has been disclaimed.
Int. Cl.² B28B 7/34
U.S. Cl. 106—38.3 4 Claims

1. A process for the fabrication of foundry shapes which comprises:

a. mixing foundry aggregate having an average particle size of no less than about 150 mesh (Tyler Screen Mesh) with a bonding amount of up to about 10 percent by weight based upon the weight of the aggregate of the composition which comprises:
   i. boronated aluminum phosphate containing boron in an amount from about 3 mole percent to about 40 mole percent based upon the moles of aluminum and containing a mole ratio of phosphorus to total moles of aluminum and boron of about 2:1 to about 4:1;
   ii. an oxygen-containing alkaline earth metal compound capable of reacting with the aluminum phosphate and which contains alkaline earth metal and an oxide; and
   iii. water;

wherein the amount of boronated aluminum phosphate is from about 50 to about 95% by weight based upon the total weight of aluminum phosphate and alkaline earth compound; the amount of alkaline earth compound is from about 50 to about 5% by weight based upon the total weight of aluminum phosphate and alkaline earth compound; and the amount of water is from about 15 to about 50% by weight based upon the total weight of boronated aluminum phosphate and water; and wherein the quantity and particle size of said aggregate are such to provide sufficient porosity in the foundry shape to permit escape of volatiles from the shape during casting;

B. introducing the foundry mix obtained from step (A) into a pattern;
C. allowing the foundry mix to remain in the pattern for a time at least sufficient for the mix to become self-supporting; and
D. thereafter removing the shaped foundry mix of step (C) from the pattern, and allowing it to cure at room temperature, thereby obtaining a hard, solid, cured foundry shape.

4,070,196

BINDER COMPOSITIONS

Andries Kraak, Veendam, Netherlands, and Raymond Douglas George, Birmingham, England, assignors to Foseco International Limited, Birmingham, England and Co-operative Verkoop-en Productievereiniging van Aardappelmeel en Derivaten "Avebe" G.A., Veendam, Netherlands

Filed Aug. 31, 1976, Ser. No. 719,151
Claims priority, application United Kingdom, Sept. 15, 1975, 37884/75; Aug. 13, 1976, 33873/76
Int. Cl.² B28B 7/34
U.S. Cl. 106—38.35 12 Claims

1. A binder composition consisting essentially of an aqueous solution of an alkali metal silicate and a stabilized starch hydrolysate having a dextrose equivalent of below 5, the components being present in the weight ratios, calculated as solids, of 0.4 to 35 parts stabilized starch hydrolysate per 20 to 49.5 parts alkali metal silicate.

4,070,197

GAS TIGHT SILICON CARBIDE BODY

Samuel H. Coes, Northborough, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 590,395, June 25, 1975, abandoned. This application June 14, 1976, Ser. No. 695,840
Int. Cl.² C04B 35/56, 35/70
U.S. Cl. 106—44 4 Claims

1. A gas tight joint between two hollow pieces of silicon carbide which have been recrystallized, said joint consisting essentially of recrystallized silicon carbide which joint and hollow pieces have been impregnated with between 10 and 30 weight % elemental silicon to provide an actual density of at least about 2.80 g/cc., the material of the joint and the material of the pieces having been recrystallized at the same time to provide intergrowth of silicon carbide crystals froming grains between the material of the joint and the material of the pieces, wherein the recrystallized silicon carbide has a maximum grain size of about 150 microns, to produce a joint which is undetectable in a polished section with a microscope at a magnification of 40X and which joined pieces will not show air bubbles when held under water and pressureized at 2.1×10^{-3} kg/mm² with air, and have 4 % or less non-interconnected voids.

2. The process of forming a complex hollow silicon carbide shape which comprises preparing a castable slip of silicon carbide particles having a bimodal distribution of particle sizes, casting two separate hollow pieces from said slip, drying the cast pieces and removing said pieces from the casting molds, thereafter roughening mating surfaces of the two cast pieces to be joined together, wetting said roughened surface and applying a coating of casting slip between the roughened wetted mating surfaces, holding said surfaces together while allowing

said coating to dry, then firing the dried cast mated surfaces to a temperature sufficiently elevated to recrystallize the silicon carbide in the body formed of the joint and the cast pieces, impregnating the fired recrystallized product with between 10 and 30 weight % elemental silicon at a temperature in excess of 1950° C, said impregnation being carried out in an inert gas atmosphere containing an appreciable partial pressure of silicon, and wherein said complex, hollow silicon nitride shape does not show permeability to air when held under water and pressurized to 2.1×10^{-3} kg/mm^2.

4,070,198

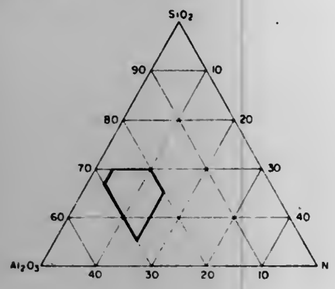
SiO_2-Al_2O_3-N GLASS FOR PRODUCTION OF OXYNITRIDE GLASS-CERAMICS

Kenneth Chyung, Elmira, and Raja R. Wusirika, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 664,263, March 5, 1976, abandoned. This application Oct. 26, 1976, Ser. No. 735,313

Int. Cl.² C03C *3/04, 3/22*

U.S. Cl. 106—52 **1 Claim**



1. A thermally crystallizable glass consisting essentially, by weight, of about 55-70% SiO_2, 20-30% Al_2O_3, and 3.5-15% N.

4,070,199

CEMENTITIOUS COMPOSITIONS

Stephen Barry Downing, High Wycombe; Desmond Wilfred John Osmond, Windsor; Maurice Wainwright Skinner, Maidenhead; Edmund James West, and David George Dawson, both of High Wycombe, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 27, 1976, Ser. No. 736,350

Claims priority, application United Kingdom, Oct. 28, 1975, 44369/75

Int. Cl.² C04B *7/353*

U.S. Cl. 106—93 **32 Claims**

1. A homogeneous uncured cementitious composition which comprises the ingredients:

a. a hydraulic cement selected from the group consisting of cements which comprise compounds of calcium, aluminum, silicon, oxygen and/or sulfur which set and harden by reaction with water,

b. water, and

c. a water-dispersible polymer, wherein

i. the ratio of water to hydraulic cement is in the range 15 - 28 parts by weight of water to 100 parts by weight of hydraulic cement;

ii. the ratio of water-dispersible polymer to hydraulic cement is in the range 0.1 - 3.0 parts by weight of water dispersible polymer to 100 parts by weight of hydraulic cement; and

iii. the water-dispersible polymer is selected, with reference to the hydraulic cement and to the selected proportions of polymer and water, for its suitability to facilitate homogenization and to yield on homogenization an uncured composition which can be shaped under pressure and which is shape retaining,

and wherein the ingredients (a), (b) and (c) have been subjected to a homogenization process of dispersion and homogenization so that they are regularly dispersed throughout the composition; such that on curing and drying, the homogeneous uncured composition yields a cured and dried cementitious composition having a modulus of rupture greater than 15 MN/m^2.

4,070,200

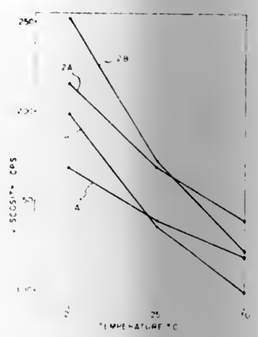
COMPOSITIONS CONTAINING DIETHYLENE GLYCOL ETHER

John James Felten, Lewiston, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 12, 1976, Ser. No. 675,764

Int. Cl.² C08L *1/28*

U.S. Cl. 106—175 **10 Claims**



1. In a composition for printing electronic functions on a substrate comprising finely divided inorganic powders dispersed in a vehicle containing a volatile organic liquid and polymer viscosifiers, the improvement comprising, as the volatile organic liquid, a mixture of 5-80% by weight of said liquid of diethylene glycol dibutyl ether, and the remainder being a second more volatile organic liquid having a boiling point at least about 10° C. less than that of said ether diethylene glycol dibutyl ether.

4,070,201

SPIKE HOLE PLUGGING MATERIAL

Dennis J. Tessenske, Union Grove, Wis., assignor to Racine Railroad Products, Inc., Racine, Wis.

Filed July 22, 1975, Ser. No. 598,062

Int. Cl.² C08L *95/00*; E01B *9/12, 9/14*

U.S. Cl. 106—281 R **5 Claims**

1. A spike hole plugging material including a substantially uniform mix of the following materials by volume:

about 25-75% of a granular abrasive material having a grit size in the range of about 20-100 grit and abrasive to spikes; and

about 25-75% of a granular plastic material having a grit size of about 100 grit or less and having a plastic temperature no lower than about 120° F. and in the range of about 120°-350° F.

4,070,202

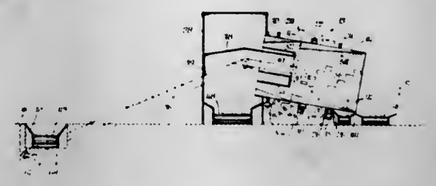
METHOD AND APPARATUS FOR SEPARATING SOLID MATERIALS

Anthony R. Nollet, Wilmington, Del., assignor to Cargill, Incorporated, Minneapolis, Minn.

Filed Mar. 24, 1976, Ser. No. 669,831

Int. Cl.² B02C *19/00*; B07B *15/00*

U.S. Cl. 106—309 **18 Claims**



1. A method of processing refuse and separating its constituent materials into a low bulk density substantially combustible light fraction and a high bulk density substantially incombustible heavy fraction comprising the steps of: charging the refuse directly into an inclined rotating air drum processor at a position intermediate the ends thereof without a previous size reduction of the refuse; lifting and dropping the refuse within said drum processor to expose the refuse materials to air separation; rotating said air drum processor to cause the heavy fraction materials in said refuse to undergo a sufficient number of lifting and dropping actions during their travel to the lower end of said drum for discharge as the heavy fraction to effect disentanglement of light fraction materials from the heavy fraction materials; flowing air through the rotating drum at a velocity to separate at least 50 percent by weight of the refuse materials by virtue of their area to mass ratio and aerodynamic shape as the light fraction at one end of said drum, and controlling the air velocity to provide an ever increasing air velocity in the upwardly inclined direction and controlling the rotational velocity of said drum and the charging flow of the refuse to prevent a substantial stagnation of material in said air drum processor.

4,070,203

METHOD FOR STRIPPING PHOTOLACQUERS

Karl Heinz Neisius, and Wilhelm Bäumer, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Nov. 13, 1975, Ser. No. 631,660

Claims priority, application Germany, Nov. 16, 1974, 2454399

Int. Cl.² B08B *3/08*

U.S. Cl. 134—3 **6 Claims**

1. In a method of stripping a hardened photolacquer etching mask from the surface of an etched electronic component substrate coated therewith by contacting the surface of the substrate with a stripping agent for the photolacquer which is free of metal ions, dust and high molecular weight and resinous impurities, the improvement wherein the stripping agent is a substantially impurity-free mixture of 25-50 weight percent of at least one alkylbenzenesulfonic acid of 12-20 carbon atoms and the remaining 80-50 weight percent of the mixture being a chlorine-free, aromatic hydrocarbon solvent having a boiling point above 150° C.

4,070,204

LOW-ENERGY DISHWASHER

Albert L. Hardy, Louisville; Edwin R. Braun, Jeffersontown, and Edwin M. Hall, Jr., Louisville, all of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 22, 1976, Ser. No. 651,519

Int. Cl.² B08B *3/00*

U.S. Cl. 134—25 A **4 Claims**

1. A method of washing dishes arranged in a wash chamber of a dishwasher having both hot and cold water inlets for connection to household hot and cold water lines comprising the steps of:

a. introducing a quantity of cold pre-rinse water into said wash chamber;

b. circulating said cold pre-rinse water within said wash chamber in contact with said dishes to effect rinsing of waste food particles therefrom;

c. draining said cold pre-rinse water from said wash chamber;

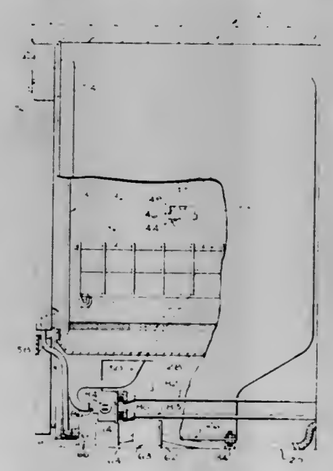
d. introducing a wash liquid comprising cold and hot water into the wash chamber after draining said cold pre-rinse water, beginning with the introduction of the cold water in a quantity which constitutes only a minor portion of the wash liquid to be introduced, and simultaneously circulating said minor portion of the wash liquid;

e. continuing to introduce said wash liquid, wherein the liquid now being introduced is comprised of hot water and is of sufficient quantity to constitute the major portion of said wash liquid;

f. sensing the temperature of the resultant wash liquid and, depending upon the result of said sensing;

g. introducing heat into said wash chamber to effect a temperature increase of said wash liquid to a temperature of at least about 135° F.;

h. circulating said wash liquid within said wash chamber in contact with said dishes for a preselected period of time;



i. draining all of said wash liquid from said wash chamber;

j. introducing a first rinse water comprising hot and cold water into said wash chamber after draining said wash liquid, beginning with the introduction of hot water in a quantity which constitutes only a minor portion of the first rinse water to be introduced and simultaneously circulating said minor portion of the first rinse water;

k. continuing to introduce said first rinse water wherein the water now being introduced is comprised of cold water and is of sufficient quantity to constitute the major portion of said first rinse water;

l. circulating said first rinse water within said wash chamber in contact with said dishes for a preselected period of time;

m. draining all of said first rinse water from said wash chamber;

n. introducing a second rinse water comprising cold and hot water into the wash chamber after draining said first rinse water, beginning with the introduction of cold water in a quantity which constitutes only a minor portion of the second rinse water to be introduced and simultaneously circulating said minor portion of the second rinse water;

o. continuing to introduce said second rinse water, wherein the water now being introduced is comprised of hot water

and is of sufficient quantity to constitute the major portion of said second rinse water;

p. sensing the temperature of the resultant second rinse water and, depending upon the result of said sensing;

q. introducing heat into said wash chamber to effect a temperature increase of said second rinse water to a temperature of at least about 135° F.;

r. circulating said hot second rinse water now at a temperature of about 135° F. within said wash chamber in contact with said dishes for a preselected period of time;

s. draining all of said second rinse water from said wash chamber; and

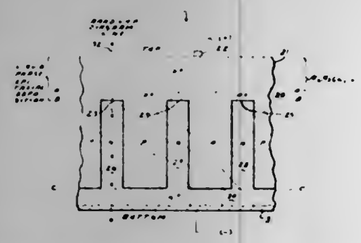
t. drying said dishes after draining said second rinse water by circulating air throughout the wash chamber.

4,070,205

ALUMINUM ARSENIDE EUTECTIC GALLIUM ARSENIDE SOLAR CELL

William P. Rahilly, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 8, 1976, Ser. No. 748,578
Int. Cl.² H01L *31/06*
U.S. Cl. 136—89 SJ **2 Claims**



1. A solar cell comprising:

a. a wafer formed of a crystal of eutectic gallium arsenide having a plurality of alternating P and N doped regions forming a plurality of vertical PN junctions between a top and a bottom surface thereof;

b. a first liquid phase epitaxial growth region overlying the said upper surface providing a GaAS P+ region adjacent the said upper surface thereby forming substantially horizontal P^+N junctions perpendicular to said vertical PN junctions;

c. a second liquid phase epitaxial growth region providing an Al_xAsGa_{1-x} P+ region overlying the said GaAs P+ region, and providing an operating surface;

d. an N+ region formed by ion implantation into the said bottom surface;

e. a metallization contact positioned on the said operating surface; and

f. a metallization contact positioned on the said bottom surface.

2. The method of forming a solar cell on a wafer of eutectic gallium arsenide substrate having a plurality of vertical PN junctions formed between an upper surface and a lower surface comprising the steps of:

a. growing by liquid phase epitaxial deposition a layer of GaAs doped with a P type impurity to provide a P+ layer on the said upper surface of the said substrate;

b. growing by liquid phase epitaxial deposition of a P+ doped Al_xAsGa_{1-x} layer on the said P doped GaAs layer;

c. ion implanting an N type impurity on the said lower surface to provide a N+ region;

d. annealing the said N+ region with a pulsed electron beam;

e. metallizing a contact on the said Al_xAsGa_{1-x}; and

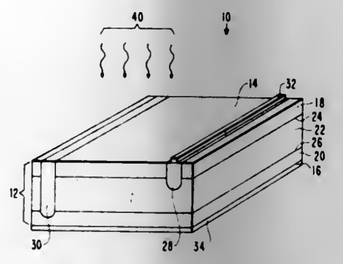
f. metallizing a contact on the said N+ region.

4,070,206

POLYCRYSTALLINE OR AMORPHOUS SEMICONDUCTOR PHOTOVOLTAIC DEVICE HAVING IMPROVED COLLECTION EFFICIENCY

Henry Kressel, Elizabeth; Robert Vincent D'Aiello, East Brunswick, and Paul Harvey Robinson, Lawrenceville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 20, 1976, Ser. No. 688,476
Int. Cl.² H01L *31/06*
U.S. Cl. 136—89 TF **11 Claims**



1. A photovoltaic device comprising:

a body of polycrystalline or amorphous semiconductor material capable of generating carriers by the absorption of solar radiation having first and second opposed surfaces and including therein a first layer of one conductivity type along the first surface, a second layer of the same conductivity type as said first layer along the second surface and a third layer between and contiguous to both first and second layers, said third layer being of a conductivity type opposite the conductivity type of said first and second layers so as to form a first P-N junction between said first and third layers and a second P-N junction between said second and third layers, said third layer being of a thickness, from said first P-N junction to said second P-N junction, of at least about twice the minority carrier diffusion length of the semiconductor material of said body;

a first pocket region at said first surface and extending as far as the first P-N junction, said first pocket region being of the same conductivity type as said third layer but of a higher concentration;

means for electrically connecting the first and second P-N junctions; and

means for both electrically contacting said second layer at said second surface and reflecting solar radiation unabsorbed by said body back into said body.

4,070,207

METHOD OF PRODUCING POROUS COPPER WORKPIECES AND PRODUCT THEREOF

Louis B. Holdeman, 9 Diller Court, Boyds, Md. 20720

Filed Oct. 19, 1976, Ser. No. 733,813
Int. Cl.² C22F *1/02*
U.S. Cl. 148—2 **4 Claims**

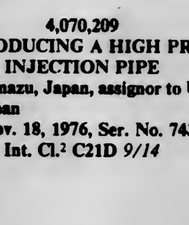
1. A method of making porous copper workpieces of average pore diameter below 10 - 15 microns comprising the steps of:

a. obtaining a copper workpiece having a selected grain size;

b. matching the workpiece to a selected size or shape;

c. electrochemically polishing said workpiece;

d. annealing said workpiece from step (c) in an oxygen atmosphere at 750° - 1080° C. and 10^{-4} - 10^{2} Torr for 2 - 72 hours; and



e. annealing said workpiece from step (d) in hydrogen at 750° - 1080° C. and 10^{-3} - 10^{+3} Torr for 2 - 72 hours.

4,070,208

METHOD FOR THE MANUFACTURE OF A RIDGING-FREE FERRITIC STAINLESS STEEL SHEET

Satohiro Hayami, Yokohama; Munetsugu Matsuo, Kawasaki; Soichi Izumi, and Ryoji Terakado, both of Muroran, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 3, 1977, Ser. No. 756,423
Int. Cl.² C21D *9/48*
U.S. Cl. 148—12 EA **3 Claims**



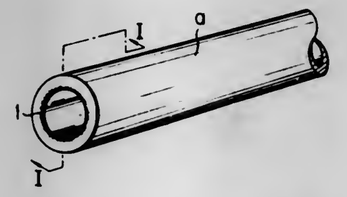
1. A method of manufacturing a ridging free ferritic stainless steel for deep drawing applications, which comprises hot rolling a slab or ingot of the ferritic stainless steel, coiling the hot rolled material at a temperature of 750° to 450° C, subjecting the resulting material, without cooling, to a warm rolling in the temperature range of 700° and 450° C with a reduction of at least 15% by a rolling mill installed separately from the hot strip rolling line, subjecting the material to a continuous annealing and thereafter subjecting a cold rolling and a final annealing.

4,070,209

METHOD OF PRODUCING A HIGH PRESSURE FUEL INJECTION PIPE

Masayoshi Usui, Numazu, Japan, assignor to Usui International Industry, Ltd., Japan

Filed Nov. 18, 1976, Ser. No. 743,081
Int. Cl.² C21D *9/14*
U.S. Cl. 148—12 R **5 Claims**



1. A method of producing a high pressure fuel injection pipe comprising the steps of cutting off the hair crack layer portion including the black skin layer of the inner peripheral wall surface of a steel blank pipe, and thereafter repetitively subjecting said steel blank pipe to the process of said radially inner wall having a hair crack layer portion and a black skin layer dilation of the length and the process of annealing within a non-oxidizing hearth, thereby forming a finished pipe.

4,070,210

METHOD FOR HOT AND IMMERSION ALUMISING OF COMPACTLY FORMED FERROUS ALLOY PRODUCTS

Adam Gierek, and Lech Bajka, both of Katowice, Poland, assignors to Politechnika Slaska Im. Wincentego Pstrowskiego, Gliwice, Poland

Filed Jan. 14, 1976, Ser. No. 649,158
Claims priority, application Poland, Jan. 18, 1975, 177421
Int. Cl.² C21D *1/48*
U.S. Cl. 148—15 **7 Claims**

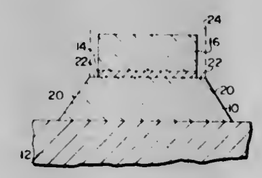
1. A method for heat treating and aluminizing compactly shaped ferrous alloy products comprising the steps of pre-heating said products to a temperature of 100° to 400° C., immersing the pre-heated products in a molten metal bath of liquid aluminum or an alloy of aluminum at a temperature of 550° to 950° C. for 15 seconds to 30 minutes at a controlled speed rate between 0.1 to 12 m/min, removing the products from said bath at a controlled speed rate between 0.1 to 12 m/min, and cooling the products in air or water.

4,070,211

TECHNIQUE FOR THRESHOLD CONTROL OVER EDGES OF DEVICES ON SILICON-ON-SAPPHIRE

Eliyahou Harari, Irvine, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1977, Ser. No. 784,383
Int. Cl.² H01L *21/22*
U.S. Cl. 148—187 **8 Claims**



1. In a process for fabricating metal-oxide-semiconductor devices of the type wherein a layer of silicon is formed on an insulating substrate and wherein silicon islands are formed on the substrate by removing the silicon in the region between adjacent devices, the improvement comprising a technique for doping the edges of the silicon islands to prevent channel-edge conduction before the device threshold voltage is reached comprising the steps of:

depositing a thick masking layer on top of the silicon layer;

forming islands on the substrate by etching away portions of the masking layer and the silicon layer, said islands being mesa-like structures including said masking layer and said silicon layer;

partially etching said thick masking layer to remove a portion of the mask from the sides of the mask, thereby exposing a frame of the top surface of the silicon as well as the edges of the silicon island, the remainder of the top surface of the silicon being covered by said masking layer; and

doping the exposed edges and the exposed top surface of the silicon to prevent channel-edge conduction.

4,070,212

HIGH PERFORMANCE FAST BURNING SOLID PROPELLANT

Johnny R. Mackey, and Earl T. Foster, both of Huntsville, Ala., assignors to Thiokol Corporation, Newtown, Pa.

Filed Nov. 23, 1964, Ser. No. 414,940
Int. Cl.[2] C06B 45/10
U.S. Cl. 149—19.2 4 Claims

1. A solid composite propellant consisting of 7% to 15% of a carboxyl-terminated butadiene polymer binder, 66% to 82% of ammonium perchlorate, greater than 0% to 18% of aluminum and greater than 0% to 8% of n-butyl ferrocene as a burning rate catalyst, the ingredient amounts being in weight percent, and wherein the particle size of the ammonium perchlorate is greater than 0 but less than 3 microns in size.

4,070,213

DISPERSING AIDS FOR MT-4

Marjorie T. Cucksee, Huntsville, and Henry C. Allen, Decatur, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 30, 1976, Ser. No. 701,319
Int. Cl.[2] C06B 45/10
U.S. Cl. 149—19.92 3 Claims

1. In a method relating to processing a solid propellant composition wherein an interfacial bonding agent which is the product prepared by reacting together 2.0 moles of tris 1(2 methylaziridinyl) phosphine oxide, 0.7 mole adipic acid, and 0.3 mole tartaric acid is employed to improve the bond between the binder ingredients of a solid propellant composition comprised of a binder of a hydroxy-terminated polybutadiene, a plasticizer selected from the group consisting of a hydrocarbon processing oil plasticizer, a nonenergetic ester plasticizer, or an energetic ester plasticizer, a diisocyanate curing agent, a burning rate catalyst of Fe_2O_3, and an ammonium perchlorate oxidizer blend of 200 micron and 17 micron particle size, the additional improvement to said processing method which enhances the physical and mechanical properties of said propellant composition when cured achieved by incorporating from about 0.01 weight percent to about 0.1 weight percent of said composition a dispersing aid for said interfacial bonding agent selected from a diol having the general formula, $R(OH)_2$, wherein R is an alkylene radical, or an iminodiol selected from an iminodiol having the general formula $R'N(R''OH)_2$, wherein R' is an aryl or alkyl radical and R'' is an alkylene radical, said selected diol or iminodiol being an effective dispersing aid for said interfacial bonding agent which results in improving the efficiency of said interfacial bonding agent by ensuring uniform coating of solids; and said selected diol or iminodiol being reactive to become a part of the binder matrix without causing degradation of the physical and mechanical properties as a result of dewetting or weakening of the bond at the ammonium perchlorate interface of said solid propellant composition.

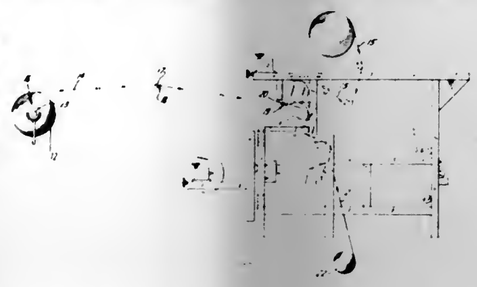
4,070,214

PROCESS FOR CONTINUOUS PRECISION LAMINATION OF MULTIPLE STRIPS TO A SUBSTRATE

Jordon M. Brown, Somerset; Charles J. Benedict, Newark, and Robert M. Pricone, West Milford, all of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,068
Int. Cl.[2] H01B 7/08, 13/00
U.S. Cl. 156—47 4 Claims

1. A process for continuously and precisely laminating strips of foil to a substrate which comprises the steps of (1) coating a roll of foil with an adhesive; (2) slitting the adhesive-coated roll of foil to the desired width or widths; (3) mounting the slit roll of foil onto an unwind shaft at a distance of at least about 7 feet from the point of lamination, said unwind shaft being fitted with a pneumatic brake device to adjust the unwind tension; (4) pulling each foil strip through a first guiding spool fixed on a rigid shaft perpendicular to the direction of the foil strip and midway between the unwind shaft and the point of lamination, each said first spool being about 0.015 inch wider than the foil strip and serving as a rough guide; (5) pulling each foil strip through a second guiding spool mounted on a threaded shaft perpendicular to the direction of the foil strip



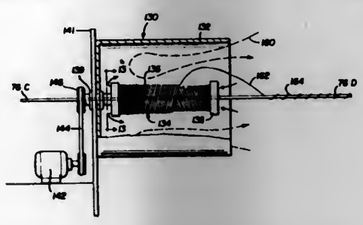
and less than about 3 inches from the point of lamination, each said second spool being about 0.005–0.01 inch wider than the foil strip, serving as a fine guide and being of a three-piece design to enable it to be adjusted; (6) placing the precisely positioned foil strips onto a substrate; and (7) removing the resulting laminate product.

4,070,215

METHOD AND APPARATUS FOR MAKING ELECTRIC CONDUCTOR

Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 480,194, June 17, 1974, abandoned.
This application Sept. 16, 1976, Ser. No. 723,698
Int. Cl.[2] B65H 81/06, 49/18, 54/02
U.S. Cl. 156—51 8 Claims



1. The method of winding a yarn around a bundle of filaments comprising:

moving the bundle of filaments through the axial passage of an annular bobbin having a yarn wound thereon; and

rotating said bobbin to centrifugally throw said yarn therefrom in a free unconfined balloon by enclosing said bobbin in a cylindrical shield having an internal diameter concentric with said bobbin, said bobbin having pumping fins within the passage promoting the flow of air through said passage of said bobbin, said hood being adapted to deflect the flow of air over and along the length of the bobbin, and said shield having a cylindrical internal diameter greater than the maximum radial diameter of said balloon, said air flow and shield stabilizing said balloon and utilizing said stabilized balloon to wind said element on said bundle under tension sufficient to bind the bundle.

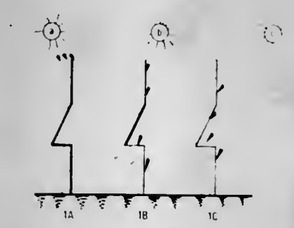
5. An apparatus for winding a binder yarn about a bundle of filaments comprising a bobbin having an axial passage and exteriorally peripherally wound binder yarn thereon, means for feeding the filament bundle through the bobbin, a generally cylindrical stationary hood enclosing the bobbin, and means for rotating the bobbin, the free end of the binder yarn being adhered to the bundle of filaments so that rotation of the bobbin throws the yarn therefrom in a free unconfined balloon, the interior diameter of the hood being greater than the radial dimension of the balloon, said bobbin having pumping fins within the passage to promote the flow of air through the bobbin, said hood being adapted to deflect said air over and along with length of the bobbin at least within the radial confines of the balloon to stabilize the balloon so that the binder yarn is wrapped on the bundle under uniform tension.

4,070,216

METHOD OF PRODUCING A BAS-RELIEF WITH A MOTIF WHICH VARIES WITH LIGHT AND THE BAS-RELIEF THUS OBTAINED

André Baladi, 7, Eugene Pittard, Geneva, Switzerland, and Roland Albert Baladi, 6bis, rue Bachaumont, Paris, France

Filed Feb. 19, 1976, Ser. No. 659,450
Claims priority, application France, Feb. 24, 1975, 75 05705
Int. Cl.[2] B66C 1/00
U.S. Cl. 156—63 10 Claims



1. A method of producing a bas-relief with a motif which varies in accordance with the light projected on the bas-relief comprising the steps of:

a. dividing a picture to be reproduced into a plurality of divisions;

b. measuring the intensity of the grey in each division;

c. assigning a numerical value to each division proportional to the intensity of grey measured in each respective division, said values varying from a value representative of white to a value representative of black;

d. providing a three dimensional element for representing each division;

e. providing means on each of said elements for producing a shadow on said element, said shadow having an area corresponding to the assigned value of grey intensity for the division which said element represents; and

f. arranging said elements in the manner in which the divisions are arranged in the picture.

4,070,217

METHOD OF MAKING ELECTRIC BLANKET SHELL

Alexander M. Smith, II; Allen H. Adkins, and Thomas M. Roth, all of Elkin, N.C., assignors to The Fiberwoven Corporation, Elkin, N.C.

Division of Ser. No. 541,645, Jan. 16, 1975, Pat. No. 3,973,066.
This application Feb. 13, 1976, Ser. No. 658,072
Int. Cl.[2] B32B 5/06, 31/16, 31/28
U.S. Cl. 156—73.2 11 Claims

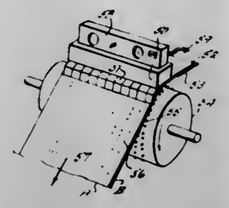
1. A method for producing an electric blanket shell comprising:

1. needling first and second batts of textile fibers and forming them into first and second needled fabrics each being an integral coherent structure, wherein at least one of the first or second needled fabrics contains a heat fusible component and at least one of the first and second needled fabrics contains a yarn layer having at least a first plurality of generally parallel yarns extending generally in a planar direction of the needled fabric;

2. stretching in a planar direction of and permanently setting at least one of the first and second needled fabrics prior to forming fusion bonds linking the first and second needled fabrics;

3. arranging the first and second needled fabrics into juxtaposition with each other;

4. and then forming a plurality of small, discrete fusion bonds spaced from each other, which link the first needled fabric to the second needled fabric and form at least one pattern



of fusion bonds which extends across one dimension of the blanket shell;

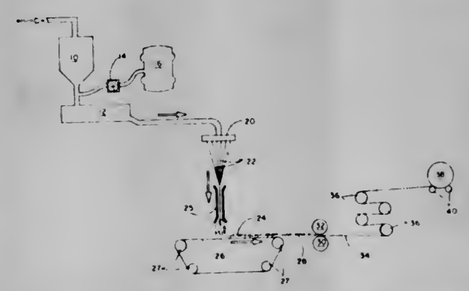
and wherein the pattern of fusion bonds engage no more than about 50% of the said first plurality of generally parallel yarns of the yarn layer and are disposed transversely across the first plurality of generally parallel yarns of the yarn layer.

4,070,218

METHOD OF PRODUCING A SOFT, NONWOVEN WEB

Robert E. Weber, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 626,252, Oct. 28, 1975, Pat. No. 3,973,068.
This application Apr. 19, 1976, Ser. No. 678,161
Int. Cl.[2] D04H 3/16
U.S. Cl. 156—167 8 Claims



1. A method of making a soft, nonwoven web comprising the steps of,

mixing with a thermoplastic polymer 0.1% to 3.0% of a semi-compatible lubricating agent having a molecular weight in the range of from about 200 to about 4000 and an HLB number in the range of from about 8 to about 20;

extruding said mixture to form filaments;

collecting said filaments into a web;

pattern bonding said web to produce areas of relative high and low bond intensity; and

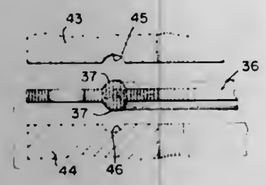
heating said bonded web to a temperature in the range of from about 180° F to 260° F to cause said agent to migrate to the filament surfaces and substantially release said low intensity bonds.

4,070,219

METHOD OF MAKING DENSIFIED CONVOLUTE GASKET STRUCTURE

Robert G. Farnam, New Lisbon, Wis., assignor to F. D. Farnam Co., Lyons, Ill.

Continuation of Ser. No. 496,766, Aug. 12, 1974, abandoned, Division of Ser. No. 301,435, Oct. 27, 1972, Pat. No. 3,854,736, said Ser. No. 496,766, Continuation-in-part of Ser. No. 250,193, is a continuation-in-part of Ser. No. 840,171, July 9, 1969, Pat. No. 3,697,348. This application Jan. 23, 1976, Ser. No. 651,703
The portion of the term of this patent subsequent to Oct. 10, 1989, has been disclaimed.
Int. Cl.[2] B32B 5/14
U.S. Cl. 156—192 11 Claims



1. A method of making a convolutely wound, densified, substantially flat gasket structure having multiple layers of gasket material and a fluid-impermeable polymer material convoluted together about a predetermined convolute axis, said method comprising:

a. taking a web of compactible gasket material having minute voids therein;

b. coating the web with a fluid-impermeable, curable polymer;

c. winding the coated web in convoluted configuration about said axis and with sufficient tension to form a tube about said axis, said tube comprising said web in convoluted form with its coated side forming convoluted fluid-impermeable barriers;

d. cutting said tube transversely of said axis into individual gasket blanks each having a central axis coincident with said tube axis; and

e. laterally compacting said blanks in a direction substantially parallel to said central axis to form a transverse bearing surface consisting of multiple plies of gasket material having one or more internal fluid-impermeable barriers, said bearing surface having a flat relatively high density major portion and a minor portion of a relatively low density compactible and conformable bead of gasket material extending in a direction substantially normal to said transverse bearing surface.

4,070,220

RECORD ASSEMBLY AND METHOD OF USING WEB OF RECORD ASSEMBLIES

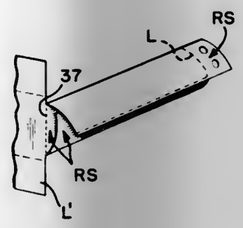
Donald E. Cavender, Centerville, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 520,710, Nov. 4, 1974, Pat. No. 3,993,814.
This application Sept. 7, 1976, Ser. No. 721,005
Int. Cl.[2] B31F 1/00
U.S. Cl. 156—227 2 Claims

1. Method of using record assemblies, comprising the steps of:

providing an elongated web of supporting material and printable label material having a coating of pressure sensitive adhesive releasably adhered to the supporting material web, the supporting material web being partially severed transversely and the label material being at least partially severed transversely to provide a series of record assemblies that can be readily separated from each other, the web having a longitudinally extending line of complete severing disposed between opposite side edges of the web, the label material having a longitudinally extending line of partial severing disposed generally along the line of complete severing in the web, the label material on the one side of the longitudinal line of partial severing being divided into a plurality of labels, the label material of each record assembly on the other side of the longitudinal line constituting a carrier label, the supporting material on the one side of the longitudinal line of complete severing which underlies the plurality of labels being partially severed transversely along at least two longitudinally spaced, transversely extending lines of partial severing to provide at least three transversely extending record sections;

printing data on the plurality of labels and on the carrier labels of the record assemblies;



removing from each printed and separated record assembly only the portion of the supporting material web on said other side of the longitudinal line of complete severing;

folding the record sections about the respective transversely extending lines of partial severing so that each record section is in face-to-face relationship with another record section;

positioning the folded record sections in underlying relationship relative to the carrier label with the supporting material of at least one of the record sections in contact with the exposed adhesive on the carrier label;

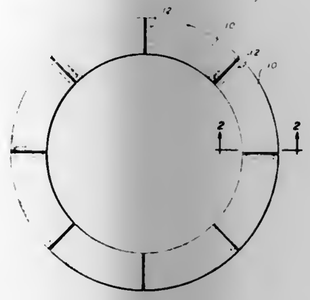
and thereafter adhering the carrier label to merchandise by means of exposed adhesive adjacent the folded record sections.

4,070,221

MULTI-SEGMENTED SEALING RING

Andrew James Anthony, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 1, 1976, Ser. No. 728,667
Int. Cl.[2] B29C 19/00
U.S. Cl. 156—245 6 Claims



1. A method of making a sealing ring to be used to cover an opening between a reactor-vessel flange and a cavity wall in a nuclear reactor system, the sealing ring to be supported by supporting surfaces on the reactor-vessel flange and the cavity wall, comprising the steps of:

a. bonding elastomeric seal segments, having ends, to each of a plurality of ring segments that form a structure when connected of such shape as to cover the opening, the seal segments extending substantially the full length of the ring segments and being bonded in such positions on the ring segments as to engage the supporting surfaces when the structure is set in place and to bring each seal-segment end into registration with an end of a seal segment bonded to an adjacent ring segment when the ring segments are connected;

b. connecting the ring segments, thereby forming joints between adjacent ring segments and between adjacent seal segments; and

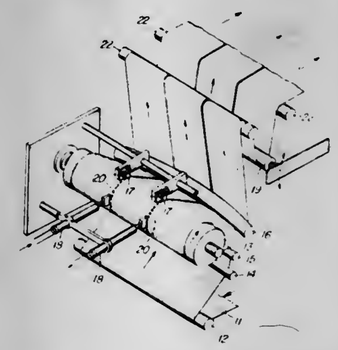
c. bonding an elastomeric seal into the ring-segment joint and into the seal-segment joints, thereby forming a continuous ring and continuous seals.

4,070,222

PRETREATMENT OF THERMOPLASTIC FILM FOR IMPROVED SEALING

Robert H. Olson, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 2, 1977, Ser. No. 773,711
Int. Cl.[2] B32B 31/00; B65C 9/25
U.S. Cl. 156—251 4 Claims



1. A method for slit-sealing a continuously advancing flattened tube of thermoplastic film which comprises sequentially:

a. locally preheating said tube along at least one continuously extending longitudinally area utilizing heated air, said preheating being insufficient to cause said flattened tube to be heat welded together; and

b. subsequently subsequently continuously slitting and sealing said flattened tube within said preheated longitudinal area thereby forming a plurality of individual tubes.

4,070,223

APPARATUS AND METHOD FOR INTRODUCING CONNECTED FORMS INTO AN ASSOCIATED DEVICE

Edwin Stalzer, 69-39 Trotting Course Lane, Rego Park, N.Y. 11374

Filed Nov. 17, 1975, Ser. No. 632,270
Int. Cl.[2] B32B 3/10, 31/06; B65D 85/671
U.S. Cl. 156—264 13 Claims



1. A method for introducing connected multiform units of the type having spaced indexing holes on separable marginal tapes adjacent each marginal edge into a device of the type having indexing means for advancing said units to an operating station in said device, comprising:

providing a pair of lead strips having a width no wider than said separable marginal tapes with indexing holes having the same spacing as said indexing holes in said units,

superimposing at least a portion of one of said pair of lead strips on one of said separable tapes of the first of said units with the indexing holes in said strip in overlapped and vertical alignment with the holes in said one tape, whereby the remaining portion of said lead strip extends beyond the leading edge of said first unit by a length sufficient to permit introduction of said units into the device;

and connecting said one of said pair of lead strips to said one tape by a pressure sensitive adhesive;

superimposing the other of said pair of lead strips on the other of said tapes of said first unit with the indexing holes in said strip in overlapped and vertical alignment with the holes in said other tape, whereby a portion of said other lead strip extends beyond the leading edge of said first unit by a length sufficient to permit introduction of said units into the device;

and connecting said other of said strips to said other tape by a pressure sensitive adhesive,

whereby movement of said strips causes movement of said units.

4,070,224

POLYMER BACKED SILICONE RUBBER MOLDS AND MEANS FOR FORMING BONDS WITH POLYORGANOSILOXANES

John C. Zemlin, Reading, and Robert Davis, Concord, both of Mass., assignors to Allied Resin Corporation, East Weymouth, Mass.

Continuation of Ser. No. 456,831, April 1, 1974, abandoned. This application July 19, 1976, Ser. No. 706,784
Int. Cl.[2] B32B 31/12
U.S. Cl. 156—314 5 Claims

1. A method of bonding a cured silicone rubber to an essentially non-silicone, organic polymeric substance comprising applying a composition consisting essentially of an alkaline activating agent selected from the group consisting essentially of γ-aminopropyltrimethoxy silane, γ-aminopropyltriethoxy silane, and N-β-(aminoethyl)-γ-aminopropyltrimethoxy silane, to a surface of the silicone rubber which activating agent functions to disrupt siloxane groups in said silicone rubber, and said activating agent also acts as a bridging agent which bridging agent bonds with said so disrupted siloxane groups and leaves a residue reactive group,

said polymeric substance being a polyurethane,

and reacting said residue reactive group to form a bond with said polyurethane, said bond having adhesion of over 0.1 lb/in.

2. A method of bonding a cured polyorganosiloxane to an essentially non-silicone, organic polymeric substance comprising, applying an activating agent other than a peroxide material to a surface of the polyorganosiloxane which activating agent functions to disrupt siloxane groups in said polyorganosiloxane, and applying a bridging agent to said surface which bridging agent bonds with said so disrupted siloxane groups and leaves a residue reactive group,

reacting said residue reactive group to form a bond with said polymeric substance, said bond having adhesion of over 0.1 lb/in.,

said polyorganosiloxane being a silicone rubber and said polymeric substance being a polyurethane, and said polyurethane being cured during said last-mentioned reacting step, with said activating agent being selected from the group consisting essentially of calcium hydroxide, sodium hydroxide, potassium hydroxide, cesium hydroxide, alkali metal silanolates, alkali metal alkoxides, quaternary ammonium hydroxides, quaternary phosphonium hydroxides, potassium amide, silanolates and alkoxides of quater-

nary ammonium and phosphonium radicals, and said bridging agent being an amino organo silane.

4,070,225

METHOD OF USING STRUCTURAL ADHESIVE

Vernon H. Batdorf, Minneapolis, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.

Filed Nov. 17, 1976, Ser. No. 742,600
Int. Cl.² C09J 5/00; B32B 27/38
U.S. Cl. 156—330 **20 Claims**

1. A one-part, curable epoxy prepolymer/polyamide system comprising:

a. a continuous phase comprising a polar solvent system containing a polar organic liquid, said solvent system being generally incapable of dissolving an epoxy prepolymer, said polar organic liquid having a boiling point below 200° C. under normal ambient conditions; and, dissolved in each 100 parts by weight of said solvent system, 5 to 300 parts by weight of a polyamide having a ball and ring softening point within the range of 60°-200° C. and containing at least 20 mole % terminal groups which are residues of 1,4-bis-alkylamino piperazine, and, linked by amido linkages thereto, the residue of a polyfunctional carboxylic acid; and

b. a discontinuous, substantially non-settling phase dispersed uniformly throughout said continuous phase, said discontinuous phase being selected from the group consisting of solid particles of a solid epoxy prepolymer and droplets of a liquid epoxy prepolymer, said epoxy prepolymer having an epoxide equivalent weight greater than 60.

6. A method for forming an epoxy adhesive-bonded joint between a plurality of substrates, comprising:

a. applying to at least one of said substrates a substantially uniform mixture comprising:
   1. a solution comprising a solid, primary-amine terminated polyamide dissolved therein and a suitable solvent therefor, said polyamide having a ball and ring softening point within the range of 60°-200° C.;
   2. uniformly and intimately distributed through said solution, an epoxide prepolymer having an epoxide equivalent weight greater than 60; said epoxide prepolymer being substantially unreacted with said polyamide;

b. removing sufficient solvent from said solution to cause said uniform mixture to become a non-flowable material under normal ambient temperature and pressure conditions; said non-flowable material being capable of cure initiation at temperatures above 60° C. and being capable of continued curing at normal ambient temperatures, subsequent to such cure initiation;

c. mating said plurality of substrates;

d. forming a joint with the thus-mated substrates under epoxide cure initiation conditions, which conditions include applying a temperature greater than 60° C. to said joint for more than 1 second but less than 20 minutes, whereby said polyamide is:
   1. brought to a temperature above its ball and ring softening point;
   2. forms a flowable phase reactive with said epoxide prepolymer; and
   3. enters into an amine/epoxide curing reaction with said polyamide;

e. removing said epoxide cure initiation conditions before said amine/epoxide curing reaction is complete, but after the strength of the joint is sufficient to permit further handling of the mated substrates;

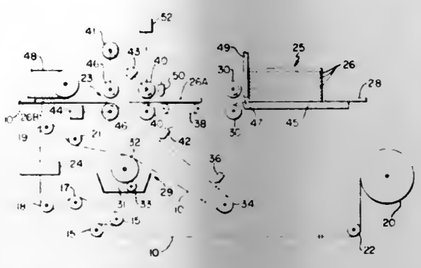
f. continuing said amine/epoxide curing reaction under substantially normal ambient pressure and temperature conditions for at least 12 hours, the continuing of said curing reaction being characterized by an increase in the tensile shear strength of said joint.

4,070,226

REGISTRATION SYSTEM

Charles F. H. Crathern, Contoocook, and Sherman W. Twitchell, Hopkinton, both of N.H., assignors to Crathern Engineering Co., Inc., Contoocook, N.H.

Filed Jan. 21, 1977, Ser. No. 761,453
Int. Cl.² B65C 9/40
U.S. Cl. 156—364 **20 Claims**



1. Apparatus for bringing a plurality of moving articles into registration with each other by establishing a predetermined spatial relationship between detectable indicia on said articles; said apparatus comprising:

transport means corresponding to each of said articles for moving said each article at its own transport speed in a separate path;

means stationed at a predetermined position along each of said paths for detecting the indicium on an article moving in said path;

means responsive to each of said transport means for measuring the distance travelled by said indicium beyond said predetermined position;

means for comparing respective measured distances to determine the instantaneous spatial relationship between respective ones of said indicia in response to the detection of said indicia;

means responsive to the differential between said instantaneous and said predetermined spatial relationships for varying at least some of said transport speeds to diminish said differential; and

means for equalizing said transport speeds when said differential reaches zero indicative of said registration between said moving articles.

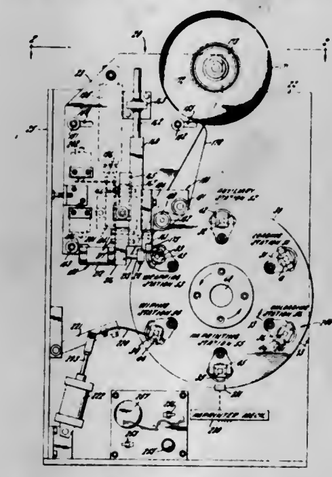
4,070,227

TAPING MACHINE FOR COILS AND THE LIKE

Donald J. Stuart, Park Ridge, Ill., assignor to Midland Engineering and Machine Co., Rosemont, Ill.

Filed Apr. 19, 1976, Ser. No. 677,898
Int. Cl.² B32B 31/00
U.S. Cl. 156—446 **14 Claims**

1. In a taping machine for coils wound upon bobbins, the combination comprising a frame, a turret wheel mounted for rotation on the frame, the face of the wheel having mounted thereon a plurality of peripherally spaced mandrels dimensioned for slidable reception of the bobbins of a succession of coils, the turret having spaced about its periphery (a) a loading station where a coil is loaded on a mandrel, (b) a tape wrapping station, (c) a wiping station having a wiper for wiping down the tail of the tape, and (d) an unloading station, drive spindles located at the back of the turret wheel at the wrapping and wiping stations respectively, indexing means including an oscillating arm having a reciprocating actuator connected thereto for indexing the turret wheel to advance each mandrel into the next station, a tape applicator assembly at the wrapping station having an associated roll of adhesive tape and having a resilient applicator pad at the end thereof, the tape applicator assembly having non-retrograde roller means adjacent the applicator pad for supporting the leading end of the tape on the pad, the applicator member having means adjacent the applicator pad for guiding the pad along an arc of movement from a reference position in which the applicator pad is adjacent the coil to a pressing position in which the leading end of the tape is pressed by the applicator pad against the side of the coil to tack the tape to the coil followed by return of the applicator member to reference position, a pair of drive spindles at the wrapping and wiping stations, a shiftable carriage located behind the turret wheel for journalling the drive spindles, the drive spindles having pinions at one end and dog type clutch surfaces at the other, actuator means for shifting the



carriage axially to bring the spindles into simultaneous clutching engagement with the mandrels at the respective wrapping and wiping stations, actuator means including a rack engaging the pinions so that upon a stroke of actuator movement the pinions are rotated through a predetermined number of revolutions for simultaneous wrapping and wiping of the tape on the coils in the wrapping and wiping stations, means including a cutter blade adajcent to the applicator pad for severing the tape following the wrapping thereof with the applicator member substantially in reference position to produce a new leading end positioned on the applicator pad.

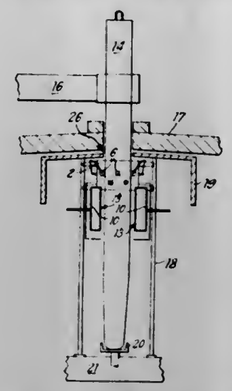
4,070,228

COATING CARBON ELECTRODES

Helmut Jaunich; Dieter Dunkelmann, and Josef Schiffarth, all of Gelsenkirchener Str. 10, D. 428 Borken Postfach, Germany

Filed May 3, 1976, Ser. No. 682,873
Claims priority, application United Kingdom, May 1, 1975, 18255/75
Int. Cl.² B29C 17/00
U.S. Cl. 156—475 **10 Claims**

1. Apparatus for applying protective sheets to the surface of an electric arc furnace electrode, said apparatus comprising a vertically extending frame having an open upper entrance for receiving a portion of said electrode which is delivered by electrode moving means usable with said apparatus to lower and raise a portion of said electrode through said entrance, said frame being open to allow passageof said electrode, a plurality of heat resistant rollers located below said entrance and adapted to contact said electrode, said rollers being biased toward said electrode and being rotatable about an axis perpendicular to a plane including the center of the respective roller and the longitudinal axis of the electrode, said rollers mounted to guide said electrode during lowering, and a plurality of carriages located below said rollers, said carriages each being reciprocable in a direction radial of the major axis of the electrode from a first withdrawn position to a second electrode contacting position, each carriage being adapted to support a protective sheet that is placed in the carriage in said first position, advancing means to advance said carriage with a protective sheet from said first position to said second position to apply said protective sheet firmly against a portion of said electrode, said carriage adapted also to hold said protective



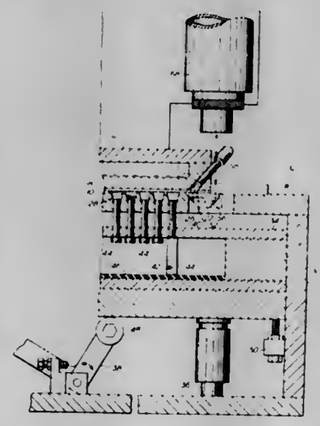
sheet against said electrode for a length of time sufficient to assure adherence, said advancing means also adapted to withdraw said carriages away from said electrode, said rollers being also adapted to press said protective sheet upon said electrode when said electrode is raised.

4,070,229

APPARATUS FOR POSITIONING AND ADHERING A PLURALITY OF SEMICONDUCTOR DEVICES TO SITES ON AN ADHERENT SITE ON A SUBSTRATE

Lyle J. Hentz, Whitehall, and Willard G. Otto, Schnecksville, both of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 414,481, Nov. 9, 1973, Pat. No. 3,982,979, which is a continuation-in-part of Ser. No. 374,436, June 28, 1973, abandoned. This application July 7, 1976, Ser. No. 703,385
Int. Cl.² H01L 21/88; H05K 3/30
U.S. Cl. 156—556 **5 Claims**



1. Apparatus for positioning and adhering a plurality of semiconductor devices to sites on a substrate, the substrate having fiducial masks relative to the sites and the sites having a liquefiable coating, which comprises:

a. a base;

b. cavities in the base for rotating and positioning each device wherein the sides of each cavity slope downward

toward its center and the cross section of at least a portion of each cavity is smaller than the smallest device;

c. means for intermittently engaging the devices with the walls of the cavities, while lowering the devices into the cavities to position the devices, and for forcing individual devices against the substrate with equal pressure, said means including tubular members positioned within the cavities and connected to a source of vacuum;

d. means for aligning the sites with the cavities; and

e. means for adhering the devices to the sites.

4,070,230

SEMICONDUCTOR COMPONENT WITH DIELECTRIC CARRIER AND ITS MANUFACTURE

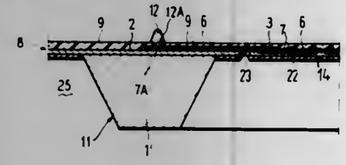
Karl-Ulrich Stein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 592,526, July 2, 1975. This application June 4, 1976, Ser. No. 692,664

Claims priority, application Germany, July 4, 1974, 24325448

Int. Cl.² H01L *21/312*

U.S. Cl. 156—657 **8 Claims**



1. A process for the production of a component assembly incorporating a flattened, integrated semiconductor circuit of the type having a plurality of discrete sites of doped, semiconductor material which discrete sites are interconnected together in a predetermined manner by layered paths of conductive material, said process comprising the steps of:

A. forming a said semiconductor circuit on an n^+ conducting silicon wafer by depositing an n^- conductive monocrystalline epitaxial silicon layer thereon, diffusing p-conducting doping material into said epitaxial layer selectively to form doped zones, depositing an insulative layer selectively thereover, and depositing electrically conductive paths selectively thereover.

B. forming a layer of polyamide resin over the resulting said semiconductor circuit,

C. heating said layer of polyamide resin to convert same into a layer of polyimide resin,

D. selectively etching away portions of said n^+ silicon wafer and said n^- epitaxial silicon layer.

4,070,231

WET GLYCOL STRIPPED WITH FUEL GAS

Carl E. Alleman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 560,393, March 20, 1975, Pat. No. 4,010,065. This application Nov. 22, 1976, Ser. No. 744,059

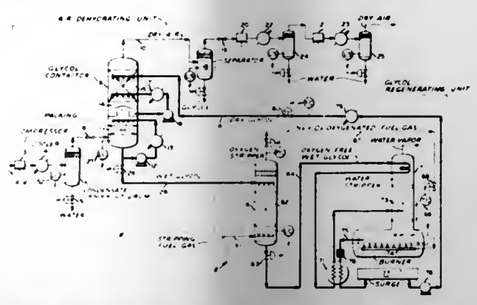
Int. Cl.² B01D *1/16, 1/00, 53/02;* C07C *29/26*

U.S. Cl. 159—47 R **15 Claims**

1. A process for drying gas streams containing free oxygen and water which comprises

a. contacting said gas streams with a glycol to produce a dry gas stream and a wet glycol stream containing free oxygen;

b. removing free oxygen from said wet glycol stream by stripping said wet glycol at a temperature in the range of about 70° to 150° F;



c. removing water from said wet glycol to obtain dry glycol; and

d. thereafter recovering the dry glycol.

4,070,232

PREHYDROLYSIS AND DIGESTION OF PLANT MATERIAL

Harald F. Funk, 68 Elm St., Murray Hill, N.J. 07974

Continuation-in-part of Ser. No. 442,821, Feb. 15, 1974, abandoned. This application May 30, 1975, Ser. No. 582,349

Int. Cl.² D21C *1/04;* C13K *13/00*

U.S. Cl. 162—16 **13 Claims**

1. A method for treating annual, vascular plant material containing hemicellulose and lignin which comprises the steps of:

a. prehydrolyzing said plant material by heating said plant material under pressure in the presence of steam and the vapors of a dilute acid solution having a pH in the range from 1.5 to about 3.5 at a temperature ranging between about 105° C. and about 135° C. for between 7 minutes and about 20 minutes to hydrolyze at least a portion of said hemicellulose into pentoses and hexoses and to leave a fibrous material and a liquid, said liquid containing said pentoses and hexoses;

b. separating said liquid from said fibrous material, and recovering the pentoses and hexoses from said liquid;

c. heating said fibrous material under pressure in the presence of white liquor at a temperature ranging between about 105° C. and about 135° C. for a time sufficient to digest said fibrous material;

d. separating the digested fibrous material from spent digestion liquor; and then

e. washing the digested fibrous material.

4,070,233

PROCESS OF THE PULPING OF BLEACHING OF VEGETABLE MATERIAL

Hiroshi Matsuura, Tokyo, Japan, assignor to Japan Pulp & Paper Research Instutute Inc., Tokyo, Japan

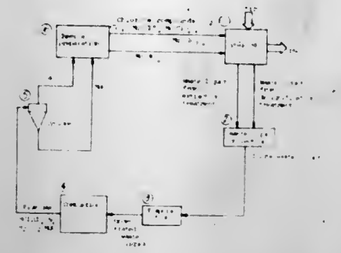
Filed June 14, 1972, Ser. No. 262,645

Claims priority, application Japan, June 14, 1971, 46-42438

Int. Cl.² D21C *3/18*

U.S. Cl. 162—28 **5 Claims**

1. A process for the production of pulp which comprises the steps of pulping finely shredded vegetable material by delignifying the same with at least one oxidizing chemical selected from the group consisting of Cl_2, Cl_2O, ClO_2, $Mg(ClO)_2$, $Mg(ClO_2)_2$ and $Mg(ClO_3)_2$; extracting the thus delignified vegetable material with $Mg(OH)_2$; and regenerating $Mg(OH)_2$ and said oxidizing chemical from the waste liquor discharged from the pulping step by burning said waste liquor to generate



MgO and HCl and converting the thus obtained MgO and HCl into $Mg(OH)_2$ and said oxidizing chemical.

4,070,234

PROCESS RELATED TO PULP BLEACHING EFFLUENT PURIFICATION USING ION EXCHANGE RESINS

Lars-Gustaf Anderson; Hilding Roland Andersson; Bengt Gunnar Broddevall, and Erik Axel Sigvard Lindberg, all of Skoghall, Sweden, assignors to Uddeholms Aktiebolag, Uddeholm, Hagfors, Sweden

Filed Dec. 9, 1976, Ser. No. 748,895

Claims priority, application Sweden, Dec. 19, 1975, 7514424

Int. Cl.² D21C *11/00*

U.S. Cl. 162—29 **10 Claims**



1. In a pulp bleaching process comprising sequentially subjecting the pulp to treatment with chlorine, extraction with alkali, and bleaching in a plurality of bleach stages, the improvement comprising

a. washing the pulp in a plurality of counter-current wash steps connected in series from a final bleach section wash step to a first alkali extraction stage wash to produce a strongly polluted effluent from the first alkali extraction stage wash step;

b. feeding said strongly polluted effluent through a first bed of activated particulate porous weakly basic anion exchange resin to retain organic pollutants in said effluent in said first bed; and

c. using the effluent from said first bed to wash pulp leaving the chlorine treatment stage, to produce an acidic chlorine treatment stage wash effluent; and passing said chlorine treatment stage wash effluent through a second bed of particulate porous weakly basic anion exchange resin to retain any organic pollutants from said chlorine bleaching stage and residual organic pollutants in the effluent from said first bed in said second bed, while activating the second resin bed, and while passing chloride ions in said chloride treatment stage wash effluent through said second bed without retaining same to discharge said chloride ions from said pulp bleaching process in a purified effluent from said second bed as the final wash liquor effluent of said plurality of counter-current wash steps.

4,070,235

METHOD OF MAKING BIAXIALLY ORIENTED NONWOVEN FABRICS

Preston F. Marshall, 191 Gould St., Walpole, Mass. 02081

Continuation-in-part of Ser. No. 506,843, Sept. 17, 1974, Pat. No. 3,969,561. This application Dec. 19, 1975, Ser. No. 642,667

Int. Cl.² D21H *5/02*

U.S. Cl. 162—116 **6 Claims**



1. A method of making biaxially oriented nonwoven fabrics having areas of low fiber density and high fiber density wherein a majority of the fibers in said low fiber density areas are oriented in a direction substantially normal to the fibers in the directly adjacent high fiber density areas and a majority of the fibers in said high fiber density areas that lie directly adjacent said low fiber density areas are oriented in a direction substantially parallel with the contours of the configuration of the adjacent low fiber density areas, comprising:

preparing an aqueous slurry of a stock of blended long and short fibers, said long fibers being at least one-half inch in length or more and said short fibers being less than one-half inch in length;

maintaining said stock of fibers in an agitated state;

causing a flow of said stock to pass into a headbox, and stabilizing same therein;

passing said stabilized stock flow onto a moving fourdrinier screen having liquid-impervious resist areas thereon of a particular contour;

causing a majority of said long and short fibers in said stock flow to locate outside said liquid-impervious resist areas said majority of fibers that lie directly adjacent said liquid-impervious resist areas orienting themselves in a direction substantially parallel with the contours of said resist areas;

simultaneously causing, by the water's diverging action between liquid pervious and impervious areas, a minority of said long and short fibers in said stock flow to locate across said liquid impervious resist areas, said minority of said long and short fibers orienting themselves in a substantially cross direction normal to the axis of said liquid impervious resist areas;

securing said biaxially oriented nonwoven fabric in said orientation as described herein;

carrying said biaxially oriented nonwoven fabric on said moving fourdrinier screen toward a pick-up means for collecting the thusly formed fabric; and,

collecting said fabric on said pick-up means.

4,070,236
PAPER MANUFACTURE WITH IMPROVED RETENTION AGENTS

Jean-Pierre Carrard, and Helmut Pummer, both of Therwil, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

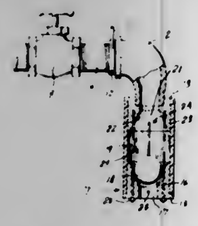
Filed Nov. 10, 1975, Ser. No. 630,090
Claims priority, application Switzerland, Nov. 15, 1974, 15247/74; Nov. 19, 1974, 15370/74
Int. Cl.² D21D 3/00
U.S. Cl. 162—164 R 9 Claims

1. A process for the production of paper and paper-like products which comprises the step of incorporating in the pulp a retention agent comprising a polyalkylene oxide of molecular weight in excess of 1 million and a water soluble resin selected from the group consisting of phenol - or naphthol formaldehyde containing sulfonic acid and/or sulfone groups and phenol - or naphthol sulfur resin, said resin being employed in an amount of from 0.01 to 0.5% by weight based on the weight of solids in said pulp.

4,070,237
AUTOMATIC VACUUM STABILIZING VALVE

Derrick Ronald Woodward, Pointe Claire, Canada, assignor to JWI Ltd., Canada

Filed Aug. 30, 1976, Ser. No. 720,044
Claims priority, application United Kingdom, Sept. 4, 1975, 36405/75
Int. Cl.² D21F 1/52; F16K 15/04
U.S. Cl. 162—217 14 Claims



1. An automatic adjustable bleed valve comprising a valve body having means defining a lower inlet opening and an upper outlet opening with a passageway interconnecting said inlet and outlet openings, said valve body having a long axis, a displaceable gravity actuated valve element mounted for guided movement in said passageway, a valve element seat internally of said valve body about said inlet opening for receiving said valve element in close seated contact thereon, stop means internally of said body adjacent said outlet opening to limit the displacement of said valve element whilst permitting fluid passage from said inlet opening to said outlet opening about said valve element, horizontally disposed support means for connecting said outlet opening to a vacuum system with said passageway being in communication with a vacuum chamber, and adjustment means between said valve body and said horizontally disposed support means to control the angular position of said long axis of said valve body with respect to the vertical to vary the vertical weight component of said valve element and thereby regulate the amount of vacuum required to cause said valve element to be displaced off its seat.

14. A method of controlling vacuum pressure in a suction box for a paper making machine comprising the steps of:

i. applying a vacuum to said suction box,

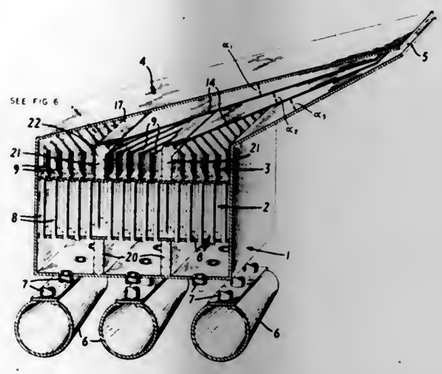
ii. connecting an adjustable automatic air bleed valve to said suction box to admit air in said box when vacuum pressure in said box exceeds a desired value, said bleed valve having an angularly displaceable valve body having a long axis, and

iii. adjusting the angular position of the long axis of said bleed valve with respect to the vertical to adjust its sensitivity and capacity to permit said admission of air at said desired value.

4,070,238
HEADBOX FOR DELIVERING A JET OF WELL DISPERSED FIBROUS STOCK

Douglas Wahren, Karlstad, Sweden, assignor to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Mar. 11, 1977, Ser. No. 776,667
Claims priority, application Sweden, Aug. 16, 1976, 7609140
Int. Cl.² D21F 1/02, 1/06
U.S. Cl. 162—343 14 Claims



1. A headbox for delivering a stock of fibers carried in a liquid to a web former, comprising a stock mixing section which includes (a) a rectifier stage having means defining a multiplicity of closely-spaced flow passages through which the stock flows in separate streams at a substantially higher velocity than the velocities of stock flow in other parts of the mixing section and (b) a fine-mixing stage downstream, relative to the direction of stock flow through the headbox, from the rectifier stage, the fine-mixing stage including closely-spaced planar lamellae disposed (1) substantially parallel to the medial axis in the flow direction of the fine-mixing stage and (2) oblique to a medial transverse plane of the fine-mixing stage that is defined by the said axis and by a medial line perpendicular to said axis and extending transversely of the fine-mixing stage, and a stock delivery nozzle communicating with the mixing section downstream from the fine-mixing stage and defined by opposed converging walls terminating in a slice opening.

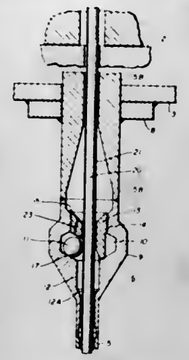
4,070,239
BALL CHECK VALVE

Frank Bevilacqua, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 23, 1976, Ser. No. 679,582
Int. Cl.² G21C 17/08; F16K 15/08
U.S. Cl. 176—19 R 5 Claims

5. An installation for measuring and controlling a nuclear reactor of which the core is situated in a pressurized reactor vessel, the installation having flux measuring instrumentation operatively connected to flux detectors contained within a tube or probe which is capable of penetrating into the core by sliding in a channel beneath said core, the channel having an axial bore and extending up through a lower wall of the reactor vessel, a valve body mounted on the channel, the valve body having an axial passage extended vertically through the valve body and aligned with the axial bore of the channel, a cavity formed within the valve body and axially aligned with the vertical passage, a ball valve element within the cavity, a seat formed on the upper end portion of the vertical passage extended through the lower part of the valve body and into the cavity, an insert member positioned within the cavity from above the ball valve element and having an axial bore aligned with the body passage and having a cut arranged to form with a lower surface of the cavity a track which is sized to receive the ball valve element as the ball valve element is positioned

from its engagement with seat to a location laterally removed from the axial passage of the body, the probe sized for upward insertion through the axial passage and valve seat to position the ball valve element from the seat and along the sloped track



to a position lateral of the axial passage, whereby the probe moves the ball valve element from the seat and lateral of the axial passage when inserted into the axial bore of the channel and the ball valve element falls onto the seat in a sealing relationship when the probe is removed to below the valve body.

4,070,240
SEAL CONTAINMENT SYSTEM

Ralph W. Kugler; Kenneth S. Gerkey, both of Mount Lebanon, and William H. Kasner, Penn Hills, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1977, Ser. No. 765,032
Int. Cl.² G21C 3/02
U.S. Cl. 176—66 4 Claims



1. An automated system for assembling nuclear fuel elements including transporting nuclear fuel elements between fuel element assembly stations comprising:

a fuel pellet load station containing fuel pellet loading apparatus and having an open horizontal slot in the side thereof for accommodating the insertion of the open end of said fuel element for loading fuel pellets into said fuel element;

a plug insertion station arranged near said fuel pellet load station containing end plugs and welding apparatus and having an open horizontal slot in the side thereof for accommodating the insertion of the open end of said fuel element for inserting said end plug into said open end of said fuel element thereby sealing said fuel pellets in said fuel element;

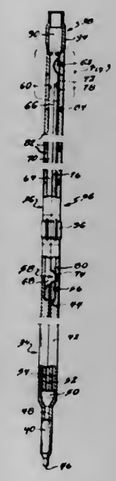
sealing means connected to said open horizontal slots of said assembly stations for connecting said assembly stations together and for sealing said open horizontal slots while said fuel element extends therethrough and into said assembly station; and,

transport means arranged along said sealing means for transporting said fuel elements between said assembly stations without removing said fuel element from within said sealing means, said sealing means limiting release of radioactive contaminants from within said assembly stations during said transport.

4,070,241
NUCLEAR REACTOR REMOVABLE RADIAL SHIELDING ASSEMBLY HAVING A SELF-BOWING FEATURE

William E. Pennell, Greensburg; Joseph E. Kalinowski, Smithton; Robert N. Waldby, New Stanton; John A. Rylatt, Monroeville, and Daniel V. Swenson, Greensburg, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 16, 1977, Ser. No. 769,371
Int. Cl.² G21C 11/00
U.S. Cl. 176—87 6 Claims



1. A self-bowing removable radial shielding assembly for a sodium-cooled-fast breeder reactor core comprising:

a. a relatively short elongated base section having a lower nozzle portion for inserting the assembly into a reactor core support structure and an upper portion having an axial opening;

b. an elongated flexible center section extending upward from the base section, the center section having an axial rod-shaped spine assembly having a lower end inserted into the axial opening in the base section and an upper end, said assembly being constructed of thermally sensitive bimetallic material whereby a predetermined increase in the temperature of the shielding assembly will cause the spine to bow laterally in a predetermined direction, a plurality of relatively short, tubular shaped shielding sections slidably mounted one above the other along the length of the axial spine, the shielding sections being movable longitudinally relative to each other as the spine bows in response to temperature variations; and

c. a short top section above the center section, mounted on the upper end of the axial spine and attached thereto for retaining the tubular sections on the spine.

4,070,242
METHOD FOR THE PREPARATION OF PROSTAGLANDIN SYNTHETASE

Sheikh Arshad Saeed, South Harrow, England, assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 23, 1977, Ser. No. 780,258
Int. Cl.² C07G 7/026
U.S. Cl. 195—66 R 7 Claims

1. A method for the preparation of prostaglandin synthetase from bovine seminal vesicles which comprises the steps of: homogenizing said vesicles with sufficient liquid medium to form an homogenate, subjecting said homogenate to low-speed centrifugation wherein said centrifugation is sufficient to form a solid phase and a liquid phase, and wherein said centrifuga-

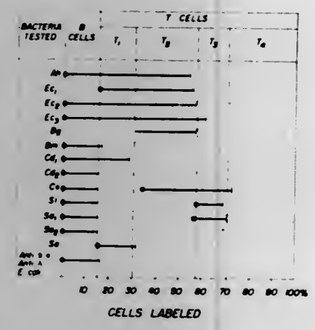
tion does not exceed about 1,000g, to obtain a supernatant fraction containing prostaglandin synthetase.

4,070,243

METHOD FOR DISTINGUISHING SUBPOPULATIONS IN A POPULATION OF MORPHOLOGICALLY INDISTINGUISHABLE CELLS

Marius C. Teodorescu, Oak Park; Eugene P. Mayer, and Sheldon Dray, both of Chicago, all of Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Aug. 30, 1976, Ser. No. 718,807
Int. Cl.² C12K *1/02, 9/00*
U.S. Cl. 195—79 **9 Claims**



1. A method for detecting, identifying and enumerating a subpopulation of leukocytes in a mixture of morphologically indistinguishable leukocytes having different membrane characteristics, which method comprises bringing said mixture into close contact with a previously selected strain of bacteria having an affinity for binding only to the cells of said subpopulation by a mechanism not involving the binding sites of any immunoglobulins on the surface of said leukocytes, and observing the presence of said bacteria bound to said subpopulation as a morphologically distinct marker for identification and enumeration of said subpopulation.

4,070,244

METHOD FOR PRODUCING UBIQUINONE-10

Yoshio Nakao, Ibaraki; Kazuaki Kitano, Suita; Isuke Imada, Izumi, and Hiroshi Morimoto, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 25, 1977, Ser. No. 772,332
Claims priority, application Japan, Feb. 27, 1976, 51-21513
Int. Cl.² C12D *13/02*
U.S. Cl. 195—81 **11 Claims**

1. A method for producing ubiquinone-10 which comprises; cultivating a microorganism which belongs to the genus Sporidiobolus or the genus Oosporidium and is capable of producing ubiquinone-10 in a culture medium containing an assimilable carbon source and a digestible nitrogen source until ubiquinone-10 is substantially accumulated; and recovering ubiquinone-10.

4,070,245

SUBSTRATE FOR THE QUANTITATIVE DETERMINATION OF PROTEOLYTIC ENZYMES

Lars Gundro Svendsen, Reinach, Switzerland, assignor to Pentapharm A.G., Basel, Switzerland

Filed June 18, 1976, Ser. No. 697,550
Claims priority, application Switzerland, June 23, 1975, 8224/75
Int. Cl.² G01N *31/14*; C07G *7/02*
U.S. Cl. 195—99 **18 Claims**

1. A chromogenic or fluorescent substrate for the quantitative determination of proteolytic enzymes of class E.C. 3.4.4. which split peptide chains on the carboxyl side of arginine and lysine in human and mammal body fluids in animal cell extracts and in glandular venoms of cold-blooded animals, which has the structure

$$R^1 - Gly - Pro - X - NH - R^2 \qquad I$$

wherein R^1 represents hydrogen or a blocking acyl or sulfonyl group, R^2 represents an aromatic hydrocarbon group which may carry substituents, and X represents an arginyl or lysyl group, —NH—R^2 being a chromogenic or fluorescent group, and which, when subjected to the proteolytic action of the said enzymes, yields a split product of formula NH_2—R^2 the quantity of which is measurable by photometric, spectrophotometric or fluoroescence-photometric methods.

4,070,246

REACTIVE MATRICES

John Frederick Kennedy, and Martin Frank Chaplin, both of Birmingham, England, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 9, 1976, Ser. No. 675,110
Int. Cl.² G01N *33/00*
U.S. Cl. 195—99 **7 Claims**

1. A composition comprising a water-insoluble metal substrate, the surface of which is coated with a condensation product of an aminobenzoic acid with an aldehyde, which composition is suitable for coupling with an organic compound having biological activity.

4,070,247

DIAGNOSTIC MEDIA

Stanton C. Burt, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Mar. 30, 1977, Ser. No. 782,612
Int. Cl.² C12K *1/04*
U.S. Cl. 195—100 **9 Claims**

1. In a diagnostic medium for culturing micro-organisms comprising at least one nutrient, the improvement comprising incorporating therein an amount of isopropyl-beta-D-Thiogalactopyranoside effective to induce the production of beta galactosidase in lactose negative strains of *E. Coli.*

7. A method for classifying microorganisms comprising the steps of:

inoculating the micro-organism onto a diagnostic medium comprising at least one nutrient and an amount of isopropyl-beta-D-thiogalactopyranoside effective to induce the production of beta galactosidase in lactose negative strains of *E. coli;*

incubating te inoculated medium; and

assaying the inoculated medium for beta-galactosidease.

4,070,248

DEVICE FOR MEASURING FRACTIONARY VOLUMES OF LIQUID SAMPLES

Jean-Michel Schmidt, Orgeval, France, assignor to Intertechnique, Plaisir, France

Continuation-in-part of Ser. No. 582,764, June 2, 1975, Pat. No. 3,986,534. This application Aug. 11, 1976, Ser. No. 713,487
Claims priority, application France, July 30, 1974, 74.26426
The portion of the term of this patent subsequent to Oct. 19, 1993, has been disclaimed.
Int. Cl.² C12K *1/04*; B65B *3/04*
U.S. Cl. 195—103.5 K **11 Claims**

1. A device for accurately measuring predetermined volumes of a liquid sample, comprising:

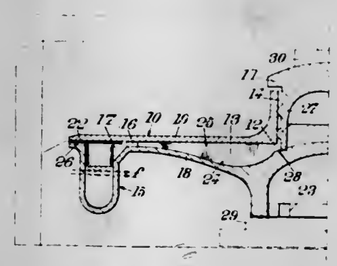
a casing having a central axis of rotation which is kept vertical in operation, a concentric upwardly open chamber to receive said liquid sample, a plurality of test cells having transparent side walls, distributed around said chamber and spaced radially therefrom, and a plurality of radial pockets each having an inner end communicating with said chamber and to be filled by liquid flowing from said chamber and an outer end communicating with a respective one of said cells by means defining a capillary constriction;

and displaceable closure means arranged to separate said chamber from said pockets and to retain, in each of said pockets, the liquid volumes passed by gravity from said chamber to said pockets respectively,

wherein a vent is formed in the wall of each said cell in the upper portion thereof.

11. A method for testing susceptibility of bacteria in a liquid sample to a plurality of different antibiotics, comprising the steps of:

providing a rotatable casing defining an upwardly open central chamber concentric with the rotational axis of said casing, a plurality of radial pockets communicating at the inner ends thereof with said central chamber for gravity



flow of liquid from said chamber into each of said pockets, the outer ends of each of said pockets communicating by means of a flow restriction with each of the plurality of vented test cells formed in the rotatable casing, some at least of said cells containing a bacteria growing medium and an antibiotic in lyophylised form,

filling said central chamber with said liquid sample until the pockets are filled up to said constrictions by gravity flow from said chamber,

inserting said closure means to isolate said predetermined volumes of liquid in said pockets,

rotating said casing about said axis to create centrifugal forces sufficient to overcome said capillary forces and to cause transfer of said volumes from said pockets into said test tubes,

incubating said bacteria for a predetermined time period, and optically determining the growth of bacteria in each said cell.

4,070,249

APPARATUS FOR COMPENSATING FOR PRESSURE WITHIN A BIOLOGICAL TEST DEVICE

Pierre R. Janin, New York, and Holger Hagen, Smithtown, both of N.Y., assignors to American Home Products Corporation, New York, N.Y.

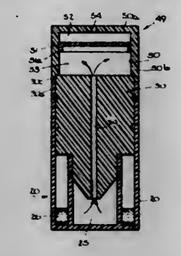
Filed June 8, 1976, Ser. No. 693,836
Int. Cl.² C12K *1/04*
U.S. Cl. 195—127 **8 Claims**

1. Apparatus for containing fluid vented from the interior of a biological testing device during use thereof, the testing device having a hollow body portion and a member for closing off the interior of the body portion, the closing member having an open passage extending from the interior of the body portion to the external surface of the member for venting fluid from the interior of the body portion, the apparatus comprising:

means forming a tubular chamber having an opening at each of the end portions oppositely disposed along the length of the tubular chamber and having a disc retaining means at its upper end portion;

means for mounting an end portion of the tubular chamber on the external surface of the closing member with an opening of the tubular chamber in communication with the open passage of the closing member;

a disc disposed within the tubular chamber and having its oppositely disposed sides intersecting the length of the tubular chamber, the disc having its periphery in a sliding and sealing engagement with the inner surface of the tubular chamber, the disc being adapted to be displaced



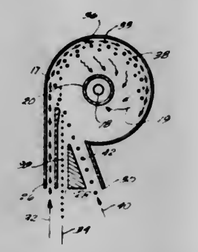
along the length of the tubular chamber in response to fluid vented by the open passage from an initial position adjacent the end portion thereof mounted on the external surface of the closing member by the mounting means, the displacement of the disc forming a sealed volume within the tubular chamber in which fluid vented by the open passage can be contained.

4,070,250

PYROLYSIS OF CARBONACEOUS MATERIALS IN A DOUBLE HELIX CYCLONE

Charles K. Choi, Claremont, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed June 25, 1976, Ser. No. 700,001
Int. Cl.² B01D *45/12*; C10B *1/00, 49/16*; C10G *1/00*
U.S. Cl. 201—12 **23 Claims**



1. In a process for the pyrolysis of carbonaceous materials in which the carbonaceous material is primarily pyrolyzed by heat transferred thereto from a high temperature particulate solid source of heat to yield as products of pyrolysis, a pyrolytic vapor containing hydrocarbons and a particulate carbon containing solid residue, the improved method of achieving pyrolysis which comprises the steps of:

a. essentially tangentially introducing to and passing along a path formed by the curved inner surface of a cyclone reaction-separation zone having a vapor outlet at one end and a solids outlet at the base thereof, a high velocity, high temperature stream of the particulate solid source of heat, while;

b. introducing to the cylone reaction-separation zone a low velocity stream of carbonaceous material in a flow path essentially parallel to the flow path of the high velocity stream of the particulate solid source of heat, wherein the high velocity stream of the particulate solid source of heat serves to prevent carbonaceous material from contacting

and agglomerating on the inner surface of the cyclone reaction-separation zone, while;

c. introducing to the cyclone reaction-separation zone into at least the entering path of the low velocity stream of carbonaceous material, a low velocity, high temperature stream of the particulate solid source of heat an an angle inclined toward the path of travel of carbonaceous material to penetrate and initiate pyrolysis of the carbonaceous material, the introduced quantity of particulate source of heat in the low velocity and high velocity of streams of particulate solid source of heat being sufficient to raise the carbonaceous material to a pyrolysis temperature of at least about 600° F; and

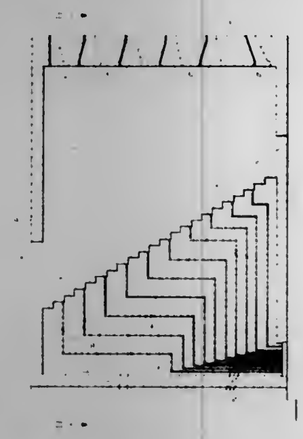
d. separating a gaseous stream containing the pyrolytic vapor from a solids mixture including the particulate solid source of heat and the carbon containing solid residue by the formation of flow patterns of each by action of induced centrifugal forces.

4,070,251

INCLINED CHAMBER COKE OVEN

Kurt Prange, Hattingen; Friedrich Isermann, Essen; Ernst Hasenäcker, Hattingen, and Manfred Blase, Essen, all of Germany, assignors to Didier Engineering GmbH., Essen, Germany

Filed Dec. 17, 1976, Ser. No. 751,711
Claims priority, application Germany, Dec. 30, 1975, 2559131
Int. Cl.² C10B *1/08, 5/04, 11/00*
U.S. Cl. 202—130 **11 Claims**



1. An inclined chamber coke oven, particularly for the coking of coal in briquette form, said oven comprising:

an oven chamber defined by a horizontal chamber ceiling, a heating side, a coke removal side, a chamber floor inclined downwardly from said heating side to said coke removal side, and opposite lateral heating walls;

a plurality of vertical heating flues within each of said heating walls, each of said heating flues having a floor, the floors of said heating flues being vertically staggered such that a line joining said floors is inclined in a direction parallel to said chamber floor;

each of said floors having extending therein a gas feed nozzle;

upper ends of adjacent pairs of said heating flues being joined by guide openings, said guide openings being vertically staggered such that a line joining said guide openings is inclined by an inclination less than that of said chamber floor;

each of said heating flues having therein central and upper air inlet openings, said central and upper openings each being vertically staggered such that a line joining said central openings and a line joining said upper openings are each inclined by an inclination less than that of said chamber floor but greater than that of the line joining said guide openings.

4,070,252

PURIFICATION OF CRUDE TITANIUM TETRACHLORIDE

James Paul Bonsack, Aberdeen, Md., assignor to SCM Corporation, New York, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,135
Int. Cl.² C01G *23/02;* B01D *3/34*
U.S. Cl. 203—29 **10 Claims**

1. A method for separating contaminant chloride of niobium and/or tantalum from crude titanium tetrachloride vehicle contaminated therewith, which comprises:

establishing a reaction mixture of said crude titanium tetrachloride vehicle with water in a proportion of water not substantially above 1 mole per mole of said contaminant chloride present;

maintaining said vehicle in liquid state until a solid hydration product of said contaminant chloride forms with essentially no net reaction of titanium tetrachloride in said vehicle with said water; and

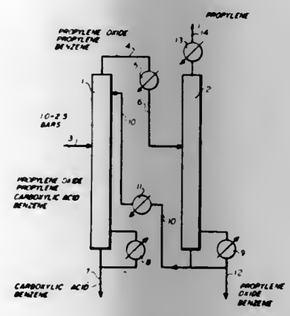
separating said solid hydration product of said contaminant chloride from said vehicle.

4,070,253

PROCESS FOR SEPARATING SOLUTIONS CONTAINING PROPYLENE OXIDE

Willi Hofen, Rodenbach; Rolf Wirthwein, Hanau; Karl-Hermann Reissinger, Leverkusen, and Jorg Krekel, Essen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Deutsche Gold- und Silber-Scheideanstal vormals Roessler, Frankfurt am Main, both of Germany

Filed Apr. 28, 1976, Ser. No. 678,826
Claims priority, application Germany, Apr. 30, 1975, 2519292
Int. Cl.² B01D *3/10;* C07D *301/02*
U.S. Cl. 203—75 **20 Claims**



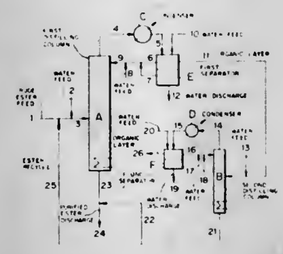
1. Process for separating a solution comprising propylene oxide, propylene, carboxylic acid containing 1–4 carbon atoms and benzene, by distillation, comprising distilling the solution in a first distillation stage to provide an overhead product rich in propylene and propylene oxide and containing 20–70% by weight of benzene and a bottoms product rich in carboxylic acid and containing the remaining benzene, at a pressure of 1.0–2.5 bars, and distilling said overhead product in a second distillation stage to provide an overhead product comprising propylene and a bottoms product comprising benzene rich in propylene oxide and recycling part of the bottoms of the second distillation stage to the first distillation as reflux for the first distillation stage.

4,070,254

PROCESS FOR PREPARING A PURIFIED METHACRYLIC ACID ESTER

Ryoji Sato, Kosugi, and Takanori Musha, Takaoka, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed June 7, 1976, Ser. No. 693,444
Claims priority, application Japan, June 10, 1975, 50-70005
Int. Cl.² B01D *3/36;* C07C *69/52*
U.S. Cl. 203—83 **11 Claims**



1. A process for preparing a purified methacrylic acid ester from a crude methacrylic acid ester containing an isobutyric acid ester as an impurity which comprises the steps of:

1. firstly distilling said crude methacrylic acid ester in the presence of water to separate as the distillate the isobutyric acid ester and water together with part of the methacrylic acid ester and recover as the bottoms a first purified methacrylic acid ester,

2. separating said distillate into an aqueous phase and an organic phase consisting substantially of the isobutyric acid ester and the methacrylic acid ester, and

3. secondly distilling the thus separated organic phase in the presence of water to separate as the distillate the isobutyric acid ester and water together with a very small amount of the methacrylic acid ester and recover as the bottoms a second purified methacrylic acid ester, thereby obtaining the purified methacrylic acid ester, wherein the water is present in each of the steps (1) and (3) in such amounts that substantially the whole of the isobutyric acid ester contained in the crude methacrylic acid ester is distilled off while minimizing the amount of the methacrylic acid ester distilled off.

4,070,255

PROCESS FOR ELECTROLYTICALLY COLORING ALUMINUM AND ALUMINUM ALLOYS

Mutsuo Hasegawa, Uozu; Kazuo Aikawa, Toyama, and Katsuyuki Nagata, Uozu, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 3, 1976, Ser. No. 663,568
Claims priority, application Japan, Mar. 6, 1975, 50-26518
Int. Cl.² C25D *11/22*
U.S. Cl. 204—42 **7 Claims**

1. A process for electrolytically coloring aluminum or aluminum alloy which comprises anodizing a desired basis metal, and electrolyzing the anodized basis metal in an acidic aqueous electrolyte by use of a constantly applied alternating current, the voltage at which the anodized basis metal is electrolyzed being lowered at least once by a value of from about 1 to 10 volts but not to a sustained zero potential in the course of the electrolysis.

4,070,256

ACID ZINC ELECTROPLATING BATH AND PROCESS

Grace F. Hsu, Somers, and Jaan-Jiue Fong, Tolland, both of Conn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed June 16, 1975, Ser. No. 587,147
Int. Cl.² C25D *3/22*
U.S. Cl. 204—55 R **7 Claims**

1. An aqueous ammonium ion-free electroplating bath for depositing zinc comprising about 4.0 to about 100.0 grams per liter of zinc ion, from about 15.0 to about 250.0 grams per liter of an ammoniumfree electrolyte, from about 2.0 to about 40.0 grams per liter of a non-ionic polyoxyalkylated compound selected from the group consisting of alkoxylated alkyl phenols, alkoxylated alkyl naphthols, alkoxylated aliphatic monohydric alcohols, alkoxylated polyoxypropylene glycols, alkoxylated 2,4,7,9-tetramethyl-5-decyne-4,7-diol, alkoxylated ethylene diamine, alkoxylated fatty acids, alkoxylated amides, and alkoxylated esters, from about 0.1 to about 15.0 grams per liter of a carboxylic acid, and at least about 1.0 grams per liter of boric acid or a soluble salt thereof, the pH of said bath being from about 3.0 to about 6.5.

4,070,257

ELECTROLYTIC PROCESS USING NOVEL DIAPHRAGM

Kensuke Motani; Shunji Matuura, and Ryohei Kataoka, all of Tokuyama, Japan, assignors to Electrode Corporation, Chardon, Ohio

Continuation of Ser. No. 398,465, Sept. 18, 1973, abandoned, which is a division of Ser. No. 170,999, Aug. 11, 1971, abandoned. This application Jan. 29, 1976, Ser. No. 653,397
Claims priority, application Japan, Aug. 13, 1970, 45-70397
Int. Cl.² C25B *1/26, 13/06, 13/08*
U.S. Cl. 204—98 **3 Claims**

1. In an electrolysis process for brine wherein a diaphragm is utilized in an electrolytic cell, the improvement wherein said diphragm is of a size of at least 1 cm in length in at least two directions, said diaphragm having permeability to water of 0.003 - 0.32 ml/cm²/hr/cm.H_2O and comprising a diaphragm base composed of inorganic fibers selected from the group consisting of asbestos and graphite fibers and a fluorine-containing resin, said fluorine-containing resin being present in an amount of 0.5 - 60% by weight based on the weight of said diaphragm, and said diaphragm being prepared by homogeneously blending a dispersion of said inorganic fibers with said fluorine-containing resin, forming said blend into a film, and then heat treating said film so that said resin is locally sintered and adhered to the film.

4,070,258

DUAL CURE CATHODIC ELECTROCOATING COMPOSITIONS

Vincent Daniel McGinniss, Valley City, Ohio, assignor to SCM Corporation, New York, N.Y.

Division of Ser. No. 689,104, May 24, 1976. This application Mar. 8, 1977, Ser. No. 775,617
Int. Cl.² C08F *8/00*
U.S. Cl. 204—159.15 **10 Claims**

1. A cathodic electrocoating composition dispersed in an aqueous electrocoating bath for electrodeposition onto a cathode substrate disposed within said bath for forming a curable electrodeposited coating on said cathode substrate, comprising:

a. a water-dispersed electrocoating polymer having at least about 1% by weight pendant mercaptan groups;

b. a water-dispersed electrocoating polymer having at least about 1% by weight pendant tertiary amine groups, each said amine group being attached to an alpha carbon of said polymer;

c. at least about 5% by weight of said polymers of an alpha-, beta- ethylenically unsaturated carbonyl cross-linking

agent having at least two alpha-, beta-ethylenically unsaturated carbonyl groups; and

d. at least about 0.5% ultraviolet photosensitizer by weight of said polymers; said pendant amine groups and said pendant mercaptan groups together comprising at least about 5% by weight of said polymers, said electrodeposited coating of said electrocoating composition adapted to cure by heating said electrodeposited coating on said cathode substrate to cross-link said mercaptan groups with said cross-linking agent to partially cure said coating followed by irradiating with ultraviolet radiation said partially cured coating to cross-link said alpha carbon of said polymer having said pendant amine groups with said cross-linking agent to fully cure said coating on said cathode substrate.

4,070,259

RADIOCURABLE COMPOSITIONS

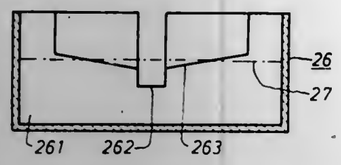
Michel De Poortere, Brussels; Paul Dufour, Ruisbroek, and August Vrancken, Dworp, all of Belgium, assignors to U C B, Societe Anonyme, Brussels, Belgium

Filed July 29, 1975, Ser. No. 600,196
Claims priority, application Belgium, Aug. 29, 1974, 16150
Int. Cl.² C08F *2/48, 2/50, 2/46*
U.S. Cl. 204—159.16 **19 Claims**

1. A radiation-curable composition which comprises a Diels-Alder reaction product between at least one dienophile (A) having the formula

$$Z-CH=CH-COOY(OCOCH=CH_2)_n \\ \quad\quad\quad\

and a circulation pump returning the liquid flowing through said slots to the interior of the bath, the improvement of at least one of said vertical slots being increased in width at a point spaced from a slot bottom, the increase in width forming a fixed weir extending outwardly from said slot above the slot



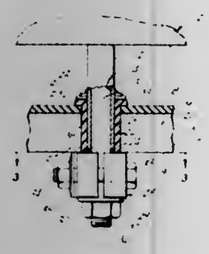
bottom and below side walls of the bath, vertically adjustable means supporting said treatment bath allowing vertical adjustment of the bath to locate the weir at a desired height with respect to the level of the items, and the weir having overflow top portions thereof positioned at a height of desired liquid level in the bath.

4,070,266

CONNECTION MEANS FOR ANODE POSTS AND CONDUCTORS TO ELECTROLYTIC CELLS

Peter A. Danna, Milford, and Richard D. Burt, Westport, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 6, 1973, Ser. No. 422,211
Int. Cl.² C25B *1/26*
U.S. Cl. 204—266 **12 Claims**



1. An electrolytic diaphragm cell for the electrolysis of brine, comprising:

a. a laminated cell base having a non-metallic corrosion resistant upper layer secured to a lower metallic supporting layer and further having an exterior surface and an interior surface and a plurality of walls defining a plurality of holes communicating said interior and exterior surfaces;
b. a cell body secured to said cell base;
c. a plurality of diaphragm coated cathodes secured to said cell body;
d. a plurality of anodes, each having a metallic conductive surface;
e. a plurality of metal anode posts positioned in at least one straight row and extending through said holes of said cell base and secured to respective ones of said conducting surfaces;
f. at least one conducting means for each of said straight rows including at least one pair of spaced conductive bars having a series of pairs of adjacent grooves for receiving and being secured to each of said anode posts in at least one of said rows responsive to the securing of each of said pairs of bars together;
g. bus bar attachment means, secured to one end of said conducting means, for attaching a bus bar to said conducting means;
h. a plurality of conductor leaf means, secured to said conducting means in decreasing thicknesses from said bus bar attachment means to the opposite side of said cell base, for achieving a more uniform current distribution among said anode posts;
i. a flange secured to each of said anode posts at a position above said interior surface of said cell base, and
j. a flanged sleeve, inserted into each of said holes of said cell base and lying between said anode post and said cell base, each of said sleeves having:
   i. a lower sleeved portion exteriorly joined to one of said walls of said cell base, and
   ii. an upper flanged portion having a bottom joined to said interior surface.

4,070,267

COAL PROCESSING SYSTEM FOR REDUCING THE AMOUNT OF INSOLUBLE COAL PRODUCTS IN A LIGHT FRACTION STREAM

Robert E. Leonard, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Oklahoma

Filed June 1, 1976, Ser. No. 691,576
Int. Cl.² C10G *1/04*
U.S. Cl. 208—8 **17 Claims**

1. A process for reducing the amount of insoluble coal products in a light fraction stream portion of a feed mixture comprising:

providing a feed mixture comprising a dissolving solvent, insoluble coal products and soluble coal products;
introducing the feed mixture into a first separation zone provided with a coalescing section;
maintaining the temperature level in the first separation zone in a range of from about 525° F. to about 630° F.;
maintaining the pressure level in the first separation zone in a range of from about 700 psig to about 1000 psig;
separating the feed mixture in the first separation zone into a first heavy fraction comprising the insoluble coal products and a first light fraction comprising the soluble coal products, the dissolving solvent and some insoluble coal products entrained in small liquid droplets;
contacting at least the first light fraction in the first separtion zone with the coalescing section to coalesce the small liquid droplets containing entrained insoluble coal products present in the first light fraction into larger liquid droplets which separate from the first light fraction in the first separation zone for reducing the amount of insoluble coal products in the first light fraction to be withdrawn from the first separation zone;
withdrawing the first light fraction from the first separation zone; and
withdrawing the first heavy fraction from the first separation zone.

4,070,268

SOLVENT RECOVERY IN A COAL DEASHING PROCESS

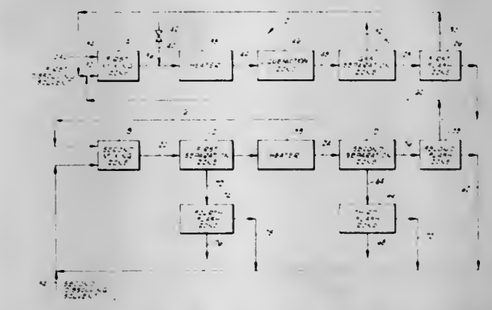
Robert E. Davis, Oklahoma City, and Roger A. Baldwin, Warr Acres, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed June 1, 1976, Ser. No. 691,579
Int. Cl.² C10G *1/04*
U.S. Cl. 208—8 **8 Claims**

1. A process comprising:

mixing in a first mixing zone a first dissolving solvent with coal;
solubilizing the coal at elevated temperatures and pressures and flashing the mixture comprising the first dissolving solvent, the soluble coal products and the insoluble coal products to provide a prepared mixture;
mixing in a second mixing zone the prepared mixture with a second dissolving solvent to provide a feed mixture;
introducing the feed mixture into a first separation zone;
maintaining the temperature level in the first separation zone in the range of from about 460° F. to about 620° F., and maintaining the pressure level in the first separation zone in the range of from about 650 psig to about 1000 psig;

separating the feed mixture in the first separation zone into a first heavy fraction and a first light fraction comprising the soluble coal products, some of the first dissolving solvent and some of the second dissolving solvent;
withdrawing the first light fraction from the first separation zone;
heating the first light fraction;
introducing the first light fraction into a second separation zone;
maintaining the temperature level in the second separation zone in the range of from about 630° F. to about 900° F., and maintaining the pressure level in the second separation zone in the range of from about 650 psig to about 1000 psig;



separating the first light fraction in the second separation zone into a second light fraction comprising some of the second dissolving solvent and some of the first dissolving solvent, and a second heavy fraction;
withdrawing the second fraction from the second separation zone;
flashing the second light fraction to produce one stream comprising the first dissolving solvent and one other stream comprising the second dissolving solvent;
passing the second dissolving solvent separated from the second light fraction to the second mixing zone for mixing with the prepared mixture to aid in providing the feed mixture; and
passing the first dissolving solvent separated from the second light fraction to the first mixing zone for mixing with the coal to aid in providing the prepared mixture.

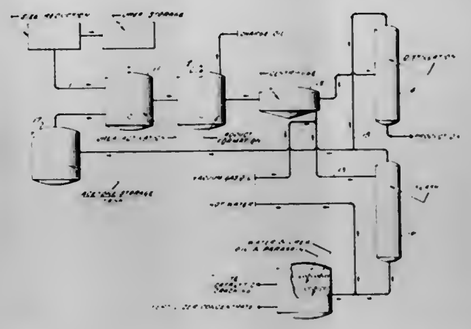
4,070,269

UREA ADDUCTION PROCESS FOR REFRIGERATION OIL MANUFACTURE

Ronald W. Reynolds; John D. Tice, both of Wilmington, Del., and John S. Nutter, Glen Mills, Pa., assignors to Suntech, Inc., Wayne, Pa.

Filed Oct. 12, 1976, Ser. No. 731,272
Int. Cl.² C10G *29/22, 43/02*
U.S. Cl. 208—25 **5 Claims**

1. In the process of manufacturing a refrigeration oil where an oil stock is dewaxed by forming a complex with urea in the presence of an activator, the improvement of slurrying the separated urea complex with a vacuum gas oil at a temperature sufficient to vaporize said activator which is recycled for reuse, treating the activator-free urea complex with water in



the presence of said gas oil to break said complex and separating a water-urea mixture and an oil and paraffin mixture.

4,070,270

HYDROCRACKING OF HYDROCARBONS OVER TRI-METALLIC CATALYST

Richard E. Rausch, Mundelein, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 696,165, June 14, 1976, Pat. No. 4,014,783, which is a division of Ser. No. 585,265, June 9, 1975, Pat. No. 3,996,304, which is a continuation-in-part of Ser. No. 480,793, June 19, 1974, Pat. No. 3,898,154, which is a continuation-in-part of Ser. No. 376,841, July 5, 1973, Pat. No. 3,846,283, which is a continuation-in-part of Ser. No. 201,576, Nov. 23, 1971, Pat. No. 3,745,112, which is a continuation-in-part of Ser. No. 807,910, March 17, 1969, Pat. No. 3,740,328. This application Mar. 9, 1977, Ser. No. 776,041
Int. Cl.² C10G *13/06;* B01J *27/06, 29/12*
U.S. Cl. 208—111 **7 Claims**

1. A process for hydrocracking a hydrocarbonaceous charge stock into lower molecular weight hydrocarbons, which process comprises reacting said charge stock with hydrogen at hydrocracking conditions, and in contact with a catalytic composite of a porous alumina-silica carrier material, a platinum or palladium component, a rhodium component and a tin component, and separating the resulting reaction zone effluent to recover said lower molecular weight hydrocarbons.

4,070,271

CATALYTIC OXIDATION OF MERCAPTANS AND REMOVAL OF NAPHTHENIC ACIDS, CATALYST TOXINS, AND TOXIN PRECURSORS FROM PETROLEUM DISTILLATES

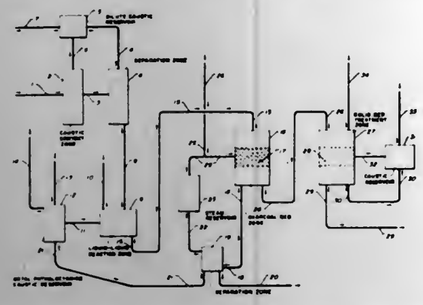
David H. J. Carlson, Park Ridge, and Peter Urban, Northbrook, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 615,449, Sept. 22, 1975, abandoned. This application Mar. 4, 1977, Ser. No. 774,283
Int. Cl.² C10G *27/06, 19/02*
U.S. Cl. 208—206 **14 Claims**

1. A process for the catalytic oxidation of mercaptans in a sour petroleum distillate containing difficultly oxidizable mercaptans, catalyst toxins and toxin precursors which comprises:

a. treating said distillate in contact with an alkaline solution and extracting naphthenic acids from said distillate, said alkaline solution having a pH of from about 8 to about 10;
b. treating at least a portion of the substantially naphthenic acids-free distillate in contact with an oxidizing agent and an alkaline metal phthalocyanine solution having a pH of from about 9 to about 14, and oxidizing the residual catalyst toxins and toxin precursors contained therein, and converting a portion of the mercaptans to disulfides;
c. passing at least a portion of the resulting reaction mixture from step b through a bed of solid adsorbent particles and

adsorbing said oxidized toxins, toxin precursors, and the metal phthalocyanine solution on said adsorbent;
d. treating at least a portion of the toxin-free and toxin precursor-free distillate from step c in contact with an alka-



line solution and a supported metal phthalocyanine catalyst in the presence of an oxidizing agent, said alkaline solution having a pH of from about 9 to about 14; and
e. recovering the resultant distillate from step d substantially free of mercaptans.

4,070,272
HYDRODESULFURIZATION OF HYDROCARBON DISTILLATE WITH A CATALYST COMPOSITE OF CARRIER, PT/PD, RH AND SN

Richard E. Rausch, Mundelein, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 696,165, June 14, 1976, Pat. No. 4,014,783, which is a division of Ser. No. 585,265, June 9, 1975, Pat. No. 3,996,304, which is a continuation-in-part of Ser. No. 480,793, June 19, 1974, Pat. No. 3,898,154, which is a continuation-in-part of Ser. No. 376,841, July 5, 1973, Pat. No. 3,846,283, which is a continuation-in-part of Ser. No. 201,576, Nov. 23, 1971, Pat. No. 3,745,112, which is a continuation-in-part of Ser. No. 807,910, March 17, 1969, Pat. No. 3,740,328. This application Mar. 9, 1977, Ser. No. 776,072
Int. Cl.² C10G *23/04*
U.S. Cl. 208—217 7 Claims

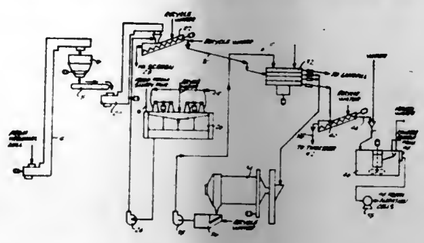
1. A process for desulfurizing a sulfurous hydrocarbon distillate containing mono-olefinic hydrocarbons and aromatics, which process comprises reacting said distillate with hydrogen, in contact with a ctalytic composite a carrier selected from the group consisting of alumina, alumina-boria, silica-alumina, chromia-alumina, alumina-silica-boron phosphate and crystalline aluminosilicate, a platinum or palladium component, a rhodium component and a tin component.

4,070,273
GLASS RECOVERY

Booker W. Morey, Pasadena, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed Aug. 11, 1975, Ser. No. 603,868
Int. Cl.² B03B *1/00*
U.S. Cl. 209—3 12 Claims

4. In a process for the treatment of solid waste which includes forming a glass-rich fraction containing glass and inorganic and organic constituents, the method of recovery of purified glass from the glass-rich fraction which comprises:
a. passing the glass-rich fraction to a classifier zone to separate the organic constituents from the glass-rich fraction;
b. passing the organics-free, glass-rich fraction to a screen separation zone to reject coarse particles of a size greater than about ¼ inch;
c. screening the remainder of the particles from step (b) into a first glass-rich fraction containing particles of a size greater than about 20 mesh and a second glass-rich fraction containing particles of a size less than about 20 mesh;
d. comminuting the first glass-rich fraction containing particles greater than about 20 mesh;
e. recycling the comminuted particles back to the screen separation zone and repeating steps (b) and (c);
f. classifying screened particles finer than 20 mesh to remove fine particles of a size less than about 325 mesh; and

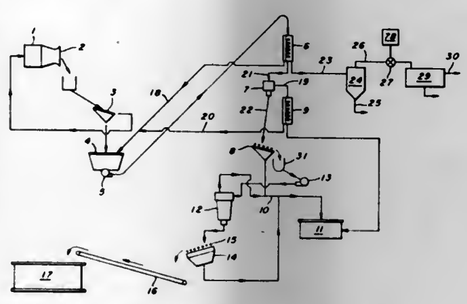


g. subjecting the resultant mixture of particles in the size range of about 20 mesh to about 325 mesh to froth flotation in the presence of at least a beneficiating amount of a collector reagent for glass to form a float containing predominantly glass and an essentially glass-free tailing.

4,070,274
COARSE CONCENTRATED IRON ORE FOR CATALYTIC PURPOSES

Roy E. Bryson, Port Cartier, Canada, assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 11, 1976, Ser. No. 665,846
Int. Cl.² B03B *7/00*
U.S. Cl. 209—10 11 Claims

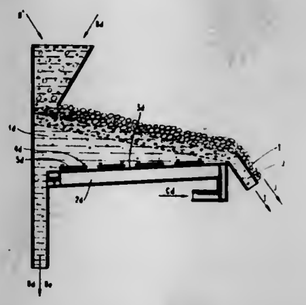


1. Process for making a coarse, low-fines iron ore concentrate comprising
a. concentrating, by gravity and density in a spiral concentrator, a ground and screened iron ore to obtain tailings and a first coarse concentrate having about 10 to about 25% by weight particles of −6 to +14 mesh and about 75 to about 90% −20 mesh,
b. hydraulically sizing said first coarse concentrate to obtain a second coarse concentrate having about 15 to about 40% particles of −6 to +14 mesh and about 60 to about 85% −20 mesh,
c. agitating at least a portion of said second coarse concentrate to separate cohering particles, to obtain a third coarse concentrate, and
d. size-separating said third coarse concentrate to obtain a product containing at least 60% particles in the range of about −6 to +14 mesh and up to about 1% −20 mesh.

4,070,275
MATERIAL TREATING APPARATUS INCLUDING PNEUMO-HYDRAULIC VIBRATOR

Stoycho Mitrev Stoev; Metodi Stoyanov Metodiev; Lyubomir Vladimirov Kuzev; Petko Georgiev Vedrichkov; Ivan Mitrev Sapunarov; Vassil Vladimirov Vassilev; Spas Petkov Dimitrov; Vihar Assenov Gasharov; Sheko Kolev Russev, and Kostadin Georgiev Mitrev, all of Sofia, Bulgaria, assignors to Vish Minno-Geoloshki Institute-Nis, Sofia, Bulgaria

Division of Ser. No. 572,457, April 28, 1975, abandoned. This application May 20, 1976, Ser. No. 688,268
Claims priority, application Bulgaria, Feb. 19, 1974, 25837
Int. Cl.² B03B *7/00*
U.S. Cl. 209—44 1 Claim



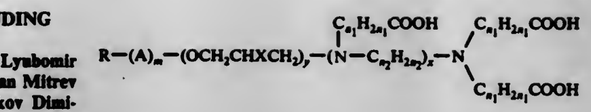
1. An apparatus for stratifying ore in particulate form suspended in a solution in accordance with the density of the ore particles and for washing the crude ore particles, such apparatus having a working cell for receiving a solution having ore particles to be treated, the improvement which comprises a gas cell disposed at least partially below said working cell, partition wall means separating the working cell and the gas cell and having at least one horizontal aperture therein for providing vertical communication between the working cell and the gas cell, a valve associated with the partition wall means and having a valve element disposed above the aperture and normally urged into a closed position by the weight of the liquid in the working cell when the solution having ore particles to be treated is introduced into the working cell, means for introducing a pressurized gas into said gas cell to urge said valve element against the force of the liquid to open said valve against the force of the liquid until sufficient gas pressure escapes into the working cell to cause the weight of the liquid to again close the valve, thereby producing a repetitive vibration of the valve element and a corresponding repetitive pressure surge within the liquid in the working cell, at least one inclined sieve mounted in the working cell above the valve, means for feeding particulate ore onto the sieve, and means for discharging stratified ore particles.

4,070,276
FLOTATION PROCESS OF LEAD-, COPPER-, URANIUM- AND RARE EARTH MINERALS

Per Gunnar Broman, Sala; Per Gudmar Kihlstedt, and Carl Du Rietz, both of Bromma, all of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Filed Jan. 9, 1976, Ser. No. 647,676
Claims priority, application Sweden, Jan. 15, 1975, 7500421
Int. Cl.² B03D *1/02*
U.S. Cl. 209—166 6 Claims

1. A process for the flotation of oxides and sulfides of lead copper, uranium, and rare earth minerals and ores, which comprises subjecting an aqueous pulp of the mineral or ore to a froth flotation to float said minerals and ores from a gangue in the presence of a tertiary amine flotation agent having the general formula:

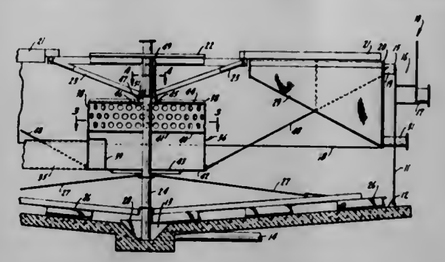


wherein:
R is an aliphatic hydrocarbon group having from about six to about twentyfour carbon atoms;
A is an oxyalkylene group having from about two to about four carbon atoms;
x is selected from the group consisting of hydrogen and hydroxyl;
m is a number within the range from 0 to about 10;
n_1 is a number within the range from 1 to about 4;
n_2 is 1, 2 or 3;
x is a number within the range from about 0 to about 4; and
y is 0 or 1;
the sum of $m + y$ being within the range from 1 to about 11; and salts thereof.

4,070,277
APPARATUS FOR SEPARATING SOLIDS FROM LIQUIDS

Stephen Allen Uban, Lenexa, and Donald George Mason, Overland Park, both of Kans., assignors to Ecodyne Corporation, Lincolnshire, Ill.

Filed Feb. 22, 1977, Ser. No. 770,473
Int. Cl.² B03D *1/14*
U.S. Cl. 209—168 10 Claims



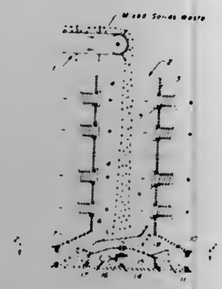
1. Apparatus for separating solids from liquids comprising a vessel having a clarified liquid outlet conduit, means at its bottom for collecting settled solids for disposal through a first solids outlet conduit, means for collecting floatable solids and for passing such floatable solids through a second solids outlet conduit, and means for raising such floatable solids towards the surface of said liquid comprising an enclosure submerged below the surface of said liquid having a perforated wall, inlet means for feeding a mixture of solids, liquid and gas bubbles in the size range of 25 - 50 microns into the interior of said enclosure, means for preventing escape of gas bubbles into said vessel except through the perforations in said wall comprising a top closure spanning said enclosure and a pipe passing through said top closure and extending above the surface of said liquid so as to vent the interior of said enclosure to the atmosphere, the relative volume of said enclosure and the sizing and location of said perforations causing a relatively uniform distribution of said gas bubbles throughout said vessel for raising said flotable solids, and a bottom closure member for said enclosure having a central opening therethrough permitting solids in said enclosure to escape to the bottom of said vessel.

4,070,278

MAGNETIC SEGREGATION OF MIXED NON-FERROUS SOLID MATERIALS IN REFUSE

Jack A. Hunter, Long Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 3, 1976, Ser. No. 655,038
Int. Cl.² B03C *1/14*
U.S. Cl. 209—212 **4 Claims**



1. A method for segregating mixed solids materials, including mixed metals and non-metals, that remain in refuse or waste materials after initial separations of low density materials and magnetically removable ferrous materials, which method comprises the steps of:

a. effecting the dropping of a batch of mixed solids materials downwardly through a defined vertically elongated dropping zone,

b. simultaneously providing a constant magnetic field comprised of vertically spaced magnetic members or opposed sides of the dropping zone for substantially the length of the dropping zone to cause material fragments to cut through the magnetic lines of force and result in effecting retarding forces on the conductive materials of said batch proportional to the conductivity of each such piece of material and to its mass/density characteristics,

c. providing a downward air current flow in interconnection with said dropping zone causing an air stream to flow downwardly at the approximate average velocity of the falling material which is to be separated such as to minimize the effects of wind resistance,

d. providing timed and synchronized diversions of the solids materials at the lower end of the dropping zone by movable particle deflector means to effect a plurality of resulting time-of-flight separations for the different materials, and,

e. effecting the collection of segregated types of solids and metals within different areas of said dropping zone.

4,070,279

EDUCTOR FOR DISSOLVING GASES IN LIQUIDS

Edward T. Armstrong, 490 Pepperidge Tree Terrace, Butler, N.J. 07405

Filed Sept. 13, 1976, Ser. No. 722,590
Int. Cl.² C02C *1/12, 5/04, 5/10*; C02B *1/34*
U.S. Cl. 210—14 **63 Claims**

1. An apparatus for dissolving a gas in a liquid, comprising,

an eductor, said eductor having an inlet portion, an outlet portion, and a throat portion,

said throat portion located at the junction of said inlet portion and said outlet portion,

said inlet portion having an inward convergence towards said throat,

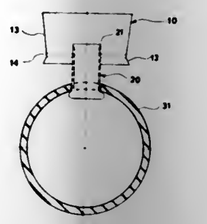
said outlet portion having an outward divergence away from said throat,

a diffuser for carrying at least a gas, said diffuser being a conduit and having a tip,

said diffuser extending through said eductor inlet portion, through said throat portion, and into said outlet portion,

said throat portion diameter ranging from about 2 to about 4 times the diameter of said diffuser,

said diffuser tip extending into said outlet portion a distance of from about 0.25 to about 0.5 throat diameters, and



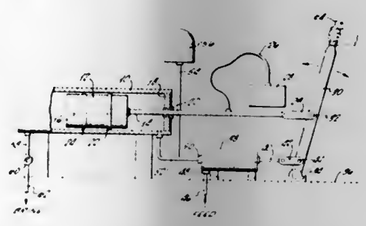
said diffuser emitting said gas through said diffuser tip into said outlet portion.

4,070,280

MANUALLY OPERABLE REVERSE OSMOSIS APPARATUS

Donald Thedore Bray, Escondido, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.

Filed Nov. 17, 1976, Ser. No. 742,658
Int. Cl.² B01D *13/00, 33/00*; C02B *1/82*
U.S. Cl. 210—23 H **12 Claims**



1. Apparatus for purifying water by reverse osmosis comprising; a tubular pressure resistant container housing a semipermeable membrane cartridge comprising a membrane, a purified water transfer sheet, and a spacer sheet spirally wound around a central purified water collection tube, and providing generally longitudinal channels for passage of feed water therethrough; a pump for introducing impure feed water under elevated pressure into said tubular pressure resistant container near one end thereof for longitudinal passage through said semipermeable membrane cartridge, and means for actuating said pump; and means for releasing said feed water as brine from said tubular pressure resistant container near the other end thereof while maintaining operating pressure therein; in which the improvement comprises:

a. said semipermeable membrane cartridge being of cylindrical configuration and materially shorter than said tubular pressure resistant container, and of diameter to fit slidably inside said tubular pressure resistant container;

b. rod means attached to said semipermeable membrane cartridge and passing slidably and sealingly through an end of said tubular pressure resistant container for imparting longitudinal reciprocal motion of said semipermeable membrane cartridge within said tubular pressure resistant container during passage of feed water therethrough; and including a reciprocating hollow rod communicating with the central purified water collection tube of said semipermeable membrane cartridge, for transferring purified water from said semipermeable membrane cartridge to the exterior of said tubular pressure resistant container.

4,070,281

METHOD FOR TREATING WASTE WATER

Yoshiaki Tagashira; Hitoshi Takagi; Katsumi Inagaki; Kanji Ishii, all of Kurashiki, and Hiroyuki Ohashi, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed July 31, 1975, Ser. No. 600,537
Claims priority, application Japan, Aug. 5, 1974, 49-88982; Nov. 11, 1974, 49-128961
Int. Cl.² C02B *1/34*; C02C *5/04*
U.S. Cl. 210—26 **13 Claims**

1. A method for treating organic waste water containing inorganic-CN to render it harmless by oxidation, which comprises the steps of:

A. subjecting the waste water to a wet oxidation treatment in the presence of copper or a copper compound and at least one ammonium salt selected from the group consisting of ammonium sulfate, ammonium nitrate, ammonium sulfamate, ammonium hydrogencarbonate, ammonium chloride, ammonium iodide, ammonium formate, ammonium acetate, ammonium oxalate and ammonium hydrogentartrate at a temperature of 175° to 300° C under a pressure of 20 to 150 kg/cm²;

B. subjecting the effluent from the wet oxidation treatment to gas-liquid separation to recover gas and oxidized liquid;

C. subjecting the recovered oxidized liquid to a treatment with a substance capable of generating oxygen in the nascent state in water to effect oxidation-decomposition of the inorganic-CN remaining in said recovered oxidized liquid thereby to decompose the inorganic-CN to carbon dioxide and nitrogen; and

D. recovering the copper component from the oxidized liquid.

4,070,282

METHOD OF REMOVING DISSOLVED ORGANO-LEAD COMPOUNDS FROM WATER

Jack M. Otto, Beaumont, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 568,357, April 15, 1975, abandoned. This application Nov. 1, 1976, Ser. No. 737,870
Int. Cl.² B01D *15/00*
U.S. Cl. 210—27 **8 Claims**



8. A method of treating a lead-containing aqueous composition containing inorganic lead compounds, tetra alkyl lead, and more than 1 part per million of dissolved ionizable organo-lead compounds, which method comprises:

adjusting the pH of the liquid composition to between pH = 9.0 and pH = 10.0 whereby to precipitate the inorganic lead compounds;

physically separating inorganic lead compounds and tetra alkyl lead compounds from the liquid composition;

passing the liquid composition containing more than 1 part per million of dissolved ionizable organo-lead compounds through a bed of activated carbon whereby to adsorb the organo-lead compounds onto the activated carbon, thereby removing dissolved, ionizable organo-lead compounds from the liquid composition; and

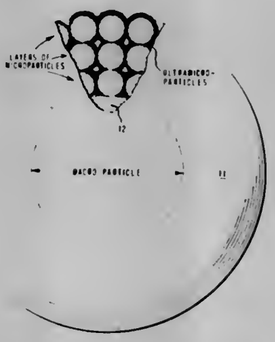
recovering a liquid composition containing less than 1 part per million of ionizable organo-lead compounds from the activated carbon bed.

4,070,283

CONTROLLED SURFACE POROSITY PARTICLES AND A METHOD FOR THEIR PRODUCTION

Joseph Jack Kirkland, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 8, 1976, Ser. No. 748,770
Int. Cl.² B01D *15/08*; B01J *13/00*
U.S. Cl. 210—31 C **13 Claims**



1. As an article of manufacture, a powder of superficially porous macroparticles comprising:

a. an impervious core having an average diameter in the range of about 5 to about 500 microns;

b. at least two monolayers of like microparticles adhered to said core, each microparticle having an average diameter in the range of about 0.005 to about 1 micron; and

c. at least two monolayers of like ultramicroparticles adhered to the surface of said microparticles, each of said ultramicroparticles having an average diameter in the range of about 1.0 to about 15 millimicrons, the diameter of said ultramicroparticles being no more than one quarter of the average diameter of the pores between the microparticles, and the combined microparticle and ultramicroparticle layers constituting from about 0.002 to about 25% of the total volume of the macroparticles.

2. The article of claim 1 wherein all layers of macroparticles contain like microparticles.

6. A process for performing chromatographic separation comprising the steps of contacting the materials to be separated in a carrier phase with the powder of superficially porous macroparticles of claim 2 and determining the extent of retention of at least one of said materials by said macroparticles.

4,070,284

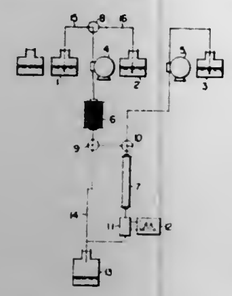
LIQUID CHROMATOGRAPHY AND APPARATUS FOR THE SAME

Kazunori Fujita, Ibaraki; Seiji Takeuchi, Hitachi; Yoshinori Takata, Ibaraki; Mamoru Taki, Hitachi, and Yoshimasa Hamano, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 496,829, Aug. 12, 1974, abandoned. This application Apr. 5, 1976, Ser. No. 673,529
Claims priority, application Japan, Aug. 20, 1973, 48-92490
Int. Cl.² B01D *15/08*
U.S. Cl. 210—31 C **36 Claims**

1. A liquid chromatography process comprising feeding a predetermined amount of a sample solution having adsorbable components therein to a concentration column capable of

producing a solution of said adsorbable components in higher concentration than the concentration of the adsorbable components in the sample solution to be measured, accumulating said adsorbable components in said concentration column resulting in concentration of said adsorbable components, desorbing the adsorbable components accumulated in said concentration



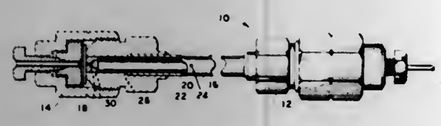
column with a desorbing solution, the amount of desorbing solution being smaller than said predetermined amount of said sample solution, feeding the desorbing solution containing the desorbed components to a separation column, separating the components from one another with an eluting solution fed to said separation column, and detecting the components contained in an effluent from said separation column.

4,070,285

CHROMATOGRAPHY TUBE

Louis Abrahams, Worcester, Mass., assignor to Waters Associates, Inc., Milford, Mass.

Filed Dec. 24, 1975, Ser. No. 644,178
Int. Cl.² B01D *15/08*
U.S. Cl. 210—31 C **7 Claims**



1. In a chromatographic column of the type comprising an elongate chamber filled with a porous mass of chromatographic packing material, the improvement wherein said chamber is formed of a cylinder having a mechanical strength such that the diameter of said cylinder will be increased by less than about 0.01% when subjected to an internal pressure of 5000 psi, wherein said column comprises a relatively thin tubular sleeve of a chemically-resistant material within an exterior reinforcing tube formed of a material having relatively greater resistance to strain and wherein said exterior reinforcing tube is formed of a metal having a yield strength (0.2% offset) of over 100,000 psi and wherein said tubular sleeve is formed of stainless steel which has been expanded to the elastic limit.

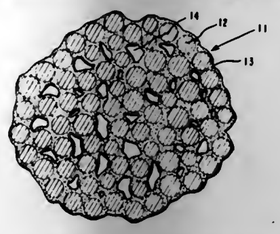
4,070,286

MACROPOROUS MICROSPHEROIDS AND A PROCESS FOR THEIR MANUFACTURE

Ralph Kingsley Iler, and Joseph Jack Kirkland, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 15, 1976, Ser. No. 693,111
Int. Cl.² B01D *15/08*
U.S. Cl. 210—31 C **9 Claims**

9. A process of chromatographic separation comprising contacting the material to be separated in a carrier phase with a resolving zone filled with powder comprising a plurality of discrete macroporous, microspheroids, each microspheroid having an average diameter in the range of about 2 to about 50 microns and comprising a plurality of contiguous large colloidal particles joined and cemented together at their points of contact by from about 1 to about 10% by weight of non-porous, amorphous silica based on the total weight of the microspheroid, to form a porous matrix, the pores of said microspheroids being uniformly distributed throughout said micro-



spheroid, each of said large colloidal particles having an average diameter in the range of about 0.1 to about 1.0 micron and having a surface of silica and a core of material selected from the group consisting of silica and acid-insoluble refractory metal oxides, said microspheroids having a high degree of mechanical stability and a surface area of between about 80 and about 110% of the total surface area of the large colloidal particles in said microspheroids.

4,070,287

POLYMERIC AND CELLULOSIC FIBER MATERIAL FOR REMOVING OIL FROM WATER

Donald E. Wiegand, Minneapolis; Frederick H. Riedel, Cloquet, and Otis R. Videen, St. Paul, all of Minn., assignors to Conweb Corporation, St. Paul, Minn.

Filed Sept. 14, 1976, Ser. No. 723,089
Int. Cl.² E02B *15/04*
U.S. Cl. 210—40 **12 Claims**

1. Sorbent material preferentially sorptive of liquid hydrocarbons over an aqueous liquid comprising a blend of:

a. from about 25% to about 90% by weight of polymeric fibers, said fibers being less than about 40 microns in diameter and being of a material selected from the group consisting of polyethylene, polypropylene, polystyrene, polycarbonate, polyester, polyethylene terephthalate, poly(4-methyl-pentene-1), poly(tetramethyleneterephthalate);

b. from about 5% to about 70% by weight of cellulosic fibers, said cellulosic fibers comprising:
   i. at least about 25% unsized cellulosic fibers;
   ii. at least about 25% cellulosic fibers sized with a water repellent material;

c. from about 5% to about 15% of a binding agent capable of bonding the fibers together and not deleteriously affected by water or the liquid hydrocarbon to be sorbed; said sorbent material having a density no greater than about ten pounds per cubic foot.

4,070,288

DISC FILTER HAVING MEANS FOR SENSING THE THICKNESS OF FILTER CAKES AND METHOD OF FILTERING WITH THE FILTER

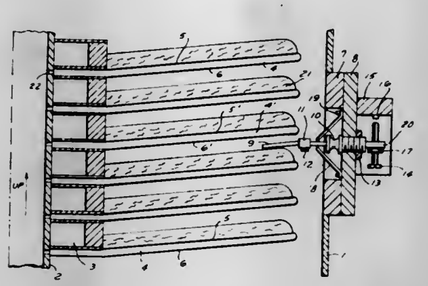
Paul Gerteis, Oetwil a, See, Switzerland, assignor to Chemap AG, Mannedorf, Switzerland

Filed Apr. 8, 1976, Ser. No. 675,189
Claims priority, application Switzerland, July 28, 1975, 9722/75
Int. Cl.² B01D *37/04*; C02C *1/22*
U.S. Cl. 210—65 **15 Claims**

1. A disc filter for separating solids from liquids and accumulating the solids in the form of a filter cake, comprising in combination, a housing adapted to contain an unfiltered fluid

having a predetermined fluid pressure; a pipe mounted for rotation within said housing; at least two vertically spaced filter discs fixed to said pipe and each having an upper filter cake-accumulating surface, the upper of said dics also having a lower surface facing the upper surface of the lower filter disc; and sensing means for sensing a build-up of a filter cake to a desired height above the lower filter disc, said sensing means including a movably mounted plate located between said filter discs and having two generally planar sides, one of said sides facing said lower surface of the upper filter disc and the other of said sides facing and being spaced from said upper accumulating surface of the lower filter disc, so as to be approached by the growing filter cake when the same reaches the desired height, said plate being subjected to a balanced fluid pressure which acts equally on both of said sides until the growing filter cake blocks at least part of the surface area of said other side against impingement by the fluid pressure so that the fluid pressure acting on said one side then exceeds the fluid pressure acting on said other side and the plate is pressed against the filter cake under the force of the thus existing pressure differential, said sensing means also including a signalling device, and linkage means coupling said signalling device to said sensing plate for activating the former in response to pressing of the plate against the filter cake.

12. A method of filtering a fluid in a disc filter, comprising



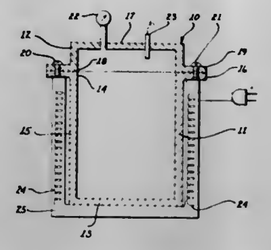
the steps of positioning a sensing plate having an upper and a lower side within a disc filter housing in such a manner that said plate is intermediate two vertically spaced filter discs each having an upper surface upon which a filter cake can accumulate, the upper filter disc also having a lower surface facing the upper surface of the lower filter disc, the lower side of the sensing plate is a predetermined distance above and both sides are substantially parallel to the upper surface of the lower filter disc; adding the fluid under pressure into said filter housing so as to subject the upper and lower sides of said sensing plate to a balanced fluid pressure which acts equally on both sides of said sensing plate; accumulating filter cakes upon said upper surfaces until a filter cake extends above said upper surface of the lower filter disc to the predetermined distance and blocks at least a portion of the surface area of said lower side of said sensing plate against impingement by the fluid pressure so that the fluid pressure acting on said upper side then exceeds the fluid pressure acting on said lower side and the plate is pressed against the filter cake on said upper surface of said lower filter disc under the force of the thus existing pressure differential; sensing build-up of the filter cake accumulating on the upper surface of the lower filter disc to the predetermined distance above the upper surface of the lower filter disc by sensing pressing of said partially covered sensing plate against the filter cake; and generating a signal in response to the pressing of said sensing plate.

4,070,289

PREPARATION OF PYROGEN-FREE WATER

Alaeddin Akcasu, Dept. of Pharmacology, University of Istanbul, Istanbul, Turkey

Filed Feb. 23, 1976, Ser. No. 660,095
Int. Cl.² B01D *35/18*; C02B *1/02*
U.S. Cl. 210—71 **9 Claims**



2. A method for producing pyrogen-free water while consuming a minimum of energy, comprising the steps of: filling a container with water which contains pyrogens to a volume sufficient to accomodate expansion of said water upon subsequent heating; sealing said volume of water within said container; heating said volume of water to a temperature of at least 180° C while simultaneously controlling the pressure of said volume of said water so as to maintain said water substantially entirely in a liquid state thereby thermally degrading said pyrogens to produce pyrogen-free water without any appreciable vaporization of said water; reducing the pressure and temperature of said volume of said water to ambient pressure and temperature, respectively; and removing said water from said container for use.

9. A system for producing pyrogen-free water comprising:
first sealable container means for containing a first volume of water,
second sealable container means for containing a second volume of water,
first means to feed a first pyrogen-containing water stream to said first container means; said first means comprising first preheater means to indirectly exchange heat between said first stream and said second volume,
second means to feed a second pyrogen-containing water stream to said second container means, said second means comprising second preheater means to indirectly exchange heat between said second stream and said first volume,
means to heat said first and second volumes to temperatures of at least 180° C,
means to maintain said first and second volumes substantially entirely in a liquid state at said temperatures, thereby to thermally degrade pyrogens within said water so as to produce pyrogen-free water therefrom,
first outlet means to withdraw said pyrogen-free water from said first container means,
second outlet means to withdraw said pyrogen-free water from said second container means.

4,070,290

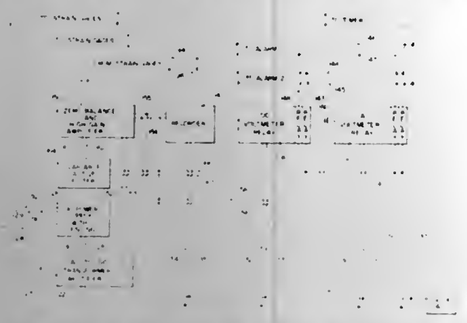
CENTRIFUGE WITH TORSIONAL VIBRATION SENSING AND SIGNALING

Herbert L. Crosby, Plainville, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Filed Mar. 4, 1976, Ser. No. 663,906
Int. Cl.² B01D *29/00*
U.S. Cl. 210—91 **13 Claims**

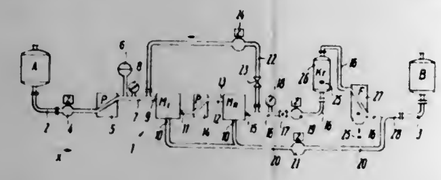
1. In solids-liquid separating centrifuge apparatus of the type which includes a rotary bowl member and a rotary conveyor member mounted therein, drive means for rotating said members about a common axis at a differential speed, and feed means for feeding solids-liquid slurry to said bowl member,

the improvement comprising:
means for sensing torsional vibration only of at least one of said members about its axis and providing an output which varies in accordance with the sensed vibration;
signal means connected to said output for measuring the



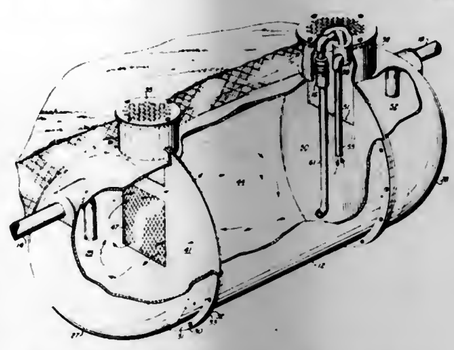
amplitude of said variations thereof and providing an indicative signal when said amplitude is representative of vibration amplitude above a predetermined level; and
means responsive to said signal for adjusting the solids throughput of said apparatus, said adjusting means including feed rate control means.

4,070,291
METHOD AND APPARATUS FOR ACCELERATING THE CRYSTALLIZATION AND REMOVAL OF TARTAR FROM WINE
Otto R. Rhein, Wiesbaden-Dotzheim, Germany, assignor to Henkell & Co., Wiesbaden-Biebrich, Germany
Division of Ser. No. 508,740, Sept. 24, 1974, Pat. No. 3,988,486.
This application May 24, 1976, Ser. No. 689,478
Int. Cl.[2] B01D *13/00, 21/24, 23/20*
U.S. Cl. 210—115 **4 Claims**



1. Apparatus for removing tartrate from a tartarous beverage comprising,
a module having a semipermeable membrane for receiving said tartarous beverage at a preselected pressure from a source,
said module operable to separate said tartarous beverage into a permeate portion of tartrate-free beverage and a concentrate portion containing a solution of said beverage and a tartrate,
a first conduit connected to said module for removing said permeate portion from said module,
a second conduit connected to said module for removing said concentrate portion from said module,
a valve means positioned in said second conduit for regulating the flow rate of said concentrate portion through said second conduit, said valve means being controllable by the amount of flow through said first conduit,
means for crystallizing said concentrate portion to form tartrate crystals having a preselected particle size, said crystallizing means connected to said second conduit,
means communicating with said crystallizing means for filtering said tartrate crystals from said beverage in said concentrate portion, and
a third conduit connected to said filtering means and said first conduit for admixing said permeate portion with tartrate-free beverage from said concentrate portion.

4,070,292
APPARATUS FOR TREATING SEWAGE
Leon R. Adams, Apache Junction, Ariz., assignor to American Water Recycling Company, Apache Junction, Ariz.
Filed Aug. 25, 1975, Ser. No. 607,623
Int. Cl.[2] C02C *1/08*
U.S. Cl. 210—195 R **2 Claims**

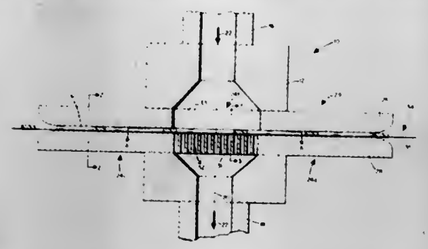


1. An extended aeration system for continuous treatment of sewage comprising:
a. a treatment tank having opposite first and second end walls, said first end wall being generally curved;
b. a foraminous transverse baffle within said tank having opposite first and second sides;
c. a primary chamber within said tank formed between said first tank wall and said first side of said foraminous baffle;
d. a mixing chamber within said tank disposed adjacent said second side of said foraminous baffle and being in hydraulic communication with said primary chamber via said baffle;
e. inlet means for delivering sewage to be treated and communicating with said primary chamber;
f. pumping and aerating means including a conduit having ejector means located therein and having an inlet withdrawing liquid from said mixing chamber and an outlet discharging recirculated liquid in said mixing chamber towards said baffle and said curved end wall whereby a general circular flow pattern is established from the mixing chamber to the primary chamber across said baffle and return whereby larger solids are maintained in the primary chamber and are subject to substantially complete organic decomposition therein;
g. discharge means for withdrawing treated effluent from the mixing chamber separate from said pumping and aerating means; and
h. holding means for receiving the effluent of said treatment tank having means associated therewith for chemical disinfection of said effluent.

4,070,293
FILTER MEDIA
John E. Fogarty, Jr., 12 Sherburne Road, Westboro, Mass. 01581
Continuation-in-part of Ser. No. 537,780, Dec. 31, 1974, Pat. No. 3,971,721. This application June 14, 1976, Ser. No. 695,942
The portion of the term of this patent subsequent to Mar. 8, 1993, has been disclaimed.
Int. Cl.[2] B01D *33/04*
U.S. Cl. 210—401 **21 Claims**

1. For use with an apparatus for filtering pressurized material in flowable form, the said apparatus having means for forming a filter zone, pressurized inlet and outlet conduit means for directing a flow of said material through said filter

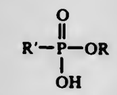
zone, and elongated channel means extending transversely in relation to the flow axis of said conduit means, said channel means having imperforate walls forming entry and exit channel sections in communication at opposite sides with said filter zone, a filter element for filtering said pressurized material, said filter element being adapted to move longitudinally through said entry channel section, across said filter zone and through said exit channel section, said filter element comprising: an



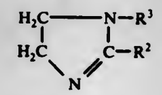
elongated perforate web adapted to accommodate filtered flow therethrough of said pressurized material, a plurality of imperforate seal members fixed to the perforate web transversely to and at spaced intervals along the longitudinal axis thereof, said seal members being dimensioned to cooperate in internal sealing engagement with said imperforate walls, said perforate web extending continuously and uninterruptedly across said seal members to provide a means of interconnection therebetween.

4,070,294
LUBRICANT COMPOSITIONS CONTAINING IMIDAZOLINE-PHOSPHONATE SALTS AS ANTIWEAR AGENTS
Daniel G. Jones, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 544,245, Jan. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 386,481, Aug. 7, 1973, abandoned. This application Oct. 18, 1976, Ser. No. 733,581
Int. Cl.[2] C10M *1/44*
U.S. Cl. 252—32.5 **5 Claims**

1. A lubricant composition comprising a major proportion of a lubricant base selected from the group consisting of mineral oils, synthetic oils and greases; and an antiwear amount of a salt of (a) an alkyl, long chain alkyl acid phosphonate having he formula:



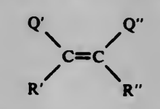
where R′ is a substantially unbranched paraffinic alkyl group consisting from about 10 to about 36 carbon atoms, and R is a hydrocarbyl group containing from 1 to about 4 carbon atoms with at least one hydrogen atom present on the carbon atom which is bonded to oxygen and (b) a substituted imidazoline o the formula:



where one of the R^2 and R^3 substituents must be a substantially unbranched paraffinic or olefinic hydrocarbyl group containing from about 12 to about 35 carbon atoms; and the other R^2 or R^3 substitutent is selected from the group consisting of: paraffinic alkyl containing from 1 to about 35 carbon atoms, alkenyl containing from 1 to about 35 carbon atoms, substituted alkyl and substituted alkenyl containing from 1 to about 20 carbon atoms, wherein said substituents are selected from the group consisting of hydroxy, alkoxy, alkoxy-methoxy and oxo.

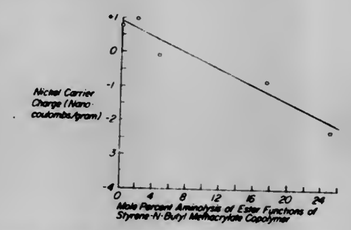
4,070,295
SULFONE COPOLYMERIC ADDITIVE FOR HYDROCARBON OILS
Harold N. Miller, Millington, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.
Filed Feb. 2, 1976, Ser. No. 654,204
Int. Cl.[2] C10M *1/38*
U.S. Cl. 252—48.6 **8 Claims**

1. A composition comprising a major proportion of lubricating oil, and dissolved therein, in the range of about 0.01 to 20 wt. %, based on the total weight of said composition, of oil soluble sulfone copolymer of:
a. about 30 to about 50 mole percent of sulfur dioxide,
b. about 20 to about 70 mole percent of an ethylenically unsaturated polar monomer which is copolymerizable with sulfur dioxide and has a total of 8 to 52 carbon atoms and is represented by the general formula:



wherein R′ and R″ are independently selected from the group consisting of hydrogen, halogen and C_1 to C_{12} alkyl radicals; Q′ is selected from the group consisting of —COOH, —CN, —CH_2OH, —COOR‴, —CH_2—O—R″, —CH_2—CO—R‴ and —O—R‴; and Q″ is selected from the group consisting of hydrogen, —COOH, —CN, and —COOR‴; and wherein R‴ is selected from the group consisting of C_1 to C_{24} straight and branched chain alkyl, arylalkyl, and cycloalkyl radicals;
c. 0 to about 68 mole % of C_2 to C_{50} monoolefin; and
d. 0 to about 6 mole % diolefin;
wherein said copolymer has a number average molecular weight (Mn) in the range of about 400 to about 750,000 and improves one or more properties of said lubricating oil.

4,070,296
TRIBOELECTRICALLY CONTROLLED COVALENTLY DYED TONER MATERIALS
Harry W. Gibson, Penfield, and Wolfgang H. H. Gunther, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 26, 1974, Ser. No. 500,762
Int. Cl.[2] G03G *9/08, 9/10*
U.S. Cl. 252—62.1 P **18 Claims**



1. An electrostatographic toner composition for use in developing electrostatic latent images on a recording surface, said toner composition comprising finely-divided toner particles having an average particle diameter of less than about 30 microns, said toner particles comprising an aminolyzed polymer selected from the group consisting of styrenealkylmethacrylate and styrene-alkylacrylate, said polymer being cova-

lently bonded with a reactive dye wherein said toner particles are characterized as possessing controlled triboelectric charging properties provided by the controlled aminolysis of said polymer, and wherein said dye is substantially metabolically inaccessible.

4,070,297

ELECTRICAL INSULATING OIL COMPOSITIONS

Midori Masunaga, Tokyo; Yoshiki Kohno, Kawasaki, and Tadashi Ohmori, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1977, Ser. No. 763,456
Claims priority, application Japan, Feb. 3, 1976, 51-10026
Int. Cl.² H01B 3/22
U.S. Cl. 252—63 9 Claims

1. An electrical insulating oil composition having satisfactory oxidation stability, electrical properties and low-temperature performances, consisting essentially of:

I an electrical insulating oil having a sulphur content of 0.1–0.35 wt.% prepared by firstly refining a distillate containing at least 80 wt.% of a fraction having a boiling range of 230°–430° C at atmospheric pressure and being obtained by the distillation of a paraffin or mixed base crude oil at atmospheric pressure or by the distillation at a reduced pressure a bottom oil obtained by the distillation of the crude oil at atmospheric pressure, with a refining solvent for selectively dissolving aromatic compounds therein to remove 30–75 wt. of the sulphur present in the said distillate thereby obtaining a raffinate, secondly hydrofining the thus obtained raffinate to remove 40–90 wt.% of the sulphur present in the raffinate, thirdly dewaxing the hydrofined oil with a dewaxing solvent to obtain the electrical insulating oil and

II 0.001–1.0% by weight, based on the oil (I), of an essentially amorphous ethylene-propylene copolymer having an average molecular weight of 10,000–200,000 and a propylene content of 10–70 mol%.

4,070,298

DEFOAMING DETERGENT ADDITIVE

Michael Scardera, Hamden, and Robert N. Scott, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed July 26, 1976, Ser. No. 708,468
The portion of the term of this patent subsequent to May 11, 1993, has been disclaimed.
Int. Cl.² C11D 1/78, 1/72, 3/075
U.S. Cl. 252—89 R 16 Claims

1. An additive composition which can be adapted into automatic dishwasher detergents for reducing foam during use thereof, comprising:

A. a nonionic surface active agent having the formula:

$$RO-(CH_2-\underset{R'}{CH}-O)_x-(CH_2-CH_2-O)_y-(CH_2-\underset{R''}{CH}-O)_z-H$$

wherein

R is a substantially linear, alkyl radical having an average from about 6 to about 12 carbon atoms,

R′ is a linear, alkyl radical of 1 to about 4 carbon atoms,

R″ is a linear, alkyl radical of 1 to about 4 carbon atoms,

x is an integer of 1 to about 6,

y is an integer of about 4 to about 20, and

z is an integer of about 4 to about 25, and

B. an alkyl phosphate ester having an average of about 16 to about 28 carbon atoms in the alkyl radical, wherein the weight ratio of (A):(B) is from about 1:1 to about 99:1.

4,070,299

AZEOTROPIC COMPOSITIONS

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 609,115, Aug. 29, 1975, Pat. No. 4,035,258, which is a division of Ser. No. 391,663, Aug. 27, 1973, Pat. No. 3,936,387, which is a continuation-in-part of Ser. No. 223,779, Feb. 4, 1972, abandoned. This application Mar. 1, 1977, Ser. No. 773,235
Int. Cl.² C11D 7/50, 7/30; C23G 5/02
U.S. Cl. 252—171 7 Claims

1. An azeotrope of (A) 1,2-dichloro-1-fluoroethane and (B) one of isopropanol, tetrahydrofuran, or methyl ethyl ketone.

4,070,300

POURABLE SOLID FILTER MATERIAL, PARTICULARLY FOR THE REMOVAL OF UNPLEASANT ODORS FROM THE AIR, AND A PROCESS FOR ITS MANUFACTURE

Rolf Moroni, Bornheim-Hersel, and Heinz Kalbow, Konigswinter-Stieldorf, both of Germany, assignors to COLLO GmbH, Bornheim-Hersel, Germany

Filed May 31, 1974, Ser. No. 475,287
Claims priority, application Germany, June 9, 1973, 2329645; May 9, 1974, 2422574
Int. Cl.² C01K 3/00
U.S. Cl. 252—190 2 Claims

1. A pourable solid filter material for the removal of foreign gases, particularly unpleasant odors, from air consisting of granular mass comprised of granules having a substantially spherical shape and a diameter of about 0.5 mm to 8.0 mm characterized in that said granules have:

a. a skeleton core of a substance which stores moisture selected from a class consisting of: swellable clay, expanded clay, tuff, pumice, brick dust, rigid plastic foam, silica gel and Kieselguhr, and

b. a coating on said core comprising a mixture of:

i. a water soluble binder selected from a class consisting of: cellulose derivatives, polyvinyl alcohol, collagen, alginates, pectins and starch, and

ii. at least one acidic chemosorptive substance which reacts chemically with said foreign gas selected from the class consisting of: organic monocarboxylic acids, organic polycarboxylic acids, amidosulphonic acid, p-toluene sulphonic acid, boric acid, sodium hydrogen sulphate, potassium hydrogen sulphate, ammonium hydrogen sulphate and phthalic anhydride,

said selected chemosorptive substance being present in a proportion greater than said substance which stores moisture.

4,070,301

METHOD OF PREPARING CERIUM-ACTIVATED YTTRIUMALUMINATE PHOSPHOR OF IMPROVED EFFICIENCY

Tetsuhiko Tomiki; Takeshi Takeda; Takeo Miyata, and Fumio Muramatsu, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kawasaki, Japan

Filed June 1, 1976, Ser. No. 691,784
Claims priority, application Japan, June 2, 1975, 50-66824
Int. Cl.² C09K 11/46
U.S. Cl. 252—301.4 R 7 Claims

1. A method of producing a phosphor comprising yttrium aluminate activated by cerium, the atomic ratio of yttrium to aluminum in the phosphor being substantially 1:1, the method comprising the steps of:

a. preparing a mixture of Y_2O_3, Al_2O_3 and CeF_3, the molar ratio of Y_2O_3 to Al_2O_3 being substantially 1:1, the quantity of CeF_3 being such that cerium amounts to 0.1 to 5 mol % of said yttrium aluminate;

b. adding a barium compound selected from the group consisting of BaO, $BaCO_3$, BaF_2, $BaCl_2$ and barium salts which yield BaO at a temperature below 1400° C. and selected from the group consisting of $Ba(NO_3)_2$, $Ba(OH)_2$ and BaC_2O_4, to said mixture in an amount of 0.001 to 20 mol % of said mixture;

c. baking the resultant mixture at a temperature in the range from about 1000° to about 1400° C.; and

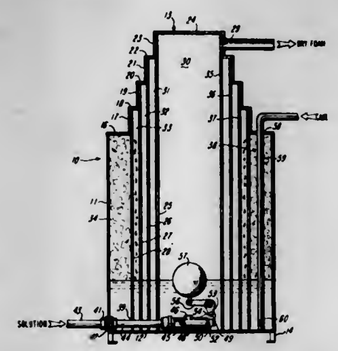
d. washing the product of step (c) with nitric acid when said amount of said barium compound is larger than 8 mol %.

4,070,302

FOAM PRODUCING EQUIPMENT

James L. Chatterton, 2916 Philadelphia Drive, Dayton, Ohio 45405

Filed Apr. 1, 1976, Ser. No. 672,738
Int. Cl.² B01J 13/00
U.S. Cl. 252—359 E 10 Claims



1. A foam producing unit comprising a container, interior wall means defining therein a plurality of side by side chambers, means submerged in a liquid foamable solution for introducing a gas to one of said chambers, under pressure, in a jet-like flow, to enter a small quantity of a liquid foamable solution at the bottom thereof, to cause said solution to form into bubbles which produce a foam rising upwardly through said solution to build up and fill the said one chamber over the level of the liquid therein, means defining laterally directed small bore passages in a portion of said wall means above the level of liquid, said passages communicating said one chamber with an upper part of an adjacent chamber to one side thereof, the said passages being located to limit the movement of foam from said one chamber to said adjacent chamber until the foam is built up, under pressure, in said one chamber, whereupon the bubbles on the foam will be forced to move laterally to said adjacent chamber by way of said small bore passages, the means defining the passages being formed to squeeze and strip liquid from the bubbles passing therethrough and to discharge the resultant bubble structure to enter and build up in said adjacent chamber prior to proceeding to discharge under the head of pressure continued on said foam by the continuing delivery of gas under pressure to said one chamber, said wall means providing a drain surface for return of stripped liquid to the contained quantity of liquid solution.

4,070,303

SOLVENT FOR DYE USED IN PRESSURE-SENSITIVE COPYING PAPER

Kimio Ohkubo, Tokyo, and Mikio Fujioka, Ichigayadaimachi, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1976, Ser. No. 680,272
Claims priority, application Japan, May 2, 1975, 50-52588
Int. Cl.² B01F 1/00
U.S. Cl. 252—364 6 Claims

1. A solvent for dye used in pressure-sensitive copying paper, comprising (a) an aromatic hydrocarbon selected from the group consisting of alkyl naphthalenes, alkyl biphenyls, triaryl dimethanes, diaryl ethanes and hydrogenated terphenyls and mixtures thereof and (b) an aliphatic acid di-ester of the formula

$$ROOC-CH_{2n}-COOR$$

Wherein R is methyl or ethyl and *n* is an integer from 2 to 4, said di-ester being present in an amount of 0.5 to 10 parts by weight per 100 parts by weight of said aromatic hydrocarbon.

4,070,304

ANTIOXIDANT COMPOSITION, STABILIZED POLYOLS AND POLYURETHANES PREPARED THEREFROM

Kenneth J. Hiaze, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 552,095, Feb. 24, 1975, Pat. No. 4,007,230. This application Aug. 19, 1976, Ser. No. 715,807
Int. Cl.² C09K 15/08
U.S. Cl. 252—404 3 Claims

1. An antioxidant composition containing:

A. from about 15 to about 85 percent by weight of a sterically hindered phenolic antioxidant selected from the group consisting of
2,4-dimethyl-6-octyl phenol,
2,6-ditertiarybutyl-4-methyl phenol,
2,6-ditertiarybutyl-4-ethyl phenol,
2,6-ditertiarybutyl-4-n-butyl phenol,
2,2′-methylenebis (4-methyl-6-tertiarybutyl phenol),
2,2′-methylenebis (4-ethyl-6-tertiarybutyl phenol),
2,4-dimethyl-6-tertiarybutyl phenol,
4-hydroxymethyl-2,6-ditertiarybutyl phenol,
n-octadecyl-beta (3,5-dibetriarybutyl-4-hydroxyphenyl)-propionate, and mixtures thereof; and

B. from 85 to about 15 percent by weight of 4,4′-bis(α,α-dimethylbenzyl) diphenyl amine.

4,070,305

PROCESS FOR REGENERATING CATALYST

Shigeji Obayashi, Akashi; Kanji Ueda, Ashiya; Haruhiko Iwatsubo, Habikino, and Thoru Okabe, Hyogo, all of Japan, assignors to Seitetsu Kagaku Co., Ltd, Japan

Filed Mar. 1, 1976, Ser. No. 662,630
Claims priority, application Japan, Sept. 3, 1975, 50-107428
Int. Cl.² B01J 23/94, 23/92; C01B 21/02; B01D 53/34
U.S. Cl. 252—411 S 16 Claims

1. A process for regenerating a catalyst used for removing nitrogen oxides from flue gas by catalytic reduction with ammonia and wherein said catalyst is an oxide of a metal selected from the group consisting of copper, iron, chromium, vanadium, and mixtures thereof, and said catalyst is poisoned by the formation of sulfates with sulfur oxides contained in said flue gas, which process comprises contacting said poisoned catalyst at a temperature of 350° to 500° C with a gaseous mixture consisting essentially of at least 1% by volume of ammonia and a substantially inert gas and for a time sufficient for regenerating said catalyst to liberate the sulfur oxides thereby from said catalyst, whereby said catalyst is regenerated.

2. The process of claim 1 wherein said inert gas is selected from the group consisting of nitrogen, helium, argon, cabon dioxide, steam, and mixtures thereof.

8. The method of claim 2 wherein said gas also contains oxygen or sulfur dioxide in small amounts insufficient to significantly increase the ammonia consumption.

12. The method of claim 1 wherein said catalyst comprises iron oxide and at least one other oxide of a metal selected from the group consisting of copper, chromium, vanadium, and mixtures thereof.

4,070,306

METHOD OF TREATING A USED PLATINUM GROUP ALUMINA CATALYST WITH A METAL PROMOTER

George P. Masologites, Olympia Fields, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 315,906, Dec. 18, 1922, abandoned. This application Jan. 13, 1977, Ser. No. 758,965
Int. Cl.² B01J *23/96*; C10G *35/08*
U.S. Cl. 252—416 6 Claims

1. A method for producing a composition which comprises:

1. contacting a solid catalyst comprising a major portion of alumina derived from hydrous alumina predominating in alumina trihydrate and a catalytically effective amount of from about 0.05% to about 3.0% by weight of at least one platinum group metal component calculated on an elemental basis in a reaction zone with a hydrocarbon in the presence of hydrogen at hydrocarbon conversion conditions to chemically convert said hydrocarbon and form carbonaceous deposits on said solid catalyst;
2. contacting said solid catalyst with an oxygen-containing gas to remove at least a portion of said carbonaceous deposits and from a regenerated solid catalyst;
3. repeating steps (1) and (2) until the surface area of the regenerated solid catalyst is reduced to form about 20% to about 90% of the surface area of the solid catalyst used in first performing step (1) to form a decreased area solid catalyst; and

(4.) treating said decreased area solid catalyst with a rhenium component to produce a treated catalyst containing from about 0.01% to about 5% by weight of said rhenium calculated on an elemental basis having improved catalytic activity stability relative to said solid catalyst first used in step (1).

4,070,307

METHOD OF CATALYST MANUFACTURE

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 12, 1976, Ser. No. 714,073
Int. Cl.² B01J *31/18*
U.S. Cl. 252—428 7 Claims

1. A method of catalyst manufacture which comprises:

a. preparing an aqueous dispersion of a metal phthalocyanine containing a water soluble diamide selected from the group consisting of malonamide and urea, wherein said metal phthalocyanine to said diamide weight ratio is 1:1 to about 2:1;
b. contacting a solid adsorptive support with said dispersion at conditions to adsorb at least a catalytic amount of said metal phthalocyanine thereon; and
c. drying the resulting composite.

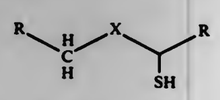
4,070,308

α-OXY(OXO)MERCAPTAN PERFUME AND COLOGNE COMPOSITIONS

William J. Evers, Red Bank; Howard H. Heinsohn, Jr., Hazlet, and Frederick Louis Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sept. 15, 1976, Ser. No. 723,529
Int. Cl.² C11B *9/00*
U.S. Cl. 252—522 12 Claims

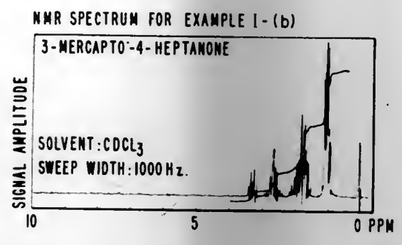
1. A perfume composition comprising at least one compound having the structure:



wherein R is selected from the group consisting of ethyl, 1-propyl, 2-propyl and 1-butyl; and X is the moiety:



and at least one adjuvant selected from the group consisting of



natural perfume oils, synthetic perfume oils, alcohols, aldehydes, ketones, esters, nitriles and lactones.

4,070,309

DETERGENT COMPOSITION

Ronald Lowell Jacobsen, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 27, 1976, Ser. No. 709,015
Int. Cl.² C11D *3/36*
U.S. Cl. 252—547 11 Claims

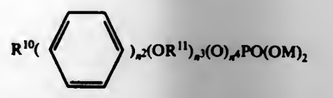
1. A light duty liquid detergent composition consisting essentially of

a. from about 5% to about 35% of an anionic surfactant having the formula



wherein R is an alkyl group containing from 8 to about 24 carbon atoms which can be either straight or branched chain, saturated or unsaturated and attached either at the terminal position, a secondary position, or random attachment or mixtures thereof; Y is a group selected from the group consisting of $(OC_2H_4)_x$ wherein x is a number from 1 to 30; $(O—CH_2—CHOH—CH_2)_m$ wherein m is a number from 1 to 3; or a benzene ring; each n is either 0 or 1; and M is selected from the group consisting essentially of sodium; potassium; mono-, di-, or tri-alkanolammonium wherein the alkanol groups contain from 2 to 4 carbon atoms; mono-, di- or tri-alkylammonium wherein the alkyl groups contain from 2 to 4 carbon atoms; ammonium; magnesium; calcium; or mixtures thereof;

b. from 0% to about 15% of a suds boosting ingredient selected from the group consisting of amine oxide surfactants and amide surfactants;
c. from 0.5% to about 10% of a detergency boosting ingredient selected from the group consisting of compounds having the formula



wherein R^{10} is an alkyl group containing from about 14 to about 20 carbon atoms, wherein R^{11} is an alkylene group containing 2 or 3 carbon atoms, wherein n^2 is 0 or 1, wherein n^3 is a number from 0 to about 20, wherein n^4 is 0 or 1, wherein M is a cation selected from the group consisting of hydrogen; sodium; potassium; ammonium; mono-, di-, and tri-alkanolammonium; mono-, di-, and tri-, alkylammonium; magnesium; calcium; and mixtures thereof, R^{10} being a random alkyl group when n^2, n^3 and n^4 are 0;

d. from 0% to heavy metal chelating amounts of citric acid salt; and,
e. water, the pH of the composition being above 7 and less than about 10 and said composition being free of effective amounts of detergency builders.

4,070,310

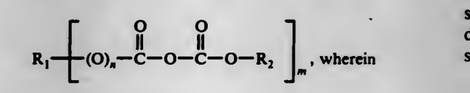
PROCESS FOR THE PRODUCTION OF FOAMS

Heinz-Georg Schneider, Dieringhausen; Helmut Kleimann, and Bruno Luckas, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 28, 1976, Ser. No. 691,057
Claims priority, application Germany, June 4, 1975, 2524834
Int. Cl.² C08G *18/14*
U.S. Cl. 260—2.5 BD 6 Claims

1. A process for the production of poylurethane foam in a closed mold by foaming a reaction mixture which comprises a polyisocyanate component, a reactive hydrogen containing component, and an organic blowing agent, wherein

1. the polyisocyanate component is a mixture comprising
A. at least one organic polyisocyanate which is liquid at room temperature and
B. a flow improving organic compound which splits off carbon dioxide under the catalytic influence of basic compounds, said flow improving organic compound being of the formula:



m represents 1 or 2
n represents 0 or 1 when m=1 and 0 when m=2,
R_1 represents an m-valent aliphatic hydrocarbon group having from 1 to 18 carbon atoms, which may be olefinically unsaturated; a cycloaliphatic hydrocarbon group having from 4 to 10 carbon atoms; an aromatic hydrocarbon group having from 6 to 10 carbon atoms; or an araliphatic hydrocarbon group having from 7 to 10 carbon atoms;
R_2 represents a monovalent hydrocarbon group which has the meaning defined for R_1, and
wherein from 0.1 to 5% by weight of said component (B) based on polyisocyanate (A), is used, and

2. the reactive hydrogen containing component comprises
C. a compound having a molecular weight of from about 62 to about 10,000 which contains reactive hydrogen atoms and
D. a basic compound mixed with (C) and/or a basic compound chemically built into (C) which basic compound acts as a catalyst for the catalytic decomposition of said organic compound (B).

4,070,311

FLAMEPROOF MATERIAL OR CONGLOMERATE

Adolphe Cominassi, 95 Avenue Mozart, 75-Paris XVI, and Henri Lievremont, 69 rue Roger Salengro, 27-Louviers, both of France

Continuation-in-part of Ser. No. 695,777, June 14, 1976, abandoned, which is a continuation of Ser. No. 518,716, Oct. 29, 1974, abandoned. This application Oct. 12, 1976, Ser. No. 731,627
Int. Cl.² C08J *9/14*
U.S. Cl. 260—2.5 F 14 Claims

1. An expanded material or conglomerate comprising: 20–80% by weight of a binder comprising a phenol-formaldehyde resin, and 20–80% by weight of the sulfuric acid residue-containing, synthetically produced calcium sulfate known as phospho-gypsum, said phospho-gypsum being the reaction product of the components comprising sulfuric acid and fluorine-containing calcium phosphate rock, said fluorine-containing calcium phosphate rock containing, by weight, 1.8–4.2% F and at least 0.1% of Al_2O_3 or Fe_2O_3, and said phospho-gypsum having a pH less than natural gypsum and containing more than 0.5% by weight of F and phosphate residues from said phosphate rock.

4,070,312

CLOSED CELL POLYIMIDES

John Gagliani, San Diego, and John V. Long, El Cajon, both of Calif., assignors to International Harvester Company, San Diego, Calif.

Filed May 27, 1975, Ser. No. 581,136
Int. Cl.² C08J *9/12*
U.S. Cl. 260—2.5 N 8 Claims

1. The method of making a strong, thermally stable polyimide with low absorption characteristics and low density comprising the steps of: preparing a moldable material from a diester of 3,3',4,4'-benzophenonetetracarboxylic acid and a mixture of diamines, at least one of said diamines being an aromatic, meta-substituted diamine and any diamine which is not meta-substituted being an aromatic, para-substituted diamine which is free of aliphatic moities; molding such material under confinement at a temperature in the range of 300° to 350° C. and under a pressure of 300 to 2000 psi to cure the material and to impart a selected shape thereto; hydrating the polyimide thus obtained by heating it in an aqueous liquid at a temperature of 25°–250° C. and under a pressure of one to 15 atmospheres for a period of one to 200 hours; and heating the hydrated polyimide at a temperature of 270° to 400° C. for a time sufficiently long to develop a porous, closed cell structure.

4,070,313

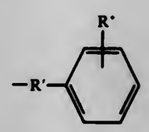
NON PUNKING PHENOLIC FOAM

Anthony Joseph Papa, St. Albans, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 16, 1976, Ser. No. 649,815
Int. Cl.² C08J *9/14*
U.S. Cl. 260—2.5 F 26 Claims

1. A blend of:

a. a phenolic resole;
b. an aralkyl-polyalkylsiloxane in which the aralkyl and alkyl groups are bonded to silicon, the alkyl groups have from one to four carbon atoms and the aralkyl groups are of the formula,



wherein R' is bivalent alkylene having two or three carbon atoms and R° is hydrogen or methyl; and
c. a halogenated alkane having a boiling point from about minus 40° F. to about 200° F. and in which the halogen substituents are fluorine, chlorine or a combination thereof.

4,070,314

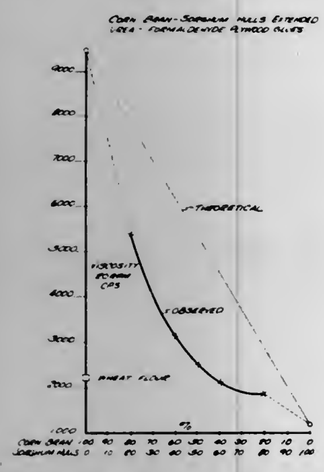
PLYWOOD ADHESIVES USING AMYLACEOUS EXTENDERS COMPRISING FINELY GROUND CEREAL-DERIVED HIGH FIBER BY-PRODUCT

Richard J. Alexander, Wauwatosa, and Robert K. Krueger, Sheboygan, both of Wis., assignors to Krause Milling Company, Milwaukee, Wis.

Filed Oct. 7, 1976, Ser. No. 730,503
Int. Cl.² C08L *3/02*, *5/00*
U.S. Cl. 260—17.3 9 Claims

1. An adhesive consisting of a combination of urea-formalde-

hyde resin present in the range of 20–40%, water in the range of 25–60%, filler in the range of 2–4%, catalyst in the range of 1–4%, and an amylaceous extender in the range of 10–40%, said amylaceous extender including 30–100% of a finely ground cereal-derived high fiber by-product containing less than 50% starch and 0–70% of an auxiliary amylaceous material said high fiber by-product being selected from the group comprising corn bran, sorghum bran, oat hulls, barley hulls,



rice hulls, rice bran, wheat bran, oilseed processing by-products such as soy bean hulls and cottonseed hulls, spent brewers grains, expelled or extracted corn germ, and malt husks and said auxiliary amylaceous material being selected from the group of cereal flour, starch, or fraction thereof, derived from a cereal grain, the high fiber by-product being of a type having substantially greater water absorption properties than the auxiliary amylaceous material.

4,070,315

BENTONITE/HALOGEN FLAME RETARDING ADDITIVE

Ram K. S. Mehta, Troy, and Philip Weiss, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 12, 1976, Ser. No. 676,154
Int. Cl.² C08L *91/00*
U.S. Cl. 260—28.5 B **4 Claims**

1. A fire retardant composition comprising a uniform blend of an ABS resin and at least about 3 to 5% by weight of said resin of a synergistic fire retardant additive combination consisting essentially of

a bentonite clay taken from the group consisting of hydrogen bentonite, alkali metal bentonites and alkaline earth metal bentonites, said clay having a volume swell in water of at least about 50% and a cation exchange capacity of at least about 30 milliequivalents per 100 grams; and

a halogenated aliphatic, aromatic, or alicyclic compound,

said additive combination containing at least as many parts by weight of said bentonite clay as said halogenated aliphatic, aromatic or alicyclic compound.

4,070,316

POLYETHYLENE CONTAINING HOT MELT ADHESIVES

Robert L. Combs; Richard L. McConnell, and Max F. Meyer, Jr., all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 585,638, June 10, 1975, abandoned. This application Oct. 8, 1976, Ser. No. 730,913
Int. Cl.² C08L *91/00*
U.S. Cl. 260—28.5 A **8 Claims**

1. An adhesive composition capable of being used as a hot melt adhesive containing as adhesive components a blend essentially consisting of

a. about 50 to 80 percent by weight of at least one polyethylene having a melt viscosity of 500 to 20,000 centipoise at 190° C.,

b. about 10 to 40 percent by weight of at least one hydrocarbon tackifier resin, and

c. about 7 to 15 weight percent of a high melting synthetic Fischer-Tropsch hydrocarbon wax.

4,070,317

PROCESS FOR THE PRODUCTION OF FILM FORMING SYNTHETIC RESINS FOR HAIR FIXATIVES

Hans-Albrecht Meyer-Stoll, Rheinkamp-Repelen; Johannes Wollner, Kapellen, and Hans-Heinz Schittek, Moers-Meerbeck, all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Division of Ser. No. 263,517, June 16, 1972, Pat. No. 3,987,010. This application Sept. 28, 1976, Ser. No. 727,542
Claims priority, application Germany, May 29, 1968, 1770518
Int. Cl.² C08L *61/04, 61/30*
U.S. Cl. 260—29.3 **12 Claims**

1. Process for the production of a water soluble, film-forming resin product having a molecular weight in the range of from about 700 up to about 3000 or more for a hair fixative composition, which comprises reacting a 5,5-dialkylhydantoin wherein each alkyl group thereof contains from 1 to 5 carbon atoms with aqueous formaldehyde solution in the mole ratio of from about 1.5 to about 2.5 moles of formaldehyde per mole of said hydantoin, at a temperature in the range of from about 55° C. up to about 100° C. and a pH in the range of from about 6 up to about 11 and recovering the resulting methylolated 5,5-dialkylhydantoin from the resulting reaction products by removal of from about 50 to 100% of water, then reacting at an elevated temperature in the range of from about 70° C to about 115° C. said methylolated 5,5-dialkylhydantoin in the presence of from about 0.2 to about 2.5 moles of salicylic acid amide per mole of said hydantoin.

4,070,318

POLLUTION FREE METHOD OF MAKING 2,6-BIS(2,4-DIHYDROXY PHENYLMETHYL)-4-CHLOROPHENOL TIRE CORD DIPS AND PRODUCTS

Edward F. Kalafus, Akron, and Richard M. Wise, Uniontown, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 597,796, July 21, 1975, abandoned. This application Dec. 22, 1975, Ser. No. 642,857
Int. Cl.² C08L *61/10*
U.S. Cl. 260—29.3 **3 Claims**

1. A process for making a cord dip which comprises:

a. reacting in the presence of from about 0.05 to 0.8 moles of a base catalyst

1. one mole of p-chlorophenol with

2. from about 2 to 2.2 moles of formaldehyde to form a reaction mixture containing 2,6-bis-hydroxymethyl-4-chlorophenol;

b. then without separating the 2,6-bis-dihydroxy-methyl-4-chlorophenol from the reaction mixture, adding

1. from 1 to 3 moles of resorcinol and

2. sufficient acid to neutralize the base catalyst and to lower the pH of the reaction mixture to a value of from 1 to 6;

c. heating the mixture to form a reaction product containing 2,6-bis (2,4-dihydroxy phenylmethyl)-4-chlorophenol;

d. adding base to the mixture to dissolve the 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol and to increase the pH to a value above 7;

e. then without separating the 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol from the reaction mixture, adding a major amount of weight on a solid basis of an alkaline dispersion of a rubbery vinyl pyridine copolymer to a minor amount by weight on a solids basis of the reaction product containing 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol.

4,070,319

SIZING

Philippe Robert Raymond Carel, Paris; Rene Paul Auguste Decamp, Villers Saint Paul, and Jean Perronin, Chantilly, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Mar. 11, 1975, Ser. No. 557,426
Claims priority, application France, Mar. 11, 1974, 74 08114
Int. Cl.² C08L *33/02*
U.S. Cl. 260—29.4 UA **13 Claims**

1. Sizing bath for a non-woven cellulose based substrate in which the bath has a pH of 2 to 12 and contains as sizing agent at least one anionic latex of at least one copolymer of which the vitreous transition temperature is −40° C to +120° C and of which the K value is 55 to 130, the copolymer containing in interpolymerized form:

a. 35% to 80% by weight of at least one ester of acrylic and/or methacrylic acid with an alcohol containing 1 to 18 carbon atoms and/or at least one vinyl ester of a carboxylic acid containing 1 to 18 carbon atoms,

b. 20% to 50% by weight of acrylic, methacrylic, crotonic or itaconic acid, or a mixture thereof,

c. 0% to 20% by weight of at least one monomer having an ethylene linkage and at least one polar group or containing several ethylene linkages,

d. 0% to 30% by weight of at least one halogenated or non-halogenated hydrocarbon containing at least one double bond and 2 to 18 carbon atoms, the latex having a pH of 2 to 7, and having the property of thickening by treatment with alkali, the amount of copolymer in said bath being 0.1% to 2% by weight.

4,070,320

PROCESS FOR THE PRODUCTION OF FILM FORMING SYNTHETIC RESINS FOR HAIR FIXATIVES

Hans-Albrecht Meyer-Stoll, Rheinkamp-Repelen; Johannes Wöllner, Kapellen, and Hans-Heinz Schittek, Moers-Meerbeck, all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Division of Ser. No. 263,517, June 16, 1972, Pat. No. 3,987,010. This application Sept. 28, 1976, Ser. No. 727,543
Claims priority, application Germany, May 29, 1968, 1770518
Int. Cl.² C08L *61/24, 61/30*
U.S. Cl. 260—29.4 R **13 Claims**

1. Process for the production of a water soluble, film-forming resin product having a molecular weight in the range of from about 700 up to about 3000 or more for a hair fixative composition, which comprises reacting a 5,5-dialkylhydantoin wherein each alkyl group thereof contains from 1 to 5 carbon atoms with aqueous formaldehyde solution in the mole ratio of from about 1.5 to about 2.5 moles of formaldehyde per mole of said hydantoin, at a temperature in the range of from about 55° up to about 100° C. and a pH in the range of from about 6 up to about 11 and recovering the resulting methylolated 5,5-dialkylhydantoin from the resulting reaction products by removal of from about 50 to 100% of water, then reacting at an elevated temperature in the range of from 70° to about 115° C. said methylolated 5,5-dialkylhydantoin in the presence of from about 0.2 to about 2.5 moles of a mixture of urea and a diamine, per mole of said hydantoin.

4,070,321

PROCESS FOR THE PREPARATION OF WATER-IN-OIL EMULSIONS OF WATER SOLUBLE VINYL CARBOXYLIC ACID POLYMERS AND COPOLYMERS

Louis A. Goretta, Naperville, and Frederick J. Sibert, Chicago, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 2, 1976, Ser. No. 746,758
Int. Cl.² C08F *2/24*
U.S. Cl. 260—29.6 H **5 Claims**

1. In an improved method for the preparation of water-in-oil emulsions of high molecular weight water soluble vinyl carboxylic acid polymers, said method comprising:

A. Forming an emulsion comprising:

1. 30–95% by weight of an aqueous phase consisting of water and a water soluble vinyl addition monomer said water soluble vinyl addition monomer containing from 1.0–70.0% by weight of a water soluble vinyl carboxylic acid monomer based on the weight of the monomer;

2. 5.0–70.0% by weight of a hydrophilic oil;

3. 0.1–21.0% by weight of a water-in-oil emulsifying agent;

B. Polymerizing said emulsion under free radical forming conditions; and then,

C. Recovering a water-in-oil emulsion of a high molecular weight water soluble vinyl carboxylic acid polymer; the improvement comprising adjusting the pH of the aqueous phase to between 4.5–8.0 prior to polymerization.

4,070,322

INK COMPOSITION FOR JET PRINTING ONTO NON-ABSORBENT SURFACES

Ki-Sup Hwang, Chicago, and Daniel M. Zabiak, Park Ridge, both of Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed Feb. 2, 1976, Ser. No. 654,076
Int. Cl.² C09D *11/10*; C08L *31/04, 33/02*
U.S. Cl. 260—29.6 R **15 Claims**

1. An ink composition for jet printing onto non-porous non-absorbent surfaces comprising a solvent component the major portion of which is one or more organic ketones present in an amount of at least 64% by weight of the ink composition, and in which water may be present in an amount that does not exceed 10% by weight, a soluble ionizable salt present in solution in an amount within the range of 0.25 to 2.0% by weight, and an organic dyestuff soluble in the solvent component and present in an amount of at least 0.25% by weight, said ink composition having a viscosity within the range of 1.5 to 10 cps, a resistance less than 2000 ohm-cm, a surface tension of less than 28 dynes/cm, a velocity of sound within the range of 1200–1700 m/sec, and no particles having a dimension greater than 5 microns.

4,070,323

AQUEOUS POLYURETHANE EMULSIONS

John W. Vanderhoff, 345 9th Ave., Bethlehem, Pa. 18018; Mohamed S. El-Aasser, 1201 N. Maxwell St., Allentown, Pa. 18103, and Joseph D. Hoffman, P.O. Box 567, Logan, Ohio 43138

Filed Mar. 26, 1976, Ser. No. 670,907
Int. Cl.² C08L *33/14*
U.S. Cl. 260—29.6 NR **30 Claims**

1. A method comprising

I. reacting isocyanate groups in an organic polyisocyanate by anhydrous reaction with a chemically equivalent amount of primary hydroxyl-containing material, at least about 50 mole % of which material is one or a mixture of

A. allyl alcohol, or

B. at least one C_{2-4} hydroxyalkyl ester of acrylic or methacrylic acid, to form a water-resistant adduct of said polyisocyanate with said material, and

II. intimately dispersing said adduct, in the form of a water insoluble liquid phase, into an aqueous liquid medium containing

a. an anionic or cationic oil-in-water functioning emulsifying agent, in the presence of

b. an aliphatic hydrocarbon or hydrocarbyl alcohol which is inert, non-volatile, water insoluble, liquid, and contains a terminal aliphatic hydrocarbyl group of at least about 8 carbon atoms.

4,070,324

CONTINUOUS PROCEDURE FOR THE PRODUCTION OF A DIENE BASED SYNTHETIC RUBBER LATEX WHOSE PARTICLE DIAMETER IS IN THE RANGE BETWEEN 1500 AND 4000 ANGSTROMS

Ferruccio Fronzoni, Ravenna, and Carlo Giampaolo, San Donato Milanese, both of Italy, assignors to Anic, S.p.A., Palermo, Italy

Continuation of Ser. No. 369,243, June 12, 1973, abandoned. This application Nov. 3, 1975, Ser. No. 628,422
Claims priority, application Italy, June 24, 1972, 26168/72
Int. Cl.² C08L 9/00, 9/04, 9/08, 9/10
U.S. Cl. 260—29.7 D **3 Claims**

1. Process for the continuous production of a diene based synthetic rubber latex whose particle diameter is in the range between 1500 and 4000 A through an emulsion polymerization including the steps of feeding to the first autoclave in a system consisting of a single autoclave furnished with a stirrer or a series of autoclaves furnished with stirrers the following ingredients separately or in admixture:

a. 100 parts of a monomer consisting of a conjugated diolefin or of a mixture of monomers consisting of one or more conjugated diolefins at a total concentration of at least 80% and the balance selected from styrene, α-methylstyrene, acrylonitrile, methacrylonitrile, alkylic acrylates and methacrylates as such or in admixture;

b. from 60 to 300 parts of water and from 0.5 to 5 parts of one or more organic emulsifying agents in solution in said water; and

c. from 0.01 to 2 parts of a polymerization promoter, and collecting polymerization product from the autoclave system at a rate such that the residence time of such ingredients in the autoclave system is in the range between 2 hours and 30 hours, and maintaining the temperature in said autoclave system in the range between 70° and 140° C.

4,070,325

AQUEOUS LATICES OF HIGH POLYMER COMPOSITIONS AND PROCESS AND MEANS FOR THE PRODUCTION THEREOF

Oliver W. Burke, Jr., Fort Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 870,733, Nov. 4, 1969, abandoned, and Ser. No. 226,419, Feb. 15, 1972, Pat. No. 3,879,327, said Ser. No. 870,733, is a division of Ser. No. 691,823, Dec. 19, 1967, which is a continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917, said Ser. No. 226,419, is a continuation-in-part of Ser. No. 813,494, April 18, 1969, abandoned. This application Oct. 17, 1974, Ser. No. 515,472
Int. Cl.² C08L 7/02, 9/04, 9/08, 23/36
U.S. Cl. 260—29.7 EM **5 Claims**

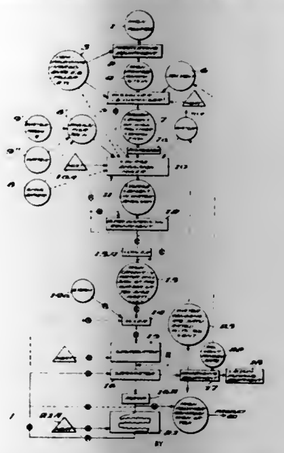
1. A latex consisting essentially of

a. an aqueous phase containing

b. a colloidally dispersed phase of essentially solvent free, anhydrously polymerized, organic polymer composition including by weight from 0–9 parts of resinous material per part of polymer of the composition, which polymer consists essentially of anhydrously formed polymer of ethylenically unsaturated monomer material having from 2 to 10 carbon atoms, and

c. as dispersant a combination of cationic amine and quaternary ammonium emulsifier, said combination consisting essentially of

1. amine emulsifier selected from the group consisting of



the water soluble salts of fatty amine emulsifiers and the water soluble salts of fatty diamine emulsifiers, and

2. quaternary ammonium emulsifier,

3. in a ratio of amine emulsifier to quaternary ammonium emulsifier in the range of from 0.5:5 to 5:0.5 by wt.,

d. said emulsifier combination being present in an amount in the range of 2 to 20% by weight based on the polymer composition, said amount being sufficient to form the latex.

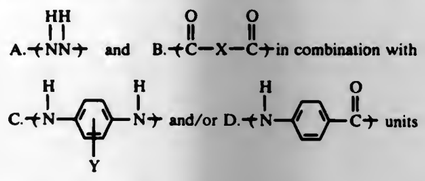
4,070,326

ANISOTROPIC SULFURIC ACID DOPES OF POLYAMIDE HYDRAZIDES

Paul Winthrop Morgan, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1975, Ser. No. 642,010
Int. Cl.² C08R 5/36
U.S. Cl. 260—30.8 R **4 Claims**

1. A novel optically anisotropic spinning solution of at least 5 percent by weight of a fiber- and film-forming polyamide-hydrazide consisting essentially of repeating units



wherein the divalent radical —X— in repeating units may be the same or different and is a bond or 1,4-phenylene;wherein Y is a hydrogen atom or a methyl or chloro radical; the B units and the total A and C units are present in substantially equimolar amounts; and the total of C and D units is from 15 to 50 mole percent based on the total of A, C and D units present in the polymer; in sulfuric acid of at least 99.5% but not greater than 102% concentration or in a mixture thereof with fluorosulfonic acid.

4,070,327

PROCESS FOR IMPROVING THE MECHANICAL PROPERTIES OF NOVOLAK-CURED MOLDED ARTICLES

Hans Jünger, Troisdorf, and Franz Weissenfels, Sieburg, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed July 21, 1976, Ser. No. 707,283
Claims priority, application Germany, July 22, 1975, 2532649
Int. Cl.² C08K 5/10
U.S. Cl. 260—31.4 R **12 Claims**

1. A process for increasing the strength and elasticity of molded articles consisting predominantly of inorganic, oxide-type fillers and cured novolaks, which comprises prior to the curing of the novolak containing said filler intermixing the novolak with a dialkylene glycol dibenzoate, and thereafter manufacturing the molded articles according to a conventional procedure.

4,070,328

MERCAPTOORGANOPOLYSILOXANES CURED TO ELASTOMERS WITH PEROXIDES AND NITROGEN COMPOUNDS

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

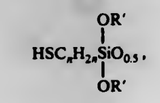
Filed Jan. 3, 1977, Ser. No. 756,295
Int. Cl.² C08L 83/08
U.S. Cl. 260—37 SB **4 Claims**

1. A composition curable to an elastomer comprising a material prepared by mixing

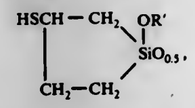
A. a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, trimethylsiloxane units, units of the formula



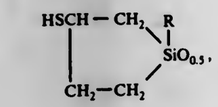
units of the formula



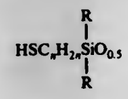
units of the formula



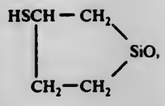
units of the formula



units of the formula



and units of the formula



wherein R is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radicals, R′ is methyl or ethyl and *n* has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of more than two sulfur containing siloxane units per molecule and no more than 10 mol percent —SH containing siloxane units based on the total number of siloxane units in the mercaptoorganopolysiloxane, there being at least 10 siloxane units per molecule in said mercaptoorganopolysiloxane,

B. organic hydroperoxide in an amount of from 1 to 6 parts by weight based on 100 parts by weight of (A),

C. a nitrogen compound selected from the group consisting of N,N′-tetramethylguanidine, piperidine, cyclohexylamine and triethylamine in amounts of 0.05 to 1 part by weight based on 100 parts by weight of (A), and

D. a filler in an amount of from 0 to 100 parts by weight per 100 parts by weight of (A).

4,070,329

SILOXANE ELASTOMER PREPARED FROM MERCAPTOORG ANOPOLYSILOXANES

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

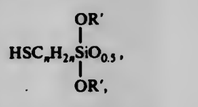
Filed Jan. 3, 1977, Ser. No. 756,294
Int. Cl.² C08L 83/08
U.S. Cl. 260—37 SB **2 Claims**

1. A composition curable to an elastomer comprising a material prepared by mixing

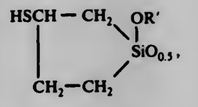
A. a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, trimethylsiloxane units, units of the formula



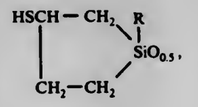
units of the formula



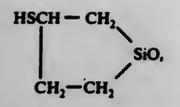
units of the formula



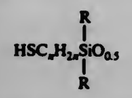
units of the formula



units of the formula



and units of the formula



wherein R is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radicals, R' is methyl or ethyl and *n* has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of at least two sulfur containing siloxane units per molecule and no more than 10 mol percent —SH containing siloxane units based on the total number of siloxane units in the mercaptoorganopolysiloxane, there being at least 10 siloxane units per molecule in said mercaptoorganopolysiloxane,

B. an organic peroxide in an amount of from 1 to 6 parts by weight based on 100 parts by weight of (A), and

C. a filler in an amount of from 0 to 100 parts by weight per 100 parts by weight of (A).

4,070,330

HIGH IMPACT MINERAL FILLED POLYCARBONATES

Herbert L. Rawlings, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jan. 23, 1976, Ser. No. 651,756

Int. Cl.² C08L 69/00

U.S. Cl. 260—37 PC **15 Claims**

1. In a polycarbonate suitable for forming molded articles comprising a polycarbonate resin and a filler the improvement comprising said filler being a novaculite mineral having an average particle size of up to 5 microns.

4,070,331

METHOD OF MAKING MOLDING COMPOUNDS AND PRODUCTS PRODUCED THEREBY

Walter D. Cottrell, Jr., Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 17, 1976, Ser. No. 751,567

Int. Cl.² C08K 3/20, 3/34

U.S. Cl. 260—38 **15 Claims**

1. A method of producing molding compounds from phenol aldehyde condensates that are produced by means of a basic catalyst comprising: reacting a phenol monomer with the basic catalyst for the reaction to form a phenolate salt; reacting the phenolate salt with the aldehyde therefor in relative proportions to form the phenol-aldehyde condensate and while dispersed throughout the inorganic filler of the molding compound, and causing the reaction to stop at a fusible state.

4,070,332

FLAME RETARDANT, NON-DRIPPING, SHAPE-RETAINING POLYESTER MOLDING COMPOSITION

Masanobu Morikawa; Toshikazu Aoyama, and Miyoji Yada, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 10, 1976, Ser. No. 740,534

Claims priority, application Japan, Nov. 18, 1975, 50-37758

Int. Cl.² C08K 3/22, 5/03

U.S. Cl. 260—40 R **12 Claims**

1. A flame-retardant, non-dripping, shape-retaining thermoplastic polyester resin comprising about 100 parts by weight of a linear polyester, about 5 to 25 parts by weight of a halogenated aromatic compound, about 1 to 20 parts by weight of antimony trioxide, and about 1 to 20 parts by weight of a zirconium compound containing a substantial and effective proportion of zirconium oxide.

4,070,333

POLY(ARYLACETYLENE) MOLDING COMPOSITIONS

Harold Jabloner, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 262,166, June 12, 1972, which is a continuation-in-part of Ser. No. 165,592, July 23, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 430,101

Int. Cl.² C08K 7/14

U.S. Cl. 260—42.18 **21 Claims**

1. A molding composition comprising a blend of (1) a prepolymer of at least one polyacetylenically substituted aromatic compound selected from the group consisting of diethynylbenzene; diethynyltoluene; diethynylxylene; diethynylbiphenyl; 9,10-diethynylanthracene; 9,10-diethynylphenanthrene; di(ethynylphenyl)ether; 1-chloro-2,5-diethynylbenzene; 2,3,5,6-tetrachloro-1,4-diethynylbenzene; 4,4'-diethynyl-transazobenzene; diphenylbutadiyne; 2,2'-dichlorodiphenyldiacetylene; 4,4'-dichlorodiphenyldiacetylene; 4,4'-dibromodiphenyldiacetylene; di-p-tolydiacetylene; di-α-naphthyldiacetylene; dibenzyldiacetylene; 1,4-bis(phenylethynyl)benzene; 1,3-bis(-phenylethynyl)benzene; 9,10-bis(phenylethynyl)anthracene; 1,3,5-triethynylbenzene; 1,2,4-triethynylbenzene; 1,3,5-tris(-phenylethynyl)-2,4,6-triphenylbenzene; 1,2,4-tris(phenylethynyl)-3,5,6-triphenylbenzene and tris(ethynylphenyl)benzene, said prepolymer having a number average molecular weight of from about 900 to about 12,000, a ratio of aromatic protons to olefinic protons greater than about 2.4 and containing from about 5 to about 20% acetylenic groups by weight of the prepolymer, with (2) from about 2 to about 70% by weight of the prepolymer, of at least one monomeric acetylenically substituted aromatic compound having a melting point below about 185° C. and a boiling point above about 250° C. and being selected from the group consisting of β-naphthylacetylene; biphenylacetylene; 4-ethynyl-trans-azobenzene; diphenylacetylene, di-o-tolylacetylene; di-m-tolylacetylene; bis(4-ethylphenyl)acetylene; bis(3,4-dimethylphenyl)acetylene; bis(4-chlorophenyl)acetylene; di(α-naphthyl)acetylene; β-naphthylphenylacetylene; phenyl benzoyl acetylene; 1,4-diethynylnaphthalene; 9,10-diethynylanthracene; 9,10-diethynylphenanthrene; 4,4'-diethynylbiphenyl; 4,4'-diethynyl-transazobenzene; 4,4'-diethynyldiphenyl ether; 2,3,5,6-tetrachloro-1,4-diethynylbenzene; diphenylbutadiyne; 2,2'-dichlorodiphenyldiacetylene; 3,3'-dichlorodiphenyldiacetylene; di-p-tolyldiacetylene; di-α-naphthyldiacetylene; dibenzyldiacetylene and diethynyldiphenyldiacetylene.

4,070,334

METHOD OF BONDING

George Edward Green, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 2, 1975, Ser. No. 636,893

Claims priority, application United Kingdom, Dec. 11, 1974, 53677/74

Int. Cl.² C08J 3/24

U.S. Cl. 260—42.53 **25 Claims**

1. A method of making a shaped article from particulate solid material which comprises

i. forming a mixture of the particles and an anaerobically-curing adhesive containing, as a curing accelerator, either an aliphatic amine having at least two primary aliphatic amino groups or a condensation product of such an amine with a ketone or with an aldehyde,

ii. forming the mixture into the desired shape, and

iii. in the presence of water, causing the adhesive to cure and to bond the particles together by displacing air or other oxygen-containing gas in the environment of the shaped article with an inert gas or vapour.

4,070,335

3,5-DIALKYL-4-HYDROXYPHENYLALKYL SUBSTITUTED PIPERAZINE DIONES AND POLYMERIC COMPOSITIONS STABILIZED THEREBY

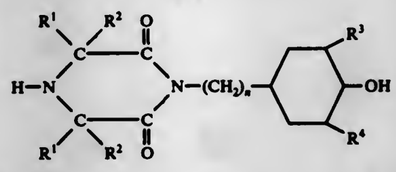
Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 622,553, Oct. 15, 1975, Pat. No. 3,969,316, which is a division of Ser. No. 378,472, July 12, 1973, Pat. No. 3,919,234, which is a continuation-in-part of Ser. No. 237,981, March 24, 1972, abandoned. This application July 2, 1976, Ser. No. 701,768

Int. Cl.² C08K 5/34, 5/13

U.S. Cl. 260—45.8 NT **11 Claims**

1. A composition of matter stabilized against ultraviolet deterioration which comprises a synthetic organic polymer normally subject to ultraviolet deterioration and from 0.01 to 2% by weight of the polymer of a stabilizing compound of the formula



wherein

R^1 and R^2 are independently of each other methyl or ethyl or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group;

n is an integer of from 1 to 4; and

each of R^3 and R^4 is the same or different (lower)alkyl group having from 1 to 8 carbon atoms, wherein at least one of said alkyl groups is branched on the α carbon atom.

4,070,336

HYDROGEN PHOSPHONATES AND POLYMER COMPOSITIONS CONTAINING THEM AS FLAME RETARDANTS

Gail H. Birum, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 3, 1976, Ser. No. 720,323

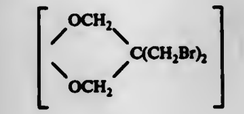
Int. Cl.² C07F 9/02; C08K 5/51, 5/53

U.S. Cl. 260—45.8 R **23 Claims**

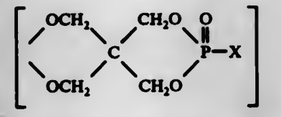
1. A cyclic phosphorus compound having the formula



where Y is selected from the group consisting of

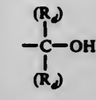


and



and where X is selected from the group consisting of —S(R_e)

where R_e is phenyl with 0 to 5 halogens, or phenyl with 0 to 2 nitro groups, or methyl with 0 to 3 chlorine atoms, and



where R_d is an alkyl radical of 1 to 4 carbon atoms, or phenyl.

14. The combination of an organic polymer together with a cyclic phosphorus compound as defined in claim 1.

4,070,337

BICHROMOPHORIC BENZOTRIAZOLE-STYRENE ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

Gether Irick, Jr.; Charles A. Kelly, both of Kingsport, and James C. Martin, Johnson City, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 16, 1976, Ser. No. 715,016

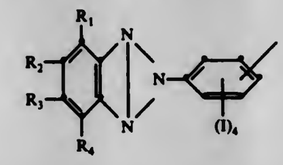
Int. Cl.² C08K 5/34

U.S. Cl. 260—45.8 NT **60 Claims**

1. An organic composition susceptible to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of at least one bichromophoric compound having the formula:

A—B—C

wherein A is a group having the structure

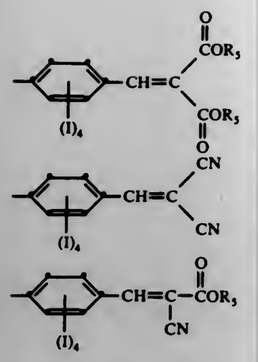


wherein

R_1, R_2, R_3 and R_4 are hydrogen, chloro, bromo, lower alkyl, substituted lower alkyl, cyclohexyl, substituted cycloalkyl, phenyl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, substituted amino, cyano, carboalkoxy, acetamido and the substituents R_1 and R_2, R_2 and R_3, and R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the heterocyclic ring and the carbon atom attached to the B group connecting the heterocyclic aromatic A group with the aromatic C group, wherein B is a linking group connecting A and C and is carbonyloxy, oxycarbonylalkyleneoxy, alkyleneoxycarbonyloxy, oxyalkylenecarbonyloxy, oxycarbonyloxy, alkyleneoxy, alkyleneoxyalkyleneoxy, oxyalkylenearylenealkyleneoxy, thio, thioalkyleneoxy, sulfinyldioxy, oxy(alkoxy)phosphinooxy, carbonylamino, N-alkylcarbonylamino, N-arylcarbonylamino, aminocarbnylalkyleneoxy, N-alkylaminocarbonylalkyleneoxy, N-arylaminocarbonylalkyleneoxy, aminocarbonylamino, N-alkylaminocarbonylamino, N-alkylamino, N-arylamino, N-alkylaminoalkyleneoxy, N-arylaminoalkyleneoxy, oxyalkyleneoxy, oxyaryleneoxy, oxy; and

wherein C is a group having the formula



where I is the same substituent as listed above and is present in all positions of the benzenoid rings except the carbon atom attached to the B group connecting the A and C moieties, and said I substituents can all be one of the substituents listed above or different listed substituents and R_5 is an alkyl group containing 1 to 20 carbon atoms or a hydroxyalkyl group or a substituted alkoxyalkyl group containing 1 to 20 carbon atoms.

4,070,338

PHENOLIC IMIDAZOLONES AND POLYMERS STABILIZED THEREWITH

Siegfried Rosenberger, Riehen, and Andreas Schmidt, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

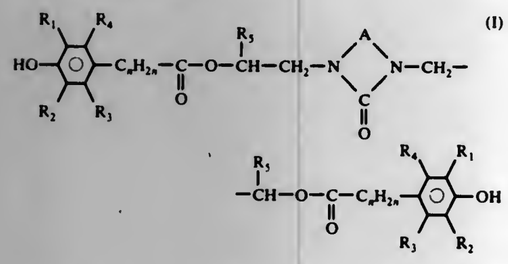
Filed Mar. 31, 1976, Ser. No. 672,565

Claims priority, application Switzerland, Apr. 10, 1975, 4569/75

Int. Cl.² C07D *235/26;* C08K *5/34*

U.S. Cl. 260—45.8 N **9 Claims**

1. Compounds of the formula I



wherein A is 1,2-cycloalkylene, 1,2-cycloalkenylene or 1,2-arylene, R_1 and R_2 are alkyl, R_3, R_4 and R_5 are hydrogen or alkyl and *n* is 0, 1 or 2.

7. Synthetic organic polymer containing a compound according to claim 1.

4,070,339

BICHROMOPHORIC BENZOTRIAZOLE-STYRENE ESTER ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

Gether Irick, Jr.; Charles A. Kelly, both of Kingsport, and James C. Martin, Johnson City, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 16, 1976, Ser. No. 715,014

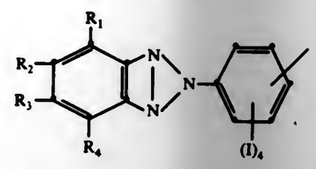
Int. Cl.² C08K *5/34*

U.S. Cl. 260—45.8 NT **34 Claims**

1. An organic composition susceptible to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of at least one bichromophoric compound having the formula:

A—B—C

wherein A is a group having the structure

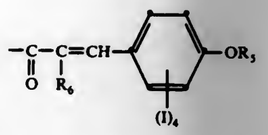


wherein

R_1, R_2, R_3 and R_4 are hydrogen, chloro, bromo, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, substituted amino, cyano, carboalkoxy and the substituents R_1 and R_2, R_2 and R_3, and R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the heterocyclic ring and the carbon atom attached to the B group connecting the heterocyclic aromatic A group with the styrene C group, wherein B is a linking group connecting A and C and can be oxy, oxycarbonylalkyleneoxy, alkyleneoxy, alkyleneoxyalkyleneoxy, oxyalkylenearylenealkyleneoxy, thio, thioalkyleneoxy, aminocarbonylalkyleneoxy, N-alkylaminocarbonylalkyleneoxy, N-arylaminocarbonylalkyleneoxy, N-alkylamino, N-arylamino, N-arylaminoalkyleneoxy, N-alkyleneaminoalkyleneoxy, oxyalkyleneoxy, oxyaryleneoxy; and

wherein C is a group having the formula



where I is the same substituent as listed above and said I substituents can all be one of the substituents listed above or different listed substituents and R_5 is an alkyl group containing 1 to 20 carbon atoms, and R_6 is cyano, alkylsulfonyl, arylsulfonyl, alkylcarbonyl, arylcarbonyl or carbonylalkoxy.

4,070,340

AMINE MODIFIED POLYMERS REACTED WITH HALOGEN COMPOUNDS

Evalds Lasis, and Ernest Jack Buckler, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Continuation-in-part of Ser. No. 510,725, Sept. 30, 1974, Pat. No. 3,969,330. This application Mar. 26, 1976, Ser. No. 670,968

Int. Cl.² C08C *19/14, 19/22*

U.S. Cl. 260—47 UP **12 Claims**

1. An improved process of preparing a synthetic rubber composition of improved green strength which comprises reacting a rubbery polymer of a C_4–C_6 conjugated diolefin or a rubbery polymer thereof with a C_8–C_{10} vinyl or vinylidene substituted aromatic hydrocarbon or with a C_3–C_5 vinyl compound having a nitrile group, the rubbery polymer having from about 0.5 millimoles to about 10 millimoles per 100 grams of polymer of bound tertiary amine groups therein, with a halogen compound, the improvement being that the halogen compound is of general formula

X — CH_2—R—CH_2—Y

wherein X and Y each represent chlorine, bromine, or iodine, and R represents a mononuclear aromatic group containing one CH_2—X group or a methoxy group substituted or a polynuclear aromatic group selected from diphenyl, diphenyl ether, diphenyl thioether, diphenyl alkane in which the alkane residue has from 1–4 carbon atoms, and naphthalene, the aromatic groups of the polynuclear aromatic group being unsubstituted or substituted by one or more groups selected from lower alkyl, lower alkyl halide, aryl or lower alkenyl, the groups X—CH_2 and CH_2—Y being associated with a different nucleus of the polynuclear aromatic group, and being linked directly to said nucleus

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4,070,341

STABILIZED ETHYLENE-CHLOROTRIFLUOROETHYLENE POLYMERS EXHIBITING REDUCED METAL CORROSION

Stephen R. Schulze, Gillette, N.J., assignor to Allied Chemical Corporation, Morris Township, N.J.

Filed Dec. 15, 1976, Ser. No. 751,001

Int. Cl.² C08K *3/30, 5/13*

U.S. Cl. 260—45.75 V **7 Claims**

1. A stabilized fluoropolymer composition comprising a polymer of from about 40 to 60 mol percent ethylene, about 60 to 40 mol percent chlorotrifluoroethylene, optionally about 0.1 to 10 mol percent of a fluorinated termonomer selected from the group consisting of 3,3,3-trifluoro-2-trifluoromethyl propene, a vinyl monomer which is free of telogenic activity and which provides a side chain having at least two carbon atoms, the side chain being aromatic or having its elements bonded by a single bond only, and mixtures thereof, and as stabilizing agent, a mixture of tribasic lead sulfate and bisphenol A.

4,070,342

MANUFACTURE OF POLYESTERS

Stanley David Lazarus, Petersburg, and John Walter Showers, Chester, both of Va., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Dec. 20, 1976, Ser. No. 752,483

Int. Cl.² C08K *5/17, 5/18, 5/56*

U.S. Cl. 260—45.75 C **2 Claims**

1. In a continuous process for melt-spinning yarn from a high molecular weight polyethylene terephthalate polymer, the improvement which consists of continuously incorporating in said polymer a stabilizing amount of a copper compound selected from the group consisting of copper II dichloro 2,2'-dipyridyl, copper II dichloro bis(2,2'-dipyridyl), copper II dichloro oxamide, copper II dichloro 1,10-phenanthroline, and copper II dichloro ethylene diamine, said process being further characterized in that said copper compound is incorporated in said polymer when said polymer is in the molten state immediately prior to spinning, by forming a stable dispersion comprising a liquid polyisobutene and said copper compound and injecting the dispersion with mixing ipto said molten polymer, said liquid polyisobutene having a viscosity of 3 to 70 poises at 20° C., and said dispersion containing 10 to 60 weight percent of said copper compound, whereby said yarn has an intrinsic viscosity of 0.90 to 0.95 dl. per gram and less than 12 equivalents of carboxyl end groups per 10^6 grams of yarn, said yarn being particularly useful to make fabric for tire building.

4,070,343

HEAT STABLE ORGANOPOLYSILOXANE COMPOSITION

Kelichi Kishimoto, Ichihara; Yoshinobu Koda, Chiba; Shosaku Sasaki, and Masahiko Suzuki, both of Ichihara, all of Japan, assignors to Toray Silicone Company, Ltd., Ichihara, Japan

Continuation-in-part of Ser. No. 616,972, Sept. 26, 1975, abandoned. This application Nov. 5, 1976, Ser. No. 739,225

Int. Cl.² C08K *5/09*

U.S. Cl. 260—45.75 F **7 Claims**

1. A composition consisting of an organopolysiloxane composition having incorporated therein as a heat-stability additive a mixture of (1) a reaction product of an alkali metal siloxanolate having an average of at least three siloxane units per molecule with a cerium salt of an organic carboxylic acid or cerium chloride and (2) at least one metal compound selected from the group consisting of organic carboxylic acid salts and alkoxy compounds of zirconium, titanium and iron wherein the mole ratio of component (2) to cerium present in the composition is from 0.5/1 to 2.0/1.

4,070,344

AMINE TERMINATED POLYMERS AND THE FORMATION OF BLOCK COPOLYMERS

William L. Hergenrother; Richard A. Schwarz, both of Akron; Richard J. Ambrose, Fairlawn, and Robert A. Hayes, Cuyahoga Falls, all of Ohio, assignors to The Firestone Tire and Rubber Company, Akron, Ohio

Filed May 5, 1975, Ser. No. 574,676

Int. Cl.² C08F *18/24;* C08G *18/04, 18/10*

U.S. Cl. 260—77.5 CR **34 Claims**

1. A composition, comprising; an amine terminated polymer said amine terminated polymer produced by the anionic polymerization of monomers selected from the class consisting of conjugated diene, vinyl substituted aromatic, vinyl substituted pyridine, vinyl substituted quinoline, and compounds selected from the class consisting of

1. CH_2=CACN wherein A is CN, CF_3, CH_3 or H;
2. CH_2=$CACO_2R$ wherein A is CO_2R, SO_2R, CH_3 or H;
3. CH_2=$CANO_2$ wherein A is Cl, CH_3 or H;
4. CH_2=$CACON(R)_2$ wherein A is CH_3 or H;

wherein R is hydrogen, an alkyl having from 1 to 15 carbon atoms, a cycloalkyl having from 4 to 15 carbon atoms, an aromatic having from 6 to 15 carbon atoms, or a substituted aromatic ring wherein the substitution is an alkyl group having from 1 to 15 carbon atoms or a cycloalkyl group having from 4 to 15 carbon atoms,

said anionic polymerized polymer end capped by a compound selected from the class consisting of polyisocyanates and polyisothiocyanates through one of the isocyanate or isothiocyanate groups,

said polyisocyanates and said polyisothiocyanates having the formula $R(N=C=X)_n$ where R is an aliphatic containing from 2 to about 20 carbon atoms, a cycloaliphatic containing from 4 to about 20 carbon atoms, an aromatic containing from 6 to about 20 carbon atoms, and combinations thereof, *n* is an integer of 2 or 3 and X is selected from the class consisting of oxygen and sulfur,

said end capped polymer reacted with an amide compound to form an imide type terminated polymer, and

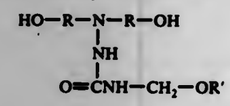
said imide terminated polymer hydrolyzed to produce said amine terminated polymer.

4,070,345
MONOMETHYLOL ETHER DIOLS AND POLYURETHANE SOLUTIONS PREPARED THEREFROM

Hans Dieter Winkelmann, Cologne; Harald Oertel, Odenthal, and Norbert Weimann, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 21, 1976, Ser. No. 725,319
Claims priority, application Germany, Sept. 24, 1975, 2542449
Int. Cl.[2] C07C *133/02*; C08G *18/32*; C08K *5/20*
U.S. Cl. 260—77.5 AM 8 Claims

7. Solutions of autocrosslinkable polyurethane produced by reacting a substantially linear NCO prepolymer of relatively long chain dihydroxy compounds with molecular weights of from about 600 to 6000 and excess quantities of organic diisocyanates, and chain extension in polyurethane solvents, with water or low molecular weight compounds comprising diols, diamines aminoalcohols, dihydrazide compounds, and hydrazine said compounds having molecular weights of from 32 to about 400, wherein the NCO prepolymer is produced using monomethylol ether diols corresponding to the formula:



in which

R is a straight-chain or branched alkylene radical having up to 12 carbon atoms; and

R' is an alkyl radical, in quantities of from about 0.1 to 10% by weight based on the solids content.

4,070,346
PRODUCTION OF POLYURETHANE POWDER

Hildegard Schnöring, Wuppertal-Elberfeld, and Bernd Klinksiek, Bensberg-Herkenrath, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

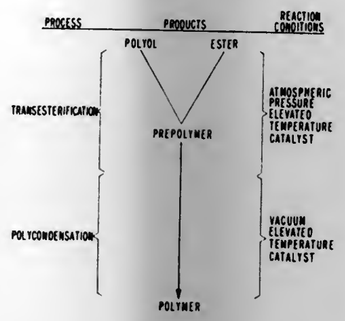
Continuation of Ser. No. 542,883, Jan. 21, 1975, abandoned. This application Mar. 23, 1977, Ser. No. 780,395
Int. Cl.[2] C08G *18/08*
U.S. Cl. 260—77.5 AA 9 Claims

1. An interface polyaddition process for producing polyurethane polyurea in the form of powder, the particles of which may contain other substances enclosed in them, comprising converting a polyisocyanate into small particles in the liquid state, bringing the particles into contact with a gaseous diamine or polyamine until they have been converted into the solid state by polyisocyanate-polyaddition, and separating the said product from the gaseous diamine or polyamine.

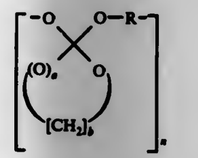
4,070,347
POLY(ORTHOESTER) CO- AND HOMOPOLYMERS AND POLY(ORTHOCARBONATE) CO- AND HOMOPOLYMERS HAVING CARBONYLOXY FUNCTIONALITY

Edward Emil Schmitt, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

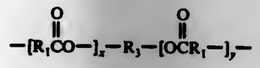
Filed Aug. 16, 1976, Ser. No. 714,577
Int. Cl.[2] C08G *63/02*
U.S. Cl. 260—77.5 D 32 Claims



1. A polymer of the general formula:



wherein R is a member selected from the group consisting of (1) R_1 and R_2 randomly arranged on the polymeric backbone to form a polymer containing both R_1 and R_2, and (2) R_2 only, with R_1 selected from the group consisting of alkylene of 1 to 10 carbons; alkenylene of 2 to 10 carbons; cycloalkylene of 3 to 7 carbons; cycloalkylene of 3 to 7 carbons substituted with a member selected from the group consisting of an alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons, alkoxy of 1 to 10 carbons and alkylene of 1 to 10 carbons; cycloalkenylene of 5 to 7 carbons; cycloalkenylene of 5 to 7 carbons substituted with a member selected from the group consisting of an alkyl of 1 to 10 carbons; alkenyl of 2 to 10 carbons, alkoxy of 1 to 10 carbons and alkylene of 1 to 10 carbons; arylene; arylene of 6 to 20 carbons substituted with an alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons, alkoxy of 1 to 10 carbons, and alkylene of 1 to 10 carbons; and with R_2 a



group with R_1 as defined and R_3 independently selected from the group consisting of alkylene of 1 to 10 carbons; alkenylene of 2 to 10 carbons; cycloalkylene of 3 to 7 carbons; cycloalkylene of 3 to 7 carbons substituted with a member selected from the group consisting of an alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons, alkoxy of 1 to 10 carbons and alkylene of 1 to 10 carbons; cycloalkenylene of 5 to 7 carbons; cycloalkenylene of 5 to 7 carbons substituted with a member selected from the group consisting of an alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons, alkoxy of 1 to 10 carbons and alkylene of 1 to 10 carbons; arylene; arylene of 6 to 20 carbons substituted with an alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons, alkoxy of 1 to 10 carbons and alkylene of 1 to 10 carbons; and a is 0 to 1, b is 2 to 6, x and y are independently 0 to 100 with the proviso that at least one of x and y is at least one, and n is at least 10.

4,070,348
WATER-SWELLABLE, BEAD COPOLYMER

Dieter Kriemer, Mainz; Klaus Lehmann, Rossdorf via Darmstadt; Horst Peanewiss, Darmstadt-Neu-Kranichstein; Hermann Plainer, Darmstadt, and Roland Schweder, Darmstadt-Eberstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Continuation-in-part of Ser. No. 382,379, July 25, 1973, abandoned. This application Jan. 28, 1975, Ser. No. 544,830
Int. Cl.[2] C08F *28/00*; C08G *75/00*; C08F *24/00, 2/00*
U.S. Cl. 260—79.3 MU 12 Claims

1. A water-swellable, cross-linked bead copolymer prepared by the method comprising:

a. dissolving a monomer mixture consisting essentially of

1. an ethylenically-unsaturated radical-polymerizable comonomer having a glycidyl group,
2. a cross-linking comonomer having at least two radical-polymerizable α,β-carbon double bonds, but otherwise free of the functional groups found in monomer (1),
3. a radical-polymerizable water-soluble monounsaturated comonomer,

comonomers (1), (2), and (3) constituting from about 50 to 100 mol percent of the monomer mixture with the balance, if any, being

4. a water-insoluble radical-polymerizable monounsaturated compound,

comonomer (1) comprising at least 2 mol percent, comonomer (2) comprising 0.2 to 5 mol percent, and comonomer (3) comprising at least 10 mol percent of the monomer mixture, in from 20 to 200 percent, by weight of the monomer mixture, of a non-aqueous solvent for said monomer mixture;

b. combining the solution with a free radical-forming initiator soluble in said solution;

c. suspending the resulting solution, in the form of droplets, in a continuous phase of a non-polar organic liquid which is immiscible with said non-aqueous solvent and is not a solvent for said monomer or said initiator;

d. polymerizing said monomer mixture at a temperature at which said initiator forms free radicals, whereby said bead copolymer is formed; and

e. separating said bead copolymer from said continuous phase of organic liquid.

4,070,349
AROMATIC SULFIDE/SULFONE POLYMER PRODUCTION

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

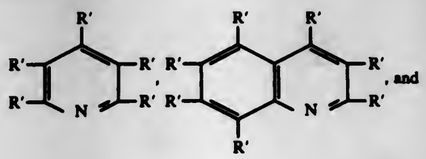
Filed June 22, 1976, Ser. No. 698,578
Int. Cl.[2] C08G *75/16*
U.S. Cl. 260—79.3 M 10 Claims

1. A process for the production of high molecular weight aromatic sulfide/sulfone polymers which comprises contacting

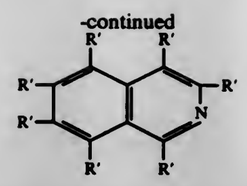
a. at least one dihalo aromatic sulfone,

b. at least one alkali metal sulfide selected from the group consisting of sodium sulfide, potassium sulfide, rubidium sulfide, and cesium sulfide, and

c. at least one heterocyclic amine represented by a formula selected from



-continued



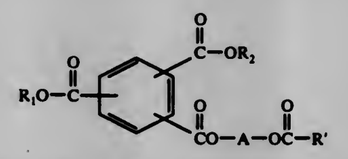
where each R' is selected from the group consisting of hydrogen and alkyl radicals, the total number of carbon atoms in each of the heterocyclic amine molecules being up to about 15, under polymerization conditions for a period of time sufficient to form an aromatic sulfide/sulfone polymer.

4,070,350
EPOXIDIZED MIXED MELLITATE COMPOUNDS

Alfred Johannes Dieterman, Mississauga, and Roland Hendrick Riem, Oakville, both of Canada, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Nov. 20, 1973, Ser. No. 417,586
Claims priority, application Canada, Nov. 23, 1972, 157256
Int. Cl.[2] C07D *303/42, 303/40*
U.S. Cl. 260—97.5 5 Claims

1. An epoxidized mixed mellitate composition of the formula



wherein R_1 and R_2 are alkyl radicals containing from 4 to 18 carbon atoms, A is a bivalent branched or straight-chain alkylene radical containing 2 to 8 carbon atoms and R' is a radical containing 3 to 21 carbon atoms derived from an unsaturated monobasic acid and epoxidized at the sites of unsaturation.

4,070,351
PROCESS FOR THE TREATMENT OF VEGETABLE MATTER WITH RECOVERY OF CALORIES FROM THE DEHYDRATION STACK GASES AND APPLICATIONS THEREOF

Olivier de Mathan, Olivet, France, assignor to France-Luzerne, Paris, France

Filed Feb. 17, 1976, Ser. No. 658,332
Int. Cl.[2] A23J *1/14*; C07G *7/00*
U.S. Cl. 260—112 R 8 Claims

1. A process of the treatment of vegetable matter comprising:

a. pressing the vegetable matter to provide a pressing juice and a cake,

b. dehydrating said cake by passing it into a heated dehydration zone to provide a dehydrated cake and stack gases from the heated dehydration zone.

c. recycling of a fraction of said stack gases at the input to said heated dehydration zone, said recycling being provided to obtain at the outlet of said heated dehydration zone stack gases having a temperature between about 100 to 120° C and containing CO_2, steam, nitrogen, and oxygen, the pressure being substantially equal to atmospheric pressure, and

d. concentrating said pressing juice by passing it through a multiple effect evaporator, with the introduction of unrecycled stack gases into the first effect of said evaporator, whereby the steam contained in said unrecycled stack gases is at least partially condensed to provide a condensate and the non-condensable gases are discharged into the atmosphere.

4,070,352

BENZOISOTHIAZOLEAZOBENZMORPHOLINE OF TETRAHYDROQUINONE COMPOUNDS

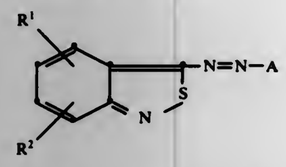
Ronald J. Maner, and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 418,639, Nov. 23, 1973, abandoned, Continuation-in-part of Ser. No. 252,645, May 12, 1972, abandoned. This application Oct. 29, 1975, Ser. No. 626,797

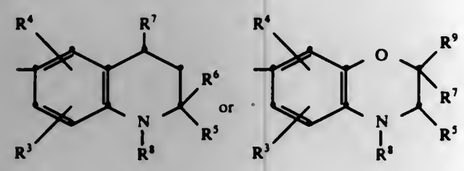
Int. Cl.[2] C09B *29/36;* D06P *1/04, 3/24, 3/26*

U.S. Cl. 260—155 **7 Claims**

1. A compound having the formula



wherein R^1 and R^2 each is hydrogen, lower alkyl, lower alkoxy, chloro or bromo and A is



wherein

R^3 is hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, lower alkanoylamino, or lower alkoxycarbonylamino;

R^4 is hydrogen;

R^5 is hydrogen, lower alkyl or when R^3, R^6 and R^7 each is methyl, R^5 methyl;

R^6, R^7 and R^9 each is hydrogen or R^6 and R_7 each is methyl; and

R^8 is lower alkyl or lower alkyl substituted with hydroxy, sulfonamido, lower alkylsulfonamido, lower dialkylsulfonamido, lower alkoxy, cyano, carbamoyl, lower alkylcarbamoyl, lower dialkylcarbamoyl, acetamido, hydroxy substituted lower alkanoylamino, lower alkanoyloxy, or lower alkoxycarbonyl.

4,070,353

DICARBOXYLIC ACID ESTER DIAZO PIGMENTS

Georg Cseh, Basel, and Karl Ronco, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

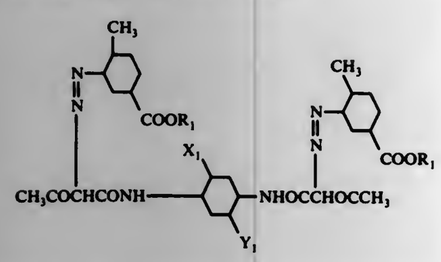
Continuation of Ser. No. 458,729, April 8, 1974, abandoned. This application Feb. 4, 1976, Ser. No. 655,293

Claims priority, application Switzerland, Apr. 18, 1973, 5639/73

Int. Cl.[2] C09B *33/16*

U.S. Cl. 260—176 **7 Claims**

1. A disazo pigment of the formula



wherein R_1 is alkyl containing 1 to 6 carbon atoms; alkyl containing 1 to 6 carbon atoms substituted with chloro, or alkoxy containing 1 to 4 carbon atoms; cycloalkyl containing 5 to 6 carbon atoms; phenalkyl having 1 to 2 carbon atoms in the alkyl radical; phenyl; or phenyl substituted by chloro, bromo, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms, methoxycarbonyl, ethoxycabonyl or akoanoylamino containing 1 to 4 carbon atoms; X_1 is hydrogen; halogen; alkyl containing 1 to 4 carbon atoms; or alkoxy containing 1 to 4 carbon atoms; and Y_1 is hydrogen; halogen; alkyl containing 1 to 4 carbon atoms; or alkoxy containing 1 to 4 carbon atoms.

4,070,354

POLYMERS FROM N-(2-HYDROXYETHYL)AZIRIDINES

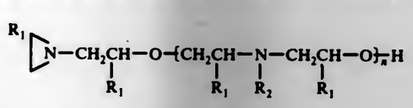
Clarence R. Dick, and James Larry Potter, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 57,798, July 23, 1970, abandoned. This application Sept. 28, 1972, Ser. No. 292,928

Int. Cl.[2] C07D *203/12;* C08G *73/04*

U.S. Cl. 260—239 E **1 Claim**

1. A process for preparing a polymer of the formula



wherein R_1 is hydrogen or methyl, R_2 is hydrogen or a branching side chain of like structure, and n is an integer of from 1 to 25, the process comprising polymerizing by heating at a temperature of from about 100° C to about 225° C at least one monomer selected from the group of N-(2-hydroxyethyl)ethylenimine, N-(2-hydroxypropyl)ethylenimine, N-(2-hydroxyethyl)-2-methylethylenimine or N-(2-hydroxypropyl)-2-methylethylenimine, said process being conducted in the presence of from zero percent up to about 10 percent by weight of water, based on the weight of the monomer(s), and in the presence of metallic lithium, sodium, potassium; or lithium, sodium or potassium amide; sodium or potassium borohydride; lithium, sodium, or potassium amalgam; lithium, sodium or potassium hydride; lithium sodium or potassium lower alkoxide having from 1 to 4 carbon atoms in the alkoxy radical; sodium phenolate; or an alkyllithium having from 1 to 4 carbon atoms in the alkyl radical.

4,070,355

1,5-BENZODIAZEPIN-2-ONES

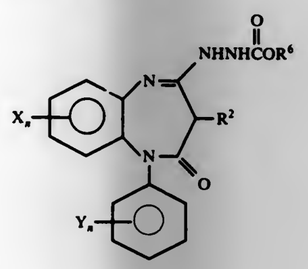
B. Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 404,071, Oct. 5, 1973, Pat. No. 4,033,947. This application Mar. 17, 1977, Ser. No. 778,531

Int. Cl.[2] C07D *487/22, 243/12*

U.S. Cl. 260—239.3 B **6 Claims**

1. A compound of the formula



wherein

R^2 is H, alkyl of 1–3 carbons, hydroxy or alkanoyloxy of 1–4 carbons;

X and Y are the same or different and are H, F, Cl, Br, trifluoromethyl, alkyl of 1 to 4 carbons, alkoxy of 1–4 carbons, nitro, cyano, amino, alkanoylamino of 1–4 carbons, alkylthio of 1–4 carbons, alkylsulfinyl of 1–4 carbons or alkyl sulfonyl of 1–4 carbons;

n is 0, 1 or 2;

and R^6 is alkyl of 1–4 carbons optionally substituted by phenyl.

4,070,356

MANUFACTURE OF SOLUBLE SULFATHIAZOLE

Emanuel B. Hershberg, West Orange, and James E. Christensen, Westfield, both of N.J., assignors to MBH Chemical Corporation, Orange, N.J.

Filed Jan. 22, 1976, Ser. No. 651,293

Int. Cl.[2] C07D *275/00, 277/00, 285/00;* A01N *9/22*

U.S. Cl. 260—239.95 **9 Claims**

1. In the production of hydrates of sodium sulfathiazole, by contacting sulfathiazole with aqueous NaOH in approximately equimolar amount and recovering the resulting hydrate, the improvement which comprises adjusting the water content of the aqueous sodium hydroxide sulfathiazole solution such that the mol ratio of water to sodium sulfathiazole is about 4.5 to 6, and maintaining the temperature at a range of about 50° to 63° C. until a clear solution is formed, and the molten hydrate is then poured into containers and allowed to cool and solidify.

4,070,357

PROCESS FOR THE PREPARATION OF INDOLINE DERIVATIVES

Rochus Jonas, and Rudolf Klug, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Germany

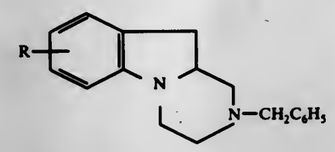
Filed Jan. 30, 1976, Ser. No. 653,846

Claims priority, application Germany, Feb. 4, 1975, 2504531

Int. Cl.[2] C07D *487/04*

U.S. Cl. 260—268 TR **5 Claims**

1. A compound of the formula



wherein R is H or CH_3O, or an acid addition salt thereof.

4,070,358

PROCESS FOR THE PREPARATION OF DIINDOLE ALKALOIDS OR OF THE ACID ADDITION SALTS THEREOF

Karola Jovanovics; Kalman Szasz; Csaba Lorincz; Laszlo Hermann, and Eszter Dezseri, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

Filed Oct. 22, 1976, Ser. No. 735,004

Claims priority, application Hungary, Oct. 28, 1975, RI 581

Int. Cl.[2] C07D *519/04*

U.S. Cl. 260—287 B **6 Claims**

1. A process for isolating vinblastine from a mixture of diindole alkaloids comprising acid addition salts of vinblastine and leurosine which comprises the steps of:

a. dissolving the mixture in an organic solvent at least partially miscible with water;

b. adding to the solution formed in step (a) an organic base of higher basicity than that of vinblastine or leurosine;

c. separating the precipitated leurosine;

d. evaporating the remaining solution to leave behind a dry residue;

e. extracting the dry residue formed in step (d) with a hydrocarbon solvent;

f. extracting the solution formed in step (e) with an aqueous phosphate buffer solution having a pH of 3.7 to 4.3;

g. readjusting the aqueous phase extracted in step (f) with phosphoric acid to a pH of 3.5 to 4.1;

h. extracting the acidic aqueous phase formed in step (g) with a chlorinated hydrocarbon solvent; and

i. recovering vinblastine from the chlorinated hydrocarbon solvent.

4,070,359

PROCESS FOR PREPARING 5,11-DIAZATETRACYCLODODECANES

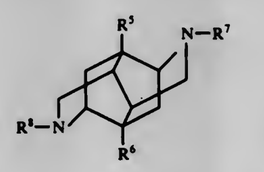
Jan ten Broeke, Somerset; Edward J. J. Grabowski, Westfield, both of N.J.; Lars M. Flataker, Lansdale, Pa.; Michael H. Fisher, Bridgewater, and Arthur A. Patchett, Cranford, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 676,769, April 14, 1976, Pat. No. 4,033,968. This application Mar. 24, 1977, Ser. No. 780,731

Int. Cl.[2] C07D *487/08*

U.S. Cl. 260—293.55 **3 Claims**

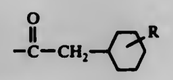
1. A process for the preparation of a compound of structural formula:



wherein

R^5 and R^6 are the same or different, and each is

1. CN,
2. COO(lower alkyl),
3. $CONH_2$,

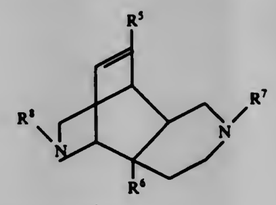


5. $CSNH_2$,

R^7 and R^8 are

1. lower alkyl,
2. lower alkenyl, or
3. phenyl-lower alkyl, wherein the phenyl is unsubstituted or substituted with C_{1-3} alkyl, C_{1-3} alkoxy, or halo,

which comprises heating a compound of structural formula:



in water or a lower alkanol.

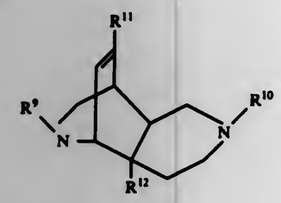
4,070,360

4,9-DIAZATRICYCLO[6.2.2.0^{2,7}]DODEC-11-ENES

Jan ten Broeke, Somerset; Edward J. J. Grabowski, Westfield, both of N.J.; Lars M. Flataker, Lansdale, Pa.; Michael H. Fisher, Bridgewater, and Arthur A. Patchett, Cranford, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 676,769, April 14, 1976, Pat. No. 4,033,968.
This application Mar. 24, 1977, Ser. No. 780,732
Int. Cl.^{2} C07D *471/04*
U.S. Cl. 260—293.55 1 Claim

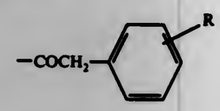
1. A compound of structural formula:



or acid addition salt thereof, wherein

R^{11} and R^{12} are the same or different and each is:

1. —CN,
2. —COO(lower alkyl),
3. —$CONH_2$,



(4).

wherein R is lower alkoxy, fluoro, chloro, bromo, or hydrogen; and

R^9 and R^{10} are the same or different and each is:

1. lower alkyl,
2. lower akenyl,
3. phenyl-lower alkyl, wherein the phenyl group is unsubstituted or substituted with C_{1-3} alkyl, C_{1-3} alkoxy, or halo;

with the proviso that if R^{11} and R^{12} are —CN, then R^9 and R^{10} are other than lower alkyl.

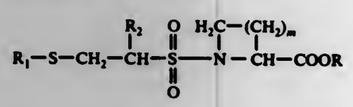
4,070,361

MERCAPTOALKYLSULFONYL PROLINE AND PIPECOLIC ACID AND ESTERS THEREOF

Edward William Petrillo, Jr., Peanington, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 21, 1977, Ser. No. 789,466
Int. Cl.^{2} C07D *207/48, 211/96*
U.S. Cl. 260—293.85 12 Claims

1. A compound of the formula



wherein

R and R_2 each is hydrogen or lower alkyl;

R_1 is hydrogen, lower alkanoyl or benzoyl; and

m is 2 or 3.

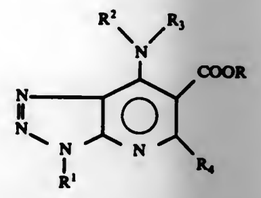
4,070,362

AMINO DERIVATIVES OF TRIAZOLO(4,5-B)PYRIDINES

Theodor Deazel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 21, 1974, Ser. No. 444,203
Int. Cl.^{2} C07D *471/04*
U.S. Cl. 260—295.5 B 11 Claims

1. A compound of the formula



wherein R is hydrogen or lower alkyl; R_1 is hydrogen, lower alkyl, phenyl, benzyl or phenethyl; R_2 and R_3 each is hydrogen, lower alkyl, lower alkenyl, lower alkanoyl, R_5, R_6-phenyl, R_5, R_6-phenyl-lower alkyl, di-lower alkylamino-lower alkyl, R_5, R_6-benzoyl, methanesulfonyl, benzenesulfonyl or toluenesulfonyl; or the group



is pyrrolidino, piperidino, 4-lower alkylpiperidino, pyrazolyl, pyrimidino, pyridazino, piperazino or N^4-lower alkylpiperazino; R_4 is hydrogen, C_1–C_4-lower alkyl or phenyl; R_5 is hydrogen, halogen, lower alkyl, trifluoromethyl, amino or carboxy; R_6 is hydrogen, halogen of lower alkyl; and physiologically acceptable salts thereof.

4,070,363

MANUFACTURE OF TETRAMISOLE

Alan Charles Barker, and Peter Fulton Southern, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 1, 1975, Ser. No. 601,016
Claims priority, application United Kingdom, Aug. 13, 1974, 35594/74
Int. Cl.^{2} C07D *513/04*
U.S. Cl. 260—306.7 T 10 Claims

1. In a process for the manufacture of ICPT and acid-addition salts thereof, which comprises reacting IHPT, or an acid-addition salt thereof, with hydrogen chloride gas as a chlorinating agent, the improvement which consists of generating the hydrogen chloride gas in situ by the reaction of chlorosulphonic acid with either aqueous hydrochloric acid or water.

4,070,364

PROCESS FOR THE PRODUCTION OF [2-ACETOACETYL-AMINOTHIAZOLYL-(4)-]-ACETIC ACID ETHYL ESTER

Erik Herkearath, Glis, Switzerland, assignor to Lonza, Ltd., Gampel, Switzerland

Continuation-in-part of Ser. No. 531,765, Dec. 11, 1974, abandoned. This application Sept. 13, 1976, Ser. No. 722,874
Claims priority, application Switzerland, Dec. 11, 1973, 017303/73
Int. Cl.^{2} C07D *277/56*
U.S. Cl. 260—306.8 R 5 Claims

1. The process for the production of [2-acetoacetylaminothiazolyl-(4)-]-acetic acid ethyl ester which comprises reacting [2-aminothiazolyl-(4)-]-acetic acid ethyl ester with diketene in

an organic solvent in the presence of 5 to 15 percent of glacial acetic acid, based on the amount of said solvent, at a temperature between 30° and 80° C., said solvent being selected from the group consisting of an alkyl acetate having 1 to 4 carbon atoms in the alkyl group, an aromatic hydrocarbon, a halogenated hydrocarbon having 1 to 4 carbon atoms, amyl acetate, isopropyl cyclopentane, ethyl cyclopentane and propyl cyclopentane.

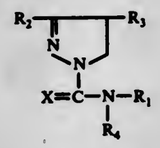
4,070,365

PYRAZOLINE COMPOUNDS

Jan Johannes van Dusien, Weesp, and Rudolf Mulder, Lunteren, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 9, 1975, Ser. No. 594,205
Claims priority, application Netherlands, July 12, 1974, 7409433
Int. Cl.^{2} C07D *231/06;* A01N *9/22*
U.S. Cl. 548—379 15 Claims

1. A compound of the formula



wherein R_1 is a member selected from the group consisting of alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenylalkyl, ring halogenated phenylalkyl, ring nitrated phenylalkyl, ring alkylated phenylalkyl, phenyl, phenyl substituted in the 2, 3 or 4 positions with up to two substituents selected from the group consisting of halogen, alkyl of 1 to 4 carbon atoms, halogenated alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, dialkylamino wherein each alkyl radical is of 1 to 4 carbon atoms, alkylsulphonyl of 1 to 4 carbon atoms, acyl of an aliphatic monocarboxylic acid, acylamino wherein the acyl moiety is of an aliphatic monocarboxylic acid, cyano, nitro, phenyl and halogenated phenyl, R_2 and R_3 are each independently selected from the group consisting of alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, phenyl substituted with up to two substituents selected from the group consisting of halogen, alkyl of 1 to 4 carbon atoms, halogenated alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, mono or dialkylamino wherein each alkyl is of 1 to 4 carbon atoms, nitro, phenyl, halogenated phenyl and cyano, R_4 is a member selected from the group consisting of hydrogen and alkyl of 1 to 15 carbon atoms and wherein X is oxygen or sulfur.

4,070,366

ALKYLATION PROCESS

Basil V. Gregorovich, Maple Shade, N.J., and Stewart F. MacDonald, Ottawa, Canada, assignors to Canadian Patents & Development Limited, Calif.

Continuation of Ser. No. 281,624, Aug. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 832,001, June 10, 1969, abandoned. This application July 21, 1975, Ser. No. 597,330
Claims priority, application Canada, June 12, 1968, 022,379
Int. Cl.^{2} C07D *207/34, 207/32*
U.S. Cl. 260—313.1 7 Claims

1. A single step method of ring alkylating a substituted pyrrole compound which comprises the steps of

reacting in a liquid system (1) a substituted pyrrole compound selected from the group consisting of 2,4-dimethyl-5-carbethoxy pyrrole, 2,4-dimethyl-3,5-dicarbethoxy pyrrole, 2-methyl-3-carbethoxy pyrrole, 2,4-dimethyl-3-acetyl pyrrole, 2-carbethoxy-3-methyl-pyrrole, 2-methyl-5-carbethoxy pyrrole, 2,3-dimethyl-5-carbethoxy pyrrole, 2,4-dimethyl-3-bromo-5-carbethoxy pyrrole, 3-ethyl-4-methyl-5-carbethoxy pyrrole, 3-methyl-4-carbethoxy pyrrole, 2,5-dimethyl-3-carbethoxy pyrrole, 2-methyl-3,5-dicarbethoxy pyrrole, 3-methyl-2,5-dicarbethoxy pyrrole, 2,3-dimethyl-5-carbethoxy pyrrole, 2,3-dimethyl pyrrole, 2,5-dimethyl pyrrole, 2-methyl-5-carboxy pyrrole-4-propionic acid diethyl ester and 2,4-dimethyl pyrrole; with (2) a carbonyl compound selected from the group consisting of formaldehyde, acetaldehyde, propionaldehyde, n-butyraldehyde, isobutyraldehyde, paraldehyde, heptaldehyde, laurylaldehyde, stearaldehyde, amino-acetaldehyde, acetone, diethyl-ketone, isobutyl-methyl ketone, 3-pentanone, cyclopentanone, cyclohexanone, pyruvic acid, levulinic acid, glyoxylic acid, benzaldehyde acetophenone, chloroacetone, 2,5-hexane dione and 2-formyl-3-acetyl-4-methyl-5-carbethoxy-pyrrole

in the presence of both (a) an acid condensing agent selected from the group consisting of hydriodic acid, aqueous HI, HI in acetic acid, HI in heptane, HBr in acetic acid HCl in acetic acid, H_2SO_4 in acetic acid, hydrobromic acid, sulfuric acid, and hydrochloric acid; and (b) a reducing agent selected from the group consisting of hydrogen iodide, zinc, zinc in acid, zinc amalgam, stannous bromide, and stannous chloride and when said reducing agent is hydrogen iodide, there may be included also an auxiliary substance selected from the group consisting of red phosphorus, phosphonium iodide, and hypo-phosphorous acid

at a temperature sufficient to effect reaction between the substituted pyrrole compound (1) and said carbonyl compound (2)

whereby to form from the reactants a derivative of said pyrrole compound in which the carbon of said carbonyl group is attached to the pyrrole ring.

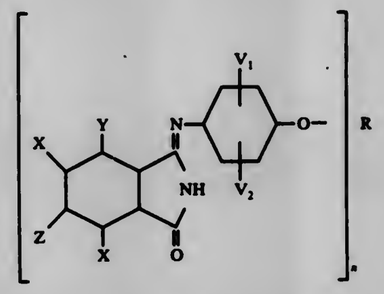
4,070,367

ISOINDOLINONE PIGMENTS AND PROCESS FOR THEIR MANUFACTURE

Ernst Model, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 10, 1976, Ser. No. 657,010
Claims priority, application Switzerland, Feb. 20, 1975, 2156/75
Int. Cl.^{2} C07D *209/50*
U.S. Cl. 260—325 PH 11 Claims

1. An isoindolinone pigment of the formula



wherein R represents alkylene of 1 to 6 carbon atoms, alkylene of 1 to 6 carbon atoms interrupted by oxygen, alkylene of 1 to 6 carbon atoms substituted by alkoxy containing 1 to 6 carbon atoms, phenoxy, phenyl, or phenyl substituted by halogen, alkyl containing 1 to 4 carbon atoms, or alkoxy containing 1 to 4 carbon atoms, or a radical of the formula



wherein A represents an alkylene containing 1 to 4 carbon atoms, or alkyleneoxy containing 1 to 4 carbon atoms; V_1 and V_2 represent hydrogen, halogen, alkyl containing 1 to 4 carbon atoms, X represents halogen; Y and Z represent halogen, alkoxy containing 1 to 6 carbon atoms, alkylmercapto containing 1 to 6 carbon atoms, cycloalkoxy containing 5 or 6 carbon atoms; and *n* is an integer from 2 to 6.

4,070,368

PROCESS FOR PREPARING ALKYL, AROYL SUBSTITUTE PYRROLE-2-ACETATES

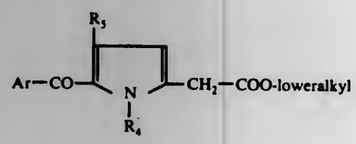
John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Division of Ser. No. 338,461, Feb. 16, 1973, Pat. No. 3,865,840, which is a division of Ser. No. 5,958, Jan. 26, 1970, Pat. No. 3,752,826, which is a continuation-in-part of Ser. No. 741,348, July 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 656,074, July 26, 1967, abandoned. This application June 17, 1974, Ser. No. 479,733

Int. Cl.² C07D *207/34*

U.S. Cl. 260—326.47 2 Claims

1. The process of making a loweralkyl 5-aroyl-1-R_4-4-R_5-pyrrole-2-acetate of the formula:



which comprises acylating a loweralkyl 1-R_4-4-R_5-3-loweralkoxy-carbonyl-pyrrole-2-acetate with an aroyl chloride of the formula Ar-COCl in the presence of a Lewis acid in an organic solvent suitable for Friedel-Crafts acylation reactions, hydrolyzing the thus-obtained loweralkyl 5-aroyl-1-R_4-4-R_5-3-loweralkoxycarbonyl pyrrole-2-acetate under alkaline conditions to form the corresponding alkaline salt of the di-acid, 5-aroyl-1-R_4-4-R_5-3-carboxypyrrole-2-acetic acid, separating said alkaline salt and treating same with strong mineral acid to form said di-acid, partially reesterifying said di-acid by treatment with an acidic solution of a lower alkanol and decarboxylating the 3-carboxy group of the thus-obtained loweralkyl 5-aroyl-1-R_4-4-R_5-3-carboxypyrrole-2-acetate by heating said loweralkyl 5-aroyl-1-R_4-4-R_5-3-carboxypyrrole-2-acetate to CO_2-elimination temperatures; wherein the foregoing said Ar-CO is a member selected from the group consisting of benzoyl, thenoyl, 5-methyl-thenoyl, monosubstituted benzoyl, disubstituted benzoyl and trisubstituted benzoyl, each substituent of said substituted benzoyl being a member selected from the group consisting of halo, loweralkyl, trifluoromethyl and nitro, and said R_4 and said R_5 each represent loweralkyl.

4,070,369

2-AMINOMETHYL-5-CHLORO-3-(2,4-DICHLOROPHENYL)INDOLE

Martin Steinman, Livingston, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 636,517, Dec. 1, 1975, Pat. No. 3,996,159, which is a division of Ser. No. 473,625, May 28, 1974, Pat. No. 3,944,672, which is a continuation-in-part of Ser. No. 314,899, Dec. 13, 1972, abandoned. This application Aug. 18, 1976, Ser. No. 715,598

The portion of the term of this patent subsequent to Mar. 16, 1993, has been disclaimed.

Int. Cl.² C07D *209/14*

U.S. Cl. 260—326.15 1 Claim

1. The compound which is 2-aminomethyl-5-chloro-3-(2,4-dichlorophenyl)indole and the acid addition salts thereof.

4,070,370

POLYESTER LUBRICANT ADDITIVES, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

John Scotchford Elliott; Bryan Terence Davis, and Stephen Norman, all of Bracknell, England, assignors to Edwin Cooper and Company Limited, Bracknell, England

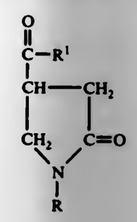
Filed Sept. 17, 1974, Ser. No. 506,910

Claims priority, application United Kingdom, Sept. 18, 1973, 43735/73

Int. Cl.² C07D *403/12*

U.S. Cl. 260—326.25 13 Claims

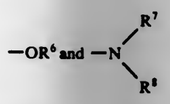
1. A polyester suitable for use as a lubricant additive which is the product of the reaction at elevated temperature from reflux up to about 210° C. with removal of water of a polyolefin substituted succinic acid or anhydride wherein said polyolefin substituent has a molecular weight of about 700–3,000 with a substituted carboxypyrrolidone of the following formula A



in which

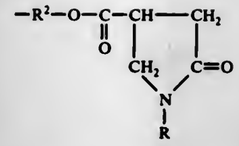
a. R is selected from the group consisting of a hydrogen atom, an alkyl containing up to 8 carbon atoms, a phenyl group, a benzyl group, a hydroxyalkyl group containing 1–3 hydroxy radicals, a polyoxyalkylenealkyl group containing up to an average of about 2 oxyalkylene groups, a hydroxyalkylaminoalkyl group, a carboxypyrrolidone substituted C_{2-6} alkyl group, and an imidazoline substituted C_{1-4} alkyl group,

b. each R^1 is independently selected from a group consisting of



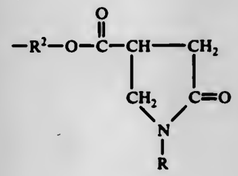
c. R^2 is alkylene containing 2–6 carbon atoms

d. R^6 is selected from the group consisting of alkyl groups containing up to 8 carbon atoms, polyoxylalkyene alkyl groups containing up to an average of about 2 oxyalkylene groups, hydroxyalkyl groups containing 1–3 hydroxy radicals, imidazoline substituted C_{1-4} alkyl groups, and groups having the formula

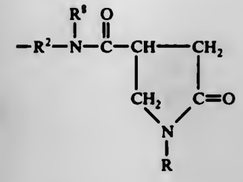


in which the groups R and R^2 independently are as herein defined,

e. R^7 is selected from the group consisting of alkyl groups containing up to 8 carbon atoms, hydroxyalkyl groups containing 1–3 hydroxy radicals, dialkylaminoalkyl groups, hydroxyalkylaminoalkyl groups, imidazoline substituted C_{1-4} alkyl groups, groups having the formula

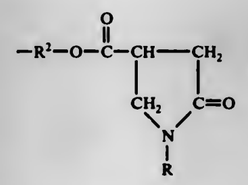


and groups having the formula



in which the groups R and R^2 independently are as herein defined,

f. R^8 is selected from the group consisting of hydrogen, alkyl groups containing up to 8 carbon atoms, hydroxyalkyl groups containing up to 3 hydroxy groups, dialkyl aminoalkyl groups, imidazoline substituted C_{1-4} alkyl groups, hydroxyalkylaminoalkyl groups and groups having the formula



in which the groups R and R^2 independently are as herein defined, and

g. provided that there are a total of from 2–6 free hydroxy groups on groups R and/or R^1.

4,070,371

DERIVATIVES OF 1,3,4,9-TETRAHYDROPYRANO[3,4-b]INDOLE-1-ACETIC ACID

Christopher A. Demerson, Montreal; Leslie G. Humber; Thomas A. Dobson, both of Dollard des Ormeaux, and Ivo L. Jirkovsky, Montreal, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 555,506, March 5, 1976, Pat. No. 4,012,417, which is a continuation-in-part of Ser. No. 513,693, Oct. 10, 1974, Pat. No. 3,974,179, which is a continuation-in-part of Ser. No. 311,023, Nov. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 289,714, Sept. 15, 1972, Pat. No. 3,939,178, which is a continuation-in-part of Ser. No. 148,895, June 1, 1971, Pat. No. 3,843,681. This application Dec. 13, 1976, Ser. No. 749,631

Claims priority, application South Africa, May 16, 1972, 72/3344

The portion of the term of this patent subsequent to Feb. 17, 1993, has been disclaimed.

Int. Cl.² C07D *491/04*

U.S. Cl. 260—326.29 21 Claims

1. 1-Cyclopropyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid.

4,070,372

PROCESS FOR THE PREPARATION OF THE 2-DIETHOXYPHOSPHINYLIMINO-1,3-DITHIETANE

Murray Garber, Lawrenceville, and David William Reger, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 14, 1976, Ser. No. 695,692

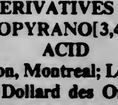
Int. Cl.² C07D *339/00*

U.S. Cl. 260—327 M 5 Claims

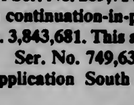
1. A fully integrated process for the preparation of a compound of formula:



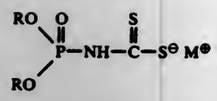
wherein R is C_1–C_4 alkyl; consisting essentially in the steps of: reacting one molar equivalent of a compound of the formula:



wherein R is as above defined, with a 1.0 to 1.2 molar equivalent of a thiocyanate selected from the group consisting of sodium-, potassium- and ammonium thiocyanate at a temperature range of 5° C to 30° C for a period of time so as to obtain a compound of formula:



wherein R is as above defined; reacting the thus-formed compound without isolation from the above-said reaction mixture and in the presence of same with a 1.1 to 1.2 molar equivalent of sodium or potassium hydrosulfide in a water:acetone solvent system wherein the ratio of water:acetone is established in the range of 1:3 to 1:9 at a temperature range of 5° C to 30° C for a period of time so as to obtain a compound of the formula:



wherein R is as above defined and M is an alkali metal, and reacting (*a*) the thus-formed compound in said water:acetone solvent system and in the presence of the reaction media with (*b*) a one to 2 molar equivalent of a methylene halide selected from the group consisting of methylene bromide and methylene iodide in the presence of a 1 to 2 molar equivalent of an alkali metal bicarbonate at a temperature of 25° C to 35° C for a period of time sufficient to essentially complete the reaction.

4,070,373

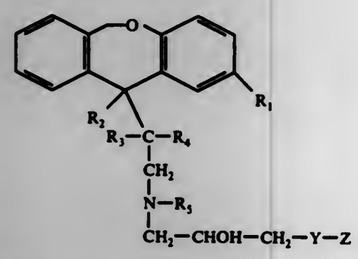
TRICYCLIC AMINOALKYL DERIVATIVES

Werner Winter, Heppenheim; Max Thiel, Mannheim, both of Germany; Kurt Stach, deceased, late of Mannheim, Germany, by Werner Plattner, administrator, Linz, Austria; Wolfgang Schaumann, Heidelberg, and Karl Dietmann, Mannheim, both of Germany, assignors to C.F. Boehringer & Soehne GmbH, Mannheim-Waldhof, Germany

Continuation of Ser. No. 646,170, June 15, 1967, abandoned. This application Sept. 22, 1972, Ser. No. 291,426
Claims priority, application Germany, July 21, 1966, 1568145
Int. Cl.² C07D *313/12*
U.S. Cl. 260—333 19 Claims

1. A tricyclic aminoalkyl derivative selected from the group consisting of

a. compounds of the formula:



wherein

R_1 is a member selected from the group consisting of hydrogen, chloro, lower alkyl and lower alkoxy;

R_2 is hydrogen or hydroxyl;

R_3 is hydrogen;

R_4 and R_5 are each hydrogen or lower alkyl;

Y is oxygen or sulfur; and

Z is cycloalkyl, lower alkylcycloalkyl and cycloalkyl-lower alkyl containing from 5 to 12 ring-carbon atoms, unsubstituted or mono- or disubstituted benzyl and aryl of up to 10 carbon atoms, wherein said substituents are chloro, nitro, lower alkoxy, benzyloxy, lower alkyl or trifluoromethyl; and

b. pharmaceutically acceptable acid addition salts thereof.

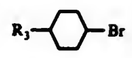
4,070,374

PROCESS FOR THE PREPARATION OF ARYL SUBSTITUTED ALDEHYDES, KETONES AND ALCOHOLS

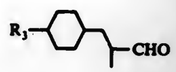
Alan J. Chalk, Kinnelon, and Steven A. Mageanis, Wayne, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed June 16, 1975, Ser. No. 587,183
Int. Cl.² C07D *317/06*
U.S. Cl. 260—340.5 R 18 Claims

1. A process for reacting an aryl compound of the formula:



wherein R_3 is $(CH_3)_3C$— or $(CH_3)_2CH$—;
with methallyl alcohol to provide a compound of the formula:



wherein, an inert atmosphere is employed and there is used,

a. 0.5 to 2.0 moles of methallyl alcohol per mole of aryl bromide;

b. a palladium catalyst selected from the group consisting of $PdCl_2$, $PdCl_2(C_6H_5CN)_2$, and $(CH_3COO)_2Pd$ in an amount equivalent, by weight, to 0.01 to 1.0% of the aryl bromide;

c. one to two moles of sodium bicarbonate per mole of aryl bromide;

d. from 0.01 to 1.0 moles of sodium iodide per mole of aryl bromide; and

e. a solvent selected from the group consisting of hexamethylphosphoramide, dimethylacetamide, dimethylformamide, N-methylpyrrolidinone and tetramethylurea.

4,070,375

PROCESS FOR PREPARING 1,4-DIOXAN-2-ONES

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 5, 1976, Ser. No. 711,933
Int. Cl.² C07D *319/10*
U.S. Cl. 260—340.6 10 Claims

1. A process for preparing a 1,4-dioxan-2-one and 5-substituted-1,4-dioxan-2-ones which comprises contacting carbon monoxide with formaldehyde and a 1,2-glycol in the presence of a catalytic amount of hydrogen fluoride.

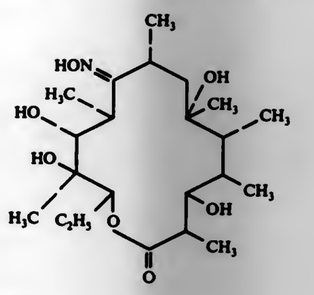
4,070,376

ANTIBIOTIC 1745A/X AND METHODS FOR THE PRODUCTION THEREOF

Ronald A. LeMahieu; Richard W. Kierstead, both of North Caldwell, and David L. Pruess, Passaic, all of N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

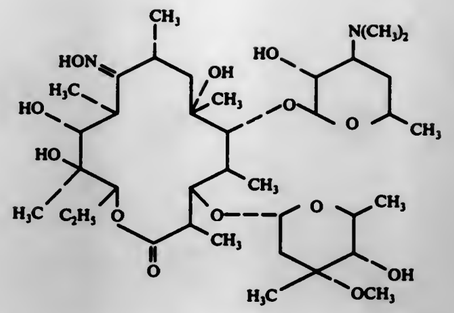
Continuation of Ser. No. 613,844, Sept. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 438,987, Feb. 4, 1974, Pat. No. 3,928,387. This application Feb. 28, 1977, Ser. No. 773,025
Int. Cl.² C07D *313/00*
U.S. Cl. 260—343 1 Claim

1. A process to produce a compound of the formula



which comprises

A. reacting a compound of the formula



with hydrogen fluoride in an inert aromatic base

B. neutralizing the resultant product of (A) and

C. extracting and titurating the product of (B) to produce the final product.

4,070,377

PROCESS FOR PRODUCING L-ASCORBIC ACID-2-SULFATE

Eiichi Hayashi, Shizuoka; Kiyoshi Takita, Shimizu; Hironari Sugiyama, Shimizu, and Yukio Nezu, Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 521,767, Nov. 7, 1974, abandoned. This application Aug. 3, 1976, Ser. No. 711,409
Claims priority, application Japan, Nov. 7, 1973, 48-124395; Nov. 8, 1973, 48-124951
Int. Cl.² C07D *307/32*
U.S. Cl. 260—343.7 7 Claims

1. A process for producing a mono- or di-alkali metal salt or alkaline earth metal salt of L-ascorbic acid-2-sulfate which consists essentially of:

A. reacting L-ascorbic acid in which the 5- and 6- positions are protected by a ketone or aldehyde, with dimethyl formamide-sulfur trioxide complex in an inert solvent,

B. neutralizing the product with an alkali metal hydroxide or an alkaline earth metal hydroxide, and

C. removing said protecting aldehyde or ketone at the 5-and 6-positions.

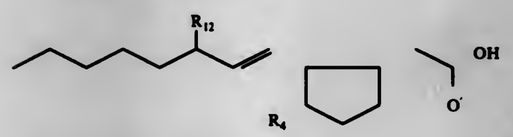
4,070,378

SYNTHESIS CYCLOPENTANOL

Frank Kienzle, Therwil, Switzerland, and Perry Rosen, North Caldwell, N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Division of Ser. No. 381,322, July 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 300,633, Nov. 25, 1972, abandoned. This application Sept. 10, 1975, Ser. No. 612,133
Int. Cl.² C07D *309/06, 307/77*
U.S. Cl. 260—345.9 2 Claims

1. A compound of the formula:



wherein R_4 lower alkyl; and R_{12} is lower alkanoyloxy, benzoyloxy, tetrahydropyranyloxy, benzyloxy, trityloxy, 4-methoxy-5,6-dihydro-2H-pyranyloxy, benzyhydryloxy or trimethylsilyloxy

or enantiomers or racemates thereof.

4,070,379

PROCESS FOR THE MANUFACTURE OF MALEIC ANHYDRIDE

Jean Henri Camille Ciquier, Villers Saint Paul, and Michel Hyppolite Carfantan, Chantilly, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation-in-part of Ser. No. 525,599, Nov. 20, 1974, abandoned. This application Oct. 21, 1976, Ser. No. 734,577
Claims priority, application France, Nov. 23, 1973, 73 41733
Int. Cl.² C07D *307/60*
U.S. Cl. 260—346.75 9 Claims

1. A process for the manufacture of maleic anhydride by the oxidation of benzene with oxygen in the presence of a catalyst which has been previously activated and which comprises an inert support coated with a catalytically active mass containing, by weight, 10% to 20% of antimony trioxide, 40% to 70% of vanadium pentoxide, 20% to 50% of molybdenum trioxide, 0.7% to 1.5% of phosphorus pentoxide, 0.9% to 2.0% of sodium oxide and optionally another mineral oxide selected from the group consisting of, nickel, calcium, iron, silver, strontium, uranium, tungsten, cobalt, and boron oxides.

4,070,380

5-(4-AMIDINOPHENYL)-2-FURAMIDINE DIHYDROCHLORIDE MONOHYDRATE

Stanford S. Peloni; Ronald E. White; George C. Wright, and Chia Nien Yu, all of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jan. 25, 1977, Ser. No. 765,618
Int. Cl.² C07D *307/68*
U.S. Cl. 260—347.7 1 Claim

1. The compound 5-(4-amidinophenyl)-2-furamidine dihydrochloride monohydrate.

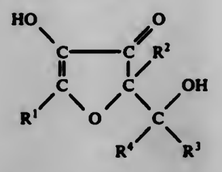
4,070,381

CERTAIN 2-(HYDROXYALKYL)-2,5-DIALKYL-4-HYDROXY-4,5-DIHYDROFURAN-3-ONES AND METHOD FOR THEIR PREPARATION

Godefridus Antonius Maria van den Ouweland, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

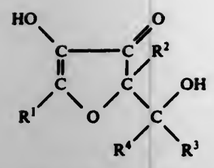
Continuation of Ser. No. 488,631, July 15, 1974, abandoned, which is a division of Ser. No. 378,085, July 11, 1973, Pat. No. 3,950,565. This application Jan. 30, 1976, Ser. No. 653,972
Int. Cl.² C07D *307/32*
U.S. Cl. 260—347.8 5 Claims

1. A compound of the formula

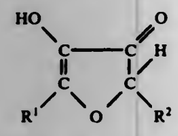


in which R^1 and R^2 represent a C_1–C_4 alkyl group, R^3 represents hydrogen or a methyl group and R^4 represents hydrogen or a C_1–C_{14} alkyl, a C_2–C_{10} alkenyl, a benzyl, a furyl or an alkyl substituted furyl radical containing up to 14 carbon atoms, with the proviso that R^4 should not contain more than 4 carbon atoms in case R^3 represents a methyl group.

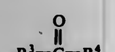
5. A process for preparing a compound of the formula



in which R^1 and R^2 represent a C_1–C_4 alkyl group, R^3 represents hydrogen or a methyl group and R^4 represents hydrogen or a C_1–C_{14} alkyl, a C_2–C_{10} alkenyl, a benzyl, a furyl or an alkyl substituted furyl radical containing up to 14 carbon atoms, with the proviso that R^4 should not contain more than 4 carbon atoms in case R^3 represents a methyl group, comprising reacting a compound of the formula



with a carbonyl compound of the formula



in which R^1, R^2, R^3 and R^4 represent groups as indicated above, in a polar solvent in the presence of an acid catalyst.

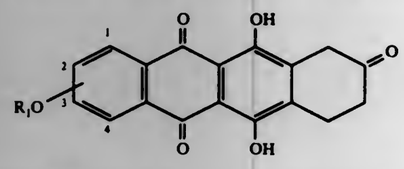
4,070,382

INTERMEDIATES FOR POLYCYCLIC QUINOID ANTIBIOTICS

Andrew S. Kende, Pittsford; John E. Mills, Rochester, both of N.Y., and Yuh-Geng Tsay, Taichung, China /Taiwan, assignors to Research Corporation, New York, N.Y.

Filed Nov. 18, 1975, Ser. No. 632,939
Int. Cl.² C07C *87/10*
U.S. Cl. 260—365 **27 Claims**

1. A mixture of the 1- and 4-regioisomers of the formula:



wherein R_1 is lower alkyl of 1–5 carbon atoms; phenyl- or substituted phenyl-lower alkyl wherein the substituent groups are lower alkyl, lower alkoxy, each containing 1–5 carbon atoms, or halo; and lower alkyl contains 1–5 carbon atoms or hydrogen.

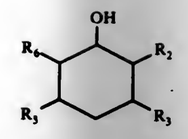
4,070,383

OXIDATIVE COUPLING OF PHENOLS AND NAPHTHOLS

Thomas F. Rutledge, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 550,445, Feb. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 499,826, Aug. 23, 1974, abandoned. This application Feb. 4, 1976, Ser. No. 655,104
Int. Cl.² C07C *37/00, 39/12, 39/16, 45/16, 49/62, 49/72*
U.S. Cl. 260—396 N **23 Claims**

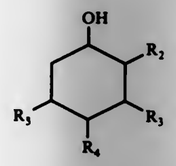
1. A method of preparing a carbon-carbon coupled condensation product of an alkylphenol, an alkoxyphenol or a 1-naphthol, having one of the following formulas



wherein

R_2 and R_6 are alkyl groups containing from 1 to about 12 carbon atoms, provided that only one of said alkyl groups may be a tertiary alkyl, and

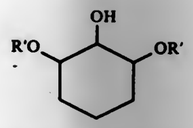
R_3 and R_5 are hydrogen or alkyl groups containing from 1 to about 12 carbon atoms provided that if both R_3 and R_5 are alkyl only one of said alkyl groups may be a tertiary alkyl;



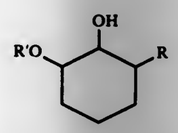
wherein

R_2 and R_4 *L are alkyl groups containing from* 1 to about 12 carbon atoms, provided that at least one of said alkyl groups is a tertiary alkyl, and

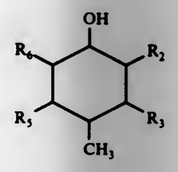
R_3 and R_5 are hydrogen or alkyl;



wherein OR' is an alkoxy group containing from 1 to about 6 carbon atoms;



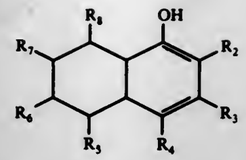
wherein R is an alkyl group containing from 1 to about 12 carbon atoms and OR' is an alkoxy group containing from 1 to about 6 carbon atoms;



wherein

R_3 and R_5 are hydrogen, alkyl groups containing from 1 to about 5 carbon atoms, or alkoxy groups containing from 1 to about 6 carbon atoms provided that if both R_3 and R_5 are alkyl or alkoxy groups only one of said groups may be a tertiary alkyl or alkoxy; and

R_2 and R_6 are alkyl groups containing from 1 to about 12 carbon atoms or alkoxy groups containing from 1 to about 6 carbon atoms provided that only one of said substituents may be a tertiary alkyl or alkoxy; and



wherein R_2, R_3 and R_4 are hydrogen, alkyl containing from 1 to 5 carbon atoms, or alkoxy containing from 1 to 6 carbon atoms, provided that either R_2 or R_4 is hydrogen and R_5, R_6, R_7 and R_8 are hydrogen, alkyl containing from 1 to 5 carbon atoms or alkoxy containing from 1 to 6 carbon atoms provided that tertiary alkyl or alkoxy groups are not attached to adjacent carbon atoms of the naphthalene molecule, said method comprising contacting an aqueous mixture of the phenol or naphthol with oxygen in the presence of a catalyst consisting essentially of:

a. a copper compound selected from the group consisting of cupric halides, basic cupric halohydroxides, cupric carboxylates, cupric nitrate, cupric sulfate, cupric alkylsulfates, cupric aryl sulfonates, cupric carbonate, basic cupric carbonate, cupric hydroxide, cupric chlorate, cuprous halides, and cuprous red oxide,

b. an anionic surfactant in which the hydrophilic moiety is selected from the group consisting of carboxylate, phosphate, sulfate and sulfonate, and

c. an alkaline material selected from the group consisting of alkali metal hydroxides, alkali metal carbonates and alkali metal bicarbonates.

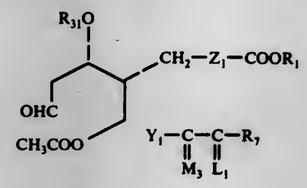
4,070,384

PROCESS FOR PREPARING THROMBOXANE B COMPOUNDS FROM PROSTAGLANDIN Fα COMPOUNDS

William P. Schneider, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 676,894, April 14, 1976, Pat. No. 4,018,804. This application Aug. 20, 1976, Ser. No. 716,473
Int. Cl.² C09F *5/00*; C11C *3/00*
U.S. Cl. 260—406 **3 Claims**

1. A process for preparing a thromboxane intermediate of the formula

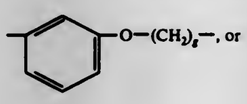


wherein R_{31} is a hydroxy-hydrogen replacing group; wherein Z_1 is

1. cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
2. cis-CH=CH—CH_2—$(CH_2)_g$—CF_2—,
3. cis-CH_2—CH=CH—$(CH_2)_g$—CH_2—,
4. —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
5. —$(CH_2)_3$—$(CH_2)_g$—CF_2—,

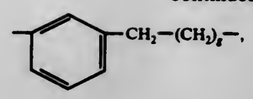
—CH_2—O—CH_2—$(CH_2)_g$—CH_2-,

(7)

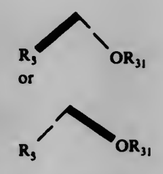


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(8)



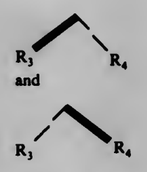
wherein g is 1, 2, or 3; wherein R_1 is alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one or two chloro, fluoro, or alkyl of 1 to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation; wherein Y_1 is trans-CH=CH— or —CH_2CH_2—; wherein M_3 is



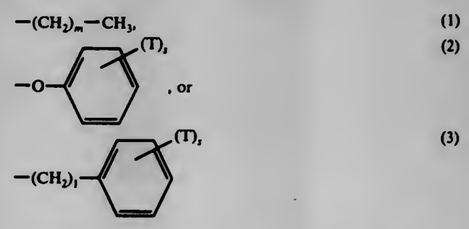
wherein R_5 is hydrogen or methyl and R_{31} is a hydroxyhydrogen replacing group; wherein L_1 is



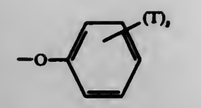
or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; wherein R_7 is

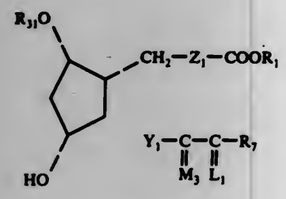


wherein l is 0, 1, 2, or 3, wherein m is 1 to 5, inclusive, T is alkyl of 1 to 3 carbon atoms, inclusive, alkoxy of 1 to 3 carbon atoms, inclusive, chloro, fluoro, or trifluoromethyl, and s is 1, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



only when R_3 and R_4 are hydrogen or methyl, being the same or different; which comprises:

1. oxidizing with lead tetraacetate a compound of the formula



or a mixture comprising that compound and the enantiomer thereof; wherein R_{31}, Z_1, R_1, Y_1, M_3, L_1, and R_7 are as defined above.

4,070,385

PHOSPHORUS, NITROGEN AND SULFO-CONTAINING ADDITIVES

William Monroe Le Suer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 634,390, Nov. 24, 1975, Pat. No. 4,026,812, which is a division of Ser. No. 424,246, Dec. 12, 1973, Pat. No. 3,926,821. This application Mar. 15, 1977, Ser. No. 777,880

Int. Cl.² C07F 00/00, 3/06, 1/10, 3/10

U.S. Cl. 260—429 R **28 Claims**

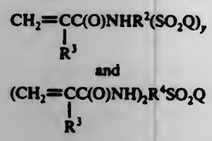
1. A sulfur-, nitrogen- and phosphorus-containing composition made by reacting one or more phosphorus acid compounds of the formula



(A)

wherein each X is independently oxygen or divalent sulfur, M is a hydrogen, an equivalent of a metal of ammonium cation, R is hydrogen or a hydrocarbyl, hydrocarbyloxy, or hydrocarbyl mercapto group of about one to about thirty carbon atoms, and R′ is XM or R, with the proviso that the total number of carbon atoms in both R and R′ is at least two, with

(B) one or more sulfo- and nitrogen-containing compounds of the general formulae:



wherein *y* is one or two, each R^3 is independently hydrogen or lower alkyl group of one to seven carbon atoms, R^2 is di- or trivalent hydrocarbyl group having one to eighteen carbon atoms, R^4 is a trivalent hydrocarbyl group having one to eighteen carbon atoms, and Q is selected from the group consisting of —OH —OR^3, —OM, —O(Alkylene-O)$_n$—R^3, —N(R^3)$_2$, —NR^3(Alkylene-NR^3)$_n$$R^3$, —OH($R^3$)$_4$, and —$ONR_3^3$-(AlkyleneN$R^3$)$_n$$R^3$, wherein n has an average value of about one to about ten, M is as defined in (A) and te alkylene group has from one to ten carbon atoms.

4,070,386

PROCESS FOR THE PREPARATION OF ORGANOPOLYSILOXANE-POLYETHER COPOLYMERS WITH SIOC BONDS

Gerd Rossmy, Haltern, Germany, assignor to Th. Goldschmidt AG, Essen, Germany

Continuation of Ser. No. 517,297, Oct. 23, 1974, abandoned. This application May 4, 1976, Ser. No. 683,084

Claims priority, application Germany, Oct. 24, 1973, 2353161

Int. Cl.² C07F 7/04, 7/18

U.S. Cl. 260—448.8 R **13 Claims**

1. A process of preparing organopolysiloxanepolyether copolymers of the kind wherein the polysiloxane blocks are linked to the polyetherblocks through SiOC-linkages, which comprises:

1. equilibrating mixtures of organohalogensilanes and organopolysiloxanes or mixtures of organopolysiloxanes with terminal silylhalide groups in the presence of an equilibration catalyst, the molecular weight distribution or the distribution of the individual siloxane structures of the mixtures to be equilibrated deviating from the statistical equilibrium and said equilibration catalyst being a mixed catalyst comprising
   a. hydrogen halide acid and
   b. peralkylated acid amide,

the amount of said mixed catalyst being in the range of 0.002 to 0.2 mole per siloxane bond to obtain at least approximately equilibrated mixtures of halogen siloxanes,

2. separating the mixed catalyst from the halogen siloxanes by phase separation, and
3. reacting the halogen siloxanes thus obtained with hydroxyl group containing polyether compounds.

4,070,387

10,11-DIHYDRO-10,10,11,11-TETRAFLUORO-5H-DIBENZO[A,D]CYCLOHEPTENE-5-METHYLISOCYANATE COMPOUNDS

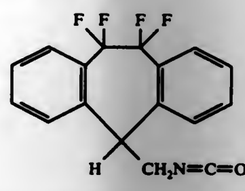
Marcia Elizabeth Christy, Perkasie, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 569,134, April 17, 1975, Pat. No. 4,020,096, which is a division of Ser. No. 438,924, Feb. 1, 1974, Pat. No. 3,950,423. This application Oct. 4, 1976, Ser. No. 729,060

Int. Cl.² C07C 119/048

U.S. Cl. 260—453 AP **2 Claims**

1. A compound of the formula



in which at least one of the hydrogens at the 1-, 2-, 3-, 4-, 6-, 7-, 8- or 9- positions is replaced with a substituent selected from halogen, loweralkyl of from 1–6 carbon atoms, loweralkoxy of from 1–5 carbon atoms, trifluoromethyl, loweralkylmercapto of from 1–6 carbon atoms, loweralkylsulfonyl of from 1–6 carbon atoms and dialkylsulfamoyl of from 2–8 carbon atoms.

4,070,388

POLYMERIC MATERIALS WITH ACID END GROUPS

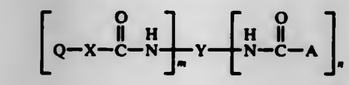
Frank N. Jones, Louisville, Ky., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 622,429, Oct. 14, 1975, Pat. No. 4,029,861, which is a continuation-in-part of Ser. No. 329,154, Feb. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 133,423, April 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 39,533, May 21, 1970, abandoned. This application Nov. 10, 1976, Ser. No. 742,532

Int. Cl.² C07C 153/09, 143/90; C11C 3/00; C07C 101/26

U.S. Cl. 260—455 A **14 Claims**

1. A polymeric material represented by the structure



where

Q is a non-resinous polymeric or copolymeric segment of
   a. an ester of acrylic acid or methacrylic acid with an alkanol of 1–18 carbon atoms;
   b. styrene or acrylonitrile;
   c. a vinyl ester derived from an acid of 2 through 18 carbon atoms; or
   d. a vinyl ether;

X is the residue of a chain transfer agent;

Y is the residue of a di-, tri-, or tetraisocyanate radical after removal of isocyanate groups;

A is the residue of an acid radical having a pk_a value of −1 to 6; and

m and *n* are 1, 2 or 3, the total not exceeding 4, provided that when *n* is 2 or 3, only one of A need be as defined.

4,070,389

PHENYLGLYOXYLONITRILE-2-OXIME-CYANOMETHYLETHER

Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

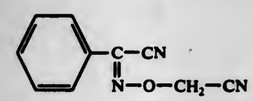
Filed Aug. 25, 1976, Ser. No. 717,792

Claims priority, application Switzerland, Sept. 4, 1975, 11458/75

Int. Cl.² C07C 121/84

U.S. Cl. 260—465 E **1 Claim**

1. The compound phenylglyoxylonitrile-2-oxime-cyanomethyl ether of the formula.



4,070,390

METHOD FOR THE CATALYTICAL PREPARATION OF ACRYLONITRILE

Sumio Umemura; Kyoji Ohdan; Tokuo Matsuzaki; Taiso Uda; Mikio Hidaka; Yasuo Nakamura, and Masao Tsuruoka, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Oct. 14, 1976, Ser. No. 732,361

Claims priority, application Japan, May 11, 1976, 51-52832

Int. Cl.² C07C 120/14

U.S. Cl. 260—465.3 **27 Claims**

1. A process for the catalytical preparation of acrylonitrile, comprising bringing, at an elevated temperature, a reaction feed containing propylene, ammonia and molecular oxygen in gas phase into contact with a catalyst consisting of an oxide composition of the empirical formula:

$$Mo_aCo_bFe_cBi_dX_eO_f$$

wherein X represents at least one atom of an element selected from vanadium and tellurium, the subscripts *a, b, c, d, e* and *f* respectively denote the numbers of the respective atoms of the elements, the ratio *a:b:c:d:e* being in the range of 10:3 to 10:1 to 7:0.1 to 0.7:0.01 to 1; and the subscript *f* represents the number of oxygen atoms which satisfies the average valency of the elements, the ratio *a:f* being in the range of 10:34.6 to 54.1.

4,070,391

PROCESS FOR PRODUCING ISOCYANATE FROM NITRO COMPOUNDS AND CARBON MONOXIDE USING RHODIUM OXIDE CATALYSTS

George C. Licke, Deer River, Minn., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 615,763, Sept. 22, 1975, abandoned. This application Sept. 27, 1976, Ser. No. 726,642

Int. Cl.² C07C 118/06

U.S. Cl. 260—453 PC **15 Claims**

1. A process for the preparation of an isocyanate mixture comprising mono- and diisocyanates derivable from an aromatic dinitro compound, said process comprising reacting said dinitro compound with carbon monoxide at an elevated temperature and an elevated pressure in the presence of a rhodium oxide catalyst and a promoter quantity of an alkyl nitrile solvent.

4,070,392

PROCESS FOR THE PRODUCTION OF O-DERIVATIVES OF P-ISOPROPENYL PHENOL

Erhard Tresper, and Heinrich Krimm, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

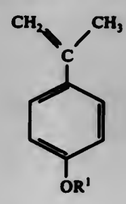
Filed Feb. 23, 1976, Ser. No. 660,243

Claims priority, application Germany, Feb. 27, 1975, 2508512

Int. Cl.² C07C 68/00, 69/96

U.S. Cl. 260—463 **31 Claims**

1. A process for the production of an O-derivative of p-isopropenyl phenol corresponding to the formula



in which

R^1 represents an aliphatic, cycloaliphatic, araliphatic or aromatic radical which may be substituted; a cyano group; an organic or inorganic acyl radical or a halogen carbonyl or alkoxy or aroxy carbonyl radical,

which comprises heating the corresponding O-derivative of dimeric, trimeric, oligomeric or polymeric p-isopropenyl phenol at a temperature of from 60° to 300° C. in the presence of a catalytic amount of an acid catalyst which is inert and non-volatile at the heating temperature and thereby splitting said corresponding O-derivative.

4,070,393

AMMOXIDATION PROCESS

Howard P. Angstadt, Media, Pa.; Jack D. Tinkler; Richard V. Norton, both of Wilmington, Del., and Ronald D. Bushick, Glen Mills, Pa., assignors to Sun Ventures, Inc., Radnor, Pa.

Continuation-in-part of Ser. No. 559,617, March 18, 1975, abandoned. This application June 1, 1976, Ser. No. 691,757

Int. Cl.² C07C 120/14

U.S. Cl. 260—465 C **14 Claims**

1. In an ammoxidation process where reactant gases comprised of a lower alkyl-substituted hydrocarbon, oxygen, and

ammonia are passed over an ammoxidation catalyst in a fixed or fluidized bed system, the improvement of reducing combustion of hydrocarbon and ammonia burn by distributing said reactant oxygen at a multiplicity of positions along the length of said catalyst bed.

4,070,394

CARNITINE NITRILE HALIDE PREPARATION

Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 651,824, Jan. 23, 1976, abandoned. This application Mar. 11, 1977, Ser. No. 776,506
Int. Cl.² C07C *120/00*
U.S. Cl. 260—465.5 R **10 Claims**

1. A process for the production of carnitine nitrile halide without co-production of substantial amounts of water-soluble salts consisting of, in combination, the steps of

a. contacting a 2,3-epoxypropyl halide with trimethylamine in an organic solvent to produce a 2,3-epoxypropyl trimethyl ammonium halide,

(b) removing the organic solvent from said 2,3-epoxypropyl trimethyl ammomium halide,

(c) mixing an inert liquid aqueous reaction medium with said 2,3-epoxypropyl trimethyl ammonium halide, and

(d) contacting at a temperature from 0° to about 30° C, said 2,3-epoxypropyl trimethyl ammonium halide with a cyano compound selected from the group consisting of a metal cyanide, ammonium cyanide and hydrocyanic acid whereby carnitine nitrile halide is produced without co-production of substantial amounts of water soluble salts.

4,070,395

PROCESS FOR THE PREPARATION OF 4,4'-DIAMINOSTILBENE-2,2'-DISULFONIC ACID OR ITS SALTS

Masatomo Fujise, Wako, and Koji Isobe, Yono, both of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 711,725, Aug. 11, 1976, abandoned. This application Aug. 24, 1976, Ser. No. 717,272
Claims priority, application Japan, Aug. 13, 1975, 50-97520
Int. Cl.² C07C *143/62*
U.S. Cl. 260—510 **3 Claims**

1. A process for the preparation of 4,4'-diaminostilbene-2,2'-disulfonic acid or its alkali salts which comprises catalytic hydrogenation of 4,4'-dinitrostilbene-2,2'-disulfonic acid or its alkali salts in the presence of both Raney nickel and dicyandiamide in water at a temperature in the range of 50° to 120° C under an elevated hydrogen pressure, the amount of dicyandiamide being from 0.5 to 50% by weight of 4,4'-dinitrostilbene-2,2'-disulfonic acid or its alkali salts.

4,070,396

SULFITE ION CATALYSIS OF BISULFITE ADDITION TO HIGHER MOLECULAR WEIGHT DETERGENT RANGE OLEFINS

Ronald J. Convers, and Kang Yang, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 15, 1976, Ser. No. 667,000
Int. Cl.² C07C *139/12*
U.S. Cl. 260—513 B **7 Claims**

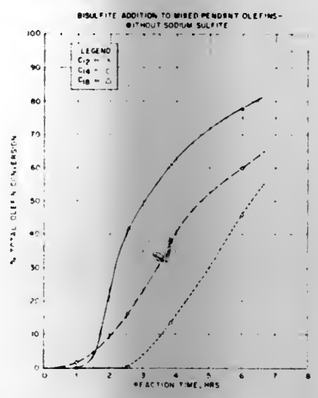
1. In the process of reacting C_{12} and higher pendant and internal olefins with bisulfite to form alkanesulfonates wherein the reaction proceeds by means of a free radical initiator, wherein the rate increases as the molecular weight of the said olefin increases, the improvement comprising carrying out the reaction:

a. in the presence of from about 10 to about 30 mole percent of water soluble sulfite ion based on the moles of olefins present;

b. in the presence of a solvent system comprising

1. about 3 to 6 molar water soluble bisulfite in water together with;

2. a mixture of bisulfite solution of part (1) with an organic solvent selected from the group consisting of 1-propanol and 2-propanol in volume ratios of from 1:1 to about 1:3 respectively wherein the mole ratio of bisulfite to olefin is at least 1.0 to 0.9,



c. at a temperature of from about 60° to about 130° C;

d. under agitation.

4,070,397

PROCESS FOR THE PREPARATION OF METHACRYLIC ACID FROM THE CORRESPONDING ALDEHYDE

James F. White, Akron, Ohio; James R. Rege, Corpus Christi, Tex.; Robert K. Grasselli, Chagrin Falls, and Dev. D. Suresh, Warrensville Heights, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 405,309, Oct. 11, 1973, Pat. No. 3,875,220. This application Mar. 27, 1975, Ser. No. 562,709
Int. Cl.² C07C *51/32*
U.S. Cl. 260—530 N **2 Claims**

1. In the process for the production of methacrylic acid comprising reacting methacrolein with molecular oxygen in the vapor phase at a temperature of 200° to 600° C. in the presence of a catalyst and optionally in the presence of steam, the improvement comprising

using a catalyst consisting essentially of Sb, W, P, V, Mo and oxygen, said catalyst having the formula

$$Sb_zW_aP_bV_cMo_{12}O_x$$

wherein

z is 0.1–6;

a and c are about 0.1 to about 12;

b is a positive number less than about 6; and

x is the number of oxygens required by the valence states of the other elements present.

4,070,398

LAMINATES USEFUL AS PACKAGING MATERIALS AND METHOD FOR MANUFACTURE THEREOF

Chen-i Lu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,560
Int. Cl.² B65D *65/40, 81/00*; B32B *27/16*; B37B *31/26*
U.S. Cl. 206—524.2 **24 Claims**

1. A laminate adapted for use as a packaging material, said laminate comprising (1) a metal foil (2) a heat-sealable layer of a radiation-cured and heat-fused polymeric composition and (3) a radiation-cured chemically-resistant polymeric interlayer between said foil and said heat-sealable layer.

18. An article of manufacture comprising a container and alkaline fluid means disposed in said container, said container being at least partially constructed from a laminate having at least first, second and third layers, said first layer being a heat-sealable layer of a radiation-cured and heat-fused polymeric composition in contact with said alkaline fluid means, said second layer being a barrier layer disposed between said first and third layers, and said third layer being a metal foil; said barrier layer being a radiation-cured chemically-resistant polymeric layer.

4,070,399

HYDROGENATION OF TEREPHTHALNITRILE

Walter A. Butte, Jr., West Chester, Pa., assignor to Suntech, Inc., Wayne, Pa.

Filed Sept. 20, 1976, Ser. No. 724,504
Int. Cl.² C07C *83/00, 85/00, 87/00, 89/00*
U.S. Cl. 260—563 D **11 Claims**

1. A process for the preparation of 1,4-bis(aminomethyl)cyclohexane by hydrogenating an inert solvent solution of terephthalonitrile containing at least about 5% by volume of ammonia, said solvent being selected from the group of alcohols, ether and amines, said hydrogenation being conducted at a temperature between about 100° and about 150° C, at a pressure of at least about 750 psig, and in the presence of oxide supported catalyst consisting of from about 10% to 45% by weight of palladium and from about 90% to about 55% by weight of ruthenium.

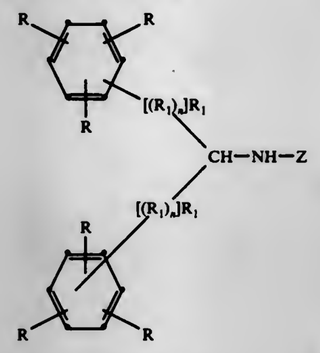
4,070,400

DIPHENYL POLYAMINES HAVING A CYCLOHEXYLENE MOIETY

Richard A. Dybas, Somerville; Nathaniel Grier, Englewood, and Bruce E. Witzel, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 16, 1975, Ser. No. 622,935
Int. Cl.² C07C *87/38*
U.S. Cl. 260—570.5 P **14 Claims**

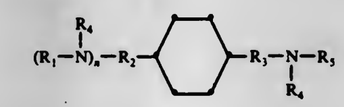
1. A compound of the formula:



where R is hydrogen or loweralkyl;

each n is alike or different and is the integer 0 or 1;

each R_1 is alike or different and is C_1 to C_4 alkylene; and Z is



where

R_2 is 2-hydroxy-1,3-trimethylene, or R_1 as previously defined;

R_3 is 2-hydroxy-1,3-trimethylene, or R_1 as previously defined;

R_4 is hydrogen, aminoethyl, aminopropyl, C_1 to C_4 hydroxyalkyl, aminohydroxy C_2 to C_4 alkyl, or C_2 to C_4 dihydroxyalkyl;

R_5 is hydrogen, C_1 to C_4 hydroxyalkyl or C_2 to C_4 dihydroxyalkyl, aminohydroxy C_2 to C_4 alkyl, and n is as previously defined.

4,070,401

METHOD FOR THE PREPARATION OF A HALOGENATED AROMATIC AMINE

Yutaka Hirai, and Katsuharu Miyata, both of Omuta, Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,834
Claims priority, application Japan, Feb. 19, 1972, 47-17546; Feb. 28, 1972, 47-19724
Int. Cl.² C07C *85/11*
U.S. Cl. 260—580 **10 Claims**

1. In a method for the conversion of a halogenated aromatic nitro compound to produce the corresponding halogenated aromatic amine selected from the group consisting of halogenated anilines, halogenated aminophenols, halogenated aminodiphenyls, alkylhalogenated anilines and halogenated aminophenylcarboxylic acids by catalytic, liquid-phase hydrogenation in the presence of a platinum catalyst, the improvement consisting of hydrogenating said nitro compound in the presence of:

a. 1 part by weight of platinum per 10,000–1,000,000 parts of said nitro compound, and

b. 1 part by weight of an amine dehalogenation inhibitor selected from the group consisting of (i) an alkylmonoamine selected from methylamine, dimethylamine, trimethylamine, ethylamine, diethylamine, triethylamine, propylamine, dipropylamine, isopropylamine, di-isopropylamine, n-butylamine, di-n-butylamine, isobutylamine, hexylamine, dihexylamine, heptylamine, octylamine, dioctylamine, nonylamine, n-amylamine, isoamylamine, decylamine, dodecylamine, didocecylamine, undecylamine, tridecylamine, ditridecylamine, tetradecylamine, pentadecylamine, dipentadecylamine, hexadecylamine, octadecylamine, and dioctadecylamine, (ii) an alicyclic amine selected from cyclohexylamine, dicyclohexlamine, 1,2-, 1,3-, 1,4-diaminocyclohexane and isopropyridenebis-(4-aminocyclohexane) and (iii) a polyalkylenepolyamine selected from diethylenetriamine, triethylenetetramine, tetraethylenepentamine, pentaethylenehexamine, dipropylenetriamine, tripropylenetetramine, tetrapropylenepentamine, pentapropylenehexamine, dibutylenetriamine, dipentylenetriamine, dihexylenetriamine, N, N, N', N'', N'' - pentamethyldiethylenetriamine, 6, 6', 6'' -tris (dimethylamino) trihexylamine, 6, 6', 6'' -tris (diethylamino) trihexylamine, 6, 6', 6'' -tris (dipropylamino) trihexylamine, and 2, 2', 2' -triaminotriethylamine, per 1–1000 parts of said nitro compound, said amine inhibitor having a dissociation constant's value pK_b lower than 4.2.

4,070,402

TERPOLYMER ALKYLATED PHENOL

Robert E. Karll, Batavia, Ill.; Edmund J. Piasek, deceased, late of Chicago, Ill., and by Evelyn W. Hunt, administratrix, Hoffman Estates, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Mar. 15, 1976, Ser. No. 667,197
Int. Cl.² C07C *37/14, 39/12, 39/17, 39/18*
U.S. Cl. 260—619 D **9 Claims**

1. A process of preparing a high molecular weight ethylene-propylene-diene terpolymer having 1 to 5 pendant hydroxyphenyl groups conprising reacting an ethylene-propylene-diene terpolymer of from 10,000 up to 40,000 Mn whose units consist essentially of from 1 up to 10 mole percent of a C_4 to C_{25} diene hydrocarbon or a 2-(C_2–C_5 alkenyl)-2-norborene and whose remaining 99–90 mole percent units consist of 35 to 70 mole percent ethylene and from 65 to 30 mole percent propy-

lene units, with about 50 to about 100 moles of phenol for each mole of terpolymer, in the presence of BF_3 as a catalyst in amounts in the range of about 0.05 to about 0.20 moles of BF_3 for each mole of phenol, at a reaction temperature of about 170° F to about 300° F, and thereafter removing unreacted BF_3 and phenol.

4,070,403

CATALYTIC HYDROFORMYLATION PROCESS

Edwin H. Homeier, Maywood, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 597,725, July 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 491,705, July 25, 1974, abandoned. This application Feb. 10, 1977, Ser. No. 767,274
Int. Cl.² C07C 27/22
U.S. Cl. 260—632 HF 16 Claims

1. A process for the hydroformylation of an olefinic hydrocarbon which comprises treating said hydrocarbon with carbon monoxide and hydrogen at hydroformylation conditions in the presence of a catalyst system comprising a cobalt-containing compound chemically bonded to a zeolite-alumina hydrosol dispersion which has been aged at a temperature of from about 30° to about 500° C. and recovering the resultant hydroformylated products.

4,070,404

PROCESS TO 1,1-DIHALO-4-METHYL-1,3-PENTADIENES, PYRETHROID INSECTICIDE INTERMEDIATES

Andrew Lupichuk, Hamilton Square, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 26, 1976, Ser. No. 670,791
Int. Cl.² C07C 21/00
U.S. Cl. 260—654 D 12 Claims

1. A process for producing 1,1-dichloro-4-methyl-1,3-penadiene which comprises

a. condensing a carbon tetrahalide, selected from the group consisting of carbon tetrachloride, bromotrichloromethane, and dibromodichloromethane, with 3-methyl-11 -butene in the presence of a free radical catalyst to produce a 1,1,1,3-tetrahalo-4-methylpentane; and then

b. treating the 1,1,1,3-tetrahalo-4-methylpentane with an alkali metal hydroxide at a temperature between about 100° C and 150° C in a solvent selected from the group consisting of hydrocarbons and ethers, causing dehydrohalogenation, eliminating two moles of hydrohalic acid, producing said 1,1-dichloro-4-methyl-1,3-pentadiene.

4. A process for producing 1,1-dichloro-4-methyl-1,3-pentadiene which comprises

a. condensing a carbon tetrahalide, selected from the group consisting of carbon tetrachloride, bromotrichloromethane, and dibromodichloromethane, with 3-methyl-11 -butene in the presence of a free radical catalyst to produce a 1,1,1,3-tetrahalo-4-methylpentane; and then

b. treating the 1,1,1,3-tetrahalo-4-methylpentane with an alkali metal hydroxide at a temperature of about 0° C in a solvent selected from the group consisting of alcohols and water, causing dehydrohalogenation, eliminating one mole of hydrohalic acid, producing a mixture of a 1,1,1-trihalo-4-methyl-2-pentene and a 1,1,1-trihalo-4-methyl-3-pentene; and then

c. heating the mixture of pentenes at a temperature between about 125° C and 175° C, causing isomerization, yielding a 1,1,3-trihalo-4-methyl-1-pentene; and then

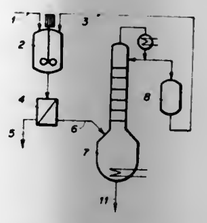
d. treating the 1,1,3-trihalo-4-methyl-1-pentene with an alkali metal hydroxide at a temperature between about 100° C and 150° C in a solvent selected from the group consisting of hydrocarbons and ethers, causing dehydrohalogenation, eliminating a second mole of hydrohalic acid, producing 1,1-dichloro-4-methyl-1,3-pentadiene.

4,070,405

PROCESS FOR WORKING UP LIQUID COPPER-CONTAINING CATALYST WASTE FROM ISOMERIZATION REACTIONS OF DICHLOROBUTENE

Rolf Bautz, Dormagen; Gunter Beilstein, Straberg; Dieter Grenaer, Dormagen; Wilfried Keller, Leverkusen, and Dimitry Steinbach, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed July 13, 1976, Ser. No. 704,792
Claims priority, application Germany, July 19, 1975, 2532472
Int. Cl.² C07C 21/00
U.S. Cl. 260—654 R 9 Claims



1. A process for working up a liquid copper complex-containing catalyst waste stream from the isomerization reaction of dichlorobutene wherein the copper complex dissolved in dichlorobutene is precipitated at a temperature of from 0° to 250° C by the addition of an apolar solvent to the waste stream and said precipitated copper complex is recovered by filtration.

2. A process as claimed in claim 1, wherein the filtrate is worked up by distillation and the apolar solvent recovered is reused as precipitant.

4,070,406

1-PHENYL-CYCLOOCTADIENE (1,5)

Gunther Wilke, and Paul Heimbach, both of Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

Division of Ser. No. 585,287, June 9, 1975, Pat. No. 4,032,585, which is a division of Ser. No. 463,087, April 22, 1974, Pat. No. 3,929,921, which is a division of Ser. No. 109,949, Jan. 26, 1971, Pat. No. 3,849,506, which is a division of Ser. No. 843,220, July 18, 1969, Pat. No. 3,586,727, and Ser. No. 845,901, July 29, 1969, Pat. No. 3,629,347, and Ser. No. 845,904, July 29, 1969, abandoned, each is a continuation-in-part of Ser. No. 582,775, Sept. 27, 1966, abandoned. This application Nov. 1, 1976, Ser. No. 737,765
Claims priority, application Germany, Sept. 29, 1965, 1493221
Int. Cl.² C07C 15/00, 3/035
U.S. Cl. 260—668 R 2 Claims

1. 1-Phenyl-cyclooctadiene (1,5).

4,070,407

ALKYLATION/TRANSALKYLATION IN PRESENCE OF CRYSTALLINE ALUMINOSILICATE CATALYST

Werner O. Haag, Trenton, and David H. Olson, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 449,315, March 8, 1974, abandoned. This application May 27, 1975, Ser. No. 580,864
Int. Cl.² C07C 3/52, 3/62
U.S. Cl. 260—671 R 36 Claims

1. A process for effecting alkylation of an aromatic hydrocarbon charge selected from the group consisting of aromatic hydrocarbons and aromatic hydrocarbons containing a non-polar substituent which comprises contacting said hydrocarbon charge with an alkylating agent under conditions effective for accomplishing said alkylation including a reactor inlet temperature between about 100° F and about 1200° F, a reactor pressure between atmospheric and about 3000 psig, employing a mole ratio of hydrocarbon charge to alkylating agent in the approximate range of 1:3 to 20:1 and a weight hourly space velocity between about 0.5 and 1000 in the presence of a catalyst comprising a crystalline aluminosilicate zeolite, or a product of heating said zeolite to a temperature of from about 500° F to about 1500° F, characterized by the X-ray diffraction pattern of Table 1 and a formula, expressed in terms of mole ratios of oxides in the anhydrous state, as follows:

$$(0.3\text{–}2.5)R_2O:(0\text{–}0.8)M_2O:Al_2O_3: > 8SiO_2$$

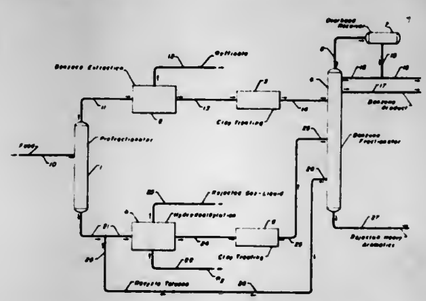
wherein R is an organic nitrogen-containing cation derived from ethylenediamine or pyrrolidine and M is an alkali metal cation, said zeolite being further characterized, after calcination at 600° C, by exhibiting a sorption ratio of n-hexane/2-methylpentane of less than 10 at 90° C.

4,070,408

AROMATICS EXTRACTION AND DISTILLATION PROCESS

Anthony G. Vickers, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed July 6, 1976, Ser. No. 702,832
Int. Cl.² C07C 3/58
U.S. Cl. 260—672 R 17 Claims



5. In a process for the hydrodealkylation of alkylaromatics to benzene wherein a stream comprising toluene is charged to a hydrodealkylation zone to produce a benzene and toluene-rich dealkylation effluent containing trace amounts of olefins, the dealkylation effluent is passed through a clay treating zone for conversion of olefins to di-olefins, and heavier material, clay treated dealkylation effluent is introduced into an intermediate locus of benzene product fractionator wherein benzene reflux is supplied to the top of the fractionator and benzene product is recovered from an upper portion of the fractionator, above the feed locus, a toluene fraction is recovered from a lower portion of the fractionator for recycle to the hydrodealkylation unit, and heavy aromatics and polymerized olefins are removed as a bottoms fraction, the improvement which comprises: supplying as at least a portion of the reflux requirement of the benzene fractionator a high purity, clay treated benzene fraction derived from an aromatics extraction unit, wherein the extracted, clay treated benzene is added to the benzene fractionator at a point between the benzene product withdrawal locus and the feed locus of the fractionator.

4,070,409

PROCESS FOR RECOVERING ANTHRACENE

Vasily Efimovich Privalov, ulitsa Gaiana, 5, kv. 13; Evgeny Iosifovich Vail, ulitsa Tobolskaya, 52, kv. 36; Larisa Semenovna Kuznetsova, pereulok Avtostradny, 10, kv. 1; Konstantin Alexeevich Belov, ulitsa Frunze, 15, kv. 6; Ivan Mikhailovich Nosalevich, ulitsa Sumskaya, 124-a, kv. 17, and Igor Vasilievich Romanov, prospekt Gagarina, 7, kv. 107, all of Kharkov, U.S.S.R.

Filed June 25, 1976, Ser. No. 699,966
Int. Cl.² C07C 15/28
U.S. Cl. 260—675 2 Claims

1. A process for recovering anthracene from crude anthracene, comprising treating crude anthracene with N,N-dimethylacetamide to give suspension I; separating the suspension I into liquid and solid phases; treating the solid phase with N,N-dimethylacetamide at a temperature ranging from 52° to 135° C to give suspension II containing impurities insoluble in the solvent; separating said impurities from suspension II; cooling the remaining solution from suspension II to a temperature ranging from −10° to +40° C to give suspension III containing anthracene crystals; separating the crystals of anthracene from said suspension III.

4,070,410

METHOD OF ISOLATING INDIVIDUAL NORMAL ALKANES FROM PETROLEUM STOCK

Vladimir Alexandrovich Matishev, Novocheremushkinskaya ulitsa, 64, korpus 3, kv. 19, Moscow, U.S.S.R.

Filed Aug. 16, 1976, Ser. No. 714,752
Int. Cl.² C07B 21/00
U.S. Cl. 260—676 R 1 Claim

1. A method of isolating individual normal alkanes from petroleum stock, which comprises contacting said petroleum stock with crystalline carbamide in the presence of an activator at a temperature which is the upper limit for complex formation of the individual normal alkane to be isolated, said alkane having the maximum molecular weight of the alkanes in said petroleum stock, thereby forming a complex of said alkane with the carbamide; removing the residual stock from the formed complex; washing the complex with an individual normal alkane which is the same as the alkane being isolated; heating said complex to a temperature 2°–5° C higher than its decomposition point; recovering the individual normal alkane having the maximum molecular weight in said petroleum stock from said complex; and recycling the residual petroleum stock and recovering the remaining individual normal alkanes in succession in order of decreasing molecular weight by the above steps.

4,070,411

CONVERSION OF LOWER OLEFINS TO ISOBUTANE

Stephen A. Butter, East Windsor, and Warren W. Kaeding, Westfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 562,278, March 26, 1975, abandoned. This application Oct. 7, 1976, Ser. No. 730,490
Int. Cl.² C07C 9/12
U.S. Cl. 260—676 R 4 Claims

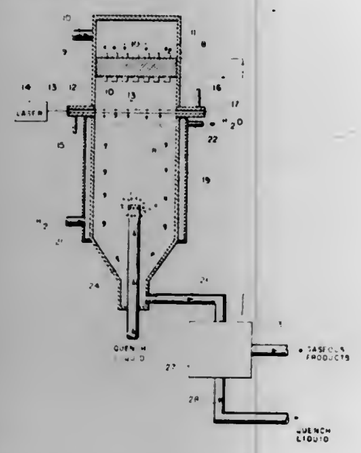
1. In the process of converting a feed consisting of ethylene to a product comprising isobutane and n-butane by contacting such ethylene with a ZSM-5 type of crystalline alumino-silicate zeolite at a given set of operating conditions including a space velocity of about 0.5 to 10 WHSV and a temperature of at least about 300° C; the improvement which comprises utilizing as said zeolite ZSM-11 and operating at said given combination set of conditions such as to produce a product having an iso-butane to n-butane ratio of at least about 6 and separating a C_4 fraction comprising butanes that contain at least about 85% iso-butane.

4,070,412

METHOD FOR PRODUCTION OF ACETYLENE BY LASER IRRADIATION

Thomas J. Manuccia, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 8, 1976, Ser. No. 721,649
Int. Cl.[2] C07C *11/24*
U.S. Cl. 260—679 R 7 Claims



1. A method for pyrolytic production of acetylene which comprises:

doping a hydrocarbon gas with an olefin to absorb laser radiation in a controlled manner; and

irradiating said doped hydrocarbon gas with laser radiation to quickly raise said gas to a reaction temperature at which acetylene is produced.

4,070,413

DEHYDROGENATION OF SATURATED HYDROCARBONS

Tamotsu Imai, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 28, 1976, Ser. No. 736,281
Int. Cl.[2] C07C *5/36*
U.S. Cl. 260—683.3 11 Claims

1. A process for dehydrogenating a paraffinic hydrocarbon which comprises contacting said hydrocarbon at dehydrogenation reaction conditions including a temperature of from about 400° to about 700° C. with a catalytic composite of from about 0.01 to about 2.0 wt. % Group VIII metal component and from about 0.01 to about 0.1 wt. % of an alkali metal or alkaline earth metal component with a precalcined alumina support which has been hydrothermally treated with steam at a temperature of from about 800° to about 1200° C. after its calcination and prior to the compositing of said metal components therewith.

4,070,414

TOUGHENED MERCAPTOSILOXANE MODIFIED BULK POLYMERIZED VINYLIC POLYMERS

James R. Falender, Sanford, and John C. Saam, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 23, 1976, Ser. No. 679,621
Int. Cl.[2] C08L *83/10*
U.S. Cl. 260—825 20 Claims

1. A composition of matter consisting essentially of a matrix of

1. a thermoplastic vinylic polymer having dispersed therein

2. gel particles of a rubbery organopolysiloxane, (1) being selected from the group consisting of polymethyl methacrylate, copolymers of methyl methacrylate with minor amounts of other vinylic monomers and copolymers of a styrenic monomer with minor amounts of a monomer selected from the group consisting of acrylonitrile monomers, 1,4-butadienes, acrylate monomers, vinyl acetate and vinyl halides, (2) being formed from a copolymer dispersible in at least one of the monomers from which (1) is prepared, (2) containing from 0.001 to 10 mol percent siloxane units of the formula $HSRSi(R')_nO_{3-n/2}$ in which R has 1 to 8 carbon atoms and is a divalent saturated aliphatic hydrocarbon radical or a trivalent saturated aliphatic hydrocarbon radical in which two valences are satisfied by the same silicon atom, n is 0 to 2 and R' is a monovalent hydrocarbon radical free of aliphatic unsaturation of 1 to 8 carbon atoms, the remainder of (2) being essentially all dimethylsiloxane, the proportion of (2) being from 1 to 40 percent by weight based on the combined weights of (1) and (2) said composition having been prepared by bulk or suspension polymerization of at least one monomer (1) having (2) dispersed therein, in the presence of a free radical generator.

4,070,415

THERMOPLASTIC MOLDING COMPOSITIONS ON THE BASIS OF POLYOXYMETHYLENES

Gunter Sextro, Naurod, Taunus; Karlheinz Burg, Langenhain, Taunus; Rudolf Kern, Mainz; Heinz Schmidt, and Ernst Wolters, both of Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 13, 1972, Ser. No. 217,668
Claims priority, application Germany, Oct. 7, 1971, 2150038
Int. Cl.[2] C08L *59/02, 63/00, 63/02*
U.S. Cl. 260—830 R 2 Claims

1. A thermoplastic molding composition consisting essentially of a mixture of from 99.999 to 90 percent by weight of a linear polyoxymethylene and from 0.001 to 10 percent by weight of a branched or cross-linked copolymer of trioxane with monofunctionally reacting compound copolymerizable with trioxane through its functional group, and a preformed copolymer of a monofunctionally reacting cyclic ether having from 3 to 5 ring members and a bifunctionally reacting cyclic ether having two ether ring groups of 3 to 5 members.

4,070,416

NOVEL THERMOSETTING RESIN AND A PROCESS FOR PRODUCING SAME

Toshikazu Narahara; Katuo Sugawara; Yoshiharu Karasawa, all of Hitachi; Hitoshi Yokono, Katsuta; Junji Mukai, and Tadashi Muroi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 418,905, Nov. 26, 1973, abandoned. This application Aug. 18, 1975, Ser. No. 605,324
Claims priority, application Japan, Nov. 29, 1972, 47-118986
Int. Cl.[2] C08L *63/00*
U.S. Cl. 260—830 P 48 Claims

1. A resin composition comprising 1 equivalent of an epoxide having 2 or more of vicinal epoxy groups, 2 equivalents or more of an organic polyisocyanate and 0.01 to 10% by weight of catalyst for forming isocyanurate rings and oxazolidone rings based on the total amount of the epoxide and isocyanate, whereby a thermosetting resin containing as a recurring unit 2 or more isocyanurate rings each being connected through an organic isocyanate residue and an oxazolidone ring connected at one side through an isocyanate residue to an organic isocyanurate and having at the other side an epoxy residue is provided by heating at a temperature higher than 80° C at which isocyanurate rings and oxazolidone rings are formed.

4,070,417

STRETCHED POLYESTER FILM FROM A POLYMER BLEND

Tsutomu Isaka; Hiroshi Nagano, both of Inuyama; Tetsushi Murakami, Otsu; Koichi Matsunami, Otsu, and Yukio Yamane, Otsu, all of Japan, assignors to Toyobo Co., Ltd., Osaka, Japan

Filed Dec. 18, 1975, Ser. No. 642,184
Claims priority, application Japan, Dec. 19, 1974, 49-146537
Int. Cl.[2] C08L *67/02*
U.S. Cl. 260—860 14 Claims

1. A stretched polyester film made from a polymer blend comprising (i) a polyester consisting essentially of a residue of dibasic acids wherein at least 80% by mole thereof is terephthalic acid and a residue of at least one glycol and (ii) a block copolyester consisting of a crystalline polyester segment having a high melting point and a soft polymer segment having a low melting point and a number average molecular weight of 400 to 8,000, said soft polymer segment having a low melting point being present in an amount of 0.5 to 10% by weight on the basis of the whole weight of the mixed polymer, and said crystalline polyester segment having a melting point of at least 170° C. when a polymer is produced by the monomers composing this segment alone and said soft polymer segment having a melting or softening point of 100° C. or lower, said film being drawn at least uniaxially in a ratio of 1.2 to 6.

4,070,418

HEAT FORMABLE ELASTOMERIC BLOCK POLYMER PRODUCTS

Gary A. Harpell, North Tonawanda, N.Y., assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 191,118, Oct. 20, 1971, abandoned. This application June 29, 1973, Ser. No. 374,891
Int. Cl.[2] C08L *53/02*
U.S. Cl. 260—876 B 4 Claims

1. An elastomeric article consisting of a vulcanized composition comprising a block copolymer having a central thermoplastic block of molecular weight from about twenty thousand to several hundred thousand and terminal blocks of vulcanizable elastomer, the ratio of the quantity of thermoplastic in the central block to the quantity of elastomer in the terminal block along with such additional vulcanizable elastomer as may be present being from about 1:1 to about 1:5, and which article has a definite size and shape and which when heated beyond a moldable temperature of the thermoplastic block without mechanical restraint will shrink in at least one direction to assume a different shape.

4,070,419

POLYMERIZATION OF STYRENE

James M. Watson, Big Spring, Tex., assignor to Cosden Technology, Inc., Big Spring, Tex.

Filed Dec. 1, 1975, Ser. No. 636,718
The portion of the term of this patent subsequent to June 22, 1993, has been disclaimed.
Int. Cl.[2] C08F *279/02, 112/08, 2/02*
U.S. Cl. 260—879 12 Claims

1. A process for the production of polystyrene, comprising the steps of

a. contacting styrene monomer with gaseous nitric oxide (NO); and

b. subjecting said styrene monomer to polymerization conditions, whereby said styrene polymerizes at an accelerated rate.

4,070,420

THERMOPLASTIC ELASTOMERS PREPARED VIA CATIONIC GRAFTING

Richard Joseph Ambrose, Akron, Ohio, assignor to The Firestone Tire and Rubber Company, Akron, Ohio

Filed Sept. 15, 1976, Ser. No. 723,412
Int. Cl.[2] C08F *279/02*
U.S. Cl. 260—880 R 1 Claim

1. In the process for grafting alpha-methyl styrene from chlorinated polybutadiene in the presence of toluene and trimethyl aluminum, the improvement wherein said grafting is conducted in the presence of from about 1.5 to about 2.5 × 10^{-3}M water dissolved in said toluene, said water and toluene being added prior to the addition of said trimethyl aluminum.

4,070,421

CHLORINATED POLYMERIC COMPOSITIONS USEFUL AS PRIMERS FOR POLYOLEFINS

Raymond L. Etter, Jr., Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1976, Ser. No. 679,633
Int. Cl.[2] C08L *27/24*
U.S. Cl. 260—897 C 31 Claims

1. A chlorinated polymeric composition useful as a primer for polyolefin surfaces containing from about 15 to about 35 weight percent chlorine comprising a blend of from about 20 to 80 weight percent of at least one chlorinated polyethylene prepared from polyethylene having a density greater than 0.96 and a melt index at 190° C. of from about 0.5 to about 50 and about 80 to 20 weight percent of at least one chlorinated synthetic hydrocarbon resin selected from the group consisting of DAC-B hydrocarbon resin, synthetic polyterpenes, and low molecular weight polystyrene resins.

4,070,422

METHOD FOR PRODUCING PHYTIN

Lyubomir Alexandrov Kolchev, Pleven, Bulgaria, assignor to DSO "UHARMACHIM", Sofia, Bulgaria

Continuation-in-part of Ser. No. 543,917, Jan. 24, 1975, abandoned. This application Sept. 9, 1976, Ser. No. 721,841
Claims priority, application Bulgaria, Feb. 26, 1971, 16916
Int. Cl.[2] C07F *9/117*
U.S. Cl. 260—990 3 Claims

1. A method for the production of inorganic phosphorus and protein free phytin from groats and rice brans containing phytin which comprises the steps of:

a. forming a suspension of said raw materials and an aqueous solution of an acid selected from the group consisting of hydrochloric and nitric acid having a pH of about 1;

b. filtering the suspension to obtain an acidified filtrate extract containing said phytin;

c. adding an aqueous solution containing bicarbonate ions to said extract in an amount sufficient to produce a pH of 7–8 whereby phytin is precipitated;

d. recovering the precipitated phytin;

e. dissolving the recovered phytin in hydrochloric or nitric acid solution of pH 1;

f. saturing the solution of phytin with a denaturing agent selected from the group consisting of sulfur dioxide, ether and formaldehyde;

g. filtering the denatured solution to recover a solution of purified phytin free from protein; and

h. precipitating the purified phytin by adding an aqueous bicarbonate solution to the solution thereof.

4,070,423

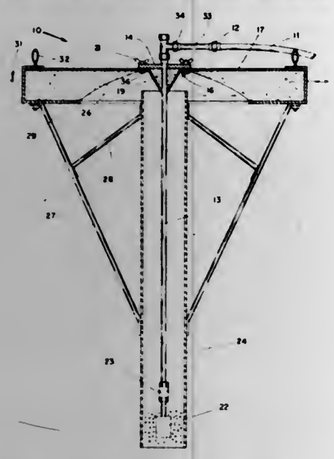
APPARATUS FOR DIFFUSION IN BODIES OF LIQUID

Roger C. Pierce, 521 S. Washington St., Dillon, Mont. 59725

Filed Aug. 5, 1974, Ser. No. 494,550
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—77 4 Claims

1. A floating aerator for a sewage lagoon or the like, said

aerator comprising a floating diffuser dome of generally disc-shaped configuration and having a closed upper face disposed above the liquid level of the lagoon, said dome having an underface which is concave over a central portion of its total surface area and of flat planar configuration over the marginal area, said marginal surface area being below said liquid level and encircling said concave surface portion, said concave surface thus providing a trapped air pocket under said dome, a draft tube supported by said dome and depending vertically



below the center of said concave portion of the dome surface with the upper end of the draft tube spaced therefrom, and an air supply tube accessible from the outer surface of said dome and extending through said draft tube to terminate at a diffuser adjacent the draft tube's lower end, whereby the upper flow of the air-liquid mixture induced in the draft tube by the injection of air through the diffuser initially impacts on said concave surface portion then flows radially outwardly along said planar marginal surface of the dome.

4,070,424

METHOD AND APPARATUS FOR CONDITIONING FLUE GAS WITH A MIST OF H_2SO_4

Wallace I. Olson, Darien; Robert H. Gaunt, Ridgefield, and Jerome G. Lynch, Bridgeport, all of Conn., assignors to UOP Inc., Des Plaines, Ill.

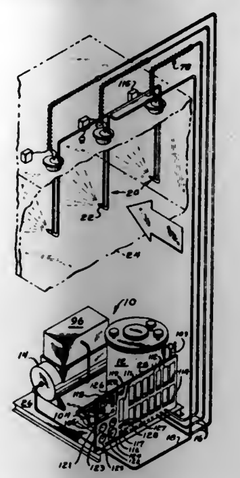
Filed Sept. 21, 1976, Ser. No. 725,058
Int. Cl.² F02M *15/04*
U.S. Cl. 261—142 **15 Claims**

1. Method of injecting an acid conditioning agent into a flue gas stream containing fly ash to be conditioned to enhance the efficiency with which the fly ash can be electrostatically precipitated comprising the steps of:

passing sulfuric acid conditioning agent under pressure through a first line into a lance incorporating a sonic atomizing nozzle;

heating a portion of said first line adjacent said lance so that said acid will be heated to a temperature higher than ambient but lower than its vaporizing temperature and which is sufficient to increase its temperature to at least about 93° C. before it leaves the nozzle; and

passing a gas under pressure through a second line into said nozzle, said gas pressure being at least about 10 psig higher than the liquid acid pressure, and said nozzle incorporating means to produce sonic vibrations capable of breaking



up said liquid acid into a mist having a means droplet size no greater than about 10 microns.

4,070,425

POLYAMIDE GEL REMOVAL

T. A. Wood, Lehigh Acres, Fla., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 24, 1976, Ser. No. 660,853
Int. Cl.² B29C *29/00*; B08B *3/08*
U.S. Cl. 264—39 **12 Claims**

1. A process for rendering an aliphatic polyamide gel readily flushed which comprises contacting said gel at a temperature of about from 100° to 300° C and for a period of about from 15 minutes to 12 hours with at least one compound having at least one alcoholic or phenolic hydroxyl group in amounts sufficient to maintain the concentration of dissolved ungelled polyamide below about 10 percent by weight, the compound being liquid at the contact temperature and having:

a. an infrared absorption characterized by a wavelength difference of at least about 0.2 micron in hydroxyl group stretching frequency when measured in carbon tetrachloride and tetrahydrofuran;

b. a normal boiling point greater than about 100° C; and

c. not more than one aliphatic carbon-carbon double bond per molecule.

4,070,426

ACRYLIC MODIFIED FOAMED NYLON PRODUCT AND PROCESS

Marshall T. Purvis, Newtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 495,956, Aug. 9, 1974, abandoned. This application Mar. 22, 1977, Ser. No. 780,201
Int. Cl.² C08J *9/00*; B29H *7/20*
U.S. Cl. 264—54 **8 Claims**

1. A method of making polycarbonamide foam comprising extruding a blend of polycarbonamide, characterized as possessing amine end groups with recurring amide linkages, and a multiphase carboxylic acid-containing polymer, which has a first elastomeric phase formed by polymerization of a monomer charge of 50 to 99.9 parts by weight alkyl acrylate, wherein the alkyl group contains 1 to 15 carbon atoms, butadiene or substituted butadiene; 0 to 40 parts by weight of other ethylenically unsaturated monomers; 0 to 5 parts by weight of a graft-linking monomer; and a final phase polymerized in the presence of said first phase from a monomer charge comprising

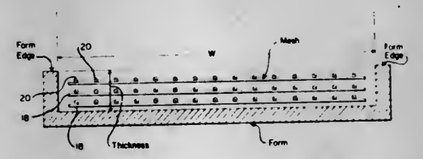
0.1 to 50 parts by weight of a copolymerizable carboxylic acid; 50 to 99.9 parts by weight of a member selected from the group consisting of alkyl methacrylate, styrenes, acrylonitrile, methacrylonitrile, and olefins that, when homopolymerized, form polymers having a heat distortion temperature greater than about 20° C, in a non-vented extruder under conditions such that the carboxylic acid groups of said multiphase carboxylic acid-containing polymers react with the amine groups of acid polycarbonamide, said multiphase polymer having a final polymeric phase polymerized in the presence of a first polymeric phase, wherein the polycarbonamide foam has a density less than 1 without the use of added blowing agents.

4,070,427

CONCRETE PLANK AND METHOD FOR MAKING IT FOR ELEVATED PLAYING COURT SURFACES

James P. Romualdi, and Samuel M. Bell, both of Pittsburgh, Pa., assignors to Samuel M. Bell, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 566,309, April 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 402,346, Oct. 1, 1973. This application Aug. 27, 1976, Ser. No. 718,384
Int. Cl.² B28B *1/08, 3/20*
U.S. Cl. 264—71 **13 Claims**



1. A method for making a composite mesh reinforced concrete plank which duplicates the flexbility of a non-concrete plank of a given thickness and which has sufficient strength for use in an elevated playing court surface which comprises:

a. placing multiple layers of wire mesh within a U-shaped cross-sectional form having a desired length and width of the non-concrete plank to be duplicated in such a manner that the mesh is generally uniform and consistently distributed over the length, width and thickness of the cross-sectional form, the mesh has openings that are no greater than 0.75 inches and the layers of mesh are spaced apart no greater than 0.5 inches and the sizes of wire forming the mesh are such that the total amount of reinforcement is not less than 5 lbs. per cubic foot of reinforced concrete;

b. filling the form with concrete to a thickness within the following parameters:

$$(T_c/T_w)^3 = E_w/E_c$$

wherein:
T_c = thickness of the concrete plank,
T_w = thickness of the non-concrete plank which is to be duplicated and not to exceed two inches in thickness,
E_w = modulus of elasticity of the non-concrete plank to be duplicated, and
E_c = modulus of elasticity of the concrete plank; and

c. removing the finished concrete plank from the form.

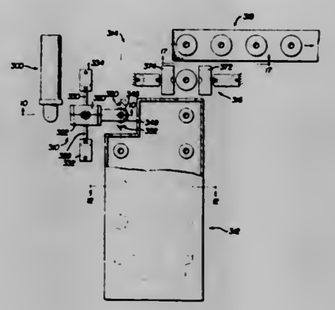
4,070,428

METHOD FOR BLOW MOLDING

Thomas J. Krall, and Albert R. Uhlig, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 9, 1976, Ser. No. 656,566
Int. Cl.² B29C *17/07*
U.S. Cl. 264—89 **2 Claims**

1. In a method of forming a molecularly oriented, plastic article by successively blowing a plastic parison in a first mold cavity to a pre-form having a blown body and a generally annular opening and then blowing the pre-form while at a temperature conducive to molecular orientation in a second mold cavity to the configuration of the final article, the improvement comprising the steps of transporting the pre-form from the first mold cavity to a position where the annular opening is in vertical alignment with a laterally movable, essentially cylindrical carrier, vertically raising the pre-form to telescopically insert the carrier in the annular pre-form opening, adjusting the temperature of the pre-form in an elongated thermal conditioning chamber to within the range for substantial molecular orientation while (a) the pre-form is pendently suspended from said carrier and (b) the pre-form is incremen-



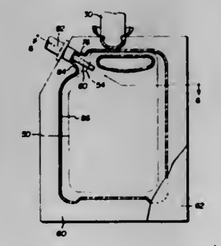
tally displaced by the carrier into and through the elongated conditioning chamber, displacing the carrier with the suspended pre-form from the thermal conditioning chamber to the second mold cavity while the pre-form temperature is accurately maintained within the desired range for the final blowing operation; injecting blow fluid under pressure through the carrier and into the pre-form to form the final article; and maintaining the carrier at essentially the same horizontal level while displacing the pre-form through the thermal conditioning chamber and to the second mold cavity.

4,070,429

METHOD FOR FORMING A BLOWN PLASTIC CONTAINER

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

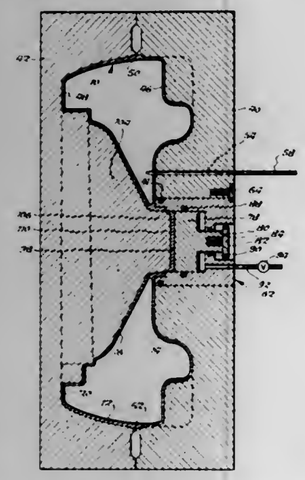
Filed Oct. 26, 1976, Ser. No. 735,554
Int. Cl.² B29C *17/07, 17/10*
U.S. Cl. 264—89 **12 Claims**



1. In a method of forming a blown container, by the steps of introducing blow air under pressure into the open end of a thermoplastic parison as the parison is confined within a first mold cavity to form a blown preform, and then introducing blow air under pressure into the preform while in a second mold cavity to form the blown container, the improvement of forming an additional opening in said preform spaced from said open end of said parison during the blow molding operation and while the preform is confined in the first mold cavity, and then pinching shut the open end of the preform by mold sections of said second mold and injecting final blow air through said additional opening and into the preform while the preform

is in the second mold cavity, to form a blown container having a dispensing opening defined by said additional opening.

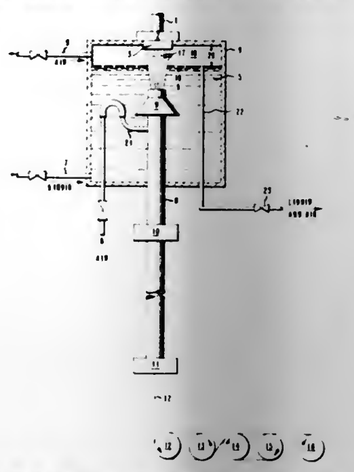
4,070,430
METHOD FOR BLOW MOLDING AND TRANSFER MOLDING THERMOPLASTIC MATERIAL
Raymond C. Confer, Gasport, N.Y., assignor to Air Lock Plastics, Inc., Tonawanda, N.Y.
Continuation of Ser. No. 520,622, Nov. 4, 1974, abandoned, Division of Ser. No. 310,896, Nov. 30, 1972, Pat. No. 3,869,239. This application Apr. 28, 1976, Ser. No. 681,228
Int. Cl.² B29C *17/07*
U.S. Cl. 264—98 **4 Claims**



1. A method of molding a hollow body comprising: introducing thermoplastic material between a pair of mold sections, moving said mold sections into engagement about the thermoplastic material to sever and enclose a segment thereof, directing a portion of said enclosed thermoplastic material into a cavity formed between opposed portions of said mold sections, further closing said mold sections and providing a predetermined pressure in said cavity to act on said portion of thermoplastic material to thereby displace at least a part of said thermoplastic material portion from said cavity into an adjacent space defined by other portions of said mold sections upon closing movement thereof to completely fill said space and form a wall section on said body, and expanding the remainder of said thermoplastic material against said mold sections to form said hollow body.

4,070,431
IMPROVED YARN EXTRACTION PROCESS
Gary Brett Lewis, and Stephen Donald Moore, both of Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 21, 1976, Ser. No. 752,913
Int. Cl.² D01D *5/14*
U.S. Cl. 264—180 **5 Claims**

1. A process for spinning an acidic solution of an aromatic polyamide downwardly through a non-coagulating fluid into a liquid coagulating bath and subsequently through a spin tube through which some of the coagulating liquid passes along with the freshly spun fibers at a spinning speed of at least 300 mpm wherein 0.1 to 3 volumes of a gas per volume of coagulating liquid passing through the spin tube are injected into the



spin tube at a point 0.25 to 20 cm. downstream from the entrance of the spin tube.

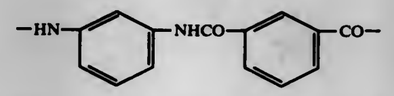
4,070,432
PRODUCTION OF LOW SHRINK POLYESTER FIBER
Cyrus Tamaddon, Chester, Va., assignor to Allied Chemical Corporation, Morris Township, N.J.
Continuation of Ser. No. 549,642, Feb. 13, 1975, abandoned. This application July 6, 1976, Ser. No. 702,792
Int. Cl.² D01D *5/16*
U.S. Cl. 264—210 F **1 Claim**

1. A melt-spinning process for production of a low shrinkage polyester yarn having uniform properties of breaking strength in grams per denier of at least 7.0, and a residual thermal shrinkage measured in an oven at 350° F. for 1 minute of 0.8 to −0.7 percent, which comprises: supplying a melt of high molecular weight, linear polyester polymer at a temperature below the spinning temperature and at a high pressure to a spinning unit comprising a spinning pump, a spinneret, and a spinning filter disposed between said pump and said spinneret; passing said melt by means of said spinning pump through said spinning filter prior to said melt passing through said spinneret whereby the temperature of the melt is increased to about 305° to 310° C.; extruding the melt at a rate of 50 to 90 pounds per hour downwardly through a spinneret having a plurality of extrusion orifices to form filaments; advancing the extruded filaments downwardly through a substantially stationary column of air having a temperature of 100° to 330° C. and a height of from 1 to 1.5 feet immediately below the spinneret, the average distance between adjacent filaments immediately below the spinneret being 0.28 to 0.4 inch; subsequently advancing the filaments downwardly through a quenching zone wherein they are in contact with a cross flow of cooling air introduced into the path of the filaments at a temperature not above 35° C., said air contacting the filaments at a volumetric rate of 100 to 800 cubic feet of air per pound of filaments entering the quenching zone, whereby the temperature of the filaments is reduced to not over 55° C.; lubricating the cooled filaments at a temperature of 40° to 60° C. by surface contact with a roll surface at a contact angle of about 10° to 12°, said roll having a surface of 140 to 160 RMS; passing the lubricated filaments over a forwardly roll system maintained at a temperature of less than 50° C.; heating the filaments substantially immediately above their second order transition temperature; drawing the filaments substantially instantly by passing said filaments over a draw roll system maintained at a temperature of between about 130° and about 190° C.; heat treating the drawn filaments by passing said filaments for 144–192 millisec-

onds over a heated roll system maintained at a temperature in the range of about 246° to about 249° C., said filaments being maintained at a tension in grams of between about 0.045 and about 0.075 gram per denier; and winding up said filaments.

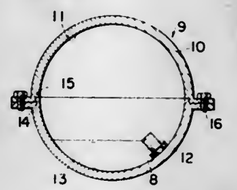
4,070,433
CASTING FILMS OF POLY(META-PHENYLENE ISOPHTHALAMIDE) AND ITS COPOLYMERS
Akira Miyoshi; Masanori Masuda, both of Uji, and Tamihiro Nakayama, Joyo, all of Japan, assignors to Unitika Ltd., Amagasaki, Japan
Filed June 16, 1976, Ser. No. 696,652
Claims priority, application Japan, Nov. 4, 1975, 50-132751
Int. Cl.² B29D *7/24*
U.S. Cl. 264—233 **20 Claims**

1. A process for producing an aromatic polyamide film from a solution comprising an aromatic polyamide in which at least about 50 mol% of its entire structural units are recurring units of the general formula:



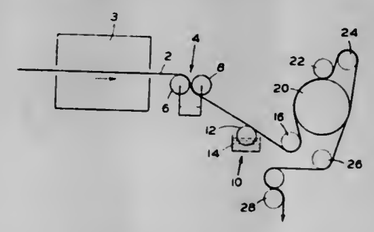
and an amide type solvent, which comprises casting said solution, drying the cast product to form a film having a residual solvent content of not more than about 60% by weight, immersing the film in an aqueous medium kept at not more than about 20° C, and stretching the resulting wet film containing at least about 5% by weight, based on the weight of the wet film, of the aqueous medium in at least one direction at a stretch ratio of at least about 1.4.

4,070,434
METHOD OF MANUFACTURING HOLLOW PLASTIC BALL
Jiseki Noda, Kawasaki, Japan, assignor to Nihon Nodalon Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 562,031, March 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 448,046, March 3, 1974, abandoned, which is a continuation-in-part of Ser. No. 207,770, Dec. 14, 1971, abandoned. This application Dec. 17, 1976, Ser. No. 751,710
Claims priority, application Japan, Dec. 14, 1970 45-111461
Int. Cl.² A63B *41/00*; B29C *5/04*
U.S. Cl. 264—255 **4 Claims**



1. In a method of manufacturing a hollow polyvinyl chloride ball having an inflating valve therein and which has a valve body and a valve seat and wherein the valve body and valve seat firstly are sequentially molded of resins containing polyvinyl chloride and are integrally joined and placed in a hollow metal mold with the valve seat on the mold surface and the valve body projecting into the mold and then a polyvinyl chloride resin paste for the ball body is poured into the mold and thereafter the resulting ball body and the valve seat are integrally secured to each other, the improvement which comprises, in the step of molding the inflating valve, using a plastisol composed mainly of 20 to 80 parts by weight of polyethylene-vinyl acetate copolymer and 100 and 150 parts by weight of acrylonitrile copolymer for the formation of said inflating valve body and pouring said plastisol into a valve body mold for filling the mold only with the plastisol and then gelating it to form the inflating valve body, whereby a hole pierced in said valve body by an air injection needle inserted through the valve seat and the valve body is closed when the needle is withdrawn not only due to the action of internal pressure on the inflating valve, but also to the tackiness of the material of the valve body.

4,070,435
MULTILEVEL EMBOSSING OF FOAMED-SHEET MATERIALS-II
Walter J. Lewicki, Jr., Lancaster; William M. McQuate, Reinholds, and Richard M. Ringer, Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Continuation of Ser. No. 626,727, Oct. 29, 1975, abandoned. This application Feb. 9, 1977, Ser. No. 766,941
Int. Cl.² B29D *27/00*
U.S. Cl. 264—284 **9 Claims**



1. A process for embossing a web of material wherein said material is composed of a composite structure having at least a carrier and a thick foam layer, said foam layer on the surface thereof adjacent the surface to be embossed having a decorative pattern printed thereon, said above composite structure being in the form of a web which is heated in an oven to a temperature of about 250° F. to 350° F., the steps comprising:

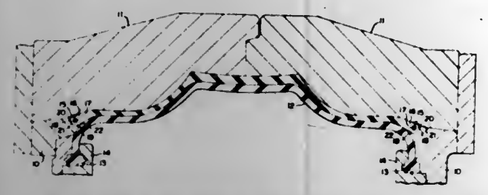
a. after the carrier of the web leaves the oven, wetting the carrier of the web, which is the back surface of the web, so as to lower the temperature of the back surface of the web approximately 100° below the top surface of the web, which is the surface to be embossed,
b. embossing the top surface of the web with an embossing roll and backup roll,
c. cooling the embossed surface of the web to set the embossed pattern in the web, and
d. the improvement comprising:
   1. wrapping the web of material partially around the chilled steel backup roll prior to the time that the web passes between the nip of the backup roll and the embossing roll, to cool the backside of the web and secure good frictional contact between the web and backup roll so that good frictional drive exists between the web and backup roll,
   2. wrapping the embossed surface of the web around the embossing roll after it has passed through the nip between the embossing roll and the backup roll to partly cool the embossed surface of the web, and
   3. said wetting of the carrier of the web is carried out by two back-wetting operations, one back-wetting operation wets the carrier of the web just as it leaves the oven and the second back-wetting operation wets the carrier of the web just prior to the time the web is wrapped partially around the chilled steel backup roll.

4,070,436

METHOD OF MANUFACTURING A PNEUMATIC TIRE

James Dennis Gardner, Akron, and Robert William Glasscock, Canal Fulton, both of Ohio, assignors to The Firestone Tire and Rubber Company, Akron, Ohio

Filed Oct. 20, 1976, Ser. No. 734,221
Int. Cl.² B29H 5/02
U.S. Cl. 264—315 3 Claims



1. In the wide stance method of manufacturing a pneumatic tire in which said tire is placed in the curing mold, pressure is applied internally of said tire by a curing bladder to shape said tire into the mold and heat is applied to vulcanize said tire, and wherein said tire has an annular road-engaging tread area and sidewalls connecting the lateral edges of said tread area to bead areas which contain annular wire bead bundles, the improvement comprising providing said mold with two annular bead cavities, each of which is designed to accept one of said bead areas and said annular wire bead bundles so that said mold substantially surrounds said bead bundles in directions axially outwardly and both radially outwardly and radially inwardly, placing said tire into said mold between said curing bladder and said mold so that the parting line between said bladder and said mold is located on the inner periphery of said tire and axially inwardly of the center of said bead bundles, shaping said uncured tire by inflating said bladder with internal pressure, maintaining said bead areas and bead bundles in an unrotated condition after said shaping, closing said mold and vulcanizing said tire.

4,070,437

PROCESS FOR THE RECOVERY OF METAL CHLORIDES FROM JAROSITE SLUDGES RESULTING FROM THE SULPHURIC ACID PROCESSING OF ORES

Alain Van Ceulen, Douai, France, assignor to Compagnie Royale Asturienne des Mines, Brussels, Belgium

Filed Dec. 31, 1975, Ser. No. 645,896
Claims priority, application France, Jan. 7, 1975, 75 00293
Int. Cl.² C01G 1/06; C01F 11/46; C01G 49/10
U.S. Cl. 423—1 9 Claims

1. A process for use in recovering valuable metal chlorides from jarosite sludges resulting from sulphuric acid processing of ores comprising

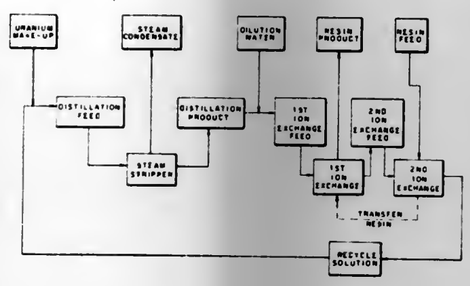
a. contacting the sludge with an aqueous solution of an alkaline earth metal chloride which contains free hydrochloric acid and is in excess stoichiometric ratio to the sulphate content of said sludge so as to dissolve said contained metals in chloride form and precipitate sulphate ions in the form of an alkaline earth metal sulphate;
b. separating insoluble products including said alkaline earth metal sulphate from the metallic chlorides solution resulting from step (a) by filtration;
c. stripping said separated insoluble products of metallic chlorides by washing and filtration; and
d. recovering metallic chloride solutions from steps (b) and (c).

4,070,438

METHOD FOR LOADING RESIN BEDS

Karl J. Notz, Oak Ridge; Robert H. Rainey; Charles W. Greene, both of Knoxville, and William E. Shockley, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sept. 21, 1976, Ser. No. 725,078
Int. Cl.² B01J 1/04, 1/08
U.S. Cl. 423—7 9 Claims



1. In a method for providing a uranium loaded cation exchange resin comprising contacting a cation exchange resin with an aqueous uranyl nitrate solution deficient in nitrate ions, the improvement comprising providing said solution deficient in nitrate ions by a method comprising the steps of:

reacting in a reaction zone maintained between about 145°14 200° C, a first aqueous component comprising a uranyl nitrate solution having a boiling point of at least 145° C with a second aqueous component to provide a gaseous phase containing HNO_3 and a reaction product comprising an aqueous uranyl nitrate solution deficient in nitrate ion and containing a solid phase.

8. A continuous process for providing a cation exchange resin loaded with uranium ions comprising the steps of:

a. in a reaction zone maintained between about 145°–200° C, contacting a first aqueous uranyl nitrate solution having a boiling point of at least about 145° C with a distillation feed comprising a second uranyl nitrate solution more dilute than the first solution to provide a gaseous phase containing HNO_3 and an aqueous uranyl nitrate product solution deficient in nitrate ion and containing a solid phase;
b. recovering HNO_3 from said gaseous phase;
c. withdrawing said product solution from said reaction zone at a rate sufficient to maintain a constant volume of reactants within said reaction zone;
d. contacting said product with at least sufficient water to provide a flowable slurry thereby providing an ion exchange feed;
e. contacting said ion exchange feed with a cation exchange resin to provide a cation exchange resin loaded with uranium ions and an ion exchange effluent solution comprising a uranyl nitrate solution having a NO_3/U mole ratio greater than said ion exchange feed solution;
f. combining said ion exchange effluent solution with make-up uranyl nitrate solution to provide said distillation feed, said distillation feed having a NO_3/U mole ratio greater than said product solution deficient in nitrate.

4,070,439

PROCESS FOR THE RECOVERY OF ANTIMONY PENTACHLORIDE FROM A SPENT ANTIMONY CATALYST MIXTURE

Yonosuke Osaka, Takatsuki, and Takashi Tohzaka, Settsu, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 3, 1976, Ser. No. 711,222
Claims priority, application Japan, Aug. 13, 1975, 50-98684
Int. Cl.² C01B 29/00
U.S. Cl. 423—88 21 Claims

1. A process for the recovery of antimony pentachloride from a spent liquid catalyst mixture of antimony halides comprising antimony (III) and antimony (V) - halides and halogenated hydrocarbons having high melting points or high sublimation points, said process comprising the steps of:

a. bubbling an inactive gas through the spent liquid antimony catalyst mixture at a temperature sufficient to convert the high melting point or high sublimation point halogenated hydrocarbons into lower boiling point chlorofluorohydrocarbons and to distill off, with the inactive gas, the lower boiling point chlorofluorohydrocarbons from the spent antimony catalyst mixture to form a first residue, wherein the fluorine content of said antimony halides is at least 0.2 gram-atoms per gram atom of total antimony during step (a); then
b. reacting said first residue with a chlorinating agent to convert antimony fluorides into antimony chlorides, and with chlorine to convert trivalent antimony into pentavalent antimony; and
c. distilling the treated catalyst mixture obtained in step (b) to recover antimony pentachloride as the distillate.

4,070,440

METHOD OF REDUCING NO_x PRESENT IN AN EXHAUST TO HARMLESS N_2

Sanseki Moriguchi, Yokohama; Hiroshi Abe, Kanagawa; Joichi Takenaka, Yokohama; Hideyuki Yoshikoshi, Hino, and Osamu Komatsu, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 7, 1976, Ser. No. 720,603
Claims priority, application Japan, Sept. 5, 1975, 50-107623; Sept. 5, 1975, 50-107624
Int. Cl.² B01D 53/34
U.S. Cl. 423—239 2 Claims

1. In the method for reducing NO_x gas contained in an exhaust gas to N_2 gas wherein the exhaust gas is contacted with NH_3 gas and an iron oxide catalyst, the improvement wherein the catalyst consists essentially of a hematite iron ore modified from a goethite iron ore by preheating the goethite iron ore at a temperature of from 300° to 900° C., and having a ratio defined by the peak intensity of X-rays diffracted on the (110) plane of the lattice of the hematite crystals therein to that of X-rays diffracted on the (104) plane of said crystal lattice of from 0.6 to about 1.0.

4,070,441

METHOD OF REMOVING SULFUR DIOXIDE FROM FLUE GASES

Leopold Pessel, Wyndmoor, Pa., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Filed Jan. 31, 1975, Ser. No. 545,928
Int. Cl.² C01B 17/00, 17/72
U.S. Cl. 423—242 1 Claim

1. A method of removing sulfur dioxide from flue gas by scrubbing with a ferric sulfate containing liquid, which is regenerative and continuous, and leading to a progressive increase in the sulfuric acid content of the liquid comprising the steps of:

a. subjecting the sulfur dioxide containing gas in a flue gas scrubber to an aqueous mixture containing ferric sulfate in which the ferric sulfate reacts stoichiometrically with the sulfur dioxide, being reduced to ferrous sulfate while the sulfur dioxide is oxidized to sulfur trioxide which dissolves in the mixture as sulfuric acid, said ferric sulfate being present in the beginning of step a) in an amount in the order of one percent by weight and up to the saturation limit of the sulfate in the mixture,
b. subjecting the mixture in a plurality of regenerating scrubbers to the action of an oxygen-containing gas essentially free of sulfur dioxide to reoxidize and regenerate at least a portion of the ferrous sulfate formed in step a) to provide ferric sulfate in an amount specified for the beginning of step a), the plurality of regenerating scrubbers being provided for the flue gas scrubber of step a) to make available to it sufficient regenerated ferric sulfate to maintain its continuous operation,
c. transferring regenerated mixture from the regenerating scrubbers to the flue gas scrubber for subsequent scrubbing steps a),
d. alternating steps a) and b) repeatedly in a continuous and regenerative cycling process, while allowing the sulfuric acid content of the mixture to increase until the time when the mixture is removed from cycling and replaced by a new mixture conforming to that provided in step a), and,
e. passing said gas after being subjected to the iron sulfate mixture through an aqueous solution of a nitrogen compound selected from the group consisting of urea and guanidine to remove any acid mist from said gas.

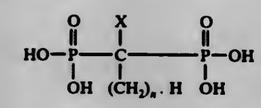
4,070,442

STABILIZED HYDROGEN PEROXIDE

John Conway Watts, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

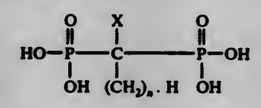
Continuation of Ser. No. 393,056, Aug. 30, 1973, abandoned.
This application Sept. 27, 1976, Ser. No. 727,363
Int. Cl.² C01B 15/02
U.S. Cl. 423—272 6 Claims

1. An aqueous hydrogen peroxide solution having improved stability in the presence of heavy metal ions and insoluble heavy metal sulfides containing from 3–70 weight percent hydrogen peroxide; an alkylidene diphosphonic acid having the formula



wherein X is hydrogen or the hydroxyl radical and *n* is a whole number from 0 to 5, or soluble alkali metal salts thereof; and an organic hydroxy compound selected from the group consisting of allyl alcohol, methallyl alcohol, phenol, o-chlorophenol, o-nitrophenol, o-aminophenol, p-chlorophenol, p-nitrophenol, p-aminophenol, and mixtures thereof; said alkylidene diphosphonic acid and organic hydroxy compound being present in combined amounts from about 0.05 to 33 weight percent based upon the weight of the hydrogen peroxide in solution and in a weight ratio of alkylidene diphosphonic acid to organic hydroxy compound of from about 10:1 to 1:10.

4. A method of stabilizing an aqueous hydrogen peroxide solution containing 3 to 70 weight percent hydrogen peroxide against decomposition in the presence of heavy metal ions and insoluble heavy metal sulfides comprising adding to the aqueous hydrogen peroxide solution an alkylidene diphosphonic acid having the formula



wherein X is hydrogen or the hydroxyl radical and *n* is a whole number from 0 to 5 or soluble alkali metal salts thereof; and an organic hydroxy compound selected from the group consisting of allyl alcohol, methallyl alcohol, phenol, o-chlorophenol,

o-nitrophenol, o-aminophenol, p-chlorophenol, p-nitrophenol, p-aminophenol, and mixtures thereof; said alkylidene diphosphonic acid and organic hydroxy compound being added in a combined amount of from about 0.05 to 33 weight percent based upon the weight of the hydrogen peroxide in solution and in a weight ratio of alkylidene diphosphonic acid to organic hydroxy compound of from about 10:1 to 1:10.

4,070,443

PROCESS FOR REMOVING SULFATE IONS FROM EXTRACTED PHOSPHORIC ACID WITH A BARIUM COMPOUND

Mitsuo Kikuchi, and Yoichi Hiraga, both of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed June 22, 1976, Ser. No. 698,710
Claims priority, application Japan, Feb. 13, 1976, 51-13941; Feb. 13, 1976, 51-13944; Feb. 13, 1976, 51-13945
Int. Cl.² C01B *25/16*
U.S. Cl. 423—321 R **13 Claims**

1. A process for removing sulfate ions from extracted phosphoric acid which is substantially free of metallic ion impurities and which has been prepared by extracting wet process phosphoric acid with an organic solvent which comprises:

a. adjusting the extracted phosphoric acid concentration to a concentration greater than 70%;

b. adding to said extracted phosphoric acid a sufficient amount of a barium compound to react with at least 80% of the dissolved sulfate ions and form barium sulfate crystals; and

c. separating said barium sulfate from the resulting slurry at a temperature less than 80° C and recovering purified, extracted phosphoric acid;

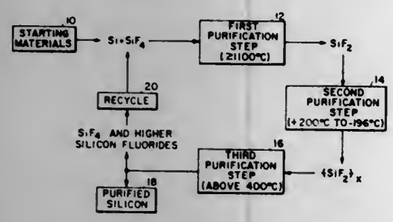
wherein the amount of barium compound added is such that said purified, extracted phosphoric acid contains at least 5 ppm of sulfate ions.

4,070,444

LOW COST, HIGH VOLUME SILICON PURIFICATION PROCESS

William Martell Ingle, Phoenix, Ariz., assignor to Motorola Inc., Schaumberg, Ill.

Filed July 21, 1976, Ser. No. 707,153
Int. Cl.² C01B *33/02, 33/08*
U.S. Cl. 423—349 **12 Claims**



1. A process of producing pure semiconductor grade silicon which comprises:

chemically combining metallurgical grade silicon and at least one binary silicon fluoride compound to form silicon difluoride gas,

forming a polymer of said silicon difluoride at a partial pressure of said silicon difluoride gas greater than about 150 microns Hg and at a first temperature of from about −45° C to about +200° C which will allow formation of said polymer in a continuous form on a substrate having a different coefficient of thermal expansion than that of said polymer,

cooling said polymer and said substrate to a second lower temperature which will allow said polymer to be separated easily from said substrate,

thermally decomposing the silicon difluoride polymer to produce silicon and a binary silicon fluoride compound, and

introducing said binary silicon fluoride compound from said thermal decomposition to said step of combining with silicon, these process steps serving to remove unwanted impurities from said metallurgical grade silicon.

5. A process for producing pure silicon, which comprises:

chemically combining raw material silicon and at least one binary silicon fluoride compound to form silicon difluoride gas,

forming an initial quantity of a polymer of said silicon difluoride gas including impurities present in said raw material silicon or said silicon difluoride gas at a first temperature from about −45° C to about 200° C and a partial pressure of said silicon difluoride gas greater than about 150 microns Hg,

forming an additional quantity of the polymer of said silicon difluoride gas at a second temperature lower than said first temperature, said additional quantity of silicon difluoride polymer being substantially free of impurities present in said silicon difluoride gas or said raw material silicon, and

thermally decomposing said additional quantity of said silicon difluoride polymer to produce silicon substantially free of the impurities present in said silicon difluoride gas or said raw material silicon.

4,070,445

REDUCTION OF AQUEOUS THIOSULFATE SOLUTIONS

Edgar B. Klunder, Pittsburgh, Pa., assignor to Continental Oil Company, Ponca City, Okla.

Filed May 29, 1975, Ser. No. 583,211
Int. Cl.² C01D *7/00;* C01B *17/00*
U.S. Cl. 423—428 **5 Claims**

1. The method of converting sodium, potassium, or ammonium thiosulfate to a mixture of the corresponding carbonates and sulfides which comprises:

a. contacting a reducing gas containing CO with an aqueous solution of said thiosulfate in a first reduction zone under reducing conditions selected to favor the production of the corresponding formate until a mixture of formate and unconverted thiosulfate in an effluent aqueous solution is obtained wherein only sufficient formate, stoichiometrically, has been produced to react with a predetermined amount of the unconverted thiosulfate, the amount of thiosulfate converted in said first reduction zone being between 20 and 90 weight percent of the total conversion of thiosulfate effected in this and the following step (b); and thereafter

b. maintaining said effluent aqueous solution from step (a) in liquid phase in a second reduction zone under reducing conditions selected to effect reaction of the formate formed in step (a) with unreacted thiosulfate from step (a), to yield an aqueous solution containing carbonates and sulfides.

4,070,446

PROCESS FOR PRODUCTION OF CARBON FIBER

Shozo Horikiri, Amagasaki; Jiro Iseki, Toyonaka, and Masao Minobe, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Feb. 1, 1974, Ser. No. 438,704
Claims priority, application Japan, Feb. 1, 1973, 48-13440; Feb. 13, 1973, 48-18189; May 18, 1973, 48-56114
Int. Cl.² C01B *31/02*
U.S. Cl. 423—447.2 **20 Claims**

1. A process for producing carbon fiber, which comprises sulfonating fiber consisting of polyethylene or a copolymer of ethylene containing 90 or more % by weight of ethylene units with a sulfonating agent selected from the group consisting of chlorosulfonic acid, sulfuric acid, fuming sulfuric acid and mixtures thereof and then carbonizing the resultant sulfonated

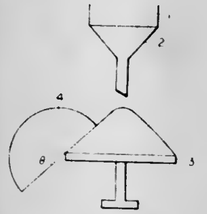
product by heating at a temperature of from 600° to 2,000° C. in an atmosphere of an inert gas or in a vacuum.

4,070,447

PROCESS FOR PREPARING ANHYDROUS ALUMINUM FLUORIDE

Tetsuhiro Ono; Minoru Aramaki, and Etuo Ushirogouthi, all of Ube, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed June 16, 1976, Ser. No. 696,715
Claims priority, application Japan, June 16, 1975, 50-72053
Int. Cl.² C01F *7/50;* C01C *1/02, 1/16*
U.S. Cl. 423—489 **5 Claims**



1. A process for preparing crystalline particles of anhydrous aluminum fluoride having a relatively large particle size and excellent flowability, said process comprising the steps of interacting ammonium hexafluoroaluminate, an inorganic acid selected from the group consisting of sulfuric acid and hydrochloric acid and an aluminum compound selected from the group consisting of aluminum hydroxide and aluminum oxide at a temperature of below 100° C to obtain ammonium tetrafluoroaluminate particles having an average size of above 50 microns; interacting said ammonium tetrafluoroaluminate particles having an average size above said 50 microns and an aluminum compound selected from the group consisting of aluminum compound selected from the group consisting of aluminum hydroxide and aluminum oxide first, at a temperature of from between about 250° to 300° C to decompose the ammonium tetrafluoroaluminate into γ-aluminum fluoride, NH_4HF_2 and NH_3 and then at a temperature of between about 350° to 500° C to react said NH_4HF_2 with said aluminum compound to thereby obtain crystalline particles of γ-anhydrous aluminum fluoride having an average particle size corresponding essentially to that of the starting ammonium tetrafluoroaluminate.

4,070,448

METHOD OF PRODUCING HIGH PURITY ALUMINUM CHLORIDE

Stanley C. Jacobs, Lower Burrell, Pa., and Larry K. King, Maryville, Tenn., assignors to Aluminum Company of America, Pittsburgh, Pa.

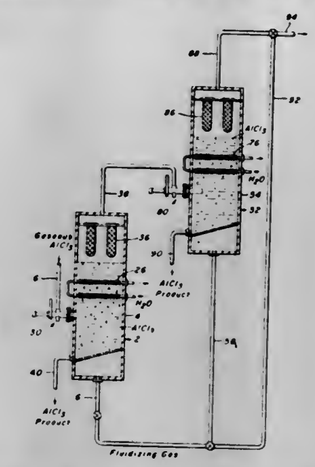
Filed Feb. 3, 1977, Ser. No. 765,459
Int. Cl.² C01F *7/58, 7/62*
U.S. Cl. 423—495 **3 Claims**

1. In the process for the recovery of high purity particulate aluminum chloride from a chlorinator by the condensation of hot aluminum chloride vapors the improvement which comprises:

a. introducing the aluminum chloride vapors at an entrance velocity of 18 to 90 meters/sec into a first fluidized bed having a particle size range of 1–500 microns of aluminum chloride particles maintained at a temperature of 80°–110° C;

b. removing solid particles of aluminum chloride from the fluidized bed at a point adjacent the bottom of the fluidized bed; and

c. passing the remaining uncondensed gases and vapors from said first fluidized bed at an entrance velocity of 18–90 meter sec into a second fluidized bed of aluminum chloride particles having a particle size range of 1–500 microns and maintained at a temperature of 20°–50° C to recover



the remainder of the chloride values from said gases and vapors.

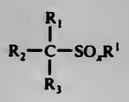
4,070,449

COMPOUNDS HAVING A PHYSIOLOGICAL COOLING EFFECT AND COMPOSITIONS CONTAINING THEM

David G. Rowsell, Staines, and Roger Hems, Maidenhead, both of England, assignors to Wilkinson Sword Limited, London, England

Filed July 20, 1973, Ser. No. 381,097
Claims priority, application United Kingdom, Oct. 24, 1972, 49039/72
Int. Cl.² A61K *7/16, 31/10*
U.S. Cl. 424—45 **6 Claims**

1. In a personal care product for topical application to the human body, comprising a topically administrable vehicle and, as adjuvants in said vehicle, i) an antiseptic or odourant or both, and ii) a compound capable of stimulating the cold receptors of the nervous system in the surface tissues of the body when brought into contact therewith by topical application of the said product, the improvement which comprises using as said cold receptor stimulating compound an effective amount of a cold receptor stimulating acyclic sulfoxide or sulfone of the formula:



wherein

R_1 is H or C_1–C_5 alkyl;

R_2 is C_1–C_6 alkyl;

R_3 is C_1–C_8 alkyl;

R_1, R_2 and R_3 together provide a total of from 3–15 carbon atoms;

R^1 is C_1–C_8 alkyl;

R_1, R_2, R_3 and R^1 together provide a total of from 6–18 carbon atoms; and

x is an integer from 1–2 inclusive.

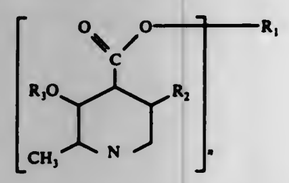
4,070,450

SUNSCREENING COMPOUND AND METHOD

Richard Barner, Witterswil, and Walter Boguth, Rieben, both of Switzerland, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 608,957, Aug. 29, 1975, abandoned. This application Dec. 22, 1975, Ser. No. 643,427
Int. Cl.² A61K 7/42; C07D 471/00
U.S. Cl. 424—59 16 Claims

1. A method of protecting skin from erythma inducing ultraviolet radiation which comprises applying to the skin an amount of a sunscreen composition sufficient for the protection thereof, said composition comprising an inert. dermatologically acceptable carrier selected from the group consisting of a cream, a milk, an ointment, a gel, a lotion, a spray and an aerosol and from about 1% by weight to about 25% by weight of an active ingredient consisting essentially of one or more compounds represented by the formula



wherein n is 1, R_1 is hydrogen, alkyl, alkali metal, ammonium or ammonium substituted with one or more alkyl or hydroxy alkyl residues, R_2 is hydroxymethyl or alkoxymethyl and R_3 is hydrogen; or R_1 and R_2 together represent a methylene group and R_3 is hydrogen, methyl or ethyl; and wherein n is 2, R_1 is an alkaline earth metal, R_2 is hydroxymethyl or alkoxymethyl and R_3 is hydrogen; and
pharmaceutically acceptable acid addition salts thereof.

4,070,451

HOOF CARE EMULSION OR CREAM

Howard Price, 270-11V Grand Central Parkway, Floral Park, N.Y. 11005

Filed Nov. 2, 1976, Ser. No. 738,147
Int. Cl.² A61K 7/04
U.S. Cl. 424—61 10 Claims

1. A composition for the treatment of keratinous tissues which comprises an aqueous emulsion containing the following ingredients in parts by weight:

Glycerol stearate	11.0 - 13.0
Lanolin wax	5.0 - 7.0
Lanolin alcohols	5.6 - 6.5
Stearic acid	4.0 - 6.0
Mineral oil	4.5 - 6.0
Paraffin	1.5 - 3.5
Polysorbate	0.5 - 2.0
Sodium lauryl sulfate	0.4 - 0.6
Hydrolyzed animal protein	0.2 - 0.5
Imidazolinidyl urea	0.1 - 0.25

4,070,452

METHOD OF TREATING HAIR WITH A SHAMPOO CONTAINING HONEY

Birgit Borchorst, 39 Kystvej, 3100, Hornbaek, Denmark

Filed Mar. 24, 1976, Ser. No. 669,910
Claims priority, application United Kingdom, Apr. 3, 1975, 13577/75
Int. Cl.² A61K 7/06
U.S. Cl. 424—70 4 Claims

1. A method of treating hair to impart luster thereto and better retention of a wave which comprises shampooing the hair with an effective amount of a composition comprising
A. an effective amount of an anionic detergent;
B. 0.5–5 percent by weight of a foam stabilizer;
C. 0.5–5 percent by weight of a viscosity adjusting agent;
D. 3–20 percent by weight of honey and
E. balance water.

4,070,453

DIPLOID PORCINE EMBRYONIC CELL STRAINS, CULTURES PRODUCED THEREFROM, AND USE OF SAID CULTURES FOR PRODUCTION OF VACCINES

Dale Emil Bordt, and Phillip Clay Thomas, both of Des Moines, Iowa, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed June 25, 1976, Ser. No. 700,251
Int. Cl.² A61K 39/12; C12B 3/00; C12K 9/00
U.S. Cl. 424—89 11 Claims

1. A nutrient growth medium for culturing and subculturing a diploid porcine embryonic cell strain which comprises:

L-glutamine	146	to	584 mg/liter
Lactalbumin hydrolysate	2,500	to	10,000 mg/liter
$NaHCO_3$	213	to	4,400 mg/liter
Vitamin E (α-tocopherol acetate)	0.05	to	0.2 mg/liter
Polysorbate (Solubilized lipid source)	2.5	to	10 mg/liter
Cholesterol	0.1	to	0.4 mg/liter
Bovine, Equine, Ovine, Caprine or Porcine Serum	to provide a final concentration of from about 0.1% to about 20%		
Eagle's Minimum Essential Medium containing Earle's Salts	q.s.	to	1 liter
pH (adjusted with acid or base)			6.0 to 8.0

3. A diploid porcine embryonic cell strain characterized by:
A. freedom from
i. specified viral contaminants as measured by cytopathology, hemadsorption, inclusion body staining, and fluorescent antibody techniques,
ii. specified bacterial contaminants as measured by sterility testing,
iii. mycoplasma contamination as measured by brothagar subculturing;
B. nontumorigenicity in immunologically depressed hamsters;
C. possessing a substantially constant degree of viral susceptibility;
D. capable of maintaining substantial diploidy and not becoming senescent after at least 36 subculturings, while remaining free from morphological transformation and chromosomal anomalies; and
E. retention of marker chromosomes; and a suitable culture medium therefor.

4,070,454

VACCINES, THE PROCESS FOR PREPARING THE SAME AND THE APPLICATIONS THEREOF

Edgar Hans Relyveld, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Division of Ser. No. 465,712, April 30, 1974, Pat. No. 3,983,229. This application July 12, 1976, Ser. No. 704,255
Claims priority, application France, May 4, 1973, 73.16131
Int. Cl.² A61K 39/12, 39/16, 39/26
U.S. Cl. 424—89 25 Claims

1. An improvement in a process for preparing a viral vaccine by reacting a virus with an inactivating agent and stopping the reaction as soon as said inactivation is achieved, wherein the improvement comprises the step of inactivating the virus with glutaraldehye as the inactivating agent for a time and a concentration corresponding to from about 1.5 hours to about 5 days at 0.00263 M, whereby an inactivated product is obtained which is usable as a viral vaccine while remaining antigenic and retaining its immunizing power.

4,070,455

PROCESS FOR PREPARING INJECTABLE DESENSITIZING COMPOSITIONS AND PRODUCTS THEREOF IN MICROPARTICLE FORM

Geoffrey Green, Worthing; Brian George Overell, Dorking, and Anthony Phillip Hart, Worthing, all of England, assignors to Beecham Group Limited, England

Continuation-in-part of Ser. No. 548,701, Feb. 10, 1975, abandoned. This application Oct. 4, 1976, Ser. No. 729,489
Claims priority, application United Kingdom, Feb. 16, 1974, 7156/74
Int. Cl.² A61K 27/14; C07G 7/00
U.S. Cl. 424—91 10 Claims

1. A process of preparing finely-divided micro-particles of tyrosine having a water-soluble, glutaraldehyde-treated extract of ragweed pollen as allergen dispersed therein, which process comprises: mixing (a) an aqueous solution of a water-soluble glutaraldehyde-modified ragweed pollen extract with (b) a solution of tyrosine in a strong aqueous acid, and neutralising such mixture of solutions, thereby precipitating the required finely-divided micro-particles of tyrosine containing a water-soluble, glutaraldehyde-treated ragweed pollen extract dispersed therein.

4,070,456

COMPOSITIONS CONTAINING DIOCTYL CALCIUM SULFOSUCCINATE

John Kazan, Somerville, N.J., and Robert Arnold Nash, Spring Valley, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 5, 1976, Ser. No. 673,838
Int. Cl.² A61K 47/00, 31/225
U.S. Cl. 424—173 10 Claims

1. A composition comprising from about 40% to about 60% of dioctyl calcium sulfosuccinate, from about 10% to about 40% of a solvent consisting essentially of a polyol ester of mixed caprylic and capric acids, and from about 20% to about 30% of glyceryl monooleate.

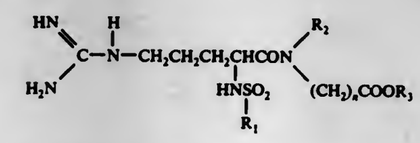
4,070,457

N^2-NAPHTHALENESULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Shosuke Okamoto, Hyogo; Ryoji Kikumoto; Kazuo Ohkubo, both of Tokyo; Tohru Tezuka, Kanagawa; Shinji Tonomura, Tokyo; Yoshikuni Tamao, Kanagawa, and Akiko Hijikata, Hyogo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo and Shosuke Okamoto, both of Japan

Continuation-in-part of Ser. No. 671,568, March 29, 1976, which is a division of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Mar. 24, 1976, Ser. No. 669,743
Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635; Mar. 5, 1975, 50-026768; Mar. 11, 1975, 50-029357; Mar. 11, 1975, 50-029358
The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.
Int. Cl.² A61K 37/00; C07C 103/52
U.S. Cl. 424—177 4 Claims

1. N^2-naphthalenesulfonyl-L-arginamides having the formula (I):



(I)

and the pharmaceutically acceptable salts thereof, wherein R_1 is selected from the group consisting of naphthyl, 5,6,7,8-tetrahydronaphthyl and naphthyl substituted with at least one substituent selected from the group consisting of halo, hydroxy and C_1–C_{10} alkyl; R_2 is selected from the group consisting of C_2–C_{10} alkyl, C_2–C_{10} alkoxyalkyl, C_2–C_{10} alkylthioalkyl, C_7–C_{13} aralkyl, C_3–C_{10} cycloalkyl and C_4–C_{10} cycloalkylalkyl; R_3 is selected from the group consisting of C_1–C_{10} alkyl, C_7–C_{12} aralkyl and C_6–C_{10} aryl; and n is an integer of 1, 2 or 3.

4,070,458

NOVEL PHYSIOLOGICALLY ACTIVE PEPTIDE AND ITS N-ACYL DERIVATIVES AND PROCESSES FOR PRODUCING THEREOF

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Takaaki Aoyagi, Fujisawa; Akira Takamatsu, Yokohama; Taiji Inui, Chigasaki; Hiroshi Tone, Fujisawa, and Hajime Morishama, Tokyo, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 551,459, Feb. 20, 1975, abandoned. This application Nov. 3, 1976, Ser. No. 738,212
Claims priority, application Japan, Jan. 5, 1976, 51-1055; Feb. 28, 1974, 49-23953; Mar. 10, 1974, 49-28849; Apr. 10, 1974, 49-40696; Dec. 17, 1974, 49-145208; Dec. 19, 1974, 49-146474
Int. Cl.² A61K 37/00
U.S. Cl. 424—177 5 Claims

1. A tetrapeptide of the formula:

Val—X—Ala—X,

wherein Val is L-valine, the X between Val and Ala is 4-amino-3-hydroxy-6-methylheptanoyl and the other X is 4-amino-3-hydroxy-6-methylheptanoic acid or a salt or an ester thereof and Ala is L-alanine, the amino functionality of the X between Val and Ala being attached to the carbonyl functionality of Val to form an amido group, the carbonyl functionality of the X between Val and Ala being attached to the amino functionality of Ala to form an amido group and the amino functionality of the other X being attached to the carbonyl functionality of Ala to form an amido group, and N-acyl peptides of said tetrapeptide of the formula:

R'—Val—X—Ala—X,

wherein Val-X-Ala-X is as previously defined and R' is an acyl radical having 1 to 16 carbon atoms or said acyl radical partially substituted by one or more hydroxyl groups or halogen atoms or a C-Terminal of a lower alkyl ester, the carbonyl functionality of the unsubstituted or partially substituted acyl radical being attached to the amino functionality of Val to form an amido group.

4,070,459

N-CARBAMYLATED ORGOTEIN

Wolfgang Huber, Atherton; Mark G. Saifer, Berkeley, and Lewis D. Williams, Menlo Park, all of Calif., assignors to Diagnostic Data, Inc., Mountain View, Calif.

Filed Dec. 9, 1975, Ser. No. 639,076
Int. Cl.² A61K 37/14; C07G 7/02, 7/04
U.S. Cl. 424—177 15 Claims

1. N-carbamylated orgotein wherein a carbamyl group is present on at least one lysine ε-amino group.

4,070,460

METHOD FOR TREATING CEREBRAL EDEMA

James V. Gainer, Jr., Kingwood, W. Va., assignor to University of Virginia Patents Foundation, Charlottesville, Va.

Filed Nov. 10, 1975, Ser. No. 630,684
Int. Cl.² A61K 31/70, 31/23, 31/19, 31/20
U.S. Cl. 424—180 5 Claims

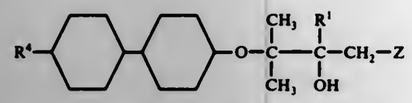
1. A method for the treatment of cerebral edema which comprises administering to an affected mammal an effective dose of a water-soluble carotenoid.

4,070,461
BIPHENYLYL ETHERS

Erich Schacht; Rochus Jonas; Werner Mehrhof; Herbert Nowak; Zdenek Simane, and Reinhard Lissner, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Feb. 5, 1976, Ser. No. 655,545
Claims priority, application Germany, Feb. 8, 1975, 2505423
Int. Cl.[2] A61K *31/435, 31/55;* C07D *295/08*
U.S. Cl. 424—232 15 Claims

1. A compound selected from the group consisting of biphenylyl ethers of the formula



wherein R^1 is H or CH_3; R^4 is H, F, Cl, Br or CF_3; and Z is pyrrolidino, homopiperidino or piperidino which is optionally monosubstituted or polysubstituted by alkyl of 1–4 carbon atoms or by hydroxyl; and the physiologically acceptable acid addition salts thereof.

15. A process for lowering elevated serum cholesterol and/or triglyceride levels in humans which comprises administering a safe and effective amount of a compound according to claim 1 to a living human being so afflicted for a period of time sufficient to reduce said elevated serum cholesterol and/or triglyceride levels.

4,070,462
STEROID OINTMENT

Varda Ecker, New York, N.Y., assignor to Schering Corporation, Kenilworth, N.J.

Filed Oct. 26, 1976, Ser. No. 735,854
Int. Cl.[2] A61K *31/56*
U.S. Cl. 424—243 18 Claims

1. A method of treating inflammation which comprises applying to the skin a topical formulation comprising an amount effective to treat said inflammation of a dermatologically acceptable anti-inflammatory 17-mono or 17,21-diester of betamethasone in a non-aqueous, water-miscible solvent-in-oil base comprising

5–15% of a non-aqueous, water-miscible solvent consisting essentially of a glycol solvent selected from the group consisting of

1,2-propylenediol, butylene glycol, hexylene glycol and mixtures thereof;

1–3% of propylene glycol monostearate;

0–7% of white or yellow wax; and

70–90% of petrolatum.

4,070,463
ANTIMOTION SICKNESS REMEDY

Ashton Graybiel, Warrington, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1976, Ser. No. 663,407
Int. Cl.[2] A61K *31/54, 31/135*
U.S. Cl. 424—247 2 Claims

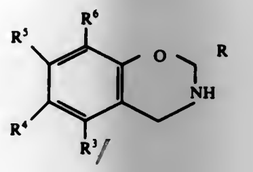
1. A pharmaceutical composition for the prevention of motion sickness which comprises two parts of promethazine hydrochloride and one part of l-ephedrine sulfate.

4,070,464
METHOD OF TREATING AUTOIMMUNE DISEASES

Edward J. Cragoe, Jr., Lansdale, and Clarence G. Van Arman, Fort Washington, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 659,443, Feb. 19, 1976, abandoned. This application Dec. 9, 1976, Ser. No. 748,787
Int. Cl.[2] A01N *9/00, 9/22;* C07D *265/00, 273/00*
U.S. Cl. 424—248.51 10 Claims

1. A method of treating an autoimmune disease selected from the group consisting of multiple sclerosis, and allergic encephalomyelitis which comprises oral or intravenous administration to a patient in need of such treatment from 1–50 mg/kg/day of a compound of formula:



wherein

R^3 is

1. hydrogen,
2. methyl,
3. chloro, or
4. methoxy;

R^4 is

1. halo,
2. lower alkyl, or
3. adamantyl;

R^5 is

1. hydrogen,
2. lower alkyl,
3. lower alkoxy, or
4. halo;

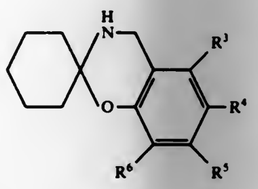
R^6 is

1. halo,
2. lower alkyl,
3. lower alkylthio, or
4. trifluoromethyl;

R^5 and R^6 taken together is —N=CH—CH=CH—, and

R is

1. a spiro-carbocycle of 5,6, or 10–17 members, unsubstituted or substituted with
   a. lower alkyl,
   b. lower alkoxy,
   c. phenyl, or
   d. phenyl substituted with lower alkoxy, or
   e. lower alkanoyloxy;
2. a 6-membered spiroheterocycle containing 1 or 2 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen wherein the nitrogen heteroatom can be substituted with lower alkyl, phenyl-lower alkyl, or lower alkanoyl;
3. a spiro-polycycloalkyl of 6–15 members, or



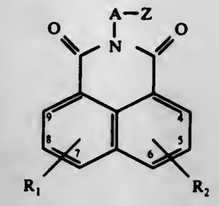
(4)

4,070,465
VARIOUS 2-(SUBSTITUTED PIPERAZINYL)-1H-BENZ [DE]ISOQUINOLINE-1,3 (2H) -DIONES

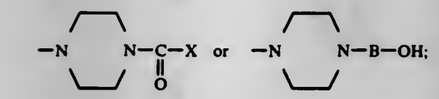
Peter C. Wade, Pennington, N.J., and Berthold Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed June 24, 1976, Ser. No. 699,723
Int. Cl.[2] A61K *31/495;* C07D *401/06*
U.S. Cl. 424—250 11 Claims

1. A compound of the formula:



wherein Z is



A is straight or branched chain alkylene of 2 to 6 carbons; B is straight chain alkylene of 2 to 4 carbons; X is straight or branched chain alkyl of 1 to 8 carbons, phenyl, benzyl, phenethyl, substituted phenyl, substituted benzyl or substituted phenethyl wherein said phenyl ring substituent is straight or branched chain alkyl of 1 to 4 carbons, straight or branched chain alkoxy of 1 to 4 carbons, Cl, Br, F, CF_3, nitro, di(Cl), di(Br), di(methyl), di(methoxy), or tri(methoxy); R_1 and R_2 are located at the 7 or 8 and 5 or 6 position respectively and are independently selected from the group consisting of hydrogen, straight or branched chain alkyl of 1 to 4 carbons straight or branched chain alkoxy of 1 to 4 carbons Cl, Br, F, amino, nitro, CF_3, and cyano; and a pharmaceutically acceptable acid addition salt thereof.

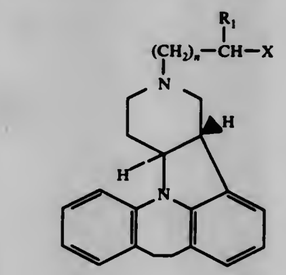
10. A pharmaceutical composition useful for treating mammals having a protozoa infection comprising a compound or mixture of compounds of claim 1 and a pharmaceutically acceptable carrier.

4,070,466
4H-PYRAZOLO[1,5-A]PYRAZOLO[4',3':5,6]PYRIDO-[3,4-E]PYRIMIDIN-5(8H)ONE AND DERIVATIVES THEREOF

Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 19, 1976, Ser. No. 659,291
Int. Cl.[2] A61K *31/415;* C07D *471/22*
U.S. Cl. 424—251 12 Claims

1. A compound of the formula



wherein

R^1 is hydrogen, lower alkyl, phenyl, phenyl-lower alkylene, benzoyl or substituted benzoyl;

R^2, R^4 and R^6 each is hydrogen or lower alkyl;

R^3 is hydrogen, lower alkyl or phenyl;

R^5 is hydrogen, lower alkyl, phenyl-lower alkylene, benzoyl, substituted benzoyl, lower alkanoyl, lower alkoxy-lower alkylene, lower alkylthio-lower alkylene, phenyl or substituted phenyl; the substituent on said substituted benzoyl or substituted phenyl being halogen, lower alkyl or lower alkoxy, and physiologically acceptable acid addition salts thereof.

10. A composition comprising about 10 to 250 mg. of a compound of claim 1 and a physiologically acceptable carrier therefor.

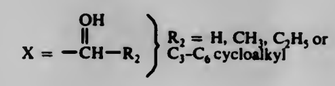
4,070,467
TRANS-OCTAHYDRO-PYRIDO-INDOLO-BENZAZE-PINE-3-ALKANOLS, -ALKANONITRILES,-ALKANOIC ACID AND ESTER AS TRANQUILIZERS

Joel G. Berger, Freeport, N.Y., assignor to Endo Laboratories, Inc., Garden City, N.Y.

Filed Apr. 8, 1976, Ser. No. 675,113
Int. Cl.[2] C07D *471/14;* A61K *31/55*
U.S. Cl. 424—256 27 Claims

1. A compound of the following formula:

wherein



provided that when $R_1 = CH_3$, $n = 1$, or an acid addition salt thereof with a pharmaceutically suitable acid.

10. A pharmaceutical tranquilizing composition comprising of a pharmaceutically suitable carrier and an effective amount of a compound of claim 1.

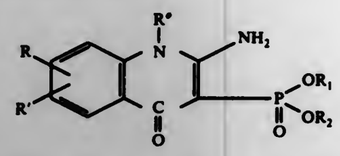
19. A method for producing a tranquilizing effect in warm-blooded animals comprising administering to said warm-blooded animals an effective amount of a compound of claim 1.

4,070,468
2-AMINO-QUINOLIN-4-ONE-3-PHOSPHONIC ACID ESTERS

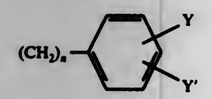
Goetz E. Hardtmann, Morristown, and Gary M. Coppola, Parsippany, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 1, 1976, Ser. No. 662,704
Int. Cl.² C07D *215/22, 215/38;* A61K *31/47*
U.S. Cl. 424—258 37 Claims

1. A compound of the formula:



wherein R^o is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms, or



n is 0 or 1,

Y and Y' are independently hydrogen, fluoro, chloro, or bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or trifluoromethyl,

R and R' are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro or trifluoromethyl, with the proviso that only one of R and R' can be from the group consisting of nitro and trifluoromethyl, or R and R'

together form 6,7-methylenedioxy, and R_1 and R_2 are independently alkyl of 1 to 4 carbon atoms, with the further proviso that the unsaturation in any alkenyl or alkynyl is on other than the alpha carbon atom.

17. The method of treating allergic conditions due to histamine release comprising administering to a mammal in need of such treatment an allergy treating effective amount of a compound of claim 1.

33. A pharmaceutical composition comprising in unit dosage form a pharmaceutically acceptable carrier and an amount effective to treat allergic conditions due to histamine release of a compound of claim 1.

4,070,469
COMPOUND FOR THE TREATMENT OF BOVINE MASTITIS

Raphael Ralph G. Haber; Eva Schöenberger, both of Givatayim, and Morris E. Stolar, Tel-Aviv, all of Israel, assignors to Abic Ltd., Israel

Filed June 28, 1976, Ser. No. 700,173
Claims priority, application Israel, July 3, 1975, 47633
Int. Cl.² A61K *31/47*
U.S. Cl. 424—258 9 Claims

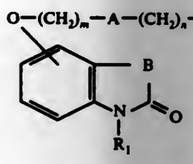
1. Composition for the treatment of bovine mastitis, comprising a pharmaceutical carrier suitable for administration in a bovine udder and a bovine mastitis treating effective amount of 2-carboxy-4-[2'-(5'-nitrofuryl)] quinoline N-oxide.

4,070,470
PLATELET AGGREGATION INHIBITING CARBOSTYRILS, THEIR COMPOSITIONS AND METHOD OF USE

Kazuyukip Nakagawa, Tokushima; Minoru Uchida, Komatsushima, and Kimiaki Oka, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed June 19, 1975, Ser. No. 588,475
Claims priority, application Japan, May 16, 1975, 50-58872; May 16, 1975, 50-58874; June 2, 1975, 50-66729; June 24, 1974, 49-72472; June 24, 1974, 49-72473; July 5, 1974, 49-77660; July 5, 1974, 49-77661; Aug. 16, 1974, 49-94376; Apr. 30, 1975, 50-53026; Apr. 30, 1975, 50-53027; Apr. 30, 1975, 50-53028; May 15, 1975, 50-58127; May 15, 1975, 50-58128; May 15, 1975, 50-58129; May 15, 1975, 50-58134; May 15, 1975, 50-58135
Int. Cl.² A61K *31/47;* C07D *215/22*
U.S. Cl. 424—258 27 Claims

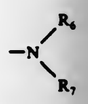
1. A compound of the formula:



where R_1 is selected from the group consisting of hydrogen, C_{1-4} alkyl, C_{2-4} alkenyl, benzyl and phenethyl; B is $—CH_2—CH_2—$ or $—CH=CH—$; A is $—CH=CH—$ or



wherein R_2 or R_3 may be the same or different and are selected from the group consisting of hydrogen and C_{1-4} alkyl; R_4 is $—OR_5$, wherein R_5 is selected from the group consisting of hydrogen, C_{1-8} alkyl, cyclohexyl, benzyl and phenethyl, or



wherein R_6 and R_7 may be the same or different and are selected from the group consisting of hydrogen, C_{1-4} alkyl, benzyl, phenethyl and together with the nitrogen atom, a heterocyclic group selected from the group consisting of a piperidino, morpholino, piperazino or thiazolino group; and *m* and *n* each are zero or a positive integer with $m + n$ being no more than 11.

8. A pharmaceutical composition for inhibiting platelet aggregation which comprises a compound as claimed in claim 1 and a pharmaceutically acceptable carrier.

9. A method for inhibiting platelet aggregation in the blood of a subject which comprises administering to the subject a pharmaceutical composition containing the compound of claim 1 and a pharmaceutically acceptable carrier in a dosage equivalent to about 0.1 mg. to about 100 mg. of said compound per day per kg. of weight of the subject.

4,070,471
3,4,5-TRIS(4-PYRIDINYLTHIO)-2,6-PYRIDINEDICARBONITRILE AND ITS USE TO CONTROL BACTERIA AND FUNGI

Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 15, 1976, Ser. No. 723,423
Int. Cl.² A01N *9/22;* C07D *401/14*
U.S. Cl. 424—263 3 Claims

1. The compound 3,4,5-tris(4-pyridinylthio)-2,6,-pyridinedicarbonitrile.

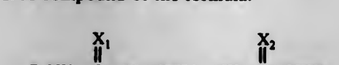
2. A method for controlling bacteria and fungi which comprises applying to said bacteria and fungi or their habitat an antimicrobially effective amount of 3,4,5-tris(4-pyridinylthio)-2,6-pyridinedicarbonitrile.

4,070,472
GUANIDINO, THIOUREIDO, ISOTHIOUREIDO AND NITROVINYLAMINO DERIVATIVES OF PYRIDINE

Graham John Durant, and Charon Robin Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 542,971, Jan. 22, 1975, Pat. No. 3,968,227.
This application Apr. 20, 1976, Ser. No. 678,564
Claims priority, application United Kingdom, Feb. 7, 1974, 5596/74
Int. Cl.² A61K *31/395;* C07D *213/83*
U.S. Cl. 424—263 14 Claims

1. A compound of the formula:



wherein R_1 and R_2, which may be the same or different, each represent a grouping of the structure:

$$Het - (CH_2)_m Z - (CH_2)_n —$$

wherein Het is pyridine which is attached at a ring carbon and which is optionally substituted by lower alkyl, hydroxyl, halogen or amino; Z is sulphur or a methylene group; m is 0, 1 or 2; *n* is 2 or 3; and the sum of *m* and *n* is 3 or 4; X_1 and X_2, which are the same, are sulphur, $CHNO_2$ or NY wherein Y is hydrogen, or lower alkyl; W is NH or sulphur; and q is an integer from 2 to 8; or a pharmaceutically acceptable acid addition salt thereof, provided that W is sulphur only when X_1 and X_2 are NH.

4,070,473
PIPERIDINO-BUTYROPHENONES

Sven Eric Harry Hernestam; Bengt Eric Sigvard Kjellberg, and Knut Gunnar Olsson, all of Malmo, Sweden, assignors to AB Ferrosan, Malmo, Sweden

Continuation of Ser. No. 435,842, Jan. 23, 1974, abandoned. This application Nov. 19, 1975, Ser. No. 633,268
Claims priority, application United Kingdom, Jan. 26, 1973, 4246/73
Int. Cl.² C07D *211/48*
U.S. Cl. 424—267 5 Claims

1. Gamma-(4-ethyl-4-ethoxypiperidino)-p-fluoro-butyrophenone or a pharmaceutically-acceptable acid addition salt thereof.

4,070,474
COMBATING INSECTS AND MITES WITH 1-CARBAMYL-4H-1,2,4-TRIAZOLIN-5-ONES AND THIONES

Joel L. Kirkpatrick, Overland Park, Kans., assignor to Gulf Research & Development Co., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 508,476, Sept. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 295,318, Oct. 5, 1972, abandoned. This application Feb. 23, 1976, Ser. No. 660,090
Int. Cl.² A01N *9/22*
U.S. Cl. 424—269 37 Claims

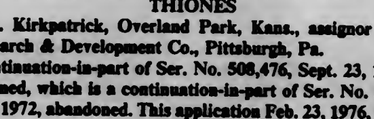
1. A method of combating insects comprising applying to the locus of the insects an effective amount of 3-tert. butyl-1-(N,N-dimethylcarbamyl)-4-methyl-4H-1,2,4-triazoline-5-thione.

4,070,475
PHARMACOLOGICALLY ACTIVE GUANIDINE COMPOUNDS AS H-2 HISTAMINE RECEPTOR INHIBITORS

Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 637,499, Dec. 4, 1975, Pat. No. 4,024,271, which is a division of Ser. No. 450,957, March 14, 1974, Pat. No. 3,950,333, which is a continuation-in-part of Ser. No. 290,584, Sept. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Feb. 2, 1977, Ser. No. 765,040
Claims priority, application Ireland, Feb. 3, 1972, 136/72
Int. Cl.² A61K *31/42, 31/425*
U.S. Cl. 424—270 16 Claims

7. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein

A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic nucleus being a thiazole, isothiazole, oxazole or isoxazole ring;

X_1 is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, benzyl, halogen, amino or



X_2 is hydrogen or when X_1 is lower alkyl, lower alkyl or halogen; *k* is 0 to 2 and *m* is 2 or 3, provided that the sum of *k* and *m* is 3 or 4; Y is oxygen, sulphur or NH; E is NR_2;

R_1 is hydrogen, lower alkyl or di-lower alkylamino-lower alkyl; and

R_2 is hydrogen, nitro or cyano, or a pharmaceutically acceptable addition salt thereof.

4,070,476

TOPICAL ANTHELMINTIC COMPOSITIONS AND METHODS OF USE

Peter John Brooker, and John Goose, both of Saffron Walden, England, assignors to Fisons Incorporated, Bedford, Mass.

Continuation of Ser. No. 443,522, Feb. 19, 1974, abandoned.
This application Feb. 28, 1977, Ser. No. 773,111
Claims priority, application United Kingdom, Feb. 23, 1973, 8972/73; Jan. 25, 1974, 3521/74
Int. Cl.[2] A61K *31/425*
U.S. Cl. 424—270 8 Claims

1. A method of combating helminthic parasites in an animal which comprises applying to the skin of the animal an anthelmintically effective amount of the compound 2,3,5,6-tetrahydro-6-phenylimidazo(2,1-b)thiazole or a pharmaceutically acceptable salt thereof in a pharmaceutically acceptable carrier for passing said compound through the skin of said animal, said carrier comprising a mixture of an aromatic hydrocarbon having a boiling point of 130° to 250° C and cyclohexanone.

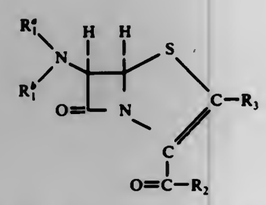
4,070,477

2-PENEM COMPOUNDS

Ivan Ernest, Birsfelden; Jacques Gosteli, Basel, both of Switzerland, and Robert Burns Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 2, 1976, Ser. No. 746,979
Claims priority, application Switzerland, Dec. 8, 1975, 15914/75; June 28, 1976, 8252/76
Int. Cl.[2] A61K *31/43, 31/425;* C07D *499/02, 499/44*
U.S. Cl. 424—271 12 Claims

1. A 6-amino-2-penem-3-carboxylic acid compound of the formula



(I)

in which R_1^a is hydrogen or a group R_1^d which denotes a conventional acyl radical of an organic carboxylic acid having up to 18 carbon atoms, a conventional triarylmethyl group or a conventional organic silyl or stannyl group, R_1^b is hydrogen or a conventional acyl radical or an organic carboxylic acid having up to 18 carbon atoms, R_1^a and R_1^b together is a conventional bivalent acyl radical of an organic dicarboxylic acid having up to 18 carbon atoms or the conventional acyl radical of an α-aminoacetic acid, which is substituted in α-position by an aromatic or heterocyclic group, and in which the amino group is bonded to the nitrogen atom via a methylene radical which is substituted by two lower alkyl groups, or R_1^a and R_1^b together represent a conventional aliphatic, cycloaliphatic, cycloaliphatic-aliphatic or araliphatic ylidene radical having up to 18 carbon atoms, R_2 denotes hydroxyl or a radical R_1^d which, together with the carbonyl grouping —C(=O)—, forms a conventional protected carboxyl group, and R_3 is hydrogen lower alkyl with up to 7 carbon atoms, cycloalkyl with 3 to 7 carbon atoms, cycloalkyl-lower alkyl with 4 to 7 carbon atoms, phenyl, naphthyl or phenyl-lower alkyl or such group substituted by hydroxyl, mercapto, lower alkoxy, lower alkanoyloxy, halogen, lower alkylmercapto, carboxyl, lower alkoxycarbonyl, carbamoyl, cyano, nitro, amino, lower alkylamino, di-lower alkylamino or lower alkylene-amino, or R_3 is pyridyl, thienyl, furyl, pyridyl-lower alkyl, thienyl-lower alkyl or furyl-lower alkyl, the 1-oxide thereof and pharmaceutically acceptable salts thereof.

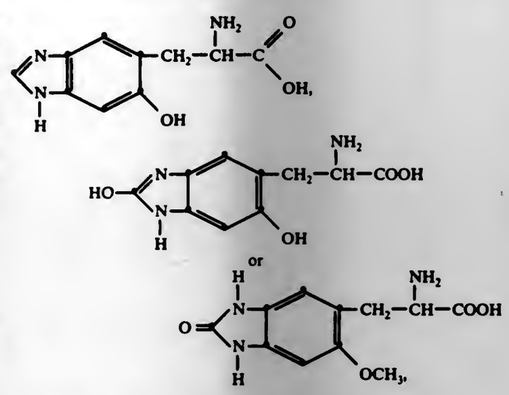
4,070,478

BENZIMIDAZOLE SUBSTITUTED ALANINES

Chandravadan Nanalal Talaty, Athens, Ga.; Jeremy Wright, Baltimore, and Nicolas Zenker, Lutherville, both of Md., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 17, 1977, Ser. No. 769,802
Int. Cl.[2] A61K *31/415;* C07D *235/26, 235/08*
U.S. Cl. 424—273 R 9 Claims

1. A compound having the formula



or

tautomers, and pharmaceutically acceptable salts thereof.

8. Method of treating hypertension which comprises administration to hypertensive patient, of an antihypertensive amount of a compound of claim 1.

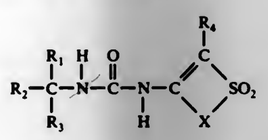
4,070,479

1-TERTIARY-ALKYL-3-(SUBSTITUTED THIENYL)UREAS AND 1-TERTIARY-ALKYL-3-(SUBSTITUTED THIETYL)UREAS AS ANTIHYPERTENSIVE AGENTS

Paul Edward Aldrich, Wilmington, Del.; Gilbert Harvey Berezin, West Chester, Pa., and Bruce Ivor Dittmar, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 555,307, March 11, 1975, Pat. No. 4,009,847, which is a continuation-in-part of Ser. No. 461,699, April 17, 1974, abandoned. This application Nov. 18, 1976, Ser. No. 743,002
Int. Cl.[2] A01N *9/00;* C07D *327/00*
U.S. Cl. 424—275 9 Claims

1. A compound of the formula



where

R_1, R_2, and R_3 are C_1-C_3 alkyl, or C_2-C_3 alkenyl, with the provisos that the total number of carbon atoms of R_1 plus R_2 plus R_3 does not exceed 5 and that two of R_1, R_2, and R_3 may be joined to form a cycloalkyl or cycloalkenyl group;

X is $—CH_2—$;

R_4 is H or CH_3; and its sodium, potassium, or calcium salts.

4. A method of treating hypertension in a warmblooded animal comprising administering to said warm-blooded animal an antihypertensive amount of a compound of claim 1.

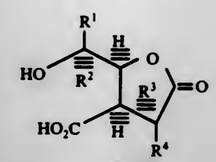
4,070,480

HYDROXY ACIDS

David Cecil Aldridge; Graham Charles Crawley, and Colin John Strawson, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 20, 1976, Ser. No. 716,284
Claims priority, application United Kingdom, Aug. 21, 1975, 34842/75
Int. Cl.[2] C07D *307/32;* C01B *15/12*
U.S. Cl. 424—279 5 Claims

1. A mono-lactone of the formula:-



III

wherein one of R^1 and R^2 is hydrogen, a C_{1-10}-alkyl or phenyl radical, and the other of R^1 and R^2 is hydrogen; one of R^3 and R^4 is hydrogen or a C_{1-6}-alkyl radical, and the other of R^3 and R^4 is hydrogen; or R^3 and R^4 together form the methylene ($=CH_2$) radical or a pharmaceutically acceptable base addition salt thereof.

4. A pharmaceutical composition for the treatment of duodenal or gastric ulcers in warm-blooded animals which comprises as active ingredient an effective amount of a compound as claimed in claim 1, or a pharmaceutically-acceptable base addition salt thereof, together with a pharmaceutically-acceptable diluent or carrier.

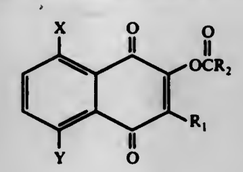
4,070,481

SUBSTITUTED 2-HIGHER ALKYL-3-HYDROXY-1,4-NAPHTHOQUINONE CARBOXYLIC ACID ESTERS AND THEIR USE AS MITICIDES

Russell Frank Bellina, Wilmington, and Dennis Lynn Fost, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 613,553, Sept. 15, 1975, which is a continuation-in-part of Ser. No. 531,483, Dec. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 494,294, Aug. 2, 1974, abandoned, which is a continuation of Ser. No. 468,692, May 10, 1974, abandoned. This application Mar. 29, 1976, Ser. No. 671,044
Int. Cl.[2] A01N *9/00, 9/24*
U.S. Cl. 424—311 11 Claims

1. A method for protecting plants from mites or aphids which comprises applying to the plant a miticidally or aphicidally effective amount of a compound of the formula



wherein

R_1 is alkyl of 8–14 carbon atoms which are branched, cyclic or straight chain; R_2 is alkyl of 1–17 carbon atoms either branched or straight chain, cycloalkyl of 3–6 carbon atoms, $—CH_2OCH_3$ or $—CH_2OCH_2CH_3$;

X is hydrogen, fluorine, chlorine, bromine, methyl or mehoxy; and

Y is hydrogen, fluorine, chlorine, bromine, methyl or methoxy;

provided that at least one of X and Y is other than hydrogen.

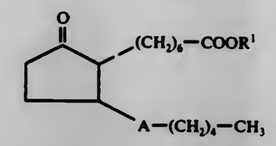
4,070,482

PROSTAGLANDIN ANTAGONISTS

Wilbur Lippmann, Montreal, and Jehan F. Bagli, Kirkland, both of Canada, assignors to Ayerst, McKenna & Harrison Ltd., Montreal, Canada

Division of Ser. No. 545,664, Jan. 2, 1975, Pat. No. 4,004,027.
This application Oct. 27, 1976, Ser. No. 735,929
Int. Cl.[2] C07C *177/00;* A61K *31/215, 31/19*
U.S. Cl. 424—317 5 Claims

1. A compound of the formula



I

in which A is —CHOH—C≡C— and R^1 is hydrogen or lower alkyl.

4,070,483

METHOD OF ADMINISTERING A HUMAN OCULAR TREATING AGENT AND PRODUCT THEREFOR

Sidney Lerman, 1648 Musket Ridge Road, NW., Atlanta, Ga. 30327

Continuation-in-part of Ser. No. 591,758, June 30, 1975, abandoned. This application June 21, 1976, Ser. No. 697,918
Int. Cl.[2] A61K *31/195*
U.S. Cl. 424—319 8 Claims

1. A method of administering an agent to animal ocular lenses for the treatment of nuclear cataracts therein, comprising the steps of:

a. preparing a solution which is isotonic with animal tears and which includes physiological saline and an effective amount of said agent to form a saturated solution, said agent being D,L-penicillamine;

b. exposing artificial ocular contact lenses to said solution for a sufficient period of time wherein said agent is retained on said lenses; and

c. placing said exposed artificial lenses on the ocular cornea and/or cornea and sclera whereby said agent enters said ocular lenses.

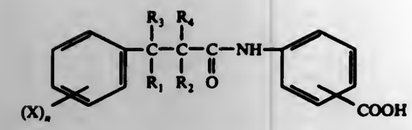
4,070,484

ANTIALLERGIC COMPOSITION CONTAINING AROMATIC CARBOXYLIC AMIDE DERIVATIVES AND METHOD OF USING THE SAME

Kozaburo Harita, Hougo; Yukiyoshi Ajisawa, Okaya; Kinji Iizuka; Yukihiko Kinoshita, both of Matsumoto; Tetsuhide Kamijo, Shiojiri, and Michihiro Kobayashi, Toyoshina, all of Japan, assignors to Kissei Pharmaceutical Co., Ltd., Matsumoto, Japan

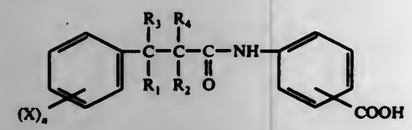
Continuation of Ser. No. 559,041, July 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 434,252, Jan. 17, 1976, Pat. No. 3,940,422. This application Dec. 21, 1976, Ser. No. 752,885
Claims priority, application Japan, Jan. 18, 1973, 48-7359
Int. Cl.[2] A61K *31/195, 31/335, 31/36*
U.S. Cl. 424—319 20 Claims

1. A pharmaceutical composition for alleviating the symptoms of allergic reactions in mammals when administered in an effective amount consisting essentially of a mixture of an active ingredient selected from the group consisting of an aromatic carboxylic amide derivative of the formula:



and the therapeutically acceptable salts thereof, wherein R_1 and R_2 are each selected from the group consisting of a hydrogen atoms and an alkyl group having 1–4 carbon atoms, R_3 and R_4 each represent a hydrogen atom or may be combined together to form another chemical bond, each X is an alkoxyl group having 1–4 carbon atoms and may be the same or different, and *n* is an integer from 2 to 3 and at least one pharmaceutically acceptable carrier or diluent.

6. A method of alleviating the symptoms of allergic reactions in mammals characterized by administering orally a therapeutically effective amount of a compound selected from the group consisting of an aromatic carboxylic amide derivative of the formula:



and the therapeutically acceptable salts thereof, wherein R_1 and R_2 are each selected from the group consisting of a hydrogen atom and an alkyl group having 1–4 carbon atoms, R_3 and R_4 each represent a hydrogen atom or may be combined together to form another chemical bond, one or more X's may be the same or different and are selected from the group consisting of a hydroxyl group, a halogen atom, an alkyl group having 1–4 carbon atoms and an alkoxyl group having 1–4 carbon atoms, and *n* is an integer from 1 to 3, provided that when X's stand for two alkyl or alkoxyl groups, the alkyl groups thereof may be connected together into an alkylene group.

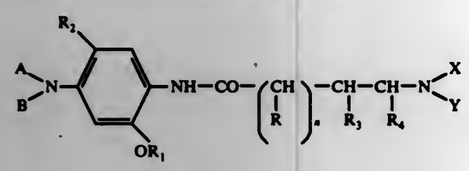
4,070,485

ALKOXY ANILIDES PROCESS FOR PREPARING THE SAME AND PHARMACEUTICAL COMPOSITIONS

Charles Malen, Fresnes; Pierre Roger, St-Cloud; Jean-Claude Poignant, Bures, Yvette, and Xavier Pascaud, Paris, all of France, assignors to Science Union et Cie, Neuilly, France

Division of Ser. No. 558,043, March 13, 1975, Pat. No. 3,989,834. This application Sept. 16, 1976, Ser. No. 723,685
Claims priority, application United Kingdom, Mar. 18, 1974, 11868/74
Int. Cl.² C07C *103/44*
U.S. Cl. 424—324 **8 Claims**

1. The ortho-alkoxy-anilides of the formula



in which *n* is zero or an integer from one to three,

R represents a hydrogen atom or a lower alkyl radical of 1 to 6 carbon atoms,

R_1 represents a lower alkyl radical of 1 to 6 carbon atoms, a lower alkenyl radical of 2 to 6 carbon atoms, or a phenyl-lower alkyl radical of 1 to 4 carbon atoms in the side chain,

R_2 represents a lower alkoxy radical of 1 to 6 carbon atoms or a halogen atom,

R_3 represents a hydrogen atom or a lower alkyl radical of 1 to 6 carbon atoms,

R_4 represents a hydrogen atom or a lower alkyl radical of 1 to 6 carbon atoms,

X and Y, which may be the same or different, each represents a lower alkyl radical of 1 to 6 carbon atoms.

A and B are the same, and each represents a hydrogen atom, or A and B are each an oxygen atom and (b) the acid addition salts thereof with a mineral or organic acid.

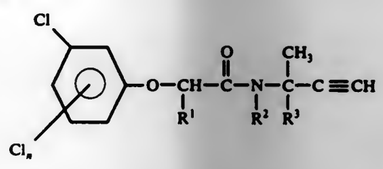
4,070,486

N-SUBSTITUTED-N-(1-SUBSTITUTED-1-METHYL-2-PROPYNYL)-α-(SUBSTITUTED PHENOXY) ALKYLAMIDES AND THEIR USE AS MITICIDES

Don R. Baker, Orinda, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 591,730, June 30, 1975, abandoned. This application Aug. 25, 1976, Ser. No. 717,835
Int. Cl.² A01N *9/20, 9/24*
U.S. Cl. 424—324 **19 Claims**

1. A method of controlling mites comprising applying to said mites a miticidally effective amount of a compound having the formula



wherein R^1 is either methyl or ethyl; R^2 and R^3 are independently either hydrogen or methyl; and when R^3 is hydrogen, *n* is either 1 or 2; and when R^3 is methyl, *n* is 2.

4,070,487

METHOD OF STIMULATING APPETITE IN RUMINANTS AND RUMINANT FEED CONTAINING APPETITE STIMULANT

Glenn A. Trout, Lebanon; Barry L. Zoumas, and Stanley M. Tarka, both of Palmyra, all of Pa., assignors to Hershey Foods Corporation, Hershey, Pa.

Filed Aug. 5, 1976, Ser. No. 711,912
Int. Cl.² A23L *1/00*
U.S. Cl. 426—2 **8 Claims**

1. A method of stimulating appetite in a ruminant comprising administering theobromine to the ruminant in a weight concentration of between about 0.05 to 0.1 weight percent theobromine in the ruminant's daily feed.

4,070,488

NUTRITIVE COMPOSITION

Rachel D. Davis, 111 E. Gordon St., Kinston, N.C. 28501

Filed Nov. 25, 1975, Ser. No. 634,667
Int. Cl.² A23L *1/30*
U.S. Cl. 426—72 **8 Claims**

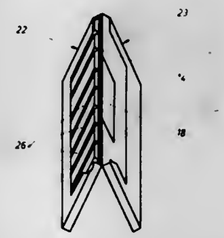
1. A highly stable aqueous solution useful as a nutritive supplement or nutritive composition and comprising water, ascorbic acid and metabolically available iron in quantities suitable for supplementing the human diet and materially assisting in assuring the intake of the recommended daily allowances thereof, and gelatin in such quantity as to effectively retard the deterioration of the ascorbic acid in the presence of the iron and without gelling the solution.

4,070,489

SHIPPING AND COUNTER DISPLAY PACKAGE FOR CANDY BARS

Otto Pahnke, Halle, Germany, assignor to August Storck KG, Halle, Germany

Filed July 15, 1976, Ser. No. 705,628
Claims priority, application Germany, July 21, 1975, 7523165
Int. Cl.² B65D *5/50*
U.S. Cl. 426—115 **10 Claims**



1. A shipping and counter display package for candy in bar form, particularly chocolate bars, a carton of said package having a crease line on the rear side of said package, a detachable section on the opposite front side of said package positioned over said crease line for partially exposing candy bars when said detachable section has been removed, slide-in cardboard trays holding a plurality of candy bars and having a bottom surface and having bent-up rims touching one another, said trays having their bottom surface resting on the inner surface of said rear side and being located symmetrical with said crease line in said carton, said bent-up rims being substantially parallel to said crease line, a metal strip on the interior of the rear side of the package carton and partially covering said crease line, said metal strip being connected to the package carton for holding the package in a display position; said slide-in trays stiffening the rear side of said package so that a substantially sharp fold is formed along said crease line when said package carton is bent to form said fold for placement of the package in a display position.

4,070,490

LIVER-LIKE PET FOOD

Joaquin Castro Lugay, Thornwood, and Robert James Beale, New Rochelle, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 9, 1976, Ser. No. 665,207
Int. Cl.² A23K *1/04*
U.S. Cl. 426—533 **10 Claims**

1. A process for preparing a liver-like pet food which comprises:

a. preparing an aqueous reaction mixture of emulsified fat, whole blood, and a reducing sugar; and

b. heating the reaction mixture for a time and at a temperature effective to solidify the mixture and produce a textured, liver-like material.

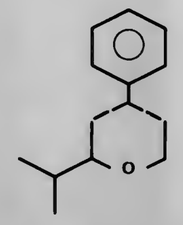
4,070,491

2-ALKYL-4-PHENYL-DIHYDROPYRANS AND PROCESSES FOR AUGMENTING THE ORGANOLEPTIC PROPERTIES OF FOODSTUFFS AND TOBACCO USING ONE OR MORE OF SAID PYRANS

Joaquin Francisco Vinals, Red Bank, N.J.; Jacob Kiwala, Brooklyn, N.Y.; Denis E. Hruza, Sr., Brick Town, N.J.; John B. Hall, Rumson, N.J., and Manfred Hugo Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 676,389, April 12, 1976. This application Mar. 23, 1977, Ser. No. 780,641
Int. Cl.² A23L *1/235*
U.S. Cl. 426—536 **2 Claims**

1. A process for augmenting or enhancing the fruit flavor of a foodstuff comprising adding to said footstuff from 0.2 ppm up to about 200 ppm of 2-isopropyl-4-phenyl-2H-dihydropyran having the structure:



wherein one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond.

4,070,492

PROPRANOLOL ASSAY

Sidney Spector, Livingston, N.J., assignor to Hoffmann-La Roche, Inc., Nutley, N.J.

Division of Ser. No. 669,784, March 23, 1976, Pat. No. 4,026,879. This application Mar. 2, 1977, Ser. No. 773,451
Int. Cl.² G01N *33/16;* A61K *39/00, 43/00;* C07G *7/00*
U.S. Cl. 424—1 **6 Claims**

4. A method for the assay of propranolol or enantiomers thereof in a sample which method comprises mixing said sample with a known amount of a labelled propranolol derivative and an antibody which will selectively complex with said propranolol or its enantiomers thereof, and with said labelled propranolol derivative, measuring the degree of binding of said labeled propranolol derivative with said antibody, and determining the amount of propranolol or enantiomers thereof present in such sample by comparing said degree of binding to a standard curve obtained by mixing known amounts of propranolol or enantiomers thereof with fixed amounts of said labeled propranolol derivative.

4,070,493

DIAGNOSTIC KIT

Jacques A. Nadeau, Laurent, Canada, assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 16, 1977, Ser. No. 778,207
Int. Cl.² A61K *29/00, 43/00*
U.S. Cl. 424—1 **5 Claims**

1. A kit for preparing Technetium 99m calcium phytate colloid injection which comprises in separate containers:

a. a freeze-dried solid mixture of sodium phytate and stannous chloride; and

b. a buffered aqueous solution of calcium chloride having a pH of between 2.7 and 3.7; wherein the said sodium phytate and the said calcium chloride are present in a ratio of approximately 1.0 to 1.0 by weight.

4. In a process for preparing an injectable aqueous colloid of

Technetium 99m calcium phytate, the improvement which comprises adding a buffered aqueous solution of a soluble calcium salt to a solution of sodium phytate complexed with reduced pertechnate ion.

4,070,494

ENTERAL PHARMACEUTICAL COMPOSITIONS

Friedrich Hoffmeister; Rudolf Hiltmann; Hartmund Wollweber, all of Wuppertal, and Helmut Kramer, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Dec. 15, 1975, Ser. No. 640,581
Claims priority, application Germany, July 9, 1975, 2530563
Int. Cl.² A01N *17/00*; G01N *1/00, 33/16*
U.S. Cl. 424—2 **4 Claims**

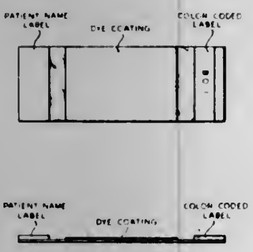
1. In an enterally administered pharmaceutical composition which is a tablet, capsule or suppository containing the medicinal agent having parenteral abuse potential N-(1-methyl-2-piperidinoethyl)-N-pyrid-2-ylpropionamide or an acid addition salt thereof, the improvement inhibiting water extractability of said agent without reducing its biological availability from the composition when administered enterally which comprises the presence in said composition of a nontoxic, aqueously gelable material selected from the group consisting of methylcellulose, sodium carboxymethylcellulose, methylhydroxyethylcellulose, methylhydroxypropylcellulose, alginic acid, polyacrylic acid, karaya gum and tragacanth in a quantity at least equal to the amount of said agent so as to form a gel with substantially no residual filterable liquid when combined with that quantity of water otherwise necessary to dissolve all of said medicinal agent.

4,070,495

MICROSCOPE SLIDE

Dieter Berger, Viernheim; Werner Güthlein, Mannheim-Neckarau; Wolfgang Werner, Mannheim-Vogelstang, and Peter Rieckmann, Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Mar. 31, 1976, Ser. No. 672,572
Claims priority, application Germany, Apr. 11, 1975, 2515966
Int. Cl.² G01N *33/16, 31/22, 21/60*
U.S. Cl. 424—3 **5 Claims**



1. Microscope slide for blood investigation comprising a coating of chromatographically pure methylene blue N and cresyl violet acetate in a weight ratio of from 1:1.5 to 1:5.

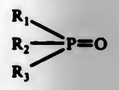
4,070,496

PHOSPHINE OXIDES HAVING A PHYSIOLOGICAL COOLING EFFECT

David G. Rowsell, Staines, and David J. Spring, Datchet, both of England, assignors to Wilkinson Sword Limited, London, England

Filed Sept. 14, 1973, Ser. No. 397,374
Claims priority, application United Kingdom, Sept. 27, 1972, 44622/72
Int. Cl.² A61K *31/66, 7/16*
U.S. Cl. 424—45 **10 Claims**

1. In a manufactured consumer product for application to or consumption by the human body, said product comprising (a) a topically administrable or orally ingestible carrier and one or more of the following: a flavourant, colourant, odourant, antiseptic, antacid or analgesic, and (b) a compound capable of stimulating the cold receptors of the nervous system in the surface tissues of the body when brought into contact therewith by application or consumption of the said product, the improvement which comprises using as the cold receptor stimulating compound, an effective amount of a cold receptor stimulating phosphine oxide of the formula



where

R_1 is a straight chain alkyl group having from 4–8 carbon atoms inclusive;

R_2 is a branched chain alkyl group having from 3–5 carbon atoms inclusive; and

R_3 is an alkyl group having from 3–6 carbon atoms inclusive or cyclopentyl;

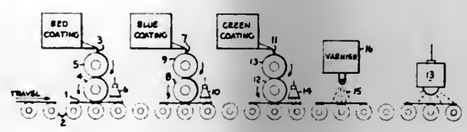
R_1, R_2 and R_3 together providing a total of from 13–16 carbon atoms.

4,070,497

PROCESS OF APPLYING AND CURING A PLURALITY OF COATINGS

Marco Wismer, Gibsonia, Pa., and Gene Gerek, Franklin, Mich., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 122,433, March 9, 1971, abandoned. This application Mar. 6, 1973, Ser. No. 338,462
Int. Cl.² B05D *3/06*
U.S. Cl. 427—44 **27 Claims**



1. A method comprising

a. applying over a coating which has been gelled by actinic light and which is curable by ionizing irradiation, a topcoat; and

b. exposing said gelled coating and said topcoat to ionizing irradiation to cure said gelled coating.

4,070,498

METHOD OF MANUFACTURING FLUORESCENT SCREEN OF COLOR PICTURE TUBE

Masahiro Nishizawa, and Takehiko Ueyama, both of Mobara, Japan, assignors to Hitachi, Ltd., Japan

Filed July 30, 1976, Ser. No. 710,304
Claims priority, application Japan, Oct. 1, 1975, 50-117691
Int. Cl.² B05D *3/06, 5/06*
U.S. Cl. 427—53 **2 Claims**

1. A method for manufacturing the fluorescent screen of a color picture tube including the steps of forming a coating of opto-hardening material on the inner surface of the faceplate of the panel of a color picture tube and exposing to a light and hardening selectively the coating thereby to form a matrix of stripes of opto-hardening material, in which said selective exposure is performed by projecting a light derived from a light source having a predetermined width from each of at least two positions onto said coating of opto-hardening material formed on said faceplate through a slot with a predetermined width of a shadow mask located between said inner surface of said faceplate and said positions whereby the inclination of the energy level distribution curve of said projected light is steep around the portion where the energy level is equal to that required to harden said coating, said positions being separated from said inner surface of said faceplate by a predetermined distance and spaced from each other in a direction parallel to the width of said slot and by a distance selected so that the light-exposed area on said coating obtained by light



projection from said light source located at one of said positions overlaps with the light-exposed area obtained by light projection from said light source located at the other position, and selecting a light energy of said projected light such that the coating is hardened at only an area where the light projections from all of said positions are applied.

4,070,499

METHOD FOR CROSSLINKING ULTRAVIOLET LIGHT CURABLE COATINGS

Warren J. Ramler, Elmhurst, and James K. Lackore, Joliet, both of Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 561,747, March 25, 1975, Pat. No. 4,037,112. This application Mar. 24, 1977, Ser. No. 780,734
Int. Cl.² B05D *3/06*
U.S. Cl. 427—54 **5 Claims**



1. In a method of coating a substrate comprising applying an ultraviolet light curable coating composition to a substrate and exposing said substrate to ultraviolet light to crosslink said coating, said exposure being made by passing said coated substrate under a substantially symmetrical reflector system comprising four substantially elliptical cylindrical reflectors which reflect ultraviolet light from four generally linear parallel sources of ultraviolet light located at the first foci of said reflectors to the second foci thereof, wherein:

a. said reflector system has a plane of symmetry generally parallel to said four generally parallel sources of ultraviolet light;

b. said second foci are more remotely located from said reflectors than said first foci;

c. the second foci of two of said reflectors are superimposed to form a first common focus;

d. the second foci of the other two of said reflectors are superimposed to form a second common focus;

e. said common foci are located in a plane perpendicular to said plane of symmetry;

f. said common foci are spaced apart by a distance in the range of from about 10 percent to about 50 percent of the distance between the two extreme first foci;

g. the eccentricity of said substantially elliptical cylindrical reflectors is in the range of from about 0.2 to about 0.9; and

h. said coated substrate vibrates such that said coating vibrates toward and away from said reflectors about a mean position during said exposure; the improvement comprising passing said coated substrate under said reflector system such that the mean position of said coating is located more remotely from said reflectors than said plane containing said common foci and such that said coating is exposed to ultraviolet light of sufficinet intensity for a time sufficient to crosslink said coating during said passage.

4,070,500

RADIATION-CURABLE COMPOSITIONS AND METHOD OF COATING THEREWITH

Roland L. Leitner, Somerset; Gerald I. Nass, Secaucus; Phillip Adams, Murray Hill, and Marvin Weiss, New Providence, all of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Filed Jan. 21, 1976, Ser. No. 650,937
Int. Cl.² B05D *3/06*
U.S. Cl. 427—54 **13 Claims**

1. A radiation-curable film-forming vehicle consisting essentially of a radiation-curable film-forming agent consisting of a mixture of (a) a substantially saturated ketone resin having a molecular weight of from about 500 to about 1200 and formed by the condensation of an aldehyde and a cyclic or acyclic ketone and (b) an extender, said ketone resin being present in the mixture in an effective amount to form a radiation-curable film, and said extender being selected from the group consisting of esters, alcohols, aldehydes, nitrogen heterocyclics, epoxides, nitriles, and carbamates.

11. A method of imprinting a substrate which comprises (a) applying to said substrate a composition consisting essentially of a substantially saturated ketone resin having a molecular weight of from about 500 to 1200 and formed by the condensation of an aldehyde and a cyclic or acyclic ketone, an extender selected from the group consisting of esters, alcohols, aldehydes, nitrogen heterocyclics, epoxides and nitrites, and a coloring agent, said ketone resin being present in an effective amount to form a cured film when subjected to radiation, said extender being present in an effective amount to homogeneously disperse or solublize said ketone resin, and said coloring agent being present in an effective amount to color the radiation-cured ketone resin, and (b) applying an effective amount of radiation to cure said ketone resin.

4,070,501

FORMING SELF-ALIGNED VIA HOLES IN THIN FILM INTERCONNECTION SYSTEMS

Vivian Ruth Corbin, Wappingers Falls; James Edward Hitchner, Poughkeepsie; Bisweswar Patnaik, and Chung-Yu Ting, both of Wappingers Falls, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Oct. 28, 1976, Ser. No. 736,615
Int. Cl.² H01L *21/44*
U.S. Cl. 427—88 **14 Claims**

1. A method for forming via holes atop selected regions of a thin film pattern of raised thin film stripes disposed on a substrate comprising the steps of:

depositing a dielectric material atop said stripes and said substrate, the topology of said dielectric material including protuberances conforming to said stripes;

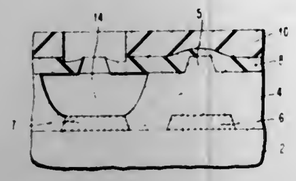
depositing a second material atop said dielectric material, which fills in the regions between said protuberances to a greater thickness than atop said protuberances;

said material being insensitive to exposure;

forming, on said second material, a masking layer having

openings over selected protuberances, thereby exposing portions of said second material;

removing those portions of said second material which are disposed above said selected protuberances while not substantially affecting those portions of said second material disposed in the regions between said protuberances; and



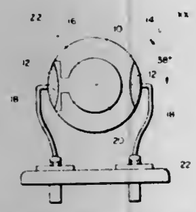
etching said dielectric material through the openings in said second material with an etchant which does not substantially attack said second material or said masking layer, thereby forming said via holes.

4,070,502

METHOD OF TREATING PIEZOELECTRIC RESONATORS

John R. Vig, Bucks Mill Road, Colts Neck, N.J. 07722, and Raymond L. Filler, 66 Old Port Road, Freehold, N.J. 07728

Filed May 5, 1976, Ser. No. 683,598
Int. Cl.² H03H 9/14
U.S. Cl. 427—100 **6 Claims**



1. A method of shifting the apparent angle of cut of a piezoelectric resonator blank so as to give the piezoelectric resonator a desired frequency versus temperature characteristic including the steps of

A. measuring the angle of cut of the piezoelectric resonator blank;

B. determining the shift in apparent angle of cut required to give the piezoelectric resonator the desired frequency versus temperature characteristic;

C. selecting the shape, area and thickness of a strongly adherent film to be deposited;

D. determining the orientation on the piezoelectric resonator blank of the area selected so as to shift the apparent angle of cut of the piezoelectric blank to the value that will give the piezoelectric resonator the desired frequency versus temperature characteristic; and

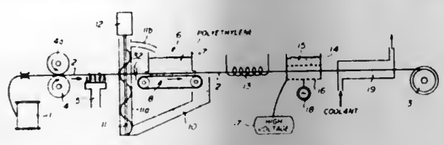
E. depositing the strongly adherent film onto the piezoelectric resonator blank at the orientation determined in step D, said strongly adherent film having the shape, area, and thickness selected in step C.

4,070,503

PROCESS FOR CONTINUOUSLY COATING A METAL WIRE AT HIGH VELOCITY

Philippe Robert, Epalinges, Switzerland; Claude Guignard, St. Genis Pouilly, France, and Francis Stagoll, Grand-Lancy, Switzerland, assignors to S.A., des Cableries & Trefilleries de Cossonay; Societe d'Exploitation des Cables Electriques and Cableries de Brugg S.A., all of Switzerland

Filed Aug. 15, 1975, Ser. No. 605,053
Claims priority, application Switzerland, Aug. 16, 1974, 11223/74
Int. Cl.² B05D 5/12, 3/02, 3/10
U.S. Cl. 427—120 **5 Claims**



1. A process for coating a metal wire with thermoplastic material, comprising the steps of continuously longitudinally advancing said wire through a treatment zone at an absolute velocity exceeding a threshold value above which a surrounding mass of stationary thermoplastic particles would exert a significant abrasive effect, piling a mass of thermoplastic particles in said treatment zone around said wire on an underlying independently movable support, continuously moving said support and said mass codirectionally with said wire through said treatment zone at a speed different from the velocity of said wire but with a speed difference less than said threshold value to prevent the occurrence of said abrasive effect, preheating said wire upstream of said treatment zone to a temperature sufficient to cause adherence of some of said particles thereto, reheating said wire downstream of said treatment zone to fuse the adhering particles into a continuous envelope, and cooling the wire so enveloped.

4,070,504

METHOD OF PRODUCING A VALVE METAL ELECTRODE WITH VALVE METAL OXIDE SEMI-CONDUCTOR FACE AND METHODS OF MANUFACTURE AND USE

Giuseppe Bianchi, Milan, Italy; Vittorio de Nora, Nassau, Bahamas; Patrizio Gallone, and Antonio Nidola, both of Milan, Italy, assignors to Diamond Shamrock Technologies, S.A., Geneva, Switzerland

Division of Ser. No. 771,665, Oct. 29, 1968, Pat. No. 3,948,751, and a continuation-in-part of Ser. No. 690,407, Dec. 14, 1967, Pat. No. 3,616,445. This application Nov. 28, 1975, Ser. No. 635,879
Int. Cl.² C25B 11/10
U.S. Cl. 427—126 **20 Claims**

1. The method of producing an electrode on a chlorine-resistant metal base from the group consisting of titanium and tantalum, which comprises applying a coating mixture in liquid form to said base which on heating forms a mixture of an oxide of a platinum group metal, oxides from the group consisting of titanium and tantalum and at least one doping oxide from the group consisting of silver, tin, chromium, lanthanum, cobalt, antimony, molybdenum, nickel, iron, tungsten, vanadium, phosphorus, boron, beryllium, sodium, calcium, strontium, lead, copper and bismuth, and mixtures thereof, the percentage of doping oxide in said coating mixture being between 0.10 and 50% of the material from the group consisting of oxides of titanium and tantalum and the ratio of platinum group metals to the non-precious metals in said coating being between 20:100 and 85:100, all said percentages being based upon the metals in said oxides; applying said coating mixture and heating the coating on the chlorine-resistant metal base until oxides of the metals in said coating mixture have been produced.

4,070,505

METHOD OF IMPARTING PARAMAGNETIC SUSCEPTIBILITY TO COTTON FIBERS

Albert Baril, Jr., Metairie; Mayer Mayer, Jr., New Orleans, and Devron P. Thibodeaux, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 448,422, March 4, 1974, abandoned. This application Feb. 24, 1976, Ser. No. 660,882
Int. Cl.² H01F 10/04
U.S. Cl. 427—128 **7 Claims**

1. A method of imparting paramagnetic susceptibility to raw unprocessed cotton fibers to provide a means of manipulating said fibers in a magnetic force field, the method consisting essentially of:

a. impregnating cotton fibers with a solution consisting of about from 1% to 10% by weight of a paramagnetic organometallic rare earth compound selected from the group consisting of dysprosium acetylacetonate and holmium acetylacetonate dissolved in an organic solvent selected from the group consisting of benzene, chloroform, ethyl ether, and hexane; and

b. drying the wet impregnated cotton fibers to obtain fibers with a paramagnetic susceptibility of about from 10^{-6} to 10^{-5} electromagnetic units per gram (emu/gm) which is sufficient to render the fibers reactive to magnetic forces.

4,070,506

METHOD FOR APPLYING CONTAINED PATTERN COMPOSITION FOR SOLDERING

Frank X. Meister, Chicago, Ill., assignor to Sod-r Stop, Inc., Chicago, Ill.

Filed Nov. 22, 1976, Ser. No. 743,572
Int. Cl.² C09D 5/20
U.S. Cl. 427—156 **4 Claims**

1. A process for applying a pattern to prevent solder overrun to a metal work surfaceto be soldered comprising the steps of

providing a metal work surface which incorporates elements to be soldered,

providing a composition consisting essentially of about one-half to about 2 parts by volume of a laminate silicate mineral and about 9½ to about 8 parts by volume of a solution of magnesium hydroxide in water, said magnesium hydroxide present in said solution from about 3% by weight to about 12% by weight, said laiminated silicate material being dissolved in said magnesium hydroxide solution,

applying said liquid composition to the area on said work surface wherein the soldering is to be effected,

permitting said composition as applied to said work surface to dry,

and removing any of the residual dried pattern composition by applying water to said composition subsequent to soldering.

4,070,507

PLATINUM-RHODIUM-CONTAINING HIGH TEMPERATURE ALLOY COATING METHOD

Richard J. Stueber, Suffern, N.Y., and Stanley J. Klach, Riverdale, N.J., assignors to Chromalloy American Corporation, New York, N.Y.

Division of Ser. No. 551,615, Feb. 21, 1975, Pat. No. 3,999,956. This application July 29, 1976, Ser. No. 709,770
Int. Cl.² C23C 9/02, 11/02
U.S. Cl. 427—252 **5 Claims**

1. A method for improving the heat and corrosion resistance of a heat resistant article formed of an alloy selected from the group consisting of nickel-base, cobalt-base and nickel-cobalt-base alloys which comprises, providing said articles with a clean surface for receiving a metal coating,

thermally diffusing first and second coatings of rhodium and platinum into the surface of said article, said rhodium and platinum having been applied to said article prior to diffusion therein as first and second coatings, respectively, at a Rh/Pt thickness ratio of about 0.5/1 to 2.5/1 at thicknesses of each ranging from about 0.00005 inch to 0.002 inch,

and then pack aluminizing said article at an elevated aluminizing temperature by embedding it in a cementation pack containing by weight about 5 to 40% chromium metal and about ½ to 20% aluminum sufficient to effect the diffusion coating thereof into the surface of said article, said pack also containing about ½ to 2% of a vaporizable halogen material as a carrier for said aluminum,

thereby producing a multi-layered protective coating characterized metallographically by an outer zone containing platinum and an inner zone substantially adjacent the surface of the article containing rhodium with an intermediate zone enriched in aluminum in the form of at least one intermetallic compound selected from the group consisting of nickel aluminide in the case of nickel-base and nickel-cobalt-base alloys, and cobalt aluminide in the case of nickel-cobalt-base and cobalt-base alloys.

4,070,508

RECORDING METHOD COMPRISING REACTING CELLULOSE FIBER WITH A BASIC COLOR FORMER

Sadao Ishige; Hideo Usui, both of Minami-ashigara; Hajime Kato, Fujimiya; Keiso Saeki, Fujimiya, and Masataka Kiritani, Fujimiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 23, 1975, Ser. No. 570,976
Claims priority, application Japan, Apr. 23, 1974, 49-45090
Int. Cl.² B41M 5/12, 5/14, 5/16, 5/18
U.S. Cl. 427—282 **20 Claims**

1. A recording method comprising forming a colored image by contacting with a cellulose fiber a basic color former component which changes to a colored species by an interaction with the cellulose fiber and has a molecular extinction coefficient of not less than about 100 in an ethyl alcohol solution, said color image being formed principally by the interaction of the color former and the cellulose fiber.

4,070,509

HIGH SOLIDS URETHANES AND APPLICATION THEREOF

James W. Garner, Farmington Hills, and Robert G. Kelso, Southfield, both of Mich., assignors to Grow Chemical Corporation, New York, N.Y.

Filed July 28, 1975, Ser. No. 599,833
Int. Cl.² B05D 3/02, 7/14, 7/06, 7/02
U.S. Cl. 427—385 R **19 Claims**

1. A method for applying a polyurethane coating onto a substrate by employing a catalyzed coating composition comprising the steps:

1. Providing a coating composition comprised of:

A. a polyol composition comprising (1) a polymerized low molecular weight polyol selected from the group consisting of (a) polycaprolactone; (b) a copolymer of a compound of the formula $CH_2=C(R)—R^1$ and allyl alcohol; and (c) mixtures thereof; (2) a saturated aliphatic polyol from 4 to 12 carbon atoms or a saturated cycloaliphatic polyol of from 5 to 8 carbon atoms per ring; wherein R is methyl, ethyl or hydrogen; R^1 is a group having 6 to 12 carbon atoms containing an aromatic carbocyclic ring, and said aromatic ring is directly bonded to the moiety $CH_2=C(R)—$;

B. a polyisocyanate; wherein the ratio of NCO/OH of A and B ranges from about 0.9 to 1.2; the coating composition having a range of solids content from about 40 to about 100% by weight of A and B; and

C. a compatible polyurethane catalyst;

2. Applying the coating composition to a substrate; and

3. Heating the coated substrate at a temperature-time range

of from about 130° F to about 180° F for a period of time ranging from about 15 minutes to about 60 minutes to achieve a Tukon hardness of at least 3 within 24 hours.

4,070,510

AQUEOUS POLISH COMPOSITION

Joe E. Kahn, Hartland, Wis., assignor to Acme Chemical Company, Milwaukee, Wis.

Filed Mar. 12, 1976, Ser. No. 666,203
Int. Cl.² B05D *3/02*
U.S. Cl. 427—385 R **23 Claims**

1. An aqueous polish composition driable to provide a substantially clear finish on a substrate to which the polish composition is applied comprising

an aqueous phase;

a non-volatile, solid film former, which is capable of forming a smooth, substantially colorless, protective film on the substrate, uniformly dispersed in said aqueous phase;

a sufficient amount of a dispersing agent to form a stable dispersion of said film former in said aqueous phase and to permit said film former upon evaporation of the water to deposit therefrom as a smooth film on the substrate;

a water-soluble, acid-base indicator which is colored at a pH above a predetermined level and is colorless at a lower pH in an amount sufficient to impart a distinctive color to said composition when the overall pH of said composition is above said predetermined level; and

a sufficient quantity of an alkaline material capable of solubilizing in said aqueous dispersion to raise the overall pH of said composition above said predetermined level, said film former, said dispersing agent and said alkaline material having a coloration which does not mask the color imparted to said composition by said indicator;

whereby, after application on the substrate, said composition retains its original color for a finite time period while in the liquid state and then becomes substantially colorless as the water evaporates during formation of the film.

21. A method for treating and preserving the surface of a substrate comprising

applying on the surface of the substrate an aqueous alkaline polish composition which is driable to a substantially clear finish and includes as its essential ingredients:

an aqueous base,

a non-volatile, solid film former, which is capable of forming a smooth, substantially colorless, protective film on the substrate and includes an emulsifiable acrylic copolymer, uniformly dispersed in said aqueous phase,

a sufficient amount of a dispersing agent to form a stable dispersion of said film former in said aqueous phase and to permit said film former upon evaporation of the water to deposit therefrom as a smooth film on the substrate,

a water-soluble acid-base indicator which is colored above a predetermined level and is colorless at a lower pH, in an amount sufficient to impart a distinctive color to said composition when the overall pH of said composition is above said predetermined level, and

a sufficient amount of an alkaline material capable of solubilizing in said aqueous dispersion to raise the pH of said composition to said predetermined level, said film former, said dispersing agent and said alkaline material having coloration which does not mask the color imparted to said composition by said indicator,

whereby, after application on the substrate, said composition retains its original color for a finite time period while in the liquid state and then becomes substantially colorless as the water evaporates, the resultant, dried protective film containing said indicator.

4,070,511

METHOD OF PRODUCING LAYERS OF LEAD AND ITS ALLOYS ON WORKPIECES MADE OF FERROUS ALLOYS

Adam Gierek; Lech Bajka, both of Katowice; Piotr Liberski, Poreba, and Anna Gruszecka, Katowice, all of Poland, assignors to Politechnika Salaska Im. Wicentego Pstrowskiego, Gliwice, Poland

Filed Aug. 9, 1976, Ser. No. 713,219
Claims priority, application Poland, Aug. 15, 1975, 182775
Int. Cl.² C23C *1/06, 1/08*
U.S. Cl. 427—405 **14 Claims**

1. A method of producing a corrosion-resistant, diffusion layer of lead or its alloys on a workpiece made of a ferrous alloy, said method comprising dipping the workpiece to be coated into a two-layer bath, the upper layer of which is a bath of aluminum of its alloys, and the lower layer of which is a bath of lead or its alloys, the workpiece passing first through the upper layer to form an aluminum coating thereon and then through the lower layer to form a diffusion lead layer of uniform thickness and corrosion-resistant properties.

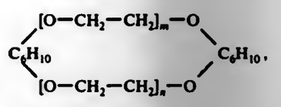
4,070,512

MIXTURE CONTAINING AN ORGANOMETALLIC COMPOUND OF ALKALI METAL AND BEING STABILIZED TOWARDS EFFECTS OF ATMOSPHERE USEFUL FOR SURFACE ACTIVATION OF FLUOROCARBON POLYMERS

Lubomir Lochmann; Theodor Kremlicka, and Josef Babka, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Dec. 19, 1975, Ser. No. 642,389
Claims priority, application Czechoslovakia, Dec. 29, 1974, 9175/74
Int. Cl.² C09J *5/02*
U.S. Cl. 427—445 **2 Claims**

1. Mixture containing an organometallic compound of alkali metal and stabilized toward the effects of an air atmosphere, and consisting of 1 to 60 wt. % of an organic polymer of molecular weight of at least 4000 obtained by polymerization of ethylene or ethylene substituted with at least one alkyl group with 1 to 3 carbon atoms, phenyl, or an alkoxy group with 1 to 10 carbon atoms in the straight or branched chain, or a polymer obtained by polymerization of ethylene oxide or propylene oxide, or a mixture of the above mentioned polymers, the product of interaction of 1 mol of alkali metal selected from the group consisting of lithium, sodium and potassium and 0.4 to 2 mol of a hydrocarbon containing 2 to 4 aromatic nuclei, 500 to 5000 ml of an organic solvent or a mixture of solvents selected from the group comprising aliphatic or cycloaliphatic ethers, 0 to 50 wt. % of an aromatic, aliphatic or cycloaliphatic hydrocarbon, and 0 to 1 mol of the macrocyclic polyether (crown ether) of the general formula



where $m + n = 2$ to 10.

2. The method for the activation of the surfaces of polytetrafluoroethylene and related fluorocarbon polymers in which the mixture of claim 1 is applied to such surfaces in a layer having a thickness of from 1 to 2 mm. for a minimum time of 30 seconds and in the absence of a protective atmosphere.

4,070,513

HEAT SEAL APPARATUS AND SEAMED SLEEVE ARTICLE MADE THEREBY

Roger R. Rhoads, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 20, 1976, Ser. No. 724,675
Int. Cl.² B32B *3/00;* B65D *11/16*
U.S. Cl. 428—36 **2 Claims**



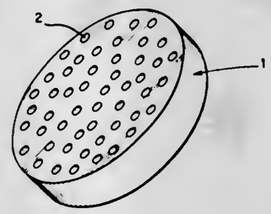
1. A shrunken sleeve member for encircling a container comprised of a rectilinear sheet of a thermoplastic, cellular, heat shrinkable polymeric material, the opposite end margins thereof being overlapped and fusion bonded together by heat and pressure along a side seam region of said sleeve, said side seam having compressed areas of the overlapped material and plural, discrete island-like raised portions therein which are heated and compressed to a lesser degree than the balance of said overlapped areas of said side seam, the improvement therein comprising narrow, elongated, island-like, raised portions disposed in the seam area of the sleeve in at least four aligned rows thereof extending longitudinally of the sleeve side seam, said raised portions of material in each of the rows being hot worked in the sealing of the seam and offset from raised portions in the adjacent row thereof.

4,070,514

METHOD OF FABRICATING GRAPHITE FOR USE AS A SKELETAL PROSTHESIS AND PRODUCT THEREOF

Walter P. Eatherly; J. M. Robbins, and David E. Rosson, Sr., all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed June 5, 1973, Ser. No. 367,276
Int. Cl.² A61F *1/00*
U.S. Cl. 428—64 **7 Claims**



1. A method for producing a prosthetic article, comprising the steps of:

passing a fugitive fiber through a slurry comprising a carbon powder filler and a thermosetting carbon precursor binder to coat said fiber with said slurry;

winding said fiber into a generally elliptical toroidal configuration having cross sections containing a parallel array of fibers created by the arrangement of said fugitive fiber, said parallel array of fibers having interstices between said fibers substantially filled with said slurry;

setting said binder to create a cured configuration;

cutting said cured configuration at points substantially perpendicular to said parallel array to produce a plurality of generally cylindrical sections having said parallel array of fibers embodied therein with said fibers being substantially parallel to the axis of each said cylindrical section;

destructively removing said parallel array of fibers from said cylindrical sections to leave uniformly dispersed generally parallel pores having a diameter within the range of 100 to 1000 micrometers within carbon precursor relics; and

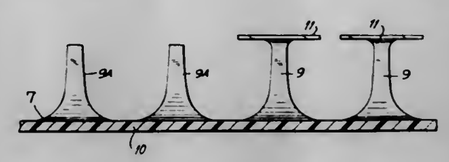
carbonizing said relics.

4,070,515

I-BEAM SHAPED BRISTLED ARTICLE

Walter H. Smarook, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 427,472, Dec. 26, 1973, Pat. No. 3,919,378, which is a continuation-in-part of Ser. No. 213,479, Dec. 29, 1971, abandoned. This application June 18, 1975, Ser. No. 588,026
Int. Cl.² B32B *3/02*
U.S. Cl. 428—92 **26 Claims**



1. An article of commerce integrally formed from thermoformable material and comprising

a continuous base member, and

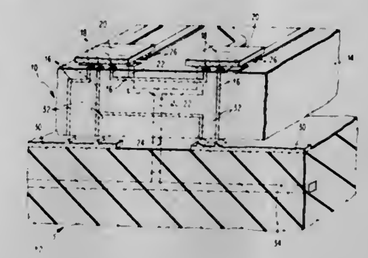
a plurality of bristle members projecting vertically from at least one side of said base member, each of said bristle members having an I beam configuration.

4,070,516

MULTILAYER MODULE HAVING OPTICAL CHANNELS THEREIN

Harold Dalton Kaiser, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,546
Int. Cl.² B32B *3/10;* G02B *5/14*
U.S. Cl. 428—137 **8 Claims**



1. A multilayer ceramic module structure comprising:

a ceramic body;

a plurality of continuous glass channels within said body and having their ends at two surfaces of said body;

wherein said glass has a softening point about equal to or less than the said ceramic body's sintering temperature; and

said glass has a refractive index greater than the said ceramic.

4,070,517

LOW FIRED CONDUCTIVE COMPOSITIONS

Casimir W. Kazmierowicz, Mission Viejo, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 8, 1976, Ser. No. 703,393
Int. Cl.² H01B 1/02
U.S. Cl. 428—209 11 Claims

1. A composition comprising about 79 weight percent nickel, about 11 weight percent glass, about 4 weight percent lead oxide, about 3 weight percent boron, and about 3 weight percent silicon.

9. A conductor comprising successively a nonconducting substrate; a thick film pattern comprising from about 0.2 to about 6 weight percent silicon, from about 0.2 to about 2 weight percent boron, from about 75 to about 90 weight percent aluminum, and from about 2 to about 24 weight percent glass; and a layer of nickel over said thick film pattern having a thickness of from about 0.05 to about 0.5 mil.

4,070,518

COPPER METALLIZATIONS

Lewis Charles Hoffman, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1976, Ser. No. 732,749
Int. Cl.² H01B 1/02
U.S. Cl. 428—209 16 Claims

1. In compositions of finely divided metal powder and glass binder powder useful for forming conductor patterns on a dielectric substrate, wherein the improvement consists essentially of, as the metal powder, 85–97 weight % copper powder and, as the glass binder powder, 3–15 weight % of a glass powder comprising

40–70% PbO
0–20% PbF_2
7–27% SiO_2
0–5% Al_2O_3
10–20% B_2O_3
0.25–4% M_2O

wherein M is Na, K and mixtures thereof, provided that the weight of K_2O is 0–40% of the total weight of K_2O and Na_2O,

0–5% CeO_2
0–6% TiO_2,

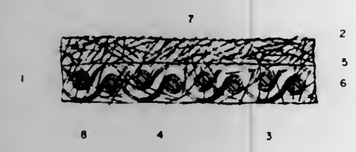
provided that (1) where the total weight of CeO_2 and TiO_2 is 0–1%, there is at least 5% PbF_2 present; (2) where the weight of PbF_2 is 0–5%, there is at least 1% CeO_2, TiO_2 or mixtures thereof, and (3) the total weight of PbO and PbF_2 is 50–70%.

4,070,519

HIGH TEMPERATURE FILTER FABRICS

Leonard R. Lefkowitz, Latham, and W. Henrik Krohn, Chatham, both of N.Y., assignors to Huyck Corporation, Wake Forest, N.C.

Filed Apr. 27, 1976, Ser. No. 680,602
Int. Cl.² B32B 5/06
U.S. Cl. 428—235 14 Claims



1. A filter fabric comprising

a non-woven fibrous surface layer needled to a woven base layer characterized by the fact that said surface layer comprises glass fibers which are 2 to 8 microns in diameter,

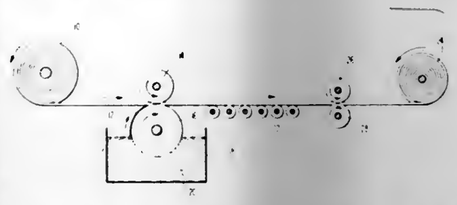
said base layer comprises yarns which comprise mineral fibers, and said surface layer and said base layer are impregnated with resin.

4,070,520

FABRIC SOFTENER COMPOSITION

Robert Andrew Volz, West Chester, Pa., and Robert Eugene Welsh, Claymont, Del., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Sept. 3, 1976, Ser. No. 720,268
Int. Cl.² B05D 5/00, 3/12
U.S. Cl. 428—311 13 Claims



1. In the method of manufacturing a heat-activatable fabric conditioning product comprising impregnating an absorbent substrate having a thickness of at least 0.05 centimeters with at least 0.3 grams per cubic centimeter of a liquid fabric conditioning chemical followed by solidifying the fabric conditioning chemical on the substrate, the improvement which comprises;

subjecting the absorbent substrate having the solidified fabric conditioning chemical impregnated therein to a compressive force of sufficient magnitude to reduce the thickness of the impregnated substrate to about 70% or less than 70% of its original thickness followed by relieving the compressive forces.

4,070,521

METHYLENE CHLORIDE PHOSPHATIZED COATING

Edward A. Rowe, Jr., Mentor, and William H. Cawley, Painesville, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 560,378, March 20, 1975, Pat. No. 4,008,101. This application July 28, 1976, Ser. No. 709,262
Int. Cl.² B32B 15/18
U.S. Cl. 428—332 13 Claims

1. A coated ferruginous substrate having an adherent and water-insoluble surface coating that is a complex coating of the iron phosphate type obtained by contacting said ferruginous substrate with a methylene chloride and water-containing liquid phosphatizing composition containing water in an amount up to water saturation of the composition, said surface coating containing, in addition to trace elements, the elements iron, phosphorus and oxygen, plus carbon and nitrogen, and having a coating surface of oxygen atoms to phosphorus atoms of at least about 4:1.

9. A coated ferruginous substrate having a corrosion-resistant and water-insoluble composite surface coating, the base coating of the composite on the substrate surface being a complex coating of the iron phosphate type obtained by contacting said ferruginous substrate with a methylene chloride and water-containing liquid phosphatizing composition containing water in an amount up to water saturation of the composition, said surface coating containing, in addition to trace elements, the elements iron, phosphorus, and oxygen plus carbon and nitrogen, and having a coating surface ratio of oxygen atoms to phosphorus atoms of at least about 4:1, with the subsequent coating in the composite being an adherent coating from a nonphosphatizing solution for treating metal surfaces.

4,070,522

MAGNETIC RECORDING MEDIUM

Kazuo Ogasa, Tama, and Seiya Ogawa, Yokohama, both of Japan, assignors to Fujitsu Limited, Japan

Continuation-in-part of Ser. No. 462,130, April 18, 1974, abandoned. This application Apr. 1, 1976, Ser. No. 672,737
Claims priority, application Japan, Apr. 20, 1973, 48-44079
Int. Cl.² H01F 10/02
U.S. Cl. 428—336 9 Claims

1. A magnetic recording medium comprising finely divided magnetic metal oxide particles dispersed in a thermosetting resin binder composition and in the form of a thin layer film having a thickness of less than 5 microns closely adhered to a non-magnetic substrate, said thermosetting resin binder composition comprising:

a. 30% to 95% by weight of a copolymer consisting essentially, based on the weight of the copolymer, of

1. 25% to 65% by weight of units derived from at least one compound selected from the group consisting of alkyl acrylate and alkyl methacrylate, the alkyl group having 1 to 4 carbon atoms,
2. 3% to 30% by weight of units derived from at least one compound selected from the group consisting of N-methylolacrylamide and N-alkoxymethylacrylamide, the alkoxy group having 1 to 4 carbon atoms,
3. 10% to 60% by weight of units derived from at least one compound selected from styrene and methyl styrenes, and,
4. 0% to 30% by weight of units derived from at least one other copolymerizable ethylenically unsaturated compound, and;

b. 5% to 70% by weight of an epoxy resin, the predominant constituent being a condensation product of bisphenol A and epihalohydrin, possessing an average molecular weight of approximately 300 to approximately 2,000.

4,070,523

PRINTABLE PRESSURE-SENSITIVE ADHESIVE TAPES

Alfred Blum, Skokie, and Charles Bartell, Highland Park, both of Ill., assignors to Borden, Inc., Columbus, Ohio

Filed Mar. 25, 1976, Ser. No. 670,189
Int. Cl.² C09J 7/02, 7/04
U.S. Cl. 428—352 5 Claims

1. A pressure-sensitive adhesive tape comprising a backing of paper, cloth, film, or foil material, a pressure-sensitive adhesive applied to one side of said backing, and a release coating composition applied to the other side of said backing, the release coating composition being a blend of about 10–30 parts by weight of an organic release agent, about 20–70 parts of a film former, and from 15–40 parts of a polyketone resin to provide printability.

4,070,524

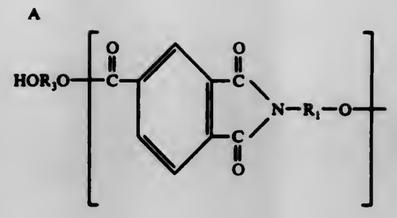
SELF-BONDING VARNISH FOR MAGNETIC WIRE COMPRISING POLYALKYLENETRIMELLITATE IMIDE POLYALKYLENETRIMELLITATE ESTER

Robert G. Keske, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

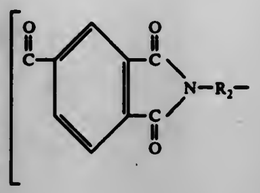
Filed Feb. 23, 1976, Ser. No. 660,714
Int. Cl.² B05D 5/12; H01B 3/18; H01F 5/06, 27/30, 27/32
U.S. Cl. 428—383 5 Claims

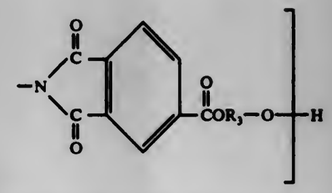
1. Magnet wire bearing at least one enamel subbing layer selected from the group consisting of polyester, polyester imide, polyimide and polyamide-imide and a continuous self-bonding varnish top coat comprising a polyalkylenetrimellitate imide polyalkylenetrimellitate ester imide having a ratio of from about 1 : 19 to 19 : 1 of units A and B wherein A and B have the structures:

A



B





and R_1, R_2 and R_3 are independently divalent alkylene radicals.

4,070,525

FLUOROPOLYMER COATING COMPOSITIONS HAVING IMPROVED ADHESION

Eustathios Vassiliou, Newark, Del., and Thomas P. Concannon, Newtown Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

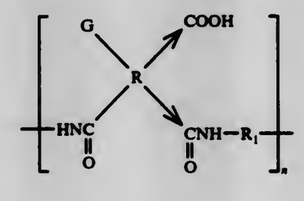
Division of Ser. No. 597,493, July 21, 1975, Pat. No. 4,016,125. This application Nov. 1, 1976, Ser. No. 737,617
Int. Cl.² B32B 27/00; C08G 51/24; C08J 1/48; C08L 27/18
U.S. Cl. 428—422 11 Claims

1. An article bearing a primer coat and topcoated with a fused fluoropolymer enamel, wherein the primer coat is produced from a primer coating composition comprising

a. about 10–90%, by weight of (a) and (b) solids, of a particulate polymer of monoethylenically unsaturated hydrocarbon monomers completely substituted with fluorine atoms or a combination of fluorine atoms and chlorine atoms, having a number average molecular weight of at least 20,000;

b. about 10–90%, by weight of the total of (a) and (b) solids, of a binder which comprises

1. about 5–95%, by weight of the total of (1) and (2) solids, of an alkali metal silicate having an alkali metal oxide mol content within the range of from a trace amount to about 20% of the total number of mols of alkali metal oxide and silicon dioxide, and
2. about 5–95%, by weight of the total of (1) and (2) solids, of a salt of a polyamide acid represented by the structure



where
G is hydrogen or a carboxyl group; → denotes isomerism;
R is a tetravalent organic radical containing at least two carbon atoms, no more than two carbonyl groups of each polyamide acid unit being attached to any one carbon atom of said tetravalent radical;
R_1 is a divalent radical containing at least two carbon atoms, the amide groups of adjacent polyamide acid units each being attached to separate atoms of said divalent radical; and
n is a number large enough to give the polyamide acid an inherent viscosity of at least 0.1, measured as a 0.5% solution in N,N-dimethyl acetamide at 30° C., neutralized with a stoichiometric amount of a tertiary amine;

c. about 10–90%, by weight of the polyamide acid amine salt, of N-methyl pyrrolidone, dimethylformamide, dimethylacetamide, dimethylsulfoxide, cresylic acid, sulfolane or formamide; and
d. a liquid carrier.

11. In a method for improving the adhesion of a fluoropolymer coating to its substrate, the improvement comprising priming the substrate, before the fluoropolymer coating is applied, with the primer coating composition of claim 1.

4,070,526

RADIATION-CURABLE COATING COMPOSITIONS COMPRISING MERCAPTOALKYL SILICONE AND VINYL MONOMER, METHOD OF COATING THEREWITH AND COATED ARTICLE

Joseph A. Colquhoun, Midland, and Robert E. Kalinowski, Auburn, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 20, 1976, Ser. No. 688,197
Int. Cl.² B05D *3/06*
U.S. Cl. 428—537 18 Claims

1. A radiation-curable composition consisting essentially of a mixture of
A. a triorganosiloxane-endblocked polydiorganosiloxane fluid having a viscosity of at least 0.5 pascal-seconds at 25° C., wherein from 50 to 99 percent of all organic radicals are methyl, from 1 to 5 percent of all organic radicals are mercaptoalkyl having the formula $—(CH_2)_nSH$, wherein *n* has a value of from 1 to 4 inclusive, any remaining organic radicals in (A) being alkyl radicals having from 2 to 6, inclusive, carbon atoms or phenyl,
B. a methylvinylpolysiloxane, compatible with (A) and having an average of at least three vinyl groups per molecule, the amount of (B) being from none to an amount sufficient to provide up to 10.0 silicon-bonded vinyl radicals for every silicon-bonded mercaptoalkyl radical in the composition, and from about 1 to 50 parts by weight for every 100 parts by weight of (A) of
C. a vinylic monomer.

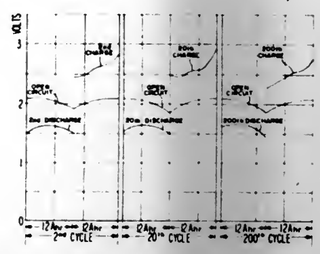
4,070,527

EFFICIENT SODIUM/SULFUR BATTERY

Randall N. King, Johnston; Stephan P. Mitoff, Clifton Park, and Manfred W. Breiter, Schenectady, all of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 13, 1976, Ser. No. 714,064
Int. Cl.² H01M *10/39*
U.S. Cl. 429—104 11 Claims

1. In a sodium-sulfur solid-electrolyte battery having a sulfur electrode, wherein substantially all of the sulfur is impregnated in an electronically conducting matrix as the sulfur electrode and a solid-electrolyte, wherein said sulfur electrode is adjacent to said solid electrolyte, the improvement in combination therewith which comprises:



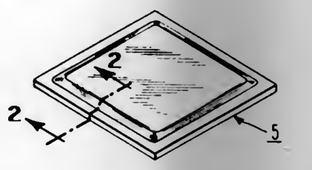
a sulfur electrode having an electronic resistivity gradient, the resistivity diminishing with distance from said solid electrolyte.

4,070,528

BATTERY HAVING POROUS INHERENTLY SEALABLE SEPARATOR

Bernard C. Bergum, Madison, and Walter Lee Fong, Middleton, both of Wis., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Apr. 30, 1975, Ser. No. 572,968
Int. Cl.² H01M *6/46*
U.S. Cl. 429—152 6 Claims



1. An improved battery comprising in combination
a. at least one cell, each cell comprising the combination of
1. a positive electrode,
2. a negative electrode, and
3. an electrolyte permeable separator between the electrodes, the separator extending beyond the periphery of the electrodes; and
b. an intercell connector between each adjacent pair of cells, the connector extending outwardly beyond the periphery of the cell electrodes;
wherein the improvement comprises having each electrolyte permeable separator consisting essentially of nonconductive, porous, inherently sealable polymeric film material and sealing the separator around its perimeter to the intercell connector, without applying an adhesive material to the surface of the separator periphery, to form a liquid and electrolyte impervious seal.

4,070,529

SOLID ELECTROLYTE

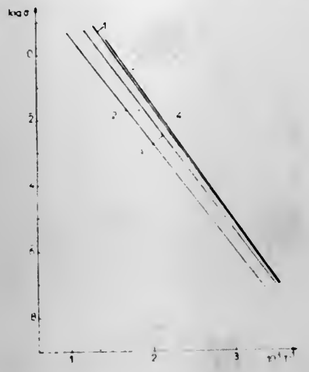
Claude Delmas, Merignac; Claude Fouassier, Gradignan, and Paul Hagenmuller, Merignac, all of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Neuilly-sur-Seine, France

Filed July 7, 1976, Ser. No. 703,141
Int. Cl.² H01M *6/18*
U.S. Cl. 429—193 9 Claims

1. Lamelliform oxides characterised by the fact that they contain monovalent elements inserted between lamellae of the formula I

$$(L_yM_{1-y})O_2 \qquad (I)$$

wherein each of the two elements L and M is present in the said lamellae in only one degree of oxidation, the degree of oxidation of L being lower by at least one unit than that of M, the



said elements being selected from compounds which either have only one degree of oxidation or have one degree of oxidation which is very stable in the presence of others if more than one exists, *y* being a number of between 0 and 1.

4,070,530

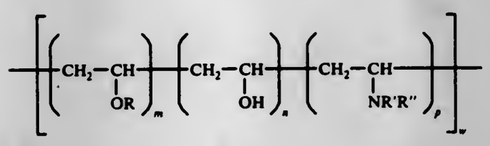
CATALYTIC AMINATION OF POLYMERIC POLYOLS AND RESULTING AMINO SUBSTITUTED POLYMERS

Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 30, 1975, Ser. No. 627,438
Int. Cl.² C08F *8/20, 8/32, 16/06, 16/08*
U.S. Cl. 526—7 9 Claims

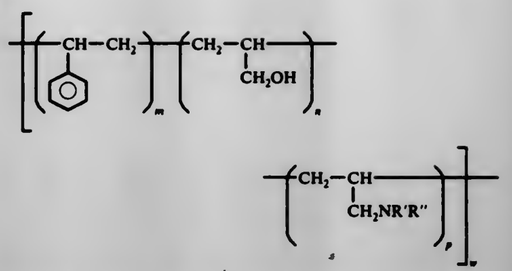
1. A catalytic process for producing polymers having pendant amino and hydroxyl groups comprising the amination of polymers of ethylenically unsaturated alcohols selected from vinyl and allyl alcohols, and copolymers of said alcohols and vinyl compounds selected from the group consisting of vinyl esters of monocarboxylic acids and styrene, said process comprising contacting said polymers of ethylenically unsaturated alcohols or copolymers with at least one of ammonia, mono- and di- aliphatic amines in the presence of a Group VIII metal hydrogenation catalyst, at a temperature of from 125° C to 300° C and a pressure of from about 500 to 2500 psig, said unsaturated alcohol polymers and copolymers having a weight average molecular weight of from about 1700 to about 115,000.

6. Amino substituted polymeric polyols of enhanced emulsifying capability having the general formula



where
R is hydrogen or an acyl group:
R′ and R″ are hydrogen or an alkyl group,
n is an integer and
m, *p* and *w* are integers of 1 or more,
produced by the catalytic amination of polymers consisting of polyvinyl alcohol and copolymers of vinyl alcohol and vinyl acetate having a weight average molecular weight of from about 1700 to about 115,000 with at least one of ammonia, mono- and di-aliphatic amines in the presence of a Group VIII metal hydrogenation catalyst at a temperature of from 125° to 300° C and a pressure of from about 500 to 2500 psig.

8. Amino substituted polyols having the general formula



where R′ and R″ are hydrogen or an alkyl group and *m*, *n*, *p* and *w* are integers of 1 or more, produced by the catalytic amination of copolymers of styrene and allyl alcohol having a weight average molecular weight of from about 1700 to about 115,000 with at least one of ammonia, mono- and di- aliphatic amines in the presence of a Group VIII metal hydrogenation catalyst at a temperature of from 125° to 300° C and a pressure of from about 500 to 2500 psig.

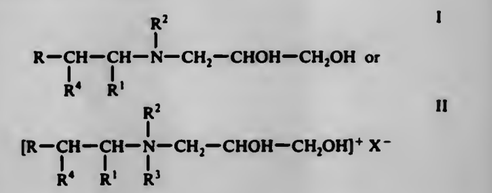
4,070,531

ANTISTATIC AGENTS FOR THERMOPLASTIC SYNTHETIC RESINS

Werner Schwarze, Frankfurt; Wolfgang Merk, and Volker Binder, both of Hanau, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt and Henkel & Cie. GmbH, Dusseldorf-Holthausen, both of Germany

Filed Jan. 30, 1976, Ser. No. 653,834
Claims priority, application Germany, Jan. 31, 1975, 2504054
Int. Cl.² C08K *5/17*
U.S. Cl. 526—6 13 Claims

1. A composition comprising a thermoplastic synthetic resin containing an antistatically effective amount of a compound having the formula



where
R and R^1 are alkyl groups in which the sum of the carbon atoms in the two alkyl groups is 4 to 30 carbon atoms, with the proviso that not over one of R and R^1 can be hydrogen,
R^2 is 2-hydroxyethylaminoalkyl, 2-hydroxypropylaminoalkyl or 2,3-dihydroxypropylaminoalkyl,
R^3 is hydrogen or alkyl of 1 to 5 carbon atoms,
R^4 is hydroxy, and
X^- is a monovalent inorganic or organic acid group or one equivalent of a polybasic inorganic or organic acid group.

4,070,532

ETHYLENE CARBON MONOXIDE COPOLYMERS CONTAINING EPOXY SIDE GROUPS

Clarence Frederick Hammer, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 681,741, April 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 580,515, May 23, 1975, abandoned. This application Jan. 26, 1977, Ser. No. 762,826

Int. Cl.² C08F *3/40, 13/04;* C08G *67/00*

U.S. Cl. 526—11.2 30 Claims

1. A solid ethylene - carbon monoxide copolymer containing epoxy side groups, said copolymer consisting essentially of, by weight (a) 40 to 90 percent ethylene; (b) 2 to 20 percent carbon monoxide; (c) 5 to 40 percent of a monomer copolymerizable therewith to provide flexible polymers, said monomer taken from the class consisting of unsaturated mono- or dicarboxylic acids of 3 to 20 carbon atoms, esters of said unsaturated mono- or dicarboxylic acids, vinyl esters of saturated carboxylic acids where the acid group has 1 to 18 carbon atoms, vinyl alkyl ethers where the alkyl group has 1 to 18 carbon atoms, acrylonitrile, methacrylonitrile, alpha-olefins of 3 to 20 carbon atoms, norbornene, and vinyl aromatic compounds; and (d) 0.1 to 5.0 percent of an ethylenically unsaturated monomer of 4 to 21 carbon atoms containing an epoxy group.

4,070,533

TERPOLYMER OF (a) CROTONIC ACID (b) VINYL ACETATE AND (c) ALLYL OR METHALLYL ESTERS

Christos Papantoniou, Epinay-sur-Seine, and Jean-Claude Grognet, Gagny, both of France, assignors to L'Oreal, Paris, France

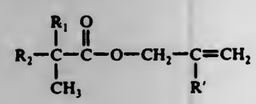
Division of Ser. No. 563,461, March 31, 1975, Pat. No. 3,966,404. This application Apr. 6, 1976, Ser. No. 674,274

Claims priority, application Luxembourg, Apr. 1, 1974, 69760

Int. Cl.² C08F *20/04, 8/30, 2/00*

U.S. Cl. 526—16 9 Claims

1. Terpolymer of
a. crotonic acid,
b. vinyl acetate and
c. an allyl or methallyl ester of the formula



wherein
R' is selected from the group consisting of hydrogen and $-CH_3$,
R_1 is a saturated hydrocarbon chain, linear or branched, having 1–6 carbon atoms, and
R_2 is selected from the group consisting of $-CH_3$ and $-CH(CH_3)_2$, with the proviso that the sum of the number of carbon atoms in R_1 and R_2 is equal to or less than 7.

4,070,534

PRODUCING HEAT STABLE VINYL CHLORIDE POLYMERS AT LOW TEMPERATURES IN THE PRESENCE OF TETRAHYDROFURAN

Richard Augustus Jones, Avon Lake, and Donald Edward Witenhafer, North Olmsted, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 534,672, Dec. 20, 1974, abandoned, which is a continuation of Ser. No. 401,367, Sept. 27, 1973, abandoned. This application Mar. 19, 1976, Ser. No. 668,534

Int. Cl.² C08F *14/06*

U.S. Cl. 526—204 9 Claims

1. In a process for the suspension or dispersion polymerization of a monomeric system containing 80% or more of vinyl chloride and 20% or less of one or more vinylidene monomers containing a terminal $CH_2{=}C<$ group selected from vinylidene chloride, vinyl esters, esters of acrylic acid and methacrylic acid, maleate and fumarate esters, ethylene, propylene and butylene in the presence of 0.001 to 1.0 part, based on 100 parts of monomer or monomers, or a monomer-soluble peroxide catalyst, the improvement wherein the polymerization is carried out in an aqueous medium at a temperature in the range of about 0° to 40° C. and in the presence of about 5 parts to about 50 parts by weight, based on 100 parts by weight of the monomer or monomers, of tetrahydrofuran, said polymerization being continued to a point no greater than 80% conversion of monomer or monomers to produce a polymer having a capillary viscosity heat stability in the range of about 15 to about 21 minutes.

4,070,535

CELLULASE-FREE XANTHAN GUM AND PROCESS FOR PRODUCING SAME

Richard A. Empey, San Diego, and David J. Pettitt, Powal, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 22, 1975, Ser. No. 606,899

The portion of the term of this patent subsequent to Nov. 11, 1992, has been disclaimed.

Int. Cl.² C08B *37/00*

U.S. Cl. 536—114 9 Claims

1. A process for inactivating cellulase enzyme in xanthan gum precipitated from a fermentation beer at a pH of from about 4 to about 8 comprising intermingling wet particulate chemically unmodified xanthan gum, having a solids content not above about 90% by weight, with 2–20% based on xanthan dry weight of an oxide reagent which is either propylene oxide, β-propiolactone, glutaraldehyde, pivalolactone, glycidol, epichlorohydrin or ethylene oxide at from about 40° to about 70° C., for from about 1 to about 5 hours, at ambient pressure and recovering the cellulase-inactivated xanthan gum thus produced.

4,070,536

PROCESS FOR THE PREPARATION OF 4-BENZOYLPYRAZOLE DERIVATIVES

Takuo Konotsune; Takashi Matsui, and Junzo Tobitsuka, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed June 1, 1976, Ser. No. 691,476

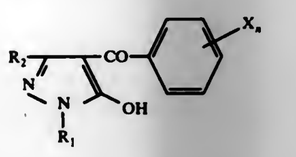
Claims priority, application Japan, June 19, 1975, 50-74962; June 19, 1975, 50-74963

Int. Cl.² C07D *231/20*

U.S. Cl. 548—367 5 Claims

1. In a process for the the preparation of a 4-benzoylpyrazole derivative having the formula

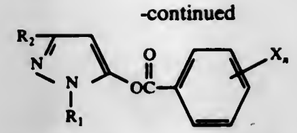
(I)



wherein
R_1 represents an alkyl group having from 1 to 3 carbon atoms or an alkenyl group having 3 or 4 carbon atoms,
R_2 represents an alkyl group having from 1 to 3 carbon atoms,
X represents a halogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms or nitro group and
n is an integer from 1 to 3, provided that when *n* is an integer of 2 or 3, X may be the same or different from each other or a metal salt thereof wherein a pyrazole derivative having the formula

(II)

-continued



wherein R_1, R_2, X and *n* have the same meaning as defined above is treated with a catalyst, the improvement which comprises said catalyst being an alkali metal carbonate in an amount of more than 1 equivalent mole per mole of the pyrazole derivative (II).

4,070,537

17-OXO-17-PHENYL-PROSTAGLANDINS

Masaki Hayashi; Seiji Kori, both of Takatsuki; Hajimu Miyake, Suita, and Kimiichiro Matsumoto, Takatsuki, all of Japan, assignors to Ono Pharmaceutical Company, Osaka, Japan

Filed Apr. 22, 1976, Ser. No. 679,299

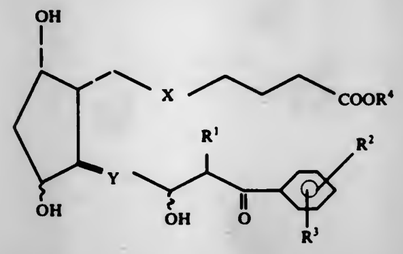
Claims priority, application United Kingdom, May 30, 1975, 18039/75; Oct. 20, 1975, 43041/75

Int. Cl.² C07C *69/76*

U.S. Cl. 560—51 6 Claims

1. A compound of the formula:

VI



wherein X represents ethylene or cis-vinylene, Y represents ethylene or trans-vinylene, R^1 represents a hydrogen atom or a methyl or ethyl group, R^2 and R^3, which may be the same or different, each represent a hydrogen or halogen atom, a trifluoromethyl group or a straight- or branched-chain alkyl group containing from 1 to 3 carbon atoms, and R^4 represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms and cyclodextrin clathrates of such acids and esters, and when R^4 represents a hydrogen atom, non-toxic salts thereof.

4,070,538

3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-9B-PGD, COMPOUNDS

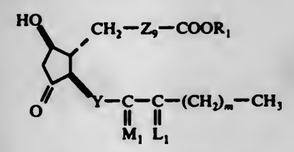
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sept. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 756,103

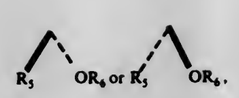
Int. Cl.² C07C *69/76*

U.S. Cl. 560—53 33 Claims

1. A prostaglandin analog of the formula



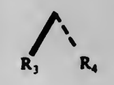
wherein Y is cis—CH=CH— or trans—CH=CH—; wherein *m* is one to 5, inclusive; wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of

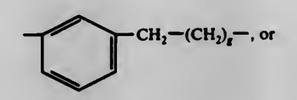


and

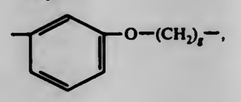


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and wherein Z_9 is

(1)



(2)



wherein g is one, 2, or 3.

4,070,539

[1-OXO-2-HALO(OR HYDROGEN) INDANYLOXY]-ALKANOIC ACID

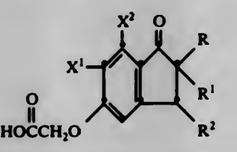
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 198,435, Nov. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 32,434, April 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 778,840, Nov. 25, 1968, Pat. No. 3,704,314. This application May 5, 1976, Ser. No. 683,362

Int. Cl.² C07C *69/76*

U.S. Cl. 560—56 13 Claims

1. A compound having the formula:



wherein R is lower alkyl containing from 1 to 5 carbon atoms, trifluorosubstituted lower alkyl, cycloalkyl having from 3 to 6

carbon atoms, cycloalkyl lower alkyl having 3 to 6 carbon atoms in the cycloalkyl moiety, R^1 is hydrogen or halo; R^2 is hydrogen, halo or lower alkyl; X^1 is hydrogen, halo, lower alkyl, or trihalomethyl; X^2 is halo, lower alkyl or trihalomethyl and the nontoxic, pharmacologically acceptable salt and lower alkyl ester derivatives thereof.

4,070,540

4-HOMOISOTWISTANE-3-CARBOXYLIC ACID ESTERS AND A PROCESS FOR PRODUCING THE SAME

Yoshiaki Inamoto; Yoshiaki Fujikura; Hiroshi Ikeda, all of Wakayama, and Naotake Takaishi, Iwade, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

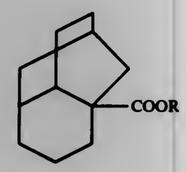
Filed June 14, 1976, Ser. No. 695,976

Claims priority, application Japan, June 24, 1975, 50-78221

Int. Cl.² C07C *69/74*

U.S. Cl. 560—117 **5 Claims**

1. 4-Homoisotwistane-3-carboxylic acid esters of the formula:



wherein R represents a C_{1-22} straight or branched alkyl or alkenyl group, or a monocyclic or polycyclic cycloalkyl group.

4,070,541

DIARYLMETHYLENES

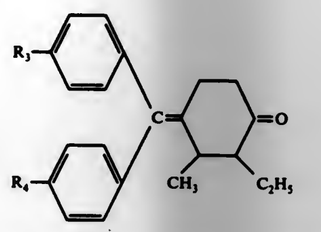
George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 351,940, April 17, 1973, Pat. No. 3,936,493. This application Sept. 12, 1975, Ser. No. 612,839

Int. Cl.² C07C *69/12*

U.S. Cl. 560—140 **5 Claims**

1. A compound of the formula:



wherein R_3 and R_4 are the same or different hydrogen, lower alkyl having 1–5 carbon atoms, lower alkoxy of from 1–5 carbon atoms or lower alkanoyloxy of from 2–5 carbon atoms.

4,070,542

PRODUCTION OF BETA-ALUMINA CERAMIC ARTICLES AND FURNACE THEREFOR

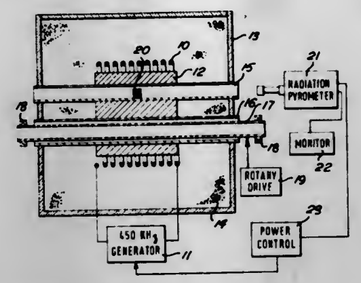
Lyndon James Miles, and Ivor Wynn Jones, both of Chester, England, assignors to The Electricity Council, London, England

Continuation-in-part of Ser. No. 450,111, March 11, 1974, abandoned. This application Sept. 22, 1975, Ser. No. 615,866

Claims priority, application United Kingdom, Mar. 12, 1973, 11835/73

Int. Cl.² H05B *5/00*

U.S. Cl. 13—26 **15 Claims**



1. A furnace for the production of β-alumina ceramic articles comprising an open-ended tube with heating means for heating the tube and means for moving the articles continuously through the tube at a uniform rate and having means for inducing oxygen-containing gas to flow through the tube in the direction of movement of the articles.

4,070,543

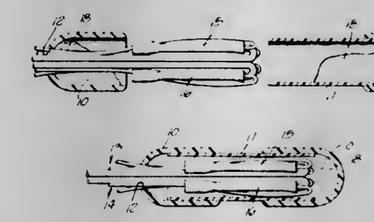
ENCAPSULATED SPLICE ASSEMBLY AND METHOD

John T. Thompson, 244 Loring St., Los Angeles, Calif. 90024, and George W. Gillemot, 2331 20th St., Santa Monica, Calif. 90405

Continuation of Ser. No. 352,914, April 20, 1973, abandoned, which is a continuation of Ser. No. 159,714, July 6, 1971, abandoned. This application Dec. 30, 1974, Ser. No. 537,091

Int. Cl.² H01R *5/02, 5/10, 43/00;* H02G *15/10*

U.S. Cl. 174—87 **6 Claims**



1. That method of encapsulating a splice junction between a plurality of conductors in a waterproof manner in a re-enterable housing which comprises: splicing the bare ends of a plurality of conductors together, inserting the spliced conductors through an opening therefor in the end wall of a cup-shaped housing member, telescoping said cup-shaped member over the end of a cooperating second housing member having a snug fit with said cup-shaped member, and excluding moisture and air from said assembled housing members by introducing thereinto, prior to assembly of said housing members, charges of encapsulating permanently gel-like potting composition having waterproof and pronounced cohesive characteristics highly effective in holding said housing members telescoped together without need for clamps or fasteners and adapted to fill the interiors of said housing members.

2. A readily re-enterable encapsulated conductor splice assembly for electrical conductors comprising, a plurality of conductors in side by side relation and spliced together at their adjacent ends, a splice housing enclosing the spliced ends of said conductors, said housing including a pair of cup-shaped members at least one of which is formed of pliant elastomeric material having their inlet ends telescoped together, the bottom of said one of said members being slit crosswise thereof with said conductors extending outwardly therethrough and in close wiping contact with the edges of said slit, and the interior of said splice housing being filled with permanently gel-like potting composition having waterproof and pronounced cohesive characteristics highly effective in holding said housing members assembled about the spliced conductor ends encapsulated therein.

4,070,544

ELECTROGRAPHIC APPARATUS AND METHOD OF PRODUCING AN ELECTRODE SURFACE THEREFOR

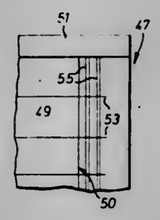
Martin Roy Lambden, Stapehill, Wimborne, England, assignor to Quest Automation Limited, Stapehill, Wimborne, England

Filed July 30, 1976, Ser. No. 710,083

Claims priority, application United Kingdom, Aug. 5, 1975, 32687/75

Int. Cl.² G08C *21/00*

U.S. Cl. 178—18 **12 Claims**



1. A method of producing an electrode surface for electrographic apparatus, comprising the steps of forming on an insulating surface an electrically conducting coating comprising a series of elongated, separate strips of low surface resistivity interconnected by areas of high surface resistivity, providing connection means electrically connected with said coating so that the potential gradient developed in said coating in response to voltage supplied to said connection means is substantially orthogonal to the direction of elongation of said strips, and adjusting the total resistances between respective adjacent pairs of said low surface resistivity strips so as to substantially equalize the mean potential gradients which are developed across respective ones of said high surface resistivity areas in response to such voltage supplied to said connection means.

4,070,545

MULTIDIRECTIONAL REPEATER

Charles George Diefenderfer, Elkins Park, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 29, 1976, Ser. No. 727,760

Int. Cl.² H04L *5/00, 25/20*

U.S. Cl. 178—73 **3 Claims**

1. A communication system comprising

a plurality of input/output terminals,

a plurality of signal detectors, each of said detectors having an input connected to a respective one of said input/output terminals, and an output,

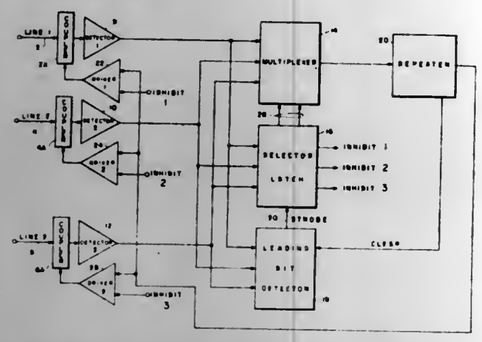
a leading bit detector connected to the outputs of all of said input signal detectors to produce an output signal representative of the start of an input signal thereto,

selector latch means connected to said input signal detectors and said leading bit detector and arranged to be controlled by an output signal from said leading bit detector means to develop an inhibit signal from the output signals of said

input signal detectors representative of an input signal detected by said input signal detectors,

multiplexer means connected to said input signal detectors and to said selector latch means to select an output signal from one of said input signal detectors in response to an output signal from said selector latch means,

signal repeater means connected to said multiplexer means to produce an output signal corresponding to an output signal from an input signal detector selected by said multiplexer means and



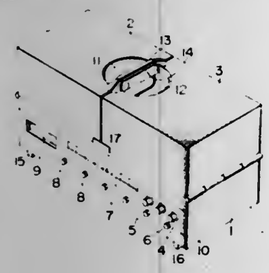
a plurality of input/output line driver means each having an output connected to respective ones of said input/output lines and an input connected to said multiplexer means, said line driver means being connected to said selector latch to have said inhibit signals applied to respective ones of said line driver means to inhibit a line driver connected to the one of said input/output terminal receiving an input signal.

4,070,546

PORTABLE STEREO AUDIO APPARATUS

Kashichi Hirota, Hachioji, Japan, assignor to Kyowa Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed July 13, 1976, Ser. No. 705,777
Claims priority, application Japan, Aug. 29, 1975, 50-119169
Int. Cl.² H04R *1/02*
U.S. Cl. 179—1 GA **5 Claims**



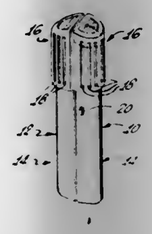
1. A portable stereo audio apparatus having a main cabinet including a bottom side, a top side and enclosing side walls for housing the stereo electronics, a pair of auxiliary cabinets for housing the speakers for the stereo apparatus, each speaker cabinet adapted to support at least one loud speaker and to be hinged to an edge of the main cabinet so as to be supported, when not in use, on the top side of the main cabinet and when in use on the left side and right side of the main cabinet, respectively, hinge means for hinging the left side speaker cabinet of said speaker cabinet at its lower left edge to an upper left edge of said main cabinet and the right side speaker cabinet at its lower right edge to the upper right edge of said cabinet, whereby the apparatus may be used as a stereophonic system by rotating said speaker cabinets about the hinges to locate them one at either side of said main cabinet to be apart from each other by the width of said main cabinet, each speaker cabinet being one half the width of the main cabinet, the width being defined as the distance between the upper edges of said main cabinet, each of said speaker cabinets including gripping means on the edge diagonal to the hinged edge thereof, so that the respective gripping means of said speaker cabinets are positioned adjacent to each other when the speaker cabinets are positioned on top of said main cabinet and cooperate with each other to form a handle grip member for toting the apparatus.

4,070,547

ONE-POINT STEREO MICROPHONE

Fred Jay Dellar, Sun Valley, Calif., assignor to Superscope, Inc., Chatsworth, Calif.

Filed Jan. 8, 1976, Ser. No. 647,337
Int. Cl.² H04R *5/00*
U.S. Cl. 179—1 G **2 Claims**



1. A one-point stereo microphone which includes:

a first uni-directional microphone adapted to respond to sounds from a hemisphere;

a second uni-directional microphone adapted to respond to sounds from a hemisphere, each of said first and second microphones being capable of and intended for independent normal operation;

a housing for each of said first and second microphones, each of said housings being generally elongated with a flat side along the elongated direction and each of said microphones responding to sound from the hemisphere opposite said flat side; and

releasable means located on said flat sides of said housings and including a mortise and tenon connection whereby said microphones may be connected together with their flat sides abutting and with said microphones held against rotation with respect to each other.

4,070,548

MODULAR INTERCONNECTION SYSTEM

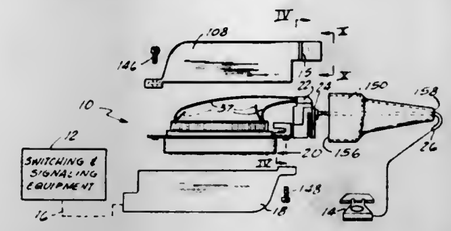
Alan Henry Kasper, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 19, 1975, Ser. No. 578,749
Int. Cl.² H01R *13/50*
U.S. Cl. 179—1 PC **28 Claims**

9. A bracket for mounting a first electrical connector unit on a second electrical connector unit, comprising:

first means for releasably receiving at least a portion of the first electrical connector unit therein;

second means adapted for connection to the second electrical connector unit; and



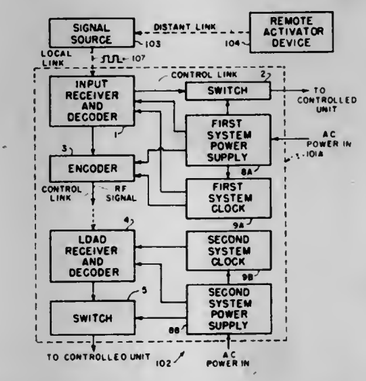
third means interconnecting said first means and said second means.

4,070,549

REMOTE LOCATION ELECTRONIC ACTUATOR AND SYSTEM THAT INCLUDES THE SAME

Richard H. Baker, Bedford, Mass., assignor to David Otten, Newton, Mass., a part interest

Filed Aug. 16, 1976, Ser. No. 714,702
Int. Cl.² H04M *11/00*
U.S. Cl. 179—2 A **36 Claims**



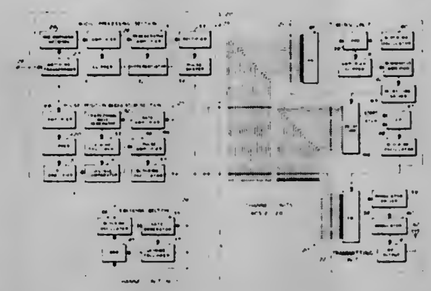
1. A remotely activated command and control device that comprises, in combination: transducer means operable to pickup as input thereto across a local link a wireless input signal, initiated over a distant link, in the form of a predetermined code and to convert the same to an internal signal; means for decoding connected to accept the internal signal from the transducer means and to provide an activating signal that is directly related to the code on the input signal, said means for decoding comprising analog means and digital logic means; and switch means that receives the activating signal and is selectively activated thereby, the switch means comprising a set of mechanical contacts in parallel with a thyristor to bypass the thysistor, when closed, with a lowresistance bypass, and timer means operable to control the thyristor and the mechanical switching contacts to render the switch means respectively conductive and non-conductive, as follows: the closing of the mechanical contacts is timed by the timer means such the thyristor is caused to conduct prior to closing the mechanical contacts and then the mechanical contacts are closed, and the switch means is rendered non-conductive by first opening the mechanical contacts and then rendering the thyristor non-conductive.

4,070,550

QUANTIZED PULSE MODULATED NONSYNCHRONOUS CLIPPED SPEECH MULTI-CHANNEL CODED COMMUNICATION SYSTEM

Ralph H. Miller, Jr.; William W. Dyer, both of La Mesa; John A. Waterbury, San Diego; Wayland A. Carlson, San Diego, and Richard O. Eastman, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 28, 1961, Ser. No. 122,056
Int. Cl.² H04J *3/00*
U.S. Cl. 179—15 BA **10 Claims**



1. A quantized pulse-modulated nonsynchronous clipped speech multi-channel coded communication system comprising transmitter terminals and receiver terminals; said transmitter terminals comprising a plurality of channel units, a timing unit, and a transmitting unit; said channel unit including processing section, encoding section and pulse position modulating section; said processing section including input means for coupling a composite waveform thereto, preemphasis means operatively receiving said composite waveform for accentuating crossover points in the composite waveform, clipping means operatively receiving the output of said preemphasis means for infinitely clipping the amplitude portion of said composite waveform and retaining the frequency information therein, pulse generating means operatively coupled to the output of said clipping means for generating pulses corresponding to said crossover points; gate generator means contained within said encoding section and operatively coupled to the output of said pulse generating means for generating gate pulses; buffer circuit means contained within said timing unit operatively connected to the output of said gate generator means for isolating the outputs of said plurality of channel units, sampling means for sampling the outputs of said channel units fed to said buffer circuit means, first coincidence circuit means operatively receiving the output of said buffer circuit means and said sampling means for generating an output pulse when pulses from said summing circuit and said sampling means are coincident therein, channel coding means comprising a delay line operatively receiving pulses from said coincidence circuit means for generating start stop and a plurality of channel pulses corresponding to the number of channel units; second coincidence circuit means operatively receiving pulses from said gate generating means and pulses from said delay line corresponding to the appropriate channel unit for generating an output pulse when pulses from said gate generator and said delay line are coincident therein, blocking oscillator means operatively receiving pulses from the output of said second coincidence circuit means for generating first output pulse which is operatively coupled to said gate generator means for turning off said gate generating means and generating a second pulse; comparator means in said position modulator section and operatively receiving the second output pulse from said blocking oscillator and receiving a signal corresponding to said composite waveform and time modulating said second output pulse from said blocking oscillator wherein the modulation corresponds to the amplitude information of the input waveform; other buffer circuit means contained within said trans-

mitting unit for receiving start-stop pulses from said delay line and time modulated channel pulses from said comparator means wherein said channel pulses are contained between said start-stop pulses, and propagating means operatively receiving the output trains of pulses from said other buffer circuit means for propagating said trains of pulses; said receiver terminal comprising a receiver unit for receiving and detecting trains of pulses; master decoder means operatively receiving trains of pulses from said receiver unit for separating incoming trains of pulses into channels and for generating a time reference pulse; at least one channel decoder means including coincidence means operatively receiving pulses from said master decoder means for determining the presence of information on a particular channel by comparing said reference pulse to individual channel pulses in the coincidence means; at least one reprocessing means operatively receiving pulses from said channel decoder means for converting information applying to a particular channel from pulses to a reproduction of the originating signals; each reprocessing unit including pulse position demodulator means operatively receiving pulses from said channel decoder means for converting time modulation information to a DC voltage which is proportional to the amplitude information; a clipped speech section contained within said audio reprocessing means operatively receiving output pulses from said channel decoder means for recovering the frequency information contained therein; variable amplifier means operatively receiving amplitude information from said pulse position demodulator means and audio frequency information from said clipped speech means for combining said amplitude information and said frequency information thereby improving the naturalness of the output speech and audio output means operatively receiving the output of said variable amplifier means for reproducing said output waveform from said variable amplifier means.

4,070,551

LOCAL CALL COMPLETION FOR TIME DIVISION MULTIPLEXING SYSTEM

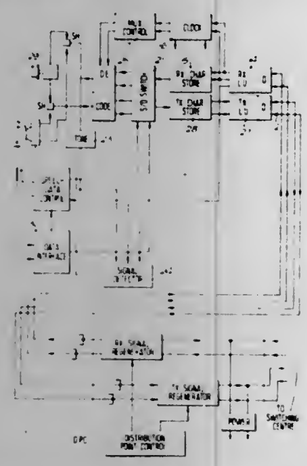
Donald Adams Weir, Cheshunt, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 27, 1976, Ser. No. 726,727

Claims priority, application United Kingdom, Oct. 2, 1975, 40310/75

Int. Cl.² H04J 3/00; H04M 3/02; H04Q 3/60

U.S. Cl. 179—18 FC **4 Claims**



1. An automatic telecommunications switching system comprising a switching center, a plurality of subscriber lines coupled to said center over a plurality of time division multiplexed highways with each of said highways coupled to a plurality of subscriber lines to provide call service to said lines, a distribution circuit coupled to one of said highways intermediately between the subscriber lines served by said highway and the switching center for serving a plurality of subscriber lines over said highway, each time frame of the time multiplex of said one highway being divided into a first group of time slots for connection from a subscriber line seeking a call connection through a selected idle one of said time slots through said switching center and a second group of slots for local call connections between two or more subscriber lines served by said distribution circuit, and means in said distribution circuit responsive to recognition of a call as being directed to a subscriber line served by said distribution circuit for switching said local call to a selected idle one of said second group of slots independently of the switching center.

4,070,552

MULTI-DIRECTIONAL STEREO MULTIPLE RECORDING APPARATUS WITH CONSTANT ACCELERATION CUTTING

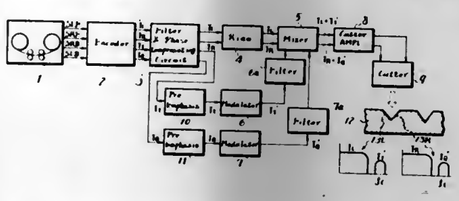
Yoshihisa Kamo, Kawasaki, Japan, assignor to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Filed Nov. 26, 1975, Ser. No. 635,624

Claims priority, application Japan, Nov. 29, 1974, 49-138013

Int. Cl.² G11B 3/00

U.S. Cl. 179—100.4 ST **10 Claims**



1. A multi-directional stereo multiple recording apparatus comprising:

a. encoder means for encoding a plurality if input signals corresponding to a plurality of sound sources in a plurality of main-channel signals and sub-channel signals;

b. mixer means for producing a multiplex signal;

c. means for applying said main-channel signals from said encoder means to said mixer means;

d. angle-modulator means for angle-modulating a carrier signal of a given frequency by said sub-channel signals to produce modulated sub-channel signals;

e. filter means for further modulating at a constant acceleration said modulated sub-channel signals interposed between said angle-modulator means and for applying said modulated sub-channel signals to said mixer means; and

f. cutter means for recording the output of said mixer means on a groove of a lacquer disc.

4,070,553

PERSONAL AUDIO LISTENING SYSTEM

William J. Hass, 4105 N. Lawndale, Chicago, Ill. 60618

Filed Feb. 10, 1977, Ser. No. 767,476

Int. Cl.² H04M 1/05

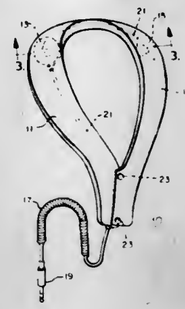
U.S. Cl. 179—157 **12 Claims**

1. A personal audio listening system to be worn by an individual listener, comprising:

a first and a second small audio speaker for generating audible sound in response to an electrical signal input;

means for coupling said first and second audio speakers to a source of the electrical signal input;

means for supporting and enclosing each of said first and second audio speakers beneath a corresponding ear of the listener and in the proximity of the listener's neck and shoulders, said supporting means comprising a flexible body for surrounding at least the back and sides of the listener's neck and further being adapted to conform to the



neck and shoulder body contours of the listener and to support said audio speakers in such a manner that audible sounds are transmitted by said first and second audio speakers to a corresponding ear of the listener by acoustic radiation as well as by conduction through the listener's body.

4,070,554

DIGITAL TESTING AND POWER CONTROL IN A DIGITAL COMMUNICATION SYSTEM

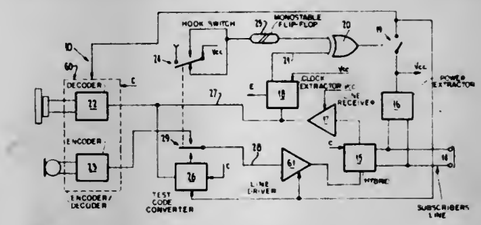
Peter Rule, Dallas; Owen Mace, South Yarra, and Ernest Zimmer, Pascoe Vale, all of Australia, assignors to L.M. Ericcson Pty. Ltd., Broadmeadows, Australia

Filed June 30, 1976, Ser. No. 701,738

Claims priority, application Australia, June 30, 1975, 2155/75

Int. Cl.² H04B 3/46

U.S. Cl. 179—175.3 R **21 Claims**



2. A method for controlling the power state of remote data terminals in a digital communication system of the kind wherein power for the terminals is supplied from a central switching station, said method comprising the steps of controlling the digital signal transmitted to said terminals from said central switching station to cause said terminals to assume either a power-up state wherein continuous operating power is consumed by said terminals or a power-down state wherein a small amount of power is consumed by said terminals, said small amount of power being sufficient only to enable said terminals and said central switching station to communicate, the switching of a terminal from the power-down state to the power-up state being made at the terminal when said digital signal transmitted includes a particular control signal, and transmitting said particular control signal to a terminal of said system only when the change of state of that terminal to the power-up state will not cause the exceeding of an allowable sum of power rationed for the terminals of the system.

15. A method for digitally testing lines between digital terminals and a central switching station in a digital communication system, said method including the steps of generating a digital test signal, transmitting said test signal from said switching station to a terminal, modifying said test signal at said terminal, transmitting said modified test signal back to said switching station, counting the errors which occur by comparing the returned test signal with a similarly modified non-transmitted signal, reducing the signal to noise ratio on the line under test at least for the transmission from said station to said terminal to enable a reasonable error count in a short time, and assessing the error count to establish the transmission quality of the line.

4,070,555

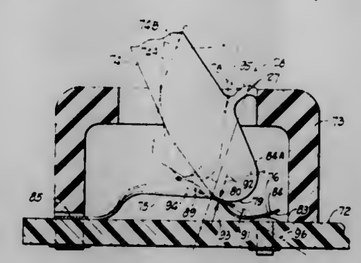
SWITCHING MECHANISM

Alvin J. Carli, Sebring, Ohio, assignor to The Alliance Manufacturing Company, Alliance, Ohio

Filed Nov. 28, 1975, Ser. No. 636,080

Int. Cl.² H01H 21/80, 1/50, 9/02

U.S. Cl. 200—6 B **41 Claims**



1. A switch mechanism comprising, in combination,

a base,

first and second contact means,

means mounting said contact means on said base insulated from each other and mounted for mutual cooperation,

a convex abutment connected to one of said contact means,

a lever having an operating end,

means fastening said lever to said base about an effective pivot point for movement of said operating end between first and second positions on opposite sides of a neutral plane passing through said effective pivot point and said convex abutment,

said fastening means of said lever establishing cooperation of said operating end with said convex abutment and establishing the first and second contact means actuable between open and closed circuit conditions in accordance with movement of said lever between said first and second positions,

means including said fastening means providing a first resilient force in a first path generally tangential to said convex abutment and between said operating end and said base with said lever in said first position and with said first force resisted by said abutment,

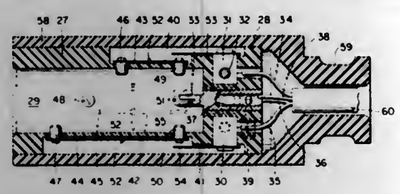
means including said fastening means providing a second resilient force in a second path between said operating end and said base with said lever in said first position and with said first and second forces being disposed at an inclusive angle in the order of 20° to 160°,

and means providing a frictional force between said operating end and said abutment at least in said first position of said lever to resist said first force and establish static equilibrium despite said first and second forces being at other than 180°.

4,070,556
PLUG-AND-SOCKET CONNECTION

Rudolf Kofmel, Schulhausstrasse 99, Deitingen, Solothurn, Switzerland (4707)

Filed Sept. 22, 1976, Ser. No. 725,892
Claims priority, application Switzerland, Sept. 29, 1975, 12607/75
Int. Cl.² H01R 33/30
U.S. Cl. 200—16 B 4 Claims



1. In a plug-and-socket connection for connecting at least two electric conductors of a cable to two other electric conductors, of the type wherein a socket protion having at least two terminals for said two other electric conductors is provided with a cavity for receiving part of a plug portion, the improvement comprising:

an axially symmetrical plug body,

a central aperture in said plug body for receiving said cable,

a cylindrical extension secured to said plug body in alignment with the axis of said body, said extension having a stop surface at an end thereof remote from said body,

at least one contact ring disposed coaxially with said extension between said plug body and said stop surface, said contact ring having an exposed outer surface,

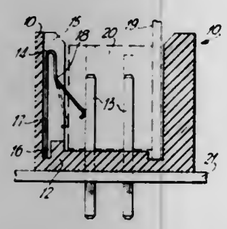
at least one contact element comprising a radially movable stud secured to one end of a first flat spring, said stud projecting partially into said cavity of said socket portion for cooperation with said contact ring so that said stud rests against said contact ring upon complete insertion of said extension into said cavity, and

switch means disposed on said socket portion for cooperation with said stop surface upon insertion of said extension into said cavity, said switch means comprising a contact nipple secured to an other end of said first flat spring and a second flat spring secured to one of said terminals and partially overlapping said first flat spring, whereby said contact nipple contacts said second flat spring upon complete insertion of said extension into said cavity.

4,070,557
APPARATUS FOR PROVIDING CLOSED LOOP CONDITIONS IN VACANT MODULE POSITIONS

Harold Joseph Ostapovitch, Lachine, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed July 26, 1976, Ser. No. 708,626
Int. Cl.² H01R 13/70
U.S. Cl. 200—51.1 8 Claims



1. Apparatus for providing closed loop conditions in a vacant module position, comprising:

a housing forming a shroud for a back panel and including a base portion, a first wall extending at one side of said base portion and normal thereto, and a further wall extending from said base portion and spaced from and parallel to said first wall;

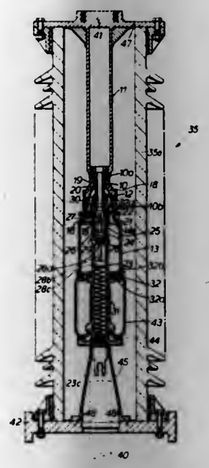
a plurality of terminals extending through said base portion, said terminals positioned between said walls and including portions extending external to said shroud, in a direction opposite to said walls, for insertion through said back panel for attachment of conductors thereto; and

a spring contact member mounted on said first wall and moveable from a first position to a second position, said contact member in said first position in electrical contact with at least two of said terminals and in said second position deflected away from said terminals on insertion of a circuit module into said housing over said terminals, said spring contact member in said first position on absence of said circuit module.

4,070,558
HIGH VOLTAGE CIRCUIT-INTERRUPTERS

John Stanley Stewart, Gateshead, and Peter Headley, North Shields, both of England, assignors to Reyrolle Parsons Limited, Newcastle-upon-Tyne, England

Filed Oct. 10, 1975, Ser. No. 621,515
Claims priority, application United Kingdom, Oct. 11, 1974, 44231/74
Int. Cl.² H01H 33/70
U.S. Cl. 200—148 A 6 Claims

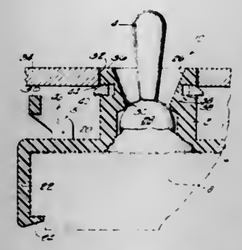


1. A high-voltage circuit-interrupter for operation within an enclosure containing an insulating fluid medium which comprises a fixed contact having a bore and a relatively movable contact assembly wherein the movable contact assembly is axially movable relative to the fixed contact and comprises an insulating nozzle, a generally tubular main electrical contact within the nozzle, an auxiliary contact positioned within the interior of the main electrical contact and movable axially within the main contact by a biased spring, there being at least one radial passage extending through to the interior of the contact assembly, and the interrupter further including means for withdrawing the contact assembly relative to the fixed contact to separate them and draw an arc between them; means for delivering insulating liquid under pressure to the nozzle so as to create a flow of the said fluid through the nozzle during te said withdrawal, the nozzle being constructed and arranged to direct said flow inwardly into a gap formed between the separated fixed contact and contact assembly; means for moving the auxiliary contact relative to the main electrical cntact during the said withdrawal so that the auxiliary contact carries the arcing current, the auxiliary contact further containing a central rooting electrode which is movable with the auxiliary contact relative to the main electrical contact, said rooting electrode being fixed by a hollow spider to the auxiliary contact and having a gas deflecting portion, said auxiliary contact cooperating with said main contact to constitute valve means, said valve means being operable to permit a first part of the said fluid flow to vent through a port in the auxiliary contact into said radial passage in the movable contact assembly after passing inwardly into the said gap and being deflected by said gas deflecting portion of the rooting electrode towards said radial passage, another part of the said flow escaping through the bore of the fixed contact after passing inwardly into said gap, and in which the said movement of the auxiliary contact relative to the main electrical contact on operation of the circuit-breaker is arranged to operate said valve means so as to permit said radial venting.

4,070,559
SNAP-IN MEANS FOR MOUNTING ELECTRICAL DEVICES OR THE LIKE IN A SUPPORT PANEL APERTURE

Earl T. Piber, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Dec. 8, 1975, Ser. No. 638,811
Int. Cl.² H01H 9/02
U.S. Cl. 200—296 4 Claims



1. The snap-in mounting means for a device adapting the device to be mounted from the back of and through a hole in a support panel to secure the device to the panel so that part of the device is accessible from the front of the panel comprising

an elongated bushing carrying the accessible part of the device and having an outer end portion to be received in the panel mounting hole, said bushing outer end portion including an annular groove,

retainer means comprising a split ring which is slidably disposed in said bushing groove, which is radially compressible and expandable within said bushing groove between a normally expanded position where its outer dimension is larger than the dimension of the panel mounting hole and a compressed position where it can pass through the panel mounting hole, and which has a beveled leading edge portion which engages the back rim of the panel mounting hole and serves to cam said ring to said compressed position as said bushing outer end portion is inserted into the hole during mounting, said ring returning to its normally expanded position, where at least a portion thereof overlies the front of the support panel in the area surrounding the mounting hole after said bushing outer end portion has been inserted through the mounting hole,

means for centering said ring with respect to the panel mounting hole,

an annular undercut in the trailing edge portion of said ring and including a radially extending edge, and

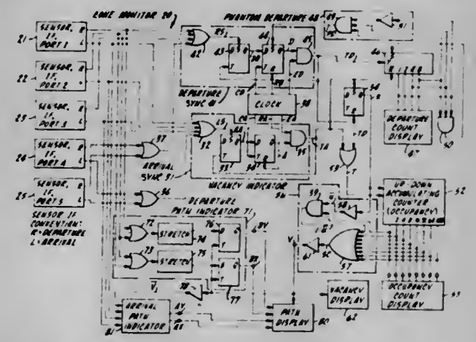
a coil spring encircling said bushing with one end bearing against a portion of the device and the opposite end engaging said ring ledge prior to mounting,

whereby said opposite end of said spring is disengaged from said ring ledge and bears against the back of the support panel as said bushing outer end portion is inserted through the panel mounting hole during mounting so that said spring thereafter urges said bushing in an axial direction away from the support panel and thereby holds said ring in tight engagement with the front of the support panel.

4,070,560
TRANSIT ZONE MONITOR CIRCUIT

Carl G. Blanyer, Thousand Oaks, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Nov. 22, 1976, Ser. No. 743,931
Int. Cl.² G08G 1/065; G06M 3/14
U.S. Cl. 235—92 TC 18 Claims



1. A zone monitor circuit for monitoring the occupancy of a transit zone having plural ports, each port including sensor means for generating an arrival signal indicative of movement of a vehicle or other movable object into the transit zone through that port and for generating a departure signal indicative of movement of an objec: out of the zone through that port, comprising:

synchronization means, coupled to the sensor means, for developing synchronized arrival signals and departure signals segregated from each other on a time basis;

occupancy counter means, coupled to the synchronization means, for maintaining a continuous count of the number of arrival signals minus the number of departure signals to afford an occupancy count representative of the number of objects within the zone;

and departure anticipation means, coupled to the synchronization means, for developing an impending vacancy signal indicative of occurrence of a predetermined number of departure signals with no more than a much smaller given number of intervening arrival signals.

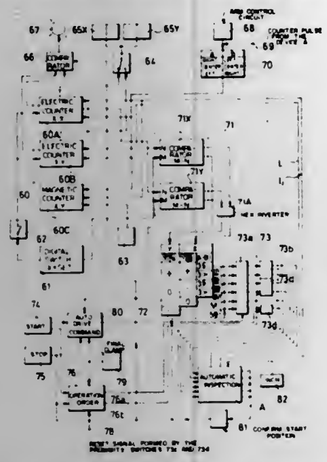
4,070,561
METHOD AND APPARATUS OF CONTROLLING AN AUTOMATIC INSPECTION DEVICE

Nishizawa Shunichi, Nagaokakyo; Igarashi Taenzi, Kyoto, and Fujishima Shigeru, Nagaokakyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Nov. 3, 1975, Ser. No. 628,324
Claims priority, application Japan, Nov. 15, 1974, 49-131653
Int. Cl.² B25J 9/00; F28F 7/00
U.S. Cl. 364—104 17 Claims

1. A method of controlling positioning of an automatic inspection device, arranged to be installed in a field of alignment holes and shifted by using the alignment holes, and which device has a frame, a first carrier body mounted on said frame for shifting in an X-direction, a second carrier body mounted on said frame for shifting in mutually perpendicular X-Y-directions, clamping means on both carrier bodies clampingly engageable in the alignment holes, arm means pivoted on said second carrier body and having a free end for mounting an inspection means, and obstacle detection means: said method comprising the steps of assigning respective X-Y addresses to

the alignment holes; indicating, on an objective counter in terms of its address, the location of said automatic inspection device; providing a preset counter for instructing the shifting direction of said device in terms of an address to which said device is to be moved; responsive to supplying instructions to



said preset counter, comparing the address of such instructions with the address contents of said objective counter; responsive to such comparison, shifting said device in a direction to reduce the difference resulting from such comparison; and, during such shifting, utilizing said obstacle detection means to avoid any obstacles in the shifting path of said device.

4,070,562

ACCELERATION/DECELERATION ALARM SYSTEM

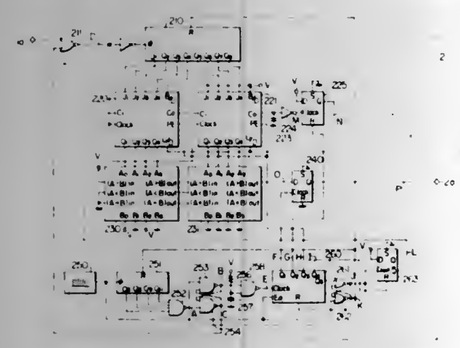
Akira Kuso, Nagoya, and Yasuyuki Sakakibara, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed June 24, 1976, Ser. No. 699,605

Claims priority, application Japan, Aug. 28, 1975, 50-104803; Aug. 29, 1975, 50-105248

Int. Cl.² B60T *8/12*; G06F *15/20*

U.S. Cl. 364—426 **4 Claims**



1. An acceleration/deceleration alarm system comprising:

speed measuring means for generating a train of pulses having a frequency proportional to the running speed of a vehicle;

first counting means for counting the number of said pulses applied from said speed measuring means during an (i)th constant time interval;

second counting means for counting down the count value of said first counting means in response to said pulses applied from said speed measuring means after the lapse of said (i)th constant time interval until the time when said count value is counted down to zero;

third counting means for counting the number of said pulses applied from said speed measuring means after the completion of the counting operation of said second counting means;

control means for controlling the successive operating time interval of said second and third counting means to an $(i+1)$th constant time interval which follows from said (i)th constant time interval so that the count value of said second counting means is proportional to the decelerating speed difference between said (i)th and $(i+1)$th constant time intervals when said $(i+1)$th constant time interval terminates during the counting operation of said second counting means and so that the count value of said third counting means is proportional to the accelerating speed difference between said (i)th and $(i+1)$th constant time intervals when said $(i+1)$th constant time interval terminates during the counting operation of said third counting means;

setting means for presetting a reference value;

comparing means for comparing the count value of said second and third counting means with said reference value preset by said setting means; and

alarm means for giving a warning when said count value applied to said comparing means exceeds said reference value.

4,070,563

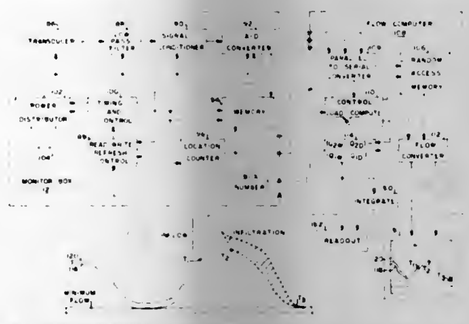
INFILTRATION-INFLOW SEWER LINE ANALYZER

Peter D. Petroff, 4102 Piedmont Drive, Huntsville, Ala. 35802

Filed Aug. 8, 1975, Ser. No. 602,974

Int. Cl.² G01F *23/14*

U.S. Cl. 364—510 **2 Claims**



1. A system of measurement flow gains between ends of a sewer pipe comprising:

A. a pair of monitoring assemblies, one being positioned at each end of said pipe, and wherein each monitoring assembly comprises:

pressure sensing means for sensing liquid pressure,

mounting means for mounting and positioning a said pressure sensing means at a selected level within an end region of said sewer pipe, and

sampling and recording means for periodically and synchronously, as between monitoring assemblies, and responsive to said pressure sensing means, sampling and recording pressure values over a selected period of time;

B. conversion means responsive to selected said recorded values for converting said values into liquid flow rates;

C. computation means responsive to said conversion means and dry and rainy day samples of values from each of said monitoring assemblies for (1) determining the difference between like timed dry and rainy day flows at a first end of said pipe, (2) determining the difference between like timed dry and rainy day flows at an opposite end of said pipe, and (3) determining differences in said difference flows contained in (1) and (2) of this paragraph; and

D. control means for selectively fetching samples from said memory and placing same in said conversion means whereby readings and computations may be made at selected times and thereby measurements made during rainfalls which are representative of inflow into said pipe and measurements made following rainfalls are representative of infiltration into a said pipe.

4,070,564

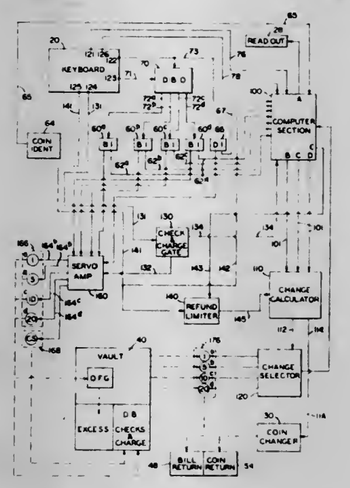
ANTI-THEFT CASH REGISTER

John S. Tucker, 5527 Forrest Haven Circle, Tampa, Fla. 33615

Filed July 6, 1976, Ser. No. 702,710

Int. Cl.² G06F *15/30*; G07D *1/06*

U.S. Cl. 364—405 **18 Claims**



1. An anti-theft cash register comprising in combination:

a vault for storing money therein;

money deposit means for receiving and inserting money into said vault and for generating money deposit signals responsive thereto;

electronic computer means having a first input for receiving said money deposit signals from said money deposit means, and having a second input for receiving data signals for calculating an answer, with said computer means comparing said money deposit signal with said answer and responsive thereto generating change signals at a first output thereof;

money withdrawal means having an input coupled to said first output of said computer means for removing and disbursing money from within said vault responsive to receiving said change signals from said computer means; and

primary key means coupled to said computer means, said primary key means comprising a first key having a plurality of isolated electrical conductors communicating between points along the periphery thereof, and a first key receptacle for receiving said first key therein, said first key receptacle having a plurality of circuit leads coupled to said computer means for being selectively coupled by said electrical conductors of said first key only when said first key is properly inserted thereinto.

4,070,565

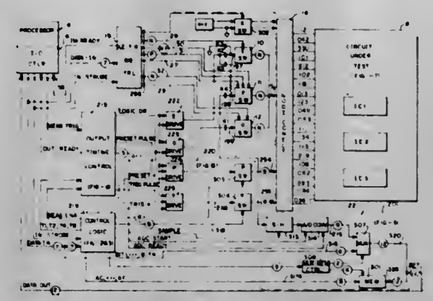
PROGRAMMABLE TESTER METHOD AND APPARATUS

Ronald N. Borrelli, Moraga, Calif., assignor to Zehntel, Inc., Concord, Calif.

Filed Aug. 18, 1976, Ser. No. 715,232

Int. Cl.² G06F *11/04*; G01R *31/28*

U.S. Cl. 235—302 **23 Claims**



1. A testing apparatus for testing electrical properties of logic elements having inputs and outputs in a circuit under test where the circuit is formed by a plurality of the logic elements interconnected at nodes comprising,

selectible connection switch means for connection to selected nodes of the circuit under test, said switch means including first switch means for connecting to first ones of said nodes and thereby for connecting to all inputs of a selected logic element under test, and said switch means including second switch means for connecting to a second one of said nodes and thereby for connecting to an output of the selected logic element under test,

drive means for providing one or more drive signals to said first ones of said nodes of said selected logic element under test,

measurement means connected to said second one of said nodes to receive an output signal from the selected logic element under test,

control means including program controlled processor means for processing a program of instructions correlated to predetermined types of logic elements, said processor means operative to cause said switch means to be connected to said first and second ones of said nodes and to cause said drive means to provide said drive signals to said selected logic element under test in accordance with a subroutine of instructions correlated to said selected logic element under test,

translation memory means for storing node numbers identifying nodes including means for accessing said memory means to fetch node numbers identifying said first and second nodes in response to said processor means during the execution of said subroutine whereby said subroutine is executed independently of the topology of the selected logic element in the circuit under test.

4,070,566

MARKER LAMP ASSEMBLY

Roel C. Buck, Sunderland, and Peter E. Brudy, West Hill, both of Canada, assignors to Dominion Auto Accessories Limited, Toronto, Canada

Filed Mar. 22, 1976, Ser. No. 668,849

Int. Cl.² B60Q *1/32*

U.S. Cl. 362—369 **11 Claims**

1. In a lamp assembly, the combination comprising

a lens,

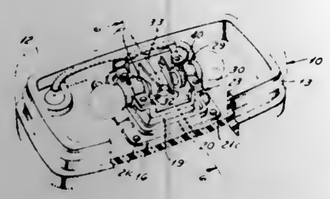
a housing assembly including a base,

a mounting member

means for fixing said mounting member on said base,

said mounting member having a central resilient portion spaced from said base,

said central portion having a centrally located opening therein,
said opening having at least a portion thereof extending radially away from the center,
a socket base,
said base having a planar surface and a centrally located projection,



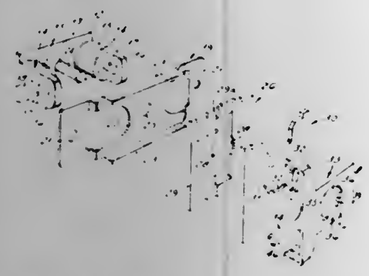
said projection having at least one laterally extending portion spaced from said planar surface of said base such that said base may be mounted on said central portion of said mounting member by inserting said projection through said opening with the laterally extending projection passing through the radially extending portion of said opening and rotating said base relative to said mounting member to bring the laterally extending portion thereof beneath the central portion of the mounting member.

4,070,567

MARKER LAMP WITH RESILIENT BULB SUPPORT

Kenneth J. Crompton, Willowdale, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Canada

Filed Aug. 23, 1976, Ser. No. 716,584
Int. Cl.² B60Q *1/32*
U.S. Cl. 362—390 **17 Claims**



1. A marker lamp comprising
a base,
a resilient support having a surface complementary to the base,
a retainer engaging and maintaining said support in position,
a bulb-engaging socket assembly having outwardly extending projections,
said resilient support having upstanding columnar portions with slots therein into which said projections of said bulb-engaging socket assembly extend to support said assembly on said resilient support.

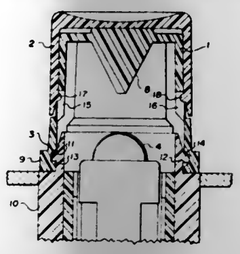
4,070,568

LAMP CAP FOR USE WITH INDICATING LIGHT ASSEMBLY

Babulal Virji Gala, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 9, 1976, Ser. No. 749,208
Int. Cl.² F21V *5/04*
U.S. Cl. 362—311 **8 Claims**

1. A lamp cap for use with indicating light assembly comprising: A substantially flat upper portion; supported by wall means extending in a downward direction from said upper portion to form an open bottomed structure having a hollow interior; said upper portion including an off-center positioned



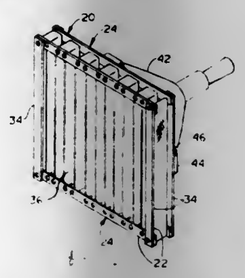
frusto-conical shaped lens; said lens extending downward from said upper portion and positioned within said wall means; said wall means further adapted to releasably engage said indicating light assembly.

4,070,569

COLLAPSIBLE AND PORTABLE RIBBON LOUVER ATTACHMENT FOR LIGHTS TO LIMIT THE LATERAL DISTRIBUTION OF LIGHT

Edgar G. Haughawout, 10613 Sherwood Drive SW., Tacoma, Wash. 98498

Filed Oct. 15, 1976, Ser. No. 732,923
Int. Cl.² F21V *11/02*
U.S. Cl. 362—352 **7 Claims**



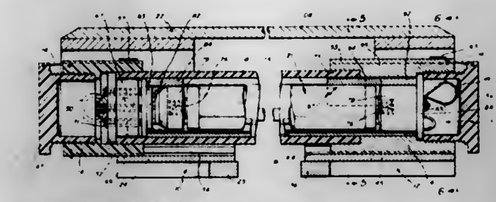
1. A collapsible and portable louver attachment for lights comprising:
a. a first elongated member having a first and second end and having a plurality of openings along its length;
b. a second elongated member having a first and second end and having a plurality of openings along its length;
c. means for pivotally connecting the elongated members at a distance from each other and maintaining them in a parallel relationship to form a framework;
d. a ribbon attached to the framework and woven between the elongated members passing through the openings in the elongated members so that louvers are formed which limit the amount of light cast in a direction normal to the louvers when the louvers are placed in front of a light source and permit the framework to be collapsed for transportation and storage.

4,070,570

LIGHTING APPARATUS

Harold B. Wetmore, Needham; Robert A. Harrow, Sudbury, and William C. Holway, Acton, all of Mass., assignors to General Energy Development Corporation, Needham, Mass.

Filed June 29, 1976, Ser. No. 700,786
Int. Cl.² H05B *33/02*
U.S. Cl. 362—218 **23 Claims**



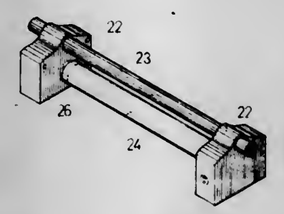
1. A lighting apparatus comprising;
one and another spaced support structures each including a housing having a through passage defining in part a chamber in the housing,
at least translucent tube means extending between the support structures and received thereby,
connector means disposed in the chamber of said one support structure adjacent one end of said tube means,
and a lamp assembly slideably received by the tube means,
said lamp assembly comprising, a tubular fluorescent lamp, a pair of spaced lamp holders, a connector block at one end of the lamp assembly adjacent one of the holders, a ground plane extending longitudinally of the lamp in a direction between holders, a support block at the other end of the lamp assembly, means securing the ground plane at one end to the connector block and at the other end to the support block with the ground plane spaced only a slight distance from the lamp along its length, and means secured to said support block on the side thereof opposite said lamp to enable pulling of the lamp assembly from the tube,
said passage in said other support structure having a minimum diameter greater than the maximum diameter of the lamp assembly so as to permit withdrawal of the lamp assembly, in toto, from the tube through said other support structure.

4,070,571

MODULAR BLOCK FLUORESCENT LAMP SUSPENSION SYSTEM

Ross E. Robertson, and Donald L. Tomie, both of Calgary, Canada, assignors to Penguin Marketing Ltd., British Columbia, Canada

Filed Apr. 30, 1976, Ser. No. 682,141
Claims priority, application United Kingdom, May 6, 1975, 18942/75
Int. Cl.² H05B *33/02*
U.S. Cl. 362—217 **9 Claims**



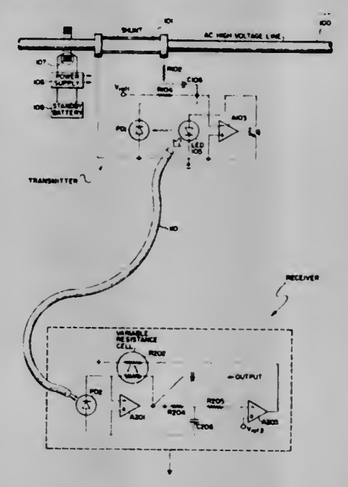
1. A fluorescent lamp suspension system comprising in combination a pair of end blocks, fluorescent lamp holder in each of said end blocks and means to support and maintain said end blocks in the desired spaced relationship to receive and operatively support a conventional fluorescent lamp tube, said means including said end blocks being apertured parallel to the longitudinal axis of said system and above said lamp holders and a rod slidably engaging within said apertures and clamp means co-operating between said rod and said end blocks to detachably secure said end blocks on said rod in the desired spaced relationship.

4,070,572

LINEAR SIGNAL ISOLATOR AND CALIBRATION CIRCUIT FOR ELECTRONIC CURRENT TRANSFORMER

Harry R. Summerhayes, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,583
Int. Cl.² H04B *9/00*
U.S. Cl. 250—199 **16 Claims**



1. An improved optically-coupled data transmission channel comprising:
means for producing optical electromagnetic radiation which varies in intensity as a substantially linear function of the sum of a variable, alternating frequency input and a first known, direct current reference signal;
means for receiving said radiation and for producing a first electrical signal in response to the intensity thereof;
variable gain means connected to process said first electrical signal; and
first negative feedback means connected to receive the output of said gain means and to stabilize the gain of said channel by furnishing a second signal to vary the gain of said variable gain means in response to the difference between a direct current component to the output of said gain means and a second known, direct current reference signal.

4,070,573

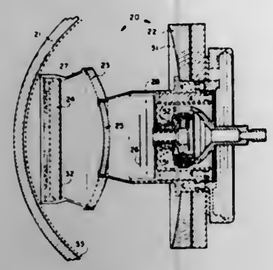
WIDE ANGLE LASER SEEKER

Edwin M. Allen; William C. Fitzgerald, and Marino S. Meisted, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 21, 1976, Ser. No. 736,276
Int. Cl.² G01J *1/20*
U.S. Cl. 250—203 R **10 Claims**

1. A wide angle radiant energy detection apparatus, comprising:
an optical system having a primary mirror having an optical

axis for gathering and reflecting radiant energy; a first lens defining an annular shape having an inner and outer circumference, positioned concentrically about said primary mirror optical axis for transmitting radiant energy reflected by said primary mirror; a secondary mirror positioned on said primary mirror optical axis for reflecting



radiant energy transmitted by said first lens; a second lens positioned on said primary mirror optical axis for transmitting radiant energy reflected by said secondary mirror; and

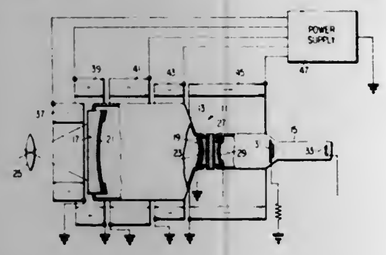
a detector responsive to radiant energy, positioned to receive radiant energy transmitted by said second lens.

4,070,574

MAGNIFYING IMAGE INTENSIFIER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of James Vine, Pittsburgh, Pa.

Filed Apr. 28, 1976, Ser. No. 680,958
Int. Cl.² H01J *31/50, 39/12*
U.S. Cl. 250—213 VT **10 Claims**



1. A magnetically focused image intensifier tube, comprising:

photocathode means responsive to light radiation for emitting an electron beam;

phosphorescent means axially spaced from said photocathode means for attracting said electron beam;

first coil means surrounding said photocathode means and having an electrical current flowing therethrough in one direction, said first coil means providing a magnetic focusing field having a positive magnetic field strength at said photocathode means; and

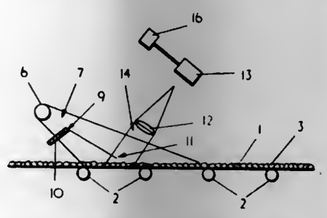
second coil means surrounding substantially all of said space between said photocathode means and said phosphorescent means and having said electrical current flowing therethrough opposite to said one direction, said second coil means providing a magnetic focusing field reversed from said magnetic focusing field of said first coil means between said photocathode means and said phosphorescent means and providing a negative magnetic field strength at said phosphorescent means for increasing the usable magnification range of said image intensifier tube without increasing the power consumption of said first and second coil means.

4,070,575

MEASUREMENT OF FLOW OF PARTICULATE MATERIAL BY SENSING THE SHADOW PROFILE

Andrew Howard Donaldson Park, Burton-on-Trent, and Brian George Pidgeon, Barton-under-Needwood, both of England, assignors to Coal Industry (Patents) Ltd., London, England

Filed Jan. 27, 1976, Ser. No. 652,740
Claims priority, application United Kingdom, Jan. 31, 1975, 04313/75
Int. Cl.² H01J *39/12;* G01N *21/26*
U.S. Cl. 250—223 R **10 Claims**



2. Apparatus for measuring flow of particulate material comprising a light beam emitter for directing a light beam towards the flow of particulate material, a member having an edge for interrupting the emitted light beam such that in operation the edge casts a shadow across the flow of particulate material, a sensor for sensing the shadow profile and deriving a signal indicative of the shadow profile, and a monitor for receiving the derived signal as a function of flow velocity to determine the volume of flow.

4,070,576

DETECTING MALIGNANT CELLS

Carolus M. Cobb, Arlington, Mass., assignor to American Science & Engineering, Inc., Cambridge, Mass.

Filed Feb. 2, 1976, Ser. No. 654,178
Int. Cl.² G01T *1/161*
U.S. Cl. 250—303 **4 Claims**

1. Cytological examination method comprising,

suspending a cell population in a carrier fluid together with a radioactive tracer species which is linkable to both normal and abnormal cells, but more readily to one than the other, in essentially repeatable differential uptake pattern,

further incorporating in said such suspension a preemptive species which pre-emptively links to the type of cell which is less readily linked by the tracer species to enhance the pattern of differential uptake of tracer by suspended cells,

and measuring radioactivity of separate portions of the cell population to produce decay count data based on extent of tracer pickup by each such portion,

wherein the tracer species is gallium and the pre-emptive species is selected from the class consisting of indium, yttrium and scandium.

4,070,577

IMAGING SYSTEMS WITH FLUORESCENT AND PHOSPHORESCENT TONER

John H. Lewis, Los Angeles, and Robert A. Young, Chatsworth, both of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Sept. 10, 1976, Ser. No. 722,277
Int. Cl.² G03G *13/00*
U.S. Cl. 250—315 A **6 Claims**

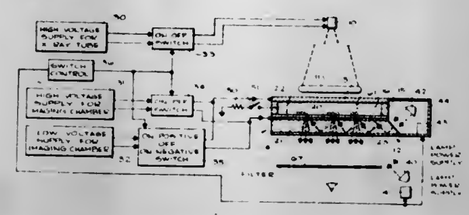
1. In an electronradiography imaging chamber for providing a visual image, the combination of:

first and second electrodes;

means for supporting said electrodes in spaced relation with a gap therebetween;

an X-ray absorber and electron and positive ion emitter in said gap, with X-ray radiation from a first source entering said gap being absorbed and providing electrons and positive ions in said gap;

a plurality of movable electrophoretic fluorescent particles in said gap;



means for connecting an electric power source across said electrodes for attracting electrons toward one electrode and positive ions toward the other depending upon the polarity of the power source and forming an electrostatic charge image, with said particles being selectively deposited as a function of said electrostatic charge image forming a particle image; and

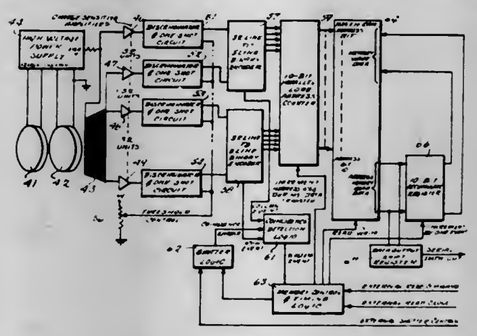
means for directing radiation from a second source onto deposited particles, with said radiation of a wavelength to excite emission from said particles and provide a visual image viewable through one of said electrodes.

4,070,578

DETECTOR ARRAY AND METHOD

John G. Timothy, 85 E. India Row, Boston, Mass. 02110, and Richard Lee Bybee, 955 McIntire, Boulder, Colo. 80303

Filed July 30, 1976, Ser. No. 710,178
Int. Cl.² G01T *1/29*
U.S. Cl. 250—336 **11 Claims**



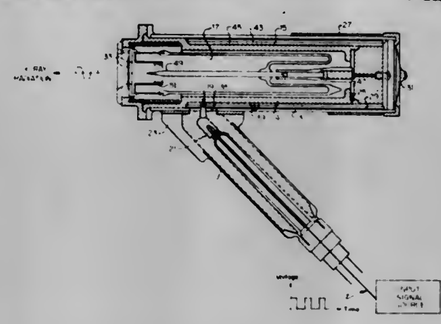
1. A method of detecting photons comprising the steps of providing at least one microchannel array plate having an input face for admitting photons and an output face, providing a plurality of sets of electrodes in proximity focus to the output face of the microchannel array plate with each set including a plurality of linearly extending parallel individual electrode elements, orienting the sets of electrodes at angles with respect to one another so that individual elements of each set intersect and overlap individual elements of the other sets to form a charged particle counting zone in the vicinity of overlapped elements, electrically insulating the intersecting and overlapping elements from each other, focusing a two-dimensional charged particle source on the sets of electrode elements, separately amplifying any signals on each individual electrode element to form pulses, and detecting coincidence of pulses on an individual element in each of the sets to thereby detect impact of charged particles on the charged particle counting zone formed by overlapping of the individual elements having coincident pulses.

4,070,579

X-RAY TUBE TRANSFORMER

John La Due Brewster, Dundee, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 19, 1976, Ser. No. 715,806
Int. Cl.² H05G *1/10*
U.S. Cl. 250—402 **7 Claims**



1. An x-ray generator comprising:

a transmission line transformer including:

a first electrical conductor having a cavity therein;

a second electrical conductor including helical windings disposed along a longitudinal axis within the cavity in said first electrical conductor, said helical windings having a pitch which varies per unit length along said longitudinal axis;

a dielectric material disposed within the cavity in said first electrical conductor and between said first and second electrical conductors for electrically insulating said first electrical conductor from said second electrical conductor and electro-magnetically coupling said first and second electrical conductors in response to an electric current folowing through said conductors;

said first and second electrical conductors having an impedance between them which varies as a function of distance along a longitudinal axis of the helix of said second electrical conductor;

said second electrical conductor having an input terminal connected to receive an applied input signal and an output terminal for producing an output signal; and

an x-ray tube disposed along the longitudinal axis within the cavity having an input coupled to said first electrical conductor and having another input coupled to the output terminal of said second electrical conductor for radiating x-rays.

4,070,580

METHOD AND APPARATUS FOR FIELD IONIZATION FOR ISOTOPE SEPARATION

Thomas F. Gallagher; Robert M. Hill, and Stephen A. Edelstein, all of Palo Alto, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

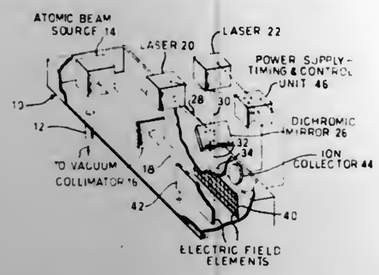
Filed Feb. 17, 1976, Ser. No. 658,386
Int. Cl.² H01J *37/08;* B01D *59/44*
U.S. Cl. 250—423 P **20 Claims**

10. A method of separating first and second atomic isotopes comprising,

subjecting said atoms to radiation of predetermined frequency for selective resonant excitation of the first isotope without excitation of the second isotope,

subjecting said atoms to radiation of predetermined frequency for resonant excitation of the excited atoms of the

first isotope to a Rydberg level without excitation of the non-excited atoms of the second isotope, and



field ionizing Rydberg level atoms of the first isotope and separating said ionized atoms from nonionized atoms.

4,070,581

DETECTION OF RADIATION

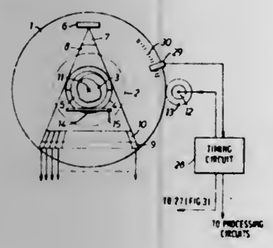
David John Gibbons, Uxbridge; Wieslaw Antoni Karwowski, Perivale; Charles Phillip Cousins, London, all of England; Ian MacDonald Green, Buckie, Scotland, and John James Jarrett, Chalfont St. Peter, England, assignors to EMI Limited, Middlesex, England

Filed July 2, 1976, Ser. No. 702,093

Claims priority, application United Kingdom, July 10, 1975, 29010/75

Int. Cl.² G01M *23/00*

U.S. Cl. 250—445 T **11 Claims**



1. In a rotation only scanner for computerized axial tomography, an arrangement for detecting ionizing radiation simultaneously emergent from a body along a plurality of substantially co-planar beam paths, said arrangement comprising a detector element for each of said paths, each element including a semiconductive device having a *p-n* junction region operated in the photovoltaic current mode.

4,070,582

X-RAY FILM HOLDER USING CAPACITIVE SENSING FOR DETERMINING FILM SIZE

Leverne Kisrow, Ramsey, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 3, 1976, Ser. No. 720,226

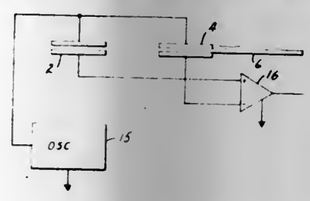
Int. Cl.² G03B *41/16*

U.S. Cl. 250—475 **10 Claims**

1. An improved X-ray film holder of the type for use with any one of a plurality of different predetermined film sizes, the holder having an open-topped receptacle which is closed by a top plate, and a pressure plate positioned in the receptacle wherein a vacuum when formed within the film holder draws the top plate of the holder toward the pressure plate to tightly sandwich a film positioned between the top plate and pressure plate, the improvement including

a plurality of capacitor structures, each having two plates, one plate positioned for movement with said top plate and the other positioned at said pressure plate, said capacitor structures positioned to receive or not receive a film between the plates dependent on which one of the predetermined film sizes is positioned in the film holder;

circuitry positioned within the holder and connected to said capacitor structures, said circuitry including an oscillator connected to said capacitors, a plurality of differential amplifiers connected to said capacitors for providing signals dependent on the oscillator signal passed by the capacitors as determined by the presence or absence of film at the various ones of said plurality of capacitor structures; decoding logic having a width dimension output for each possible film width dimension and a length



dimension output for each possible film length dimension, said decoding logic operatively connected to said differential amplifiers and responsive thereto for providing a signal at one of said width and one of said length dimension outputs of said decoding logic corresponding to the film size presented to the holder, circuit means connected to said width dimension outputs of said decoding logic for providing a signal having a characteristic determined by the width dimension output of said decoding logic at which a signal is provided and circuit means connected to said length dimension outputs of said decoding logic for providing a signal having a characteristic determined by the length dimension output of said decoding logic at which a signal is provided.

4,070,583

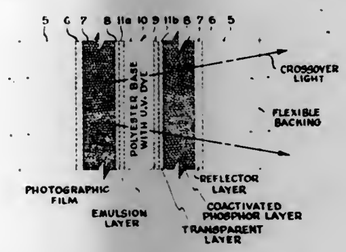
RARE EARTH OXYHALIDE PHOSPHORS COACTIVATED WITH TERBIUM, THULIUM

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 13, 1976, Ser. No. 750,200

Int. Cl.² G01J *1/58*

U.S. Cl. 250—483 **12 Claims**



1. A rare earth oxyhalide phosphor according to the formula $Ln_{1-y-w}OX:Tb_y,Tm_w$

wherein *Ln* is one or more of lanthanum and gadolinium;

x is one or more of chlorine and bromine;

Tb and *Tm* are present as coactivators;

y is from about 0.0005 to 0.010 moles per mole of the selected oxyhalide; and

w is from about 0.00005 to 0.005 moles per mole of the selected oxyhalide;

the phosphor exhibiting relatively low afterglow and relatively high ultraviolet light emission.

4,070,584

OBJECT-IDENTIFICATION SYSTEM WITH SEQUENTIALLY ACTIVATED PHOTOCELL ARRAY

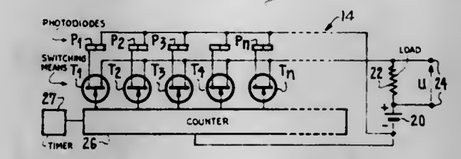
Jacques Chartraire; Jean Le Coeur, and Jacques Pouliquen, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 17, 1975, Ser. No. 641,658

Claims priority, application France, Dec. 20, 1974, 74 42371

Int. Cl.² G06K *7/10, 9/00*

U.S. Cl. 250—555 **10 Claims**



1. A system for the remote identification of objects each provided with an area carrying a multiplicity of light-reflecting zones separated by non-reflecting zones, said zones forming a code identifying the respective object, comprising:

a source of light emitting a steady beam for illuminating said area;

an array of photoelectric sensors;

optical means trained upon said area for imaging said zones upon said array, thereby casting a pattern of shadows and light spots onto said sensors;

scanning means for sequentially actuating said sensors in a predetermined order, thereby generating signal pulses in the outputs of sensors illuminated by a light spot of said pattern;

quantizing means connected to said sensors for suppressing signal pulses below a predetermined threshold;

processing means connected to said quantizing means for determining the distribution of said zones from the sequence of occurrence of unsuppressed signal pulses; and

storage means connected to said processing means for registering a representation of said sequence.

4,070,585

STARTER MOTOR LOCKOUT SYSTEM

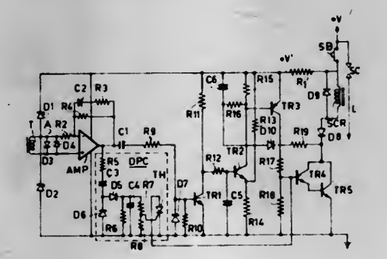
Derek John Parkyn, Westerham, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 26, 1975, Ser. No. 590,441

Claims priority, application United Kingdom, Feb. 13, 1975, 06151/75

Int. Cl.² F02N *11/00*

U.S. Cl. 290—37 A **9 Claims**



1. A starter motor lockout system for an internal combustion engine comprising, a starter switch, a transducer responsive to engine rotation to produce an alternating output signal whose frequency is dependent upon engine speed, time delay means including a capacitor, a semiconductor switch periodically controlled by said output signal and coupled to said capacitor to control the mean charge thereon, means including the starter switch for connecting said capacitor in a charge circuit while the starter switch is operated, means including the semiconductor switch for periodically connecting the capacitor in a discharge circuit at a rate determined by the frequency of said alternating output signal, a semiconductor output stage connected to energize a starter relay when the mean charge on the capacitor exceeds a predetermined value, said value being attained a predetermined time period after the starter switch is operated with the engine at rest and determined by the time constant of the charge circuit, operation of the starter relay being effective to operate contacts for supplying current to a starter motor, a latching circuit coupled to the semiconductor output stage for maintaining said output stage operative while the starter switch is operated, and a frequency-to-DC voltage converter circuit responsive to the transducer alternating output signal and having output means coupled to the semiconductor output stage, said converter circuit being operative when said output signal attains a predetermined frequency to produce a DC voltage of a magnitude and polarity to actuate the output means so as to inhibit operation of the semiconductor output stage thereby to deenergize the starter relay and in turn the starter motor and independently of the continued operation of the starter switch.

4,070,586

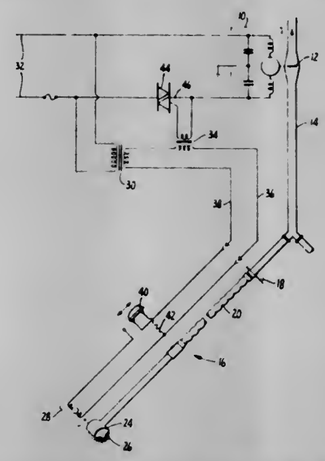
ELECTRIC VACUUM CLEANING AND AGITATOR MOTOR CONTROL SYSTEM

John J. Breslin, Los Altos, Calif., assignor to Beamco, Inc., Mountain View, Calif.

Filed Aug. 23, 1976, Ser. No. 716,682

Int. Cl.² H01H *47/22*

U.S. Cl. 307—22 **10 Claims**



1. A control system for selectively energizing and supplying power to a central and a remote electrical load device interconnected by a single conductor pair from a common control located at the remote device comprising:

a. power means at the location of the central electrical device for providing electrical power to said central device and to the conductor pair interconnecting said central device with the remote electrical device;

b. first switching means interposed between said power means and said central device for controlling the flow of electrical current to said central device;

c. second switching means at the location of said remote device and interposed in one conductor of said pair for controlling the flow of electrical current to said remote device;

d. detecting means at the location of said central device and

interposed in one conductor of said pair of detecting an electrical current flow through said conductor pair; and

e. actuating means responsive to said detecting means and coupled to said first switching means for actuating said first switching means in response to a current flow detected by said detecting means.

4,070,587

ENERGIZING CONTROL SYSTEM FOR AN INTERMITTENTLY ENERGIZED DEVICE

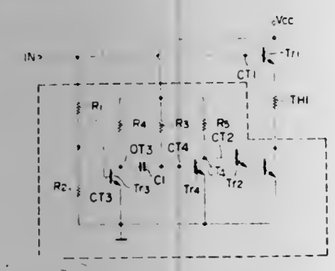
Takayoshi Hanakata, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1976, Ser. No. 668,804

Claims priority, application Japan, Mar. 25, 1975, 50-35912; Feb. 24, 1975, 51-19135

Int. Cl.² G01D *15/10*

U.S. Cl. 307—141 **7 Claims**



1. An energizing control system for a device to be intermittently energized comprising:

means for intermittently energizing the device;

means for sensing a quiescent period during which the device is deenergized; and

means coupled to said sensing means for controlling the energizing means to energize the device for a period of time determined by the duration of the previous said quiescent period sensed by said sensing means.

4,070,588

LIMITER CIRCUIT FOR TIMING RECOVERY IN A HIGH SPEED DIGITAL REPEATER

Brian Richard Bryden, Fitzroy Harbour, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Nov. 10, 1975, Ser. No. 630,252

Int. Cl.² H03K *5/08*

U.S. Cl. 307—237 **24 Claims**



1. A limiter circuit for a periodic input signal having varying amplitudes, comprising:

a. first and second switching devices connected and biased to operate in current mode switch operation;

b. means for applying said input signal to a control electrode of said first switching device;

c. means, including a series direct current blocking means, connected between an output electrode of said first switching device and a control electrode of said second switching device for applying a delayed, attenuated version of the signal appearing at said output electrode to said control electrode, whereby said delayed, attenuated version has at the control electrode a predetermined amplitude and a predetermined difference in phase with respect to said input signal.

4,070,589

HIGH SPEED-HIGH VOLTAGE SWITCHING WITH LOW POWER CONSUMPTION

David John Martinkovic, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Oct. 29, 1976, Ser. No. 737,095

Int. Cl.² H03K *17/60*

U.S. Cl. 307—246 **9 Claims**



1. A high speed-high voltage switch which consumes little power when operative to charge and discharge a capacitive load comprising:

a storage capacitor of several orders of magnitude greater capacity than the capacitive load;

means to continually maintain a desired charge level on said storage capacitor;

a conduction path of variable impedance connecting said storage capacitor and said capacitive load;

a switched discharge path operative to discharge said capacitive load while simultaneously increasing the impedance of said variable impedance conduction path; and

drive means to establish the operating state (charge or discharge) of said high speed-high voltage switch.

4,070,590

SENSING CIRCUIT FOR MEMORY CELLS

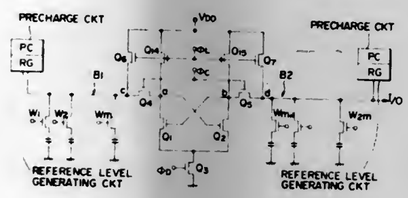
Nobuaki Ieda, Kodaira, and Takao Yano, Tokorozawa, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Aug. 9, 1976, Ser. No. 712,708

Claims priority, application Japan, Aug. 11, 1975, 50-97848; Sept. 16, 1975, 50-111929

Int. Cl.² H03K *5/20, 5/18, 3/286;* G11C *11/40*

U.S. Cl. 307—355 **6 Claims**



1. A weak signal detecting circuit comprising:

a flip-flop circuit composed of first and second MIS transistors having sources connected together and having the drain and gate of one MIS transistor respectively interconnected to the gate and drain of the other MIS transistor;

a third MIS transistor connected between the drain of the first MIS transistor and a first bit line so that the drain and source of the third MIS transistor provide a current path therethrough;

a fourth MIS transistor connected between the drain of the second MIS transistor and a second bit line so that the drain and source of the fourth MIS transistor provide a current path therethrough the gates of the third and fourth MIS transistors being so connected as to be supplied with a first clock signal;

a fifth MIS transistor having a source connected to the first bit line;

a sixth MIS transistor having a source connected to the second bit line, the drains of the fifth and sixth MIS transistors being connected together and to a first power source, and their respective gates being so connected as to be supplied with a second clock signal;

a reference level generating circuit connected to the first and second bit lines;

a precharge circuit connected to the first and second bit lines;

a seventh MIS transistor having a drain connected to the sources of the first and second MIS transistors, the source of the seventh MIS transistor being grounded and the gate being so connected as to be supplied with a third clock signal;

wherein the third and fourth MIS transistors are turned off only during signal detection while being operative throughout the rest of the operation,

two additional MIS transistors having their sources respectively connected to the drains of the first and second MIS transistors, their drains connected together and to the first power source, and their gates so connected together as to be supplied with a second clock signal, wherein the fifth, sixth and two additional MIS transistors are turned on only during the time that the third and fourth MIS transistors are turned off, and

wherein the input/output is taken from one of said bit lines.

4,070,591

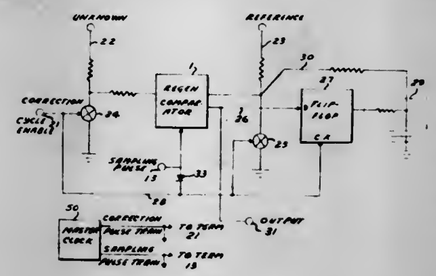
ERROR CORRECTED ERROR AMPLIFIER

Daryl T. Butcher, LaHabra, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 19, 1976, Ser. No. 706,414

Int. Cl.² H03K *5/20*

U.S. Cl. 307—359 **2 Claims**



1. An error amplifier having an unknown signal input, a reference signal input, a signal output, and a sampling pulse signal input comprising:

a. a regenerative comparator;

b. a master clock providing a first and a second time-separate pulse train signal;

c. a first switch cooperating with the said unknown signal input, the said regenerative comparator, and the said first train of clock pulses for grounding the said unknown signal;

d. a second switch cooperating with the said reference signal input, the said regenerative comparator, and the said first train of clock pulses for grounding the said reference signal input;

e. a D flip-flop cooperating with the said comparator, the said first train of clock pulses and providing an output;

f. an integrator for integrating the output of the D flip-flop and providing a correction signal;

g. means for combining the said correction signal and the said reference signal;

h. means for applying the said combined correction signal and the said reference signal to the said regenerative comparator; and

i. means including the said second pulse train signals and the said sampling pulse signal input, cooperating with the said regenerative comparator, whereby the said signal output from the error amplifier is representative of the comparison of the said unknown signal input and the combined reference and correction signal.

4,070,592

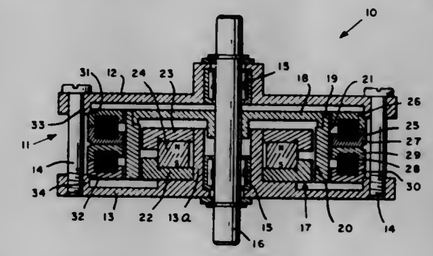
THREE STEP SEQUENCE MOTOR

Arthur E. Snowdon, Bristol, and Albert Palmero, Wallingford, both of Conn., assignors to The Superior Electric Company, Bristol, Conn.

Filed Oct. 8, 1976, Ser. No. 731,059

Int. Cl.² H02K *37/00*

U.S. Cl. 310—49 R **11 Claims**



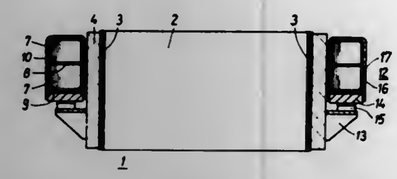
1. A motor for producing a plurality of incremental steps of essentially equal extent in each revolution in accordance with a repeating three step sequence comprising a stator and a rotor rotatably supported by the stator; said stator having a first energizable means and a second energizable means, each of said energizable means providing when energized a magnetic field with the magnetic field produced by the second means being rotatably displaced one step from the magnetic field of the first means, a third magnetic field producing means for producing a continuous magnetic field rotatably displaced one step from the fields of the first and second energizable means; said rotor being positioned for reaction to all magnetic fields and having means for causing it to assume a rotatable position of minimum reluctance where it is rotatably in alignment with the strongest one of said magnetic fields; and means for sequentially solely energizing the first and second energizable means to each produce a step of the motor and for maintaining both energizable means de-energized to produce a third step.

4,070,593

EXCITATION WINDING ARRANGEMENT FOR A SYNCHRONOUS ELECTRIC MACHINE

Rudolf Von Musil; Ingolf Schmidt, and Franz Spirk, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 537,373, Dec. 20, 1974, abandoned.
This application June 22, 1976, Ser. No. 698,533
Claims priority, application Germany, Jan. 31, 1974, 2405148
Int. Cl.[2] H02K 1/24
U.S. Cl. 310—194 8 Claims



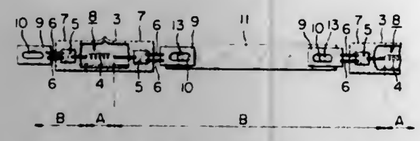
1. In an electric synchronous machine operable at low rotational speed equipped with a rotor having salient, shoeless poles for accommodating the excitation winding of an excitation winding arrangement thereon, each two mutually adjacent ones of the poles defining a pole gap therebetween through which air flows when the rotor rotates, the excitation winding arrangement comprising: at least one coil defining the excitation winding at a given pole, each of said coils being wound from a flat conductor with the flat sides thereof extending parallel to the walls of the pole whereby a coil of sufficient stiffness is obtained to constitute a self-supporting component, each of said coils having only turns insulation for electrically insulating the turns one from the other; and, mounting means connected at the end-faces of the rotor for holding said coils only at said end-faces and for supporting said coils in surrounding spaced relation to the poles, thereby completely exposing the exterior surfaces of said coils to the air flowing in the pole gaps.

4,070,594

LIGHT SOURCE DEVICE TO BE UTILIZED MAINLY FOR PROJECTION PURPOSES

Tsutomu Fuchi, Takatsuki, and Hiroshi Toyoda, Koga, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Feb. 10, 1976, Ser. No. 656,860
Claims priority, application Japan, Feb. 13, 1975, 50-20301[U]; Feb. 19, 1975, 50-23631[U]
Int. Cl.[2] F21V 21/08; H01K 1/24, 1/42; H01R 33/08
U.S. Cl. 313—1 7 Claims



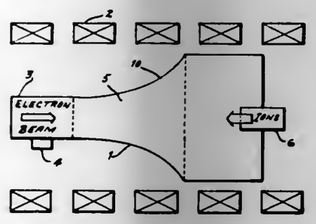
1. In an elongated light source device to be used mainly for projection purposes of the type comprising a plurality of series connected tubular light source units each containing a single light emitting element, and a plurality of non-light-emitting sections connected between alternate light source units of said series connected light source units, the improvement wherein said non-light-emitting sections each comprise an elongated rigid metal conductor supporting member connected at each end to a different light source unit, the longitudinal dimension of each of said non-light-emitting sections being substantially aligned with the axes of said light source units connected thereto, each of said non-light-emitting members being fixed to said tubular light source units in such a way that a metal plate is fixed to the non-light-emitting supporting member and is connected to at least one lead-in wire extending from the end sealing portion of an adjacent one of said tubular light source units, wherein a screw is provided for connecting said at least one lead-in wire to said supporting member, and wherein said metal plate is provided with a screw-fixing hole having a dimension in the longitudinal direction of said conductor that exceeds the diameter of said screw, whereby said metal plate is slidably movable in the longitudinal direction of the adjacent tubular light source unit.

4,070,595

APPARATUS FOR THE ACCELERATION OF IONS IN THE VIRTUAL CATHODE OF AN INTENSE RELATIVISTIC ELECTRON BEAM

Robert B. Miller, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 8, 1976, Ser. No. 748,583
Int. Cl.[2] H05H 1/00
U.S. Cl. 313—361 3 Claims



1. Apparatus for acceleration of ions in the virtual cathode of an intense relativistic electron beam comprised of a drift tube flared a predetermined magnitude at a predetermined position along the longitudinal axis thereof, said drift tube having first and second ends opposite to each other with said second end substantially larger than said first end, means to form an electron beam at said first end, said electron beam being directed toward said second end, an acceleration section adjacent to said means to form said electron beam, said acceleration section being appropriately flared to allow the formation of a virtual cathode and an associated potential well in the region of said second end for subsequent uniform acceleration of said virtual cathode backward toward the electron beam, ion injector means positioned at said second end to provide ions to be loaded into said potential well associated with said virtual cathode for synchronous acceleration backward, and means to establish a uniform, static, longitudinal magnetic field along said drift tube to hold the beam radial profile approximately constant.

4,070,596

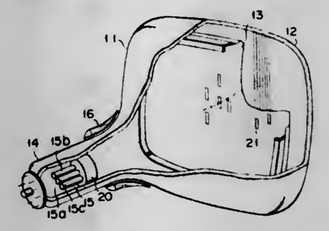
IN-LINE PLURAL BEAMS CATHODE RAY TUBE HAVING COLOR PHOSPHOR ELEMENT STRIPS SPACED FROM EACH OTHER BY INTERVENING LIGHT ABSORBING AREAS AND SLIT-SHAPED APERTURE MASK

Asahide Tsuneta, Kawasaki, and Takeshi Suzuki, Fukaya, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 532,181, Dec. 12, 1974, abandoned, which is a continuation of Ser. No. 283,727, Aug. 25, 1972, abandoned. This application Jan. 19, 1976, Ser. No. 650,152
Int. Cl.[2] H01J 29/30, 31/20
U.S. Cl. 313—408 2 Claims

1. A color cathode ray tube comprising an evacuated envelope; a multicolor image screen including a plurality of horizontally spaced groups of different color phosphor element strips each extending continuously throughout substantially

the entire vertical extent of the screen, said strips being spaced from each other by intervening light absorbing strips, about 40 percent of the total area of said screen being covered by said light absorbing strips, each said light absorbing strip having a width less than the width of each of said phosphor strips, electron gun means for emitting in horizontally linear arrangement a central electron beam and a pair of side electron beams to the concave wall of said screen; converging means for converging said electron beams to pass simultaneously through a slit aperture of a mask; a mask perforated with a multiplicity of slit apertures, each of said apertures selectively directing said electron beams onto different ones of said phosphor strips of each group and located opposite to said electron gun means, said slit apertures being vertically elongated but vertically spaced apart by bridge elements which are much shorter vertically than the slit aperture length, the vertical height of each of said spaced bridge elements being less than the width of each of said slit apertures, the pattern for said strips being formed on an inner surface of said screen by a process including an exposing stage using a linear light source projecting light through the vertically spaced slit apertures of the maks, said light source having an effective length in a direction parallel to said strips greater than the length of one of the apertures in the shadow mask to extend the image of each aperture on said screen surface in the lengthwise direction to reduce the effects of the shadow cast by said bridge members on said screen surface and form said continuous vertical strips, said slit apertures of said mask being slightly wider than said phosphor strips but narrower than the combined width of a phosphor strip and an adjoining light absorbing strip and of length much shorter than the phosphor strips so as to have an area much smaller than the phosphor strips, whereby the landing areas of the electron beams on the phosphor strips have the same shape as said slit apertures and are wider but much shorter vertically than the strips, and not wider than the combined width of a phosphor strip and an adjoining light absorbing strip, and sensitivity to vertical landing errors is avoided so that only horizontal adjustment is necessary to achieve color purity.

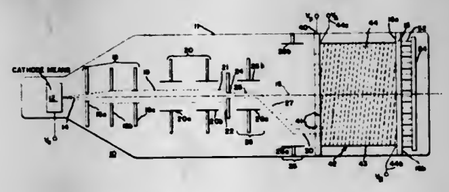


4,070,597

MULTI-APERTURED SINGLE PLATE MATRIX LENS

William C. Hughes, and Harold G. Parks, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 22, 1976, Ser. No. 679,245
Int. Cl.[2] H01J 29/72, 29/64, 29/76
U.S. Cl. 313—431 10 Claims



1. A matrix lens for finely focussing a collimated electron beam upon a surface of a target, comprising:

a single plate having an array of apertures formed therethrough;

said plate being maintained in spaced and substantially parallel relation to said target surface;

said electron beam passing through a selected one of said apertures toward said target; each said aperture being associated with one of a plurality of areas defined upon said target surface;

a hollow member having a pair of opposed parallel and planes, a first end plane substantially abutting said target surface and another end plane substantially abutting a surface of said single plate facing said target surface, the bore of said member being aligned to facilitate passage therethrough of said electron beam passing through any of said apertures; and

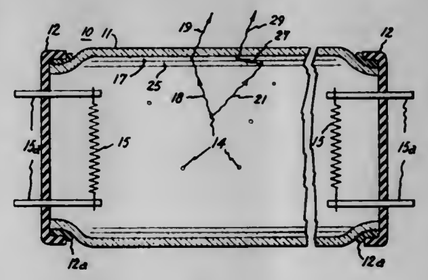
a helix of conductive material wound upon said member, said helix having a first end furthest from said target at a first electrical potential and a second end nearest to said target at a second electrical potential to cause formation of an electrostatic field within at least a portion of the volume enclosed by said helix, with said field being essentially orthogonal to a surface of said plate facing said target; said electrostatic field having a magnitude accelerating the electrons of said beam toward said target.

4,070,598

FLUORESCENT LAMP WITH SECOND PHOSPHOR LAYER

John A. DeLuca, and William W. Piper, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 8, 1976, Ser. No. 739,749
Int. Cl.[2] H01J 61/44, 61/48
U.S. Cl. 313—487 6 Claims



1. A fluorescent lamp comprising:

envelope means for forming a substantially gas-tight enclosure;

means contained within said envelope means for emitting radiation at at least wavelengths of about 185 nanometers and about 254 nanometers in the ultraviolet portion of the electromagnetic spectrum;

a first phosphor layer fabricated upon an interior surface of said envelope means for converting at least the ultraviolet-wavelength radiations at about 254 nanometers to radiation in the visible portion of the electromagnetic spectrum, said first phosphor layer having the visible radiation output thereof subject to depreciation responsive to receipt of at least the 185 nanometer ultraviolet wavelength radiation; and

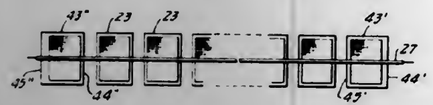
a second phosphor layer, deposited upon the interior surface of said first phosphor layer, for absorbing a substantial quantity of the radiation at at least the 185 nanometer wavelength and converting the quanta thereof to radiation having wavelengths on the order of 220–260 nanometers and absorbable by said first phosphor layer for conversion thereof to visible radiation.

4,070,599

MULTI-DIGIT LUMINESCENT DISPLAY TUBE HAVING WIDER GRID FRAME MEMBERS ON BOTH ENDS OF A SERIES OF GRIDS

Tsukasa Uchikobe; Saneo Yuda; Kiyoshige Hirano; Kazufumi Yawata, and Masaki Kobayakawa, all of Izumi, Japan, assignors to Nippon Electric Kagoshima, Limited, Izumi, Japan

Filed Jan. 26, 1977, Ser. No. 762,485
Claims priority, application Japan, Jan. 28, 1976, 51-8536
Int. Cl.² H01J 1/72, 63/02
U.S. Cl. 313—497 2 Claims



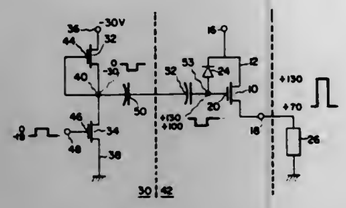
1. In a luminescent display tube for displaying luminescing displays of a plurality of units substantially at a time, comprising a plurality of anode segment groups regularly spaced along a line segment, a hot cathode, a first and a second support on both longitudinal sides of said line segment for supporting said cathode over said anode segment groups substantially parallel to said line segment, a first and a second metal member for each anode segment group transversely of said line segment, and metal meshes supported by the metal members for said anode segment groups between said cathode and the respective anode segment groups, each of said anode segment groups comprising a plurality of segmented luminescent anodes for the displays of a concerned one of said units, the first metal members for said anode segment groups being nearer to said first support than the second metal members for said anode segment groups, the improvement wherein the first metal member for the anode segment group nearest of said anode segment groups to said first support and the second metal member of the anode segment group nearest of said anode segment groups to said second support are wider in a direction of said line segment than all other metal members for said anode segment groups.

4,070,600

HIGH VOLTAGE DRIVER CIRCUIT

Walter J. Butler, Scotia, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1976, Ser. No. 753,773
Int. Cl.² H05B 41/14; H03K 17/60, 3/353
U.S. Cl. 315—169 R 9 Claims



1. A semiconductor switching circuit for switching between a higher and a lower voltage comprising:

a first transistor having a breakdown voltage substantially equal to the difference between said higher and said lower voltages and less than said higher voltage, said transistor including a control electrode and first and second current carrying electrodes; and

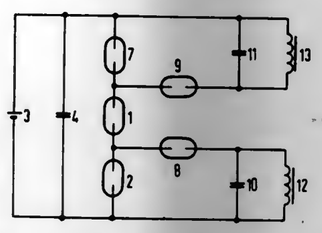
control means connected to said control electrode for alternately switching said first transistor between a first current carrying state when said transistor is turned on and a breakdown state when said transistor is off.

4,070,601

CIRCUIT ARRANGEMENT FOR IGNITING AT LEAST ONE GAS DISCHARGE FLASH TUBE

Ernst-Ludwig Hoene, Singapore, Singapore, assignor to Heinmann GmbH, Germany

Filed Apr. 5, 1976, Ser. No. 673,974
Claims priority, application Germany, Apr. 15, 1975, 2516381
Int. Cl.² H05B 41/23
U.S. Cl. 315—241 R 8 Claims



1. In a flash arrangement of the type wherein a chargeable flash capacitor is connected in a charging path and in parallel with a plurality of serially-connected electronic gas discharge devices including at least one flash tube which has only two electrodes for supporting both ignition and discharge, and wherein the flash tube is connected via an electronic switch to a voltage generator which supplies ignition pulses, the electronic discharge devices constituting a discharge path for said flash capacitor and the electronic switch constituting an ignition switch, the improvement, in combination therewith, wherein:

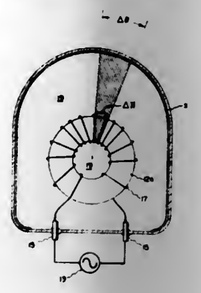
said voltage generator comprises a low internal impedance which causes the ignition voltage pulses to at least approximately and rapidly adiabatically heat the plasma channel produced in the flash tube of the gas discharge path.

4,070,602

SPATIALLY DISTRIBUTED WINDINGS TO IMPROVE PLASMA COUPLING IN INDUCTION IONIZED LAMPS

Armand P. Ferro, Schenectady, and Harold A. Gauper, Jr., Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,206
Int. Cl.² H05B 41/16, 41/24
U.S. Cl. 315—248 6 Claims



1. In an induction ionized fluorescent lamp of the type comprising: an evacuable, light-transmissive envelope, a gaseous medium disposed within said envelope and capable of sustaining an electric discharge due to a varying magnetic field induced therein and to emit radiation at a first wavelength while sustaining said discharge, a luminous phosphor at least on the interior of said envelope capable of emitting visible light while being excited by said first wavelength radiation, a closed loop magnetic core with said gaseous medium disposed about said loop, and means for energizing said core with a varying magnetic field at radio frequency whereby said electric discharge is induced in said gaseous medium, the improvement wherein:

said means for energizing said core comprises a multi-turn winding linking said core and connected for receipt of radio frequency electrical current, the spatial distribution of said winding on said core being proportional to current flow in said electric discharge in adjacent regions and said gaseous medium.

4,070,603

SOLID STATE MICROWAVE POWER SOURCE FOR USE IN AN ELECTRODELESS LIGHT SOURCE

Robert J. Regan, Needham; Paul O. Haugsjaa, Acton, and William H. McNeill, Carlisle, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed July 14, 1976, Ser. No. 705,324
Int. Cl.² H05B 41/16, 41/24
U.S. Cl. 315—248 13 Claims



1. In a light source having a microwave power source, an electrodeless lamp with a light-transmitting envelope and a volatile fill material which emits light upon breakdown and excitation and a termination fixture having an inner conductor and an outer conductor disposed around the inner conductor, the conductors having a first end coupled to the microwave power source and a second end associated with the lamp so that the microwave power terminates at the lamp to initiate breakdown and excitation of the fill material, the fixture further having means for matching the impedance of the lamp in a running condition to the output impedance of the microwave power source, means providing a starting assist for the lamp and for reducing the output of the microwave power source at starting, an improved microwave power source comprising:

a. a dc power source capable of providing power at variable levels,

b. a solid state microwave oscillator, responsive to the output of the dc power source, for generating a microwave signal,

c. a solid state microwave power amplifier, responsive to the output of the dc power source, for increasing the power level of the microwave signal, the amplifier including a power amplifying transistor with the collector circuit of the transistor forming the output of the microwave power source, and

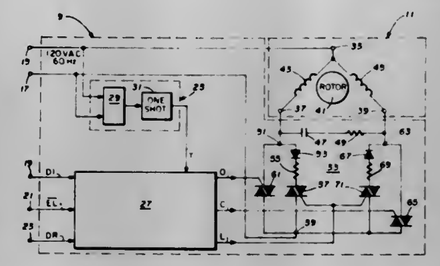
d. impedance matching means coupled between the amplifier and the first end of the conductors of the fixture including a length of transmission line which is effective to transform the dynamic input impedance of the fixture after the lamp is started and before the lamp is in a running condition to a value at the collector of the transistor in the amplifier that is acceptable to the transistor and which allows an amount of power to be delivered to the lamp, even when the amplifier receives reduced dc power, sufficient to cause the lamp to warm-up to the running condition, the impedance matching means further maintaining the voltage at the collector of the amplifying transistor at an acceptable level during the time when a large impedance mismatch occurs between the amplifier output impedance and the input impedance of the fixture.

4,070,604

STEPPER MOTOR VALVE ACTUATOR

Joe D. Usry, Salt Lake City, Utah, assignor to E-Systems, Inc., Dallas, Tex.

Filed June 16, 1976, Ser. No. 696,600
Int. Cl.² H02P 1/42
U.S. Cl. 318—203 A 9 Claims



1. For use in controlling a regulated device, the combination comprising:

power input terminal means arranged for connection to a source of AC power;

motor means having field coils and a motor shaft;

means arranged to provide a DC signal;

switching means connected between said motor means and said power input terminals and to said DC signal means, said switching means being arranged for receiving a first direction control signal and a locking control signal, said switching means being responsive to said first direction control signal for completing a first circuit between said power input terminals and said motor means to apply the AC power to the motor means thereby effecting a rotation of the motor shaft in a first direction, said switching means being further responsive to said locking control signal to apply a DC signal to the motor terminals thereby effecting the locking of the motor shaft in situ in between applications of said first direction control signal, the motor shaft being thereby driven predetermined incremental amounts in accordance with the first direction control signal; and

actuating means operatively coupled to said motor means and arranged for connection to the regulated device, said actuating means being responsive to the motor means for controlling the operation of the regulated device.

4,070,605

POLYPHASE POWER CONTROL

Conrad H. Hoeppner, Indialantic, Fla., assignor to McNeil Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 495,783, Aug. 8, 1974, abandoned. This application Jan. 2, 1975, Ser. No. 645,941
Int. Cl.² H02P 5/40
U.S. Cl. 318—227 39 Claims

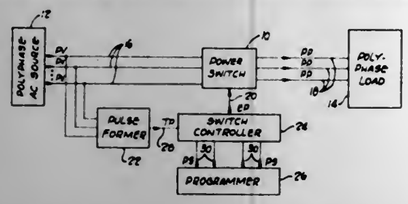
1. Power control apparatus coupled to an n-phase voltage source for generating on a set of *n* lines a repeating sequence of time spaced power pulses, with each power pulse occurring at a controlled repetition rate and comprising a permutation of associated phase voltages on respective lines of said set, at least portions of said associated phase voltages being time coincident, said apparatus comprising:

a. pulse-forming means coupled to said source for providing a series of timing pulses indicative of zero voltage level crossings of the phase voltages from said source;

b. circuit means responsive to said timing pulses for selec-

tively providing a series of time spaced energizing pulses at said controlled repetition rate, with each pulse having a predetermined duration, said circuit means including counter means providing one of said energizing pulses every predetermined integer number of timing pulses; and,

c. power-switching means, including a set of thyristor switches, coupled to said n-phase voltage source for intermittently providing said power pulses; said thyristor switches having their respective control inputs responsive



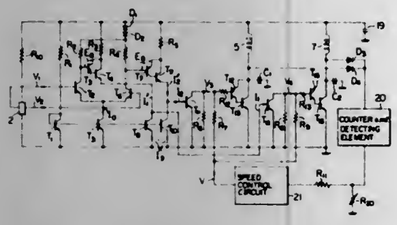
to all said energizing pulses and having their output terminals respectively coupled to ones of said set of lines, wherein the occurrence of one energizing pulse renders all thyristor switches of said set conductive to produce one of the power pulses to be comprised of a preselected permutation of phase voltages, and the occurrence of successive energizing pulses produces a succession of power pulses separated in time by an amount determined by the pulse width and the repetition rate of the succession of energizing pulses.

4,070,606

DRIVING CIRCUIT FOR BRUSHLESS DC MOTOR

Hiroshi Morozumi, and Hiroyasu Kanemaru, both of Tokyo, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 12, 1976, Ser. No. 713,915
Claims priority, application Japan, Aug. 20, 1975, 50-100205
Int. Cl.² H02K 29/02
U.S. Cl. 318—254 **13 Claims**



1. A driving circuit for a brushless DC motor consisting mainly of a rotor of permanent magnet having a pair of N and S poles, a stator winding having a plurality of coils and at least one detecting element for detecting the angular position of said rotor; said driving circuit comprising

a first means for amplifying the AC voltage derived from said detecting element and for converting the amplified voltage to an AC current;

a second means for supplying a predetermined constant current;

a third means for obtaining a current as the difference of the current from said first means and said constant current from said second means;

a fourth means for generating a control signal corresponding to a desired speed;

a fifth means for determining the conduction angle in accordance with the difference current derived from said third means and said control signal derived from said fourth means; and

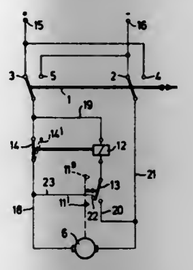
a sixth means for controlling the currents flowing through said coils of said stator winding in accordance with said conduction angle determined by said fifth means.

4,070,607

DRIVE CIRCUIT FOR POWER OPERATION OF A MOVABLE PART OF A VEHICLE COACHWORK

Erik Mitterer, Stockdorf, Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Germany

Filed Oct. 29, 1975, Ser. No. 626,755
Claims priority, application Germany, Nov. 19, 1974, 2454723
Int. Cl.² G05D 3/00; H02P 1/04, 3/00
U.S. Cl. 318—468 **2 Claims**



1. In a control device for an electromechanically operated closure panel, for example, of the kind used in so-called power windows, power doors and power sunroofs of automobiles and the like, comprising in combination:

A. a reversible electric motor and power source therefor,

B. transmission means between the motor and the closure panel capable of moving the latter into and out of a closed position,

C. a pole reversing switch arranged between the power source and the connecting leads of the motor,

D. a relay having its winding connected in parallel with the motor between the motor connections and the reversing switch,

E. a control switch actuated by the relay and arranged to open and close one of the motor leads between the parallel connections of the relay winding and the motor,

F. a position-responsive switch arranged in one of the connections of the relay winding, and

G. means for actuating the position-responsive switch in response to the movement of the closure panel and its transmission means,

the improvement wherein said position-responsive switch further comprises a contact arm connected to one end of said relay winding and two contacts, the first contact being connected to the motor lead which is directly connected to the reversing switch and the second contact being connected to the other motor lead, and

wherein the position-responsive switch and the actuating means are so arranged that said contact arm assumes a first position when the panel is in its closed position, and a second position when the panel is in an open position, the contact arm cooperating in its first position with the first contact and in its second position with the second contact.

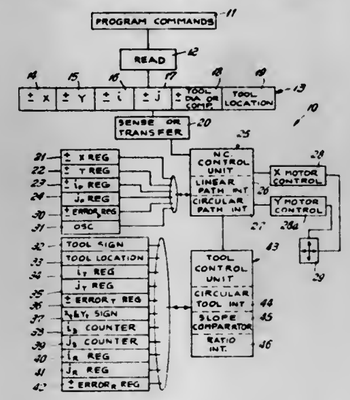
4,070,608

TWO AXES NC SYSTEM WITH TOOL OFFSET

Hermann Rosshirt, Bristol, and Robert J. Jarosik, Southbury, both of Conn., assignors to The Superior Electric Company, Bristol, Conn.

Filed Dec. 22, 1975, Ser. No. 643,180
Int. Cl.² G05B 19/24
U.S. Cl. 318—572 **21 Claims**

1. A numerical control system for producing a tool center movement along two axes that is offset a desired value from a commanded path comprising means for producing independent stepwise movement along each axis, means for accepting information of the commanded path, circular path interpolator means for determining the axis on which successive steps are to be produced for an arcuate commanded path, linear path interpolator means for determining the axis on which successive steps are to be produced for a linear commanded path, means for receiving the desired value of the offset, circular tool interpolator means for determining the axis on which successive steps should be taken for an arc having a radius equal to the desired offset value, slope comparator means for causing the tool center to be located on a line normal to the extent of the commanded path at the beginning of the commanded path and



ratio interpolator means for causing the extent of the tool center movement to be limited to that commanded by the extent of the commanded path, in which the circular tool interpolator means includes a pair of registers for maintaining the extent that the tool center is offset along each axis, an error register for determining upon actuation the axis on which the next step should be taken and means for maintaining an indication of the direction on each axis of the tool center offset and in which the slope comparator means includes means for comparing the instantaneous extent of the tool center offset with the instantaneous extent of a slope line normal to the beginning of the commanded path, means for sequentially altering either extents and means for terminating the altering when the extents are essentially equal.

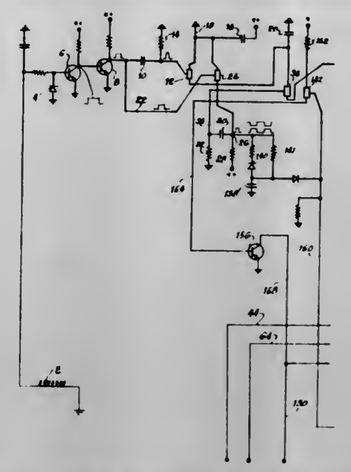
4,070,609

AUTOMATIC CONTROL SYSTEM

William J. Barrett, and Elwood J. Meyers, both of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed Jan. 2, 1975, Ser. No. 538,133
Int. Cl.² G05B 11/42
U.S. Cl. 318—609 **10 Claims**

1. In an automatic control circuit, including means for producing a signal representative of a remote condition, the improvement comprising: first means receiving a signal representative of a remote condition for deriving a direct current input signal, the average value of which is representative of the remote condition; second means for comparing said input signal with a reference signal to derive an error signal; third means for deriving a control signal which is proportional to said error signal and to the integral and derivative thereof; fourth means for deriving a feedback signal representative of the position of a controlling element; fifth means for comparing said control signal and said feedback signal; sixth means responsive to said comparing means to produce an actuating signal to cause a controlled element to assume a desired position; and seventh means for coupling the feedback signal to an input of said second means.

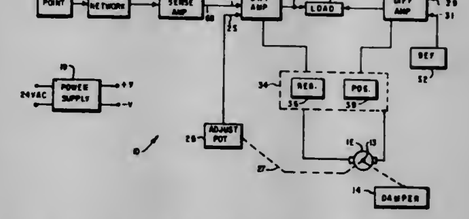


4,070,610

PROPORTIONAL MOTOR CIRCUIT

George Rudich, Jr., Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Jan. 19, 1976, Ser. No. 649,946
Int. Cl.² G05F 1/00
U.S. Cl. 318—678 **16 Claims**

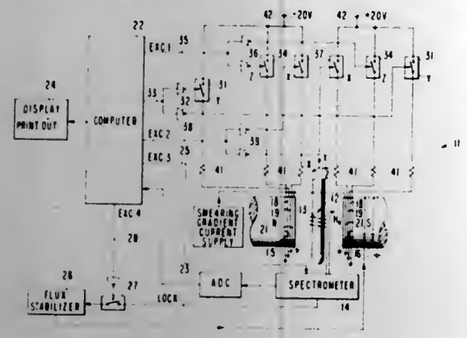


1. In a control system, a control circuit responsive to an input signal indicative of a condition being monitored for providing first and second control outputs indicating an increase or a decrease, respectively, in said input signal, said control circuit comprising sensing means responsive to said input signal to provide an error signal which varies in amplitude and polarity in accordance with changes in the condition being monitored, first differential detecting means responsive to said error signal and a first reference signal to provide a first output signal at an output thereof, second differential detecting means responsive to said first output signal and a second reference signal to provide a second output signal at an output thereof, first switching means coupled to at least said first detecting means and enabled thereby to provide said first control output whenever the output signals provided by said first and second detecting means indicate a predetermined increase in said error signal, said second switching means coupled to at least said second detecting means and enabled thereby to provide said second control output whenever the output signals provided by said first and second detecting means indicate a predetermined decrease in said error signal.

4,070,611
GYROMAGNETIC RESONANCE FOURIER TRANSFORM ZEUGMATOGRAPHY

Richard R. Ernst, Winterthur, Switzerland, assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 559,479, March 18, 1975, abandoned. This application Apr. 13, 1977, Ser. No. 787,112
Int. Cl.² G01R 33/08
U.S. Cl. 324—.5 A 28 Claims



1. In a method of pulse gyromagnetic resonance zeugmatography, the steps of:

a. inducing a transient gyromagnetic resonance signal from a sample of matter disposed in a region to be imaged by applying an RF pulse to induce a transverse magnetic moment of the sample;

b. applying for a first time period a first magnetic field gradient upon the gyromagnetic sample of matter within said region after the end of said RF pulse and during the gyromagnetic resonance induced by said pulse;

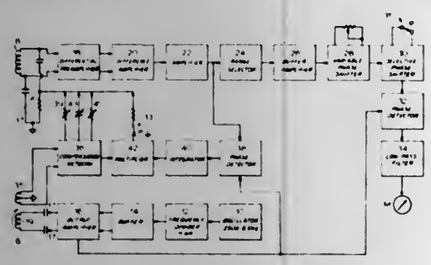
c. applying for a second time period a second magnetic field gradient relative to the said region after the end of said RF pulse and during the gyromagnetic resonance induced by said RF pulse wherein the ratio of said first time period to said second time period has a first value; and

sampling, detecting and storing the induced transient gyromagnetic resonance signal after said first time period.

4,070,612
METHOD AND APPARATUS FOR MEASURING TERRAIN RESISTIVITY

James Duncan McNeill, Mississauga; Gary George Black, Bramalea, and Miroslav Bosnar, Don Mills, all of Canada, assignors to Geonics Limited, Missauga, Canada

Filed June 2, 1976, Ser. No. 692,057
Int. Cl.² G01V 3/10
U.S. Cl. 324—6 17 Claims

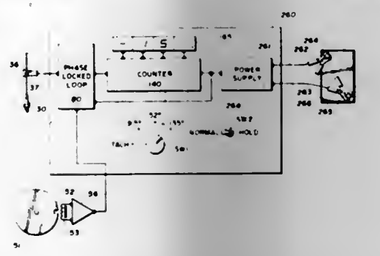


1. A direct reading terrain conductivity meter comprising a transmitter coil, a receiving coil horizontally spaced from the transmitter coil above terrain whose conductivity is to be measured, signal generating means connected to the transmitter coil to supply an alternating current thereto, signal processing means connected to receive signals from the receiver coil and the signal generating means and compare said signals so as to isolate from the signal from the receiver any component in quadrature with that from the generating means, and means linearly responsive to the amplitude of said quadrature component and calibrated to provide a direct read out of the conductivity of terrain being surveyed, the spacing D of the coils in meters and the frequency F of the alternating current in Hertz being restricted to values such that D does not substantially exceed about $50/\sqrt{FG}$ where G is the maximum terrain conductivity to be measured in mhos/meter.

4,070,613
IGNITION TIMING MEASURING APPARATUS

Brian B. Brady, Minneapolis, Minn., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Jan. 26, 1977, Ser. No. 762,741
Int. Cl.² F02P 17/00
U.S. Cl. 324—16 T 10 Claims



1. Apparatus for measuring the ignition timing of a multicylinder internal combustion engine having a rotating crankshaft, electrical signal generating means located adjacent a rotating member driven by said crankshaft to indicate when said crankshaft is in a predetermined position subsequent to the top dead center position of the crankshaft, a plurality of igniters, one for each cylinder, and means for periodically and successively energizing said igniters, said apparatus comprising:

ignition signal means adapted to be connected to that one of said igniters which is energized closest to the time at which said crankshaft is in a top dead center position to produce a first electrical signal when said igniter is energized,

reference signal means adapted to be connected to said electrical signal generating means to produce a second electrical signal when said crankshaft is in the predetermined position having a fixed relationship subsequent to the top dead center position of the crankshaft,

means to generate a pulse train having a constant number of pulses per engine revolution,

a counter connected to said pulse train generating means for counting the pulses produced thereby,

means connected to said ignition signal means for initiating said counting operation in response to said first electrical signal when said one igniter is energized regardless of whether said igniter is energized prior to or subsequent to said top dead center position,

means connected to said reference signal means for terminating said counting operation in response to said second electrical signal when said crankshaft is in said predetermined position and for maintaining said counting operation ineffective until said one igniter is again energized,

compensating means connected to said counter for compensating the operation of said counter in accordance with the reference angle between said predetermined position of the crankshaft and the top dead center position thereof,

and indicating means connected to said counter for indicating the extent and direction that the position of the crankshaft at which said one igniter is energized differs from the related top dead center position of the crankshaft.

4,070,614
MAGNETOELASTIC SHAPE METER FOR COLD-ROLLED STRIPS OF FERROMAGNETIC MATERIAL

Orvar Dahle, Vasteras, Sweden, assignor to Asea Aktiebolag, Vasteras, Sweden

Filed Jan. 22, 1976, Ser. No. 651,466
Claims priority, application Sweden, Jan. 24, 1975, 7500751
Int. Cl.² G01R 33/12
U.S. Cl. 324—209 2 Claims

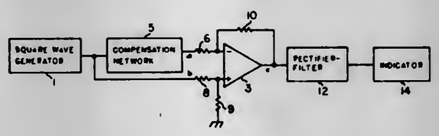


1. A magnetoelastic shape meter for cold-rolled strips of ferromagnetic material, comprising, in combination with a pair of parallel rolls, a beam positioned between said rolls and parallel thereto for mounting a plurality of magnetoelastic stress-sensing transducers, each transducer comprising two U-shaped magnetic cores provided with windings and crossing each other perpendicularly, said magnetic cores being arranged with their pole surfaces at a distance from the strip of ferromagnetic material and with said magnetic cores forming an angle of 45° with the longitudinal axis of said strip, one magnetic core being excited by alternating current for inducing a magnetic field in said strip and the other magnetic core being arranged to sense an asymmetry in said magnetic field caused by tensile stresses in said strip, wherein adjacent transducers have their excited cores rotated 90° with respect to each other, and said shape meter including means for screening the individual transducers from each other and comprising a screen of magnetic material positioned axially symmetrically around each transducer to prevent the adjacently positioned transducers from magnetically affecting each other, other than through the field in said strip and the leakage field in said strip and the leakage field in the air gap between said transducers and said strip.

4,070,615
COMPENSATION INDICATOR FOR ATTENUATION PROBE

Roland Emil Crop, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 12, 1976, Ser. No. 685,462
Int. Cl.² G01R 27/00
U.S. Cl. 324—57 R 7 Claims



5. A circuit for indicating the adjustment of a frequency-compensated attenuator probe coupled to the input circuit of an electronic instrument, comprising:

a square-wave generator;

a differential amplifier for producing a difference signal;

a first signal path from said square-wave generator through said probe and input circuit to a first input of said differential amplifier;

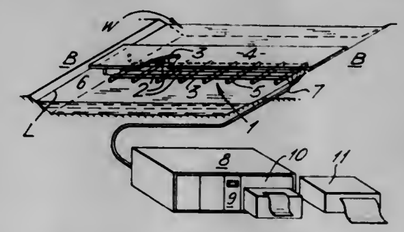
a second signal path from said square-wave generator to a second input of said differential amplifier; and

an output circuit including an indicating device connected to said differential amplifier, said output circuit developing a control voltage porportional to said difference signal to be applied to said indicating device.

4,070,616
METHOD AND APPARATUS FOR DETECTING FISH IN WATER

Bjorn Kristinsson, Tomasarhagi 21, Reykjavik, Iceland

Filed May 19, 1976, Ser. No. 687,750
Claims priority, application Iceland, May 22, 1975, 2275
Int. Cl.² G01R 27/02; G06M 11/00
U.S. Cl. 324—65 R 5 Claims



1. An apparatus for sensing the presence of fish within a volume of water by measuring the conductivity of the water, the fish having an electrical conductivity differing from that of water, the apparatus comprising at least three longitudinally extending primary electrodes positioned within the volume of water, and arranged symmetrically, a centre one of the electrodes defining in conjunction with each other electrode a conductive path through the water which forms an arm of an electrical bridge circuit the said bridge circuit further including a first coupling means to introduce an alternating current signal produced by a signal generating means, and a second coupling means at an output of which a signal is produced when the bridge arms are out of balance, second electrodes positioned adjacent two primary electrodes within the volume of water and also connected to the bridge circuit through variable attenuating means by which the bridge circuit may be set to a balance condition, the secondary electrode is further positioned in relation to the primary electrodes and water surface to reduce the affect of wave motion on the balance condition of the bridge circuit.

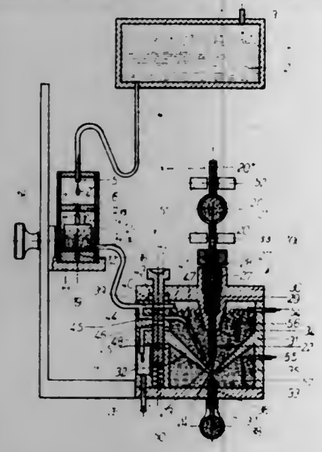
4,070,617
DEVICE FOR CONTROLLING THE PARTICLE FLOW IN AN APPARATUS FOR MEASURING THE PROPERTIES OF PARTICLES SUSPENDED IN LIQUID

Volker Kachel, Gauting, and Ewald Gloesner, Munich, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.v., Gottingen, Germany

Continuation of Ser. No. 533,657, Dec. 17, 1974, abandoned. This application Aug. 3, 1976, Ser. No. 711,224
Claims priority, application Germany, May 8, 1974, 2422119
Int. Cl.² G01N 27/07
U.S. Cl. 324—71 CP 22 Claims

1. In an apparatus for the measurement of properties of particles held in suspension including: a housing defining therein a main measuring chamber separated into a first and a

second chamber; a separating wall separating both chambers and having a measuring aperture formed therein connecting the first and second chamber, wherein the first chamber is supplied with particle-free electrolyte; means connected to the second chamber for maintaining the pressure in the second chamber below the pressure in the first chamber causing thereby the electrolyte to flow from the first chamber through the measuring aperture into the second chamber; a first electrode mounted with the first chamber; a second electrode mounted with the second chamber; and a supply capillary tube subject to the surrounding atmospheric pressure for receiving the suspension and having an outlet, said supply capillary tube being mounted to extend with its outlet into the first chamber



such that to allow the suspension to enter into the first chamber and be carried through the measuring aperture with the electrolyte, when the pressure in the supply capillary tube exceeds the pressure in the first chamber around the outlet, the improvement comprising:

a. said housing constructed to pressure isolate the first chamber from the surrounding atmosphere; and

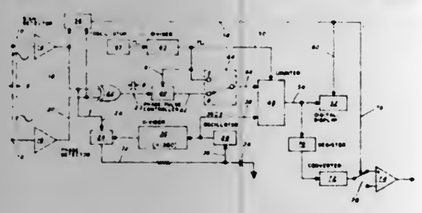
b. a source of variable pressure connected to the first chamber for providing within said first chamber a variable pressure less than atmospheric pressure and above the pressure in the second chamber to effect the flow of particles containing suspension from the supply capillary tube into the first measuring chamber.

4,070,618

DIGITAL PHASE AND FREQUENCY METER

Elmer L. Thomas, Placentia, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 14, 1976, Ser. No. 731,971
Int. Cl.² G01R *23/02*
U.S. Cl. 324—78 D **10 Claims**



1. Method of determining the phase difference between two low audio or sub-audio frequency sinusoidal voltages of identical frequency, one a test input voltage and the other a phase-shifted input voltage, comprising the steps of:

a. generating a first square wave whose vertical upgoing edges correspond to the upward-going zero crossings of said test input voltage and whose vertical downgoing edges correspond to the downward-going zero crossings of said test input voltage, and generating a second square wave whose vertical upgoing edges correspond to the upward-going zero crossings of said hase-shifted input voltage and whose vertical downgoing edges correspond to phase-shifted downgoing zero crossings of said phase-shifted input voltage, also generating a series of voltage pulses whose repetition rate is 360 times said identical frequency of said two sinusoidal voltages whose phase difference is to be measured;

b. generating from said first and second square waves a series of square pulses whose width is equal to the noncoincidence interval of said first and second square waves;

c. selecting one and only one complete noncoincidence pulse during each one of a set of succeeding time intervals, each 1/1.8 second long;

d. counting the number of degree pulses occurring throughout each selected noncoincidence pulse; and

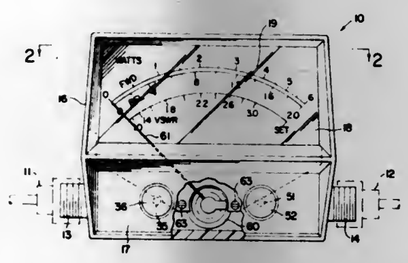
e. displaying the count as the degrees of phase difference of said measured voltages.

4,070,619

MICROSTRIP CONFIGURATION WITH INDUCTIVE PICKUP LOOP FOR VSWR METER

Ralph P. Trefney, Valley View, Ohio, assignor to Bird Electronic Corporation, Solon, Ohio

Filed Feb. 14, 1977, Ser. No. 768,078
Int. Cl.² G01R *27/04*
U.S. Cl. 324—95 **3 Claims**



1. In an instrument for detecting and measuring directional RF voltage wave levels on a coaxial transmission line having a tubular outer conductor and a coaxial inner conductor, said instrument being adapted to be inserted in the line and having a D'Arsonval meter movement, the improvement which comprises:

a microstrip circuit board with a ground plane conductive layer on one surface in electrical contact with the ends of said tubular outer conductor and a conductive path printed on the other surface thereof connected to the ends of said coaxial inner conductor, said conductive path having a circular loop portion formed therein,

an inductive sensing loop printed on said other surface within and coaxial with said loop portion of said conductive path and closely spaced thereto for sensing the RF voltage wave level on said transmission line,

circuit means between said sensing loop and said meter movement to process the signal sensed by said sensing loop, and

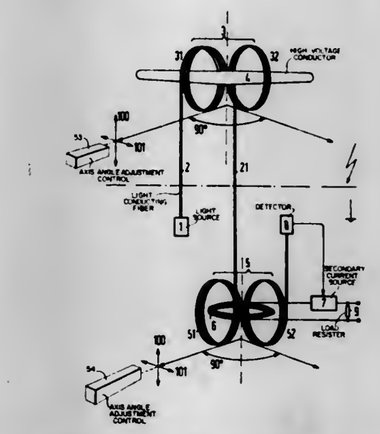
rotary switch means operationally associated with said microstrip circuit board and having a first position wherein said sensing loop is connected to said circuit means to sense the forward voltage wave on said transmission line and a second position wherein said sensing loop is connected to said circuit means to sense the reflected voltage wave on said transmission line.

4,070,620

MAGNETO-OPTICAL HIGH-VOLTAGE CURRENT MEASURING TRANSDUCER

Ernst Feldtkeller; Hauke Harms, and Alfred Papp, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 9, 1976, Ser. No. 712,759
Claims priority, application Germany, Sept. 15, 1975, 2541072
Int. Cl.² G01R *31/00*
U.S. Cl. 324—96 **7 Claims**



1. A magneto-optical measuring transducer for measuring high-voltage currents carried by a high-voltage conductor, comprising:

a. a measuring sensing element adjacent the high-voltage conductor to be measured, said sensing element being designed as a light conducting coil means, the polarization plane of linearly polarized light therein being rotated in dependence upon the strength of a magnetic field produced by the currents to be measured, such rotation being related to the current being measured; and

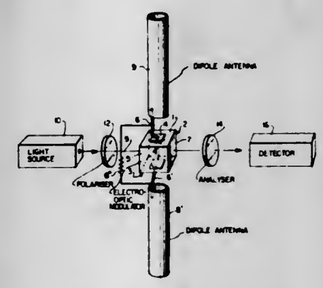
b. said light conducting coil means comprising at least one pair of similar and adjacent light conducting coils whose axes are at approximate right angles to one another.

4,070,621

ANTENNA WITH ELECTRO-OPTICAL MODULATOR

Howard I. Bassen, North Chevy Chase, and Richard Peterson, Rockville, both of Md., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed July 23, 1976, Ser. No. 708,008
Int. Cl.² G01R *31/00*
U.S. Cl. 324—96 **17 Claims**



1. A wideband, passive detector of electromagnetic fields comprising:

an electro-optic modulator having first and second surfaces with electrodes attached thereto and third and fourth surfaces intersecting an optical path;

an antenna means having a first electrode connected to said first electrode of said modulator and a second electrode connected to said second electrode of said modulator for converting electromagnetic fields intercepted to a voltage signal to be applied to said first and second electrodes of said modulator;

a light source located above said optical path, for transmitting light into said modulator through said third surface;

said modulator modulating the light entering through said third surface, as it traverses said modulator, with said voltage signal impressed upon said first and second surfaces by said antenna means; and

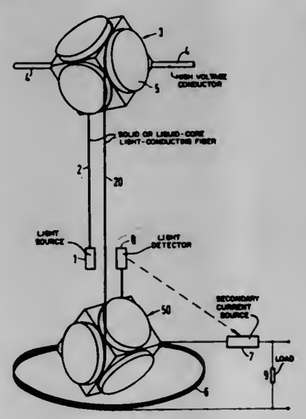
a detector means located along said optical path for detecting said modulated light along said optical path as it exits from said modulator through said fourth surface whereby weak electromagnetic fields may be detected in free space with a negligible perturbation.

4,070,622

MAGNETO-OPTICAL HIGH VOLTAGE CURRENT MEASURING TRANSDUCER

Hauke Harms, and Ernst Feldtkeller, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 10, 1976, Ser. No. 721,949
Claims priority, application Germany, Sept. 26, 1975, 2543134
Int. Cl.² G01R *31/00*
U.S. Cl. 324—96 **11 Claims**



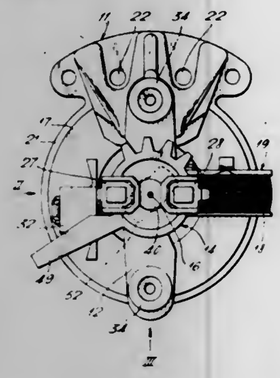
1. A magneto-optical transducer for measuring high-voltage currents carried by a high-voltage conductor, comprising a measuring sensing device having a light-conducting coil means formed by a light-transmitting conductor, said coil means being divided into a plurality of similar coil elements, each of which is less in circumferential length than a single complete coil turn of said light-transmitting conductor, each of said elements being disposed in a plane of curvature extending at right angles to the plane of an adjacent element, with such elements following one another in the propagation direction of the linearly polarized light, said coil means being so disposed, with respect to such a high-voltage conductor, that it will be positioned in the magnetic field created by current flowing therein, whereby linearly polarized light, supplied to the light-transmitting conductor, will have the polarization plane thereof rotated in dependence upon the strength of said magnetic field.

4,070,623

MOVING-COIL ELECTRICAL INSTRUMENTS WITH BEARING STRUCTURE

Maurice Dingley, Sutton, England, assignor to Smiths Industries Limited, London, England

Filed Feb. 10, 1976, Ser. No. 657,004
Claims priority, application United Kingdom, Feb. 12, 1975, 5859/75
Int. Cl.² G01R 5/02, 1/10
U.S. Cl. 324—150 17 Claims



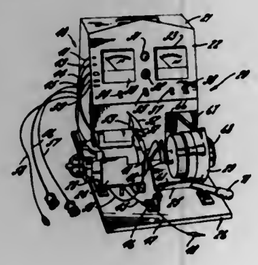
1. A moving-coil electrical instrument comprising a frame member defining a pair of aligned apertures, a spindle, a pair of bearings mounted in said apertures, respective ends of said spindle being rotatably mounted in said pair of bearings, one of said bearings having a part mounted in the respective said aperture of the frame member for movement between first and second angular positions about the axis of said spindle, the said one bearing having a supporting surface against which bears the respective end of said spindle, an electric coil, means mounting said electric coil on said spindle for angular displacement about the axis thereof, a core member of a magnetic circuit embraced by said coil, and means engageable by said part of said one bearing to constitute a bayonet mounting to mount the said part in the respective said aperture when in said first angular position with the said supporting surface located at a predetermined and fixed position within said one bearing and to permit removal of the said part from the respective said aperture when in said second angular position.

4,070,624

APPARATUS FOR TESTING STARTERS AND ALTERNATORS

Clifford Taylor, Chicago, Ill., assignor to American Generator & Armature Co., Chicago, Ill.

Filed July 26, 1976, Ser. No. 709,001
Int. Cl.² G01R 31/02
U.S. Cl. 324—158 MG 2 Claims



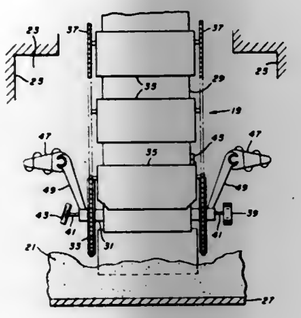
1. Test apparatus for rotating electrical machinery used in motor vehicle electrical systems comprising in combination, a first fixture for receiving an alternator to be tested, a motor having a drive belt for engaging a drive pulley of the alternator positioned in said fixture, said fixture having manually operable pivoting means for locking said alternator in said fixture and tensioning said belt, a second fixture for receiving a starter to be tested and operable to hold said starter during said test, and electrical circuitry for testing said machinery, electrical leads connected to said circuitry and having terminals thereon for connection to a starter or alternator to be tested, said circuitry including means for connection to a battery for testing said starter, means for energizing the field of said alternator for test, indicators for showing the condition of said machinery under test, and switch means for interlocking said circuitry having a first condition for enabling the testing of alternators while disabling the testing of starters, and a second condition for enabling the testing of starters while disabling the testing of alternators, whereby said rotating electrical machinery may be efficiently inserted, connected, tested and removed providing an indication of the operability thereof, said second fixture comprising a pair of substantially right angle channel sections independently pivoted to form a segmented lower surface enclosed by a pair of upstanding surfaces for receiving said starter, said pivots being located in the respective segments of the lower surface so that positioning a starter in said fixture causes said upstanding surfaces to pivot toward each other thereby to embrace said starter holding the same in position, said pivots being offset from the center of gravity of the associated channel member so that the fixture is automatically biased to an open position when said starter is removed, said alternator being of the type including a mounting flange, said first fixture including a post for slidably receiving said mounting flange and at least one supporting surface for supporting a portion of the alternator case when positioned on said post, said first fixture further including handle means for pivoting said fixture about a center offset from said post whereby said alternator is pivoted to tension said belt and force the case thereof against said supporting surface.

4,070,625

APPARATUS FOR MEASURING THE DISTANCE TO THE FLOOR OF THE CARGO HOLD OF A SHIP THROUGH INTERVENING BULK MATERIAL

Joseph W. Harpster, Galena, Ohio, assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Sept. 14, 1976, Ser. No. 723,066
Int. Cl.² G01R 33/12
U.S. Cl. 324—239 13 Claims



1. Apparatus for measuring the distance to the floor of a large magnetically permeable container such as the cargo hold of a ship through intervening bulk material including a dipole field generating magnetic field radiator, a dipole field sensitive receiver antenna, said field radiator and receiver antenna being displaced from one another in a direction parallel to the floor of the cargo hold by a distance d at least equal to the dimensions of the radiator with the axis of the field of one parallel to the floor of the cargo hold and displaced therefrom a distance D which distance is the same order as d and with the axis of the field of the other intersecting and perpendicular to the axis of the field of the first and substantially perpendicular to the floor of the cargo hold, and

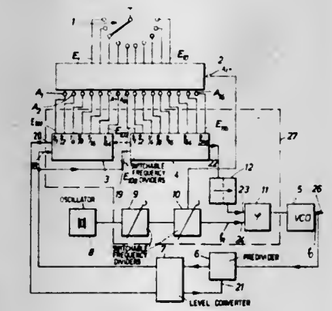
a receiver circuit connected to the receiver antenna including a log converter for generating from the perturbations in said magnetic field produced by the magnetically permeable floor of the cargo hold and detected by the receiver antenna, a signal proportional to the distance D.

4,070,626

RADIO TELEPHONE WITH CHANNEL SWITCH

Anton Binder; Manfred Franke, and Siegfried Gärtner, all of Berlin, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 25, 1977, Ser. No. 772,293
Claims priority, application Germany, Feb. 27, 1976, 2607992
Int. Cl.² H04B 1/54
U.S. Cl. 325—17 15 Claims



1. In a radio telephone unit including a channel switch for tuning the instrument to one radio channel of a certain number of given radio channels, where each radio channel has associated with it a discrete oscillator frequency, the unit further including a phase locked loop oscillator circuit containing a signal controllable frequency divider means having a plurality of control inputs and arranged to have a dividing ratio determined by the control inputs to which signals are being applied, the oscillator circuit producing oscillations at the discrete oscillator frequency of any selected channel, the improvement wherein said channel switch is constituted by a single pole switch having a plurality of fixed contacts and a movable contact disposed for connecting any one of said fixed contacts to a source of a fixed reference potential, and said unit further comprises a matrix circuit having a plurality of inputs each connected to a respective fixed contact of said switch, a plurality of outputs each connected to a respective control input of said frequency divider means, and interconnection means disposed between said inputs and outputs and permanently programmed before the first use of said unit for causing a respectively different signal pattern to appear at said outputs of said matrix circuit in response to each switching position of said channel switch.

4,070,627

DOUBLE TUNED INPUT CIRCUIT FOR TELEVISION TRANSMITTER AMPLIFIER

Joseph Richard Jasinski, Shillington, Pa.; James Bruce Pickard, Quincy, Ill., and Claude Edward Doner, New Providence, Pa., assignors to RCA Corporation, New York, N.Y.

Filed June 3, 1976, Ser. No. 692,547
Int. Cl.² H04B 1/04; H04N 5/14, 5/38; H03F 3/60
U.S. Cl. 325—127 4 Claims

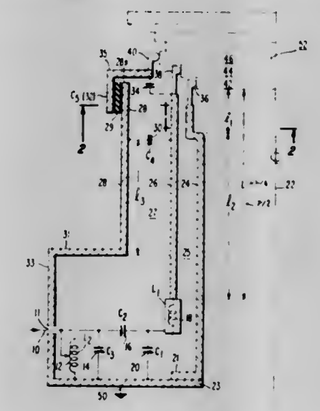
4. An input circuit for a very high frequency low band television linear amplifier comprising:

a. an electron tube having at least a cathode, a control grid and a screen grid,

b. a transmission line means having first, second, and third coaxial members one end of said first member coupled to said cathode, one end of said second member coupled to said control grid, one end of said third member coupled to said screen grid, and the other end of said third member coupled to ground,

c. a double tuned circuit means including the other ends of said first and second members of said transmission line, the length of the portion of said first member from said cathode to the other end of said second member is determined such that the electrical length is greater than a quarter wavelength ($>\lambda/4$) and less than a half wavelength ($<\lambda/2$) over said low band,

and a capacitance connected between said second and third members at a predetermined distance from said control grid such that the cavity formed by said members is parallel resonated at a frequency which is substantially the mid point of said low band.

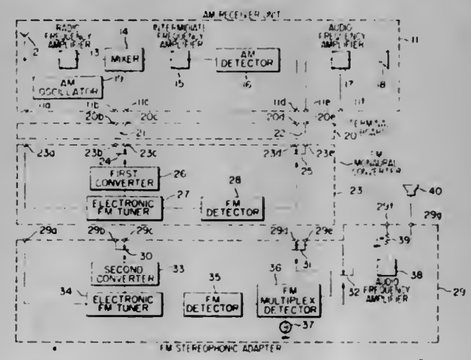


4,070,628

RADIO RECEIVER WITH SELECTIVE PLURAL BAND RECEPTION

Toshihisa Funabashi, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 17, 1976, Ser. No. 667,563
Claims priority, application Japan, Mar. 20, 1975, 50-34141
Int. Cl.² H04B 1/16
U.S. Cl. 325—316 4 Claims

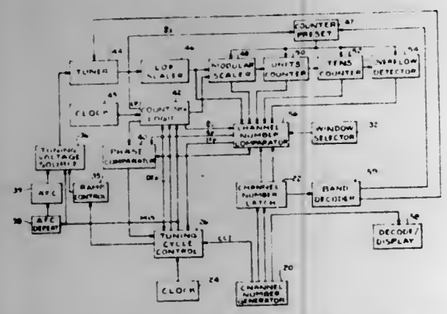


2. A radio receiver comprising:

a cabinet containing a radio receiver circuit capable of re-

ceiving a first band of frequencies and including a tunable oscillator and a speaker;
a series of contacts coupled to said receiver for coupling said oscillator and speaker to an adapter capable of receiving a second band of frequencies,
said adapter having frequency sensitive tuning means and a detection circuit;
said cabinet having means for accommodating said adapter in selectively removable fashion such that, when said adapter is installed, said tuning means is coupled to said oscillator via one or more of said contacts and controlled thereby, and said detection circuit is coupled to said speaker via one or more of said contacts.

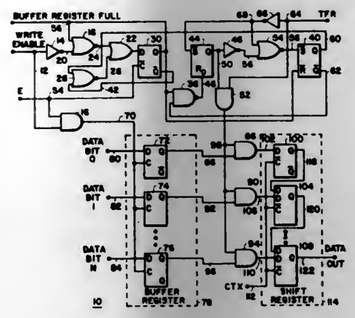
4,070,629
HIGH SPEED TUNING SYSTEM
Richard G. Merrell, Darien, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.
Filed Oct. 21, 1976, Ser. No. 734,483
Int. Cl.² H04B *1/16*
U.S. Cl. 325—453 **8 Claims**



1. An all-electronic tuning system for rapidly tuning to any television channel by channel number comprising:
a tuner including a voltage controllable oscillator;
ramp means capable of supplying tuning voltage to said oscillator for adjusting system tuning at a normal rate and at a second higher rate;
counting means deriving channel tuning information by interrogation of the frequency of said oscillator;
channel number selection means for generating desired channel tuning information;
channel information comparison means comparing derived channel tuning information with desired channel tuning information and controlling operation of said ramp means at said normal rate in accordance with the result of the comparison; and
tuning cycle control means, for initially controlling said ramp means to drive said tuner at said higher rate until system tuning is driven past the frequency corresponding to the desired channel number at which time said comparison means assumes control of said ramp means at said normal rate.

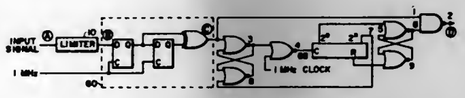
4,070,630
DATA TRANSFER SYNCHRONIZING CIRCUIT
Edward Clare Hepworth, Austin, Tex., and Rodney Jerome Means, Tempe, Ariz., assignors to Motorola Inc., Schaumburg, Ill.
Filed May 3, 1976, Ser. No. 682,822
Int. Cl.² H03K *1/17, 5/13*
U.S. Cl. 328—63 **10 Claims**

1. A digital logic circuit for synchronizing the transfer to data between asynchronously clocked data systems comprising:
a. a first register coupled to a source of data,
b. a second register coupled to said first register,
c. first control means for selectively enabling the loading of data from said source of data into said first register, said first control means comprising a first flip-flop, one state of which denotes that data is available for transfer from said first register to said second register,
d. second control means for selectively enabling the transfer of data from said first register to said second register,



e. third control means for enabling the transfer of data from said second register to an output,
f. said third control means including further means for inhibiting said first and second control means until completion of the transfer of data from said second register.

4,070,631
DIGITAL NOISE BLANKING CIRCUIT
Harold Garth Nash, Tempe, and Jack Whitmore, Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.
Division of Ser. No. 641,453, Dec. 17, 1975. This application Nov. 26, 1976, Ser. No. 745,020
Int. Cl.² H04B *15/04*; H03K *5/153*
U.S. Cl. 328—165 **2 Claims**

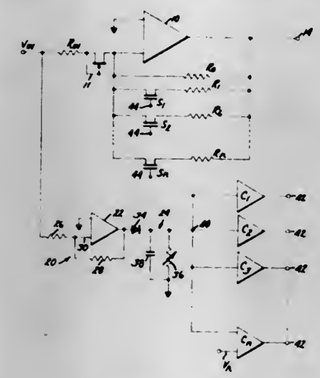


1. A digital noise blanking circuit for converting a noisy time domain input signal into a series of transitional pulses comprising:
a. first means for converting the zero axis crossings of the noisy input signal into clusters of transitional pulses,
b. second means for generating a single transitional pulse for each of the clusters of transitional pulses,
c. said second means including:
1. logic circuit means; and
2. N-stage counter means coupled to said logic circuit means for generating a single transitional pulse in response to each cluster of transitional pulses.

4,070,632
DISCRETE-GAIN OUTPUT LIMITER
John R. Tuttle, 9116 Orlando Place N.E., Albuquerque, N. Mex. 87111
Filed Sept. 22, 1976, Ser. No. 725,464
Int. Cl.² H03F *1/36*; H03G *3/20*
U.S. Cl. 330—86 **7 Claims**

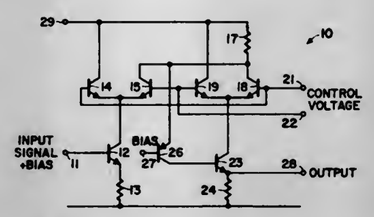
1. A discrete-gain amplifier having an input, an output, and a gain control circuit, the improvement in the gain control circuit comprising:
a. means for continuously monitoring the input voltage to the amplifier and producing continuous control voltage output; and

b. means for incrementally varying the gain of the amplifier in response to changes in said control voltage output, said means for incrementally varying the gain further comprising:
a plurality of resistors connected in parallel between the input and output of the amplifier;
switch means in series with each resistor for selectively connecting said resistor between the input and output of the amplifier;
a plurality of voltage comparators each having one input



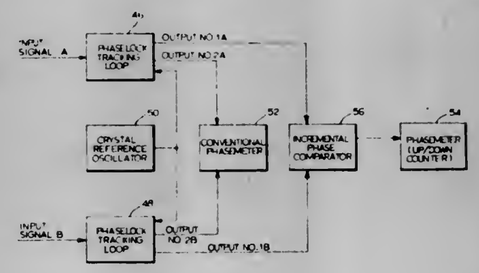
connected to the output of said voltage monitoring means, a second input connected to a reference voltage, and an output, said comparator generating a signal on said output when said control output exceeds said reference voltage; and
means for connecting said output of each of said comparators to a different one of said switch means, whereby a resistor is connected between the input and output of the amplifier to vary the amplifier feedback resistance when said control voltage output exceeds a predetermined reference voltage.

4,070,633
REMOTE CONTROLLED AMPLIFIER
Michael John Gay, Geneva, Switzerland, assignor to Motorola Inc., Schaumburg, Ill.
Filed Mar. 10, 1977, Ser. No. 776,332
Int. Cl.² H03G *3/30*
U.S. Cl. 330—254 **6 Claims**



1. A circuit capable of amplifying more than one signal, comprising: first means for amplifying a first signal and having a gain that is variable in response to a control signal; second means for amplifying a second signal and having a gain that is variable in response to the control signal; a differential amplifier to provide the control signal for balancing the gain between the first and second means; and an amplifier coupled in parallel with the differential amplifier for controlling magnitude of the control signal for the first and second means, so that the control signal can provide gain control for the first and second means and gain balance between the first and second means.

4,070,634
PHASE COMPARISON SYSTEMS EMPLOYING IMPROVED PHASELOCK LOOP APPARATUS
A. Clifford Barker, and Edmund S. Zavada, both of Hampton, Va., assignors to Navidyne Corporation, Hampton, Va.
Division of Ser. No. 479,996, June 17, 1974, Pat. No. 3,931,585. This application Oct. 2, 1975, Ser. No. 618,778
Int. Cl.² H03B *3/04*
U.S. Cl. 331—2 **17 Claims**

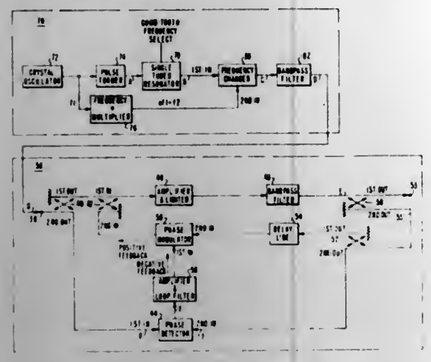


1. A phase comparison system comprising a pair of phase lock loops responsive to first and second input signals, respectively, and means for comparing corresponding output signals of said phase lock loops, each phase lock loop comprising:
means for producing an error signal representative of the phase difference between an input signal and a reference signal;
means responsive to said error signal for generating a signal having a frequency which varies in accordance with said phase difference;
means for generating a pulse train signal having a pulse repetition frequency which is orders of magnitude higher than the frequency of said variable-frequency signal; and
means for deriving said reference signal from said variable-frequency signal and said pulse train signal, said deriving means including a pulse deletion circuit which deletes pulses from said pulse train signal in response to said variable-frequency signal.

4,070,635
DELAY LINE OSCILLATOR WITH PHASE LOCKED LOOP FOR REDUCING PHASE FLUCTUATIONS
Daniel J. Healey, III, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 28, 1976, Ser. No. 691,163
Int. Cl.² H03B *3/04, 5/00*
U.S. Cl. 331—19 **21 Claims**

1. A method for generating a frequency signal with low phase fluctuations comprising the steps of:
a. generating an input signal with low phase fluctuations;
b. generating an output signal in accordance with a first portion of said input signal and a second feedback signal coupled together;
c. generating a delayed feedback signal derived from said output signal, said delayed feedback signal having the same frequency as said output signal;
d. generating a first signal indicative of the phase difference between a second portion of said input signal, and said output signal; and
e. modulating the phase of said delayed feedback signal in

accordance with said first signal to generate said second feedback signal



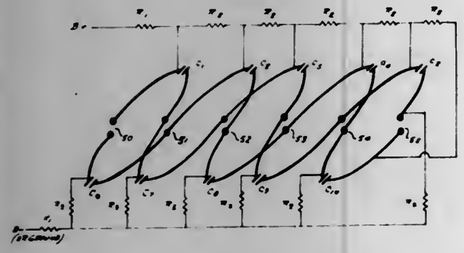
whereby the phase fluctuations of said output signal are substantially reduced due to the presence of said second feedback signal.

4,070,636

PLURAL LOOP SPARK GAP RF PULSE RADIATION CONVERTER

Paul Van Etten, Clinton, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 24, 1976, Ser. No. 744,499
Int. Cl.[2] H03B *11/02*
U.S. Cl. 331—127 5 Claims



1. A high-power, short-pulse array comprised of loops, each connected sequentially in a series arrangement from first to last to radiate in phase, each of said loops having a predetermined inductance, a spark gap from first to last for each of said loops, a charging circuit for each of said loops, and means to apply a high voltage to each of said charging circuits causing the first spark gap to fire with the resulting waveform firing the next spark gap until the firing of the last spark gap to sequentially fire each of said spark gaps thereby providing from said loops radiated waveforms in the form of RF pulses.

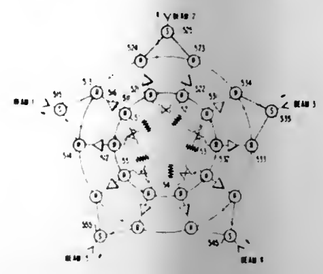
4,070,637

REDUNDANT MICROWAVE CONFIGURATION

Francois Tsvi Assal, Bethesda, Md.; Cristoph Erhardt Mahle, Washington, D.C., and Arnold Berman, Kensington, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Mar. 25, 1976, Ser. No. 670,290
Int. Cl.[2] H01P *1/12*
U.S. Cl. 333—7 R 11 Claims

1. A redundant microwave configuration providing a highly flexible routing of a plurality of inputs to a plurality of outputs consisting of two switching layers wherein each switching layer comprises a plurality of four port switches and the switches in at least one of the switching layers are connected in a ring with corresponding switches in the two switching layers being interconnected, the switches which are connected in a



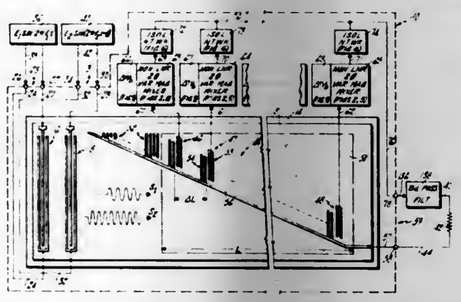
ring being of the type wherein each port can be selectively and exclusively connected to each other port.

4,070,638

NONLINEAR SURFACE ACOUSTIC WAVE PSK ENCODER/CORRELATOR

Thomas Macklin Reeder, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 14, 1976, Ser. No. 676,836
Int. Cl.[2] H03H *7/28, 9/26, 9/02, 9/32*
U.S. Cl. 333—30 R 9 Claims



1. A nonlinear surface acoustic wave, phase shift key (PSK) encoder/correlator apparatus, for providing encoding and correlation of a pair of electrical signals of different determined frequency provided by a signal source, comprising:

a nondispersive surface acoustic wave delay line including, a piezoelectric substrate having a major surface, a pair of signal launching transducers disposed on said major surface, each responsive to the pair of electrical signals, and each providing surface acoustic waves in said substrate at a frequency in dependence on a respective one of said electrical signals, said delay line further including a plurality of transducer taps disposed in an interaction region of said major surface, each providing a plurality of sensed electrical signals in response to surface acoustic waves impinging thereon in said interaction region, said sensed signals including electrical signals at the frequency of each of said acoustic waves;

a plurality of nonlinear frequency mixer means, each responsive to said sensed electrical signals from a corresponding one of said transducer taps, and each having a nonlinear signal transfer characteristic in each of two quadrants displaced by one hundred eighty degrees, each of said mixer means providing, in either of said quadrants, alternatively, signal manifestations of the sum and difference frequency of the surface acoustic waves impinging on the tap; and

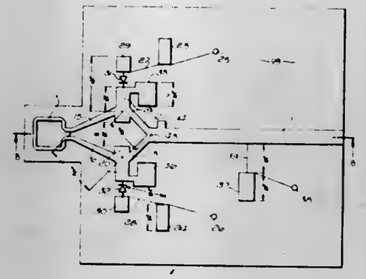
summing means, responsive to the signal manifestations from each of said nonlinear frequency mixer means, for providing a summation thereof.

4,070,639

MICROWAVE 180° PHASE-BIT DEVICE WITH INTEGRAL LOOP TRANSITION

Jeffrey T. Nemit, Canoga Park, and Bobby J. Sanders, Pacoima, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 30, 1976, Ser. No. 755,630
Int. Cl.[2] H01P *1/18, 1/15*
U.S. Cl. 333—31 A 10 Claims



1. An integral device including a 180° selective microwave phase bit device and transitional coupling operative between waveguide and a second transmission line medium, comprising:

a conductive loop in a plane orthogonal with respect to the longitudinal axis of said waveguide, said plane being located to place said loop within said waveguide to provide magnetic coupling between said loop and the energy within said waveguide;

said loop being connected to provide a first port for said device;

means providing a second port in said second transmission line medium, said phase bit device being operatively connected between said first and second ports;

at least a first control terminal for receiving at least a first control signal;

and a microwave energy switching arrangement within said phase shifter, responsive to said first control signal to establish a first direction of current flow in said loop in response to the microwave signal at said second port for a first condition of said control signal and a second direction of current flow in said loop for a second condition of said control signal.

4,070,640

HIGH RESOLUTION TORODIDAL DEFLECTION YOKE

Charles E. Torsch, Geneva, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 7, 1977, Ser. No. 785,651
Int. Cl.[2] H01F *7/00*
U.S. Cl. 335—213 10 Claims

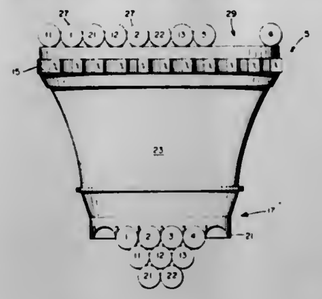
1. A deflection yoke for a cathode ray tube comprising:

a core member of magnetic material having a front end, a back end and a longitudinal axis;

a front crown member affixed to said front end of said core member and having a substantially flat surface normal to said longitudinal axis and parallel to said front end of said core member and an outer circumferential surface substantially parallel to said longitudinal axis and having a plurality of slots therein;

a back crown member affixed to said back end of said core member and having a plurality of slots on at least the surface normal to said longitudinal axis, said back crown member and said front crown member having a slot ratio of about 1:3; and

a plurality of wire turns toroidally wrapped about said core and first and second crown members, said wire turns being positionally located to provide a single layer of wire turns at said front end of said core member with not more than one wire turn in a slot of said front crown member and a plurality of layers of wire turns at said back crown member with said slots of said back crown member each supporting a first layer wire turn and adjacent wire turns supporting layers other than the first layer or wire turns.

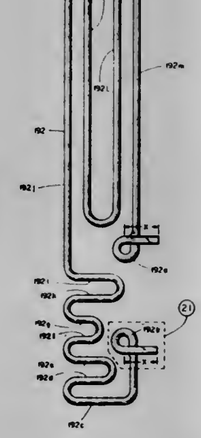


4,070,641

CURRENT LIMITING CIRCUIT BREAKER

Joseph M. Khalid, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Continuation-in-part of Ser. No. 465,012, April 29, 1974, Pat. No. 3,943,473. This application Jan. 9, 1976, Ser. No. 647,823
Int. Cl.[2] H01C *3/02*
U.S. Cl. 338—61 3 Claims



1. A current limiting resistor comprising:

a wire of a material having a positive temperature coefficient of resistance, the wire being circular in cross-section for the greater portion of its length and having blowout preventive terminal end means,

said blowout preventive terminal means including intermediate terminal means for electrical connection between said resistor and conductor means, said resistor having relatively high resistivity, said conductor means having relatively lower resistivity, said intermediate terminal means having resistivity intermediately between that of said resistor and that of said conductor means,

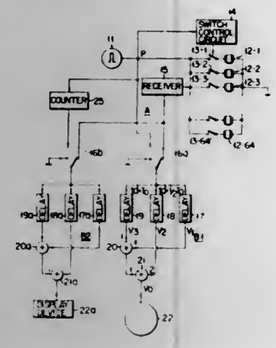
said wire comprising said resistor is substantially pure iron, said intermediate terminal means is a terminal member of copper clad stainless steel, said terminal member being welded to an end portion of said resistor.

4,070,642

ULTRASONIC WAVE TRANSMITTING AND RECEIVING APPARATUS

Kazuhiro Iinuma, and Kinya Takamizawa, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed June 24, 1976, Ser. No. 699,368
Claims priority, application Japan, June 24, 1975, 50-78052
Int. Cl.[2] G01S 9/66
U.S. Cl. 340—1 R 8 Claims



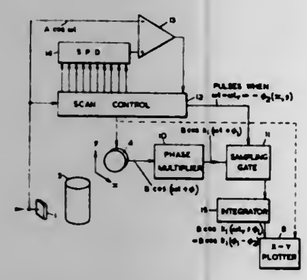
1. An ultrasonic wave transmitting and receiving apparatus comprising transmitting means including a plurality of electro-acoustic transducing elements for transmitting ultrasonic wave pulses having a definite period toward an object to be examined, receiving means arranged to receive ultrasonic wave pulses reflected by said object through said electro-acoustic transducing elements for producing corresponding electric signals, switch means having an ON-OFF state including a switch control means for controlling the ON-OFF state of the switch means for selectively passing a predetermined part of said electric signals produced by said receiving means, and a signal converting circuit including a plurality of delay circuits for dividing the electric signals passing through said switch means into a plurality of signals and for applying a predetermined weight of delay times to said divided signals and means for adding together the outputs from said delay circuits at a predetermined ratio and combination.

4,070,643

ACOUSTIC HOLOGRAPHY APPARATUS

David Trevor Green, Banbury, England, assignor to National Research Development Corporation, London, England

Filed June 22, 1976, Ser. No. 698,779
Claims priority, application United Kingdom, June 26, 1975, 27189/75
Int. Cl.[2] G01S 9/66
U.S. Cl. 340—5 H 12 Claims



1. Acoustic holography apparatus comprising:

acoustic transmitter means for insonifying an article or object for examination,

an acoustic receiver transducer for detecting acoustic signals from the acoustic transmitter means which have passed by or through the said article or object or have been diffracted or reflected therefrom,

scanning means for producing a displacement of the acoustic receiver transducer relative to the object,

sampling means for taking substantially instantaneous samples of the amplitude of a signal derived from the acoustic receiver transducer at instants selected relative to the phase of the signal transmitted by the acoustic transmitter means, the selected instants being dependent on the current position of the receiver transducer and being determined according to the phase of a chosen notional reference wave at the current position of the receiver transducer relative to the phase of the chosen notional reference wave at a datum point, and

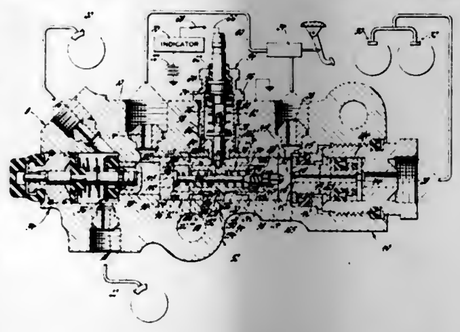
plotting means for plotting the samples taken by the sampling means versus the displacement of the acoustic receiver transducer so as to form a graphical diagram representing an acoustical hologram of the object.

4,070,644

FAILURE WARNING SWITCH ACTUATOR WITH AUTOMATIC RESET AND PROPORTIONER OVERRIDE

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1976, Ser. No. 678,909
Int. Cl.[2] B60T 8/26, 11/34, 17/22
U.S. Cl. 340—52 C 3 Claims



2. A combination valve assembly for a dual circuit brake system having a front brake pressurizing circuit and a rear brake pressurizing circuit, said valve assembly comprising:

a failure warning section having axially relatively movable first and second pistons with said first piston being responsive to brake pressure in the front brake pressurizing circuit and said second piston being responsive to brake pressure in the rear brake pressurizing circuit, a shuttle member intermediate said pistons and biased toward an axially centered position therebetween, and switch means actuated by a predetermined axial movement of said shuttle member to close an indicating circuit, said shuttle member predetermined axial movement occurring upon a pressure loss in either one of said circuits;

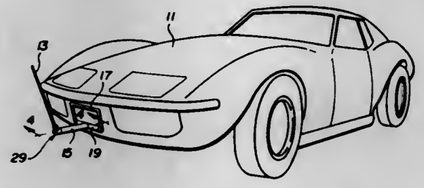
and a rear brake actuating pressure proportioning section having a differential area responsive proportioning piston including an annular valve seat, a proportioning valve element cooperable with said valve seat to define therewith a proportioning valve, and a valve stem having said valve element thereon, said valve stem being operatively attached to said first piston to be axially moved thereby so that said valve element is moved into proportioning position relative to said valve seat at and above a predetermined pressure in both brake circuits, is moved to engage and close said annular valve seat when the brake system is actuated and a pressure loss occurs in said rear brake pressurizing circuit, and is moved axially away from said annular valve seat to override the proportioning action and permit unproportioned rear brake actuating pressure to pass through said assembly when the brake system is actuated and a pressure loss occurs in said front brake pressurizing circuit.

4,070,645

SELF CONTAINED UNIVERSAL FRONT END PROTECTOR

Jerome Allan Oreluk, 3156 S. Racine, Chicago, Ill. 60608

Filed Nov. 18, 1976, Ser. No. 742,749
Int. Cl.[2] H01H 3/16
U.S. Cl. 340—52 H 8 Claims



1. Apparatus for use with a moving vehicle or parked vehicle to automatically alert the operator of said moving vehicle to an impending collision between said moving vehicle and said parked vehicle, said apparatus comprising:

means selectively actuable to emit a perceptible alarm signal;

means including a switch coupled to said alarm means for selectively enabling said alarm means, said switch having push-button actuator means for opening and closing said switch;

a wand;

means mounted to one of said vehicles and extending outwardly therefrom to support said wand;

means for pivotably coupling said wand to said support means, said coupling means comprising a yoke coupled to said support means and means including a tongue member coupled to said wand, said yoke having a pair of horizontally displaced finger members extending outwardly from said support means and said tongue being positioned between said yoke finger members, said coupling means including a pin for pivotably coupling said tongue to said yoke finger members so that said wand extends in a generally vertical direction at a predetermined distance from said one vehicle,

said switch being mounted in said yoke with said push-button actuator extending outwardly between said yoke finger members to selectively engage said tongue; and

means for biasing said tongue to a quiescent position relative to said push-button actuator means where said switch is open-circuited, said switch being close-circuited to enable said alarm means whenever said wand is moved responsive to encroachment by said moving vehicle to within said predetermined distance of said parked vehicle.

4,070,646

PULSE ERROR DETECTOR

Tommy L. Sandlin, Irving, Tex., assignor to Communication Mfg. Co., Long Beach, Calif.

Filed June 25, 1976, Ser. No. 699,619
Int. Cl.[2] H03K 5/18; G06F 11/00
U.S. Cl. 340—146.1 AB 8 Claims

1. An error detector for received pulses which pulses normally alternately extend in opposite directions, comprising:

a resettable up-down counter having first, second, third and fourth sequential states;

means for forming an error signal when said counter is in either said first or fourth state;

means for resetting said counter to one of said second and third states after said counter reaches either said first or fourth state; and



means for receiving said pulses and for causing said counter to count up a state responsive to a pulse of one direction and for causing said counter to count down a state responsive to a pulse of the other direction.

4,070,647

ERROR MEASUREMENT FOR DIGITAL SYSTEMS

Stephen Ronald Robson, Chelmsford, England, assignor to The Marconi Company Limited, England

Filed Apr. 9, 1976, Ser. No. 675,694
Claims priority, application United Kingdom, Apr. 11, 1975, 15091/75
Int. Cl.[2] G06F 11/00
U.S. Cl. 340—146.1 AX 8 Claims

1. A method of determining the number of samples in which the error rate in a bit stream exceeds 1 in N, where N is a predetermined sample size, by the steps of detecting the occurrence of an error in the bit stream, counting the number of bits from each error to the next, evaluating for each sequence (i) of errors in which no three consecutive errors span more than (N + 1) bits, the sum

$$S_i = N - a_1 + \sum_{j=1}^{j=m-2} a_j$$

where

a_j = the number of bits from the jth error to the $(j + 1)$th error in the sequence, and

m = the number of errors in the sequence, and generating the cumulative sum

$$S_T = \sum_i S_i$$

4,070,648

COMPUTER TO COMPUTER COMMUNICATION SYSTEM

Barry M. Mergenthaler, and Wesley D. Dickover, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed June 18, 1976, Ser. No. 697,796
Int. Cl.[2] G08C 25/02; G06F 11/08
U.S. Cl. 340—146.1 BE 16 Claims

1. A method for detecting data transmission errors when data is transferred from a first data processing means to a second data processing means, comprising the steps of:

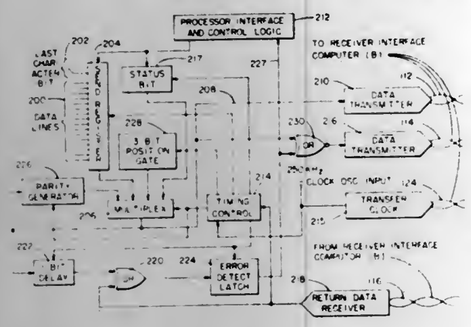
transmitting said data on a first line serially bit-by-bit from said first data processing means to said second data processing means;

inverting said data bit-by-bit prior to transmission;

transmitting said inverted data simultaneously with said data, bit-by-bit on a second line as complementary data to said second data processing means;

comparing the polarity of said data and said inverted data, bit-by-bit at said second data processing means; and

generating an error condition at said first data processing means by returning data thereto from said second data



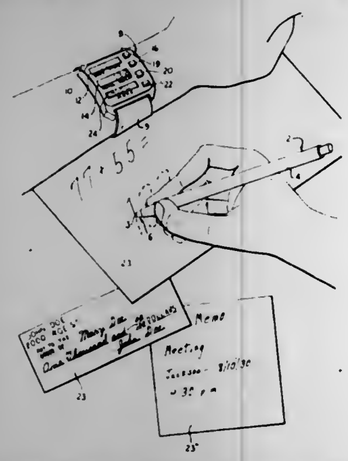
processing means inverted from that as transmitted when said compared data and inverted data are of like polarity.

4,070,649

MULTI-MODAL DATA INPUT/OUTPUT APPARATUS AND METHOD COMPATIBLE WITH BIO-ENGINEERING REQUIREMENTS

Sanford J. Wright, Jr., 415 A. St., SE., Washington, D.C. 20005; Peter T. Anderson, Burlington, and Ralph S. Grimes, South Burlington, both of Vt., assignors to said Sanford J. Wright, by said Peter Anderson and said Ralph Grimes

Filed Dec. 1, 1976, Ser. No. 746,611
Int. Cl.² G06K *9/00*; G08C *1/00*
U.S. Cl. 340—146.3 SY **30 Claims**



1. A method for detecting, recognizing and displaying information created by hand movement of a human being while in a customary writing posture, comprising the steps of

a. forming a permanent visible record of symbols on a writing surface by the movement of a writing instrument supported by a human hand;

b. converting the symbolic and non-symbolic movement of the writing instrument relative to the writing surface into an electrical signal representative of the hand movement;

c. identifying symbolic motion by producing electrical signals representative of only those electrical signals produced in step (b) which are validly representative of one in a predetermined set of symbolic motions;

d. visually displaying the symbols represented by the electrical signals produced in step (c) on an electronic visual display separate and distinct from the visible record formed in step (a); and

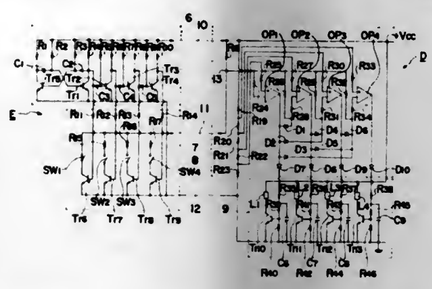
e. mounting the visual display in a position for viewing without disturbing the normal writing posture and without disturbing continued hand movement by mounting the visual display on the wrist of one arm of the human whose other arm is producing the symbolic movement.

4,070,650

DIGITAL SIGNAL TRANSMISSION SYSTEM AND EQUIPMENT

Hiroshi Ohashi, Aichi, and Takashi Kimura, Nagoya, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Japan

Filed May 19, 1976, Ser. No. 687,914
Claims priority, application Japan, May 29, 1975, 50-63544
Int. Cl.² H03K *5/20*; H04J *3/00*; H04Q *9/06*
U.S. Cl. 340—172 **13 Claims**



1. A system for transmission of digital signals comprising

timing pulse generator means for generating sequential timing pulse signals in a repetitive time frame and for applying the generated timing pulse signals only to a switching means;

a multiplex highway for carrying voltage signals;

a plurality of voltage signal generating means each capable of selectively generating a respective voltage signal of different voltage level;

said switching means being responsive to said sequential timing pulse signals for sequentially connecting said voltage signal generating means to one end of said multiplex highway; and

decoding means connected to the other end of said multiplex highway for detecting the level of the voltage signals received on said multiplex highway, said decoding means operating independently of said timing pulse generator means.

4,070,651

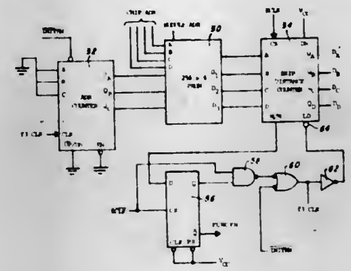
MAGNETIC DOMAIN MINOR LOOP REDUNDANCY SYSTEM

Rex Alan Naden, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 10, 1975, Ser. No. 594,901
Int. Cl.² G11C *19/08*
U.S. Cl. 365—15 **11 Claims**

1. In a thin magnetic film memory system which includes at least one thin magnetic film capable of supporting magnetic domains responsive to a control means for controllably positioning said magnetic domains in said film from one storage position to another storage position, said film including at least one defective portion such that magnetic domains cannot be positioned therein, a programmable read-only memory for

recording the locations of said at least one defective portion, said programmable read-only memory being coupled to said



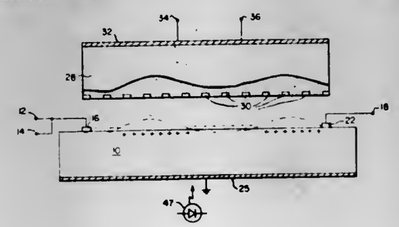
control means for providing signals thereto effective to prevent the use of said defective portions for memory storage.

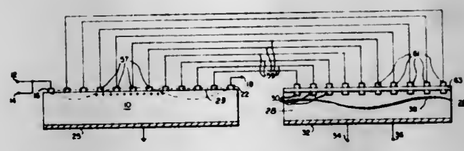
4,070,652

ACOUSTO-ELECTRIC SIGNAL CONVOLVER, CORRELATOR AND MEMORY

Terrance M. S. Heng, Plum Borough; Harvey C. Nathanson, Pittsburgh; Dieter K. Schroder, Wilkins Township, and Paul R. Malmberg, Edgewood Borough, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 14, 1975, Ser. No. 631,970
Int. Cl.² H01L *41/10*; G06G *7/19*
U.S. Cl. 365—157 **24 Claims**





1. An acousto-electric device for storing a reference signal in response to a write pulse, said device comprising:

piezoelectric means for providing an electric field in response to said reference signal;

semiconductor means including a first semiconductor material of one semiconductivity type and a second semiconductor material of opposite semiconductivity type to form a matrix of PN junctions, said semiconductor means being responsive to the write pulse and to the electric field of said piezoelectric means to form a space-charge region in said first semiconductor material corresponding to the reference signal upon the termination of the write pulse and

an electrode attached to the surface of said first semiconductor material that is oppositely disposed from the PN junction matrix for applying the write pulse to the first material of the one semiconductivity type.

15. An acousto-elecric device for storing a reference signal in relation to a write pulse, said device comprising:

piezoelectric means for providing an electric field in relation to an acoustic wave;

a first electrode array for providing a current in relation to the electric field of said piezoelectric means;

electrical conductors for transferring the current provided by said first electrode array;

a second electrode array for applying an electric field in relation to the current transferred by said conductor; and

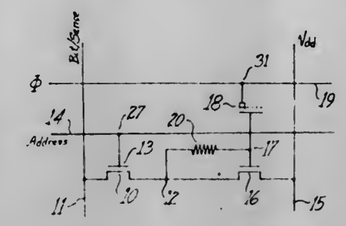
semiconductor means for providing a space-charge region in relation to said write pulse and in relation to said electric field of said second electrode array.

4,070,653

RANDOM ACCESS MEMORY CELL WITH ION IMPLANTED RESISTOR ELEMENT

G. R. Mohan Rao, Houston; Gerald R. Rogers, Sugarland, and David J. McElroy, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 29, 1976, Ser. No. 700,989
Int. Cl.² G11C *11/40*
U.S. Cl. 365—222 **13 Claims**



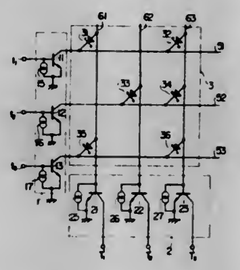
6. A storage cell comprising an address line, a data line, a storage node, a first controlled switching device having a current path connecting the data line to the storage node and being controlled by the address line, a voltage supply, a second controlled switching device connecting the storage node to the voltage supply, resistance means connecting the storage node to a refresh node, the refresh node being connected to the control element of the second switching device, and means for applying an intermittent voltage to the refresh node.

4,070,654

BIPOLAR READ-ONLY MEMORY

Selichi Tachi, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Sept. 13, 1976, Ser. No. 722,578
Claims priority, application Japan, Sept. 26, 1975, 50-115631
Int. Cl.² G11C *11/34, 13/00*; H03K *3/286*
U.S. Cl. 365—104 **4 Claims**



1. A bipolar read-only memory containing information, comprising:

input and output terminals;

a matrix circuit having selection input lines, digit output lines and a plurality of Schottky barrier diodes connected between predetermined ones of said selection input lines and predetermined ones of said digit output lines in accor-

dance with the contained information, said input and output lines being arranged in rows and columns;

a selection input circuit having a first group of bipolar transistors and a first group of injection current sources one for each said first group transistor, each said first group transistor interconnecting different one of said input terminals and different one of said selection input lines; and

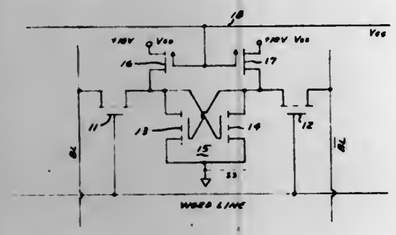
a digit output circuit having a second group of bipolar transistors and a second group of injection current sources one for each said second group transistor, each said second group transistor interconnecting different one of said output terminals and different one of said digit output lines.

4,070,655

VIRTUALLY NONVOLATILE STATIC RANDOM ACCESS MEMORY DEVICE

Fritz L. Schürmeyer, Yellow Springs, and Charles R. Young, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 5, 1976, Ser. No. 734,159
Int. Cl.² G11C *11/40*
U.S. Cl. 365—156 **2 Claims**



1. A solid state RAM cell for a memory system having a bit line, a bit line, a word line, a gate line, and a drain line, the said cell comprising:

a. an n-channel substrate;

b. a first IGFET enhancement mode access transistor fabricated on the said n-channel substrate cooperating with the said bit line and the said word line;

c. a second IGFET enhancement mode access transistor fabricated on the said n-channel substrate cooperating with the said $\overline{\text{bit}}$ line and the said word line;

d. a first and a second IGFET enhancement mode, active transistors fabricated on the said n-channel substrate and cooperating with each other to provide a flip-flop;

e. a first MNOS, IGFET depletion mode variable threshold transistor, fabricated on the said n-channel substrate, having a drain electrode connected to the said drain line, a gate electrode connected to the said gate line and a source electrode;

f. a second MNOS, IGFET depletion mode variable threshold transistor, fabricated on the said n-channel substrate, having a drain electrode connected to the said drain line, a gate electrode connected to the said gate line, and a source electrode;

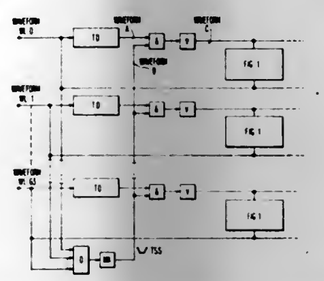
g. means for connecting the said first access transistor and the said flip-flop to the said source electrode of the first variable threshold transistor, and the said second access transistor and the said flip-flop to the said source electrode of the second variable threshold transistor whereby a nonvolatile RAM is provided.

4,070,656

READ/WRITE SPEED UP CIRCUIT FOR INTEGRATED DATA MEMORIES

Klaus Heuber, Boeblingen; Wilfried Klein, Holzgerlingen; Knut Najmann, Gaertringen, and Siegfried Kurt Wiedmann, Stuttgart, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1976, Ser. No. 739,669
Claims priority, application Germany, Dec. 17, 1975, 2556833
Int. Cl.² G11C *11/40, 7/00*
U.S. Cl. 365—203 **16 Claims**



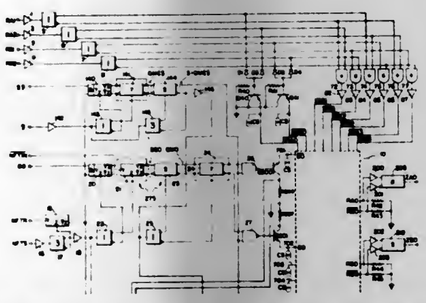
6. In a method of powering a semiconductor storage array, wherein the actual flip-flop transistors of the storage cells and the load elements of the storage cells comprise bipolar transistors and the supply current is applied in at least two phases, said method being characterized by inclusion of the following step: a stand-by current flowing in the storage cells immediately after reading, or writing, in a read, or write cycle is increased for a very short time interval by a current increment, whereby the stray capacitance of the storage cells is rapidly recharged to a stand-by potential.

4,070,657

CURRENT MODE SIMULTANEOUS DUAL-READ/SINGLE-WRITE MEMORY DEVICE

Darrell LeRoy Fett, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 3, 1977, Ser. No. 756,466
Int. Cl.² G11C *11/40*
U.S. Cl. 365—233 **4 Claims**



1. An improved current mode simultaneous dual-read/single-write memory device comprising:

a plurality of *n* data-in circuits, each data-in circuit comprising a data selector circuit and a master latch register, each of said master latch registers generating a true data-in signal and a complement data-in signal,

a write select circuit responsive to a plurality of write select signals for generating one of *m* write select commands over *m* write select lines,

first and second read select circuits, said first read select circuit being responsive to a plurality of first read select signals for generating one of *m* first read select command signals, and said second read select circuit being responsive to a plurality of second read select signals for generating one of *m* second read select command signals,

a control circuit responsive to a clock signal $ and to a clock enable signal $\overline{c\$}$, said control circuit generating an output signal to each of said master latch registers and to said write select circuit,

an $m \times n$ matrix of memory cells, where *m* represents the number of words to be stored in said memory cells and *n* represents the number of bits per word, each cell comprising first and second dual emitter bipolar transistors, the base of each transistor being connected to the collector of the other transistor, resistive means connecting the collector of each transistor to a voltage potential, one emitter of each transistor being connected to one of *m* write select lines, the remaining emitter of said first transistor being connected to said complement data-in signal of one of said master latch registers, the remaining emitter of said second transistor being connected to the true data-in signal of said master latch register, a first memory cell read enable circuit, said first memory cell read enable circuit responsive to said first read select command signal and being capable of distinguishing between conduction or non-conduction in said first and second transistors, said first memory cell read enable circuit generating a first true readout signal and a first complement readout signal, a second memory cell read enable circuit responsive to said second read select command signal and being capable of distinguishing between conduction or non-conduction in said first and second transistors, said second memory cell read enable circuit generating a second true readout signal and a second complement readout signal,

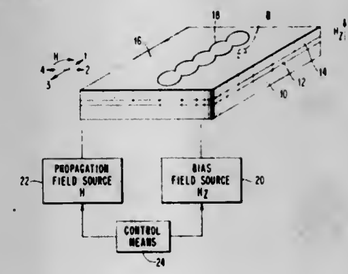
first and second sets of *n* data output buffers, said first set of *n* buffers being responsive to said first true and complement readout signals from said first memory cell read enable circuit and said second set of *n* buffers being responsive to said second true and complement readout signals from said second memory cell read enable circuit.

4,070,658

ION IMPLANTED BUBBLE PROPAGATION STRUCTURE

Edward August Giess, Somers; George Edward Keefe, Montrose, and Yeong Show Lin, Mount Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1975, Ser. No. 645,737
Int. Cl.² G11C *19/08*
U.S. Cl. 365—36 **7 Claims**



1. A double layer magnetic bubble domain storage device, comprising:

a storage layer in which stable bubble domains having diameters not exceeding about one micron exist in the presence of a stabilizing bias field H_z substantially perpendicular to said storage layer, said bubble domains being moved by magnetic coupling of the domains to moving magnetic charged walls produced in a magnetic drive layer when a magnetic field is applied in the plane of said drive layer, said storage layer having magnetic properties which prevent it from being ion implanted to produce magnetic charged walls having sufficient flux to move said bubble domains, and

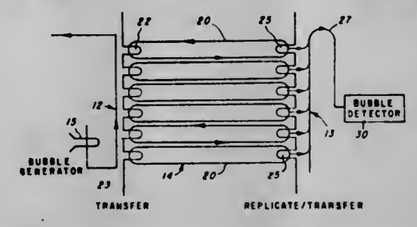
a drive layer comprised of a magnetic medium of different chemical formula than said storage layer including propagation means for producing magnetic charged walls in said drive layer of sufficient intensity to couple to said bubble domains in said storage layer to move said coupled bubble domains when said magnetic field reorients, said drive layer having magnetic properties which do not allow stable magnetic bubble storage in said drive layer in the presence of said bias field H_z where said propagation means for producing said charged walls is comprised of contiguous propagation elements formed in said magnetic drive layer which produce magnetic charged walls having sufficient flux and being sufficiently close to said bubble domains that substantial flux coupling to said bubble domains exists for movement of said bubble domains in said magnetic medium.

4,070,659

MAGNETIC BUBBLE DOMAIN MEMORY CHIP WITH MAJOR/MINOR BUBBLE PATH CONFIGURATION

David Carl Bullock, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 14, 1976, Ser. No. 695,485
Int. Cl.² G11C *19/08*
U.S. Cl. 365—15 **2 Claims**



1. In a magnetic bubble domain memory, the combination comprising:

a planar layer of magnetic material in which magnetic bubbles can be moved,

an overlay pattern of magnetically soft material disposed on a major surface of said planar magnetic layer and defining at least one bubble propagation path on said major surface of said planar magnetic layer for guiding the movement of said bubbles in said layer in response to a change in orientation of a rotary magnetic field within the plane of said layer,

said overlay pattern of magnetically soft material including a bubble storage section and a bubble output section disposed adjacent thereto,

a replicate/transfer gate structure of magnetically soft material interposed between said bubble storage section and said bubble output section, said replicate/transfer gate structure comprising an elongated hair-pin configuration disposed as a first level metal layer,

means defining an insulation layer disposed atop said hair-pin structure,

at least one pickax structure of magnetically soft material disposed on said insulation layer as a second level metal layer in registration with said hair-pin structure disposed therebeneath and including opposite end extensions of the pickax configuration beyond the outer boundaries of said hair-pin structure,

pulse generator means operably associated with said replicate/transfer gate structure and adapted to direct pulsed energy thereto in first and second pulsing modes, and

control means regulating said pulse generator means for

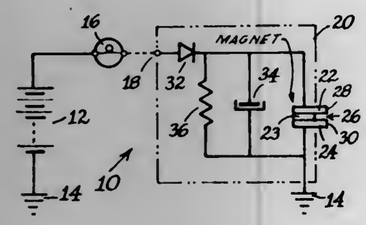
operation in either of said first and second modes, wherein said replicate/transfer gate structure is operable to replicate a magnetic bubble domain incident thereon from said bubble storage section for return to said bubble storage section while transferring said incident magnetic bubble domain to said bubble output section in a first mode, and to transfer said incident bubble to said bubble output section in a second mode.

4,070,660

WEAR PARTICLE DETECTOR

Thomas E. Tauber, 24 E. Glenolden Ave., Glenolden, Pa. 19036

Filed Feb. 20, 1976, Ser. No. 659,948
Int. Cl.² G08B 21/00
U.S. Cl. 340—236 11 Claims



1. A wear particle detector for the attraction, collection, automatic destruction and indication, selectively, of wear particles present in hydraulic systems and adapted for connection with an electric power source, comprising:

a pair of electrodes of electrically and magnetically conductive material spaced apart so as to form an operational gap of predetermined dimensions and thereby constituting a discontinuity of an energized electric indicating circuit adapted to attract and to collect wear particles,

a means to provide a magnetic field between said electrodes, and

at least one capacitor of a predetermined capacitance connected in parallel with said operational gap so as to cause at least one release of the charge of said capacitor through at least one wear particle attracted and collected by said electrodes across said gap and the then closed electric circuit, the destruction of said at least one wear particle, followed by an automatic recharging of said at least one capacitor, and

an alarm means, said means being activated should said at least one wear particle not have become destroyed.

4,070,661

PHOTO ELECTRONIC DIRECTION OF MOTION INDICATOR

Adolf R. Marko, Fairborn, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 10, 1976, Ser. No. 656,918
Int. Cl.² G01D 5/34
U.S. Cl. 340—271 1 Claim

1. Apparatus for detecting and indicating direction of a rotating body having a center of rotation comprising:

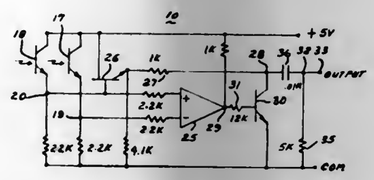
a. a ring having a plurality of uniformly spaced holes and a center of rotation positioned on the said rotating body and rotating therewith, such that the center of rotation of the said ring is also at the center of rotation of the said rotating body;

b. a light source positioned near the said center of rotation of the said ring providing substantially constant intensity of light emanating from the said holes;

c. a first photosensor positioned exterior to the said rotating body, substantially on a radial line extending from the said center of rotation through the said light source and one of the said plurality of holes receiving light emanating from the said hole and providing positive electrical output;

d. a second photosensor positioned exterior to the said rotating body receiving light emanating from the said hole and providing a positive electrical output, the said second photosensor positioned such that it is away from the said radial when the said first photosensor is on the said radial to provide an electrical output from the said second photosensor that is approximately 75% of the output of the said first photosensor;

e. an electronic comparator responsive to the said electrical outputs of the said first and second photosensors for providing a high output state when the electrical output of the said first photosensor is more positive than the said electrical output of the said second photosensor and to



provide a low output state when the electrical output of the said second photosensor is more positive than the electrical output of the said first photosensor;

f. an emitter-follower cooperating with the output of the said first photosensor providing an electrical output at low impedance responsive to the output of the said first photosensor;

g. means including a differentiator cooperating with the said electrical output of the said comparator and the said electrical output of the emitter-follower for providing an electrical output of a positive going pulse for one direction of rotation of the said rotating body and an electrical output of a negative going pulse for the opposite direction of rotation of the said rotating body; and

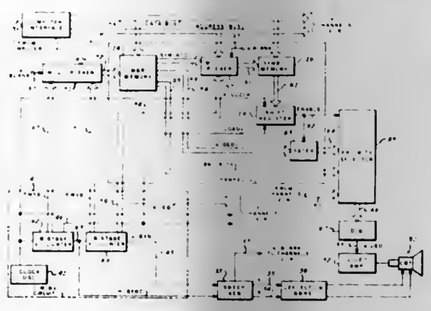
h. means cooperating with the said output of the differentiator for indicating the said direction of rotation.

4,070,662

DIGITAL RASTER DISPLAY GENERATOR FOR MOVING DISPLAYS

Parm L. Narveson, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 11, 1975, Ser. No. 630,833
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 AD 16 Claims



1. A digital raster display system having a display face comprising

raster generating means for generating a raster on said display face, said raster generating means including digital

timing circuit means for providing digital signals synchronous with respect to said raster,

first random access programmable memory means responsive to said digital signals and having a plurality of storage locations corresponding to a respective plurality of display cells comprising said display face,

said digital signals addressing said storage location corresponding to said display cell associated with the point of said raster being generated,

each storage location containing a symbol defining word comprising a symbol address portion,

said first memory means providing a symbol address signal corresponding to said symbol address portion of said symbol defining word stored at said storage location addressed by said digital signals,

second random access programmable memory means responsive to said symbol address signal and having a plurality of symbol storage means for storing a respective plurality of symbols and patterns to be displayed in said display cells, said plurality of symbol storage means being addressed by said symbol address signal for providing symbol display signals in accordance with said symbol or pattern stored in said addressed symbol storage means,

display means responsive to said symbol display signals for displaying said symbol or pattern stored in said addressed symbol storage means in said display cell associated with said point of said raster being generated, and

means for periodically updating the data stored in said second random access programmable memory means,

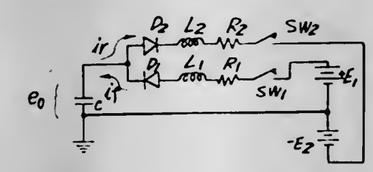
whereby motion is readily imparted to said displayed symbol or pattern.

4,070,663

CONTROL SYSTEM FOR DRIVING A CAPACITIVE DISPLAY UNIT SUCH AS AN EL DISPLAY PANEL

Yoshiharu Kanatani; Masahiro Ise; Etsuo Mizukami; Kenzoh Inazaki, all of Tenri, and Chuji Suzaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed July 7, 1976, Ser. No. 703,127
Claims priority, application Japan, July 7, 1975, 50-83767; July 18, 1975, 50-88510; July 23, 1975, 50-90650; Aug. 8, 1975, 50-96967; Aug. 8, 1975, 50-96968; Aug. 11, 1975, 50-97783
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 M 11 Claims



1. In a drive system for a capacitive display element, which writes desired information in the display element through the use of a write-in signal, maintains the information written in the display element through the use of a sustaining signal, and erases the information written in the display element through the use of an erasing signal, the improvement comprising:

coil means connected to the capacitive display element in a series fashion so that an LC resonance circuit is formed in combination with the capacitive component of the capacitive display element;

circuit means for supplying the capacitive display element with the sustaining signal through said coil means;

said circuit means including a D.C. potential source, diode means and switch means; and

said switch means selectively interconnecting said diode means in series with said coil means, said source and said capacitive display elements to selectively reverse the polarity of said source with respect to said capacitive display element in the provision of said sustaining signal.

4,070,664

KEY CONTROLLED DIGITAL SYSTEM HAVING SEPARATED DISPLAY PERIODS AND KEY INPUT PERIODS

Masayoshi Abe, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan

Filed June 23, 1976, Ser. No. 699,223
Claims priority, application Japan, July 2, 1975, 50-80893
Int. Cl.² G09F 9/32
U.S. Cl. 340—337 4 Claims



1. In a digital system comprising a character display means having plural display elements arranged in digit positions respectively and energized sequentially, a digital computing module for generating a repeating sequential series of first pulses and a group of second pulses simultaneously with each of said first pulses for selective energization of said display elements, and a keyboard means having keys whose actuation effects the coupling of timing pulses to said computing module, said timing pulses being provided for the coding of information corresponding to the actuated key, the improvement wherein said computing module comprises a display timing circuit means for receiving said first pulses, said display timing circuit means being arranged for enabling the supplying of said first pulses to said display means during a first period of each of predetermined time intervals and for inhibiting the supplying of said first pulses to said display means during a second period of the predetermined time interval, and a key input timing circuit means for receiving said second pulses and said timing pulses, said key input timing circuit means being arranged for supplying said second pulses to said display means during said first period of the predetermined time interval and for coupling said timing pulses to said computing module during said second period of the predetermined time interval, whereby selective energization of said display elements is enabled during said first period and not during said second period when said timing pulses are coupled to said computing module.

4,070,665

HIGH ACCURACY DIGITAL TO ANALOG RESOLVER CONVERTER

William Joseph Glennon, Maplewood, NJ; Alfred Douglas Groaner, White Plains, N.Y., and David Julian Simon, Saddle Brook, N.J., assignors to The Singer Company, Little Falls, N.J.

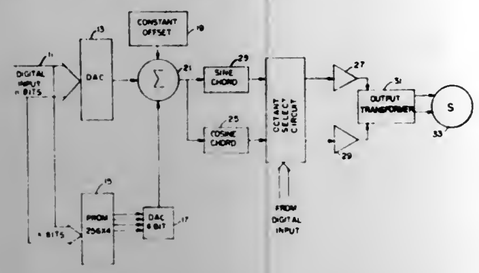
Filed May 27, 1976, Ser. No. 690,704
Int. Cl.² H03K 13/02
U.S. Cl. 340—347 SY 14 Claims

1. A method for enhancing the accuracy of a digital to analog resolver converter of the type which first converts a primary *n* bit digital input to a corresponding analog value and then converts the analog value to outputs for resolver use

having a known variable error for each desired angle comprising the steps:

a. storing in a read only memory device having a *y* bit output the known variable error for each desired angle;

b. addressing the read only memory device with the bits of the primary *n* bit digital input representing the magnitude of each desired angle;



c. converting the output of the read only memory device to analog form with a digital to analog converter;

d. summing the variable error output converted to analog form and analog value of the primary digital input resulting in a corrected signal; and

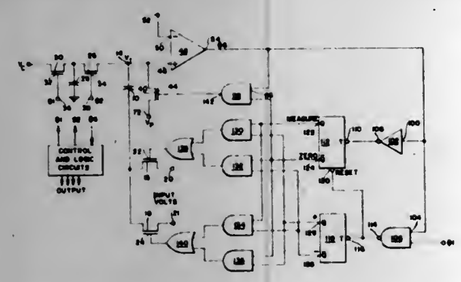
e. using said corrected signal to develop the outputs for resolver use corresponding to each desired angle.

4,070,666

AUTOMATIC POLARITY SENSING ANALOG-TO-DIGITAL CONVERTER

Walter J. Butler, Scotia, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 21, 1976, Ser. No. 698,012
Int. Cl.² H03K *13/02*
U.S. Cl. 340—347 AD **11 Claims**



1. In a time-independent charge transfer analog-to-digital converter of the type wherein a differential analog input signal is converted to a digital output signal by the substantially linear metered transfer of charge from first charge storage means during a time-independent two part conversion cycle including an initial ZERO period followed by a MEASUREMENT Period, said first charge storage means having first and second terminals, said converter including detector means connected to a first terminal of said charge storage means and responsive to a preselected threshold level of charge therein to produce an output signal whenever the level of charge in said charge storage means equals or exceeds said preselected level, the improvement for automatically measuring both positive and negative differential input signals, comprising:

first and second input terminals adapted to have said analog input signal connected therebetween:

controllable switch means for selectively connecting one and the other, respectively, of said first and second input terminals to said second terminal of said charge storage means respectively during said zero and measurement periods;

precharging means for establishing a predetermined initial charge level in said first charge storage means at the end of each of said measurement periiods and before each of said pero periods, said predetermined initial charge level being less than said preselected threshold level; and

control means connected to said detector means for controlling said switch means to reverse the order of connection of said first and second input terminals to said charge storage means whenever said output signal is present during a measurement period;

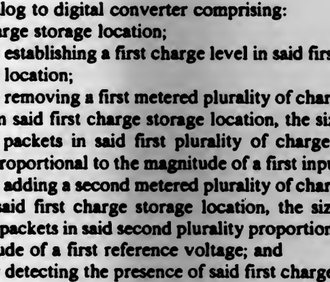
said precharging means being enabled to cause said conversion cycle to be re-initialized with a zero period whenever said output signal is present during a measurement period, to cause the magnitude of the differential analog signal to be converted in a single conversion cycle regardless of the polarity of said analog signal.

4,070,667

CHARGE TRANSFER ANALOG-TO-DIGITAL CONVERTER

Charles W. Eichelberger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 3, 1975, Ser. No. 628,401
Int. Cl.² H03K *13/02*
U.S. Cl. 340—347 NT **18 Claims**



1. An analog to digital converter comprising:

a first charge storage location;

means for establishing a first charge level in said first charge storage location;

means for removing a first metered plurality of charge packets from said first charge storage location, the size of the charge packets in said first plurality of charge packets being proportional to the magnitude of a first input signal;

means for adding a second metered plurality of charge packets to said first charge storage location, the size of the charge packets in said second plurality proportional to the magnitude of a first reference voltage; and

means for detecting the presence of said first charge level in said first charge storage location and providing an output signal in response thereto;

the ratio between the number of charge packets in said first plurality to the number of charge packets in said second plurality at the time of said output signal being equal to the ratio between said first reference voltage and the magnitude of said first input signal.

4,070,668

DISPLAY DEVICE

Masaru Kawaharada, Fuchu, and Etsuso Yokoyama, Tachikawa, both of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed June 21, 1976, Ser. No. 697,788
Int. Cl.² G08B *5/22*
U.S. Cl. 340—373 **10 Claims**

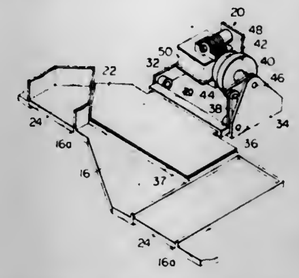
1. A segmental display device comprising:

a casing;

a window plate mounted at an open end of the casing and having a plurality of segmental openings to provide a display of selected characters;

a light source mounted in said casing rearwardly of the window plate;

a plurality of actuating units, mounted on the rearward side of the window plate at positions adjacent the segmental openings, respectively, for actuating rotatable shafts ex-



tending parallel to the plane of the window plate at the sides of the segmental openings, respectively; and

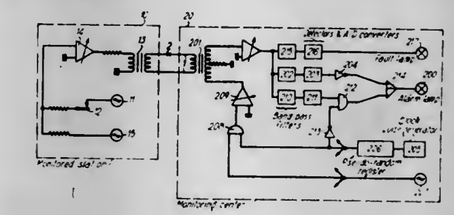
a plurality of closure members supported on said rotatable shafts, respectively, to selectively permit light from the light source to pass through selected one of the segmental openings and block the passage of light through another selected one of the segmental openings for thereby providing the display of the selected characters.

4,070,669

ANTI-FRAUD ALARM TRANSMISSION LINE SECURITY SYSTEM

Gerard A. Gautier, 27, Rue Gustave Robin, Chatenay-Malabry, France (92290)

Filed Aug. 27, 1976, Ser. No. 718,168
Claims priority, application France, Sept. 15, 1975, 75 28205
Int. Cl.² G08B *19/00*
U.S. Cl. 340—409 **1 Claim**



1. In a transmission line security system including a transmission line for carrying alarm information from at least one monitored station to a central monitor station, said alarm information being in the form of a non-alarm signal having a first frequency, permanently transmitted along said line under normal conditions and cut-off under alarm conditions; that improvement consisting of:

means at said central monitor station for generating and transmitting to at least one of said monitored station a trap signal having a second frequency which is different from said first frequency and which is modulated in pseudo-random pulses;

means for picking up and receiving said transmitted trap signal;

means for triggering an alarm by said received trap signal;

means for inhibiting said trap signal receiving means by said transmitted trap signal;

said means for inhibiting said trap signal receiving means by said transmitted trap signal including means for inverting said trap signal; and,

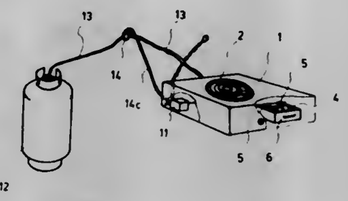
an "AND gate" for receiving on a first input said inverted trap signal and on a second input said received trap signal.

4,070,670

AUTOMATIC SHUT-OFF AND ALARM FOR STOVE HEATING UNIT

Ho Chi Chen, No. 19, Chung Hsin Road, Sec. 1, San Chung City, Taipei, China /Taiwan

Filed Jan. 30, 1976, Ser. No. 653,763
Int. Cl.² G05B *9/00*
U.S. Cl. 340—417 **4 Claims**



1. A shut-off control device for a heating element of a cooking stove, comprising:

a plate having grooves and being pitched from a horizontal position; a heating element associated with said plate and connected to a source of energy;

a discharge outlet at an end portion of said grooves to allow discharge of spilled water collected in said grooves;

a water detector diposed beneath said outlet for collecting water discharged from said outlet and including electrical contacts which are connected to complete a circuit upon deposit of water therein;

a relay actuated by the closing of said electrical contacts in said water detector;

means operable in response to said relay to disconnect said heating element from said source of energy and

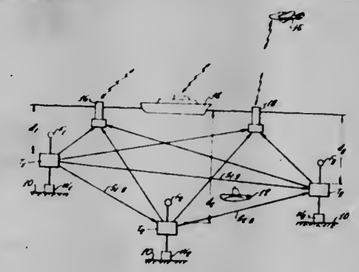
means operable in response to said relay to sound an alarm.

4,070,671

NAVIGATION REFERENCE SYSTEM

James A. Morrow, Huntington Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sept. 18, 1975, Ser. No. 614,456
Int. Cl.² G01S *9/56*
U.S. Cl. 343—6.5 LC **2 Claims**



1. The machine method of establishing a navigation reference system comprising the steps of

emplacing a plurality of pairs of transponders at fixed positions, transmitting an interrogation signal from a first transponder of each pair to a second transponder of each pair,

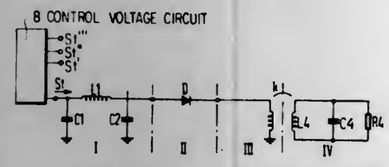
receiving at the second transponder of each pair the signal transmitted thereto from the first transponder of such pair and in response thereto sending a reply signal from said

second transponder back to said first transponder of each pair,
transmitting an acknowledgement signal from the first transponder of each pair in response to receipt thereat of the reply signal from the second transponder of such pair,
receiving at a remote station both the interrogation and acknowledgement signals from the first transponder of each said pair,
repetitively transmitting master interrogation signals from one of said transponders,
receiving each of said master interrogation signals at transponders of a group of slave transponders, transmitting a reply signal from each of said slave transponders upon receipt of each of said master interrogation signals from said one transponder, repetitively transmitting second master interrogation signals from a second transponder, said second master signals being transmitted in a predetermined chronological relation with respect to the transmission of said first named master interrogation signals, receiving said second master interrogation signals at the transponders of a second group of slave transponders,
transmitting a reply signal from the transponders of each of said second group of slave transponders upon receipt of each said second master interrogation signal, whereby a plurality of said transponders are caused to act as master transponders to thereby provide a measure of redundancy,
said first named and second master interrogation signals being each uniquely identified and including the steps of setting and resetting said transponders to selectively respond to uniquely identified master interrogation signals from each of said first and second transponders at different times.

4,070,672
ANSWERING DEVICE FOR A SYSTEM FOR THE AUTOMATIC WIRELESS TRANSMISSION OF MULTI-POSITION DATA BETWEEN INTERROGATION DEVICES AND ANSWERING DEVICES MOVABLE WITH RESPECT TO ONE ANOTHER

Friedbert Becker; Karl Laufer, and Johann Albert Steinkamp, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 9, 1976, Ser. No. 703,841
Claims priority, application Germany, July 11, 1975, 2531148
Int. Cl.[2] G01S 9/56
U.S. Cl. 343—6.8 R 5 Claims

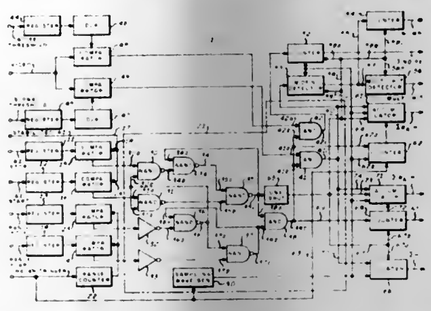


1. An answering device in a system for automatic wireless transmission of multi-digit information, particularly identifying indicia on railroad cars between interrogation devices and answering devices movable with respect to one another on movable carrier units, wherein each interrogation device transmits an interrogation signal which periodically varies its frequency within a predetermined microwave frequency band to which the answering device being moved past responds to frequencies for each digit of the information and sends back to the interrogation device a predetermined number of answering frequencies corresponding to each digit of the information, each answering device comprising:
a. a plurality of resonators coupled to a high frequency line section, said resonators each having a fixed frequency;
b. a microwave diode coupled to each resonator to switch the resonator inoperative when a control voltage is applied to said diode;
c. a control voltage means connected to the microwave diodes for switching inoperative certain of said resonators to set up the answering device for multi-digit information to be transmitted; and
d. the resonators being constructed as containerlike hollow waveguides with head portions, the coupling of the microwave diode to the resonator taking place via an inductive coupling element through the head portion of the resonator.

4,070,673
RADAR VIDEO DIGITAL PROCESSOR

Richard Q. Schmidt, Huntington; Herman J. Fleischer, Halesite; Walter C. Lanning, Plainview, and Bert V. Tiblin, Huntington, all of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 3, 1976, Ser. No. 720,473
Int. Cl.[2] G01S 9/14
U.S. Cl. 343—7.3 8 Claims



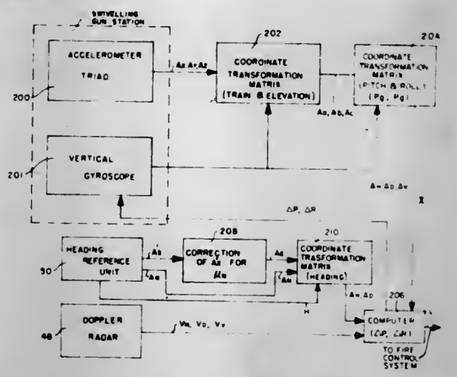
1. An apparatus for processing video signals derived from a radar system of the type including an antenna and a receiver coupled thereto for receiving return signals from a plurality of range bins within an illuminated area comprising:
means for comparing signals representative of said illuminated area location with signals representative of predetermined boundaries which define a detection window and for providing signals that indicate when said detection window has been entered and traversed;
means for comparing said video signals with a predetermined signal threshold level to provide a pulse whenever said video signal exceeds said threshold;
means coupled to said signal comparison means and said boundary comparison means for providing a sweep weighted accumulated sum of said pulses which indicate said video signals exceed said threshold for a range sweep within said detection window said accumulated sum being obtained by assigning a weighting factor to each range sweep, which increases for each succeeding range sweep, and by adding said weight to a previously accumulated sum whenever said video, for a given range sweep, exceeds said threshold; and
a counter coupled to receive said pulses indicative of said video signal exceeding said threshold level within said detection window and providing a count thereof.

4,070,674
DOPPLER HEADING ATTITUDE REFERENCE SYSTEM

Heinz Buell, Mount Kisco, N.Y., and John M. Fiore, Elizabeth, N.J., assignors to The Singer Company, Little Falls, N.J.

Continuation-in-part of Ser. No. 407,120, Oct. 17, 1973, abandoned. This application Oct. 15, 1976, Ser. No. 732,574
Int. Cl.[2] G01C 21/18; G01S 9/44
U.S. Cl. 343—9 4 Claims

1. A control system for use in an aircraft, or the like comprising:
an inertial heading reference unit mounted on the aircraft and including accelerometer means and associated circuit means for providing first acceleration signals in horizontal coordinates;
a controlled unit mounted on the aircraft remote from the inertial heading reference unit and including accelerometer means for producing second acceleration signals and vertical gyroscope means for producing pitch and roll signals;

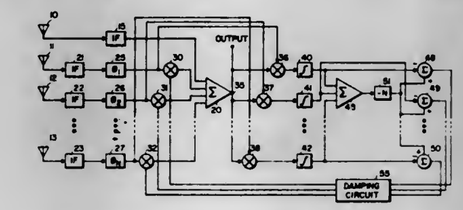


transforming circuit means coupled to said controlled unit and responsive to said second acceleration signals and controlled by said pitch and roll signals for transforming said second acceleration signals into second accelerations signals in horizontal coordinates; and
computer means coupled to said heading reference unit and to said transforming circuit means for comparing the first and second acceleration signals in the horizontal coordinates to produce pitch and roll error signals to compensate for pitch and roll errors in said vertical gyroscope.

4,070,675
POWER REJECTION APPARATUS USING A NULL-CONSTRAINED SUBARRAY FOR MTI RADAR APPLICATIONS

Sam M. Daniel, Tempe, and Eric Jerome Carlson, Mesa, both of Ariz., assignors to Motorola Inc., Schaumberg, Ill.

Filed Oct. 21, 1976, Ser. No. 734,699
Int. Cl.[2] H04B 7/00
U.S. Cl. 343—100 LE 7 Claims

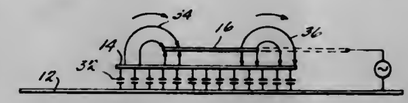


1. In a communications system, such as radar and the like, including a main antenna having a radiation pattern characterized by a relatively narrow main lobe and a plurality of relatively low sidelobes, adaptive sidelobe power rejection apparatus using a null-constrained subarray comprising:
a. A plurality of secondary antennas forming a subarray;
b. Phase shifting means coupled to said secondary antennas for shifting the phase of output signals to any predetermined phase;
c. Adjustable weighting means coupled to said phase shifting means and providing outputs weighted in accordance with the adjustments of said weighting means;
d. Combining means connected to the main antenna for receiving output signals therefrom and connected to said weighting means for receiving the outputs therefrom, said combining means having an output; and
e. Controller means coupled to said secondary antennas, the output of said combining means and said adjustable weighting means for adjusting said weighting means so that the radiation pattern of said secondary antennas minimizes the sidelobe power in the radiation pattern of said main antenna and has substantially no effect on the main lobe of the main antenna.

4,070,676
MULTIPLE RESONANCE RADIO FREQUENCY MICROSTRIP ANTENNA STRUCTURE

Gary G. Sanford, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Oct. 6, 1975, Ser. No. 620,196
Int. Cl.[2] H01Q 1/38
U.S. Cl. 343—700 MS 24 Claims



1. A multiple resonance radio frequency antenna structure of the microstrip type comprising:
an electrically conductive reference surface,
a plurality of successively stacked electrically conductive element surfaces disposed above said reference surface, said plurality of element surfaces being successively disposed one on top of the other,
each element surface defining a radiating aperture between its periphery and the next underlying conductive surface,
each element surface being differently dimensioned than other surfaces so as to resonate at a different respectively corresponding radio frequency such that any one of a plurality of different radio frequencies may be utilized depending upon the activation of a corresponding desired one of said surfaces as an active element so as to produce radiation from the respectively corresponding radiating aperture defined between its periphery and the next underlying conductive surface,
each element surface being spaced from each other and from said reference surface with a dielectric layer, and
feed means electrically connected to at least one but not all of said element surfaces at a free edge portion thereof for conducting radio frequency signals to/from antenna structure, said radio frequency signals being electromagnetically coupled through the stacked element surfaces with nonresonant elements coupling inductively below their resonant frequency and coupling capacitively above their resonant frequency to activate a resonant element not directly conductively connected to said radio frequency signals.

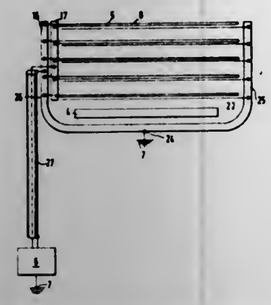
4,070,677
WINDOW ANTENNA AND DEFROSTER WITH MEANS FOR REDUCING RADIO INTERFERENCE

Hans Heinrich Meinke, Gauting; Heinz Lindenmeier, Planegg; Friedrich Landstorfer, Munich, and Gerhard Flachenecker, Ottobrunn, all of Germany, assignors to Hans Kolbe & Co., Bad Salzdetfurth, Germany

Filed Nov. 18, 1976, Ser. No. 743,467
Claims priority, application Germany, Nov. 20, 1975, 2552002
Int. Cl.[2] H01Q 1/32
U.S. Cl. 343—704 22 Claims

1. In an automotive vehicle having a window and having a vehicle body, in combination, a window heater comprising an arrangement of heating conductors provided on the window; a radio receiving antenna located in the vicinity of the heating conductors; and an interference-suppressing arrangement for

decreasing the effect upon the antenna of interference fields emanating from the heating conductors, the interference-suppressing arrangement comprising an arrangement of auxiliary conductors located in the vicinity of the heating conductors,



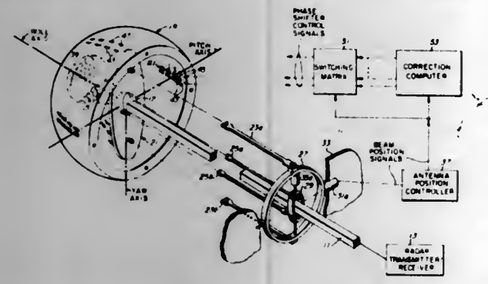
the auxiliary conductors along their lengths being insulated from the heating conductors, each auxiliary conductor at at least one of the ends thereof being conductively connected to the vehicle body for high-frequency conduction.

4,070,678

WIDE ANGLE SCANNING ANTENNA ASSEMBLY

Richard L. Smedes, Westford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 2, 1976, Ser. No. 673,239
Int. Cl.² H01Q *19/06, 3/12*
U.S. Cl. 343—754 **5 Claims**



1. An antenna arrangement for directing a collimated beam of radio frequency energy, such arrangement comprising the combination of:

a. beam forming means, including a feed horn and a curved polarized reflector disposed in a fixed spatial relationship one to the other, for forming a linearly polarized covergent beam of radio frequency energy;

b. first beam directing means, including planar polarized reflector rotatably mounted in the path of the linearly polarized convergent beam, for changing the direction of the linearly polarized convergent beam of radio frequency energy in accordance with the position of the planar polarized reflector and for rotating the direction of polarization of the radio frequency energy in the linearly polarized covergent beam by substantially 90°;

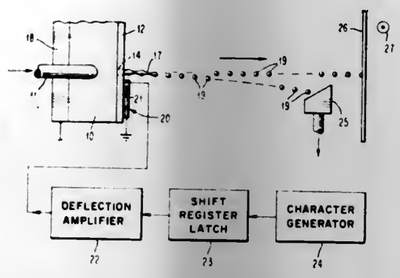
c. second beam directing means, including a constrained electromagnetic lens disposed in the path of the linearly polarized convergent beam from the first beam directing means, for simultaneously refracting and collimating the radio frequency energy in such beam to produce a collimated beam in free space.

4,070,679

METHOD AND APPARATUS FOR RECORDING INFORMATION ON A RECORDING SURFACE BY THE USE OF MAGNETIC INK

George J. Fan, Ossining, and John C. Slonczewski, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 591,982
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **6 Claims**



1. An apparatus for recording information on a recording surface including:

a nozzle body formed of silicon;

said body having a plurality of nozzles therein;

means to direct a stream of magnetic ink through each of said nozzles and toward the recording surface;

means to cause break-up of each of the streams into droplets after the stream exits from said nozzle and prior to application to the recording surface;

separate means to selectively apply a magnetic deflection to selected portions of each of the streams prior to break-up to cause deflection of the droplets formed from the selected portions so that the droplets formed from the selected portions or the droplets formed from the non-selected portions strike the recording surface to provide the recorded information on the recording surface;

each of said separate means including a magnet supported on said body adjacent the exit of said nozzle;

means to selectively cause each of said magnets to selectively produce a magnetic field gradient;

each of said magnets having its air gap disposed relative to the exit of said nozzle with which said magnet cooperates to enable application of the magnetic field gradient to selected portions of the stream exiting from said cooperating nozzle;

and each of said magnets includes: a film of magnetic material on said body; and a conductive winding disposed around said film.

4,070,680

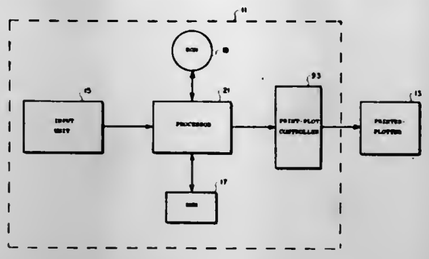
THERMAL PRINTER-PLOTTER SYSTEM FOR MULTI-DIRECTIONAL PRINTING AND PLOTTING

David J. Shelley, San Diego, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 20, 1976, Ser. No. 716,033
Int. Cl.² G01D *15/10*; H05B *3/00*
U.S. Cl. 346—76 R **19 Claims**

11. A print head comprising a cluster of a selected number of print elements disposed on and about at least two diagonals for forming output manifestations on a web in any of four orthogo-

nal directions, such elements being located at the intersection of first and second coordinate positions, with no element occu-



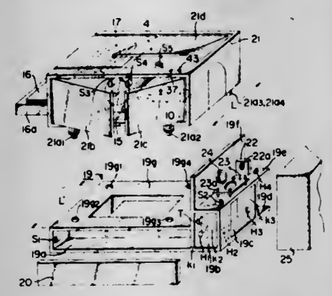
pying the same first coordinate position and no element occupying the same second coordinate position.

4,070,681

MODULATED LASER

Jyunji Ichikawa, Kawasaki; Takehiko Kiyohara, Zama; Noboru Koumura; Koichi Kadokura, both of Tokyo, and Takashi Nakano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 30, 1975, Ser. No. 618,153
Claims priority, application Japan, Feb. 7, 1975, 50-16096
Int. Cl.² G03G *15/04*; H01S *3/111*
U.S. Cl. 346—160 **19 Claims**



1. In an image information recording apparatus comprising, a laser beam forming means for forming a laser beam modulated in accordance with an image information signal, optical means for focussing the modulated laser beam on a recording medium, an optical scanner for scanning the modulated laser beam, and a frame structure for placing therein said laser beam forming means, said optical means and said optical scanner, the improvement comprising:

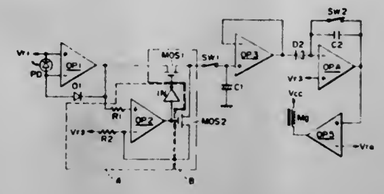
optical axis detecting means mounted at a position to receive the laser beam and to detect deviation from a predetermined optical axis passing through the position at which said detecting means is mounted of the actual optical axis passing therethrough after said laser beam forming means, said optical means and said optical scanner are mounted in the frame structure, to thereby facilitate fine adjustment of the actual optical path of the laser beam.

4,070,682

EXPOSURE TIME CONTROL CIRCUIT

Saburo Numata, and Shinichiro Fujino, both of Urawa, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed June 30, 1976, Ser. No. 701,076
Claims priority, application Japan, June 30, 1975, 50-80674
Int. Cl.² G03B *7/02*
U.S. Cl. 354—51 **4 Claims**



1. An exposure control circuit for a camera comprising a light measuring and exposure time determining circuit including a photodetector to measure the scene brightness, a memory circuit connected therewith for memorizing the output therefrom, and an exposure time control circuit connected with said memory circuit for controlling exposure time in accordance with the output memorized by said memory circuit, wherein the improvement comprising a maximum exposure time output means, and an exposure time selecting means connected with said maximum exposure time output means and said light measuring and exposure time determining circuit for selecting the output indicative of a shorter exposure time between the output of said light measuring and exposure time determining circuit and the output of said maximum exposure time output means, said exposure time selecting means being connected with said memory circuit for giving the selected output to the memory circuit, said exposure time selecting means comprising a level comparing circuit and a switching means, said level comparing circuit comparing the output of said light measuring and exposure time determining circuit with the output of said maximum exposure time output means, and said switching means selectively connecting one of said outputs with said memory circuit, said level comparing circuit being an operational amplifier having a positive input terminal and a negative input terminal, said positive input terminal being connected with the output of said light measuring and exposure time determining circuit, said negative input terminal being connected with said maximum exposure time output means, whereby said exposure time control circuit controls the exposure time in accordance with the output selected by said selecting means indicative of the shorter exposure time between said maximum exposure time and the exposure time output from said light measuring circuit and exposure time determining circuit.

4,070,683

OPTICAL SURFACE TOPOGRAPHY MAPPING SYSTEM

Bruce R. Altschuler, 123 Thornell, San Antonio, Tex. 78235, and John Taboada, 159 Ebbtide, San Antonio, Tex. 78227

Filed Mar. 4, 1976, Ser. No. 663,640
Int. Cl.² G03B *17/54*
U.S. Cl. 354—77 **5 Claims**

1. A system for projecting a rectangular grid pattern upon an object comprising:

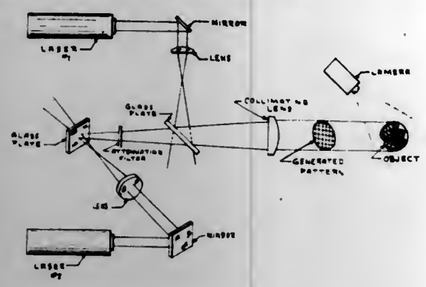
a. a first transparent slab, said first transparent slab having front and rear partially reflecting surfaces;

b. a first source of coherent light directed at the first transparent slab generating a first beam of interference fringes;

c. a second source of coherent light;

d. a second transparent slab, said second transparent slab having partially reflecting front and rear surfaces and being positioned in the path of a second source of coherent light to generate a second beam of interference fringes

directed into the first transparent slab at a right angle to that of the first source of coherent light to form a rectangular grid pattern upon the object; and



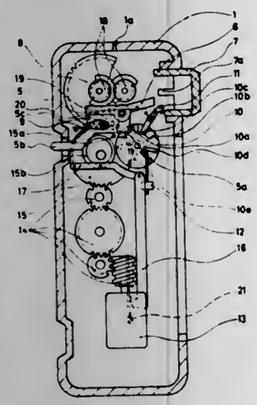
e. means for recording the rectangular grid pattern upon the object.

4,070,684

SHUTTER RELEASE BLOCKING DEVICE FOR FOLDABLE CAMERA

Helmut Ettischer, Ostfildern, and Peter Huschle, Boblingen, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 7, 1976, Ser. No. 684,503
Claims priority, application Germany, July 17, 1975, 2531884
Int. Cl.² G03B 17/52, 17/04, 17/38
U.S. Cl. 354—86 22 Claims



1. A foldable camera comprising:
a. a housing having a wall portion;
b. a cover member movable relative to said housing from an open position wherein the camera is unfolded to a closed position wherein the camera is folded;
c. means in said housing for supporting film at an exposure station;
d. means including an externally accessible member movable from a first position to a second position for effecting an exposure of the film at said exposure station;
e. means drivable through an operating cycle for transporting the film from said exposure station after the exposure has been effected;
f. means operable for driving said transporting means through said operating cycle;
g. an actuating member movable from an initial position through a movement cycle substantially synchronous with said operating cycle; and
h. means for preventing said externally accessible member from moving to said second position when the camera is folded and during said operating cycle, said preventing means including a blocking member movable into blocking relationship with said externally accessible member in response to movement of said cover member to said closed position and in response to movement of said actuating member from said initial position.

18. A foldable camera adapted to effect an exposure and initiate processing of a self-processable film unit, said camera comprising:
a. a housing having a wall portion;
b. a cover member movable relative to said housing from an unfolded-camera position to a folded-camera position overlying said wall portion;
c. means in said housing for supporting the film unit in position for the exposure;
d. an externally accessible member movable from a first position to a second position to effect the exposure and returnable to said first position, said externally accessible member having an engagement portion that moves along a predetermined path as said externally accessible member moves from said first position to said second position;
e. means drivable through an operating cycle after the exposure has been effected for transporting the film unit from said supporting means and for initiating the processing, said transporting and initiating means including a movable film-engaging member for advancing the film unit from said supporting means and a pair of juxtaposed rotatable rollers defining a nip for receiving the film unit when advanced by said film-engaging member, said operating cycle including both movement of said film-engaging member to advance the film unit from said supporting means and rotation of at least one of said rollers to move the film unit through said nip and thereby initiate the processing;
f. an actuating member having a cam surface thereon and rotatable from an initial position, through a single revolution synchronous with said operating cycle, to said initial position again, said actuating member being initially rotatable from said initial position in response to movement of said externally accessible member from said second position to said first position and further rotatable through said single revolution as said transporting and initiating means is driven through said operating cycle;
g. means operable for driving said transporting and initiating means through said operating cycle, said driving means including a motor drivingly associated with both said actuating member and said transporting and initiating means, said motor becoming energized in response to rotation of said actuating member from said initial position and remaining energized until said actuating member resumes said initial position, whereby said motor operates to drive said actuating member through said single revolution and said transporting and initiating means through said operating cycle in response to said movement of said externally accessible member from said second position to said first position; and
h. means for preventing said externally accessible member from moving to said second position when said camera is folded and during said operating cycle, said preventing means including a blocking member having an abutment portion movable into said predetermined path in response to movement of said cover member to said folded-camera position and in response to said rotation of said actuating member from said initial position.

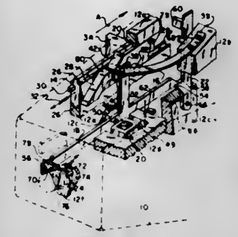
4,070,685

FIRING SPRING COCKING MECHANISM

Graham Edward Asker, Ware, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1977, Ser. No. 780,139
Int. Cl.² G03B 15/03
U.S. Cl. 354—135 3 Claims

1. Photographic apparatus, comprising: means, including a piezoelectric crystal and a firing spring movable from a cocked position to a striking position, for generating electrical energy;
a shutter;
a shutter actuating member movable from a latched position to an unlatched position to actuate the shutter for effecting an exposure and to release the firing spring from its cocked position to allow it to move to its striking position;
a latch for releasably retaining the shutter actuating member in its latched position; and



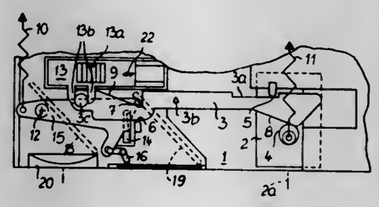
a body release member movable between a rest position and an operating position wherein the body release member is adapted to release said latch, the body release member including means for returning the shutter actuating member to its latched position upon movement of the body release member from its operating position to its rest position, said body release member having a surface, said surface being adapted to engage the firing spring upon movement of the body release member from its operating position to its rest position, to move the firing spring from its striking position to its cocked position.

4,070,686

CAMERA WITH ADJUSTABLE OBJECTIVE

Karl-Heinz Lange, Bunde, Germany, assignor to Balda-Werke Photographische Gerate & Kunststoff GmbH. & Co. KG, Bunde, Germany

Filed Dec. 20, 1976, Ser. No. 752,340
Claims priority, application Germany, July 17, 1976, 2632370; Aug. 16, 1976, 2636795
Int. Cl.² G03B 3/00, 13/02
U.S. Cl. 354—195 6 Claims



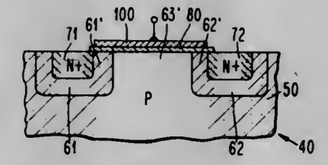
1. In a camera, objective means having an optical axis, housing means guiding said objective means for movement along said optical axis thereof, movable means guided by said housing means transversely with respect to said optical axis, a pair of inclined surface means connected with and forming part of said movable means and each being inclined both with respect to the direction of movement of said movable means and with respect to said optical axis, a pair of pressing means respectively pressing against and slidably engaging said pair of inclined surface means, one of said pressing means being fixed to said objective means, and a pair of spring means respectively connected operatively with said pair of pressing means for respectively urging the latter against said pair of inclined surface means, said movable means when moved transversely with respect to said optical axis acting through one of said inclined surface means on said one pressing means which is fixed to said objective means for moving the latter along said optical axis, and said pair of inclined surface means respectively cooperating with said pair of pressing means for providing at all positions of said movable means equal and opposite forces in the direction of movement of said movable means.

4,070,687

COMPOSITE CHANNEL FIELD EFFECT TRANSISTOR AND METHOD OF FABRICATION

Irving Tse Ho, and Jacob Riseman, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 645,771, Dec. 31, 1975, abandoned.
This application June 6, 1977, Ser. No. 803,712
Int. Cl.² H01L 29/78, 29/34
U.S. Cl. 357—23 4 Claims



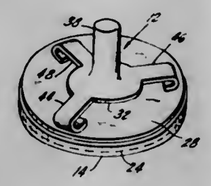
1. A composite channel insulated gate field effect transistor with low sensitivity to threshold shifts caused by hot electrons when operated at high drain voltage levels consisting of:
a conductive substrate of one conductivity type having first and second spaced apart regions of another conductivity type formed therein defining source and drain regions having a channel region there between at the surface of said substrate, said channel region including third and fourth regions of said one conductivity type separated by a fifth region also of said one conductivity type, with said third and fourth regions having different resistivity and different impurity concentration than said fifth region;
wherein the doping level of the third and fourth regions is such that, during operation of the device at drain voltage levels above the 3–4 volt range, the P-N junction depletion width at the drain electrode does not extend beyond the bounds of said third or fourth regions; and
a dielectric layer on the surface of said substrate extending between the source and drain regions and a conductive layer upon said dielectric layer.

4,070,688

FLEXIBLE LEAD

Joseph Wislocky, El Segundo, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

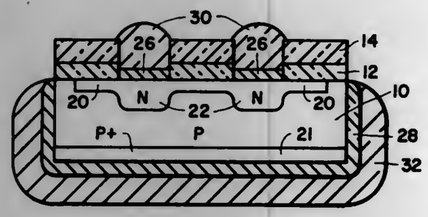
Filed Dec. 27, 1976, Ser. No. 754,164
Int. Cl.² H01L 23/48, 23/02, 23/42
U.S. Cl. 357—68 9 Claims



1. A flexible lead for a semi-conductor device; said semi-conductor device comprising:
a single, relatively fragile, thin, flat wafer of a semi-conductor material having at least one p-n junction;

first and second electrodes on opposite surfaces of said semiconductor wafer;
a housing enclosing said semi-conductor wafer;
first and second terminals extending externally of said housing; said second terminal being electrically connected to said second electrode;
said flexible lead connecting said first terminal to said first electrode; said flexible lead including an elongated conductive member having a main body which has at least two reentrantly bent flexible legs extending from a flat body section and which are disposed in a common plane which is spaced from and parallel to said flat body section; said legs having ends which face one another and which are spaced from one another; said flexible lead having an elongated lead extending perpendicularly from a central region of said main body and extending in a direction opposite from the direction of said common plane, the outer surfaces of said at least two legs being electrically and mechanically connected to said first electrode.

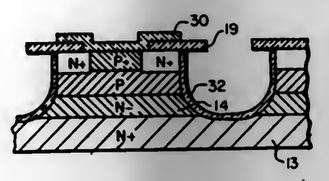
4,070,689
SEMICONDUCTOR SOLAR ENERGY DEVICE
Michael G. Coleman, Tempe, and Fabio Restrepo, Scottsdale, both of Ariz., assignors to Motorola Inc., Chicago, Ill.
Filed Dec. 31, 1975, Ser. No. 645,572
Int. Cl.² H01L 27/14
U.S. Cl. 357—30 **5 Claims**

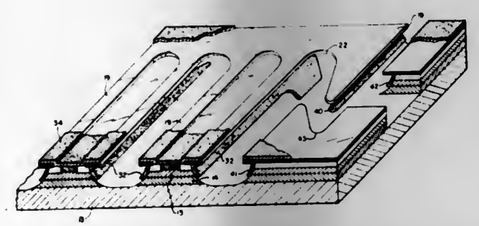


1. A semiconductor solar energy device comprising, in combination, a silicon substrate of one type conductivity having a doped region of the opposite type conductivity, said doped region being beneath and extending to a first surface of said substrate, metal ohmic contacts in electrical contact with said substrate and said doped region of the opposite type conductivity, respectively, and an anti-reflective dielectric coating in contact with said first surface of said silicon substrate and in contact with a surface of said doped region of the opposite type conductivity, said anti-reflective coating comprising a thin layer of silicon dioxide on said first surface of said silicon substrate and a thicker layer of silicon nitride on said layer of silicon dioxide, said doped region of the opposite type conductivity comprising a thin region in contact with said anti-reflective coating and a thicker region located beneath an opening in said anti-reflective coating where at least one of said metal ohmic contacts is in contact with said doped region of the opposite type conductivity.

4,070,690
VMOS TRANSISTOR
Robert A. Wickstrom, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 17, 1976, Ser. No. 715,256
Int. Cl.² H01L 23/48, 29/44, 29/52
U.S. Cl. 357—68 **10 Claims**

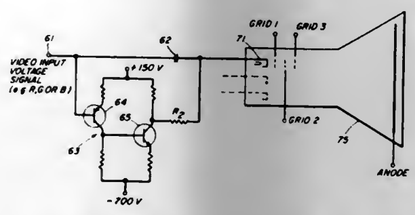
1. A transistor comprising:
a. a substrate;
b. a first semiconductor structure supported by said substrate, said structure including a first layer of a first conductivity type interposed between second and third layers of a second conductivity type, said first semiconductor structure including a subetantially flat palm-like mesa and a plurality of finger-like mesas extending therefrom with the edges of said first, second and third layers being exposed along the edges of said finger-like mesas;
c. a second mesa-like structure supported by said substrate and separated from said finger-like and palm-like mesas by a valley;
d. an electrically conductive structure, electrically insulated





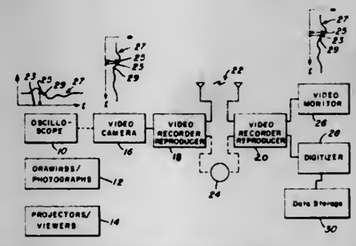
from said first, second and third layers, selectively overlying the top, edges and valleys surrounding said second mesa-like structure and extending along the edges of said finger-like mesas to form the gate of said transistor;
e. means for making electrical contact to said second and third layers to form a transistor wherein said first, second and third layer form the channel, source and drain of said transistor.

4,070,691
STABILIZING SYSTEM FOR CATHODE RAY TUBE
Clyde Smith, North Salem, N.Y., and Reuville H. McMann, New Canaan, Conn., assignors to Thomson-CSF Laboratories, Inc., Stamford, Conn.
Filed Apr. 28, 1975, Ser. No. 572,128
Int. Cl.² H04N 9/535, 5/68
U.S. Cl. 358—29 **4 Claims**



1. In a video display apparatus which includes a cathode ray tube having at least one electron gun and means for deriving a source of excitatory voltage signal representative of picture information; a system for stabilizing the display intensity of said cathode ray tube comprising: means for amplifying said voltage signal; constant current means including resistive means coupling said amplified voltage signal to the cathode of said electron gun, said resistive means having an impedance which is substantially greater than the input impedance of said cathode; and capacitive means in parallel with said constant current means for shunting high frequency voltage signals across said constant current means; whereby the current applied to said cathode is substantially dependent only upon said voltage signal and is relatively insensitive to variations in the characteristics of said cathode.

4,070,692
VIDEO DIGITIZING SYSTEM FOR SINGLE VALUED FUNCTIONS
John D. Parks, Lorton, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 8, 1975, Ser. No. 575,894
Int. Cl.² H04N 7/18
U.S. Cl. 358—107 **6 Claims**



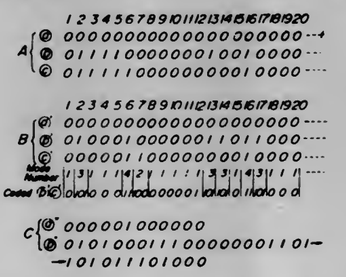
1. A video digitizing system comprising:
a visual source representing a plot of a single-valued function;
a stationary TV camera positioned near the visual source and scanning the source in a manner producing a single intersection between each horizontal scan of the camera and the plot;
means connected to the camera for recording horizontal scan information and reproducing electrical signals representing images of the plot;
means connected to the reproducing means for digitizing the signal for subsequent data storage, the means for digitizing comprising a video detector for generating adjacent pulses with intervals between adjacent pulses corresponding to relative amplitude changes along the plot;
a pulse generating means connected to the output of the detector for generating gate pulses having varying widths corresponding to the intervals between adjacent pulses from the video detector;
an amplitude counter gate having at least two inputs, the first input accepting relatively high frequency count cycles from an oscillator while the second input accepts the gate pulses which gate the count cycles on and off during corresponding horizontal scans from the video reproducing means;
an amplitude counter means connected at its input to the output of the amplitude counter gate for counting the gated cycles during corresponding horizontal scans, each count relating to the amplitude of a respective point along the plot;
a line counter means connected at its first input to the output of the pulse generating means for determining the vertical scan count;
a sync separator which transmits vertical pulses to the reset input of the line counter;
a latch register connected to the output of the amplitude and line counter means for storing the count thereof during a particular horizontal scan; and
a means connected to the latch register output for storing the various counts, indicative of the amplitude of respective points along the plot.

4,070,693
SECURE TELEVISION TRANSMISSION SYSTEM
Harold B. Shutterly, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 603,075, Aug. 8, 1975, abandoned. This application Mar. 10, 1977, Ser. No. 776,329
Int. Cl.² H04N 1/44
U.S. Cl. 358—123 **3 Claims**



1. Apparatus for scrambling a signal, said signal including a plurality of first lines with each first line comprising a synchronization portion followed in time by a first data portion, said data portion comprising at least sequentially occurring first and second data segments.
1. data storage apparatus having first and second storage locations with each of said locations having sufficient storage capacity to store data representing at least one line of said signal;
2. storage control apparatus for alternately storing data representing selected lines of said signal;
3. read control apparatus for alternately reading said stored data from said first and second storage locations to produce a modified line corresponding to each of said first lines, each modified line consisting of a synchronization portion and third and fourth data segments sequentially following said synchronization portion; with
a. said synchronization portion being substantially identical to the synchronization portion of the corresponding said first line;
b. said third data segments being substantially identical to said second data segments;
c. said fourth data segments being substantially identical to said first data segments; and
4. apparatus for randomly varying the length of said first and second data segments to produce said scrambled signal.

4,070,694
PICTURE IMAGE INFORMATION BAND COMPRESSION AND TRANSMISSION SYSTEM
Masaharu Sakamoto, Tokyo, and Masahiro Aoki, Hachioji, both of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan
Filed Dec. 22, 1975, Ser. No. 643,383
Claims priority, application Japan, Dec. 24, 1974 49-1508
Int. Cl.² H04N 7/12
U.S. Cl. 358—133 **10 Claims**



6. A picture image information band compression and transmission process for selecting and processing digital picture elements occurring in a picture area of at least first, second and third successive scanning lines, said picture elements being aligned in columns along said picture area, comprising the steps of:
selecting three consecutive adjacent picture elements in said

first scanning line, said three consecutive adjacent picture elements being disposed in first, second and third columns;

selecting a fourth picture element in said second scanning line, said fourth picture element being disposed in said first column;

estimating a picture element adjacent to said fourth picture element in a direction of scanning by selecting an estimated parameter in dependence of a predetermined consecutive combination of said first, second, third and fourth picture elements;

comparing the estimated picture element with an actual picture element adjacent to said fourth picture element in the direction of scanning; and

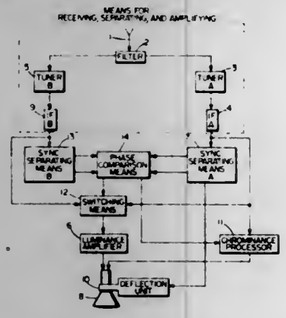
determining coincidence or non-coincidence of said estimated picture element with said actual picture element, allotting a "zero" to coincidence, and a "one" to lack of coincidence, the consecutively determined coincidence or non-coincidence becoming an estimated reference information scanning line.

4,070,695

CIRCUIT FOR SIMULTANEOUS DISPLAY OF SEPARATELY BROADCAST VIDEO SIGNALS

Artur Scholz, Braunlingen, and Dennis Cota, VS-Villingen, both of Germany, assignors to Saba Schwarzwaelder Apparate-Bau-Anstalt August Schwer Soehne GmbH, Villingen, Germany

Filed Feb. 25, 1977, Ser. No. 771,903
Claims priority, application Germany, Apr. 2, 1976, 2614199
Int. Cl.[2] H04N 5/68
U.S. Cl. 358—181 8 Claims



1. A circuit system for a television receiver wherein a quadrant of a first transmitted video signal is replaced by a sector of a second transmitted video signal comprising:

means for receiving, separating and amplifying at intermediate frequencies a first and a second transmitted video signal;

sync-separating means for separately extracting the vertical and the horizontal synchronizing pulses from said first and second transmitted video signals;

phase-comparison means for processing said vertical and horizontal pulses to provide a bi-level switching signal in which a second level is activated only during time periods corresponding to transmission of a quadrant of said second transmitted video signal, said time periods coinciding with time periods during which no synchronous pulses occur during transmission of said first transmitted video signal;

video display means; and

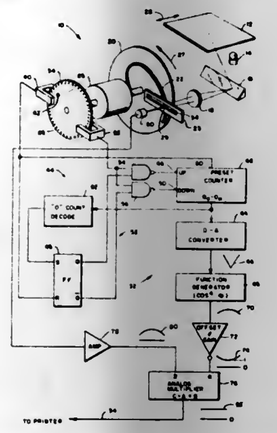
switching means responsive to said bi-level switching signal, said switching means linking said second transmitted video signal to said video display means during activation by said second level of said switching signal and linking said first transmitted video signal to said video display means during activation by the first level of said switching signal.

4,070,696

METHOD AND APPARATUS FOR CANCELLING NONTONAL VARIATIONS IN A FACSIMILE SCANNER OUTPUT SIGNAL

Paul Mitchell, Glenview, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 10, 1976, Ser. No. 684,829
Int. Cl.[2] H04N 1/40, 1/10
U.S. Cl. 358—280 3 Claims



1. An apparatus for cancelling nontonal variations in the output signal from a facsimile scanner, the scanner serving to successively sample the tonal level at selected areas of a scanned document wherein the output signal from the scanner is distorted by the nontonal variations related to the physical location of the document area being sampled comprising:

means for generating a series of pulses related to the physical position of that portion of the document being sampled;

a counter clocked by said pulses so that the state of said counter is related to the location of the sampled area on the document;

means for presetting said counter to a predetermined value at the start of each document scan and for counting down said counter to a selected state in response to said pulses from said preset value and for advancing said counter thereafter during the remainder of said document scan;

a digital to analog converter converting the state of said counter to an analog location signal;

a compensating circuit operating upon the analog location signal and providing a correction signal, said compensating circuit having a predetermined operating characteristic which is the reciprocal of the nontonal variations present in the output signal from the scanner;

means for combining said correction signal from said compensating circuit with the output signal from the scanner, said combining means being an analog multiplier multiplying said scanner output signal by said correction signal from said compensating circuit so that said combining means provides a signal which is substantially free of nontonal variations and thus accurately representative of the tonal level of the document area being sampled.

4,070,697

APPOINTMENT CALENDARING CLOCK

Leonard W. Miller, and James B. Bear, both of Santa Ana, Calif., assignors to Leonard W. Miller, Santa Ana, Calif.

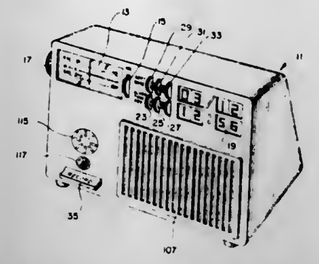
Filed Apr. 30, 1976, Ser. No. 681,992
Int. Cl.[2] G11B 23/18, 27/22
U.S. Cl. 360—12 13 Claims

1. An alarm clock, comprising:

means for recording plural spoken messages comprising:

means for inputting a signal representing a date on which said messages are to be played; and

means for generating signals in response to a human voice for recording on a storage medium, each such recording corresponding to a signal representing a date; and



alarm means for playing back informtion recorded on said storage medium corresponding to a given date on said given date; and

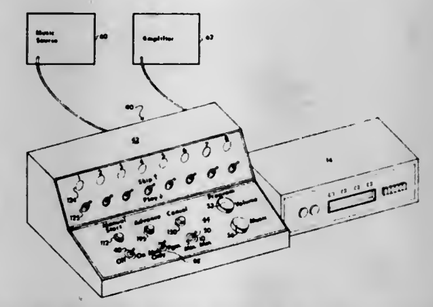
means for automatically eliminating from said storage medium said information following the playback of said information on said given date.

4,070,698

POINT OF SALE AUTOMATIC ANNOUNCING SYSTEM WITH PREPROGRAMMED CAPACITY

Donald W. Curtis, Scotts Meadows Drive; Michael A. Brunciforte, 803-A W. Church St., both of Laurinburg, N.C. 28352, and Terry L. Tucker, 202 I Byrum St., Cary, N.C. 27511

Filed May 10, 1976, Ser. No. 684,492
Int. Cl.[2] G11B 5/00, 31/00
U.S. Cl. 360—12 12 Claims



1. An automatic announcing system of the type which periodically interrupts a source of background material with a program of commercial announcements which comprising:

a. a multi-track tape player, having a motor and a track advance solenoid;

b. a control system comprising:

i. a timing means for emitting a control signal at preselected time intervals;

ii. a program start circuit electrically connected between said timer and said tape player for periodically activating the motor of said tape player responsive to said control signal from said timing means;

iii. a track skip relay circuit operatively connected to said track advance solenoid for activation thereof responsive to (1st) completion of play of each track, or (2nd) a skip pulse;

iv. a preprogrammable selecting means connected to said tape player for selecting at a time previous to the playing of a tape which ones of said tracks will be played, said selecting means including a selectively activated skip circuit means electrically connected to said track skip relay so that when activated, said skip pulse is emitted; and

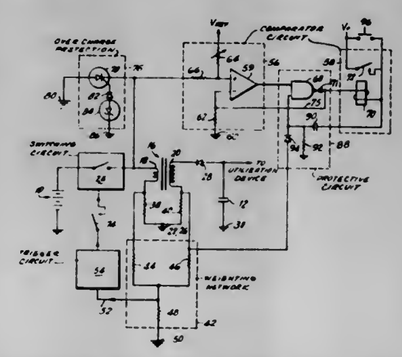
v. a skip switch provided for each track of said tape and connected to said skip circuit means for initiating said skip pulse when the track corresponding to the skip switch selected would normally move into a play position.

4,070,699

CHARGING CIRCUITS USING CONTROLLED MAGNETIC FIELDS

Herbert M. Einbinder, Hackensack, N.J., assignor to Datascope Corporation, Paramus, N.J.

Filed Nov. 10, 1975, Ser. No. 630,499
Int. Cl.[2] H02H 7/122
U.S. Cl. 361—86 5 Claims

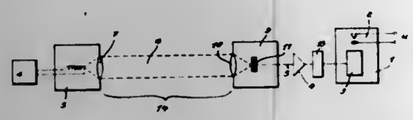


1. In a charging circuit adapted to include a source of energy and comprising electrical storage means, induction coil means connected to said storage means and adapted to be electrically coupled between said source of energy and said electrical storage means, for building a magnetic field when connected to said source of energy and for transferring energy to said storage means when disconnected from said source of energy to provide a drop in the magnetic field, and switching means connected to said coil means and adapted to be connected between said coil means and energy source for repeatedly interconnecting said coil means with said source of energy in successive cycles during each of which said coil means is first connected to said source of energy to build said magnetic field up to a predetermined maximum and is then disconnected from said source to provide said drop, and said switching means starting each cycle when the magnetic field has dropped to a predetermined minimum well above a zero magnetic field so that during operation of the charging circuit there is at said coil means a continuous substantial magnetic field ranging between said maximum and minimum, said coil means being an induction coil having a primary coupled to said switching means and a secondary coupled to said electrical storage means, said induction coil being capable of having energy stored in said magnetic field induced therein, comparator circuit means coupled to the primary of said induction coil, reference voltage coupled to said comparator circuit means for providing a selected reference voltage, said comparator circuit means comparing the voltage across said primary with said reference voltage and producing an output when said voltages are equal, and control means connected between said comparator circuit means and said switching means for opening the latter to disconnect said primary from said source of energy in response to said output.

4,070,700
DETECTING ELEMENT FOR A CONTROL DEVICE FOR INVALIDS

Jean-Claude Gobus, Corsaux, Switzerland, assignor to Carba S.A., Liebefeld, Switzerland

Filed Dec. 1, 1975, Ser. No. 636,703
Claims priority, application Switzerland, Dec. 5, 1974, 16136/74
Int. Cl.² H01H 47/00
U.S. Cl. 361—170 1 Claim

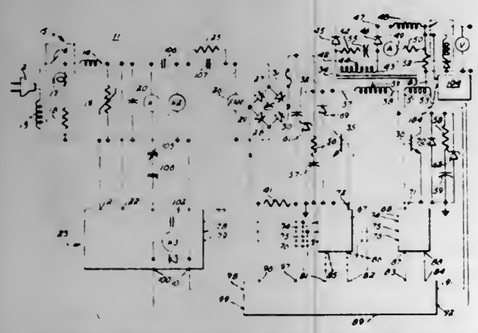


1. Detecting element for a control device for invalids who cannot precisely and adequately control their movements, comprising a source of waves adapted to establish a sensitive zone whose size is large relative to the size of a member of the invalid's body that is deliberately movable by the invalid, means for detecting the presence of said member in said zone, and means for transmitting from said detecting means a signal responsive to the presence of said member in said zone and for preventing the transmission of said signal upon interfering movements of said member in said zone, said transmitting and preventing means including a time delay element that prevents the transmission of successive signals upon repeated movements of said member in said zone.

4,070,701
INVERTER POWER SUPPLY

John D. Harnden, Jr.; William P. Kornrumpf; John P. Walden, and Loren H. Walker, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 516,789, Oct. 21, 1974, abandoned.
This application Feb. 11, 1976, Ser. No. 657,384
Int. Cl.² H02M 3/335
U.S. Cl. 363—25 32 Claims



1. A high frequency inverter power supply for operation from a single phase low frequency a.c. power source comprising:

a full wave rectifier section including input terminals adapted to be connected to said a.c. power source and first and second oppositely poled output terminals providing full wave rectified substantially unfiltered pulsating d.c. power at said output terminals;

a high frequency inverter section having an operating frequency substantially higher than said a.c. frequency, said high frequency inverter section connected to said first and second oppositely poled output terminals, said high frequency inverter section including high frequency transformer means having a primary winding and a secondary winding, and controllable solid state switching means electrically connected to said oppositely poled output terminals and to said primary winding;

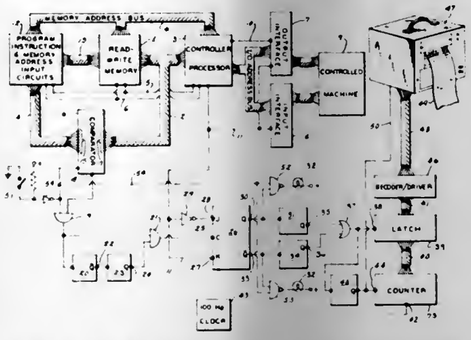
reactive means having a high impedance at said low a.c. frequency and a low impedance at said inverter operating frequency, said reactive means connected to said oppositely poled output terminals providing a low impedance, high frequency path thereacross, said reactive means providing substantially no filtering or power storage at said low a.c. frequency;

control means operatively associated with said controllable solid state switching means for providing alternate conduction in said primary winding at said operating frequency whereby a waveform is produced in said secondary winding characterized by a first frequency equal to said high operating frequency amplitude modulated by a second frequency equal to said low a.c. frequency.

4,070,702
CONTACT HISTOGRAM FOR PROGRAMMABLE CONTROLLER

Valdis Grants, Lyndhurst, and Odo J. Struger, Chagrin Falls, both of Ohio, assignors to Allan-Bradley Company, Milwaukee, Wis.

Filed Mar. 26, 1976, Ser. No. 671,020
Int. Cl.² G06F 11/00
U.S. Cl. 364—200 12 Claims



1. In a controller having a processor which operates in response to control program instructions stored in a controller memory to periodically examine the status of a plurality of input devices on a machine to be controlled, the improvement therein of a contact histogram which provides a visual record of the status of a selected one of said input devices and which comprises:

means for storing the I/O address of a selected input device to be monitored;

means connected to said storing means and said controller for comparing said stored I/O address with an I/O address in each program instruction executed by said controller, said comparing means generating a selected logic signal when they are identical;

means connected to said controller and said comparing means for storing a signal indicative of the status of said selected input device when said selected logic signal is generated by said comparing means;

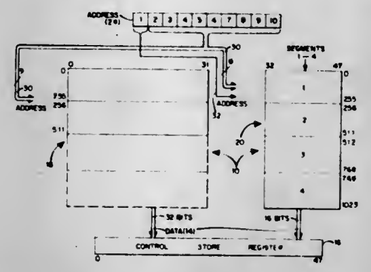
timer means for accumulating elapsed time between status changes of said selected input device and recording the same when enabled; and

means connected to said status storing means for enabling said timer means when the stored status of said selected input device changes status.

4,070,703
CONTROL STORE ORGANIZATION IN A MICROPROGRAMMED DATA PROCESSING SYSTEM

Virendra S. Negi, Pepperell, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sept. 27, 1976, Ser. No. 726,888
Int. Cl.² G06F 9/00
U.S. Cl. 364—200 10 Claims



1. A data processing system comprising:

a. means, responsive to a first group of signals, for generating an address including a least significant portion and a most significant portion, said most significant portion having either a first state or a second state;

b. first storage means having a first plurality of word locations, each of said word locations having a first plurality of bit locations;

c. second storage means having a first plurality of word locations, each of said word locations having a second plurality of bit locations;

d. third storage means having a second plurality of word locations, each of said word locations having a second plurality of bit locations, each of said word locations of said third storage means having positions corresponding to those of said second storage means;

e. wherein said first storage means includes command information for controlling the operation of said system and wherein said second and third storage means includes address information representative in part of said first group of signals;

f. first means for addressing said first storage means with said least significant portion of said address; and,

g. second means for addressing said second and third storage means with said least significant portion and said most significant portion of said address, said second means for addressing including means for addressing said second storage means if said most significant portion is in said first state and means for addressing said third storage means if said most significant portion is in said second state, whereby the same said command information is addressed when either a said word location in a corresponding location of said second storage means or a said word location in a corresponding location of said third storage means is addressed.

4,070,704
AUTOMATIC RECONFIGURATION APPARATUS FOR INPUT/OUTPUT PROCESSOR

Jaime Calle, Glendale; Robert J. Garvey, Phoenix; Earnest M. Monahan, Phoenix; George L. Parris, Phoenix; Jerome J. Twibell, Phoenix, and John M. Woods, Glendale, all of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

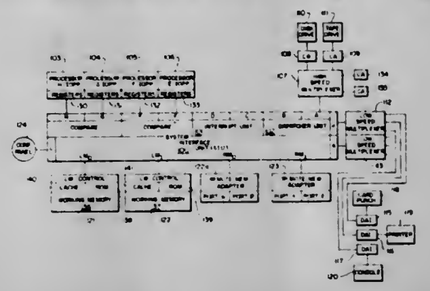
Filed May 17, 1976, Ser. No. 686,975
Int. Cl.² G06F 11/00, 13/00
U.S. Cl. 364—200 4 Claims

1. In a computer system including a system interface unit coupled to plural processors, plural main memories, a peripheral unit for storing computer programs, an interval timer and a computer program bootload apparatus, the combination which comprises:

a. first logic means responsive to a system initialization request for issuing a reconfiguration signal during a start-up phase of a system initialization;

b. second logic means responsive to said signal and to an extrasystem configuration code for selecting a first configuration of said plural memories and said plural processors to accommodate a computer program bootload; and

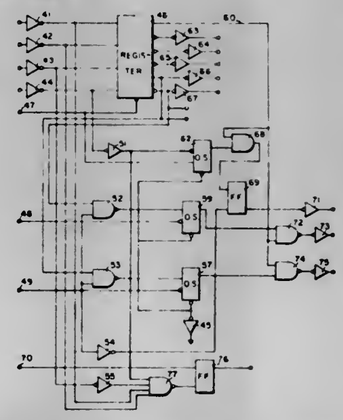
c. third logic means in electrical communication with said first means, said second means and said interval timer for automatically reinitializing said system and selecting one of plural successive configurations of said plural memories and said plural processors in the event said bootload is not completed within a preset time interval.



4,070,705
SIMULATION APPARATUS

James Andre Lockwood, Columbia, and Francis Arthur Charrette, Cheverly, both of Md., assignors to The Singer Company, Binghamton, N.Y.

Filed Nov. 20, 1975, Ser. No. 633,943
Int. Cl.² G06F 11/04
U.S. Cl. 364—200 6 Claims



3. A system for interconnecting two digital computers in a master-slave relation wherein a master computer containing a first communications unit that is able to perform a series of mathematical processes continuously to produce continually updated results and a slave computer containing a second communications unit and including an information memory comprising a plurality of separate addresses which are individually assigned to represent the status of a particular item or condition of an indicator or switch, each of said items or conditions being changed as said system operates, said system comprising:

an interface connecting said first and second communications units in mutual communication with each other;

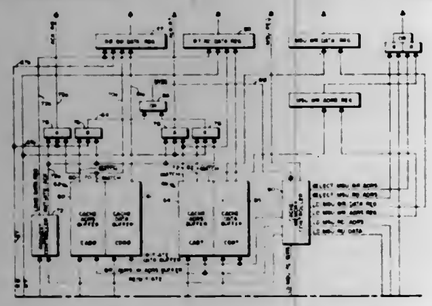
said interface comprising a clock which generates an output interrupt signal for the periodic updating of communications;
means for connecting said interrupt signal from said interface to said first communications unit;
a first bistable device contained within said interface;
means for connecting said interrupt signal to said first bistable device to set said first device, said first device being reset by said master computer;
means for connecting the set output of said first bistable device to said first communications unit to indicate the purpose of said interrupt signal;
said master computer in response to said set output and said interrupt signal generating a code combination indicative of the nature, direction and content of the communications to be established between said master and said slave computers, and
means responsive to and connected to said code combination and coupled to said master computer and said slave computer for alerting said slave computer to the communication.

4,070,706

PARALLEL REQUESTOR PRIORITY DETERMINATION AND REQUESTOR ADDRESS MATCHING IN A CACHE MEMORY SYSTEM

James Herman Scheuneman, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 20, 1976, Ser. No. 724,681
Int. Cl.² G06F 9/18
U.S. Cl. 364—200 3 Claims



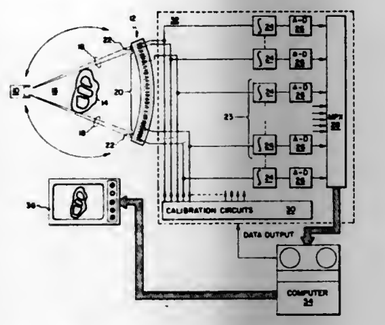
1. In an electronic data processing system, including a plurality of requestors that seek access to data stored in a like plurality of cache memories, the combination comprising:
R cache memories, each comprising:
a buffer memory having a plurality of address memory locations and a like plurality of associated data memory locations for storing a requestor address in each of said address memory locations and associated data in the associated data memory location; and,
match determining means coupled to said address memory locations;
R requestors having a priority range, each generating an associated requesting requestor address and an associated priority request signal;
priority determining means;
means separately coupling each of said priority request signals from each separate one of said R requestors to said priority determining means for determining which one of the priority request signals generated by the requesting requestors is to be granted priority over the other ones of said requesting requestors and generating a requestor active signal indicative of the one requesting requestor that is to be granted priority;
R gating means;
means coupling each of said gating means to only a separate associated one of said R cache memories for receiving the data that are read out of the associated cache memory;
means coupling said requestor active signal from said priority determining means to only the separate associated one of said R gating means for enabling the data that were read out of the associated one of said R cache memories to be coupled to the requesting requestor that was granted priority by said priority determining means;
means coupling the requesting requestor address from each of said R requestors to only an associated separate one of said R cache memories; and,
timing means simultaneously coupling said priority request signals to said priority determining means and each of said requesting requestor addresses to the associated cache memory for simultaneously initiating said priority determination and said match determination.

4,070,707

REDUCTION OF OFFSETS IN DATA ACQUISITION SYSTEMS

William D. Barber, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 12, 1976, Ser. No. 704,413
Int. Cl.² H03K 13/02; G01N 23/00
U.S. Cl. 364—414 10 Claims



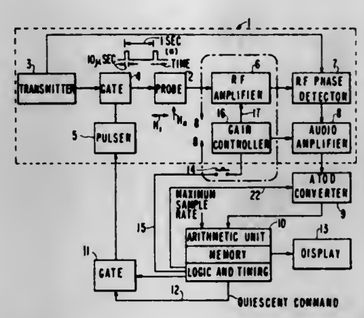
6. In a ramp-type, analog-to-digital converter circuit of the type comprising integrating means connected to receive and integrate signals, comparator means connected to produce a logical signal in response to the polarity of the difference of an output of the integrating means subtracted from a reference signal, and timing means functioning to produce a digitization of the time period between the start of the integration of the data signal and the occurrence of a value of the logical signal which indicates a change in the polarity of the difference; wherein the comparator means are characterized by a significant propagation delay time between the occurrence of the change of polarity of the difference and the occurrence of the corresponding value of the logical signal, the improvement comprising;
means for applying a preconditioning signal to the integrating means prior to the reception of a data signal;
means for causing the integrating means to integrate the preconditioning signal through a reference value until the comparator produces a signal indicating a change of polarity, whereby a negative residue signal is produced on the integrating means;
means for applying the data signal to said integrating means in the presence of said residue signal;
means for causing the integrating means to integrate the data and residue signals through the reference value;
and
means associated with said timing means for providing a digitization of the data signal without offsets attributable to propagation delays.

4,070,708

ANALYTICAL INSTRUMENT OPTIMUM DATA ACQUISITION METHOD AND APPARATUS

Stephen H. Smallcombe, and Howard D. W. Hill, both of Cupertino, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sept. 1, 1976, Ser. No. 719,557
Int. Cl.² G06F 15/34
U.S. Cl. 364—575 18 Claims



7. An analytical instrument comprising a spectrometer, a ensemble averaging computer including means for accumulating data to improve the signal-to-noise ratio of ensemble averaged low level resonance outputs derived from said spectrometer, said ensemble averaging computer including an A/D converter having a least significant bit value of d, a memory unit including scaling capability and storage of the scaling factor, an arithmetic unit, a logic and timing unit, said analytical instrument further including
means for causing said A/D converter to perform a plurality of time displaced noise measurements and analogue to digital conversions of said noise measurements of the output of said spectrometer at a sampling rate less than a predetermined maximum sampling rate;
means to cause said memory unit to store each said digital time noise displaced measurement in a separate channel of said memory;
means for causing said computer to operate upon said plurality of digital time displaced readings to determine a factor m, wherein m is proportional to $\log kV'/d$ and where V' is the rms value of the said stored digital time displaced measurements, d is said least significant bit of the said A/D converter, and k is a constant;
means for generating a parameter n, where n equals a function of m;
means for causing said arithmetic unit to compare, in nonquiescent state operation, the number of said scaling operations to the parameter n; and
means for discontinuing operation of said analytical instrument when said scaling factor exceeds the parameter n.

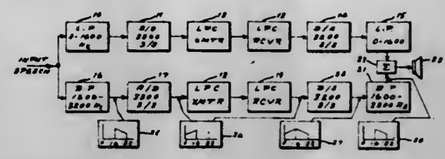
4,070,709

PIECEWISE LINEAR PREDICTIVE CODING SYSTEM

John E. Roberts, Lexington, and Richard H. Wiggins, Burlington, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 13, 1976, Ser. No. 731,608
Int. Cl.² G06J 1/00; G10L 1/06
U.S. Cl. 364—602 3 Claims

1. An LPC signal processing system comprising
means for dividing an input analog signal into N contiguous, substantially equal bandwidth signal components,
a separate LPC transmitting and receiving circuit connected to process each said signal component, each said LPC transmitting and receiving circuit having a sampling rate of $(2f_{max}/N)$, f_{max} being the upper limit frequency of the input signal bandwidth, and



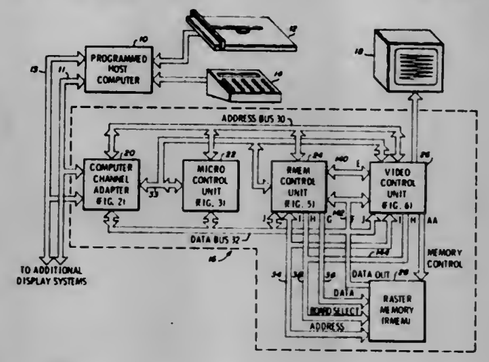
means for summing the outputs of said LPC transmitting and receiving circuits.

4,070,710

RASTER SCAN DISPLAY APPARATUS FOR DYNAMICALLY VIEWING IMAGE ELEMENTS STORED IN A RANDOM ACCESS MEMORY ARRAY

Josef S. Sukonick, Cupertino, and Greg J. Tilden, San Jose, both of Calif., assignors to Nagraphics, Inc., Sunnyvale, Calif.

Filed Jan. 19, 1976, Ser. No. 650,372
Int. Cl.² G06F 3/14
U.S. Cl. 364—900 32 Claims



1. A computer graphics display system for use in association with a host computer to provide a visual display of graphics information contained therein, comprising:
a data bus;
an address bus;
display means for developing a visible image corresponding to video signals input thereto;
channel adapter means for providing an interface for communicating information including bits of graphics data between the host computer and said data bus and said address bus;
system control means communicatively coupled to said data bus and said address bus and operative to generate first and second control signals;
raster memory means including an array of N rows and M columns of storage sites each capable of storing a bit of graphics data corresponding to a picture element of a graphics image to be formed by said display means;
raster memory control means communicatively coupled to said address bus, said data bus, said raster memory means and said system control means, said raster memory control means being responsive to said first control signal and operative to cause bits of graphics data input from the host computer to be stored in said raster memory means; and
video control means communicatively coupled to said address bus, said data bus, said raster memory means, said display means, and said system control means, said video control means being responsive to said second control signal and operative to read out in raster fashion data stored in any selected block of n rows and m columns of

said storage sites, where n is an integer less than N and m is an integer less than M, and to use such data to generate a video signal for input to said display means whereby said display means is caused to display an image comprised of picture elements corresponding to the data obtained in the selected block of storage sites.

4,070,711

DOUGH HOOK ATTACHMENT FOR KITCHEN MIXER

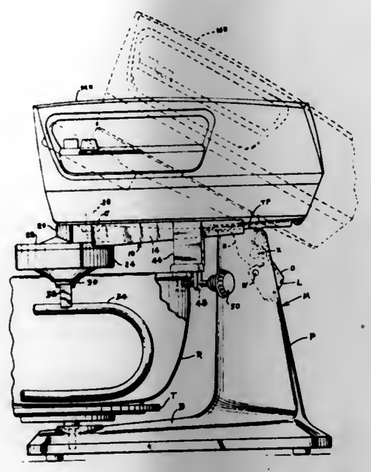
C. Louis Saunder, Cheshire, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Mar. 25, 1977, Ser. No. 781,164
Int. Cl.[2] B01F 7/16
U.S. Cl. 366—98 5 Claims

1. For a kitchen stand-type food mixer having a base adapted to receive a mixing bowl, an upstanding pedestal at one end of the base, the pedestal having a substantially horizontal top portion, and a mixer motor housing pivotally attached to the top of the pedestal extends from the attachment to the top portion and is cantilevered out over the base, the housing having at its distal end a downwardly-facing collet adapted to drivingly engage a mixer beater, a dough hook attachment comprising:

a. a rigid frame presenting at one end a gear box having an upstanding drive shaft adapted to operatively engage said collet and a downwardly-directed spindle, the opposite end of the frame having integral pad means adapted to rest on the top portion of the pedestal and to be held firmly down thereagainst by the underside of the housing; and

b. a dough hook having an upward shank drivingly engaging the spindle and extending downward to operate in the bowl;



whereby the engagement of the shaft and the collet and holding of the pad means between pedestal and housing securely holds the attachment on the mixer.

DESIGN PATENTS

GRANTED JANUARY 24, 1978

ERRATA

For CLASS	See PATENT NO.
D09-193	247,064

247,006
SHOE
Ambrogio Borri, Piazza della Republica 21, Milano, Italy
Filed Dec. 29, 1975, Ser. No. 644,449
The portion of the term of this patent subsequent to Dec. 21, 1980, has been disclaimed.
Term of patent 3½ years
Int. Cl. D2—*04*
U.S. Cl. D2—286



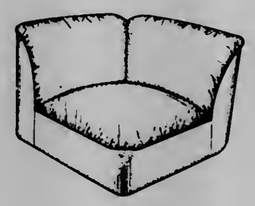
247,007
SPORT SHOE
Morris L. Krome, 9 Roland Mews, Baltimore, Md. 21210
Filed July 29, 1975, Ser. No. 599,921
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



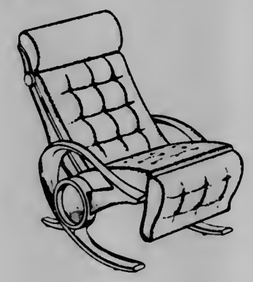
247,008
SPORT SHOE
Morris L. Krome, 9 Roland Mews, Baltimore, Md. 21210
Filed Apr. 28, 1976, Ser. No. 681,193
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



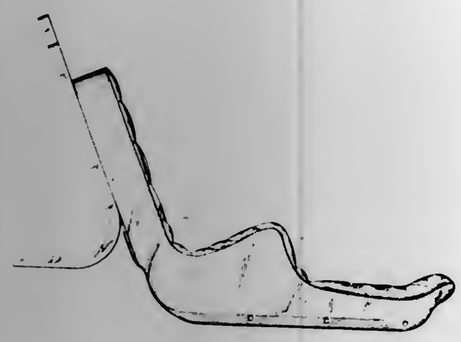
247,009
CHAIR
Svante Schöblom, and Carl Eric Klote, both of Tranas, Sweden, assignors to Overman AB, Tranas, Sweden
Filed Oct. 15, 1975, Ser. No. 622,469
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37

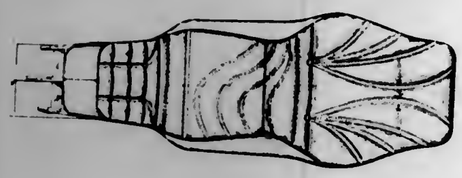


247,010
ADJUSTABLE RECLINING CHAIR
Alexander C. Daswick, 647 Orange Grove, South Pasadena, Calif. 91030
Filed Apr. 30, 1976, Ser. No. 681,846
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—39

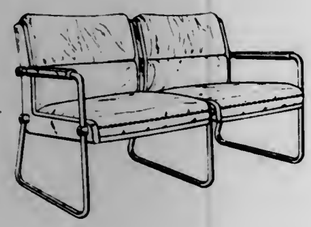


247,011
COMBINED MOTORCYCLE SEAT AND BACKREST WITH SUPPORT BAR THEREFOR
Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry, Inc., Somersville, Conn.
Filed Oct. 22, 1976, Ser. No. 735,128
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D6—48.1

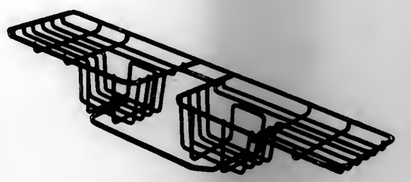




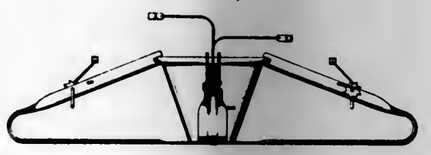
247,012
SETTEE
Karl Läbke, Rheda, Germany, assignor to Läbke KG, Rheda, Germany
Filed Oct. 17, 1975, Ser. No. 623,452
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



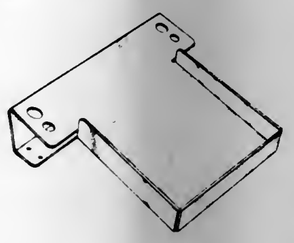
247,013
BATHTUB CADDY
George Chapman, 1712 Park Blvd., Cherry Hill, N.J. 08002
Filed June 17, 1976, Ser. No. 697,205
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86



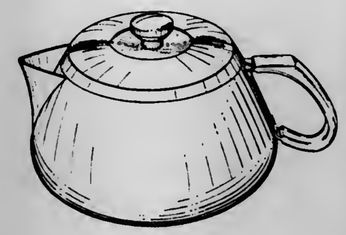
247,014
CHRISTMAS TREE STAND
John Chulick, 15 Main St., Winters, Calif. 95694
Filed Dec. 20, 1976, Ser. No. 752,554
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—105



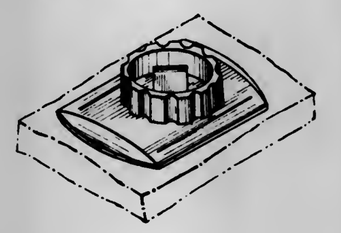
247,015
SUPPORT STAND FOR A DESK TOP CALCULATOR OR SIMILAR ARTICLE
William J. C. Fowlie, 1815 SE. 7th Ave., Portland, Oreg. 97214
Filed Feb. 17, 1976, Ser. No. 658,709
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—184



247,016
TEA POT
Carl-Arne Breger, Lilla Molleberos, 212 90 Malmo, Sweden
Division of Ser. No. 483,153, March 28, 1974, Pat. No. Des. 239,687. This application Mar. 29, 1976, Ser. No. 671,482
Claims priority, application Sweden, Sept. 21, 1973, 1724/73
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—65



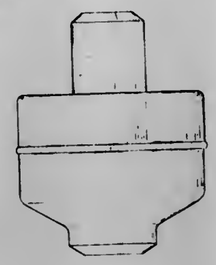
247,017
HOLDER FOR SCOURING IMPLEMENT
Louis J. Silver, 3434 Baker St., San Francisco, Calif. 94123
Filed Aug. 4, 1976, Ser. No. 711,485
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—178



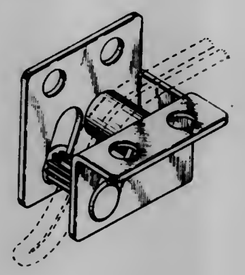
247,018
BURNISHING TOOL
James D. Kramer, Minneapolis; Dennis E. Herkal, Plymouth; Lawrence D. Kramer, Minneapolis, and Lawrence A. Charboneau, St. Paul, all of Minn., assignors to Real Estate Graphics, Inc., Minneapolis, Minn.
Filed Oct. 15, 1976, Ser. No. 733,009
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



247,019
STRUCTURAL STRUT JOINT
Theodore C. Patten, 17127 Roundhill Drive, Huntington Beach, Calif. 92649
Filed Sept. 18, 1975, Ser. No. 614,356
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



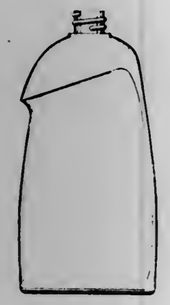
247,020
CORD LOCK FOR ATTACHMENT TO DECORATIVE WOVEN WOOD SHADES
Pero Giumac, 15566 Stetson, Los Gatos, Calif. 95030
Filed Feb. 5, 1976, Ser. No. 655,467
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—394



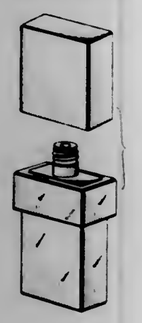
247,021
BOTTLE
William James Britt, Greenville, S.C., assignor to Morton-Norwich Products, Inc.
Filed June 14, 1976, Ser. No. 695,889
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



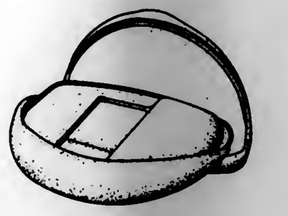
247,022
BOTTLE OR SIMILAR ARTICLE
Guy A. Turabull, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 22, 1976, Ser. No. 651,496
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60



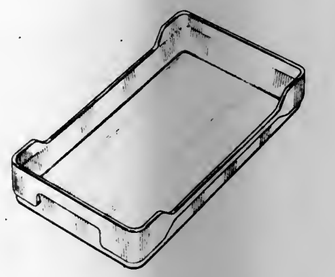
247,023
BOTTLE OR SIMILAR ARTICLE
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sept. 2, 1975, Ser. No. 609,758
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168



247,024
CASE FOR A DRY SHAVER
Karl Peter Günter Hauf, Klagenfurt, Viktring, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 29, 1976, Ser. No. 653,500
Claims priority, application Benelux, July 30, 1975, 50465-02
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D9—186



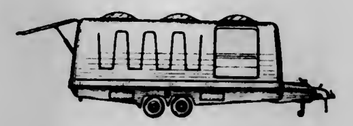
247,025
STACKABLE PACKAGING TRAY
Richard Sutton Cherry, Toronto, Canada, assignor to Phillips Plastics of North America, Inc., Mississauga, Canada
Filed Nov. 3, 1975, Ser. No. 628,220
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242

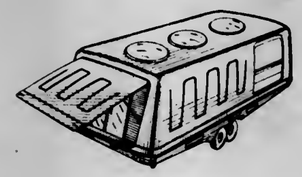


247,026
HOLDER FOR A FLOWER OR CANDLE
Hellmuth Sterniske, Lutt-Iserbrook 65, D-2000 Hamburg 55, Germany
Filed June 30, 1976, Ser. No. 701,756
Claims priority, application Germany, Dec. 31, 1975, 10148
Term of patent 14 years
Int. Cl. D11—*02*; D26—*01*
U.S. Cl. D11—149

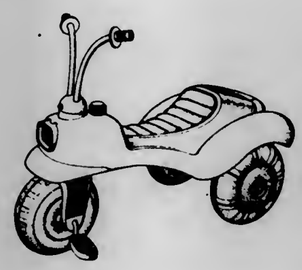


247,027
TRAILER
Graham Robert Eagle, 34/247 Ernest Street, Cammeray, New South Wales 2062, Australia, and Anthony Pasteris, 36 Southerden Avenue, Grange, Queensland 4051, both of Australia
Filed June 8, 1976, Ser. No. 693,989
Claims priority, application Australia, Dec. 9, 1975, 14491/75
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103

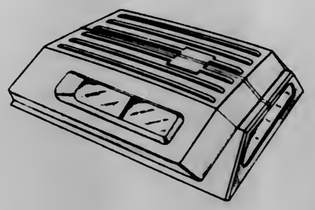




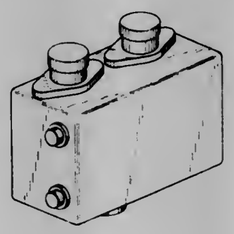
247,028
TRICYCLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Kenshun Ishii, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed June 30, 1976, Ser. No. 701,267
Claims priority, application Japan, Feb. 19, 1976, 51-5374
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



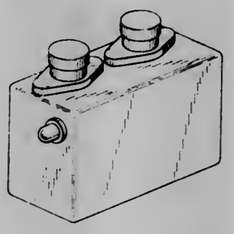
247,029
CANOPY FOR A PICK UP TRUCK BED
Victor Fairthorne, Toronto, Canada, assignor to Lead Ranger Manufacturing Inc.
Filed Oct. 22, 1976, Ser. No. 735,127
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



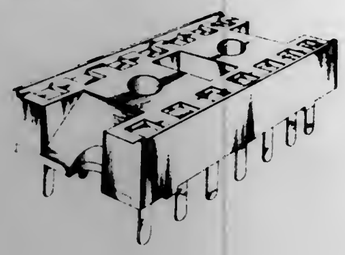
247,030
TRANSIENT VOLTAGE SUPPRESSION UNIT
Daniel M. Cocuzzo, 22 High Rock Circle, Waltham, Mass. 02154
Filed Oct. 8, 1976, Ser. No. 730,832
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—11



247,031
TRANSIENT VOLTAGE SUPPRESSION UNIT
Daniel M. Cocuzzo, 22 High Rock Circle, Waltham, Mass. 02154
Filed Oct. 8, 1976, Ser. No. 731,035
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—11



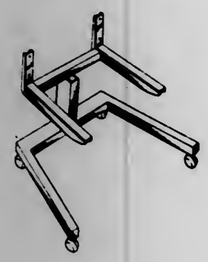
247,032
LOW PROFILE INTEGRATED CIRCUIT DIP SOCKET
Gene C. Hollingsworth, Cerritos, and Eugene G. Freehauf, Ontario, both of Calif., assignors to Zero Corporation, Burbank, Calif.
Filed June 16, 1975, Ser. No. 587,394
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



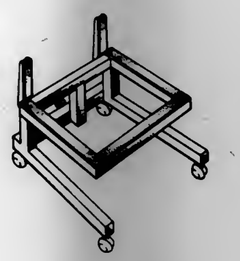
247,033
FILM MAGAZINE
Katsuji Muramatsu, and Ikuo Fusugawa, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Dec. 10, 1975, Ser. No. 639,501
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—11



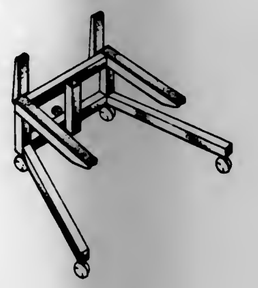
247,034
MOBILE STAND FOR A LOUDSPEAKER
Harry Brodmann, Wolverhampton, England, assignor to C.A. Moon Limited, West Midlands, Great Britain
Filed Aug. 9, 1976, Ser. No. 712,530
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—38



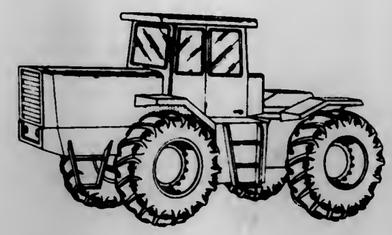
247,035
MOBILE TILTABLE STAND FOR A LOUDSPEAKER
Harry Brodmann, Wolverhampton, England, assignor to C.A. Moon (Holdings) Limited, West Midlands, Great Britain
Filed Nov. 26, 1976, Ser. No. 744,988
Claims priority, application United Kingdom, Oct. 6, 1976, 977422/76
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—38



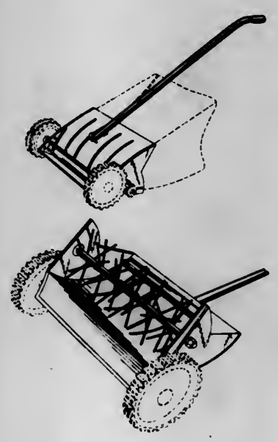
247,036
MOBILE TILTABLE STAND FOR A LOUDSPEAKER
Harry Brodmann, Wolverhampton, England, assignor to C.A. Moon (Holdings) Limited, West Midlands, Great Britain
Filed Nov. 26, 1976, Ser. No. 745,095
Claims priority, application United Kingdom, Oct. 6, 1976, 977423/76
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—38



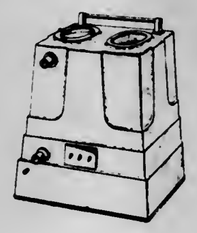
247,037
TRACTOR
Morley L. Smith, Jr., Beaconsfield, Canada, assignor to Jacques Guillon/Designers Inc., Montreal, Canada
Filed May 26, 1976, Ser. No. 690,084
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—23



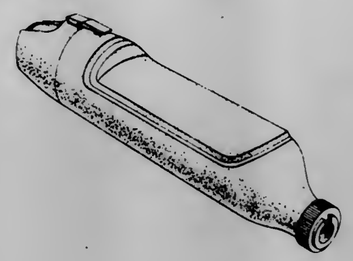
247,038
COMBINED LEAF SWEEPER BODY AND HANDLE
Eric Denis Stallard, 12 Burwood St., Shenton Park, Western Australia, Australia
Filed July 26, 1974, Ser. No. 492,974
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—27



247,039
CARPET CLEANER AND DRYER
Junie B. Lawson, 2516 Hood Drive, Virginia Beach, Va. 23454
Filed May 18, 1976, Ser. No. 687,466
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—52



247,040
SUCTION CLEANER BODY OR THE LIKE
Robert M. Goodman, 9024 Moody Ave., Morton Grove, Ill. 60053, and Joseph R. Mango, 14651 S. 49th Court, Midlothian, Ill. 60445
Filed May 3, 1976, Ser. No. 682,570
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—55

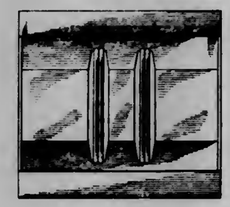


247,041
FLASH CAMERA
Hiroshi Fukuda, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Sept. 13, 1976, Ser. No. 722,981
Claims priority, application Japan, Mar. 11, 1976, 51-8592
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—06



247,042
FILE CARD HOLDER
Hildaur L. Nelsen, Metuchen, and Martin Glauninger, Teaneck, both of N.J., assignors to The Rolodex Corporation
Filed Mar. 25, 1975, Ser. No. 561,778
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

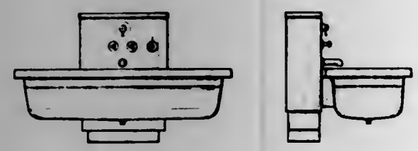




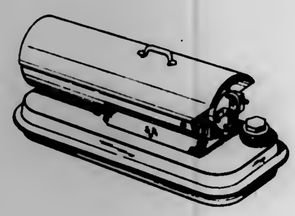
247,043
HOLSTER
Earl J. Clark, Frederick, Md., assignor to Tandy Brands, Inc., Fort Worth, Tex.
Filed Jan. 12, 1976, Ser. No. 648,452
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13



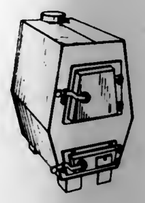
247,044
COMBINED BATHTUB AND LIFTING UNIT
Hans Arne Valentin Johansson, Treharadsvagen 36, 241 OO Eslov, Sweden
Filed Mar. 10, 1976, Ser. No. 665,530
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—56



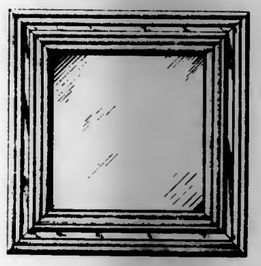
247,045
PORTABLE HEATER
Eugene C. Briggs, Dayton, Ohio, assignor to Kochring Company, Milwaukee, Wis.
Filed Aug. 8, 1975, Ser. No. 603,039
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77



247,046
HEATING STOVE
George Paul Bader, LaFarge, Wis., assignor to Kickapoo Stove Works, Ltd., LaFarge, Wis.
Filed Jan. 26, 1976, Ser. No. 652,550
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



247,047
STORM WINDOW
Norm Damiano, 1245 S. Inca St., Denver, Colo. 80223
Filed June 24, 1976, Ser. No. 699,514
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—52



247,048
FLOOR TILE
Stanley King, New York, N.Y., assignor to Dunlop Limited, London, England
Filed May 11, 1976, Ser. No. 685,345
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



247,049
COMBINED CIGARETTE HOLDER AND ASHTRAY
Mary Louise Irene Alves, 2472 Rampart Court, Hayward, Calif. 94545
Filed June 16, 1976, Ser. No. 696,729
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—14



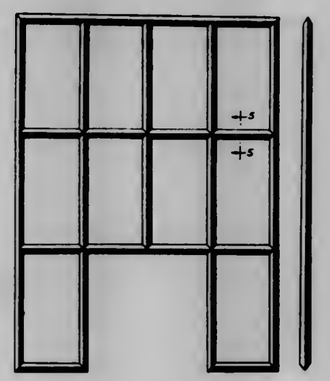
247,050
SMOKE DISPERSING DEVICE FOR USE WITH A CIGARETTE ASHTRAY
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed July 1, 1976, Ser. No. 701,542
Term of patent 14 years
Int. Cl. D27—*3, 99*
U.S. Cl. D27—15



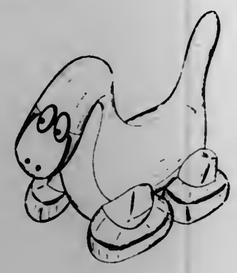
247,051
CIGARETTE LIGHTER
Jean Tricot, 53 rue du Val d'Osne, Saint Maurice (Val de Marne), France
Filed Mar. 3, 1977, Ser. No. 774,223
Claims priority, application France, Oct. 11, 1976, 75137
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



247,052
GRID FOR POULTRY CAGE GATE
Donald L. DeMyer, c/o Cycle Systems, Inc. 9290 Belding Road, NE., Rockford, Mich. 49341
Division of Ser. No. 694,567, June 10, 1976. This application May 9, 1977, Ser. No. 795,151
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



247,053
TOY STUFFED ANIMAL
Thomas J. Dawson, St. Louis, Mo., assignor to Genie Toys, Inc., St. Louis, Mo.
Filed Aug. 12, 1976, Ser. No. 713,697
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



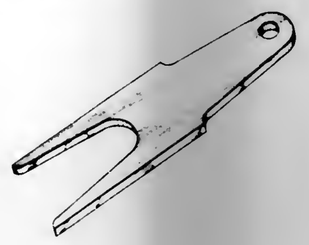
247,054
TOY-FIGURE
Dietmar Rahmstorf, Nurnberg, Germany, assignor to Messrs. BIG Spielwarenfabrik Dipl.-Ing. Ernst A. Bettag, Furth, Germany
Filed Dec. 5, 1975, Ser. No. 638,191
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



247,055
GAME COMPONENT
Fredric C. Behling, 41 Washington St., West Barrington, R.I. 02890, and Paul J. Sullivan, 300 Metacom Ave., Bristol, R.I. 02809
Filed Mar. 22, 1976, Ser. No. 669,390
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 R



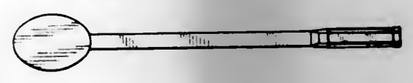
247,056
DIVOT REPAIR TOOL FOR GOLFERS
Melvin G. McClankie, 1058 Oakway Court, Columbus, Ohio 43228
Filed Apr. 7, 1976, Ser. No. 674,371
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



247,057
NOVELTY TENNIS RACKET HAVING TWO HEADS
Ted R. Simmoneau, P.O. Box C, Florence, Oreg. 97439
Filed June 1, 1976, Ser. No. 691,401
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



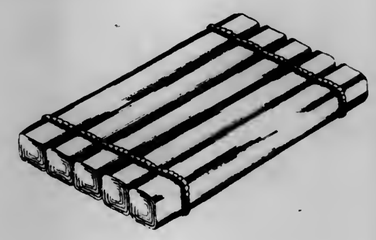
247,058
PRACTICE TENNIS RACQUET
George R. Clowes, 1309 Braeburn Road, Flossmoor, Ill. 60422
Filed June 1, 1976, Ser. No. 691,494
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 SP



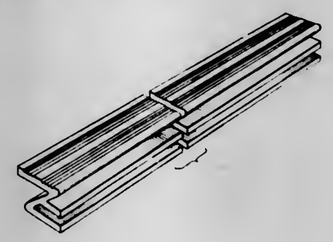
247,059
NOVELTY TENNIS RACKET HAVING BENT HANDLE
Ted R. Simmoneau, P.O. Box C, Florence, Oreg. 97439
Filed June 1, 1976, Ser. No. 691,567
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



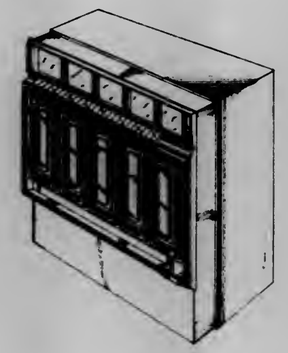
247,060
TOY RAFT
John Alfred Park, 3626 W. Eagle Ave., Phoenix, Ariz. 85029
Filed Nov. 3, 1975, Ser. No. 628,167
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ



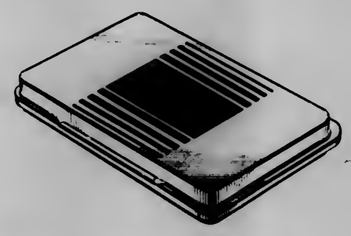
247,061
CEILING LIGHT FIXTURE DIFFUSER SIDE RAIL
Murray M. Win, 1223 S. Roxbury Drive, Los Angeles, Calif. 90035
Filed Nov. 4, 1976, Ser. No. 738,664
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 A



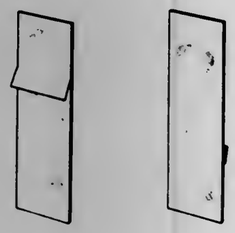
247,062
VENDING MACHINE
Robert P. Franklin, Lake Hopatcong, and Walter L. Koch, Caldwell, both of N.J., assignors to Rowe International Inc., Whippany, N.J.
Filed Aug. 20, 1976, Ser. No. 716,168
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 B



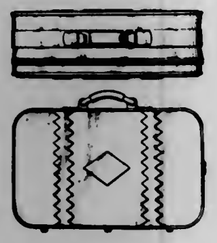
247,063
STAMP PAD
Takaji Funakoshi, No. 1, 2-chome, Kitstakasho, Nishi, Nagoya, Aichi, Japan
Filed July 23, 1976, Ser. No. 707,991
Claims priority, application Japan, Feb. 4, 1976, 51-3241
Term of patent 14 years
Int. Cl. 19—*02*
U.S. Cl. D64—10



247,064
ADHESIVE BANDAGE PACKAGE
Hans Spiegelberg, Taby, Sweden, assignor to Salve S.A., Fribourg, Sweden
Filed Sept. 18, 1975, Ser. No. 614,432
Claims priority, application Sweden, July 1, 1975, 751333; July 1, 1975, 751334; July 1, 1975, 751335; July 1, 1975, 751336; July 1, 1975, 751337; July 1, 1975, 751338; July 1, 1975, 751339
Term of patent 14 years
Int. Cl. D9—*99*; D24—*04*
U.S. Cl. D9—193



247,065
HAND LUGGAGE
Sol Koffler, Providence, R.I., assignor to American Luggage Works, Inc., Warren, R.I.
Filed Oct. 8, 1975, Ser. No. 620,578
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G



247,066
CASE FOR BINOCULARS
Masakazu Tomatsuri, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Mar. 8, 1976, Ser. No. 664,692
Claims priority, application Japan, Oct. 28, 1975, 50-42977
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R





247,067
HAND LUGGAGE
Sol Koffler, Providence, R.I., assignor to American Luggage Works, Inc., Warren, R.I.
Filed Dec. 19, 1975, Ser. No. 642,584
The portion of the term of this patent subsequent to Jan. 24, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G



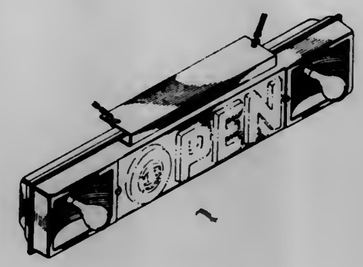
247,068
CARRYING CASE FOR A CAMERA OR SIMILAR ARTICLE
Sanford Sykes, 22201 Burbank Blvd., Woodland Hills, Calif. 91364
Filed Jan. 2, 1976, Ser. No. 646,194
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5 E



247,069
SIDE POCKET FOR A HANDBAG OR THE LIKE
Burt J. Siris, 150 E. 69th St., New York, N.Y. 10021
Filed Jan. 19, 1976, Ser. No. 650,106
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 R



247,070
ILLUMINATED SIGN
Steven Mihojevich, Elkhart, Ind., assignor to Metaline Products, Inc., Elkhart, Ind.
Filed Oct. 15, 1976, Ser. No. 732,818
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JANUARY, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Abrams, Marilyn M. Table structure. 4,069,769, Cl. 108-11.000.

Acda, Petrus Marinus, to Polva Nederland B.V. High-strength coupling of plastic pipe to metal pipe. 4,070,042, Cl. 285-21.000.

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Ahlbert, Enar; Andersson, Karl-Hugo; Karlsson, Ingemar; and Oldaeus, Bengt, to Aktiebolaget Svenska Flaktfabriken. Arrangement for conveying web material through a treating plant. 4,069,595, Cl. 34-156.000.

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Alegria, Richard S. Shoe protector. 4,069,599, Cl. 36-7.200.

Aleman, Augusto Cuevas. System and means for using white waters in buildings. 4,069,521, Cl. 4-300.000.

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Hoffmeister, Friedrich; Hiltmann, Rudolf; Wollweber, Hartmund; and Kramer, Helmut, 4,070,494, Cl. 424-2.000.
Muschelknautz, Edgar; Burkholz, Armin; and Richter, Wolfgang, 4,069,711, Cl. 73-61.400.
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Winkelmann, Hans Dieter; Oertel, Harald; and Weimann, Norbert, 4,070,345, Cl. 260-77.5AM.
Beach, James M.; and Eastin, Elbert R. Oil leak scavenger apparatus. 4,069,895, Cl. 184-106.000.
Beale, Robert James: *See—*
Lugay, Joaquin Castro; and Beale, Robert James, 4,070,490, Cl. 426-533.000.
Beamco, Inc.: *See—*
Breslin, John J., 4,070,586, Cl. 307-22.000.
Bear, James B.: *See—*
Miller, Leonard W.; and Bear, James B., 4,070,697, Cl. 360-12.000.
Beattie, David Lloyd George, to Porta-Test Manufacturing Ltd. Inlet assembly for an oil separator. 4,070,168, Cl. 55-205.000.
Becicka, William J.: *See—*
Katz, Marvin; and Becicka, William J., 4,070,150, Cl. 432-210.000.
Becker, Floyd W., to Drill Systems Inc. Double-walled pipe construction. 4,070,043, Cl. 285-133.00A.
Becker, Friedbert; Laufer, Karl; and Steinkamp, Johann Albert, to Siemens Aktiengesellschaft. Answering device for a system for the automatic wireless transmission of multi-position data between interrogation devices and answering devices movable with respect to one another. 4,070,672, Cl. 343-6.80R.
Beckman Instruments, Inc.: *See—*
Kazmierowicz, Casimir W., 4,070,517, Cl. 428-209.000.
Beecham Group Limited: *See—*
Green, Geoffrey; Overell, Brian George; and Hart, Anthony Phillip, 4,070,455, Cl. 424-91.000.
Beery, Jack, to Burroughs Corporation. Ribbonless endorser for printing both fixed and variable information on moving documents. 4,069,755, Cl. 101-93.120.
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Belart, Juan; and Birkenbach, Alfred, to ITT Industries, Incorporated. Pressure control arrangement for hydraulic brake systems. 4,070,069, Cl. 303-115.000.
Bell & Howell Company: *See—*
Scheib, Harold A., 4,070,108, Cl. 355-50.000.
Bell, Lance Peter: *See—*
Harper, Leslie Richard; Lewis, William James; McMurtry, David Roberts; Bell, Lance Peter; and Hall, John Matthew, 4,069,663, Cl. 60-226.00A.
Bell, Samuel M.: *See—*
Romualdi, James P.; and Bell, Samuel M., 4,070,427, Cl. 264-71.000.
Bell Telephone Laboratories, Incorporated: *See—*
Buzzard, Clair Alan; Gifford, Richard Cyril; Leciasky, Frank William; and Zachok, Robert Michael, 4,069,970, Cl. 235-312.000.
Schwartz, Morton I., 4,070,093, Cl. 350-96.00B.
Bellina, Russell Frank; and Fost, Dennis Lynn, to Du Pont de Nemours, E. I., and Company. Substituted 2-higher alkyl-3-hydroxy-1,4-naphthoquinone carboxylic acid esters and their use as miticides. 4,070,481, Cl. 424-311.000.
Belov, Konstantin Alexeevich: *See—*
Privalov, Vasily Efimovich; Vail, Evgeny Iosifovich; Kuznetsova, Larisa Semenovna; Belov, Konstantin Alexeevich; Nosalevich, Ivan Mikhailovich; and Romanov, Igor Vasilievich, 4,070,409, Cl. 260-675.000.
Benedict, Charles J.: *See—*
Brown, Jordon M.; Benedict, Charles J.; and Pricone, Robert M., 4,070,214, Cl. 156-47.000.
Bennett, Robert B., to Dow Chemical Company, The. Insulated structure. 4,069,939, Cl. 220-9.00A.
Berezin, Gilbert Harvey: *See—*
Aldrich, Paul Edward; Berezin, Gilbert Harvey; and Dittmar, Bruce Ivor, 4,070,479, Cl. 424-275.000.
Berger, Dieter; Guthlein, Werner; Werner, Wolfgang; and Rieckmann, Peter, to Boehringer Mannheim GmbH. Microscope slide. 4,070,495, Cl. 424-3.000.
Berger, Joel G., to Endo Laboratories, Inc. Trans-octahydro-pyrido-indolo-benzazepine-3-alkanols, -alkanonitriles,-alkanoic acid and ester as tranquilizers. 4,070,467, Cl. 424-256.000.
Bergman, Kenneth A.; and Bishop, Robert J., to Allied Chemical Corporation. Safety belt connector cover. 4,070,038, Cl. 280-744.000.
Bergum, Bernard C.; and Fong, Walter Lee, to ESB Incorporated. Battery having porous inherently sealable separator. 4,070,528, Cl. 429-152.000.
Berman, Arnold: *See—*
Assal, Francois Tsvi; Mahle, Cristoph Erhardt; and Berman, Arnold, 4,070,637, Cl. 333-7.00R.
Berman, Robert A. Intubating pharyngeal airway. 4,069,820, Cl. 128-208.000.
Bern, Edward C.; and Gemeinhardt, Donald B., to Baker Cac, Inc. Thermal safety valve. 4,069,834, Cl. 137-75.000.
Bernstein, Irving, to Combustion Engineering, Inc. Fuel transfer machine. 4,069,766, Cl. 104-173.00R.
Berntell, John Osvald, to Kommanditbolaget United Stirling (Sweden) AB & Co. Stirling engine combustion assembly. 4,069,671, Cl. 60-525.000.
Berol Kemi AB: *See—*
Broman, Per Gunnar; Kihlstedt, Per Gudmar; and Du Rietz, Carl, 4,070,276, Cl. 209-166.000.
Berry, Samuel M.: *See—*
Pierce, William C.; Berry, Samuel M.; and Johnson, Arthur D., 4,069,572, Cl. 29-159.00R.
Bertanza, Battista, to Riva Calzoni S.p.A. Control units for vehicle powersteering mechanisms. 4,069,743, Cl. 91-375.00R.

Bertelsen, Henry Filso. Table with an undivided table-top. 4,069,770, Cl. 108-66.000.

Bertelsen, Henry Filso. Oval table with undivided table top. 4,069,771, Cl. 108-66.000.

Bertram, Howard William. Music teaching and computation device. 4,069,735, Cl. 84-474.000.

Beta Corporation: *See*—
Volk, Joseph A.; and Volk, Joseph A., Jr., 4,069,709, Cl. 73-228.000.

Bevilacqua, Frank, to Combustion Engineering, Inc. Ball check valve. 4,070,239, Cl. 176-19.00R.

Bianchi, Giuseppe; de Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, to Diamond Shamrock Technologies, S.A. Method of producing a valve metal electrode with valve metal oxide semi-conductor face and methods of manufacture and use. 4,070,504, Cl. 427-126.000.

Bibler, David R., to Bilber Brothers Inc. Method and apparatus for processing logs. 4,069,851, Cl. 144-312.000.

Bierlich, Johannes Harald. Hinge for use with window assembly. 4,069,548, Cl. 16-140.000.

Bigorre, Gaston. Question and answer game. 4,069,597, Cl. 35-9.00C.

Bilber Brothers Inc.: *See*—
Bibler, David R., 4,069,851, Cl. 144-312.000.

Binder, Anton; Franke, Manfred; and Gartner, Siegfried, to Robert Bosch GmbH. Radio telephone with channel switch. 4,070,626, Cl. 325-17.000.

Binder, Volker: *See*—
Schwarze, Werner; Merk, Wolfgang; and Binder, Volker, 4,070,531, Cl. 526-6.000.

Bingham, Andrew M. Collapsible rod and joint structure forming a tetrahedral or similar frame. 4,069,832, Cl. 135-3.00R.

Bird Electronic Corporation: *See*—
Trefney, Ralph P., 4,070,619, Cl. 324-95.000.

Bird Machine Company, Inc.: *See*—
Crosby, Herbert L.; and Den Hartog, Jacob P., 4,069,966, Cl. 233-1.00C.
Crosby, Herbert L.; and Den Hartog, Jacob P., 4,069,967, Cl. 233-1.00C.
Crosby, Herbert L., 4,070,290, Cl. 210-91.000.

Birkenbach, Alfred: *See*—
Belart, Juan; and Birkenbach, Alfred, 4,070,069, Cl. 303-115.000.

Birum, Gail H., to Monsanto Company. Hydrogen phosphonates and polymer compositions containing them as flame retardants. 4,070,336, Cl. 260-45.80R.

Bishop, Robert J.: *See*—
Bergman, Kenneth A.; and Bishop, Robert J., 4,070,038, Cl. 280-744.000.

Bissett, Larry A., to United States of America, Energy. Cyclic flow underground coal gasification process. 4,069,867, Cl. 166-256.000.

Black, Clyde A. Lubricating tool for control cables. 4,069,894, Cl. 184-15.00R.

Black and Decker Manufacturing Company, The: *See*—
O'Grady, James Kenneth, 4,069,849, Cl. 144-134.00D.

Black, Gary George: *See*—
McNeill, James Duncan; Black, Gary George; and Bosnar, Miroslav, 4,070,612, Cl. 324-6.000.

Black, Seymour; and MacRitchie, David C., to American Cyanamid Company. Suture package. 4,069,912, Cl. 206-63.300.

Blackstone, Charles David. Ladder stabilizer and leveler. 4,069,893, Cl. 182-200.000.

Blanyer, Carl G., to Abex Corporation. Transit zone monitor circuit. 4,070,560, Cl. 235-92.0TC.

Blase, Manfred: *See*—
Prange, Kurt; Isermann, Friedrich; Hasenacker, Ernst; and Blase, Manfred, 4,070,251, Cl. 202-130.000.

Blum, Alfred; and Bartell, Charles, to Borden, Inc. Printable pressure-sensitive adhesive tapes. 4,070,523, Cl. 428-352.000.

Blumenau, Leif; and Pignata, Frank John, Jr., to Ebasco Services Incorporated. Buoyancy elevator for moving a load in an industrial facility such as a nuclear power plant. 4,069,923, Cl. 214-17.00B.

Bocharov, Jury Alexandrovich; Safonov, Anatoly Vasilievich; Grigorenko, Anatoly Sergeevich; Moroz, Jury Antonovich; Kuznetsov, German Nikolaevich; and Zimin, Anatoly Ivanovich, deceased (by Zimina, administratrix; Elizaveta Konstantinovna). Screw press. 4,069,700, Cl. 72-407.000.

Bode, Gerald; and Worrall, Roy, to Monsanto Limited. Shuttering member. 4,069,632, Cl. 52-309.700.

Boehringer Mannheim GmbH: *See*—
Berger, Dieter; Guthlein, Werner; Werner, Wolfgang; and Rieckmann, Peter, 4,070,495, Cl. 424-3.000.

Boguth, Walter: *See*—
Barner, Richard; and Boguth, Walter, 4,070,450, Cl. 424-59.000.

Bolasny, Robert E., to Scientific Enterprises, Inc. Gas ionizing apparatus for improving the operation of an internal combustion engine. 4,069,665, Cl. 60-275.000.

Boling, James Vernon: *See*—
Stollberg, Ray Harold; and Boling, James Vernon, 4,069,917, Cl. 206-423.000.

Bonafous, Maurice, to Applications Mecaniques et Robinetterie Industrielle A.M.R.I. Valve actuators. 4,070,002, Cl. 251-58.000.

Bonnemay, Maurice Gabriel Ernst: *See*—
Treille, Pierre Albert Eugene; Dassonville, Vincent; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,070,263, Cl. 204-180.00R.

Bonsack, James Paul, to SCM Corporation. Purification of crude titanium tetrachloride. 4,070,252, Cl. 203-29.000.

Borchorst, Birgit. Method of treating hair with a shampoo containing honey. 4,070,452, Cl. 424-70.000.

Borden, Inc.: *See*—
Blum, Alfred; and Bartell, Charles, 4,070,523, Cl. 428-352.000.

Bordes, Cornelis, to N.V. Industrieele Handelscombinatie Holland. Ship of similar floating installation equipped for the assembly of apparatus and for lowering same into the water. 4,069,785, Cl. 114-47.000.

Bordt, Dale Emil; and Thomas, Phillip Clay, to Syntex (U.S.A.) Inc. Diploid porcine embryonic cell strains, cultures produced therefrom, and use of said cultures for production of vaccines. 4,070,453, Cl. 424-89.000.

Borrelli, Ronald N., to Zehntel, Inc. Programmable tester method and apparatus. 4,070,565, Cl. 235-302.000.

Bose, Karlheinz: *See*—
Willingshofer, Walter; Hopach, Gerhard; and Bose, Karlheinz, 4,070,123, Cl. 403-132.000.

Bosnar, Miroslav: *See*—
McNeill, James Duncan; Black, Gary George; and Bosnar, Miroslav, 4,070,612, Cl. 324-6.000.

Bouchard, Andre C.: *See*—
Hall, Harold H., Jr.; and Bouchard, Andre C., 4,070,145, Cl. 431-93.000.

Bouter, Roger Jean; and Jaffre, Robert Rene, to Etat Francais. Ground effect vehicle structure. 4,069,634, Cl. 52-648.000.

Bouwmaatschappij Nederhorst B. V.: *See*—
Hendriks, Nicolaas Arie, 4,069,642, Cl. 52-224.000.

Brackbill, Warren H., to Sperry Rand Corporation. Engaging and distributing paddle for a manure spreader. 4,069,982, Cl. 241-291.000.

Brady, Brian B., to Applied Power Inc. Ignition timing measuring apparatus. 4,070,613, Cl. 324-16.00T.

Braithwaite, Arthur Bevan Midgley, to Caterpillar Tractor Co. Tubular section boom. 4,069,637, Cl. 52-726.000.

Braly, Joseph M., to Con-Sole Golf Corporation. Matched golf shafts and clubs. 4,070,022, Cl. 273-77.00A.

Brammer, Robert C. Vehicle stabilizer. 4,070,041, Cl. 280-763.000.

Branciforte, Michael A.: *See*—
Curtis, Donald W.; Branciforte, Michael A.; and Tucker, Terry L., 4,070,698, Cl. 360-12.000.

Brandenstein, Manfred: *See*—
Garrett, Roy Peter; Parkins, Derek Ray; Brandenstein, Manfred; and Olschewski, Armin, 4,069,904, Cl. 192-85.0CA.

Brasca, Carlo. Vice for a machine tool bed. 4,070,010, Cl. 269-27.000.

Bratt, Jan Christer; Lorant, Stefan Istvan; Moodyason, Bengt-Ove Moody; and Rosenqvist, Nils Kaj Gunnar, to Kommanditbolaget United Stirling (Sweden) AB & Co. Hot gas engine heater head. 4,069,670, Cl. 60-517.000.

Braun, Edwin R.: *See*—
Hardy, Albert L.; Braun, Edwin R.; and Hall, Edwin M., Jr., 4,070,204, Cl. 134-25.00A.

Bray, Donald Thedore, to Desalination Systems, Inc. Manually operable reverse osmosis apparatus. 4,070,280, Cl. 210-23.00H.

Breiter, Manfred W.: *See*—
King, Randall N.; Mitoff, Stephan P.; and Breiter, Manfred W., 4,070,527, Cl. 429-104.000.

Breslin, John J., to Beamco, Inc. Electric vacuum cleaning and agitator motor control system. 4,070,586, Cl. 307-22.000.

Brewer, Jack J. Security door guard. 4,070,049, Cl. 292-263.000.

Brewster, John La Due, to Hewlett-Packard Company. X-ray tube transformer. 4,070,579, Cl. 250-402.000.

Bridgestone Tire Company Limited: *See*—
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; Mizuno, Keiichiro; Nomoto, Sadao; Murayama, Noriaki; and Watanabe, Kei, 4,069,768, Cl. 105-452.000.

Britcher, Harry H., Jr., to United States Steel Corporation. Continuous casting installation including tundish car with tilting cradle. 4,069,861, Cl. 164-438.000.

Broddevall, Bengt Gunnar: *See*—
Anderson, Lars-Gustaf; Andersson, Hilding Roland; Broddevall, Bengt Gunnar; and Lindberg, Erik Axel Sigvard, 4,070,234, Cl. 162-29.000.

Broes, Frank. Ship structure. 4,069,782, Cl. 114-61.000.

Broman, Per Gunnar; Kihlstedt, Per Gudmar; and Du Rietz, Carl, to Berol Kemi AB. Flotation process of lead-, copper-, uranium- and rare earth minerals. 4,070,276, Cl. 209-166.000.

Brooker, Peter John; and Goose, John, to Fisons Incorporated. Topical anthelmintic compositions and methods of use. 4,070,476, Cl. 424-270.000.

Brookshire, Phillip L., to Clopay Corporation. Roman shade and method for making same. 4,069,857, Cl. 160-84.00R.

Brother Kogyo Kabushiki Kaisha: *See*—
Kozawa, Tetsuo, 4,069,778, Cl. 112-121.120.

Brown, Cicero C., deceased; and by Brown, Joe R., executor. Ball check valve. 4,069,840, Cl. 137-533.110.

Brown, Cicero C., deceased; and by Brown, Joe R., executor. Pipe handler. 4,069,879, Cl. 175-57.000.

Brown, Joe R., executor: *See*—
Brown, Cicero C., deceased; and Brown, Joe R., executor, 4,069,840, Cl. 137-533.110.
Brown, Cicero C., deceased; and Brown, Joe R., executor, 4,069,879, Cl. 175-57.000.

Browa, Jordon M.; Benedict, Charles J.; and Pricone, Robert M., to Sun Chemical Corporation. Process for continuous precision lamination of multiple strips to a substrate. 4,070,214, Cl. 156-47.000.

Brown, Ralph Harold: *See*—
Rundell, Dan Joseph; McHugh, Donald Patrick; Foster, Tom; and Brown, Ralph Harold, 4,069,661, Cl. 60-204.000.

Brown, Robert Cushman: *See*—
Barbee, Eugene Hartzell; and Brown, Robert Cushman, 4,070,167, Cl. 55-192.000.

Brudy, Peter E.: *See*—
Buck, Roel C.; and Brudy, Peter E., 4,070,566, Cl. 362-369.000.

Bryant, Clifford Aldene; and Jarrell, Mark Floyd, to West Point-Pepperell, Inc. Yarn tension compensating mechanism. 4,069,775, Cl. 112-79.00A.

Bryden, Brian Richard, to Northern Electric Company Limited. Limiter circuit for timing recovery in a high speed digital repeater. 4,070,588, Cl. 307-237.000.

Bryson, Roy E., to United States Steel Corporation. Coarse concentrated iron ore for catalytic purposes. 4,070,274, Cl. 209-10.000.

Buchroeder, Richard A., to University of Arizona Foundation, The. Fisheye projection lens system for 35mm motion pictures. 4,070,098, Cl. 350-198.000.

Buck, Roel C.; and Brudy, Peter E., to Dominion Auto Accessories Limited. Marker lamp assembly. 4,070,566, Cl. 362-369.000.

Buck, Wayne; and Waterman, Vernon I. Swivel hitch for chisel plows. 4,069,874, Cl. 172-450.000.

Buckler, Ernest Jack: *See*—
Lasia, Evalds; and Buckler, Ernest Jack, 4,070,340, Cl. 260-47.0UP.

Buell, Heinz; and Fiore, John M., to Singer Company, The. Doppler heading attitude reference system. 4,070,674, Cl. 343-9.000.

Buell, Kenneth B., to Procter & Gamble Company, The. Porous fibrous web to a substrate and articles therefrom. 4,069,822, Cl. 128-294.000.

Bullock, David Carl, to Texas Instruments Incorporated. Magnetic bubble domain memory chip with major/minor bubble path configuration. 4,070,659, Cl. 365-15.000.

Bunker Ramo Corporation: *See*—
Kasper, Alan Henry, 4,070,548, Cl. 179-1.0PC.

Burdick Corporation, The: *See*—
Dominy, Francis I., 4,069,827, Cl. 128-422.000.

Burg, Karlheinz: *See*—
Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst, 4,070,415, Cl. 260-830.00R.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Aqueous latices of high polymer compositions and process and means for the production thereof. 4,070,325, Cl. 260-29.7EM.

Burkholz, Armin: *See*—
Muschelknautz, Edgar; Burkholz, Armin; and Richter, Wolfgang, 4,069,711, Cl. 73-61.400.

Burns, William K., to United States of America, Navy. Active waveguide branch with variable synchronism. 4,070,092, Cl. 350-96.00C.

Burr, Kenneth John; and Holland, Stephen Ross, to English Clays Lovering Pochin & Co. Ltd. Analysis of materials. 4,069,705, Cl. 73-61.00R.

Burroughs Corporation: *See*—
Beery, Jack, 4,069,755, Cl. 101-93.120.
Docteur, Russell William, 4,069,758, Cl. 101-348.000.
Hutchison, Robert V., 4,070,084, Cl. 339-143.00R.

Burrow, Reginald Edward Dowton: *See*—
Taylor, Reginald Sidney; and Burrow, Reginald Edward Dowton, 4,069,682, Cl. 61-95.000.

Burt, Richard D.: *See*—
Danna, Peter A.; and Burt, Richard D., 4,070,266, Cl. 204-266.000.

Burt, Stanton C., to Indiana University Foundation. Diagnostic media. 4,070,247, Cl. 195-100.000.

Bushick, Ronald D.: *See*—
Angstadt, Howard P.; Tinkler, Jack D.; Norton, Richard V.; and Bushick, Ronald D., 4,070,393, Cl. 260-465.00C.

Buss, Russel A.: *See*—
Smith, Dexter E.; Buss, Russel A.; and Stewart, William S., 4,070,172, Cl. 62-21.000.

Butcher, Daryl T., to United States of America, Air Force. Error corrected error amplifier. 4,070,591, Cl. 307-359.000.

Butler Automatic, Inc.: *See*—
Bartell, Ronald A.; Corcoran, George F.; and Fuller, Donald H., 4,069,959, Cl. 226-21.000.

Butler, Walter J.; and Eichelberger, Charles W., to General Electric Company. High voltage driver circuit. 4,070,600, Cl. 315-169.00R.

Butler, Walter J.; and Eichelberger, Charles W., to General Electric Company. Automatic polarity sensing analog-to-digital converter. 4,070,666, Cl. 340-347.0AD.

Butte, Walter A., Jr., to Suntech, Inc. Hydrogenation of terephthalnitrile. 4,070,399, Cl. 260-563.00D.

Butter, Stephen A.; and Kaeding, Warren W., to Mobil Oil Corporation. Conversion of lower olefins to isobutane. 4,070,411, Cl. 260-676.00R.

Buzzard, Clair Alan; Gifford, Richard Cyril; Lescinsky, Frank William; and Zachok, Robert Michael, to Bell Telephone Laboratories, Incorporated. Data access circuit for a memory array. 4,069,970, Cl. 235-312.000.

Bybee, Richard Lee: *See*—
Timothy, John G.; and Bybee, Richard Lee, 4,070,578, Cl. 250-336.000.

C.F. Boehringer & Soehne GmbH: *See*—
Winter, Werner; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Schaumann, Wolfgang; and Dietmann, Karl, 4,070,373, Cl. 260-333.000.

C. G. DORIS (Campagnie Generale pour les Developpements Operationnels des Richesses Sous-marines): *See*—
Lamy, Jacques Edouard, 4,069,685, Cl. 61-107.000.

Cableries de Brugg S.A.: *See*—
Robert, Philippe; Guignard, Claude; and Stagoll, Francis, 4,070,503, Cl. 427-120.000.

California Institute of Technology: *See*—
Frazer, Robert E.; and Ingram, Marylou, 4,070,113, Cl. 356-104.000.

Calle, Jaime; Garvey, Robert J.; Monahan, Earnest M.; Parris, George L.; Twibell, Jerome J.; and Woods, John M., to Honeywell Information Systems Inc. Automatic reconfiguration apparatus for input/output processor. 4,070,704, Cl. 364-200.000.

Cambardella, Nicholas A. Board game apparatus. 4,070,026, Cl. 273-254.000.

Campagna, Frank John; and Pavlovic, Gary Frank, to International Business Machines Corporation. Apparatus for monitoring product temperature in an open ended, secondary emission, product carrying conveyor furnace. 4,070,148, Cl. 432-50.000.

Campbell, Gerald Allan: *See*—
Kelley, Richard Norman; and Campbell, Gerald Allan, 4,070,189, Cl. 96-87.00A.

Campbell, John J.; Dezelan, Joseph E.; and Hart, Cullen P., to Caterpillar Tractor Co. Auxiliary hydrostatic front wheel drive system. 4,069,886, Cl. 180-44.00F.

Campbell, Robert W., to Phillips Petroleum Company. Aromatic sulfide/sulfone polymer production. 4,070,349, Cl. 260-79.30M.

Canada Wire And Cable Limited: *See*—
Nethersole, Douglas C.; Dudley, Michael A.; and Parthasarathy, Mellapalayam R., 4,069,792, Cl. 118-629.000.

Canadian Patents & Development Limited: *See*—
Gregorovich, Basil V.; and MacDonald, Stewart F., 4,070,366, Cl. 260-313.100.

Cancilla, Philip S. Chain tensioner for chain drives. 4,069,719, Cl. 74-242.11B.

Canon Kabushiki Kaisha: *See*—
Endo, Ichiro; Kobayashi, Hajime; and Kinjo, Kikuo, deceased, 4,069,759, Cl. 101-467.000.
Hanakata, Takayoshi, 4,070,587, Cl. 307-141.000.
Ichikawa, Jyunji; Kiyohara, Takehiko; Koumura, Noboru; Kadokura, Koichi; and Nakano, Takashi, 4,070,681, Cl. 346-160.000.

Caravito, Vito A., to Goodyear Tire & Rubber Company, The. Traction element for removable track. 4,070,071, Cl. 305-13.000.

Carba S.A.: *See*—
Gabus, Jean-Claude, 4,070,700, Cl. 361-170.000.

Carder, William E. Carpet securing strips. 4,069,542, Cl. 16-16.000.

Carel, Philippe Robert Raymond; Decamp, Rene Paul Auguste; and Perronin, Jean, to Produits Chimiques Ugine Kuhlmann. Sizing. 4,070,319, Cl. 260-29.4UA.

Carfantan, Michel Hyppolite: *See*—
Ciquier, Jean Henri Camille; and Carfantan, Michel Hyppolite, 4,070,379, Cl. 260-346.750.

Cargill, Incorporated: *See*—
Nollet, Anthony R., 4,070,202, Cl. 106-309.000.

Carli, Alvin J., to Alliance Manufacturing Company, The. Switching mechanism. 4,070,555, Cl. 200-6.00B.

Carlo, Louis David, to Century Products Inc. Collapsible child pen with improved hinge joint. 4,069,524, Cl. 5-99.00B.

Carlsen, Richard A., to Egan Machinery Company. Flying transfer winder driver. 4,069,986, Cl. 242-56.00A.

Carlson, David H. J.; and Urban, Peter, to UOP Inc. Catalytic oxidation of mercaptans and removal of naphthenic acids, catalyst toxins, and toxin precursors from petroleum distillates. 4,070,271, Cl. 208-206.000.

Carlson, David H. J., to UOP Inc. Method of catalyst manufacture. 4,070,307, Cl. 252-428.000.

Carlson, Eric Jerome: *See*—
Daniel, Sam M.; and Carlson, Eric Jerome, 4,070,675, Cl. 343-100.0LE.

Carlson, Roy S. Harvesting apparatus. 4,069,652, Cl. 56-328.00R.

Carlson, Wayland A.: *See*—
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,070,550, Cl. 179-15.0BA.

Carrard, Jean-Pierre; and Pummer, Helmut, to Sandoz Ltd. Paper manufacture with improved retention agents. 4,070,236, Cl. 162-164.00R.

Carroll, Albert W.: *See*—
Gazda, Imre I.; and Carroll, Albert W., 4,069,865, Cl. 166-113.000.

Carrow, Guy E., to Phillips Petroleum Company. Polymer pipe connection and method to make it. 4,070,044, Cl. 285-156.000.

Carson, John Robert, to McNeil Laboratories, Incorporated. Process for preparing alkyl, aroyl substitute pyrrole-2-acetates. 4,070,368, Cl. 260-326.470.

Carson, John W., to Reynolds Metals Company. Continuous casting mold with horizontal inlet. 4,069,862, Cl. 164-439.000.

Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., to Warner-Lambert Company. Safety razor with flexible blade cartridge. 4,069,580, Cl. 30-47.000.

Cataldo, Roy S., to General Motors Corporation. Synchronizing and indexing clutch. 4,069,803, Cl. 123-198.00F.

Caterpillar Tractor Co.: *See*—
Braithwaite, Arthur Bevan Midgley, 4,069,637, Cl. 52-726.000.
Campbell, John J.; Dezelan, Joseph E.; and Hart, Cullen P., 4,069,886, Cl. 180-44.00F.
Cobb, Delwin E.; Gutman, Nathan; and Livesay, Richard E., 4,070,064, Cl. 299-81.000.
Goloff, Alexander, 4,070,137, Cl. 418-61.00A.

McClure, Randall D., 4,069,738, Cl. 85-70.000.
Sogge, John W., 4,069,856, Cl. 152-27.000.
Stamate, Robert L., 4,069,900, Cl. 192-4.00A.
Stedman, Robert N., 4,069,932, Cl. 214-730.000.
Stepe, Visvaldis A., 4,069,604, Cl. 37-141.00T.
Stinson, Robert A., 4,069,745, Cl. 91-442.000.
Wirt, Leon A., 4,069,847, Cl. 144-34.00E.

Cato, Bennie D. Pipeline pig. 4,069,535, Cl. 15-104.06R.

Cauteruccio, Ugo: *See*—
Marshall, Philip; Laber, Albert Paul; and Cauteruccio, Ugo, 4,069,706, Cl. 73-666.000.

Cavender, Donald E., to Monarch Marking Systems, Inc. Record assembly and method of using web of record assemblies. 4,070,220, Cl. 156-227.000.

Cawley, William H.: *See*—
Rowe, Edward A., Jr.; and Cawley, William H., 4,070,521, Cl. 428-332.000.

Cecka, Andrew W.; Dano, Pol; and Pawling, Paul G., to Fansteel Inc. Composite high strength to weight structure having shell and sleeved core. 4,070,021, Cl. 273-73.00F.

Celanese Corporation: *See*—
Grant, James William, Jr.; and Coble, Scott Brown, Jr., 4,069,704, Cl. 73-38.000.

Central Glass Company, Limited: *See*—
Ono, Tetsuhiro; Aramaki, Minoru; and Ushirogouthi, Etuo, 4,070,447, Cl. 423-489.000.

Century Products Inc.: *See*—
Carlo, Louis David, 4,069,524, Cl. 5-99.00B.

Ceskoslovenska akademie ved: *See*—
Lochmann, Lubomir; Kremlicka, Theodor; and Babka, Josef, 4,070,512, Cl. 427-445.000.

Chalk, Alan J.; and Magennis, Steven A., to Givaudan Corporation. Process for the preparation of aryl substituted aldehydes, ketones and alcohols. 4,070,374, Cl. 260-340.50R.

Chaplin, Martin Frank: *See*—
Kennedy, John Frederick; and Chaplin, Martin Frank, 4,070,246, Cl. 195-99.000.

Chapman, Lloyd R.: *See*—
Klein, Emmett J., Jr.; Hubbard, Clyde W., Jr.; and Chapman, Lloyd R., 4,070,187, Cl. 96-27.00R.

Charrette, Francis Arthur: *See*—
Lockwood, James Andre; and Charrette, Francis Arthur, 4,070,705, Cl. 364-200.000.

Chartraire, Jacques; Le Coeur, Jean; and Pouliquen, Jacques, to Thomson-CSF. Object-identification system with sequentially activated photocell array. 4,070,584, Cl. 250-555.000.

Chatterjea, Probir K., to International Harvester Company. Clutch cylinder circuit and charging valve therefor. 4,069,843, Cl. 137-625.690.

Chatterton, James L. Foam producing equipment. 4,070,302, Cl. 252-359.00E.

Chauvigne, Michel, to Etablissements CARPANO & PONS. Oscillating sprinkling device. 4,069,976, Cl. 239-242.000.

Chemap AG: *See*—
Gerteis, Paul, 4,070,288, Cl. 210-65.000.

Chemetron Corporation: *See*—
George, Henry Howard, 4,070,126, Cl. 403-271.000.
Yarem, Joseph; and Poss, Werner, 4,069,980, Cl. 241-24.000.

Chen, Ho Chi. Automatic shut-off and alarm for stove heating unit. 4,070,670, Cl. 340-417.000.

Chess, James S.; Davis, James A.; and Spindler, Robert G., to PPG Industries, Inc. Heat reflecting window. 4,069,630, Cl. 52-172.000.

Chevron Research Company: *See*—
Suzuki, Shigeto, 4,070,375, Cl. 260-340.600.
Thomas, Elmer L., 4,070,618, Cl. 324-78.00D.

Chiari, Natale: *See*—
Inverardi, Giuseppe; and Chiari, Natale, 4,069,653, Cl. 57-53.000.

Chicago Bridge & Iron Company: *See*—
Sikora, Orwill Granger; and Sheneman, Donald, 4,070,147, Cl. 432-5.000.

Chicago Lock Co.: *See*—
Steinbach, Robert L., 4,069,696, Cl. 70-363.000.

Chicoine, Bernard C.: *See*—
Fenole, Joseph E.; Wells, Jerry E.; and Chicoine, Bernard C., 4,069,817, Cl. 128-138.00A.

Chitwood, Byron W.; and Winship, Thomas E., to Reed Tool Company. Raise drilling bit with detachable stem. 4,069,878, Cl. 175-53.000.

Choi, Charles K., to Occidental Petroleum Corporation. Pyrolysis of carbonaceous materials in a double helix cyclone. 4,070,250, Cl. 201-12.000.

Chou, Wayne: *See*—
Vanasco, Salvatore; and Chou, Wayne, 4,069,716, Cl. 73-432.00R.

Chr. Bjelland & Co. A/S: *See*—
Danielsen, Odd, 4,069,644, Cl. 53-59.00R.

Christensen, James E.: *See*—
Hershberg, Emanuel B.; and Christensen, James E., 4,070,356, Cl. 260-239.950.

Christopher, Edward Charles: *See*—
Nebelung, Hermann; and Christopher, Edward Charles, 4,070,174, Cl. 65-229.000.

Christy, Marcia Elizabeth, to Merck & Co., Inc. 10,11-Dihydro-10,10,11,11-tetrafluoro-5H-dibenzo[a,d]cycloheptene-5-methylisocyanate compounds. 4,070,387, Cl. 260-453.0AP.

Chromalloy American Corporation: *See*—
Stueber, Richard J.; and Klach, Stanley J., 4,070,507, Cl. 427-252.000.

Chrones, Anthony, to Reliance Products Corporation. Safety cover for an electrical outlet. 4,070,078, Cl. 339-44.00R.

Chyung, Kenneth; and Wusirika, Raja R., to Corning Glass Works. SiO_2-Al_2O_3-N glass for production of oxynitride glass-ceramics. 4,070,198, Cl. 106-52.000.

Ciba-Geigy Corporation: *See*—
Cseh, Georg; and Ronco, Karl, 4,070,353, Cl. 260-176.000.
Ernest, Ivan; Gosteli, Jacques; and Woodward, Robert Burns, 4,070,477, Cl. 424-271.000.
Green, George Edward, 4,070,334, Cl. 260-42.530.
Martin, Henry, 4,070,389, Cl. 260-465.00E.
Model, Ernst, 4,070,367, Cl. 260-325.0PH.
Pentz, Lipot, 4,070,152, Cl. 8-115.600.
Ramey, Chester E.; and Luzzi, John J., 4,070,335, Cl. 260-45.8NT.
Rosenberger, Siegfried; and Schmidt, Andreas, 4,070,338, Cl. 260-45.80N.
Vogel, Christian; and Aebi, Rudolf, 4,070,179, Cl. 71-118.000.

Ciquier, Jean Henri Camille; and Carfantan, Michel Hyppolite, to Produits Chimiques Ugine Kuhlmann. Process for the manufacture of maleic anhydride. 4,070,379, Cl. 260-346.750.

Citizen Watch Company Limited: *See*—
Kawaharada, Masaru; and Yokoyama, Etsuso, 4,070,668, Cl. 340-373.000.

Clark, Bob J. Combination sled and ramp. 4,070,030, Cl. 280-24.000.

Clark, James R.: *See*—
Saunders, Thomas C.; and Clark, James R., 4,069,991, Cl. 248-1.000.

Clark, Larry G. Combination pass-through and deal tray for tellers. 4,069,773, Cl. 109-19.000.

Clark, Stephen Larry, to Du Pont de Nemours, E. I., and Company. Circuit board eyelet. 4,070,077, Cl. 339-17.00C.

Clemens, Anton Hubert, to Miles Laboratories, Inc. Double lumen cannula apparatus. 4,069,814, Cl. 128-2.00F.

Clements, Herbert Arthur; and Heybourne, Robert Howard, to S.S.S. Patents Limited. Synchronous self-shifting toothed clutch. 4,069,903, Cl. 192-67.00A.

Clopay Corporation: *See*—
Brookshire, Phillip L., 4,069,857, Cl. 160-84.00R.

Co-operative Verkoop-en Productievereiniging van Aardappelmeel en Derivaten "Avebe" G.A.: *See*—
Kraak, Andries; and George, Raymond Douglas, 4,070,196, Cl. 106-38.350.

Coal Industry (Patents) Ltd.: *See*—
Park, Andrew Howard Donaldson; and Pidgeon, Brian George, 4,070,575, Cl. 250-223.00R.
Plumpton, Norman Albert, 4,069,676, Cl. 61-35.000.

Coats & Clark, Inc.: *See*—
Toepelt, Werner, 4,069,555, Cl. 24-205.14R.

Coatta, Joseph. Tree shearing device. 4,069,848, Cl. 144-34.00E.

Cobb, Carolus M., to American Science & Engineering, Inc. Detecting malignant cells. 4,070,576, Cl. 250-303.000.

Cobb, Delwin E.; Gutman, Nathan; and Livesay, Richard E., to Caterpillar Tractor Co. Cooling system for rock ripper tip. 4,070,064, Cl. 299-81.000.

Cobble, Paul M., to B & J Machinery Company, Inc. Knife block for cut pile tufting machine. 4,069,776, Cl. 112-79.00R.

Coble, Scott Brown, Jr.: *See*—
Grant, James William, Jr.; and Coble, Scott Brown, Jr., 4,069,704, Cl. 73-38.000.

Cockrell, Walter T.: *See*—
Smith, Gary L.; and Cockrell, Walter T., 4,069,945, Cl. 221-73.000.

Coes, Samuel H., to Norton Company. Gas tight silicon carbide body. 4,070,197, Cl. 106-44.000.

Colaianni, Flammarion R. Moisture trap for clarinets. 4,069,734, Cl. 84-382.000.

Coleman, Michael G.; and Restrepo, Fabio, to Motorola Inc. Semiconductor solar energy device. 4,070,689, Cl. 357-30.000.

Colgate-Palmolive Company: *See*—
Fitzgerald, Harry G.; and Patience, Donald, 4,069,821, Cl. 128-290.00P.

COLLO GmbH: *See*—
Moroni, Rolf; and Kalbow, Heinz, 4,070,300, Cl. 252-190.000.

Colquhoun, Joseph A.; and Kalinowski, Robert E., to Dow Corning Corporation. Radiation-curable coating compositions comprising mercaptoalkyl silicone and vinyl monomer, method of coating therewith and coated article. 4,070,526, Cl. 428-537.000.

Colter, John S.; and Schommer, Alfred J., to Watts Regulator Company. Separable connection for conduit segments conveying a fluid under pressure. 4,070,045, Cl. 285-325.000.

Colton, John W., to UOP Inc. Pretreatment of raw natural gas prior to liquefaction. 4,070,165, Cl. 55-30.000.

Comba, James Irvin: *See*—
Trifunovic, Alexander L.; and Comba, James Irvin, 4,069,562, Cl. 28-273.000.
Trifunovic, Alexander L.; and Comba, James Irvin, 4,069,564, Cl. 28-273.000.

Combs, Robert L.; McConnell, Richard L.; and Meyer, Max F., Jr., to Eastman Kodak Company. Polyethylene containing hot melt adhesives. 4,070,316, Cl. 260-28.50A.

Combustion Engineering, Inc.: *See*—
Anthony, Andrew James, 4,070,221, Cl. 156-245.000.
Bernstein, Irving, 4,069,766, Cl. 104-173.00R.
Bevilacqua, Frank, 4,070,239, Cl. 176-19.00R.

Rogers, George Dominic, Jr.; and West, John Merle, 4,069,573, Cl. 29-421.00R.

Combustion Unlimited Incorporated: *See*—
Straitz, John F., III, 4,070,146, Cl. 431-202.000.

Cominassi, Adolphe; and Lievremont, Henri. Flameproof material or conglomerate. 4,070,311, Cl. 260-2.50F.

Communication Mfg. Co.: *See*—
Sandlin, Tommy L., 4,070,646, Cl. 340-146.1AB.

Communications Satellite Corporation: *See*—
Assal, Francois Tsvi; Mahle, Cristoph Erhardt; and Berman, Arnold, 4,070,637, Cl. 333-7.00R.

Compagnie Royale Asturienne des Mines: *See*—
Dreulle, Noel, 4,070,260, Cl. 204-119.000.
Van Ceulen, Alain, 4,070,437, Cl. 423-1.000.

Con-Sole Golf Corporation: *See*—
Braly, Joseph M., 4,070,022, Cl. 273-77.00A.

Concannon, Thomas P.: *See*—
Vassiliou, Eustathios; and Concannon, Thomas P., 4,070,525, Cl. 428-422.000.

Confer, Raymond C., to Air Lock Plastics, Inc. Method for blow molding and transfer molding thermoplastic material. 4,070,430, Cl. 264-98.000.

Consolidated Refining Company, Inc.: *See*—
Prasad, Janniah S., 4,069,963, Cl. 228-179.000.

Continental Gummi-Werke A. G.: *See*—
Meckel, Werner; Kilian, Werner; Lehmann, Rolf; and Siegfried, Armin, 4,069,569, Cl. 29-116.0AD.

Continental Oil Company: *See*—
Convers, Ronald J.; and Yang, Kang, 4,070,396, Cl. 260-513.00B.
Klunder, Edgar B., 4,070,445, Cl. 423-428.000.

Contractor, Rashmikant Maganlal; and Kirayoglu, Birol, to Du Pont de Nemours, E. I., and Company. Process for making nonwoven fabric. 4,069,563, Cl. 28-105.000.

Convers, Ronald J.; and Yang, Kang, to Continental Oil Company. Sulfite ion catalysis of bisulfite addition to higher molecular weight detergent range olefins. 4,070,396, Cl. 260-513.00B.

Conweb Corporation: *See*—
Wiegand, Donald E.; Riedel, Frederick H.; and Videen, Otis R., 4,070,287, Cl. 210-40.000.

Cook, James A.; Mercik, Henry J., Jr.; and Armstrong, Lee R., to United Technologies Corporation. Balance point diagnostics for internal combustion engine. 4,069,707, Cl. 73-116.000.

Cooper, Charles Frank; and Greer, Robert, to Morgan Refractories Limited. Refractory wall structures. 4,069,633, Cl. 52-586.000.

Coppola, Gary M.: *See*—
Hardtmann, Goetz E.; and Coppola, Gary M., 4,070,468, Cl. 424-258.000.

Corbin, Vivian Ruth; Hitchner, James Edward; Patnaik, Bisweswar; and Ting, Chung-Yu, to International Business Machines Corporation. Forming self-aligned via holes in thin film interconnection systems. 4,070,501, Cl. 427-88.000.

Corcoran, George F.: *See*—
Bartell, Ronald A.; Corcoran, George F.; and Fuller, Donald H., 4,069,959, Cl. 226-21.000.

Corner & Lada Co., Inc.: *See*—
Lada, Walter, 4,069,992, Cl. 248-54.00R.

Corning Glass Works: *See*—
Chyung, Kenneth; and Wusirika, Raja R., 4,070,198, Cl. 106-52.000.
Travis, Karen L.; and Ward, Frank B., 4,070,153, Cl. 23-230.600.

Cosden Technology, Inc.: *See*—
Watson, James M., 4,070,419, Cl. 260-879.000.

Cota, Dennis: *See*—
Scholz, Artur; and Cota, Dennis, 4,070,695, Cl. 358-181.000.

Cottage, Robert L.: *See*—
Myers, George D.; Walters, Paul W.; and Cottage, Robert L., 4,070,159, Cl. 23-288.00E.

Cottle, John E., to Phillips Petroleum Company. Gasification process with zinc condensation on the carbon source. 4,070,160, Cl. 48-197.00R.

Cottrell, Walter D., Jr., to Owens-Corning Fiberglas Corporation. Method of making molding compounds and products produced thereby. 4,070,331, Cl. 260-38.000.

Coupling Systems, Inc.: *See*—
Felker, Charles E.; and Rieffle, Paul F., 4,070,046, Cl. 285-337.000.

Cousineau, Richard L. Snow vehicle. 4,069,883, Cl. 180-5.00A.

Cousins, Charles Phillip: *See*—
Gibbons, David John; Karwowski, Wieslaw Antoni; Cousins, Charles Phillip; Green, Ian MacDonald; and Jarrett, John James, 4,070,581, Cl. 250-445.00T.

Cragoe, Edward J., Jr.; and Van Arman, Clarence G., to Merck & Co., Inc. Method of treating autoimmune diseases. 4,070,464, Cl. 424-248.510.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. [1-Oxo-2-halo(or hydrogen) indanyloxy]-alkanoic acid. 4,070,539, Cl. 560-56.000.

Cranberg, Lawrence. Apparatus and method for combustion. 4,069,808, Cl. 126-164.000.

Crathern, Charles F. H.; and Twitchell, Sherman W., to Crathern Engineering Co., Inc. Registration system. 4,070,226, Cl. 156-364.000.

Crathern Engineering Co., Inc.: *See*—
Crathern, Charles F. H.; and Twitchell, Sherman W., 4,070,226, Cl. 156-364.000.

Crawley, Graham Charles: *See*—
Aldridge, David Cecil; Crawley, Graham Charles; and Strawson, Colin John, 4,070,480, Cl. 424-279.000.

Cremona, Angelo. Tool feeding device for use in a work forming machine. 4,069,850, Cl. 144-178.000.

Crompton, Kenneth J., to Dominion Auto Accessories Limited. Marker lamp with resilient bulb support. 4,070,567, Cl. 362-390.000.

Crookston, R. Kent: *See*—
Hicks, Dale R.; and Crookston, R. Kent, 4,069,614, Cl. 47-58.000.

Crop, Roland Emil, to Tektronix, Inc. Compensation indicator for attenuation probe. 4,070,615, Cl. 324-57.00R.

Crosby, Herbert L.; and Den Hartog, Jacob P., to Bird Machine Company, Inc. Centrifuge with chatter suppression. 4,069,966, Cl. 233-1.00C.

Crosby, Herbert L.; and Den Hartog, Jacob P., to Bird Machine Company, Inc. Centrifuge with chatter suppression. 4,069,967, Cl. 233-1.00C.

Crosby, Herbert L., to Bird Machine Company, Inc. Centrifuge with torsional vibration sensing and signaling. 4,070,290, Cl. 210-91.000.

Crosby, Lawton H.; and Keane, Thomas H., to Morley Furniture Spring Corporation. Spring connection. 4,070,124, Cl. 403-208.000.

Crown Zellerbach Corporation: *See*—
Stollberg, Ray Harold; and Boling, James Vernon, 4,069,917, Cl. 206-423.000.

Cseh, Georg; and Ronco, Karl, to Ciba-Geigy Corporation. Dicarboxylic acid ester diazo pigments. 4,070,353, Cl. 260-176.000.

Cucksee, Marjorie T.; and Allen, Henry C., to United States of America, Army. Dispersing aids for MT-4. 4,070,213, Cl. 149-19.920.

Cunliffe, Stephen Edson: *See*—
Robbins, Thomas Richard; and Cunliffe, Stephen Edson, 4,069,601, Cl. 36-11.500.

Cunningham, Michal A.: *See*—
Van Dyke, Richard L.; and Cunningham, Michal A., 4,069,551, Cl. 17-68.000.

Cunningham, William W. Four wheel pedal driven vehicle. 4,070,032, Cl. 280-231.000.

Curtis, Donald W.; Branciforte, Michael A.; and Tucker, Terry L. Point of sale automatic announcing system with preprogrammed capacity. 4,070,698, Cl. 360-12.000.

Cutler-Hammer, Inc.: *See*—
Piber, Earl T., 4,070,559, Cl. 200-296.000.

Cutler, Jerome J., to Strong Design Research and Sales Corporation. Nunchaku. 4,070,023, Cl. 273-84.00R.

Cziptschirsch, Kurt, to Gebr. Happich GmbH. Bearing for a sun visor body of a motor vehicle. 4,070,054, Cl. 296-97.00K.

Dahle, Orvar, to Asea Aktiebolag. Magnetoelastic shape meter for cold-rolled strips of ferromagnetic material. 4,070,614, Cl. 324-209.000.

D'Aiello, Robert Vincent: *See*—
Kressel, Henry; D'Aiello, Robert Vincent; and Robinson, Paul Harvey, 4,070,206, Cl. 136-89.0TF.

Daikin Kogyo Co., Ltd.: *See*—
Osaka, Yonosuke; and Tohzuka, Takashi, 4,070,439, Cl. 423-88.000.

Daimler-Benz Aktiengesellschaft: *See*—
Fleisch, Eugen, 4,070,055, Cl. 296-137.00A.
Willingshofer, Walter; Hopsch, Gerhard; and Bose, Karlheinz, 4,070,123, Cl. 403-132.000.
Wolters, Gerhard; and Strifler, Paul, 4,069,888, Cl. 180-98.000.

Daitoseiki Company Limited: *See*—
Takigawa, Kazue, 4,069,689, Cl. 66-14.000.

Damsky, Arnold M. Shipping, storage and handling device for convolutely wound magnetic tape assemblies. 4,069,914, Cl. 206-303.000.

Daniel, Sam M.; and Carlson, Eric Jerome, to Motorola Inc. Power rejection apparatus using a null-constrained subarray for MTI radar applications. 4,070,675, Cl. 343-100.0LE.

Danielsen, Odd, to Chr. Bjelland & Co. A/S. Packing machine for fish. 4,069,644, Cl. 53-59.00R.

Danna, Peter A.; and Burt, Richard D., to Olin Corporation. Connection means for anode posts and conductors to electrolytic cells. 4,070,266, Cl. 204-266.000.

Danneels, Laurent; Helder, Johan; Kuypers, Jan; Piolon, James; and Pernegger, Wolfgang, to Siemens Aktiengesellschaft. Electroplating device for partially plating items in transit. 4,070,265, Cl. 204-206.000.

Dano, Pol, to Fansteel Inc. Composite high strength to weight structure with fray resistance. 4,070,020, Cl. 273-73.00F.

Dano, Pol: *See*—
Cecka, Andrew W.; Dano, Pol; and Pawling, Paul G., 4,070,021, Cl. 273-73.00F.

Dassler, Armin A. Sport shoe. 4,069,598, Cl. 36-114.000.

Dassonville, Vincent: *See*—
Treille, Pierre Albert Eugene; Dassonville, Vincent; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,070,263, Cl. 204-180.00R.

Datascope Corporation: *See*—
Einbinder, Herbert M., 4,070,699, Cl. 361-86.000.

Date, Tasuku; Yamazaki, Shuichi; and Shimada, Shinichi, to Honda Giken Kogyo Kabushiki Kaisha. Engine exhaust port liner. 4,069,667, Cl. 60-282.000.

Davenport, Harold F., to Alger Corporation, The. Binding strip for shoes. 4,069,603, Cl. 36-57.000.

David, Vasile: *See*—
Gheorghe, Dumitru; Renghes, Mihail; Serban, Gheorghe; and David, Vasile, 4,069,621, Cl. 51-117.000.

Davis, Bryan Terence: *See*—
Elliott, John Scotchford; Davis, Bryan Terence; and Norman, Stephen, 4,070,370, Cl. 260-326.250.

Davis, Frederick J.: *See—*
Faley, Arnold F.; and Davis, Frederick J., 4,069,910, Cl. 198-456.000.

Davis, James A.: *See—*
Chess, James S.; Davis, James A.; and Spindler, Robert G., 4,069,630, Cl. 52-172.000.

Davis, Rachel D. Nutritive composition. 4,070,488, Cl. 426-72.000.

Davis, Robert: *See—*
Zemlin, John C.; and Davis, Robert, 4,070,224, Cl. 156-314.000.

Davis, Robert E.; and Baldwin, Roger A., to Kerr-McGee Corporation. Solvent recovery in a coal deashing process. 4,070,268, Cl. 208-8.000.

Dawdy, Jack A., to National Gypsum Company. Method of mounting and demounting a wallboard wall. 4,069,640, Cl. 52-746.000.

Dawson, David George: *See—*
Downing, Stephen Barry; Osmond, Desmond Wilfred John; Skinner, Maurice Wainwright; West, Edmund James; and Dawson, David George, 4,070,199, Cl. 106-93.000.

Dawson, Frederick Wilbur: *See—*
Novoryta, Robert John; and Dawson, Frederick Wilbur, 4,069,864, Cl. 165-86.000.

Decamp, Rene Paul Auguste: *See—*
Carel, Philippe Robert Raymond; Decamp, Rene Paul Auguste; and Perronin, Jean, 4,070,319, Cl. 260-29.4UA.

DeCaprio, Alfred R.: *See—*
Swift, Roderick D.; and DeCaprio, Alfred R., 4,070,099, Cl. 350-269.000.

Decouzon, Georges, to Regie Nationale des Usines Renault. Rear axle for motor vehicle. 4,070,036, Cl. 280-710.000.

Dedkov, Ivan Parfenovich: *See—*
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.

Deere & Company: *See—*
Leonard, Ronald Keith; and Hoffman, John E., Jr., 4,069,882, Cl. 180-5.00R.

de Gennes, Gerard, to Societe Anonyme Francaise du Ferodo. Assembly unit for a clutch, especially for the clutches of automobile vehicles. 4,069,905, Cl. 192-112.000.

Degremont: *See—*
Treille, Pierre Albert Eugene; Dassonville, Vincent; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,070,263, Cl. 204-180.00R.

Deikel, Theodore. Bed covering apparatus. 4,069,526, Cl. 5-343.000.

Dellar, Fred Jay, to Superscope, Inc. One-point stereo microphone. 4,070,547, Cl. 179-1.00G.

Delmas, Claude; Fouassier, Claude; and Hagenmuller, Paul, to Agence Nationale de Valorisation de la Recherche (Anvar). Solid electrolyte. 4,070,529, Cl. 429-193.000.

DeLuca, John A.; and Piper, William W., to General Electric Company. Fluorescent lamp with second phosphor layer. 4,070,598, Cl. 313-487.000.

de Mathan, Olivier, to France-Luzerne. Process for the treatment of vegetable matter with recovery of calories from the dehydration stack gases and applications thereof. 4,070,351, Cl. 260-112.00R.

Demerson, Christopher A.; Humber, Leslie G.; Dobson, Thomas A.; and Jirkovsky, Ivo L., to American Home Products Corporation. Derivatives of 1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid. 4,070,371, Cl. 260-326.290.

Demy, Nicholas G. Casting lure. 4,069,609, Cl. 43-42.060.

Den Hartog, Jacob P.: *See—*
Crosby, Herbert L.; and Den Hartog, Jacob P., 4,069,966, Cl. 233-1.00C.
Crosby, Herbert L.; and Den Hartog, Jacob P., 4,069,967, Cl. 233-1.00C.

de Nora, Vittorio: *See—*
Bianchi, Giuseppe; de Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 4,070,504, Cl. 427-126.000.

Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Amino derivatives of triazolo(4,5-B)pyridines. 4,070,362, Cl. 260-295.50B.

Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. 4H-pyrazolo[1 ,5-a]pyrazolo[4',3':5,6]pyrido[3,4-e]pyrimidin-5(8H)one and derivatives thereof. 4,070,466, Cl. 424-251.000.

De Poortere, Michel; Dufour, Paul; and Vrancken, August, to U C B, Societe Anonyme. Radiocurable compositions. 4,070,259, Cl. 204-159.160.

Derrick, Dennis P., to General Motors Corporation. Variable ratio brake pedal lever assembly. 4,069,722, Cl. 74-516.000.

Desalination Systems, Inc.: *See—*
Bray, Donald Thedore, 4,070,280, Cl. 210-23.00H.

Deutsche Gold- und Silber-Scheideanstal vormals Roessler: *See—*
Hofen, Willi; Wirthwein, Rolf; Reissinger, Karl-Hermann; and Krekel, Jorg, 4,070,253, Cl. 203-75.000.

Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Kremer, Paul; Gora, Bernhard; and van Amsterdam, Cornelis, 4,069,602, Cl. 36-45.000.
Schwarze, Werner; Merk, Wolfgang; and Binder, Volker, 4,070,531, Cl. 526-6.000.

Deutsche Texaco Aktiengesellschaft: *See—*
Meyer-Stoll, Hans-Albrecht; Wollner, Johannes; and Schittek, Hans-Heinz, 4,070,317, Cl. 260-29.300.
Meyer-Stoll, Hans-Albrecht; Wollner, Johannes; and Schittek, Hans-Heinz, 4,070,320, Cl. 260-29.40R.

Dezelan, Joseph E.: *See—*
Campbell, John J.; Dezelan, Joseph E.; and Hart, Cullen P., 4,069,886, Cl. 180-44.00F.

Dezseri, Eszter: *See—*
Jovanovics, Karola; Szasz, Kalman; Lorincz, Csaba; Hermann, Laszlo; and Dezseri, Eszter, 4,070,358, Cl. 260-287.00B.

DeZutter, Theodore M., to K-S-H, Inc. Storm window framing. 4,069,641, Cl. 52-202.000.

D'Hooge, Richard E., to Rixson-Firemark, Inc. Electrically actuated door holder and release. 4,069,544, Cl. 16-49.000.

Diagnostic Data, Inc.: *See—*
Huber, Wolfgang; Saifer, Mark G.; and Williams, Lewis D., 4,070,459, Cl. 424-177.000.

Diamond Shamrock Corporation: *See—*
Rowe, Edward A., Jr.; and Cawley, William H., 4,070,521, Cl. 428-332.000.

Diamond Shamrock Technologies, S.A.: *See—*
Bianchi, Giuseppe; de Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 4,070,504, Cl. 427-126.000.

Dick, Clarence R.; and Potter, James Larry, to Dow Chemical Company, The. Polymers from N-(2-hydroxyethyl)aziridines. 4,070,354, Cl. 260-239.00E.

Dickover, Wesley D.: *See—*
Mergenthaler, Barry M.; and Dickover, Wesley D., 4,070,648, Cl. 340-146.1BE.

Didier Engineering GmbH.: *See—*
Prange, Kurt; Isermann, Friedrich; Hasenacker, Ernst; and Blase, Manfred, 4,070,251, Cl. 202-130.000.

Diefenderfer, Charles George, to Honeywell Inc. Multidirectional repeater. 4,070,545, Cl. 178-73.000.

Diesel Kiki Co., Ltd.: *See—*
Kanda, Fumio; Kaibara, Nobuhiro; Ohki, Seibi; Okamoto, Kazuo; and Suzuki, Akira, 4,069,800, Cl. 123-139.00A.

Dieterman, Alfred Johannes; and Riem, Roland Hendrick, to Emery Industries, Inc. Epoxidized mixed mellitate compounds. 4,070,350, Cl. 260-97.500.

Dietmann, Karl: *See—*
Winter, Werner; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Schaumann, Wolfgang; and Dietmann, Karl, 4,070,373, Cl. 260-333.000.

Dietz, Gerald Edward, to Johnson Controls, Inc. Fuel ignition system including an igniter providing a lingering spark. 4,070,143, Cl. 431-43.000.

Dimitrov, Spas Petkov: *See—*
Stoev, Stoycho Mitrev; Metodiev, Metodi Stoyanov; Kuzev, Lyubomir Vladimirov; Vedrichkov, Petko Georgiev; Sapunarov, Ivan Mitrev; Vassilev, Vassil Vladimirov; Dimitrov, Spas Petkov; Gasharov, Vihar Assenov; Russev, Sheko Kolev; and Mitrev, Kostadin Georgiev, 4,070,275, Cl. 209-44.000.

Dingley, Maurice, to Smiths Industries Limited. Moving-coil electrical instruments with bearing structure. 4,070,623, Cl. 324-150.000.

Dingwall, Andrew Gordon Francis, to RCA Corporation. Method of making a semiconductor device. 4,069,577, Cl. 29-571.000.

DiPalma, Joseph. Electrical power line extension. 4,070,083, Cl. 339-104.000.

Dittmar, Bruce Ivor: *See—*
Aldrich, Paul Edward; Berezin, Gilbert Harvey; and Dittmar, Bruce Ivor, 4,070,479, Cl. 424-275.000.

Dobson, Thomas A.: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Dobson, Thomas A.; and Jirkovsky, Ivo L., 4,070,371, Cl. 260-326.290.

Docteur, Russell William, to Burroughs Corporation. Ink roll with fabric cover retention and protection device. 4,069,758, Cl. 101-348.000.

Dominion Auto Accessories Limited: *See—*
Buck, Roel C.; and Brudy, Peter E., 4,070,566, Cl. 362-369.000.
Crompton, Kenneth J., 4,070,567, Cl. 362-390.000.

Dominy, Francis I., to Burdick Corporation, The. Diathermy apparatus. 4,069,827, Cl. 128-422.000.

Donatelli, Philip A.: *See—*
Ellion, M. Edmund; and Donatelli, Philip A., 4,069,664, Cl. 60-258.000.

Doner, Claude Edward: *See—*
Jasinski, Joseph Richard; Pickard, James Bruce; and Doner, Claude Edward, 4,070,627, Cl. 325-127.000.

Doveinis, Juozas, to General Motors Corporation. Window regulator. 4,069,616, Cl. 49-103.000.

Dow Chemical Company, The: *See—*
Bennett, Robert B., 4,069,939, Cl. 220-9.00A.
Dick, Clarence R.; and Potter, James Larry, 4,070,354, Cl. 260-239.00E.
Goralski, Christian T., 4,070,471, Cl. 424-263.000.
Hinze, Kenneth J., 4,070,304, Cl. 252-404.000.

Dow Corning Corporation: *See—*
Colquhoun, Joseph A.; and Kalinowski, Robert E., 4,070,526, Cl. 428-537.000.
Falender, James R.; and Saam, John C., 4,070,414, Cl. 260-825.000.
Homan, Gary R.; and Lee, Chi-Long, 4,070,328, Cl. 260-37.0SB.
Homan, Gary R.; and Lee, Chi-Long, 4,070,329, Cl. 260-37.0SB.

Downing, Stephen Barry; Osmond, Desmond Wilfred John; Skinner, Maurice Wainwright; West, Edmund James; and Dawson, David George, to Imperial Chemical Industries Limited. Cementitious compositions. 4,070,199, Cl. 106-93.000.

Dragoun, Jozef, to VUMA Vyskumny ustav mechanizacie a automatizacie. Arrangement for forming form pieces by point rolling. 4,069,698, Cl. 72-67.000.

Dravo Corporation: *See—*
Harpster, Joseph W., 4,070,625, Cl. 324-239.000.

Dray, Sheldon: *See—*
Teodorescu, Marius C.; Mayer, Eugene P.; and Dray, Sheldon, 4,070,243, Cl. 195-79.000.

Dreulle, Noel, to Compagnie Royale Asturienne des Mines. Process of sulfuric acid leaching silicated zinc ores. 4,070,260, Cl. 204-119.000.

Drill Systems Inc.: *See—*
Becker, Floyd W., 4,070,043, Cl. 285-133.00A.

Driller, Timothy C.: *See—*
Popplewell, William T., Jr.; and Driller, Timothy C., 4,069,941, Cl. 220-23.400.

Drummond, James E.: *See—*
Kolb, Alan C.; and Drummond, James E., 4,070,163, Cl. 55-11.000.

DSO "UHARMACHIM": *See—*
Kolchev, Lyubomir Alexandrov, 4,070,422, Cl. 260-990.000.

Dudley, Michael A.: *See—*
Nethersole, Douglas C.; Dudley, Michael A.; and Parthasarathy, Mellapalayam R., 4,069,792, Cl. 118-629.000.

Dudnichenko, Vladimir Nikolaevich: *See—*
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.

Duer, Gregory F. Tube joints. 4,070,119, Cl. 403-12.000.

Dufour, Paul: *See—*
De Poortere, Michel; Dufour, Paul; and Vrancken, August, 4,070,259, Cl. 204-159.160.

Dumas, Bruce G. Non-mechanical lure for dog racing. 4,070,016, Cl. 272-4.000.

Dumesnil, Gerard Paul Louis, to Electronic & Technology. Connecting device for ensuring stable electrical connections. 4,070,087, Cl. 339-205.000.

Duni Bila AB: *See—*
Andersson, Karl Gosta Bertil, 4,069,781, Cl. 112-438.000.

Dunkelmann, Dieter: *See—*
Jaunich, Helmut; Dunkelmann, Dieter; and Schiffarth, Josef, 4,070,228, Cl. 156-475.000.

Du Pont de Nemours, E. I., and Company: *See—*
Aldrich, Paul Edward; Berezin, Gilbert Harvey; and Dittmar, Bruce Ivor, 4,070,479, Cl. 424-275.000.
Bascom, Laurence N.; Parker, Franklin G.; and Rogers, James W., 4,069,657, Cl. 57-160.000.
Bellina, Russell Frank; and Fost, Dennis Lynn, 4,070,481, Cl. 424-311.000.
Clark, Stephen Larry, 4,070,077, Cl. 339-17.00C.
Contractor, Rashmikant Maganlal; and Kirayoglu, Birol, 4,069,563, Cl. 28-105.000.
Felten, John James, 4,070,200, Cl. 106-175.000.
Friedrich, Wolfgang; Friedel, Horst; and Jury, Erhard, 4,070,190, Cl. 96-94.00R.
Hammer, Clarence Frederick, 4,070,532, Cl. 526-11.200.
Hartig, Martval John, 4,069,807, Cl. 126-110.00R.
Hoffman, Lewis Charles, 4,070,518, Cl. 428-209.000.
Iler, Ralph Kingaley; and Kirkland, Joseph Jack, 4,070,286, Cl. 210-31.00C.
Jones, Frank N., 4,070,388, Cl. 260-455.00A.
Kirkland, Joseph Jack, 4,070,283, Cl. 210-31.00C.
Lewis, Gary Brett; and Moore, Stephen Donald, 4,070,431, Cl. 264-180.000.
Morgan, Paul Winthrop, 4,070,326, Cl. 260-30.80R.
Tobias, Herbert Albert, 4,069,791, Cl. 118-120.000.
Vassiliou, Eustathios; and Concannon, Thomas P., 4,070,525, Cl. 428-422.000.
Watts, John Conway, 4,070,442, Cl. 423-272.000.
Wood, T. A., 4,070,425, Cl. 264-39.000.

Durand, Charles A., to Gardner-Denver Company. Mechanism for tensioning fluid hoses on a rock drill feed. 4,069,877, Cl. 173-152.000.

Durant, Graham John; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Guanidino, thioureido, isothioureido and nitrovinylamino derivatives of pyridine. 4,070,472, Cl. 424-263.000.

Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Pharmacologically active guanidine compounds as H-2 histamine receptor inhibitors. 4,070,475, Cl. 424-270.000.

Du Rietz, Carl: *See—*
Broman, Per Gunnar; Kihlstedt, Per Gudmar; and Du Rietz, Carl, 4,070,276, Cl. 209-166.000.

Dusich, Jerry G.; and Basco, Willard. Downrigger for trolling. 4,069,611, Cl. 43-43.120.

Dybas, Richard A.; Grier, Nathaniel; and Witzel, Bruce E., to Merck & Co., Inc. Diphenyl polyamides having a cyclohexylene moiety. 4,070,400, Cl. 260-570.50P.

Dyer, William W.: *See—*
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,070,550, Cl. 179-15.0BA.

Dynamit Nobel Aktiengesellschaft: *See—*
Junger, Hans; and Weissenfels, Franz, 4,070,327, Cl. 260-31.40R.

E. R. Squibb & Sons, Inc.: *See—*
Denzel, Theodor; and Hoehn, Hans, 4,070,362, Cl. 260-295.50B.
Denzel, Theodor; and Hoehn, Hans, 4,070,466, Cl. 424-251.000.
Petrillo, Edward William, Jr., 4,070,361, Cl. 260-293.850.
Vogt, B. Richard, 4,070,355, Cl. 260-239.30B.
Wade, Peter C.; and Vogt, Berthold Richard, 4,070,465, Cl. 424-250.000.

E-Systems, Inc.: *See—*
O'Neill, Mark J., 4,069,812, Cl. 126-271.000.
Usry, Joe D., 4,070,604, Cl. 318-203.00A.

Eastin, Elbert R.: *See—*
Beach, James M.; and Eastin, Elbert R., 4,069,895, Cl. 184-106.000.

Eastman Kodak Company: *See—*
Asker, Graham Edward, 4,070,685, Cl. 354-135.000.
Barbee, Eugene Hartzell; and Brown, Robert Cushman, 4,070,167, Cl. 55-192.000.
Combs, Robert L.; McConnell, Richard L.; and Meyer, Max F., Jr., 4,070,316, Cl. 260-28.50A.
Etter, Raymond L., Jr., 4,070,421, Cl. 260-897.00C.
Ettischer, Helmut; and Huschle, Peter, 4,070,684, Cl. 354-86.000.
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,070,337, Cl. 260-45.8NT.
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,070,339, Cl. 260-45.8NT.
Kelley, Richard Norman; and Campbell, Gerald Allan, 4,070,189, Cl. 96-87.00A.
Lu, Chen-i, 4,070,398, Cl. 206-524.200.
Maner, Ronald J.; and Weaver, Max A., 4,070,352, Cl. 260-155.000.
Muka, Richard Stephen, 4,070,015, Cl. 271-100.000.

Eastman, Richard O.: *See—*
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,070,550, Cl. 179-15.0BA.

Eatherly, Walter P.; Robbins, J. M.; and Rosson, David E., Sr., to United States of America, Energy. Method of fabricating graphite for use as a skeletal prosthesis and product thereof. 4,070,514, Cl. 428-64.000.

Ebasco Services Incorporated: *See—*
Blumenau, Leif; and Pignata, Frank John, Jr., 4,069,923, Cl. 214-17.00B.

Eberhart, Ray. Latch mechanism. 4,069,558, Cl. 24-230.00R.

Eckels, Robert E. Method for driving a shaft with shaped charges. 4,069,760, Cl. 102-23.000.

Ecker, Varda, to Schering Corporation. Steroid ointment. 4,070,462, Cl. 424-243.000.

Ecodyne Corporation: *See—*
Uban, Stephen Allen; and Mason, Donald George, 4,070,277, Cl. 209-168.000.

Edelstein, Stephen A.: *See—*
Gallagher, Thomas F.; Hill, Robert M.; and Edelstein, Stephen A., 4,070,580, Cl. 250-423.00P.

Edera Officina Meccanica Tessile S.p.A.: *See—*
Inverardi, Giuseppe; and Chiari, Natale, 4,069,653, Cl. 57-53.000.

Edwards, Albert, to Baker Perkins Holdings Limited. Manufacture of foundry moulds and cores. 4,069,858, Cl. 164-7.000.

Edwards, Douglas W. Thermal distribution and storage system for solar and other heating and cooling. 4,069,973, Cl. 237-69.000.

Edwin Cooper and Company Limited: *See—*
Elliott, John Scotchford; Davis, Bryan Terence; and Norman, Stephen, 4,070,370, Cl. 260-326.250.

Effinger, Robert J., to Southern Railway Company. Rail wear measurement system. 4,069,590, Cl. 33-174.00L.

Egan Machinery Company: *See—*
Carlsen, Richard A., 4,069,986, Cl. 242-56.00A.

Eggers, Frederick S. Vehicle wheel speed retarding system. 4,070,070, Cl. 303-116.000.

Egri, Laszlo, to Tamag Basel AG. Apparatus for use in the preparation of smokable products. 4,069,831, Cl. 131-138.000.

Eichelberger, Charles W., to General Electric Company. Charge transfer analog-to-digital converter. 4,070,667, Cl. 340-347.0NT.

Eichelberger, Charles W.: *See—*
Butler, Walter J.; and Eichelberger, Charles W., 4,070,600, Cl. 315-169.00R.
Butler, Walter J.; and Eichelberger, Charles W., 4,070,666, Cl. 340-347.0AD.

Einbinder, Herbert M., to Datascope Corporation. Charging circuits using controlled magnetic fields. 4,070,699, Cl. 361-86.000.

Eisenberg, Arnold J.: *See—*
Klink, Jerome P.; and Eisenberg, Arnold J., 4,069,984, Cl. 242-18.00G.

Ekeborg, Bo Gunnar: *See—*
Lofgren, Stig-Gunnar; and Ekeborg, Bo Gunnar, 4,069,774, Cl. 111-3.000.

El-Aasser, Mohamed S.: *See—*
Vanderhoff, John W.; El-Aasser, Mohamed S.; and Hoffman, Joseph D., 4,070,323, Cl. 260-29.6NR.

Electric Power Research Institute, Inc.: *See—*
King, Randall N.; Mitoff, Stephan P.; and Breiter, Manfred W., 4,070,527, Cl. 429-104.000.

Electricity Council, The: *See—*
Miles, Lyndon James; and Jones, Ivor Wynn, 4,070,542, Cl. 13-26.000.
Electrode Corporation: *See—*
Motani, Kensuke; Matuura, Shunji; and Kataoka, Ryohei, 4,070,257, Cl. 204-98.000.
Electronic & Technology: *See—*
Dumesnil, Gerard Paul Louis, 4,070,087, Cl. 339-205.000.
Eller, J. Marlin. Mobile pumping apparatus. 4,070,135, Cl. 417-234.000.
Ellion, M. Edmund; and Donatelli, Philip A., to Hughes Aircraft Company. Monopropellant thruster. 4,069,664, Cl. 60-258.000.
Elliott, John Scotchford; Davis, Bryan Terence; and Norman, Stephen, to Edwin Cooper and Company Limited. Polyester lubricant additives, their preparation and compositions containing them. 4,070,370, Cl. 260-326.250.
El Moussa, Wadid, to Klockner-Humboldt-Deutz Aktiengesellschaft. Fuel injection valve. 4,069,978, Cl. 239-533.200.
Emanuelsson, Kaj Bengt Ingemar, to Atlas Copco Aktiebolag. Method and device for driving liquid from a liquid separator. 4,070,166, Cl. 55-41.000.
Emery Industries, Inc.: *See—*
Dieterman, Alfred Johannes; and Riem, Roland Hendrick, 4,070,350, Cl. 260-97.500.
Emhart Industries, Inc.: *See—*
Johnson, Lloyd Douglas; and Kroeber, Kenneth Ernest, 4,069,908, Cl. 198-437.000.
Nebelung, Hermann; and Christopher, Edward Charles, 4,070,174, Cl. 65-229.000.
EMI Limited: *See—*
Gibbons, David John; Karwowski, Wieslaw Antoni; Cousins, Charles Phillip; Green, Ian MacDonald; and Jarrett, John James, 4,070,581, Cl. 250-445.00T.
Emmett, James S.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., 4,069,580, Cl. 30-47.000.
Emmett, John Colin: *See—*
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 4,070,475, Cl. 424-270.000.
Empey, Richard A.; and Pettitt, David J., to Merck & Co., Inc. Cellulase-free xanthan gum and process for producing same. 4,070,535, Cl. 536-114.000.
Endo, Ichiro; Kobayashi, Hajime; and Kinjo, Kikuo, deceased (by Kinjo, Ayako, legal representative), to Canon Kabushiki Kaisha. Light and heat formation of conductive image printing plate. 4,069,759, Cl. 101-467.000.
Endo Laboratories, Inc.: *See—*
Berger, Joel G., 4,070,467, Cl. 424-256.000.
Endo, Takaya: *See—*
Imamura, Hiroyuki; Sato, Shui; Kojima, Tamotsu; and Endo, Takaya, 4,070,191, Cl. 96-100.00R.
Engels, Walter: *See—*
Gilpatrick, Michael William; and Engels, Walter, 4,069,561, Cl. 26-9.000.
English Clays Lovering Pochin & Co. Ltd.: *See—*
Burr, Kenneth John; and Holland, Stephen Ross, 4,069,705, Cl. 73-61.00R.
English Glass Company Limited: *See—*
Wharmby, Martin John, 4,069,994, Cl. 248-101.000.
Erler, Eckart, to HOCHTIEF AG fur Hoch-und Tiefbauten vorm. Gebr. Helfmann. Method of and apparatus for the anchoring of drilling and production platforms on a structure sunk on a sea bottom. 4,069,680, Cl. 61-86.000.
Ernest, Ivan; Gosteli, Jacques; and Woodward, Robert Burns, to Ciba-Geigy Corporation. 2-Penem compounds. 4,070,477, Cl. 424-271.000.
Ernst, Richard R., to Varian Associates, Inc. Gyromagnetic resonance fourier transform zeugmatography. 4,070,611, Cl. 324-.50A.
ESB Incorporated: *See—*
Bergum, Bernard C.; and Fong, Walter Lee, 4,070,528, Cl. 429-152.000.
Escamilla, Abraham S. Resurfacing device for screwdrivers and like tools. 4,069,619, Cl. 51-3.000.
Escher Wyss Limited: *See—*
Meckel, Werner; Kilian, Werner; Lehmann, Rolf; and Siegfried, Armin, 4,069,569, Cl. 29-116.0AD.
Esec Sales S.A.: *See—*
Nicklaus, Karl; and Tresky, Miroslav, 4,069,961, Cl. 228-1.00R.
Eseke, James R.: *See—*
Moran, John J.; Gellenthin, Carl O.; and Eseke, James R., 4,070,156, Cl. 23-253.00R.
Eshleman, Barden E.; and Johnson, George S., to Viking Industries, Inc. Circular connectors. 4,070,080, Cl. 339-91.00R.
Etablissements CARPANO & PONS: *See—*
Chauvigne, Michel, 4,069,976, Cl. 239-242.000.
Etat Francais: *See—*
Bouter, Roger Jean; and Jaffre, Robert Rene, 4,069,634, Cl. 52-648.000.
Ethyl Corporation: *See—*
Licke, George C., 4,070,391, Cl. 260-453.0PC.
Wiegand, Karl E., 4,070,394, Cl. 260-465.50R.
Etter, Raymond L., Jr., to Eastman Kodak Company. Chlorinated polymeric compositions useful as primers for polyolefins. 4,070,421, Cl. 260-897.00C.
Ettischer, Helmut; and Huschle, Peter, to Eastman Kodak Company. Shutter release blocking device for foldable camera. 4,070,684, Cl. 354-86.000.
Evers, William J.; Heinsohn, Howard H., Jr.; and Schmitt, Frederick Louis, to International Flavors & Fragrances Inc. α-Oxy(oxo)mercaptan perfume and cologne compositions. 4,070,308, Cl. 252-522.000.
Ewertowski, Norbert, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Vertical tool head for headstock of horizontal drilling-milling machines. 4,069,741, Cl. 90-17.000.
Excel Industries, Inc.: *See—*
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., 4,069,649, Cl. 56-202.000.
Exxon Research and Engineering Company: *See—*
Burke, Oliver W., Jr., 4,070,325, Cl. 260-29.7EM.
Miller, Harold N., 4,070,295, Cl. 252-48.600.
Eyelet Specialty Co., Inc.: *See—*
Marshall, Francis G.; and Klimeck, Edward F., 4,069,942, Cl. 221-4.000.
Ezaki, Toshi; and Mineda, Hisahalu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Mechanism for joining a cable to a link lever. 4,069,721, Cl. 74-501.00R.
F. D. Farnam Co.: *See—*
Farnam, Robert G., 4,070,219, Cl. 156-192.000.
Fagan, Philip J.: *See—*
Groth, Harry E., Jr.; and Fagan, Philip J., 4,069,518, Cl. 3-1.910.
Falender, James R.; and Saam, John C., to Dow Corning Corporation. Toughened mercaptosiloxane modified bulk polymerized vinylic polymers. 4,070,414, Cl. 260-825.000.
Faley, Arnold F.; and Davis, Frederick J. Apparatus and method for center positioning lumber and the like. 4,069,910, Cl. 198-456.000.
Falk, Richard A. Molten metal sampler with offset connector. 4,069,715, Cl. 73-354.000.
Falk, Richard A. Molten metal stream sampler and clamp. 4,069,717, Cl. 73-425.40R.
Fallen, Burke R. Drive disc and pad assembly for floor buffer. 4,069,538, Cl. 15-230.170.
Fan, George J.; and Slonczewski, John C., to International Business Machines Corporation. Method and apparatus for recording information on a recording surface by the use of magnetic ink. 4,070,679, Cl. 346-75.000.
Fansteel Inc.: *See—*
Cecka, Andrew W.; Dano, Pol; and Pawling, Paul G., 4,070,021, Cl. 273-73.00F.
Dano, Pol, 4,070,020, Cl. 273-73.00F.
Farmhand (U.K.) Limited: *See—*
Jackson, Michael Vivian; and Avis, James Kendall, 4,069,926, Cl. 214-6.00B.
Farnam, Robert G., to F. D. Farnam Co. Method of making densified convolute gasket structure. 4,070,219, Cl. 156-192.000.
Farr, Robert C.; and Hametner, Alfred, to Hametner-Farr Company, Inc. Optical instrument employing a truncated prism having its distal end disposed proximate a planar end of an opaque tubular housing. 4,070,090, Cl. 350-21.000.
Farrell, John J., to Farrell Patent Company. Injection of plastic in molding machine. 4,070,142, Cl. 425-555.000.
Farrell Patent Company: *See—*
Farrell, John J., 4,070,142, Cl. 425-555.000.
Fawcett, Michael E. Automatic carousel vendor for stacked articles. 4,069,943, Cl. 221-5.000.
Feldtkeller, Ernst; Harms, Hauke; and Papp, Alfred, to Siemens Aktiengesellschaft. Magneto-optical high-voltage current measuring transducer. 4,070,620, Cl. 324-96.000.
Feldtkeller, Ernst: *See—*
Harms, Hauke; and Feldtkeller, Ernst, 4,070,622, Cl. 324-96.000.
Felker, Charles E.; and Rieffle, Paul F., to Coupling Systems, Inc. Pipe and tubing connecting sleeve. 4,070,046, Cl. 285-337.000.
Felten, John James, to Du Pont de Nemours, E. I., and Company. Compositions containing diethylene glycol ether. 4,070,200, Cl. 106-175.000.
Fenole, Joseph E.; Wells, Jerry E.; and Chicoine, Bernard C. Body waste detecting device. 4,069,817, Cl. 128-138.00A.
Ferdinand Gutmann & Co.: *See—*
Hampel, Alfred H., 4,069,935, Cl. 215-203.000.
Fernbaugh, Francis W. Security system for merchandise display. 4,069,919, Cl. 211-4.000.
Ferro, Armand P.; and Gauper, Harold A., Jr., to General Electric Company. Spatially distributed windings to improve plasma coupling in induction ionized lamps. 4,070,602, Cl. 315-248.000.
Fett, Darrell LeRoy, to Honeywell Information Systems Inc. Current mode simultaneous dual-read/single-write memory device. 4,070,657, Cl. 365-233.000.
Feurstein, Guntram, to Sulzer Brothers Limited. Drying cylinder. 4,069,594, Cl. 34-124.000.
F'Geppert, Erwin, to United States of America, Army. Speed change device. 4,069,718, Cl. 74-206.000.
Fiberwoven Corporation, The: *See—*
Smith, Alexander M., II; Adkins, Allen H.; and Roth, Thomas M., 4,070,217, Cl. 156-73.200.
Filler, Raymond L.: *See—*
Vig, John R.; and Filler, Raymond L., 4,070,502, Cl. 427-100.000.
Fiore, John M.: *See—*
Buell, Heinz; and Fiore, John M., 4,070,674, Cl. 343-9.000.
Firestone Tire and Rubber Company, The: *See—*
Ambrose, Richard Joseph, 4,070,420, Cl. 260-880.00R.
Gardner, James Dennis; and Glasscock, Robert William, 4,070,436, Cl. 264-315.000.
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,070,344, Cl. 260-77.5CR.
Firmin, Herman P. Stud worm fishing lures. 4,069,610, Cl. 43-42.240.

Fisher, Michael H.: *See—*
ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., 4,070,359, Cl. 260-293.550.
ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., 4,070,360, Cl. 260-293.550.
Fisher, Robert C. Inertia locking seat belt retractor. 4,069,987, Cl. 242-107.40A.
Fisons Incorporated: *See—*
Brooker, Peter John; and Goose, John, 4,070,476, Cl. 424-270.000.
Fitzgerald, Harry G.; and Patience, Donald, to Colgate-Palmolive Company. Absorbent article. 4,069,821, Cl. 128-290.00P.
Fitzgerald, William C.: *See—*
Allen, Edwin M.; Fitzgerald, William C.; and Melsted, Marino S., 4,070,573, Cl. 250-203.00R.
Flachenecker, Gerhard: *See—*
Meinke, Hans Heinrich; Lindenmeier, Heinz; Landstorfer, Friedrich; and Flachenecker, Gerhard, 4,070,677, Cl. 343-704.000.
Flataker, Lars M.: *See—*
ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., 4,070,359, Cl. 260-293.550.
ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., 4,070,360, Cl. 260-293.550.
Fleisch, Eugen, to Daimler-Benz Aktiengesellschaft. Fastening of inner roof covering of motor vehicles. 4,070,055, Cl. 296-137.00A.
Fleischer, Herman J.: *See—*
Schmidt, Richard Q.; Fleischer, Herman J.; Lanning, Walter C.; and Tiblin, Bert V., 4,070,673, Cl. 343-7.300.
Fletcher, James C.; and Vine, James. Magnifying image intensifier. 4,070,574, Cl. 250-213.0VT.
Flider, Frank S., to Justrite Manufacturing Company. Consumer safety container for inflammables. 4,069,946, Cl. 222-1.000.
Flow Research, Inc.: *See—*
Olsen, John H.; and Saurwein, Albert C., 4,069,749, Cl. 93-58.100.
FMC Corporation: *See—*
Lupichuk, Andrew, 4,070,404, Cl. 260-654.00D.
Fogarty, John E., Jr. Filter media. 4,070,293, Cl. 210-401.000.
Fohrman, Seymour: *See—*
Shevin, Jack R.; and Fohrman, Seymour, 4,069,606, Cl. 40-10.00A.
Follett, Robert Pierce: *See—*
Rossitto, Conrad; and Follett, Robert Pierce, 4,069,532, Cl. 12-146.00D.
Fomenko, Sergei Michael, to Greenwood Mills, Inc. Detector optics for use in fabric inspection. 4,070,114, Cl. 356-111.000.
Fong, Jaan-Jiue: *See—*
Hsu, Grace F.; and Fong, Jaan-Jiue, 4,070,256, Cl. 204-55.00R.
Fong, Walter Lee: *See—*
Bergum, Bernard C.; and Fong, Walter Lee, 4,070,528, Cl. 429-152.000.
Ford Motor Company: *See—*
Zawacki, Chester W., 4,069,974, Cl. 239-15.000.
Forry, James Edward; and Neer, Robert Gordon, to Towmotor Corporation. Cylinder constructions. 4,069,747, Cl. 92-166.000.
Forslund, Erik Torsten, to Ostbergs Fabriks AB. Device for extracting tree stumps. 4,069,846, Cl. 144-2.00N.
Foseco International Limited: *See—*
Kraak, Andries; and George, Raymond Douglas, 4,070,196, Cl. 106-38.350.
Fosha, Albert A.: *See—*
Loomis, Gary A.; and Fosha, Albert A., 4,070,127, Cl. 403-334.000.
Fost, Dennis Lynn: *See—*
Bellina, Russell Frank; and Fost, Dennis Lynn, 4,070,481, Cl. 424-311.000.
Foster, Earl T.: *See—*
Mackey, Johnny R.; and Foster, Earl T., 4,070,212, Cl. 149-19.200.
Foster, Tom: *See—*
Rundell, Dan Joseph; McHugh, Donald Patrick; Foster, Tom; and Brown, Ralph Harold, 4,069,661, Cl. 60-204.000.
Fouassier, Claude: *See—*
Delmas, Claude; Fouassier, Claude; and Hagenmuller, Paul, 4,070,529, Cl. 429-193.000.
Fowler, William H.; and Ludwig, David P., to Western Electric Co., Inc. Tape for holding electronic articles. 4,069,916, Cl. 206-330.000.
Fraim, Freeman W., to Thermo Electron Corporation. Apparatus for chromatographically analyzing a liquid sample. 4,070,155, Cl. 23-230.0PC.
France-Luzerne: *See—*
de Mathan, Olivier, 4,070,351, Cl. 260-112.00R.
Frank, Carl A., to Frank, Claire D.; Frank, Gerald A.; and Parmelee, G. Kendall. Method of forming a nozzle outlet in the stretchable flexible wall for a container. 4,069,748, Cl. 93-35.00R.
Frank, Claire D.: *See—*
Frank, Carl A., 4,069,748, Cl. 93-35.00R.
Frank, Gerald A.: *See—*
Frank, Carl A., 4,069,748, Cl. 93-35.00R.
Frank J. Zamboni & Co.: *See—*
Zamboni, Frank J., 4,069,540, Cl. 15-320.000.
Frank, Roger. Bar-tumbler type safety lock. 4,069,695, Cl. 70-363.000.
Franke, Manfred: *See—*
Binder, Anton; Franke, Manfred; and Gartner, Siegfried, 4,070,626, Cl. 325-17.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,069,763, Cl. 104-12.000.
Frazer, Robert E.; and Ingram, Marylou, to California Institute of Technology. Coherent optics blood cell classification system. 4,070,113, Cl. 356-104.000.
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, to Vockenhuber, Karl; and Hauser, Raimund. Cine camera. 4,070,107, Cl. 352-72.000.
Friedel, Horst: *See—*
Friedrich, Wolfgang; Friedel, Horst; and Jury, Erhard, 4,070,190, Cl. 96-94.00R.
Friedrich, Wolfgang; Friedel, Horst; and Jury, Erhard, to Du Pont de Nemours, E. I., and Company. Process for producing photographic silver halide emulsions having a core/shell structure. 4,070,190, Cl. 96-94.00R.
Friswell, David R., to Waters Associates, Inc. Diaphragm valve. 4,070,004, Cl. 251-331.000.
Fronzoni, Ferruccio; and Giampaolo, Carlo, to Anic, S.p.A. Continuous procedure for the production of a diene based synthetic rubber latex whose particle diameter is in the range between 1500 and 4000 angstroms. 4,070,324, Cl. 260-29.70D.
Frosch, Albert; Mannsdorfer, Walter; and Scheuing, Claus, to International Business Machines Corporation. Gap measuring device for defining the distance between two or more surfaces. 4,070,116, Cl. 356-156.000.
Fuchi, Tsutomu; and Toyoda, Hiroshi, to Matsushita Electronics Corporation. Light source device to be utilized mainly for projection purposes. 4,070,594, Cl. 313-1.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Nakamura, Hiroyuki, 4,069,666, Cl. 60-278.000.
Fuji Photo Film Co., Ltd.: *See—*
Ishige, Sadao; Usui, Hideo; Kato, Hajime; Saeki, Keiso; and Kiritani, Masataka, 4,070,508, Cl. 427-282.000.
Nakamura, Takashi; and Watanabe, Shigeru, 4,070,188, Cl. 96-53.000.
Fuji Photo Optical Co., Ltd.: *See—*
Numata, Saburo; and Fujino, Shinichiro, 4,070,682, Cl. 354-51.000.
Fujikawa, Kanichi: *See—*
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,070,177, Cl. 71-105.000.
Fujikura, Yoshiaki: *See—*
Inamoto, Yoshiaki; Fujikura, Yoshiaki; Ikeda, Hiroshi; and Takaishi, Naotake, 4,070,540, Cl. 560-117.000.
Fujino, Shinichiro: *See—*
Numata, Saburo; and Fujino, Shinichiro, 4,070,682, Cl. 354-51.000.
Fujioka, Mikio: *See—*
Ohkubo, Kimio; and Fujioka, Mikio, 4,070,303, Cl. 252-364.000.
Fujise, Masatomo; and Isobe, Koji, to Nippon Kayaku Kabushiki Kaisha. Process for the preparation of 4,4'-diaminostilbene-2,2'-disulfonic acid or its salts. 4,070,395, Cl. 260-510.000.
Fujita, Kazunori; Takeuchi, Seiji; Takata, Yoshinori; Taki, Mamoru; and Hamano, Yoshimasa, to Hitachi, Ltd. Liquid chromatography and apparatus for the same. 4,070,284, Cl. 210-31.00C.
Fujitsu Limited: *See—*
Ogasa, Kazuo; and Ogawa, Seiya, 4,070,522, Cl. 428-336.000.
Fukagawa, Susumu; and Sasaki, Hisashi, to Asahi Kakoushi Kabushiki Kaisha et al. Water applicator for wettable tape. 4,069,789, Cl. 118-43.000.
Fukui, Yoshitaka: *See—*
Araya, Kenzo; Hashimoto, Takashi; and Fukui, Yoshitaka, 4,069,754, Cl. 101-53.000.
Fuller, Donald H.: *See—*
Bartell, Ronald A.; Corcoran, George F.; and Fuller, Donald H., 4,069,959, Cl. 226-21.000.
Funabashi, Toshihisa, to Matsushita Electric Industrial Co., Ltd. Radio receiver with selective plural band reception. 4,070,628, Cl. 325-316.000.
Funk, Harald F. Prehydrolysis and digestion of plant material. 4,070,232, Cl. 162-16.000.
Fussell, Theodore John, Jr., to Neptune Eastech, Inc. Flowmeter plate and sensing apparatus. 4,069,708, Cl. 73-194.0VS.
Fussinger, Gerhard: *See—*
Gego, Arno; and Fussinger, Gerhard, 4,069,885, Cl. 180-14.00B.
Gabus, Jean-Claude, to Carba S.A. Detecting element for a control device for invalids. 4,070,700, Cl. 361-170.000.
Gaessler, Henri Pierre: *See—*
Treille, Pierre Albert Eugene; Dassonville, Vincent; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,070,263, Cl. 204-180.00R.
Gagliani, John; and Long, John V., to International Harvester Company. Closed cell polyimides. 4,070,312, Cl. 260-2.50N.
Gainer, James V., Jr., to University of Virginia Patents Foundation. Method for treating cerebral edema. 4,070,460, Cl. 424-180.000.
Gala, Babulal Virji, to GTE Automatic Electric Laboratories Incorporated. Lamp cap for use with indicating light assembly. 4,070.568, Cl. 362-311.000.
Gallagher, Thomas F.; Hill, Robert M.; and Edelstein, Stephen A., to Stanford Research Institute. Method and apparatus for field ionization for isotope separation. 4,070,580, Cl. 250-423.00P.
Gallone, Patrizio: *See—*
Bianchi, Giuseppe; de Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 4,070,504, Cl. 427-126.000.
Gallus, Julius P., to Union Oil Company of California. Method of cementing well casing using a high temperature cement system. 4,069,870, Cl. 166-293.000.

Gamaleya, Nikolai Fedorovich: *See—*
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.

Ganellin, Charon Robin: *See—*
Durant, Graham John; and Ganellin, Charon Robin, 4,070,472, Cl. 424-263.000.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 4,070,475, Cl. 424-270.000.

Garber, Murray; and Reger, David William, to American Cyanamid Company. Process for the preparation of the 2-diethoxyphosphinylimino-1,3-dithietane. 4,070,372, Cl. 260-327.00M.

Garconnet, Michel Jean. Tightening and releasing tool. 4,069,726, Cl. 74-785.000.

Gardner-Denver Company: *See—*
Durand, Charles A., 4,069,877, Cl. 173-152.000.

Gardner, James Dennis; and Glasscock, Robert William, to Firestone Tire and Rubber Company, The. Method of manufacturing a pneumatic tire. 4,070,436, Cl. 264-315.000.

Garner, James W.; and Kelso, Robert G., to Grow Chemical Corporation. High solids urethanes and application thereof. 4,070,509, Cl. 427-385.00R.

Garrett, Roy Peter; Parkins, Derek Ray; Brandenstein, Manfred; and Olschewski, Armin, to SKF Industrial Trading and Development Company B.V. Hydraulic clutch release mechanism for motor vehicles. 4,069,904, Cl. 192-85.0CA.

Garrison, Harry F. Multiple-groover for pavements. 4,070,128, Cl. 404-89.000.

Gartner, Siegfried: *See—*
Binder, Anton; Franke, Manfred; and Gartner, Siegfried, 4,070,626, Cl. 325-17.000.

Garvey, Robert J.: *See—*
Calle, Jaime; Garvey, Robert J.; Monahan, Earnest M.; Parris, George L.; Twibell, Jerome J.; and Woods, John M., 4,070,704, Cl. 364-200.000.

Gasharov, Vihar Assenov: *See—*
Stoev, Stoycho Mitrev; Metodiev, Metodi Stoyanov; Kuzev, Lyubomir Vladimirov; Vedrichkov, Petko Georgiev; Sapunarov, Ivan Mitrev; Vassilev, Vassil Vladimirov; Dimitrov, Spas Petkov; Gasharov, Vihar Assenov; Russev, Sheko Kolev; and Mitrev, Kostadin Georgiev, 4,070,275, Cl. 209-44.000.

Gassmann, Gerhard G., to International Telephone and Telegraph Industries. Arrangement for determining liquid and gas flow rates. 4,069,713, Cl. 73-194.00A.

Gaunt, Robert H.: *See—*
Olson, Wallace I.; Gaunt, Robert H.; and Lynch, Jerome G., 4,070,424, Cl. 261-142.000.

Gauper, Harold A., Jr.: *See—*
Ferro, Armand P.; and Gauper, Harold A., Jr., 4,070,602, Cl. 315-248.000.

Gautier, Gerard A. Anti-fraud alarm transmission line security system. 4,070,669, Cl. 340-409.000.

Gay, Michael John, to Motorola Inc. Remote controlled amplifier. 4,070,633, Cl. 330-254.000.

Gazda, Imre I.; and Carroll, Albert W., to Otis Engineering Corporation. Bottom hole fluid pressure communicating probe and locking mandrel. 4,069,865, Cl. 166-113.000.

Gebr. Happich GmbH: *See—*
Cziptschirsch, Kurt, 4,070,054, Cl. 296-97.00K.

Gego, Arno; and Fussinger, Gerhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. Tractor-implement arrangement for establishing frictional engagement therebetween. 4,069,885, Cl. 180-14.00B.

Geiss, Charles, to All-Shield Enclosures, Inc. Radiant resistant closure assembly. 4,069,618, Cl. 49-483.000.

Gelber, Robert M., to Optical Coating Laboratory, Inc. Ophthalmic antireflection coatings with metal, dielectric, substrate, metal, dielectric in sequence. 4,070,097, Cl. 350-165.000.

Gelin, Robert J., to Owens-Corning Fiberglas Corporation. Method and apparatus for making electric conductor. 4,070,215, Cl. 156-51.000.

Gellenthin, Carl O.: *See—*
Moran, John J.; Gellenthin, Carl O.; and Eseke, James R., 4,070,156, Cl. 23-253.00R.

Gemeinhardt, Donald B.: *See—*
Bern, Edward C.; and Gemeinhardt, Donald B., 4,069,834, Cl. 137-75.000.

General Electric Company: *See—*
Ashley, Eugene, 4,069,739, Cl. 89-1.704.
Barber, William D., 4,070,707, Cl. 364-414.000.
Butler, Walter J.; and Eichelberger, Charles W., 4,070,600, Cl. 315-169.00R.
Butler, Walter J.; and Eichelberger, Charles W., 4,070,666, Cl. 340-347.0AD.
DeLuca, John A.; and Piper, William W., 4,070,598, Cl. 313-487.000.
Eichelberger, Charles W., 4,070,667, Cl. 340-347.0NT.
Ferro, Armand P.; and Gauper, Harold A., Jr., 4,070,602, Cl. 315-248.000.
Hardy, Albert L.; Braun, Edwin R.; and Hall, Edwin M., Jr., 4,070,204, Cl. 134-25.00A.
Harnden, John D., Jr.; Kornrumpf, William P.; Walden, John P.; and Walker, Loren H., 4,070,701, Cl. 363-25.000.
Harter, Donald J., 4,070,161, Cl. 48-210.000.
Holet, Kenneth M.; and Prada, Luis E., 4,069,545, Cl. 16-49.000.
Hughes, William C.; and Parks, Harold G., 4,070,597, Cl. 313-431.000.
Kemp, Charles L., 4,069,750, Cl. 99-280.000.
Nelson, Fred E., 4,070,085, Cl. 339-196.00R.
Rabatin, Jacob G., 4,070,583, Cl. 250-483.000.
Ryckman, William D., Jr., 4,069,949, Cl. 222-146.0HA.
Sisler, Robert R., 4,069,596, Cl. 34-242.000.
Summerhayes, Harry R., 4,070,572, Cl. 250-199.000.
Wyland, Alvin D.; and Patel, Jaykishan C., 4,070,144, Cl. 431-79.000.

General Energy Development Corporation: *See—*
Wetmore, Harold B.; Harrow, Robert A.; and Holway, William C., 4,070,570, Cl. 362-218.000.

General Foods Corporation: *See—*
Lugay, Joaquin Castro; and Beale, Robert James, 4,070,490, Cl. 426-533.000.

General Motors Corporation: *See—*
Balsley, Richard L., 4,069,796, Cl. 123-75.00B.
Cataldo, Roy S., 4,069,803, Cl. 123-198.00F.
Derrick, Dennis P., 4,069,722, Cl. 74-516.000.
Doveinis, Juozas, 4,069,616, Cl. 49-103.000.
Gephart, Robert L.; and Parker, Donald L., 4,069,742, Cl. 91-369.00A.
Mehta, Ram K. S.; and Weiss, Philip, 4,070,315, Cl. 260-28.50B.
Nelson, Richard P.; and Roth, William H., 4,069,571, Cl. 29-156.50R.
Pelouch, Robert J., 4,070,035, Cl. 280-709.000.
Shellhause, Ronald L., 4,070,644, Cl. 340-52.00C.
Silk, Leonard P.; and Keefer, Ernest G., 4,069,550, Cl. 16-179.000.
Thornburgh, William F., 4,069,798, Cl. 123-119.00A.

General Signal Corporation: *See—*
Trafford, Larry F., 4,070,086, Cl. 339-198.00H.

General Tire & Rubber Company, The: *See—*
Kalafus, Edward F.; and Wise, Richard M., 4,070,318, Cl. 260-29.300.

Genik-Sas-Berezowsky, Roman M.; Sefton, Verner B.; and Gormely, Lynton S., to Sherritt Gordon Mines Limited. Recovery of precious metals from metal sulphides. 4,070,182, Cl. 75-103.000.

Geonics Limited: *See—*
McNeill, James Duncan; Black, Gary George; and Bosnar, Miroslav, 4,070,612, Cl. 324-6.000.

George, Henry Howard, to Chemetron Corporation. Gusseted connectors. 4,070,126, Cl. 403-271.000.

George, Raymond Douglas: *See—*
Kraak, Andries; and George, Raymond Douglas, 4,070,196, Cl. 106-38.350.

Gephart, Robert L.; and Parker, Donald L., to General Motors Corporation. Power brake booster system. 4,069,742, Cl. 91-369.00A.

Gerek, Gene: *See—*
Wismer, Marco; and Gerek, Gene, 4,070,497, Cl. 427-44.000.

Gerkey, Kenneth S.: *See—*
Kugler, Ralph W.; Gerkey, Kenneth S.; and Kasner, William H., 4,070,240, Cl. 176-66.000.

Germain, Robert A., to True Temper Corporation. Grass shears. 4,069,584, Cl. 30-238.000.

Gerteis, Paul, to Chemap AG. Disc filter having means for sensing the thickness of filter cakes and method of filtering with the filter. 4,070,288, Cl. 210-65.000.

Gheorghe, Dumitru; Renghes, Mihail; Serban, Gheorghe; and David, Vasile, to Intreprinderea "Mecanica" Plopeni. Apparatus for machining bearing rolls. 4,069,621, Cl. 51-117.000.

Giampaolo, Carlo: *See—*
Fronzoni, Ferruccio; and Giampaolo, Carlo, 4,070,324, Cl. 260-29.70D.

Gibbons, David John; Karwowski, Wieslaw Antoni; Cousins, Charles Phillip; Green, Ian MacDonald; and Jarrett, John James, to EMI Limited. Detection of radiation. 4,070,581, Cl. 250-445.00T.

Gibson, Harry W.; and Saeva, Franklin D., to Xerox Corporation. Tribo modified toner materials via silylation and electrostatographic imaging process. 4,070,186, Cl. 96-1.0SD.

Gibson, Harry W.; and Gunther, Wolfgang H. H., to Xerox Corporation. Triboelectrically controlled covalently dyed toner materials. 4,070,296, Cl. 252-62.10P.

Gierek, Adam; and Bajka, Lech, to Politechnika Slaska Im. Wincentego Pstrowskiego. Method for hot and immersion alumising of compactly formed ferrous alloy products. 4,070,210, Cl. 148-15.000.

Gierek, Adam; Bajka, Lech; Liberski, Piotr; and Gruszecka, Anna, to Politechnika Salaska Im. Wicentego Pstrowskiego. Method of producing layers of lead and its alloys on workpieces made of ferrous alloys. 4,070,511, Cl. 427-405.000.

Giess, Edward August; Keefe, George Edward; and Lin, Yeong Show, to International Business Machines Corporation. Ion implanted bubble propagation structure. 4,070,658, Cl. 365-36.000.

Gifford, Richard Cyril: *See—*
Buzzard, Clair Alan; Gifford, Richard Cyril; Lescinsky, Frank William; and Zachok, Robert Michael, 4,069,970, Cl. 235-312.000.

Gilb, Tyrell T., to Simpson Manufacturing Co., Inc. Truss structure with clevis assembly joints. 4,069,635, Cl. 52-693.000.

Gilbert, Donald E. Screen for deterring flying insects. 4,069,615, Cl. 49-58.000.

Gillemot, George W.: *See—*
Thompson, John T.; and Gillemot, George W., 4,070,543, Cl. 174-87.000.

Gilpatrick, Michael William; and Engels, Walter, to Milliken Research Corporation. Selvedge protection apparatus for loop pile fabric cutting machine. 4,069,561, Cl. 26-9.000.

Gilula, Louis A., to Barbier, Jean Y., a part interest. Method and apparatus for applying stress for knee arthrography and the like. 4,069,813, Cl. 128-2.00R.

Givaudan Corporation: *See—*
Chalk, Alan J.; and Magennis, Steven A., 4,070,374, Cl. 260-340.50R.

Glasscock, Robert William: *See—*
Gardner, James Dennis; and Glasscock, Robert William, 4,070,436, Cl. 264-315.000.

Glaze, Stanley George, to Lucas Aerospace. Pneumatically controlled hydromechanical railway car stabilizing apparatus. 4,069,767, Cl. 105-164.000.

Glen Raven Mills, Inc.: *See—*
Trifunovic, Alexander L.; and Combs, James Irvin, 4,069,562, Cl. 28-273.000.
Trifunovic, Alexander L.; and Combs, James Irvin, 4,069,564, Cl. 28-273.000.

Glennon, William Joseph; Gronner, Alfred Douglas; and Simon, David Julian, to Singer Company, The. High accuracy digital to analog resolver converter. 4,070,665, Cl. 340-347.0SY.

Glesser, Louis S. Articulated tool. 4,070,011, Cl. 269-45.000.

Glock, Wilfried; Ruppert, Josef; and Korecki, Jorg. Holder for anchoring the trunk lid of a car. 4,070,050, Cl. 292-339.000.

Glory Kogyo Kabushiki Kaisha: *See—*
Horie, Shozo, 4,069,647, Cl. 53-212.000.

Glossner, Ewald: *See—*
Kachel, Volker; and Glossner, Ewald, 4,070,617, Cl. 324-71.0CP.

Goetsch, Henry E.: *See—*
Armstrong, Lee R.; Goetsch, Henry E.; and Mercik, Henry J., Jr., 4,069,712, Cl. 73-118.000.

Goloff, Alexander, to Caterpillar Tractor Co. Rotary mechanism with a continuous curve at the chamber waist. 4,070,137, Cl. 418-61.00A.

Goodyear Tire & Rubber Company, The: *See—*
Caravito, Vito A., 4,070,071, Cl. 305-13.000.

Goose, John: *See—*
Brooker, Peter John; and Goose, John, 4,070,476, Cl. 424-270.000.

Gora, Bernhard: *See—*
Kremer, Paul; Gora, Bernhard; and van Amsterdam, Cornelis, 4,069,602, Cl. 36-45.000.

Goralski, Christian T., to Dow Chemical Company, The. 3,4,5-Tris(4-pyridinylthio)-2,6-pyridinedicarbonitrile and its use to control bacteria and fungi. 4,070,471, Cl. 424-263.000.

Goretta, Louis A.; and Sibert, Frederick J., to Nalco Chemical Company. Process for the preparation of water-in-oil emulsions of water soluble vinyl carboxylic acid polymers and copolymers. 4,070,321, Cl. 260-29.60H.

Gormely, Lynton S.: *See—*
Genik-Sas-Berezowsky, Roman M.; Sefton, Verner B.; and Gormely, Lynton S., 4,070,182, Cl. 75-103.000.

Gosteli, Jacques: *See—*
Ernest, Ivan; Gosteli, Jacques; and Woodward, Robert Burns, 4,070,477, Cl. 424-271.000.

Gottliebsen, Lenius H. Device for leveling a ladder. 4,069,890, Cl. 182-108.000.

Gower, Samuel. Automatic pet feeder. 4,069,793, Cl. 119-51.130.

Grabowski, Edward J. J.: *See—*
ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., 4,070,359, Cl. 260-293.550.
ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., 4,070,360, Cl. 260-293.550.

Grafton, David A., to Xerox Corporation. Two dimensional laser scanner with movable cylinder lens. 4,070,089, Cl. 350-7.000.

Graham, John P., to Moog Automotive, Inc. Wear indicating ball joint. 4,070,121, Cl. 403-27.000.

Graham, Paul R., to Monsanto Company. Migration-resistant plasticizer for vinyl halide polymers. 4,069,517, Cl. 3-1.400.

Gramling, William Dwight. Gas powered swabbing device. 4,070,134, Cl. 417-56.000.

Grant, James William, Jr.; and Coble, Scott Brown, Jr., to Celanese Corporation. Variable length encapsulating pressure drop tester. 4,069,704, Cl. 73-38.000.

Grants, Valdis; and Struger, Odo J., to Allan-Bradley Company. Contact histogram for programmable controller. 4,070,702, Cl. 364-200.000.

Grasselli, Robert K.: *See—*
White, James F.; Rege, James R.; Grasselli, Robert K.; and Suresh, Dev. D., 4,070,397, Cl. 260-530.00N.

Gray, Robert E. Muffin splitter. 4,069,581, Cl. 30-114.000.

Graybiel, Ashton, to United States of America, Navy. Antimotion sickness remedy. 4,070,463, Cl. 424-247.000.

Green, David Trevor, to National Research Development Corporation. Acoustic holography apparatus. 4,070,643, Cl. 340-5.00H.

Green, Geoffrey; Overell, Brian George; and Hart, Anthony Phillip, to Beecham Group Limited. Process for preparing injectable desensitizing compositions and products thereof in microparticle form. 4,070,455, Cl. 424-91.000.

Green, George Edward, to Ciba-Geigy Corporation. Method of bonding. 4,070,334, Cl. 260-42.530.

Green, Ian MacDonald: *See—*
Gibbons, David John; Karwowski, Wieslaw Antoni; Cousins, Charles Phillip; Green, Ian MacDonald; and Jarrett, John James, 4,070,581, Cl. 250-445.00T.

Greene, Charles W.: *See—*
Notz, Karl J.; Rainey, Robert H.; Greene, Charles W.; and Shockley, William E., 4,070,438, Cl. 423-7.000.

Greenwood Mills, Inc.: *See—*
Fomenko, Sergei Michael, 4,070,114, Cl. 356-111.000.

Greer Hydraulics, Inc.: *See—*
Zahid, Abduz, 4,069,844, Cl. 138-30.000.

Greer, Robert: *See—*
Cooper, Charles Frank; and Greer, Robert, 4,069,633, Cl. 52-586.000.

Gregorovich, Basil V.; and MacDonald, Stewart F., to Canadian Patents & Development Limited. Alkylation process. 4,070,366, Cl. 260-313.100.

Grenner, Dieter: *See—*
Baatz, Rolf; Beilstein, Gunter; Grenner, Dieter; Keller, Wilfried; and Steinbach, Dimitry, 4,070,405, Cl. 260-654.00R.

Grier, Nathaniel: *See—*
Dybas, Richard A.; Grier, Nathaniel; and Witzel, Bruce E., 4,070,400, Cl. 260-570.50P.

Grigorenko, Anatoly Sergeevich: *See—*
Bocharov, Jury Alexandrovich; Safonov, Anatoly Vasilievich; Grigorenko, Anatoly Sergeevich; Moroz, Jury Antonovich; Kuznetsov, German Nikolaevich; and Zimin, Anatoly Ivanovich, deceased, 4,069,700, Cl. 72-407.000.

Grimes, Ralph S.: *See—*
Wright, Sanford J., Jr.; Anderson, Peter T.; and Grimes, Ralph S., 4,070,649, Cl. 340-146.3SY.

Grisnich, Marius: *See—*
Slomp, Jan; and Grisnich, Marius, 4,069,646, Cl. 53-139.000.

Grognet, Jean-Claude: *See—*
Papantoniou, Christos; and Grognet, Jean-Claude, 4,070,533, Cl. 526-16.000.

Gronner, Alfred Douglas: *See—*
Glennon, William Joseph; Gronner, Alfred Douglas; and Simon, David Julian, 4,070,665, Cl. 340-347.0SY.

Gronwick, Jerry P.; and Augustine, Robert J., to Sunbeam Corporation. Coffee brewing apparatus. 4,069,751, Cl. 99-306.000.

Groth, Harry E., Jr.; and Fagan, Philip J. Total ankle prosthesis. 4,069,518, Cl. 3-1.910.

Groves-Kelco Sales, Inc.: *See—*
Segal, Charles L.; Anderson, Michael G.; and Vincent, David N., 4,070,019, Cl. 273-73.00F.

Grow Chemical Corporation: *See—*
Garner, James W.; and Kelso, Robert G., 4,070,509, Cl. 427-385.00R.

Grumman Aerospace Corporation: *See—*
Yen, James T., 4,070,131, Cl. 415-3.000.

Gruszecka, Anna: *See—*
Gierek, Adam; Bajka, Lech; Liberski, Piotr; and Gruszecka, Anna, 4,070,511, Cl. 427-405.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Gala, Babulal Virji, 4,070,568, Cl. 362-311.000.

GTE Laboratories Incorporated: *See—*
Regan, Robert J.; Haugajas, Paul O.; and McNeill, William H., 4,070,603, Cl. 315-248.000.

GTE Sylvania Incorporated: *See—*
Hall, Harold H., Jr.; and Bouchard, Andre C., 4,070,145, Cl. 431-93.000.
Palte, Kenneth F.; and Kurtz, Joseph M., 4,069,938, Cl. 217-13.000.
Scheithauer, William, Jr.; and Ritsko, Joseph E., 4,070,184, Cl. 75-203.000.
Torsch, Charles E., 4,070,640, Cl. 335-213.000.

Guarino, John P.; and McCarty, William H., to Mobil Oil Corporation. Radiation curable coating. 4,070,262, Cl. 204-159.240.

Guignard, Claude: *See—*
Robert, Philippe; Guignard, Claude; and Stagoll, Francis, 4,070,503, Cl. 427-120.000.

Guionie, Paul; and Roudier, Rene, to Paumellerie Electrique. Toggle-type door stop device in particular for an automobile vehicle. 4,069,547, Cl. 16-85.000.

Gulf Research & Development Co.: *See—*
Kirkpatrick, Joel L., 4,070,474, Cl. 424-269.000.

Gunther, Wolfgang H. H.: *See—*
Gibson, Harry W.; and Gunther, Wolfgang H. H., 4,070,296, Cl. 252-62.10P.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
Laubach, Winfried; Kienbaum; and Thomas, Rolf, 4,069,975, Cl. 366-220.000.

Guthlein, Werner: *See—*
Berger, Dieter; Guthlein, Werner; Werner, Wolfgang; and Rieckmann, Peter, 4,070,495, Cl. 424-3.000.

Gutman, Nathan: *See—*
Cobb, Delwin E.; Gutman, Nathan; and Livesay, Richard E., 4,070,064, Cl. 299-81.000.

Gutshall, Charles E., to Wales-Beech Corporation. Thread-forming screw. 4,069,730, Cl. 85-47.000.

H. B. Fuller Company: *See—*
Batdorf, Vernon H., 4,070,225, Cl. 156-330.000.

H. Berthold AG, Firma: *See—*
Ihlenfeld, Arnold O.; and Morgott, Heribert, 4,070,109, Cl. 355-77.000.

Haag, Werner O.; and Olson, David H., to Mobil Oil Corporation.

Alkylation/transalkylation in presence of crystalline aluminosilicate catalyst. 4,070,407, Cl. 260-671.00R.

Haspala, Ray. Tier support system for fancy cakes. 4,069,772, Cl. 108-94.000.

Haber, Raphael Ralph G.; Schoenberger, Eva; and Stolar, Morris E., to Abic Ltd. Compound for the treatment of bovine mastitis. 4,070,469, Cl. 424-258.000.

Hagen, Holger: *See*—
Janin, Pierre R.; and Hagen, Holger, 4,070,249, Cl. 195-127.000.

Hagenmuller, Paul: *See*—
Delmas, Claude; Foussier, Claude; and Hagenmuller, Paul, 4,070,529, Cl. 429-193.000.

Hall, Edwin M., Jr.: *See*—
Hardy, Albert L.; Braun, Edwin R.; and Hall, Edwin M., Jr., 4,070,204, Cl. 134-25.00A.

Hall, Harold H., Jr.; and Bouchard, Andre C., to GTE Sylvania Incorporated. Selective actuating mechanism for signal device using percussive flashlamps. 4,070,145, Cl. 431-93.000.

Hall, John B.; Hruza, Denis E.; Vock, Manfred Hugo; Vinals, Joaquin; and Shuster, Edward J., to International Flavors & Fragrances Inc. Flavored tobacco article. 4,069,828, Cl. 131-17.00R.

Hall, John B.: *See*—
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,070,491, Cl. 426-536.000.

Hall, John Matthew: *See*—
Harper, Leslie Richard; Lewis, William James; McMurtry, David Roberts; Bell, Lance Peter; and Hall, John Matthew, 4,069,663, Cl. 60-226.00A.

Hamano, Nobuo, to Tomy Kogyo Co., Inc. Continuous racetrack having vehicle accelerating device. 4,070,024, Cl. 273-86.00D.

Hamano, Yoshimasa: *See*—
Fujita, Kazunori; Takeuchi, Seiji; Takata, Yoshinori; Taki, Mamoru; and Hamano, Yoshimasa, 4,070,284, Cl. 210-31.00C.

Hamby Company, The: *See*—
Mills, Franky D., 4,069,875, Cl. 172-548.000.

Hametner, Alfred: *See*—
Farr, Robert C.; and Hametner, Alfred, 4,070,090, Cl. 350-21.000.

Hametner-Farr Company, Inc.: *See*—
Farr, Robert C.; and Hametner, Alfred, 4,070,090, Cl. 350-21.000.

Hammer, Clarence Frederick, to Du Pont de Nemours, E. I., and Company. Ethylene carbon monoxide copolymers containing epoxy side groups. 4,070,532, Cl. 526-11.200.

Hammond, Ogden H., III: *See*—
Moskowitz, Jacob F.; and Hammond, Ogden H., III, 4,069,732, Cl. 84-1.160.

Hampel, Alfred H., to Ferdinand Gutmann & Co. Child resistant closure. 4,069,935, Cl. 215-203.000.

Hanakata, Takayoshi, to Canon Kabushiki Kaisha. Energizing control system for an intermittently energized device. 4,070,587, Cl. 307-141.000.

Handke, Kenneth E. Fluid drive cooling apparatus. 4,069,906, Cl. 192-113.00B.

Hans.Kolbe & Co.: *See*—
Meinke, Hans Heinrich; Lindenmeier, Heinz; Landstorfer, Friedrich; and Flachenecker, Gerhard, 4,070,677, Cl. 343-704.000.

Hansel, William B.; and O'Connell, Paul B., to Sun Oil Company of Pennsylvania. Fiber optic liquid level sensor. 4,069,838, Cl. 137-392.000.

Harari, Eliyahou, to United States of America, Navy. Technique for threshold control over edges of devices on silicon-on-sapphire. 4,070,211, Cl. 148-187.000.

Hardtmann, Goetz E.; and Coppola, Gary M., to Sandoz, Inc. 2-Aminoquinolin-4-one-3-phosphonic acid esters. 4,070,468, Cl. 424-258.000.

Hardy, Albert L.; Braun, Edwin R.; and Hall, Edwin M., Jr., to General Electric Company. Low-energy dishwasher. 4,070,204, Cl. 134-25.00A.

Hargassner, Reinhard; and Holleis, Gunter, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Plate mould for continuously casting steel strands. 4,069,863, Cl. 164-436.000.

Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, to Kissei Pharmaceutical Co., Ltd. Antiallergic composition containing aromatic carboxylic amide derivatives and method of using the same. 4,070,484, Cl. 424-319.000.

Harker, Ralph J., to Wisconsin Alumni Research Foundation. Mechanism for compacting material. 4,069,929, Cl. 214-83.140.

Harms, Hauke; and Feldtkeller, Ernst, to Siemens Aktiengesellschaft. Magneto-optical high voltage current measuring transducer. 4,070,622, Cl. 324-96.000.

Harms, Hauke: *See*—
Feldtkeller, Ernst; Harms, Hauke; and Papp, Alfred, 4,070,620, Cl. 324-96.000.

Harnden, John D., Jr.; Kornrumpf, William P.; Walden, John P.; and Walker, Loren H., to General Electric Company. Inverter power supply. 4,070,701, Cl. 363-25.000.

Harnischfeger Corporation: *See*—
Raugulis, I. Edward; Smith, L. Clark; and Meyler-Warlow, Raymond de C., 4,069,921, Cl. 212-18.000.

Harpell, Gary A., to B. F. Goodrich Company, The. Heat formable elastomeric block polymer products. 4,070,418, Cl. 260-876.00B.

Harper, Leslie Richard; Lewis, William James; McMurtry, David Roberts; Bell, Lance Peter; and Hall, John Matthew, to Rolls-Royce (1971) Limited. Thrust reverser for by-pass gas turbine engine. 4,069,663, Cl. 60-226.00A.

Harpster, Joseph W., to Dravo Corporation. Apparatus for measuring the distance to the floor of the cargo hold of a ship through intervening bulk material. 4,070,625, Cl. 324-239.000.

Harrick, Nicolas James. Rapid scan spectrophotometer. 4,070,111, Cl. 356-83.000.

Harrigan, Roy M. Surgical glove package and fixture. 4,069,913, Cl. 206-278.000.

Harris, Phillip A.; and Rutledge, Charles W. Electronic switch activated by current flow through the human body. 4,069,659, Cl. 58-152.00R.

Harris, William C. Protective bed canopy. 4,069,527, Cl. 5-362.000.

Harrow, Robert A.: *See*—
Wetmore, Harold B.; Harrow, Robert A.; and Holway, William C., 4,070,570, Cl. 362-218.000.

Hart, Anthony Phillip: *See*—
Green, Geoffrey; Overell, Brian George; and Hart, Anthony Phillip, 4,070,455, Cl. 424-91.000.

Hart, Cullen P.: *See*—
Campbell, John J.; Dezelan, Joseph E.; and Hart, Cullen P., 4,069,886, Cl. 180-44.00F.

Harter, Donald J., to General Electric Company. Double seal gate valve structure. 4,070,161, Cl. 48-210.000.

Hartig, Martval John, to Du Pont de Nemours, E. I., and Company. Hot air heater. 4,069,807, Cl. 126-110.00R.

Hartnett Company: *See*—
Ackley, Edward M., deceased; and Ackley, James Brian, co-executor, 4,069,753, Cl. 101-40.000.

Hartz, Robert E.; and Rien, Charles J. Golf club washer. 4,069,536, Cl. 15-104.920.

Hasegawa, Mutsuo; Aikawa, Kazuo; and Nagata, Katsuyuki, to Yoshida Kogyo K.K. Process for electrolytically coloring aluminum and aluminum alloys. 4,070,255, Cl. 204-42.000.

Hasenacker, Ernst: *See*—
Prange, Kurt; Isermann, Friedrich; Hasenacker, Ernst; and Blase, Manfred, 4,070,251, Cl. 202-130.000.

Hashimoto, Takashi: *See*—
Araya, Kenzo; Hashimoto, Takashi; and Fukui, Yoshitaka, 4,069,754, Cl. 101-53.000.

Hass, William J. Personal audio listening system. 4,070,553, Cl. 179-157.000.

Hasselqvist, Stig Ernst Allan; and Thoreson, Anders Victor, to Scanovator AB. Structure of lightweight bars and connector means therefore. 4,069,638, Cl. 52-726.000.

Haughawout, Edgar G. Collapsible and portable ribbon louver attachment for lights to limit the lateral distribution of light. 4,070,569, Cl. 362-352.000.

Haugsjaa, Paul O.: *See*—
Regan, Robert J.; Haugsjaa, Paul O.; and McNeill, William H., 4,070,603, Cl. 315-248.000.

Hauni-Werke Korber & Co. KG: *See*—
Thiele, Willi; Wendt, Gerd-Joachim; and Heyden, Werner, 4,069,830, Cl. 131-135.000.

Hauser, Raimund: *See*—
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,070,107, Cl. 352-72.000.

Hausmann, Winfried, to Massey-Ferguson Services N.V. Heat systems for vehicles. 4,069,972, Cl. 237-12.30R.

Hawkins, Wallace H. Portable crane with hoist mounting and outrigger support apparatus. 4,069,922, Cl. 212-59.00R.

Hayami, Satohiro; Matsuo, Munetsugu; Izumi, Soichi; and Terakado, Ryoji, to Nippon Steel Corporation. Method for the manufacture of a ridging-free ferritic stainless steel sheet. 4,070,208, Cl. 148-12.0EA.

Hayashi, Eiichi; Takita, Kiyoshi; Sugiyama, Hironari; and Nezu, Yukio, to Kumiai Chemical Industry Co., Ltd. Process for producing L-ascorbic acid-2-sulfate. 4,070,377, Cl. 260-343.700.

Hayashi, Masaki; Kori, Seiji; Miyake, Hajimu; and Matsumoto, Kimiichiro, to Ono Pharmaceutical Company. 17-Oxo-17-phenyl-prostaglandins. 4,070,537, Cl. 560-51.000.

Hayes, Robert A.: *See*—
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,070,344, Cl. 260-77.5CR.

Hayner, Paul F., to Sanders Associates, Inc. Method and apparatus for testing the run-out and recoil control systems of a gun. 4,069,702, Cl. 73-11.000.

Headley, Peter: *See*—
Stewart, John Stanley; and Headley, Peter, 4,070,558, Cl. 200-148.00A.

Healey, Daniel J., III, to Westinghouse Electric Corporation. Delay line oscillator with phase locked loop for reducing phase fluctuations. 4,070,635, Cl. 331-19.000.

Hedstrom, Bror Folke; and Persson, Per Thorvald, to Kockums Automation AB. Method and device for producing substantially kinematic steering of a vessel. 4,069,784, Cl. 114-144.00E.

Heighberger, Robert N., to Jos. Dyson & Sons, Inc. Locknut with segmental locking elements. 4,069,854, Cl. 151-21.00C.

Heimbach, Paul: *See*—
Wilke, Gunther; and Heimbach, Paul, 4,070,406, Cl. 260-668.00R.

Heimess Heinz Messmer - Haus Baby-Gluck: *See*—
Messmer, Heinz; and Schwab, Martin, 4,069,522, Cl. 4-138.000.

Heinmann GmbH: *See*—
Hoene, Ernst-Ludwig, 4,070,601, Cl. 315-241.00R.

Heinsohn, Howard H., Jr.: *See*—
Evers, William J.; Heinsohn, Howard H., Jr.; and Schmitt, Frederick Louis, 4,070,308, Cl. 252-522.000.

Heinze, Richard: *See*—
Zernig, Ernst; and Ruther, Manfred, 4,069,549, Cl. 16-158.000.

Heitfield, Vernon. Wheel for skateboards and roller skates. 4,070,065, Cl. 301-5.300.

Helder, Johan: *See*—
Danneels, Laurent; Helder, Johan; Kuypers, Jan; Piolon, James; and Pernegger, Wolfgang, 4,070,265, Cl. 204-206.000.

Hemphill, Robert L. Aircraft anti-theft device. 4,069,692, Cl. 70-207.000.

Hems, Roger: *See*—
Rowsell, David G.; and Hems, Roger, 4,070,449, Cl. 424-45.000.

Hendriks, Nicolaas Arie, to Bouwmaatschappij Nederhorst B. V. Storage tank having a protective wall construction. 4,069,642, Cl. 52-224.000.

Heng, Terrance M. S.; Nathanson, Harvey C.; Schroder, Dieter K.; and Malmberg, Paul R., to Westinghouse Electric Corporation. Acoustoelectric signal convolver, correlator and memory. 4,070,652, Cl. 365-157.000.

Henkel & Cie. GmbH: *See*—
Schwarze, Werner; Merk, Wolfgang; and Binder, Volker, 4,070,531, Cl. 526-6.000.

Henkell & Co.: *See*—
Rhein, Otto R., 4,070,291, Cl. 210-115.000.

Henry, Rufus A., Jr., to Stanray Corporation. Portable grinding machine for resurfacing cylinder head retainers. 4,069,624, Cl. 51-241.00B.

Henshaw, Fritz Hunt: *See*—
Iwao, Kumiy Roy; and Henshaw, Fritz Hunt, 4,070,169, Cl. 55-267.000.

Hentz, Lyle J.; and Otto, Willard G., to Western Electric Co., Inc. Apparatus for positioning and adhering a plurality of semiconductor devices to sites on an adherent site on a substrate. 4,070,229, Cl. 156-556.000.

Hepworth, Edward Clare; and Means, Rodney Jerome, to Motorola Inc. Data transfer synchronizing circuit. 4,070,630, Cl. 328-63.000.

Hercules Incorporated: *See*—
Jabloner, Harold, 4,070,333, Cl. 260-42.180.
Ott, John Wright, 4,070,110, Cl. 355-100.000.

Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., to Firestone Tire and Rubber Company, The. Amine terminated polymers and the formation of block copolymers. 4,070,344, Cl. 260-77.5CR.

Herkenrath, Erik, to Lonza, Ltd. Process for the production of [2-acetoacetyl-aminothiazolyl-(4)-]-acetic acid ethyl ester. 4,070,364, Cl. 260-306.80R.

Herman, Wallace Unto, to Union Carbide Corporation. Disposable tubing harness for use with blood washing apparatus. 4,069,968, Cl. 233-14.00R.

Hermann, Laszlo: *See*—
Jovanovics, Karola; Szasz, Kalman; Lorincz, Csaba; Hermann, Laszlo; and Dezseri, Eszter, 4,070,358, Cl. 260-287.00B.

Hernestam, Sven Eric Harry; Kjellberg, Bengt Eric Sigvard; and Olsson, Knut Gunnar, to AB Ferrosan. Piperidino-butyrophenones. 4,070,473, Cl. 424-267.000.

Hershberg, Emanuel B.; and Christensen, James E., to MBH Chemical Corporation. Manufacture of soluble sulfathiazole. 4,070,356, Cl. 260-239.950.

Hershey Foods Corporation: *See*—
Trout, Glenn A.; Zoumas, Barry L.; and Tarka, Stanley M., 4,070,487, Cl. 426-2.000.

Heuber, Klaus; Klein, Wilfried; Najmann, Knut; and Wiedmann, Siegfried Kurt, to International Business Machines Corporation. Read/write speed up circuit for integrated data memories. 4,070,656, Cl. 365-203.000.

Hewlett-Packard Company: *See*—
Brewster, John La Due, 4,070,579, Cl. 250-402.000.
Shelley, David J., 4,070,680, Cl. 346-76.00R.

Heybourne, Robert Howard: *See*—
Clements, Herbert Arthur; and Heybourne, Robert Howard, 4,069,903, Cl. 192-67.00A.

Heyden, Werner: *See*—
Thiele, Willi; Wendt, Gerd-Joachim; and Heyden, Werner, 4,069,830, Cl. 131-135.000.

Hickman, Kim Michael, to White Automotive Corporation. Utility vehicle door and seal. 4,070,056, Cl. 296-148.000.

Hicks, Dale R.; and Crookston, R. Kent, to University of Minnesota, Regents of the. Early growth alteration to increase corn grain yield. 4,069,614, Cl. 47-58.000.

Hidaka, Mikio: *See*—
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Uda, Taizo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,070,390, Cl. 260-465.300.

Hijikata, Akiko: *See*—
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tezuka, Tohru; Tonomura, Shinji; Tamao, Yoshikuni; and Hijikata, Akiko, 4,070,457, Cl. 424-177.000.

Hill, Howard D. W.: *See*—
Smallcombe, Stephen H.; and Hill, Howard D. W., 4,070,708, Cl. 364-575.000.

Hill, Robert M.: *See*—
Gallagher, Thomas F.; Hill, Robert M.; and Edelstein, Stephen A., 4,070,580, Cl. 250-423.00P.

Hiltmann, Rudolf: *See*—
Hoffmeister, Friedrich; Hiltmann, Rudolf; Wollweber, Hartmund; and Kramer, Helmut, 4,070,494, Cl. 424-2.000.

Hinze, Kenneth J., to Dow Chemical Company, The. Antioxidant composition, stabilized polyols and polyurethanes prepared therefrom. 4,070,304, Cl. 252-404.000.

Hira, Rikuo: *See*—
Tsunazawa, Yoshio; Tezuka, Shosuke; and Hira, Rikuo, 4,070,112, Cl. 356-96.000.

Hiraga, Yoichi: *See*—
Kikuchi, Mitsuo; and Hiraga, Yoichi, 4,070,443, Cl. 423-321.00R.

Hirai, Yutaka; and Miyata, Katsuharu, to Mitsui Toatsu Chemicals Inc. Method for the preparation of a halogenated aromatic amine. 4,070,401, Cl. 260-580.000.

Hirano, Kiyoshige: *See*—
Uchikoba, Tsukasa; Yuda, Saneo; Hirano, Kiyoshige; Yawata, Kazufumi; and Kobayakawa, Masaki, 4,070,599, Cl. 313-497.000.

Hirota, Kashichi, to Kyowa Denki Kagaku Kabushiki Kaisha. Portable stereo audio apparatus. 4,070,546, Cl. 179-1.0GA.

Hitachi, Ltd.: *See*—
Abe, Masayoshi, 4,070,664, Cl. 340-337.000.
Fujita, Kazunori; Takeuchi, Seiji; Takata, Yoshinori; Taki, Mamoru; and Hamano, Yoshimasa, 4,070,284, Cl. 210-31.00C.
Morozumi, Hiroshi; and Kanemaru, Hiroyasu, 4,070,606, Cl. 318-254.000.
Narahara, Toshikazu; Sugawara, Katuo; Karasawa, Yoshiharu; Yokono, Hitoshi; Mukai, Junji; and Muroi, Tadashi, 4,070,416, Cl. 260-830.00P.
Nishizawa, Masahiro; and Ueyama, Takehiko, 4,070,498, Cl. 427-53.000.
Tachi, Seiichi, 4,070,654, Cl. 365-104.000.

Hitchner, James Edward: *See*—
Corbin, Vivian Ruth; Hitchner, James Edward; Patnaik, Bisweswar; and Ting, Chung-Yu, 4,070,501, Cl. 427-88.000.

Ho, Irving Tze; and Riseman, Jacob, to International Business Machines Corporation. Composite channel field effect transistor and method of fabrication. 4,070,687, Cl. 357-23.000.

Hobba, Charles F., to Monsanto Company. Catalytic amination of polymeric polyols and resulting amino substituted polymers. 4,070,530, Cl. 526-7.000.

HOCHTIEF AG fur Hoch-und Tiefbauten vorm. Gebr. Helfmann: *See*—
Erler, Eckart, 4,069,680, Cl. 61-86.000.

Hodges, Kenneth M. Ball impact target with ball impact sensor. 4,070,018, Cl. 273-29.00A.

Hoechst Aktiengesellschaft: *See*—
Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst. 4,070,415, Cl. 260-830.00R.

Hoehn, Hans: *See*—
Denzel, Theodor; and Hoehn, Hans, 4,070,362, Cl. 260-295.50B.
Denzel, Theodor; and Hoehn, Hans, 4,070,466, Cl. 424-251.000.

Hoelman, Walter A. Coupling for use in servicing air conditioning systems. 4,069,686, Cl. 62-292.000.

Hoene, Ernst-Ludwig, to Heinmann GmbH. Circuit arrangement for igniting at least one gas discharge flash tube. 4,070,601, Cl. 315-241.00R.

Hoeppner, Conrad H., to McNeil Corporation. Polyphase power control. 4,070,605, Cl. 318-227.000.

Hofen, Willi; Wirthwein, Rolf; Reissinger, Karl-Hermann; and Krekel, Jorg, to Bayer Aktiengesellschaft; and Deutsche Gold- und Silber-Scheideanstal vormals Roessler. Process for separating solutions containing propylene oxide. 4,070,253, Cl. 203-75.000.

Hoffman, John E., Jr.: *See*—
Leonard, Ronald Keith; and Hoffman, John E., Jr., 4,069,882, Cl. 180-5.00R.

Hoffman, Joseph D.: *See*—
Vanderhoff, John W.; El-Aasser, Mohamed S.; and Hoffman, Joseph D., 4,070,323, Cl. 260-29.6NR.

Hoffman, Lewis Charles, to Du Pont de Nemours, E. I., and Company. Copper metallizations. 4,070,518, Cl. 428-209.000.

Hoffmann, Gunter; and Kopke, Wilfried, to Volkswagenwerk Aktiengesellschaft. Passive vehicle safety belt apparatus. 4,070,039, Cl. 280-745.000.

Hoffmann-La Roche, Inc.: *See*—
Barner, Richard; and Boguth, Walter, 4,070,450, Cl. 424-59.000.
Kienzle, Frank; and Rosen, Perry, 4,070,378, Cl. 260-345.900.
LeMahieu, Ronald A.; Kierstead, Richard W.; and Pruess, David L., 4,070,376, Cl. 260-343.000.
Spector, Sidney, 4,070,492, Cl. 424-1.000.

Hoffmeister, Friedrich; Hiltmann, Rudolf; Wollweber, Hartmund; and Kramer, Helmut, to Bayer Aktiengesellschaft. Enteral pharmaceutical compositions. 4,070,494, Cl. 424-2.000.

Hofmann, Wilfried: *See*—
Pfeifer, Josef; Hofmann, Wilfried; and Liermann, Traugotte, 4,069,989, Cl. 242-195.000.

Hokudo, Toshiaki: *See*—
Arai, Yoshiyasu; Hokudo, Toshiaki; and Saka, Masanori, 4,069,656, Cl. 57-160.000.

Holdeman, Louis B. Method of producing porous copper workpieces and product thereof. 4,070,207, Cl. 148-2.000.

Holet, Kenneth M.; and Prada, Luis E., to General Electric Company. Door control device with closure regulator. 4,069,545, Cl. 16-49.000.

Holland, Stephen Ross: *See*—
Burr, Kenneth John; and Holland, Stephen Ross, 4,069,705, Cl. 73-61.00R.

Hollandsche Beton Groep N. V.: *See*—
Jansz, Joost W., 4,069,683, Cl. 61-98.000.

Holleis, Gunter: *See*—
Hargassner, Reinhard; and Holleis, Gunter, 4,069,863, Cl. 164-436.000.

Holmqvist, Magnus Allan. Method of making a composite baking mold. 4,069,962, Cl. 228-170.000.

Holway, William C.: *See*—
Wetmore, Harold B.; Harrow, Robert A.; and Holway, William C., 4,070,570, Cl. 362-218.000.
Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Mercaptoorganopolysiloxanes cured to elastomers with peroxides and nitrogen compounds. 4,070,328, Cl. 260-37.0SB.
Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Siloxane elastomer prepared from mercaptoorg anopolysiloxanes. 4,070,329, Cl. 260-37.0SB.
Homeier, Edwin H., to UOP Inc. Catalytic hydroformylation process. 4,070,403, Cl. 260-632.0HF.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Date, Tasuku; Yamazaki, Shuichi; and Shimada, Shinichi, 4,069,667, Cl. 60-282.000.
Ogano, Takeo; and Noguchi, Mitsuru, 4,069,804, Cl. 123-198.00E.
Honeywell Inc.: *See*—
Diefenderfer, Charles George, 4,070,545, Cl. 178-73.000.
Honeywell Information Systems Inc.: *See*—
Calle, Jaime; Garvey, Robert J.; Monahan, Earnest M.; Parris, George L.; Twibell, Jerome J.; and Woods, John M., 4,070,704, Cl. 364-200.000.
Fett, Darrell LeRoy, 4,070,657, Cl. 365-233.000.
Negi, Virendra S., 4,070,703, Cl. 364-200.000.
Hoppe, Robert F., to Melco Industries, Inc. Digitizer. 4,069,588, Cl. 33-1.00M.
Hopech, Gerhard: *See*—
Willingshofer, Walter; Hopech, Gerhard; and Bose, Karlheinz, 4,070,123, Cl. 403-132.000.
Horie, Shozo, to Glory Kogyo Kabushiki Kaisha. Device for crimping projecting edges of wrapping sheet in coin packaging machine. 4,069,647, Cl. 53-212.000.
Horikiri, Shozo; Iseki, Jiro; and Minobe, Masao, to Sumitomo Chemical Company, Limited. Process for production of carbon fiber. 4,070,446, Cl. 423-447.200.
Hosac, Steven W. Slope measuring and indication means and the like. 4,069,592, Cl. 33-387.000.
Hottinger, Conrad; Wust, Albert; and Jenzer, Pierre, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Automatic weapon equipped with at least two cartridge magazines. 4,069,740, Cl. 89-33.0SF.
Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel: *See*—
Lassen, Harry, 4,069,872, Cl. 169-47.000.
Howard, William E., to Materials Handling Systems, Inc. Dump truck. 4,070,060, Cl. 298-2.000.
Hruza, Denis E.: *See*—
Hall, John B.; Hruza, Denis E.; Vock, Manfred Hugo; Vinals, Joaquin; and Shuster, Edward J., 4,069,828, Cl. 131-17.00R.
Hruza, Denis E., Sr.: *See*—
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,070,491, Cl. 426-536.000.
Hsu, Grace F.; and Fong, Jaan-Jiue, to Minnesota Mining and Manufacturing Company. Acid zinc electroplating bath and process. 4,070,256, Cl. 204-55.00R.
Huang, Barney K. Solar curing and drying structure and method of utilizing solar energy associated with available solar radiation in curing and drying various materials. 4,069,593, Cl. 34-93.000.
Hubbard, Clyde W., Jr.: *See*—
Klein, Emmett J., Jr.; Hubbard, Clyde W., Jr.; and Chapman, Lloyd R., 4,070,187, Cl. 96-27.00R.
Huber, Wolfgang; Saifer, Mark G.; and Williams, Lewis D., to Diagnostic Data, Inc. N-carbamylated orgotein. 4,070,459, Cl. 424-177.000.
Hughes Aircraft Company: *See*—
Ellion, M. Edmund; and Donatelli, Philip A., 4,069,664, Cl. 60-258.000.
Hughes, George C., to Textron Inc. Gas pressure regulator. 4,069,839, Cl. 137-505.460.
Hughes, William C.; and Parks, Harold G., to General Electric Company. Multi-apertured single plate matrix lens. 4,070,597, Cl. 313-431.000.
Humber, Leslie G.: *See*—
Demerson, Christopher A.; Humber, Leslie G.; Dobson, Thomas A.; and Jirkovsky, Ivo L., 4,070,371, Cl. 260-326.290.
Humphrey Instruments, Inc.: *See*—
Humphrey, William Edwin, 4,070,115, Cl. 356-125.000.
Humphrey, William Edwin, to Humphrey Instruments, Inc. Lens meter. 4,070,115, Cl. 356-125.000.
Hunt, Evelyn W., administratrix: *See*—
Karll, Robert E.; Piasek, Edmund J., deceased; and Hunt, Evelyn W., administratrix, 4,070,402, Cl. 260-619.00D.
Hunter, Jack A., to UOP Inc. Magnetic segregation of mixed non-ferrous solid materials in refuse. 4,070,278, Cl. 209-212.000.
Huschle, Peter: *See*—
Ettischer, Helmut; and Huschle, Peter, 4,070,684, Cl. 354-86.000.
Hutchison, Robert V., to Burroughs Corporation. Controlled impedance connector. 4,070,084, Cl. 339-143.00R.
Huyck Corporation: *See*—
Lefkowitz, Leonard R.; and Krohn, W. Henrik, 4,070,519, Cl. 428-235.000.
Hwang, Ki-Sup; and Zabiak, Daniel M., to A. B. Dick Company. Ink composition for jet printing onto non-absorbent surfaces. 4,070,322, Cl. 260-29.60R.
Hycel, Inc.: *See*—
Moran, John J.; Gellenthin, Carl O.; and Eseke, James R., 4,070,156, Cl. 23-253.00R.
I.W.S. Nominee Company Limited: *See*—
Smith, Donald, 4,069,690, Cl. 66-135.000.
Ichikawa, Jyunji; Kiyohara, Takehiko; Koumura, Noboru; Kadokura, Koichi; and Nakano, Takashi, to Canon Kabushiki Kaisha. Modulated laser. 4,070,681, Cl. 346-160.000.
Ichinomiya, Tutomu: *See*—
Yamamura, Yukio; Kawaguchi, Shojiro; Terashima, Otohiko; Ichinomiya, Tutomu; and Otuka, Shinpei, 4,069,816, Cl. 128-41.000.
ICI Americas Inc.: *See*—
Rutledge, Thomas F., 4,070,383, Cl. 260-396.00N.
Ideal Spring Company: *See*—
Valoff, Bob S., 4,069,525, Cl. 5-247.000.
Ieda, Nobuaki; and Yano, Takao, to Nippon Telegraph and Telephone Public Corporation. Sensing circuit for memory cells. 4,070,590, Cl. 307-355.000.
Igeta, Harutoshi. Seat belt system. 4,070,040, Cl. 280-745.000.
Ihlenfeld, Arnold O.; and Morgott, Heribert, to H. Berthold AG, Firma. Process for making changes on photoprint film. 4,070,109, Cl. 355-77.000.
Iida, Kazuyoshi: *See*—
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; Mizuno, Keiichiro; Nomoto, Sadao; Murayama, Noriaki; and Watanabe, Kei, 4,069,768, Cl. 105-452.000.
Iinuma, Kazuhi:o; and Takamizawa, Kinya, to Tokyo Shibaura Electric Co., Ltd. Ultrasonic wave transmitting and receiving apparatus. 4,070,642, Cl. 340-1.00R.
Iizuka, Kinji: *See*—
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 4,070,484, Cl. 424-319.000.
Ikeda, Hiroshi: *See*—
Inamoto, Yoshiaki; Fujikura, Yoshiaki; Ikeda, Hiroshi; and Takaishi, Naotake, 4,070,540, Cl. 560-117.000.
Iler, Ralph Kingsley; and Kirkland, Joseph Jack, to Du Pont de Nemours, E. I., and Company. Macroporous microspheroids and a process for their manufacture. 4,070,286, Cl. 210-31.00C.
Iles, Gerald Sidney, to Johnson, Matthey & Co., Limited. Temperature-responsive device. 4,070,157, Cl. 23-254.00E.
Illg, Peter: *See*—
Lohest, Hans; Lenk, Erich; and Illg, Peter, 4,069,985, Cl. 242-45.000.
Imada, Isuke: *See*—
Nakao, Yoshio; Kitano, Kazuaki; Imada, Isuke; and Morimoto, Hiroshi, 4,070,244, Cl. 195-81.000.
Imai, Tamotsu, to UOP Inc. Dehydrogenation of saturated hydrocarbons. 4,070,413, Cl. 260-683.300.
Imamura, Hiroyuki; Sato, Shui; Kojima, Tamotsu; and Endo, Takaya, to Konishiroku Photo Industry Co., Ltd. Silver halide emulsion containing colored magenta coupler for photography. 4,070,191, Cl. 96-100.00R.
Imperial Chemical Industries Limited: *See*—
Aldridge, David Cecil; Crawley, Graham Charles; and Strawson, Colin John, 4,070,480, Cl. 424-279.000.
Barker, Alan Charles; and Southern, Peter Fulton, 4,070,363, Cl. 260-306.70T.
Downing, Stephen Barry; Osmond, Desmond Wilfred John; Skinner, Maurice Wainwright; West, Edmund James; and Dawson, David George, 4,070,199, Cl. 106-93.000.
In Situ Technology, Inc.: *See*—
Terry, Ruel C., 4,069,868, Cl. 166-258.000.
Inagaki, Katsumi: *See*—
Tagashira, Yoshiaki; Takagi, Hitoshi; Inagaki, Katsumi; Ishii, Kanji; and Ohashi, Hiroyuki, 4,070,281, Cl. 210-26.000.
Inamoto, Yoshiaki; Fujikura, Yoshiaki; Ikeda, Hiroshi; and Takaishi, Naotake, to Kao Soap Co., Ltd. 4-Homoisotwistane-3-carboxylic acid esters and a process for producing the same. 4,070,540, Cl. 560-117.000.
Inazaki, Kenzoh: *See*—
Kanatani, Yoshiharu; Ise, Masahiro; Mizukami, Etsuo; Inazaki, Kenzoh; and Suzuki, Chuji, 4,070,663, Cl. 340-324.00M.
Incom International Inc.: *See*—
Payerle, Frank S., 4,069,723, Cl. 74-528.000.
Indiana University Foundation: *See*—
Burt, Stanton C., 4,070,247, Cl. 195-100.000.
Ingle, William Martell, to Motorola Inc. Low cost, high volume silicon purification process. 4,070,444, Cl. 423-349.000.
Ingram, Marylou: *See*—
Frazer, Robert E.; and Ingram, Marylou, 4,070,113, Cl. 356-104.000.
Inoue, Katsuo; and Kamiya, Yoji, to Toyoda-Koki Kabushiki Kaisha. Tool storage magazine. 4,069,918, Cl. 211-1.500.
International Business Machines Corporation: *See*—
Campagna, Frank John; and Pavlovic, Gary Frank, 4,070,148, Cl. 432-50.000.
Corbin, Vivian Ruth; Hitchner, James Edward; Patnaik, Bisweswar; and Ting, Chung-Yu, 4,070,501, Cl. 427-88.000.
Fan, George J.; and Slonczewski, John C., 4,070,679, Cl. 346-75.000.
Frosch, Albert; Mannsdorfer, Walter; and Scheuing, Claus, 4,070,116, Cl. 356-156.000.
Giess, Edward August; Keefe, George Edward; and Lin, Yeong Show, 4,070,658, Cl. 365-36.000.
Heuber, Klaus; Klein, Wilfried; Najmann, Knut; and Wiedmann, Siegfried Kurt, 4,070,656, Cl. 365-203.000.
Ho, Irving Tze; and Riseman, Jacob, 4,070,687, Cl. 357-23.000.

Kaiser, Harold Dalton, 4,070,516, Cl. 428-137.000.
Loiseau, Michel; and Pileur, Pierre Charles, 4,070,264, Cl. 204-192.00E.
Moffitt, John Stuart, 4,069,957, Cl. 225-5.000.
International Flavors & Fragrances Inc.: *See*—
Evers, William J.; Heinsohn, Howard H., Jr.; and Schmitt, Frederick Louis, 4,070,308, Cl. 252-522.000.
Hall, John B.; Hruza, Denis E.; Vock, Manfred Hugo; Vinals, Joaquin; and Shuster, Edward J., 4,069,828, Cl. 131-17.00R.
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,070,491, Cl. 426-536.000.
International Harvester Company: *See*—
Chatterjea, Probir K., 4,069,843, Cl. 137-625.690.
Gagliani, John; and Long, John V., 4,070,312, Cl. 260-2.50N.
International Rectifier Corporation: *See*—
Wislocky, Joseph, 4,070,688, Cl. 357-68.000.
International Standard Electric Corporation: *See*—
Weir, Donald Adams, 4,070,551, Cl. 179-18.0FC.
International Telephone and Telegraph Corporation: *See*—
Nemit, Jeffrey T.; and Sanders, Bobby J., 4,070,639, Cl. 333-31.00A.
International Telephone and Telegraph Industries: *See*—
Gassmann, Gerhard G., 4,069,713, Cl. 73-194.00A.
Intertechnique: *See*—
Schmidt, Jean-Michel, 4,070,248, Cl. 195-103.50K.
Intreprinderea "Mecanica" Plopeni: *See*—
Gheorghe, Dumitru; Renghea, Mihail; Serban, Gheorghe; and David, Vasile, 4,069,621, Cl. 51-117.000.
Inubushi, Masanobu; and Toyoda, Yoshiaki, to Kawasaki Jukogyo Kabushiki Kaisha. Chemical reaction furnace system. 4,069,660, Cl. 60-39.250.
Inui, Taiji: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Takamatsu, Akira; Inui, Taiji; Tone, Hiroshi; and Morishama, Hajime, 4,070,458, Cl. 424-177.000.
Inventio AG: *See*—
Koepfli, Josef, 4,069,887, Cl. 180-44.00R.
Inverardi, Giuseppe; and Chiari, Natale, to Edera Officina Meccanica Tessile S.p.A. Device for loading yarn collection tubes onto the spindle faces of spinning machines and twisting frames. 4,069,653, Cl. 57-53.000.
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., to Eastman Kodak Company. Bichromophoric benzotriazole-styrene ultraviolet stabilizers and their use in organic compositions. 4,070,337, Cl. 260-45.8NT.
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., to Eastman Kodak Company. Bichromophoric benzotriazole-styrene ester ultraviolet stabilizers and their use in organic compositions. 4,070,339, Cl. 260-45.8NT.
Isaka, Tsutomu; Nagano, Hiroshi; Murakami, Tetsushi; Matsunami, Koichi; and Yamane, Yukio, to Toyobo Co., Ltd. Stretched polyester film from a polymer blend. 4,070,417, Cl. 260-860.000.
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and by Kudryavtseva, Galina Antonovna, administratrix. Apparatus for laser therapy. 4,069,823, Cl. 128-303.100.
Ise, Masahiro: *See*—
Kanatani, Yoshiharu; Ise, Masahiro; Mizukami, Etsuo; Inazaki, Kenzoh; and Suzuki, Chuji, 4,070,663, Cl. 340-324.00M.
Iseki, Jiro: *See*—
Horikiri, Shozo; Iseki, Jiro; and Minobe, Masao, 4,070,446, Cl. 423-447.200.
Isermann, Friedrich: *See*—
Prange, Kurt; Isermann, Friedrich; Hasenacker, Ernst; and Blase, Manfred, 4,070,251, Cl. 202-130.000.
Ishige, Sadao; Usui, Hideo; Kato, Hajime; Saeki, Keiso; and Kiritani, Masataka, to Fuji Photo Film Co., Ltd. Recording method comprising reacting cellulose fiber with a basic color former. 4,070,508, Cl. 427-282.000.
Ishihara Sangyo Kaisha Ltd.: *See*—
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,070,177, Cl. 71-105.000.
Ishii, Jiro: *See*—
Miura, Mitsuo; Sugibayashi, Yasuo; Suzuki, Akio; Kukino, Yoshinori; Aoyagi, Hayao; Tanifuji, Fuminobu; and Ishii, Jiro, 4,069,678, Cl. 61-63.000.
Ishii, Kanji: *See*—
Tagashira, Yoshiaki; Takagi, Hitoshi; Inagaki, Katsumi; Ishii, Kanji; and Ohashi, Hiroyuki, 4,070,281, Cl. 210-26.000.
Ishikawa, Kikuichi: *See*—
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, 4,070,176, Cl. 71-103.000.
Ishikawa, Yoichiro, to Union Special Corporation. Button guide assembly. 4,069,777, Cl. 112-113.000.
Ishioka, Kunio: *See*—
Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,069,979, Cl. 241-5.000.
Isobe, Koji: *See*—
Fujise, Masatomo; and Isobe, Koji, 4,070,395, Cl. 260-510.000.
Isobe, Minoru; and Kuriyama, Akiumi, to Oki Electric Industry Co., Ltd. High speed printer having spokes with a plurality of sections connected together at an angle greater than zero. 4,069,907, Cl. 197-53.000.
ITL Industries, Inc.: *See*—
Suhr, Donald C., 4,070,095, Cl. 350-103.000.
Ito, Hiroshi, to Rhythm Watch Co. Ltd. Alarm setting device for timepieces. 4,069,658, Cl. 58-16.00R.
Itoh, Akira: *See*—
Kato, Akira; Itoh, Akira; and Uchida, Tohru, 4,070,185, Cl. 96-1.800.
ITT Industries, Incorporated: *See*—
Belart, Juan; and Birkenbach, Alfred, 4,070,069, Cl. 303-115.000.
Iwao, Kumiy Roy; and Henshaw, Fritz Hunt, to Varian Associates, Inc. Chromatographic column oven. 4,070,169, Cl. 55-267.000.
Iwatsubo, Haruhiko: *See*—
Obayashi, Shigeji; Ueda, Kanji; Iwatsubo, Haruhiko; and Okabe, Thoru, 4,070,305, Cl. 252-411.00S.
Izumi, Soichi: *See*—
Hayami, Satohiro; Matsuo, Munetsugu; Izumi, Soichi; and Terakado, Ryoji, 4,070,208, Cl. 148-12.0EA.
J.P. Stevens & Co., Inc.: *See*—
Smith, Gary L.; and Cockrell, Walter T., 4,069,945, Cl. 221-73.000.
Jabloner, Harold, to Hercules Incorporated. Poly(arylacetylene) molding compositions. 4,070,333, Cl. 260-42.180.
Jackson, Michael Vivian; and Avis, James Kendall, to Farmhand (U.K.) Limited. Bale collectors. 4,069,926, Cl. 214-6.00B.
Jacobs, Stanley C.; and King, Larry K., to Aluminum Company of America. Method of producing high purity aluminum chloride. 4,070,448, Cl. 423-495.000.
Jacobsen, Ronald Lowell, to Procter & Gamble Company, The. Detergent composition. 4,070,309, Cl. 252-547.000.
Jaffre, Robert Rene: *See*—
Bouter, Roger Jean; and Jaffre, Robert Rene, 4,069,634, Cl. 52-648.000.
James, Michael Joseph, to James, Michael Joseph; and Baggs, William Holroyd Thomas. Glide castors. 4,069,543, Cl. 16-42.00R.
Janin, Pierre R.; and Hagen, Holger, to American Home Products Corporation. Apparatus for compensating for pressure within a biological test device. 4,070,249, Cl. 195-127.000.
Jansz, Joost W., to Hollandsche Beton Groep N. V. Method and device for securing a support structure onto the ocean floor. 4,069,683, Cl. 61-98.000.
Japan Pulp & Paper Research Instutute Inc.: *See*—
Matsuura, Hiroshi, 4,070,233, Cl. 162-28.000.
Jarosik, Robert J.: *See*—
Rosshirt, Hermann; and Jarosik, Robert J., 4,070,608, Cl. 318-572.000.
Jarrell, Mark Floyd: *See*—
Bryant, Clifford Aldene; and Jarrell, Mark Floyd, 4,069,775, Cl. 112-79.00A.
Jarrett, John James: *See*—
Gibbons, David John; Karwowski, Wieslaw Antoni; Cousins, Charles Phillip; Green, Ian MacDonald; and Jarrett, John James, 4,070,581, Cl. 250-445.00T.
Jasgur, Joseph. Polarized cosmetic mirror. 4,070,096, Cl. 350-156.000.
Jasinski, Joseph Richard; Pickard, James Bruce; and Doner, Claude Edward, to RCA Corporation. Double tuned input circuit for television transmitter amplifier. 4,070,627, Cl. 325-127.000.
Jaunich, Helmut; Dunkelmann, Dieter; and Schiffarth, Josef. Coating carbon electrodes. 4,070,228, Cl. 156-475.000.
Jenzer, Pierre: *See*—
Hottinger, Conrad; Wust, Albert; and Jenzer, Pierre, 4,069,740, Cl. 89-33.0SF.
Jeslis, Jerome: *See*—
Sessions, Robert William; and Jeslis, Jerome, 4,069,826, Cl. 128-348.000.
Jimenez, Fernando. Vehicle flare assembly and launcher. 4,069,761, Cl. 102-37.400.
Jirasek, James D. Washing machine overflow control means. 4,069,837, Cl. 137-360.000.
Jirkovsky, Ivo L.: *See*—
Demerson, Christopher A.; Humber, Leslie G.; Dobson, Thomas A.; and Jirkovsky, Ivo L., 4,070,371, Cl. 260-326.290.
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., to Kasper Instruments, Inc. Apparatus for the automatic alignment of two superimposed objects, e.g. a semiconductor wafer and mask. 4,070,117, Cl. 356-172.000.
Johansson, John Valter. Collapsible wind and/or sunshade screen. 4,069,833, Cl. 135-4.00R.
Johnson, Arthur D.: *See*—
Pierce, William C.; Berry, Samuel M.; and Johnson, Arthur D., 4,069,572, Cl. 29-159.00R.
Johnson Controls, Inc.: *See*—
Dietz, Gerald Edward, 4,070,143, Cl. 431-43.000.
Rudich, George, Jr., 4,070,610, Cl. 318-678.000.
Johnson, Donald Patrick: *See*—
Krevald, Helga; Johnson, Donald Patrick; and Woodruff, Keith, 4,069,574, Cl. 29-434.000.
Johnson, George S.: *See*—
Eshleman, Barden E.; and Johnson, George S., 4,070,080, Cl. 339-91.00R.
Johnson, Lloyd Douglas; and Kroeber, Kenneth Ernest, to Emhart Industries, Inc. Side push divider. 4,069,908, Cl. 198-437.000.
Johnson, Matthey & Co., Limited: *See*—
Iles, Gerald Sidney, 4,070,157, Cl. 23-254.00E.

Johnson, Velmo: *See—*
Weir, Gary L.; and Johnson, Velmo, 4,070,033, Cl. 280-423.00A.

Johnson, Wayne O.; and Yih, Roy Y., to Rohm and Haas Company. Herbicidal diphenyl ethers. 4,070,178, Cl. 71-105.000.

Johnstone, David C.; and Kita, John F., to Kennametal Inc. Excavation tool. 4,069,880, Cl. 175-410.000.

Jonas, Rochus; and Klug, Rudolf, to Merck Patent Gesellschaft mit beschraenkter Haftung. Process for the preparation of indoline derivatives. 4,070,357, Cl. 260-268.0TR.

Jonas, Rochus: *See—*
Schacht, Erich; Jonas, Rochus; Mehrhof, Werner; Nowak, Herbert; Simane, Zdenek; and Lissner, Reinhard, 4,070,461, Cl. 424-232.000.

Jones, Daniel G., to Mobil Oil Corporation. Lubricant compositions containing imidazoline-phosphonate salts as antiwear agents. 4,070,294, Cl. 252-32.500.

Jones, Frank N., to Du Pont de Nemours, E. I., and Company. Polymeric materials with acid end groups. 4,070,388, Cl. 260-455.00A.

Jones, Ivor Wynn: *See—*
Miles, Lyndon James; and Jones, Ivor Wynn, 4,070,542, Cl. 13-26.000.

Jones, Richard Augustus; and Witenhafer, Donald Edward, to B. F. Goodrich Company, The. Producing heat stable vinyl chloride polymers at low temperatures in the presence of tetrahydrofuran. 4,070,534, Cl. 526-204.000.

Jones, William C., to Markus, Franklyn M. Combined folding table and seat assembly. 4,070,057, Cl. 297-159.000.

Jordan, Robert Denney. Positive power control internal combustion engine. 4,069,794, Cl. 123-25.00A.

Jos. Dyson & Sons, Inc.: *See—*
Heighberger, Robert N., 4,069,854, Cl. 151-21.00C.

Jovanovics, Karola; Szasz, Kalman; Lorincz, Csaba; Hermann, Laszlo; and Dezseri, Eszter, to Richter Gedeon Vegyeszeti Gyar Rt. Process for the preparation of diindole alkaloids or of the acid addition salts thereof. 4,070,358, Cl. 260-287.00B.

Judge International Limited: *See—*
Martin, Edward Rankine, 4,069,952, Cl. 222-510.000.

Junger, Hans; and Weissenfels, Franz, to Dynamit Nobel Aktiengesellschaft. Process for improving the mechanical properties of novolak-cured molded articles. 4,070,327, Cl. 260-31.40R.

Junzo Shimoiizaka: *See—*
Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,069,979, Cl. 241-5.000.

Jurek, Julius V. .22 Caliber rimfire adapter system for M16 type rifle. 4,069,607, Cl. 42-25.000.

Jurek, Julius V. .22 Caliber rimfire adapter system for M16 type rifle. 4,069,608, Cl. 42-49.00A.

Jury, Erhard: *See—*
Friedrich, Wolfgang; Friedel, Horst; and Jury, Erhard, 4,070,190, Cl. 96-94.00R.

Justrite Manufacturing Company: *See—*
Flider, Frank S., 4,069,946, Cl. 222-1.000.

JWI Ltd.: *See—*
Woodward, Derrick Ronald, 4,070,237, Cl. 162-217.000.

K-S-H, Inc.: *See—*
DeZutter, Theodore M., 4,069,641, Cl. 52-202.000.

Kabushiki Kaisha Nippon Kijuki Seisakusho: *See—*
Tsujii, Takehiko; and Kutsuzawa, Shunsuke, 4,070,053, Cl. 294-81.00R.

Kabushiki Kaisha Nitto Tekuno Group: *See—*
Yamada, Kunimitsu; and Kanematsu, Hitaka, 4,069,677, Cl. 61-39.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Ohashi, Hiroshi; and Kimura, Takashi, 4,070,650, Cl. 340-172.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Nakayama, Shozo; Kurahashi, Masayuki; and Kato, Kimio, 4,070,136, Cl. 417-269.000.

Kachel, Volker; and Glossner, Ewald, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.v. Device for controlling the particle flow in an apparatus for measuring the properties of particles suspended in liquid. 4,070,617, Cl. 324-71.0CP.

Kaddis Mfg. Co.: *See—*
Tucker, James Mackey, 4,070,193, Cl. 106-14.000.

Kadokura, Koichi: *See—*
Ichikawa, Jyunji; Kiyohara, Takehiko; Koumura, Noboru; Kadokura, Koichi; and Nakano, Takashi, 4,070,681, Cl. 346-160.000.

Kaeding, Warren W.: *See—*
Butter, Stephen A.; and Kaeding, Warren W., 4,070,411, Cl. 260-676.00R.

Kahn, Joe E., to Acme Chemical Company. Aqueous polish composition. 4,070,510, Cl. 427-385.00R.

Kaibara, Nobuhiro: *See—*
Kanda, Fumio; Kaibara, Nobuhiro; Ohki, Seibi; Okamoto, Kazuo; and Suzuki, Akira, 4,069,800, Cl. 123-139.00A.

Kaiser, Harold Dalton, to International Business Machines Corporation. Multilayer module having optical channels therein. 4,070,516, Cl. 428-137.000.

Kalafus, Edward F.; and Wise, Richard M., to General Tire & Rubber Company, The. Pollution free method of making 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol tire cord dips and products. 4,070,318, Cl. 260-29.300.

Kalbow, Heinz: *See—*
Moroni, Rolf; and Kalbow, Heinz, 4,070,300, Cl. 252-190.000.

Kalinowski, Joseph E.: *See—*
Pennell, William E.; Kalinowski, Joseph E.; Waldby, Robert N.; Rylatt, John A.; and Swenson, Daniel V., 4,070,241, Cl. 176-87.000.

Kalinowski, Robert E.: *See—*
Colquhoun, Joseph A.; and Kalinowski, Robert E., 4,070,526, Cl. 428-537.000.

Kamijo, Tetsuhide: *See—*
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 4,070,484, Cl. 424-319.000.

Kamiya, Yoji: *See—*
Inoue, Katsuo; and Kamiya, Yoji, 4,069,918, Cl. 211-1.500.

Kamo, Yoshihisa, to Nippon Columbia Kabushikikaisha. Multi-directional stereo multiple recording apparatus with constant acceleration cutting. 4,070,552, Cl. 179-100.4ST.

Kanamori, Nobutaka: *See—*
Nagai, Susumu; Kanamori, Nobutaka; Sawayanagi, Yasuo; and Nakagawa, Takashi, 4,069,859, Cl. 164-56.000.

Kanatani, Yoshiharu; Ise, Masahiro; Mizukami, Etsuo; Inazaki, Kenzoh; and Suzuki, Chuji, to Sharp Kabushiki Kaisha. Control system for driving a capacitive display unit such as an EL display panel. 4,070,663, Cl. 340-324.00M.

Kanda, Fumio; Kaibara, Nobuhiro; Ohki, Seibi; Okamoto, Kazuo; and Suzuki, Akira, to Diesel Kiki Co., Ltd. Fuel injection apparatus. 4,069,800, Cl. 123-139.00A.

Kanemaru, Hiroyasu: *See—*
Morozumi, Hiroshi; and Kanemaru, Hiroyasu, 4,070,606, Cl. 318-254.000.

Kanematsu, Hitaka: *See—*
Yamada, Kunimitsu; and Kanematsu, Hitaka, 4,069,677, Cl. 61-39.000.

Kantner, Otto: *See—*
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,070,107, Cl. 352-72.000.

Kao Soap Co., Ltd.: *See—*
Inamoto, Yoshiaki; Fujikura, Yoshiaki; Ikeda, Hiroshi; and Takaishi, Naotake, 4,070,540, Cl. 560-117.000.

Kapron, Felix Paul: *See—*
Taylor, John Charles Wood; and Kapron, Felix Paul, 4,070,091, Cl. 350-96.0WG.

Karabedian, James A., to Owens-Illinois, Inc. Container with improved heat-shrunk cellular sleeve. 4,069,934, Cl. 215-12.00R.

Karasawa, Yoshiharu: *See—*
Narahara, Toshikazu; Sugawara, Katuo; Karasawa, Yoshiharu; Yokono, Hitoshi; Mukai, Junji; and Muroi, Tadashi, 4,070,416, Cl. 260-830.00P.

Karll, Robert E.; Piasek, Edmund J., deceased; and by Hunt, Evelyn W., administratrix, to Standard Oil Company. Terpolymer alkylated phenol. 4,070,402, Cl. 260-619.00D.

Karlsson, Ingemar: *See—*
Ahlbert, Enar; Andersson, Karl-Hugo; Karlsson, Ingemar; and Oldaeus, Bengt, 4,069,595, Cl. 34-156.000.

Karmas, George, to Ortho Pharmaceutical Corporation. Diarylmethylenes. 4,070,541, Cl. 560-140.000.

Karwowski, Wieslaw Antoni: *See—*
Gibbons, David John; Karwowski, Wieslaw Antoni; Cousins, Charles Phillip; Green, Ian MacDonald; and Jarrett, John James, 4,070,581, Cl. 250-445.00T.

Kasel Steel Corporation: *See—*
Morrison, James J.; and Baringer, Berlyn E., 4,069,697, Cl. 72-19.000.

Kasner, William H.: *See—*
Kugler, Ralph W.; Gerkey, Kenneth S.; and Kasner, William H., 4,070,240, Cl. 176-66.000.

Kasper, Alan Henry, to Bunker Ramo Corporation. Modular interconnection system. 4,070,548, Cl. 179-1.0PC.

Kasper Instruments, Inc.: *See—*
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., 4,070,117, Cl. 356-172.000.

Kataoka, Ryohei: *See—*
Motani, Kensuke; Matuura, Shunji; and Kataoka, Ryohei, 4,070,257, Cl. 204-98.000.

Kato, Akira; Itoh, Akira; and Uchida, Tohru, to Konishiroku Photo Industry Co., Ltd. Photosensitive material for electrophotography having photosensitive multi-layers. 4,070,185, Cl. 96-1.800.

Kato, Hajime: *See—*
Ishige, Sadao; Usui, Hideo; Kato, Hajime; Saeki, Keiso; and Kiritani, Masataka, 4,070,508, Cl. 427-282.000.

Kato, Kimio: *See—*
Nakayama, Shozo; Kurahashi, Masayuki; and Kato, Kimio, 4,070,136, Cl. 417-269.000.

Katoh, Sadao; and Kouno, Tsuneo, to Nissan Motor Co., Ltd. Fluid pressure control device. 4,070,067, Cl. 303-6.00C.

Katz, Marvin; and Becicka, William J., to Top-Scor Products, Inc. Continuous melting device. 4,070,150, Cl. 432-210.000.

Kavetsky, Rostislav Evgenievich: *See—*
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.

Kawaguchi, Shojiro: *See—*
Yamamura, Yukio; Kawaguchi, Shojiro; Terashima, Otohiko; Ichinomiya, Tutomu; and Otuka, Shinpei, 4,069,816, Cl. 128-41.000.

Kawaharada, Masaru; and Yokoyama, Etsuso, to Citizen Watch Company Limited. Display device. 4,070,668, Cl. 340-373.000.

Kawanoe Zoki Kabushiki Kaisha: *See—*
Takahashi, Shokichi, 4,070,014, Cl. 270-39.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Inubushi, Masanobu; and Toyoda, Yoshiaki, 4,069,660, Cl. 60-39.250.

Kazan, John; and Nash, Robert Arnold, to American Cyanamid Company. Compositions containing dioctyl calcium sulfosuccinate. 4,070,456, Cl. 424-173.000.

Kazmierowicz, Casimir W., to Beckman Instruments, Inc. Low fired conductive compositions. 4,070,517, Cl. 428-209.000.

Keane, Thomas H.: *See—*
Crosby, Lawton H.; and Keane, Thomas H., 4,070,124, Cl. 403-208.000.

Kearns, Paul. Johnny bolt cutter. 4,069,582, Cl. 30-182.000.

Keefe, George Edward: *See—*
Giess, Edward August; Keefe, George Edward; and Lin, Yeong Show, 4,070,658, Cl. 365-36.000.

Keefer, Ernest G.: *See—*
Silk, Leonard P.; and Keefer, Ernest G., 4,069,550, Cl. 16-179.000.

Keller, Wilfried: *See—*
Baatz, Rolf; Beilstein, Gunter; Grenner, Dieter; Keller, Wilfried; and Steinbach, Dimitry, 4,070,405, Cl. 260-654.00R.

Kelley, Richard Norman; and Campbell, Gerald Allan, to Eastman Kodak Company. Silver halide element with an antistatic layer. 4,070,189, Cl. 96-87.00A.

Kelly, Charles A.: *See—*
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,070,337, Cl. 260-45.8NT.
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,070,339, Cl. 260-45.8NT.

Kelso, Robert G.: *See—*
Garner, James W.; and Kelso, Robert G., 4,070,509, Cl. 427-385.00R.

Kemp, Charles L., to General Electric Company. Brewer with timer mount. 4,069,750, Cl. 99-280.000.

Kendall Company, The: *See—*
Swallow, Roger T.; and Stanley, Leonard A., 4,069,515, Cl. 2-239.000.

Kende, Andrew S.; Mills, John E.; and Tsay, Yuh-Geng, to Research Corporation. Intermediates for polycyclic quinoid antibiotics. 4,070,382, Cl. 260-365.000.

Kennametal Inc.: *See—*
Johnstone, David C.; and Kita, John F., 4,069,880, Cl. 175-410.000.

Kennedy, John Frederick; and Chaplin, Martin Frank, to Abbott Laboratories. Reactive matrices. 4,070,246, Cl. 195-99.000.

Kern, Rudolf: *See—*
Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst, 4,070,415, Cl. 260-830.00R.

Kerr-McGee Corporation: *See—*
Davis, Robert E.; and Baldwin, Roger A., 4,070,268, Cl. 208-8.000.
Leonard, Robert E., 4,070,267, Cl. 208-8.000.

Keske, Robert G., to Standard Oil Company (Indiana). Self-bonding varnish for magnetic wire comprising polyalkylenetrimellitate imide polyalkylenetrimellitate ester. 4,070,524, Cl. 428-383.000.

Kessler, James E. Insulation supporting strap. 4,069,636, Cl. 52-712.000.

Khalid, Joseph M., to Square D Company. Current limiting circuit breaker. 4,070,641, Cl. 338-61.000.

Khlyvnjuk, Boris Grigorievich: *See—*
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.

Kienbaum: *See—*
Laubach, Winfried; Kienbaum; and Thomas, Rolf, 4,069,975, Cl. 366-220.000.

Kienzle, Frank; and Rosen, Perry, to Hoffmann-La Roche, Inc. Synthesis cyclopentanol. 4,070,378, Cl. 260-345.900.

Kierstead, Richard W.: *See—*
LeMahieu, Ronald A.; Kierstead, Richard W.; and Pruess, David L., 4,070,376, Cl. 260-343.000.

Kifferstein, Harry P.; and Kifferstein, Warren M. Limb stiffening device. 4,070,027, Cl. 273-189.00A.

Kifferstein, Warren M.: *See—*
Kifferstein, Harry P.; and Kifferstein, Warren M., 4,070,027, Cl. 273-189.00A.

Kihlstedt, Per Gudmar: *See—*
Broman, Per Gunnar; Kihlstedt, Per Gudmar; and Du Rietz, Carl, 4,070,276, Cl. 209-166.000.

Kikuchi, Mitsuo; and Hiraga, Yoichi, to Toyo Soda Manufacturing Co., Ltd. Process for removing sulfate ions from extracted phosphoric acid with a barium compound. 4,070,443, Cl. 423-321.00R.

Kikumoto, Ryoji: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tezuka, Tohru; Tonomura, Shinji; Tamao, Yoshikuni; and Hijikata, Akiko, 4,070,457, Cl. 424-177.000.

Kilian, Werner: *See—*
Meckel, Werner; Kilian, Werner; Lehmann, Rolf; and Siegfried, Armin, 4,069,569, Cl. 29-116.0AD.

Kimball, William R.: *See—*
Williams, Robert C.; and Kimball, William R., 4,069,541, Cl. 15-321.000.

Kimberly-Clark Corporation: *See—*
Weber, Robert E., 4,070,218, Cl. 156-167.000.

Kimura, Takashi: *See—*
Ohashi, Hiroshi; and Kimura, Takashi, 4,070,650, Cl. 340-172.000.

King, Larry K.: *See—*
Jacoba, Stanley C.; and King, Larry K., 4,070,448, Cl. 423-495.000.

King, Lawrence Edward. Animal snare assembly. 4,069,612, Cl. 43-87.000.

King, Randall N.; Mitoff, Stephan P.; and Breiter, Manfred W., to Electric Power Research Institute, Inc. Efficient sodium/sulfur battery. 4,070,527, Cl. 429-104.000.

Kinjo, Ayako, legal representative: *See—*
Endo, Ichiro; Kobayashi, Hajime; and Kinjo, Kikuo, deceased, 4,069,759, Cl. 101-467.000.

Kinjo, Kikuo, deceased: *See—*
Endo, Ichiro; Kobayashi, Hajime; and Kinjo, Kikuo, deceased, 4,069,759, Cl. 101-467.000.

Kinki Aerosol Industrial Co., Ltd.: *See—*
Arakawa, Kenji, 4,070,194, Cl. 106-30.000.

Kinoshita, Yukihiko: *See—*
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 4,070,484, Cl. 424-319.000.

Kinsman, Gordon F., to Polaroid Corporation. Method for sealing battery. 4,069,578, Cl. 29-623.300.

Kirayoglu, Birol: *See—*
Contractor, Rashmikant Maganlal; and Kirayoglu, Birol, 4,069,563, Cl. 28-105.000.

Kiritani, Masataka: *See—*
Ishige, Sadao; Usui, Hideo; Kato, Hajime; Saeki, Keiso; and Kiritani, Masataka, 4,070,508, Cl. 427-282.000.

Kirkland, Joseph Jack, to Du Pont de Nemours, E. I., and Company. Controlled surface porosity particles and a method for their production. 4,070,283, Cl. 210-31.00C.

Kirkland, Joseph Jack: *See—*
Iler, Ralph Kingsley; and Kirkland, Joseph Jack, 4,070,286, Cl. 210-31.00C.

Kirkpatrick, Joel L., to Gulf Research & Development Co. Combating insects and mites with 1-carbamyl-4H-1,2,4-triazolin-5-ones and thiones. 4,070,474, Cl. 424-269.000.

Kishimoto, Keiichi; Koda, Yoshinobu; Sasaki, Shosaku; and Suzuki, Masahiko, to Toray Silicone Company, Ltd. Heat stable organopolysiloxane composition. 4,070,343, Cl. 260-45.75F.

Kisrow, Leverne, to Minnesota Mining and Manufacturing Company. X-ray film holder using capacitive sensing for determining film size. 4,070,582, Cl. 250-475.000.

Kissei Pharmaceutical Co., Ltd.: *See—*
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 4,070,484, Cl. 424-319.000.

Kissich, Arnulf: *See—*
Kogler, Peter; and Kissich, Arnulf, 4,070,063, Cl. 299-64.000.

Kita, John F.: *See—*
Johnstone, David C.; and Kita, John F., 4,069,880, Cl. 175-410.000.

Kitano, Kazuaki: *See—*
Nakao, Yoshio; Kitano, Kazuaki; Imada, Isuke; and Morimoto, Hiroshi, 4,070,244, Cl. 195-81.000.

Kiwala, Jacob: *See—*
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,070,491, Cl. 426-536.000.

Kiyohara, Takehiko: *See—*
Ichikawa, Jyunji; Kiyohara, Takehiko; Koumura, Noboru; Kadokura, Koichi; and Nakano, Takashi, 4,070,681, Cl. 346-160.000.

Kjellberg, Bengt Eric Sigvard: *See—*
Hernestam, Sven Eric Harry; Kjellberg, Bengt Eric Sigvard; and Olsson, Knut Gunnar, 4,070,473, Cl. 424-267.000.

Klach, Stanley J.: *See—*
Stueber, Richard J.; and Klach, Stanley J., 4,070,507, Cl. 427-252.000.

Kleimann, Helmut: *See—*
Schneider, Heinz-Georg; Kleimann, Helmut; and Luckas, Bruno, 4,070,310, Cl. 260-2.5BD.

Klein, Alice V. Button holder. 4,059,779, Cl. 112-136.000.

Klein, Emmett J., Jr.; Hubbard, Clyde W., Jr.; and Chapman, Lloyd R., to Seiscom Delta Inc. Color display of data. 4,070,187, Cl. 96-27.00R.

Klein, Wilfried: *See—*
Heuber, Klaus; Klein, Wilfried; Najmann, Knut; and Wiedmann, Siegfried Kurt, 4,070,656, Cl. 365-203.000.

Kleinert, Heinz: *See—*
Schudy, Karl-Heinz; and Kleinert, Heinz, 4,070,073, Cl. 312-184.000.

Klimeck, Edward F.: *See—*
Marshall, Francis G.; and Klimeck, Edward F., 4,069,942, Cl. 221-4.000.

Klingberg, Olle Herbert, deceased; and by Valfridsson, Sven, administrator. Wiper device for windshields and headlight glasses. 4,069,539, Cl. 15-250.320.

Klink, Jerome P.; and Eisenberg, Arnold J., to Owens-Corning Fiber-

glas Corporation. Apparatus for packaging linear material. 4,069,984, Cl. 242-18.00G.
Klinksiek, Bernd: *See*—
Schnoring, Hildegard; and Klinksiek, Bernd, 4,070,346, Cl. 260-77.5AA.
Klippan GmbH Hamburg: *See*—
Minolla, Horst; and Peters, Uwe, 4,069,554, Cl. 24-196.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
El Moussa, Wadid, 4,069,978, Cl. 239-533.200.
Gego, Arno; and Fussinger, Gerhard, 4,069,885, Cl. 180-14.00B.
Klockner - Werke AG: *See*—
Linde, Joachim; and Spath, Wolfgang, 4,070,139, Cl. 425-188.000.
Klug, Rudolf: *See*—
Jonas, Rochus; and Klug, Rudolf, 4,070,357, Cl. 260-268.0TR.
Klunder, Edgar B., to Continental Oil Company. Reduction of aqueous thiosulfate solutions. 4,070,445, Cl. 423-428.000.
Kobayakawa, Masaki: *See*—
Uchikoba, Tsukasa; Yuda, Saneo; Hirano, Kiyoshige; Yawata, Kazufumi; and Kobayakawa, Masaki, 4,070,599, Cl. 313-497.000.
Kobayashi, Hajime: *See*—
Endo, Ichiro; Kobayashi, Hajime; and Kinjo, Kikuo, deceased, 4,069,759, Cl. 101-467.000.
Kobayashi, Michihiro: *See*—
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 4,070,484, Cl. 424-319.000.
Kober, Alfred E.; and Kukin, Ira, to Apollo Chemical Corporation. Method of agglomerating particles in gas stream. 4,070,162, Cl. 55-5.000.
Kockums Automation AB: *See*—
Hedstrom, Bror Folke; and Persson, Per Thorvald, 4,069,784, Cl. 114-144.00E.
Koda, Yoshinobu: *See*—
Kishimoto, Keiichi; Koda, Yoshinobu; Sasaki, Shosaku; and Suzuki, Masahiko, 4,070,343, Cl. 260-45.75F.
Koepfli, Josef, to Inventio AG. Steerable drive shaft. 4,069,887, Cl. 180-64.00R.
Kofmel, Rudolf. Plug-and-socket connection. 4,070,556, Cl. 200-16.00B.
Kogler, Peter; and Kisich, Arnulf, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Dividing cutting machine. 4,070,063, Cl. 299-64.000.
Kohno, Yoshiki: *See*—
Masunaga, Midori; Kohno, Yoshiki; and Ohmori, Tadashi, 4,070,297, Cl. 252-63.000.
Koike, Syouichi, to Nissan Motor Co., Ltd. Vehicle window guide assembly. 4,069,617, Cl. 49-428.000.
Kojima, Tamotsu: *See*—
Imamura, Hiroyuki; Sato, Shui; Kojima, Tamotsu; and Endo, Takaya, 4,070,191, Cl. 96-100.00R.
Kolb, Alan C.; and Drummond, James E., to Maxwell Laboratories, Inc. Method and apparatus for electrostatic precipitating particles from a gaseous effluent. 4,070,163, Cl. 55-11.000.
Kolchev, Lyubomir Alexandrov, to DSO "UHARMACHIM". Method for producing phytin. 4,070,422, Cl. 260-990.000.
Komatsu, Osamu: *See*—
Moriguchi, Sanseki; Abe, Hiroshi; Takenaka, Joichi; Yoshikoshi, Hideyuki; and Komatsu, Osamu, 4,070,440, Cl. 423-239.000.
Kommanditbolaget United Stirling (Sweden) AB & Co.: *See*—
Berntell, John Osvald, 4,069,671, Cl. 60-525.000.
Bratt, Jan Christer; Lorant, Stefan Istvan; Moodysson, Bengt-Ove Moody; and Rosenqvist, Nils Kaj Gunnar, 4,069,670, Cl. 60-517.000.
Kondo, Yoshikazu: *See*—
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; Mizuno, Keiichiro; Nomoto, Sadao; Murayama, Noriaki; and Watanabe, Kei, 4,069,768, Cl. 105-452.000.
Konishi, Hiroyuki: *See*—
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, 4,070,176, Cl. 71-103.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Imamura, Hiroyuki; Sato, Shui; Kojima, Tamotsu; and Endo, Takaya, 4,070,191, Cl. 96-100.00R.
Kato, Akira; Itoh, Akira; and Uchida, Tohru, 4,070,185, Cl. 96-1.800.
Konotsune, Takuo; Matsui, Takashi; and Tobitsuka, Junzo, to Sankyo Company Limited. Process for the preparation of 4-benzoylpyrazole derivatives. 4,070,536, Cl. 548-367.000.
Koob, Robert W.: *See*—
Tosato, Larry P.; and Koob, Robert W., 4,069,898, Cl. 187-29.00R.
Kopke, Wilfried: *See*—
Hoffmann, Gunter; and Kopke, Wilfried, 4,070,039, Cl. 280-745.000.
Korecki, Jorg: *See*—
Glock, Wilfried; Ruppert, Josef; and Korecki, Jorg, 4,070,050, Cl. 292-339.000.
Kori, Seiji: *See*—
Hayashi, Masaki; Kori, Seiji; Miyake, Hajimu; and Matsumoto, Kimiichiro, 4,070,537, Cl. 560-51.000.
Kornrumpf, William P.: *See*—
Harnden, John D., Jr.; Kornrumpf, William P.; Walden, John P.; and Walker, Loren H., 4,070,701, Cl. 363-25.000.
Koumura, Noboru: *See*—
Ichikawa, Jyunji; Kiyohara, Takehiko; Koumura, Noboru; Kadokura, Koichi; and Nakano, Takashi, 4,070,681, Cl. 346-160.000.
Kouno, Tsuneo: *See*—
Katoh, Sadao; and Kouno, Tsuneo, 4,070,067, Cl. 303-6.00C.
Kozawa, Tetsuo, to Brother Kogyo Kabushiki Kaisha. Numerically controlled sewing machine. 4,069,778, Cl. 112-121.120.
Koziol, Leon W. Ice cream cone packing jacket and holder. 4,069,996, Cl. 248-146.000.
Kraak, Andries; and George, Raymond Douglas, to Foseco International Limited; and Co-operative Verkoap-en Productievereiniging van Aardappelmeel en Derivaten "Avebe" G.A. Binder compositions. 4,070,196, Cl. 106-38.350.
Kraemer, Dieter; Lehmann, Klaus; Pennewiss, Horst; Plainer, Hermann; and Schweder, Roland, to Rohm GmbH. Water-swellable, bead copolymer. 4,070,348, Cl. 260-79.3MU.
Krainski, Andrzej; Lendzion, Krzyztof; Lojek, Andrzej; and Wewior, Jerzy, to Warszawskie Zaklady Mechaniczne "Deltawzm". Injection pump. 4,069,799, Cl. 123-139.00B.
Krall, Thomas J.; and Uhlig, Albert R., to Owens-Illinois, Inc. Method for blow molding. 4,070,428, Cl. 264-89.000.
Kramer, Helmut: *See*—
Hoffmeister, Friedrich; Hiltmann, Rudolf; Wollweber, Hartmund; and Kramer, Helmut, 4,070,494, Cl. 424-2.000.
Krause Milling Company: *See*—
Alexander, Richard J.; and Krueger, Robert K., 4,070,314, Cl. 260-17.300.
Krazhan, Gennady Dmitrievich: *See*—
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.
Kreimer, Charles Clement, to Pease Company. Eave thermal baffle for insulation. 4,069,628, Cl. 52-94.000.
Krekel, Jorg: *See*—
Hofen, Willi; Wirthwein, Rolf; Reissinger, Karl-Hermann; and Krekel, Jorg, 4,070,253, Cl. 203-75.000.
Kremer, Paul; Gora, Bernhard; and van Amsterdam, Cornelis, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Joining stiffening material to shoe upper using UHF field. 4,069,602, Cl. 36-45.000.
Kremlicka, Theodor: *See*—
Lochmann, Lubomir; Kremlicka, Theodor; and Babka, Josef, 4,070,512, Cl. 427-445.000.
Kressel, Henry; D'Aiello, Robert Vincent; and Robinson, Paul Harvey, to RCA Corporation. Polycrystalline or amorphous semiconductor photovoltaic device having improved collection efficiency. 4,070,206, Cl. 136-89.0TF.
Kretschmer, Wolfgang: *See*—
Mascher, Werner; Kretschmer, Wolfgang; and Schmidt, Gerhard, 4,070,154, Cl. 23-230.00R.
Krevald, Helga; Johnson, Donald Patrick; and Woodruff, Keith, to American Cyanamid Company. Process for the manufacture of a cosmetic or pharmaceutical stick. 4,069,574, Cl. 29-434.000.
Krimm, Heinrich: *See*—
Tresper, Erhard; and Krimm, Heinrich, 4,070,392, Cl. 260-463.000.
Kristinsson, Bjorn. Method and apparatus for detecting fish in water. 4,070,616, Cl. 324-65.00R.
Krivenko, Alexei Ivanovich: *See*—
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.
Kroeber, Kenneth Ernest: *See*—
Johnson, Lloyd Douglas; and Kroeber, Kenneth Ernest, 4,069,908, Cl. 198-437.000.
Krohn, W. Henrik: *See*—
Lefkowitz, Leonard R.; and Krohn, W. Henrik, 4,070,519, Cl. 428-235.000.
Krueger, Robert K.: *See*—
Alexander, Richard J.; and Krueger, Robert K., 4,070,314, Cl. 260-17.300.
Krumpholz, Oskar: *See*—
Maslowski, Stefan; and Krumpholz, Oskar, 4,070,118, Cl. 356-237.000.
Ksenych, Nick. Grain trailer. 4,070,059, Cl. 298-1.00V.
Kudryavtsev, Ivan Vasilievich, deceased: *See*—
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.
Kudryavtseva, Galina Antonovna, administratrix: *See*—
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Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.
Kugler, Ralph W.; Gerkey, Kenneth S.; and Kasner, William H., to Westinghouse Electric Corporation. Seal containment system. 4,070,240, Cl. 176-66.000.
Kukin, Ira: *See*—
Kober, Alfred E.; and Kukin, Ira, 4,070,162, Cl. 55-5.000.
Kukino, Yoshinori: *See*—
Miura, Mitsuo; Sugibayashi, Yasuo; Suzuki, Akio; Kukino, Yoshinori; Aoyagi, Hayao; Tanifuji, Fuminobu; and Ishii, Jiro, 4,069,678, Cl. 61-63.000.
Kumiai Chemical Industry Co., Ltd.: *See*—
Hayashi, Eiichi; Takita, Kiyoshi; Sugiyama, Hironari; and Nezu, Yukio, 4,070,377, Cl. 260-343.700.
Kuno, Akira; and Sakakibara, Yasuyuki, to Nippon Soken, Inc. Acceleration/deceleration alarm system. 4,070,562, Cl. 364-426.000.
Kurahashi, Masayuki: *See*—
Nakayama, Shozo; Kurahashi, Masayuki; and Kato, Kimio, 4,070,136, Cl. 417-269.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Ohkubo, Kimio; and Fujioka, Mikio, 4,070,303, Cl. 252-364.000.
Kuriyama, Akiumi: *See*—
Isobe, Minoru; and Kuriyama, Akiumi, 4,069,907, Cl. 197-53.000.
Kurtz, Joseph M.: *See*—
Palte, Kenneth F.; and Kurtz, Joseph M., 4,069,938, Cl. 217-13.000.
Kuster, Adolf. Letter opener. 4,069,585, Cl. 30-287.000.
Kuts, Mathew, to B. F. Goodrich Company, The. Fabric cutter. 4,069,729, Cl. 83-488.000.
Kutsuzawa, Shunsuke: *See*—
Tsujii, Takehiko; and Kutsuzawa, Shunsuke, 4,070,053, Cl. 294-81.00R.
Kutz, Norman J.: *See*—
Morrow, James G., Sr.; Pech, David J.; and Kutz, Norman J., 4,069,884, Cl. 180-9.20R.
Kuypers, Jan: *See*—
Danneels, Laurent; Helder, Johan; Kuypers, Jan; Piolon, James; and Pernegger, Wolfgang, 4,070,265, Cl. 204-206.000.
Kuzev, Lyubomir Vladimirov: *See*—
Stoev, Stoycho Mitrev; Metodiev, Metodi Stoyanov; Kuzev, Lyubomir Vladimirov; Vedrichkov, Petko Georgiev; Sapunarov, Ivan Mitrev; Vassilev, Vassil Vladimirov; Dimitrov, Spas Petkov; Gasharov, Vihar Asenov; Russev, Sheko Kolev; and Mitrev, Kostadin Georgiev, 4,070,275, Cl. 209-44.000.
Kuznetsov, German Nikolaevich: *See*—
Bocharov, Jury Alexandrovich; Safonov, Anatoly Vasilievich; Grigorenko, Anatoly Sergeevich; Moroz, Jury Antonovich; Kuznetsov, German Nikolaevich; and Zimin, Anatoly Ivanovich, deceased, 4,069,700, Cl. 72-407.000.
Kuznetsova, Larisa Semenovna: *See*—
Privalov, Vasily Efimovich; Vail, Evgeny Iosifovich; Kuznetsova, Larisa Semenovna; Belov, Konstantin Alexeevich; Nosalevich, Ivan Mikhailovich; and Romanov, Igor Vasilievich, 4,070,409, Cl. 260-675.000.
Kyowa Denki Kagaku Kabushiki Kaisha: *See*—
Hirota, Kashichi, 4,070,546, Cl. 179-1.0GA.
L.M. Ericcson Pty. Ltd.: *See*—
Rule, Peter; Mace, Owen; and Zimmer, Ernest, 4,070,554, Cl. 179-175.30R.
Labbe, Francis Auguste Maurice: *See*—
Molins, Desmond Walter; and Labbe, Francis Auguste Maurice, 4,069,829, Cl. 131-84.00C.
Laber, Albert Paul: *See*—
Marshall, Philip; Laber, Albert Paul; and Cauteruccio, Ugo, 4,069,706, Cl. 73-666.000.
La Botz, Richard John. Water ski towing means. 4,069,786, Cl. 115-6.100.
Lackore, James K.: *See*—
Ramler, Warren J.; and Lackore, James K., 4,070,499, Cl. 427-54.000.
Lada, Walter, to Corner & Lada Co., Inc. Travel stop. 4,069,992, Cl. 248-54.00R.
Laitram Corporation, The: *See*—
Lapeyre, James M., 4,069,673, Cl. 60-641.000.
Lallo, Matti: *See*—
Ahokas, Pentti; and Lallo, Matti, 4,069,925, Cl. 214-6.00H.
Lambden, Martin Roy, to Quest Automation Limited. Electrographic apparatus and method of producing an electrode surface therefor. 4,070,544, Cl. 178-18.000.
Lamiglas Corporation: *See*—
Loomis, Gary A.; and Fosha, Albert A., 4,070,127, Cl. 403-334.000.
Lamy, Jacques Edouard, to C. G, DORIS (Campagnie Generale pour les Developpements Operationnels des Richesses Sous-marines). Method of and device for forming a fluidtight duct transition through a wall. 4,069,685, Cl. 61-107.000.
Landry, Jean. Collapsible camp stove assembly. 4,069,806, Cl. 126-9.00R.
Landstorfer, Friedrich: *See*—
Meinke, Hans Heinrich; Lindenmeier, Heinz; Landstorfer, Friedrich; and Flachenecker, Gerhard, 4,070,677, Cl. 343-704.000.
Lange, Karl-Heinz, to Balda-Werke Photographische Gerate & Kunststoff GmbH. & Co. KG. Camera with adjustable objective. 4,070,686, Cl. 354-195.000.
Lanning, Walter C.: *See*—
Schmidt, Richard Q.; Fleischer, Herman J.; Lanning, Walter C.; and Tiblin, Bert V., 4,070,673, Cl. 343-7.300.
Lanzisera, Joseph C. Washing machine for cleaning cooking pots or similar articles. 4,069,533, Cl. 15-56.000.
Lapeyre, James M., to Laitram Corporation, The. Sealed turbine engine. 4,069,673, Cl. 60-641.000.
La Rocco, Lawrence. Adaptor for machine tool fixture. 4,070,012, Cl. 269-287.000.
Larriva, Raoul M. Refrigeration evaporative booster combination. 4,069,687, Cl. 62-305.000.
Larsen, Tor G.: *See*—
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., 4,070,117, Cl. 356-172.000.
Larson, Melvin E.: *See*—
Sparks, Charles E.; Templeton, J. G.; and Larson, Melvin E., 4,069,727, Cl. 83-16.000.
Laser Systems & Electronics, Inc.: *See*—
Noyes, Richard S., 4,069,955, Cl. 224-5.00H.
Lasis, Evalds; and Buckler, Ernest Jack, to Polysar Limited. Amine modified polymers reacted with halogen compounds. 4,070,340, Cl. 260-47.0UP.
Lassen, Harry, to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel. Method of and device for extinguishing burning gases. 4,069,872, Cl. 169-47.000.
Laubach, Winfried; Kienbaum; and Thomas, Rolf, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Mixer truck for shipping molten metals. 4,069,975, Cl. 366-220.000.
Laufer, Karl: *See*—
Becker, Friedbert; Laufer, Karl; and Steinkamp, Johann Albert, 4,070,672, Cl. 343-6.80R.
Lazarev, Ilya Romanovich: *See*—
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.
Lazarus, Stanley David; and Showers, John Walter, to Allied Chemical Corporation. Manufacture of polyesters. 4,070,342, Cl. 260-45.75C.
Le Coeur, Jean: *See*—
Chartraire, Jacques; Le Coeur, Jean; and Pouliquen, Jacques, 4,070,584, Cl. 250-555.000.
Lee, Arnold S. J., to Milstein Medical Research Foundation, Inc. Method of detecting and recording a succession of time-spaced blood flow surges. 4,069,815, Cl. 128-2.05A.
Lee, Chi-Long: *See*—
Homan, Gary R.; and Lee, Chi-Long, 4,070,328, Cl. 260-37.0SB.
Homan, Gary R.; and Lee, Chi-Long, 4,070,329, Cl. 260-37.0SB.
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Shah, Sunil C., 4,069,981, Cl. 241-30.000.
Lefkowitz, Leonard R.; and Krohn, W. Henrik, to Huyck Corporation. High temperature filter fabrics. 4,070,519, Cl. 428-235.000.
Lehmann, Klaus: *See*—
Kraemer, Dieter; Lehmann, Klaus; Pennewiss, Horst; Plainer, Hermann; and Schweder, Roland, 4,070,348, Cl. 260-79.3MU.
Lehmann, Rolf: *See*—
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Leinfelt, Karl Eric, to Aktiebolaget Electrolux. Combination dust container for vacuum cleaner and signalling device. 4,070,170, Cl. 55-274.000.
Leitner, Roland L.; Nass, Gerald I.; Adams, Phillip; and Weiss, Marvin, to Millmaster Onyx Corporation. Radiation-curable compositions and method of coating therewith. 4,070,500, Cl. 427-54.000.
Lelouch, Frederic. Apparatus for sensory control of a person undergoing test. 4,070,102, Cl. 351-18.000.
LeMahieu, Ronald A.; Kierstead, Richard W.; and Pruess, David L., to Hoffmann-La Roche, Inc. Antibiotic 1745A/X and methods for the production thereof. 4,070,376, Cl. 260-343.000.
Lemelson, Jerome H.; and Nutting, William B. Activity doll. 4,069,613, Cl. 46-120.000.
Lendzion, Krzyztof: *See*—
Krainski, Andrzej; Lendzion, Krzyztof; Lojek, Andrzej; and Wewior, Jerzy, 4,069,799, Cl. 123-139.00B.
Lenk, Erich: *See*—
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Leonard, Robert E., to Kerr-McGee Corporation. Coal processing system for reducing the amount of insoluble coal products in a light fraction stream. 4,070,267, Cl. 208-8.000.
Leonard, Ronald Keith; and Hoffman, John E., Jr., to Deere & Company. Snowmobile drive assembly. 4,069,882, Cl. 180-5.00R.
Lerman, Sidney. Method of administering a human ocular treating agent and product therefor. 4,070,483, Cl. 424-319.000.
Lescinsky, Frank William: *See*—
Buzzard, Clair Alan; Gifford, Richard Cyril; Lescinsky, Frank William; and Zachok, Robert Michael, 4,069,970, Cl. 235-312.000.
Leslie, James Albert: *See*—
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Le Suer, William Monroe, to Lubrizol Corporation, The. Phosphorus, nitrogen and sulfo-containing additives. 4,070,385, Cl. 260-429.00R.
Levart, Michel Marc: *See*—
Treille, Pierre Albert Eugene; Dassonville, Vincent; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc;

Gaessler, Henri Pierre; and Richard, Yves Robert, 4,070,263, Cl. 204-180.00R.
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, to Saint-Gobain Industries. Method and apparatus for fiberizing attenuable materials. 4,070,173, Cl. 65-5.000.
Lever Brothers Company: *See—*
van den Ouweland, Godefridus Antonius Maria, 4,070,381, Cl. 260-347.800.
Lewicki, Walter J., Jr.; McQuate, William M.; and Ringer, Richard M., to Armstrong Cork Company. Multilevel embossing of foamed-sheet materials-II. 4,070,435, Cl. 264-284.000.
Lewis, Gary Brett; and Moore, Stephen Donald, to Du Pont de Nemours, E. I., and Company. Improved yarn extraction process. 4,070,431, Cl. 264-180.000.
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Barrett, William J.; and Meyers, Elwood J., 4,070,609, Cl. 318-609.000.
Meyler-Warlow, Raymond de C.: *See—*
Raugulis, I. Edward; Smith, L. Clark; and Meyler-Warlow, Raymond de C., 4,069,921, Cl. 212-18.000.
Michael, Arthur E.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., 4,069,580, Cl. 30-47.000.
Microdot, Inc.: *See—*
Vaden, James L., 4,070,088, Cl. 339-252.00R.
Midland Engineering and Machine Co.: *See—*
Stuart, Donald J., 4,070,227, Cl. 156-446.000.
Miles Laboratories, Inc.: *See—*
Clemens, Anton Hubert, 4,069,814, Cl. 128-2.00F.
Saeed, Sheikh Arshad, 4,070,242, Cl. 195-66.00R.
Miles, Lyndon James; and Jones, Ivor Wynn, to Electricity Council, The. Production of beta-alumina ceramic articles and furnace therefor. 4,070,542, Cl. 13-26.000.
Miller, Harold N., to Exxon Research and Engineering Company. Sulfone copolymeric additive for hydrocarbon oils. 4,070,295, Cl. 252-48.600.
Miller, Leland D. Dynamic column support for feeder pan. 4,069,995, Cl. 248-118.100.
Miller, Leonard W.; and Bear, James B., to Miller, Leonard W. Appointment calendaring clock. 4,070,697, Cl. 360-12.000.
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., to United States of America, Navy. Quantized pulse modulated nonsynchronous clipped speech multi-channel coded communication system. 4,070,550, Cl. 179-15.0BA.
Miller, Robert B., to United States of America, Air Force. Apparatus for the acceleration of ions in the virtual cathode of an intense relativistic electron beam. 4,070,595, Cl. 313-361.000.
Millett, James A.: *See—*
Raymond, James W.; and Millett, James A., 4,069,694, Cl. 70-337.000.
Milliken Research Corporation: *See—*
Gilpatrick, Michael William; and Engels, Walter, 4,069,561, Cl. 26-9.000.
Sanders, John Randolph, 4,069,688, Cl. 66-1.00R.
Milling, Robert W. Waste heat converter for an internal combustion engine. 4,069,672, Cl. 60-618.000.
Millmaster Onyx Corporation: *See—*
Leitner, Roland L.; Nass, Gerald I.; Adams, Phillip; and Weiss, Marvin, 4,070,500, Cl. 427-54.000.
Mills, Franky D., to Hamby Company, The. Rolling ring. 4,069,875, Cl. 172-548.000.
Mills, John E.: *See—*
Kende, Andrew S.; Mills, John E.; and Tsay, Yuh-Geng, 4,070,382, Cl. 260-365.000.
Milstein Medical Research Foundation, Inc.: *See—*
Lee, Arnold S. J., 4,069,815, Cl. 128-2.05A.
Minami, Tadashi, to Yoshida Kogyo Kabushiki Kaisha. Sewing machine with means for stitching slide fastener stringers onto a relatively thick article. 4,069,780, Cl. 112-150.000.
Mineda, Hisahalu: *See—*
Ezaki, Toshi; and Mineda, Hisahalu, 4,069,721, Cl. 74-501.00R.
Minnesota Mining and Manufacturing Company: *See—*
Hsu, Grace F.; and Fong, Jaan-Jiue, 4,070,256, Cl. 204-55.00R.
Kisrow, Leverne, 4,070,582, Cl. 250-475.000.
Minobe, Masao: *See—*
Horikiri, Shozo; Iseki, Jiro; and Minobe, Masao, 4,070,446, Cl. 423-447.200.
Minolla, Horst; and Peters, Uwe, to Klippan GmbH Hamburg. Adjustable fitting for safety belt. 4,069,554, Cl. 24-196.000.
Minor, Dale R.; Rose, Byron W.; and Vivian, William R., to United States Steel Corporation. Plastic fence posts and enclosures. 4,070,007, Cl. 256-19.000.
Mitchell, Paul, to Teletype Corporation. Method and apparatus for cancelling nontonal variations in a facsimile scanner output signal. 4,070,696, Cl. 358-280.000.
Mitoff, Stephan P.: *See—*
King, Randall N.; Mitoff, Stephan P.; and Breiter, Manfred W., 4,070,527, Cl. 429-104.000.
Mitrev, Kostadin Georgiev: *See—*
Stoev, Stoycho Mitrev; Metodiev, Metodi Stoyanov; Kuzev, Lyubomir Vladimirov; Vedrichkov, Petko Georgiev; Sapunarov, Ivan Mitrev; Vassilev, Vassil Vladimirov; Dimitrov, Spas Petkov; Gasharov, Vihar Assenov; Russev, Sheko Kolev; and Mitrev, Kostadin Georgiev, 4,070,275, Cl. 209-44.000.
Mitsubishi Chemical Industries Ltd.: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tezuka, Tohru; Tonomura, Shinji; Tamao, Yoshikuni; and Hijikata, Akiko, 4,070,457, Cl. 424-177.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Shunichi, Nishizawa; Taenzi, Igarashi; and Shigeru, Fujishima, 4,070,561, Cl. 364-104.000.
Mitsubishi Kakoki Kaisha, Ltd.: *See—*
Tanaka, Yasuhisa, 4,069,969, Cl. 233-20.00A.
Mitsui Toatsu Chemicals Inc.: *See—*
Hirai, Yutaka; and Miyata, Katsuharu, 4,070,401, Cl. 260-580.000.
Mitterer, Erik, to Webasto-Werk W. Baier GmbH & Co. Drive circuit for power operation of a movable part of a vehicle coachwork. 4,070,607, Cl. 318-468.000.
Miura, Mitsuo; Sugibayashi, Yasuo; Suzuki, Akio; Kukino, Yoshinori; Aoyagi, Hayao; Tanifuji, Fuminobu; and Ishii, Jiro, to Takenaka Komuten Co., Inc. Device for solidifying sludgy material in a surface layer. 4,069,678, Cl. 61-63.000.
Miwa, Kishio; Tsunoi, Kazuo; and Noguchi, Yoshio, to Toray Industries, Inc. Adsorption-desorption pressure swing gas separation. 4,070,164, Cl. 55-26.000.
Miyake, Hajimu: *See—*
Hayashi, Masaki; Kori, Seiji; Miyake, Hajimu; and Matsumoto, Kimiichiro, 4,070,537, Cl. 560-51.000.
Miyata, Katsuharu: *See—*
Hirai, Yutaka; and Miyata, Katsuharu, 4,070,401, Cl. 260-580.000.
Miyata, Takeo: *See—*
Tomiki, Tetsuhiko; Takeda, Takeshi; Miyata, Takeo; and Muramatsu, Fumio, 4,070,301, Cl. 252-301.40R.
Miyoshi, Akira; Masuda, Masanori; and Nakayama, Tamihiro, to Unitika Ltd. Casting films of poly(meta-phenylene isophthalamide) and its copolymers. 4,070,433, Cl. 264-233.000.
Mizukami, Etsuo: *See—*
Kanatani, Yoshiharu; Ise, Masahiro; Mizukami, Etsuo; Inazaki, Kenzoh; and Suzuki, Chuji, 4,070,663, Cl. 340-324.00M.
Mizuno, Keiichiro: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; Mizuno, Keiichiro; Nomoto, Sadao; Murayama, Noriaki; and Watanabe, Kei, 4,069,768, Cl. 105-452.000.
Mo och Domsjo Aktiebolag: *See—*
Lofgren, Stig-Gunnar; and Ekeborg, Bo Gunnar, 4,069,774, Cl. 111-3.000.
Mobay Chemical Corporation: *See—*
Rawlings, Herbert L., 4,070,330, Cl. 260-37.0PC.
Mobil Oil Corporation: *See—*
Butter, Stephen A.; and Kaeding, Warren W., 4,070,411, Cl. 260-676.00R.
Guarino, John P.; and McCarty, William H., 4,070,262, Cl. 204-159.240.
Haag, Werner O.; and Olson, David H., 4,070,407, Cl. 260-671.00R.
Jones, Daniel G., 4,070,294, Cl. 252-32.500.
Olson, Robert H., 4,070,222, Cl. 156-251.000.
Model, Ernst, to Cibe-Geigy Corporation. Isoindolinone pigments and process for their manufacture. 4,070,367, Cl. 260-325.0PH.
Moeltzner, Wilhelm, to Angis - Anstalt. Apparatus for chamfering, pointing or the like of workpieces having a head or shoulder. 4,069,530, Cl. 10-9.000.
Moench, Frank Fred, Sr. Earth compacting equipment. 4,070,129, Cl. 404-127.000.
Moffitt, John Stuart, to International Business Machines Corporation. Burster method. 4,069,957, Cl. 225-5.000.
Molins, Desmond Walter; and Labbe, Francis Auguste Maurice, to Molins Limited. Manufacture of cigarettes and the like. 4,069,829, Cl. 131-84.00C.
Molins Limited: *See—*
Molins, Desmond Walter; and Labbe, Francis Auguste Maurice, 4,069,829, Cl. 131-84.00C.
Monahan, Earnest M.: *See—*
Calle, Jaime; Garvey, Robert J.; Monahan, Earnest M.; Parris, George L.; Twibell, Jerome J.; and Woods, John M., 4,070,704, Cl. 364-200.000.
Monarch Marking Systems, Inc.: *See—*
Cavender, Donald E., 4,070,220, Cl. 156-227.000.
Monsanto Company: *See—*
Birum, Gail H., 4,070,336, Cl. 260-45.80R.
Graham, Paul R., 4,069,517, Cl. 3-1.400.
Hobbs, Charles F., 4,070,530, Cl. 526-7.000.
Monsanto Limited: *See—*
Bode, Gerald; and Worrall, Roy, 4,069,632, Cl. 52-309.700.
Montanari, Marc; and Van Dest, Jean C., to Massey-Ferguson Services N.V. Crop gathering apparatus. 4,069,650, Cl. 56-221.000.
Moodysson, Bengt-Ove Moody: *See—*
Bratt, Jan Christer; Lorant, Stefan Istvan; Moodysson, Bengt-Ove Moody; and Rosenqvist, Nils Kaj Gunnar, 4,069,670, Cl. 60-517.000.
Moog Automotive, Inc.: *See—*
Graham, John P., 4,070,121, Cl. 403-27.000.
Moore, Stephen Donald: *See—*
Lewis, Gary Brett; and Moore, Stephen Donald, 4,070,431, Cl. 264-180.000.
Moran, John J.; Gellenthin, Carl O.; and Eseke, James R., to Hycel, Inc. Reagent dispensing system in an automatic chemical analyzer. 4,070,156, Cl. 23-253.00R.
Morey, Booker W., to Occidental Petroleum Corporation. Glass recovery. 4,070,273, Cl. 209-3.000.
Morgan, George W., to Sun Oil Company Limited. Method of and apparatus for disaggregating particulate matter. 4,069,783, Cl. 114-42.000.
Morgan, George W.; and Zupanick, Joseph E., to Sun Oil Company Limited. Method of and apparatus for disaggregating particulate matter. 4,070,062, Cl. 299-10.000.
Morgan, Paul Winthrop, to Du Pont de Nemours, E. I., and Company. Anisotropic sulfuric acid dopes of polyamide hydrazides. 4,070,326, Cl. 260-30.80R.
Morgan Refractories Limited: *See—*
Cooper, Charles Frank; and Greer, Robert, 4,069,633, Cl. 52-586.000.
Morgan, Robin H. Ammunition loading bench. 4,070,075, Cl. 312-250.000.
Morgott, Heribert: *See—*
Ihlenfeld, Arnold O.; and Morgott, Heribert, 4,070,109, Cl. 355-77.000.
Moriguchi, Sanseki; Abe, Hiroshi; Takenaka, Joichi; Yoshikoshi, Hideyuki; and Komatsu, Osamu, to Nippon Kokan Kabushiki Kaisha. Method of reducing NO_x present in an exhaust to harmless N_2 4,070,440, Cl. 423-239.000.
Morikawa, Masanobu; Aoyama, Toshikazu; and Yada, Miyoji, to Toray Industries, Inc. Flame retardant, non-dripping, shape-retaining polyester molding composition. 4,070,332, Cl. 260-40.00R.
Morimoto, Hiroshi: *See—*
Nakao, Yoshio; Kitano, Kazuaki; Imada, Isuke; and Morimoto, Hiroshi, 4,070,244, Cl. 195-81.000.
Morishama, Hajime: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Takamatsu, Akira; Inui, Taiji; Tone, Hiroshi; and Morishama, Hajime, 4,070,458, Cl. 424-177.000.
Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, to Yamamura Glass Kabushiki Kaisha; and Junzo Shimoiizaka. Method and apparatus for breaking up and separating waste glass to obtain cullet. 4,069,979, Cl. 241-5.000.
Morley Furniture Spring Corporation: *See—*
Crosby, Lawton H.; and Keane, Thomas H., 4,070,124, Cl. 403-208.000.
Moroni, Rolf; and Kalbow, Heinz, to COLLO GmbH. Pourable solid filter material, particularly for the removal of unpleasant odors from the air, and a process for its manufacture. 4,070,300, Cl. 252-190.000.
Moroz, Jury Antonovich: *See—*
Bocharov, Jury Alexandrovich; Safonov, Anatoly Vasilievich; Grigorenko, Anatoly Sergeevich; Moroz, Jury Antonovich; Kuznetsov, German Nikolaevich; and Zimin, Anatoly Ivanovich, deceased, 4,069,700, Cl. 72-407.000.
Morozumi, Hiroshi; and Kanemaru, Hiroyasu, to Hitachi, Ltd. Driving circuit for brushless DC motor. 4,070,606, Cl. 318-254.000.
Morrison, James J.; and Baringer, Berlyn E., to Kasel Steel Corporation. Automatic counterbalance control circuit. 4,069,697, Cl. 72-19.000.
Morrow, James A., to Rockwell International Corporation. Navigation reference system. 4,070,671, Cl. 343-6.5LC.
Morrow, James G., Sr.; Pech, David J.; and Kutz, Norman J., to Manitowoc Company, Inc., The. Self-propelled drive mechanism. 4,069,884, Cl. 180-9.20R.
Morton, Douglas Ross, Jr., to Upjohn Company, The. 3,7-Inter-m-phenylene-4,5,6-trinor-9B-PGD, compounds. 4,070,538, Cl. 560-53.000.
Morton-Norwich Products, Inc.: *See—*
Pelosi, Stanford S.; White, Ronald E.; Wright, George C.; and Yu, Chia Nien, 4,070,380, Cl. 260-347.700.
Moskowitz, Jacob F.; and Hammond, Ogden H., III, to Massachusetts Institute of Technology. Electric guitar. 4,069,732, Cl. 84-1.160.
Motani, Kensuke; Matuura, Shunji; and Kataoka, Ryohei, to Electrode Corporation. Electrolytic process using novel diaphragm. 4,070,257, Cl. 204-98.000.
Motorola Inc.: *See—*
Coleman, Michael G.; and Restrepo, Fabio, 4,070,689, Cl. 357-30.000.
Daniel, Sam M.; and Carlson, Eric Jerome, 4,070,675, Cl. 343-100.0LE.
Gay, Michael John, 4,070,633, Cl. 330-254.000.
Hepworth, Edward Clare; and Means, Rodney Jerome, 4,070,630, Cl. 328-63.000.
Ingle, William Martell, 4,070,444, Cl. 423-349.000.
Nash, Harold Garth; and Whitmore, Jack, 4,070,631, Cl. 328-165.000.
Mott, George E., to Texaco Inc. Offshore structure for deltaic substrates. 4,069,681, Cl. 61-89.000.
MRAD Corporation: *See—*
Marshall, Philip; Laber, Albert Paul; and Cauteruccio, Ugo, 4,069,706, Cl. 73-666.000.
Muehling, Anthony A. Infinite position seat back recliner. 4,070,058, Cl. 297-374.000.
Muir, David Michael: *See—*
Parker, Alan James; and Muir, David Michael, 4,070,183, Cl. 75-117.000.
Muka, Richard Stephen, to Eastman Kodak Company. Sheet feeding apparatus. 4,070,015, Cl. 271-100.000.
Mukai, Junji: *See—*
Narahara, Toshikazu; Sugawara, Katuo; Karasawa, Yoshiharu; Yokono, Hitoshi; Mukai, Junji; and Muroi, Tadashi, 4,070,416, Cl. 260-830.00P.
Mulder, Rudolf: *See—*
van Daalen, Jan Johannes; and Mulder, Rudolf, 4,070,365, Cl. 548-379.000.
Muller, Gerhard. Cableway system and particularly support system therefor. 4,069,765, Cl. 104-123.000.
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., to Excel Industries, Inc. Grass and leaf collector and compactor attachment for mowers. 4,069,649, Cl. 56-202.000.
Multicore Solders Limited: *See—*
Arbib, Gordon Francis; and Allen, Bernard Michael, 4,070,192, Cl. 106-1.050.
Multivac Sepp Haggenmueller KG: *See—*
Vetter, Arthur, 4,069,645, Cl. 53-112.00A.
Murakami, Tetsushi: *See—*
Isaka, Tsutomu; Nagano, Hiroshi; Murakami, Tetsushi; Matsunami, Koichi; and Yamane, Yukio, 4,070,417, Cl. 260-860.000.
Muramatsu, Fumio: *See—*
Tomiki, Tetsuhiko; Takeda, Takeshi; Miyata, Takeo; and Muramatsu, Fumio, 4,070,301, Cl. 252-301.40R.
Muramatsu, Masahiro; Taniguchi, Katsutoshi; and Murase, Katsuhiko, to Teijin Limited. Method and device for forming a bunch winding

on a fresh bobbin at the time of a doffing and donning operation. 4,069,983, Cl. 242-18.0PW.
Murase, Katsuhiko: *See—*
Muramatsu, Masahiro; Taniguchi, Katsutoshi; and Murase, Katsuhiko, 4,069,983, Cl. 242-18.0PW.
Murayama, Noriaki: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; Mizuno, Keiichiro; Nomoto, Sadao; Murayama, Noriaki; and Watanabe, Kei, 4,069,768, Cl. 105-452.000.
Muroi, Tadashi: *See—*
Narahara, Toshikazu; Sugawara, Katuo; Karasawa, Yoshiharu; Yokoso, Hitoshi; Mukai, Junji; and Muroi, Tadashi, 4,070,416, Cl. 260-830.00P.
Muschelknautz, Edgar; Burkholz, Armin; and Richter, Wolfgang, to Bayer Aktiengesellschaft. Method and apparatus for measuring the grain-size of fine powders. 4,069,711, Cl. 73-61.400.
Musgrove, Ronald R. Vacuum safety valve. 4,070,001, Cl. 251-46.000.
Musha, Takanori: *See—*
Sato, Ryoji; and Musha, Takanori, 4,070,254, Cl. 203-83.000.
Mushet, William D.: *See—*
Willet, George L.; and Mushet, William D., 4,069,964, Cl. 229-62.500.
Myers, George D.; Walters, Paul W.; and Cottage, Robert L., to Ashland Oil, Inc. Apparatus for separating solid dispersoids from gaseous streams. 4,070,159, Cl. 23-288.00E.
N.A.D., Inc.: *See—*
Schreiber, Peter J., 4,069,818, Cl. 128-145.600.
Nadeau, Jacques A., to Merck & Co., Inc. Diagnostic kit. 4,070,493, Cl. 424-1.000.
Naden, Rex Alan, to Texas Instruments Incorporated. Magnetic domain minor loop redundancy system. 4,070,651, Cl. 365-15.000.
Nagai, Susumu; Kanamori, Nobutaka; Sawayanagi, Yasuo; and Nakagawa, Takashi, to Sato Technical Research Laboratory Ltd. Direct pouring method using self-fluxing heat-resistant sheets. 4,069,859, Cl. 164-56.000.
Nagano, Hiroshi: *See—*
Isaka, Tsutomu; Nagano, Hiroshi; Murakami, Tetsushi; Matsunami, Koichi; and Yamane, Yukio, 4,070,417, Cl. 260-860.000.
Nagata, Katsuyuki: *See—*
Hasegawa, Mutsuo; Aikawa, Kazuo; and Nagata, Katsuyuki, 4,070,255, Cl. 204-42.000.
Nagato, Tokuichi: *See—*
Sakamoto, Minoru; and Nagato, Tokuichi, 4,069,568, Cl. 29-78.000.
Nahr, Helmar. Body assembled from at least two component bodies. 4,069,631, Cl. 52-309.500.
Naimoli, John A. Crispy-mix bowl. 4,069,940, Cl. 220-20.000.
Najmann, Knut: *See—*
Heuber, Klaus; Klein, Wilfried; Najmann, Knut; and Wiedmann, Siegfried Kurt, 4,070,656, Cl. 365-203.000.
Nakagawa, Kazuyukip; Uchida, Minoru; and Oka, Kimiaki, to Otsuka Pharmaceutical Co., Ltd. Platelet aggregation inhibiting carbostyrils, their compositions and method of use. 4,070,470, Cl. 424-258.000.
Nakagawa, Takashi: *See—*
Nagai, Susumu; Kanamori, Nobutaka; Sawayanagi, Yasuo; and Nakagawa, Takashi, 4,069,859, Cl. 164-56.000.
Nakamura, Hiroyuki, to Fuji Jukogyo Kabushiki Kaisha. Internal combustion gasoline engine. 4,069,666, Cl. 60-278.000.
Nakamura, Takashi; and Watanabe, Shigeru, to Fuji Photo Film Co., Ltd. One bath type silver dye bleaching and silver bleaching. 4,070,188, Cl. 96-53.000.
Nakamura, Yasuo: *See—*
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Uda, Taizo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,070,390, Cl. 260-465.300.
Nakano, Takashi: *See—*
Ichikawa, Jyunji; Kiyohara, Takehiko; Koumura, Noboru; Kadokura, Koichi; and Nakano, Takashi, 4,070,681, Cl. 346-160.000.
Nakao, Yoshio; Kitano, Kazuaki; Imada, Isuke; and Morimoto, Hiroshi, to Takeda Chemical Industries, Ltd. Method for producing ubiquinone-10. 4,070,244, Cl. 195-81.000.
Nakayama, Shozo; Kurahashi, Masayuki; and Kato, Kimio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for lubricating a swash plate compressor. 4,070,136, Cl. 417-269.000.
Nakayama, Tamihiro: *See—*
Miyoshi, Akira; Masuda, Masanori; and Nakayama, Tamihiro, 4,070,433, Cl. 264-233.000.
Nalco Chemical Company: *See—*
Goretta, Louis A.; and Sibert, Frederick J., 4,070,321, Cl. 260-29.60H.
Narahara, Toshikazu; Sugawara, Katuo; Karasawa, Yoshiharu; Yokono, Hitoshi; Mukai, Junji; and Muroi, Tadashi, to Hitachi, Ltd. Novel thermosetting resin and a process for producing same. 4,070,416, Cl. 260-830.00P.
Narveson, Parm L., to Sperry Rand Corporation. Digital raster display generator for moving displays. 4,070,662, Cl. 340-324.0AD.
Nash, Harold Garth; and Whitmore, Jack, to Motorola Inc. Digital noise blanking circuit. 4,070,631, Cl. 328-165.000.
Nash, Robert Arnold: *See—*
Kazan, John; and Nash, Robert Arnold, 4,070,456, Cl. 424-173.000.
Nass, Gerald I.: *See—*
Leitner, Roland L.; Nass, Gerald I.; Adams, Phillip; and Weiss, Marvin, 4,070,500, Cl. 427-54.000.
Nathanson, Harvey C.: *See—*
Heng, Terrance M. S.; Nathanson, Harvey C.; Schroder, Dieter K.; and Malmberg, Paul R., 4,070,652, Cl. 365-157.000.
National Gypsum Company: *See—*
Dawdy, Jack A., 4,069,640, Cl. 52-746.000.
National Research Development Corporation: *See—*
Green, David Trevor, 4,070,643, Cl. 340-5.00H.
Navidyne Corporation: *See—*
Barker, A. Clifford; and Zavada, Edmund S., 4,070,634, Cl. 331-2.000.
NCR Corporation: *See—*
Mergenthaler, Barry M.; and Dickover, Wesley D., 4,070,648, Cl. 340-146.1BE.
Nebelung, Hermann; and Christopher, Edward Charles, to Emhart Industries, Inc. Glassware forming machine of the I.S. type with in-line mold motion. 4,070,174, Cl. 65-229.000.
Neer, Robert Gordon: *See—*
Forry, James Edward; and Neer, Robert Gordon, 4,069,747, Cl. 92-166.000.
Negi, Virendra S., to Honeywell Information Systems Inc. Control store organization in a microprogrammed data processing system. 4,070,703, Cl. 364-200.000.
Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Inc. Process and apparatus for producing textured multifilament yarn. 4,069,565, Cl. 28-274.000.
Neisius, Karl Heinz; and Baumer, Wilhelm, to Merck Patent Gesellschaft mit beschrankter Haftung. Method for stripping photolacquers. 4,070,203, Cl. 134-3.000.
Nelson, Fred E., to General Electric Company. Fast torque dyna-mate attachment means. 4,070,085, Cl. 339-196.00R.
Nelson, Richard P.; and Roth, William H., to General Motors Corporation. Wheel cylinder piston having a flared boss end and a method of flaring a boss end. 4,069,571, Cl. 29-156.50R.
Nemit, Jeffrey T.; and Sanders, Bobby J., to International Telephone and Telegraph Corporation. Microwave 180° phase-bit device with integral loop transition. 4,070,639, Cl. 333-31.00A.
Neptune Eastech, Inc.: *See—*
Fussell, Theodore John, Jr., 4,069,708, Cl. 73-194.0VS.
Nethersole, Douglas C.; Dudley, Michael A.; and Parthasarathy, Mellapalayam R., to Canada Wire And Cable Limited. Electrostatic fluidized bed coating unit. 4,069,792, Cl. 118-629.000.
Newing, Charles Wesley, to Owens-Illinois, Inc. Polyethylene terephthalate bottle for carbonated beverages having reduced bubble nucleation. 4,069,933, Cl. 215-1.00C.
Newton, Milton Dwayne; and Willette, Leo Gaston. Dart-point sharpener and straightening device. 4,069,528, Cl. 7-1.00R.
Nezu, Yukio: *See—*
Hayashi, Eiichi; Takita, Kiyoshi; Sugiyama, Hironari; and Nezu, Yukio, 4,070,377, Cl. 260-343.700.
Ng, Chun Wing. Resilient vehicle bumper. 4,070,052, Cl. 293-71.00R.
Nicklaus, Karl; and Tresky, Miroslav, to Esec Sales S.A. Contacting head for forming a wire connection on an integrated circuit. 4,069,961, Cl. 228-1.00R.
Nidola, Antonio: *See—*
Bianchi, Giuseppe; de Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 4,070,504, Cl. 427-126.000.
Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.): *See—*
Saito, Fumio, 4,070,106, Cl. 352-27.000.
Nihon Nodalon Co., Ltd.: *See—*
Noda, Jiseki, 4,070,434, Cl. 264-255.000.
Nippon Columbia Kabushikikaisha: *See—*
Kamo, Yoshihisa, 4,070,552, Cl. 179-100.4ST.
Nippon Electric Kagoshima, Limited: *See—*
Uchikoba, Tsukasa; Yuda, Saneo; Hirano, Kiyoshige; Yawata, Kazufumi; and Kobayakawa, Masaki, 4,070,599, Cl. 313-497.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Fujise, Masatomo; and Isobe, Koji, 4,070,395, Cl. 260-510.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Moriguchi, Sanseki; Abe, Hiroshi; Takenaka, Joichi; Yoshikoshi, Hideyuki; and Komatsu, Osamu, 4,070,440, Cl. 423-239.000.
Nippon Oil Co., Ltd.: *See—*
Masunaga, Midori; Kohno, Yoshiki; and Ohmori, Tadashi, 4,070,297, Cl. 252-63.000.
Nippon Soken, Inc.: *See—*
Kuno, Akira; and Sakakibara, Yasuyuki, 4,070,562, Cl. 364-426.000.
Nippon Steel Corporation: *See—*
Hayami, Satohiro; Matsuo, Munetsugu; Izumi, Soichi; and Terakado, Ryoji, 4,070,208, Cl. 148-12.0EA.
Nippon Telegraph and Telephone Public Corporation: *See—*
Ieda, Nobuaki; and Yano, Takao, 4,070,590, Cl. 307-355.000.
Nippon Zeon Co., Ltd.: *See—*
Sato, Ryoji; and Musha, Takanori, 4,070,254, Cl. 203-83.000.
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, to Ishihara Sangyo Kaisha Ltd. Herbicidal phenoxy-phenoxy alkane carboxylic acid derivatives. 4,070,177, Cl. 71-105.000.
Nishizawa, Masahiro; and Ueyama, Takehiko, to Hitachi, Ltd. Method of manufacturing fluorescent screen of color picture tube. 4,070,498, Cl. 427-53.000.
Nissan Motor Co., Ltd.: *See—*
Katoh, Sadao; and Kouno, Tsuneo, 4,070,067, Cl. 303-6.00C.
Koike, Syouichi, 4,069,617, Cl. 49-428.000.
Nitzki, Leopold, to Aktien-Gesellschaft "Weser". Method and apparatus for conducting water through ships. 4,069,788, Cl. 115-76.000.
Noda, Jiseki, to Nihon Nodalon Co., Ltd. Method of manufacturing hollow plastic ball. 4,070,434, Cl. 264-255.000.
Noguchi, Mitsuru: *See—*
Ogano, Takeo; and Noguchi, Mitsuru, 4,069,804, Cl. 123-198.00E.

Noguchi, Yoshio: *See—*
Miwa, Kishio; Tsunoi, Kazuo; and Noguchi, Yoshio, 4,070,164, Cl. 55-26.000.
Nohira, Hidetaka; and Tanaka, Masaaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for recirculating exhaust gases. 4,069,797, Cl. 123-119.00A.
Nollet, Anthony R., to Cargill, Incorporated. Method and apparatus for separating solid materials. 4,070,202, Cl. 106-309.000.
Nomoto, Sadao: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; Mizuno, Keiichiro; Nomoto, Sadao; Murayama, Noriaki; and Watanabe, Kei, 4,069,768, Cl. 105-452.000.
Norman, Stephen: *See—*
Elliott, John Scotchford; Davis, Bryan Terence; and Norman, Stephen, 4,070,370, Cl. 260-326.250.
Northern Electric Company Limited: *See—*
Bryden, Brian Richard, 4,070,588, Cl. 307-237.000.
Northern Telecom Limited: *See—*
Ostapovitch, Harold Joseph, 4,070,557, Cl. 200-51.100.
Taylor, John Charles Wood; and Kapron, Felix Paul, 4,070,091, Cl. 350-96.0WG.
Norton Company: *See—*
Coes, Samuel H., 4,070,197, Cl. 106-44.000.
Norton, Richard V.: *See—*
Angstadt, Howard P.; Tinkler, Jack D.; Norton, Richard V.; and Bushick, Ronald D., 4,070,393, Cl. 260-465.00C.
Nosalevich, Ivan Mikhailovich: *See—*
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Notz, Karl J.; Rainey, Robert H.; Greene, Charles W.; and Shockley, William E., to United States of America, Energy. Method for loading resin beds. 4,070,438, Cl. 423-7.000.
Novoryta, Robert John; and Dawson, Frederick Wilbur, to Martin Marietta Corporation. Gas filled swivel joint for cryogenic heat pipes. 4,069,864, Cl. 165-86.000.
Nowak, Herbert: *See—*
Schacht, Erich; Jonas, Rochus; Mehrhof, Werner; Nowak, Herbert; Simane, Zdenek; and Lissner, Reinhard, 4,070,461, Cl. 424-232.000.
Noyes, Richard S., to Laser Systems & Electronics, Inc. Disposable carrier for cardiac telemonitor transmitter. 4,069,955, Cl. 224-5.00H.
Nugraphics, Inc.: *See—*
Sukonick, Josef S.; and Tilden, Greg J., 4,070,710, Cl. 364-900.000.
Numata, Saburo; and Fujino, Shinichiro, to Fuji Photo Optical Co., Ltd. Exposure time control circuit. 4,070,682, Cl. 354-51.000.
Nuova San Giorgio S.p.A.: *See—*
Roehrich, Christian, 4,069,654, Cl. 57-56.000.
Nutter, John S.: *See—*
Reynolds, Ronald W.; Tice, John D.; and Nutter, John S., 4,070,269, Cl. 208-25.000.
Nutting, William B.: *See—*
Lemelson, Jerome H.; and Nutting, William B., 4,069,613, Cl. 46-120.000.
N.V. Industrieele Handelscombinatie Holland: *See—*
Bordes, Cornelis, 4,069,785, Cl. 114-47.000.
N.V. Klippan S.A.: *See—*
Weman, Per Olof, 4,069,559, Cl. 24-230.00A.
Oakes, Malcolm Campbell, to Taymar Limited. Adaptors. 4,069,947, Cl. 222-5.000.
Obayashi, Shigeji; Ueda, Kanji; Iwatsubo, Haruhiko; and Okabe, Thoru, to Seitetsu Kagaku Co., Ltd. Process for regenerating catalyst. 4,070,305, Cl. 252-411.00S.
Obolensky, Vsevolod, to Union Miniere. Method and apparatus for collecting mineral aggregates from sea beds. 4,070,061, Cl. 299-8.000.
Occidental Petroleum Corporation: *See—*
Choi, Charles K., 4,070,250, Cl. 201-12.000.
Morey, Booker W., 4,070,273, Cl. 209-3.000.
O'Connell, Paul B.: *See—*
Hansel, William B.; and O'Connell, Paul B., 4,069,838, Cl. 137-392.000.
Oertel, Harald: *See—*
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Ogano, Takeo; and Noguchi, Mitsuru, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for attaching a fuel tank in an internal combustion engine. 4,069,804, Cl. 123-198.00E.
Ogasa, Kazuo; and Ogawa, Seiya, to Fujitsu Limited. Magnetic recording medium. 4,070,522, Cl. 428-336.000.
Ogawa, Seiya: *See—*
Ogasa, Kazuo; and Ogawa, Seiya, 4,070,522, Cl. 428-336.000.
O'Grady, James Kenneth, to Black and Decker Manufacturing Company, The. Arrangement for cutting contours in a workpiece. 4,069,849, Cl. 144-134.00D.
Ohashi, Hiroshi; and Kimura, Takashi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Digital signal transmission system and equipment. 4,070,650, Cl. 340-172.000.
Ohashi, Hiroyuki: *See—*
Tagashira, Yoshiaki; Takagi, Hitoshi; Inagaki, Katsumi; Ishii, Kanji; and Ohashi, Hiroyuki, 4,070,281, Cl. 210-26.000.
Ohdan, Kyoji: *See—*
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Uda, Taizo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,070,390, Cl. 260-465.300.
Ohki, Seibi: *See—*
Kanda, Fumio; Kaibara, Nobuhiro; Ohki, Seibi; Okamoto, Kazuo; and Suzuki, Akira, 4,069,800, Cl. 123-139.00A.
Ohkubo, Kazuo: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tezuka, Tohru; Tonomura, Shinji; Tamao, Yoshikuni; and Hijikata, Akiko, 4,070,457, Cl. 424-177.000.
Ohkubo, Kimio; and Fujioka, Mikio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Solvent for dye used in pressure-sensitive copying paper. 4,070,303, Cl. 252-364.000.
Ohmori, Tadashi: *See—*
Masunaga, Midori; Kohno, Yoshiki; and Ohmori, Tadashi, 4,070,297, Cl. 252-63.000.
Oka, Kimiaki: *See—*
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Okabe, Thoru: *See—*
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Okamoto, Kazuo: *See—*
Kanda, Fumio; Kaibara, Nobuhiro; Ohki, Seibi; Okamoto, Kazuo; and Suzuki, Akira, 4,069,800, Cl. 123-139.00A.
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tezuka, Tohru; Tonomura, Shinji; Tamao, Yoshikuni; and Hijikata, Akiko, to Mitsubishi Chemical Industries Ltd.; and Okamoto, Shosuke. N^2-naphthalenesulfonyl-L-argininamides and the pharmaceutically acceptable salts thereof. 4,070,457, Cl. 424-177.000.
Oki Electric Industry Co., Ltd.: *See—*
Isobe, Minoru; and Kuriyama, Akiumi, 4,069,907, Cl. 197-53.000.
Oldaeus, Bengt: *See—*
Ahlbert, Enar; Andersson, Karl-Hugo; Karlsson, Ingemar; and Oldaeus, Bengt, 4,069,595, Cl. 34-156.000.
Oldberg, Oscar, to United States of America, Army. Dispersion exhauster for engines and combustion heaters. 4,069,668, Cl. 60-317.000.
Olin Corporation: *See—*
Danna, Peter A.; and Burt, Richard D., 4,070,266, Cl. 204-266.000.
Scardera, Michael; and Scott, Robert N., 4,070,298, Cl. 252-89.00R.
Ollinger, James C., to Armstrong Cork Company. Suspended ceiling runner. 4,070,125, Cl. 403-230.000.
Olschewski, Armin: *See—*
Garrett, Roy Peter; Parkins, Derek Ray; Brandenstein, Manfred; and Olschewski, Armin, 4,069,904, Cl. 192-85.0CA.
Olsen, John H.; and Saurwein, Albert C., to Flow Research, Inc. Expansible drive shaft tool mechanism. 4,069,749, Cl. 93-58.100.
Olson, David H.: *See—*
Haag, Werner O.; and Olson, David H., 4,070,407, Cl. 260-671.00R.
Olson, Robert H., to Mobil Oil Corporation. Pretreatment of thermoplastic film for improved sealing. 4,070,222, Cl. 156-251.000.
Olson, Wallace I.; Gaunt, Robert H.; and Lynch, Jerome G., to UOP Inc. Method and apparatus for conditioning flue gas with a mist of H_2SO_4. 4,070,424, Cl. 261-142.000.
Olsson, Knut Gunnar: *See—*
Hernestam, Sven Eric Harry; Kjellberg, Bengt Eric Sigvard; and Olsson, Knut Gunnar, 4,070,473, Cl. 424-267.000.
Olympus Optical Company Limited: *See—*
Sakamoto, Masaharu; and Aoki, Masahiro, 4,070,694, Cl. 358-133.000.
O'Neill, Mark J., to E-Systems, Inc. Solar concentrator and energy collection system. 4,069,812, Cl. 126-271.000.
Ong, Kwok Y.: *See—*
Baldauf, Frederick C.; and Ong, Kwok Y., 4,069,701, Cl. 73-1.00G.
Ono Pharmaceutical Company: *See—*
Hayashi, Masaki; Kori, Seiji; Miyake, Hajimu; and Matsumoto, Kimiichiro, 4,070,537, Cl. 560-51.000.
Ono, Tetsuhiro; Aramaki, Minoru; and Ushirogouthi, Etuo, to Central Glass Company, Limited. Process for preparing anhydrous aluminum fluoride. 4,070,447, Cl. 423-489.000.
Optical Coating Laboratory, Inc.: *See—*
Gelber, Robert M., 4,070,097, Cl. 350-165.000.
Oreluk, Jerome Allan. Self contained universal front end protector. 4,070,645, Cl. 340-52.00H.
Ortho Pharmaceutical Corporation: *See—*
Karmas, George, 4,070,541, Cl. 560-140.000.
Osaka, Yonosuke; and Tohzuka, Takashi, to Daikin Kogyo Co., Ltd. Process for the recovery of antimony pentachloride from a spent antimony catalyst mixture. 4,070,439, Cl. 423-88.000.
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, to Sumitomo Chemical Company, Limited. Method for controlling the growth of plants. 4,070,176, Cl. 71-103.000.
Osmond, Desmond Wilfred John: *See—*
Downing, Stephen Barry; Osmond, Desmond Wilfred John; Skinner, Maurice Wainwright; West, Edmund James; and Dawson, David George, 4,070,199, Cl. 106-93.000.
Ostapovitch, Harold Joseph, to Northern Telecom Limited. Apparatus for providing closed loop conditions in vacant module positions. 4,070,557, Cl. 200-51.100.
Ostbergs Fabriks AB: *See—*
Forslund, Erik Torsten, 4,069,846, Cl. 144-2.00N.
Ota, Yoshihiro, to Shibazaki Seisakisho Ltd. Cap for a beverage container. 4,069,936, Cl. 215-256.000.
Otis Engineering Corporation: *See—*
Gazda, Imre I.; and Carroll, Albert W., 4,069,865, Cl. 166-113.000.
Otsuka Pharmaceutical Co., Ltd.: *See—*
Nakagawa, Kazuyukip; Uchida, Minoru; and Oka, Kimiaki, 4,070,470, Cl. 424-258.000.

Ott, John Wright, to Hercules Incorporated. Automatic platemaking process and apparatus. 4,070,110, Cl. 355-100.000.
Otten, David: *See—*
Baker, Richard H., 4,070,549, Cl. 179-2.00A.
Otto, Jack M., to PPG Industries, Inc. Method of removing dissolved organo-lead compounds from water. 4,070,282, Cl. 210-27.000.
Otto, Willard G.: *See—*
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Otuka, Shinpei: *See—*
Yamamura, Yukio; Kawaguchi, Shojiro; Terashima, Otohiko; Ichinomiya, Tutomu; and Otuka, Shinpei, 4,069,816, Cl. 128-41.000.
Overell, Brian George: *See—*
Green, Geoffrey; Overell, Brian George; and Hart, Anthony Phillip, 4,070,455, Cl. 424-91.000.
Owens-Corning Fiberglas Corporation: *See—*
Cottrell, Walter D., Jr., 4,070,331, Cl. 260-38.000.
Gelin, Robert J., 4,070,215, Cl. 156-51.000.
Klink, Jerome P.; and Eisenberg, Arnold J., 4,069,984, Cl. 242-18.00G.
Owens-Illinois, Inc.: *See—*
Karabedian, James A., 4,069,934, Cl. 215-12.00R.
Krall, Thomas J.; and Uhlig, Albert R., 4,070,428, Cl. 264-89.000.
Newing, Charles Wesley, 4,069,933, Cl. 215-1.00C.
Rhoads, Roger R., 4,070,513, Cl. 428-36.000.
Smalley, Ned J., 4,069,937, Cl. 215-344.000.
Uhlig, Albert R., 4,070,429, Cl. 264-89.000.
Page, John S., Jr. Deep well safety valve. 4,069,871, Cl. 166-321.000.
Pahnke, Otto, to August Storck KG. Shipping and counter display package for candy bars. 4,070,489, Cl. 426-115.000.
Palmaer, Tore Georg. Locating device for ear-muffs on helmets. 4,069,512, Cl. 2-209.000.
Palmero, Albert: *See—*
Snowdon, Arthur E.; and Palmero, Albert, 4,070,592, Cl. 310-49.00R.
Palmieri, John Angelo; and Palmieri, Joseph Michael. Beltless slacks. 4,069,514, Cl. 2-235.000.
Palmieri, Joseph Michael: *See—*
Palmieri, John Angelo; and Palmieri, Joseph Michael, 4,069,514, Cl. 2-235.000.
Palte, Kenneth F.; and Kurtz, Joseph M., to GTE Sylvania Incorporated. Returnable shipping container. 4,069,938, Cl. 217-13.000.
Panarelli, Albert J. Roller skate. 4,070,029, Cl. 280-11.190.
Papa, Anthony Joseph, to Union Carbide Corporation. Non punking phenolic foam. 4,070,313, Cl. 260-2.50F.
Papantoniou, Christos; and Grognet, Jean-Claude, to L'Oreal. Terpolymer of (a) crotonic acid (b) vinyl acetate and (c) allyl or methallyl esters. 4,070,533, Cl. 526-16.000.
Papp, Alfred: *See—*
Feldtkeller, Ernst; Harms, Hauke; and Papp, Alfred, 4,070,620, Cl. 324-96.000.
Park, Andrew Howard Donaldson; and Pidgeon, Brian George, to Coal Industry (Patents) Ltd. Measurement of flow of particulate material by sensing the shadow profile. 4,070,575, Cl. 250-223.00R.
Parker, Alan James; and Muir, David Michael, to Anumin Pty. Ltd. Methods of separating and recovering copper from materials containing copper. 4,070,183, Cl. 75-117.000.
Parker, Donald L.: *See—*
Gephart, Robert L.; and Parker, Donald L., 4,069,742, Cl. 91-369.00A.
Parker, Franklin G.: *See—*
Bascom, Laurence N.; Parker, Franklin G.; and Rogers, James W., 4,069,657, Cl. 57-160.000.
Parkins, Derek Ray: *See—*
Garrett, Roy Peter; Parkins, Derek Ray; Brandenstein, Manfred; and Olschewski, Armin, 4,069,904, Cl. 192-85.0CA.
Parks, Harold G.: *See—*
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Parks, John D., to United States of America, Army. Video digitizing system for single valued functions. 4,070,692, Cl. 358-107.000.
Parkyn, Derek John, to U.S. Philips Corporation. Starter motor lockout system. 4,070,585, Cl. 290-37.00A.
Parmelee, G. Kendall: *See—*
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Parris, George L.: *See—*
Calle, Jaime; Garvey, Robert J.; Monahan, Earnest M.; Parris, George L.; Twibell, Jerome J.; and Woods, John M., 4,070,704, Cl. 364-200.000.
Parthasarathy, Mellapalayam R.: *See—*
Nethersole, Douglas C.; Dudley, Michael A.; and Parthasarathy, Mellapalayam R., 4,069,792, Cl. 118-629.000.
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Malen, Charles; Roger, Pierre; Poignant, Jean-Claude; and Pascaud, Xavier, 4,070,485, Cl. 424-324.000.
Pasco, William R.: *See—*
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ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., 4,070,359, Cl. 260-293.550.
ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., 4,070,360, Cl. 260-293.550.
Patel, Jaykishan C.: *See—*
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Corbin, Vivian Ruth; Hitchner, James Edward; Patnaik, Bisweswar; and Ting, Chung-Yu, 4,070,501, Cl. 427-88.000.
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Pavlovic, Gary Frank: *See—*
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Payerle, Frank S., to Incom International Inc. Detent positioning device. 4,069,723, Cl. 74-528.000.
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Kreimer, Charles Clement, 4,069,628, Cl. 52-94.000.
Pech, David J.: *See—*
Morrow, James G., Sr.; Pech, David J.; and Kutz, Norman J., 4,069,884, Cl. 180-9.20R.
Pegg, Owen Christopher. Building structure. 4,069,627, Cl. 52-92.000.
Peleckis, Anthony J.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., 4,069,580, Cl. 30-47.000.
Pelosi, Stanford S.; White, Ronald E.; Wright, George C.; and Yu, Chia Nien, to Morton-Norwich Products, Inc. 5-(4-Amidinophenyl)-2-furamidine dihydrochloride monohydrate. 4,070,380, Cl. 260-347.700.
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Penguin Marketing Ltd.: *See—*
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Pennell, William E.; Kalinowski, Joseph E.; Waldby, Robert N.; Rylatt, John A.; and Swenson, Daniel V., to United States of America, Energy. Nuclear reactor removable radial shielding assembly having a self-bowing feature. 4,070,241, Cl. 176-87.000.
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Pentz, Lipot, to Ciba-Geigy Corporation. Textile treating compositions for increasing water and oil repellency of textiles. 4,070,152, Cl. 8-115.600.
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Pessel, Leopold, to American Electronic Laboratories, Inc. Method of removing sulfur dioxide from flue gases. 4,070,441, Cl. 423-242.000.
Peter, Dietmar, to Porsche AG. Bumper for motor vehicle. 4,070,051, Cl. 293-69.00R.
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Petrillo, Edward William, Jr., to E. R. Squibb & Sons, Inc. Mercaptoalkylsulfonyl proline and pipecolic acid and esters thereof. 4,070,361, Cl. 260-293.850.
Petroff, Peter D. Infiltration-inflow sewer line analyzer. 4,070,563, Cl. 364-510.000.
Petroshanoff, George, to Tridair Industries. Captive panel fastener. 4,069,855, Cl. 151-69.000.
Pettitt, David J.: *See—*
Empey, Richard A.; and Pettitt, David J., 4,070,535, Cl. 536-114.000.
Pfeifer, Josef; Hofmann, Wilfried; and Liermann, Traugotte, to AGFA-Gevaert AG. Cartridge for strip-shaped record carriers. 4,069,989, Cl. 242-195.000.
Philip Morris Incorporated: *See—*
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Campbell, Robert W., 4,070,349, Cl. 260-79.30M.
Carrow, Guy E., 4,070,044, Cl. 285-156.000.
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Reusser, Robert E., 4,070,299, Cl. 252-171.000.
Smith, Dexter E.; Buss, Russel A.; and Stewart, William S., 4,070,172, Cl. 62-21.000.
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Karll, Robert E.; Piasek, Edmund J., deceased; and Hunt, Evelyn W., administratrix, 4,070,402, Cl. 260-619.00D.
Piazza, Matthew R., to Maso-Therm Corporation. Anchored composite building module. 4,069,629, Cl. 52-125.000.
Piber, Earl T., to Cutler-Hammer, Inc. Snap-in means for mounting electrical devices or the like in a support panel aperture. 4,070,559, Cl. 200-296.000.
Pickard, James Bruce: *See—*
Jasinski, Joseph Richard; Pickard, James Bruce; and Doner, Claude Edward, 4,070,627, Cl. 325-127.000.
Pidgeon, Brian George: *See—*
Park, Andrew Howard Donaldson; and Pidgeon, Brian George, 4,070,575, Cl. 250-223.00R.
Pierce, Roger C. Apparatus for diffusion in bodies of liquid. 4,070,423, Cl. 261-77.000.
Pierce, William C.; Berry, Samuel M.; and Johnson, Arthur D., to Pitts Industries, Inc. Method of making clutch pulley assembly. 4,069,572, Cl. 29-159.00R.
Pignata, Frank John, Jr.: *See—*
Blumenau, Leif; and Pignata, Frank John, Jr., 4,069,923, Cl. 214-17.00B.
Pileur, Pierre Charles: *See—*
Loiseau, Michel; and Pileur, Pierre Charles, 4,070,264, Cl. 204-192.00E.
Piolon, James: *See—*
Danneels, Laurent; Helder, Johan; Kuypers, Jan; Piolon, James; and Pernegger, Wolfgang, 4,070,265, Cl. 204-206.000.
Piper, William W.: *See—*
DeLuca, John A.; and Piper, William W., 4,070,598, Cl. 313-487.000.
Pitkanen, Alan R. Inertial turbine energy storage braking and power transmission system. 4,069,669, Cl. 60-325.000.
Pitts Industries, Inc.: *See—*
Pierce, William C.; Berry, Samuel M.; and Johnson, Arthur D., 4,069,572, Cl. 29-159.00R.
Plainer, Hermann: *See—*
Kraemer, Dieter; Lehmann, Klaus; Pennewiss, Horst; Plainer, Hermann; and Schweder, Roland, 4,070,348, Cl. 260-79.3MU.
Plantard, Dominique: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,070,173, Cl. 65-5.000.
Plastic Forming Company, Inc., The: *See—*
Schurman, Peter T., 4,069,915, Cl. 206-305.000.
Plastic Sales & Mfg. Co., Inc.: *See—*
Popplewell, William T., Jr.; and Driller, Timothy C., 4,069,941, Cl. 220-23.400.
Plastiflex Company: *See—*
Stanwood, David A., 4,070,138, Cl. 425-144.000.
Plattner, Werner, administrator: *See—*
Winter, Werner; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Schaumann, Wolfgang; and Dietmann, Karl, 4,070,373, Cl. 260-333.000.
Plumpton, Norman Albert, to Coal Industry (Patents) Ltd. Mine packing equipment. 4,069,676, Cl. 61-35.000.
Poignant, Jean-Claude: *See—*
Malen, Charles; Roger, Pierre; Poignant, Jean-Claude; and Pascaud, Xavier, 4,070,485, Cl. 424-324.000.
Poisson, Bernard: *See—*
Steydle, Guy; and Poisson, Bernard, 4,069,842, Cl. 137-595.000.
Polaroid Corporation: *See—*
Kinaman, Gordon F., 4,069,578, Cl. 29-623.300.
Politechnika Salaska Im. Wicentego Pstrowskiego: *See—*
Gierek, Adam; Bajka, Lech; Liberski, Piotr; and Gruszecka, Anna, 4,070,511, Cl. 427-405.000.
Politechnika Slaska Im. Wincentego Pstrowskiego: *See—*
Gierek, Adam; and Bajka, Lech, 4,070,210, Cl. 148-15.000.
Polva Nederland B.V.: *See—*
Acda, Petrus Marinus, 4,070,042, Cl. 285-21.000.
Polysar Limited: *See—*
Lasis, Evalds; and Buckler, Ernest Jack, 4,070,340, Cl. 260-47.0UP.
Popov, Yan Yakovlevich: *See—*
Isakov, Viktor Leonidovich; Popov, Yan Yakovlevich; Khlyvnjuk, Boris Grigorievich; Kavetsky, Rostislav Evgenievich; Gamaleya, Nikolai Fedorovich; Baratov, Khadzhi Aminovich; Krazhan, Gennady Dmitrievich; Lazarev, Ilya Romanovich; Dedkov, Ivan Parfenovich; Krivenko, Alexei Ivanovich; Dudnichenko, Vladimir Nikolaevich; Kudryavtsev, Ivan Vasilievich, deceased; and Kudryavtseva, Galina Antonovna, administratrix, 4,069,823, Cl. 128-303.100.
Popplewell, William T., Jr.; and Driller, Timothy C., to Plastic Sales & Mfg. Co., Inc. Engageable card racks. 4,069,941, Cl. 220-23.400.
Porsche AG: *See—*
Peter, Dietmar, 4,070,051, Cl. 293-69.00R.
Porta-Test Manufacturing Ltd.: *See—*
Beattie, David Lloyd George, 4,070,168, Cl. 55-205.000.
Pospisil, Frantisek; and Sedlak, Vaclav, to Adamovske Strojirny, narodni podnik. Cylinders and rollers for printing machines. 4,069,570, Cl. 29-132.000.
Poss, Werner: *See—*
Yarem, Joseph; and Poss, Werner, 4,069,980, Cl. 241-24.000.
Potomac Applied Mechanics, Inc.: *See—*
Stubbings, James Henry, 4,069,583, Cl. 30-228.000.
Pototsky, Vasily Borisovich; and Petrenko, Nikolai Radionovich. Hydraulic percussive machine. 4,069,876, Cl. 173-119.000.
Potter, James Larry: *See—*
Dick, Clarence R.; and Potter, James Larry, 4,070,354, Cl. 260-239.00E.
Pouget, Rene J., to Aciers et Outillage Peugeot. Retracting device for a safety belt. 4,069,988, Cl. 242-107.40A.
Pouliquen, Jacques: *See—*
Chartraire, Jacques; Le Coeur, Jean; and Pouliquen, Jacques, 4,070,584, Cl. 250-555.000.
PPG Industries, Inc.: *See—*
Chess, James S.; Davis, James A.; and Spindler, Robert G., 4,069,630, Cl. 52-172.000.
Otto, Jack M., 4,070,282, Cl. 210-27.000.
Ramler, Warren J.; and Lackore, James K., 4,070,499, Cl. 427-54.000.
Wismer, Marco; and Gerek, Gene, 4,070,497, Cl. 427-44.000.
Prada, Luis E.: *See—*
Holet, Kenneth M.; and Prada, Luis E., 4,069,545, Cl. 16-49.000.
Prange, Kurt; Isermann, Friedrich; Hasenacker, Ernst; and Blase, Manfred, to Didier Engineering GmbH. Inclined chamber coke oven. 4,070,251, Cl. 202-130.000.
Prasad, Janniah S., to Consolidated Refining Company, Inc. Electrically conductive alloy. 4,069,963, Cl. 228-179.000.
Prescott, Norman F., to Atwood & Morrill Co. Fluid operated valve. 4,070,000, Cl. 251-26.000.
Price, Howard. Hoof care emulsion or cream. 4,070,451, Cl. 424-61.000.
Pricone, Robert M.: *See—*
Brown, Jordon M.; Benedict, Charles J.; and Pricone, Robert M., 4,070,214, Cl. 156-47.000.
Priggs, Anthony. Shellfish opening tool. 4,069,552, Cl. 17-75.000.
Privalov, Vasily Efimovich; Vail, Evgeny Iosifovich; Kuznetsova, Larisa Semenovna; Belov, Konstantin Alexeevich; Nosalevich, Ivan Mikhailovich; and Romanov, Igor Vasilievich. Process for recovering anthracene. 4,070,409, Cl. 260-675.000.
Procter & Gamble Company, The: *See—*
Buell, Kenneth B., 4,069,822, Cl. 128-294.000.
Jacobsen, Ronald Lowell, 4,070,309, Cl. 252-547.000.
Lucas, Malcolm Bramel; Merz, Theodore Paul; and Van Coney, Robert Henry, 4,070,140, Cl. 425-533.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Carel, Philippe Robert Raymond; Decamp, Rene Paul Auguste; and Perronin, Jean, 4,070,319, Cl. 260-29.4UA.
Ciquier, Jean Henri Camille; and Carfantan, Michel Hyppolite, 4,070,379, Cl. 260-346.750.
Pruess, David L.: *See—*
LeMahieu, Ronald A.; Kierstead, Richard W.; and Pruess, David L., 4,070,376, Cl. 260-343.000.
Pullman Incorporated: *See—*
Weir, Gary L.; and Johnson, Velmo, 4,070,033, Cl. 280-423.00A.
Pummer, Helmut: *See—*
Carrard, Jean-Pierre; and Pummer, Helmut, 4,070,236, Cl. 162-164.00R.
Purvis, Marshall T., to Rohm and Haas Company. Acrylic modified foamed nylon product and process. 4,070,426, Cl. 264-54.000.
Quan, Glen D. Combined bridge and string anchoring device for stringed musical instruments. 4,069,733, Cl. 84-299.000.
Quest Automation Limited: *See—*
Lambden, Martin Roy, 4,070,544, Cl. 178-18.000.
Rabatin, Jacob G., to General Electric Company. Rare earth oxyhalide phosphors coactivated with terbium, thulium. 4,070,583, Cl. 250-483.000.
Racine Railroad Products, Inc.: *See—*
Tessenske, Dennis J., 4,070,201, Cl. 106-281.00R.
Rahilly, William P., to United States of America, Air Force. Aluminum arsenide eutectic gallium arsenide solar cell. 4,070,205, Cl. 136-89.0SJ.
Rainey, Robert H.: *See—*
Notz, Karl J.; Rainey, Robert H.; Greene, Charles W.; and Shockley, William E., 4,070,438, Cl. 423-7.000.
Rameson, William W., to TRW Inc. Work-master comparison gaging method and instrument. 4,069,589, Cl. 33-174.00P.
Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. 3,5-Dialkyl-4-hydroxyphenylalkyl substituted piperazine diones and polymeric compositions stabilized thereby. 4,070,335, Cl. 260-45.8NT.
Ramler, Warren J.; and Lackore, James K., to PPG Industries, Inc. Method for crosslinking ultraviolet light curable coatings. 4,070,499, Cl. 427-54.000.
Rao, G. R. Mohan; Rogers, Gerald R.; and McElroy, David J., to Texas Instruments Incorporated. Random access memory cell with ion implanted resistor element. 4,070,653, Cl. 365-222.000.
Rauch, Frank E. Golfer's wrist band for carrying tees and ball position markers. 4,069,954, Cl. 224-5.00C.
Raugulis, I. Edward; Smith, L. Clark; and Meyler-Warlow, Raymond de C., to Harnischfeger Corporation. Overhead crane including a single failure proof hoist. 4,069,921, Cl. 212-18.000.
Rausch, Richard E., to UOP Inc. Hydrocracking of hydrocarbons over tri-metallic catalyst. 4,070,270, Cl. 208-111.000.
Rausch, Richard E., to UOP Inc. Hydrodesulfurization of hydrocarbon distillate with a catalyst composite of carrier, Pt/Pd, Rh and Sn. 4,070,272, Cl. 208-217.000.
Rawlings, Herbert L., to Mobay Chemical Corporation. High impact mineral filled polycarbonates. 4,070,330, Cl. 260-37.0PC.
Ray, Eric Thomas, to AMF Incorporated. Band conveyor. 4,069,911, Cl. 198-627.000.

Raymond, James W.; and Millett, James A., to Raymond, James W. Resettable lock assembly for hotels, and the like. 4,069,694, Cl. 70-337.000.

Raymond Lee Organization, Inc., The: *See—*
Zwillinger, Daniel, 4,070,076, Cl. 312-350.000.

Raytheon Company: *See—*
Smedes, Richard L., 4,070,678, Cl. 343-754.000.

RCA Corporation: *See—*
Dingwall, Andrew Gordon Francis, 4,069,577, Cl. 29-571.000.
Jasinski, Joseph Richard; Pickard, James Bruce; and Doner, Claude Edward, 4,070,627, Cl. 325-127.000.
Kressel, Henry; D'Aiello, Robert Vincent; and Robinson, Paul Harvey, 4,070,206, Cl. 136-89.0TF.

Reading Door Closer Corporation: *See—*
Reichlin, Stanley B., 4,069,546, Cl. 16-85.000.

Redinger, Ira H., Jr.; Sadowsky, David; and Stripinis, Philip S., to United Technologies Corporation. Clearance control for gas turbine engine. 4,069,662, Cl. 60-226.00R.

Reed Tool Company: *See—*
Chitwood, Byron W.; and Winship, Thomas E., 4,069,878, Cl. 175-53.000.

Reeder, Thomas Macklin, to United Technologies Corporation. Non-linear surface acoustic wave PSK encoder/correlator. 4,070,638, Cl. 333-30.00R.

Regan, Robert J.; Haugsjaa, Paul O.; and McNeill, William H., to GTE Laboratories Incorporated. Solid state microwave power source for use in an electrodeless light source. 4,070,603, Cl. 315-248.000.

Rege, James R.: *See—*
White, James F.; Rege, James R.; Grasselli, Robert K.; and Suresh, Dev. D., 4,070,397, Cl. 260-530.00N.

Reger, David William: *See—*
Garber, Murray; and Reger, David William, 4,070,372, Cl. 260-327.00M.

Regie Nationale des Usines Renault: *See—*
Decouzon, Georges, 4,070,036, Cl. 280-710.000.
Steydle, Guy; and Poisson, Bernard, 4,069,842, Cl. 137-595.000.
Teyssedre, Jean-Pierre, 4,069,764, Cl. 104-88.000.

Reichlin, Stanley B., to Reading Door Closer Corporation. Soffit plate and limit stop for use with hydraulic door closer. 4,069,546, Cl. 16-85.000.

Reiling, Karl; and Reiling Reinhold. Grinding head for carrying a replaceable abrasive sheet. 4,069,625, Cl. 51-379.000.

Reiling Reinhold: *See—*
Reiling, Karl; and Reiling Reinhold, 4,069,625, Cl. 51-379.000.

Reissinger, Karl-Hermann: *See—*
Hofen, Willi; Wirthwein, Rolf; Reissinger, Karl-Hermann; and Krekel, Jorg, 4,070,253, Cl. 203-75.000.

Reitz, Werner: *See—*
Schwerin, Gunter; and Reitz, Werner, 4,069,746, Cl. 91-448.000.

Reliance Products Corporation: *See—*
Chrones, Anthony, 4,070,078, Cl. 339-44.00R.

Relyveld, Edgar Hans, to Agence Nationale de Valorisation de la Recherche (ANVAR). Vaccines, the process for preparing the same and the applications thereof. 4,070,454, Cl. 424-89.000.

Renghes, Mihail: *See—*
Gheorghe, Dumitru; Renghes, Mihail; Serban, Gheorghe; and David, Vasile, 4,069,621, Cl. 51-117.000.

Reppert, Merlyn Ralph; and Leslie, James Albert, to W. R. Grace & Co. Dual wheels. 4,070,066, Cl. 301-36.00R.

Research Corporation: *See—*
Kende, Andrew S.; Mills, John E.; and Tsay, Yuh-Geng, 4,070,382, Cl. 260-365.000.

Restrepo, Fabio: *See—*
Coleman, Michael G.; and Restrepo, Fabio, 4,070,689, Cl. 357-30.000.

Reusser, Robert E., to Phillips Petroleum Company. Azeotropic compositions. 4,070,299, Cl. 252-171.000.

Revy von Belvard, Peter: *See—*
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,070,107, Cl. 352-72.000.

Rew, James A., to United States of America, Air Force. Spring type dogging device. 4,069,999, Cl. 248-507.000.

Reynolds Metals Company: *See—*
Carson, John W., 4,069,862, Cl. 164-439.000.

Reynolds, Ronald W.; Tice, John D.; and Nutter, John S., to Suntech, Inc. Urea adduction process for refrigeration oil manufacture. 4,070,269, Cl. 208-25.000.

Reyrolle Parsons Limited: *See—*
Stewart, John Stanley; and Headley, Peter, 4,070,558, Cl. 200-148.00A.

Rhein, Otto R., to Henkell & Co. Method and apparatus for accelerating the crystallization and removal of tartar from wine. 4,070,291, Cl. 210-115.000.

Rhoads, Roger R., to Owens-Illinois, Inc. Heat seal apparatus and seamed sleeve article made thereby. 4,070,513, Cl. 428-36.000.

Rhythm Watch Co. Ltd.: *See—*
Ito, Hiroshi, 4,069,658, Cl. 58-16.00R.

Rice, Woodrow R. Nose pad for eyeglasses. 4,070,104, Cl. 351-138.000.

Richard, Yves Robert: *See—*
Treille, Pierre Albert Eugene; Dassonville, Vincent; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,070,263, Cl. 204-180.00R.

Richards, William E.; and Trias, John A., to United States of America, Navy. Narrowband wide field of view optical filter. 4,070,101, Cl. 350-312.000.

Richardson, Keith C.: *See—*
Long, E. David; and Richardson, Keith C., 4,069,795, Cl. 123-32.0EA.

Richter Gedeon Vegyeszeti Gyar Rt: *See—*
Jovanovics, Karola; Szasz, Kalman; Lorincz, Csaba; Hermann, Laszlo; and Dezseri, Eszter, 4,070,358, Cl. 260-287.00B.

Richter, Wolfgang: *See—*
Muschelknautz, Edgar; Burkholz, Armin; and Richter, Wolfgang, 4,069,711, Cl. 73-61.400.

Ridgeway, Louis H. Bathtub with cushioned liner of foam plastic. 4,069,523, Cl. 4-173.00R.

Rieckmann, Peter: *See—*
Berger, Dieter; Guthlein, Werner; Werner, Wolfgang; and Rieckmann, Peter, 4,070,495, Cl. 424-3.000.

Riedel, Frederick H.: *See—*
Wiegand, Donald E.; Riedel, Frederick H.; and Videen, Otis R., 4,070,287, Cl. 210-40.000.

Rieffle, Paul F.: *See—*
Felker, Charles E.; and Rieffle, Paul F., 4,070,046, Cl. 285-337.000.

Riegler, Ernst; and Schmidt, Manfred, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Tiltable metallurgical vessel arrangement. 4,070,009, Cl. 266-99.000.

Riem, Roland Hendrick: *See—*
Dieterman, Alfred Johannes; and Riem, Roland Hendrick, 4,070,350, Cl. 260-97.500.

Rien, Charles J.: *See—*
Hartz, Robert E.; and Rien, Charles J., 4,069,536, Cl. 15-104.920.

Rilling, Raymond J.: *See—*
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., 4,069,649, Cl. 56-202.000.

Ringer, Richard M.: *See—*
Lewicki, Walter J., Jr.; McQuate, William M.; and Ringer, Richard M., 4,070,435, Cl. 264-284.000.

Riseman, Jacob: *See—*
Ho, Irving Tze; and Riseman, Jacob, 4,070,687, Cl. 357-23.000.

Ritsko, Joseph E.: *See—*
Scheithauer, William, Jr.; and Ritsko, Joseph E., 4,070,184, Cl. 75-203.000.

Ritzerfeld, Gerhard. Programmed operation of rotary duplicator machine capable of whole-page, paragraphwise and linewise printing upon whole-page sheets and smaller-format cards or slips. 4,069,757, Cl. 101-132.500.

Riva Calzoni S.p.A.: *See—*
Bertanza, Battista, 4,069,743, Cl. 91-375.00R.

Rixson-Firemark, Inc.: *See—*
D'Hooge, Richard E., 4,069,544, Cl. 16-49.000.

Robbins, J. M.: *See—*
Eatherly, Walter P.; Robbins, J. M.; and Rosson, David E., Sr., 4,070,514, Cl. 428-64.000.

Robbins, Thomas Richard; and Cunliffe, Stephen Edson, to Young Californian Shoes, Inc. Thong footwear. 4,069,601, Cl. 36-11.500.

Robert Bosch GmbH: *See—*
Binder, Anton; Franke, Manfred; and Gartner, Siegfried, 4,070,626, Cl. 325-17.000.
Schwerin, Gunter; and Reitz, Werner, 4,069,746, Cl. 91-448.000.

Robert Krause KG: *See—*
Schudy, Karl-Heinz; and Kleinert, Heinz, 4,070,073, Cl. 312-184.000.

Robert, Philippe; Guignard, Claude; and Stagoll, Francis, to S.A., des Cableries & Trefileries de Cossonay; Societe d'Exploitation des Cables Electriques; and Cableries de Brugg S.A. Process for continuously coating a metal wire at high velocity. 4,070,503, Cl. 427-120.000.

Roberts, John E.; and Wiggins, Richard H., to United States of America, Air Force. Piecewise linear predictive coding system. 4,070,709, Cl. 364-602.000.

Robertson, Lawrence C.: *See—*
Merritt, James A.; and Robertson, Lawrence C., 4,070,261, Cl. 204-157.10R.

Robertson, Ross E.; and Tomie, Donald L., to Penguin Marketing Ltd. Modular block fluorescent lamp suspension system. 4,070,571, Cl. 362-217.000.

Robinson, David M. Apparatus for stabilizing structural studs. 4,069,699, Cl. 72-325.000.

Robinson, Paul Harvey: *See—*
Kressel, Henry; D'Aiello, Robert Vincent; and Robinson, Paul Harvey, 4,070,206, Cl. 136-89.0TF.

Robson, Stephen Ronald, to Marconi Company Limited, The. Error measurement for digital systems. 4,070,647, Cl. 340-146.1AX.

Rockwell International Corporation: *See—*
Morrow, James A., 4,070,671, Cl. 343-6.5LC.

Rodgers, Aubrey; and Widner, Rayburn K., to United States of America, Army. Ring-wing canard spin-up control mechanism. 4,069,990, Cl. 244-3.230.

Roedel, Richard K. Measuring apparatus. 4,069,560, Cl. 24-255.00R.

Roehrich, Christian, to Nuova San Giorgio S.p.A. Cleaning device for open end spinning units. 4,069,654, Cl. 57-56.000.

Roger, Pierre: *See—*
Malen, Charles; Roger, Pierre; Poignant, Jean-Claude; and Pascaud, Xavier, 4,070,485, Cl. 424-324.000.

Rogers, George Dominic, Jr.; and West, John Merle, to Combustion Engineering, Inc. Method of securing a sleeve within a tube. 4,069,573, Cl. 29-421.00R.

Rogers, Gerald R.: *See—*
Rao, G. R. Mohan; Rogers, Gerald R.; and McElroy, David J., 4,070,653, Cl. 365-222.000.

Rogers, James W.: *See—*
Bascom, Laurence N.; Parker, Franklin G.; and Rogers, James W., 4,069,657, Cl. 57-160.000.

Rohm GmbH: *See—*
Kraemer, Dieter; Lehmann, Klaus; Pennewiss, Horst; Plainer, Hermann; and Schweder, Roland, 4,070,348, Cl. 260-79.3MU.

Rohm and Haas Company: *See—*
Johnson, Wayne O.; and Yih, Roy Y., 4,070,178, Cl. 71-105.000.
Purvis, Marshall T., 4,070,426, Cl. 264-54.000.

Rohme, George, to Superior Steel Door & Trim Co., Inc. Tamper-proof cabinet. 4,070,074, Cl. 312-245.000.

Rollei-Werke Franke & Heidecke: *See—*
Sobotta, Reinhard, 4,069,724, Cl. 74-569.000.

Rolls-Royce (1971) Limited: *See—*
Harper, Leslie Richard; Lewis, William James; McMurtry, David Roberts; Bell, Lance Peter; and Hall, John Matthew, 4,069,663, Cl. 60-226.00A.

Romanov, Igor Vasilievich: *See—*
Privalov, Vasily Efimovich; Vail, Evgeny Iosifovich; Kuznetsova, Larisa Semenovna; Belov, Konstantin Alexeevich; Nosalevich, Ivan Mikhailovich; and Romanov, Igor Vasilievich, 4,070,409, Cl. 260-675.000.

Romualdi, James P.; and Bell, Samuel M., to Bell, Samuel M. Concrete plank and method for making it for elevated playing court surfaces. 4,070,427, Cl. 264-71.000.

Ronco, Karl: *See—*
Ceh, Georg; and Ronco, Karl, 4,070,353, Cl. 260-176.000.

Rose, Byron W.: *See—*
Minor, Dale R.; Rose, Byron W.; and Vivian, William R., 4,070,007, Cl. 256-19.000.

Rosen, Perry: *See—*
Kienzle, Frank; and Rosen, Perry, 4,070,378, Cl. 260-345.900.

Rosenberger, Siegfried; and Schmidt, Andreas, to Ciba-Geigy Corporation. Phenolic imidazolones and polymers stabilized therewith. 4,070,338, Cl. 260-45.80N.

Rosenqvist, Nils Kaj Gunnar: *See—*
Bratt, Jan Christer; Lorant, Stefan Istvan; Moodysson, Bengt-Ove Moody; and Rosenqvist, Nils Kaj Gunnar, 4,069,670, Cl. 60-517.000.

Rospatch Corporation: *See—*
Sparks, Charles E.; Templeton, J. G.; and Larson, Melvin E., 4,069,727, Cl. 83-16.000.

Ross, Abraham. Nesting wall brackets. 4,069,920, Cl. 211-87.000.

Ross, Gary Ernest Donald, to Zenith Carburetter Company Limited, The. Cold starting devices. 4,069,802, Cl. 123-179.00G.

Rosshirt, Hermann; and Jarosik, Robert J., to Superior Electric Company, The. Two axes NC system with tool offset. 4,070,608, Cl. 318-572.000.

Rossi, Eugene F., to Allis-Chalmers Corporation. Controllable distribution system for rotary kiln. 4,070,149, Cl. 432-109.000.

Rossitto, Conrad; and Follett, Robert Pierce, to USM Corporation. Methods for stiffening portions of flexible material. 4,069,532, Cl. 12-146.00D.

Rossmy, Gerd, to Th. Goldschmidt AG. Process for the preparation of organopolysiloxane-polyether copolymers with SiOC bonds. 4,070,386, Cl. 260-448.80R.

Rosson, David E., Sr.: *See—*
Eatherly, Walter P.; Robbins, J. M.; and Rosson, David E., Sr., 4,070,514, Cl. 428-64.000.

Roth, Thomas M.: *See—*
Smith, Alexander M., II; Adkins, Allen H.; and Roth, Thomas M., 4,070,217, Cl. 156-73.200.

Roth, William H.: *See—*
Nelson, Richard P.; and Roth, William H., 4,069,571, Cl. 29-156.50R.

Rottmann, Werner; Seyer, Reinhard; and Siebert, Hans-Eberhard, to Licentia Patent-Verwaltungs-G.m.b.H. Method of signaling menu components which are to be served out from supply containers of supply carriages associated with supply stations. 4,069,896, Cl. 186-1.00B.

Roudier, Rene: *See—*
Guionie, Paul; and Roudier, Rene, 4,069,547, Cl. 16-85.000.

Rowe, Edward A., Jr.; and Cawley, William H., to Diamond Shamrock Corporation. Methylene chloride phosphatized coating. 4,070,521, Cl. 428-332.000.

Rowsell, David G.; and Hems, Roger, to Wilkinson Sword Limited. Compounds having a physiological cooling effect and compositions containing them. 4,070,449, Cl. 424-45.000.

Rowsell, David G.; and Spring, David J., to Wilkinson Sword Limited. Phosphine oxides having a physiological cooling effect. 4,070,496, Cl. 424-45.000.

Royon, Jean Paul: *See—*
Treille, Pierre Albert Eugene; Dassonville, Vincent; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,070,263, Cl. 204-180.00R.

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Russev, Sheko Kolev: *See—*
Stoev, Stoycho Mitrev; Metodiev, Metodi Stoyanov; Kuzev, Lyubomir Vladimirov; Vedrichkov, Petko Georgiev; Sapunarov, Ivan Mitrev; Vassilev, Vassil Vladimirov; Dimitrov, Spas Petkov; Gasharov, Vihar Assenov; Russev, Sheko Kolev; and Mitrev, Kostadin Georgiev, 4,070,275, Cl. 209-44.000.

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Ryder, Leonard Benoit. Apparatus for injection blow molding. 4,070,141, Cl. 425-535.000.

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Saeva, Franklin D.: *See—*
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Safonov, Anatoly Vasilievich: *See—*
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Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,070,173, Cl. 65-5.000.

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Hayner, Paul F., 4,069,702, Cl. 73-11.000.

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Sandoz, Inc.: *See—*
Hardtmann, Goetz E.; and Coppola, Gary M., 4,070,468, Cl. 424-258.000.

Sandoz Ltd.: *See—*
Carrard, Jean-Pierre; and Pummer, Helmut, 4,070,236, Cl. 162-164.00R.
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Konotsune, Takuo; Matsui, Takashi; and Tobitsuka, Junzo, 4,070,536, Cl. 548-367.000.
Sanraku-Ocean Co., Ltd.: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Takamatsu, Akira; Inui, Taiji; Tone, Hiroshi; and Morishama, Hajime, 4,070,458, Cl. 424-177.000.
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Sato, Ryoji; and Musha, Takanori, to Nippon Zeon Co., Ltd. Process for preparing a purified methacrylic acid ester. 4,070,254, Cl. 203-83.000.
Sato, Shui: *See—*
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Satterwhite, Charles R., to Unit Rig & Equipment Co. Conveyor folding and moldboard operation for excavating and loading systems. 4,069,605, Cl. 37-190.000.
Saunders, Thomas C.; and Clark, James R., to Seattle Manufacturing Corporation. Chock for rock climbing. 4,069,991, Cl. 248-1.000.
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Saylors, James P. Capacitor removal device and method. 4,069,931, Cl. 214-310.000.
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Scardera, Michael; and Scott, Robert N., to Olin Corporation. Defoaming detergent additive. 4,070,298, Cl. 252-89.00R.
Schacht, Erich; Jonas, Rochus; Mehrhof, Werner; Nowak, Herbert; Simane, Zdenek; and Lissner, Reinhard, to Merck Patent Gesellschaft mit beschrankter Haftung. Biphenylyl ethers. 4,070,461, Cl. 424-232.000.
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Scheib, Harold A., to Bell & Howell Company. Optical image printer. 4,070,108, Cl. 355-50.000.
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Ecker, Varda, 4,070,462, Cl. 424-243.000.
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Scheuing, Claus: *See—*
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Scheuneman, James Herman, to Sperry Rand Corporation. Parallel requestor priority determination and requestor address matching in a cache memory system. 4,070,706, Cl. 364-200.000.
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Schittek, Hans-Heinz: *See—*
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Schlieckmann, Alfred, to Admiral Maschinenfabrik GmbH. High pressure mixing head. 4,070,008, Cl. 366-159.000.
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Schmidt, Ingolf: *See—*
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Schmidt, Jean-Michel, to Intertechnique. Device for measuring fractionary volumes of liquid samples. 4,070,248, Cl. 195-103.50K.
Schmidt, Manfred: *See—*
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Schmidt, Richard Q.; Fleischer, Herman J.; Lanning, Walter C.; and Tiblin, Bert V., to Sperry Rand Corporation. Radar video digital processor. 4,070,673, Cl. 343-7.300.
Schmitt, Edward Emil, to Alza Corporation. Poly(orthoester) co- and homopolymers and poly(orthocarbonate) co- and homopolymers having carbonyloxy functionality. 4,070,347, Cl. 260-77.50D.
Schmitt, Frederick Louis: *See—*
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Schneider, Heinz-Georg; Kleimann, Helmut; and Luckas, Bruno, to Bayer Aktiengesellschaft. Process for the production of foams. 4,070,310, Cl. 260-2.5BD.
Schneider, William P., to Upjohn Company, The. Process for preparing thromboxane B compounds from prostaglandin fα compounds. 4,070,384, Cl. 260-406.000.
Schnoring, Hildegard; and Klinksiek, Bernd, to Bayer Aktiengesellschaft. Production of polyurethane powder. 4,070,346, Cl. 260-77.5AA.
Schoenberger, Eva: *See—*
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Scholz, Artur; and Cota, Dennis, to Saba Schwarzwaelder Apparate-Bau-Anstalt August Schwer Soehne GmbH. Circuit for simultaneous display of separately broadcast video signals. 4,070,695, Cl. 358-181.000.
Schommer, Alfred J.: *See—*
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Schreiber, Peter J., to N.A.D., Inc. Fluidic controlled ventilator. 4,069,818, Cl. 128-145.600.
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Heng, Terrance M. S.; Nathanson, Harvey C.; Schroder, Dieter K.; and Malmberg, Paul R., 4,070,652, Cl. 365-157.000.
Schudy, Karl-Heinz; and Kleinert, Heinz, to Robert Krause KG. Filing device for papers. 4,070,073, Cl. 312-184.000.
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Schurman, Peter T., to Plastic Forming Company, Inc., The. Tool case. 4,069,915, Cl. 206-305.000.
Schurmeyer, Fritz L.; and Young, Charles R., to United States of America, Air Force. Virtually nonvolatile static random access memory device. 4,070,655, Cl. 365-156.000.
Schwab, Martin: *See—*
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Schwartz, James W., to Zenith Radio Corporation. Method of installing a color selection electrode in a color cathode ray tube. 4,069,567, Cl. 29-25.150.
Schwartz, Morton I., to Bell Telephone Laboratories, Incorporated. Minimizing transmission path disabling due to defective transmission members of a communications cable. 4,070,093, Cl. 350-96.00B.
Schwarz, Richard A.: *See—*
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Schwarze, Werner; Merk, Wolfgang; and Binder, Volker, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roesaler; and Henkel & Cie. GmbH. Antistatic agents for thermoplastic synthetic resins. 4,070,531, Cl. 526-6.000.
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McGinniss, Vincent Daniel, 4,070,258, Cl. 204-159.150.
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Segal, Charles L.; Anderson, Michael G.; and Vincent, David N., to Groves-Kelco Sales, Inc. Laminated game rackets and method of constructing same. 4,070,019, Cl. 273-73.00F.
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Sessions, Robert William; and Jealis, Jerome, to Barlow Mfg. Corporation. Surgical tube adapter clamp. 4,069,826, Cl. 128-348.000.
Sessler, John A. Momentum type electrically controlled torque producing devices. 4,069,901, Cl. 192-35.000.
Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst, to Hoechst Aktiengesellschaft. Thermoplastic molding compositions on the basis of polyoxymethylenes. 4,070,415, Cl. 260-830.00R.
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Shames, Sidney J.; Shames, Harold; and Logan, John F., to Shames, Sidney J.; and Shames, Harold. Coupler with automatic shut-off. 4,070,003, Cl. 251-149.600.
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Shearer, David, Sr.; and Shearer, David, Jr. Ball carrier adapted to be mounted on a bicycle. 4,069,956, Cl. 224-37.000.
Shelley, David J., to Hewlett-Packard Company. Thermal printer-plotter system for multi-directional printing and plotting. 4,070,680, Cl. 346-76.00R.
Shellhause, Ronald L., to General Motors Corporation. Failure warning switch actuator with automatic reset and proportioner override. 4,070,644, Cl. 340-52.00C.
Sheneman, Donald: *See—*
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Shiller, Peggy; and Shiller, Sidney. Form-fitting trousers. 4,069,513, Cl. 2-227.000.
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Shimadzu Seisakusho Ltd.: *See—*
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Sigmund, Jerry A., to Standard Pressed Steel Co. Method and apparatus for preloading a joint. 4,069,575, Cl. 29-446.000.
Sikora, Orwill Granger; and Sheneman, Donald, to Chicago Bridge & Iron Company. Method and apparatus for post-weld heat treating a tank. 4,070,147, Cl. 432-5.000.
Silk, Leonard P.; and Keefer, Ernest G., to General Motors Corporation. Closure panel hinge. 4,069,550, Cl. 16-179.000.
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Single Buoy Moorings, Inc.: *See—*
van Heijst, Willem Jan, 4,069,529, Cl. 9-8.00P.
Sisler, Robert R., to General Electric Company. Air seal arrangement in a clothes dryer. 4,069,596, Cl. 34-242.000.
Skaller, Hans George. Self leveling dispenser. 4,070,072, Cl. 312-71.000.
Skelton, Horace C. Center punch. 4,069,586, Cl. 30-360.000.
SKF Industrial Trading and Development Company B.V.: *See—*
Garrett, Roy Peter; Parkins, Derek Ray; Brandenstein, Manfred; and Olschewski, Armin, 4,069,904, Cl. 192-85.0CA.
Skinner, Maurice Wainwright: *See—*
Downing, Stephen Barry; Osmond, Desmond Wilfred John; Skinner, Maurice Wainwright; West, Edmund James; and Dawson, David George, 4,070,199, Cl. 106-93.000.
Slomp, Jan; and Grisnich, Marius, to Machinefabriek Grisnich B.V. Device for guiding seams of bags. 4,069,646, Cl. 53-139.000.
Slonczewski, John C.: *See—*
Fan, George J.; and Slonczewski, John C., 4,070,679, Cl. 346-75.000.
Smader, C. Louis, to Scovill Manufacturing Company. Dough hook attachment for kitchen mixer. 4,070,711, Cl. 366-98.000.
Smallcombe, Stephen H.; and Hill, Howard D. W., to Varian Associates, Inc. Analytical instrument optimum data acquisition method and apparatus. 4,070,708, Cl. 364-575.000.
Smalley, Ned J., to Owens-Illinois, Inc. Linerless closure. 4,069,937, Cl. 215-344.000.
Smarook, Walter H., to Union Carbide Corporation. I-Beam shaped bristled article. 4,070,515, Cl. 428-92.000.
Smedes, Richard L., to Raytheon Company. Wide angle scanning antenna assembly. 4,070,678, Cl. 343-754.000.
Smick, William H., III: *See—*
Atwell, Charles Gary; Spiers, Steven F.; and Smick, William H., III, 4,069,930, Cl. 214-302.000.
Smith, Alexander M., II; Adkins, Allen H.; and Roth, Thomas M., to Fiberwoven Corporation, The. Method of making electric blanket shell. 4,070,217, Cl. 156-73.200.
Smith, Clyde; and McMann, Renville H., to Thomson-CSF Laboratories, Inc. Stabilizing system for cathode ray tube. 4,070,691, Cl. 358-29.000.
Smith, Derek John: *See—*
Yapp, Robert Ernest; and Smith, Derek John, 4,069,889, Cl. 180-132.000.
Smith, Dexter E.; Buss, Russel A.; and Stewart, William S., to Phillips Petroleum Company. Pressure responsive fractionation control. 4,070,172, Cl. 62-21.000.

Smith, Donald, to I.W.S. Nominee Company Limited. Knitting apparatus. 4,069,690, Cl. 66-135.000.
Smith, Gary L.; and Cockrell, Walter T., to J.P. Stevens & Co., Inc. Sticker applicator. 4,069,945, Cl. 221-73.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham John; and Ganellin, Charon Robin, 4,070,472, Cl. 424-263.000.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 4,070,475, Cl. 424-270.000.
Smith, L. Clark: *See—*
Raugulis, I. Edward; Smith, L. Clark; and Meyler-Warlow, Raymond de C., 4,069,921, Cl. 212-18.000.
Smiths Industries Limited: *See—*
Dingley, Maurice, 4,070,623, Cl. 324-150.000.
Snowdon, Arthur E.; and Palmero, Albert, to Superior Electric Company, The. Three step sequence motor. 4,070,592, Cl. 310-49.00R.
Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Flat curve cam and follower construction. 4,069,724, Cl. 74-569.000.
Societa Farmaceutici S.p.A.: *See—*
Valeatini, Luigi; and Maiorano, Michele, 4,069,819, Cl. 128-206.000.
S.A., des Cableries & Trefileries de Cossonay: *See—*
Robert, Philippe; Guignard, Claude; and Stagoll, Francis, 4,070,503, Cl. 427-120.000.
Societe Anonyme Francaise du Ferodo: *See—*
de Geanes, Gerard, 4,069,905, Cl. 192-112.000.
Societe d'Exploitation des Cables Electriques: *See—*
Robert, Philippe; Guignard, Claude; and Stagoll, Francis, 4,070,503, Cl. 427-120.000.
Societe E. Lacroix: *See—*
Maury, Louis, 4,069,762, Cl. 102-90.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Teysseyre, Pierre; and Vigneau, Joel, 4,069,576, Cl. 29-527.200.
Sod-r Stop, Inc.: *See—*
Meister, Frank X., 4,070,506, Cl. 427-156.000.
Sogge, John W., to Caterpillar Tractor Co. Crawler-type vehicle wheels having impact absorbing rims with resilient biasing means. 4,069,856, Cl. 152-27.000.
Solymos, Frederick, to Westinghouse Electric Corporation. Elevator system. 4,069,897, Cl. 187-29.00R.
Southern, Peter Fulton: *See—*
Barker, Alan Charles; and Southern, Peter Fulton, 4,070,363, Cl. 260-306.70T.
Southern Railway Company: *See—*
Effinger, Robert J., 4,069,590, Cl. 33-174.00L.
Southwire Company: *See—*
Ward, George C., 4,069,860, Cl. 164-87.000.
Sowinski, Raymond M., to Westinghouse Air Brake Company. Brake pipe end cock with double-ended handle to permit operation from either side of the car. 4,069,836, Cl. 137-348.000.
Spalding, George T. Cylinder lock assembly. 4,069,693, Cl. 70-364.00R.
Sparks, Charles E.; Templeton, J. G.; and Larson, Melvin E., to Roepatch Corporation. Separation of label tape into labels. 4,069,727, Cl. 83-16.000.
Spath, Wolfgang: *See—*
Linde, Joachim; and Spath, Wolfgang, 4,070,139, Cl. 425-188.000.
Spector, Sidney, to Hoffmann-La Roche, Inc. Propranolol assay. 4,070,492, Cl. 424-1.000.
Sperry Rand Corporation: *See—*
Brackbill, Warren H., 4,069,982, Cl. 241-291.000.
Narveson, Parm L., 4,070,662, Cl. 340-324.0AD.
Scheuneman, James Herman, 4,070,706, Cl. 364-200.000.
Schmidt, Richard Q.; Fleischer, Herman J.; Lanning, Walter C.; and Tiblin, Bert V., 4,070,673, Cl. 343-7.300.
Sperry-Sun, Inc.: *See—*
McArthur, Billy W., 4,069,591, Cl. 33-312.000.
Spewock, Sandra; and Phillips, David C., to Westinghouse Electric Corporation. Method for measuring physical data by magnetic means. 4,069,714, Cl. 73-339.00R.
Spiers, Steven F.: *See—*
Atwell, Charles Gary; Spiers, Steven F.; and Smick, William H., III, 4,069,930, Cl. 214-302.000.
Spindler, Robert G.: *See—*
Chess, James S.; Davis, James A.; and Spindler, Robert G., 4,069,630, Cl. 52-172.000.
Spirk, Franz: *See—*
Von Musil, Rudolf; Schmidt, Ingolf; and Spirk, Franz, 4,070,593, Cl. 310-194.000.
Spiwak, John J.: *See—*
Toeniskoetter, Richard H.; and Spiwak, John J., 4,070,195, Cl. 106-38.300.
Spring, David J.: *See—*
Rowsell, David G.; and Spring, David J., 4,070,496, Cl. 424-45.000.
Square D Company: *See—*
Khalid, Joseph M., 4,070,641, Cl. 338-61.000.
Stach, Kurt, deceased: *See—*
Winter, Werner; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Schaumann, Wolfgang; and Dietmann, Karl, 4,070,373, Cl. 260-333.000.
Stadler, Rigo. Fuel and lubricant mixer. 4,069,835, Cl. 137-114.000.
Stagoll, Francis: *See—*
Robert, Philippe; Guignard, Claude; and Stagoll, Francis, 4,070,503, Cl. 427-120.000.
Stahlecker, Fritz; and Stahlecker, Hans. Open end spinning assembly with an opener roll. 4,069,655, Cl. 57-58.910.
Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 4,069,655, Cl. 57-58.910.
Stalzer, Edwin. Apparatus and method for introducing connected forms into an associated device. 4,070,223, Cl. 156-264.000.
Stamate, Robert L., to Caterpillar Tractor Co. Combination transmission neutralizer and power train interlock system. 4,069,900, Cl. 192-4.00A.
Standard Oil Company: *See—*
Karll, Robert E.; Piasek, Edmund J., deceased; and Hunt, Evelyn W., administratrix, 4,070,402, Cl. 260-619.00D.
Manley, Robert B., Jr., 4,069,679, Cl. 61-72.400.
Standish, Norman W.; and Talsma, Herbert, 4,069,703, Cl. 73-16.000.
White, James F.; Rege, James R.; Grasselli, Robert K.; and Suresh, Dev. D., 4,070,397, Cl. 260-530.00N.
Standard Oil Company (Indiana): *See—*
Keske, Robert G., 4,070,524, Cl. 428-383.000.
Standard Pressed Steel Co.: *See—*
Sigmund, Jerry A., 4,069,575, Cl. 29-446.000.
Standish, Norman W.; and Talsma, Herbert, to Standard Oil Company. Plastic orientation measurement instrument. 4,069,703, Cl. 73-16.000.
Stanford Research Institute: *See—*
Gallagher, Thomas F.; Hill, Robert M.; and Edelstein, Stephen A., 4,070,580, Cl. 250-423.00P.
Stang, Michael O. Wedging device. 4,069,731, Cl. 85-72.000.
Stanley, Leonard A.: *See—*
Swallow, Roger T.; and Stanley, Leonard A., 4,069,515, Cl. 2-239.000.
Stanray Corporation: *See—*
Henry, Rufus A., Jr., 4,069,624, Cl. 51-241.00B.
Stanwood, David A., to Plastiflex Company. Screen changer apparatus. 4,070,138, Cl. 425-144.000.
Stauffer Chemical Company: *See—*
Baker, Don R.; and Walker, Francis H., 4,070,486, Cl. 424-324.000.
Stedman, Robert N., to Caterpillar Tractor Co. Fork lift truck. 4,069,932, Cl. 214-730.000.
Steffen, Richard S. Revolving protective blade enclosure. 4,069,651, Cl. 56-320.100.
Stein, Karl-Ulrich, to Siemens Aktiengesellschaft. Semiconductor component with dielectric carrier and its manufacture. 4,070,230, Cl. 156-657.000.
Steinbach, Dimitry: *See—*
Baatz, Rolf; Beilstein, Gunter; Grenner, Dieter; Keller, Wilfried; and Steinbach, Dimitry, 4,070,405, Cl. 260-654.00R.
Steinbach, Robert L., to Chicago Lock Co. Axial split-pin tumbler-type lock and key therefor. 4,069,696, Cl. 70-363.000.
Steinkamp, Johann Albert: *See—*
Becker, Friedbert; Laufer, Karl; and Steinkamp, Johann Albert, 4,070,672, Cl. 343-6.80R.
Steinman, Martin, to Schering Corporation. 2-Aminomethyl-5-chloro-3-(2,4-dichlorophenyl)indole. 4,070,369, Cl. 260-326.150.
Stepe, Visvaldis A., to Caterpillar Tractor Co. End wear bit for earth-moving equipment blades. 4,069,604, Cl. 37-141.00T.
Stevens, Carlile R. Electronic ignition system. 4,069,801, Cl. 123-148.0DS.
Stewart, John Stanley; and Headley, Peter, to Reyrolle Parsons Limited. High voltage circuit-interrupters. 4,070,558, Cl. 200-148.00A.
Stewart, William S.: *See—*
Smith, Dexter E.; Buss, Russel A.; and Stewart, William S., 4,070,172, Cl. 62-21.000.
Steydle, Guy; and Poisson, Bernard, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Quick-fitting pipe coupling. 4,069,842, Cl. 137-595.000.
Stinson, Robert A., to Caterpillar Tractor Co. Moisture ejector. 4,069,745, Cl. 91-442.000.
Stoev, Stoycho Mitrev; Metodiev, Metodi Stoyanov; Kuzev, Lyubomir Vladimirov; Vedrichkov, Petko Georgiev; Sapunarov, Ivan Mitrev; Vassilev, Vassil Vladimirov; Dimitrov, Spas Petkov; Gasharov, Vihar Assenov; Russev, Sheko Kolev; and Mitrev, Kostadin Georgiev, to Vish Minno-Geoloshki Institute-Nis. Material treating apparatus including pneumo-hydraulic vibrator. 4,070,275, Cl. 209-44.000.
Stoft, Paul E.: *See—*
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., 4,070,117, Cl. 356-172.000.
Stolar, Morris E.: *See—*
Haber, Raphael Ralph G.; Schoenberger, Eva; and Stolar, Morris E., 4,070,469, Cl. 424-258.000.
Stollberg, Ray Harold; and Boling, James Vernon, to Crown Zellerbach Corporation. Container. 4,069,917, Cl. 206-423.000.
Stora Kopparbergs Bergslags AB: *See—*
Widell, Bjorn, 4,070,181, Cl. 75-91.000.
Storie, Jack L. Fence practice. 4,070,006, Cl. 256-1.000.
Stork Amsterdam B.V.: *See—*
Vertegaal, Jacobus Gerardus, 4,069,756, Cl. 101-120.000.
Straitz, John F., III, to Combustion Unlimited Incorporated. Flare burner for waste combustible gas. 4,070,146, Cl. 431-202.000.
Strand, Lyle L. Solar heat collecting porous building blocks. 4,069,809, Cl. 126-270.000.
Strauss, William. Dispenser. 4,069,958, Cl. 225-16.000.
Strawson, Colin John: *See—*
Aldridge, David Cecil; Crawley, Graham Charles; and Strawson, Colin John, 4,070,480, Cl. 424-279.000.
Streich, Rene. Orthopedic shoe tree. 4,069,531, Cl. 12-116.200.
Strifler, Paul: *See—*
Wolters, Gerhard; and Strifler, Paul, 4,069,888, Cl. 180-98.000.

Stripinis, Philip S.: *See—*
Redinger, Ira H., Jr.; Sadowsky, David; and Stripinis, Philip S., 4,069,662, Cl. 60-226.00R.
Strong Design Research and Sales Corporation: *See—*
Cutler, Jerome J., 4,070,023, Cl. 273-84.00R.
Struger, Odo J.: *See—*
Grants, Valdis; and Struger, Odo J., 4,070,702, Cl. 364-200.000.
Stuart, Donald J., to Midland Engineering and Machine Co. Taping machine for coils and the like. 4,070,227, Cl. 156-446.000.
Stubbings, James Henry, to Potomac Applied Mechanics, Inc. Sheet metal cutting. 4,069,583, Cl. 30-228.000.
Studiengesellschaft Kohle m.b.H.: *See—*
Wilke, Gunther; and Heimbach, Paul, 4,070,406, Cl. 260-668.00R.
Stueber, Richard J.; and Klach, Stanley J., to Chromalloy American Corporation. Platinum-rhodium-containing high temperature alloy coating method. 4,070,507, Cl. 427-252.000.
Suey, Paul V. Metallurgical furnace with water-cooled work support. 4,070,151, Cl. 432-234.000.
Sugawara, Katuo: *See—*
Narahara, Toshikazu; Sugawara, Katuo; Karasawa, Yoshiharu; Yokono, Hitoshi; Mukai, Junji; and Muroi, Tadashi, 4,070,416, Cl. 260-830.00P.
Sugibayashi, Yasuo: *See—*
Miura, Mitsuo; Sugibayashi, Yasuo; Suzuki, Akio; Kukino, Yoshinori; Aoyagi, Hayao; Tanifuji, Fuminobu; and Ishii, Jiro, 4,069,678, Cl. 61-63.000.
Sugie, Akio: *See—*
Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,069,979, Cl. 241-5.000.
Sugiyama, Hironari: *See—*
Hayashi, Eiichi; Takita, Kiyoshi; Sugiyama, Hironari; and Nezu, Yukio, 4,070,377, Cl. 260-343.700.
Suhr, Donald C., to ITL Industries, Inc. Pavement marker and reflector assembly. 4,070,095, Cl. 350-103.000.
Sukonick, Josef S.; and Tilden, Greg J., to Nugraphics, Inc. Raster scan display apparatus for dynamically viewing image elements stored in a random access memory array. 4,070,710, Cl. 364-900.000.
Sulzer Brothers Limited: *See—*
Feurstein, Guntram, 4,069,594, Cl. 34-124.000.
Sumitomo Chemical Company, Limited: *See—*
Horikiri, Shozo; Iseki, Jiro; and Minobe, Masao, 4,070,446, Cl. 423-447.200.
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, 4,070,176, Cl. 71-103.000.
Sumitomo, Norio; and Matsumoto, Yoshiki, to Toyobo Co., Ltd. Take-up method of continuous filament bundles of synthetic fibers and apparatus therefor. 4,069,566, Cl. 28-289.000.
Summerhayes, Harry R., to General Electric Company. Linear signal isolator and calibration circuit for electronic current transformer. 4,070,572, Cl. 250-199.000.
Sun Chemical Corporation: *See—*
Brown, Jordon M.; Benedict, Charles J.; and Pricone, Robert M., 4,070,214, Cl. 156-47.000.
Sun Oil Company Limited: *See—*
Morgan, George W., 4,069,783, Cl. 114-42.000.
Morgan, George W.; and Zupanick, Joseph E., 4,070,062, Cl. 299-10.000.
Sun Oil Company of Pennsylvania: *See—*
Hansel, William B.; and O'Connell, Paul B., 4,069,838, Cl. 137-392.000.
Sun Ventures, Inc.: *See—*
Angstadt, Howard P.; Tinkler, Jack D.; Norton, Richard V.; and Bushick, Ronald D., 4,070,393, Cl. 260-465.00C.
Sunbeam Corporation: *See—*
Gronwick, Jerry P.; and Augustine, Robert J., 4,069,751, Cl. 99-306.000.
Suntech, Inc.: *See—*
Butte, Walter A., Jr., 4,070,399, Cl. 260-563.00D.
Reynolds, Ronald W.; Tice, John D.; and Nutter, John S., 4,070,269, Cl. 208-25.000.
Superior Electric Company, The: *See—*
Rosshirt, Hermann; and Jarosik, Robert J., 4,070,608, Cl. 318-572.000.
Snowdon, Arthur E.; and Palmero, Albert, 4,070,592, Cl. 310-49.00R.
Superior Steel Door & Trim Co., Inc.: *See—*
Rohme, George, 4,070,074, Cl. 312-245.000.
Superscope, Inc.: *See—*
Dellar, Fred Jay, 4,070,547, Cl. 179-1.00G.
Supra Aktiebolag: *See—*
Lofberg, Gustaf Gerhard, 4,069,852, Cl. 150-1.000.
Surabian, Gisele A. Protective cover for wigs. 4,069,853, Cl. 150-52.00R.
Suresh, Dev. D.: *See—*
White, James F.; Rege, James R.; Grasselli, Robert K.; and Suresh, Dev. D., 4,070,397, Cl. 260-530.00N.
Suzuki, Akio: *See—*
Miura, Mitsuo; Sugibayashi, Yasuo; Suzuki, Akio; Kukino, Yoshinori; Aoyagi, Hayao; Tanifuji, Fuminobu; and Ishii, Jiro, 4,069,678, Cl. 61-63.000.
Suzuki, Akira: *See—*
Kanda, Fumio; Kaibara, Nobuhiro; Ohki, Seibi; Okamoto, Kazuo; and Suzuki, Akira, 4,069,800, Cl. 123-139.00A.
Suzuki, Chuji: *See—*
Kanatani, Yoshiharu; Ise, Masahiro; Mizukami, Etsuo; Inazaki, Kenzoh; and Suzuki, Chuji, 4,070,663, Cl. 340-324.00M.
Suzuki, Masahiko: *See—*
Kishimoto, Keiichi; Koda, Yoshinobu; Sasaki, Shosaku; and Suzuki, Masahiko, 4,070,343, Cl. 260-45.75F.
Suzuki, Shigeto, to Chevron Research Company. Process for preparing 1,4-dioxan-2-ones. 4,070,375, Cl. 260-340.600.
Suzuki, Takeshi: *See—*
Tsuneta, Asahide; and Suzuki, Takeshi, 4,070,596, Cl. 313-408.000.
Svendsen, Lars Gundro, to Pentapharm A.G. Substrate for the quantitative determination of proteolytic enzymes. 4,070,245, Cl. 195-99.000.
Swallow, Roger T.; and Stanley, Leonard A., to Kendall Company, The. Non-slip therapeutic stocking. 4,069,515, Cl. 2-239.000.
Swanson, David A. Solar air conditioning system. 4,069,971, Cl. 237-1.00A.
Swanson, Roger; Thompson, Duncan M.; and Shulick, Robert J., to Babson Bros. Co. Method of processing cattle excrement. 4,070,175, Cl. 71-12.000.
Swanson, S. Keith: *See—*
Adler, Louis S.; and Swanson, S. Keith, 4,069,675, Cl. 60-667.000.
Swarovski, Daniel, to Tyrolit-Schleifmittelwerke Swarovski K.G. Improvements in or relating to an abrasive wheel. 4,069,622, Cl. 51-206.500.
Swenson, Daniel V.: *See—*
Pennell, William E.; Kalinowski, Joseph E.; Waldby, Robert N.; Rylatt, John A.; and Swenson, Daniel V., 4,070,241, Cl. 176-87.000.
Swenson, Glen R. Adjustable release heel ski binding. 4,070,034, Cl. 280-625.000.
Swift, Roderick D.; and DeCaprio, Alfred R., to United States of America, Army. Fast shutter mechanism for high power thermal radiation. 4,070,099, Cl. 350-269.000.
Sydtveit, Arvid: *See—*
Lynne, Tor; Martinsen, Egil; and Sydtveit, Arvid, 4,069,892, Cl. 182-189.000.
Symes, Ernest M.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., 4,069,580, Cl. 30-47.000.
Syntex (U.S.A.) Inc.: *See—*
Bordt, Dale Emil; and Thomas, Phillip Clay, 4,070,453, Cl. 424-89.000.
Szasz, Kalman: *See—*
Jovanovics, Karola; Szasz, Kalman; Lorincz, Csaba; Hermann, Laszlo; and Dezseri, Eszter, 4,070,358, Cl. 260-287.00B.
Taboada, John: *See—*
Altschuler, Bruce R.; and Taboada, John, 4,070,683, Cl. 354-77.000.
Tabor, Harry Zvi. Vacuum solar collectors. 4,069,810, Cl. 126-271.000.
Tabor, Harry Zvi. Solar collectors. 4,069,811, Cl. 126-271.000.
Tachi, Seiichi, to Hitachi, Ltd. Bipolar read-only memory. 4,070,654, Cl. 365-104.000.
Taenzi, Igarashi: *See—*
Shunichi, Nishizawa; Taenzi, Igarashi; and Shigeru, Fujishima, 4,070,561, Cl. 364-104.000.
Tagashira, Yoshiaki; Takagi, Hitoshi; Inagaki, Katsumi; Ishii, Kanji; and Ohashi, Hiroyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for treating waste water. 4,070,281, Cl. 210-26.000.
Takagi, Hitoshi: *See—*
Tagashira, Yoshiaki; Takagi, Hitoshi; Inagaki, Katsumi; Ishii, Kanji; and Ohashi, Hiroyuki, 4,070,281, Cl. 210-26.000.
Takahashi, Kihei, to Yoshida Kogyo K.K. Automatic lock slider. 4,069,556, Cl. 24-205.14R.
Takahashi, Ryohei: *See—*
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,070,177, Cl. 71-105.000.
Takahashi, Shokichi, to Kawanoe Zoki Kabushiki Kaisha. Web folding apparatus. 4,070,014, Cl. 270-39.000.
Takahashi, Toru, to Yamaichi Electric Mfg., Co., Ltd. Coupling mechanism for male and female connectors. 4,070,081, Cl. 339-91.00R.
Takaishi, Naotake: *See—*
Inamoto, Yoshiaki; Fujikura, Yoshiaki; Ikeda, Hiroshi; and Takaishi, Naotake, 4,070,540, Cl. 560-117.000.
Takamatsu, Akira: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Takamatsu, Akira; Inui, Taiji; Tone, Hiroshi; and Morishama, Hajime, 4,070,458, Cl. 424-177.000.
Takamizawa, Kinya: *See—*
Iinuma, Kazuhiro; and Takamizawa, Kinya, 4,070,642, Cl. 340-1.00R.
Takata, Yoshinori: *See—*
Fujita, Kazunori; Takeuchi, Seiji; Takata, Yoshinori; Taki, Mamoru; and Hamano, Yoshimasa, 4,070,284, Cl. 210-31.00C.
Takazawa, Ietsugu. Curtain suspending position mover. 4,069,553, Cl. 24-73.0CH.
Takeda Chemical Industries, Ltd.: *See—*
Nakao, Yoshio; Kitano, Kazuaki; Imada, Isuke; and Morimoto, Hiroshi, 4,070,244, Cl. 195-81.000.
Takeda, Takeshi: *See—*
Tomiki, Tetsuhiko; Takeda, Takeshi; Miyata, Takeo; and Muramatsu, Fumio, 4,070,301, Cl. 252-301.40R.
Takenaka, Joichi: *See—*
Moriguchi, Sanseki; Abe, Hiroshi; Takenaka, Joichi; Yoshikoshi, Hideyuki; and Komatsu, Osamu, 4,070,440, Cl. 423-239.000.

Takenaka Komuten Co., Inc.: *See—*
Miura, Mitsuo; Sugibayashi, Yasuo; Suzuki, Akio; Kukino, Yoshinori; Aoyagi, Hayao; Tanifuji, Fuminobu; and Ishii, Jiro, 4,069,678, Cl. 61-63.000.

Takeuchi, Seiji: *See—*
Fujita, Kazunori; Takeuchi, Seiji; Takata, Yoshinori; Taki, Mamoru; and Hamano, Yoshimasa, 4,070,284, Cl. 210-31.00C.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Takamatsu, Akira; Inui, Taiji; Tone, Hiroshi; and Morishama, Hajime, 4,070,458, Cl. 424-177.000.

Taki, Mamoru: *See—*
Fujita, Kazunori; Takeuchi, Seiji; Takata, Yoshinori; Taki, Mamoru; and Hamano, Yoshimasa, 4,070,284, Cl. 210-31.00C.

Takigawa, Kazue, to Daitoseiki Company Limited. Racking mechanism for double-cylinder revolving cam-box circular knitting machine. 4,069,689, Cl. 66-14.000.

Takita, Kiyoshi: *See—*
Hayashi, Eiichi; Takita, Kiyoshi; Sugiyama, Hironari; and Nezu, Yukio, 4,070,377, Cl. 260-343.700.

Talaty, Chandravadan Nanalal; Wright, Jeremy; and Zenker, Nicolas, to Merck & Co., Inc. Benzimidazole substituted alanines. 4,070,478, Cl. 424-273.00R.

Talsma, Herbert: *See—*
Standish, Norman W.; and Talsma, Herbert, 4,069,703, Cl. 73-16.000.

Tamaddon, Cyrus, to Allied Chemical Corporation. Production of low shrink polyester fiber. 4,070,432, Cl. 264-210.00F.

Tamag Basel AG: *See—*
Egri, Laszlo, 4,069,831, Cl. 131-138.000.

Tamao, Yoshikuni: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tezuka, Tohru; Tonomura, Shinji; Tamao, Yoshikuni; and Hijikata, Akiko, 4,070,457, Cl. 424-177.000.

Tanaka, Masaaki: *See—*
Nohira, Hidetaka; and Tanaka, Masaaki, 4,069,797, Cl. 123-119.00A.

Tanaka Seiki Co., Ltd.: *See—*
Araya, Kenzo; Hashimoto, Takashi; and Fukui, Yoshitaka, 4,069,754, Cl. 101-53.000.

Tanaka, Yasuhisa, to Mitsubishi Kakoki Kaisha, Ltd. Automatic three stage centrifugal sludge separator. 4,069,969, Cl. 233-20.00A.

Tanifuji, Fuminobu: *See—*
Miura, Mitsuo; Sugibayashi, Yasuo; Suzuki, Akio; Kukino, Yoshinori; Aoyagi, Hayao; Tanifuji, Fuminobu; and Ishii, Jiro, 4,069,678, Cl. 61-63.000.

Taniguchi, Katsutoshi: *See—*
Muramatsu, Masahiro; Taniguchi, Katsutoshi; and Murase, Katsuhiko, 4,069,983, Cl. 242-18.0PW.

Tarka, Stanley M.: *See—*
Trout, Glenn A.; Zoumas, Barry L.; and Tarka, Stanley M., 4,070,487, Cl. 426-2.000.

Tauber, Thomas E. Wear particle detector. 4,070,660, Cl. 340-236.000.

Taylor, Charles F. Anchor member for unitizing a plurality of containers. 4,069,927, Cl. 214-10.50R.

Taylor, Clifford, to American Generator & Armature Co. Apparatus for testing starters and alternators. 4,070,624, Cl. 324-158.0MG.

Taylor, Jimmy N.: *See—*
Taylor, Miller; Taylor, Jimmy N.; and Taylor, Oren M., 4,069,648, Cl. 56-27.500.

Taylor, John Charles Wood; and Kapron, Felix Paul, to Northern Telecom Limited. Optical fibre with enhanced security. 4,070,091, Cl. 350-96.0WG.

Taylor, Larry Gordon, to Texas Instruments Incorporated. Gas metering orifice for decreasing gas consumption of pneumatic actuator. 4,069,744, Cl. 91-417.00R.

Taylor, Miller; Taylor, Jimmy N.; and Taylor, Oren M. Tobacco harvester. 4,069,648, Cl. 56-27.500.

Taylor, Oren M.: *See—*
Taylor, Miller; Taylor, Jimmy N.; and Taylor, Oren M., 4,069,648, Cl. 56-27.500.

Taylor, Reginald Sidney; and Burrow, Reginald Edward Dowton, to Taylor Woodrow Construction Limited. Articulated joints for deep water installations. 4,069,682, Cl. 61-95.000.

Taylor Woodrow Construction Limited: *See—*
Taylor, Reginald Sidney; and Burrow, Reginald Edward Dowton, 4,069,682, Cl. 61-95.000.

Taymar Limited: *See—*
Oakes, Malcolm Campbell, 4,069,947, Cl. 222-5.000.

Tecumseh Products Company: *See—*
Wisner, Ronald R., 4,070,122, Cl. 403-39.000.

Teijin Limited: *See—*
Muramatsu, Masahiro; Taniguchi, Katsutoshi; and Murase, Katsuhiko, 4,069,983, Cl. 242-18.0PW.

Tektronix, Inc.: *See—*
Crop, Roland Emil, 4,070,615, Cl. 324-57.00R.

Teletype Corporation: *See—*
Mitchell, Paul, 4,070,696, Cl. 358-280.000.

Templeton, J. G.: *See—*
Sparks, Charles E.; Templeton, J. G.; and Larson, Melvin E., 4,069,727, Cl. 83-16.000.

ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., to Merck & Co., Inc. Process for preparing 5,11-diazatetracyclododecanes. 4,070,359, Cl. 260-293.550.

ten Broeke, Jan; Grabowski, Edward J. J.; Flataker, Lars M.; Fisher, Michael H.; and Patchett, Arthur A., to Merck & Co., Inc. 4,9-Diazatricyclo[6.2.2.0^{2,7}]dodec-11-enes. 4,070,360, Cl. 260-293.550.

Teodorescu, Marius C.; Mayer, Eugene P.; and Dray, Sheldon, to University of Illinois Foundation. Method for distinguishing subpopulations in a population of morphologically indistinguishable cells. 4,070,243, Cl. 195-79.000.

Terakado, Ryoji: *See—*
Hayami, Satohiro; Matsuo, Munetsugu; Izumi, Soichi; and Terakado, Ryoji, 4,070,208, Cl. 148-12.0EA.

Terashima, Otohiko: *See—*
Yamamura, Yukio; Kawaguchi, Shojiro; Terashima, Otohiko; Ichinomiya, Tutomu; and Otuka, Shinpei, 4,069,816, Cl. 128-41.000.

Terry, Ruel C., to In Situ Technology, Inc. Methods of fluidized production of coal in situ. 4,069,868, Cl. 166-258.000.

Teske, Fritz; and Teske, Lothar. Machine for clearing bulk material. 4,069,928, Cl. 214-17.0DC.

Teske, Lothar: *See—*
Teske, Fritz; and Teske, Lothar, 4,069,928, Cl. 214-17.0DC.

Tesenske, Dennis J., to Racine Railroad Products, Inc. Spike hole plugging material. 4,070,201, Cl. 106-281.00R.

Texaco Inc.: *See—*
Mott, George E., 4,069,681, Cl. 61-89.000.

Texas Instruments Incorporated: *See—*
Bullock, David Carl, 4,070,659, Cl. 365-15.000.
Naden, Rex Alan, 4,070,651, Cl. 365-15.000.
Rao, G. R. Mohan; Rogers, Gerald R.; and McElroy, David J., 4,070,653, Cl. 365-222.000.
Taylor, Larry Gordon, 4,069,744, Cl. 91-417.00R.

Textron Inc.: *See—*
Hughes, George C., 4,069,839, Cl. 137-505.460.

Teyssedre, Jean-Pierre, to Regie Nationale des Usines Renault. Manufacturing production line and method. 4,069,764, Cl. 104-88.000.

Teysseyre, Pierre; and Vigneau, Joel, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Wound wire reinforcing bands and method. 4,069,576, Cl. 29-527.200.

Tezuka, Shosuke: *See—*
Tsunazawa, Yoshio; Tezuka, Shosuke; and Hira, Rikuo, 4,070,112, Cl. 356-96.000.

Tezuka, Tohru: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tezuka, Tohru; Tonomura, Shinji; Tamao, Yoshikuni; and Hijikata, Akiko, 4,070,457, Cl. 424-177.000.

Th. Goldschmidt AG: *See—*
Rossmy, Gerd, 4,070,386, Cl. 260-448.80R.

Thermo Electron Corporation: *See—*
Fraim, Freeman W., 4,070,155, Cl. 23-230.0PC.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track tamper. 4,069,763, Cl. 104-12.000.

Thibodeaux, Devron P.: *See—*
Baril, Albert, Jr.; Mayer, Mayer, Jr.; and Thibodeaux, Devron P., 4,070,505, Cl. 427-128.000.

Thiel, Max: *See—*
Winter, Werner; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Schaumann, Wolfgang; and Dietmann, Karl, 4,070,373, Cl. 260-333.000.

Thiele, Willi; Wendt, Gerd-Joachim; and Heyden, Werner, to Hauni-Werke Korber & Co. KG. Apparatus for conditioning tobacco. 4,069,830, Cl. 131-135.000.

Thiokol Corporation: *See—*
Mackey, Johnny R.; and Foster, Earl T., 4,070,212, Cl. 149-19.200.

Thomas, Elmer L., to Chevron Research Company. Digital phase and frequency meter. 4,070,618, Cl. 324-78.00D.

Thomas, Phillip Clay: *See—*
Bordt, Dale Emil; and Thomas, Phillip Clay, 4,070,453, Cl. 424-89.000.

Thomas, R. Bert. Electric bidet. 4,069,520, Cl. 4-7.000.

Thomas, Rolf: *See—*
Laubach, Winfried; Kienbaum; and Thomas, Rolf, 4,069,975, Cl. 366-220.000.

Thompson, Duncan M.: *See—*
Swanson, Roger; Thompson, Duncan M.; and Shulick, Robert J., 4,070,175, Cl. 71-12.000.

Thompson, Edward J.: *See—*
Saaty, Samir N.; and Thompson, Edward J., 4,069,948, Cl. 222-134.000.

Thompson, John T.; and Gillemot, George W. Encapsulated splice assembly and method. 4,070,543, Cl. 174-87.000.

Thomson-CSF: *See—*
Chartraire, Jacques; Le Coeur, Jean; and Pouliquen, Jacques, 4,070,584, Cl. 250-555.000.

Thomson-CSF Laboratories, Inc.: *See—*
Smith, Clyde; and McMann, Renville H., 4,070,691, Cl. 358-29.000.

Thor, Wayne A. Two axis side controller for aircraft. 4,069,720, Cl. 74-471.00R.

Thoreson, Anders Victor: *See—*
Hasselqvist, Stig Ernst Allan; and Thoreson, Anders Victor, 4,069,638, Cl. 52-726.000.

Thornburgh, William F., to General Motors Corporation. Pressure transducer and exhaust gas recirculation control valve using same. 4,069,798, Cl. 123-119.00A.

Tiblin, Bert V.: *See—*
Schmidt, Richard Q.; Fleischer, Herman J.; Lanning, Walter C.; and Tiblin, Bert V., 4,070,673, Cl. 343-7.300.

Tice, John D.: *See—*
Reynolds, Ronald W.; Tice, John D.; and Nutter, John S., 4,070,269, Cl. 208-25.000.

Tilden, Greg J.: *See—*
Sukonick, Josef S.; and Tilden, Greg J., 4,070,710, Cl. 364-900.000.

Timothy, John G.; and Bybee, Richard Lee. Detector array and method. 4,070,578, Cl. 250-336.000.

Ting, Chung-Yu: *See—*
Corbin, Vivian Ruth; Hitchner, James Edward; Patnaik, Bisweswar; and Ting, Chung-Yu, 4,070,501, Cl. 427-88.000.

Tinkler, Jack D.: *See—*
Angstadt, Howard P.; Tinkler, Jack D.; Norton, Richard V.; and Bushick, Ronald D., 4,070,393, Cl. 260-465.00C.

Tobias, Herbert Albert, to Du Pont de Nemours, E. I., and Company. Automatic toning device. 4,069,791, Cl. 118-120.000.

Tobitsuka, Junzo: *See—*
Konotsune, Takuo; Matsui, Takashi; and Tobitsuka, Junzo, 4,070,536, Cl. 548-367.000.

Toeniskoetter, Richard H.; and Spiwak, John J., to Ashland Oil, Inc. Process for fabricating foundry shapes. 4,070,195, Cl. 106-38.300.

Toepelt, Werner, to Coats & Clark, Inc. Automatically locking security slider fastener. 4,069,555, Cl. 24-205.14R.

Tohzuka, Takashi: *See—*
Osaka, Yonosuke; and Tohzuka, Takashi, 4,070,439, Cl. 423-88.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Iinuma, Kazuhiro; and Takamizawa, Kinya, 4,070,642, Cl. 340-1.00R.
Tsuneta, Asahide; and Suzuki, Takeshi, 4,070,596, Cl. 313-408.000.

Tomie, Donald L.: *See—*
Robertson, Ross E.; and Tomie, Donald L., 4,070,571, Cl. 362-217.000.

Tomiita, Kazuo: *See—*
Negishi, Takao; and Tomiita, Kazuo, 4,069,565, Cl. 28-274.000.

Tomiki, Tetsuhiko; Takeda, Takeshi; Miyata, Takeo; and Muramatsu, Fumio, to Matsushita Electric Industrial Co., Ltd. Method of preparing cerium-activated yttriumaluminate phosphor of improved efficiency. 4,070,301, Cl. 252-301.40R.

Tomy Kogyo Co., Inc.: *See—*
Hamano, Nobuo, 4,070,024, Cl. 273-86.00D.

Tone, Hiroshi: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Takamatsu, Akira; Inui, Taiji; Tone, Hiroshi; and Morishama, Hajime, 4,070,458, Cl. 424-177.000.

Tonomura, Shinji: *See—*
Okamoto, Shosuke; Kikumoto, Ryoji; Ohkubo, Kazuo; Tezuka, Tohru; Tonomura, Shinji; Tamao, Yoshikuni; and Hijikata, Akiko, 4,070,457, Cl. 424-177.000.

Top-Scor Products, Inc.: *See—*
Katz, Marvin; and Becicka, William J., 4,070,150, Cl. 432-210.000.

Toray Industries, Inc.: *See—*
Miwa, Kishio; Tsunoi, Kazuo; and Noguchi, Yoshio, 4,070,164, Cl. 55-26.000.
Morikawa, Masanobu; Aoyama, Toshikazu; and Yada, Miyoji, 4,070,332, Cl. 260-40.00R.
Negishi, Takao; and Tomiita, Kazuo, 4,069,565, Cl. 28-274.000.

Toray Silicone Company, Ltd.: *See—*
Kishimoto, Keiichi; Koda, Yoshinobu; Sasaki, Shosaku; and Suzuki, Masahiko, 4,070,343, Cl. 260-45.75F.

Toronto, Ontario. Hockey practice shooter. 4,070,017, Cl. 273-1.00B.

Torsch, Charles E., to GTE Sylvania Incorporated. High resolution torodidal deflection yoke. 4,070,640, Cl. 335-213.000.

Tosato, Larry P.; and Koob, Robert W., to Westinghouse Electric Corporation. Elevator system. 4,069,898, Cl. 187-29.00R.

Towmotor Corporation: *See—*
Forry, James Edward; and Neer, Robert Gordon, 4,069,747, Cl. 92-166.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Arai, Yoshiyasu; Hokudo, Toshiaki; and Saka, Masanori, 4,069,656, Cl. 57-160.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Kikuchi, Mitsuo; and Hiraga, Yoichi, 4,070,443, Cl. 423-321.00R.

Toyobo Co., Ltd.: *See—*
Isaka, Tsutomu; Nagano, Hiroshi; Murakami, Tetsushi; Matsunami, Koichi; and Yamane, Yukio, 4,070,417, Cl. 260-860.000.
Sumitomo, Norio; and Matsumoto, Yoshiki, 4,069,566, Cl. 28-289.000.

Toyoda, Hiroshi: *See—*
Fuchi, Tsutomu; and Toyoda, Hiroshi, 4,070,594, Cl. 313-1.000.

Toyoda-Koki Kabushiki Kaisha: *See—*
Inoue, Katsuo; and Kamiya, Yoji, 4,069,918, Cl. 211-1.500.

Toyoda, Yoshiaki: *See—*
Inubushi, Masanobu; and Toyoda, Yoshiaki, 4,069,660, Cl. 60-39.250.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ezaki, Toshi; and Mineda, Hisahalu, 4,069,721, Cl. 74-501.00R.
Nohira, Hidetaka; and Tanaka, Masaaki, 4,069,797, Cl. 123-119.00A.

Trafford, Larry F., to General Signal Corporation. Variable length electrical connector. 4,070,086, Cl. 339-198.00H.

Travis, Karen L.; and Ward, Frank B., to Corning Glass Works. Preparation of serum standard for radioassay of thyroxine. 4,070,153, Cl. 23-230.600.

Trefney, Ralph P., to Bird Electronic Corporation. Microstrip configuration with inductive pickup loop for VSWR meter. 4,070,619, Cl. 324-95.000.

Treier, Otto. Apparatus for the capacitative measurement of the surface level of fluid media in vessels. 4,069,710, Cl. 73-304.00C.

Treille, Pierre Albert Eugene; Dassonville, Vincent; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, to Degremont. Apparatus for the measurement of the mobility of colloids in an electric field. 4,070,263, Cl. 204-180.00R.

Tresky, Miroslav: *See—*
Nicklaus, Karl; and Tresky, Miroslav, 4,069,961, Cl. 228-1.00R.

Tresper, Erhard; and Krimm, Heinrich, to Bayer Aktiengesellschaft. Process for the production of O-derivatives of p-isopropenyl phenol. 4,070,392, Cl. 260-463.000.

Trias, John A.: *See—*
Richards, William E.; and Trias, John A., 4,070,101, Cl. 350-312.000.

Tridair Industries: *See—*
Petroshanoff, George, 4,069,855, Cl. 151-69.000.

Trifunovic, Alexander L.; and Combs, James Irvin, to Glen Raven Mills, Inc. Apparatus for producing interlaced or entangled multifilament yarns. 4,069,562, Cl. 28-273.000.

Trifunovic, Alexander L.; and Combs, James Irvin, to Glen Raven Mills, Inc. Process for producing interlaced or entangled multifilament yarns. 4,059,564, Cl. 28-273.000.

Trout, Glenn A.; Zoumas, Barry L.; and Tarka, Stanley M., to Hershey Foods Corporation. Method of stimulating appetite in ruminants and ruminant feed containing appetite stimulant. 4,070,487, Cl. 426-2.000.

True Temper Corporation: *See—*
Germain, Robert A., 4,069,584, Cl. 30-238.000.

TRW Inc.: *See—*
Rameson, William W., 4,069,589, Cl. 33-174.00P.

Tsay, Yuh-Geng: *See—*
Kende, Andrew S.; Mills, John E.; and Tsay, Yuh-Geng, 4,070,382, Cl. 260-365.000.

Tsujii, Takehiko; and Kutsuzawa, Shunsuke, to Kabushiki Kaisha Nippon Kijuki Seisakusho. Suspension apparatus. 4,070,053, Cl. 294-81.00R.

Tsunazawa, Yoshio; Tezuka, Shosuke; and Hira, Rikuo, to Shimadzu Seisakusho Ltd. Spectrophotometer. 4,070,112, Cl. 356-96.000.

Tsuneta, Asahide; and Suzuki, Takeshi, to Tokyo Shibaura Electric Co., Ltd. In-line plural beams cathode ray tube having color phosphor element stripe spaced from each other by intervening light absorbing areas and slit-shaped aperture mask. 4,070,596, Cl. 313-408.000.

Tsunoi, Kazuo: *See—*
Miwa, Kishio; Tsunoi, Kazuo; and Noguchi, Yoshio, 4,070,164, Cl. 55-26.000.

Tsuruoka, Masao: *See—*
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Uda, Taizo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,070,390, Cl. 260-465.300.

Tucker, James Mackey, to Kaddis Mfg. Co. Corrosion resistant metal sealing formulation. 4,070,193, Cl. 106-14.000.

Tucker, John S. Anti-theft cash register. 4,070,564, Cl. 364-405.000.

Tucker, Terry L.: *See—*
Curtis, Donald W.; Branciforte, Michael A.; and Tucker, Terry L., 4,070,698, Cl. 360-12.000.

Tuttle, John R. Discrete-gain output limiter. 4,070,632, Cl. 330-86.000.

Twibell, Jerome J.: *See—*
Calle, Jaime; Garvey, Robert J.; Monahan, Earnest M.; Parris, George L.; Twibell, Jerome J.; and Wooda, John M., 4,070,704, Cl. 364-200.000.

Twitchell, Sherman W.: *See—*
Crathern, Charles F. H.; and Twitchell, Sherman W., 4,070,226, Cl. 156-364.000.

Tyrolit-Schleifmittelwerke Swarovski K.G.: *See—*
Swarovski, Daniel, 4,069,622, Cl. 51-206.500.

U C B, Societe Anonyme: *See—*
De Poortere, Michel; Dufour, Paul; and Vrancken, August, 4,070,259, Cl. 204-159.160.

Uban, Stephen Allen; and Mason, Donald George, to Ecodyne Corporation. Apparatus for separating solids from liquids. 4,070,277, Cl. 209-168.000.

Ube Industries, Ltd.: *See—*
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Uda, Taizo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,070,390, Cl. 260-465.300.

Uchida, Minoru: *See—*
Nakagawa, Kazuyukip; Uchida, Minoru; and Oka, Kimiaki, 4,070,470, Cl. 424-258.000.

Uchida, Tohru: *See—*
Kato, Akira; Itoh, Akira; and Uchida, Tohru, 4,070,185, Cl. 96-1.800.

Uchikoba, Tsukasa; Yuda, Saneo; Hirano, Kiyoshige; Yawata, Kazufumi; and Kobayakawa, Masaki, to Nippon Electric Kagoshima, Limited. Multi-digit luminescent display tube having wider grid frame members on both ends of a series of grids. 4,070,599, Cl. 313-497.000.

Uda, Taizo: *See—*
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Uda, Taizo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, 4,070,390, Cl. 260-465.300.

Uddeholms Aktiebolag: *See—*
Anderson, Lars-Gustaf; Andersson, Hilding Roland; Broddevall, Bengt Gunnar; and Lindberg, Erik Axel Sigvard, 4,070,234, Cl. 162-29.000.

Ueda, Kanji: *See—*
Obayashi, Shigeji; Ueda, Kanji; Iwatsubo, Haruhiko; and Okabe, Thoru, 4,070,305, Cl. 252-411.00S.
Ueyama, Takehiko: *See—*
Nishizawa, Masahiro; and Ueyama, Takehiko, 4,070,498, Cl. 427-53.000.
Uhlig, Albert R., to Owens-Illinois, Inc. Method for forming a blown plastic container. 4,070,429, Cl. 264-89.000.
Uhlig, Albert R.: *See—*
Krall, Thomas J.; and Uhlig, Albert R., 4,070,428, Cl. 264-89.000.
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Uda, Taizo; Hidaka, Mikio; Nakamura, Yasuo; and Tsuruoka, Masao, to Ube Industries, Ltd. Method for the catalytical preparation of acrylonitrile. 4,070,390, Cl. 260-465.300.
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Takamatsu, Akira; Inui, Taiji; Tone, Hiroshi; and Morishama, Hajime, to Sanraku-Ocean Co., Ltd. Novel physiologically active peptide and its n-acyl derivatives and processes for producing thereof. 4,070,458, Cl. 424-177.000.
Union Carbide Corporation: *See—*
Herman, Wallace Unto, 4,069,968, Cl. 233-14.00R.
Papa, Anthony Joseph, 4,070,313, Cl. 260-2.50F.
Smarook, Walter H., 4,070,515, Cl. 428-92.000.
Union Miniere: *See—*
Obolensky, Vsevolod, 4,070,061, Cl. 299-8.000.
Union Oil Company of California: *See—*
Gallus, Julius P., 4,069,870, Cl. 166-293.000.
Sandiford, Burton B., 4,069,869, Cl. 166-270.000.
Union Special Corporation: *See—*
Ishikawa, Yoichiro, 4,069,777, Cl. 112-113.000.
Unit Rig & Equipment Co.: *See—*
Satterwhite, Charles R., 4,069,605, Cl. 37-190.000.
U.S. Floor Systems, Inc.: *See—*
Williams, Robert C.; and Kimball, William R., 4,069,541, Cl. 15-321.000.
United States of America
Agriculture: *See—*
Baril, Albert, Jr.; Mayer, Mayer, Jr.; and Thibodeaux, Devron P., 4,070,505, Cl. 427-128.000.
Air Force: *See—*
Butcher, Daryl T., 4,070,591, Cl. 307-359.000.
Marko, Adolf R., 4,070,661, Cl. 340-271.000.
Miller, Robert B., 4,070,595, Cl. 313-361.000.
Rahilly, William P., 4,070,205, Cl. 136-89.0SJ.
Rew, James A., 4,069,999, Cl. 248-507.000.
Roberts, John E.; and Wiggins, Richard H., 4,070,709, Cl. 364-602.000.
Schurmeyer, Fritz L.; and Young, Charles R., 4,070,655, Cl. 365-156.000.
Van Etten, Paul, 4,070,636, Cl. 331-127.000.
Vaughan, John C., III, 4,069,977, Cl. 239-265.230.
Army: *See—*
Baldauf, Frederick C.; and Ong, Kwok Y., 4,069,701, Cl. 73-1.00G.
Cucksee, Marjorie T.; and Allen, Henry C., 4,070,213, Cl. 149-19.920.
F'Geppert, Erwin, 4,069,718, Cl. 74-206.000.
Merritt, James A.; and Robertson, Lawrence C., 4,070,261, Cl. 204-157.10R.
Oldberg, Oscar, 4,069,668, Cl. 60-317.000.
Parks, John D., 4,070,692, Cl. 358-107.000.
Rodgers, Aubrey; and Widner, Rayburn K., 4,069,990, Cl. 244-3.230.
Swift, Roderick D.; and DeCaprio, Alfred R., 4,070,099, Cl. 350-269.000.
Energy: *See—*
Bissett, Larry A., 4,069,867, Cl. 166-256.000.
Eatherly, Walter P.; Robbins, J. M.; and Rosson, David E., Sr., 4,070,514, Cl. 428-64.000.
Notz, Karl J.; Rainey, Robert H.; Greene, Charles W.; and Shockley, William E., 4,070,438, Cl. 423-7.000.
Pennell, William E.; Kalinowski, Joseph E.; Waldby, Robert N.; Rylatt, John A.; and Swenson, Daniel V., 4,070,241, Cl. 176-87.000.
Health, Education and Welfare: *See—*
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Wilkinson Sword Limited: *See—*
Rowsell, David G.; and Hems, Roger, 4,070,449, Cl. 424-45.000.
Rowsell, David G.; and Spring, David J., 4,070,496, Cl. 424-45.000.
Willet, George L.; and Mushet, William D., to Westvaco Corporation. Gusseted pinch bottom valved bags. 4,069,964, Cl. 229-62.500.
Willette, Leo Gaston: *See—*
Newton, Milton Dwayne; and Willette, Leo Gaston, 4,069,528, Cl. 7-1.00R.
Williams, Lewis D.: *See—*
Huber, Wolfgang; Saifer, Mark G.; and Williams, Lewis D., 4,070,459, Cl. 424-177.000.
Williams, Robert C.; and Kimball, William R., to U.S. Floor Systems, Inc. Cleaning method and apparatus. 4,069,541, Cl. 15-321.000.
Willingshofer, Walter; Hopsch, Gerhard; and Bose, Karlheinz, to Daimler-Benz Aktiengesellschaft. Ball joint. 4,070,123, Cl. 403-132.000.
Wilson, Ernest I. Pipeline retard, support and protection method. 4,069,684, Cl. 61-105.000.
Wilson, Percy, to Metrosound Audio Products Ltd. Cleansing of contaminants from gramophone records. 4,070,028, Cl. 274-47.000.
Windmoller & Holscher: *See—*
Achelpohl, Fritz, 4,069,944, Cl. 221-72.000.
Winkelmann, Hans Dieter; Oertel, Harald; and Weimann, Norbert, to Bayer Aktiengesellschaft. Monomethylol ether diols and polyurethane solutions prepared therefrom. 4,070,345, Cl. 260-77.5AM.
Winship, Thomas E.: *See—*
Chitwood, Byron W.; and Winship, Thomas E., 4,069,878, Cl. 175-53.000.
Winter, Werner; Thiel, Max; Stach, Kurt, deceased; by Plattner, Werner, administrator; Schaumann, Wolfgang; and Dietmann, Karl, to C.F. Boehringer & Soehne GmbH. Tricyclic aminoalkyl derivatives. 4,070,373, Cl. 260-333.000.
Wirt, Leon A., to Caterpillar Tractor Co. Tree shear with spherical blades. 4,069,847, Cl. 144-34.00E.
Wirthwein, Rolf: *See—*
Hofen, Willi; Wirthwein, Rolf; Reissinger, Karl-Hermann; and Krekel, Jorg, 4,070,253, Cl. 203-75.000.
Wisconsin Alumni Research Foundation: *See—*
Harker, Ralph J., 4,069,929, Cl. 214-83.140.
Wise, Leslie E. Athletic foot protector. 4,069,600, Cl. 36-10.000.
Wise, Richard M.: *See—*
Kalafus, Edward F.; and Wise, Richard M., 4,070,318, Cl. 260-29.300.
Wiser, John A. Tiltable game surface device. 4,070,025, Cl. 273-110.000.
Wislocky, Joseph, to International Rectifier Corporation. Flexible lead. 4,070,688, Cl. 357-68.000.
Wismer, Marco; and Gerek, Gene, to PPG Industries, Inc. Process of applying and curing a plurality of coatings. 4,070,497, Cl. 427-44.000.
Wisner, Ronald R., to Tecumseh Products Company. Ball and socket joint and method of making. 4,070,122, Cl. 403-39.000.
Witenhafer, Donald Edward: *See—*
Jones, Richard Augustus; and Witenhafer, Donald Edward, 4,070,534, Cl. 526-204.000.
Witte, Stefan Oh. Equipment for surface treatment. 4,069,790, Cl. 118-70.000.
Witte, Wulf: *See—*
Bald, Hubert; and Witte, Wulf, 4,070,120, Cl. 403-13.000.
Witzel, Bruce E.: *See—*
Dybas, Richard A.; Grier, Nathaniel; and Witzel, Bruce E., 4,070,400, Cl. 260-570.50P.
Wolfelsperger, Robert O.: *See—*
Young, William E.; Wolfelsperger, Robert O.; and Pasco, William R., 4,069,643, Cl. 53-22.00A.

Wollner, Johannes: *See—*
Meyer-Stoll, Hans-Albrecht; Wollner, Johannes; and Schittek, Hans-Heinz, 4,070,317, Cl. 260-29.300.
Meyer-Stoll, Hans-Albrecht; Wollner, Johannes; and Schittek, Hans-Heinz, 4,070,320, Cl. 260-29.40R.
Wollweber, Hartmund: *See—*
Hoffmeister, Friedrich; Hiltmann, Rudolf; Wollweber, Hartmund; and Kramer, Helmut, 4,070,494, Cl. 424-2.000.
Wolters, Ernst: *See—*
Sextro, Gunter; Burg, Karlheinz; Kern, Rudolf; Schmidt, Heinz; and Wolters, Ernst, 4,070,415, Cl. 260-830.00R.
Wolters, Gerhard; and Strifler, Paul, to Daimler-Benz Aktiengesellschaft. Traffic system, especially public local passenger traffic system. 4,069,888, Cl. 180-98.000.
Wolterdorf, Otto W., Jr.: *See—*
Cragoe, Edward J., Jr.; and Wolterdorf, Otto W., Jr., 4,070,539, Cl. 560-56.000.
Wood, T. A., to Du Pont de Nemours, E. I., and Company. Polyamide gel removal. 4,070,425, Cl. 264-39.000.
Woodruff, Keith: *See—*
Krevald, Helga; Johnson, Donald Patrick; and Woodruff, Keith, 4,069,574, Cl. 29-434.000.
Woods, John M.: *See—*
Calle, Jaime; Garvey, Robert J.; Monahan, Earnest M.; Parris, George L.; Twibell, Jerome J.; and Woods, John M., 4,070,704, Cl. 364-200.000.
Woodward, Derrick Ronald, to JWI Ltd. Automatic vacuum stabilizing valve. 4,070,237, Cl. 162-217.000.
Woodward, Robert Burns: *See—*
Ernest, Ivan; Gosteli, Jacques; and Woodward, Robert Burns, 4,070,477, Cl. 424-271.000.
Worrall, Roy: *See—*
Bode, Gerald; and Worrall, Roy, 4,069,632, Cl. 52-309.700.
Wright, George C.: *See—*
Pelosi, Stanford S.; White, Ronald E.; Wright, George C.; and Yu, Chia Nien, 4,070,380, Cl. 260-347.700.
Wright, Jeremy: *See—*
Gusseted pinch bottom valved bags. Talaty, Chandravadan Nanalal; Wright, Jeremy; and Zenker, Nicolas, 4,070,478, Cl. 424-273.00R.
Wright, Sanford J., Jr.; Anderson, Peter T.; and Grimes, Ralph S., to said Sanford J. Wright; by said Peter Anderson and by Ralph Grimes. Multi-modal data input/output apparatus and method compatible with bio-engineering requirements. 4,070,649, Cl. 340-146.3SY.
Wusirika, Raja R.: *See—*
Chyung, Kenneth; and Wusirika, Raja R., 4,070,198, Cl. 106-52.000.
Wust, Albert: *See—*
Hottinger, Conrad; Wust, Albert; and Jenzer, Pierre, 4,069,740, Cl. 89-33.0SF.
Wyckoff, Charles W. Direction-indicating surface marker and the like. 4,069,787, Cl. 116-63.00R.
Wyland, Alvin D.; and Patel, Jaykishan C., to General Electric Company. Control system. 4,070,144, Cl. 431-79.000.
Xerox Corporation: *See—*
Gibson, Harry W.; and Saeva, Franklin D., 4,070,186, Cl. 96-1.0SD.
Gibson, Harry W.; and Gunther, Wolfgang H. H., 4,070,296, Cl. 252-62.10P.
Grafton, David A., 4,070,089, Cl. 350-7.000.
McCrea, James E., 4,069,728, Cl. 83-409.000.
Xonics, Inc.: *See—*
Lewis, John H.; and Young, Robert A., 4,070,577, Cl. 250-315.00A.
Yada, Miyoji: *See—*
Morikawa, Masanobu; Aoyama, Toshikazu; and Yada, Miyoji, 4,070,332, Cl. 260-40.00R.
Yamada, Kunimitsu; and Kanematsu, Hitaka, to Kabushiki Kaisha Nitto Tekuno Group. Anchor and method for constructing same. 4,069,677, Cl. 61-39.000.
Yamaichi Electric Mfg., Co., Ltd.: *See—*
Takahashi, Toru, 4,070,081, Cl. 339-91.00R.
Yamamura Glass Kabushiki Kaisha: *See—*
Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,069,979, Cl. 241-5.000.
Yamamura, Yukio; Kawaguchi, Shojiro; Terashima, Otohiko; Ichinomiya, Tutomu; and Otuka, Shinpei, to Matsushita Electric Works, Ltd. Shoulder patting instrument. 4,069,816. Cl. 128-41.000.
Yamane, Yukio: *See—*
Isaka, Tsutomu; Nagano, Hiroshi; Murakami, Tetsushi; Matsunami, Koichi; and Yamane, Yukio, 4,070,417, Cl. 260-860.000.
Yamazaki, Shuichi: *See—*
Date, Tasuku; Yamazaki, Shuichi; and Shimada, Shinichi, 4,069,667, Cl. 60-282.000.
Yang, Kang: *See—*
Convers, Ronald J.; and Yang, Kang, 4,070,396, Cl. 260-513.00B.
Yano, Takao: *See—*
Ieda, Nobuaki; and Yano, Takao, 4,070,590, Cl. 307-355.000.
Yapp, Robert Ernest; and Smith, Derek John, to Massey-Ferguson Services N.V. Steering systems. 4,069,889, Cl. 180-132.000.
Yarem, Joseph; and Poss, Werner, to Chemetron Corporation. Process and apparatus for mechanical separation of a combination of meat and bone into useful fractions. 4,069,980, Cl. 241-24.000.
Yarema Die & Engineering Co.: *See—*
Schuette, Heinz G., 4,069,626, Cl. 52-57.000.
Yawata, Kazufumi: *See—*
Uchikoba, Tsukasa; Yuda, Saneo; Hirano, Kiyoshige; Yawata, Kazufumi; and Kobayakawa, Masaki, 4,070,599, Cl. 313-497.000.
Yen, James T., to Grumman Aerospace Corporation. Tornado-type wind turbine. 4,070,131, Cl. 415-3.000.
Yih, Roy Y.: *See—*
Johnson, Wayne O.; and Yih, Roy Y., 4,070,178, Cl. 71-105.000.
Yokomichi, Isao: *See—*
Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,070,177, Cl. 71-105.000.
Yokono, Hitoshi: *See—*
Narahara, Toshikazu; Sugawara, Katuo; Karasawa, Yoshiharu; Yokono, Hitoshi; Mukai, Junji; and Muroi, Tadashi, 4,070,416, Cl. 260-830.00P.
Yokoyama, Etsuso: *See—*
Kawaharada, Masaru; and Yokoyama, Etsuso, 4,070,668, Cl. 340-373.000.
Yoneyama, Eiichi: *See—*
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, 4,070,176, Cl. 71-103.000.
Yoshida Kogyo K.K.: *See—*
Hasegawa, Mutsuo; Aikawa, Kazuo; and Nagata, Katsuyuki, 4,070,255, Cl. 204-42.000.
Takahashi, Kihei, 4,069,556, Cl. 24-205.14R.
Yoshida Kogyo Kabushiki Kaisha: *See—*
Minami, Tadashi, 4,069,780, Cl. 112-150.000.
Yoshikoshi, Hideyuki: *See—*
Moriguchi, Sanseki; Abe, Hiroshi; Takenaka, Joichi; Yoshikoshi, Hideyuki; and Komatsu, Osamu, 4,070,440, Cl. 423-239.000.
Young Californian Shoes, Inc.: *See—*
Robbins, Thomas Richard; and Cunliffe, Stephen Edson, 4,069,601, Cl. 36-11.500.
Young, Charles R.: *See—*
Schurmeyer, Fritz L.; and Young, Charles R., 4,070,655, Cl. 365-156.000.
Young, Philip. Releasable window guard. 4,070,048, Cl. 292-179.000.
Young, Robert A.: *See—*
Lewis, John H.; and Young, Robert A., 4,070,577, Cl. 250-315.00A.
Young, William E.; Wolfelsperger, Robert O.; and Pasco, William R., to Young, William E. Apparatus and method of packaging large items. 4,069,643, Cl. 53-22.00A.
Yu, Chia Nien: *See—*
Pelosi, Stanford S.; White, Ronald E.; Wright, George C.; and Yu, Chia Nien, 4,070,380, Cl. 260-347.700.
Yuda, Saneo: *See—*
Uchikoba, Tsukasa; Yuda, Saneo; Hirano, Kiyoshige; Yawata, Kazufumi; and Kobayakawa, Masaki, 4,070,599, Cl. 313-497.000.
Zabiak, Daniel M.: *See—*
Hwang, Ki-Sup; and Zabiak, Daniel M., 4,070,322, Cl. 260-29.60R.
Zachok, Robert Michael: *See—*
Buzzard, Clair Alan; Gifford, Richard Cyril; Lescinsky, Frank William; and Zachok, Robert Michael, 4,069,970, Cl. 235-312.000.
Zahid, Abduz, to Greer Hydraulics, Inc. Pressure dampener device. 4,069,844, Cl. 138-30.000.
Zamboni, Frank J., to Frank J. Zamboni & Co. Machine for removing painted stripes from artificial turf. 4,069,540, Cl. 15-320.000.
Zavada, Edmund S.: *See—*
Barker, A. Clifford; and Zavada, Edmund S., 4,070,634, Cl. 331-2.000.
Zawacki, Chester W., to Ford Motor Company. Electrostatic powder coating apparatus. 4,069,974, Cl. 239-15.000.
Zdeb, Brian D., to MacLean-Fogg Lock Nut Co. Reversible ratchet loadbinder. 4,069,902, Cl. 192-43.000.
Zehntel, Inc.: *See—*
Borrelli, Ronald N., 4,070,565, Cl. 235-302.000.
Zemlin, John C.; and Davis, Robert, to Allied Resin Corporation. Polymer backed silicone rubber molds and means for forming bonds with polyorganosiloxanes. 4,070,224, Cl. 156-314.000.
Zenith Carburetter Company Limited, The: *See—*
Ross, Gary Ernest Donald, 4,069,802, Cl. 123-179.00G.
Zenith Radio Corporation: *See—*
Merrell, Richard G., 4,070,629, Cl. 325-453.000.
Schwartz, James W., 4,069,567, Cl. 29-25.150.
Zenker, Nicolas: *See—*
Talaty, Chandravadan Nanalal; Wright, Jeremy; and Zenker, Nicolas, 4,070,478, Cl. 424-273.00R.
Zernig, Ernst; and Ruther, Manfred, to Heinze, Richard. Fitting component anchored into a sunk seat. 4,069,549, Cl. 16-158.000.
Zimin, Anatoly Ivanovich, deceased: *See—*
Bocharov, Jury Alexandrovich; Safonov, Anatoly Vasilievich; Grigorenko, Anatoly Sergeevich; Moroz, Jury Antonovich; Kuznetsov, German Nikolaevich; and Zimin, Anatoly Ivanovich, deceased, 4,069,700, Cl. 72-407.000.
Zimina, administratrix; Elizaveta Konstantinovna: *See—*
Bocharov, Jury Alexandrovich; Safonov, Anatoly Vasilievich; Grigorenko, Anatoly Sergeevich; Moroz, Jury Antonovich; Kuznetsov, German Nikolaevich; and Zimin, Anatoly Ivanovich, deceased, 4,069,700, Cl. 72-407.000.
Zimmer, Ernest: *See—*
Rule, Peter; Mace, Owen; and Zimmer, Ernest, 4,070,554, Cl. 179-175.30R.
Zoumas, Barry L.: *See—*
Trout, Glenn A.; Zoumas, Barry L.; and Tarka, Stanley M., 4,070,487, Cl. 426-2.000.
Zupanick, Joseph E.: *See—*
Morgan, George W.; and Zupanick, Joseph E., 4,070,062, Cl. 299-10.000.
Zwillinger, Daniel, to Raymond Lee Organization, Inc., The, a part interest. Drawer sliding device. 4,070,076, Cl. 312-350.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JANUARY, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Seating Company: *See—*
Barecki, Chester J., Re. 29,522, Cl. 297-445.000.

Barecki, Chester J., to American Seating Company. Transit seat with contoured plastic shell. Re. 29,522, Cl. 297-445.000.

Borg-Warner Corporation: *See—*
Rattenbury, Kenneth H., Re. 29,523, Cl. 260-45.85S.

Chamberlain Manufacturing Corporation: *See—*
Willmott, Colin B., Re. 29,525, Cl. 325-37.000.

Facet Enterprises, Inc.: *See—*
Spencer, Andrew R., Re. 29,524, Cl. 428-134.000.

Pender, David R. Locking means for bicycles and the like. Re. 29,521, Cl. 70-234.000.

Rattenbury, Kenneth H., to Borg-Warner Corporation. Olefinic polymers stabilized with thioacyl trivalent phosphorus compounds. Re. 29,523, Cl. 260-45.85S.

Spencer, Andrew R., to Facet Enterprises, Inc. Porous laminate and method of manufacture. Re. 29,524, Cl. 428-134.000.

Willmott, Colin B., to Chamberlain Manufacturing Corporation. Digital radio control. Re. 29,525, Cl. 325-37.000.

LIST OF PLANT PATENTEES

Armstrong, David L., to Armstrong Nurseries, Inc. Flowering-fruiting peach tree. 4,195, 1-24-78, Cl. 43.000.

Armstrong Nurseries, Inc.: *See—*
Armstrong, David L., 4,195, Cl. 43.000.

B. L. Cobia, Inc.: *See—*
Cobia, Barnell L.; and Griffith, Stephen H., 4,196, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,197, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,198, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,199, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,200, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,201, Cl. 88.000.

Cobia, Barnell L.; and Griffith, Stephen H., to B. L. Cobia, Inc. Cactaceae plant. 4,196, 1-24-78, Cl. 88.000.

Cobia, Barnell L.; and Griffith, Stephen H., to B. L. Cobia, Inc. Cactaceae plant. 4,197, 1-24-78, Cl. 88.000.

Cobia, Barnell L.; and Griffith, Stephen H., to B. L. Cobia, Inc. Cactaceae plant. 4,198, 1-24-78, Cl. 88.000.

Cobia, Barnell L.; and Griffith, Stephen H., to B. L. Cobia, Inc. Milkweed plant family. 4,199, 1-24-78, Cl. 88.000.

Cobia, Barnell L.; and Griffith, Stephen H., to B. L. Cobia, Inc. Cactaceae plant. 4,200, 1-24-78, Cl. 88.000.

Cobia, Barnell L.; and Griffith, Stephen H., to B. L. Cobia, Inc. Cactaceae plant. 4,201, 1-24-78, Cl. 88.000.

Griffith, Stephen H.: *See—*
Cobia, Barnell L.; and Griffith, Stephen H., 4,196, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,197, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,198, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,199, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,200, Cl. 88.000.
Cobia, Barnell L.; and Griffith, Stephen H., 4,201, Cl. 88.000.

LIST OF DESIGN PATENTEES

Alves, Mary Louise Irene. Combined cigarette holder and ashtray. 247,049, 1-24-78, Cl. D27-14.000.

American Cyanamid Company: *See—*
Grodin, Adam J., 247,023, Cl. D9-168.000.

American Luggage Works, Inc.: *See—*
Koffler, Sol, 247,065, Cl. D87-5.00G.
Koffler, Sol, 247,067, Cl. D87-5.00G.

Bader, George Paul, to Kickapoo Stove Works, Ltd. Heating stove. 247,046, 1-24-78, Cl. D23-93.000.

Behling, Fredric C.; and Sullivan, Paul J. Game component. 247,055, 1-24-78, Cl. D34-5.00R.

Borri, Ambrogio. Shoe. 247,006, 1-24-78, Cl. D2-286.000.

Breger, Carl-Arne. Tea pot. 247,016, 1-24-78, Cl. D7-65.000.

Briggs, Eugene C., to Koehring Company. Portable heater. 247,045, 1-24-78, Cl. D23-77.000.

Britt, William James, to Morton-Norwich Products, Inc. Bottle. 247,021, 1-24-78, Cl. D9-42.000.

Brodmann, Harry, to C.A. Moon Limited. Mobile stand for a loudspeaker. 247,034, 1-24-78, Cl. D14-38.000.

Brodmann, Harry, to C.A. Moon (Holdings) Limited. Mobile tiltable stand for a loudspeaker. 247,035, 1-24-78, Cl. D14-38.000.

Brodmann, Harry, to C.A. Moon (Holdings) Limited. Mobile tiltable stand for a loudspeaker. 247,036, 1-24-78, Cl. D14-38.000.

C.A. Moon (Holdings) Limited: *See—*
Brodmann, Harry, 247,035, Cl. D14-38.000.
Brodmann, Harry, 247,036, Cl. D14-38.000.

C.A. Moon Limited: *See—*
Brodmann, Harry, 247,034, Cl. D14-38.000.

Chapman, George. Bathtub caddy. 247,013, 1-24-78, Cl. D6-86.000.

Charboneau, Lawrence A.: *See—*
Kramer, James D.; Herkal, Dennis E.; Kramer, Lawrence D.; and Charboneau, Lawrence A., 247,018, Cl. D8-14.000.

Cherry, Richard Sutton, to Phillips Plastics of North America, Inc. Stackable packaging tray. 247,025, 1-24-78, Cl. D9-242.000.

Chulick, John. Christmas tree stand. 247,014, 1-24-78, Cl. D6-105.000.

Clark, Earl J., to Tandy Brands, Inc. Holster. 247,043, 1-24-78, Cl. D22-13.000.

Clowes, George R. Practice tennis racquet. 247,058, 1-24-78, Cl. D34-5.0SP.

Cocuzzo, Daniel M. Transient voltage suppression unit. 247,030, 1-24-78, Cl. D13-11.000.

Cocuzzo, Daniel M. Transient voltage suppression unit. 247,031, 1-24-78, Cl. D13-11.000.

Combi Co., Ltd.: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, 247,028, Cl. D12-112.000.

Corbin Gentry, Inc.: *See—*
Hanagan, Michael W., 247,011, Cl. D6-48.100.

Damiana, Norm. Storm window. 247,047, 1-24-78, Cl. D25-52.000.

Daswick, Alexander C. Adjustable reclining chair. 247,010, 1-24-78, Cl. D6-39.000.

Dawson, Thomas J., to Genie Toys. Inc. Toy stuffed animal. 247,053, 1-24-78, Cl. D34-2.00R.

DeMyer, Donald L. Grid for poultry cage gate. 247,052, 1-24-78, Cl. D30-2.000.

Dow Chemical Company, The: *See—*
Turnbull, Guy A., 247,022, Cl. D9-60.000.

Doyel, John S. Smoke dispersing device for use with a cigarette ashtray. 247,050, 1-24-78, Cl. D27-15.000.

Dunlop Limited: *See—*
King, Stanley, 247,048, Cl. D25-80.000.

Eagle, Graham Robert; and Pusterla, Anthony. Trailer. 247,027, 1-24-78, Cl. D12-103.000.

Fairthorne, Victor, to Land Ranger Manufacturing Inc. Canopy for a pick up truck bed. 247,029, 1-24-78, Cl. D12-156.000.

Fowlie, William J. C. Support stand for a desk top calculator or similar article. 247,015, 1-24-78, Cl. D6-184.000.

Franklin, Robert P.; and Koch, Walter L., to Rowe International Inc. Vending machine. 247,062, 1-24-78, Cl. D52-3.00B.

Freehauf, Eugene G.: *See—*
Hollingsworth, Gene C.; and Freehauf, Eugene G., 247,032, Cl. D13-24.000.

Fuji Photo Film Co., Ltd.: *See—*
Fukuda, Hiroshi, 247,041, Cl. D16-06.000.
Muramatsu, Katsuji; and Fuutagawa, Ikuo, 247,033, Cl. D14-11.000.

Fukuda, Hiroshi, to Fuji Photo Film Co., Ltd. Flash camera. 247,041, 1-24-78, Cl. D16-06.000.

Funahashi, Takaji. Stamp pad. 247,063, 1-24-78, Cl. D64-10.000.

Fuutagawa, Ikuo: *See—*
Muramatsu, Katsuji; and Fuutagawa, Ikuo, 247,033, Cl. D14-11.000.

Genie Toys, Inc.: *See—*
Dawson, Thomas J., 247,053, Cl. D34-2.00R.

Glaubinger, Martin: *See—*
Neilsen, Hildaur L.; and Glaubinger, Martin, 247,042, Cl. D19-76.000.

Glumac, Pero. Cord lock for attachment to decorative woven wood shades. 247,020, 1-24-78, Cl. D8-394.000.

Goodman, Robert M.; and Mango, Joseph R. Suction cleaner body or the like. 247,040, 1-24-78, Cl. D15-55.000.

Grodin, Adam J., to American Cyanamid Company. Bottle or similar article. 247,023, 1-24-78, Cl. D9-168.000.

Hanagan, Michael W., to Corbin Gentry, Inc. Combined motorcycle seat and backrest with support bar therefor. 247,011, 1-24-78, Cl. D6-48.100.

Hauf, Karl Peter Gunter, to U.S. Philips Corporation. Case for a dry shaver. 247,024, 1-24-78, Cl. D9-186.000.

Herkal, Dennis E.: *See—*
Kramer, James D.; Herkal, Dennis E.; Kramer, Lawrence D.; and Charboneau, Lawrence A., 247,018, Cl. D8-14.000.

Hollingsworth, Gene C.; and Freehauf, Eugene G., to Zero Corporation. Low profile integrated circuit dip socket. 247,032, 1-24-78, Cl. D13-24.000.

Ishii, Kenshun: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, 247,028, Cl. D12-112.000.

Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, 247,028, Cl. D12-112.000.

Jacques Guillon/Designers Inc.: *See—*
Smith, Morley L., Jr., 247,037, Cl. D15-23.000.

Johansson, Hans Arne Valentin. Combined bathtub and lifting unit. 247,044, 1-24-78, Cl. D23-56.000.

Kickapoo Stove Works, Ltd.: *See—*
Bader, George Paul, 247,046, Cl. D23-93.000.

King, Stanley, to Dunlop Limited. Floor tile. 247,048, 1-24-78, Cl. D25-80.000.

Klote, Carl Eric: *See—*
Schoblom, Svante; and Klote, Carl Eric, 247,009, Cl. D6-37.000.

Koch, Walter L.: *See—*
Franklin, Robert P.; and Koch, Walter L., 247,062, Cl. D52-3.00B.

Koehring Company: *See—*
Briggs, Eugene C., 247,045, Cl. D23-77.000.

Koffler, Sol, to American Luggage Works, Inc. Hand luggage. 247,065, 1-24-78, Cl. D87-5.00G.

Koffler, Sol, to American Luggage Works, Inc. Hand luggage. 247,067, 1-24-78, Cl. D87-5.00G.

Kramer, James D.; Herkal, Dennis E.; Kramer, Lawrence D.; and Charboneau, Lawrence A., to Real Estate Graphics, Inc. Burnishing tool. 247,018, 1-24-78, Cl. D8-14.000.

Kramer, Lawrence D.: *See—*
Kramer, James D.; Herkal, Dennis E.; Kramer, Lawrence D.; and Charboneau, Lawrence A., 247,018, Cl. D8-14.000.

Krome, Morris L. Sport shoe. 247,007, 1-24-78, Cl. D2-309.000.

Krome, Morris L. Sport shoe. 247,008, 1-24-78, Cl. D2-310.000.

Land Ranger Manufacturing Inc.: *See—*
Fairthorne, Victor, 247,029, Cl. D12-156.000.

Lawson, Junie B. Carpet cleaner and dryer. 247,039, 1-24-78, Cl. D15-52.000.

Lubke, Karl, to Lubke KG. Settee. 247,012, 1-24-78, Cl. D6-63.000.

Lubke KG: *See—*
Lubke, Karl, 247,012, Cl. D6-63.000.

Mango, Joseph R.: *See—*
Goodman, Robert M.; and Mango, Joseph R., 247,040, Cl. D15-55.000.

McClaskie, Melvin G. Divot repair tool for golfers. 247,056, 1-24-78, Cl. D34-5.0CB.

Messrs. BIG Spielwarenfabrik Dipl.-Ing. Ernst A. Bettag: *See—*
Rahmstorf, Dietmar, 247,054, Cl. D34-4.00R.

Metaline Products, Inc.: *See—*
Mihojevich, Steven, 247,070, Cl. D96-12.00R.

Mihojevich, Steven, to Metaline Products, Inc. Illuminated sign. 247,070, 1-24-78, Cl. D96-12.00R.

Morton-Norwich Products, Inc.: *See—*
Britt, William James, 247,021, Cl. D9-42.000.

Muramatsu, Katsuji; and Fuutagawa, Ikuo, to Fuji Photo Film Co., Ltd. Film magazine. 247,033, 1-24-78, Cl. D14-11.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, to Combi Co., Ltd. Tricycle. 247,028, 1-24-78, Cl. D12-112.000.

Neilsen, Hildaur L.; and Glaubinger, Martin, to Rolodex Corporation, The. File card holder. 247,042, 1-24-78, Cl. D19-76.000.

Nippon Kogaku K.K.: *See—*
Tomatsuri, Masakazu, 247,066, Cl. D87-1.00R.

Overman AB: *See—*
Schoblom, Svante; and Klote, Carl Eric, 247,009, Cl. D6-37.000.

Park, John Alfred. Toy raft. 247,060, 1-24-78, Cl. D34-15.0JJ.

Patten, Theodore C. Structural strut joint. 247,019, 1-24-78, Cl. D8-382.000.

Phillips Plastics of North America, Inc.: *See—*
Cherry, Richard Sutton, 247,025, Cl. D9-242.000.

Pusterla, Anthony: *See—*
Eagle, Graham Robert; and Pusterla, Anthony, 247,027, Cl. D12-103.000.

Rahmstorf, Dietmar, to Messrs. BIG Spielwarenfabrik Dipl.-Ing. Ernst A. Bettag. Toy-figure. 247,054, 1-24-78, Cl. D34-4.00R.

Real Estate Graphics, Inc.: *See—*
Kramer, James D.; Herkal, Dennis E.; Kramer, Lawrence D.; and Charboneau, Lawrence A., 247,018, Cl. D8-14.000.

Rolodex Corporation, The: *See—*
Neilsen, Hildaur L.; and Glaubinger, Martin, 247,042, Cl. D19-76.000.

Rowe International Inc.: *See—*
Franklin, Robert P.; and Koch, Walter L., 247,062, Cl. D52-3.00B.

Salve S.A.: *See—*
Spiegelberg, Hans, 247,064, Cl. D9-193.000.

Schoblom, Svante; and Klote, Carl Eric, to Overman AB. Chair. 247,009, 1-24-78, Cl. D6-37.000.

Silver, Louis J. Holder for scouring implement. 247,017, 1-24-78, Cl. D7-178.000.

Simmoneau, Ted R. Novelty tennis racket having two heads. 247,057, 1-24-78, Cl. D34-5.0ST.

Simmoneau, Ted R. Novelty tennis racket having bent handle. 247,059, 1-24-78, Cl. D34-5.0ST.

Siris, Burt J. Side pocket for a handbag or the like. 247,069, 1-24-78, Cl. D87-3.00R.

Smith, Morley L., Jr., to Jacques Guillon/Designers Inc. Tractor. 247,037, 1-24-78, Cl. D15-23.000.

Spiegelberg, Hans, to Salve S.A. Adhesive bandage package. 247,064, 1-24-78, Cl. D9-193.000.

Stallard, Eric Denis. Combined leaf sweeper body and handle. 247,038, 1-24-78, Cl. D15-27.000.

Sterniske, Hellmuth. Holder for a flower or candle. 247,026, 1-24-78, Cl. D11-149.000.

Sullivan, Paul J.: *See—*
Behling, Fredric C.; and Sullivan, Paul J., 247,055, Cl. D34-5.00R.

Sykes, Sanford. Carrying case for a camera or similar article. 247,068, 1-24-78, Cl. D87-5.00E.

Tandy Brands, Inc.: *See—*
Clark, Earl J., 247,043, Cl. D22-13.000.

Tomatsuri, Masakazu, to Nippon Kogaku K.K. Case for binoculars. 247,066, 1-24-78, Cl. D87-1.00R.

Tricot, Jean. Cigarette lighter. 247,051, 1-24-78, Cl. D27-42.000.

Turnbull, Guy A., to Dow Chemical Company, The. Bottle or similar article. 247,022, 1-24-78, Cl. D9-60.000.

U.S. Philips Corporation: *See—*
Hauf, Karl Peter Gunter, 247,024, Cl. D9-186.000.

Win, Murray M. Ceiling light fixture diffuser side rail. 247,061, 1-24-78, Cl. D48-16.00A.

Zero Corporation: *See—*
Hollingsworth, Gene C.; and Freehauf, Eugene G., 247,032, Cl. D13-24.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 24, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

209 4,069,512
227 4,069,513
235 4,069,514
239 4,069,515
428 4,069,516

CLASS 3

1.4 4,069,517
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CLASS 4

7 4,069,519
4,069,520
138 4,069,522
173 R 4,069,523
300 4,069,521

CLASS 5

99 B 4,069,524
247 4,069,525
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CLASS 7

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CLASS 8

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CLASS 9

8 P 4,069,529

CLASS 10

9 4,069,530

CLASS 12

116.2 4,069,531
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CLASS 13

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CLASS 15

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104.06 R 4,069,535
104.3 SN 4,069,534
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230.17 4,069,538
250.32 4,069,539
320 4,069,540
321 4,069,541

CLASS 16

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42 R 4,069,543
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4,069,545
85 4,069,546
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CLASS 17

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75 4,069,552

CLASS 23

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230.6 4,070,153
253 R 4,070,156
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CLASS 24

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205.14 R 4,069,555
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230 A 4,069,559
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230 R 4,069,558
255 R 4,069,560

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CLASS 28

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273 4,069,562
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274 4,069,565
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116 AD 4,069,569
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434 4,069,574
446 4,069,575
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623.3 4,069,578
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114 4,069,581
182 4,069,582
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174 P 4,069,589
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CLASS 34

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7.2 4,069,599
10 4,069,600
11.5 4,069,601
45 4,069,602
57 4,069,603
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141 T 4,069,604
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CLASS 43

42.06 4,069,609
42.24 4,069,610
43.12 4,069,611
87 4,069,612

CLASS 46

120 4,069,613

CLASS 47

58 4,069,614

CLASS 48

197 R 4,070,160
210 4,070,161

CLASS 49

58 4,069,615
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428 4,069,617
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CLASS 51

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100 R 4,069,620
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206.5 4,069,622
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92 4,069,627
94 4,069,628
125 4,069,629
172 4,069,630
202 4,069,641
224 4,069,642
309.5 4,069,631
309.7 4,069,632
586 4,069,633
648 4,069,634
693 4,069,635
712 4,069,636
726 4,069,637
4,069,638
745 4,069,639
746 4,069,640

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139 4,069,646
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5 4,070,162
11 4,070,163
26 4,070,164
30 4,070,165
41 4,070,166
192 4,070,167
205 4,070,168
267 4,070,169
274 4,070,170
419 4,070,171

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202 4,069,649
221 4,069,650
320.1 4,069,651
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58.91 4,069,655
160 4,069,656
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CLASS 58

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39.25 4,069,660
204 4,069,661
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275 4,069,665
278 4,069,666
282 4,069,667
317 4,069,668
325 4,069,669
517 4,069,670
525 4,069,671
618 4,069,672
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4,069,674
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35 4,069,676
39 4,069,677
63 4,069,678
72.4 4,069,679
86 4,069,680
89 4,069,681
95 4,069,682
98 4,069,683
105 4,069,684
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CLASS 62

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292 4,069,686
305 4,069,687

CLASS 65

5 4,070,173
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363 4,069,695
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CLASS 72

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67 4,069,698
325 4,069,699
407 4,069,700

CLASS 73

1 G 4,069,701
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16 4,069,703
38 4,069,704
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61.4 4,069,711
116 4,069,707
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194 A 4,069,713
194 VS 4,069,708
228 4,069,709
304 C 4,069,710
339 R 4,069,714
354 4,069,715
425.4 R 4,069,717
432 R 4,069,716
666 4,069,706

CLASS 74

206 4,069,718
242.11 B 4,069,719
471 R 4,069,720
501 R 4,069,721
516 4,069,722
528 4,069,723
569 4,069,724
750 B 4,069,725
785 4,069,726

CLASS 75

0.5 BA 4,070,180
91 4,070,181
103 4,070,182
117 4,070,183
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CLASS 83

16 4,069,727
409 4,069,728
488 4,069,729

CLASS 84

1.16 4,069,732
299 4,069,733
382 4,069,734
474 4,069,735
4,069,736
485 SR 4,069,737

CLASS 85

47 4,069,730
70 4,069,738
72 4,069,731

CLASS 89

1.704 4,069,739
33 SF 4,069,740

CLASS 90

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CLASS 91

369 A 4,069,742
375 R 4,069,743
417 R 4,069,744
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CLASS 92

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CLASS 93

35 R 4,069,748
58.1 4,069,749

CLASS 96

1 SD 4,070,186
1.8 4,070,185
27 R 4,070,187
53 4,070,188
87 A 4,070,189
94 R 4,070,190
100 R 4,070,191

CLASS 99

280 4,069,750
306 4,069,751

CLASS 100

112 4,069,752

CLASS 101

40 4,069,753
53 4,069,754
93.12 4,069,755
120 4,069,756
132.5 4,069,757
348 4,069,758
467 4,069,759

CLASS 102

23 4,069,760
37.4 4,069,761
90 4,069,762

CLASS 104

12 4,069,763
88 4,069,764
123 4,069,765
173 R 4,069,766

CLASS 105

164 4,069,767
452 4,069,768

CLASS 106

1.05 4,070,192
14 4,070,193
30 4,070,194
38.3 4,070,195
38.35 4,070,196
44 4,070,197
52 4,070,198
93 4,070,199
175 4,070,200
281 R 4,070,201
309 4,070,202

CLASS 108

11 4,069,769
66 4,069,770
4,069,771
94 4,069,772

CLASS 109

19 4,069,773

CLASS 111

3 4,069,774

CLASS 112

79 A 4,069,775
79 R 4,069,776
113 4,069,777
121.12 4,069,778
136 4,069,779
150 4,069,780
438 4,069,781

CLASS 114

42 4,069,783
47 4,069,785
61 4,069,782
144 E 4,069,784

CLASS 115

6.1 4,069,786
76 4,069,788

CLASS 116

63 R 4,069,787

CLASS 118

43 4,069,789
70 4,069,790
120 4,069,791
629 4,069,792

CLASS 119

51.13 4,069,793

CLASS 123

25 A 4,069,794
32 EA 4,069,795
75 B 4,069,796
119 A 4,069,797
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139 A 4,069,800
139 B 4,069,799
148 DS 4,069,801
179 G 4,069,802
198 E 4,069,804
198 F 4,069,803

CLASS 125

30 WD 4,069,805

CLASS 126

9 R 4,069,806
110 R 4,069,807
164 4,069,808
270 4,069,809
271 4,069,810
4,069,811
4,069,812

CLASS 128

2 F 4,069,814
2 R 4,069,813
2.05 A 4,069,815
41 4,069,816
138 A 4,069,817
145.6 4,069,818
206 4,069,819
208 4,069,820
290 P 4,069,821
294 4,069,822
303.1 4,069,823
317 4,069,824
335.5 4,069,825
348 4,069,826
422 4,069,827

CLASS 131

17 R 4,069,828
84 C 4,069,829
135 4,069,830
138 4,069,831

CLASS 134

3 4,070,203
25 A 4,070,204

CLASS 135

3 R 4,069,832
4 R 4,069,833

CLASS 136

89 SJ 4,070,205
89 TF 4,070,206

CLASS 137

75 4,069,834
114 4,069,835
348 4,069,836
360 4,069,837
392 4,069,838
505.46 4,069,839
533.11 4,069,840
568 4,069,841
595 4,069,842
625.69 4,069,843

CLASS 138

30 4,069,844

CLASS 140

124 4,069,845

CLASS 144

2 N 4,069,846
34 E 4,069,847
4,069,848

134 D	4,069,849
178	4,069,850
312	4,069,851
CLASS 148	
2	4,070,207
12 EA	4,070,208
12 R	4,070,209
15	4,070,210
187	4,070,211
CLASS 149	
19.2	4,070,212
19.92	4,070,213
CLASS 150	
1	4,069,852
52 R	4,069,853
CLASS 151	
21 C	4,069,854
69	4,069,855
CLASS 152	
27	4,069,856
CLASS 156	
47	4,070,214
51	4,070,215
63	4,070,216
73.2	4,070,217
167	4,070,218
192	4,070,219
227	4,070,220
245	4,070,221
251	4,070,222
264	4,070,223
314	4,070,224
330	4,070,225
364	4,070,226
446	4,070,227
475	4,070,228
556	4,070,229
657	4,070,230
CLASS 159	
47 R	4,070,231
CLASS 160	
84 R	4,069,857
CLASS 162	
16	4,070,232
28	4,070,233
29	4,070,234
116	4,070,235
164 R	4,070,236
217	4,070,237
343	4,070,238
CLASS 164	
7	4,069,858
56	4,069,859
87	4,069,860
436	4,069,863
438	4,069,861
439	4,069,862
CLASS 165	
86	4,069,864
CLASS 166	
113	4,069,865
147	4,069,866
256	4,069,867
258	4,069,868
270	4,069,869
293	4,069,870
321	4,069,871
CLASS 169	
47	4,069,872
51	4,069,873
CLASS 172	
450	4,069,874
548	4,069,875
CLASS 173	
119	4,069,876
152	4,069,877
CLASS 174	
87	4,070,543
CLASS 175	
53	4,069,878
57	4,069,879
410	4,069,880
CLASS 176	
19 R	4,070,239
66	4,070,240
87	4,070,241
CLASS 178	
18	4,070,544
73	4,070,545
CLASS 179	
1 G	4,070,547
1 GA	4,070,546
1 PC	4,070,548
2 A	4,070,549
15 BA	4,070,550
18 FC	4,070,551
100.4 ST	4,070,552
157	4,070,553
175.3 R	4,070,554
CLASS 180	
1 G	4,069,881
5 A	4,069,883
5 R	4,069,882
9.2 R	4,069,884
14 B	4,069,885
44 F	4,069,886
44 R	4,069,887
98	4,069,888
132	4,069,889
CLASS 182	
108	4,069,890
187	4,069,891
189	4,069,892
200	4,069,893
CLASS 184	
15 R	4,069,894
106	4,069,895
CLASS 186	
1 B	4,069,896
CLASS 187	
29 R	4,069,897
	4,069,898
CLASS 188	
72.1	4,069,899
CLASS 192	
4 A	4,069,900
35	4,069,901
43	4,069,902
67 A	4,069,903
85 CA	4,069,904
112	4,069,905
113 B	4,069,906
CLASS 195	
66 R	4,070,242
79	4,070,243
81	4,070,244
99	4,070,245
	4,070,246
100	4,070,247
103.5 K	4,070,248
127	4,070,249
CLASS 197	
53	4,069,907
CLASS 198	
437	4,069,908
446	4,069,909
456	4,069,910
627	4,069,911
CLASS 200	
6 B	4,070,555
16 B	4,070,556
51.1	4,070,557
148 A	4,070,558
296	4,070,559
CLASS 201	
12	4,070,250
CLASS 202	
130	4,070,251
CLASS 203	
29	4,070,252
75	4,070,253
83	4,070,254
CLASS 204	
42	4,070,255
55 R	4,070,256
98	4,070,257
119	4,070,260
157.1 R	4,070,261
159.15	4,070,258
159.16	4,070,259
159.24	4,070,262
180 R	4,070,263
192 E	4,070,264
206	4,070,265
266	4,070,266
CLASS 206	
63.3	4,069,912
278	4,069,913
303	4,069,914
305	4,069,915
330	4,069,916
423	4,069,917
524.2	4,070,398
CLASS 208	
8	4,070,267
	4,070,268
25	4,070,269
111	4,070,270
206	4,070,271
217	4,070,272
CLASS 209	
3	4,070,273
10	4,070,274
44	4,070,275
166	4,070,276
168	4,070,277
212	4,070,278
CLASS 210	
14	4,070,279
23 H	4,070,280
26	4,070,281
27	4,070,282
31 C	4,070,283
	4,070,284
	4,070,285
	4,070,286
40	4,070,287
65	4,070,288
71	4,070,289
91	4,070,290
115	4,070,291
195 R	4,070,292
401	4,070,293
CLASS 211	
1.5	4,069,918
4	4,069,919
87	4,069,920
CLASS 212	
18	4,069,921
59 R	4,069,922
CLASS 214	
1 R	4,069,924
6 B	4,069,926
6 H	4,069,925
10.5 R	4,069,927
17 B	4,069,923
17 DC	4,069,928
83.14	4,069,929
302	4,069,930
310	4,069,931
730	4,069,932
CLASS 215	
1 C	4,069,933
12 R	4,069,934
203	4,069,935
256	4,069,936
344	4,069,937
CLASS 217	
13	4,069,938
CLASS 220	
9 A	4,069,939
20	4,069,940
23.4	4,069,941
CLASS 221	
4	4,069,942
5	4,069,943
72	4,069,944
73	4,069,945
CLASS 222	
1	4,069,946
5	4,069,947
134	4,069,948
146 HA	4,069,949
210	4,069,950
494	4,069,951
510	4,069,952
CLASS 224	
4 E	4,069,953
5 C	4,069,954
5 H	4,069,955
37	4,069,956
CLASS 225	
5	4,069,957
16	4,069,958
CLASS 226	
21	4,069,959
CLASS 227	
120	4,069,960
CLASS 228	
1 R	4,069,961
170	4,069,962
179	4,069,963
CLASS 229	
62.5	4,069,964
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19	4,069,965
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1 C	4,069,966
	4,069,967
14 R	4,069,968
20 A	4,069,969
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92 TC	4,070,560
302	4,070,565
312	4,069,970
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1 A	4,069,971
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69	4,069,973
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15	4,069,974
242	4,069,976
265.23	4,069,977
533.2	4,069,978
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5	4,069,979
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30	4,069,981
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1	4,069,991
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97	4,069,993
101	4,069,994
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146	4,069,996
203	4,069,997
476	4,069,998
507	4,069,999
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199	4,070,572
203 R	4,070,573
213 VT	4,070,574
223 R	4,070,575
303	4,070,576
315 A	4,070,577
336	4,070,578
402	4,070,579
423 P	4,070,580
445 T	4,070,581
475	4,070,582
483	4,070,583
555	4,070,584
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26	4,070,000
46	4,070,001
58	4,070,002
149.6	4,070,003
331	4,070,004
333	4,070,005
CLASS 252	
32.5	4,070,294
48.6	4,070,295
62.1 P	4,070,296
63	4,070,297
89 R	4,070,298
171	4,070,299
190	4,070,300
301.4 R	4,070,301
359 E	4,070,302
364	4,070,303
404	4,070,304
411 S	4,070,305
416	4,070,306
428	4,070,307
522	4,070,308
547	4,070,309
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1	4,070,006
19	4,070,007
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2.5 N	4,070,312
17.3	4,070,314
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28.5 B	4,070,315
29.3	4,070,317
	4,070,318
29.4 R	4,070,320
29.4 UA	4,070,319
29.6 H	4,070,321
29.6 NR	4,070,323
29.6 R	4,070,322
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37 SB	4,070,328
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42.18	4,070,333
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306.8 R	4,070,364
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343	4,070,376
343.7	4,070,377
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347.8	4,070,381
365	4,070,382
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406	4,070,384
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81	4,070,064
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115	4,070,069
116	4,070,070
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237	4,070,588
246	4,070,589
355	4,070,590
359	4,070,591
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71	4,070,072
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250	4,070,075
350	4,070,076
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1	4,070,394
361	4,070,595
408	4,070,596
431	4,070,597
487	4,070,598
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241 R	4,070,601
248	4,070,602
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227	4,070,605
254	4,070,606
468	4,070,607
572	4,070,608
609	4,070,609
678	4,070,610
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57 R	4,070,615
65 R	4,070,616
71 CP	4,070,617
78 D	4,070,618
95	4,070,619
96	4,070,620
	4,070,621
	4,070,622
150	4,070,623
158 MG	4,070,624
209	4,070,614
239	4,070,625
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453	4,070,629
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98	4,070,082
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5 H	4,070,643
52 C	4,070,644
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271	4,070,661
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324 M	4,070,663
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77	4,070,683
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135	4,070,685
195	4,070,686
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77	4,070,109
100	4,070,110
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83	4,070,111
96	4,070,112
104	4,070,113
111	4,070,114
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30	4,070,689
68	4,070,688
	4,070,690
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29	4,070,691
107	4,070,692
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133	4,070,694
181	4,070,695
280	4,070,696
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12	4,070,697
	4,070,698
CLASS 361	
86	4,070,699
170	4,070,700
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217	4,070,571
218	4,070,570
311	4,070,568
352	4,070,569
369	4,070,566
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200	4,070,702
	4,070,703
	4,070,704
	4,070,705
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405	4,070,564
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426	4,070,562
510	4,070,563
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222	4,070,653
233	4,070,657
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159	4,070,008
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	4,070,472
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230	4,070,125
271	4,070,126
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31	4,070,130
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269	4,070,136
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239	4,070,440
242	4,070,441
272	4,070,442
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349	4,070,444
428	4,070,445
447.2	4,070,446
489	4,070,447
495	4,070,448
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2	4,070,494
3	4,070,495
45	4,070,449
	4,070,496
59	4,070,450
61	4,070,451
70	4,070,452
89	4,070,453
	4,070,454
91	4,070,455
173	4,070,456
177	4,070,457
	4,070,458
	4,070,459
180	4,070,460
232	4,070,461
243	4,070,462
247	4,070,463
248.51	4,070,464
250	4,070,465
251	4,070,466
256	4,070,467
258	4,070,468
	4,070,469
	4,070,470
263	4,070,471
	4,070,472
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269	4,070,474
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311	4,070,481
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319	4,070,483
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324	4,070,485
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188	4,070,139
533	4,070,140
535	4,070,141
555	4,070,142
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72	4,070,488
115	4,070,489
533	4,070,490
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53	4,070,498
54	4,070,499
	4,070,500
88	4,070,501
100	4,070,502
120	4,070,503
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128	4,070,505
156	4,070,506
252	4,070,507
282	4,070,508
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383	4,070,524
422	4,070,525
537	4,070,526
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152	4,070,528
193	4,070,529
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79	4,070,144
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5	4,070,147
50	4,070,148
109	4,070,149
210	4,070,150
234	4,070,151
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6	4,070,531
7	4,070,530
11.2	4,070,532
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204	4,070,534
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367	4,070,536
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140	4,070,541

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	4,070,213		4,069,951		4,070,639		4,070,442		4,069,932		4,069,649
	4,070,563		4,069,957		4,070,671		4,070,479		4,069,946		4,069,691
	4,070,568		4,070,001		4,070,680		4,070,481		4,069,954		4,069,895
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	4,069,525		4,070,096		4,069,580		4,070,564		4,070,306		4,070,152
	4,069,528		4,070,097		4,069,629		4,070,605		4,070,307		4,070,394
	4,069,534		4,070,101		4,069,662	13 :	4,069,600		4,070,321		4,070,505
	4,069,538		4,070,105		4,069,712		4,069,672		4,070,322	24 :	4,069,553
	4,069,540		4,070,108		4,069,766		4,069,775		4,070,402		4,069,582
	4,069,589		4,070,113		4,069,908		4,069,860		4,070,403		4,069,583
	4,069,592		4,070,114		4,069,912		4,069,891		4,070,408		4,069,686
	4,069,599		4,070,115		4,069,915		4,069,909		4,070,413		4,069,701
	4,069,601		4,070,117		4,069,942		4,070,093		4,070,499		4,069,769
	4,069,623		4,070,132		4,069,948		4,070,478		4,070,506		4,069,999
	4,069,635		4,070,138		4,069,963		4,070,483		4,070,523		4,070,134
	4,069,639		4,070,163		4,069,968	15 :	4,069,568		4,070,524		4,070,207
	4,069,659		4,070,169		4,070,060	16 :	4,070,030		4,070,548		4,070,252
	4,069,664		4,070,211		4,070,083	17 :	Re.29,525		4,070,553		4,070,412
	4,069,669		4,070,250		4,070,221		4,069,515		4,070,609		4,070,621
	4,069,675		4,070,273		4,070,239		4,069,544		4,070,624		4,070,635
	4,069,692		4,070,280		4,070,256		4,069,551		4,070,629		4,070,637
	4,069,694		4,070,312		4,070,266		4,069,567		4,070,645		4,070,705
	4,069,719		4,070,347		4,070,298		4,069,604		4,070,696	25 :	4,069,532
	4,069,731		4,070,375		4,070,424		4,069,606	18 :	4,069,558		4,069,578
	4,069,733		4,070,459		4,070,586		4,069,651		4,069,611		4,069,586
	4,069,786		4,070,486		4,070,592		4,069,696		4,069,773		4,069,706
	4,069,794		4,070,517		4,070,608		4,069,730		4,069,814		4,069,707
	4,069,801		4,070,535		4,070,638		4,069,738		4,069,839		4,069,732
	4,069,805		4,070,543		4,070,711		4,069,745		4,070,103		4,069,734
	4,069,817		4,070,547	10 :	4,069,563		4,069,751		4,070,143		4,069,787
	4,069,844		4,070,550		4,069,807		4,069,777		4,070,247		4,069,853
	4,069,855		4,070,560		4,070,110		4,069,826		4,070,610		4,069,959
	4,069,869		4,070,565		4,070,202		4,069,843	19 :	4,069,809		4,069,966
	4,069,870		4,070,573		4,070,269		4,069,847		4,069,856		4,069,967
	4,069,871		4,070,577		4,070,283		4,069,881		4,069,874		4,070,000
	4,069,917		4,070,580		4,070,286		4,069,886		4,070,453		4,070,004

	4,070,029		4,069,893		4,069,820		4,069,720		4,069,940		4,069,865
	4,070,045	33 :	4,069,702		4,069,832		4,069,722		4,069,958		4,069,866
	4,070,099		4,070,016		4,069,835		4,069,723		4,069,982		4,069,875
	4,070,145		4,070,076		4,069,920		4,069,729		4,069,997		4,069,878
	4,070,155		4,070,226		4,069,923		4,069,742		4,070,022		4,069,879
	4,070,197	34 :	4,069,577		4,069,934		4,069,822		4,070,023		4,069,894
	4,070,224		4,069,613		4,069,935		4,069,854		4,070,046		4,069,960
	4,070,235		4,069,643		4,070,003		4,069,857		4,070,077		4,070,025
	4,070,285		4,069,708		4,070,015		4,069,906		4,070,082		4,070,033
	4,070,290		4,069,748		4,070,026		4,069,933		4,070,125		4,070,049
	4,070,293		4,069,753		4,070,074		4,069,937		4,070,146		4,070,062
	4,070,549		4,069,761		4,070,079		4,069,938		4,070,151		4,070,147
	4,070,570		4,069,791		4,070,111		4,069,943		4,070,173		4,070,156
	4,070,576		4,069,815		4,070,131		4,069,973		4,070,178		4,070,187
	4,070,578		4,069,828		4,070,148		4,069,984		4,070,180		4,070,282
	4,070,603		4,069,834		4,070,153		4,070,007		4,070,184		4,070,304
	4,070,678		4,069,897		4,070,167		4,070,035		4,070,229		4,070,354
	4,070,703		4,069,898		4,070,186		4,070,071		4,070,240		4,070,419
	4,070,709		4,069,955		4,070,189		4,070,140		4,070,241		4,070,421
26 :	Re.29,522		4,069,970		4,070,198		4,070,195		4,070,323		4,070,630
	Re.29,524		4,069,986		4,070,200		4,070,205		4,070,326		4,070,646
	4,069,536		4,069,996		4,070,222		4,070,215		4,070,355		4,070,651
	4,069,550		4,070,072		4,070,223		4,070,220		4,070,368		4,070,653
	4,069,557		4,070,141		4,070,249		4,070,258		4,070,387		4,070,659
	4,069,616		4,070,142		4,070,296		4,070,302		4,070,393		4,070,683
	4,069,620		4,070,161		4,070,335		4,070,309		4,070,399	49 :	4,069,684
	4,069,626		4,070,162		4,070,380		4,070,318		4,070,400		4,069,998
	4,069,718		4,070,206		4,070,382		4,070,331		4,070,426		4,070,034
	4,069,727		4,070,214		4,070,398		4,070,344		4,070,427		4,070,604
	4,069,755		4,070,262		4,070,418		4,070,385		4,070,435	50 :	4,069,739
	4,069,796		4,070,279		4,070,430		4,070,397		4,070,441		4,069,913
	4,069,798		4,070,294		4,070,451		4,070,420		4,070,445	51 :	4,069,560
	4,069,803		4,070,295		4,070,462		4,070,428		4,070,448		4,069,590
	4,069,824		4,070,308		4,070,467		4,070,429		4,070,464		4,069,607
	4,069,883		4,070,341		4,070,490		4,070,436		4,070,487		4,069,608
	4,069,939		4,070,356		4,070,501		4,070,513		4,070,497		4,069,624
	4,069,956		4,070,359		4,070,507		4,070,521		4,070,520		4,069,668
	4,069,974		4,070,360		4,070,516		4,070,534		4,070,539		4,069,841
	4,069,987		4,070,361		4,070,519		4,070,555		4,070,545		4,069,862
	4,070,027		4,070,366		4,070,527		4,070,583		4,070,574		4,069,930
	4,070,038		4,070,369		4,070,572		4,070,619		4,070,627		4,069,977
	4,070,041		4,070,372		4,070,589		4,070,625		4,070,652		4,070,065
	4,070,057		4,070,374		4,070,597		4,070,644		4,070,660		4,070,092
	4,070,058		4,070,376		4,070,598		4,070,648		4,070,690		4,070,342
	4,070,095		4,070,404		4,070,600		4,070,655		4,070,693		4,070,431
	4,070,122		4,070,407		4,070,602		4,070,661	44 :	4,069,981		4,070,432
	4,070,128		4,070,411		4,070,636		4,070,702		4,069,992		4,070,460
	4,070,315		4,070,456		4,070,640	40 :	4,069,679		4,070,078		4,070,634
	4,070,328		4,070,465		4,070,658		4,070,006		4,070,085		4,070,692
	4,070,329		4,070,468		4,070,666		4,070,044	45 :	Re.29,521	53 :	4,069,749
	4,070,384		4,070,491		4,070,667		4,070,160		4,069,523		4,069,910
	4,070,414		4,070,492		4,070,673		4,070,172		4,069,561		4,069,991
	4,070,471		4,070,500		4,070,674		4,070,231		4,069,688		4,070,127
	4,070,509		4,070,502		4,070,679		4,070,267		4,069,922		4,070,569
	4,070,526		4,070,515		4,070,687		4,070,268		4,069,931	54 :	Re.29,523
	4,070,538		4,070,541		4,070,691		4,070,299	46 :	4,070,059		4,069,867
27 :	4,069,526		4,070,665		4,070,701		4,070,349	47 :	4,069,657		4,070,313
	4,069,614		4,070,699		4,070,707		4,070,396		4,069,776		4,070,330
	4,069,772	35 :	4,070,129	37 :	4,069,541	41 :	4,069,518		4,070,193	55 :	4,069,545
	4,070,225		4,070,595		4,069,562		4,069,747		4,070,261		4,069,715
	4,070,287		4,070,632		4,069,564		4,070,579		4,070,316		4,069,717
	4,070,391	36 :	4,069,513		4,069,593		4,070,615		4,070,337		4,069,821
	4,070,582		4,069,516		4,069,648	42 :	4,069,514		4,070,339		4,069,827
	4,070,613		4,069,533		4,069,704		4,069,546		4,070,352		4,069,882
	4,070,706		4,069,542		4,069,730		4,069,575		4,070,438		4,069,884
29 :	4,069,517		4,069,574		4,069,945		4,069,630		4,070,514		4,069,901
	4,069,588		4,069,581		4,069,949		4,069,714	48 :	4,069,535		4,069,921
	4,069,641		4,069,609		4,070,217		4,069,779		4,069,572		4,069,929
	4,069,693		4,069,618		4,070,488		4,069,818		4,069,591		4,070,149
	4,069,709		4,069,640		4,070,698		4,069,836		4,069,605		4,070,201
	4,069,813		4,069,674	39 :	4,069,524		4,069,838		4,069,744		4,070,218
	4,070,121		4,069,716		4,069,571		4,069,861		4,069,783		4,070,219
	4,070,336		4,069,728		4,069,584		4,069,880		4,069,808		4,070,314
	4,070,530		4,069,758		4,069,628		4,069,890		4,069,812		4,070,510
30 :	4,070,013		4,069,793		4,069,661		4,069,916		4,069,837		4,070,528
	4,070,423		4,069,795		4,069,703		4,069,924		4,069,840		4,070,559
31 :	4,069,619										

DESIGN PATENTS

4 :	247,060		247,061	24 :	247,007	27 :	247,018		247,050		247,059
6 :	247,010		247,068		247,008	29 :	247,053		247,066	44 :	247,055
	247,014	8 :	247,047		247,043	34 :	247,013		247,069		247,065
	247,017	9 :	247,011	25 :	247,030		247,042	39 :	247,045		247,067
	247,019	12 :	247,016		247,031		247,062		247,056	45 :	247,021
	247,020	17 :	247,040	26 :	247,022	36 :	247,023	41 :	247,015	51 :	247,039
	247,032		247,058		247,052		247,048		247,057	55 :	247,046
	247,049	18 :	247,070								

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6 :	4,195					
12 :	4,196	4,197	4,198	4,199	4,200	4,201

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

January 31, 1978 Volume 966 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

National Inventors Day

The Patent and Trademark Office will be sponsoring National Inventors Day in the Public Search Room on Saturday, February 11, from 1:00 p.m. to 5:00 p.m. and Sunday February 12, 1978 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend a formal program at 2:00 p.m. on Sunday.

In order to accommodate the exhibits, it will be necessary to close the Public Search Room at 5:00 p.m. on Friday, February 10, 1978.

We would appreciate the cooperation of all users of the Search Room facilities in removing all personal items and belongings in order to permit the early closing time.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

Dec. 7, 1977

Board of Appeals Decisions Rendered in the Month of December 1977

Affirmed	120
Affirmed in part	16
Reversed	56
Total	192

Registration to Practice

The following are names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before March 3, 1978.

Bots, Eugene G., R.R. 2, Co. Rd. 64, Auburn, Ind. 46706
Gallagher, Richard J., 1600 S. Eads St., #1107N, Arlington, Va. 22202
Lloyd, Nannellyn W., P.O. Box 3927, Wilmington, Del. 19807
Modance, Walter A., 2311 Washington Ave., Chevy Chase, Md. 20015
Sommer, Warren, 2608 N. Humboldt, Milwaukee, Wis. 53212

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks and Chairman, Committee on Enrollment.

Jan. 8, 1978.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,610,869, R. P. Allison, FLEXIBLE-HOSE END CONNECTION; **2,616,456**, N. E. Klein, SHUTTLE EYE; **2,657,960**, C. H. Latimer-Needham, PISTON; **2,692,102**, Cobham, Latimer-Needham, Smith and MacGregor, APPARATUS FOR TOWING AND REFUELING AIRCRAFT IN FLIGHT; **2,692,103**, Cobham, Latimer-Needham and MacGregor, APPARATUS FOR TOWING AND REFUELING AIRCRAFT IN FLIGHT; **2,716,527**, C. H. Latimer-Needham, APPARATUS FOR AIRCRAFT-REFUELING IN FLIGHT AND AIRCRAFT-TOWING; **2,728,590**, P. S. MacGregor, SELF-ENGAGING AND SELF-SEALING PIPE COUPLINGS, ESPECIALLY APPLICABLE TO FLIGHT REFUELING PURPOSES; **2,733,079**, R. F. Worlidge, SELF-ENGAGING AND SELF-SEALING PIPE COUPLINGS, ESPECIALLY APPLICABLE TO FLIGHT REFUELING PURPOSES, **2,788,243**, Goodliffe and MacGregor, HOSE-REELS WITH MEANS FOR JETTISONING THE HOSE AND SEALING THE HOSE CONNECTION; **2,852,280**, R. F. Worlidge, SELF-ENGAGING AND SELF-SEALING PIPE COUPLINGS, ESPECIALLY APPLICABLE TO FLIGHT REFUELING PURPOSES, **2,855,223**, P. S. MacGregor, same; **2,887,297**, MacGregor, and Goodliffe, HOSE OR CABLE-CARRYING WINCHES; **2,904,351**, Gellett, MacGregor and Upton, PIPE-COUPLING DEVICES; **2,905,407**, MacGregor and Goodliffe, DEVICE FOR RESILIENTLY ARRESTING THE MOVEMENT OF HOSE OR CABLE-CARRYING WINCHES; **2,953,332**, Cobham, Latimer-Needham, Smith and MacGregor, APPARATUS FOR TOWING AND REFUELING AIRCRAFT IN FLIGHT; **2,973,163**, Goodliffe, MacGregor and Procter, APPARATUS FOR TRAILING A FLUID-TRANSMITTING HOSE OR TOW-LINE FROM AN AIRCRAFT, filed Apr. 28, 1976, United States Court of Claims (District of Columbia), Doc. 169–76, *Flight Refuelling Ltd. v. The United States*. Order, judgment is entered for the plaintiff, Aug. 19, 1977.

2,616,456. (See 2,610,869.)
2,657,960. (See 2,610,869.)
2,692,102. (See 2,610,869.)
2,692,103. (See 2,610,869.)
2,716,527. (See 2,610,869.)
2,728,590. (See 2,610,869.)
2,733,079. (See 2,610,869.)
2,788,243. (See 2,610,869.)
2,852,280. (See 2,610,869.)
2,855,223. (See 2,610,869.)
2,887,297. (See 2,610,869.)
2,904,351. (See 2,610,869.)
2,905,407. (See 2,610,869.)
2,953,332. (See 2,610,869.)
2,973,163. (See 2,610,869.)

3,030,744, A. E. Mueller, AIR FILM BEARING FOR MACHINE TOOLS, filed Nov. 14, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2896, *Harig Products, Inc. v. K. O. Lee Co., Atherton Machinery & Equipment Corp., Balko Tool & Machine Co. and F.J.M. Corp.* Judgment entered in favor of the defendants and against plaintiff, Aug. 18, 1977.

3,175,317, R. J. Slavsky, IDENTIFICATION TAG, filed May 13, 1976, D.C. (District of Columbia), Doc. 76–0831, *Godfrey Bloch v. C. Marshall Dann et al.* Order denying plaintiff's motion for reconsideration of order on July 16, 1976, Dec. 10, 1976.

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3,292,117, Bryant and Johnston, COAXIAL CONNECTOR WITH MEANS FOR PREVENTING AXIAL AND ROTATIONAL MOVEMENT BETWEEN CONNECTOR COMPONENTS, filed Aug. 11, 1977, United States Court of Claims (District of Columbia), Doc. 416–77, *Omni-Spectra, Inc. v. The United States of America.*

3,296,600, Lewis and Brown, Jr., ELECTRICALLY OPERATED CHARACTER PRINTER, filed Aug. 23, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3123, *A. B. Dick Company and Gould Inc. v. Recognition Equipment Inc.*

3,361,858. (See 3,220,960.)

3,754,300, Jones and Barkley, CUTTING INSERT AND CLAMPING ARRANGEMENT THEREFOR, filed Aug. 18, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77–3128–ALS, *Kennametal Inc. v. The Kelley-Western Corp. and Irl L. Brossman.*

3,814,725, Zimmerman and Isaacson, POLYALKYLENE TEREPHTHALATE MOLDING RESIN, filed June 6, 1975, D.C., S.D. Ind. (Evansville), Doc. EV75–75–C, *Celanese Corporation v. General Electric Company.* Case dismissed, Apr. 19, 1977.

3,822,089. (See 3,220,960.)

3,937,167, W. H. Warren, METHOD FOR UNLOADING AND TRANSFERRING EGGS, filed July 20, 1976, D.C., C.D. Calif. (Los Angeles), Doc. CV76–2312–RMT, *Henningsen Foods, Inc. v. Food Engineering Service et al.* Filed stipulation and order that action is dismissed with prejudice except that the affirmative defenses and counterclaims of defendants against plaintiff seeking declarations of the invalidity and unenforceability of said patent are dismissed without prejudice, entered Aug. 26, 1977.

3,942,632, R. S. Witkoff, JEWELRY BOX, filed Aug. 22, 1977, D.C., E.D. N.Y. (Brooklyn), Doc. 77–C–1709, *The Alsten Company v. Jewelry Box Corp. of America and Harvey Hoff.*

3,961,454, H. C. Adams, PREFABRICATED INSULATION PANEL, filed Dec. 22, 1976, D.C., M.D. Fla. (Tampa), Doc. 76–1003–C.T.H., *Howard C. Adams and Global Lagging Inc. v. Anco Incorporated, Container Corporation of America and Koppers Co.* Complaint and counterclaims dismissed with prejudice, Sept. 8, 1977.

Re. 27,401. (See 3,220,960.)

Re. 28,861, S. Hall, Jr., SAFETY MEDICINE BOTTLE CLOSURE, filed Dec. 13, 1976, D.C., W.D. Okla. (Oklahoma City), Doc. 76–1011–D, *Plastic Container Corporation v. Continental Plastics of Oklahoma, Inc.* Defendant's motion for summary judgment granted and plaintiff's complaint is dismissed, and judgment is entered in favor of defendant, Aug. 5, 1977.

D. 198,760, L. T. Harris, RIVETLESS CHAIN LINK, filed Jan. 20, 1975, D.C., S.D. W. Va. (Charleston), Doc. 75–0010BK, *Proteo, Inc. v. Janes Manufacturing, Inc. and Cooke-Wilson Electric Supply Company.* Janes Manufacturing was dismissed from action on Nov. 3, 1975 and Cooke-Wilson Electric Supply Company was dismissed on Aug. 25, 1977.

D. 218,999, Ross and Wilkens, BICYCLE FRAME, filed July 7, 1977, D.C., S.D. N.Y., Doc. 77–C–3311, *Chain Bike Corporation v. S.S.T. Trade & Development et al.*

PATENT NOTICES

Certificates of Correction for the Week of Jan. 31, 1978

P.P. 4,117	4,008,247	4,042,020	4,049,861
P.P. 4,118	4,013,762	4,042,671	4,049,935
Re 29,375	4,014,730	4,043,254	4,049,987
3,695,363	4,024,247	4,044,994	4,050,222
3,792,758	4,024,889	4,045,221	4,050,275
3,845,876	4,026,669	4,046,066	4,050,328
3,875,225	4,028,964	4,046,827	4,050,869
3,887,914	4,030,026	4,046,936	4,051,173
3,898,857	4,032,978	4,046,980	4,051,188
3,929,270	4,033,127	4,047,293	4,051,565
3,961,061	4,033,513	4,048,100	4,051,633
3,977,941	4,036,947	4,048,105	4,051,745
3,978,192	4,039,233	4,048,554	4,051,751
3,986,933	4,039,678	4,049,412	4,052,245
3,989,825	4,040,699	4,049,464	4,052,675
3,993,648	4,040,978	4,049,539	4,052,883
4,001,441	4,041,045	4,049,640	4,054,008
4,004,317	4,041,510	4,049,646	4,054,318
4,006,251	4,041,655	4,049,669	4,054,413

Disclaimer

3,834,143.—*Carlo Menegatto*, Monza, Italy. SPINDLE UNIT FOR TEXTILE MACHINE. Patent dated Sept. 10, 1974. Disclaimer filed Nov. 7, 1977, by the inventor.

Hereby enters this disclaimer to claims 1, 2, 6 and 7 of said patent.

Errata

All reference to Patent No. 4,067,236 to Gary L. Frederick of the United States for Mass Flow Sensor and Method appearing in the OFFICIAL GAZETTE of January 10, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,067,281 to James H. Files of Louisiana and John M. Montague and Charles T. Thomerson of Texas for Protective Marine Structures appearing in the OFFICIAL GAZETTE of January 10, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,069,210 to Leonard Evans James of the United States for Preparation of Polymeric Polyesters Using Certain Titanium Compounds as Combined Esterification-Polymerization Catalysts appearing in the OFFICIAL GAZETTE of January 17, 1978 should be deleted since no patent was granted.

In the OFFICIAL GAZETTE of August 16, 1977, vol. 961, p. 13, cancellation of entry of disclaimer re Patent No. 3,834,143 granted September 10, 1974 to Carlo Menegatto of Monza, Italy.

In the OFFICIAL GAZETTE of December 13, 1977, vol. 965, p. 10, delete Patent No. 3,887,914.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 14, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-9-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	2-11-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-14-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-10-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-7-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	9-13-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-2-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-7-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-20-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-3-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-6-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	4-4-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-3-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-6-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-22-77

Expiration of patents: The patents within the range of numbers indicated below expire during January 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,966,681 to 2,970,312, inclusive
Plant Patents... ..... Numbers 2,009 to 2,018, inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

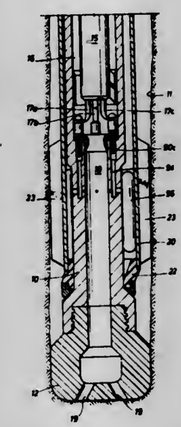
Re. 29,526
DIRECTIONAL DRILLING APPARATUS

John D. Jeter, 5952 Royal Lane, Suite 254, Dallas, Tex. 75230

Original No. 3,637,032, dated Jan. 25, 1972, Ser. No. 4,943, Jan. 22, 1970. Continuation-in-part of Ser. No. 869,056, Oct. 24, 1969, abandoned. Application for reissue Jan. 22, 1974, Ser. No. 435,413

Int. Cl.[2] E21B 7/06

U.S. Cl. 175—73 26 Claims



26. Apparatus for directionally drilling a well bore comprising a drill string extending into the well bore, a drill bit, means connecting the drill bit to the drill string to transmit rotation of the drill string to the drill bit and to allow limited universal pivotal movement of the bit around an axis perpendicular to the longitudinal axis of the drill string, including a bit sub having an upper portion extending above the universal connection into the drill string, means for sensing the inclination of the drill string adjacent the bit, and means responsive to the sensing means for urging the bit to pivot in the desired direction around said axis to change the direction of the well bore, said urging means including a piston mounted in the drill string adjacent the upper portion of the bit sub for rotation relative to the drill string and for axial movement along the longitudinal axis of the drill string toward and away from said upper portion for rotation relative thereto, a cam follower connecied to the swivel member, a cam surface on the piston engaging the cam follower to pivot the sub and bit around said axis when the piston is moved axially along the longitudinal axis of the drill string, and means responsive to the sensing means to position the piston to pivot the sub and bit in the desired direction and to move the piston to so pivot the sub and bit.

Re. 29,527
SAFETY FOR FASTENER DRIVING TOOL

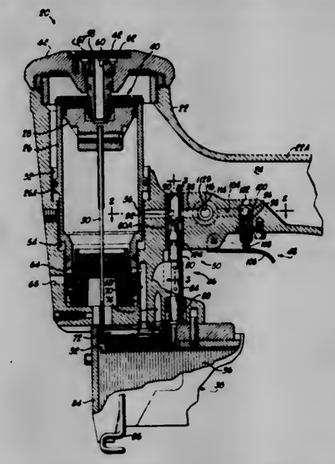
Howard B. Ramspeck, Elmhurst, and Allen R. Obergfell, Park Ridge, both of Ill., assignors to Duo Fast Corporation, Franklin Park, Ill.

Original No. 3,677,456, dated July 18, 1972, Ser. No. 55,178, July 15, 1970. Application for reissue July 17, 1974, Ser. No. 489,395

Int. Cl.[2] B27F 7/22

U.S. Cl. 227—8 22 Claims

20. A fastener driving device including a portable housing, fluid pressure operated fastener driving means carried by said housing for movement through successive cycles of operation each of which includes a fastener driving stroke and a return stroke, fastener magazine means carried by said housing for receiving a supply of fasteners and feeding successive fasteners into a position to be driven into a workpiece during successive fastener driving strokes of said fastener driving means, fluid pressure control means including an actuating member carried by said housing for movement from a normal inoperative position into an operative position for initiating the movement of said fastener driving means through a fastener driving stroke, a work contact responsive member carried by said housing for movement from a normal inoperative position into an operative position in response to the movement of said device into cooperating engagement with a workpiece, and a trigger member carried by said housing for manual movement from a normal inoperative position into an operative position, the



improvement in combination therewith which comprises enabling means operatively associated with said members for (1) enabling movement of said trigger member into its operative position when said work contact responsive member is in its inoperative position without movement of said actuating member into its operative position, (2) enabling movement of said trigger member into its operative position when said work contact responsive member is in its operative position to effect movement of said actuating member into its operative position, and (3) enabling movement of said work contact responsive member into its operative position when said trigger member is in its operative position without movement of said actuating member into its operative position.

Re. 29,528
JET FIRED ZONAL LEHR FOR APPLYING TREATING MEDIUM INSIDE AND OUTSIDE OF GLASS CONTAINERS SIMULTANEOUSLY

Edward W. Bowman, deceased, late of Uniontown, Pa. (by Muriel B. Bowman, co-executor), assignor to E. W. Bowman, Incorporated, Uniontown, Pa.

Original No. 3,754,885, dated Aug. 28, 1973, Ser. No. 1,97,,302, Nov. 10, 1971. Application for reissue July 9, 1976, Ser. No. 704,090

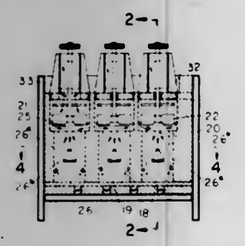
Int. Cl.[2] C03B 25/04

U.S. Cl. 65—119 8 Claims

1. A glass annealing lehr for treating hollow glassware such as bottles and the like, which consists of a tunnel having undivided separately controllable temperature zones, longitudinally of said tunnel and having superposed treating, recirculating and firing chambers vertically of said tunnel, a conveyor for supporting and passing the products to be annealed through

said treating [chambers] *chamber,* and a fan mounted for delivering the convective treating medium to the recirculating chamber under pressure, said recirculating chamber [having an opening] *being formed with a longitudinally extending slot* aligned over the ware supported on said conveyor for jetting the treating medium into the mouth and simultaneously around the outside wall of the ware supported on said conveyor[.], *and return flow passages at the sides of said treating chamber for drawing the treating gases therefrom for return to said fan.*

5. In the method of annealing *open top* glassware such as bottles and the like [in a tunnel shaped treating chamber



having a support for the ware between the top and bottom of the tunnel,] *in a glass annealing lehr having in superposed relation, a treating chamber, a recirculating chamber and a firing chamber, and return flow passages at opposite sides of said treating chamber, comprising* the steps of withdrawing a heat treating fluid from beneath the ware, recirculating said fluid [to a zone over said ware] *through said return flow passages first to said firing chamber and then to said recirculating chamber,* and *continuously* directing said fluid downwardly *through a longitudinally extending slot in said recirculating chamber* into the mouth of the ware and around the sides of the ware simultaneously *as the ware is moved longitudinally through said treating chamber.*

Re. 29,529

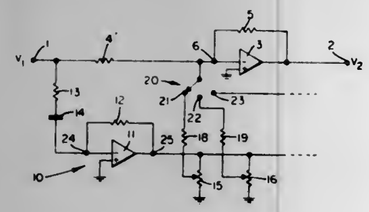
EQUALIZATION CIRCUIT

Alastair M. Heaslett, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Original No. 3,940,709, dated Feb. 24, 1976, Ser. No. 534,357, Dec. 19, 1974. Application for reissue May 3, 1976, Ser. No. 682,556

Int. Cl.[2] H03F *1/36*

U.S. Cl. 330—107 **21 Claims**



14. An equalization circuit, comprising:

a. an input terminal for receiving an input signal to be equalized;

b. a first amplifying means having an input and an output;

c. a first means for connecting said first amplifying means to said input terminal and providing an output signal which is substantially in phase with said input signal;

d. a phase shift circuit means coupled to said input terminal and providing an output signal having an increasing amplitude and constant phase lag with frequency relative to said input signal, within a predetermined frequency range of said input signal;

e. a second means for connecting the output of said phase shift circuit means to said input of said first amplifying means; and

f. said first amplifying means providing an output signal representative of the sum of said respective output signals provided by said first connecting means and said phase shift means.

Re. 29,530

MAGNETO-OPTICAL INFORMATION STORAGE DEVICE USING PHOTOCONDUCTIVE CONTROL ELEMENT

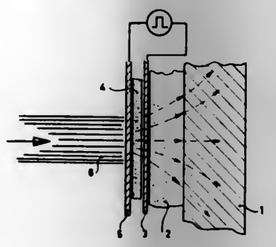
Jens-Peter Krumme, and Bernhard Hill, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Original No. 3,944,992, dated Mar. 16, 1976, Ser. No. 520,533, Nov. 4, 1974. Application for reissue Jan. 17, 1977, Ser. No. 759,680

Claims priority, application Germany, Nov. 16, 1973, 2357301

Int. Cl.[2] G11B *5/02*

U.S. Cl. 365—122 **10 Claims**



1. [An] *In an* information storage *and retrieval* device comprising [a] *an information* storage plate of [a magnetizable] *magneto-optic* material, [means including a light beam] *means for heating selected area of said storage plate, means to produce a magnetic field to effect storage within one of the heated areas of a value represented by one of two stable orientations, and means utilizing a magneto-optical effect* for [recording and] retrieving information [in] *from* said storage plate, *the improvement comprising* a photoconductive layer on the magneto-optic material of the storage plate, and electrode means on said photoconductive layer, *said heating means including the combination of optical means for positioning a spot of activating radiation on said photoconductive layer whereby a selected area of said photoconductive layer is rendered electrically conductive,* said electrode means being connected to an electrical power source [to heat said layer] *whereby a current can flow within said selected area and thermal energy is dissipated in said area which heats an adjacent area of the storage plate .*

PLANT PATENTS

GRANTED JANUARY 31, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,202

IMPATIENS PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jan. 31, 1977, Ser. No. 764,023

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Impatiens known by the cultivar name Lafayette and particularly characterized as to uniqueness by the combined characteristics of semi-compact growth habit that breaks well after the removal of the apical tip; internode spacing which provides excellent exposure to foliage and flowers; sharp, narrow leaf variegation, with the variegation developing quickly; deep orange-red flower color and profuse flowering; a spur which is curved and the same color as the flower petals, and its five flower petals, the top one of which is separated from the other four with its apex nearly pointed, and the bottom two of which are largest in diameter and have their apices recessed at the vein.

4,203

IMPATIENS PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jan. 31, 1977, Ser. No. 764,024

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Impatiens known by the cultivar name Preamble and particularly characterized as to uniqueness by the combined characteristic of narrow, long and variegated foliage; rose pink flower color; symmetrically round flower shape, with each flower petal being nearly the same size; superior durability; produces substantial side growth thereby permitting adequate cuttings to be taken for commercial production, and by its general plant growth which is ideal for pot plant culture.

4,204

IMPATIENS PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jan. 31, 1977, Ser. No. 764,525

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Impatiens known by the cultivar name Paul Revere and particularly characterized as to uniqueness by the combined characteristics of large variegated foliage having dark green outer areas and light green inner areas near the midrib; medium red to orange red flowers up to 6 cm. in diameter; upright medium height plant with good self branching habits and by its growing and flowering in full sunlight outdoors without deterioration of flower or the variegated foliage.

4,205

IMPATIENS PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jan. 31, 1977, Ser. No. 764,531

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Impatiens known by the cultivar name Liberty and particularly as to uniqueness by the combined characteristics of a very floriferous appearance due to the terminal whorl of leaves developing close to the previous node and branching frequently at several nodes on the same stem; the top and bottom petals having a nearly white throat at the base; relatively wide and variegated leaves; generally pink flower color and above average flower size; strong, rigid growth which develops an arching, flowering pattern; ease of propagation in quantity, and preferred growth in a very lightly shaded environment.

PATENTS

GRANTED JANUARY 31, 1978

ERRATA

For CLASS	See PATENT NO.
052–125	4,070,832
052–148	4,070,833
052–166	4,070,834
052–235	4,070,835
052–245	4,070,836
052–297	4,070,837
052–400	4,070,838
052–448	4,070,839
052–489	4,070,840
052–506	4,070,841
053–508	4,070,842
052–521	4,070,843
052–584	4,070,844
053–632	4,070,845
052–641	4,070,846
052–650	4,070,847
052–707	4,070,848
052–742	4,070,849
053–048	4,070,850
053–228	4,070,851
053–297	4,070,852
053–373	4,070,853
053–381 A	4,070,854
074–475	4,070,914
123–198 A	4,070,971
137–317	4,071,011
137–321	4,071,012
292–246	4,071,129
336–172	4,071,167
336–064	4,071,226
366–064	4,071,226
427–185	4,071,304
072–329	4,071,360
364–105	4,071,744
364–104	4,071,745
252–392	4,071,746
362–127	4,071,747
362–019	4,071,748
362–020	4,071,749
362–217	4,071,750
363–080	4,071,812
365–065	4,071,841

PATENTS

GRANTED JANUARY 31, 1978

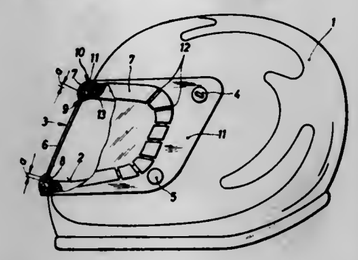
GENERAL AND MECHANICAL

4,070,712

CLEAR WINDOW FOR PROTECTIVE HELMETS

Hans-Günther v. d. Marwitz, Munich, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Germany

Filed Sept. 16, 1976, Ser. No. 723,969
Claims priority, application Germany, Sept. 17, 1975, 2541468
Int. Cl.[2] A61F *9/04;* A42B *3/00*
U.S. Cl. 2—10 **31 Claims**



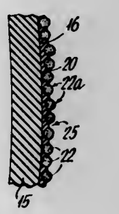
1. A window shield for protective helmets, especially for the users of motor vehicles, which includes a window aperture provided in the helmet and window means made of laminated glass which extends substantially over the entire field of vision of the window shield, characterized in that the window means is mounted within an elastic mounting support means which abuts at the edge area of the window aperture provided in the protective helmet so that the window means overlaps the edge area of the window aperture, and frame means joined to said support and detachably connecting said window means to said helmet.

4,070,713

MEDICAL GLOVE AND METHOD

Glenn Francis Stockum, Arlington, Tex., assignor to Arbrook, Inc., Arlington, Tex.

Filed Mar. 17, 1976, Ser. No. 667,790
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—168 **4 Claims**



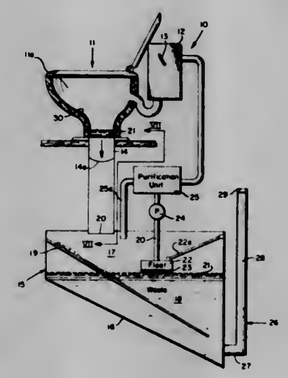
1. A medical glove adapted to tightly conform to the skin of a wearer's hand and to be donned without the use of additional lubricants, comprising: an outer layer of elastomeric material; an inner layer of elastomeric material comprising as a major component thereof carboxylated styrene butadiene latex bonded to said outer layer; and corn starch particles securely embedded in and randomly distributed throughout said inner layer, at least a portion of said particles having a size greater than the thickness of said inner layer and at least a portion of said particles being partially exposed on the inner, skin-contacting surface of said inner layer to form a lubricating means for aiding in the donning of said glove.

4,070,714

SEWERLESS RECIRCULATING TOILET AND HUMAN WASTE STORAGE SYSTEM

Norris J. Bishton, Jr., Santa Monica; Robert L. Rod, Marina Del Rey; Bruce Wagenhals, Fountain Valley; Theodore M. Woltanski, Hawthorne, and John S. Blick, III, Laguna Beach, all of Calif., assignors to Monogram Industries, Inc., Santa Monica, Calif.

Filed Feb. 27, 1974, Ser. No. 446,294
Int. Cl.[2] E03D *5/016;* B01D *37/00*
U.S. Cl. 4—318 **21 Claims**



9. In a sewerless recirculating toilet and human waste products storage system, having a commode with a flushing fluid of a specific gravity less than water associated therewith, a trap controlled waste products and flushing fluid outlet leading from said commode to a waste products and flushing fluid separation space, a storage space for the separated human waste products, the improvement which comprises:

fluid and human waste storage means operatively connected to said outlet for receiving said mixture of human waste products and said flushing fluid, separating said flushing fluid from said human waste products, storing said human waste products for an indefinite period of time in a state of suspended animation by maintaining said layer of flushing fluid in sealing contact with said human waste products until said flushing fluid cuts off substantially all oxygen from said human waste products thereby stopping aerobic bacterial action in said human waste products, and continuing to maintain said layer of flushing fluid in sealing contact with said human waste products until the pH of said human waste products reaches a level at which anaerobic bacterial action in said human waste products virtually ceases, so that said flushing fluid is stored on top of said human waste products and a portion of said stored flushing fluid may be recycled back into said commode, when desired.

4,070,715

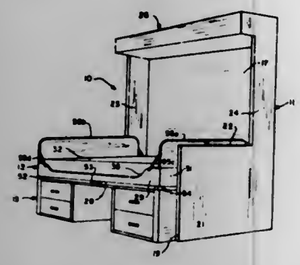
COMBINATION BED AND DESK

George S. Reppas, 1030 San Raymundo Road, Hillsborough, Calif. 94010

Filed Sept. 29, 1976, Ser. No. 727,780
Int. Cl.[2] A47C *13/18*
U.S. Cl. 5—2 R **11 Claims**

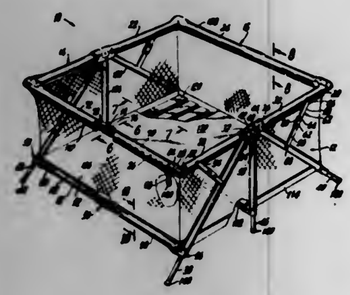
1. Combination bed and desk furniture comprising a bed frame for holding bedding, means for carrying the frame at one of its ends for pivotal movement about a transverse axis between a raised position in which the frame and bedding are disposed in an upright orientation and a lowered position in

which the frame and bedding are disposed in a horizontal orientation, a desk having a top surface disposed in a generally horizontal orientation, means for mounting the desk for movement with the bed between a raised position and a lowered position concurrent with movement of the bed between its



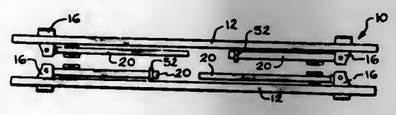
respective raised and lowered positions, said last mentioned means maintaining the desk surface in said horizontal orientation throughout movement of the desk, said desk in its raised position being elevated a height above an underlying floor which affords space under the desk top for the legs and feet of an individual when seated at the desk.

4,070,716
FOLDABLE PLAYPEN
Henry Satt, 1006 Neilson St., and Dave Neuberg, 833 Central Ave., both of Far Rockaway, N.Y. 11691
Filed July 19, 1976, Ser. No. 706,925
Int. Cl.² A47D 7/00
U.S. Cl. 5—99 C **15 Claims**



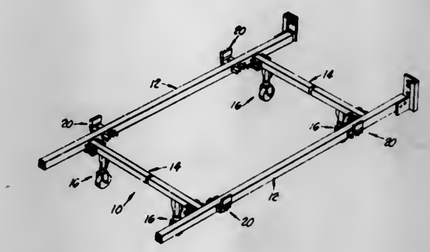
1. A foldable playpen comprising:
an upper frame including two end members and two side members;
each end member including two end sections hingedly interconnected to each other at their respective inner ends to provide junctions;
two pairs of legs, each pair having its upper ends hingedly interconnected with a respective one of said end members at said junction;
two vertical legs, each having its upper end fixedly interconnected to a respective one of said end members at said junction;
each side member including two side sections and first hinge means interconnecting said two side sections to each other at their inner ends for permitting said two side sections to be pivoted inward towards each other into a substantially parallel position with respect to each other, second hinge means interconnecting outer ends of said two side sections to outer ends of said end sections for permitting each of said two side sections to be pivoted to a substantially parallel position with respect to an associated connected one of said end sections;
three bars, each bar including two bar sections and third hinge means interconnecting said two bar sections to each other at their inner ends for permitting said two end sections to be pivoted inward towards each other into a substantially parallel position with respect to each other, fourth hinge means interconnecting outer ends of two of said bars respectively between a corresponding leg on each of said pairs of legs adjacent bottom ends thereof for permitting each of said bar sections of said two bars to be pivoted to a substantially parallel position with respect to said corresponding leg connected thereto, fifth hinge means interconnecting outer ends of the third bar between said vertical legs adjacent bottom ends thereof for permitting each of said bar sections of said third bar to be pivoted to a substantially parallel position with respect to an associated connected one of said vertical legs;
wherein, in an unfolded condition, each of said side members and said three bars are horizontal and substantially parallel to each other, each of said end members are horizontal and substantially perpendicular to said side members, and said pairs of legs diverge downwardly from their respective junctions;
and in a folded condition, each of said end members are pivoted downward, said pairs of legs are placed inward toward their respective upright legs to provide folded ends, each of said side members are pivoted upward and inward, and said bars are pivoted upward and inward to bring said folded ends towards each other;
whereby longitudinal axes of each of said end sections, side sections, bar sections and legs are disposed in the same direction in said folded condition to provide a compact arrangement.

4,070,717
BED FRAME
John P. Kitchen; Terry L. Gabhart, both of Georgetown, and Joseph S. Lanham, Lexington, all of Ky., assignors to Hoover Ball and Bearing Co., Saline, Mich.
Filed Apr. 28, 1976, Ser. No. 681,133
Int. Cl.² A47C 19/12
U.S. Cl. 5—176 R **7 Claims**



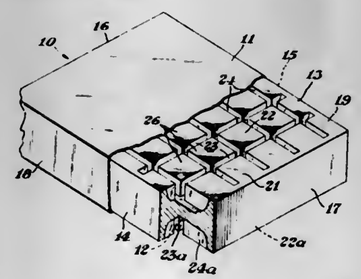
1. A bed carrying frame comprising a pair of generally parallel side rail members, a pair of end rail units each of which is comprised of two relatively telescoped end rail members, and corner bracket members mounting each of said end rail members on one of said side rail members, each of said bracket members including a trough shape portion configured to accommodate one of said side rails therein and vertically spaced flange portions integral with said trough shape portion, said flange portions being disposed on opposite sides of an end rail member and said trough shape portion having a side rail member disposed therein and secured thereto, pivot pin means mounting each end rail member on the flange portions of one of said bracket members for movement of said end rail member between a shipping and storage position disposed parallel to and adjacent the side rail member to which said end rail member is mounted and an operative position extending perpendicular to said side rail member, and means operatively associated with each of said end rail units releasably maintaining the end rail members therein in predetermined relative positions.

4,070,718
BOX SPRING RETAINER
Melvin P. Spitz, 619 N. Elm Drive, Beverly Hills, Calif. 90210
Filed Sept. 13, 1976, Ser. No. 722,706
Int. Cl.² A47C 19/04
U.S. Cl. 5—207 **22 Claims**



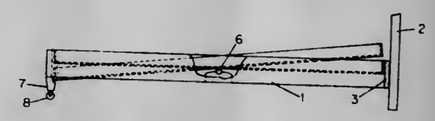
1. In a bed frame having an elongate side rail with a surface providing a support for a box spring adapted to project outwardly therebeyond, a box spring locating and retainer clip structure, comprising:
a. a generally L-shaped body structure having a base leg and a right-angled end leg at one end thereof, said legs being of fixed width;
b. means adjustably mounting said body on said rail for movements in extendable and retractable directions with said base leg extending transversely of the rail below said surface and with said end leg being positioned outwardly of said surface and projecting above the plane thereof to engage a projecting side of the box spring; and
c. means for releasably latching said body against movement in said extendable direction from an adjusted position, including a manually operable latch member pivoted on one face of said base leg adjacent its juncture with the end leg for swinging movement over said one face to latched and unlatched positions with respect to a portion of the associated rail.

4,070,719
CUSHIONING ELEMENT
Charles W. Morgan, Rolling Hills, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sept. 1, 1976, Ser. No. 719,498
Int. Cl.² A47C 27/08
U.S. Cl. 5—355 **5 Claims**



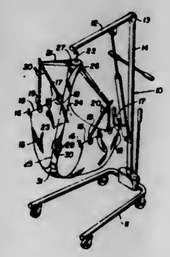
1. A cushioning element for seating or sleeping of humans and the like, the cushioning element having a synthetic resinous resilient cellular cushioning body, the cushioning body having ends and edges at least a principal human body-supporting face adapted to be disposed adjacent a human body when the cushioning element is in use, the cushioning body defining on the body-supporting face a plurality of grooves, the grooves having a width of from about one-eighth to about three-eighths of an inch, the plurality of grooves extending into the body and dividing the body-supporting face and a portion of the body adjacent to the body-supporting face into a plurality of adjacent spaced-apart bosses the grooves terminating at a location adjacent the ends and edges thereby providing an edge portion which is more resistant to compression than the area having grooves with the further limitation the bosses are individually deflectable and exhibit individual recovery when a deflecting force is applied and removed respectively, thereby providing a body-supporting face of a plurality of body-supporting face bosses each at least partially deformable independent of adjacent body-supporting face bosses.

4,070,720
DUAL PURPOSE HOME MEDICAL BED
Willie C. Edney, Rte. 5, Box 170B, Hendersonville, N.C. 28739
Filed June 9, 1975, Ser. No. 585,245
Int. Cl.² A45F 1/00; A61G 7/10
U.S. Cl. 5—62 **3 Claims**



1. Therapeutic bedding for conventional usage comprising a headboard; first and second base frames vertically pivotally attached to said headboard at the head ends and movable support means at the foot ends of said base frames, said base frames being in side-by-side relationship and each adjacent the headboard at the head end in a closed position and at an angle away from each other in an open position; first and second mattress support frames attached to said first and second base frames, respectively, at least one mattress support frame being horizontally pivotally mounted in its respective base frame about the longitudinal center of said mattress support frame; and means for positioning said support frame at a predetermined level of inclination relative to said base frame about said longitudinal center, said means for positioning said support frame comprising at least one series of openings in said base frame radially equidistant from the pivot axis of said mattress frame, at least one corresponding opening in said mattress support frame, and at least one pin insertable in said base frame and mattress support frame openings to position the relative inclination of said mattress support frame to said base frame at the predetermined level.

4,070,721
SAFETY ATTACHMENT FOR INVALID LIFT AND TRANSPORT APPARATUS
William Stasko, 1058 Boyd Ave., Johnstown, Pa. 15905
Filed Oct. 26, 1976, Ser. No. 735,444
Int. Cl.² A61G 1/02
U.S. Cl. 5—89 **3 Claims**



1. In an invalid lift and transport apparatus, a mobile support, a hanger element on the support, a flexible patient support sling

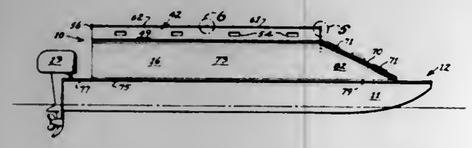
suspended at its sides from said hanger element, a flexible safety strap attachment for the front of the sling having a lower end permanently secured to the sling near its forward edge and transverse center, said strap attachment having an upper end secured to said hanger element, said strap attachment arresting forward displacement of a patient being supported in said sling, said safety strap attachment formed in two separable sections, a quick coupling and release buckle joining said sections, said separable strap sections comprising a relatively short lower strap section permanently secured to said sling and an upper relatively long strap section secured to said hanger element, and said upper strap section having a top end loop adapted to embrace a center hub of the hanger element to thereby suspend the upper strap section from the center of the hanger element and above the center of the sling.

4,070,722

HUNTING BLIND BOAT COVER

Johnny L. Sutherland, Rte. 2, Calvert City, Ky. 42029

Filed Aug. 2, 1976, Ser. No. 710,858
Int. Cl.² B63B *35/72*
U.S. Cl. 9—5 **7 Claims**



1. A hunting blind adapted to be supported upon an elongated boat hull having an open top and a pair of opposed elongated gunwales, comprising:

a. an elongated, rigid, covered superstructure having main top, front and side walls, the width between said main side walls being substantially equal to the width of a boat hull having opposed elongated gunwales upon which the superstructure is to be mounted,

b. said main side walls having lower feet means adapted to detachably seat upon the elongated gunwales of said boat hull for supporting said superstructure above said hull,

c. said main top wall comprising a pair of opposed longitudinal structural members defining the side margins of an elongated head opening through said top wall and extending substantially the length of the center portion of said superstructure and having a width substantially less than the width between the main side walls of said superstructure, but wide enough to permit the passage therethrough of a man's body,

d. an elongated elevated roof structure covering said head opening,

e. said roof structure having a pair of opposed upper side walls, each upper side wall projecting upward from each of said longitudinal structural members above said main top wall,

f. said upper side walls having opposed upper edges defining the sides of an elongated hatch opening spaced vertically above said head opening,

g. an elongated hatch adapted to cover said hatch opening,

h. means operatively connecting said hatch cover to one of said upper side walls for opening and closing said hatch opening, and

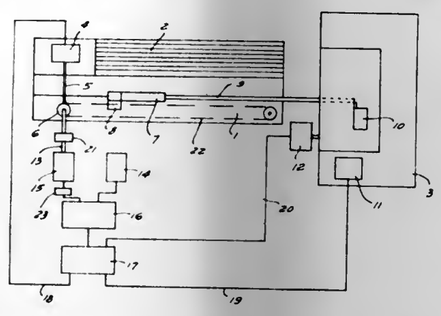
i. a plurality of observation ports in both of said upper side walls.

4,070,723

METHOD AND ARRANGEMENT FOR CONTROLLING THE FEEDING OF RODS TO A WORK TOOL IN AUTOMATIC SCREW MACHINES AND THE LIKE

Hans Jurgen Jess, Kronshagen, and Karl-Heinz Friederichs, Kiel, both of Germany, assignors to Hagenuk Vormals Neufeldt & Kuhnke GmbH, Kiel, Germany

Filed Sept. 29, 1972, Ser. No. 293,375
Claims priority, application Germany, Oct. 2, 1971, 2149319
Int. Cl.² B21D *43/06*; B23G *1/22, 11/00*; B26D *5/20*
U.S. Cl. 10—90 **5 Claims**



1. A method for automatically monitoring and controlling the operation of a rod-working apparatus of the type including an automatically operating rod-feeding unit which feeds towards a cyclically operating work tool a certain length of rod per work cycle of the tool, comprising the steps of selecting a minimum and maximum distance through which a rod to be fed towards the tool is to be permitted to advance per work cycle of the tool; feeding a rod towards and into the range of operation of the tool; determining the actual distance advanced by said rod during a work cycle of said tool; determining whether said actual distance falls within the range defined between said minimum and maximum distances; terminating operations of said rod-feeding unit when said actual distance falls outside said range, said cyclically operating work tool having a null position which it assumes at the beginning of its work cycles; and further comprising the step of terminating operation of said work tool upon a determination that said actual distance falls outside said range but only when said work tool has been allowed to return to said null position thereof.

4,070,724

APPARATUS FOR MAKING SELF-LOCKING INTERNALLY THREADED FASTENERS WITH RING-LIKE LOCKING ELEMENTS

Richard S. Newnom, Tujunga, Calif., assignor to Amerace Corporation, New York, N.Y.

Division of Ser. No. 680,480, April 26, 1976, Pat. No. 4,035,859, which is a division of Ser. No. 637,989, Dec. 5, 1975, Pat. No. 3,975,787, which is a continuation of Ser. No. 466,499, May 2, 1974, abandoned. This application May 13, 1977, Ser. No. 796,662
Int. Cl.² B21K *27/00, 1/64*; B21D *53/24*
U.S. Cl. 10—162 R **8 Claims**

1. In an apparatus for converting a nut having an imperforate wall providing the nut with external wrenching surfaces and an internal thread-defining surface into a self-locking nut of the prevailing torque type in which the self-locking characteristic is derived from a patch of plastic material adhered to said thread-defining surface, said patch being of a predetermined circumferential extent which is greater than 180° and further being axially limited so as to be spaced from both axial ends of said thread-defining surface:

a pin for entering said thread-defining surface from either end thereof, said pin including a terminal end, a generally

cylindrical shoulder portion axially spaced from said terminal end and extending axially along the pin for receiving the nut in seated relationship therewith and a frusto-conical, cavity-forming surface portion having the same axis as said cylindrical shoulder portion and tapered from



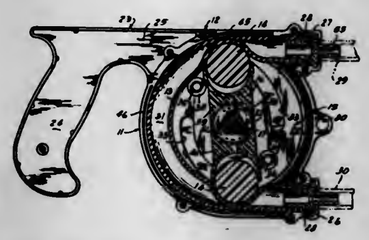
a larger diameter at the axial end thereof adjacent said shoulder portion to a smaller diameter at said terminal end, said frusto-conical surface portion also providing said pin with a pilot to facilitate engagement of the nut with said pin.

4,070,725

COMBINED PUMP AND SIPHON

Forrest L. Austin, Brooklyn Center, and Richard T. Cornelius, Minneapolis, both of Minn., assignors to Cornelius Engineering Center, Inc., New Hope, Minn.

Filed Nov. 7, 1975, Ser. No. 629,757
Int. Cl.² F04B *41/00, 43/08, 43/12, 45/06*; F04F *10/00*
U.S. Cl. 417—236 **10 Claims**



1. A pump comprising:

a. a housing;

b. a resilient tube disposed within said housing and having an inlet and an outlet, said tube having a portion intermediate its ends extending in an arcuate manner;

c. a plurality of rollers in said housing; and

d. support means within said housing supporting said rollers, said support means being rotatable about the axis of said arcuate portion for orbiting said rollers, said support means including means to shift said rollers radially to engage and collapse said tube and to shift said rollers radially to substantially disengage said tube, said support means comprising:

1. a pair of axially spaced generally flat sections joined together by a central drive hub, and rotatably supported by said housing concentric with the arcuate portion of said tube;

2. said sections having spirally arcuate bearing slots receiving journals on said rollers; and

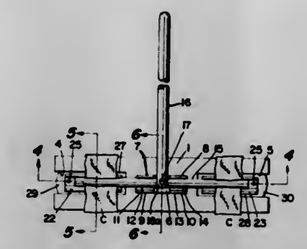
3. a guide member rockable about said axis and carried on said hub and having a plurality of equally spaced arms extending radially therefrom, the distal end of each of said arms being bifurcated and guidingly embracing one of said rollers near its diameter.

4,070,726

DEVICES FOR CLEANING, DUSTING, MOPPING OR APPLYING FLUIDS TO FLOORS

Robert L. Joffre, 530 Parks Drive, Norton, Ohio 44203

Filed June 23, 1976, Ser. No. 698,886
Int. Cl.² A47L *13/256, 13/258*
U.S. Cl. 15—231 **4 Claims**



1. A device of the character described comprising a substantially flat base of generally rectangular configuration, having a clamping member secured thereto, said clamping member being of channel-shaped cross-section having spaced upstanding flanges which are movable relatively to each other, a wiping member comprising a cloth having marginal portions disposed in the space between said flanges, means comprising an elongated rod of round cross-section within said clamped member which wedgingly secures said marginal portions of said wiping member to said flanges, and a handle secured to said rod by a transverse pivotal connection, said handle being movable to cause said rod to rotate about its central longitudinal axis to provide a universal joint for the device.

4,070,727

DEVICE FOR AUTOMATIC DOOR CLOSING

Kazuyoshi Kanou, 81-49, Oaza Matsugo, Tokorozawa, Saitama, Japan

Filed Jan. 18, 1977, Ser. No. 760,434
Claims priority, application Japan, June 29, 1976, 51-84590
Int. Cl.² E05F *1/08, 5/06*
U.S. Cl. 16—72 **4 Claims**



1. A device for automatic closing of a door comprising:

a plate spring of predetermined length, having an arcuate cross-section and a center section, said spring having first and second ends and being bent about said center section at an angle deviating slightly from a straight line;

a stationary wall;

a hinge attached to said wall; and

a door openable and closeable about said hinge, the first spring end being attached to said wall and the second spring end being attached to said door.

4,070,728

VERTICALLY ADJUSTABLE DOOR HINGE ASSEMBLY

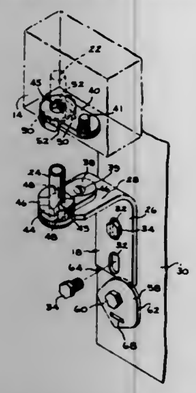
Charles J. Herman, Ellettsville, Ind., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 26, 1976, Ser. No. 735,330
Int. Cl.² E05D *7/04*
U.S. Cl. 16—134 **1 Claim**

1. In a hinge assembly for a door of the center-hung type having a vertical door frame with a door opening therein, a

door mounted for pivotal movement on the door frame and adapted to close the door opening, a first pair of hinge brackets fastened to the door frame adjacent the upper and lower edges of the door, a second pair of complementary hinge means fastened to the door adjacent the hinge brackets, and vertically arranged hinge pin means between each hinge bracket and its complementary hinge means so the door may pivot with respect to the hinge brackets; the improvement comprising:

vertically adjustable slot and bolt means for securely fastening the lower hinge bracket to the door frame; and



a rotatable cam plate having a peripheral cam face in engagement with the underside of the lower hinge bracket, having tool-receiving means to permit leverage to be applied to rotate the cam plate, and having an adjustable means for securely fastening the cam plate to the door frame in any position, whereby said rotatable cam plate serves to adjust the position of the lower hinge bracket and additionally reinforces the holding power of said slot and bolt means.

4,070,729

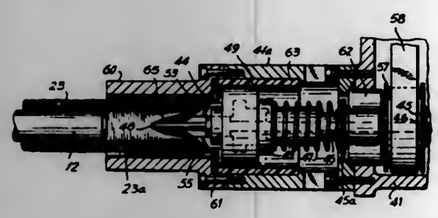
CLOSURE FOR SHIRRED CASING STICKS

Valdis M. Tums, Palos Park, and Thomas J. Maxwell, Lockport, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 604,113, Aug. 13, 1975, abandoned, which is a division of Ser. No. 538,458, Jan. 3, 1975, Pat. No. 3,914,447, which is a division of Ser. No. 242,932, April 11, 1972, Pat. No. 3,865,954. This application Dec. 6, 1976, Ser. No. 747,625

Int. Cl.[2] A22C *11/12*

U.S. Cl. 17—34 8 Claims



1. A device for forming an end closure in a shirred casing stick having a bore throughout its central portion, comprising in combination:

a. a rod member;

b. means for inserting said rod member into the bore at one end of said shirred casing stick;

c. rotatable, twisting member rotatable around said rod member and including means for engaging and twisting terminal pleats from said one end relative to the rest of said shirred casing stick into said bore;

d. means for urging said twisting member into engagement with and maintaining engagement with said terminal pleats;

e. means for rotating said rotatable, twisting member, whereby a twisted end closure is formed within said bore and around the periphery of said rod member; and

f. means for retracting said rod member from said bore without disturbing said end closure.

4,070,730

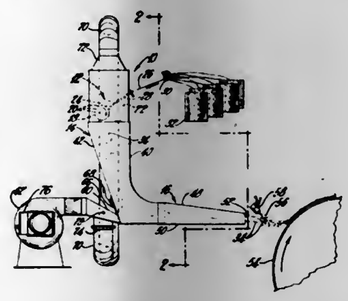
PRODUCTION OF CHOPPED FIBERS

Kenneth D. Pfeifer, and Julius C. Brooks, both of Huntingdon, Pa., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 12, 1976, Ser. No. 648,075

Int. Cl.[2] D01G *1/02*

U.S. Cl. 19—.58 3 Claims



1. Apparatus for producing chopped fibers from fibers of longer lengths, said apparatus comprising a chopper assembly, a discharge chute extending from said assembly, a second chute extending tranversely to said discharge chute and communicating with an end thereof away from said chopper assembly, means for producing a flow of gas, and means for directing a first portion of the flow, from the side of the chopper assembly opposite the chute, through the chopper assembly and through the discharge chute to carry the chopped fibers from the chopper assembly and a second portion of the flow through the second chute to direct the fibers from the discharge chute and to carry the fibers through the second chute.

4,070,731

METHOD OF AND APPARATUS FOR PACKAGING A LINEAR FIBROUS ELEMENT

Cletis L. Roberson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 564,947, April 3, 1975, abandoned, which is a division of Ser. No. 510,935, Oct. 1, 1974, Pat. No. 3,912,479. This application Sept. 7, 1976, Ser. No. 721,026

Int. Cl.[2] B65H *54/80*

U.S. Cl. 19—159 R 12 Claims

1. The method of packaging a linear fibrous textile element comprising:

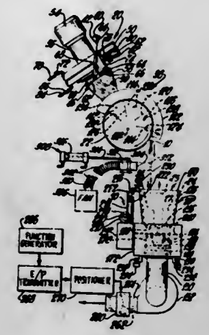
linearly advancing a linear fibrous textile element downwardly to collect as a package in an upstanding open topped generally cylindrical rotating foraminous container;

establishing a reduced pressure effect to draw air from the container through its foraminous bottom wall to move air downwardly through the package at a velocity sufficient to prevent freedom of movement of the collected portion of the fibrous element at the upper surface region of the package during package formation;

maintaining the velocity of the air moved downwardly through the package substantially constant to continue to

prevent freedom of movement of the collected postion of the fibrous element at the upper surface region of the package during package formation; and,

simultaneously establishing a reduced pressure effect to draw air uniformly from all sides of the container in a



direction outwardly through the foraminous sidewall portion of the container above the package at a rate effective to reduce air turbulence in the container and thereby promote conditions in the container for ordered collection of the fibrous element during package formation.

4,070,732

TEXTILE FIBRE CONTROL SYSTEM IN A DRAWING DEVICE

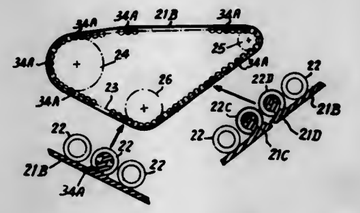
Jean Frederic Herubel, Guebwiller, France, assignor to Schlumberger & Cie, Guebwiller, France

Continuation of Ser. No. 592,471, July 2, 1975, abandoned. This application Dec. 21, 1976, Ser. No. 753,010

Claims priority, application France, July 16, 1974, 74 24653

Int. Cl.[2] D01H *5/70, 5/86*

U.S. Cl. 19—236 8 Claims



1. A textile fibre drawing device comprising a first fibre control system including a plurality of first elongate parallel control elements adapted to be progressed in a succession along a working path, said first control elements extending transversely to the direction of movement along said working path, and a second fibre control system including a plurality of second elongate parallel control elements made of elastomer and each extending transversely to said direction of movement and having a working face and a retaining portion opposed to said working face, a respective tubular support element corresponding with each said retaining portion and having therein a respective longitudinal slit into which said retaining portion projects, means for driving, guiding and orientating said second control elements to move along said working path whilst pressed against said first control elements of said first control system, feed roller means and drawing roller means to feed and draw, respectively, textile fibres to and from operating engagement between said first and second control elements, characterized in that each said retaining portion comprises a longitudinal fixing rib engaged in said slit and terminating in a retention head accommodated within the respective support element, each said second control element being of a width, measured in the direction of its movement along said path, corresponding to the space occupied by at least two of said tubular support elements, and being provided, at each of its ends, considered in the said direction, with a respective said fixing rib engaged in the said longitudinal slits in corresponding ones of said tubular support elements.

4,070,733

PRE-NOTCHED TIEING WIRES

Emil Simich, Chicago, Ill., assignor to A. J. Gerrard & Company, Des Plaines, Ill.

Filed July 26, 1976, Ser. No. 708,901

Int. Cl.[2] B65D *63/02*

U.S. Cl. 24—27 6 Claims



1. In a bale tie wire for use with press platens in a baling press for baling materials, the tie wire having a loop formed at each end of the wire in opposite directions thereof, and with a portion of each loop bent out of the plane of each respective loop in opposite directions thereof, including at least one notch predeterminedly positioned in the bale tie wire to provide engagement of the bale tie wire about the corners of the baled material and to permit alignment and engagement of each of the looped ends for fastening thereof.

4,070,734

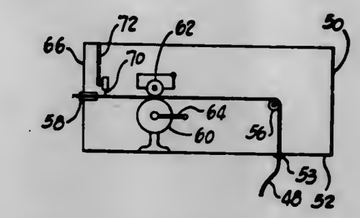
LOCKING MEANS FOR BALING WIRE

Ernest D. Paden, 6873 Center Road, Valley City, Ohio 44280; James E. Antolik, 6231 Sylvia Drive, Brookpark, Ohio 44142, and Keith W. Boldman, 26715 Bruce Road, Bay Village, Ohio 44140

Filed Aug. 7, 1975, Ser. No. 602,559

Int. Cl.[2] B65D *63/00*

U.S. Cl. 24—28 1 Claim



1. A method of securing a compressed bale of compacted waste material, comprising:

providing from a coil of wire a predetermined length of baling wire having free non-twisted distal ends;

wrapping said baling wire around said compressed bale;

locking the opposite free distal ends of said wire with a locking clip having a peripheral frame member and a centrally disposed raised arcuate member interconnected to said peripheral frame at opposed ends of the arcuate member, the raised arcuate member laterally spaced from the peripheral frame forming a first locking crotch therebetween at one arcuate connection and a second locking crotch therebetween at the other arcuate connection for locking the first free end and the second free end of said baling wire passing transversely between said arcuate member and said peripheral frame;

bending each free distal end portion of said baling wire to

form at least a right angle adjacently to entering each said crotch, and bending each said free distal end portion into a back-angled bend adjacently to said crotch after transversely passing through said crotch;

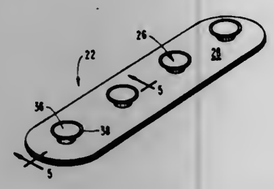
releasing the compression on the bale whereby the first and second free ends are locked without twisting within the first and second crotch respectively due to the tension of the baling wire.

4,070,735

SHOWER CURTAIN FASTENER

William Canaday, P.O. Box 1723, Plainville, Mass. 02762

Filed Nov. 24, 1976, Ser. No. 744,626
Int. Cl.² A44B 21/00; A47H 1/00
U.S. Cl. 24—73 VA 10 Claims



1. A fastener for temporarily holding a flexible shower curtain against the sidewall of a shower enclosure, said fastener comprising:

(a) flexible strip formed with a plurality of integral suction cups on one face thereof;

(b) a pressure sensitive adhesive layer superimposed on an opposite face of said flexible strip, said opposite face of said flexible strip formed with an expanded surface area to which said adhesive layer is attached; and

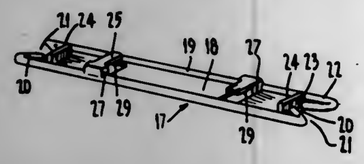
(c) a cover sheet having a release coating superimposed on said adhesive layer, said release coating in contact with said adhesive layer.

4,070,736

FASTENING DEVICE

Walter Henry Land, 656 Nepean Highway, Frankston, Victoria, Australia (3199)

Filed Sept. 21, 1976, Ser. No. 725,413
Claims priority, application Australia, Sept. 25, 1975, 3324/75
Int. Cl.² A44B 9/00
U.S. Cl. 24—153 10 Claims



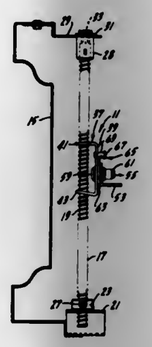
1. A flexible, two-piece paper fastener constructed of plastics material and comprising a compressor with an aperture adjacent each end thereof, a base with an integral tongue extending from each end thereof, the junction of said base and each said tongue having a design radius forming a plastic hinge, one surface of each said tongue being roughened to engage a transverse knife edge on said compressor for engaging each said tongue when inwardly folded toward one side of said compressor as a means to prevent accidental longitudinal slipping of said tongue from said compressor, integral hook members, each having a post portion which is rigidly attached to said one side of the compressor and a transversely extending arm portion having catch means on its underside for engaging complementary catch means on the other surface of one said tongue to releasably retain said tongue in a snap-locking and quick-release arrangement under said arm portion to lock said tongues against accidental lateral displacement from said compressor.

4,070,737

ADJUSTABLE BED MECHANISM FOR A CASKET

Charles R. Peterson, 918 Jackson Ave., River Forest, Ill. 60305

Filed May 7, 1976, Ser. No. 684,247
Int. Cl.² A61G 17/00
U.S. Cl. 27—12 11 Claims



1. A tilting mechanism for a casket bed, said mechanism including:

a vertically extending threaded rod,

a bracket mounted on the threaded rod and movable vertically along the rod upon rotation thereof,

a pivotal connector joining the bracket and a casket bed frame,

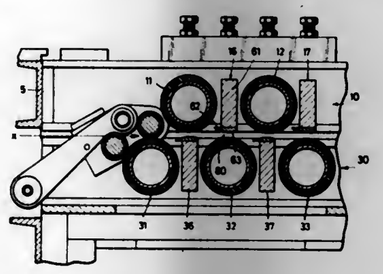
the pivotal connector providing a predetermined, nonadjustable resistance to tilting movement of the casket bed frame relative to the bracket which resistance is sufficient to retain the casket bed frame in any selected tilted position under the normal load carried by the casket bed frame while permitting pivotal movement of the casket bed frame to another tilted position upon the application of additional force to the casket bed.

4,070,738

FELTING APPARATUS

Volker Göbel, Alsfeld, Germany, assignor to Krafft Gobel KG Textilmaschinenbau, Alsfeld, Germany

Filed July 8, 1975, Ser. No. 593,980
Claims priority, application Germany, July 12, 1974, 2433602
Int. Cl.² D04H 17/12
U.S. Cl. 28—137 11 Claims



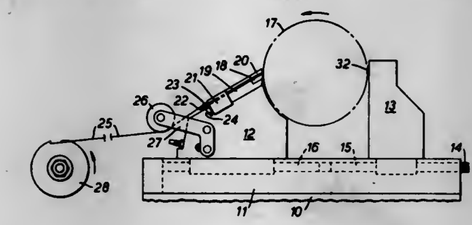
1. Apparatus particularly suitable for felting and fulling of felt materials comprising a plurality of rollers having a given length arranged in two mutually overlying rows of rollers, said rows defining therebetween a path through which a fleece may be passed in a given direction between said two rows of rollers, driving means for rotating said rollers, a compression beam located intermediate every two adjacent rollers in said two rows of rollers, said compression beam having a longitudinal extension corresponding substantially to said length of said rollers, with each of said compression beams having a side facing said path defined between said rows of rollers through which said fleece may be passed, means defining an arcuate surface on said side facing said path of each of said compression beams, said arcuate surface of each of said beams being curved on the side thereof facing toward said given direction of passage of said fleece with a generally convex configuration curving away from said path to define on one side of said path an entry aperture facing toward said given direction of passage of said fleece, and driving means coupled with said compression beams located in both said overlying rows of rollers for axially reciprocating said compression beams, said driving means operating to reciprocate said compression beams with variable predetermined amplitudes.

4,070,739

MANUFACTURE OF METAL STRIP

David P. Hague; Dalip T. Malkani; Andrew Middlemiss, and Stuart Scholey, all of Sheffield, England, assignors to British Steel Corporation, London, England

Filed Nov. 29, 1976, Ser. No. 745,560
Claims priority, application United Kingdom, Nov. 28, 1975, 49057/75
Int. Cl.² B21D 33/00
U.S. Cl. 29—18 7 Claims



1. A method of manufacturing metal strip from a cylindrical workpiece whose longitudinal axis is greater than the desired strip width including rotating the cylindrical workpiece about its longitudinal axis, feeding a first cutting tool into the peripheral surface of the workpiece as it rotates so as to form a groove in the surface having a depth not less than the required thickness of strip peeled from the workpiece, said groove being spaced from one end of the workpiece by a distance equal to the desired strip width, feeding a second cutting tool continuously into the peripheral surface of the workpiece between the said one end of the workpiece and the groove made by the first cutting tool so as to produce a continuous metal strip peeled from the surface of the workpiece of width equal to the distance between the said one end of the workpiece and the said groove, the cutting tool being dimensioned so that it overlaps the said one end of the workpiece and extends into said groove to a position spaced from the shoulder of the workpiece created by the peeling operation and collecting the peeled strip by winding it around a coiler.

4,070,740

CONTINUOUS PRODUCTION HOT-SETTING INSTALLATION

Gerard Bardet, Paris, France, assignor to Automatisme & Technique, Arcueil, France

Filed Aug. 11, 1975, Ser. No. 603,574
Claims priority, application France, Sept. 3, 1974, 74.29949
Int. Cl.² H01J 9/46
U.S. Cl. 29—25.19 6 Claims



1. A spark plug processing apparatus comprising:

means for pre-heating spark plug bodies;

means for setting said spark plug bodies;

means for continuously conveying said spark plugs from the input of said pre-heating means, through said pre-heating means, then through said setting means and to the output of said setting means;

said pre-heating means including a high frequency inductor in the form of a conductor;

said conductor having two parallel sectors with no more than a low degree of curvature whereby the lines of force of the field produced in said sector are substantially concentric circles;

a portion of each spark plug body having a thinner cross-section than the remainder of said body;

said conveying means moving said portion of said spark plug bodies along the lengthwise dimension of said conductor, between said sectors and on a level with said sectors whereby said spark plug bodies are heated and the heating of each spark plug body is concentrated generally in said portion; and

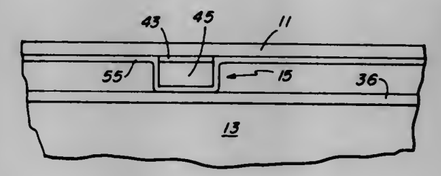
said setting means including a continuously operating turntable, a setting turret assembly having slide blocks for applying setting pressure to the plug bodies, and resilient means for metering the pressure applied whereby said portion of each spark plug body is deformed.

4,070,741

METHOD OF MAKING AN ELECTRET ACOUSTIC TRANSDUCER

Svetislav V. Djuric, Stow, Mass., assignor to Genrad Inc., West Concord, Mass.

Continuation of Ser. No. 726,598, Sept. 27, 1976, abandoned.
This application Apr. 18, 1977, Ser. No. 788,317
Int. Cl.² H04R 31/00
U.S. Cl. 29—25.42 7 Claims



1. The method of making an electret acoustic transducer comprising:

laminating an elastic diaphragmatic plastic film with a layer of material of predetermined thickness; selectively removing undesired portions of said layer of material, leaving a

desired post pattern on the film; metalizing the post side of said film to render it conductive; securing said film to a supporting ring;

providing a conductive backplate carrying on one face thereof a layer of polarized electret material which is itself insulating;

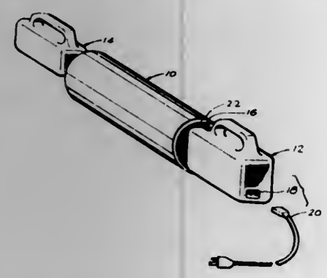
mounting said backplate and said ring in juxtaposition in a transducer assembly with said post pattern contacting the electret layer, the diaphragmatic film being deformed and spaced from the backplate thereby.

4,070,742

MOTORIZED ROLLING PIN

Claire Dorfman, 2251 Faunce St., Philadelphia, Pa. 19152

Filed Dec. 13, 1976, Ser. No. 750,329
Int. Cl.² B05C *1/08*
U.S. Cl. 29—110.5 **9 Claims**



1. A motorized rolling pin, comprising:

a cylindrical roller member, having a longitudinal central axis;

a first handle, rotatably connected to one end of said roller member, disposed along and rotatable about said central axis;

a second handle rotatably connected to the end of said roller member opposite from said first handle, disposed along and rotatable about said central axis;

means mounted exclusively in said first handle for imparting rotatational energy to said roller member to spin said roller member about said central axis, between said first and said second handles; and,

means for controlling said rotational energy imparting means.

4,070,743

APPARATUS FOR MOUNTING TENSION COIL SPRING ONTO ARTICLE

Seii Miyakawa, Yokohama; Takashi Kobayashi, Fujisawa; Masaya Kishi, Kamakura, and Kenji Ogiro, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sept. 1, 1976, Ser. No. 719,582
Claims priority, application Japan, Sept. 3, 1975, 50-105943
Int. Cl.² B23P *19/04*
U.S. Cl. 29—227 **12 Claims**

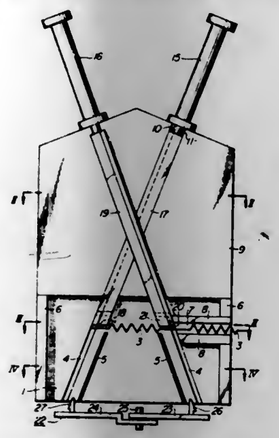
1. An apparatus for mounting or fitting a tension coil spring at both hook ends thereof onto two projections of an article comprising:

a. conveying means for conveying said tension coil spring supplied at a predetermined supplying position to a distant mounting position where said two projections of the article are positioned, said conveying means having a pair of conveying members and driving means for driving said conveying members;

b. guide means defining a pair of guide paths for allowing said conveying members to be carried therealong by said driving means from the supplying position to the mounting position and

c. members for restraining said tension coil spring at its both hook ends during the conveyance of said spring from the supplying position to the mounting position by said conveying means;

said guide paths being so formed that the pair of the conveying members guided by the guide paths are apart from each other in a non-stretched length of said spring at the supplying position and in a stretched mountable length of said spring at the mounting position, respectively, and that



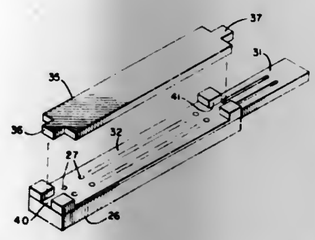
the space between the guide paths is gradually increased so as to gradually increase the space between the conveying members guided by said guide paths from the supplying position to the mounting position, and said restraining members removing restraint of said spring at the mounting position when the both hook ends of said spring have already been positioned in contactable position with said two projections of the article.

4,070,744

WASHER ALIGNING AND PLACING TOOL

Lewis C. Hartz, Jr., Simpsonville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 16, 1976, Ser. No. 705,851
Int. Cl.² B23P *19/04*
U.S. Cl. 29—241 **5 Claims**



1. An apparatus for the assembly of components, having a hole therethrough, onto the pins of a structure having a plurality of said pins positioned in a predetermined manner on a base, comprising:

a jig having extending therethrough a plurality of apertures positioned in an identical pattern to the pattern of said pins, said apertures extending through said jig and having a dimension sufficiently large to admit said components;

means for loading said components into said apertures; and

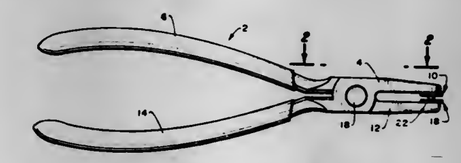
a slideably removable furcated element adapted to fit and disposed below and in contact with said jig, said element having slots formed between said furcations, said slots extending longitudinally from one end of said element to a point near the opposite end of said element and having a width smaller than said components but sufficiently large to admit said pins, thereby preventing said components from falling through said apertures, said slots disposed within said element such that when said element is in place below said jig and said jig and element are placed over said structure and in contact therewith, said pins extend through said slots and said holes of said components, such that when said element is removed by laterally pulling said element from said jig in a direction parallel to said slots, said components retained in said apertures by said element fall onto said pins.

4,070,745

CRIMPING TOOL

Arthur H. Schimmelman, Agura, Calif., assignor to Precision Dynamics Corporation, Burbank, Calif.

Filed July 21, 1976, Ser. No. 707,308
Int. Cl.² B23P *19/04*
U.S. Cl. 29—268 **12 Claims**



1. A hand-held, eyelet crimping tool comprising a pair of opposed jaws with handles and linkage for movement of the jaws toward and away from each other, one of said jaws having an annular anvil platen portion on the terminus thereof, the other of said jaws having a forming pin portion on the terminus thereof, said annular anvil platen portion being adapted for abutting relationship to said forming pin portion when said jaws are in the crimping position, said pin portion being centrally located and adapted to be superposed centrally of said annular anvil platen portion when said jaws are moved toward each other, said forming pin portion having an annular plate at least the diameter of said annular anvil platen portion and having a centrally located upstanding pin relative to said annular plate, the surface of said annular plate circumferentially of said upstanding pin being recessed relative to the circumferential edge of said plate to form an upraised circumferential lip about said edge.

4,070,746

METHOD FOR COVERING AN ARTICLE WITH A RECOVERABLE SLEEVE

Joseph H. Evans, Palo Alto, and Richard B. Wolfe, Menlo Park, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 587,267, June 16, 1975. This application Sept. 3, 1976, Ser. No. 720,611
Int. Cl.² B23P *11/02*
U.S. Cl. 29—450 **5 Claims**

1. The method of covering a member comprising:

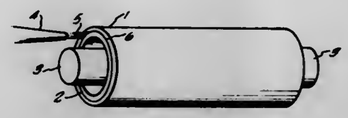
positioning over said member a recoverable tubular article comprising;

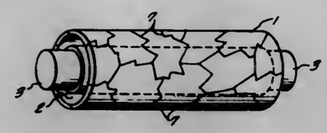
a tubular sleeve held under tension in an expanded condition such that upon the release of the tension the sleeve tends to assume a small diameter;

a restraint having an essentially tubular configuration;

a bond between the sleeve and the restraint to hold said sleeve in its expanded condition, said bond being capable of being sufficiently weakened by the application of a solvent to allow the sleeve to pull away from the restraint and return to its smaller diameter; and

applying a solvent to the bond between the sleeve and the restraint to thereby weaken the bond sufficiently to cause





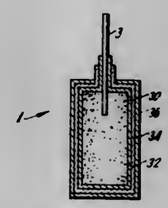
the sleeve to peel away from the restraint and shrink down about said member.

4,070,747

ANODE AND CATHODE LEAD WIRE ASSEMBLY FOR SOLID ELECTROLYTIC CAPACITORS

Richard Arthur Lambrecht, Greenville, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 22, 1976, Ser. No. 753,566
Int. Cl.² B01J *17/00*
U.S. Cl. 29—570 **1 Claim**



1. Method for providing an anode lead wire and a cathode lead wire on a solid electrolytic capacitor having a substantially cylindrical body including an anode, an anode lead in contact with and connected to the anode and extending along the longitudinal axis of said cylindrical body, a dielectric layer on the anode, a solid electrolytic cathode layer on the dielectric layer, said method comprising: providing a pair of cantilever mounted preshaped, resilient wires, each wire of said pair of wires having resiliently deformable extended portions substantially parallel to each other and substantially lying in a selected plane containing the longitudinal axis of said cylindrical capacitor body, one of said pair of wires being an anode lead wire and the resiliently deformable extended portion thereof having an end portion lying substantially in said selected plane, the other wire of said pair of wires being the cathode lead wire and the resiliently deformable extended portion thereof having an arcuate portion spaced from said end portion of said anode lead wire lying in a plane transverse to said selected plane, said arcuate portion having a shape generally conforming to the substantially cylindrical capacitor body; positioning said cylindrical capacitor body with respect to said anode lead wire such that said anode lead of said cylindrical capacitor body is closely adjacent to said end portion of said anode lead wire; positioning said cylindrical capacitor body with respect to said cathode lead wire such that said cylindrical capacitor body is closely adjacent to the generally conforming arcuate portion of said cathode lead wire; subjecting said resiliently deformable extended portion of said cathode

lead wire to a force which is in a direction transverse to said selected plane, said force being sufficient to establish a nesting contact between said arcuate portion of said cathode lead wire and said cylindrical capacitor body; soldering said arcuate portion to said capacitor body while said force is applied; subjecting said anode lead wire to a force which is in a direction transverse to said selected plane, said force being sufficient to establish contact between said end portion of said anode lead wire and said anode lead of said capacitor body and welding said end portion to said anode lead while said force is applied.

4,070,748

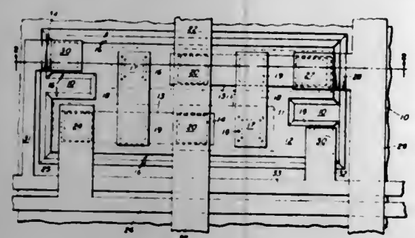
INTEGRATED CIRCUIT STRUCTURE HAVING SEMICONDUCTOR RESISTANCE REGIONS

Wilhelm H. Legat, Wilmington, Mass.; Keith G. Taft, Ben Lomond, and Karl H. Tiefert, Los Altos, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 563,429, March 31, 1975, abandoned, which is a continuation of Ser. No. 401,319, Sept. 27, 1973, abandoned, which is a continuation of Ser. No. 242,457, April 10, 1972, abandoned. This application Aug. 30, 1976, Ser. No. 719,201

Int. Cl.² B01J *17/00*

U.S. Cl. 29—577 C **12 Claims**



1. The method of forming an integrated circuit comprising the steps of:

forming a semiconducting layer having a <100> crystallographic surface on a supporting substrate comprising epitaxially depositing said layer over said substrate;

forming in said layer a plurality of active elements with said elements having a plurality of emitter regions formed in common base regions, base contacts formed on said base regions intermediate said emitter regions, and resistive regions comprising portions of said epitaxial layer directly connected to collector regions, said collector regions forming collector junctions with said base regions, portions of the boundaries of said resistive regions being formed by etching said layer from said <100> crystallographic surface along <111> crystallographic surface planes at least through said layer; and

forming conductors which are supported on insulating layers on said <100> and <111> surfaces of said layer and which interconnect regions of at least some of said elements.

4,070,749

METHOD OF MANUFACTURING LIQUID CRYSTAL DISPLAY DEVICES

Masayoshi Misono, Chiba; Masaharu Koyama, and Tutomu Aida, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

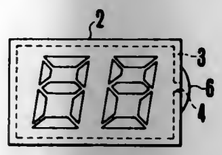
Filed June 30, 1976, Ser. No. 701,141

Claims priority, application Japan, July 4, 1975, 50-81827

Int. Cl.² G02F *1/13*

U.S. Cl. 29—592 R **11 Claims**

1. A method of manufacturing a liquid crystal display device comprising the steps of forming a dam made of frit glass having a liquid crystal inlet opening on at least one of paired insulating substrates, at least one of the substrates being transparent and provided with a transparent electrode, putting together a resultant structure and the other insulating substrate at the dam and baking the frit glass at a predetermined temperature to complete a liquid crystal cell, metalizing area surrounding the



liquid crystal inlet opening, filling a liquid crystal into said cell through said opening, and sealing said liquid crystal inlet opening with a molten sealing material in an atmosphere in which the surface portion and the inner portion of said molten sealing material have substantially the same viscosity.

4,070,750

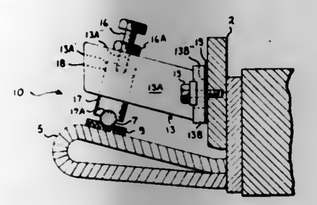
TIELESS BRACING AND METHOD FOR SUPPORTING END TURNS OF A DYNAMOELECTRIC MACHINE

Thomas E. Brennan, Voorheesville; Robert H. Hartmann, Gansevoort, and Robert M. McCoy, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 678,601, April 20, 1976, Pat. No. 4,037,126. This application May 3, 1977, Ser. No. 793,339

Int. Cl.² H02K *15/06*

U.S. Cl. 29—596 **3 Claims**



1. A tieless method of bracing the winding end turns of a dynamoelectric machine comprising the steps:

1. providing a dynamoelectric machine having a frame with a stator mounted therein, said stator being provided with slots adapted to receive an insulated winding therein, said insulated winding having end turns that extend beyond opposite ends of the frame when said winding is assembled in the stator slots,
2. mounting a plurality of generally T-shaped brackets on said frame at angularly spaced points radially outward from the end turns, each of said brackets being provided with a cup-shaped recess facing the stator winding and having a threaded aperture through its base to receive a dowel-driving bolt therethrough,
3. mounting a transversely grooved dowel and an associated dowel-driving bolt on each of said brackets, with each dowel slidably mounted in one of the cup-shaped recesses and each bolt threaded through one of said apertures,
4. providing a split metal annulus having a spreader means for enlarging the diameter thereof,
5. adjusting the annulus spreader means to open the annulus to a desired extent relative to said end turns,
6. positioning an absorbent, compressible material between the annulus and the stator winding end turns,
7. clamping said metal annulus at a predetermined diameter against the stator winding end turns by adjusting each of said bolts in sequence to slide the transverse grooves in the dowels against the annulus,

8. impregnating the winding and coating said compressible material with insulating resin, and
9. curing said resin.

4,070,751

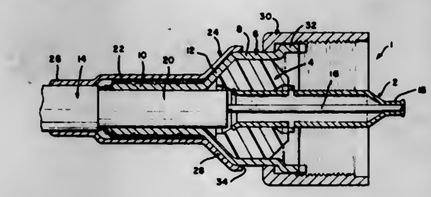
METHOD OF MAKING A COAXIAL CONNECTOR

Richard Shure Hogendobler, Camp Hill, and Robert Maclay Murray, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 12, 1977, Ser. No. 758,731

Int. Cl.² H01R *43/04*

U.S. Cl. 29—628 **2 Claims**



1. A method for manufacturing a coaxial connector, comprising the steps of:

separately forming a series of center contacts along a first carrier strip and a series of connector bodies along a second carrier strip each of said connector bodies having at least one slit and a longitudinal seam,

assembling said series of center contacts together with corresponding dielectric slugs encircling said center contacts concentrically within said series of connector bodies to form a series of subassemblies,

retaining said series of subassemblies along at least one of said carrier strips,

conveying said series of subassemblies together with said at least one of said carrier strips to an assembly station where at each said subassembly is assembled to a coaxial cable and is separated from said at least one of said carrier strips, and

covering said at least one slit and said longitudinal seam of each connector body with a seamless ferrule.

4,070,752

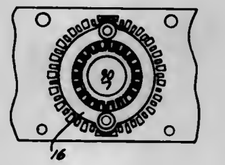
METHOD OF MAKING AN ELECTRICAL SWITCH AND CHEMICALLY MILLED CONTACTS

James H. Robinson, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 532,744, Dec. 16, 1974, Pat. No. 4,019,000. This application Mar. 23, 1977, Ser. No. 780,438

Int. Cl.² H01H *11/04*

U.S. Cl. 29—630 B **8 Claims**



1. A method of producing an electrical switch component comprising the steps of:

(a) producing a pattern for fabricating a plurality of interconnected electrical contacts within a portion of a strip of metal;

(b) defining the pattern on a first side of the strip of metal by the application of an acid resistant coating thereto;

(c) defining the pattern on the other side of the strip in mirror image registry with the pattern on the first side by the application of an acid resistant coating to the other side of the strip;

(d) chemically milling both sides of the strip to selectively open areas therethrough and thereby to produce a plurality of the interconnected electrical contacts within a portion of the strip;

(e) attaching a body of insulating material to selective portions of the strip to secure the electrical contacts to the body; and

(f) severing the electrical contacts from each other and from adjoining portions of the strip.

4,070,753

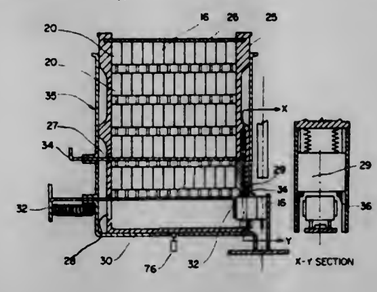
AUTOMATIC INSERTION MACHINE FOR INSERTING RADIAL LEAD ELECTRONIC COMPONENTS

Clark Wen-Hai Liu, No. 25, Alley 8, Lane 18, T'ung-Ho Street, Taipei, Taiwan, China /Taiwan

Continuation-in-part of Ser. No. 705,342, July 14, 1976. This application Dec. 27, 1976, Ser. No. 754,097

Int. Cl.² H05K *3/30*

U.S. Cl. 29—741 **5 Claims**



1. An automatic insertion machine which can automatically and continuously insert radial lead electronic components one by one onto a printed circuit board, said machine comprising:

a. an insertion head for punching components onto a printed circuit board;

b. means to retain electronic components in a plurality of rows;

c. a feeding and advancing mechanism for advancing a first one of said rows toward said insertion head where an endmost component of the advanced row is inserted into said board and for feeding said rows of electronic components into alignment with the advancing mechanism such that all the components in a row are inserted into the board in sequence, and one row is used after another;

d. a storage bin for supporting said feeding mechanism and storing said electronic components; and

e. a magnetic chuck for fixing the machine to a work surface.

4,070,754

HAND TOOL FOR JOINING OBJECTS

Michael Bauerkemper, Cerritos, Calif., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

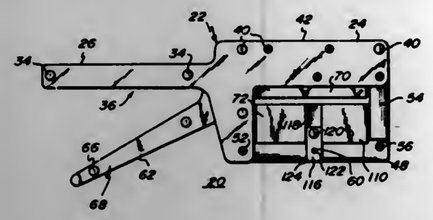
Filed Oct. 22, 1976, Ser. No. 735,008

Int. Cl.² H01R *43/04*

U.S. Cl. 29—749 **16 Claims**

1. A hand tool for joining two or more objects together comprising: a frame member having a first end portion, a second end portion and an intermediate portion therebetween; a movable support member having first and second ends, said first end pivotally coupled to said intermediate portion of said frame member to permit movement of said support member second end with respect to said frame member second end portion; a latch bar pivotally coupled to said second end of said support member and releasably coupled to said frame member second end portion to prevent relative movement of said support member with respect to said frame member; handle means

having first and second ends, said second end of said handle means pivotally coupled to said intermediate portion of said frame member; presser plate means; first coupling means coupled to said presser plate means and said frame member between said intermediate portion and said second end portion;



and second coupling means coupling said presser plate to said second end of said handle means; the arcuate movement of said first end of said handle means towards said first end portion of said frame member driving said presser plate axially towards said support member.

4,070,755

IMPACT EXTRACTION TOOL

Clyde Thomas Carter, Shermans Dale, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 12, 1976, Ser. No. 704,143
Int. Cl.² H01R *43/00*
U.S. Cl. 29—764 6 Claims



1. An impact extraction tool for driving friction mounted contacts from apertures in printed circuit boards, electrical connectors, and the like, said tool comprising:

a hollow tubular tool body member;

a hammer body movably mounted within said tool body member;

first spring means mounted between one end of said tool body member and said hammer;

trigger means within said tool body member and controlling release of said hammer;

a cap housing assembly secured to the other end of said tool body member and including a cylindrical housing cap and a plunger housing sliding coaxially within said housing cap;

a plunger movably positioned within said plunger housing and having a first end portion for actuating said trigger means and a second end portion for engaging said contact;

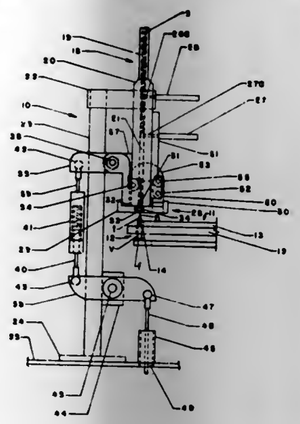
second and third spring means biasing said plunger with respect to said trigger and said plunger with respect to said plunger housing, respectively, whereby predetermined movement of said plunger causes movement of said plunger housing prior to the tripping of said trigger at which time an impact is delivered by the hammer body to the plunger to drive the contact from its seat.

4,070,756

APPARATUS FOR HOLDING HYPODERMIC NEEDLES STRAIGHT AND PLACING SHEATHS THEREON

Walter A. Shields, 181-41 Henley Road, Jamaica, New York, N.Y. 11432

Filed Nov. 24, 1976, Ser. No. 744,678
Int. Cl.² B23Q *7/10*
U.S. Cl. 29—809 3 Claims



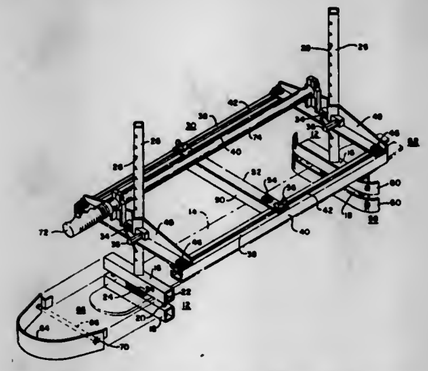
1. The combination of apparatus for placing a sheath on a vertically oriented hypodermic needle, the sheath having an open end for receiving the hypodermic needle, and apparatus for assuring the straightness of the hypodermic needle thereby to facilitate the placing of the sheath on said hypodermic needle, the sheath placing apparatus comprising an upright magazine for containing a stacked plurality of the sheaths with the openings thereof oriented downwardly, a downwardly extending passage having an upper end communicating with the magazine and a lower end having a discharge opening arranged on a vertical axis with which the hypodermic needle is to be aligned for being received in a respective said sheath discharged from the discharge opening onto the hypodermic needle, a first gate defining the boundary between the magazine and the passage and for blocking transit of a sheath from the magazine into the passage and a second gate below the first gate a distance about equal to the length of a respective said sheath for blocking transit of said sheaths to the discharge opening of the passage, whereby said sheaths may be individually discharged by gravity onto respective said hypodermic needles consecutively positioned in alignment with said axis by a cycle constituting closing the first gate of the loaded apparatus while the second gate is closed thereby to isolate the lowermost of said sheaths between said first and second gates, then opening the second gate thereby to permit the lowermost one of said sheaths of said stack to drop out of the discharge opening over the hypodermic needle aligned with said axis, then closing the second gate and opening the first gate to permit the now lowermost one of said sheaths of the stack to descend onto the second gate, and repeating said cycle for each said sheath which is to be deposited on a respective said hypodermic needle, and the straightness assuring apparatus comprising straightening means movable between an open inoperative condition and a closed operative condition for engaging said hypodermic needle with only point contact at first, second and third consecutive positions along the length of said hypodermic needle, said engaging at said first and third positions, on the one hand, and said engaging at said second position, on the other hand, being in opposition and holding the hypodermic needle in a straight configuration, and means for effecting movement of said straightening means between said inoperative and operative conditions thereof, said straightening means comprising first and second clamping members, said first clamping member including means defining a pair of like substantially right-angled notches which are vertically spaced and vertically aligned throughout on lines parallel to the axis of the elongated member when the clamping members are closed and said second clamping member including means defining a substantially right-angled notch similar to but opposite to the two notches of said first clamping member and being located between the two notches of said first clamping member when the clamping members are closed, said three notches being arranged to engage said hypodermic needle at the respective said three positions when said clamping members are closed thereby to hold the hypodermic needle in a straight configuration, the two notches of said first clamping member being arranged to engage the hypodermic needle at each of said first and third positions only at two points each rotationally spaced from the other by substantially ninety degrees and the notch of said second clamping member being arranged to engage the hypodermic needle at said second position only at two points each rotationally spaced from the other by substantially ninety degrees and each rotationally spaced by substantially ninety degrees from a respective one of the points of contact of either of said notches of said first clamping member with the needle.

4,070,757

LOG SAWING ATTACHMENT FOR A CHAIN SAW

Elof Granberg, San Rafael, Calif., and Emil Adolph Olsen, North Burnaby, Canada, assignors to Granberg Industries, Richmond, Calif.

Filed Nov. 8, 1976, Ser. No. 739,509
Int. Cl.² B27B *17/02, 27/02*
U.S. Cl. 30—371 10 Claims



1. A log sawing attachment for chain saw comprising

a pair of clamping means for engaging opposite ends of the cutter bar of a chain saw, each of said clamping means being formed with a pair of locking bars which extend beyond the edges of the cutter bar and saw chain and are adjustably interconnected at their opposite ends outside the chain path permitting the locking bars to be drawn together to clamp the chain saw cutter bar therebetween,

a pair of support posts, each of said posts being secured to one of said clamping means and disposed to project perpendicularly from said cutter bar on the same side thereof,

a guide frame adjustably mounted on said support posts for guiding the chain saw to cut at a preselected depth in the log being sawed, said guide frame including a pair of flat bottomed slide members having their bottom surfaces disposed in a plane parallel said cutter bar and which slide along the flat surface being used to guide the chain saw during the saw cut, said slide members being interconnected by a pair of spreaders and disposed in parallel relation on opposite sides of a plane formed between said support posts, said spreaders being adjustably clamped to said support posts to permit variable spacing of the guide frame with respect to the chain saw cutter bar,

a guide fence secured to the clamping means disposed at the drive end of the cutter bar, and

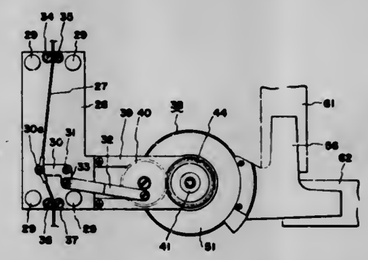
a handle secured to said guide frame disposed on the race end of the cutter bar.

4,070,758

STRAIGHTEDGE SUPPORTING DEVICE FOR RAIL TYPE DRAWING INSTRUMENT

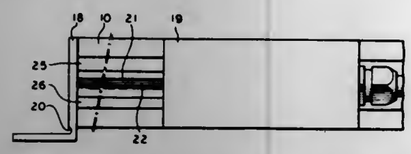
Yoshinori Watanabe, Tokyo, Japan, assignor to Mutoh Industry Ltd., Tokyo, Japan

Filed Dec. 9, 1976, Ser. No. 749,084
Claims priority, application Japan, Dec. 20, 1976, 51-152304
Int. Cl.² B43L *13/02*
U.S. Cl. 33—76 R 6 Claims



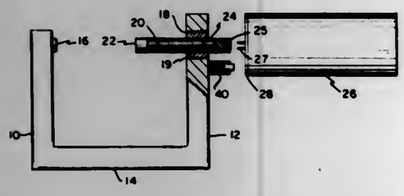
1. A rail type drawing apparatus having a straightedge supporting device, said apparatus comprising a cross rail disposed at a side portion of a drawing board, a cross cursor slidably mounted on the cross rail, a longitudinal rail connected to the cross cursor at right angles to the cross rail, a weight means mounted for shifting movement along the longitudinal rail, a longitudinal cursor mounted on the longitudinal rail for shifting movement therealong, a head connected to the longitudinal cursor, a ruler mounting plate rotatably mounted on the head, a straightedge means adjustably mounted on the ruler mounting plate, means for fixedly engaging the ruler mounting plate to the head and disengaging it therefrom, a rope means having one end connected to said weight means and having exerted thereon a force in one direction due to the effect on gravity on said weight, the other end of said rope means being coupled to said longitudinal cursor and having a force exerted thereon by the weight of said cursor, said head, said plate and said straightedge means in the opposite direction, and turning force converting means mechanically coupled between said ruler mounting plate and said rope means for converting the rotary motion of the straightedge means around the head in a plane parallel with the surface of the drawing board under the effect of gravity into a force opposite to the direction of the force exerted on the rope by the weight means.

4,070,759
SEALED INCREMENTAL MEASURING DEVICE HAVING AN ARTICULATED FASTENING MEANS FOR MOUNTING THE HOUSING
Günther Nelle, Siegsdorf, Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Germany
Filed Feb. 9, 1976, Ser. No. 656,745
Claims priority, application Germany, Feb. 11, 1975, 2505585
Int. Cl.² G01B 11/04
U.S. Cl. 33—125 C 12 Claims



5. The measuring instrument of claim 1 wherein one of said legs in each pair forms one of the ends of the hollow body and the other of said legs in each pair is adapted for attachment to the object to which the hollow body is fastened.

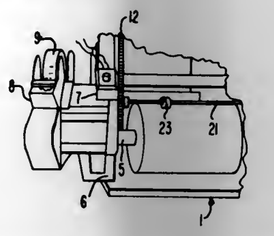
4,070,760
MICROMETER
Leo Roth, and Ursula Roth, both of 52-27 69th St., Maspeth, N.Y. 11378
Filed Nov. 26, 1976, Ser. No. 745,091
Int. Cl.² G01B 3/18
U.S. Cl. 33—166 7 Claims



1. A micrometer comprising:
a vertical upright U-shaped member having two parallel legs, each leg having parallel vertical inner and outer surfaces, the inner surfaces of the legs being disposed adjacent and parallel to each other, one of the legs having a horizontal threaded bore extending transversely between its outer and inner surfaces, the bore being disposed adjacent the upper end of the said one leg;
a sleeve having an internal thread and removably disposed in the bore;
one flat disc lying in a vertical plane and secured to the inner surface of the other leg, the disc having its center aligned with the axis of said bore; and
a threaded shaft threadedly engaging said sleeve, said shaft having a front portion which extends through the sleeve into the space between the legs and having a rear portion which extends outwardly from the outer surface of said one leg, the front portion being non-magnetic, the rear portion being magnetic.

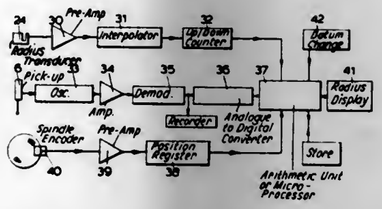
4,070,761
PRINTING PRESS WITH INVENTORY CONTROL
Joseph Martin Collins, Ontario, N.Y., assignor to Burroughs Corporation, Detroit, Mich.
Filed May 19, 1976, Ser. No. 687,807
Int. Cl.² G01B 5/08
U.S. Cl. 33—172 F 7 Claims

1. A web printing press comprising:
a frame;
a print and wind station;
a load roll station;
a spindle disposed in said load roll station and journaled in said frame for mounting a supply roll of paper to feed the press;
scale means disposed in a plane substantially perpendicular to the axis of said spindle and structurally extending from said spindle to the maximum radius of a supply roll mounted on said spindle;



indicia carried by said scale means and visually displayed thereon between said spindle and a radial distance of at least the maximum radius of the roll; and
monitoring means conjointly cooperating with both the outer circumferential surface of the roll and said scale means, said cooperation occurring substantially along the cylindrical plane defined by the outer circumferential surface of the roll, and said monitoring means transducing the radius of the roll into a visual indication thereof.

4,070,762
MEASURING APPARATUS
Graham John Siddall, Keyworth, England, assignor to The Rank Organisation Limited, London, England
Filed Aug. 21, 1975, Ser. No. 606,724
Claims priority, application United Kingdom, Aug. 21, 1974, 36725/74
Int. Cl.² G01B 7/34
U.S. Cl. 33—174 Q 4 Claims

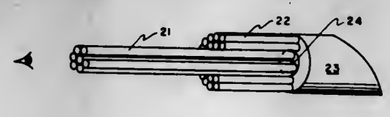


1. A method of determining the radius of curvature of the curved surface of a component under test using a roundness measuring instrument of the type comprising:
a workpiece table,
a pick-up,
amplifier means connected to said pick-up,
a pick-up mount supporting said pick-up, and
means interconnecting said pick-up mount and said workpiece support table such that said pick-up and said table are relatively rotatable about a main axis of the instrument and said pick-up is adjustable radially towards or away from said main axis so as to be brought into contact with a workpiece on said workpiece support table to produce output signals representative of the surface of said workpiece,
a displacement transducer having a body connected to one of said pick-up mount and a fixed frame member which is fixed with respect to said main axis, and a sensing element movable with respect to said body and attached to the other of said fixed frame member and said pick-up mount, and
means connected to the output of said pick-up amplifier means and to the output of said displacement transducer and operating to produce an instrument output signal representing the sum of the signals from said pick-up and said displacement transducer,
whereby to provide output signals representing the radial displacement of said pick-up over a limited range,
said method comprising the steps of:
locating a reference body on the table of said instrument,
obtaining at least two instrument output signals representing the radial separation of the surface of said reference body from the axis of relative rotation at at least two points spaced diametrically opposite one another across the said axis of relative rotation, and storing said two instrument output signals,
substituting a component under test for said reference body,
obtaining a plurality of instrument output signals representing the separation of the surface of the component under test from said axis of relative rotation, and
providing from said instrument output signals and the known dimensions of the reference body, an output signal representative of the mean radius of curvature of the curved surface of the component under test by computing the value of the expression

$$R_c = R_2 + (L_c - L_s) + (R_c - R_s)/M$$

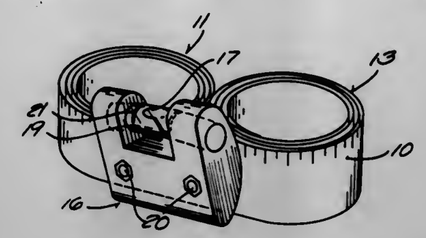
where:
R_c is the mean radius of the component under test
R_s is the mean radial separation of the surface of the reference body from the instrument at the two points detected
$(L_c - L_s)$ is the change in the instrument output signal upon substitution of the component for the reference body
R_c is the radius of the least squares reference circle computed from the pick-up output signal upon traversing the component
R_s is the radius of the least squares reference circle computed from the values of the pick-up output signal at the said two diametrically opposite points on the reference body
and M is the magnification of the instrument.

4,070,763
AIMING/SIGHTING DEVICE
Stanley L. Carts, Jr., Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 3, 1976, Ser. No. 747,132
Int. Cl.² F41G 1/32, 1/02
U.S. Cl. 33—241 7 Claims



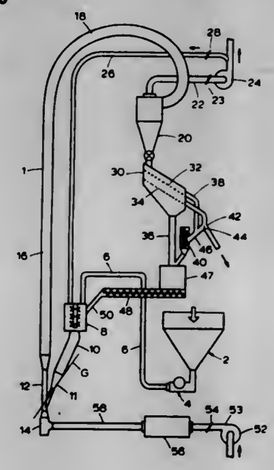
1. An aiming device comprising:
at least two bundles of straight parallel light collimating fibers having normal ends with diameters which are orders of magnitude less than their lengths, the fibers in each bundle being equal in length and the fibers in each bundle having a length to diameter ratio different from the fibers in every other bundle; and
an illumination means attached to said bundles to illuminate one end of the fibers in each bundle with light of one color, the colors for adjacent bundles being different.

4,070,764
LEVEL AND COLLAPSIBLE RULER
Daniel P. Rohlinger, W220 N3197 Springdale Road, Pewaukee, Wis. 53072
Filed Dec. 10, 1976, Ser. No. 749,600
Int. Cl.² G01C 9/18
U.S. Cl. 33—342 3 Claims



1. A combination collapsible ruler and level comprising a coilable spring strip having a formed concave, convex cross-section and spaced edges permanently stressed to form a plurality of tightly wound convolutions when the stressed strip is collapsed and a linear ruler when uncoiled, on arcuate level tube, and mounting means for mounting said level tube on said spring strip intermediate the ends of the strip and said mounting means having a convex surface complementary to said concave strip surface and having a foot portion for engaging a supporting surface at a point spaced from the lower edge of the strip to cooperate with one of said strip edges to provide bipodal support for the strip and level when in an uncoiled condition so that a plane through the tube arc is normal to the surface upon which said strip and level combination are supported.

4,070,765
PROCESS AND APPARATUS FOR CONVERTING A SOLUTION OR SUSPENSION INTO A DRIED PARTICULATE, GRANULATE PRODUCT
Svend Hovmand, Horsholm, and Erik Liborius, Charlottenlund, both of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark
Filed Apr. 26, 1976, Ser. No. 680,058
Claims priority, application United Kingdom, Apr. 26, 1975, 17431/75
Int. Cl.² F26B 3/08; F27B 15/00
U.S. Cl. 34—10 39 Claims



1. A process for converting a solution or suspension including recycled material into a dried particulate product in a

material cycling system including a pneumatic conveyor dryer and a mixer-granulator, said process comprising:

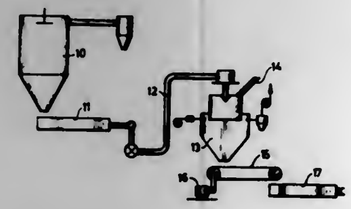
a. mixing in said mixer-granulator, the solution of suspension with recycled material consisting of dried particulate material of smaller particle size than the desired final product, to obtain particles of a higher moisture content than that of the desired final product,
b. feeding the resulting particles into and conveying them through said pneumatic conveyor dryer without any substantial disintegration of said particles,
c. classifying dried particulate product discharged from the pneumatic conveyor dryer into a fraction of desired particle size range, an undersize fraction, and, if present, an oversize fraction,
d. withdrawing particles of desired size range as final product,
e. disintegrating oversize particles, if any, and
f. recycling the disintegration product together with undersize particles into said mixer-granulator.

4,070,766

METHOD AND APPARATUS FOR PREPARING A SO-CALLED NON-CAKING POWDER

Gerrit George Kamphuis, Gorredijk, Netherlands, assignor to Stork Friesland B.V., Gorredijk, Netherlands

Filed Sept. 9, 1976, Ser. No. 722,054
Int. Cl.² F26B 7/00, 19/00
U.S. Cl. 34—12 **5 Claims**



1. A method for preparing a non-caking powder from a concentrate comprising spray-drying a concentrate having a minimum dry solids content of 48% at a temperature above 60° to form a powder having a moisture content below that at which crystallization is possible, cooling the powder to a temperature below 35° C., remoistening the cooled powder in a separate space to a moisture content at which crystallization is possible, allowing the remoistened powder to recrystailize and then drying the recrystallized powder to a final desired moisture content.

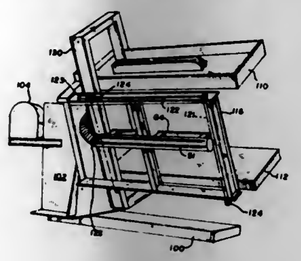
4,070,767

APPARATUS AND METHOD FOR AERATING, VIBRATING AND ALIGNING SHEETS OF PAPER AND THE LIKE

Cyril H. T. Woodward, 160 Howard Ave., Rochelle Park, N.J. 07662

Filed June 29, 1976, Ser. No. 700,840
Int. Cl.² F26B 5/00
U.S. Cl. 34—33 **25 Claims**

25. A method of aerating and vibrating a stack of sheet material such as cardboard, paper and the like in which the stack is transportable on a skid to said apparatus, said method steps including: (a) providing a lift frame including a pair of platform members and moving these platform members toward one another so as to engage a stack of sheets on its flat top and bottom surfaces and grasping said stack and when so grasped the stack is turned substantially to bring the stack to a vertical edgewise condition and after turning, moving the platforms apart sufficiently to permit aerating and vibrating of the loosened stack of sheets; (b) providing a side support frame carried by the lift frame and moving the frame to a position whereat one edge of the stack is supported and is aligned; (c) providing and cycling a vibrator support frame and carrying this support frame on the side frame and moving the frame back and forth at a selected and determined speed; (d) positioning at least one vibrated shoe carried on a support structure and moving this shoe and structure in a common plane and line which is substantially coincident with a plane normal to the bottom supported edge of the sheet as provided by the side support frame; (e) vibrating the movable shoe in a controlled direction and amplitude and toward and away from the side frame and forming the vibrated shoe with a flat support surface at that portion which is brought into engagement with the supported edges of the stack of sheets when the stack is lifted and turned and agitating the sheets as the air is blown therebetween without a lifting of the sheets from the vibrated shoe above the support surface provided by the side support frame; (f) mounting a spring at such an angle that these springs are disposed to carry the shoe during the vibrating of this shoe and



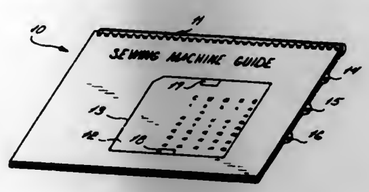
during vibration to carry and move locally the sheets in association with the shoe to a stop surface provided on the side frame; (g) mounting on the shoe a vibrator having a cycle and amplitude adjusting means and carrying said vibrator on said shoe so that the imposed vibrations are in a plane substantially parallel to the plane of the sheets in the stack; (h) providing and carrying an air conduit so as to be movable with the vibrator frame, this air conduit supplied with a large volume of low pressure air and disposed to feed this air to the vibrated shoe; (i) forming air passageways at and in the carrying surface of the shoe and connecting these air passageways to the conduit so that a large volume of low pressure air from the conduit is supplied to these passageways, and (j) forming a plurality of air outlets in the carrying surfaces of each shoe, each of the outlets so formed and positioned as to direct a stream of pressurized air upwardly and locally to and through the stack of sheet material as and after the platform members holding this material are loosened to allow vibrating and aerating of the sheets.

4,070,768

INFORMATION LOCATING SYSTEM AND METHOD

Irving Zuckerman, 19 Lyons Place, Larchmont, N.Y. 10538

Filed May 19, 1976, Ser. No. 687,912
Int. Cl.² G09B 3/00
U.S. Cl. 35—8 R **12 Claims**



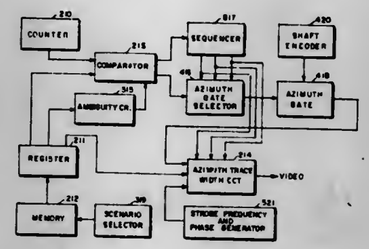
1. A system for locating information in an information bank, comprising an index and a key for the index, the index comprising an integral sheet not part of the information bank and bearing an array of indicia identifying the locations of information in the information bank and the key comprising a card having an array of closed windows which are registrable with the array of indicia, the key bearing legends for guiding a person to open a particular one or more of said windows depending upon the information which is to be located in the information bank and the windows not bearing any legends, the at least one window which is accordingly opened registering with indicia identifying the location of the information which is to be located in the information bank when the array of windows is registered with the array of indicia.

4,070,769

DIGITAL RADAR TARGET GENERATOR

Ernest E. Hollis, Bedford, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed July 26, 1976, Ser. No. 708,656
Int. Cl.² G01S 9/00
U.S. Cl. 35—10.4 **11 Claims**



1. A radar target generator for displaying targets on the display of a radar system having a clock the counts of which indicate a plurality of points on said display, said generator comprising

storage means storing individual target scenarios, each scenario including a plurality of target display numbers each of which indicates one of said plurality of points,
first means for selecting one or more individual target scenarios and interleaving the display numbers of the selected ones of said individual target scenarios when more than one scenario is selected to produce a composite target scenario,
read out means for selecting sequential ones of said display numbers in said composite target scenario, and
a comparator individually comparing said sequentially selected display numbers with the counts of said clock and providing a signal causing a target trace on said display whenever there is a match between said clock count and said display numbers.

4,070,770

INSOLE FOR ROCK CLIMBING SHOE

Francesco Vello, Venegazzu (Treviso), Italy, assignor to Red Wing Shoe Company, Inc., Red Wing, Minn.

Continuation of Ser. No. 660,133, Feb. 23, 1976, abandoned.
This application Feb. 15, 1977, Ser. No. 768,848
Claims priority, application Italy, Sept. 19, 1975, 2432/75
Int. Cl.² A43B 13/38
U.S. Cl. 36—43 **6 Claims**



1. In combination with a shoe used for rock climbing applications in which differentiated flexibility of a sole thereof in a longitudinal direction with a maximum of rigidity in a heel portion thereof and a maximum of flexibility in a toe portion thereof is desired to facilitate purchase of said sole with minimum lean-out, such differentiated flexibility traditionally being accomplished by a metal plate incorporated into said heel portion, the improvement which comprises:

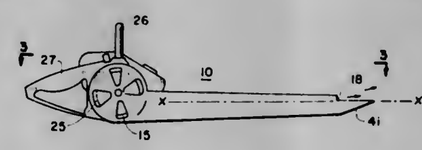
an insole formed of a unitary piece of synthetic plastic material replacing said metal plate, said insole having a heel portion and a front portion, with said heel portion being of sufficient thickness to be substantially rigid in use, and said front portion underlying the toes and a portion of the ball of a wearer's foot in use, said front portion having a thickness substantially linearly variable and decreasing in the longitudinal direction toward the toes to provide substantially greater flexibility of the front portion than said heel portion while distributing stress throughout its length.

4,070,771

PORTABLE SNOW BLOWER

John Yakiwchuk, Edmonton, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 9, 1976, Ser. No. 740,189
Int. Cl.² E01H 5/02
U.S. Cl. 37—53 **1 Claim**



1. A portable snow blower unit fitted with a housing enclosing a powered blower, said housing formed as a chute for enclosing exhaust air from the blower to a port at the forward end of the housing, in which

the forward end of the housing is formed with an open port section extending across the forward end and forward upper end of the housing, with the bottom forward end section of the housing, below said port section, externally extending as a flat surface towards the forward end of the housing,
said flat surface oriented at an acute angle taken from the port opening, to the axis of the chute of the housing, and at an obtuse angle to the remainder of the undersurface of the housing to the rear of said flat surface, together with a handle externally mounted on an upper section of the housing, so that with the unit manually gripped by the said handle, the unit may be slid with said flat surface resting on a base surface in the direction of the forward end of the housing with air flowing from the chute at an obtuse angle to the said base surface forward of the chute port section so as to blow snow on said base surface away from said port.

4,070,772

GROUND EXCAVATING APPARATUS

Mitsutera Motomura, Kamakura; Chiaki Kojima, Tokyo; Hiroshi Ohta, Chigasaki, and Akira Nemoto, Tokyo, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

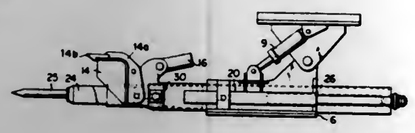
Filed Sept. 24, 1975, Ser. No. 616,290
Claims priority, application Japan, Sept. 30, 1974, 49-111409; Sept. 30, 1974, 49-111410; Sept. 30, 1974, 49-111411; Sept. 30, 1974, 49-111408
Int. Cl.² E07F 3/76
U.S. Cl. 37—117.5 **8 Claims**

1. A ground excavating apparatus comprising

a supporting member,
a bucket boom fitted on said supporting member such that it travels in the forward and rearward directions,
a bucket fitted on the top end section of the bucket boom

such that it can be inclined with respect to the boom, said bucket having a plurality of flukes on the forward end thereof,

means for impact crushing housed in said bucket boom and capable of traveling in the forward and rearward directions,



primary means of operation positioned on said supporting member, for operating said bucket boom for causing it to travel forward and rearward,

secondary means of operation positioned on said bucket boom, for operating said means for impact crushing to cause it to travel forward and rearward, and

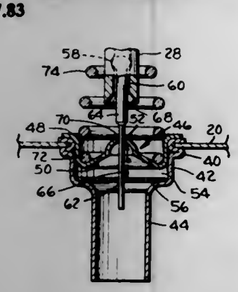
means of operation for inclination positioned on said bucket boom, for inclining said bucket.

4,070,773

STEAM IRON WATER VALVE STRUCTURE

Harold W. Gowdy, Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.

Filed Oct. 7, 1976, Ser. No. 730,378
Int. Cl.[2] D06F *75/06*
U.S. Cl. 38—77.83 5 Claims



1. In a steam iron having a water tank, steam generating soleplate, a guided water valve with a stem and metering rod portion movable between an on-off position and an outlet duct from the tank having a recess and extending below said valve directing water to the soleplate for steam generation, the improvement comprising:

a thin stainless steel sheet metal cup-shaped plate with a flanged rim overlying the duct and an upwardly-domed bottom with an orifice in the dome;

said flange fixedly nesting the plate in the duct above the recess bottom;

a separate floating centrally-apertured thin stainless steel scraper plate in the recess below the cup-shaped plate;

said metering rod portion carried by the stem and having dual diameters with the rod continuously protruding through said orifice;

the small diameter adapted to scrape in the plate aperture and large diameter scraping the orifice;

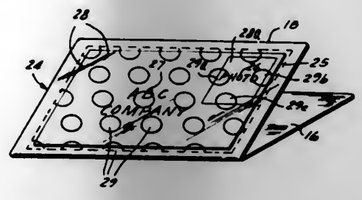
the distance between orifice and scraper plate being less than the total valve travel so both orifice and small diameter are simultaneously scraped on each valve operation and a scraped rod is always disposed in a scraped orifice in valve-on position for continuous accurate control.

4,070,774

IDENTIFICATION CARD POUCH

Henry N. Staats, Deerfield, and Jerome J. Wiermanski, Elmhurst, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.

Filed Aug. 16, 1976, Ser. No. 714,407
Int. Cl.[2] G09F *3/02*
U.S. Cl. 40—2.2 21 Claims



1. A card covering for use with a paper stock card having a photographic image placed over a portion thereof, comprising:

a. polyethylene terephthalate front and back covering leaves each having an inside surface for contacting front and back surfaces of the card;

b. a heat reactivatible adhesive on said inside surface of said front and back leaves for adhesion to said paper stock or to itself but which does not substantially adhere to the photographic image; and

c. a bond promoting patterned layer for adhesion to the photographic image on said heat reactivatible adhesive distributed over a major portion of the surface of said front leaf to form treated and untreated areas on said adhesive;

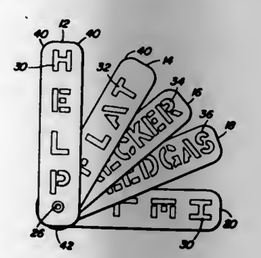
wherein the treated areas of the front covering leaf adhere to the photographic image and the untreated areas to the paper stock card.

4,070,775

ROAD EMERGENCY SIGN

John Doyle Brooks, Rte. 4, Batesville, Ark. 72501

Filed Nov. 5, 1976, Ser. No. 739,344
Int. Cl.[2] G09F *11/06*
U.S. Cl. 40—492 4 Claims



1. A road emergency sign including at least three elongated panel members of substantially the same plan shape and size and having first and second sets of corresponding ends, pivot fastener means pivotally securing said first set of ends together with said panel members spaced apart and relatively swingable in parallel planes between closed positions in registry with each other and open positions with one or more of said panel members swung about said pivot fastener means relative to each other, and assistance required indicating indicia formed on the remote sides of the remote panel members and required assistance type indicating indicia formed on the opposite sides of each intermediate panel member disposed between said remote panel members, said pivot fastener means and said panel members including means establishing a friction connection between adjacent panel members tending to frictionally

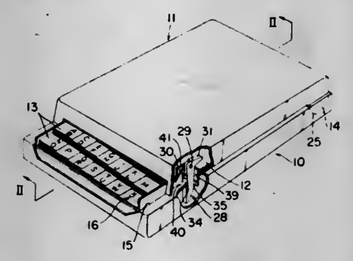
retain said panel members in adjusted relatively angularly displaced positions, said indicia on said remote panel members comprising word forming indicia spaced therealong and readable from top to bottom when said remote panel members are disposed in upstanding position with their second ends uppermost, said indicia on said intermediate panel members comprising word forming indicia spaced therealong and readable from left to right when said intermediate panel members are horizontally disposed, the indicia on the opposite sides of each of said intermediate panel members being relatively reversed, end-to-end, said remote sides of said remote panel members being at least substantially fully uncovered for viewing of the indicia thereon at all times, independent of the adjusted angular positioning of said remote panel members remote to each other and the intermediate panel members, said panel members including corresponding opposite end edges and corresponding opposite side edges, the end edges of said remote panel members at said first set of corresponding ends and at least one set of said corresponding side edges of the intermediate panel members being positionable in substantially coplanar relation when said remote and intermediate panel members are angularly displaced generally 90° relative to each other, whereby when said remote panel members are disposed in upstanding position with said second ends uppermost and one of said intermediate panel members is horizontally disposed, the lower end edges of said remote panel members and the lower side edge of said one intermediate panel member may be positioned in coplanar relation for direct support of said sign from a generally horizontal support surface.

4,070,776

TABLETOP DIRECTORY CASING WITH MEANS FOR READY ACCESS TO DESIRED ENTRIES

Yoshio Mitsuhashi, 79, Higashi-Kibogaoka, Asahi, Yokohama, Kanagawa, Japan

Filed Sept. 1, 1976, Ser. No. 719,452
Claims priority, application Japan, Sept. 9, 1975, 50-108563; Apr. 27, 1976, 51-47269
Int. Cl.[2] B42F *17/18*
U.S. Cl. 40—381 11 Claims



1. A directory casing comprising a base adapted to support on its top a stack of cards each having a tab projecting forwardly therefrom, said top of the base including a resiliently supported front end portion which is depressible by manual force exerted on any of the tabs of the cards thereon, a top cover pivotally coupled at its rear end to the base and adapted to be closed over the cards thereon so as to leave their tabs exposed, spring means biasing the top cover in an opening direction, engaging means for normally locking the top cover in a closed position against the bias of the spring means and, upon exertion of manual force on a selected one of the tabs, for permitting the top cover to open with the card or cards, if any, overlying the card having the selected tab, and stationary card-declining means provided on the top of the base and arranged rearwardly of the resiliently supported front end portion thereof to support the cards on the top of the base in rearwardly declining disposition, whereby upon exertion of manual force on a selected one of the tabs, a sufficient spacing can be formed between the front end portions of the card having the selected tab and the card lying immediately thereover.

4,070,777

BUBBLER DISPLAY DEVICE AND METHOD OF MAKING SAME

Joseph C. Lo Giudice, 5400 W. Montrose Ave., Chicago, Ill. 60641

Filed Sept. 30, 1976, Ser. No. 728,040
Int. Cl.[2] G09F *13/24*
U.S. Cl. 40—406 10 Claims



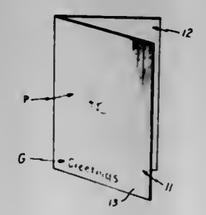
1. A display device for generating a continuous flow of bubbles through a body of liquid, said device comprising, an elongated vertically disposed transparent tube evacuated of air, a translucent glass chamber arranged at the lower end of and within said tube, said chamber being closed at its upper end and open at its lower end, a body of liquid in the tube covering and extending above said chamber, some of said liquid entering the lower end of said chamber, electric heater means within said chamber for heating liquid entering thereinto and discharging gaseous bubbles therefrom into the transparent tube and wire means supporting said heater and chamber within said tube.

4,070,778

GREETING CARD

Harry H. Mahler, 284 Main St., Centerville, Mass. 02632, and John A. Spargo, Crosby Lane, East Brewster, Mass. 02631

Filed Apr. 12, 1976, Ser. No. 676,357
Int. Cl.[2] G09F *1/00*
U.S. Cl. 40—124.1 1 Claim



1. A greeting card comprising first and second sections with the first section folded over the second section, the junction of the two sections having a score line extending from end-to-end thereof to enable the first and second sections to be easily separated, the exposed face of the first section having a picture printed thereon and its other face having a space for an address

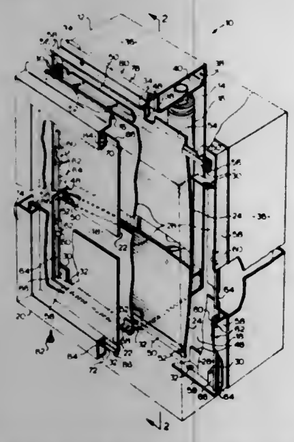
and a space for a message and at least a part of the back face of the second section includes a coat of a pressure-sensitive adhesive enabling said card to be removably secured thereby to a vertical display surface, the first section when later detached useable as a postcard and having a message printed on the exposed face of the first section adjacent the bottom edge thereof and below the picture, and the first section having a transverse score line extending from the free side edge thereto to said first named score line and enabling the message area to be separated from the picture area.

4,070,779

DISPLAY SIGN

Ralph M. Gilmour, Montreal, Canada, assignor to Claude Neon Industries Limited, Toronto, Canada

Filed Aug. 30, 1976, Ser. No. 718,667
Claims priority, application Canada, Sept. 2, 1975, 234746
Int. Cl.[2] G09F *13/04*
U.S. Cl. 40—575 13 Claims



1. A display sign for displaying printed matter on a poster or the like comprising:
a. a display case defining a first compartment adapted to contain a light source, the display case having a front opening for the transmission of light therethrough and a closure panel adapted to cover said opening, the closure panel having a central transparent face panel;
b. a concave translucent diffuser panel located between said face panel and said light source, the curvature of said concave diffuser panel extending toward the light source to define a second compartment between the diffuser panel and a face panel; and
releasable fastening means for locating said poster in the second compartment spaced between the face panel and the concave diffuser panel, so that the poster is viewed through the transparent face panel and may be backlighted by the light source.

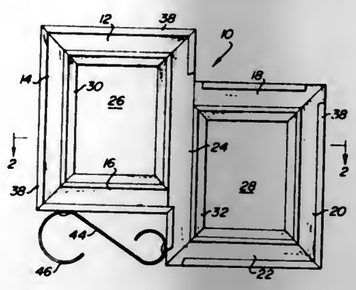
4,070,780

MULTIPLE PICTURE FRAME

Harry W. Rosenberg, 8941 Roosevelt Blvd., Philadelphia, Pa. 19152

Filed Oct. 26, 1976, Ser. No. 735,467
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—152 10 Claims

1. A multiple picture frame comprising first and second sets of peripheral border members and a common central border member all having a major face lying in a common plane, each set of border members being U-shaped with each of its ends connected to said central border member, one of the legs of each set of border members being longer than the other leg and generally perpendicular to said central border member, said sets of border members being vertically offset from each other to define at least two picture openings offset from one another, a molding secured to the inner periphery of each set of border



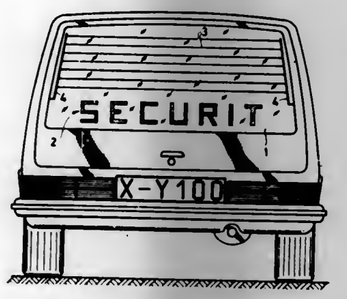
members, each set of molding being offset with respect to a rear face of said border members to define a picture recess slightly larger than said picture openings, a means on the rear face of said frame to facilitate mounting the frame.

4,070,781

WINDOWS BEARING AN INSCRIPTION

Gerd Sauer, Aachen-Laurensberg, Germany, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Nov. 5, 1976, Ser. No. 739,096
Claims priority, application France, Nov. 13, 1975, 75 34573
Int. Cl.[2] G09F *13/12*
U.S. Cl. 40—219 9 Claims



1. In a window glass extending across a window into an interior space having a lower brightness level than outside said space, said glass comprising the sole means extending across the window for closing it and having an inscription thereon, the improvement where the inscription comprises:
a. a semi-reflective, transparent layer applied to the surface of said glass.

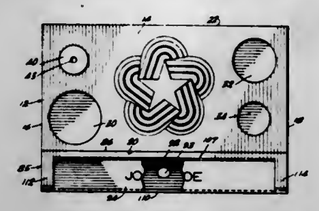
4,070,782

DESK ORNAMENT

Sergio A. Vasallo, 850 S. Miami Ave., Miami, Fla. 33130

Filed Sept. 13, 1976, Ser. No. 722,492
Int. Cl.[2] G09F *7/04*
U.S. Cl. 40—323 1 Claim

1. A decorative paper weight device comprising a body of relatively dense material having a bottom surface of plane form and an upper surface, said upper surface having a) a plurality of spaced recesses in a pattern, each of said recesses being sized to snugly receive and display the main surface of a coin of a predetermined year, and b) an embossed symbol on the upper surface centrally arranged with respect to said pattern, and c) a recess sized to receive a flag staff; and said body having a front surface, and magnetic means embedded in said front surface and a name tag means companionately sized to cover a major portion of said front surface and said name tag means including metallic plate means to attach to the magnetic means, whereby the name tag means is removable from said front surface, and said name tag means comprises a block sized to extend across the front surface between the upper and lower surface of the paper weight device and said tag means includes



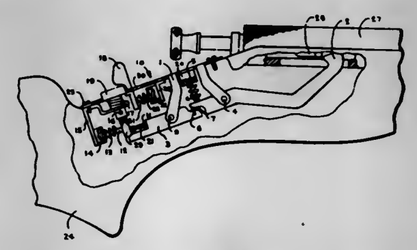
an inclined front surface extending downwardly from the level of said upper surface toward said outer surface and outwardly away from said front surface and comprising an inclined surface and a name tag plate sized and fitted on the inclined surface and means removably mounting said plate on said inclined surface.

4,070,783

THUMB TRIGGER AND AUTOMATIC SAFETY

Walter William Edwards, Rte. No. 1, Box No. 265, Bruno, Minn. 55712

Filed Dec. 29, 1976, Ser. No. 755,488
Int. Cl.[2] F41C *19/04, 17/02*
U.S. Cl. 42—69 R 10 Claims



1. A thumb trigger and automatic safety comprising: a partially enclosed casing having four tabs for locating two pivot points thereon, a swinging large arm pivoted about a pivot pin and secured thereby between two of said tabs near the front of said casing, said large arm having a clearance hole at said pivot point for receiving said pivot pin therein, said large arm having a radius slot therein for receiving a strike from a roller bearing, said large arm having a pin extending upwardly therefrom into a vertically oriented cylindrical tube containing a compression spring, said large arm extending toward the front end of the partially enclosed casing, said large arm having an angled bend at one end thereof for engaging a firing striker, and means for mounting said casing in a firearm for actuation by a thumb trigger.

4,070,784

ELECTRIC FISHING FLOAT

Seiji Yokogawa, Moriguchi, and Kiyoshi Takenaka, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed July 13, 1976, Ser. No. 704,816
Claims priority, application Japan, July 15, 1975, 50-98562[U]; July 15, 1975, 50-98563[U]; Dec. 17, 1975, 50-171752[U]; Dec. 17, 1975, 50-171753[U]
Int. Cl.[2] A01K *85/01*
U.S. Cl. 43—17.5 6 Claims



1. An electric fishing float characterized by the provision of
a. an elongated tubular fishing float case consisting of an upper case section with a light source positioned therein adjacent a closed top end thereof and a lower case section water-tightly connected to said upper case section,
b. a cell disposed within said lower case section and having an electrode axially upwardly extended from the top thereof, the shell of said cell serving as another or opposite electrode,
c. a tubular insulating member having the upper portion thereof water-tightly fitted into the lower portion of the hole of said upper case section,
d. a pair of contact members securely held in position between said tubular insulating member and a core member inserted into said tubular insulating member, said core member comprising a large diameter cylindrical base section with a cylindrical cavity having an open lower end, said cell being disposed in said cylindrical cavity, and an elongated small diameter cylindrical section axially upwardly extended from said large diameter cylindrical base section coaxially thereof, said tubular insulating member being fitted over said elongated small diameter cylindrical section with said pair of contact members interposed therebetween.
e. electrical connection means disposed within said core member for making electrical connection between one of said pair of contact members and said axially upwardly extended electrode of said cell and between the other contact member and the shell or opposite electrode of said cell, and
f. a pair of lead wires for electrically connecting between said light source and said pair of contact members.

4,070,785

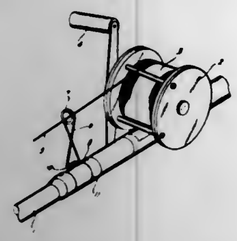
FISHING LINE GUIDE DEVICE

Cortez Hawk, 2214 Sycamore, Anaheim, Calif. 92806

Filed June 29, 1976, Ser. No. 700,772
Int. Cl.[2] A01K *87/04*
U.S. Cl. 43—24 4 Claims

1. A fishing line guide device comprising:
a. a base coil comprising a coiled metal rod portion and straight metal rod portions on either side of said coiled portion;
b. a line guide removably attached to said base coil com-

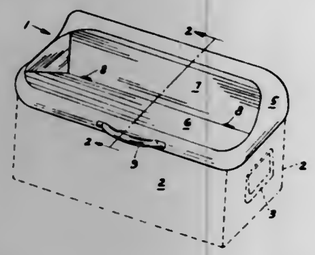
prised of a looped metal rod having straight portions on either side of a looped portion and end portions at approximately 90° to the straight portions, with the line guide having the shape so that the said end portions can be



inserted within the coil of the base coil and pivotable about said coil; and

c. means for attaching the straight metal rod portions of the base coil to a fishing rod.

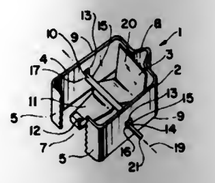
4,070,786
FISH RECEIVING HOPPER
James M. Dunham, 119 Kaffie Drive, Natchitoches, La. 71457
Filed Dec. 6, 1976, Ser. No. 747,496
Int. Cl.[2] A01K *97/04*
U.S. Cl. 43—55 12 Claims



1. A fish receiving hopper for use with a fish storage container comprising a shell-like cover, a downwardly extending chute disposed in the top of said shell-like cover and having a bottom terminus edge, and a substantially vertically oriented door having the top edge hinged to said shell-like cover and the bottom edge normally co-extensive with and adjacent said bottom terminus edge of said chute in closed configuration, whereby when a fish is caused to slide down said chute and contact said door, said door is displaced from said bottom terminus edge and swings open to permit said fish to fall into said storage container and returns to said closed configuration by operation of gravity after passage of said fish.

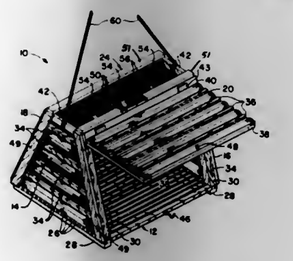
4,070,787
RODENT TRAP
George W. Oakes, Crystal Heights, Crystal City, Mo. 63019
Filed Sept. 10, 1976, Ser. No. 722,193
Int. Cl.[2] A01M *23/24, 23/26*
U.S. Cl. 43—94 10 Claims

1. Rodent trap apparatus which comprises
a unitary resilient frame having an intermediate portion and a pair of opposed coacting rodent-gripping end jaws movable with respect to each other between a spaced apart cocked position and a closed position and normally resiliently biased to closed position under sufficient snap force to grip a rodent disposed therebetween, and
a rodent-trippable unitary spacer trigger operatively interposed interengagingly with the frame to permit unhindered relative movement of the jaws with respect thereto between such positions and having a rockingly releasable slip catch portion arranged for temporarily maintaining the jaws in the spaced apart cocked position against the biasing force of the frame and a cooperating selectively counterbalanced rockable bait-carrier tripper portion



which is selectively counterbalanced to permit the slip catch portion to normally maintain the jaws in cocked position and arranged in the vicinity of the jaws and accessible to a rodent thereat for tripping the spacer trigger to release the slip catch portion and close the jaws under snap force to grip such rodent.

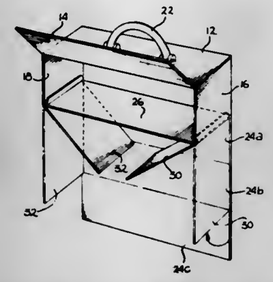
4,070,788
PRAWN TRAP
Harry G. Richcreek, 1098 H St., Crescent City, Calif. 95531
Filed Sept. 13, 1976, Ser. No. 722,892
Int. Cl.[2] A01K *69/00*
U.S. Cl. 43—100 10 Claims



1. Apparatus for entrapping prawns, comprising:
an enclosure having a bottom member, a pair of side walls and a pair of end walls, the end and side walls attached to and extending upward from the bottom member, said enclosure having an opening defined by the upper extremities of the side and end walls, the side and end walls having means for preventing light therethrough to keep the interior of the enclosure relatively dark;
an entrance structure coupled across the opening and having a plurality of first and second spaced downwardly inclined elements, the first and second elements having upper edges coupled to the upper extremities of the side wall to position the elements in converging relation to each other, a major portion of the first elements interlaced with the second elements at the lower ends thereof, certain of the first elements being shorter than adjacent first elements to define spaced, prawnreceiving openings in said entrance structure.

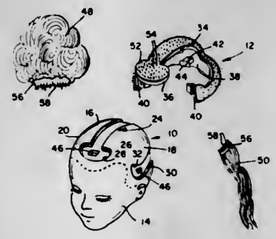
4,070,789
FOLDING DOLL HOUSE
Ellene S. Levenson, 23930 Killion St., Woodland Hills, Calif. 91364
Filed Aug. 30, 1976, Ser. No. 718,958
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—12 7 Claims

1. A folding doll house comprising:
an upper structure having top, bottom, back, front and side panels coupled to form a box-like structure, said front panel being coupled only to said top panel;
a plurality of lower side walls;
means coupling said lower side walls to said upper structure at the lower side edges thereof, whereby said lower side walls are adapted to fold to lie adjacent to said bottom panel outside of said upper structure;
a foldable lower back and floor panel; and



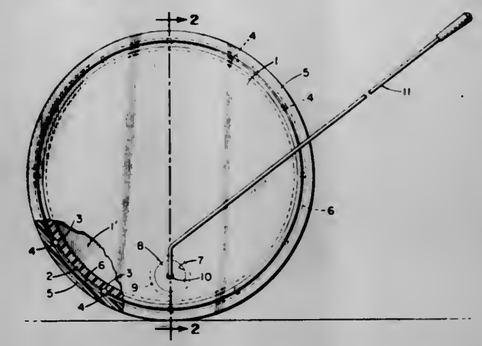
means coupling said lower back and floor panel to said upper structure at the bottom rear edge thereof, whereby said lower back and floor panel is adapted to fold to lie adjacent to said lower side walls outside of said upper structure and adjacent said front panel within said upper structure,
whereby the lower side walls and the lower back and floor panel of said dollhouse may be folded adjacent to said upper structure.

4,070,790
DOLL WITH RELEASABLY-ATTACHED HAIR PIECES
Ned Strongin, Baldwin, and Isabel Garrett, New York, both of N.Y., assignors to Ned Strongin Associates, Inc., New York, N.Y.
Filed June 15, 1976, Ser. No. 696,406
Int. Cl.[2] A63H *3/44*
U.S. Cl. 46—172 10 Claims



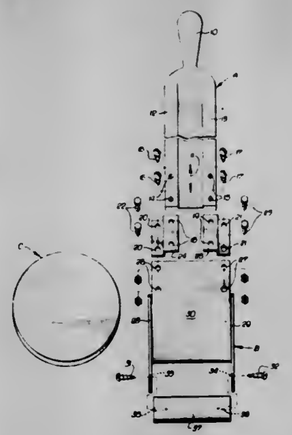
1. A doll adapted to receive interchangeable hair pieces, said doll comprising a doll head having a crown portion and a permanent wig formed of hair filaments covering said crown portion, hair piece mounting means secured to said doll head and having enlarged portions located at the front center and sides of said crown portions, an auxiliary hairpiece, and self-adhering fastening means including complementary hook and hook-engaging surfaces on said enlarged portions and said auxiliary hair piece for releasably attaching said hair piece to a selected enlarged portion, the hair filaments of said permanent wig overlying and concealing said enlarged portions and said auxiliary hair piece being removably attachable to said doll head by pressing the fastening means surface of said auxiliary hair piece against the fastening means surface on a selected enlarged portion through the hair filaments overlying the latter.

4,070,791
WHEEL TOY
J. D. Franklin Dill, Rte. 6, Box 37, Jasper, Ala. 35501
Filed Aug. 18, 1976, Ser. No. 715,555
Int. Cl.[2] A63H *33/02*
U.S. Cl. 46—220 2 Claims



1. A push or pull toy consisting of a hollow cylinder, two circular discs mounted on either end of said cylinder, said cylinder having a plurality of equally spaced hemi-cylindrical grooves in the outer periphery thereof, a roller bearing seated within each groove, a tire concentrically positioned outside of said cylinder, said tire having an inner peripheral groove to form a race for said bearings and being spaced from said cylinder a distance equal to the diameter of the roller bearings minus the depth of the grooves and means to push or pull said toy eccentrically attached to said discs.

4,070,792
GAME DEVICE FOR LAUNCHING AND PUSHING A ROLLING WHEEL
John M. Vuyovich, 1369 McDuff St., Los Angeles, Calif. 90026
Filed Apr. 21, 1976, Ser. No. 678,864
Int. Cl.[2] A63H *33/02*
U.S. Cl. 46—220 4 Claims



1. A game device for use with a disk-shaped object comprising the combination of an elongated member having a portion at one end thereof adapted to be held by hand and a groove extending along part of the length of the member between said portion and the other end thereof, said groove being configured to permit a disk-shaped object to roll along the length thereof, a pair of panels mounted on the member at said other end thereof and on opposite sides of the groove, said panels being parallel and spaced apart from each other by a distance

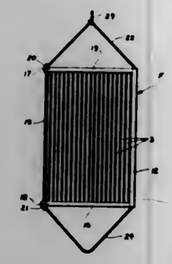
greater than the width of a disk-shaped object with which the game device is used, the panels being operative to guide the disk-shaped object when the object is rolled along the length of the elongated member and to engage the sides of the object to turn the object after launching from the elongated member and when rolling along the ground, and a roller extending between and rotatably mounted on the flanges and operative to engage and rotate with a disk-shaped object with which the game device is used when the object is received between the panels.

4,070,793

PLANT PROPAGATING AND SHIPPING DEVICE AND METHOD

Michael Francis Dillon, Athens, Ga., assignor to Flowers, Inc., Athens, Ga.

Filed Oct. 6, 1976, Ser. No. 729,889
Int. Cl.[2] A47G 7/02
U.S. Cl. 47—67 4 Claims



1. A plant propagating open ended hollow sleeve comprising top, bottom and side walls interconnected along their side edges to form a tubular structure, the height of said side walls being slightly in excess of the diameter of the stems of cuttings used in propagating plants from such cuttings and said top and bottom walls being considerably wider than the height of said side walls, and a plurality of longitudinally aligned apertures formed in each of said side walls for receiving the stems of a plurality of cuttings respectively, each of said apertures comprising a pair of angularly disposed intersecting slits.

4,070,794

PLANT WATER TROUGH

Geraldine L. Gibbs, 7515 Langley, Chicago, Ill. 60619

Filed Aug. 9, 1976, Ser. No. 712,587
Int. Cl.[2] A01G 27/00
U.S. Cl. 47—79 1 Claim



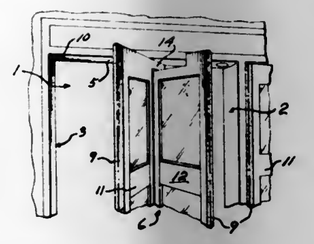
1. A plant water trough, comprising an endless, open-topped trough adapted to contain water and defined by an upstanding, endless relatively tall inner wall of substantially 1½ inches height, and an upstanding, endless, relatively short outer wall of substantially 1¼ inches height spaced substantially uniformly apart from and outside of the inner wall by substantially 1 inch, the inner wall defining an enclosed space of a size and shape larger than an individual common flower pot, both the outer and inner walls radially extending substantially outside a rim of the flower pot to locate the trough in a position spaced apart from the pot and to permit water in the trough to evaporate and the humid atmosphere created thereby to flow directly upwardly along a path of travel spaced horizontally apart from the outside of the flower pot to the foliage of a plant rooted in the pot, and three suspension means members equiangularly spaced about the trough, each suspension member being attached at one end to a hook for engagement over the pot rim, and at another end to a trough attachment means, said trough attachment means engaging said trough through an aperture formed in said inner wall, the aperture being located at a point vertically above the top rim of the outer wall and below the top rim of the inner wall, and the suspension means being of a length to suspend said trough from a lip of the pot at a level vertically intermediate the pot lip and a pot base, thereby providing a concentration of water vapor to the plant foliage while locating the trough at a point below the space used to observe, work and water the plant in the pot and yet providing an invigoratingly moist atmosphere for the plant.

4,070,795

SWINGING DOOR SYSTEM

Jean Louis Lussier, 91 Francois-Gauthier, Boucherville, Quebec, Canada (J4B 4N5)

Filed Mar. 18, 1976, Ser. No. 668,198
Int. Cl.[2] E05B 65/10; E05C 15/02
U.S. Cl. 49—141 22 Claims



1. A swinging door system comprising a door frame having a door opening, a door including a pair of wings hinged together about an upright hinge axis, releasable connection means carried by said wings for releasably maintaining said wings in substantially co-planar relation, each wing defining one of two opposite upright edges of said door respectively, means for pivotally securing one wing of said door to said door frame in said door opening for pivotal movement of said door about an operatively upright pivot axis equally distant from the opposite upright edges of said door, and means urging pivotal closing of said door in one direction of pivotal movement about said upright pivotal axis, said releasable connection automatically releasing said substantially co-planar wings for folding movement of said wings about said hinge axis upon sufficient force exerted on at least the other of said wings in the direction of closing pivotal movement of said door.

4,070,796

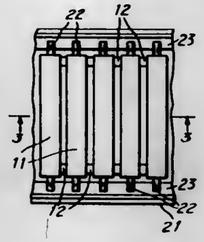
METHOD OF PRODUCING ABRASIVE GRITS

John J. Scott, Niagara Falls, Canada, assignor to Norton Company, Worcester, Mass.

Filed Dec. 27, 1971, Ser. No. 212,614
Int. Cl.[2] C09C 3/04
U.S. Cl. 51—309 R 5 Claims

1. A method for the production of abrasive grain from molten abrasive comprising

pouring said molten abrasive into a plurality of spaces defined by a plurality of relatively cold spaced parallel graphite or metal plates, the geometry of said spaces being such that at least 95% of the surface area of the poured abrasive in the mold is protected from the atmosphere by an adjacent mold surface during solidification, whereby the abrasive is solidified rapidly without melting of said plates, and



separating the solidified abrasive from said plates and comminuting it.

4,070,797

NITROGEN-FREE ANIONIC AND NON-IONIC SURFACTANTS IN A PROCESS FOR PRODUCING A HAZE-FREE SEMICONDUCT

Rudolf Griesshammer; Helmut Kirschner, and Günther Lechner, all of Burghausen, Germany, assignors to Wacker-Chemitronic Gesellshaft fur Elektronic Grundstoffe mbH, Burghausen, Germany

Filed July 2, 1976, Ser. No. 702,376
Claims priority, application Germany, July 14, 1975, 2531431
Int. Cl.[2] B24B 1/00
U.S. Cl. 51—326 10 Claims

1. In a process for the production of a semiconductor having a haze-free surface by polishing the semiconductor with a polishing agent containing at least one member of the group consisting of quartz, silica, silicates and fluosilicates, the improvement which comprises further polishing the semiconductor in a second polishing step with a modified polishing agent containing said first-mentioned polishing agent and from 0.1 to 10% by weight, calculated on the weight of said first-mentioned polishing agent, of a nitrogen-free surfactant selected from the group consisting of anionic and non-ionic surfactants and a mixture thereof.

4,070,798

POLISHING WHEELS

Jean Emain, Beau Site. Serger, 39200 Saint-Claude, France

Filed Aug. 18, 1976, Ser. No. 715,284
Claims priority, application France, Aug. 26, 1975, 75 20310
Int. Cl.[2] B24D 9/06
U.S. Cl. 51—361 5 Claims



1. A polishing wheel comprising a circular rotatable body, a plurality of spaced apart rigid support members provided on the periphery of the rotatable body, a layer of resilient materials provided on the periphery of each said support member and a strip covered with abrasive material supported on each layer of resilient material, the abrasive strip being secured on the support member by means for regulating the tension of said strip, the abrasive strip being an endless abrasive strip which is retained between the downstream end of the support member and a first cylindrical member mounted eccentrically on the body of the polishing wheel, said endless abrasive strip being engaged on a second eccentric cylindrical member and being retained by resilient means.

4,070,799

REINFORCED FINGER SEAL FOR SHOT BLAST CABINETS AND THE LIKE

John A. Pedersen, Burlington, Canada, assignor to Wheelabrator-Frye Inc., Hampton, N.H.

Filed Mar. 9, 1977, Ser. No. 775,893
Int. Cl.[2] B24C 3/10
U.S. Cl. 51—426 5 Claims



1. A finger seal for use in preventing the escape of particulate through an opening in a blast treatment device comprising:

a. a reinforced mounting portion adapted to receive a bolt therethrough for securing said seal over said opening,

b. an elongated body portion extending downwardly from said mounting portion, the length of said body portion being selected to substantially cover the vertical height of said opening, the width of said body portion being less than said length,

c. a plurality of raised reinforcing ribs provided on at least one side of said body portion along the length dimension thereof, each of said ribs spaced from and running parallel to the remaining ribs, said ribs tapering down and terminating at a point in proximity to the bottom of said body portion,

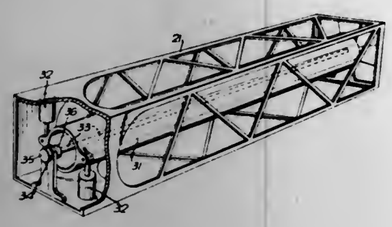
whereby said seal is relatively rigid along the upper and middle body portion due to the raised ribs thereby to deflect particulate and is relatively flexible along the lower body portion due to the termination of the ribs thereby to permit entry of parts into said blast treatment device.

4,070,800

CONTROL OF TORSIONAL DEFORMATION OF ELONGATE MEMBERS

Kenneth Robson Brown, Kirknewton, and Andrew Guy Kerr, Edinburgh, both of Scotland, assignors to Ferranti Limited, Hollinwood, England

Filed Aug. 2, 1976, Ser. No. 710,748
Claims priority, application United Kingdom, Aug. 2, 1975, 32403/75
Int. Cl.² E04B 1/36
U.S. Cl. 52—1 13 Claims



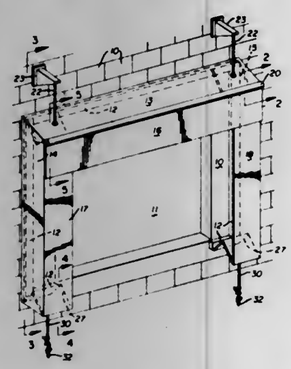
1. Apparatus for controlling the resistance of an elongate member to torsional deformation between its ends comprising a torque transmitting member mounted coaxially with the longitudinal axis of the elongate member and rigidly fixed at one of its ends to the member in a non-rotatable manner relative to the elongate member, the other end of the torque transmitting member being capable of rotation about its axis relative to the elongate member, measuring means operable to measure torsional deformation of the elongate member to produce a control signal indicative of the sense and magnitude of the deformation, and actuating means responsive to the control signal to apply a torque to the other end of the torque transmitting member about the axis thereof in such a sense as to cause the said one end of the elongate member to be rotated relative to the other end thereof to oppose the torsional deformation.

4,070,801

FLEXIBLE DOCK SEAL

Larry O'Neal, 4953 Timbercrest Drive, Canfield, Ohio 44406

Filed Oct. 4, 1976, Ser. No. 729,277
Int. Cl.² E04B 1/34, 7/14
U.S. Cl. 52—2 5 Claims



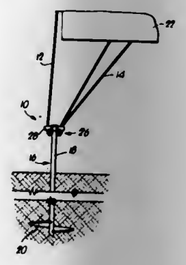
1. A flexible dock seal for positioning on a wall about an opening therein and comprising a flexible inverted U-shaped device consisting of a horizontal upper flexible member and a pair of vertical flexible members positioned one at each end thereof in depending relation thereto, means above said opening positioning said upper flexible member transversely there across in planes generally outwardly and downwardly from the plane of the wall and means at the sides of said opening positioning said vertical flexible members in planes generally outwardly and parallel with the plane of the wall and foldable hinge-like devices positioned between said wall and said flexible members and resilient means attached thereto for normally holding the foldable hinge-like devices in a first position extending outwardly from said wall and movable to a second position adjacent said wall.

4,070,802

SPRING-BIASED TAKE-UP CLAMP ASSEMBLY FOR MOBILE HOME TIE-DOWN STRAPS

James Thomas Odom, Columbia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed June 14, 1976, Ser. No. 695,648
Int. Cl.² E04D 1/34
U.S. Cl. 52—23 17 Claims



1. A clamp assembly for securing an element such as an elongated cable or strap to anchoring structure, comprising:
mounting structure presenting first and second engagement surfaces and adapted to be affixed to said anchoring structure; and
axially rotatable spindle means for receiving one end of said element and in engagement with said first engagement surface;
spring means operatively coupling said spindle means and mounting structure for precluding significant loosening of the element under tension loads normally experienced thereby,
said spring means including a first portion in gripping engagement with said spindle means, and a second portion in engagement with said second engagement surface, said mounting structure being located between said spindle means and the part of said second portion in engagement with said second surface, said second spring portion being loaded in tension.

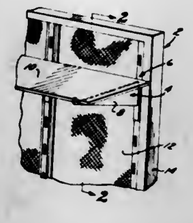
4,070,803

SUPPORTIVE ACCESSORY UNITS FOR MODULAR WALL PANELS

Clifford W. Gartung, 215 Via Dijon, Newport Beach, Calif. 92660

Filed July 6, 1976, Ser. No. 703,085
Int. Cl.² A47G 29/02
U.S. Cl. 52—36 13 Claims

1. In combination with a modular wall panel including a rigid frame having a U-shaped channel with at least one peripheral support rim and a compressible panel member mounted in the U-shaped channel frame and bearing on the support rim, the improvement comprising a shelving support assembly including;
a U-shaped support bracket having a plurality of apertures, an elongated side flat force bearing member and an upper horizontal support shoulder extending outward from the side force-bearing member at one end of the U-shaped support bracket, the compressible panel member bearing against the U-shaped support bracket, and the side force bearing member to hold the upper support shoulder against the frame support rim, the side force bearing member further extending under an adjacent peripheral support rim and bearing against the edge of the support rim, the shelving support assembly is removably mounted on



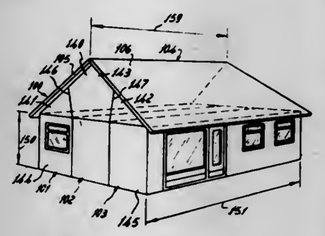
the modular wall panel by depressing the compressible panel member and sliding the upper support shoulder onto a horizontal support rim and also by sliding the side force bearing member behind an adjacent vertical support rim.

4,070,804

BUILDINGS ERECTED FROM THREE OR MORE BOX-SHAPED SECTIONS, AND METHODS OF FABRICATING SUCH BUILDINGS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Continuation of Ser. No. 445,924, Feb. 26, 1974, abandoned.
This application Nov. 20, 1975, Ser. No. 633,977
Claims priority, application Netherlands, Feb. 28, 1973, 7302761
Int. Cl.² E04H 1/12
U.S. Cl. 52—64 34 Claims



1. A building comprising three or more elongated box-shaped prefabricated sections each of which encloses part of the space of the building, at least one of said sections being located between and connected on its longer side to two further of said sections, said one section having a width of its space-enclosing part exceeding the width of the space-enclosing part of said further sections, said further sections being free of the other said sections on one side, one of said further sections being provided with a top construction which, viewed in plan, projects in a direction of width beyond the space-enclosing part of said one further section, the over-all width of said top construction being substantially equal to the width of the space-enclosing part of said one section, whereby the transport width of said one further section and said one section are substantially equal.

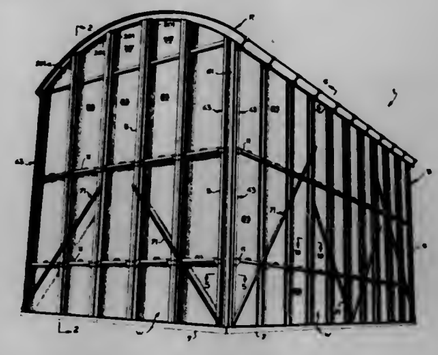
4,070,805

DISPLACEABLE BUILDING UNIT FOR OFF-THE-WALL GAMES

Sid Kastner, 68 Rosemount Crescent, Westmount, Quebec, Canada (H3Y 2C2)

Filed Aug. 16, 1976, Ser. No. 714,847
Int. Cl.² E04B 1/32
U.S. Cl. 52—86 8 Claims

1. A displaceable building unit defining a playing enclosure for use as a court for off-the-wall games requiring at least one wall suitable for the bouncing-off of a ball, comprising:
a frame made up of at least one end skeleton structure and two side skeleton structures fixed to said end skeleton structure;
flat wall panels and resilient means securing said wall panels to said structures on the inside thereof with respect to said playing enclosure; said resilient means detachably connecting said panels to said structures at spaced apart locations;



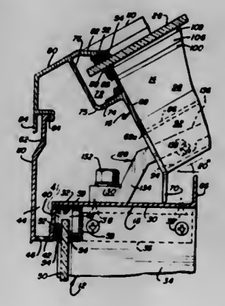
wherein each panel is a cellular construction comprising an inner skin, an outer skin spaced from and parallel to said inner skin, and a plurality of spaced apart webs extending transversely of the panel between said skins, said panels being disposed on said structures so that the outer surface formed by said panel inner skins is unbroken, and
wherein said resilient means detachably securing said panels of said ball-bouncing wall project solely toward the outside of said panels with respect to said playing enclosure whereby the inner face of said ball-bouncing wall is flat, continuous and devoid of projecting parts so as to be suitable for use in an off-the-wall game.

4,070,806

SLOPED CURTAIN WALL STRUCTURE

S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Mar. 28, 1977, Ser. No. 781,752
Int. Cl.² E04B 7/00
U.S. Cl. 52—95 37 Claims



1. A sloped curtain wall structure for buildings and the like comprising:
an elongated horizontal sill including a bottom wall and at least one upstanding side wall forming a gutter therein,
at least one rafter sloping upwardly of said sill and including a gutter and a glazing pocket for receiving an edge portion of a glazing panel, and
an elongated baffle between the lower end of said rafter and

said sill including a wall portion abutting said rafter end and interlocked with said side wall of said sill to substantially enclose said sill above said gutter thereof,

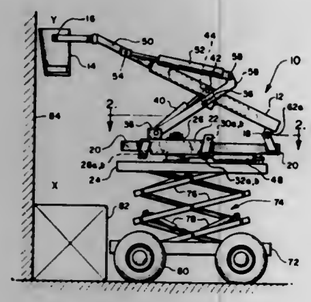
said baffle including a glazing pocket for receiving an edge portion of said glazing panel.

4,070,807

AERIAL LIFT

Raymond E. Smith, Jr., 385 E. Greenwood, Lake Forest, Ill. 60045

Filed Jan. 12, 1977, Ser. No. 758,810
Int. Cl.[2] E04G *1/22*
U.S. Cl. 52—109 10 Claims



9. An aerial lift comprising;

a base;

a vertically adjustable, substantially horizontal mounting table;

a scissors-type elevator system for raising and lowering said table above said base,

a pivotable boom having a load end, an extensible portion adjacent said load end, and a pivot end;

means for mounting said boom to said table so that said boom pivot end is horizontally movable but vertically fixed;

a support arm having one end pivotally mounted to said table, a second end pivotally mounted to said boom, and an extension which extends beyond said boom,

rigid cylinder means pivotally reaching from said support arm extension to said extensible portion of said boom for automatically extending and retracting said extensible portion of said boom; and

a pivot cylinder for raising and lowering said boom, one end of said pivot cylinder pivotally mounted to said mounting table at a point coaxial with the point at which said support arm is mounted to said mounting table and the other end pivotally mounted to said boom at a point between said boom load end and the point at which said support arm is mounted to said boom so that as the vertical portion of said boom load end is varied, the horizontal position of said boom pivot end is automatically adjusted.

4,070,808

ADJUSTABLE WALL STRUCTURE

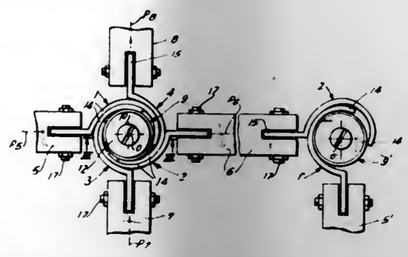
Septimius Danescu, Webgasse 43/3/6, Vienna VI, Austria (A-1060)

Filed July 26, 1976, Ser. No. 708,694
Claims priority, application Austria, Aug. 28, 1975, 6655/75
Int. Cl.[2] E04D *15/00*; E04H *1/00*
U.S. Cl. 52—122 10 Claims

1. An adjustable wall structure comprising:

a plurality of upright panels;

a plurality of resilient upright profiles respectively secured to said panels at vertical edges thereof, said profiles having resilient strip portions substantially cylindrically curved about a common vertical axis in peripherally interconvoluted relationship, thereby forming a tubular hinge interconnecting said panels with freedom of relative swinging about said axis; and



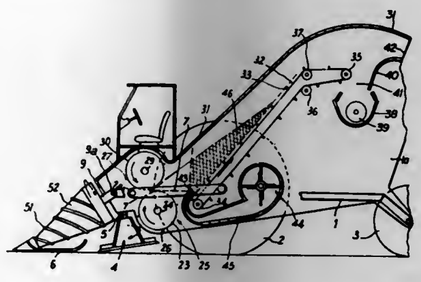
clamp means engaging said tubular hinge for relatively immobilizing said strip portions in face-to-face contact with one another.

4,070,809

AUTOMATIC SUGAR CANE HARVESTING MACHINE

Rene Soulat, Paris, France, assignor to Sodia S.A., Paris, France

Filed Aug. 15, 1975, Ser. No. 605,044
Claims priority, application France, Aug. 23, 1974, 74 28942
Int. Cl.[2] A01D *45/10*
U.S. Cl. 56—13.9 32 Claims



1. A machine for harvesting sugar cane comprising:

a machine frame,

a cutting device carried by said frame for cutting the bases of the sugar cane stems,

means carried by said frame for adjusting the working height of said cutting device relative to ground level and maintaining constant the position of said cutting device relative to said machine frame thereby adapting the machine for use over irregular ground surfaces;

means carried by said frame for slicing the cut sugar cane stems into small sections; and

means carried by said frame for sorting the various parts of the sugar cane stems and plant material and discarding specified portions of said parts,

front and rear pairs of wheels for supporting said frame;

a first compensator comprising a pair of substantially parallel arms each pivotally joined at its forward end to said frame and extending longitudinally rearwardly of said machine, said arms rotatably carrying the front pair of wheels at their respective opposite ends and forming rearwardly opening acute angles with said frame,

a second compensator including a pair of parallel arms each pivotally joined at its rearward end to said frame and extending longitudinally forwardly of the machine for resting on the ground, and

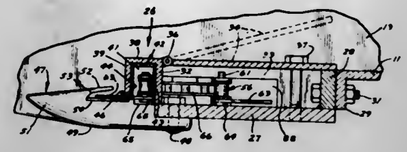
means for locking said second compensator arms at predetermined forwardly opening obtuse angles relative to said frame.

4,070,810

CUTTING APPARATUS

Henry Donald Brakke, Hickson, N. Dak. 58044

Filed Aug. 13, 1976, Ser. No. 714,040
Int. Cl.[2] A01D *55/24*
U.S. Cl. 56—291 44 Claims



1. A cutting apparatus usable with a combine header having a horizontal platform for receiving cut material comprising: an elongated base, an upright rear wall secured to the base adapted to be attached to the platform, an upright front wall secured to the base forming with the base and rear wall a chamber, a cover for closing the top of the chamber, means pivotally mounting the cover on the front wall, means releasably connecting the cover to the base allowing the cover to be moved to an open position, a housing having inside surfaces forming a passage secured to the front wall, said passage extended along said front wall, said housing having a bottom edge and an open bottom open to the passage, an inverted U-shaped insert located within the passage in engagement with the inside surfaces of the housing and the front wall, said insert having a forwardly directed lip extended under the bottom edge of said housing, a plurality of guards secured to the base, each guard having a wear plate with side cutting edges, an idler sprocket rotatably mounted adjacent one end of the base, a drive sprocket rotatably mounted adjacent the opposite end of the base, an endless chain trained about the idler sprocket and drive sprocket, a plurality of knife blades secured to the chain and extended outwardly away from the chain, each blade having a generally triangular shape with converging side cutting edges, said chain having a front run located in the passage of the insert with the blades engageable with the bottom of the lip and the top of the wear plates and a rear run located in the chamber below the cover, and means to drive the drive sprocket whereby said chain and knife blades move relative to the guards and the cutting edges of the blades move relative to the side cutting edges of the wear plates so as to cut material located between adjacent guards.

4,070,811

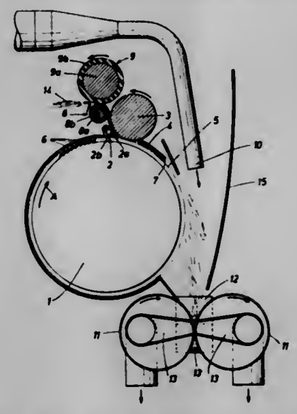
MACHINE FOR SPINNING TEXTILE FIBERS

Ernst Fehrer, Auf der Gugl 28, Linz, Austria

Continuation-in-part of Ser. No. 602,546, Aug. 7, 1975, abandoned. This application Sept. 13, 1976, Ser. No. 722,750
Claims priority, application Austria, Sept. 24, 1974, 7694/74
Int. Cl.[2] D01G *15/68*
U.S. Cl. 57—50 2 Claims

1. A machine for spinning textile fibers, which comprises the combination of

1. a carding drum rotatable at high circumferential speed in a predetermined direction, the carding drum having
   a. teeth with tips defining a cylindrical surface during rotation of the carding drum:
2. a mechanism for feeding a strand of the textile fibers to the carding drum disintegrating the strand into the textile fibers on the rotating toothed surface of the drum, the feeding mechanism comprising
   a. a pair of gripping rollers in surface contact to define a nip therebetween for feeding the strand therethrough, the rollers having axes at a fixed distance from each other whereby the surface contact is maintained, each of the gripping rollers having a hard core and an elastic surface layer wherebetween the strand is gripped, and the gripping rollers being rotatable at a circumferential speed lower than that of the carding drum,
   b. a large diameter feed roller close to the pair of gripping rollers and having a smooth surface receiving the strand from the pair of gripping rollers, the smooth surface of the large diameter feed roller being spaced from the cylindrical surface defined by the teeth of the carding drum as closely as possible, and the smooth roller surface and the cylindrical surface defining therebetween a wedge-shaped space, and
   c. a small diameter feed roller arranged in the wedge-shaped space and in contact with the smooth surface of the large diameter feed roller to define a nip therebetween for feeding the strand received on the smooth surface therethrough, the feed rollers having axes at a fixed distance from each other whereby the contact is maintained, the small diameter feed roller consisting of a hard core and an elastic surface layer, and the small diameter feed roller preceding the large diameter feed roller in the direction of rotation of the carding drum, and being spaced from the cylindrical surface defined by the teeth, of the carding drum as closely as possible the feed rollers being rotatable at a circumferential speed intermediate that of the gripping rollers and of the carding drum;
3. a guard closely and fixedly spaced from the large diameter feed roller in the direction of rotation around part of the cylindrical surface, the guard being spaced from the cylindrical surface as closely as possible, the strand being disintegrated into the textile fibers between the toothed surface of the carding drum and the guard;
4. a spinning station arranged to receive the disintegrated textile fibers from the carding drum and for spinning the textile fibers; and
5. means for transporting the disintegrated textile fibers from the carding drum to the spinning station.



4,070,812

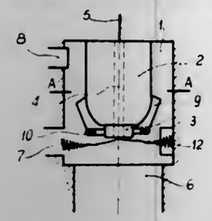
EQUIPMENT FOR PNEUMATIC MANUFACTURE OF YARN

Jerzy Ostrowski; Piotr Sierputowski, both of Warsaw; Lukasz Turkowski, Sulejowek-Ratajewo; Jerzy Jablkiewicz; Jan Pacholski, both of Lodz, and Tadeusz Jedryka, Warsaw, all of Poland, assignors to Centralny Osrodek Badawczo-Rozwojowy Naszyn Wlokienniczych, Lodz, Poland

Filed Feb. 28, 1977, Ser. No. 773,123
Claims priority, application Poland, Mar. 10, 1976, 187855
Int. Cl.[2] D01H *1/12*
U.S. Cl. 57—58.89 2 Claims

1. An apparatus for the pneumatic manufacture of yarn employing a non-rotational spinning chamber closed at one end having cylindrical insert means provided with a yarn discharge channel disposed therein, circumferential supply air

ducts for introduction of a vacuum source into the other end of the chamber, fibre delivery channel means formed of said chamber and provided upstream of an inlet of the yarn discharge channel, said apparatus including: said cylindrical insert



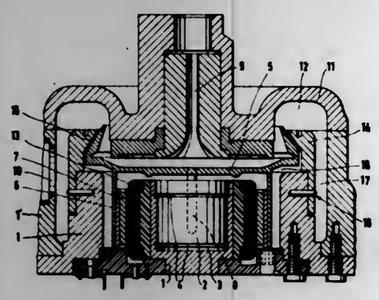
means being provided with guide means disposed about said insert lower periphery, whereby said guide means have lower edges screened with a shielding ring, and air supply duct means being disposed beneath upper edges of said guide means.

4,070,813

OPEN END SPINNING UNIT HAVING REDUCED OPERATING POWER REQUIREMENTS

Gerhard Quandt; Werner Ries, and Joachim Richter, all of Heidelberg, Germany, assignors to Teldix G.m.b.H., Heidelberg, Germany

Filed Dec. 23, 1976, Ser. No. 753,807
Claims priority, application Germany, Dec. 24, 1975, 2558758
Int. Cl.² D01H *1/12*
U.S. Cl. 57—58.89 **5 Claims**



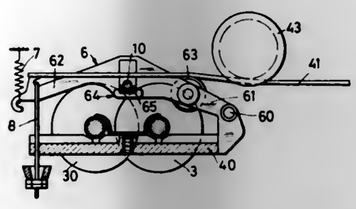
1. In an open end spinning unit having a stationary frame member presenting a yarn opening, a fiber inlet opening and a gas extraction opening, and a spinning rotor rotatably supported by the frame member and enclosed by the frame member, the stationary frame member and the spinning rotor together defining a gas flow space via which gas flows from the yarn removal opening and the fiber inlet opening to the gas extraction opening during operation of the spinning unit, and further defining an annular space coextensive with a portion of the axial extent of the rotor, the improvement comprising gas flow controlling means fixed relative to said frame member, surrounding at least a portion of said rotor and defining a narrow gap with the outer surface of said rotor which provides the only communication between said gas flow space and said annular space for substantially eliminating the flow of gas streams into said annular space.

4,070,814

APPARATUS FOR ARRESTING THE ROTOR IN AN OPEN-END SPINNING MACHINE

Georg Goldammer, Geimersheim, and Kurt Beitzinger, Ingolstadt, both of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed June 7, 1976, Ser. No. 693,181
Claims priority, application Germany, June 7, 1975, 2525435
Int. Cl.² D01H *1/241*
U.S. Cl. 57—89 **9 Claims**



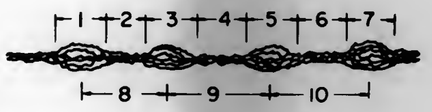
1. Apparatus for arresting the rotor of an open-end-spinning machine, the shaft of which is supported in a cradle formed by freely rotatable support rollers, and which is pressed and driven against said rollers by a tangential drive belt, comprising a pivotal lever mounted below said shaft and belt, said lever being provided with means for engaging said belt and a seat which receives said shaft, said lever being movable in the direction towards the tangential belt to sequentially lift said belt off the shaft and thereafter carry said shaft away from said support rollers.

4,070,815

TEXTURED MULTIFILAMENT YARN

Takao Negishi, and Kazuo Tomiita, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 25, 1975, Ser. No. 635,230
Claims priority, application Japan, Nov. 28, 1974, 49-135886; Dec. 5, 1974, 49-138844
Int. Cl.² D02G *1/16, 3/24, 3/34*
U.S. Cl. 57—140 J **5 Claims**



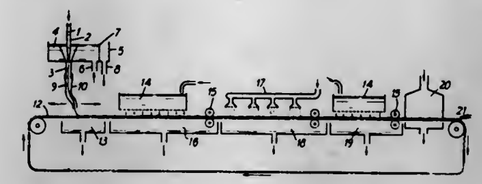
1. A multifilament yarn comprising a bundle of filaments, said yarn being composed of compact portions where the filaments are interlaced and open portions where the filaments are not substantially interlaced, said compact portions and open portions appearing alternately along the length of said yarn, each of at least 50% of said compact portions having a configuration of interlacement such that, when a compact portion is subjected to an interlacement releasing action together with the compact portions next to said compact portion, the interlacement of filaments in said compact portion cannot be released alone within said portion but it can be released together with at least a part of the interlacement of filaments in one compact portion next to said compact portion, while it cannot be released together with the interlacement of filaments in the other compact portion next to said compact portion.

4,070,816

YARN MANUFACTURING

Ralph Huggett, Rochdale, England, assignor to TBA Industrial Products Limited, Manchester, England

Continuation-in-part of Ser. No. 510,723, Sept. 30, 1974, abandoned, and Ser. No. 663,751, March 4, 1976, abandoned. This application Nov. 23, 1976, Ser. No. 744,440
Int. Cl.² D02G *3/20*
U.S. Cl. 57—153 **9 Claims**



1. A process for making a dispersion-based asbestos strand for later twisting to form a yarn, said process comprising the steps of:

a. forming an elongate continuous stream from an aqueous coagulable dispersion comprised of asbestos fibres, water and dispersion-forming chemicals;

b. coagulating said dispersion in said stream to form a self-sustaining asbestos fibre strand containing coagulated dispersion-forming chemicals together with uncoagulated residues thereof and water;

c. whilst said strand is in an untwisted state removing substantially the whole of the coagulated dispersion-forming chemicals and said uncoagulated residues thereof, and

d. adjusting the water content of the strand to provide an untwisted strand formed substantially wholly of said asbestos fibres and containing not more than 20% by weight of water.

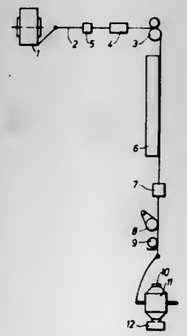
8. A never-twisted asbestos strand made by a process according to claim 1.

4,070,817

PROCESS FOR TEXTURING SYNTHETIC YARNS

Michael Bueb, Opladen; Harry Kubitzek; Arthur Langhans, both of Dormagen; Wolfgang Rellensmann, Zons, Neuss, and Wolfram Wagner, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 2, 1976, Ser. No. 646,060
Claims priority, application Germany, Jan. 4, 1975, 2500229
Int. Cl.² D02G *1/16, 1/20*
U.S. Cl. 57—157 TS **4 Claims**



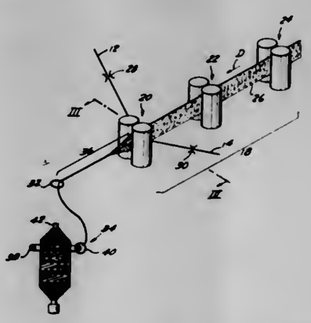
1. A process for treating synthetic yarns which have been stretched in stretching ratios of from 1:2.5 to 1:4 which comprises interlacing such yarn followed by simultaneously drawing and texturing the yarn by simultaneously drawing and texturing the yarn by false-twisting at a temperature of from 140° to 200° C.

4,070,818

METHOD OF MAKING A CORE YARN

Edmund Hamel, Romanshorn, Switzerland, assignor to Ofa AG, Horn, Switzerland

Division of Ser. No. 620,789, Oct. 8, 1975. This application Nov. 11, 1976, Ser. No. 741,119
Claims priority, application Germany, Apr. 2, 1975, 2514302
Int. Cl.² D02G *3/38*
U.S. Cl. 57—160 **3 Claims**



1. A method of making a core yarn comprising the steps of:

forming a coherent flat band of wool, cotton, rayon or staple fiber from a fleece slubbing by flattening the same by passing the slubbing through a plurality of pairs of rollers,

feeding said coherent elongated flat band of slubbing to a combining station,

simultaneously feeding a pair of synthetic-resin core filaments in spaced-apart relationship to said station,

pressing said filaments against opposite flanks of said slubbing at said station between a pair of rollers with a portion of said slubbing between said filaments, and

thereafter spinning the filaments and slubbing together about a common axis while maintaining the thickness of said band between the filaments, said band having a width relative to the diameters of said core filaments such that portions of the band overlap around said filaments and have intertwined fibers at the overlapping portion upon spinning.

4,070,819

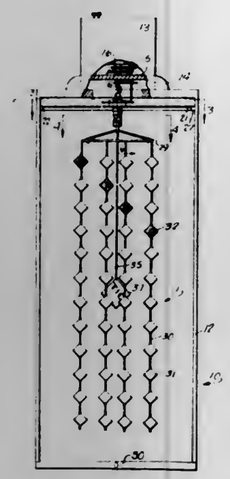
VERTICAL CLOCK

Alcuin Kelly, 60 N. Catherine St., Mobile, Ala. 36604

Filed Aug. 25, 1976, Ser. No. 717,614
Int. Cl.² G04B *45/00*
U.S. Cl. 58—2 **4 Claims**

1. A vertical clock comprising an elongated case, clock works positioned on top of the case having an hour shaft eminating centrally downward therefrom, a linkage attached to the hour shaft of the clock works, a square plate connected to the linkage and rotated according to the rotation of the hour shaft, and twelve strings hanging from the periphery of the square plate such that radial lines extending from points where the strings hang from the periphery of the square plate to the

center of the square plate define equal included angles and each string is provided on its depending portion with cubes



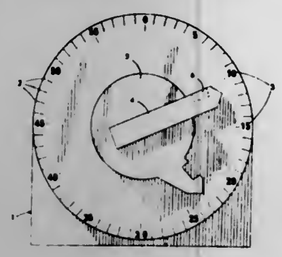
consecutively representing one to twelve so that time may be observed from a referance point remote therefrom.

4,070,820

DOUBLE KITCHEN TIMER

Orest Lewinter, and Barbara Lewinter, both of 104 Homestead Ave., Albany, N.Y. 12203

Filed Aug. 19, 1976, Ser. No. 715,896
Int. Cl.² G04F 3/02
U.S. Cl. 58—21.13 2 Claims



1. A spring-driven timer with the capability of selection of either one or two time intervals, which consists of:

a. a case, upon which are placed numerals and indicia signifying intervals of time

b. a primary and a secondary knob on a common center which are rotated in conjunction manually by means of a tab, which is part of the primary knob

c. a solid shaft which extends from the primary knob to a hammer mechanism

d. a hollow shaft concentric to the solid shaft which extends from the secondary knob to a second hammer mechanism

e. two hammers which are cocked by their respective hammer mechanisms

f. a common clock mechanism which rotates both the primary and secondary knobs

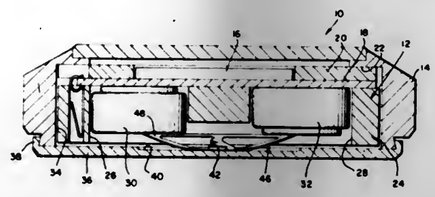
g. a common bell which can be struck by either both hammers concurrently or by each hammer consecutively.

4,070,821

ELECTRIC WATCH BATTERY CONTACT SPRING

Bela Somogyi, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 22, 1976, Ser. No. 669,131
Int. Cl.² G04C 3/00; H01M 6/50
U.S. Cl. 58—23 BA 11 Claims



1. An electric watch comprising:

a case having an open rear, said case having a central axis extending out of said open rear;

an electric watch module in said open rear of said case, said electric watch module comprising at least first and second batteries exposed to the rear of said module, said batteries being arranged substantially equidistant from said axis;

a case back engaged on said case and covering said open rear of said case;

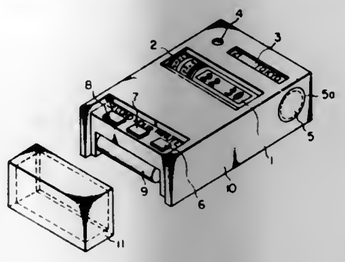
a single spring engaging said case back and the exposed rear of both of said batteries to electrically connect said batteries and to thrust them in a direction into said case, said spring being substantially circular and having its center positioned substantially on said axis, said spring being concave and having an uninterrupted peripheral rim and a central hub, said rim engaging both of said batteries and said hub engaging said watch back.

4,070,822

TIMER MECHANISM FOR USE IN A CLOCK

Kiyoyuki Arai, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Sept. 20, 1976, Ser. No. 724,525
Claims priority, application Japan, Sept. 22, 1975, 50-114442; Dec. 18, 1975, 50-151407
Int. Cl.² G04B 23/00; G04C 21/16; H01H 7/08
U.S. Cl. 58—38 R 8 Claims



1. In a timer mechanism for use in a clock having a first rotatable member adapted to be rotated at a rate relating to advance of individual minutes of time and a second rotatable member adapted to be rotated at a rate relating to advance of individual hours of time and provided with an electric source and an electric device, said timer mechanism having a switch adapted to be closed at a set time preset in said timer mechanism to connect said electric source to said electric device so as to operate the latter at said preset time, said switch comprising:

a minute setting drum having a pair of diametrically oppositely oriented through-holes therein and adapted to be manually rotated to a selected position and held thereat so as to set said set time in terms of minute;

a first rotatable contact member driven by said first rotatable member and having a pair of switch contacts adapted to be passed through said through-holes in said minute setting drum when aligned therewith during the rotation of said first contact member;

an hour setting drum arranged coaxially with said minute setting drum at the side thereof opposite to that at which said first contact member is located and having a pair of diametrically oppositely oriented through-holes therein and adapted to be manually rotated to a selected position and held thereat so as to set said set time in terms of hours;

a second rotatable contact member located at the side of said hour setting drum opposite to the side at which said minute setting drum is located and driven by said second rotatable member and having a pair of switch contacts adapted to be passed through said through-holes in said hour setting drum when aligned therewith during the rotation of said second contact member;

a first stationary contact member in the form of a semicircular contact segment positioned along the path of movement of said switch contacts of said first rotatable contact member;

a second stationary contact member in the form of a semicircular contact segment positioned along the path of movement of said switch contacts of said second rotatable contact member; and

a third stationary contact member having a pair of semicircular contact segments each positioned along the path of movement of said switch contacts of said first or said second rotatable contact member complementary with respect to said first or said second stationary contact member.

4,070,823

CHAIN HOOK

Kenneth D. Schreyer, Clarence, and Soma M. Rohosy, Hartland, both of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed July 6, 1976, Ser. No. 702,614
Int. Cl.² F16G 17/00
U.S. Cl. 59—93 7 Claims



1. A chain hook for use in combination with a chain comprising a series of interlinked bent wire type chain links having straight leg portions intermediately of their end portions, said hook including a main body portion of generally U-shaped configuration when viewed in side elevation, comprising a pair of spaced apart generally upstanding legs joined at their lower ends by an integral bight portion, one of said legs terminating at its upper end in a load connection device, said legs being generally parallel but inclined when viewed in said side elevation and defining therebetween a forwardly inclined throat for receiving in downwardly inclined sliding manner a link of said chain to rest in substantially horizontally sidewise reclining attitude transversely of said bight portion, said legs being bevelled at opposite sides thereof to complement the configurations of the ends of the links engaging said horizontally disposed link, said bight portion including a pair of lugs extending transversely outwardly of said bight portion in opposite directions from said hook body and providing therewith a straight horizontal saddle extending across the lugs for supporting said horizontally disposed link, whereby said saddle provides support to said horizontally disposed link regardless of the length of the link without creating localized stresses which would cause said link to fail prematurely.

4,070,824

INTEGRATED FLOW TURBINE ENGINE

Earl W. Traut, 5059 NE. 15th Ave., Fort Lauderdale, Fla. 33308

Division of Ser. No. 40,633, May 26, 1970, Pat. No. 3,709,629, and a continuation of Ser. No. 299,135, Oct. 19, 1972, abandoned, and a continuation-in-part of Ser. No. 741,623, July 1, 1968, abandoned. This application Mar. 12, 1975, Ser. No. 557,898
Int. Cl.² F02C 3/04
U.S. Cl. 60—39.43 11 Claims



1. An integrated flow turbine engine comprising a rotor which has a single set of identical blades attached to it, said rotor with said blades serving both as a compressor and a turbine, at least one combustion chamber in which fuel is combusted, said rotor, upon being caused to rotate, serving to deliver air to said combustion chamber to mix with fuel therein, a plurality of substantially arcuately shaped wall components defining a boundary between said rotor and said combustion chamber, said wall components being spaced somewhat apart to accomodate the flow of gases between said combustion chamber and said rotor, at least one exhaust nozzle extending from said combustion chamber and directed toward a portion of said rotor, said exhaust nozzle being configured to direct the hot gases flowing from said combustion chamber onto an essentially different portion of the blades of the rotor than the portions concerned with the compression of incoming air, thus to drive said rotor in rotation, said rotor being in essentially surrounding relationship about said combustion chamber, and the air compressed by said rotor flowing essentially centripetally in flowing into said combustion chamber.

4,070,825

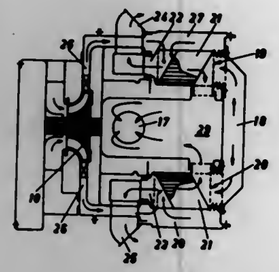
GAS TURBINE POWER PLANT

Sven-Olof Kronogård, Lomma, Sweden, assignor to United Turbine AB & Co., Sweden

Continuation of Ser. No. 527,308, Nov. 26, 1974, abandoned. This application Oct. 14, 1976, Ser. No. 732,420
Int. Cl.² F02C 7/10
U.S. Cl. 60—39.51 R 9 Claims

1. A gas turbine power plant including: (a) a compressor part having a rotational axis; (b) a turbine part operating on the same rotational axis as the compressor part, but being axially-spaced therefrom and means forming a radial passageway for combustion gases between said compressor part and said turbine part, said turbine part being designed for axial flow and having an inward end adjacent to said radial passageway and an outward end remote therefrom; (c) at least one combustion chamber for supplying combustion gases to said turbine part; (d) airpreheating means for preheating combustion air between said compressor part and said at least one combustion chamber by means of combustion gases leaving said turbine part; (e) a

common housing enclosing said compressor part, said turbine part and said air-preheating means; and (f) a power take-off from the power plant located at the compressor part end of the housing, said air-preheating means including at least two box-shaped units, located to opposite sides of said turbine part extending about from its inward end to its outward end and presenting an inward face towards said turbine part, and turning an outward face away therefrom, each of said units comprising at least two, heat exchange elements, arranged for



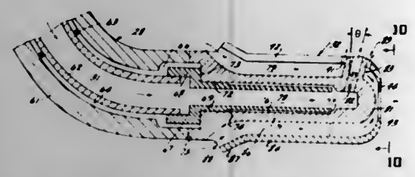
parallel flow, distribution and collecting means at the axial ends of said elements as well as at the inward and outward faces thereof, said distribution and collecting means being defined by transverse end walls and inward axial walls, said walls being provided with fluid conductive sockets to individually and removably receive said elements, and each of said elements having a hollow stud and socket connector part at one axial end and an expandible bellows connector part at its opposite axial end, and further a stud and socket connector part at its inward face.

4,070,826

LOW PRESSURE FUEL INJECTION SYSTEM

Richard E. Stenger; Edward E. Ekstedt, both of Cincinnati; John M. Richey, Fairfield, and Stanford P. Seto, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 24, 1975, Ser. No. 644,040
Int. Cl.² F02C 7/22; B05B 7/32
U.S. Cl. 60—39.66 **14 Claims**



1. An improved fuel injector of the type attached to a fuel supply for receiving fuel and discharging it into an airstream for carburetion thereof, wherein the improvement comprises:

a. a hollow body attachable at its one end to a fuel supply line and having at its other end a flow tube extending from said body, said flow tube having a hole formed therein for discharging fuel from said body; and

b. a shroud formed around the outer side of said body to form a cavity between said shroud and said body, said shroud comprising a cylindrical portion and a flared portion extending radially outwardly from said cylindrical portion to define an air inlet to said cavity for receiving an uncarbureted air supply, and said cavity having an axial air outlet at its downstream end for discharging a portion of the uncarbureted air in a substantially axial direction and an outlet aperture through which said flow tube extends and through which air is discharged in surrounding relationship with said flow tube.

12. An improved fuel injector of the type attached to a fuel supply for receiving fuel and discharging it into an airstream for carburetion thereof, wherein the improvement comprises:

a. a hollow body attachable at its one end to a fuel supply line and having at its other end a fuel discharge port;

b. a shroud formed around the outer side of said body to form a cavity between said body and said shroud for the conduct of relatively hot air to be used for carburetion;

c. a sleeve disposed concentrically within said body to define an annulus between said sleeve and said body; and

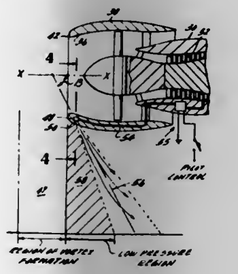
d. a gap associated with said sleeve to fluidly connect said annulus with said fuel supply line to allow the entry of fuel into said annulus for the purpose of decomposing carbon deposits which may form therein.

4,070,827

METHOD AND APPARATUS FOR LIMITING INGESTION OF DEBRIS INTO THE INLET OF A GAS TURBINE ENGINE

Charles R. Vanfleet, and William C. Ruehr, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 3, 1976, Ser. No. 682,195
Int. Cl.² F02C 7/04
U.S. Cl. 60—204 **12 Claims**



1. A method of limiting ingestion of ground debris into a gas turbine engine inlet by suppressing the vortex causing said ingestion, said method comprising the steps of:

providing a source of fluid under pressure;

providing a two dimensional array of nozzles in fluid communication with said source of fluid under pressure for introducing a plurality of fluid jets at a point aft of the leading edge of a nacelle associated with said engine inlet; and

discharging said plurality of fluid jets from said array of nozzles away from said leading edge and in the aft direction to establish a low pressure region aft of said leading edge and in sufficient proximity to a vortex formation region so as to draw airflows from said vortex formation region into said low pressure region and away from said engine inlet.

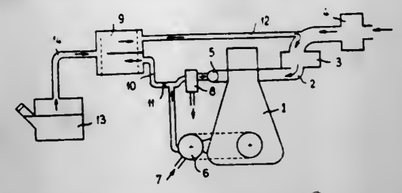
4,070,828

DEVICE AND METHOD FOR RECYCLING HYDROCARBON VAPORS OF I.C.E. VEHICLES

Roland Barres, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Jan. 14, 1976, Ser. No. 649,081
Claims priority, application France, Jan. 15, 1975, 75 01130
Int. Cl.² F01N 3/10
U.S. Cl. 60—274 **3 Claims**

1. A method for use with an engine having a carburetor, an air filter, a pipe connecting the carburetor and air filter, an exhaust system, a fuel tank and employing an anti-pollution pump for injecting fresh air into the exhaust system of the engine, the method for supplying to the carburetor the hydrocarbon vapours emitted by the engine comprising the steps of, providing a hydrocarbon adsorption canister between the fuel tank and the pipe connecting the air filter and the carburetor, wherein the hydrocarbons are adsorbed by the material contained in said canister, supplying an air stream under pressure



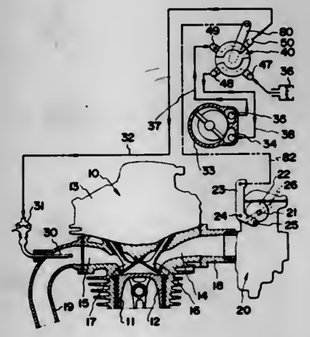
produced by said pump to said canister, whereby the hydrocarbon vapours are desorbed by means of the air stream, and supplying the desorbed hydrocarbon vapours in the air stream to the carburetor.

4,070,829

APPARATUS FOR CONTROLLING SECONDARY AIR FOR CLEANING EXHAUST GASES

Toshimitsu Yoshimura, Shiki, and Minoru Matsuda, Chofu, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1976, Ser. No. 713,826
Claims priority, application Japan, Aug. 13, 1975, 50-98420; Aug. 14, 1975, 50-99009
Int. Cl.² F01N 3/10; F02B 75/10
U.S. Cl. 60—290 **11 Claims**



1. An apparatus for controlling secondary air for cleaning exhaust gases of an engine, comprising:

said engine including a carburetor and a throttle valve;

an air pump operably connected to and driven by said engine;

a secondary air control valve provided with a valve body;

a rotor member (60) rotatably carried in said body and partitioning said body into first and second main chambers;

said control valve including a first path for feeding air to said first chamber;

said control valve including a second path for feeding air to the suction side of said air pump driven by said engine from said first chamber;

said control valve including a third path making said second chamber and the delivery side of said air pump communicate with each other;

said control valve including a fourth path making said second chamber and the exhaust path of said engine communicate with each other; and

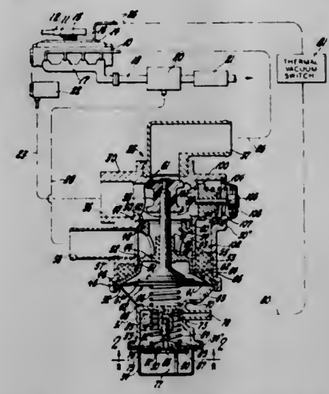
said control valve including a fifth path making said first and second chambers communicate with each other at a predetermined angle of rotation of said rotor member, said rotor member of said valve being a rotating operating cam formed to be rotated and operated by the operation of said throttle valve of said carburetor of said engine.

4,070,830

INTEGRAL AIR SWITCHING DIVERTER VALVE

David W. Beiswenger, Brockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1976, Ser. No. 735,047
Int. Cl.² F02B 75/10
U.S. Cl. 60—290 **5 Claims**



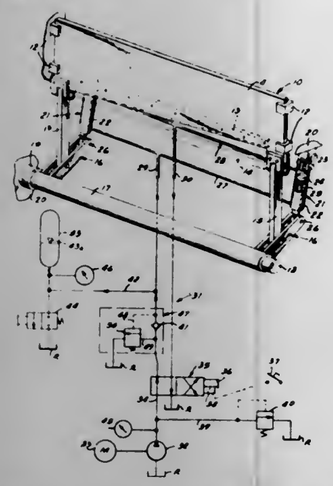
1. An integral air switching diverter valve for use with an engine having an induction system with a throttle movable therein and an exhaust emission control system including an exhaust manifold connected to the engine and an exhaust conduit for receiving exhaust gases discharged from the exhaust ports of the engine and defining a flow path for passing the exhaust gases through a converter and, a driven air pump for providing secondary air, said integral air switching diverter valve including a housing means having passage means defining an inlet flow path for receiving said secondary air, a primary discharge flow path for delivery of air to said exhaust manifold and a secondary discharge flow path for delivery of air to said converter, one end of each of said inlet flow paths, said primary discharge flow path and said secondary discharge flow path opening into a valve chamber in said housing means with said one end of said primary discharge flow path being axially aligned in spaced apart relation to said one end of said secondary discharge flow path, a valve means including a valve head positioned in said valve chamber for movement between a first position blocking said one end of said primary discharge flow path and a second position blocking said one end of said secondary discharge flow path, said valve means further including actuator means operatively connected to said valve head, said actuator means including a diaphragm forming with a first portion of said housing means a pressure chamber open to the atmosphere on one side of said diaphragm and on its other side a non-atmospheric pressure actuator chamber, a bleed orifice means in said housing means in communication at one end with said actuator chamber and at its other end in communication with the atmosphere, a passage means having one end in communication with said actuator chamber and connectable at its other end to a source of non-atmospheric pressure fluid, and a second valve means operatively positioned in said housing means for movement to control flow through said passage means, said second valve means including a second actuator means having a diaphragm with a timing valve means therein forming with a second portion of said housing means a vacuum chamber on one side of said diaphragm connected to the induction system downstream of the throttle and a timing chamber on the opposite side of said diaphragm, said timing chamber being in fluid communication with said vacuum chamber as controlled by said timing valve means.

4,070,831

HYDRAULIC DRIVE CIRCUIT FOR MACHINE TOOLS

Leon E. Rutz, Lake City, Minn., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,654
Int. Cl.² F15B 1/02, 15/18
U.S. Cl. 60—371 15 Claims



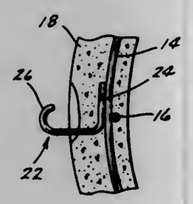
1. A fluid drive for double acting piston and cylinder power rams which comprises conduits supplying and draining fluid from opposite ends of the ram cylinder on opposite sides of the piston therein to alternately drive the piston to opposite ends of the cylinder, a pump supplying fluid to said conduits, a reservoir receiving fluid from said conduits, a reversing valve controlling the direction of flow of fluid through the conduits, an accumulator communicating with one of the conduits to maintain a predetermined fluid pressure therein, a sequence unloading valve in said one conduit unloading the pump whenever fluid pressure in the conduit is above a predetermined maximum controlled by said accumulator, a relief valve set to open at a higher pressure than said sequence unloading valve communicating with the pump discharge, a dump valve for said accumulator, and means biasing said reversing valve to flow fluid through the conduits for holding the piston in the power ram at one end of its stroke until the reversing valve is actuated against the bias to flow fluid for driving the piston to the other end of its stroke to deliver power.

4,070,832

CONCRETE WELL CASING WITH CABLE HOOKS EMBEDDED THEREIN

Gottlieb W. Grooch, Silver Creek, Nebr. 68663

Filed Oct. 26, 1976, Ser. No. 730,391
Int. Cl.² E04D 15/00
U.S. Cl. 52—125 3 Claims



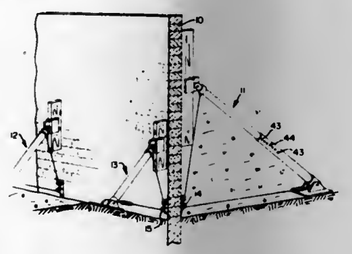
1. A concrete well casing, comprising,
a cylindrical reinforcing wire means having inner and outer sides and upper and lower ends, said reinforcing wire means being comprised of a plurality of substantially horizontally disposed and vertically spaced-apart ring-shaped members operatively interconnected,
at least one cable hook operatively secured to said wire means at each side thereof and extending outwardly therefrom,
said wire means being embedded in concrete to form the casing,
each of said cable hooks comprising a base portion and an arcuate free end portion extending outwardly therefrom,
said base portion being operatively secured to said wire means,
said arcuate portion terminating in an open-sided C-shaped hook portion defining a cable receiving area,
said C-shaped hook portion being initially substantially flush with the exterior surface of said casing but which may be deflected outwardly therefrom for receiving a casing positioning cable in said cable receiving area for attachment thereto.

4,070,833

BRACING APPARATUS

Loren Hancock, P.O. Box 887, Cheyenne, Wyo. 82001

Filed Apr. 19, 1976, Ser. No. 678,049
Int. Cl.² E04H 12/20
U.S. Cl. 52—148 11 Claims



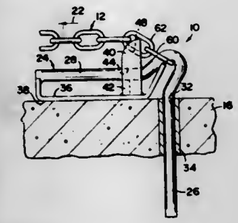
1. Apparatus for temporarily bracing against windloads an upright structure resting on a foundation comprising
a rigid diagonal member,
first support means associated with one end portion of the diagonal member for supporting engagement with a side surface of the upright structure,
second support means associated with the other end portion of the rigid diagonal member for supporting engagement with a support surface adjacent the side of the upright member,
anchoring means secured to the structure at a point above the foundation,
guide means associated with the anchoring means for engaging and guiding a flexible stay member under tension,
an elongated, continuous flexible stay member passing longitudinally around and in guided relation to the guide means,
first connection means connecting one end of the flexible stay member to the one end portion of the rigid diagonal member,
second connection means connecting the other end of the flexible stay member to the other end portion of the rigid diagonal member,
tensioning means acting on the flexible stay member between the first and second connection means for drawing the flexible stay member tight around the anchor guide means between the first connection means and the second connection means to thereby exert controlled forces on each of the end portions of the diagonal member acting in the direction of the guide means, whereby the rigid diagonal member exerts compressive forces on the upright structure and the support surface.

4,070,834

FLOOR-PRESSURE HOLD ANCHOR

Robert W. Jameson, 1690 Nutwood Road, Akron, Ohio 44305

Filed June 7, 1977, Ser. No. 804,235
Int. Cl.² E02D 5/74
U.S. Cl. 52—166 5 Claims



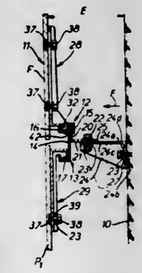
1. In combination,
a chain and a hold down anchor for the chain and comprising a substantially L-shaped metal bar one arm of which is adapted to be positioned in a hole in a floor, a support block secured to the second arm of said metal bar and extending upwardly therefrom, the upper end of said support block being bifurcated and having a surface inclined upwardly and away from said metal bar first arm, said chain having one link engaging said metal bar and having a link bearing on said support block surface for load transmittal to said metal bar and support block, the other end of said chain extending to another area for attachment to a load.

4,070,835

DEVICE INTENDED FOR THE HOOKING OF PANELS ON A WALL IN ORDER TO CONSTITUTE A COVERING ON THIS WALL

Roger Revéread, and Yves Cochin, both of Angers, France, assignors to Safama, Angers, France

Filed Aug. 9, 1976, Ser. No. 712,765
Int. Cl.² E04B 2/88
U.S. Cl. 52—235 7 Claims



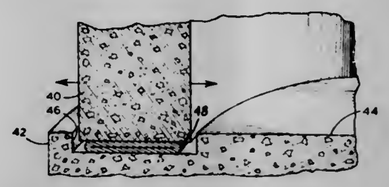
1. A mounting assembly for fixing a wall covering comprised of a plurality of panels on a wall, said mounting assembly comprising for each said panel plural support members in aligned spaced relation having means for attachment on the wall, an upper and a lower set of panel bearing elements having means for securement to each said panel, an elongate one-piece structural element including a main web, a first longitudinal groove disposed on one side of said main web and hooked onto said support members in longitudinally adjustable relation with respect thereto, a pair of upper and lower second longitudinal grooves disposed on the opposite side of said main web, each said second groove longitudinally adjustably receiving one of said sets of panel bearing elements, said upper second longitudinal groove receiving said lower set of panel bearing elements of an upper panel and said lower second longitudinal groove receiving said upper set of panel bearing elements of a next lower panel.

4,070,836

BEARING MEMBER

Arthur M. James, Beaverton, and Edgar Terry Dalton, Lake Oswego, both of Oreg., assignors to Arthur M. James, Beaverton, Oreg.

Filed Aug. 11, 1976, Ser. No. 713,415
Int. Cl.² E04B 1/36; F16C 17/02
U.S. Cl. 52—245 8 Claims



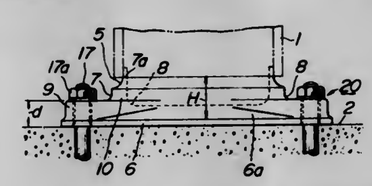
1. An installation adapted to carry a body of fluid comprising
a base,
an endless side wall mounted on said base exerting a force downwardly on the base, and
a substantially endless bearing member intermediate the side wall and base providing a seal inhibiting leakage of the fluid, said bearing member extending in a course substantially paralleling said endless side wall,
said bearing member comprising a collapsed and flattened tube of flexible elastomeric material, said tube in a relaxed and unstressed state being hollow and having flexible coating of lubricant material of substantially uniform thickness coated on the inner surface of the tube, said coating of lubricant material with said tube in a relaxed and unstressed state enveloping a hollow space within the tube, said hollow space within the tube being vented to the atmosphere and such venting permitting the tube under load to have a collapsed and flattened condition, the coating of lubricant material promoting relative sliding movement of opposed wall portions in the flattened tube tending to be induced by relative movement of said side wall relative to the base.

4,070,837

HOLLOW STEEL COLUMN BASE MEMBER AND WELDING THEREOF

Kuniaki Sato, Hiratsuka, Japan, assignor to Kajima Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 385,166, Aug. 2, 1973, Pat. No. 4,048,776. This application Sept. 15, 1975, Ser. No. 613,547
Claims priority, application Japan, Aug. 21, 1972, 47-82799; Aug. 21, 1972, 47-82800
Int. Cl.² E02D 27/00
U.S. Cl. 52—297 6 Claims



1. A steel column base plate member for connecting a hollow steel column member to a concrete foundation, which base plate member is a unitary body comprising a substantially planar bottom plate portion engageable with said concrete

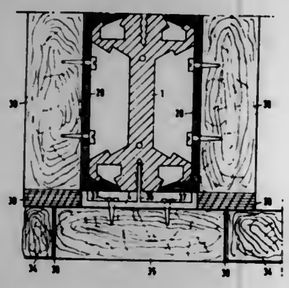
foundation, a projection upwardly extending from the planar bottom plate portion and having a top surface whose shape is substantially identical to but somewhat wider inwardly than cross sectional shape of the steel column member, J-shaped welding grooves formed along overall outer edges of said top surface of said projection facing to a lower end of said column member extending from outer peripheries of the top surface of said projection so as to effect J-shaped groove welding between said lower end of the column member and the J-shaped welding grooves, a sloped top surface formed between said projection and said bottom plate portion so as to increase the thickness thereof as the planar bottom plate portion extends toward said projection, and abutments formed on the planar bottom portion in a sufficient thickness and having anchor bolt holes bored therethrough.

4,070,838

CLIP FOR ASSEMBLING SCREENS, PANELS OR BULKHEAD SECTIONS

Johannes Kuhn, Verden, Germany, assignor to V.G.S. G.m.b.H., Germany

Filed Oct. 22, 1975, Ser. No. 624,918
Claims priority, application France, Oct. 23, 1974, 74 40152; Oct. 23, 1974, 74 40153; Nov. 15, 1974, 74 40661
Int. Cl.² E04B 2/72
U.S. Cl. 52—400 **12 Claims**



1. A clip comprising: a body having an elongated cross section symmetrical about a longitudinal axis of symmetry and a lateral axis of symmetry; said body having a pair of axial slots at opposite ends of the cross section and extending inwardly of the body along the longitudinal axis of symmetry; said body having two pairs of grooves each disposed symmetrically about a respective one of the axial slots and extending into the body generally along a longitudinal dimension of the body cross section and opening adjacent the respective one of the axial slots on opposite sides thereof, each of said grooves having facing inner side walls defining means for retaining; and said body having a pair of opposed lateral channels disposed symmetrically on opposite sides of the longitudinal axis of symmetry and having a width extending longitudinally of said body cross section symmetrically about the lateral axis of symmetry, each of the lateral channels having a pair of walls having facing surfaces defining means for retaining.

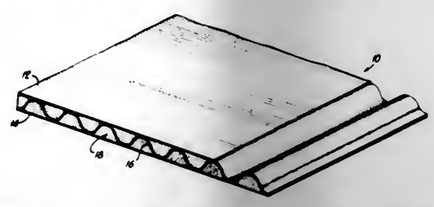
4,070,839

MOISTURE IMPERVIOUS PANEL

Arthur G. Clem, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Filed Sept. 9, 1976, Ser. No. 722,004
Int. Cl.² E04B 5/52
U.S. Cl. 52—448 **8 Claims**

1. A deck structure comprising first and second adjacent panels each panel comprising a pair of spaced facing sheets interconnected by a central rigid, non-biodegradable, corrugated support sheet forming a plurality of voids between the central rigid sheet and respective ones of the facing sheets, and a mixture of water-swellable bentonite and a compressible filler substantially filling said voids; and a wear surface covering the top faces of said first and second panels, said top faces being water penetrable; said central, rigid, non-biodegradable, corrugated support sheets of said first and second panels overlapping in mating contact.

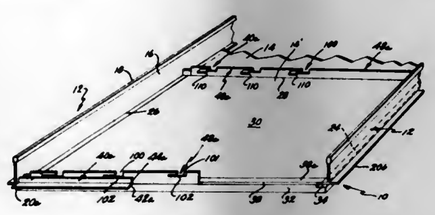


4,070,840

SUSPENDED CEILING CONSTRUCTION

Henry E. Moomey, Jr., Grand Rapids, Mich., assignor to James C. Shuster, Grand Rapids and William G. Brinks, Grandville, both of, Mich., part interest to each

Continuation-in-part of Ser. No. 546,309, Feb. 3, 1975, Pat. No. 3,988,871, which is a continuation-in-part of Ser. No. 407,802, Oct. 9, 1973, Pat. No. 3,863,413. This application Nov. 1, 1976, Ser. No. 737,782
Int. Cl.² E04B 5/52
U.S. Cl. 52—489 **15 Claims**



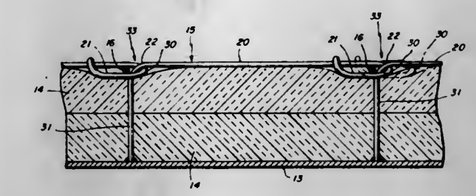
1. Components for a suspended ceiling construction comprising:
a ceiling tile;
a first spline means operatively associated with said ceiling tile for facilitating support of said ceiling tile;
a generally horizontal slot means for facilitating support of components of the suspended ceiling construction and a vertical access in communication with said slot means, said horizontal slot means being included in at least one of said ceiling tile and said first spline means;
a second spline means operatively associated with said ceiling tile and said first spline means for facilitating support of said ceiling tile, said second spline means having a support means adapted to be receivable within said slot means; and
said first and second spline means being relatively movable with respect to each other between a support position and a release position; wherein in said support position said support means is positioned within said slot means thereby securing said ceiling tile to the suspended ceiling and wherein in said release position said support means is aligned within said vertical access thereby releasing said ceiling tile from the suspended ceiling.

4,070,841

INSULATED WALL MEANS AND METHOD

Paul G. La Haye, and Ralph E. Anderson, both of Cape Elizabeth, Maine, assignors to Hague International, S. Portland, Maine

Filed May 4, 1976, Ser. No. 683,062
Int. Cl.² F27D 1/16; E04B 1/62
U.S. Cl. 52—506 **6 Claims**



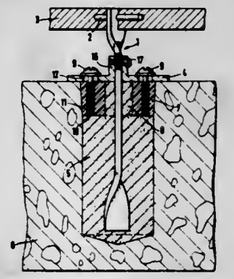
1. An insulated material comprising a first wall having a surface with a layer of insulation thereover,
said insulation being anchored to said wall by a plurality of rods each attached to said wall and extending through said insulation,
said insulation being in sheet form and having a thermal conductivity in the range of from 0.01 BTU/hr/ft²/° F/ft to 0.2 BTU/hr/ft²/° F/ft.,
said rods extend upwardly from said metal surface and being bent over to define a portion substantially coextensive with said wall sandwiching therebetween an insulating layer,
a free end of each rod looped about and under a bent over portion of another rod so as to provide a sliding joint allowing expansion and contraction of each rod with respect to the joint while still maintaining said joint and binding said insulation to said plate,
said rods are arranged in rows and adjacent rods are stitched to each other at said sliding joints, to form transverse rows,
and transverse wire means interlocking with said sliding joints and mounted in slipping relationship therewith.

4,070,842

METHOD AND ARRANGEMENT FOR ORIENTING OBJECTS ON SUPPORT STRUCTURES

Artur Fischer, Weinhalde 34, D-7244 Tumlingen, Waldachtal 3, Germany

Filed Sept. 15, 1976, Ser. No. 723,646
Claims priority, application Germany, Sept. 26, 1975, 2542971
Int. Cl.² E04B 2/30
U.S. Cl. 52—508 **13 Claims**



1. Arrangement for anchoring objects at a distance relative to a support formed with an anchoring hole, comprising an elongated element having a leading anchoring portion insertable with clearance into the hole for anchoring therein, and a trailing carrying portion outside the hole for supporting an object at a distance from the support; a fixing member fixedly mountable in the hole and having a surface which faces outwardly of the hole, said fixing member including an elongated passage through which said elongated element also passes with clearance; a plate member overlying said surface of said fixing member and being connected to said trailing portion of said elongated element; and adjusting means for moving said elongated element relative to both said passage and the anchoring hole between any of a plurality of positions relative to said fixing member, including a slot in said plate member and extending generally transversely of the direction of insertion of said elongated element into the hole, and locking means in said slot for arresting said plate member against movement relative to said fixing member to thereby secure said elongated element in a selected one of said positions, whereby the object supported on said elongated element is movable relative to the support in dependence upon movement of said elongated element.

4,070,843

SIMULATED SHINGLE ARRANGEMENT

Robert Leggiere, 34 Whitlaw Lane, Chappaqua, N.Y. 10514, and Michael Frank Saggese, 2140 Old Hickory Blvd., Nashville, Tenn. 37215

Filed Dec. 16, 1976, Ser. No. 751,416
Int. Cl.² E04D 3/362
U.S. Cl. 52—521 **6 Claims**



1. In a simulated shingle arrangement comprising
a generally rectangular shell having a body section equipped along the opposite side edges thereof with inwardly extending first and second sidewalls and along the bottom edge thereof with an inwardly extending end wall section, said sidewalls being tapered from greater dimensions adjacent the bottom of said shingle to reduced dimensions adjacent the top thereof to provide the shingle with a wedge-shaped configuration, and equipped with mounting areas spaced along the upper edge thereof, each of said mounting areas consisting of a flat depression including a nail hole, said depression extending below the under surface of said body section to a depth approximately equal to the thickness of said body section
said shell also having cooperable means attached to the lower edge of the first sidewall and extending from the top of said body section toward the bottom thereof for a distance less than the length of said first sidewall and interlockingly engagable with similar shingles adjacent thereto in side-by-side relation and permitting lateral adjustment therebetween
and tab locking means comprising a first web attached to the lower edge of the second sidewall beginning at a distance

from the top of said second sidewall approximately equal to the length of said cooperable means and extending a part of the way toward the bottom of said second sidewall, and a tab attached to the bottom edge of said first web and extending downwardly to a point between said end wall section, said tab being unattached to said second sidewall to enable the top edge of one shingle to overlap the tab of a second shingle adjacent thereto and to lie beneath the bottom portion of said second shingle in interlocking top-to-bottom relation therewith,

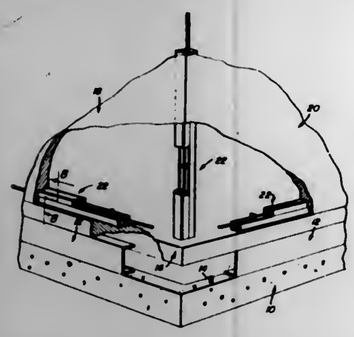
the improvement which comprises locating said tab in a plane parallel to the plane of said first web, and below the plane of said first web at a distance equal to or slightly greater than the thickness of said body section, whereby a rainproof joint is provided.

4,070,844

SPRING LOADED CAM LOCK

Karl H. Elze, Rte. 3, Box 255, Minden, Nev. 89423

Filed Aug. 16, 1976, Ser. No. 714,839
Int. Cl.² E04C *1/10*
U.S. Cl. 52—584 1 Claim



1. In combination with first and second structural components, a spring loaded cam lock for attaching the components together, the lock comprising, in combination:

a. first keeper means connected to the first structural component;

b. second keeper means connected to the second structural component; and

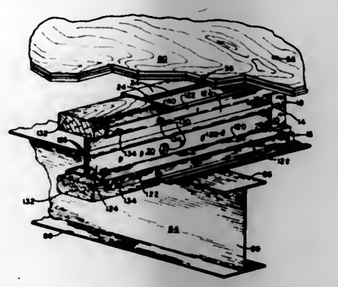
c. bolt means engaging the first keeper means and the second keeper means for connecting together the keeper means and the first structural component and second structural component, each of the keeper means including a spring lock provided with a substantially circular opening, and the bolt means including a torsion bar inserted in the opening of each of the keeper means for camming the inner locks relative to one another, the torsion bar being longitudinally extending and having a non-circular cross section forming a longest dimension, with the torsion bar being restrained against longitudinal movement by a 90° rotation of the bar from a position with the longest dimension of the cross section of the bar disposed transverse of the longitudinal extent of the spring locks to a position with the longest dimension parallel to the longitudinal extent of the spring locks, which cams the openings of the spring locks of the first keeper means and the second keeper means into substantial alignment with one another, the keeper means each including a channel including a web and a pair of spaced, codirectionally depending legs, and a spring lock mounted on the web and extending codirectionally with the legs, and offset extensions provided on the legs of only one of the channels and arranged for permitting the channels to interengage with one another, the spring lock being provided with an opening arranged for receiving the bolt means, the channel of each of the keeper means being mounted on a respective one of the first structural component and the second structural component, each of the keeper means including a plurality of generally planar spring locks provided with openings substantially coaxially to one another, with the planes of each of the spring locks being substantially parallel to one another with each of the keeper means including a plurality of the spring locks spaced along the associated channel and provided with openings substantially coaxial to one another.

4,070,845

MULTI-PURPOSE CONCRETE FORMWORK STRUCTURAL MEMBER WITH NOVEL FACILITIES FOR EXTENDING THE EFFECTIVE LENGTH THEREOF

David L. Cody, Hoffman Estates, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Division of Ser. No. 658,515, Feb. 17, 1976, Pat. No. 4,034,957.
This application June 21, 1976, Ser. No. 698,078
Int. Cl.² E04G *25/04*
U.S. Cl. 52—632 5 Claims



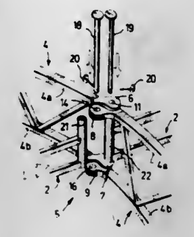
1. An assembly designed for use in supporting or reinforcing concrete formwork and comprising an elongated structural member and a pair of identical but reversely positioned extender members located at one end of the structural member and adapted to extend the effective length of said member, said structural member being generally in the form of an I-beam and embodying a pair of longitudinally extending spaced apart flange arrangements and a connecting web between the arrangements, each of said extender members being of channel shape construction and consisting of parallel outwardly extending side flanges connected together by a medial bight portion and provided along their distal side edge regions with coplanar out-turned flanges, said extender members having their inner end portions positioned on opposite sides of said one end of the structural member in back-to-back fashion and with their bight portions lying flatly against the opposite sides of the web of the structural member, having their outer end portions projecting outwards beyond said one end of the structural member, and being adjustable lengthwise of the structural member by sliding them inwards or outwards, means for releasably clamping said extender members in any of their various adjusted postions, and at least one filler strip secured fixedly within one of the spaces which exist between the projecting outer end portions of the side flanges of the extender members and the corresponding portions of their coplanar out-turned flanges, said filler strip having the outer side surface thereof flush or coplanar with the outer surfaces of the adjacent flange arrangement of the structural member.

4,070,846

SUPPORTING FRAMEWORK FOR A SHELTER SHED

Pentti Aimo Johannes Sohlberg, Paneliantie 48 A, 00940 Helsinki 94, Finland

Filed Oct. 1, 1976, Ser. No. 728,853
Claims priority, application Finland, Oct. 10, 1975, 752824
Int. Cl.² E04B *1/32*
U.S. Cl. 52—641 7 Claims



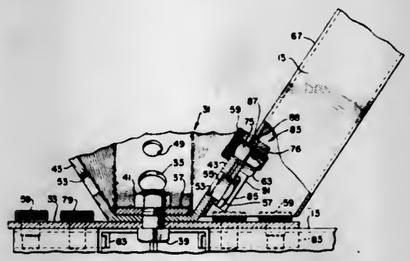
1. In a shelter shed supporting framework of the type including a plurality of support arches each made up of a plurality of arch elements with the ends positioned in adjacency for interconnection with one another and with traverse beams interconnecting the arches at predetermined distances apart; the provision of spaced pairs of articulated point means at adjacent ends of the arch elements and beams for interconnecting the same and comprising double brackets arranged in spaced pairs at the ends of adjacent arch elements with one double bracket in substantial alignment with the outer edge of its associated arch element and with the other double bracket in substantial alignment with the inner edge of its associated arch element and with coaxial holes through the brackets of each pair; tube-like elements carried at opposite ends of each beam and being parallel to one another and of a length corresponding to the distance between adjacent brackets of each double bracket and fitting therebetween with the openings through the tube-like elements in coaxial alignment with respective pairs of holes in the brackets; and fastening pins extending through aligned bracket holes and tube-like elements for connecting the arch elements and transverse beams at the joint means; the axes of the holes through the spaced brackets of each pair being parallel with the radius of curvature of the support arch whereby successive arch elements can be pivoted side-by-side about the axis of either spaced brackets when the pin through the other spaced brackets is removed.

4,070,847

SPACE FRAME STRUCTURE

Joseph Madl, Jr., 990 Volante Drive, Arcadia, Calif. 91006

Filed Dec. 2, 1976, Ser. No. 746,967
Int. Cl.² E04H *12/10*
U.S. Cl. 52—650 16 Claims



1. A modular space frame structure comprising:

a bottom horizontal modular chord structure having a plurality of chord members connected at their ends forming a grid pattern;

a top horizontal modular chord structure having a grid pattern offset from said bottom grid pattern so that the intersections of the top grid are directly over the centers of the openings in the bottom grid;

an intermediate truss structure connected between said bottom and top chord structures having a plurality of diagonal web members each connected from an intersection of the bottom chord members to an intersection of the top chord members; and

a connector at each said intersection for interconnecting said chord members and web members;

said connector including a cup shaped member having four inclined flat sides each extending along one of said diagonal web members;

threaded means connecting each of said flat sides to its related web member;

reinforcing means connected between adjacent flat sides but not extending outward beyond the planes of said flat sides; and

each said diagonal web member being connected to a top connector on one face of said web member and to a bottom connector on the opposite face thereof so that the top and bottom connections are the same but inverted.

4,070,848

FASTENING BAR ASSEMBLY FOR FRAMELESS INSULATING PANELS

Cleo M. Lingle, 1201 Montclair, Longview, Tex. 75601

Filed Apr. 28, 1977, Ser. No. 791,875
Int. Cl.² E04B *1/41*
U.S. Cl. 52—707 3 Claims



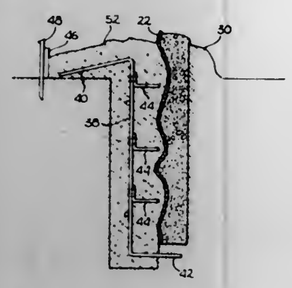
1. In a fastening bar assembly for connecting adjacent insulated panels of an insulated enclosure, a bar body adapted for encapsulation in a foam core of an insulating panel, an apertured anchor plate on one end of the bar body, and a pod formed of low heat conducting material on said apertured anchor plate, said pod being of unit construction and having a through passage from end-to-end thereof, said through passage being internally screw-threaded in a region inwardly of and between the opposite ends of said pod, at least one end of the pod having a recess leading into said screw-threads for the guidance of a screw fastener element into the screw-threads, said pod having a flange plate on its opposite end extending beyond the peripheral surface of the pod and having at least one straight edge engaging a flat face of the fastening bar assembly and resisting rotation of the pod on said apertured anchor plate, and the pod having a forwardly tapering locking bead spaced somewhat forwardly of the flange plate in parallelism therewith and adapted for snapping through the aperture of the anchor plate to hold the pod captive on the anchor plate with the bead on one side thereof and the flange plate on the other side thereof.

4,070,849

METHOD OF FORMING WALLS FOR POOLS, WATERFALLS AND THE LIKE

Philip A. DiGiacomo, 13246 Chandler Blvd., Van Nuys, Calif. 91401

Filed Jan. 2, 1976, Ser. No. 646,243
Int. Cl.² E04B *21/02*
U.S. Cl. 52—742 **6 Claims**



1. A method of simulating a natural rock surface comprising the steps of:
   a. applying a material on the surface of said natural rock to form a mother mold having a surface form conforming to said surface of said natural rock;
   b. applying polyurethane to said mother mold such that said polyurethane foams in place to form a mold panel, said polyurethane supporting said mother mold against hydrostatic pressures such that said surface form of said mother mold conforming to said natural rock surface does not distort, said mold panel being constructed of a closed cell semi rigid foam so as to avoid unnecessary water absorption and to provide sufficient support against typical hydrostatic pressures to which the mold may be subjected.
   c. removing said mold panel from said natural rock surface;
   d. supporting said mold panel with the exposed face of said mold in the desired location of the simulated surface;
   e. providing a cementitious material against said exposed face of said mother mold; and
   f. removing said mold panel after the cementitious material has cured;

   whereby a natural rock may be simulated including many of the natural details.

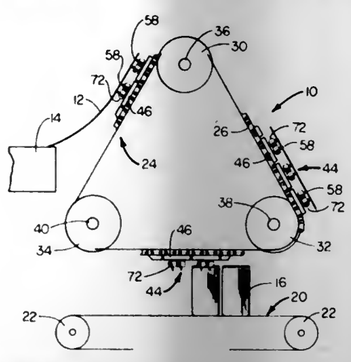
4,070,850

ASSEMBLY MACHINE FOR INTERCONNECTED CARRIER DEVICES

Ernest Ray Cunningham, Libertyville, Ill., assignor to Grip-Pak, Inc., St. Louis, Mo.

Filed Feb. 24, 1977, Ser. No. 771,565
Int. Cl.² B65B *13/02, 17/02, 27/04*
U.S. Cl. 53—48 **11 Claims**

1. A bi-directional assembly machine for assembling an interconnected series of plastic carrier devices to containers, comprising conveyor means for moving a plurality of containers in at least one row in a predetermined linear path, and carrier assembly means arranged to move in a predetermined closed path coinciding with said linear path along a portion thereof, said carrier assembly means being capable of bi-directional assembly of the interconnected series of carriers to containers and including means for assembling the interconnected series of carriers to said moving row of containers beginning generally transverse to the movement of said containers along a first container margin with assembly movement toward a second container margin when said carrier assembly means is operated in one direction in said closed path, said means for assembling the interconnected series of carriers to containers also being capable of moving generally transverse to the movement of said containers first along said second container margin with assembly movement toward said first container margin when said assembly means is operated in a second direction in said closed path.

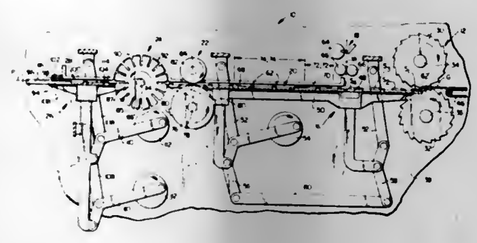


4,070,851

GUM STICK WRAPPING MACHINE

Lawrence W. Schoppee, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed June 23, 1976, Ser. No. 698,957
Int. Cl.² B65B *11/46*
U.S. Cl. 53—228 **16 Claims**



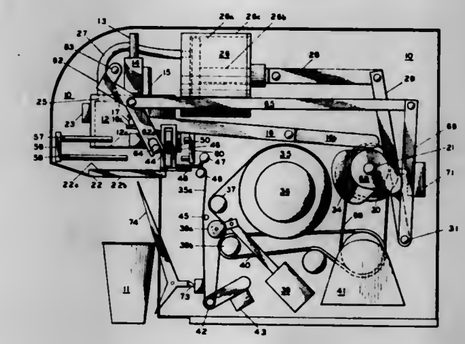
1. A gum stick wrapping machine comprising a gum breaking mechanism for separating prescored slabs of gum into individual sticks and including upper and lower toothed breaker wheels journalled for rotation about parallel axes with the teeth thereof in intermeshing relation to form a nip therebetween and means for rotating said breaker wheels in opposite directions at the same peripheral rates, said lower breaker wheel having an annular groove opening outwardly through its peripheral surface, means for feeding prescored slabs into said nip, a first transporting and folding mechanism including a walking beam gum stick transport for receiving each successive stick at said nip as it is separated from a slab by said breaker wheels and intermittently advancing it along a generally horizontal straight line feed path, said walking beam gum stick transport being supported forwardly of said breaker wheels for reciprocal movement in a generally orbital path of travel toward and away from said breaker wheels between forward and rear positions, respectively, and having a finger thereon positioned within said annular groove rearwardly of said nip when said walking beam gum stick transport is in its rear position for engaging a stick upon its separation from a slab at said nip to withdraw the stick from the breaker mechanism and advance it along said feed path, said transporting and folding mechanism including a folding channel for receiving a wrapper and a stick advanced by said walking beam gum stick transport and forming a portion of the wrapper to a generally U-shaped configuration about the stick, said transporting and folding mechanism having at least one folding means associated with said folding channel for engaging and folding a wrapper formed about a stick as the stick and its associated formed wrapper are advanced within the folding channel by said walking beam gum transport, and means for positioning a wrapper in the path of a stick advanced by said walking beam gum stick transport.

4,070,852

METHOD AND APPARATUS FOR COLD LIDDING CONTAINERS WITH ELASTOMERIC FILM

Richard Patrick Mitchell, and Thomas Mathew Gorshe, both of Neenah, Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 642,367, Dec. 19, 1975, Pat. No. 4,011,119. This application Dec. 13, 1976, Ser. No. 749,769
Int. Cl.² B65B *7/28;* B67B *3/04, 3/08, 3/22*
U.S. Cl. 53—297 **4 Claims**



1. Apparatus for cold lidding an open-top container with roll-stock elastomeric film, comprising:
   a. a chassis having a head portion,
   b. an open-bottom lidding chamber mounted in said chassis head,
   c. a clamping plate mounted in said chassis head below said lidding chamber and having an aperture through which the open-top container to be lidded can be inserted,
   d. means for presenting a web of the roll-stock elastomeric film across the bottom of said lidding chamber and above said clamping plate,
   e. means for bringing said lidding chamber and clamping plate into mating relationship to clamp said web in air-tight relationship with the bottom of said lidding chamber,
   f. means for evacuating said lidding chamber to stretch said web upwardly into said lidding chamber, and
   g. means for separating said lidding chamber and said clamping plate from said mating relationship to release said stretched web over the top of a container inserted into said lidding chamber.

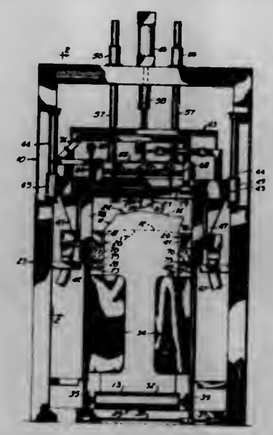
4,070,853

OPEN TOP PLASTIC BAG SEALER

Duane Sanders, Spokane, Wash., assignor to Thermoguard Insulation Company, Spokane, Wash.

Filed Jan. 10, 1977, Ser. No. 757,874
Int. Cl.² B65B *7/06, 51/14*
U.S. Cl. 53—373 **8 Claims**

1. Apparatus for closing and sealing the upwardly open ends of upright flexible plastic bags that have been filled with a formable material, comprising:
   a framework;
   bag locating means on said framework for positioning successive bags at a closing and sealing station;
   spaced facing suctions means for engaging and forming the open bag end;
   a vertically movable carriage on said framework supporting the suction means;
   means for moving the carriage vertically from a lowered position wherein the suction means are located at an elevation below the level of material within a bag at the sealing station and a raised position with the suction means at an elevation even with the upwardly open end of the bag to form the open bag end into a rectangular configuration with integral longitudinal and transverse sides;
   folding means for engaging the transverse bag sides and folding them inwardly in such a manner that they become overlapped by the longitudinal sides; and
   heat sealing means on said framework adapted to press the longitudinal sides together over the folded transverse sides and fuse the plastic material thereof together.

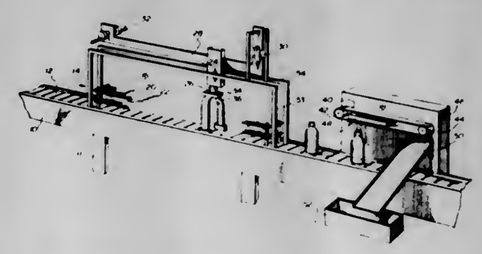


4,070,854

APPARATUS FOR REMOVING BOTTLE CAPS

Otto M. Marino, London, Canada, assignor to Labatt Breweries of Canada Limited, London, Canada

Filed Sept. 27, 1976, Ser. No. 726,821
Claims priority, application Canada, Oct. 17, 1975, 237884
Int. Cl.² B67B *7/16*
U.S. Cl. 53—381 A **6 Claims**



1. An apparatus for decapping of filled bottles comprising a decapping station, conveyor means for transporting vertically oriented filled bottles, sealed with a crown cap having a dome and skirt, to said station, means defining at least one edge engageable under a lower extremity of the skirt so as to be able to support the associated bottle whilst the bottle is travelling through said station; a chisel-like presser means at said station adapted to move in an elliptical path in a vertical plane above and in the direction of, and substantially synchronous with, bottle travel, whereby the presser means smoothly presses down on the cap dome during travel along the lower limb of the eliptical path whilst the bottle is supported by said edge means, the presser means and edge means combining to deform

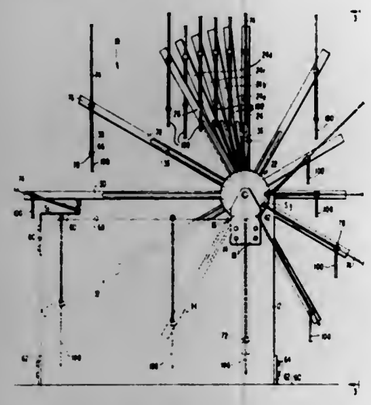
the cap in such a manner that the skirt portion thereof disengages the bottle neck, and means adapted to controllably remove the freed cap overlying the bottle mouth.

4,070,855

CONSTANT FORCE MOTOR

Roy F. Lund, Tanglewood Box 24K, R.D. #5, Muncy, Pa. 17756

Filed Mar. 12, 1976, Ser. No. 666,369
Int. Cl.² F03G *3/00*
U.S. Cl. 60—407 **8 Claims**



1. A constant force motor comprising in assembly:
a plurality of translation rods,
means for mounting said translation rods side by side for pivoting about a common pivot axis at fixed circumferentially spaced positions with respect to each other and for individual translation bidirectionally along their axes during rotation,
means for limiting translation of said rods through said common pivot axis,
means for applying equal constant forces on each rod on respective sides of said common pivot axis with said forces acting in the same fixed direction in the plane of rod rotation to cause, in response to rod shifting along its axis to positions other than that where the pivot axis coincides with the center of said rod, a force imbalance causing rod rotation about the common axis and translation thereof along their individual axes, and
means to negate a portion of the force imbalance acting on said rods during a portion of each rod rotation to thereby cause said assembly to rotate continuously in a given direction by converting unidirectional forces to usable torques.

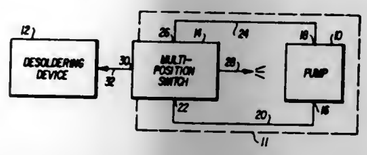
4,070,856

AIR FLOW CONTROL SYSTEM AND IMPROVED MULTIPLE POSITION SWITCHING MEANS FOR USE THEREWITH

Kenneth Curtis Litt, Silver Spring, Md., assignor to Pace, Incorporated, Silver Spring, Md.

Filed Nov. 8, 1976, Ser. No. 739,787
Int. Cl.² F15B *11/06*
U.S. Cl. 60—407 **10 Claims**

1. An air flow control system comprising
an air pump having a vacuum outlet port and an air pressure outlet port;
an air utilization device;
a switch comprising
a switch outlet port connected to said air utilization device;
a vent port;
a vacuum inlet port connected to said air pump vacuum outlet port;
an air pressure inlet port connected to said air pump air pressure outlet port; and
valve means for (a) connecting said vacuum inlet port to said switch outlet port and said air pressure inlet port to said vent port in response to said switch being in a first



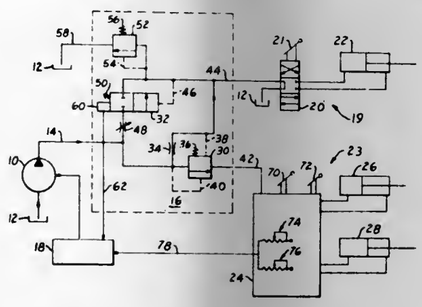
position and (b) connecting said air pressure inlet port to said switch outlet port and said vacuum inlet port to said vent port in response to said switch being in a second position
whereby either vacuum or air pressure may be switched from said air pump to said air utilization device without loading the pump.

4,070,857

HYDRAULIC PRIORITY CIRCUIT

John E. Wible, Painesville, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Dec. 22, 1976, Ser. No. 753,250
Int. Cl.² F15B *11/16, 11/20*
U.S. Cl. 60—422 **12 Claims**



1. A hydraulic priority circuit comprising:
variable output fluid pump means;
a primary work system;
a secondary work system;
valve means for regulating the flow of fluid flow from said pump means to said primary work system and said secondary work system on a priority demand basis, said valve means including indicator means for indicating demand for an increased level of fluid flow to said primary work system, said means actuated upon detecting from said primary work system an increased fluid pressure; and
means responsive to said indicator means for increasing the output of said pump means.

4,070,858

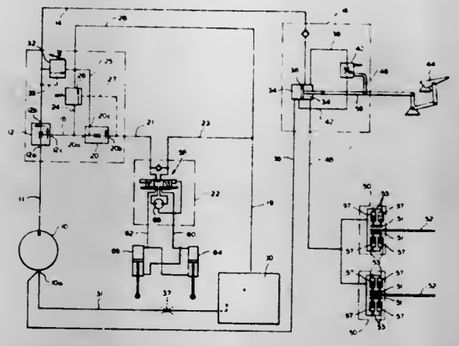
BRAKE AND STEERING SYSTEM

Gene F. Hand, Stevensville, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation-in-part of Ser. No. 729,926, Oct. 6, 1976, abandoned. This application July 18, 1977, Ser. No. 816,241
Int. Cl.² F15B *11/20*
U.S. Cl. 60—422 **6 Claims**

1. A combined brake and steering hydraulic system for a vehicle, comprising a hydraulic pump supplying pressurized

hydraulic fluid, an open center hydraulic brake mechanism, an open center hydraulic steering mechanism, a priority valve receiving the entire fluid output of the said pump and discharging a first portion of said fluid into the said hydraulic brake mechanism and an additional portion into the said hydraulic steering mechanism, a reservoir, conduit means discharging the fluid from the said hydraulic steering mechanism into the



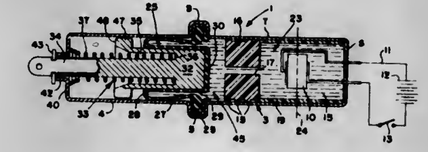
said reservoir, additional conduit means conducting fluid from said reservoir to said hydraulic pump with a predetermined pressure drop, and means conducting the fluid discharged from said hydraulic brake mechanism to said pump by-passing the said reservoir and entering the pump at a pressure lower than the pressure in the reservoir by the amount of the said predetermined pressure drop.

4,070,859

THERMAL FLUID DISPLACEMENT ACTUATOR

Ronald S. Sobecks, Seven Hills, Ohio, assignor to Design & Manufacturing Corporation, Willoughby, Ohio

Filed Dec. 23, 1976, Ser. No. 753,700
Int. Cl.² F03G *7/06*
U.S. Cl. 60—530 **9 Claims**



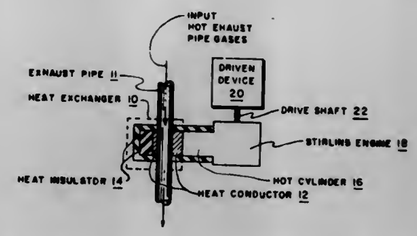
1. A thermal fluid displacement actuator comprising a body, a variable volume fluid chamber in said body formed in part by a diaphragm, a piston assembly on one side of said diaphragm and movable therewith to transmit force by such movement, a fixed volume boiler chamber in said body containing a thermally expansible and contractible force transmitting fluid, heating means to apply heat to at least a portion of said fluid to increase the pressure in the boiler chamber, and barrier means between said boiler chamber and said variable volume chamber, said barrier means having port means therethrough to provide limited fluid communication between said chambers to permit at least some of the fluid remaining in said boiler chamber to be displaced by the increased pressure through said port means to drive said diaphragm and piston assembly through an expansion stroke.

4,070,860

AUTOMOTIVE ACCESSORY ENGINE

Charles M. Hanson, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 30, 1976, Ser. No. 755,878
Int. Cl.² F01K *23/10*; F02G *1/04*
U.S. Cl. 60—616 **3 Claims**



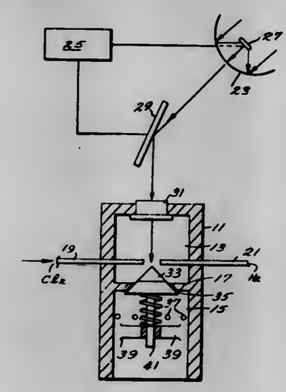
1. In an apparatus for converting heat energy from a heat source to mechanical energy, an apparatus comprising:
a Stirling heat engine comprised of a hot volume in a hot cylinder that is interfaced with a heat source and a heat exchanger, wherein said heat source is an automotive exhaust pipe and said heat exchanger comprises a mass of heat conductor material surrounding a portion of said exhaust pipe and is in intimate contact with said hot volume and a heat insulator material surrounding said mass of heat conductor material and said hot cylinder; and
a means for cyclically varying the working fluid volume enclosed within said Stirling heat engine to drive a piston operated crankshaft having a driven device connected thereto wherein rotary motion is imparted to said driven device for doing mechanical work.

4,070,861

SOLAR REACTOR COMBUSTION CHAMBER

Robert L. Scragg, and Alfred B. Parker, both of Miami, Fla., assignors to Solar Reactor Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 657,383, Feb. 10, 1976, Pat. No. 4,026,112, which is a continuation-in-part of Ser. No. 588,888, June 20, 1975, Pat. No. 4,024,715, which is a continuation-in-part of Ser. No. 564,087, April 1, 1975, Pat. No. 3,998,205. This application June 3, 1976, Ser. No. 692,495
Int. Cl.² F03G *7/02*
U.S. Cl. 60—641 **12 Claims**



1. A reactor comprising
a reactor chamber;
means for controllably coupling chlorine and hydrogen to said reactor chamber;

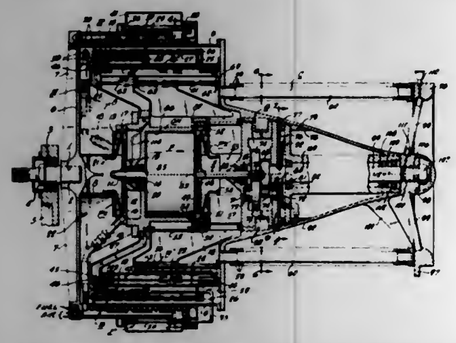
means for directing electro-magnetic radiation into said chamber to thereby ionize said chlorine and hydrogen;
a combustion chamber;
valve means communicating said reaction chamber with said combustion chamber; and
means for controllably coupling oxygen into said combustion chamber, said ionized hydrogen and chlorine passing through said valve into said combustion chamber to exothermically react therein to form hydrogen chloride at a high pressure and temperature level.

4,070,862

CASCADED TWO-FLUID ROTARY CLOSED RANKINE CYCLE ENGINE

William Allen Doerner, and Oral R. Van Buskirk, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 24, 1976, Ser. No. 726,296
Int. Cl.[2] F01K 23/02, 11/04
U.S. Cl. 60—655 23 Claims



1. In a closed, rotary Rankine cycle engine having a rotatable annular boiler-combustor system for introducing heat to the engine, an expander system for extracting work and a condenser rotatable with the boiler-combustor system for removing heat from the engine, the improvement of an engine of cascaded Rankine cycles comprising:
1. a rotatable annular boiler containing a first boiler liquid,
2. means to heat the first boiler liquid in the boiler to generate pressure vapor therein,
3. an expander system for extracting work from the pressure vapor,
4. an annular condenser rotatable with the boiler for condensing the exhaust vapor from the expander by heat-exchange, said condenser comprising heat-exchange, tubes for passing the exhaust vapor thereover to heat a second liquid contained in the tubes to generate pressure vapor therein, said second liquid having a lower boiling point than the first boiler liquid,
5. means for returning the vapor condensate to the boiler,
6. a second expander system for extracting work from the pressure vapor generated in the heat-exchange tubes,
7. a rotatable second condenser for condensing the exhaust vapor from the second expander by heat-exchange, and
8. means for returning the vapor condensate from the second condenser to the heat-exchange tubes.

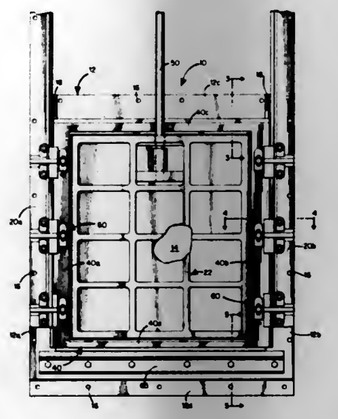
4,070,863

SLUICE GATE ASSEMBLY WITH EXTRUDABLE SEAL

David C. Brown, Petersham, Mass., assignor to Rodney Hunt Company, Orange, Mass.

Filed Nov. 5, 1976, Ser. No. 740,767
Int. Cl.[2] E02B 7/28
U.S. Cl. 61—28 9 Claims

1. A sluice gate assembly comprising: a frame bordering an opening, said frame having first seat facings; a gate disc having second seat facings, said gate disc being movable between a seated closed position at which said second seat facings are urged against said first seat facings, and an open position allowing liquid to pass through said openings; a resilient deformable seal member mounted on said gate disc, said seal member being normally spaced from said first seat facings when said gate disc is in other than the seated closed position; deforming means



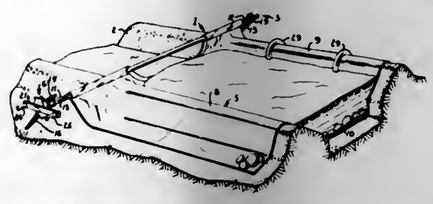
carried by and responsive to movement of said gate disc into the seated closed position for deforming said seal member against said first seat facings, said deforming means including a seal retainer interconnected into an integral unit with said seal member and said gate disc; and wedge means for moving said seal retainer relative to said gate disc to produce the aforesaid deformation of said seal member.

4,070,864

ADJUSTABLE IRRIGATION DAM

Kenneth Jarvis, R.R. 2, Box 106, Ulysses, Kans. 67880

Filed Dec. 30, 1976, Ser. No. 755,678
Int. Cl.[2] E02B 7/20
U.S. Cl. 61—29 8 Claims



1. An adjustable irrigation dam comprising:
a. a sheet of flexible material capable of being positioned in transverse blocking relation to an irrigation ditch, said sheet having opposite end portions and a width greater than the width of such ditch whereby side margins overlie areas outwardly of said ditch;
b. an elongated shaft member extending transversely across the irrigation ditch and having opposite end portions positioned laterally outwardly of the ditch;
c. means connecting portions of side margins of said sheet and spaced apart portions at one of the opposite end portions thereof of said shaft member at points adjacent the sides of the ditch for permitting a mid portion between said portions of the side margins of said sheet to sag downwardly from said elongate shaft and permitting said sheet one end portion to be wound around said elongate shaft member upon rotation thereof to raise and lower said mid portion;
d. anchor means selectively positioned on one side of and outwardly of the ditch and in engagement with one of the opposite end portions of said elongate shaft member for rotatably supporting same and retaining in a selected position relative to the ditch;
e. a handle connected to said elongate shaft member adjacent said anchor means for rotating same to wind said portions the side margins of said sheet one end portion around said elongate shaft and vary the elevation of said mid portion of said sheet one end portion between said side margin portions connected thereto; and
f. means on said handle and on said anchor means for selectively retaining said elongate shaft member against rotation and thereby position said mid portion of said sheet one end portion between said side margins at a selected elevated position.

4,070,865

METHOD OF CONSOLIDATING POROUS FORMATIONS USING VINYL POLYMER SEALER WITH DIVINYLBENZENE CROSSLINKER

Homer Charles McLaughlin, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 10, 1976, Ser. No. 665,610
Int. Cl.[2] E02D 3/14
U.S. Cl. 61—36 C 17 Claims

1. A method of consolidating a porous permeable formation using a consolidating composition which is not sensitive to pH, carbonates or water comprising contacting said formation with a polymerizable organic liquid mixture of (1) at least one vinyl type monomer having about 3–12 carbon atoms and containing at least one group from phenyl, carboxyl or nitrile and (2) at least one divinyl type monomer having about 3–12 carbon atoms, wherein each of said monomers is soluble in a low viscosity liquid aromatic hydrocarbon solvent; wherein said polymerizable mixture contains a polymerization promoter and a polymerization initiator comprising an organic peroxide, an azo compound or a combination thereof; and maintaining said polymerizable organic liquid mixture in contact with said formation until the monomers in said liquid mixture polymerize with the polymer chain and crosslink, having substantially all hydrocarbon linkages forming a crosslinked consolidated mass having a compressive strength after 24 hours of at least 120 psi.

11. A method of claim 1 of consolidating a porous permeable subterranean earthen formation penetrated by a well comprising mixing a low viscosity polymerizable organic liquid mixture comprising (1) at least one vinyl type monomer having about 3–12 carbon atoms and containing at least one group from phenyl, carboxyl or nitrile and (2) at least one divinyl type monomer having about 3–12 carbon atoms wherein each of said monomers is soluble in a low viscosity liquid aromatic hydrocarbon solvent; wherein said polymerizable mixture contains a polymerization initiator comprising an organic peroxide, an azo compound or combinations thereof and a polymerization promoter; injecting said polymerizable mixture through said well into said formation; and maintaining said polymerizable mixture in contact with said formation until said monomers polymerize, forming a water resistant formation.

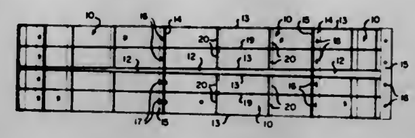
4,070,866

TUNNEL LINERS AND METHODS OF MAKING THE SAME

Ingvald O. Juvrud, Poland, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Oct. 8, 1975, Ser. No. 620,802
Int. Cl.[2] E21D 5/08
U.S. Cl. 61—45 R 4 Claims

1. A tunnel liner annulus for changing direction of the liner comprising a plurality of end to end liner segments bolted together at the ends, sealing means between adjoining ends, said liner segments each comprising a pair of liner plates each having a curved elongated skin forming an arc of said annulus, each skin having spaced dependent sidewalls bent at an angle thereto, each successive pair of liner plates in the annulus being in spaced apart side-by-side relationship, spaced apart a greater distance at one end than at the other end, a pair of wedge shaped gusset plates in spaced parallel planes fixed to the sidewalls betwen said liner plates adjacent the top and bottom respectively of the adjacent sidewalls and an end plate at each



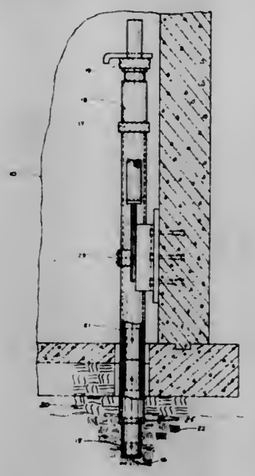
end of said pairs of liner plates extending the remote sidewalls of each segment and connected to the sidewalls, gusset plates and skins to form a unitary whole, and said segments being arranged so that the wedge shaped gusset plates are in ascending order to a selected maximum and then in descending order to a minimum.

4,070,867

NEGATIVE FRICTION PILE AND ISOLATING CASING

Paul G. Cassidy, Glen Ellyn Road, Bloomingdale, Ill. 60108

Continuation-in-part of Ser. No. 532,755, Dec., 1974, which is a continuation of Ser. No. 401,164, Sept. 27, 1973, abandoned.
This application May 9, 1977, Ser. No. 795,206
Int. Cl.[2] E02D 5/22, 27/44
U.S. Cl. 61—53 6 Claims



1. A skin friction pile for driven support in positive skin friction soil to raise and support or underpin a building structure, said pile comprising a plurality of pile sections in end-to-end abutting relationship, said pile sections being connected together by internal couplings secured in the pile sections, and a casing independent of said skin friction pile surrounding certain said pile sections in negative friction soil, said casing comprising a plurality of casing sections in end-to-end abutting relationship having minimum clearance around the pile sections in the range of approximately 1/64 inch to approximately 5/32 inch, said skin friction pile extending to depths substantially greater than said casing for support solely in positive skin friction soil by positive skin friction only of such soil bearing on the pile, said casing extending to a lesser depth than said skin friction pile through negative friction soil and isolating said certain pile sections from said negative friction soil, said minimum clearance repelling the entrance of soil between the pile sections and the casing sections thereby enabling the pile

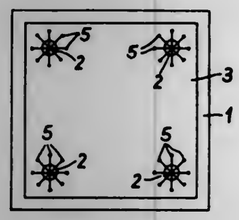
sections to be driven to greater depths than said casing sections.

4,070,868

OFF-SHORE DRILLING PLATFORM AND METHOD OF MOUNTING

Franz Sedlmayer; Paul Baron, and Klaus Seifert, all of Wilhelmshaven, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Sept. 30, 1976, Ser. No. 728,200
Claims priority, application Germany, Oct. 25, 1975, 2547890
Int. Cl.² E02B *17/00*
U.S. Cl. 61—91 **6 Claims**



1. In an off-shore drilling platform structure; a base body, legs connected to and upstanding from the base body, a floatable platform slidable on said legs, flexible tension elements extending between the upper ends of said legs and said base body, at least two clamp devices on said platform engageable with at least one of said tension elements, means for selectively clamping said tension element to each said clamp device or for releasing the tension element from each clamp device, means for moving at least one clamp device on said platform in the direction of the length of said tension elements, said tension elements being formed of lamellae, each clamp device comprising a pair of counterbearings on opposite sides of the respective tension element, pull rods extending between said counterbearings, members slidable on said rods and disposed between the laminations of the respective tension element, and means for urging said counterbearings toward each other to clamp said clamp device to said tension element.

4,070,869

METHOD OF GROUTING OFFSHORE STRUCTURE

Kenneth Anthony Williams, 3525 N. Causeway, Metaire, La. 70002

Filed Feb. 14, 1977, Ser. No. 768,165
Int. Cl.² E02D *21/00*
U.S. Cl. 61—100 **4 Claims**



1. In a method of grouting an offshore structure having a generally vertically extending outer jacket extending upwardly from the sea bed and a pile mounted inside said jacket, said pile being of a smaller outside diameter than the inside diameter of said jacket to form an annular space therebetween, the combination of steps comprising:

introducing a tube having an outside diameter smaller than the radial thickness of said annulus space downwardly through said annular space until the lower end of said tube is proximate the bottom portion of said annular space which is to be grouted;

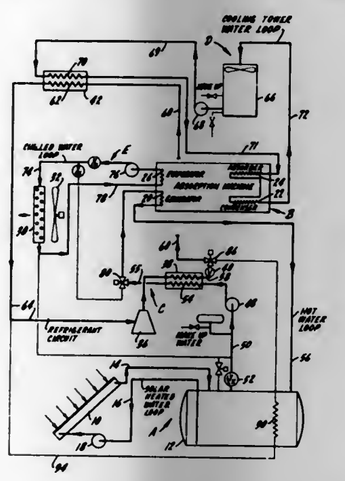
and pumping grout down said tube and up said annular space to thereby displace water from said annulus and fill said annulus with a column of grout.

4,070,870

HEAT PUMP ASSISTED SOLAR POWERED ABSORPTION SYSTEM

Vijay Omprakash Bahel, Schaumburg, and Richard Kuehner, Mount Prospect, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 4, 1976, Ser. No. 729,502
Int. Cl.² F25B *27/00, 27/02, 13/00*
U.S. Cl. 62—2 **3 Claims**



1. A combination heating and cooling system comprising: a solar collector producing a heated fluid; an absorption machine having a generator, a condenser, an absorber, and an evaporator all connected in a closed circuit, continuous cycle absorption system, said evaporator being adapted to cool a fluid to be circulated to a load; a compression cycle system including a condenser and an evaporator through which a refrigerant is circulated; and means for circulating said heated fluid from said solar collector in series flow through said compression cycle system condenser and said generator.

4,070,871

METHOD OF COLD PRODUCTION AND DEVICES FOR THE PRACTICAL APPLICATION OF SAID METHOD

Maurice de Cachard, La Tronche; Robert Moracchioli, Seyssinet, and Gérard Marie, Eybens, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 1, 1975, Ser. No. 618,576
Claims priority, application France, Oct. 8, 1974, 74 33849
Int. Cl.² F25B *1/02, 1/04*
U.S. Cl. 62—116 **8 Claims**

1. A method of refrigeration by means of: a condenser for liquefying a refrigerant, a vaporizer for vaporizing some of the liquefied refrigerant and thereby absorbing heat provided from a heat source for powering refrigeration cycle, an evaporator for evaporating some of the refrigerant and thereby refrigerating a space to be cooled, and a vapor-driven variable-volume machine having a variable-volume chamber, an energy-storing rotary member, a single outlet, and separate first and second inlets, comprising the steps of:

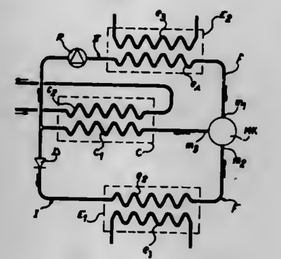
passing a portion of the liquid refrigerant output of said condenser to said evaporator;

vaporizing said portion of said liquid refrigerant in said vaporizer while absorbing heat in said refrigerant from a heat source provided for powering a refrigeration cycle;

concurrently with said vaporizing step, passing another portion of the liquefied refrigerant output of said condenser to said evaporator and evaporating said last-mentioned portion of said condenser output in said evaporator to provide cooling;

feeding the output vapor of said vaporizer to the said first inlet of said variable-volume machine and simultaneously feeding the output vapor of said evaporator to said second inlet of said variable-volume machine;

operating said variable-volume machine by the substeps of:



admitting to the variable-volume chamber of said machine, through said first inlet, a quantity of output vapor of said vaporizer and permitting it to perform first isobaric work and then polytropic work to increase the volume of the chamber while storing energy in the flywheel,

admitting to said variable-volume chamber, through said second inlet at constant pressure, a quantity of the output vapor of said evaporator and thereby accelerating the increase of the chamber volume to its maximum,

utilizing the energy stored in the energy-storing rotary member to compress both said quantities of vapor, together, in a polytropic process by reduction of the volume of said chamber, and

discharging said quantities of vapor to the input of said condenser in an isobaric process when the volume of said chamber approaches its minimum, and

converting said vapor discharged by said machine to the liquid state in said condenser.

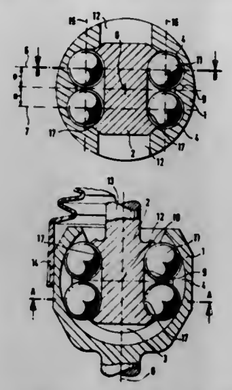
4,070,872

UNIVERSAL JOINT

Werner Krude, Neunkirchen, Germany, assignor to Uni-Cardan AG, Lohmar, Germany

Filed Sept. 23, 1976, Ser. No. 725,924
Claims priority, application Germany, Sept. 25, 1975, 2542733
Int. Cl.³ F16D *3/30*
U.S. Cl. 64—21 **5 Claims**

1. A universal joint comprising a hollow joint member having a spherical inner surface therein and there being two circular grooves in said inner surface, an inner joint member within said outer joint member and having an outer surface with recesses therein, balls jointly received in said outer joint member grooves and said inner member recesses to transmit torque therebetween, the centerlines of said outer member grooves defining first planes which are parallel to each other and parallel with the rotary axis of the outer joint member, said first planes being positioned on opposite sides of said rotary axis and spaced equidistantly therefrom, said inner member recess having means for guiding movements of the balls therein along centerlines in second planes perpendicular to said first planes.

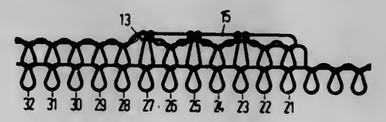


4,070,873

START UP COURSE FOR SOCK WELT

Josephus Johannes Maria Jansen, Schijndel, Netherlands, assignor to Koninklijke Textielfabrieken M. Jansen de Wit B.V., Schijndel, Netherlands

Filed Nov. 20, 1975, Ser. No. 633,832
Claims priority, application Netherlands, Nov. 21, 1974, 7415190
Int. Cl.² D04B *9/46*
U.S. Cl. 66—172 R **3 Claims**



1. A method of knitting a sock on a circular knitting machine wherein for casting on purposes the end extent of knitting yarn is engaged by a first series of needles between a feeder and a clamping means at the knitting point, characterized in that, with the clamping means as seen in the direction of rotation of the needle cylinder located before the knitting point, the feeder is brought behind the knitting point and, after engagement of the end extend of the knitting yarn by the first series of needles, the feeder is moved to a yarn feeding position before the knitting point, with a number of needles positioned between and adjacent to the first series of needles brought into a position in which the yarn is not engaged thereby during such movement of the feeder to position before the knitting point, whereby the end extent of the yarn is maintained in the form of a single open loop during one course and is included in the fabric by the needles initially not engaging the yarn during the knitting of the subsequent courses.

4,070,874

ONE PIECE PANTYHOSE AND METHOD OF MANUFACTURING SAME

Drahomir Zouhar, Blansko; Antonin Holas, and Ivan Musil, both of Brno, all of Czechoslovakia, assignors to Elitex - Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed Dec. 1, 1975, Ser. No. 636,432
Claims priority, application Czechoslovakia, Dec. 12, 1974, 8472/74
Int. Cl.² A41B 9/08
U.S. Cl. 66—177 5 Claims



1. A folded, knitted pantyhose garment comprising first and second tubular limb portions, a third tubular body portion, and a crotch portion having an outer periphery, the first, second and third portions having mutually joined first open ends, the first, third and second portions being arranged substantially coaxially one within the other in radial inward succession with their respective first ends facing in the same direction, the inwardly facing surface of the outermost first portion confronting the outwardly facing surface of the third portion, the outwardly facing surface of the innermost second portion confronting the inwardly-facing surface of the third portion, a first half of the circumference of the first end of the third portion being joined directly to a corresponding adjacent first half of the circumference of the first end of the first portion, the remaining half of the circumference of the first end of the third portion being joined directly to the adjacent half of the circumference of the first end of the second portion, the remaining halves of the circumference of the first ends of the respective first and second portions being joined by the outer periphery of the crotch portion, whereby the above-mentioned outwardly-facing surfaces of the first and second portions of the folded garment remain the outwardly-facing surfaces of said portions when the garment is unfolded.

4,070,875

APPARATUS FOR TREATING OF SYNTHETIC TEXTILE WEBS

Johannes Kutz, St. Tonis near Krefeld, Germany, assignor to Eduard Kusters, Krefeld, Germany

Continuation of Ser. No. 440,026, Feb. 6, 1974, abandoned. This application Oct. 7, 1976, Ser. No. 730,159
Claims priority, application Germany, Feb. 7, 1973, 2305932
Int. Cl.² D06B 3/22
U.S. Cl. 68—3 SS 9 Claims

1. In an arrangement for treating a textile web having a pile in which the web is required to enter and leave a treatment station with its pile facing upward, an apparatus for positioning the pile threads of a textile web fabricated from heat sensitive, synthetic material, which is comprised of:

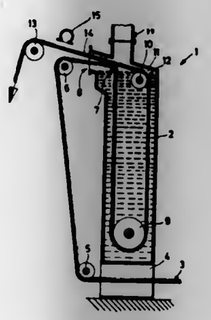
a. means in the form of a substantially vertical tank having a top and a bottom and spaced sides extending substantially vertically betwen said top and bottom for storing a heated liquid of predetermined temperature, said means having an inlet and outlet opening in one of said spaced sides near the top of said means;

b. means to guide the textile web into said means for storing and from said means for storing through said opening such that the textile web enters said means for storing below the point at which the textile web exits said means for storing, for storing said means filled with said heated liquid to a level closely adjacent the point where the textile web enters said means for storing;

c. a passageway of width at least equal to the width of the textile web under said means for storing;

d. means for routing said textile web through said passageway beneath said means for storing from the one of said sides opposite said opening and upward to said opening and into said heated liquid;

e. means for guiding said textile web through said heating liquid, first vertically downward and then vertically upward, for a predetermined period of time, said guide



means contacting only the back side of said web, and said web being contacted by no other structure while within said heated liquid;

f. means disposed approximately at the top of said heated liquid and within said means for storing for changing the direction of said web from vertical to substantially horizontal thereby bringing said web to a substantially horizontal position immediately after removal from said heated liquid; and

g. means for maintaining said web after removal from said heated liquid substantially horizontal for a second period of time, said means for maintaining in cooperation with said means for changing also directing said web out of said means for storing through said opening in said means for storing.

4,070,876

APPARATUS FOR VAPOR PHASE TREATING GARMENTS

Richard D. Thompson, Cincinnati, Ohio; Douglas Thompson, Salt Lake City, and Micheal G. Beeley, Logan, both of Utah, assignors to McGraw-Edison Company, Elgin, Ill.

Division of Ser. No. 438,587, Feb. 1, 1974, Pat. No. 4,032,294. This application July 20, 1976, Ser. No. 707,061
Int. Cl.² D06M 13/14
U.S. Cl. 68—3 R 2 Claims

2. Apparatus for vapor phase treating garments, each having cellulosic or natural protein fibers therein and being supported in a substantially wrinkle-free condition on a form, with moisture, formaldehyde, and sulfur dioxide, comprising:

a. separated first, second, third and fourth enclosed chambers;

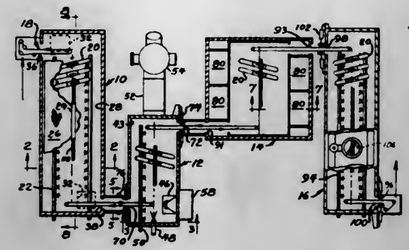
b. conveyor means for indexing a first batch of garments successively and sequentially through the first, second, third and fourth chambers, and for stopping the batch of garments in each chamber for exposure to an atmosphere therewithin;

c. means to introduce steam to the first chamber to moisten such garments therewithin;

d. means to introduce formaldehyde and sulfur dioxide vapors to the second chamber for penetration onto such garments therewithin;

e. means to introduce heated dry air to the third chamber to dry such garments therewithin;

f. means to introduce heated moist steam to the fourth chamber to vapor clean the garments and remove formaldehyde odor therefrom; and



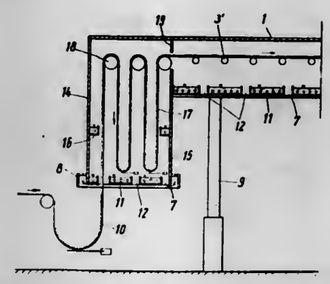
g. said conveyor means also being operable to index subsequent equally sized batches of garments successively and sequentially through the first, second, third and fourth chambers, and to stop them at each, so that successive equally sized batches of garments are simultaneously indexed to and are simultaneously stopped in the respective chambers to be exposed to the atmospheres therewithin in a sequential manner.

4,070,877

APPARATUS FOR THE CONTINUOUS STEAMING OF TEXTILE MATERIAL OF MAN-MADE FIBER MATERIAL

Hans Fleissner, Riehen, Switzerland, assignor to Vepa Aktiengesellschaft, Switzerland

Division of Ser. No. 439,049, Feb. 4, 1974, Pat. No. 3,949,577. This application Oct. 28, 1975, Ser. No. 626,539
Claims priority, application Germany, Feb. 2, 1973, 2305155; Feb. 2, 1973, 2305154; Mar. 1, 1973, 2310195; June 9, 1973, 2329687
Int. Cl.² D06B 3/02
U.S. Cl. 68—5 D 3 Claims



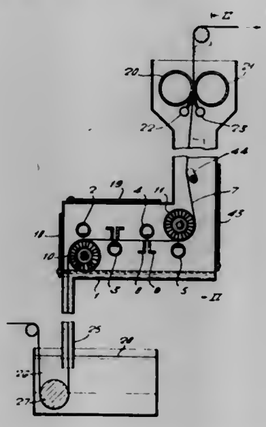
3. An apparatus for the continuous steaming of textile material or man-made fiber material in this material and synthetic fibers which comprises at least one bell-shaped housing providing a treatment chamber closed all around by sidewalls and at least partly opened at the bottom, means for supplying steam into said chamber, and at least one conveying means for transporting the material within the housing, so that the material extends from below and into the housing and extends out of the housing at the bottom thereof; said means for supplying steam into said chamber including water sump means extending along the bottom portion of said bell-shaped housing; said water sump means having a plurality of open containers spaced from each other to provide openings for removal of air from the textile material being treated within the steam housing, at least one of said containers defining a portion of an opening that forms an inlet passage for the material entering said housing and at least one other container defining a portion of an opening that forms an outlet passage for material exiting from said housing.

4,070,878

MACHINE FOR CONTINUOUSLY PROCESSING TEXTILE FABRICS

Conrado Valls, Torras y Bages, 53, 1°, 1ª, Barcelona, Spain

Filed Sept. 22, 1976, Ser. No. 725,436
Claims priority, application Spain, Oct. 4, 1975, 441823
Int. Cl.² D06B 21/00
U.S. Cl. 68—22 R 6 Claims



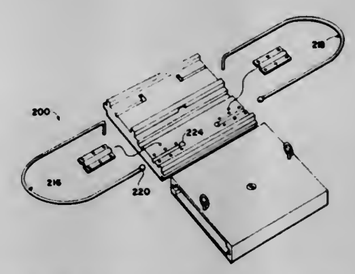
1. A machine for continuously processing textile fabrics comprising a main processing chamber provided with a plurality of nozzles placed transversally to a continuous textile band to be processed, each nozzle being substantially perpendicular to the textile band, with outlets tangential to said band, the aforesaid nozzles being provided with apertures adapted to eject strong, penetrating and uniform jets of processing liquid over the textile band, means situated opposite the nozzles to receive the processing liquid passing therethrough, said processing chamber terminating in an outlet provided with pressure cylinders and in an inlet comprising a lower passage connecting with a tank for collecting the processing liquid and receiving the textile band for supplementary processing.

4,070,879

LIGHTWEIGHT-TYPE DETACHABLE LOCK

Philip W. Thompson, Apt. B 5729 Cedonia Ave., Baltimore, Md. 21206

Filed Nov. 4, 1976, Ser. No. 738,893
Int. Cl.² E05B 67/02, 67/08
U.S. Cl. 70—20 17 Claims



1. In a lock having a body, hasp structure having a part

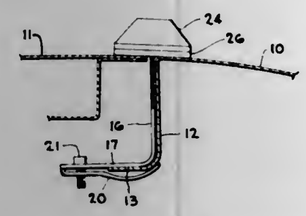
protrusive from the body, means including a first recess for securing a first portion of the hasp structure to the body while permitting a second portion thereof to move relative to said first portion, and means at the body for holding said second portion closed in locking position, the improvement comprising: the means for holding including a cover comprising a tubular member with open ends proportioned for sliding over the body to a position over at least said second portion of the hasp structure; and means for locking the cover in said position.

4,070,880

VEHICLE HOOD LOCK

Jack C. Carl, Tonawanda, N.Y., assignor to McGard, Inc., Buffalo, N.Y.

Filed Jan. 29, 1976, Ser. No. 653,369
Int. Cl.² E05C *19/00*
U.S. Cl. 70—240 **5 Claims**



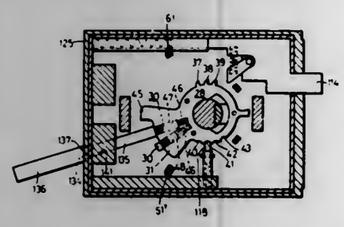
1. In combination, a vehicular engine compartment hood and a body member adjacent thereto, a side edge of said hood extending along and generally flush with said body member, said body member having a recessed stop member for limiting closing movement of said hood, a hood locking device comprising a base portion secured to said stop member which underlies the hood when the latter is in closed position, said locking device having a member extending upwardly from said base between said hood and said fixed body member, said upwardly extending member having screw threads therealong, and a cap nut engageable with said threads with the hood in a closed position and overlying said hood to prevent opening movement thereof, said nut having keying formations in its outer face adapted to coact with a special wrench having complementary keying formations whereby said nut can be removed only by means of said special wrench.

4,070,881

PUSHBUTTON OPERATED DOOR LOCKS

Juniichi Shimono, 913 Enjoji, Kasamatsu-cho, Hashima, Gifu, Japan (501-61)

Filed Dec. 14, 1976, Ser. No. 750,563
Int. Cl.² E05B *37/02, 37/16*
U.S. Cl. 70—315 **6 Claims**



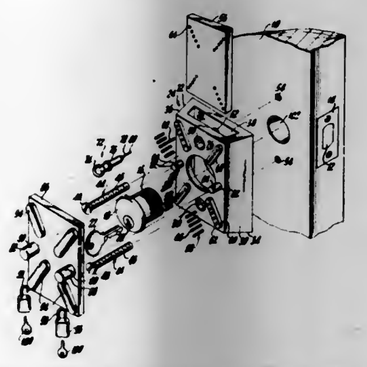
1. A pushbutton operated door lock comprising:
a casing having a wall;
a lock shaft in said casing;
a lock bolt slidably supported on said lock shaft and having a plurality of notches juxtaposed along the length of said lock bolt;
a plurality of tumbler rings rotatably supported on said lock shaft and juxtaposed along the length thereof, each of said tumbler rings having an outer peripheral edge formed with a plurality of lateral bores;
a plurality of engage pins each having one end received in one of said lateral bores of each of said tumbler rings and reciprocatorily movable along said one lateral bore for restricting an angle of rotation of said each tumbler ring;
a plurality of first pushbuttons on said casing adapted to rotate said tumbler rings individually;
a plurality of second pushbuttons on said casing adapted to rotate said tumbler rings simultaneously;
said wall of said casing having a portion formed therethrough with a plurality of apertures each providing access to said engage pin in any of said lateral bores of one of said tumbler rings for the reciprocatory movement of said engage pin for restricting said angle of rotation of said tumbler ring on the outside of said casing; and
each of said notches being engageable with one of said tumbler rings upon rotation of said one tumbler ring.

4,070,882

LOCK SHIELDING ASSEMBLY

Roberto Ruiz, 1360 Ocean Parkway, Brooklyn, N.Y. 11230

Filed Sept. 20, 1976, Ser. No. 724,967
Int. Cl.² E05B *17/14*
U.S. Cl. 70—427 **14 Claims**



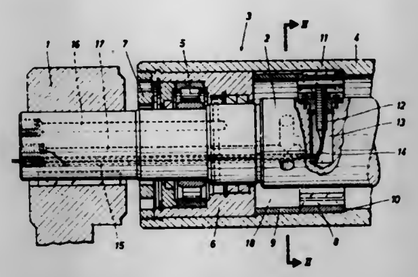
1. A lock-shielding assembly for preventing unauthorized access to a lock comprising:
a housing adapted to be fixedly superimposed over a front face of the lock, said housing having a front wall spaced from the lock face and a slot between said front wall and the lock face, a cooperating opening in said front wall providing access to the lock face;
a shield plate slidably disposed in said slot and movable between said front wall and the lock face from a first position closing said opening and covering the lock face to prevent access thereto through said opening to a second position displaced from said first position to permit access to the lock face through said opening; and
a plurality of threaded pins extending into said front wall, selectable ones of said pins extending through said front wall and into threaded engagement with said shield plate to thereby retain said shield plate in said first position.

4,070,883

SYSTEM AND ASSEMBLY FOR MEASURING THE MOVEMENT OF STRIP AND HOT STRIP MILL

Helmut Kunz, Marchtrenk, and Roland Kofler, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Mar. 28, 1977, Ser. No. 781,640
Claims priority, application Austria, May 3, 1976, 3236/76
Int. Cl.² B21B *37/00*
U.S. Cl. 72—14 **14 Claims**



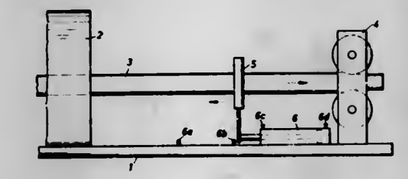
1. An assembly for measuring the movement of strip, comprising
a non-rotatable axle having an axial bore,
a roller shell rotatably mounted on said axle and engageable with said strip,
a detector non-rotatably mounted on said axle and comprising a magnet which produces a magnetic field and a sensing coil arranged to generate voltage signals in response to magnetic flux changes in said magnetic field,
an annular rotor disposed between said axle and said shell and non-rotatably connected to said shell and movable in said magnetic field and adapted to produce a predetermined magnetic flux change in said magnetic field in response to a predetermined angular movement of said shell, and
a lead connected to said detector and extending in said axial bore and arranged to transmit said voltage signals.

4,070,884

PROCESS AND DEVICE FOR DE-SCALING ELONGATED METALLIC BARS DURING CONTINUOUS FORMING

Manfred Grube, Bochum; Wilhelm Gorski, Wattenscheid, and Heinz Koch, Sprockhovel, all of Germany, assignors to Fried. Krupp Huttenwerke Ag, Bochum, Germany

Filed Feb. 4, 1977, Ser. No. 765,699
Claims priority, application Germany, Feb. 10, 1976, 2605011
Int. Cl.² B21B *45/04*
U.S. Cl. 72—39 **2 Claims**



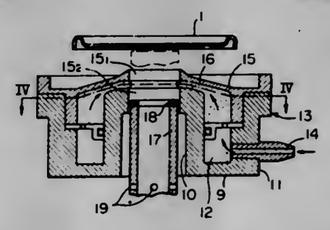
1. A process for continuous de-scaling of elongated metallic material, particularly steel, said material having a plurality of successive areas disposed in a longitudinal direction to be de-scaled; said material being defined by a leading section, trailing sections and a section therebetween, said process comprising the steps of:
continuously moving said material in one direction, and simultaneously shaping, particularly by rolling, said material; shaping said material leading section, and subsequently said section between said leading and trailing sections; heating said section between said leading and trailing sections and said trailing sections by the heat of a furnace during the shaping of said leading section;
spraying a fluid, particularly a liquid, within a de-scaling zone on the material under high pressure in a predetermined cycle for a predetermined treatment time at a predetermined degree at each of the successive areas during material movement and prior to said material shaping; and
displacing the de-scaling zone in the areas of the material in a direction opposite to the movement of the material at a relatively high velocity enabling material treatment time to be minimized in relation to a quantum of de-scaling.

4,070,885

APPARATUS FOR SIMULTANEOUSLY DEFORMING AND COATING

Yasunori Miyamatsu; Hisakazu Yasumuro, both of Yokohama; Kenichi Miyata, Kawasaki; Takashi Shimizu, and Kikuo Matsuoka, both of Yokohama, all of Japan, assignors to Toyo Seikan Kaisha Limited, Japan

Division of Ser. No. 578,019, May 16, 1975. This application Oct. 12, 1976, Ser. No. 731,570
Claims priority, application Japan, May 21, 1974, 49-56103
Int. Cl.² B05C *1/02;* B21D *22/06*
U.S. Cl. 72—46 **10 Claims**



1. An apparatus for applying a sealant to the inside surface of opening portions of a can end having a curled portion for seaming in order to reinforce it and to prevent leakage of the contents of the can, said apparatus comprising a vertically movable plunger having a top, a stamping die fitted to said plunger top, said stamping die being movable between a lower position and an elevated sealant applying position, a frame defining a chamber surrounding said plunger for accommodating sealant and a cover for said chamber, an inlet port for sealant provided in a side surface of said frame, a central hole provided in each of said frame and said cover so as to permit the vertical movement of the stamping die therethrough, the relative dimensions of said central holes and said stamping die providing a narrow clearance between the stamping die and the central holes thereby removing excess sealant adhering to the periphery of the stamping die, said frame having an inside wall defining said central hole in said frame and a slit formed in the inside wall of the frame below the cover and above said stamping die lower position so as to surround the stamping die for extruding the sealant therethrough toward the upper surface of the periphery of the stamping die at the predetermined lower position of the stamping die.

4,070,886

SPIRAL PIPE FORMING MACHINE WITH DEVICE FOR ALIGNING SPIRALLING ROLLS

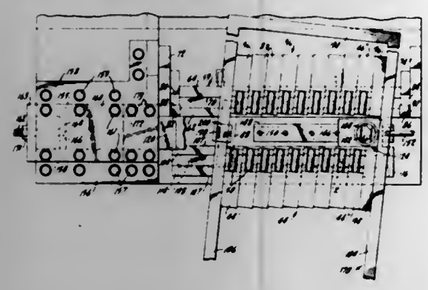
Adrianus Marinus Nyssen, 114 Windsor St., Chilliwack, British Columbia, Canada

Filed Jan. 5, 1977, Ser. No. 756,766
Int. Cl.² B21C *37/12*
U.S. Cl. 72—49 **17 Claims**

1. In an apparatus for continuously forming corrugated

metal pipe from an elongated sheet of metal, the apparatus having a corrugating device to impress longitudinal corrugations in the sheet, a multiple roll pipe forming device for accepting the corrugated sheet and spiralling the sheet into successive, adjacent helical convolutions having a central axis formed at an oblique angle to the axis of the longitudinal corrugations in the sheet, and a seaming device to join adjacent helical convolutions, the improvement comprising:

a. at least one roll of said multiple roll forming device comprising a plurality of adjacent, unconnected parallel roller elements, the periphery of each of said roller elements engaging one surface of said sheet at one point along a series of points generally parallel to the central axis of the helical convolutions, and



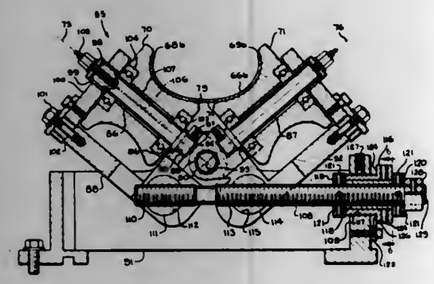
b. means unattached to said roller elements to automatically shift each of said plurality of roller elements along a line parallel to said series of points and change the spacing between adjacent points of each of said series of points as the angle between the central axis of the convolutions and the axis of the longitudinal corrugations in the sheet is varied, said means to automatically shift including a pair of members fixed relative to one another, said members adjoining opposite ends of said one roll and mounted for lateral movement relative to said one roll, said roller elements being continually confined between said members.

4,070,887

ROLL FORMER FOR TUBE MILL

Ralph L. Hankin, Manito Beach, Mich., assignor to Tube Machinery Corporation, Holland, Ohio

Filed Nov. 1, 1976, Ser. No. 737,553
Int. Cl.² B21D *22/10*
U.S. Cl. 72—52 **7 Claims**



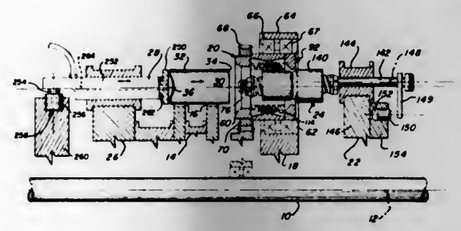
1. In a mill for forming a tube from an elongated flat strip of metal, an improved roll former for imparting a predetermined symmetrical curve to such strip comprising, in combination, first and second shafts, means mounting said first shaft to pivot in a plane about a point in such plane, means mounting said second shaft in such plane to pivot about said point, adjustment means for simultaneously pivoting said shafts in such plane equally in opposite directions about said point whereby said shafts may be selectively pivoted towards and away from one another, a symmetrical first roller mounted to rotate on said first shaft about an axis of symmetry, and a symmetrical second roller mounted to rotate on said second shaft about an axis of symmetry, said first and second rollers each having contoured external surface means for imparting one half of the predetermined symmetrical curve to such strip when such strip is longitudinally advanced between said rollers.

4,070,888

APPARATUS AND METHODS FOR SIMULTANEOUSLY NECKING AND FLANGING A CAN BODY MEMBER

Laszlo Attila Gombas, Evergreen, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Feb. 28, 1977, Ser. No. 772,480
Int. Cl.² B21D *19/06*
U.S. Cl. 72—91 **20 Claims**



1. Apparatus for simultaneously necking and flanging an unformed end portion next adjacent a rim portion of a side wall portion of a sheet metal can body member to form a curved necked-in wall portion in the unformed end portion next adjacent and connected to the side wall portion and to form a radially and axially outwardly extending flange portion between the formed curved necked-in portion and the rim portion; and comprising:

support means for supporting the can body member during a necking and flanging operation;

outer forming means mounted without the can body member in radially outwardly spaced relationship to and in axial alignment with the unformed end portion and having a curved annular outer forming surface extending thereabout for engaging circumferentially variable portions of the outer peripheral surface of the unformed end portion to form the curved necked-in portion and the flange portion;

inner forming means mounted within the can body member in radially inwardly spaced relationship to and in axial alignment with the unformed end portion and having first and second axially oppositely displaceable annular inner forming surfaces for engaging axially spaced portions of the inner peripheral surface of the unformed end portion located on axially opposite sides of the center of curvature of the curved annular outer forming surface to form the curved necked-in portion and the flange portion while preventing radial inward displacement of the rim portion; and

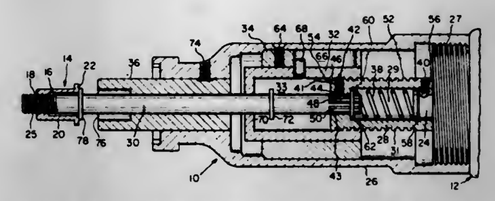
actuating means for causing relative rotational movement between said can body member and said outer forming means and for causing relative radial displacement between said can body member and said outer forming means to engage said curved annular outer forming surface with circumferentially variable portions of the outer peripheral surface of said unformed end portion and progressively move the curved annular outer forming surface radially inwardly relative to the can body member until the curved necked-in portion and the flange portion have been formed in the unformed end portion.

4,070,889

LINEAR PULL SETTING TOOL

Charles J. DeCaro, Marshfield, Mass., assignor to Textron Inc., Providence, R.I.

Filed Oct. 14, 1976, Ser. No. 732,313
Int. Cl.² B21J *15/12*
U.S. Cl. 72—114 **14 Claims**



1. An adapter suitable for attachment to a driving tool having a rotating drive shaft comprising:

A. a housing adapted for attachment to the tool;

B. a drive member positioned within the housing and adapted for securement to the drive shaft for rotation therewith;

C. an adapter shaft coaxially extending through the adapter and having a rearward end and a forward end, said rearward end including means for rotative cooperation with the drive member and said forward end adapted for association with a fastener;

D. a movable inner sleeve positioned about the adapter shaft;

E. means associated with the drive member for engaging an end of the inner sleeve for advancing the inner sleeve along the drive member;

F. means associated with the inner sleeve for preventing rotation of the sleeve relative to the drive member;

G. pick-up means secured to the adapter shaft and positioned for engagement by the inner sleeve;

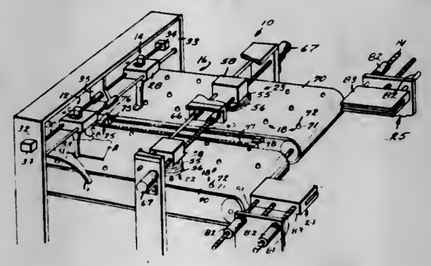
whereby in a first position the rotation of the drive shaft is translated through the drive member and the rotative means to cause rotation of the adapter shaft and in a second position the rotative means is removed from cooperation with the adapter shaft and the sleeve advances along the drive member and engages the pick-up means to cause linear movement of the adapter shaft.

4,070,890

METHOD AND APPARATUS FOR CUTTING SHEET METAL WRAPPERS OR THE LIKE

James Henry Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Filed Jan. 13, 1976, Ser. No. 648,776
Int. Cl.² B26D *5/30*; B21F *11/00*
U.S. Cl. 72—129 **13 Claims**



1. Apparatus for cutting wrappers and the like from metal sheets, comprising

a. conveyor means for continuously feeding a metal sheet into a cutting position, and past said cutting position, in a given direction *x*,

b. a pair of powered cutting means for cutting said metal sheet along the length thereof as it is fed to said cutting position, each of said cutting means comprises a scissors-like shearing cutting blade arrangement, one of said cutting blade arrangements being a right-hand cutting blade arrangement, and the other of the cutting blade arrangements being a left-hand cutting blade arrangement,

c. means for mounting said cutting means for movement in a y-dimension, said y-dimension being generally perpendicular to said *x* direction,

d. y-motor means for selectively moving said cutting means in said y-dimension,

e. means for mounting said cutting means for rotation about a generally vertical axis, said axis being generally perpendicular to a plane containing said y-dimension and x-direction,

f. α-motor means for rotating said cutting means about said axis of rotation,

g. means for spacing said metal sheet to be cut from said conveyor means so that said conveyor means is not damaged by said cutting means during cutting therewith,

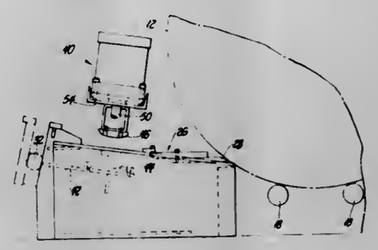
h. computer control means or the like for controlling said *y* and α motor means to cut wrappers or the like of desired shape and dimension from said metal sheet.

4,070,891

COIL-END PEALER AND DEBENDER

Ivan J. Stretten, 2829 Lakewood Drive, Drayton Plains, Mich. 48020

Filed Dec. 1, 1976, Ser. No. 746,316
Int. Cl.² B21C *47/16*
U.S. Cl. 72—183 **5 Claims**



1. A stock roll coil-end debender for use in line and combination with coil-end pealing means, and comprising;

parallel spaced side wall members providing common wall support for and having mounted therebetween said coil-end pealing means, at one end, stock roll feeding means, at the other end, and said coil-end debender therebetween,

said debender including a fixedly located forming die mounted between said common side wall support members and having an upwardly open concavity,

a complimentary forming die provided relatively over said fixedly located forming die for use therewith and having means providing power operated reciprocation thereof mounted on each of said side wall members,

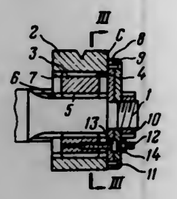
and said forming dies being relatively disposed and spaced as separated to receive a coil end from a stock roll therebetween, being relatively formed for use in straightening said coil end, and being sufficiently close to said stock roll feeding means for subsequent ease in having stock material and coil ends thereof fed thereto and through.

4,070,892

ARRANGEMENT FOR METAL WORKING BY ROLLING

Mikhail Vladimirovich Kholmogorov, ulitsa Trofimova, 20, kv. 50; Jury Vasilievich Katkov, 3 linia, 11, korpus 2, kv. 63, and Alexandr Mikhailovich Gusev, Chernomorsky bulvar, 15, korpus 2, kv. 124, all of Moscow, U.S.S.R.

Filed Dec. 22, 1976, Ser. No. 753,415
Claims priority, application U.S.S.R., Dec. 30, 1975, 2306934
Int. Cl.[2] B21B *31/16*
U.S. Cl. 72—195 2 Claims



1. In an arrangement for metal working by rolling, comprising parallel shafts, sector dies mounted on said shafts and devices for adjustably rotating the sector dies and for transmitting rotary motion to the sector dies from the shafts, said devices being mounted on said shafts and being reciprocable therealong, wherein the improvement comprises each of said devices for adjustably rotating the sector dies and for transmitting rotary motion thereto from the shafts comprises a sleeve having external and internal surfaces and provided with teeth extending on the external and internal sleeve surfaces at an angle relative to the sleeve axis, the teeth of one of said surfaces extending in opposition to the teeth of the other of said surfaces and differing in number by at least one tooth, each of said shafts provided with first spline means for receiving the teeth of the sleeve extending on the inner surface thereof, and each of the sector dies provided with second spline means for receiving the teeth of the sleeve extending on the outer surface thereof

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4,070,893

FINISH ROLLING METHOD FOR PRODUCTION OF ROUND CROSS-SECTIONAL SHAPE MATERIALS

Michio Nishikubo; Sei Miura; Toshiaki Toyoda; Katsunori Jonishi, and Kouichi Yoneta, all of Muroran, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 23, 1976, Ser. No. 753,882
Int. Cl.[2] B21B *1/12*
U.S. Cl. 72—234 1 Claim



1. A finish rolling method of metal products of round sectional shape comprising:

a. Introducing a starting material of oval cross-sectional shape into a finish rolling train comprising at least a first, a second and a third stand arranged close to each other in the stated order from an inlet side of the train;

b. rolling the starting material into an oval cross-sectional shape with a light reduction from the same direction in the first and second stands; and

c. finish rolling in the third stand the thus light reduced oval material into a round cross-sectional shape with a light reduction in a direction almost perpendicular to the reduction direction in the first and second stands,

wherein the starting material has a cross-sectional dimension as below:

1. when a final product of 5 to not more than 40 mm diameter is to be obtained; then the

Major diameter = (1.07D + 0.5)mm ~ (1.18D + 0.4)mm and the
Minor diameter = (1.01D + 0.2)mm ~ (1.05D + 0.4)mm, and

2. when a final product of 40 to not more than 200 mm diameter is to be obtained; then the

Major diameter = (1.04D + 1.5)mm ~ (1.10D + 3.5)mm and the
Minor diameter = (1.01D + 0.2)mm ~ (1.02D + 1.5)mm

and wherein the starting material which has been rolled in the first and second stands has a cross-sectional dimension as below:

1. when a final product of 5 to not more than 40 mm diameter is to be obtained; then the

Major diameter = (1.0712D + 0.52)mm ~ (1.1865D + 0.45)mm and the
Minor diameter = (0.985D − 0.1)mm ~ 0.998Dmm, and

2. when a final product of 40 to not more than 200 mm diameter is to be obtained; then the

Major diameter = (1.0412D + 1.52)mm ~ (1.1035D + 3.65)mm and the
Minor diameter = 0.985Dmm ~ 0.998Dmm,

the distance of the roll center of the first stand and that of the second stand being not longer than (5.6D + 400)mm and the distance between the roll center of the second stand and that of the third stand being not longer than (4.6D + 320)mm and wherein the rolling groove of the first and second stands has a cross-sectional dimension as below:

1. when a final product of 5 to not more than 40 mm diameter is to be obtained; then the

Major diameter = (1.1412D + 2.02)mm ~ (1.2565D + 1.95) mm, the
Minor diameter = (0.985D − 0.1)mm ~ 0.998Dmm, and

2. when a final product of 40 to not more than 200 mm diameter is to be obtained; then the

Major diameter = (1.0912D + 4.02)mm ~ (1.1535D + 6.15)mm, the
Minor diameter = 0.985D ~ 0.998Dmm

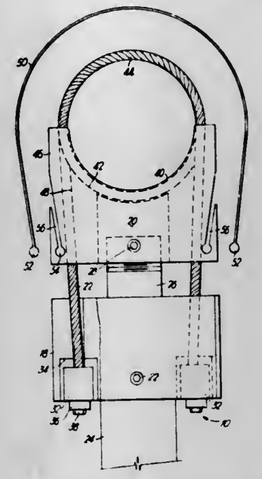
in which D is the distance between two points at which a straight line perpendicular to the roll gap center line and passing through a central point of the third stand groove intersects the upper and lower roll profile curves in the third stand.

4,070,894

CRIMPING DEVICE

Jackson A. Smith, 5443 Rand Road, Bradner, B. C., Canada

Filed Oct. 27, 1976, Ser. No. 736,352
Claims priority, application Canada, Aug. 6, 1976, 258609
Int. Cl.[2] B21D *37/00*
U.S. Cl. 72—292 3 Claims



1. A device for circumferentially crimping a tubular cable puller onto a free end of a cable, said criming device comprising

a base adapted for securement to the body of a fluid actuator;

a holder for said tubular puller and adapted for securement to the piston rod of said actuator whereby linear movement of the actuator piston relative to the body thereof effects relative movement between the base and the holder; and

a wire rope secured at each of its ends to said base and extending into and looping within the confines of said holder;

said holder having a semi-circular seat to accommodate a linear portion of the outside diameter of said tubular puller so as to retain it normal to said holder during a crimping operation and a groove in said seat to receive a portion of the loop of the wire rope;

the seat of said holder having a diameter equal to the outside diameter of the tubular puller;

said wire rope looping 360° around said tubular puller and circumferentially crimping the same in response to said base being drawn away from said holder by operation of said actuator.

4,070,895

METHOD FOR MANUFACTURING BOTTOM VALVE SEAT

Masami Yamada, Yokosuka, and Yuji Soeda, Odawara, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Sept. 10, 1976, Ser. No. 721,987
Claims priority, application Japan, Sept. 20, 1975, 50-113935; Sept. 20, 1975, 50-113936
Int. Cl.[2] B21D *53/10*
U.S. Cl. 72—334 7 Claims

1. A method for manufacturing a bottom valve seat for use in a hydraulic damper, in which projections defining fluid passages are provided on a lower end cover thereof, comprising the steps of:

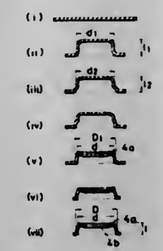
punching out a circular blank from a flat plate of a given thickness into a circular blank having given dimensions;

drawing said blank into a cup-shape having a circumferential flange portion;

forming a cylindrical wall for the cup-shaped work thus provided, said wall having a given length;

pressing the central portion of the bottom portion of said cup-shaped work downwards or internally, thereby forming an annular flat portion along the circumferential edge of said bottom portion;

cutting said flange portion to desired dimensions; and



after said forming and pressing steps, punching a through-hole in the bottom portion of said cup-shaped work;

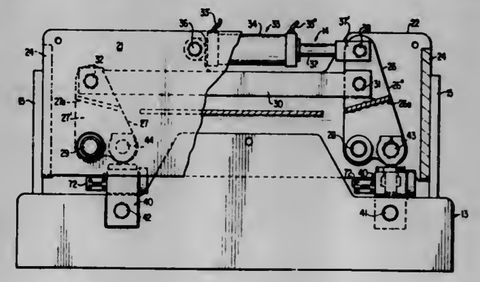
said flange portion being thereby formed to have a flat surface on the side opposite the bottom portion thereof, and said annular flat portion of said bottom portion being thereby formed to have a curvature along its inner circumferential edge for supporting a double-sheet valve.

4,070,896

PRESS BRAKE WITH IMPROVED RAM LEVELING ADJUSTMENT

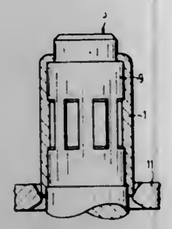
Raymond J. Heitner, Greensboro, N.C., assignor to Wysong & Miles Company, Greensboro, N.C.

Filed Dec. 2, 1976, Ser. No. 746,799
Int. Cl.[2] B21D *7/06*
U.S. Cl. 72—389 7 Claims



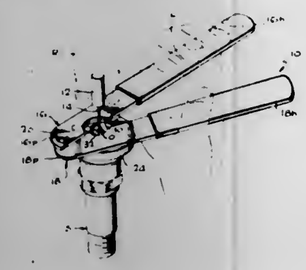
1. A press brake comprising an upstanding frame, a ram having opposite ends and hydraulic-mechanical power means for advancing and returning said ram, said power means including a pair of bell cranks each of which includes a fulcrum and first and second angularly related arms extending outwardly from said fulcrum and forming substantially a right angle therebetween, a pair of horizontally spaced pivot means for pivotally supporting said bell cranks about their fulcrums from said frame with said fulcrums at substantially the same level on said frame, hydraulic motor means connected between said frame and one of said bell cranks for oscillating said one bell crank about its fulcrum, link means pivotally interconnecting the first arm of said pair of bell cranks for causing parallel pivotal motion of said bell cranks, a pair of adjustable links pivotally supporting said ram from the second arm of said bell cranks, each link of said pair of adjustable links being independently adjustable in length for leveling said ram, and a pair of independently controlled reversible motor means for selectively lengthening and shortening each of said adjustable links.

4,070,897
METHOD FOR PRODUCING AN OUTER SHELL FOR OVERRUNNING CLUTCHES
Leonhard Linz, Herzogenaurach, Germany, assignor to Industriewerk Schaeffler OHG, Herzogenaurach, Germany
Filed Jan. 19, 1976, Ser. No. 650,292
Claims priority, application Germany, Feb. 4, 1975, 2504505
Int. Cl.² B21D 45/00
U.S. Cl. 72—345 2 Claims



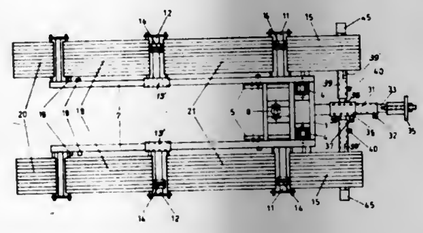
1. A method for producing an outer shell for an unitary overrunning roller clutch and roller bearing having a central section provided with camming or ramp surfaces about its circumference and on either side thereof s smooth cyclindrical end section as a race for cylindrical rollers with the diameter of the inner enveloping circle of the central section being less in the area of the camming surfaces than the diameter of the end sections comprising forming a shell of sheet metal, inserting into the shell a molding punch whose outer contour corresponds to the desired inner contour of the outer shell, stretching the shell to its final outer diameter with a die moving relative to the punch whereby the shell tightly grips the molding punch provided with a central section with recesses to form camming surfaces about its circumference and with a smooth cylindrical end section on either side of the central section whose diameters are the same and are greater than the diameter of the said inner enveloping circle of the central section to thereby enable the metal of the shell to flow into the said recesses to form the camming surfaces and pulling the molding punch out of the shell which will elastically widen for removal of the punch and then return to the final outer diameter.

4,070,898
TOOL FOR RESETTING AIRCRAFT SPARK PLUG GAP
Ronald A. Earle, Los Angeles, Calif., assignor to Aircraft Inspections, Los Angeles, Calif.
Filed Dec. 20, 1976, Ser. No. 752,163
Int. Cl.² B21D 9/08
U.S. Cl. 72—409 5 Claims



1. A tool for resetting the gap of an aircraft-type spark plug, comprising:
- a pair of bars having pivot ends pivotally connected together and having opposite handle ends; and
- a spark plug-holding member with a threaded hole, mounted on a first of said elongated members at a location spaced from the pivot end thereof by less than half the length of said first member;
- the second of said bars having a recess positioned so that when said bars are pivoted together, the recess on said second bar moves over the threaded hole of said spark plug-holding member, whereby a person can hold and operate the tool with one hand, with the spark plug held on the tool, while this other hand holds a spark gap gauge device.

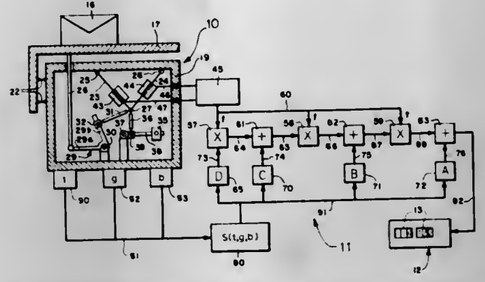
4,070,899
METAL DEFORMING APPARATUS FOR PURPOSES SUCH AS AUTOMOBILE REPAIRS
Teuvo Olavi Veniälinen, Luistelijantie 9, 70200 Kuopio 20, Finland
Filed Oct. 7, 1976, Ser. No. 730,667
Int. Cl.² B21D 1/12
U.S. Cl. 72—457 16 Claims



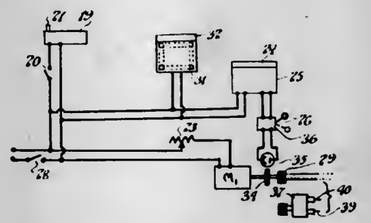
1. In a metal deforming apparatus suitable for purposes such as automobile repairs, frame means, vertically movable support means operatively connected with said frame means for vertical movement with respect thereto, vertical moving means operatively connected with said vertically movable support means for moving the same vertically with respect to said frame means, gripping means carried by said vertically movable support means for gripping a structure such as the body of an automobile, for maintaining said structure stationary with respect to said vertically movable support means, so that by way of said vertical moving means, vertically movable support means, and gripping means it is possible to support a structure such as an automobile while placing it at a selected elevation with respect to said frame means, telescopic beam means carried by said frame means, having a horizontal axis, and capable of having its length changed, beam moving means operatively connected with said telescopic beam means for changing the length thereof, clamping means for clamping a structure such as a metal automobile part which is to be deformed or a tool for deforming a metal part, and positioning means carrying said clamping means and operatively connected with said beam means for situating said clamping means at a selected position with respect to said beam means, said beam moving means being operable to move said clamping means with respect to said support means for applying horizontal pushing or pulling forces to a part which is to be deformed while said vertical moving means is operable to move a structure with respect to clamping means for applying vertical pushing or pulling forces to a part which is to be deformed.

4,070,900
WEIGHING APPARATUS
Mathijs Maria Johannes Engels, Alphen Aan de Rijn, Netherlands, assignor to Maatschappij van Berkel's Patent N.V., Rotterdam, Netherlands
Filed Apr. 27, 1976, Ser. No. 680,961
Int. Cl.² G01G 3/16
U.S. Cl. 73—1 B 9 Claims

1. A weighing apparatus for measuring loads comprising, a weight receiving member, means for producing a vibrations signal which includes at least one differentially loaded vibrating string held under a predetermined tension, means connecting one end of the string to said weight receiving member, and means responsive to vibrations of said string for generating a frequency signal that is a function of the frequency of the vibrations of said string, said vibrations signal producing means being unadjustable and therefore incapable of compensating for any errors inherent therein, a digital indicator for indicating a digital weight measurement of a load on the weight receiving member, an evaluating device connected between the means generating said frequency signal and said indicator for converting said frequency signal to a signal for said digital indicator including a plurality of serially connected arithmetic components receiving said frequency signal, and means for calibrating the components and thereby the apparatus to produce accurate weight measurements, said calibrating means including a plurality of adjustable arithmetic logic units for producing constant inputs to said components for adjusting the relationship between calibrated weights and the frequency signals generated by said weights to calibrate the apparatus for obtaining the correct weight measurements at the digital indicator over a given range.

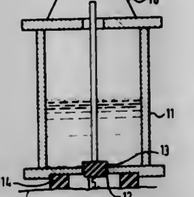


4,070,901
SPEEDOMETER AND RATIO TESTING APPARATUS
William J. McDonald, Bundoora, Australia, assignor to Gyro Enterprises (Rotates) Pty. Limited, Victoria, Australia
Filed June 22, 1976, Ser. No. 698,716
Int. Cl.² G01P 21/02
U.S. Cl. 73—2 10 Claims



1. Apparatus for testing the accuracy of a vehicle instrument such as a speedometer, tachometer or the like having a rotary input shaft driven by te instrument drive meas of te vehicle, comprising
- a. counter means (25) adapted for connection with the instrument drive means when the instrument is in a disconnected condition and the vehicle is driven through a preselected distace, thereby giving an indication of the travel of the vehicle over said preselected distance;
- b. digital calculator means (31) for computing the actual number of turns of the instrument drive means per unit length of travel, expressed as a function of the speed of travel; and
- c. variable speed drive means for driving the instrument drive means at a computed rotational rate corresponding to a preselected speed of travel for said vehicle, whereby the actual and expected readings for the said vehicle instrument can be compared and the accuracy of said instrument determined.

4,070,902
ATTACHMENT FOR AIR GAUGING APPARATUS
Max Knobel, 453 Beacon St., Boston, Mass. 02115
Filed Dec. 6, 1976, Ser. No. 747,804
Int. Cl.² G01B 13/06
U.S. Cl. 73—37.5 4 Claims



1. An attachment for an air gauging apparatus having a nozzle having an orifice positioned in close proximity to the work being gauged and adapted to direct a flow of air through said orifice against said work to form a gap therewith, comprising
- a. a flexible diaphragm, and,
- b. means mounting said diaphragm to said nozzle and across said orifice,
- c. said diaphragm normally closing said orifice under an idle condition of said nozzle and forming a gap therewith and in contact with said work when under a pressurized condition,
- d. said mounting means including a tubular sleeve having an inside diameter greater than the outside diameter of said nozzle, said diaphragm being mounted across one end of said sleeve and a perforated annulus spaced from said one end mounted to said sleeve and adapted to engage said nozzle.

4,070,903
OUTFLOW METER FOR MEASURING SURFACE DRAINAGE CHARACTERISTICS
Geoffrey Lees, Stratford-upon-Avon, and Izzed-Din Katekhda, Birmingham, both of England, assignors to Dunlop Limited, London, England
Filed June 23, 1975, Ser. No. 589,572
Claims priority, application United Kingdom, July 25, 1974, 32956/74
Int. Cl.² G01N 15/08
U.S. Cl. 73—38 9 Claims

1. An outflow meter for determining the drainage characteristics of a surface, in which the time for a given volume of fluid to flow out of the meter is a measure of the drainage characteristics of the surface, said meter comprising: a liquid fluid reservoir having an outlet in its base said reservoir including means for permitting measurement of outflow time of liquid from said

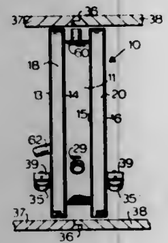
reservoir; a resilient disc having an elliptical surface engaging face for being selectively disposed in contact with a surface during use of the meter; an orifice extending through the disc and terminating at the surface engaging face; means for pressing the disc into engagement with a surface under a predetermined load; and closure means for the fluid reservoir outlet which closure means is removable from said outlet for bringing the outlet into fluid communication with the orifice to provide a fluid flow path from the reservoir through the orifice to the surface engaging face.

4,070,904

PIPELINE JOINT TESTER

Gerald G. VanderLans, 1310 W. Turner Road, Lodi, Calif. 95240

Filed Nov. 4, 1976, Ser. No. 738,839
Int. Cl.² G01M *3/28*
U.S. Cl. 73—40.5 R **17 Claims**



14. A method for testing the ability of pipe joints to retain fluids under pressure comprising:

transporting through the pipeline an annular frame smaller than the interior of the pipeline, until said frame bridges a joint to be tested,

inflating with a liquid under pressure a spaced-apart pair of gasket assemblies that are rigidly retained by said frame, one on each side of said joint, each gasket assembly being axially within a different one of the two pipes, and thereby sealing off the exterior of said frame relative to both pipes,

introducing between said gasket assemblies and through said frame, into the annular space between said frame and said pipes, a fluid under a known pressure, and

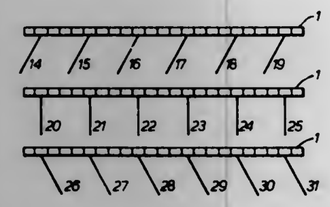
determining whether any leakage of said fluid occurs out from said space at known pressures of said fluid, said gasket assemblies being kept inflated at such pressure as retains the fluid against leakage between said frame and said pipes.

4,070,905

ULTRASONIC BEAM SCANNING

George Kossoff, Northbridge, Australia, assignor to The Commonwealth of Australia, Phillip, Australia

Filed Oct. 12, 1976, Ser. No. 731,697
Claims priority, application Australia, Oct. 13, 1975, 3548/75
Int. Cl.² G01N *29/00*
U.S. Cl. 73—614 **6 Claims**



1. Apparatus for the ultrasonic examination of an object, comprising:

a linear transducer array for transmitting pulses of ultrasonic energy into the object and receiving echoes of the pulses reflected by acoustic impedance discontinuities within the object, said transducer array including a plurality of adjacent transducer elements;

means for energizing the elements of a group of said elements in a plurality of different sequences, each of said different sequences causing said group to cooperatively transmit a pulse of energy along a beam in a different one of a plurality of angular directions in a single plane; and

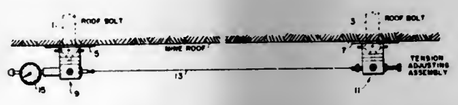
means for activating different non-exclusive groups of adjacent transducer elements within said array in turn, so that each group directs pules of ultrasonic energy into the object and receives echoes reflected along beams in said plurality of angular directions.

4,070,906

MODIFIED ROOF STRAIN INDICATOR

Gerald B. Rupert, and Lawson John Tyler, both of Rolla, Mo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 15, 1976, Ser. No. 750,745
Int. Cl.² G01B *5/30*
U.S. Cl. 73—88 E **8 Claims**



1. A horizontal roof strain indicator for use with two spaced mine roof bolts comprising:

a measuring cap assembly having an upper and lower section, means for vertically mounting said sections to each other so that the lower section can be rotatably adjusted in a horizontal plane, said upper section having roof bolt attachment means and said lower section having wire biasing and retaining means:

an anchor cap assembly spaced from said measuring cap assembly, said anchor cap assembly having roof bolt attachment means and means for retaining and adjustably tensioning a wire; and

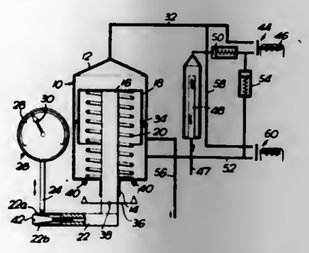
a tensioned wire extending from said wire biasing and retaining means to said means for retaining and adjustably tensioning.

4,070,907

FUEL DELIVERY METER

Reginald Stanley Emerson, Buckingham, England, assignor to Leslie Hartridge Limited, Buckingham, England

Filed Jan. 21, 1977, Ser. No. 761,058
Claims priority, application United Kingdom, Jan. 23, 1976, 2705/76
Int. Cl.² G01F *9/00*
U.S. Cl. 73—119 A **4 Claims**



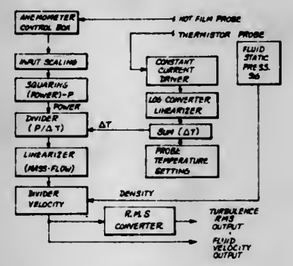
1. A fuel delivery meter for measuring and indicating the quantity of fuel delivered by engine fuel injection means "on test," the said meter comprising a chamber, a first opening in said chamber for receiving fuel delivered by engine fuel injection means, a spring-loaded piston within the chamber arranged to be displaced by fuel entering the chamber, indicating means operatively connected to the said piston so as to be actuated by displacement of said piston to give a reading which corresponds to the amount of fuel which has entered said chamber, at least one further opening in said chamber on that side of the piston remote from said first opening, a fuel circuit including fuel flow means for passing delivered fuel into said chamber through said further opening so as to warm the meter, and a simple solenoid-operated valve in said fuel circuit together with a three-port solenoid-operated valve, the said three-port valve serving to control the flow of fuel into the chamber to displace the piston and also to permit the flow of fuel into the chamber on that side of the piston remote from said first opening so as to warm the meter, and said simple solenoid-operated valve serving to control the flow, out of the chamber, of that fuel received by the chamber to displace the piston.

4,070,908

ANEMOMETER COMPENSATOR LINEARIZER

Stanley Ernest Newell, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sept. 28, 1976, Ser. No. 727,508
Int. Cl.² G01F *1/68*
U.S. Cl. 73—170 R **2 Claims**



2. In combination:

an anemometer control unit having a bridge excitation voltage output signal;

circuit means including a linearizer circuit for processing said bridge excitation voltage output signal in accordance with King's Law to provide signals representative of fluid velocity and turbulence intensity.

4,070,909

SPEED COMPENSATING PITOT TUBE APPARATUS

William R. Carpenter, Muskegon, Mich., assignor to Medallion Instruments, Inc., Spring Lake, Mich.

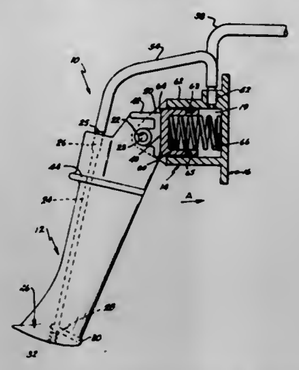
Filed Oct. 26, 1976, Ser. No. 735,744
Int. Cl.² G01C *21/10*
U.S. Cl. 73—182 **15 Claims**

1. A device usable with a water craft for exerting a variable force on a movable member, said member being mounted on said craft and being subjected to fluid drag forces exerted thereon during operation of said craft and which are proportional to craft speed, said forces tending to move said member, said device comprising:

an impact pressure tube having one end submerged and opening in the direction of craft travel;

a housing defining a pressure chamber, said impact pressure tube being connected to said pressure chamber, whereby the pressure within said chamber varies as a function of craft speed; and

force exerting means responsive to the pressure within said chamber for exerting a force on said member proportional



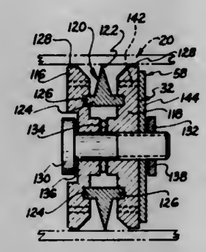
to the pressure within said chamber to thereby oppose the fluid drag forces exerted on said member.

4,070,910

FLUID FLOW MEASURING APPARATUS

William R. Alban, 6740 Africa, Galena, Ohio 43021

Continuation-in-part of Ser. No. 625,946, Oct. 26, 1975, Pat. No. 4,007,634. This application Aug. 23, 1976, Ser. No. 716,373
Int. Cl.² G01F *3/14*
U.S. Cl. 73—239 **14 Claims**



1. A fluid flow monitoring apparatus including a fluid metering cylinder; piston means mounted for reciprocation in said cylinder; and a low friction peripheral seal on said piston that functions as a bi-directional pressure relief means and that is normally flexed on one side of center during piston travel in one direction and shiftable to a pressure relief position on the other side of center responsive to pressure of said fluid flow upon arresting of said piston travel, said seal being normally flexed on said other side of center during piston travel in the other direction and shiftable to a second pressure relief position upon arresting of the piston travel.

4,070,911

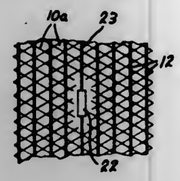
BRAIDED TAPE INCLUDING CARRIER MEANS

Ronay Denton Makin, Stockport, England, assignor to Thomas French and Sons (Electrical) Limited, England

Filed July 7, 1975, Ser. No. 593,375
Claims priority, application United Kingdom, July 5, 1974, 29832/74
Int. Cl.² G01K *1/00*
U.S. Cl. 73—343 R **6 Claims**

1. A tape comprising a single thickness braid of flat construc-

tion formed of yarns and carrier means for transmission of energy contained between the yarns from which the braid is



produced, said carrier means comprising fibre optics material for transmitting light.

4,070,912

TEMPERATURE INDICATING COMPOSITIONS AND DEVICES

Thomas J. McNaughtan, deceased, late of Malvern, Pa., and by Jerry McClintock, executor, R.R. 2, Box 183C, Fortville, Ind. 46040

Filed Oct. 1, 1975, Ser. No. 618,592
Int. Cl.² C09K *3/34*; G01K *11/16*; C09D *11/10*
U.S. Cl. 73—356 **6 Claims**

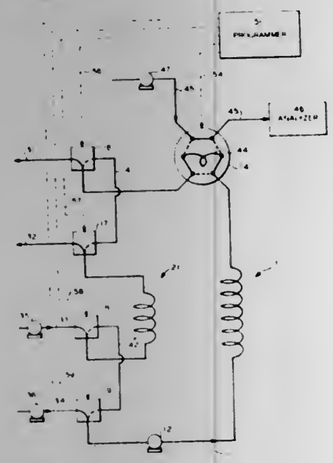
3. A temperature indicating device comprising temperature sensitive materials applied to a substrate to form a plurality of markings thereon, each marking having a different temperature sensitivity, said temperature sensitive materials being formed by heating cholesteryl acetate with a thermoplastic ester of dimeric resin acid and pentaerythritol in the presence of varying amounts of cholesteryl propionate at a temperature of 150° C until no further acetic acid is formed and the oily liquid changes to a solid.

4,070,913

SAMPLE DILUTION

Lewis B. Roof, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1976, Ser. No. 719,217
Int. Cl.² G01N *1/10*
U.S. Cl. 73—422 GC **15 Claims**



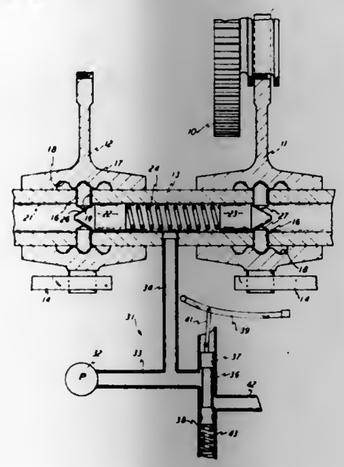
1. Apparatus comprising:
first conduit means having a passageway therethrough with a first internal volume;
second conduit means having a passageway therethrough with a second internal volume, said second internal volume having a predetermined size relationship to said first volume;
means for filling said passageway of said first conduit means with a diluent liquid;
means for filling said passageway of said second conduit means with a sample material;
means for connecting said passageway of said first conduit means and said passageway of said second conduit means to form a closed conduit loop; and
means for circulating said diluent liquid and sample material through said conduit loop to cause mixing thereof.

4,070,914

HYDRAULIC CLUTCH-CONTROLLED TRANSMISSION GEAR DETENT SYSTEM

Jack Reinhardt; Kenneth Albert Moehle, and Jerald Dietrich Hinke, all of Racine, Wis.

Filed Sept. 17, 1976, Ser. No. 724,337
Int. Cl.² G05G *9/00*
U.S. Cl. 74—475 **8 Claims**



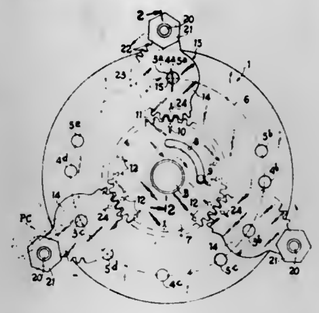
1. A hydraulic clutch-controlled transmission gear detent system comprising a vehicle, a clutch actuator movably mounted on said vehicle, a transmission shift rail, a shift member slidably mounted on said shift rail for sliding therealong, a connector connected with said shift member for sliding said shift member along said rail, a detent member operatively disposed intermediate said shift rail and said shift member for releasably securing said shift member in position along said shift rail, a hydraulically movable member operatively associated with said detent member for moving said detent member, a gear operatively connected with said shift member for shifting and positioning with respect to the position of said shift member, a hydraulic system operatively associated with said movable member for moving said movable member and thereby move said detent member into operative position relative to said shift rail and said shift member, said hydraulic system including a hydraulic valve for releasing hydraulic pressure in said hydraulic system, and said clutch actuator being connected with said valve for actuating said valve for releasing the hydraulic pressure and thereby releasing said detent member relative to said shift member and said shift rail.

4,070,915

DEVICE FOR FIXING VEHICLE WHEELS ON A WHEEL-BALANCING MACHINE

Yves Robert Caroff, Saint Mande, France, assignor to Facom, Villeneuve le roi, France

Filed Oct. 28, 1976, Ser. No. 736,488
Claims priority, application France, Dec. 4, 1975, 75 37097
Int. Cl.² G01M *1/02*
U.S. Cl. 73—487 **28 Claims**



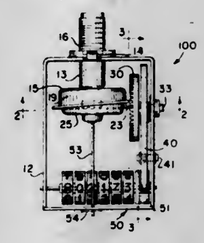
1. A device for fixing vehicle wheels having fixing apertures on a balancing machine provided with a rotary shaft, comprising in combination: a platen provided in the centre thereof with means for fixing same on said shaft to rotate about the axis thereof and a series of passages respectively having axes parallel to said shaft axis and located repsectively at the apices of at least three regular polygons, comprising respectively a triangle, a square and a pentagon, a set of first means each of which first means comprises a journal adapted to be engaged in one of the passages of the platen and a fixing stud which is eccentric with respect to said journal, and drive means for simultaneously driving all of said first means so as to rotate, by the rotation of one of the first means, all the other first means, whereby the studs of the first means are located at a distance from the centre of the platen equal to the distance between the fixing apertures of the wheel to be balanced and the centre of said wheel, one of said passages constituting an apex common to all the polygons and said passages being all located on the same circumference of the platen.

4,070,916

SPEEDOMETER-ODOMETER APPARATUS

Donald Bogosh, 2646 Willow St., Franklin Park, Ill. 60131

Filed Nov. 15, 1976, Ser. No. 741,734
Int. Cl.² G01C *22/00, 23/00*
U.S. Cl. 73—490 **7 Claims**



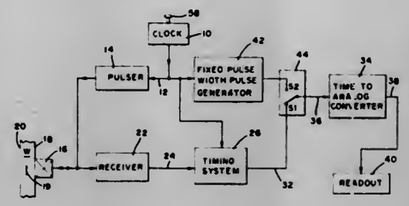
1. An apparatus particularly for use in a speedometer and odometer drive assembly, said apparatus including a drive means, a face gear mounted for rotation and operatively connected to said drive means, a camming means mounted on said face gear for eccentric rotation, a drive arm, said drive arm being pivotal about a central portion thereof, a cam follower including an opening in said drive arm, said opening captivating said camming means to cause a following movement of said camming means, at least one angularly disposed extension on said drive arm, said extension having an engaging means to engage a display means, said drive means driving said face gear to impart a rotation to said camming means, said cam follower causing an angular oscillatory motion in said drive arm in response to the rotation of said camming means, said angular oscillatory motion causing said drive arm to successively engage and disengage said engaging means with said display means to indicate total distance traveled.

4,070,917

ULTRASONIC PULSE-ECHO THICKNESS AND VELOCITY MEASURING METHOD

Ludwig Niklas, Lovenich, Germany, and Philip A. Walker, Trumbull, Conn., assignors to Krautkramer-Branson, Incorporated, Stratford, Conn.

Division of Ser. No. 618,074, Sept. 30, 1975, Pat. No. 3,994,154.
This application May 19, 1976, Ser. No. 687,896
The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.
Int. Cl.² G01N *29/00*
U.S. Cl. 73—598 **9 Claims**



1. The method of measuring characteristics of a workpiece by the pulse-echo ultrasonic technique comprising the steps of:
producing timing pulses from a clock;
providing a pulse signal commensurate with a predetermined time interval;
periodically transmitting an ultrasonic search signal into the workpiece responsive to said timing pulses and receiving a corresponding echo signal arising from the search signal intercepting an acoustic discontinuity in the workpiece;
providing a timing signal commensurate with the time interval between said search signal entering the workpiece and the receipt of said echo signal;
coupling said pulse signal and said timing signal sequentially to a converting means, and
providing respective output signals from said converting means responsive to said sequentially coupled signals, said output signals being commensurate with workpiece characteristics.

4,070,918

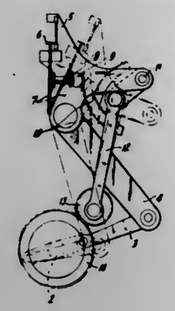
GRIPPER HOLDER BANDS DRIVING MECHANISM FOR SHUTTLELESS LOOMS

Cayetano Nunez Fuentes, Sabadell, Spain, assigno to Ingeniera Aplicada, S.A. (INAPSA), Badalona, Spain

Filed June 5, 1975, Ser. No. 583,973
Claims priority, application Spain, June 6, 1974, 203730
Int. Cl.² F16H *21/40*
U.S. Cl. 74—70 **3 Claims**

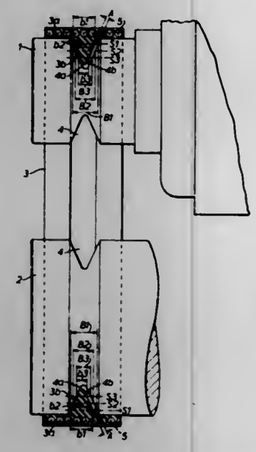
1. A shuttleless loom having means forming a shed of warp threads including a sley mounted for reciprocal movement, weft insertion means including a pair of lance bands reciprocal toward and away from each other through said shed and a driving mechanism for synchronously driving said sley and said lance bands, said driving mechanism comprising a driving crankshaft, crank means driven by said crankshaft for imparting reciprocal movement to said sley, gear train means including sector gear means pivotally mounted upon said sley for

reciprocally driving said lance bands, transmission means including drive wheel means for transmitting power from said crankshaft to said sector gear means, connecting rod means operatively interconnected between said drive wheel means and said sector gear means for effecting reciprocal pivotal motion of said sector gear means and adjustment eccentrically mounting said connecting rod means upon said drive wheel



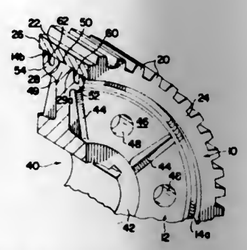
means operative to enable readjustment of the eccentricity of said connecting rod means relative to said drive wheel means, said transmission means being structured to impart to said drive wheel means two revolutions for each single revolution of said crankshaft, with readjustment of the eccentricity of said connecting rod means relative to said drive wheel means operating to effect variation of the operating stroke of said lance bands.

4,070,919
BELT DRIVE SYSTEM
Arnulf Ummen, and Alexander Muller, both of Hoxter, Germany, assignors to Arntz-Optibelt-KG, Hoxter, Germany
Filed May 17, 1976, Ser. No. 687,173
Claims priority, application Germany, May 17, 1975, 2522183
Int. Cl.² F16G *5/20*
U.S. Cl. 74—229 **2 Claims**



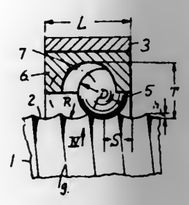
1. In a belt drive system, a rotating driving element having an annular groove, a rotating driven element having an annular groove, and a drive belt extending between the driving and driven elements to transmit a driving force from the driving element to the driven element, said belt comprising a flat belt part, a helically wound tension element, and a rib engaged in the annular grooves, the rib having a width measured in several planes parallel to the flat belt part which is smaller by a constant distance than the width of the grooves when measured in said planes, whereby during operation of the system, one side of the rib engages an adjacent side of the grooves and the other side of the rib is spaced from the adjacent side of the grooves by the same distance at the level of each of said planes.

4,070,920
COMPOSITE GEAR HAVING CARBURIZED TEETH AND METHOD OF MAKING SAME
Wayne J. LeBlanc, Lyndhurst, Ohio, assignor to The Horsburgh and Scott Company, Cleveland, Ohio
Filed Dec. 9, 1976, Ser. No. 748,935
Int. Cl.² F16H *55/12*; B21D *53/26*
U.S. Cl. 74—446 **22 Claims**



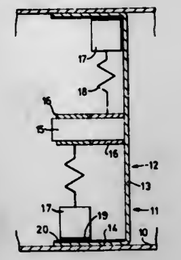
1. A composite gear comprising:
a circular gear ring having an inner surface and an outer surface having a plurality of gear teeth; and, a circular gear hub having a pair of axially facing sides and an outer surface, at least midportions of said hub outer surface being in substantial pressure abutment with midportions of said ring inner surface creating a central abutment area, and a pair of cylindrically extending weld beads between said ring inner and hub outer surfaces each axially spaced from axially opposite edges of said abutment area, said weld beads and the adjacent portions of said ring and hub being at least in radial tension.

4,070,921
SCREW SPINDLE
Franz Arnold, Spatzenweg 20, 8960 Kempton, Germany
Filed Oct. 21, 1976, Ser. No. 734,645
Claims priority, application Germany, Oct. 28, 1975, 7534177[U]; Oct. 28, 1975, 7534145[U]
Int. Cl.² F16H *25/22, 1/18*
U.S. Cl. 74—459 **11 Claims**



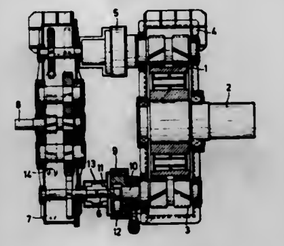
1. In a screw spindle drive comprising a screw spindle having at least one thread groove of circular cross section, a nut having a thread groove complementary to said thread groove on said screw spindle to form a ball raceway therebetween, and a closed ring of equal diameter balls in said ball raceway, the improvement comprising wherein the pitch of said thread groove on said screw spindle is less than the diameter of each of said balls.

4,070,922
ROTOR BALANCING DEVICES
Howard John Wyman, Kenilworth, England, assignor to Chrysler United Kingdom Limited, London, England
Filed Sept. 29, 1976, Ser. No. 727,657
Claims priority, application United Kingdom, Oct. 7, 1975, 41064/75
Int. Cl.² F16F *15/22*; F16C *1/00, 3/00*
U.S. Cl. 74—573 R **11 Claims**



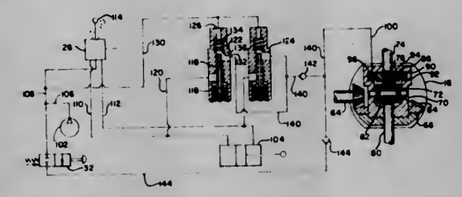
1. A rotor balancing device comprising a housing for mounting in a hollow shaft to be balanced, the housing being cup shaped and having a base wall formed with a cylindrical wall around the periphery thereof and having a pivot mounted at the center of the base concentrically with the peripheral wall, two bushes rotatably mounted on the pivot, two weights located within the housing, means connecting the two weights respectively to the two bushes to restrain the weights from engaging the peripheral wall of the housing until the rotor is rotated at a balancing speed at which the weights move around the pivot to counter-balance any out of balance in the rotor and adhesive means selectively disposed on at least one of the cylindrical walls of the housing and the weights to secure the weights in said balancing positions.

4,070,923
MULTIPLE PINION CONCENTRIC DRIVE
Heinrich Benthake, Mulheim (Ruhr), Germany, assignor to WGW Westdeutsche Getriebe und Kupplungswerke GmbH, Bochum, Germany
Filed Mar. 29, 1976, Ser. No. 671,114
Claims priority, application Germany, Oct. 27, 1975, 2547944
Int. Cl.² F16H *37/06, 57/10*
U.S. Cl. 74—665 P **10 Claims**



1. Multiple pinion concentric drive having a plurality of pinions meshing with a main gear fixed on a driven shaft, the main gear having a diameter larger than that of the pinions, comprising a respective rotatable gearing unit preceding and connected to the pinions for driving said pinions, the rotatable gearing units being connected to and driven by a distributor gearing, said rotatable gearing units having a respective outer concentric gear rotatably mounted thereon, and an elastic member for each of said rotatable gearing units respectively connected to said outer concentric gear so that the reaction moment of said outer concentric gear acts against said elastic member, and is damped by said elastic member whereby a uniform turning moment distribution is effected.

4,070,924
AUTOMATIC CONTROL OF LOCKABLE DIFFERENTIALS
Emil F. Moreno, Melrose Park; Ralph S. Hajek, Villa Park, and Julius F. Marquardt, Westchester, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed May 21, 1976, Ser. No. 688,646
Int. Cl.² F16H *1/44*; A01B *63/10*
U.S. Cl. 74—710.5 **7 Claims**

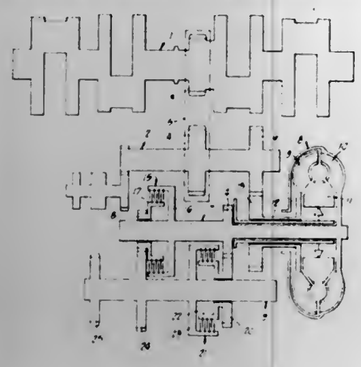


1. In a control circuit for use in controlling a lockable differential having a manually controlled system including a pressure supply means, a manually operated valve, a one way check valve, a lockable differential and first conduit means providing a means for communicating pressure from the pressure supply means to the differential through the manually operated valve and the one way check valve, the improvement comprising an automatically engaged differential locking system comprising:
a peripheral equipment control lever;
a multi position normally closed control valve being operatively linked to the peripheral equipment control lever;
a second one way check valve permitting flow in one direction;
second conduit means allowing communication between the pressure supply means and the lockable differential through the multiposition normally closed control valve and the second one way check valve whereby displacement of the peripheral equipment control lever will result in the opening of the multiposition normally closed control valve thus resulting in transmission of pressure from the pressure supply means to lock the lockable differential.

4,070,925
POWER TRANSMISSION FOR MOTORCYCLES
Kazuyoshi Yoshida, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1976, Ser. No. 748,659
Int. Cl.² F16H *47/00*
U.S. Cl. 74—720 **2 Claims**

1. A power transmission assembly for a motorcycle engine having a crank shaft, the power transmission assembly including an idler shaft driven from the crank shaft, an input shaft, and an output shaft, the shafts all being parallel, a torque converter mounted on the input shaft, means for driving the torque converter from the idler shaft, first means for driving the output shaft from the input shaft including a clutch mounted on the output shaft, second means for driving the output shaft

from the input shaft including a clutch mounted on the input shaft, the torque converter overlapping the ends of the idler



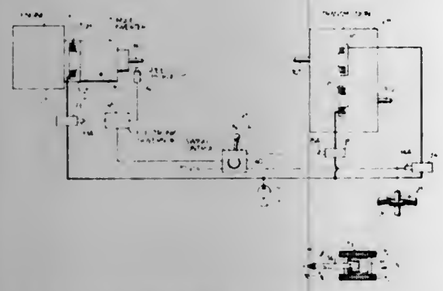
shaft and output shaft to form a compact assembly, and a final drive element on the output shaft.

4,070,926

SWING CONTROL FOR CRANE

Raymond C. Schneider, and Paul A. Pelligrino, both of Rockford, Ill., assignors to Twin Disc, Incorporated, Racine, Wis.

Filed Dec. 22, 1975, Ser. No. 643,357
Int. Cl.² F16H *47/00*
U.S. Cl. 74—730 **8 Claims**



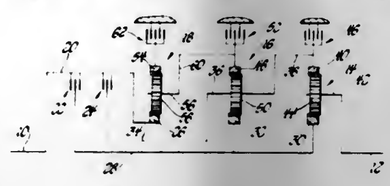
1. In a power transmission system:
a torque converter;
a modulatable torque converter clutch in said torque converter modulatable between a minimum engaged condition and a fully engaged condition;
a transmission connected to be driven by said torque converter;
at least one modulatable transmission clutch in said transmission modulatable between a minimum engaged condition and a fully engaged condition;
selectively operable control means for operating said clutches, said control means comprising an operator-controllable control member movable between a neutral position and at least one other position through an intermediate position therebetween, to enable selective modulation of said transmission clutch between minimum and fully engaged conditions as said control member is moved between said neutral position and said intermediate position, said control means further comprising means responsive to placement of said control member in said intermediate position whereby said transmission clutch is placed in fully engaged condition and to enable further movement of said control member between said intermediate position and said one other position to effect modulation of said torque converter clutch between partially engaged and fully engaged condition.

4,070,927

PLANETARY GEARING ARRANGEMENT FOR A TRANSMISSION

James C. Polak, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 4, 1976, Ser. No. 692,970
Int. Cl.² F16H *57/10*
U.S. Cl. 74—765 **3 Claims**



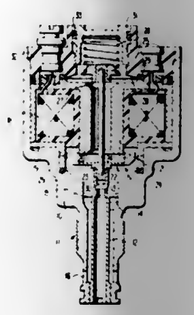
1. A planetary transmission comprising; a transmission housing; input means; output means; a plurality of simple planetary gear means each having three members interconnected between said input means and said output means; a plurality of selectively operable friction drive establishing means including at least two clutch means for providing selective drive paths from said input means to said planetary gear means and said friction drive establishing means being further connected with said planetary gear means for establishing a plurality of forward drive ratios and a reverse drive ratio between said input means and said output means, the number of said forward drive ratios being one greater than the number of friction drive establishing means and said friction drive establishing means being interchanged during shifting from one ratio to the next higher or lower ratio with only a single transition interchange between said friction drive establishing means; and one of said planetary gear means (**18**) having the first member (sun gear **26**, FIG. **1**, ring gear **54**, FIG. **3**) thereof continuously connected to one of said transmission housing and said input means and the second member (ring gear **54**, FIG. **1**, sun gear **26**, FIG. **3**) of said one planetary gear means being selectively connectable with the other of said transmission housing and said input means through one of said friction drive establishing means (brake **62**, FIG. **1**, clutch **76**, FIG. **3**).

4,070,928

CONTROL VALVE FOR THE WORKING PRESSURE OF AN AUTOMATIC CHANGE-SPEED GEAR

Arwed von Koch, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Feb. 12, 1973, Ser. No. 332,005
Claims priority, application Germany, Feb. 12, 1972, 2206751
Int. Cl.² B60K *41/18*
U.S. Cl. 74—863 **28 Claims**



1. A control valve arrangement for controlling the pressure of a pressure medium in an automatic transmission for vehicles having a driving engine, the arrangement comprising: control valve means constructed as a solenoid valve means including a ring-shaped armature means, a valve closure body means, said ring-shaped armature means being operatively connected with said valve closure body means and applying a predetermined force on said valve closure body means in a de-energized condition of the solenoid valve means a constant width annular magnetic gap means for accommodating said ring-shaped armature means upon an energization of the solenoid valve means, and means for energizing said solenoid valve means in dependence upon the torque of the driving engine such that said ring-shaped armature means is drawn into said constant width annular magnetic gap means by a predetermined amount so as to change the predetermined force acting upon said valve closure body means to that the pressure of the pressure medium is correlated with the torque of the driving engine.

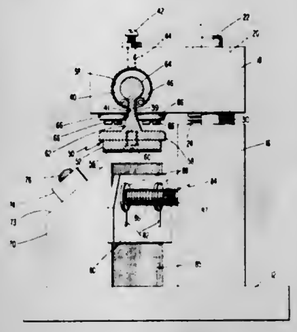
20. A control valve arrangement for controlling the pressure of a pressure medium in an automatic transmission for vehicles having a driving engine, the arrangement comprising: control valve means constructed as a solenoid valve means including a coil carrier body means, an armature means and a valve closure body means, said armature means being operatively connected with said valve closure body means and applying a predetermined force on said valve closure body means in a deenergized condition of the solenoid valve means, means for changing said predetermined force upon an energization of said solenoid valve means in dependence upon the torque of the driving engine, a rod extends centrally through the coil carrier body means, said armature means being fixedly mounted at one end of said rod, and a spring and abutment means for said spring are provided, said abutment means being disposed on an opposite end of said rod.

4,070,929

TOOL SHARPENING APPARATUS

Francis E. Risher, 906-25th St., Canton, Ohio 44709

Filed June 21, 1976, Ser. No. 697,719
Int. Cl.² B21K *5/12*
U.S. Cl. 76—82 **10 Claims**



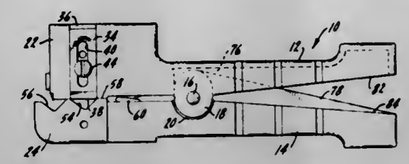
1. Tool sharpening apparatus, comprising:
a base member;
support means on said base member for securely holding a tool having an edge to be sharpened;
a head member reciprocably carried on said base member for movement toward and away from the edge of a tool held by said support means;
a sharpening element slightly mounted on said head member for reciprocable motion in constant planes relative to and generally longitudinally along the tool edge; and
means biasing said head member away from the tool edge, whereby said head member is movable downwardly for engagement of the sharpening element with the tool edge on a forward stroke thereof and is urged upwardly to separate the sharpening element from the tool edge on a return stroke.

4,070,930

WIRE STRIPPER

John A. E. Oprins, Sycamore, Ill., assignor to Ideal Industries Inc., Sycamore, Ill.

Filed Sept. 3, 1976, Ser. No. 720,202
Int. Cl.² H02G *1/12*
U.S. Cl. 81—9.5 B **8 Claims**



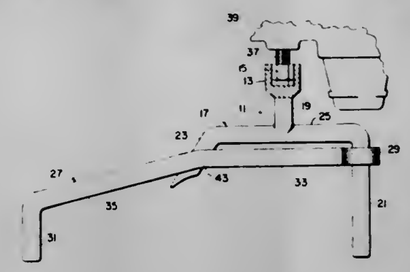
1. In a wire stripper tool having a pair of arms connected at a pivot intermediate the ends thereof, one arm having an anvil at one end and the other arm having an opposed cutting head which supports a blade at the front of the head for slitting the wire insulation longitudinally, and a blade at each side of the head for slitting the insulation circumferentially, and wherein the anvil has a seat extending normal to the second-named blades for positioning the wire while being slit:
spring means located between the pivot and the cutting blades and normally biasing the cutting head to a closed position relative to the anvil;
said arms having opposed inner surfaces which are divergent rearward of said pivot to enable the arms to be squeezed together rearward of the pivot thereby to move the cutting head to an open position relative to the anvil which allows a wire to be positioned in the seat for slitting; and
said inner surface of one arm being slotted and the inner surface of the arm opposed thereto having a guide rib with one end disposed in both the slot in the open and closed position of the cutting head.

4,070,931

LUG WRENCH

Nicholas Florko, Jr., 161 Marine Drive Apartment 6D, Buffalo, N.Y. 14202

Filed Sept. 7, 1976, Ser. No. 720,815
Int. Cl.² B25B *13/00*
U.S. Cl. 81—177 B **10 Claims**



1. A lug wrench which comprises a socket for gripping a lug nut or lug head, turning means held to said socket for turning it, said turning means having two parts, first and second parts, extending at least partially opposite to the direction of the lug when the lug wrench is in operative position, and offset with respect to it, the first part extending parallel with and opposed to the direction of the lug, and lever means connectable to the first part of the turning means in pivotal relationship, rotatable with respect to said first part of the turning means and bearable against the second part thereof, against which it applies a force so as to make a lever with a fulcrum where it is pivotally connected with the first part of the turning means and a point of application of force where it bears against the second part

thereof, so that on applying a turning force to an end of such lever away from the fulcrum, the socket, when gripping a lug nut or lug head, applies a balanced turning force to said lug nut or lug head, thus facilitating ready release of a lug nut or a lug without the socket slipping off said lug nut or lug because of application of unbalanced forces thereto.

4,070,932

EXTENSIBLE HANDLE FOR A TOOL HEADPIECE

Richard W. Jeanaotte, P.O. Box 132, Shelby, Mont. 59474

Filed Mar. 1, 1977, Ser. No. 773,219
Int. Cl.² B25G *1/04*
U.S. Cl. 81—177 A **5 Claims**



1. An extensible tool handle for applying different degrees of torque to a tool headpiece, which handle comprises, in combination:

a. a sleeve for supporting the tool headpiece at one end of the sleeve,

b. a rod telescopically received within the other end of the sleeve and having at least one I-shaped groove along the surface thereof for permitting the rod to assume at least one position of retraction and at least one position of extension with respect to the sleeve,

c. resilient means disposed within the sleeve for biasing the rod towards the position of extension,

d. latch means carried by the sleeve for engaging the groove and locking the rod against movement with respect to the sleeve in the positions of retraction and extension, and

e. a handgrip carried by the free end of the rod, which handgrip remains substantially entirely outside of the sleeve when the rod is in the position of retraction.

4,070,933

PIPE WRENCH JAW

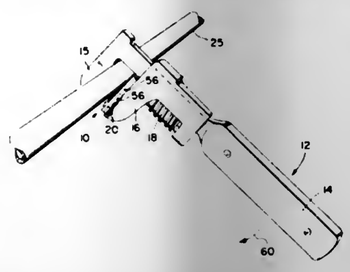
Robert B. Macintosh, 206 Beech Ave., Melrose, Mass. 02176

Filed Mar. 17, 1977, Ser. No. 778,356
Int. Cl.² B25B *13/58*
U.S. Cl. 81—180 B **10 Claims**

1. A pipe wrench jaw adapted to be utilized with a wrench having a pair of jaw members adapted to be moved towards and away from each other, said jaw comprising:

a. a housing member having an upper and lower end spaced from each other and a pair of sides adapted to fit across the width of a jaw member with a plurality of grooves extending on said upper end between said sides, each said groove having a front and rear wall extending in spaced relationship to each other, and

b. a gripping member pivotably mounted in each said groove between said sides and adapted for angular movement between a forward position and a rearward position between said front and rear wall respectively, each said gripping member including a plurality of transversely extending teeth formed in an arcuate path having a front end and a rear end, said front end having a greater radius than said rear end so as to obtain a gripping engagement



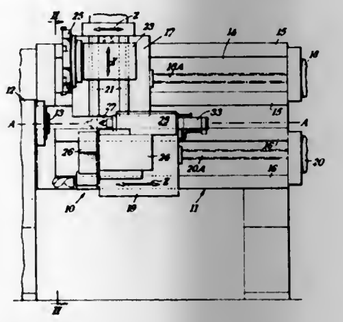
with a pipe or the like contained therebetween with said gripping member adapted to rotate with the movement of the wrench.

4,070,934

MACHINE TOOLS

Stuart Rodney Sladdin, Newcastle on Tyne, and Malcolm Thorneycroft, Whitley Bay, Tyne and Wear, both of England, assignors to Charles Churchill Limited, England

Filed May 18, 1976, Ser. No. 687,598
Int. Cl.² B23B *7/04, 3/00*
U.S. Cl. 82—2 R **4 Claims**



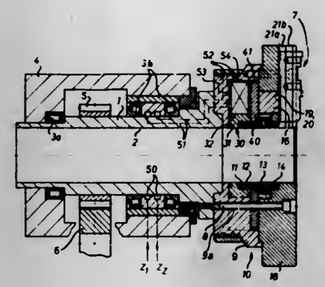
1. A turning machine comprising a rotatable chuck for supporting a workpiece to be machined, two simultaneously and independently operable turrets for carrying tools for machining the workpiece, one of said turrets having a free tool station devoid of tools and each turret being supported by a toolslide with respect to which it can be indexed about an axis parallel to the rotational axis of the chuck, said axes being on opposite sides of said rotational axis, both toolslides being movable along slideways parallel to said rotational axis and one at least of said toolslides also being movable along a slideway perpendicular to said rotational axis, a ram mounted on the toolslide carrying said one turret at the side of said one turret remote from the chuck, said ram being movable with respect to said toolslide in a direction towards and away from the chuck, and a support member rotatably mounted on the ram, said support member being movable by said ram past said station devoid of tools to support the end of the workpiece remote from the chuck.

4,070,935

CHUCKING DEVICE FOR A MACHINE TOOL

Bruno Caprioli, Basano del Grappa, Italy, assignor to Forkardt, Gefitec, Zug, Switzerland

Filed Jan. 7, 1977, Ser. No. 757,653
Claims priority, application Switzerland, Apr. 9, 1976, 4570/76
Int. Cl.² B23B *31/30*
U.S. Cl. 82—40 R **8 Claims**



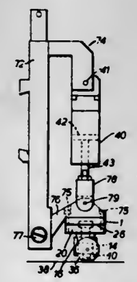
1. In a chucking device, especially for a turning machine, having a chuck body and jaws guided for radial movement on one side of the chuck body; a bar longitudinally moveable in the chuck body transversely to the direction of movement of each jaw and each jaw and bar having meshing teeth which effect radial movement of the jaw in response to movement of the bar in the chuck body, a gear on the axis of the chuck in the plane of said bars and to which each bar is tangential, each bar having gear teeth on the side facing the gear and engaging the teeth on the gear, a rotary piston directly coupled to said gear and having radial wings thereon, cavity means in the chuck body having discrete chambers each having a said wing therein, and means for supplying actuating fluid to said chambers on one side of said wings to move said jaws radially inwardly and on the other side of said wings to move said jaws radially outwardly.

4,070,936

APPARATUS FOR CUTTING OR SCORING SHEET MATERIAL

Angus Dougal Duncan, Ashton-in-Makerfield, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Nov. 29, 1976, Ser. No. 745,677
Claims priority, application United Kingdom, Dec. 5, 1975, 50043/75
Int. Cl.² B26D *3/08*
U.S. Cl. 83—12 **12 Claims**



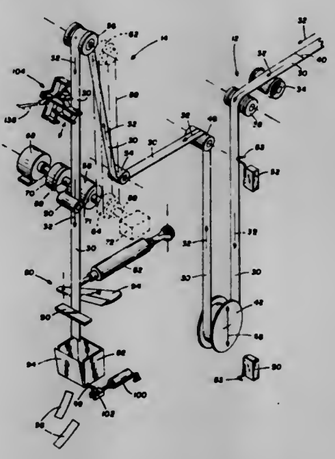
1. Apparatus for cutting or scoring sheet material comprising a cutter head mounted for travel toward and away from a surface of the sheet material, a cutting or scoring tool supported and guided in the cutter head for movement relative to the cutter head towards and away from the surface of the sheet material, loading means connected to the cutter head for applying a cutting or scoring load thereto, a fluid pressure actuated diaphragm located within the cutter head and operatively connected to the tool, fluid pressure supply means arranged to selectively control the fluid pressure acting on each side of the diaphragm at any time during operation so that the diaphragm can be displaced to move the tool relative to the cutter head toward and away from the surface of the sheet without varying the load applied by the loading means to the cutter head, and support means on the cutter head for supporting the cutter head on the surface of the sheet material when the tool is moved away from the surface of the sheet material.

4,070,937

BELT LOOP TRIMMING APPARATUS

Joseph W. A. Off, Irving, and Judson Horace Farly, Dallas, both of Tex., assignors to Haggar Company, Dallas, Tex.

Division of Ser. No. 559,340, March 17, 1975, Pat. No. 4,026,172. This application Feb. 9, 1977, Ser. No. 767,079
Int. Cl.² B26D *7/06*
U.S. Cl. 83—27 **3 Claims**



1. In the method of making belt loops from an elongated loop string having splices along the length thereof, the improvement comprising:

feeding the loop string lengthwise into a metering and trimming portion;

advancing said loop string past a cutter a distance corresponding to the desired length of said belt loop;

stopping the movement of said loop string;

engaging said cutting to cut a belt loop of the desired length from said loop string;

sensing the presence of a splice in said loop string;

advancing said splice a set distance past a cutter;

engaging said cutter to cut said splice portion from said loop string; and

sorting said splice portion from said belt loop lengths.

4,070,938

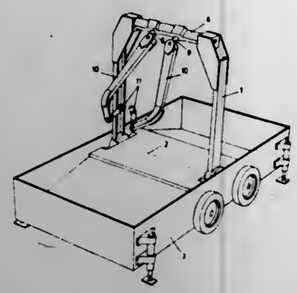
AUTOMATIC SHEARING DEVICE

Lancelot H. Lines, Adelaide, Australia, assignor to Senil Nominees Pty. Ltd.; The Commonwealth of Australia and Australian Merino Wool Harvesting Limited, all of, Australia

Filed July 27, 1976, Ser. No. 709,168
Claims priority, application Australia, July 29, 1975, 2548/75; Dec. 19, 1975, 4351/75; Apr. 1, 1976, 5452/76
Int. Cl.² B26B *19/24*
U.S. Cl. 83—71 **7 Claims**

1. A shearing device including means to support an immobilized sheep, a linkage system including a frame pivoted about an axis transverse to the sheep, a beam pivoted to the frame

parallel to the transverse axis, and a pair of caliper arms pivoted to the beam by a connection allowing pivoting about two axes at right angles to each other and generally at right angles



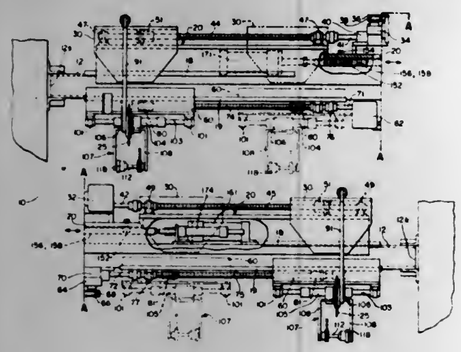
to the said axis of said beam, cutter means on each caliper, and means to control the movement of the linkage system whereby the cutter means pass over the body to shear the wool therefrom.

4,070,939

EDGE CONTROL FOR CALENDER COVERING INDUSTRIAL BELTING

Alvin W. Neumeister, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 6, 1976, Ser. No. 730,041
Int. Cl.² B26D *5/34*; B32B *31/18*
U.S. Cl. 83—368 **7 Claims**



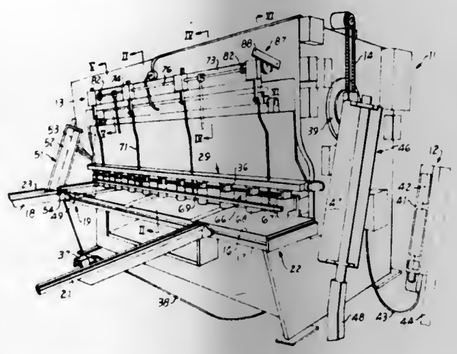
1. In an industrial belting calender having a plurality of rolls and spaced apart side frames, a hydromechanical belt edge trimming device comprising a main support beam fixed on and extending between said side frames and extending parallel to one of said rolls, a main carriage mounted on the main beam for movement longitudinally thereof, a first allochiral pair of carriages supported on and movable longitudinally of the beam, first drive means fixed on the beam and connected to move the first pair of carriages toward and away from each other, a second allochiral pair of carriages supported on and movable longitudinally of the main carriage, second drive means fixed on the main carriage and connected to move the second pair of carriages toward and away from each other, a trimming blade supported respectively on each of the second pair of carriages, a sensor supported on and movable parallel to the beam relatively of each of the first pair of carriages for sensing respectively the edges of a carcass of an industrial belt, each sensor being capable of providing a signal proportional to the amount and direction of a deviation in location of said carcass edge, and hydromechanical drive means responsive to said signals to move each of said sensors relative to the respectively associated carriage and to move said main carriage a distance equal to one-half the algebraic sum of the deviations of said carcass edge.

4,070,940

MACHINE TOOL WITH PROTECTIVE LIGHT CURTAIN AND WORK STOCK HOLDING MECHANISM

John H. McDaniel; Harry W. Sinnard, both of Decatur, and Robert W. Thomas, Blue Mound, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 1, 1977, Ser. No. 764,666
Int. Cl.² B26D *7/02, 7/24*
U.S. Cl. 83—464 **14 Claims**



1. In combination with a machine tool of the type having guide means with a surface for receiving work stock and having a tool element which is selectively movable to perform a machine operation on said work stock at a predetermined work zone and further having an electrically controlled device for stopping motion of said tool element, mechanism for protecting and assisting an operator stationed in front of said machine tool comprising:

a radiant energy source positioned to direct radiant energy across a planar area extending between said work zone and said operator's station,

a radiant energy sensor positioned to intercept radiant energy which has traveled across said planar area and having means for producing a signal indicative of a decrease of intensity of the intercepted radiant energy, means transmitting said signal to said electrically controlled device to stop motion of said tool element in response to said decrease of intensity of intercepted radiant energy, and

manually operable auxiliary hold-down means for clamping said work stock against said guide means surface, said auxiliary hold-down having an actuating element situated outside the region between said planar area and said work zone.

4,070,941

SLICING MACHINE

Horst Lorenz, Solingen, Germany, assignor to Firma Robert Krups, Solingen, Germany

Filed Aug. 5, 1976, Ser. No. 711,874
Claims priority, application Germany, Apr. 13, 1976, 7611681[U]
Int. Cl.² B26D *4/04, 4/20*
U.S. Cl. 83—478 **15 Claims**

1. A slicing machine comprising:

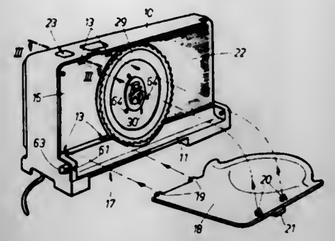
a housing;

a blade rotatable on said housing about a generally horizontal axis;

drive means in said housing for rotating said blade about said axis;

means connected to said drive means including a start element displaceable between an on position for operating said drive means and an off position in which said drive means is inoperative;

a cover plate movable on and relative to said housing independently of said start element between a closed position closely juxtaposed with said housing and covering most of



said blade and an open position spaced from said housing and exposing said blade; and

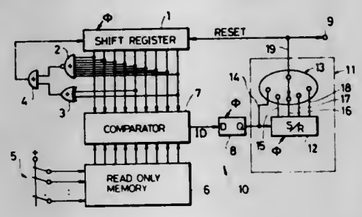
means including a link engageable with said plate and with said start element for preventing displacement of said start element from said off position into said on position except when said plate is in said closed position.

4,070,942

TONE GENERATOR

Eiichiro Aoki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hammamatsu, Japan

Filed Dec. 9, 1976, Ser. No. 748,969
Claims priority, application Japan, Dec. 11, 1975, 50-148065; Dec. 11, 1975, 50-148066; Dec. 11, 1975, 50-148067
Int. Cl.² G10H *1/00*
U.S. Cl. 84—1.01 **6 Claims**



1. In a tone generator including a counting circuit for successively changing the content thereof in accordance with a clock pulse and a comparison circuit for comparing the content of the counting circuit with a set value for da depressed key to detect coincidence between the content and the set value, the coincidence detection output of said comparison circuit being utilized as a reset signal for resetting said counting circuit and an output pulse of a desired interval being produced at a timing of resetting of said counting circuit, the improvement which comprises:

first means for delaying the coincidence detection output of said comparison circuit sequentially and successively in a plurality of stages; and

second means for selectively supplying a plurality of delayed outputs differing in delay time to said counting circuit as the reset signal;

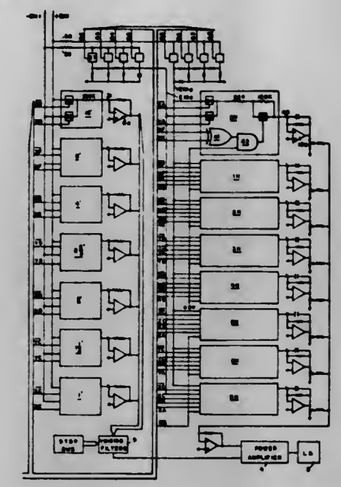
the interval of said output pulse being changed by delaying the timing of resetting said counting circuit.

4,070,943

ELECTRONIC ORGAN KEYING SYSTEM

Alfred H. Faulkner, 1324 Portesuello Ave., Santa Barbara, Calif. 93105

Filed Sept. 5, 1975, Ser. No. 610,772
Int. Cl.² G10H *1/00*
U.S. Cl. 84—1.01 **8 Claims**



7. An envelope signal source, a preamplifier, a pair of switches and two resistors in series connected between said source and said amplifier in a balanced configuration, a source of square wave tone signals in phase with sin ωt connected to said switches so as to close them alternately during successive half cycles, a third switch connected in shunt with one of said resistors, and a source of square wave tone signals in phase with cos 2ωt connected to said third switch so as to close it during alternate half cycles, whereby the third and fifth harmonic components in the amplifier tone signal output are controlled in accordance with the ratio between said two resistors.

4,070,944

OPTICAL METRONOME

Juan M. del Castillo, Risco 119, Mexico City 20, D.F., Mexico

Continuation-in-part of Ser. No. 594,092, July 8, 1975, Pat. No. 3,996,833. This application June 24, 1976, Ser. No. 699,637
Int. Cl.² G10B *15/00*
U.S. Cl. 84—484 **7 Claims**



1. An optical metronome for visually indicating the note to be played and the duration of the note on a sheet of music having at least two parallel staves comprising

means for supporting a sheet of music,

a housing along an edge of said supporting means in front of a sheet of music and parallel to the staves, and extending at least the length of a staff on the sheet of music,

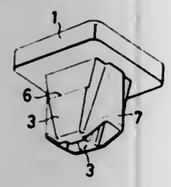
and means in said housing to project a series of vertical columns of light successively across the staves on the front of the sheet of music in timed relation to the tempo of the music being played from the sheet of music and spaced at the smallest note time interval with the notes on the sheet of music spaced at intervals related to the duration of each note.

4,070,945

SCREW GROMMET

Mutsuo Kurosaki, Moriguchi, Japan, assignor to Nifco Inc., Tokyo, Japan

Filed May 7, 1976, Ser. No. 684,202
Claims priority, application Japan, May 7, 1975, 50-60639[U]
Int. Cl.² F16B *13/04*
U.S. Cl. 85—80 **2 Claims**



1. A one-piece plastic screw grommet for use in a non-circular apertured workpiece including a centrally apertured head adapted for accepting a screw therethrough, a pair of leg members extending downwardly from the underside of said head in spaced opposed relation, the inner opposed surfaces of said legs carrying concavities forming a tapered through bore co-axial with said aperture through the head, the lateral edges of each leg being axially tapered inwardly from said head toward their opposite free end, the outer surface of each said leg being tapered outwardly from its free end to a point intermediate its length to form shoulder means, a pair of generally flexible U-shaped web means having a pair of arms and a base with said web means having a thickness substantially less than the thickness of said legs, each web means extending from the underside of said head to adjacent the free end of said legs and with the arms of each web attached to the axially tapered adjacent lateral edges of the legs intermediate the inner and outer surfaces of said legs and having an increasing height from adjacent said head to said free end, whereby each said base of said pair of web means extending substantially parallel to one another and to the axis of said bore with the increased extent of said U-shaped web adjacent the free end of said legs thereby providing substantially unrestricted flexure of said legs when a screw is telescoped into said legs and causes this separation by contact with the tapered bore.

4,070,946

FLUID ACTUATOR

Roger H. Sandvik, Eastlake, and Richard G. Huebscher, Cleveland, both of Ohio, assignors to Design & Manufacturing Corporation, Willoughby, Ohio

Filed May 3, 1976, Ser. No. 682,192
Int. Cl.² F15B *15/22*; F01B *19/04*; F16J *3/02*
U.S. Cl. 91—25 **1 Claim**



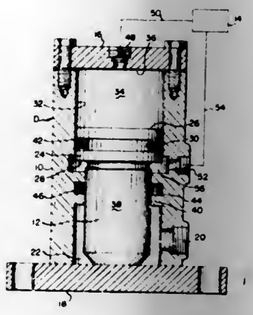
1. A linear fluid actuator comprising housing means having a fluid chamber, a folded diaphragm forming a movable wall of said chamber, the central part of said diaphragm being cylindrical and normally projecting into said chamber, a piston having a hollow central cylindrical section closely contained within the like part of said diaphragm, the admittance of fluid under pressure to said chamber causing said diaphragm to roll to expand said chamber and thereby move said piston, a piston rod at least partly contained within said hollow central cylindrical section of said piston, said rod being rotatable freely relative to said piston whereby said rod can turn without twisting of said piston and diaphragm, and said rod also being capable of withdrawal axially from said piston without moving the latter, said housing means including cap means containing at least part of each of said piston and rod for guiding the same for substantially linear movement in the axial direction of the actuator, said piston being axially longer than the axial length of the central part of said diaphragm and including skirt means having a diameter larger than the diameter of the piston section within the central part of said diaphragm and closely fitting with respect to said cap means for accurately guiding said piston for such linear movement, said skirt means including an appreciable surface area along the axial extent of the actuator in such closely fitting relationship with said cap means and being cooperable with the latter to hold said piston and said diaphragm in relatively fixed radially spaced relationship with respect to said housing means, return spring means between said cap means and said rod for normally urging the latter to engagement with said piston and said piston and diaphragm in a direction in said housing means to reduce said chamber, a portion of said spring means being accommodated within said piston, said housing means including fluid inlet means in a wall thereof for supplying fluid to said chamber, and said diaphragm including exteriorly projecting bumper means on the movable wall thereof directly facing said fluid inlet means for abutting said wall of said housing means in covering relationship with respect to said fluid inlet means to space said movable wall from said housing means when the actuator is not energized and said chamber is unexpanded, said bumper means having channel means therein for passing fluid from said fluid inlet means into said chamber for substantially uniform distribution of fluid in said chamber to energize the actuator and to expand said chamber.

4,070,947

SPRINGLESS IMPACTOR

John L. Crewse, Parma Heights, Ohio, assignor to The Cleveland Vibrator Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 561,284, March 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 408,554, Oct. 23, 1973, abandoned. This application July 22, 1976, Ser. No. 707,561
Int. Cl.² F15B *21/02, 15/17, 13/044*
U.S. Cl. 91—39 **1 Claim**



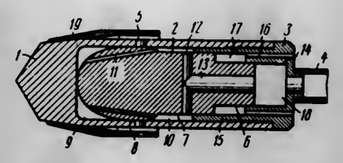
1. A pressurized fluid operated springless impactor comprising, an upstanding closed-end cylinder having a top end plate and a bottom end impact plate, said cylinder having a bottom exhaust port connecting the lower cylinder interior portion with the atmosphere, a piston operatively disposed in said cylinder for reciprocation therein, said piston having a piston head with the top end of the head having a larger cross-sectional area than the bottom end thereof, whereby the bottom end of the piston head forms a shoulder of less area than the top end of the piston head, said cylinder having an inwardly extending circumferential guide sleeve portion formed on the inner longitudinal wall of the cylinder and encompassing a piston lower portion to guide the piston longitudinally in the cylinder when it reciprocates therein, said guide sleeve portion having a resilient packing seal ring disposed circumferentially therearound and in contact with said piston, said seal ring structured to effect at all times a one-way check valve providing flow only toward the piston head top, said head top end having a second resilient packing seal ring disposed circumferentially therearound and in contact with the cylinder inner longitudinal wall, said second seal ring structured to effect at all times a one-way check valve providing limited flow of pressurized fluid interiorly of the cylinder in one direction only from the piston head top end past the side of the piston head to the bottom end of the piston head, the cylinder top end plate having a top port therein, said cylinder having a side fluid port above said guide portion connected to a fluid control timer means for feeding and exhausting pressurized fluid to the bottom side of the piston head to effect preselected control reciprocation of the piston, and said fluid control timer means also feeding and exhausting pressurized fluid to and from the top interior portion of the cylinder between the piston head top end and the adjacent top end of the cylinder, and said coacting fluid control means connected with said side fluid port for exhausting fluid when the fluid pressure beneath said piston head top end exceeds the pressure in said cylinder top end, whereby to effect impactor reciprocation against the impact plate when the fluid control timer means alternately feeds and exhausts pressurized fluid to and from the top interior portion of the cylinder.

4,070,948

PNEUMATIC IMPACT DEVICES

Khaim Berkovich Tkach, ulitsa Gogolya, 17, kv. 49; Alexandr Dmitrievich Kostylev, ulitsa Derzhavina, 19, kv. 44; Konstantin Konstantinovich Tupitsyn, ulitsa Krylova, 3, kv. 37; Konstantin Stepanovich Gurkov, ulitsa Derzhavina, 19, kv. 13; Vladimir Vasilievich Klimashko, ulitsa Novogodnaya, 44, kv. 24; Leonid Georgievich Rozhkov, ulitsa Krylova, 41, kv. 40, all of Novosibirsk; Mikhail Jurievich Bondar, ulitsa Zhukovskogo, 22a, kv. 4, Odessa, and Boris Nikolaevich Smolyanitsky, ulitsa O.Dundicha, 27, kv. 18, Novosibirsk, all of U.S.S.R.

Continuation of Ser. No. 484,224, June 28, 1974, abandoned. This application Nov. 13, 1975, Ser. No. 631,622
Int. Cl.² E21B *1/06*; E21C *19/00*
U.S. Cl. 91—234 **6 Claims**



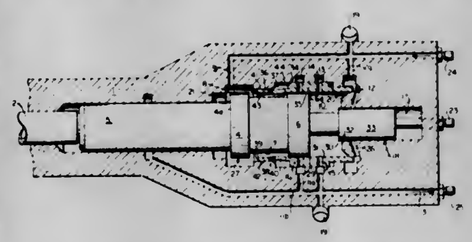
1. A pneumatic impact device, comprising a hollow, cylindrical casing having side walls and an open end, said side walls having holes; a nut which closes the open end of said casing; a stepped ram located in said casing with a provision for reciprocating motion; an axial channel and radial channels in said ram; a compressed air line, said axial and radial channels being connected to the compressed air line; a step of said ram with a minimum diameter, said step of minimum diameter being located in said nut; another step of said ram with a maximum diameter and serving as the front part of said ram, said maximum-diameter step defining, together with the side walls of said casing, a working chamber receiving compressed air from said compressed air line through said channels of the ram, the pressure of this air being used to move the ram for striking a blow after which the air is discharged through said holes of the casing, and longitudinal channels in said maximum diameter step opening at one end into said working chamber for its periodical connection with said compressed air line, said casing having a circular recess which defines, together with the cylindrical surface of the minimum diameter step of the ram, a space which communicates with the other ends of all the longitudinal channels during the movement of the ram towards the nut, with said space being in constant communication with the atmosphere through longitudinal holes in the nut.

4,070,949

HYDRAULIC STRIKING APPARATUS

Pekka M. Salmi, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Oct. 20, 1976, Ser. No. 734,038
Claims priority, application Finland, Oct. 20, 1975, 752909/75
Int. Cl.² F01L *17/00, 25/04*; F01B *7/18*
U.S. Cl. 91—276 **3 Claims**



1. In an improved hydraulic striking apparatus of the type having a body having wall means defining a cylindrical space therein having a cylindrical inner surface and end walls, a piston axially movable in said space, and a sleeve type distributing valve in said space between said piston and said inner surface, the improvement comprising:

an annular member extending radially inwardly from said inner surface and dividing said space into first and second portions;

said piston having a flange portion axially movable radially inwardly of said annular member;

said distributing valve having

a distributor portion disposed in said first portion of said space between said annular member and one of said end walls and in sliding contact with said inner surface, said distributor portion having a first annular end surface on which fluid under continuous full pressure acts; and

an extension portion attached to and slidable with said distributor portion, the outer surface of said extension portion being in sliding contact with said annular member in all positions of said valve, said extension portion having a second annular end surface against which fluid under continuous full pressure acts, the area of said second surface being smaller than the area of said first end surface;

the inner surface of said valve being in sliding contact with the outer surface of said flange portion of said piston;

means in said piston defining a canal for permitting flow of fluid axially past said annular member;

a shoulder on said distributor portion adjacent said extension portion, said shoulder, said annular member, said inner surface of said space and the outer surface of said extension portion defining a distributor space; and

means in said extension portion defining radial openings for permitting fluid under pressure to pass therethrough;

said canal means and said radial openings providing a fluid

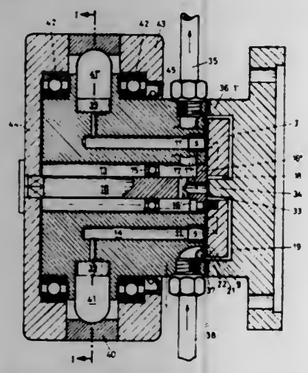
path from said second portion of said space to said distributor space, said flange portion of said piston being movable toward said said first space portion to close said path.

4,070,950

HYDRAULIC APPARATUS INCLUDING ROTARY VALVE

Ivan Jaroslav Cyphelly, Forchstrasse 968, Hinteregg, Switzerland (8128)

Filed Nov. 10, 1975, Ser. No. 630,347
Claims priority, application Switzerland, Dec. 12, 1974, 16557/74
Int. Cl.² F01B *3/10*; F16K *11/06*
U.S. Cl. 91—487 **5 Claims**



1. Hydraulic apparatus comprising:

a. a valve casing having a body portion formed with at least one intake opening, at least one discharge opening, and a return opening;

b. a distributor having a front face and a rear face;

c. securing means securing said distributor to said body portion for angular movement relative to said body portion about an axis and for limited axial movement, said faces of the secured distributor extending radially relative to said axis;

d. operating means for moving said distributor about said axis,

1. said body portion having a planar face, said planar face and said front face being formed with respective recesses alignable for connecting said at least one intake opening with said at least one discharge opening in a predetermined angular position of said distributor for flow of fluid between said intake and discharge openings in a first path through said valve casing; and

e. cover means spacedly enveloping said distributor in sealing engagement with said body portion, said cover means and said rear face of said distributor bounding therebetween a chamber,

1. said planar face and said front face defining axially therebetween a first, annular, throttling gap offset radially outward from said recesses and connecting said intake opening with said chamber,

2. a face of said cover means and a portion of said rear face substantially coplanar with said planar face defining axially therebetween a second throttling gap connecting said chamber to said return opening,

3. said intake and return openings, said gaps, and said chamber defining a second path of fluid flow through said valve casing,

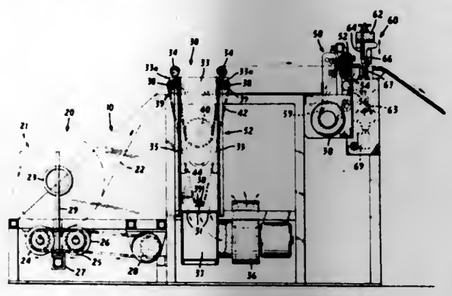
4. the effective flow section of said second path being smaller than the effective flow section of said first path.

4,070,951

WEB HANDLING APPARATUS

John L. Bala, New Paltz, N.Y., assignor to Packaging Industries, Inc., Hyannis, Mass.

Division of Ser. No. 481,918, June 21, 1974, Pat. No. 3,948,425, which is a continuation-in-part of Ser. No. 382,319, July 25, 1973, abandoned. This application Apr. 6, 1976, Ser. No. 674,281
Int. Cl.² B65L *25/32*
U.S. Cl. 93—8 R **6 Claims**



1. Apparatus of the kind used to convey substantially wide and continuous lengths of sheet plastic past a series of downstream process stations continually operating on said sheet including:

drive means for intermittently feeding said sheet to the downstream process stations;

an accumulator means including a container upstream of said drive means for receiving a loop of said sheet;

means for supplying sheet to said container;

vacuum means for withdrawing air from the container beneath the loop of sheet to provide a pressure differential across the sheet thereby to tension the sheet taken from the container by the drive means;

control means coupled to the drive means to control the feeding of sheet to the downstream process stations and including sensing means responsive to the amount of sheet within the container;

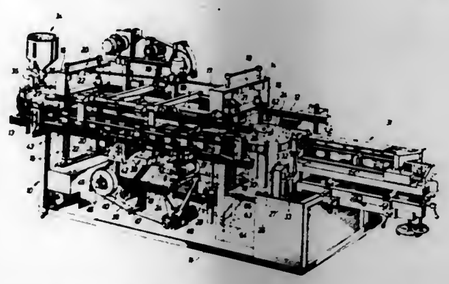
and means for adjusting the pressure differential produced by said vacuum means to modify the tension in the sheet.

4,070,952

CARTON STORAGE, FEEDING AND OPENING APPARATUS

Hans Rolf Ingemar Linner, Helsingborg, Sweden, assignor to AB Akerlund & Rausing, Lund, Sweden

Filed Mar. 15, 1977, Ser. No. 777,720
Claims priority, application Sweden, Nov. 12, 1976, 7612635
Int. Cl.² B31B *1/06, 1/78*
U.S. Cl. 93—53 R **4 Claims**



1. Carton storage, feeding and opening apparatus for use in a packaging machine in which plane folding box blanks are fed to a conveyor with simultaneous opening of the folding box blanks which are subsequently fed one after another in a predetermined direction with substantially constant center-to-center distances to processing stations along the conveyor, said apparatus comprising:

a substantially horizontal storage bottom member, said bottom member being vertically adjustable;

a pair of side guiding means for folding box blanks substantially vertically carried by the storage bottom member, said side guiding means being adjustable independently of each other and of the storage bottom in longitudinal and latitudinal direction in relation to said storage bottom member; and

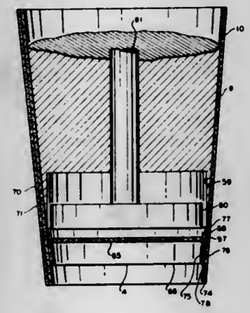
stop means mounted on said side guiding means at the discharge end of said apparatus adjacent said conveyor, said stop means adapted to fix the position of folding box blanks in a predetermined angular orientation with respect to the longitudinal direction of the storage bottom member.

4,070,953

METHOD FOR PRODUCING A CONTAINER

Frank P. Richards, and Raymond C. Taylor, both of Kansas City, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 569,731, April 21, 1975, Pat. No. 3,990,353. This application June 10, 1976, Ser. No. 694,619
Int. Cl.² B31B *49/02*
U.S. Cl. 93—39.1 R **6 Claims**



1. A method of forming a container, said method including the steps of:

a. feeding a blank to forming means having a forming die with a through bore with a plurality of different sized forming areas;

b. forming a first fold line on said blank by passing same through one of the forming areas;

c. forming a second fold line on said blank by passing same through another one of the forming areas whereby said blank is formed into a bottom member having a bottom panel portion and a depending skirt portion with said first and second fold lines therebetween with said fold lines being generally concentric;

d. reducing the diameter of the first fold line to a diameter less than the formed diameter of the first fold line;

e. moving the skirt portion into engagement with a sidewall and allowing the diameter of the first fold line to expand from the reduced size; and

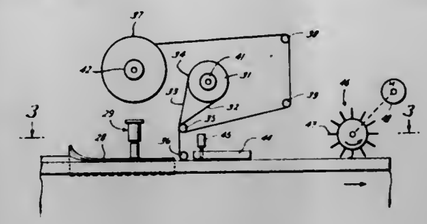
f. securing said bottom member skirt portion to an interior surface of said sidewall by adhesion to form a container.

4,070,954

DUCT FORMING MACHINE

Ronald J. Cailey, San Antonio, Tex., assignor to Glass Master Corporation, San Antonio, Tex.

Filed Oct. 30, 1975, Ser. No. 627,376
Int. Cl.² B31B *3/60*; B31F *1/00*
U.S. Cl. 93—36.9 **11 Claims**



1. A duct closing machine comprising,

a plurality of rollers arranged in parallelogram form to guide a duct board folded in duct form through the machine,

said board having a flap of material on one side thereof,

means rotating at least one of said rollers to move the duct board through the machine,

a sled guide on the machine bending and holding the flap on one side of the duct board in engagement with the opposite side of the duct board,

a tape feeding system positioning the end of a supply of tape in line to be contacted by the lead end of the duct and pulled from the supply by the duct moving through the machine, said system including a tape facing take-up system for pulling the facing from the tape before it is applied to the board,

means for activating the take-up system after the tape has been contacted by the leading end of the duct and deactivating the system after the trailing end of the duct has had tape applied thereto,

a smoothing iron for applying the tape over the duct flap and adjacent portion of said other side of the duct board as the duct moves through the machine,

cutter means for severing the tape applied to the duct free from the supply,

means responsive to movement of the duct for operating said cutter means after the trailing end of the duct has passed the cutter means,

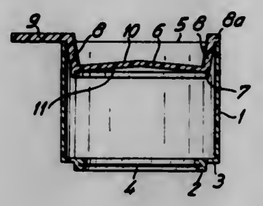
and wiper means said tape into firm engagement with said duct board as the duct leaves the machine.

4,070,955

COFFEE FILTER

Werner Braun, Sarnent, Switzerland, assignor to Maxs AG, Sachseln, Switzerland

Filed Nov. 22, 1976, Ser. No. 743,679
Claims priority, application Germany, Nov. 25, 1975, 7537473[U]
Int. Cl.² A23F *1/08*
U.S. Cl. 99—284 **5 Claims**



1. A filtering device for the preparation of coffee, comprising a pot-shaped vessel, a sieve attached to the bottom of said vessel, and a water distribution plate adapted to be supported

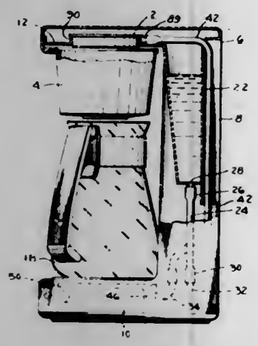
by the upper edge of said vessel, characterized by the fact that the diameter of the water distribution plate (6) is smaller than the inner diameter of the vessel (1), that at least three feet (8) protrude from the edge of the water distribution plate generally perpendicularly to the surface of the same, that the free ends of the feet (8) are provided with shoulders (8a) adapted to be put onto the upper edge (5) of said vessel, that the water distribution plate is provided with a rim (7) protruding from its front side (11) which is opposite to the feet (8), and that the edge (2) of the bottom of the vessel (1) is dimensioned such that it has a configuration which is within an area defined by said rim (7).

4,070,956

COFFEEMAKER WITH BREWING WATER SPREADER

Richard N. Brown, Macungie, Pa., assignor to General Electric Company, Bridgeport, Conn.

Filed July 12, 1976, Ser. No. 704,348
Int. Cl.[2] A47J *31/057, 31/44*
U.S. Cl. 99—304 **5 Claims**



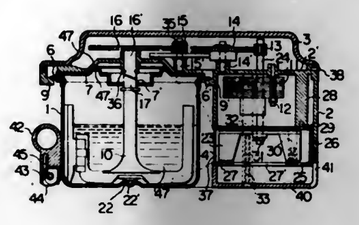
1. An electric coffeemaker comprising:
a. means for heating water;
b. a ground coffee basket for receiving dry ground coffee and heated brewing water;
c. a heated water spreader positioned generally above said ground coffee basket for receiving heated brewing water from said heating means and for distributing heated water into the ground coffee basket;
d. said spreader including a bottom wall having an upper surface and a lower surface and a cylindrical vertical side wall and a top cover; said side wall having a plurality of generally vertical tabs engaging and spacing the cover from the bottom wall of said spreader;
e. a plurality of heated water openings extending through said bottom wall for distributing water into the ground coffee basket; and
f. an enlarged overflow passage formed in the bottom wall of said spreader, said passage including a generally vertical dam wall formed with and extending upwardly from the upper surface of said bottom wall as a generally vertical cylindrical wall for permitting heated brewing water to flow over the dam wall through the overflow passage and into the ground coffee basket when the spreader has been filled with heated brewing water above the dam wall.

4,070,957

ICE CREAM MACHINE

Takashi Korekawa, Osaka; Nobuo Kato, Ikeda, and Mikio Yamaoka, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 425,795, Dec. 18, 1973, abandoned. This application Aug. 22, 1975, Ser. No. 606,952
Claims priority, application Japan, Dec. 20, 1972, 47-147172[U]; Nov. 28, 1973, 48-138219[U]; Nov. 28, 1973, 48-134759; Nov. 28, 1973, 48-134760; Nov. 28, 1973, 48-134761
Int. Cl.[2] A23C *3/04*; B01F *7/16*; A23G *9/00*
U.S. Cl. 99—455 **1 Claim**



1. An ice cream machine for use in a cold air environment comprising a stationary agitation vessel of a substantially cylindrical shape for containing an ice cream mix therein, rotatable agitation means for agitating the ice cream mix in the agitation vessel, blower means provided with a cold air inlet port and a cold air outlet port, said outlet port disposed in the vicinity of the agitation vessel, said blower means receiving cold air from said cold air environment through said inlet and blowing said cold air through said outlet port perpendicularly against the peripheral wall of the agitation vessel, and guide wall means having opposite side edges located adjacent said agitation vessel for guiding a stream of cold air discharged through the outlet port of the blower means to move along the outer peripheral surface of the agitation vessel, said guide wall means having a substantially circularly arcuate shape so as to divide substantially evenly the stream of cold air discharge through the outlet port of the blower means into two substreams of cold air, said guide wall means having cutouts at said opposite side edges thereof for inducing cold air remote from the agitation vessel to move toward the agitation vessel.

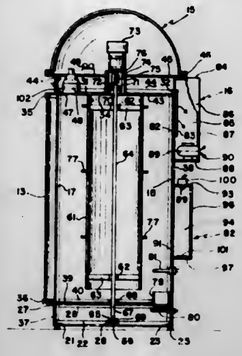
4,070,958

MEAT SMOKING AND MERCHANDISE DISPLAY CASE

Bruce W. Canright, 204 Gardenview, San Antonio, Tex. 78213

Continuation-in-part of Ser. No. 506,991, Sept. 18, 1974, Pat. No. 3,942,425. This application Mar. 8, 1976, Ser. No. 664,854
Int. Cl.[2] A01J *11/00*; A23B *4/04*
U.S. Cl. 99—468 **9 Claims**

1. A meat smoking and merchandise display case adapted to treat food products by smoke producing means comprising
a base,
an outer casing mounted on said base,
at least a portion of said outer casing of transparent material,
said case terminating upwardly in a shaped canopy,
an elongated, vertically extending inner casing rotatably mounted in said outer casing,
means to rotate said inner casing,
food product support means on said inner casing,
said smoke producing means in proximity to said base intermediate said outer and inner casings,
heating means adapted to activate said smoke producing means,
temperature control means adapted to regulate said heating means,
smoke control means adapted to detect the smoke density and to regulate said heating means when the smoke from said smoke producing means exceeds a predetermined density, and



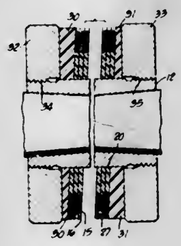
means responsive to said smoke control means to selectively exhaust the smoke from said case.

4,070,959

APPARATUS FOR EXTRACTING OIL FROM THE RIND OF WHOLE CITRUS FRUIT

Ronald C. Bushman, Hacienda Heights, and Franklin K. Holbrook, La Habra, both of Calif., assignors to Brown International Corporation, Covina, Calif.

Filed Feb. 2, 1976, Ser. No. 654,640
Int. Cl.[2] A23N *1/00*; B02C *15/00*; B26D *1/00*
U.S. Cl. 99—510 **2 Claims**



1. Apparatus for extracting oil from the rind of whole citrus fruit, comprising, in combination: a plurality of parallel horizontal rolls defining troughs between them for reception and support of whole citrus fruit, each roll comprising a shaft having an axis of rotation, a series of parallel rings mounted in inclined position on the shaft, each ring being formed of thin metal and having a continuous series of pointed teeth on its periphery, a plurality of spacer disks each mounted on the shaft between two adjacent rings, means for clamping said metal rings and spacer disks end to end, a plurality of annular washers each loosely encircling a spacer disk and having clearance space between adjacent rings, whereby rotary movement of the shaft, rings and spacers causes wobble movement of the disk peripheries, radial movement of the washers serving to displace material accumulating between adjacent rings.

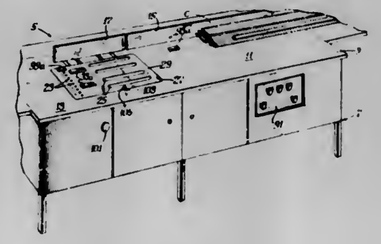
4,070,960

APPARATUS FOR PACKING FLAT ARTICLES

Arthur A. Diluiso, Beverly, Mass., assignor to Post Machinery Company, Inc., Beverly, Mass.

Filed Aug. 23, 1976, Ser. No. 716,951
Int. Cl.[2] B30B *15/14*
U.S. Cl. 100—49 **5 Claims**

1. Apparatus for packing stacks of flat articles in a box, which apparatus comprises
a frame having a flat upper surface including a receiving region and a packing region spaced longitudinally from each other, and first switch means located between said regions and protruding from the surface thereof,
at least two sets of rear abutment fingers,
means mounting said rear fingers for movement between raised positions extending upward through holes in said upper surface and retracted positions below said upper surface,
at least two sets of front compression fingers aligned with longitudinally elongated apertures in said upper surface,
means mounting said front compression fingers for extension to a raised position above said upper surface and for retraction to a lower position below said upper surface,
means for moving said sets of front fingers longitudinally of said upper surface,
second switch means extending above said upper surface in association with each set of said rear abutment fingers,
a control system connected to said first and second switch



means so that actuation of said first switch means by sliding movement thereover of a first stack of flat articles causes extension of said rear abutment fingers and actuation of said second switch means adjacent a first set of said rear fingers causes extension of a first set of said front compression fingers and longitudinal movement thereof to compress the first stack of articles therebetween, and so that subsequent actuation of said second switch means adjacent a second set of rear abutment fingers by sliding movement of a second stack of flat articles thereover causes extension of a second set of said front compression fingers and longitudinal movement thereof to compress the second stack therebetween, and
air nozzle means mounted on said frame for blowing a stream of air transversely across said upper surface so as to hold a flat divider in vertical orientation against said compressed first stack of articles to provide a separator and guide against which the second stack of articles can be evenly arranged in abutting contact.

4,070,961

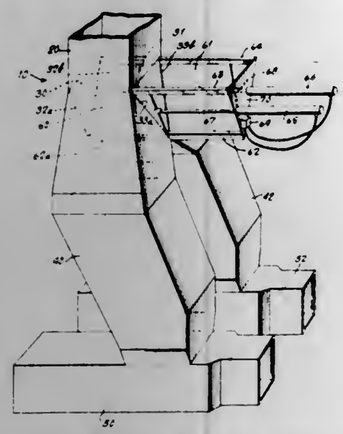
WASTE DIVERTER APPARATUS FOR A WASTE DISPOSAL SYSTEM

James O'Rourke, Waldwick, N.J., and Murray Feldberg, Brooklyn, N.Y., assignors to Multi-Pak Corporation, Hackensack, N.J.

Filed Dec. 4, 1975, Ser. No. 637,532
Int. Cl.[2] B30B *15/30*; B65G *11/20*
U.S. Cl. 100—185 **4 Claims**

1. An improved waste disposal system of the type having a single waste supplying chute, a waste diverter housing having a waste inlet opening for receiving waste from said waste supplying chute and means for selectably directing said waste to a pair of waste outlet openings in said diverter housing, a pair of waste compactors, and a pair of waste outlet chutes for connecting each said waste compactor to a waste outlet opening of said waste diverter, wherein the improvement comprises:
separate waste outlet gates for each of said waste outlet openings, said gates being horizontally slidable between a

first position substantially outside said diverter housing which opens their corresponding waste outlet openings and a second position substantially within said housing which closes said corresponding waste outlet openings and being substantially equal in size to said waste outlet openings; means for slidably supporting said horizontally slidable gates ... consisting of a single horizontal lower support element having two slotted tracks to receive the



lower portions of said gates, and a pair of spaced horizontal upper support elements, each parallel to said lower support element and having a single slotted track to receive the upper portion of one of said gates, said upper and lower horizontal support elements slidably supporting said gates in a vee configuration; and

control means for independently driving each of said gates between said first position and said second position.

4,070,962

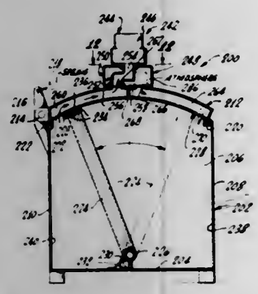
REFUSE COMPACTORS

Robert A. Peterson, 8756 33rd Ave., Kenosha, Wis. 53140

Filed Aug. 25, 1976, Ser. No. 717,675

Int. Cl.² B30B *7/00, 15/06*

U.S. Cl. 100—209 **34 Claims**



1. A refuse compactor comprising:

a refuse container including relatively rigid walls and a movable pressure plate normally disposed in mutual fluid sealing relation to form a refuse receiving space at one side of said plate;

means providing access to said space for placement of refuse in and removal of refuse from said space;

means supporting said pressure plate for movement relative to said walls in the direction of said space through a refuse compression stroke to compress refuse in said space and in the opposite direction through a return stroke;

and pressure plate operating means for selectively evacuating said space to effect movement of said pressure plate through its compression stroke by atmospheric pressure and producing a pressure differential across said pressure plate to effect movement of the plate through its return stroke.

4,070,963

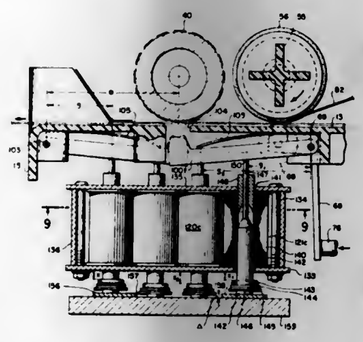
IMPACT LINE PRINTER

John H. Weaver, Encino, Calif., assignor to Anadex, Inc., Chatsworth, Calif.

Filed Apr. 12, 1976, Ser. No. 676,094

Int. Cl.² B41J *9/38*

U.S. Cl. 101—93.29 **12 Claims**



1. In an impact line printer wherein a plurality of pivoted print hammers impact a printing medium against moving type faces, the improvement comprising:

a first plurality of print hammer actuator solenoids for respectively engaging a first set of said print hammers of predetermined distance S_1 from the hammer pivot axis to push directly through a predetermined distance of armature movement X_1 on said hammers for impacting the printing media,

a second plurality of print hammer actuator solenoids for respectively engaging a second set of said print hammers of predetermined different distance S_2 from the hammer pivot axis to push directly through a different predetermined distance of armature movement X_2 on said hammers for impacting the printing media, said distances of movement of solenoid armatures X_1 and X_2 as well as said distances from the hammer pivot axis S_1 and S_2 being appropriately selected to achieve substantially the equivalent impact printing forces against said moving type faces;

a platen subassembly comprising a unitary molded plastic platen member having a series of comb-like guides for said print hammers, said print hammers being pivoted within said guide by pivot means on said platen member, said platen member having a support surface for the printing media and a plurality of openings therethrough large enough to accommodate the heads of said print hammers so that energization of the actuator solenoid drives its associated hammer head through said opening to press the printing medium on said platen surface against one of said moving type faces; and

means for driving said printing medium comprising a driven roller and clamp means for clamping said printing medium against said driven roller, said clamp means including a pinch roller rotatably mounted on a pivoted lever having an extended lever arm for engagement by an actuator means, said extended lever arm having a degree of flexibility so that printing media of varying thickness is accommodated by flexure of said lever arm.

4,070,964

THIN FLEXIBLE METAL SQUEEGEE BLADE FOR ROTARY SCREEN PRINTER

Jacobus Gerardus Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen, Netherlands

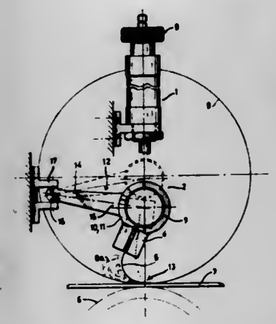
Continuation-in-part of Ser. No. 630,815, Nov. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 383,155, July 27, 1973, Pat. No. 3,933,093, which is a continuation-in-part of Ser. No. 811,787, April 1, 1969, abandoned. This application May 21, 1976, Ser. No. 688,613

Claims priority, application Netherlands, Apr. 25, 1968, 6805845

The portion of the term of this patent subsequent to Dec. 21, 1993, has been disclaimed.

Int. Cl.² B41F *15/44*

U.S. Cl. 101—120 **10 Claims**



1. A squeegee blade for a rotary printing machine and comprising a thin flexible resilient metal strip having an edge thereof attached to a squeegee holder within a cylindrical screen stencil of the rotary printing machine such that a portion thereof freely protrudes from the holder, said blade having a transverse trailing edge for contacting the inner surface of a stencil in the region of the zone of the stencil contacting the material to be printed, said blade having a thickness of less than 1.0% of the width of its freely protruding portion, said blade being flexible through an angle ranging from 90° to 3° with respect to the inner surface of the stencil to vary selectively the quantity of printing fluid pressed through the stencil by the blade trailing edge.

4,070,965

SEQUENTIAL ROTARY PRINTING PRESS WEB THREADING MEANS

Werner Aenishaenslin, Egerkingen; Fritz Suter, Boll; Ulrich Pfeuti, Worb, and Paul Haag, Bern, all of Switzerland, assignors to Maschinenfabrik Wifag, Bern, Switzerland

Continuation of Ser. No. 571,972, April 28, 1975, abandoned. This application Nov. 3, 1976, Ser. No. 738,285

Claims priority, application Switzerland, May 6, 1974, 060393/74; Apr. 28, 1975, 049312/75

Int. Cl.² B41F *13/02*

U.S. Cl. 101—228 **5 Claims**

1. A rotary printing press assembly including apparatus for initially threading and conveying continuous webs of material therethrough comprising:

a plurality of sequentially arranged printing units having said material webs pass serially therethrough;

endless chain conveyors for each of said printing units for driving said materials;

a lead-in bar attachable to said conveyors and capable of having said material web attached thereto;

a gravure cylinder and impression cylinder between which said material web is engaged when passing through each of said printing units;

a feeding station for each of said printing units for receiving said web prior to engagement thereof with said gravure cylinder and impression cylinder of each printing unit;

a rotary field motor for driving said endless conveyor chains in each said printing unit during the threading operation;

series-connected limit switches actuated by said lead-in bar for controlling operation of said rotary field motors;

engagement and disengagement means for sequentially connecting said lead-in bar to said chain conveyor at each of said feeding stations of said printing units and for disengaging said lead-in bar when said lead-in bar has passed through said printing units to enable engagement thereof by the chain conveyor of a next succeeding printing unit;

said engagement and disengagement means comprising

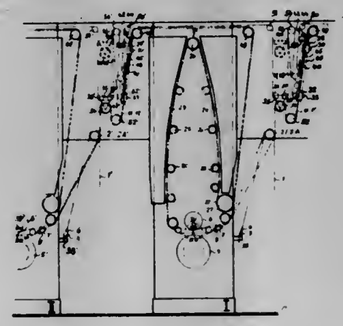
a carrier bracket mounted on said chain conveyor,

a pawl pivotally mounted on said carrier bracket,

a locking bolt fixed to said carrier bracket,

a cam surface formed on said lead-in bar adapted to be engaged by said pawl,

a recess formed in said lead-in bar located to have said pawl guided by said cam surface into locking engagement therewith to effect driving of said lead-in bar by said chain conveyor, and



a bore formed in said lead-in bar located to have said locking bolt engaged therein to hold said lead-in bar against lateral movement relative to the driving direction of said chain conveyor;

a transfer station including means for actuating said engagement and disengagement means to disengage said lead-in bar from said chain conveyor when said lead-in bar has passed through a printing unit;

said transfer station including means for transferring said lead-in bar between the chain conveyors of adjacent printing units;

said series-connected limit switches being arranged to be actuated by said lead-in bar to start the rotary field motors of each of said conveyor chains when said lead-in bar introduces said material web thereinto and to stop said rotary field motors when said lead-in bar is transferred to a next adjacent printing unit;

said material web being connected to one end of said lead-in bar and sequentially passed through said plurality of printing units by sequential engagement and disengagement of said lead-in bar with the chain conveyors of each of said printing units.

4,070,966

APPARATUS FOR MARKING DOCUMENTS

Guy Edon, Angers, France, assignor to Compagnie Honeywell Bull, Paris, France

Filed June 23, 1976, Ser. No. 698,921

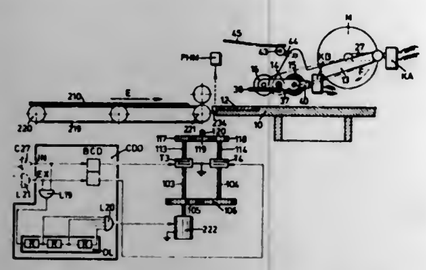
Claims priority, application France, July 31, 1975, 75 24020

Int. Cl.² B41F *3/20*

U.S. Cl. 101—269 **11 Claims**

1. A document marking apparatus comprising a fixed support provided with an impression stamp, a carriage mounted to

move over said support, drive means for imparting a reciprocating movement to said carriage, a shaft pivotally supported by said carriage and disposed parallel to said support and transversely to the direction of said reciprocating movement, a rotatable carrier mounted on said shaft and comprising an inking roller and a pressure roller parallel to said shaft and disposed on diametrically opposite sides of said shaft, and



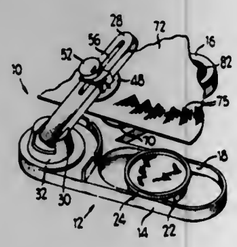
means for continuously rotating said carrier about said shaft during each cycle of reciprocation of the carriage and arranged to cause said inking roller to travel across the entire extent of the stamp in the course of a first cycle of reciprocation, and to cause said pressure roller, in the course of a second cycle of reciprocation, to travel across and mark a document positioned over the inked impression stamp between said two cycles of reciprocation.

4,070,967

STAMP DESIGN KIT

Floyd E. Schlau, Lake Forest; Howard J. Morrison, Deerfield, and Albert G. Keller, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 21, 1976, Ser. No. 650,895
Int. Cl.² B41F *1/04*
U.S. Cl. 101—301 **14 Claims**



1. A stamping kit, comprising:
a frame having two horizontal, generally elongated, diverging leg portions;
a selectively movable support arm mounted on the frame for movement between a first position above one of said leg portions and a second position, above the other of said leg portions;
an ink pad mounted on one of said leg portions and a stamping surface provided on the other of said leg portions; and
a stamp secured to said arm for selective movement therewith to contact said ink pad when the arm is in its first position to supply ink to the stamping surface and subsequent transferring of said ink to a suitable transfer sheet placed on the stamping surface by movement of said arm to said second position, wherein said second leg portion includes means for pivotally connecting the transfer sheet thereto to maintain proper rotational alignment between the successive ink transfers.

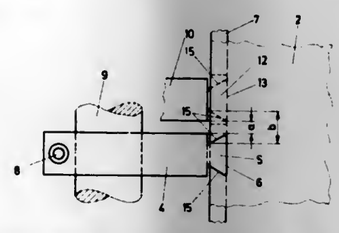
6. A stamping device, comprising:
a frame portion;
an ink pad;
a selectively movable support arm mounted on the frame by means permitting universal movement relative to said frame in a horizontal and vertical plane relative to said frame portion between at least a first position and a second position;
an ink pad mounted on said frame in vertical alignment with said support arm when in said first position and a stamping surface provided on the frame in vertical alignment with said support arm when in its second position;
a stamp for mounting on the support arm; and
a stamp carrier mounted on said support arm for mounting said stamp, said stamp being mounted by said stamp carrier to contact the ink pad when the support arm is in its first position to supply ink to the stamping surface thereof, and subsequently transferring of said ink to a suitable transfer sheet placed on the stamping surface by selective movement of said arm to the second position.

4,070,968

GRIPPER FOR PRINTING MACHINES

Alfred Zehe, Walldorf, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Sept. 7, 1976, Ser. No. 720,630
Claims priority, application Germany, Sept. 10, 1975, 2540218
Int. Cl.² B41F *21/04*
U.S. Cl. 101—408 **3 Claims**



1. In a gripper assembly for a printing machine, having a rotary member for carrying a sheet to be printed a gripper member mounted on the rotary and member having a gripper tip formed with a free edge and a clamping face thereat, said clamping face being cooperable with a gripper support for gripping the sheet therebetween, said clamping face being trapezoidal and having a pair of non-parallel sides and a pair of parallel sides of unequal length connecting said pair of non parallel sides the longer of the two parallel sides thereof being disposed at the free edge of said gripper tip whereby the gripped sheet extends beyond the longer of the two parallel sides of said clamping face and along said non-parallel sides thereof.

4,070,969

METHOD FOR STRENGTHENING LITHOGRAPHIC PRINTING PLATE IMAGES

Jack R. Helmer, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 16, 1976, Ser. No. 705,874
Int. Cl.² B41N *3/00*; B41C *1/10*
U.S. Cl. 101—465 **2 Claims**

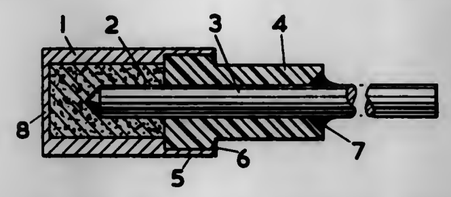
1. A process of strengthening lithographic plates comprising:
a. providing an exposed and developed olephilic image aluminum-based lithographic printing plate containing non-crosslinked resinous image areas thereon and hydrophilic non-image areas;
b. preserving the hydrophilic non-image areas and strengthening the image areas by applying a solution of triethanolamine titanate; and
c. heating the solution coated plate.

4,070,970

ELECTRO-EXPLOSIVE IGNITERS

William Bertram Scamaton, Orpington, England, assignor to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, London, England

Filed May 13, 1976, Ser. No. 686,065
Claims priority, application United Kingdom, May 14, 1975, 20469/75
Int. Cl.² F42B *3/18*
U.S. Cl. 102—28 R **8 Claims**



1. An electro-explosive igniter comprising two initiating electrodes separated by a layer of a pyrotechnic mixture of metal particles intimately and uniformly intermixed with particles of an oxidising agent for oxidising the metal particles, said mixture including particles of a dielectric material so selected and distributed in said mixture that said layer has a two-stage electrical resistance characteristic, the first stage having the natural high resistivity of said dielectric material of sufficient magnitude to limit the density of a current flow through said layer upon an application of a potential difference across the initiating electrodes to a level which is insufficient to initiate an exothermic reaction between said metal particles and said oxidising agent when said potential difference is less than a breakdown voltage at which the natural resistivity of said dielectric material degenerates, and the second stage, once said breakdown voltage has been exceeded, being the low resistivity of the resulting dielectrically degenerate mixture, the reduced magnitude of the low resistivity thereafter increasing the density of current flow to initiate said exothermic reaction.

4,070,971

ENGINE EFFICIENCY

Alden Henry Studebaker, 241 Nenue St., Honolulu, Hawaii 96821

Filed June 5, 1974, Ser. No. 476,564
Int. Cl.² F02D *13/06*
U.S. Cl. 123—198 F **11 Claims**



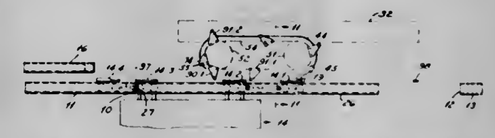
1. The method of improving engine efficiency comprising deactivating selected pistons in selected cylinders by removing the selected pistons, interrupting fuel supply to the selected cylinders, and operating the engine with the deactivated piston and interrupted fuel supply.

4,070,972

CARRIER PROPELLING MECHANISM FOR POWER AND FREE CONVEYORS

Harold A. Folsom, Livonia, and David G. Bilson, Detroit, both of Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Aug. 3, 1976, Ser. No. 711,403
Int. Cl.² B61B *10/02*
U.S. Cl. 104—172 S **17 Claims**



1. In a power and free conveyor including a carrier and a carrier supporting track section having an entrance end and an exit end, propelling mechanism for forwarding the carrier along said track section toward the exit end thereof comprising:
a double-ended flexible propelling member, one end of the propelling member being equipped with a carrier pusher;
means for supporting said propelling member including storage means and track means, said track means extending from said storage means toward the entrance end of said track section in parallel relation with said track section and defining for said propelling member a linear path of movement in which said carrier pusher is engageable in forwarding relation with a carrier;
drive means operable in a reverse direction to extend the pusher equipped end of said propelling member from said storage means along said track means toward the entrance end of said track section, and operable in a forwarding direction to return the propelling member to said storage means whereby a carrier engaged by said pusher is forwarded along said track section; and,
pusher means operably associated with said drive means for forwarding a carrier along said track section after said propelling member has been returned to said storage means.

4,070,973

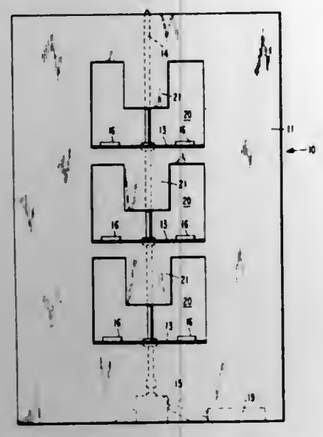
MECHANIZED DISPLAY DEVICE

Jerome Morgan, 602 E. Kirby, Detroit, Mich. 48202

Filed May 19, 1976, Ser. No. 687,884
Int. Cl.² A47D *5/025*
U.S. Cl. 108—20 **12 Claims**

1. A mechanized display device for advertising a product by displaying packages of the product, comprising:
at least one rotating, horizontally extending platform for supporting packages for the product;
shaft means fixed to and supporting said platform for rotation about an axis;
a substantially hollow housing extending vertically and having front and rear surfaces and an opening extending therethrough, wherein said platform is disposed in said opening and extends beyond the front and rear surfaces of the housing, said housing supporting said shaft means;
electric motor means disposed within said housing and beneath said platform for driving said shaft to rotate said platform in said opening and relative to said housing wherein,
said platform means includes means thereon for retaining said packages, wherein said retaining means are arranged in a circular pattern around the axis of said shaft, and wherein said housing has a portion which projects from

the top of said opening in the direction of said axis and into said opening, so that said opening is U-shaped with the



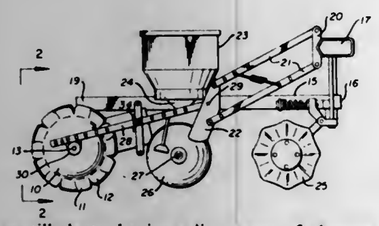
packages revolving around the projecting portion when retained on said platform by said retaining means.

4,070,974

DISC TRENCH FILLER FOR A NO-TILL PLANTER

Hugh E. Stacy, Jr., Rte. No. 2, Lowellville, Ohio 44436

Filed June 29, 1976, Ser. No. 700,975
Int. Cl.[2] A01C *5/06*
U.S. Cl. 111—85 **3 Claims**



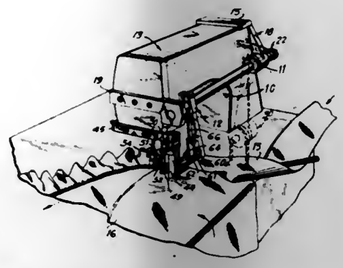
1. In a no-till planter having a disc opener of a known width arranged to form a shallow trench in the soil of a field to be planted, a hopper and a metering device for delivering seeds from the hopper to the trench formed by the disc opener; support means extending outwardly from said planter, a trench filler comprising a unitary disc journaled on said support means in trailing alignment with said disc opener, said disc having a peripheral edge, a plurality of individual alternately arranged opposite outwardly curving segments each integrally joined to the peripheral edge of said disc at the root of said segment, said segments each being curved in at least two planes and each being located immediately adjacent one another with said disc peripheral edge being formed entirely by said segment roots and adjacent segments are joined together solely at the roots thereof, the transverse spacing of the outermost edges of said curved segments being at least as great as the width of said disc opener and the shallow trench formed thereby so that the segments engage and move portions of the soil from the sides of the trench into the same.

4,070,975

RUFFLER ATTACHMENT FOR SEWING MACHINE

Richard Russell, Tappan, N.Y., assignor to U.S. Blind Stitch Machine Corporation, Plainview, N.Y.

Filed Nov. 26, 1975, Ser. No. 635,568
Int. Cl.[2] D05B *35/08*
U.S. Cl. 112—135 **7 Claims**



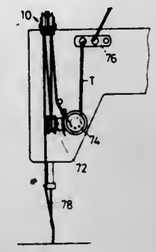
1. A ruffler assembly for use in a sewing machine having needle means including a needle, said needle means effecting periodic sewing displacement of said needle into a material to effect sewing of same, feed dog means including a feed dog constructed and arranged with respect to said needle to effect periodic displacement of said fabric after each sewing displacement of said needle, and rotary driving means coupled to said needle means and feed dog means for synchronizing the periodic fabric sewing and displacement operations respectively performed by said needle and feed dog means, said ruffler assembly comprising in combination a stiffener blade disposed to permit a body material to be introduced thereover into the sewing position of said needle to effect sewing thereof, feeder means for effecting the feeding of a trim material into contact with said stiffener blade, and a ruffler blade coordinately displaceable from a stiffener blade contact position to a ruffle-forming position proximate said needle sewing position, said ruffler blade at said first stiffener blade contact position being constructed and arranged to sandwich a portion of said trim material between said ruffler blade and said stiffener blade and thereby effect a folding of a portion of said trim material between the first stiffener blade contact position and sewing displacement position of said needle under the remaining portion of said trim fabric between said stiffener blade contact position and sewing displacement position of said needle, and oscillatory drive means coupled to said ruffler blade means and to said sewing machine rotary drive means for synchronizing said coordinate displacement of said ruffler blade from said first contact position to said ruffle forming position with said periodic sewing displacement of said needle and periodic displacement of said material by said feed dog, said oscillatory drive means further including ruffler shaft means coupled to the ruffler blade means, and calibration means disposed intermediate the main sewing machine drive shaft and the ruffler shaft means for oscillating the ruffler shaft means to a predetermined rotational angle, the extent of the rotational angle through which said ruffler shaft means is rotated defining the distance through which said ruffler blade is coordinately displaced during each ruffle forming operation, said oscillatory driving means also including eccentric drive means coupled to said calibration means for displacing said ruffler shaft means through a predetermined rotational angle during each ruffle forming operation, said eccentric driven means including a driven pulley, said sewing machine rotary drive means including a driving pulley, and a belt coupled to said driving pulley and driven pulley to effect driving of said driven pulley thereby, the gear ratios between said drive pulley and said driven pulley being selectively variable so that said variable gear ratios determine the number of pleats to be formed for each sewing operation of said sewing needle.

4,070,976

UPPER THREAD TAKE-UP LEVERS FOR SEWING MACHINES

Bunsaku Taketomi, 56-141 Ishikane, Iwasaki, Nisshin-cho, Aichi, Aichi, Japan

Filed Feb. 1, 1977, Ser. No. 764,538
Int. Cl.[2] D05B *49/00*
U.S. Cl. 112—241 **16 Claims**



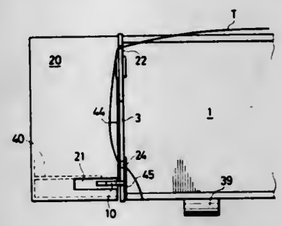
1. In an upper thread take-up lever for a two thread sewing machine, said lever having a free end, said machine having a frame carrying a vertically disposed thread guiding pulley rotatably supported thereon in the vicinity of a tension disc, the improvement which comprises:
upper thread guiding means vertically disposed above said pulley and rotatably supported adjacent to said free end of said lever; and
means secured to said free end of said lever for supporting said guiding means rotatably in unison with said pulley.

4,070,977

SEWING MACHINE

Kimihiko Yamamoto, Nagoya, and Hitoshi Ishikawa, Anjo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Nov. 2, 1976, Ser. No. 738,380
Int. Cl.[2] D05B *73/02*
U.S. Cl. 112—259 **5 Claims**



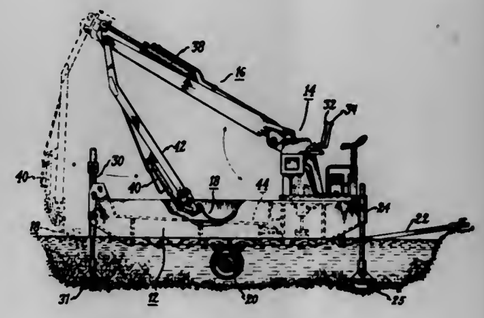
1. In a sewing machine comprising a base, a hollow arm extending from the base upright and then horizontally, a needle bar vertically reciprocating at the end portion of the arm and carrying at the end a thread carrying needle, a main driving shaft horizontally extending within said arm, a needle thread taking up lever having a slot type thread guiding eye at the free extremity thereof and being pivotable in a vertical plane parallel to the main driving shaft, a mechanism driven by the main shaft for reciprocating the needle bar and swivelling the needle thread taking up lever in synchronism with the reciprocation of the needle bar for taking up and slackening a loop of the needle thread passing through the slot type thread guiding eye, a cover attached to the end face of the arm for defining a housing in cooperation with the arm so as to nest the needle thread taking up lever in the housing, said cover having an upper side wall and a front side wall and having a small window in the upperside wall thereof elongated in parallel with the main driving shaft to permit the slot type thread guiding eye of the taking up lever to project outside of the cover, a separator means within the cover of sheet metal parallel to the front side wall of the cover to define as a partition wall in cooperation with a front side wall of the cover a space of a volume sufficient to allow the taking up lever to swivel therein but to control a ballooning of a portion of the needle thread passing through the guiding eye of the lever, and path means for the needle thread to travel unrevealedly with the cover.

4,070,978

FLOATING APPARATUS FOR WEEDING AND DREDGING WATERWAYS

Del P. Virgillo, 54 Greenings Ave., Pittsfield, Mass. 01201

Filed July 1, 1976, Ser. No. 701,758
Int. Cl.[2] B63B *35/28*
U.S. Cl. 114—26 **2 Claims**



1. A floatable device for cleaning waterways comprising, in combination,
a. a barge member
1. said barge member having a container portion for receiving debris cleaned from a waterway,
b. an articulated boom member rotatably mounted on said barge member,
c. control means mounted on said barge for articulating and rotating said boom member,
d. an instrumentality mounted on the free end of said boom member for cleaning waterways,
1. said instrumentality moved with said boom member by said control means and also separately actuated by said control means,
e. stabilizer means mounted on said barge and movable to engage the bed of a waterway to prevent tipping of said barge when said boom member and said instrumentality are actuated to clean the waterway, and
f. said barge member in the form of a trailer movable from waterway to waterway.

4,070,979

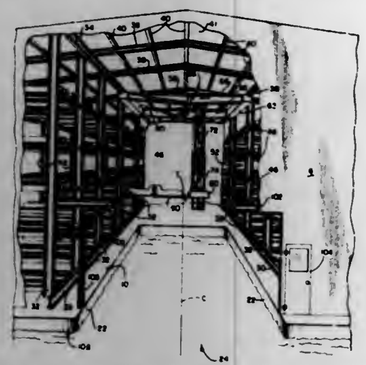
FLOATING DRY STORAGE FACILITY FOR SMALL BOATS

Roger W. Otis, and Stephen H. Otis, both of Box 518, McAlester, Okla. 74501

Filed Mar. 22, 1977, Ser. No. 780,236
Int. Cl.[2] B63B *35/44*
U.S. Cl. 114—263 **9 Claims**

1. A floating dry storage facility for removing and storing boats of a maximum predetermined length in a building from a body of water comprising: a plurality of spaced horizontally disposed joists positioned transversely through the building; means connecting the joists to form a rectangular platform; a floor secured to said platform; flotation means positioned under each side of said platform to support said facility in the body of water; a pair of spaced parallel beams running longitudinally through the building, said beams being equally spaced from the longitudinal axis of the platform and aligned over the center of the flotation means; a plurality of spaced vertically extending columns spaced along and secured to each of said beams; roof truss means secured between the upper ends of said

columns; a pair of spaced parallel runway rails secured to said roof truss means adjacent the upper ends of said columns; a plurality of outer vertically extending members having a first end secured to said joists and a second end secured to said roof truss means, said outer vertically extending members being aligned with said columns on said beams; horizontally extending members secured in vertically spaced relationship and extending parallel to said beams, said horizontally extending



members being secured to each row of said columns and vertically extending members; boat support means secured between said horizontally extending means on the columns and vertically extending members on each side of the building; bridge means movably secured between the spaced parallel runway rails; lift means depending downwardly from said bridge means and adapted to raise and lower the boats; and means to cover said facility.

4,070,980

CHANNEL CONNECTOR FOR FLOATING DOCKS

Myron L. Shorter, Jr., 81 Calypso Shores, Ignacio, Calif. 94947

Filed June 21, 1976, Ser. No. 697,832

The portion of the term of this patent subsequent to July 6, 1993, has been disclaimed.

Int. Cl.² B63B *35/44*

U.S. Cl. 114—263 **10 Claims**



1. In a float structure formed of a plurality of adjacently arranged interconnected float units, each float unit comprising an enclosed, substantially rectangular shell structure with opposed sides with sidewalls and ends with end walls, a top and a bottom, an improved means of interconnecting said float units, comprising; flange structures on said float units comprising a portion of said sidewalls horizontally projecting from said sidewalls and extending the length of said sidewalls, said flange structures having a horizontal top mounting surface a side and a horizontal bottom mounting surface spaced from said top surface; connection members for connecting at least two of said float units together with ends abutting, said connection members each comprising an elongated fabricated steel U-channel having an upper plate element mounted against said top mounting surface of said flange structures and a lower plate element mounted against said bottom mounting surface of said flange structures, and a spanning plate integrally connecting said upper and lower plates arranged at each side of said flange structures; said U-channel extending longitudinally along at least a portion of the flange structures of at least two adjacent float units; and fastening means extending through said U-channels and engaging said flange structures for securing said U-channels to at least said portions of said flange structures of said float units.

4,070,981

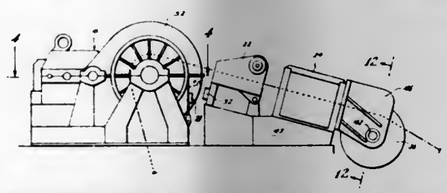
MOORING SYSTEM FOR FLOATING DRILLING VESSELS

David C. Guinn; Archie K. Haggard, and John P. Thomas, all of P. O. Box 1126, Houston, Tex. 77001

Filed Oct. 4, 1976, Ser. No. 729,496

Int. Cl.² B63B *21/50*

U.S. Cl. 114—293 **33 Claims**



1. A mooring system for maintaining a ship shape drilling vessel within alignment limits while drilling a well from the vessel in the sub-surface ground below it comprising,
a plurality of mooring chains, at least one extending from each side fore and aft of the vessel,
an anchor on each mooring chain for anchoring the anchor chain to the sub-surface ground,
a motor driven wildcat for each of the anchor chains,
means for sensing load on the motor while hauling in the anchor chain,
a brake including a brake band for braking each wildcat,
a first sensor on the brake band sensing load thereon,
a chain stopper for each anchor chain operable to lock the chain in position,
a second sensor on the chain stopper sensing load thereon,
each anchor chain extending from one each of the wildcats through one each of the chain stoppers,
load display means, and
means for transmitting the loads sensed by the means for sensing load on the motor, and the first and second sensors to the display means,
whereby the anchor chains can be let out and hauled in based on the loads sensed thereby maintaining the vessel within the alignment limits and the vessel can be warped into the sea.

30. The chain stopper of claim 29 where the chain stopper includes,
means to impact an end of the eccentric shaft to shift it axially.

4,070,982

CYLINDER-DRIVEN MARINE PROPULSION SYSTEM

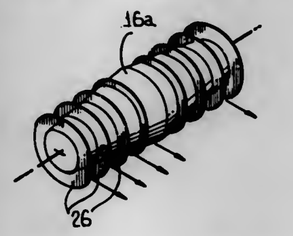
James C. Willyard, 14204 Knotley Road, Silver Spring, Md. 20904

Division of Ser. No. 559,225, March 17, 1975, Pat. No. 3,978,814, which is a division of Ser. No. 376,334, July 5, 1973, Pat. No. 3,888,202. This application June 18, 1976, Ser. No. 697,469

Int. Cl.² B63H *11/02*

U.S. Cl. 115—16 **9 Claims**

1. In a marine vessel of the hull displacement type wherein the vessel hull is partially submerged when said vessel is in motion, a propulsion system comprising:
a flow duct extending along the bottom of said hull, said duct being open at both ends and closed along its top, bottom and side walls, said duct being mostly submerged with the upper portion of its forward end extendng above the water line when said vessel is in motion;
a reaction device in the form of a driven cylinder located proximate the forward end of said duct and entirely within the confines of said hull, said cylinder having a longitudinal axis extending horizontally and perpendicular to the direction of vessel foward motion, the cylinder being positioned at a depth such that its periphery remains partially submerged during vessel motion, said cylinder having a plurality of spaced, thin annular members projecting from the cylinder periphery in vertical planes which are parallel to the direction of motion of said vessel, the cylinder periphery between said annular members comprising substantially smooth circumferential surfaces which are substantially devoid of projections therefrom, said cylinder being arranged to be rotatably driven in a first direc-



tion about its longitudinal axis such that said circumferential surfaces viscously force air and water under said cylinder and through said duct from forward of said vessel; and
means for selectively rotating said cylinder about said longitudinal axis in said first direction;
wherein said top wall of said duct extends rearwardly from a leading edge thereof, said leading being positioned adjacent said cylinder and below the top of said cylinder, said leading edge extending the length of said cylinder to direct water and air driven by said cylinder into said duct in a rearward flow direction;
wherein the bottom and side walls of said duct extend forwardly of said leading edge of said top wall and at least as far forward as the forwardmost portion of said cylinder;
whereby water and air driven rearwardly through said duct by said cylinder initiates a reactive force which drives said vessel in a forward direction without imparting a lift force to said vessel.

4,070,983

REVERSIBLE OUTBOARD MOTOR WITH EXHAUST GAS DISCHARGE CONTROL

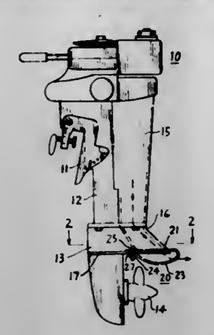
Hubert E. Randall, Apt. F-12, New Rogers Road, Levittown, Pa. 19056

Filed Dec. 23, 1976, Ser. No. 753,646

Int. Cl.² B63H *5/13, 21/26*

U.S. Cl. 115—17 **5 Claims**

1. A marine propulsion device for an outboard motor having an exhaust gas delivery pipe, an anti-cavitation plate and a propeller below said plate which comprises
an exhaust gas diverter carried by cavitation plate and having a central inlet connected to the exhaust gas delivery pipe and, in direct communication with said inlet, opposite outwardly disposed horizontal tubular discharge passage-



ways with their terminal ends separated at least as far apart as the diameter of the propeller.

4,070,984

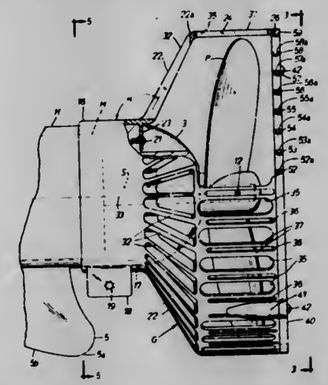
OUTBOARD MOTOR AND WEED GUARD THEREFOR

Chris S. Kappas, 218 - 13th St., Racine, Wis. 53403

Filed July 25, 1977, Ser. No. 818,309

Int. Cl.² B63H *5/16*

U.S. Cl. 115—42 **11 Claims**



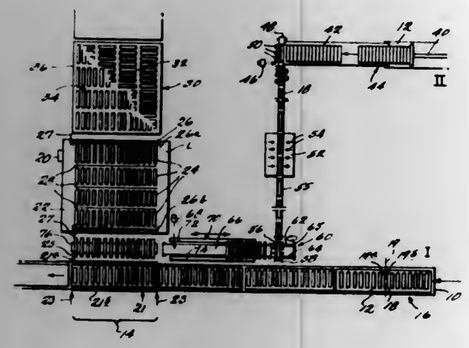
1. In combination with an outboard motor of the type having a horizontally elongated marine propeller drive housing and including a longitudinal front to rear axis, said housing having a front to rear extending shaft journalled thercin and a marine propeller mounted on the rear end of said shaft, a weed guard mounted on said housing and surrounding and enclosing said propeller, said weed guard comprising a front end embracing said rear end of said housing for detachably securing said guard front end to said housing, said guard also including a rearwardly diverging tapered wall, said tapered wall comprising a series of radially extending spokes which are relatively thin in circumferential direction as compared to their front to rear width, whereby water can pass from a front to rear direction readily through said tapered wall, said guide also including a cylindrical portion integrally connected with said tapered wall and disposed radially outwardly from and surrounding said propeller and extending rearwardly past said propeller, said cylindrical portion being perforated to permit the passage of water readily therethrough; and a removable rear end plate attached to a rear end of said cylindrical portion and extending transversely behind said propeller, said plate being formed with a series of openings whereby said plate is substantially open to permit free passage of water therethrough.

4,070,985

AUTOMATIC PRODUCTION APPARATUS FOR MANUFACTURING OF SPLIT TILE

Hans Lingl, Neu-Ulm, Ludwigsfeld, Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed Feb. 2, 1976, Ser. No. 654,168
Claims priority, application Germany, Mar. 1, 1975, 2508990
Int. Cl.² B65G *37/00*
U.S. Cl. 118—6 8 Claims



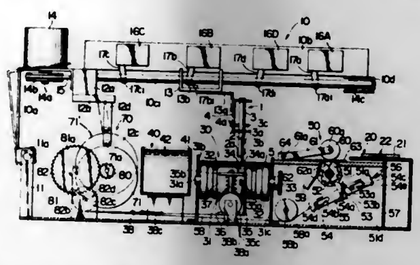
1. Apparatus for forming rows of glazed and unglazed split tile lengths into hacks for kiln firing comprising:
first and second conveying systems,
said first conveying system comprising first conveyor means for moving pallets supporting a row of spaced-apart unglazed split tile lengths to a first transfer position,
grouping area means for accumulating a predetermined number of adjacent rows of split tile lengths as a layer,
row transfer means for moving the row of spacedapart split tile lengths from the pallets located at said first transfer position to said grouping area means while maintaining the spacing established between the individual split tile lengths,
layer transfer means for moving layers from said grouping area means to a kiln car,
said second conveying system comprising
first, second and third conveyor means,
feeding means for feeding a palletized row of split tile lengths to said first conveyor means,
said second conveyor means being disposed perpendicularly to said first conveyor means and being adapted to individually receive split tile lengths therefrom in single file formation,
glazing means disposed on at least one side of said second conveyor means for glazing the split tile lengths passing therealong,
said third conveyor means being disposed perpendicularly to said second conveyor means and adapted to receive split tile lengths therefrom one at a time so as to form a row of spaced-apart split tile lengths on the third conveyor means, and
means for transferring thus formed rows to a second transfer position,
said row transfer means also being adapted to move a row of spaced-apart split tile lengths located at said second transfer position to said grouping area means while maintaining the spacing established between the individual split tile lengths.

4,070,986

AUTOMATIC BLOOD SERUM APPLICATOR APPARATUS FOR CATAPHORETIC USE

Yutaka Kato, Tama; Teruo Ouchi, Hachioji, and Kiyozo Koshiishi, Sagamihara, all of Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Sept. 18, 1975, Ser. No. 614,694
Claims priority, application Japan, Sept. 19, 1974, 49-108022
Int. Cl.² B05C *1/16*
U.S. Cl. 118—7 11 Claims



1. A blood serum applicator apparatus for cataphoretic use comprising:
a serum applicator;
a blood serum supply station and means for supplying blood at said supply station;
a blood serum application station;
a rinsing station at which said serum applicator is subjected to a rinsing fluid; means supplying rinsing fluid located at said rinsing station;
a dripping station including means for removing said rinsing fluid from said serum applicator;
a guide along which said serum applicator is moved to be sequentially passed through each of said stations;
a plurality of microswitches located at spaced intervals on said guide, each said microswitch for stopping the movement of said serum applicator when said serum applicator has reached a different one of said stations;
a cam assembly for causing a generally vertically downward and upward movement of said serum applicator when its movement is stopped by activation of one of said microswitches located on said guide; and
a station advancing control microswitch means mounted on said cam assembly, said control microswitch means being effective to cause movement of said serum applicator along said guide from one of said stations to the next, thus automatically achieving respective operations required for the application of the serum in succession.

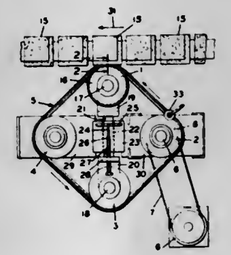
4,070,987

EDGE COATING APPARATUS

William G. Gross, York; Henry A. Long, Jr., Columbia, and John R. Yamshak, Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Nov. 18, 1976, Ser. No. 743,048
Int. Cl.² B05C *1/02*
U.S. Cl. 118—257 51 Claims

1. An edge-coating apparatus for simultaneously applying liquid coating material to adjacent non-parallel planar surfaces of the edge portions of work pieces, said apparatus comprising:
a. a flexible endless belt having an inner drive side and an outer liquid-transporting and applying side including
1. a first upper surface portion being outwardly and downwardly inclined in a plane different from the planes of the non-parallel planar edge surfaces of the work piece to be coated, an upper edge on said first surface portion of the belt, adapted to be in moving contact, at the point of application of the coating material, with a downwardly facing planar surface of the edge of the work piece being moved past said apparatus, a lower edge on said first surface portion of the belt, adapted to lightly contact, at the point of liquid application, a planar surface on the edge of the work piece which is non-contiguous and non-parallel with said downwardly facing surface thereon, said first upper surface portion on the liquid-applying side of said belt being further adapted to apply coating material to at least two adjacent non-parallel planar surfaces of said work piece edge portion;
2. a second liquid-applying surface portion on said belt having a surface configuration substantially similar to that of a portion of the edge of a work piece to be coated thereby, said second surface portion extending from and being downwardly inclined with respect to said first surface portion; and
3. a substantially vertical surface portion on said belt extending downwardly from said second surface portion,
b. rotatable mounting means for said endless belt, said mounting means comprising a plurality of pulleys all mounted for rotation in the same horizontal plane;
c. means for imparting rotation to the mounting means;
d. means for supplying liquid to the liquid-applying side of said belt at a point preceding the point of liquid application;
e. means for bringing the edge portion of a work piece and the liquid-applying side of said belt into movable contact with each other; and
f. resilient means mounted for reciprocal movement in a horizontal plane for biasing said liquid-applying side of said belt into and maintaining its contact with the edge portion of a work piece being moved therepast.

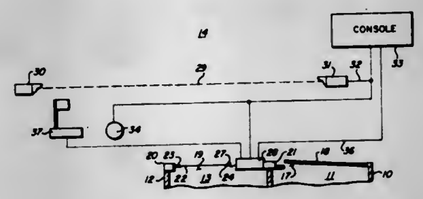


4,070,988

STARTING APPARATUS FOR RODEO EVENTS

Arthur C. Smith, 3702 E. Meadowbrook Ave., Phoenix, Ariz. 85018

Division of Ser. No. 719,572, Sept. 1, 1976. This application June 6, 1977, Ser. No. 803,672
Int. Cl.² A63K *3/02*; A01K *1/00*
U.S. Cl. 119—15.5 A 3 Claims



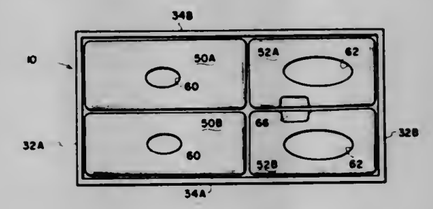
1. A starting system for use in combination with a rodeo structure, which structure includes a first stall for releasably retaining an animal and a second stall for detaining a contestant, and for initiating the activity of said contestant relative to movement of said animal from said first stall, said starting system comprising:
a. means for detecting the arrival of said animal at a predetermined distance from said second stall and for emitting a first signal in response thereto;
b. a releasable barrier for closing said second stall and including,
i. latch means for detachably holding said barrier and for releasing said barrier in response to said first signal, and
ii. switch means for emitting a second signal in response to release of said barrier prior to reception of said first signal by said latch means;
c. a first perceptible signalling device activated in response to said first signal; and
d. a second perceptible signalling device activated in response to said second signal,
whereby said contestant is started when said animal arrives at said predetermined distance, and
whereby notification is given if said contestant starts before said animal arrives at said predetermined distance.

4,070,989

LARGE ANIMAL CONVALESCENT UNIT

David K. Ganzel, 1112 N. Hester St., Stillwater, Okla. 74074

Filed Aug. 16, 1976, Ser. No. 714,789
Int. Cl.² A61D *3/00*
U.S. Cl. 119—27 8 Claims



1. A large quadruped animal convalescent recovery stall, comprising:
a. an upright, opened top box of dimensions to receive the animal and of height at least greater than the legs of the animal;
b. closed, expandable flexible-walled, water tank means, having four reentrant tubes sealed into the top surface, the contour of each said tube being designed to fit one leg of said animal, said tank means fitting within said walls of said box, the height of the water tank means, when filled with water being greater than the length of the legs of the animal; and
c. means to fill said tank means with water after the animal's legs are positioned in said tubes whereby the water pressure in said tank means pressing on the surfaces of the legs and on the lower portions of the body of the animal supports the weight of the animal.

4,070,990

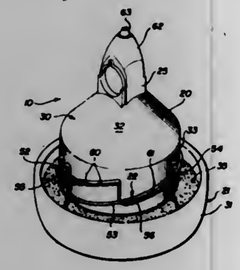
FEEDER PAN ASSEMBLY

Ray E. Swartzendruber, Syracuse, Ind., assignor to Chore-Time Equipment Inc., Milford, Ind.

Filed Feb. 2, 1976, Ser. No. 654,166
Int. Cl.² A01K *5/00*
U.S. Cl. 119—53 1 Claim

1. A feeder for poultry and the like, comprising pan means having an annular undercut lip portion and a pan bottom, hood means including feeder tube means adapted to receive feed from a source and direct it toward the pan means and shell means connected to the feeder tube means and extending to follow the contour of the pan means lip, and locatable at least partly within the pan means but spaced apart from the pan

means lip to define an annular feeding area accessible to the poultry, and also spaced apart from the pan bottom to define with the bottom a gate through which the feed must pass when traveling from the feeder tube to the annular feeding area, three inclined ramp members each unitarily formed with and projecting from the shell means, and an interconnector means including three strut members each adapted to extend down the shell means outer contours, across the interior contours of the pan, and thence upwardly into engagement with the pan means lip, and three angularly extended and inclined supports, each support being curved and inclined to lie upon the shell means ramp member with a line contact and secured to two adjacent struts at respective outer strut edges, and being vertically separated from both adjacent supports, whereby rotation of the interconnector means relative to the hood means causes the interconnector supports to slide along the corresponding shell ramps so as to raise or lower the pan means relative to the hood means and consequently to open or close the feed gate, each ramp being defined by an outer edge, and two only of the three outer ramp edges being formed to define a plurality of angularly and regularly spaced apart detents, each detent being sized and disposed to accommodate a strut whereby to inhibit movement of the strut past the detent and corresponding movement of the support along the ramp and consequent vertical movement of the pan relative to the hood and to permit said movement when the two interconnector struts are simultaneously moved out of engagement with the detents.



4,070,991

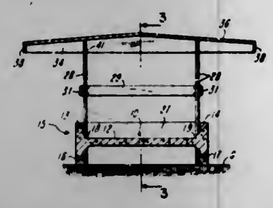
FEED BUNK STRUCTURE

Gregory Schmiesing, R.R. No. 1, New Bremen, Ohio 45869

Continuation of Ser. No. 554,187, Feb. 28, 1975, abandoned. This application May 28, 1976, Ser. No. 691,201

Int. Cl.[2] A01K *5/00*

U.S. Cl. 119—58 **19 Claims**



1. Feed bunk apparatus having an upper side and an under side, the upper side of which includes means defining a trough having a base feeding surface merging at its margins with upwardly projecting walls and the under side of which includes surface portions for seating thereof to a ground surface, post means including portions installed in said means defining a trough to one side of and immediately adjacent said upwardly projected walls, said post means being positioned and stabilized thereby to project upwardly from said base feeding surface, said installed portions of said post means being characterized by a slip fit mount in said means defining a trough and, upwardly of said installed portions thereof, said post means being adapted to mount a superstructure in an elevated relation to said trough.

4,070,992

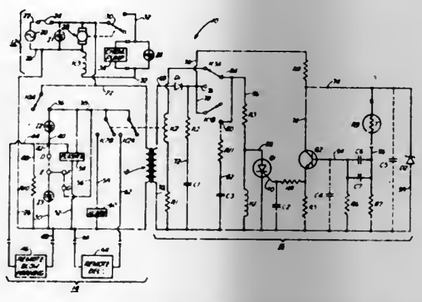
BOILER BLOW DOWN CONTROLLER

Donald Holdt, Cambridge, Md., assignor to Chemed Corporation, Cincinnati, Ohio

Filed Apr. 23, 1976, Ser. No. 679,696

Int. Cl.[2] F22B *37/54, 37/42*

U.S. Cl. 122—382 **18 Claims**



1. In combination with blow down means for a boiler, an electrical device adapted to sense changes in the fluid in said boiler blow down means being monitored and to produce an electrical signal in response to such temperature changes, circuit means adapted to receive said signal from said device, at least one alerting means, and said circuit means comprising means interconnecting said electrical device and said alerting means in such a manner that said alerting means are activated only when said temperature undergoes a predetermined relatively rapid change.

5. A method of producing an output signal in response to only a predetermined relatively rapid change in the temperature of a boiler blow down means, comprising the steps of of detecting said temperature, transducing the detected temperature into an electrical signal, inputting said signal to circuit means, selecting said circuit means such that its time constant is proportional to said predetermined relatively rapid change in said temperature, and producing an output signal from said circuit means in response to said predetermined relatively rapid change in said temperature.

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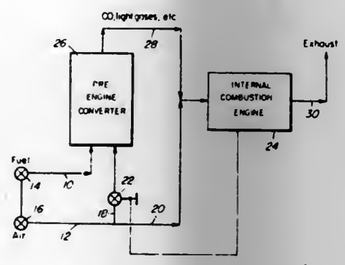
PRE-ENGINE-CONVERTER

Nai Yuen Chen, Titusville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 585,225, June 9, 1975, abandoned. This application Jan. 10, 1977, Ser. No. 758,249

Int. Cl.[2] F02M *25/06*

U.S. Cl. 123—3 **7 Claims**



1. In the process of converting low octane normally liquid hydrocarbons to higher octane normally gaseous hydrocarbons by contacting said liquid hydrocarbons with a hydrocarbon cracking catalyst under cracking conditions, mixing the resulting gaseous hydrocarbon product with an oxygen-containing gas, and generating power by burning said gaseous hydrocarbon with said oxygen in an internal combustion engine; the improvement which comprises contacting said low octane normally liquid hydrocarbons with a controlled amount of an oxygen-containing gas in the presence of a hydrocarbon cracking catalyst, said controlled amount of said oxygen-containing gas being an amount sufficient to burn only a portion of said liquid hydrocarbons and provide a gaseous effluent comprising hydrocarbons of higher octane value than said normally liquid hydrocarbons, and said hydrocarbon cracking catalyst comprising a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least 12, a constraint index of 1 to 12 and a crystal density not substantially below about 1.6 grams per cubic centimeter; mixing the resultant gaseous hydrocarbon effluent with an oxygen-containing gas in amount sufficient to burn said gaseous hydrocarbons; and passing the resulting mixture of gaseous hydrocarbons and oxygen-containing gas to said internal combustion engine.

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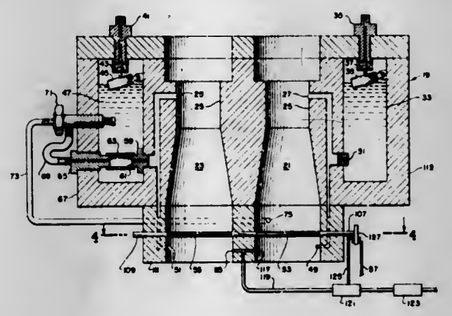
MODIFICATION FOR SELECTIVELY OPERATING A FRACTION OF MULTIPLE ROTORS OF A ROTARY ENGINE

Arthur Garabedian, Fullerton, Calif., assignor to Dudley B. Frank, Santa Ana, Calif.

Filed Nov. 10, 1975, Ser. No. 630,383

Int. Cl.[2] F02B *53/06, 53/10*

U.S. Cl. 123—8.07 **9 Claims**



1. A rotary engine, comprising:
first and second combustion chambers;
first and second rotors mounted for rotation in said first and second combustion chambers, respectively;
first and second intake manifolds connected to said first and second combustion chambers, respectively, for supplying fuel and air to said combustion chambers;
first and second carburetor barrels connected to said first and second intake manifolds, respectively;
first and second throttle valves mounted within said first and second carburetor barrels, respectively, for controlling the flow of air to said first and second intake manifolds;
means for supplying fuel to said first and second carburetor barrels;
means for sensing the vacuum in said first carburetor barrel upstream of said first throttle valve;
means responsive to said sensing means for controlling said fuel supplying means to selectively prohibit fuel flow to said second carburetor barrel when the vacuum above the primary throttle valve is below a pre-selected amount;
means for monitoring the vacuum in said first intake manifold; and
means responsive to said monitoring means for controlling said second throttle valve in response to the vacuum in said first intake manifold.

8. An engine having first and second combustion chambers, each connected by independent intake manifolds to first and second carburetor barrels, said carburetor barrels each including a throttle valve, said engine comprising:
first sensing means for monitoring the vacuum downstream of a throttle valve within said first carburetor barrel;
second sensing means for monitoring the vacuum upstream of a throttle valve within said first carburetor barrel;
means for controlling said throttle valve of said second carburetor barrel in response to said first sensing means; and
means for selectively supplying fuel to said second carburetor barrel in response to said second sensing means.

4,070,995

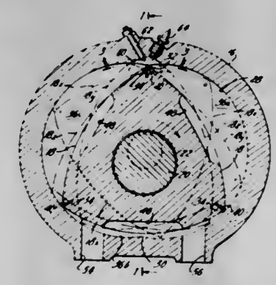
ROTARY ENGINE WITH COMBUSTION GAS FLOW-BACK FOR DIESEL OPERATION

Robert W. Loyd, Jr., Wyckoff, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed June 11, 1976, Ser. No. 695,045

Int. Cl.[2] F02B *53/02*

U.S. Cl. 123—8.11 **4 Claims**



2. A rotary combustion diesel engine comprising:
a. an outer body having an internal cavity in which the peripheral surface of said cavity has a two-lobe profile and the two lobes are joined by two regions disposed relatively near to the axis of said cavity;
b. an inner body of generally triangular profile mounted for relative rotation within said outer body, the apex portions of said inner body having sealing cooperation with said two-lobe peripheral surface to define three working chambers which vary in volume in response to said relative rotation;
c. said outer body also having an intake port and an exhaust port for sequential communication with said working chambers and disposed adjacent to and on opposite sides of one of said near-axis regions such that as the engine operates each working chamber goes through a four-stroke cycle in which in the first stroke the chamber volume increases while in communication with the intake passage, in its second stroke the chamber approaches the other of said near-axis regions to decrease in volume and compress its air charge whereupon combustion takes place in said chamber adjacent to said other near-axis region, in its third stroke the chamber increases in volume as the combustion gases expand and in its fourth stroke the chamber decreases in volume while in communication with the exhaust passage to discharge its combustion gases, the volumetric compression ratio of each of said chambers being less than about 15:1 such that said compression ratio is less than that normally required for diesel operation;
d. means for discharging fuel into each working chamber after the air charge in said chamber has been substantially compressed; and
e. said outer body also having circumferentially extending

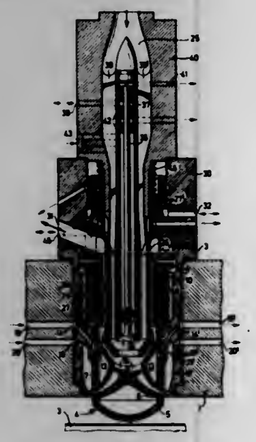
groove means in its two-lobe peripheral surface adjacent to said other near-axis region, said groove means being so positioned that an apex portion of the inner body does not reach the groove means until the working chamber on its trailing side has closed to the intake port and an apex portion of the inner body moves beyond said groove means before the working chamber on the leading side of said apex portion opens substantially to the exhaust port and said groove means having a flow cross-sectional area which is sufficiently large so that as an apex portion is passing over said groove means sufficient combustion gases flow back therethrough from the working chamber on the leading side of said apex portion into the following working chamber on the trailing side which then is in an initial portion of its compression stroke so as to raise the pressure and temperature of the charge in said following chamber to a point where the subsequent compression in said following chamber causes the pressure and temperature of its charge to reach magnitudes sufficient for self-ignition of the fuel discharged therein to provide diesel operation.

4,070,996

RECIPROCATING INTERNAL COMBUSTION ENGINE FOR THE COMBUSTION OF FINELY DIVIDED SOLID FUEL

Anton Steiger, Illnau, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 18, 1976, Ser. No. 715,532
Claims priority, application Switzerland, Apr. 7, 1976, 4354/76
Int. Cl.² F02D *19/04*
U.S. Cl. 123—23 **24 Claims**



1. In a reciprocating internal combustion engine having a combustion chamber for the combustion of finely divided solid fuel, the combination comprising

means for forming a suspension of solid fuel particles and air,

a valve piston for cyclically expelling solid fuel particles into said combustion chamber of the engine from a powdered coal collector disposed in said valve piston and adjacent said combustion chamber;

a channel extending between said means and said collector along a straight vertical longitudinal axis to deliver the fuel/air suspension to said collector;

a tube within a central and lower region of said channel to form said channel into an annular shape thereat; and

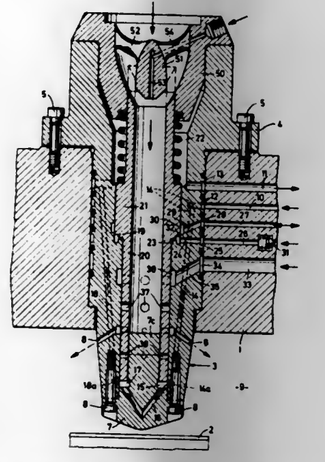
an air valve disposed in said channel above said collector and coaxially within said tube for cyclically charging air into said collector to expel the fuel particles in said collector into said combustion chamber through said valve piston, said air valve having a seating surface sealingly seating on a lower end of said tube.

4,070,997

RECIPROCATING INTERNAL COMBUSTION ENGINE USING POWDERED SOLID FUEL

Anton Steiger, Illnau, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 30, 1976, Ser. No. 718,516
Claims priority, application Switzerland, Mar. 5, 1976, 2752/76
Int. Cl.² F02D *19/04*
U.S. Cl. 123—23 **16 Claims**



1. In a reciprocating internal combustion engine, the combination comprising

at least one cylinder defining a combustion chamber;

means for supplying powdered fuel into said chamber, said means including an injection nozzle protruding into said combustion chamber and having a plurality of discharge openings therein for passage of the fuel into said combustion chamber and a cover having an extension projecting into said nozzle to the area of said discharge openings to receive a charge of powdered fuel thereon;

an air supply means for supplying air into said nozzle for passage through said discharge openings;

a hollow slider mounted in said nozzle for movement between a first position to establish a connection between said air supply means and said discharge openings to permit injection of a charge of powdered fuel on said extension into said combustion chamber and a second position blocking said connection; and

a dosing means in communication with said hollow slider for supplying a charge of powdered fuel into said nozzle and onto said extension.

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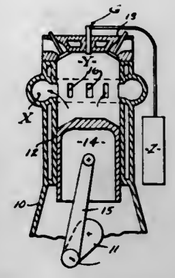
COMPRESSION IGNITION CONTROL PRESSURE HEAT ENGINE

Harlow B. Grow, 16530 Chattanooga Place, Pacific Palisades, Calif. 90272

Filed Oct. 24, 1975, Ser. No. 625,676
Int. Cl.² F02B *41/00*
U.S. Cl. 123—26 **6 Claims**

1. A compression ignition and controlled diminishing pressure cycle heat engine wherein a piston reciprocates in a cylinder and is acted upon by the expansion of burning fuel to perform work, and including; drive means coupled to the piston for reciprocation of said piston in the cylinder between

bottom and top dead center positions, a port opening into the cylinder intermediate the top and bottom dead center positions of said piston and adapted to be opened and closed by downward and upward movement of said piston respectively, a closed storage chamber in open communication with the port for the exit and re-entry of gases from and into the cylinder, the port being positioned for closure by the piston and the entrappment of gases in the said storage chamber at combustion supporting pressure, an auto ignition chamber of minimized volume between said port and a head closing the top end of the cylinder for compression of gases to ignition temperature, and a full stroke fuel pump means injecting fuel into the cylinder from the top position of the piston and substantially throughout its effective work stroke, said port being opened by the piston for re-entry of gases from said storage chamber for support of continued combustion of fuel.

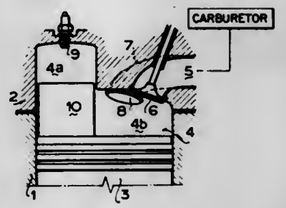


4,070,999

GASOLINE ENGINE OF FOUR-CYCLE SPARK IGNITION TYPE

Isao Matsuno, Tachikawa, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1975, Ser. No. 563,823
Claims priority, application Japan, Apr. 3, 1974, 49-37716
Int. Cl.² F02B *23/08*
U.S. Cl. 123—32 B **7 Claims**



1. A method of operating a gasoline-powered internal combustion engine having a combustion chamber, comprising the steps of

supplying for all engine loads over the full range of engine operation a homogeneous air-fuel mixture into the entire combustion chamber through an intake means in an intake stroke before a separation of the combustion chamber,

subsequently separating the combustion chamber into temporarily non-communicating first and second combustion spaces near a top dead center for a range starting and ending, respectively within a crank angle 10° to 30° before and after the top dead center, and

igniting air-fuel mixture in one of the combustion spaces by spark plug means located in said combustion chamber initiating combustion of the air-fuel mixture in one of the combustion spaces when said first and second combustion spaces are non-communicatingly separated,

subsequently communicating said first and second combustion spaces with each other at an initial stage of the expansion stroke of a piston causing flame propogation from said one of said combustion spaces into the air-fuel mixture in the other of said combustion spaces at a delayed time instant for igniting the air-fuel mixture in the second combustion space by the flame from the first ignited combustion space to cause divisional combustion to occur to decrease maximum combustion temperature.

2. A gasoline-powered internal combustion engine of four cycle type, comprising

a cylinder including a cylinder head having an inner wall defining a pocket,

intake means and exhaust means for said cylinder, said intake means including a carburetor, an intake part and an intake valve operatively connected to one another,

main piston means disposed for reciprocal operation in said cylinder,

auxiliary piston means projecting from said main piston means and disposed for reciprocal operation into said pocket for non-communicatingly separating the pocket,

said cylinder head defining a combustion chamber between said cylinder head and said main piston means, said combustion chamber being divided into non-communicatingly separated first and second combustion spaces, respectively, which are defined between said main piston means and said cylinder head, and between said inner wall of said pocket and said auxiliary piston means, respectively, when said auxiliary piston means is in said pocket, and said auxiliary piston means for non-communicatingly separating said first and second combustion spaces from each other for a predetermined time period starting and ending respectively when said main piston means is within 10°-30° before and after a top dead center of a piston stroke thereby forming an independent second combustion space,

said intake means for supplying for all engine loads over the full range of engine operation homogeneous air-fuel mixture into the entire of said combustion chamber through said intake means in an intake stroke of said main piston means prior to the separation of said combustion chamber into said first and second combustion spaces,

spark plug means disposed in said combustion chamber for initiating combustion of the air-fuel mixture in one of said non-communicatingly separated combustion spaces when said first and second combustion spaces are non-communicatingly separated when said auxiliary piston means is in said pocket, said auxiliary piston means for subsequently communicating said first and second combustion spaces with each other at an initial stage of an expansion stroke to permit flame propogation from said one of said combustion spaces into the air-fuel mixture in the other of said combustion spaces at a delayed time instant,

whereby homogeneous air-fuel mixture is introduced into said combustion chamber before separation of said combustion chamber and whereby the mixture of said one of said combustion spaces is ignited by said spark plug means during the predetermined time period of separation of said combustion chamber and the mixture in the other combustion space is burned thereafter by the flame from the ignited said one combustion space causing divisional combustion to decrease a maximum combustion temperature.

4,071,000

DOUBLE CRANKSHAFT VALVED TWO CYCLE ENGINE

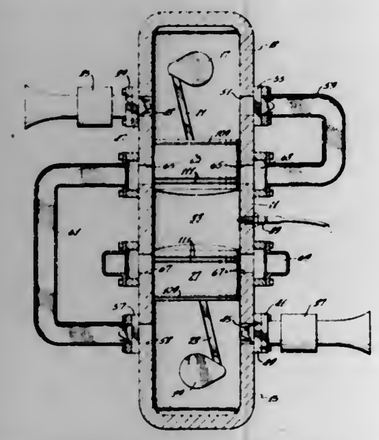
Chester L. Herbert, 17972 Athens Ave., Villa Park, Calif. 92667

Continuation of Ser. No. 589,194, June 23, 1975, abandoned.
This application Dec. 10, 1976, Ser. No. 749,501
Int. Cl.² F02B *25/10*
U.S. Cl. 123—51 BD **9 Claims**

1. A two cycle internal combustion engine having a power stroke on each rotation of the crankshaft, comprising:

a cylinder open at both ends and including a plurality of intake ports passing through the cylindrical wall of said cylinder at one end and a plurality of exhaust ports passing

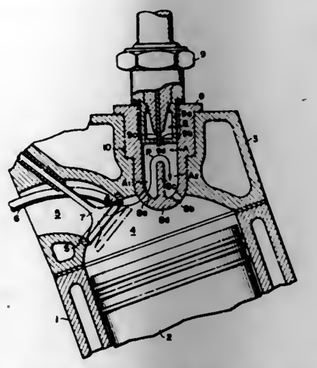
through the cylindrical wall of said cylinder at the other end;
a pair of crankcases connected at opposite ends of said cylinder, each of said crankcases including inlet and output ports;
a pair of crankshafts mounted in said pair of crankcases;
a pair of pistons each having a skirt and each connected to one of said crankshafts for reciprocation in opposite ends of said cylinder, the skirt of one of said pistons periodically covering and uncovering said cylinder intake ports and thereby opening and closing said intake ports to said cylinder during said reciprocation and the other of said pistons periodically covering and uncovering said cylinder exhaust ports and thereby opening and closing said exhaust ports to said cylinder during said reciprocation;



means for connecting both of said crankshafts to a single output shaft to produce output power;
means for conducting a mixture of fuel and air to said inlet ports of each of said crankcases;
a manifold connected exclusively to said outlet ports of both of said crankcases and to said plural intake ports of said cylinder;
a high speed valve mounted on each of said crankcases to periodically open and close said inlet ports of each of said crankcases; and
high speed valve means for preventing detonation of fuel contained in said crankcases, said means mounted on each of said crankcases to periodically open and close said outlet ports of each of said crankcases.

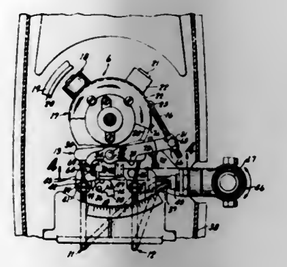
4,071,001
STRATIFIED COMBUSTION ENGINE WITH PRECHAMBER
Kenji Goto, Shizuoka, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed May 28, 1975, Ser. No. 581,528
Claims priority, application Japan, Oct. 3, 1974, 49-37170
Int. Cl.² F02B *19/10*
U.S. Cl. 123—75 B **9 Claims**

1. In an improved stratified combustion engine of the type including a main combustion chamber defined by a cylinder head and a piston head, a main suction passage supplying a lean mixture into the main combustion chamber, a precombustion chamber having a discharge electrode therein and communicating with the main combustion chamber, a supply conduit in the main suction passage for directing a rich mixture to the precombustion chamber through the main combustion chamber, and an inlet valve common to the main suction passage and to the supply conduit, the improvement comprising:
a first chamber formed in the precombustion chamber,
a first passage communicating said first chamber with said main combustion chamber for introducing a flow of the rich mixture deflected from the back face of the inlet valve into said first chamber upon opening of said inlet valve,
a second passage communicating said first chamber with the main combustion chamber for scavenging a burnt gas retained in said first chamber into a portion of the main chamber remote from said inlet valve upon opening of the inlet valve,
a second chamber arranged in the precombustion chamber in axial alignment with said first chamber,



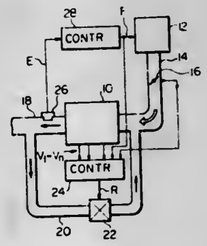
a partition dividing said first chamber from said second chamber,
an orifice formed in said partition and communicating said first chamber with said second chamber, said orifice being of sufficient size to permit at least a portion of the fuel-air mixture in said first chamber to be transferred to said second chamber during the compression state of the piston, and
said discharge electrode being disposed in said second chamber and extending into said orifice.

4,071,002
THROTTLE AND IGNITION ADVANCE LINKAGE FOR AN INTERNAL COMBUSTION ENGINE
James H. Frahm, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Continuation of Ser. No. 501,656, Aug. 29, 1974, abandoned.
This application Mar. 18, 1976, Ser. No. 668,137
Int. Cl.² F02D *37/00*
U.S. Cl. 123—99 **19 Claims**



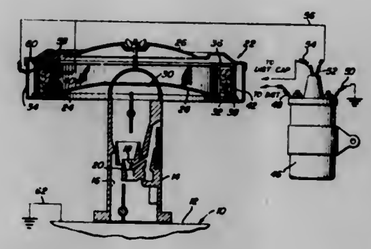
1. A throttle control apparatus having a movable throttle setting element, comprising a common pivot pin, a throttle control lever pivotally mounted on the pin and having a minimum throttle position and movable to an advanced throttle position, a timing control lever pivotally mounted on the pin, a drive means coupled to the throttle control lever for pivoting the control lever, resilient means coupling the levers for moving the timing control lever with the throttle control lever, and a lost motion coupling means connected to the throttle control lever and to the throttle setting element for moving the throttle setting element only after a selected initial movement of the throttle control lever and the timing control lever prior to movement of the throttle control lever into engagement with the throttle setting element and wherein said throttle control lever is a T-shaped member having a cross-bar and stem, said lost motion coupling means including an adjustable cam member and releasable attachment means adjustably secured to the stem of said T-shaped member and to the cam member for selective positioning along said stem, and said timing control lever extended generally parallel to the cross-bar, said resilient means coupling the one end of the timing control lever to the stem, the opposite end of the timing control lever including a pivotally mounted timing link.

4,071,003
CONTROL SYSTEM FOR ENGINE EXHAUST GAS RECIRCULATION ACCORDING TO ENGINE OPERATIONAL CONDITION
Shigeo Aono, Seki, Japan, assignor to Nissan Motor Co., Ltd., Japan
Filed Aug. 4, 1976, Ser. No. 711,521
Claims priority, application Japan, Aug. 5, 1975, 50-94747
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **12 Claims**



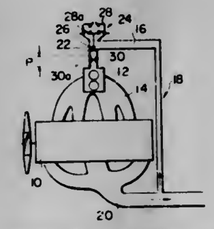
1. In an internal combustion engine provided with a throttle valve in the intake system and an exhaust gas recirculation system for recirculating a portion of the exhaust gas to the engine including a recirculation passage interconnecting the exhaust line to the intake system, a control system for controlling the quantity of the recirculated exhaust gas comprising:
a flow control valve provided in the recirculation passage;
at least two different sensor means for producing individually an electrical signal representing and corresponding to the magnitude of one of variables related to the operational condition of the engine;
at least two function generators arranged to individually receive a respective one of the electrical signals produced by said at least two sensor means and individually produce an output signal corresponding to a desirable opening degree of said flow control valve based on the assigned electrical signal;
an arithmetic operation circuit connected to said at least two function generators to modulate respectively in amplitude the outputs of the two function generators according to the respective and relative importance of said variables to the control of the opening degree of said flow control valve and means to produce from the two modulated outputs a control signal;
valve-actuating means for varying the opening degree of said flow control valve in response to said control signal, said arithmetic operation circuit comprising at least two multipliers respectively connected to said at least two function generators to individually multiply the output signal produced by the assigned function generator by a constant, an adder for producing an output signal by adding up all the outputs of said at least two multipliers except for a definite output and another multiplier arranged to produce said control signal by multiplying said output signal of said adder by said definite output, and the function generator connected to the multiplier which provides said definite output being assigned to a definite one of said variables having a great importance to the control of the opening degree of said flow control valve.

4,071,004
ELECTRO-STATIC FUEL MIXTURE SYSTEM
Neil A. Ostergaard, 3830 S. 43rd St., Apt. 10, Milwaukee, Wis. 53220
Filed Jan. 8, 1976, Ser. No. 647,638
Int. Cl.² F02M *27/04*
U.S. Cl. 123—119 E **6 Claims**



1. In combination with a combustion engine of the type including induction passage for air and fuel including air filtering means operatively associated with its inlet end and fuel inlet means for admitting fuel into said induction passage downstream from said air filtering means intermediate the inlet end of the induction passage and the outlet end thereof opening into said engine, foraminous panel means constructed of conductive material insulatively supported from said air filtering means and disposed for passage of at least substantially all of the air passing through said air filtering means through said foraminous panel means, said fuel inlet means including at least a fuel discharging portion thereof constructed of conductive material, and high voltage, low amperage current source means electrically connected to said foraminous panel means and grounded relative to said fuel inlet means fuel discharging portion.

4,071,005
INTERNAL COMBUSTION ENGINE EQUIPPED WITH IMPROVED EXHAUST GAS RECIRCULATION SYSTEM
Yasuo Nakajima, Yokosuka, and Yoshimasa Hayashi, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Japan
Filed Aug. 6, 1976, Ser. No. 712,279
Claims priority, application Japan, Aug. 12, 1975, 50-97138
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **9 Claims**



1. An internal combustion engine having a combustion chamber therein, comprising:
an intake system including an intake passage for passing therethrough at least air to the combustion chamber of the engine;

an exhaust system including an exhaust passage for passing therethrough the exhaust gases discharged from the combustion chamber;

exhaust gas recirculating means for recirculating a portion of the exhaust gases passing through the exhaust system into the combustion chamber through the intake system, said exhaust gas recirculating means including conduit means connecting the intake system and the exhaust system, and control valve means disposed in said conduit means for controlling the amount of the exhaust gases passing therethrough by varying the opening degree of said control valve means in response to an engine operating parameter; and

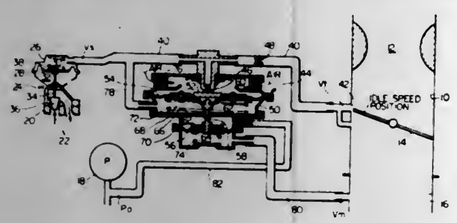
a constant area venturi portion disposed within a portion of said conduit means and spaced apart from said control valve means of said exhaust gas recirculating means, said venturi portion constituting part of a Laval nozzle which is capable of causing exhaust gases passing therethrough to flow at the velocity of sound when the pressure differential between the upstream and downstream sides thereof is within a predetermined range, said control valve means effective for control of exhaust gas flow when said pressure differential is without said predetermined range.

4,071,006

EXHAUST GAS RECIRCULATING SYSTEM

Ietsuyu Harada, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 11, 1976, Ser. No. 713,617
Claims priority, application Japan, Aug. 12, 1975, 50-110532; Nov. 8, 1975, 50-152780; Nov. 8, 1975, 50-152779
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **19 Claims**



1. In an internal combustion engine having an intake system with a throttle valve and an exhaust system,

an exhaust gas recirculating system comprising:

an EGR duct connecting the exhaust gases passing through the exhaust system to the intake system;

an EGR valve normally closing said EGR duct to prevent recirculation and movable by a signal vacuum applied thereto to an open position;

control means operable to provide a signal vacuum to said EGR valve including a vacuum line connecting a vacuum port communicating with the intake system above the idle speed position of the throttle valve to said EGR valve; air bleed means including a vent in said vacuum line; and flow restricting means in said vacuum line fluidly intermediate said vacuum port and vent;

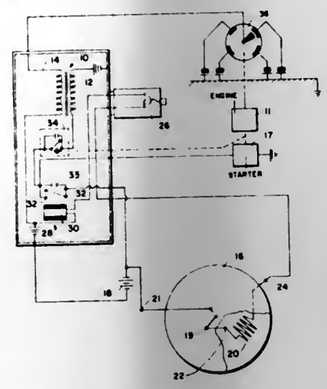
said air bleed means including an air bleed control valve movable into and out of said vent to close or open the same; first means biasing said air bleed valve closed; servo means connected to said air bleed control valve for moving it to an open vent position in response to vacuum in said vacuum line intermediate said flow restricting means and EGR valve; second means for biasing said servo means in response to the engine manifold vacuum in a direction to move said air bleed control valve to an open vent position; and third means for biasing said second biasing means to vary movement of said air bleed control valve to an open vent position.

4,071,007

STOP AUTO THEFT

Robert J. Arix, 3rd P.O. Box 343, Racine, Ohio 45771

Filed Aug. 24, 1976, Ser. No. 717,269
Int. Cl.² H02G *3/00*; B60R *25/00*
U.S. Cl. 123—146.5 B **2 Claims**



1. An anti-theft device in combination with motor vehicle having an internal combustion engine and an ignition system, said device comprising:

a transformer having a primary winding and a stepped-up secondary winding;

a distributor connected to said secondary winding;

a starter-connected ignition switch for starting the engine, said switch having a first accessible terminal and a second substantially non-accessible terminal;

a voltage source connected to said first accessible terminal of said ignition switch;

voltage-dropping means for dropping the voltage of said voltage source, said voltage-dropping means having a third substantially non-accessible terminal connected to said second terminal, and a fourth accessible terminal;

a circuit breaker connected to said fourth accessible terminal of ignition switch and set to trip at a predetermined current;

a relay having a coil connected to, and energizable by said ignition switch through said circuit breaker, and at least a pair of contacts closable by operating said ignition switch, one of said contacts being connected to said voltage source, said coil being designed to burn out at a curren' just exceeding said predetermined current, said ignition switch, said voltage dropping means, said circuit breaker and said relay being connected in series across said voltage source; and

periodically openable contact means actuable by closure of said pair of contacts, the latter, said contact means, and said voltage source being connected in series with said primary winding, whereby said circuit breaker trips upon a thief shorting said accessible terminals and the relay coil burns out upon the thief shorting said circuit breaker comma thus preventing the closure of said pair of contacts and actuation of said periodically openable contact means.

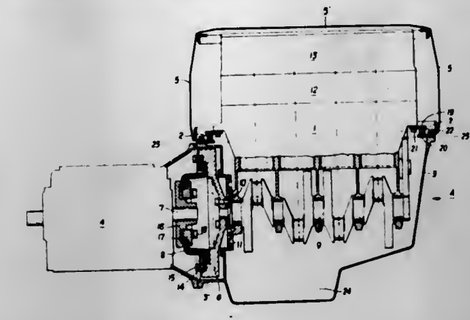
4,071,008

LOW-NOISE-LEVEL INTERNAL COMBUSTION ENGINE

Othmar Skatsche; Gerhard Thien, and Heinz Fachbach, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Apr. 15, 1976, Ser. No. 677,251
Claims priority, application Austria, Apr. 18, 1975, 3026/75
Int. Cl.² F02B *77/00*
U.S. Cl. 123—198 E **15 Claims**

1. A low-noise-level internal combustion engine comprising a crankshaft and crankshaft main bearings which are engine parts directly affected by body resonance and sound vibration, an engine unit support which supports said crankshaft main bearings, a cylinder head mounted on said engine unit support, auxiliary units rigidly connected to the engine unit support and



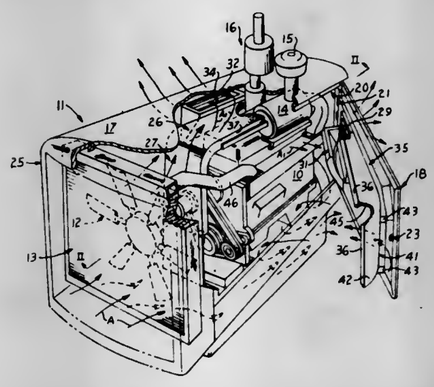
to the cylinder head, and further comprising a crankcase and a flywheel case connected with the crankcase, and at least one resonance-absorbing member located above the crankshaft between said engine parts which are directly affected by sound vibration and said crankcase and flywheel case.

4,071,009

COMBINED NOISE SUPPRESSING AND AIR FLOW GUIDE ENCLOSURE FOR ENGINES

Jack H. Kraina, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 28, 1976, Ser. No. 700,274
Int. Cl.² F02B *77/00*; F01P *1/02*
U.S. Cl. 123—198 E **19 Claims**



1. A combined noise suppressing and airflow guide enclosure mounted on a vehicle in substantial surrounding relationship about an engine thereof, an inlet having a radiator disposed therein forwardly of said engine and a fan rotatably mounted between said engine and said radiator for drawing air into said enclosure, said enclosure comprising

outer enclosure means substantially surrounding said engine comprising a horizontally disposed hood positioned over a top of said engine and a pair of vertically disposed sidewalls positioned on either side of said engine, each of said sidewalls comprising a door movably mounted on said enclosure for exposing said engine directly and having a layer of sound-absorbing material secured internally thereon,

inner enclosure means disposed in substantial isolated relationship within said outer enclosure means comprising a horizontally disposed upper wall comprising a layer of sound-absorbing material and positioned in vertically spaced relationship between said hood and the top of said engine to define a first airflow passage between said hood and said upper wall and to further define, along with said sidewalls, a second airflow passage about the top and sides of said engine and

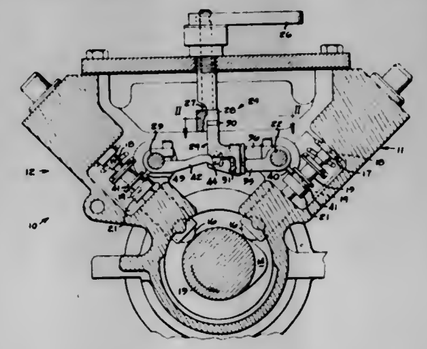
airflow guide means secured internally on each of said doors to define a passage therebetween communicating air from said radiator to said second airflow passage.

4,071,010

ENGINE START-UP SYSTEM AND METHOD

Robert H. Miller, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 19, 1976, Ser. No. 706,714
Int. Cl.² F02M *63/02*
U.S. Cl. 123—198 F **22 Claims**



1. In combination with an internal combustion engine comprising a sleeve metering fuel system including first and second banks of pumps, a housing at least substantially filled with liquid diesel fuel, a cam shaft rotatably mounted in said housing, a master control shaft rockably mounted in said housing and a plurality of control levers secured on said master control shaft, each of said pumps comprising a plunger reciprocally mounted in said housing and engageable with said cam shaft for reciprocation thereby, a pair of axially spaced fill and spill ports formed in said plunger, a barrel mounted in said housing and having an upper end of said plunger reciprocally mounted therein and positioned to alternately cover and uncover said fill port upon reciprocation of said plunger and a sleeve reciprocally mounted on a lower end of said plunger for alternately covering and uncovering said spill port, each of said control levers engaged with the sleeve of each pump of said second bank of pumps, lock-out means for selectively permitting (1) communication of fuel through only said second bank of pumps, or (2) communication of fuel through each of said first and second banks of pumps.

4,071,011

PORT CLOSURE APPARATUS FOR DIFFERENTIALLY PRESSURED VESSELS

Donald H. Oertle, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 556,254, March 7, 1975, abandoned. This application Dec. 9, 1976, Ser. No. 749,189
Int. Cl.² F16K *1/02*
U.S. Cl. 137—317 **2 Claims**

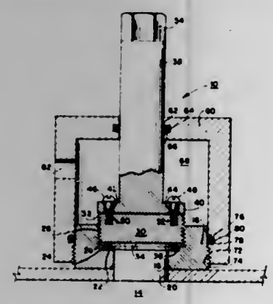
1. A low profile device for sealing a differentially pressured vessel having an entry port, comprising:

low profile port means having a central passage therethrough and being secured to the vessel with the central passage in axial alignment with the entry port by non-protrudable means, the low profile port means comprising a cylindrical ring means including a circumferentially outer

and (with respect to the vessel) inner threaded portion protected by a (with respect to the vessel) outer shoulder and a circumferentially inner and (with respect to the vessel) outer threaded bore of greater diameter and outer of an annular sealing surface surrounding the central passage; and a sealing ring seat on the annular sealing surface;

low profile sealing plug means the sealing plug means comprising a cylindrical plug having circumferentially outer threads for engagement with the cylindrical ring means in the circumferentially inner threaded bore, and having an inner (with respect to the vessel) flat end surface for sealing contact with the sealing ring means in bearing upon the annular sealing surface, insertable within the central passage in pressure-tight sealing connection between the annular sealing surface and the sealing plug means;

manifold means disposed over the sealing plug means and port means and sealingly connected about the outer pe-



riphery of the port means having an inner circumferential threaded portion and providing sealed fit over the port means;

access means formed through the manifold means to enable selective fluid communication between the exterior and interior of the manifold means; and

stem means sealingly disposed through the manifold means in rotatable realtionship for rotatable affixture to the plug means thereby to enable manipulation of the plug means into and out of sealing connection within the central passage of the port means;

further characterized that;

manipulation of the plug means by means of the stem means into sealing connection within the central passage of the port means seals the differentially pressured vessel to enable removal of the manifold means and stem means thereby to reveal a low profile seal of the differentially-pressured vessel.

4,071,012

FLUID FILL OR BLEED APPARATUS

Gordon R. Cooke, San Diego, Calif., assignor to United States of America as represented by the Secretary of the Navy

Filed Apr. 23, 1976, Ser. No. 680,013
Int. Cl. F16k *43/00*
U.S. Cl. 137—321 **6 Claims**

1. An apparatus for filling or bleeding fluid out of a container comprising:

a plug threaded in the container;

said plug having a longitudinal passageway which opens through the bottom of the plug and a lateral passageway which opens through the side of the plug so that the plug will close the container when fully inserted therein and will open the container when partially withdrawn therefrom;

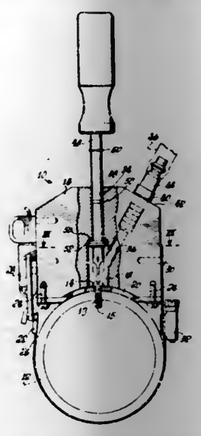
a block which has a cavity;

means for sealably attaching the block to the container so that the cavity is sealed about the plug in a spaced relationship so as not to touch the plug;

said block having a pair of passageways which extend outwardly from the cavity to respective spaced apart ports;

a fitting connected in the port of one of the passageways for filling or bleeding fluid through the plug opening;

means slidable through the other passageway for withdrawing or inserting the plug in the plug opening; and



means for sealing the withdrawing or inserting means to said other passageway,

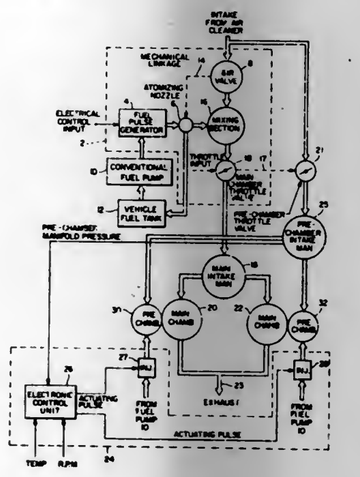
whereby a seal of the container is maintained while (1) the plug is partially withdrawn, (2) fluid is inserted in or bled from the container through the longitudinal and lateral passageways of the plug and (3) the plug is fully inserted in the plug opening to close off the container.

4,071,013

FUEL CONTROL APPARATUS FOR DUAL CHAMBER STRATIFIED CHARGE ENGINE SYSTEMS

John B. Thuren, Norman, Okla.; Walter F. Datwyler, Jr., Royal Oak, and Jack R. Phipps, St. Claire Shores, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 18, 1975, Ser. No. 633,138
Int. Cl.² F02B *19/10, 19/16*; F02M *13/06*
U.S. Cl. 123—32 SP **9 Claims**



1. Fuel control apparatus for dual chamber stratified charge internal combustion engines, wherein each of the cylinders of the engine includes a pre-combustion chamber connected with a main combustion chamber, comprising in combination:

single point fuel induction means for introducing a lean air-fuel mixture into the main combustion chambers;

multi-point fuel injection means for providing timed pulses of appropriate duration for injecting a rich air-fuel mixture into each pre-combustion chamber;

the rich air-fuel mixture in the pre-combustion chamber being spark ignited;

the lean air-fuel mixture in the main combustion chamber being torch ignited by the spark ignited rich air-fuel mixture; and

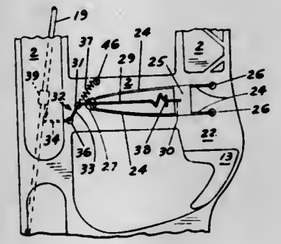
the single point fuel induction means including means responsive to sensed air flow signals and the multi-point fuel injection means including means responsive to computed air flow signals, whereby the single point and multi-point means are arranged to operate in one mode of a first mode and a second mode, the first mode occurring when the single point and the multi-point means operate independent of each other and the second mode occurring when said single point and multi-point means operate interrelated to each other.

4,071,014

ARROW POSITIONING DEVICE

George H. Trotter, 7107 Janey St., Shreveport, La. 71108

Filed Mar. 7, 1977, Ser. No. 775,418
Int. Cl.² F41B *5/00*
U.S. Cl. 124—41 A **10 Claims**



1. An arrow positioning device for a compound bow comprising:

a. retaining means mounted on a bow and projecting therefrom to engage an arrow when said retaining means is extended when a bow is in a cocked condition; said retaining means including a pair of retaining fingers;

b. a release rod engaging said retaining fingers to bias said retaining fingers in a cock configuration; and

c. trigger means pivotally mounted on a bow and cooperating with said release rod and a synchronizing cable for releasing said release rod, upon release of a cocked arrow, from engagement with said retaining fingers and permitting said retaining fingers to retract from contact under bias action with an arrow.

4,071,015

WHEEL DRESSING DEVICE

Manfred Maximilian Funke, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 15, 1977, Ser. No. 788,065
Int. Cl.² B24B *53/08*
U.S. Cl. 125—11 AT **4 Claims**

1. An improved wheel dressing device for generating a locus of curvature from a set of dressing parameters which include:

a. a pair of base-carried supports;

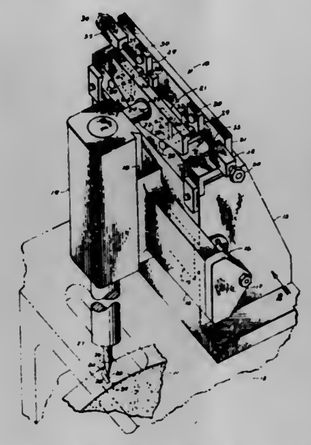
b. an angled cam bar biased against said supports;

c. a pivot point on said cam bar;

d. means to traverse said cam bar and pivot point in a first direction across said supports and the reverse, wherein the cam bar attitude varys so as to move said pivot point simultaneously in a second direction normal to said first direction; and

e. a dressing stylus depending from said pivot point so as to trace out a locus of curvature in accordance with first and second directional components; wherein the improvement comprises:

f. means to bias said supports to a first position so as to generate a first portion of a locus of curvature as said bar is traversed; and



g. means to move one of said supports at one end of said first portion so as to generate a second portion of said locus of curvature as said bar continues traversal comprising:

a. a pivotal link, carrying said one of said supports pivotally on said base; and

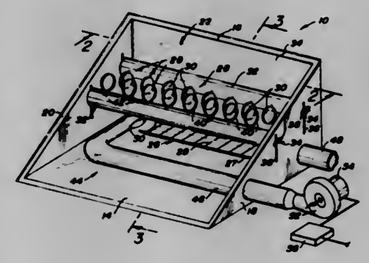
b. a dog plate, carried by said cam bar, wherein as said cam bar is traversed relative to said base, said dog plate contacts said one of said supports, driving said support arcuately away from said first position and causing generation of said second locus portion as said cam bar continues traversal.

4,071,016

SOLAR ENERGY COLLECTING APPARATUS

Thomas D. Henderson, Elyria, Ohio, assignor to Solar Energy For The Family Inc., Elyria, Ohio

Filed Aug. 23, 1976, Ser. No. 716,522
Int. Cl.² F24J *3/02*
U.S. Cl. 126—270 **5 Claims**



1. A solar energy collecting apparatus comprising:

a housing including a bottom wall, an end wall, and a pair of side walls of generally triangular configuration formed from heat insulating material to define an upwardly open chamber of generally triangular cross-section;

a solar energy transmissive member carried by said walls over said chamber;

a heat-absorbing and collecting mass in said chamber generally between said side walls and adjacent the juncture of said bottom wall and said end wall;

a plurality of lens means mounted in said chamber intermediate said transmission member and said mass for focusing solar energy passing through said transmissive member against said mass;

adjustable support means for said lens means carried by at least one of said side walls and extending generally between said side walls, said support means permitting selective adjustment of the angle of inclination of said lens means;

conduit means for directing a fluid to be heated through said chamber in an impinging heat exchange relationship with said mass, said conduit means including an inlet duct extending into chamber to a discharge opening positioned adjacent one end of said mass and an outlet duct extending outwardly of said chamber from an inlet opening positioned adjacent the opposite end of said mass, whereby the fluid to be heated passes from said inlet duct discharge opening across said mass so that heat is transferred from said mass thereto with said fluid then passing into said outlet duct inlet opening for conveyance from said chamber; and,

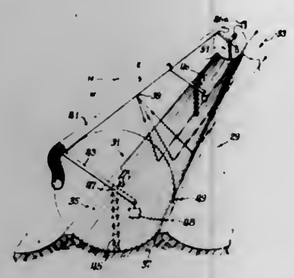
means for causing said fluid to flow through said conduit means.

4,071,017

TENSIONED REFLECTOR SUPPORT SYSTEM

John L. Russell, Jr., and Robert Edward Potthoff, both of La Jolla, Calif., assignors to General Atomic Company, San Diego, Calif.

Filed July 1, 1976, Ser. No. 701,647
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **24 Claims**



1. A reflector system for concentrating radiation from a source on an elongated receptor, said system comprising:

a plurality of pairs of long, thin flexible tension members;

support means supporting said pairs in spaced relation in a cylindrical array, with the tension members of each pair extending in the axial direction of the array and spaced substantially equidistantly apart;

tensioning means maintaining said tension members taut, with each of said pairs of tension members generally defining a respective plane; and

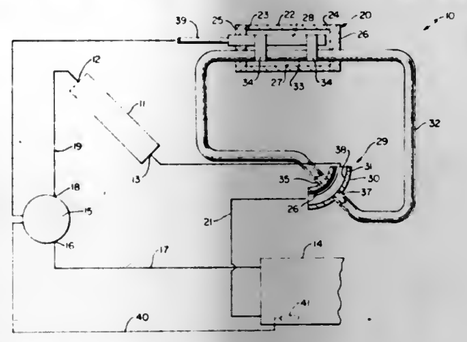
a plurality of thin reflecting elements each having a substantially planar surface reflective of radiation from the source, said reflecting elements being mounted on respective pairs of tension members with said planar surfaces substantially parallel to respective ones of said planes, the tension members of each respective pair being relatively disposed to reflect the radiation from substantially all of said planar surfaces to the receptor.

4,071,018

SOLAR HEAT COLLECTOR SYSTEM, PARTS THEREFOR AND METHODS

Charles H. Perkins, Newtown Square, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 30, 1976, Ser. No. 718,758
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **40 Claims**



1. In a solar heat collector system having a solar heat collector provided with an inlet and an outlet, a pump means, a return means, and a fluid storage means that is interconnected to said inlet of said solar heat collector by said pump means and is also interconnected to said outlet of said collector by said return means, the improvement comprising the combination of a temperature sensor operatively interconnected to said pump means to turn on said pump means when said sensor senses a temperature above a first certain magnitude above the temperature of the fluid in said storage means and to turn off said pump means when said sensor senses a temperature below a second certain magnitude above the temperature of said fluid in said storage means, and means for directing fluid from said return means to adjacent said sensor to change the temperature thereof.

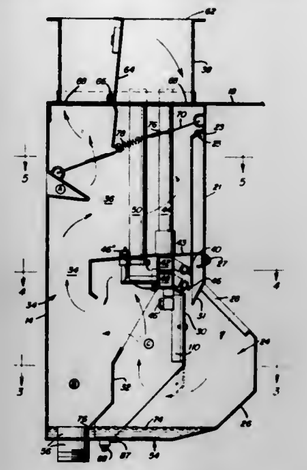
4,071,019

GREASE EXTRACTOR

Roy R. King, Houston, Tex., assignor to Industrial Industries, Inc., Houston, Tex.

Filed Apr. 8, 1976, Ser. No. 675,203
Int. Cl.² F24C 15/20
U.S. Cl. 126—299 E **13 Claims**

1. A ventilating system for drawing air from above cooking ranges and the like, comprising; a vertically oriented, upstanding housing adapted for mounting above a cooking range, a hood member secured to the housing for collecting contaminated air for passage through the housing, an entry chamber having an opening at an angle to the vertical arranged on the housing and adjacent the hood member, a plurality of baffle plates within the housing and arranged transversely of the air flowing through said housing, nozzle means within the chamber for imparting a spray of cold water across substantially the width of the chamber to extract contaminant materials entrained in the air, additional nozzle means disposed within the entry chamber for imparting a spray of hot wash liquid to said chamber and the baffle plates arranged therein, sump means at the bottom of said chamber for collecting and removing excess liquid and contaminant materials collected at the bottom of the chamber, an expansion chamber within the housing arranged above the forementioned structure to receive the flow of air and to permit an expansion and slowing of movement thereof, an exhaust duct communicating with the expansion chamber for exhausting the air after cleaning thereof, an easily removable central manifold structure, and said nozzle means and additional means are provided upon said central manifold



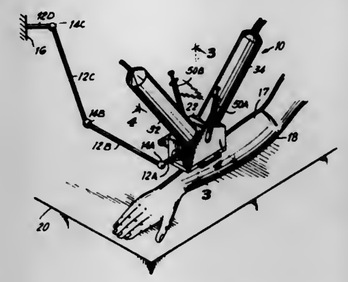
structure for complete assembly and removal of the entire arrangement as an integral unit.

4,071,020

APPARATUS AND METHODS FOR PERFORMING IN-VIVO MEASUREMENTS OF ENZYME ACTIVITY

Peter Pugliese, Bernville, Pa., assignor to Xienta, Inc., Bernville, Pa.

Filed June 3, 1976, Ser. No. 692,511
Int. Cl.² A61B 5/00, 10/00; G01N 33/16; G01T 1/161
U.S. Cl. 128—2 A **17 Claims**



7. A method for performing an in-vivo measurement of a substrate, enzyme, or other biochemical agent on the skin or mucous membranes of an accessible body surface of a patient comprising the steps of reacting at least one chemical with said substrate, enzyme or other biochemical agent on a predetermined area of the skin or mucous membranes of the patient to produce at least one reaction product, and measuring a physical characteristic of said at least one reaction product.

4,071,021

MECHANICAL BACK SCRATCHER

Joe Gallacci, Ukiah, Calif., assignor to The Raymond Lee Organization, Inc., a part interest

Filed July 12, 1976, Ser. No. 704,441
Int. Cl.² A61H 7/00
U.S. Cl. 128—52 **1 Claim**

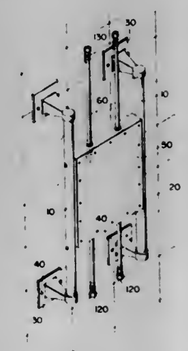
1. A back scratcher for use with a vertical wall and comprising:

first and second vertical spaced parallel bars disposed in front of the wall and secured thereto in fixed position;

a vertical hollow housing disposed between the bars and secured thereto;

first and second vertical spaced parallel shafts disposed between the bars extending slidably through the housing, the top ends of the shafts being disposed above the housing, the bottom ends of the shafts being disposed below the housing, said shafts being movable vertically in their axial direction between a raised position and a lowered position at which the top ends of the shaft approach the housing;

four coil springs, each spring being disposed concentrically about a corresponding shaft adjacent a corresponding end thereof, said springs being disposed outside of the housing;



a horizontal track secured to both shafts and disposed inside the housing at the rear of the shafts, said track having a rear disposed horizontal groove;

a rotatable vertical disc in the housing at the rear of the track;

a horizontal stud secured at one end to the disc in an off center position, the other end of the stud engaging said groove;

an electric motor disposed at the rear of the housing and having a horizontal drive shaft extending into said housing and secured to the center of the disc whereby rotation of the drive shaft imparts vertical reciprocating motion to said vertical shafts; and

scratching means secured between the ends of the vertical shafts.

4,071,022

ORTHOPEDIC ARM SLING

Marion H. Ewers, Payson, Ariz., assignor to Air Rotor Development Company, Inc., Payson, Ariz.

Filed Oct. 26, 1976, Ser. No. 735,306
Int. Cl.² A61F 5/40
U.S. Cl. 128—94 **10 Claims**

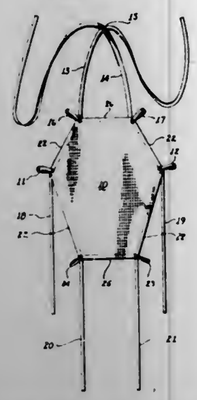
1. An orthopedic arm sling which comprises:

a. A flexible apron having upper and lower edges forming a cradle for receiving an arm and providing support therefor along a substantial portion of the arm, said cradle maintaining the arm against the body of the wearer;

b. First support means comprising straps connected to the upper edge of said apron at spaced locations proximate to the body of the wearer, said straps adapted to extend over the shoulders of the wearer;

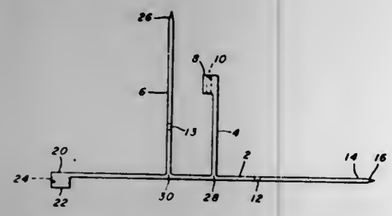
c. First fastening means connected to said apron at spaced locations proximate to the arm to be supported for engaging and securing said straps;

d. Second support means attached to the lower edge of said apron;



e. Second fastening means proximate said first support means connecting said upper and lower edges of said apron by engaging said second support means to form a cradle.

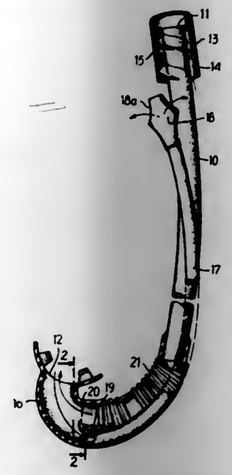
4,071,023
RESTRAINING DEVICE
Peter J. Gregory, 1301 Allen St., Aliquippa, Pa. 15001
Filed Sept. 13, 1976, Ser. No. 722,367
Int. Cl.² A61F *13/00*
U.S. Cl. 128—133 **12 Claims**



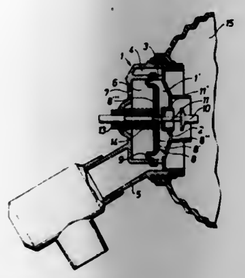
1. A restraining device comprising,
an elongated unitary body portion,
a pair of arms extending outwardly from said body portion, each said arm being of such length and position on said body portion as to cooperate with one end of said body portion in establishing a closed loop,
locking means for resisting opening of said closed loop, and
said locking means having means for permanently resisting loop enlargement so as to preclude substantial loop enlargement without permanent destruction of said loop, and
said locking means having adjustable means providing a number of different locking positions corresponding to different loop sizes, whereby
each of said loops will be partially defined by said body portion, partially defined by one said arm and will be permanently secured by said locking means.

4,071,024
SNORKEL
Max A. Blanc, Bayonne, France, assignor to Max A. Blanc, Bayonne, France and William B. Anderson, West Palm Beach, Fla.
Filed July 30, 1976, Ser. No. 710,189
Int. Cl.² A62B *7/00*
U.S. Cl. 128—145 A **10 Claims**

1. A snorkel comprising a breathing tube having an air inlet at one end for admitting air to a diver beneath the surface of the water, inhalation means at the opposite end of the breathing tube to enable the diver to inhale air, air entrapping means at the air inlet to entrap air when the air inlet is submerged, and means defining a tortuous enclosed passage from the ambient air through the air entrapping means to the air inlet to retard the intake of water into the breathing tube while permitting the purging of impure air and water from the snorkel, said tortuous enclosed passage including an air inlet spaced apart from and below the air inlet to the breathing tube, a discharge communicating with the air inlet to the breathing tube and an intermediate enclosed passage forming part of said air entrapping means and winding around the axis of the breathing tube so that air can be freely taken in when the air inlet to the tortuous enclosed passage communicates with air and water can be purged from the tube by exhaled air forced into and entrapped within the discharge end of said tortuous enclosed passage when the air inlet is submerged.

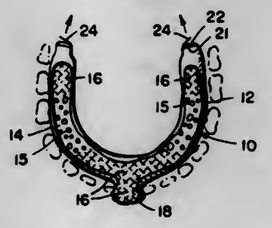


4,071,025
LUNG-VENTING APPARATUS
Ole Bjorn Kohnke, Lyngby, Denmark, assignor to Ruth Lee Hesse, Piniehoj, Denmark
Filed Sept. 19, 1975, Ser. No. 614,953
Claims priority, application Sweden, Sept. 20, 1974, 7411883
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.7 **3 Claims**



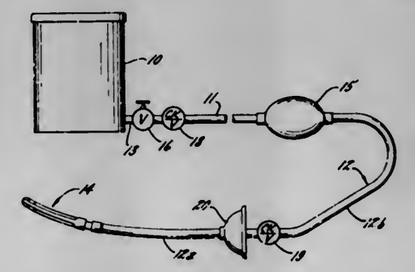
1. In a manually operated lung-venting apparatus including a self-expanding bladder having a bladder inlet through which treating gas is drawn into the bladder during expansion thereof; a bladder outlet through which treating gas is driven out of the bladder during compression thereof and a three-way breathing valve having an inlet in communication with the bladder outlet and an outlet to be connected to the respiratory system of a patient; the improvement comprising, in combination, a valve device having
a. a housing having first, second and third housing portions;
b. a first mounting means for releasably securing said first and second housing portions to one another; said first mounting means being formed of cooperating first and second ridges carried, respectively, by said first and second housing portions for providing a snap-in engagement between said first and second housing portions, by engagement of said first and second ridges behind one another;
c. a second mounting means for sealingly securing said third housing portion to said bladder in the zone of said bladder outlet;
d. a third mounting means for sealingly and releasably securing said first and second housing portions to said third housing portion; said third mounting means including an inner thread formed on said third housing portion and an outer thread complemental with said inner thread and formed on said second housing portion;
e. means defining an inlet chamber in said first housing portion;
f. means defining a valve inlet in said first housing portion; said valve inlet being connected to said bladder outlet for establishing communication between said bladder and said inlet chamber;
g. means defining a valve outlet in said first housing portion; and means defining an outlet chamber in said second housing portion; said valve outlet being in continuous communication with said outlet chamber; said outlet chamber being connected to the inlet of said three-way breathing valve;
h. a movable valve member supported in said first housing portion adjacent said valve inlet for opening and closing said valve inlet; said movable valve member having an open position in which communication is maintained between said bladder and said inlet chamber and a closed position in which gas flow is blocked from said bladder to said inlet chamber; and
i. control means arranged in said first housing portion and connected to said movable valve member for moving and maintaining said movable valve member in said closed position when the pressure in said inlet chamber exceeds a predetermined value above the ambient pressure and for moving and maintaining said movable valve member in said open position when the pressure in said inlet chamber is below said predetermined value; said first housing portion forming a structural unit with said movable valve member and said control means.

4,071,026
INTRA-ORAL FILTERING DEVICE
Jesse Althen Bevins, 1532 E. 59th St., Chicago, Ill. 60637
Filed Feb. 5, 1976, Ser. No. 655,418
Int. Cl.² A62B *23/02*
U.S. Cl. 128—147 **4 Claims**



1. An intra-oral device for filtering and removing noxious materials from the air during the breathing process, including in combination:
a U-shaped housing defining at least one cavity portion therein and having a mouth-piece portion located intermediate the ends of said housing, said mouth-piece portion having an opening therein for receiving unpurified air into said housing, said mouth-piece opening communicating with at least one of said cavity portions, said U-shaped housing having exit openings therein at each of the ends thereof, each of said openings further communicating with at least one of said cavity portions,
filter means mounted in at least one of said cavity portions of said housing for filtering and removing noxious materials from the air passing through said filter means, and
valve means mounted to said ends of said U-shaped housing and selectively engageable with each of the exit openings, said valve means being operable between an open position away from the opening to permit the exit of filtered air from said housing during inhalation and a closed position engaging the opening to prevent the entrance of spent air and saliva into said housing during exhalation.

4,071,027
METHOD FOR FLUSHING THE UTERUS OF A SOW
Lawrence Dean Meador, R.R. 2, Lanark, Ill. 61046
Continuation-in-part of Ser. No. 599,877, Aug. 27, 1975, abandoned. This application Oct. 18, 1976, Ser. No. 733,159
Int. Cl.² A61M *1/00*
U.S. Cl. 128—231 **2 Claims**

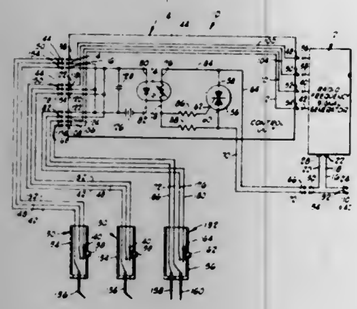


1. The method of flushing the uterine horns of a sow after farrowing with a reservoir containing flushing fluid, flexible tubing communicating with said reservoir, a squeeze bulb interposed in said tubing intermediate the ends thereof and a soft but relatively rigid hollow tip connected to the free end of said tubing at an angle thereto and having holes through which the liquid may flow, said method comprising the steps of, inserting the tip into the uterine canal of a sow with the tip pointed down toward the sow's underline, such insertion continuing until the tip enters through the hip bones of the sow, turning said tip 90° in one direction, thereafter continuing the insertion until the tip enters ones uterine horn of the sow, squeezing said bulb to inject said liquid into said horn, thereafter retracting said tip to a point adjacent said hip bones and turning the tip 180° in the opposite direction, inserting said tip into the other uterine horn of the sow, squeezing said bulb to inject said liquid into said other horn, and retracting the tip and the tubing from the uterus of the sow.

4,071,028
RADIO FREQUENCY CAUTERY INSTRUMENT AND CONTROL UNIT THEREFOR
George C. Perkins, 5809 Braniff Drive, Oklahoma City, Okla. 73105
Filed Feb. 17, 1976, Ser. No. 658,598
Int. Cl.² A61B *17/36*; A61N *3/02*
U.S. Cl. 128—303.14 **13 Claims**

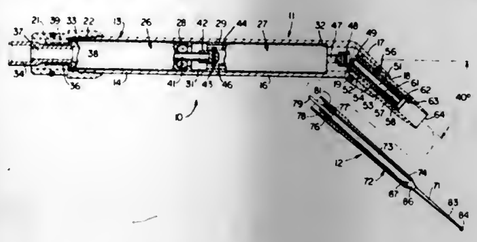
1. An improved radio frequency cautery instrument, comprising in combination:
radio frequency signal generation means having at least one

radio frequency signal output terminal and first and second electrical power input terminals;
first power conductor means for electrically connecting the first electrical power input terminal to one side of an alternating current electrical power source;
voltage controlled switch means having first and second main terminals and a control gate terminal;
second power conductor means for electrically connecting the second electrical power input terminal to the first main terminal of said voltage controlled switch means;
third power conductor means for electrically connecting the second main terminal of said voltage controlled switch means to the opposite side of the alternating current electrical power source;
photon coupled isolator means having first and second control terminals and first and second main terminals;
electrical conductor means for electrically connecting the first main terminal of said voltage controlled switch means and the first main terminal of said photon coupled isolator means;
first electrical resistance means for interconnecting the second main terminal of said photon coupled isolator means



and the control gate terminal of said voltage controlled switch means;
second electrical resistance means for interconnecting the second main terminal of said photon coupled isolator means and the second main terminal of said voltage controlled switch means;
radio frequency conductor means having first and second ends for electrical connection at the first end thereof to the radio frequency signal output terminal of said radio frequency signal generation means;
cautery electrode means electrically connected to the second end of said radio frequency conductor means;
manually actuated switch means carried adjacent said cautery electrode means and having opposite poles;
first control conductor means for interconnecting one pole of said manually actuated switch means and the first control terminal of said photon coupled isolator means;
a voltage source having opposite terminals with one terminal thereof electrically connected to the second control terminal of said photon coupled isolator means; and
second control conductor means for interconnecting the opposite pole of said manually actuated switch means and the opposite terminal of said voltage source.

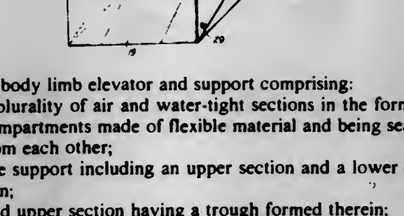
4,071,029
ANGLE HANDPIECE
James W. Richmond, Comstock Township, Kalamazoo County, and Earl H. Rhodes, Jr., Oshtemo Township, Kalamazoo County, both of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.
Filed May 21, 1976, Ser. No. 688,567
Int. Cl.[2] A61B *17/16, 17/32*
U.S. Cl. 128—305 **6 Claims**



1. In a surgical instrument, particularly for ear surgery, having a handpiece assembly formed by an angled housing having a motor mounted therein, rotatable connecting means disposed within said housing for driving connection with a tool assembly, and drive transmitting means interconnected between said motor and said connecting means, comprising the improvement wherein:
said angled housing includes an elongated tubular grip portion having said motor positioned therein and an elongated tubular nose portion fixedly connected to one end of said grip portion, said grip portion having a length which is several times longer than the length of said nose portion;
said nose portion having said connecting means positioned therein, and said nose portion extending in a direction which is inclined at an angle of 40° relative to the longitudinal direction of said grip portion; and
said tool assembly comprising a tool unit removably attached to said nose portion and drivably connected to said connecting means;
said tool unit including an elongated support sleeve removably inserted into the open free end of said nose portion, said nose portion and the rear end of said support sleeve having cooperating means forming a disconnectible connection for fixedly but releasably connecting said support sleeve to said nose portion so that said support sleeve is coaxilally aligned with and forms an outwardly projecting extension from said nose portion;
said tool unit further including an elongated tool axially fixedly connected to said support sleeve, said tool having an elongated cylindrical shank disposed within and coaxially rotatably supported by said support sleeve, said shank having a driving portion on the rearward end thereof adapted for driving connection with said rotatable connecting means, and said tool including a part thereof projecting coaxially outwardly beyond the front end of said support sleeve.

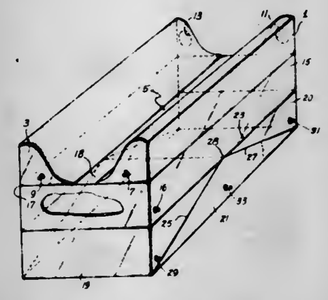
4,071,030
ROTATABLE DURAGUARD
John R. Hedrick, La Crescenta, Calif., assignor to Pevrick Engineering Company, Inc., Sun Valley, Calif.
Filed Apr. 12, 1976, Ser. No. 675,709
Int. Cl.[2] A61B *17/16;* B26B *29/00*
U.S. Cl. 128—310 **5 Claims**

1. A duraguard mounted by a hollow nose section secured to the housing of a cutting tool, the duraguard having an arm extending along the cutting tool and terminating in a foot projecting over the end of the cutting tool, the improvement comprising:
means for securing said nose section to one end of said housing from which said cutting tool extends, said nose section having an interior surface defining a hollow interior space;
a guard mounting member located in said nose section;
means for rotatably mounting said guard mounting member on said nose section for free rotation about the axis of said tool;
one end of said arm being secured to said guard mounting member;
said foot being secured to the other end of said arm and projecting over the end of said cutting tool, and said arm being free to rotate and follow the cut produced by said cutting tool;



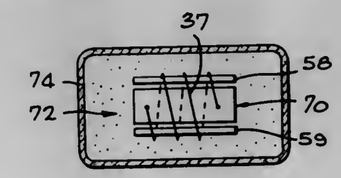
said mounting means comprising two separate sets of ball bearings located between said guard mounting member and said nose section and positioned adjacent opposite ends of said guard mounting member; and
each set of ball bearings consisting of a circular row of ball bearings around said guard mounting member, each row of ball bearings being located in a space between a radially projecting planar flange surface and a radially projecting contoured surface, one of said surfaces for locating each of said rows being located on said interior surface of said nose section and the other of said surfaces being located on the exterior of said guard mounting member.

4,071,031
INFLATABLE LEG ELEVATOR WITH MEANS FOR APPLYING THERMAL TREATMENT
Thomas Lowman, 455 Shore Acres Road, Arnold, Md. 21012
Filed Aug. 30, 1976, Ser. No. 718,480
Int. Cl.[2] A61F *7/00*
U.S. Cl. 128—402 **6 Claims**



1. A body limb elevator and support comprising:
a. a plurality of air and water-tight sections in the form of compartments made of flexible material and being sealed from each other;
b. the support including an upper section and a lower section;
c. said upper section having a trough formed therein;
d. said lower section having upper and lower substantially parallel walls and being divided into at least two separate compartments;
e. means for inserting fluid into said at least two separate compartments;
f. said at least two separate compartments being formed substantially triangular in cross-section, a wall between two of said at least two separate compartments being inclined upwardly from said lower wall of the support and contacting a compartment thereabove;
whereby when one of said separate compartments has fluid therein and another of said separate compartments is substantially free of fluid, the support and trough will tilt; and when all of said separate compartments are substantially full of fluid the support will be substantially horizontal.

4,071,032
IMPLANTABLE LIVING TISSUE STIMULATORS
Joseph H. Schulman, Los Angeles, Calif., assignor to Pacesetter Systems Inc., Sylmar, Calif.
Filed Jan. 29, 1976, Ser. No. 653,462
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—419 P **25 Claims**



1. In an implantable living tissue stimulator of the type comprising a plurality of stimulator circuit means which form the stimulator circuitry and include at least a power source and pulse generating means powered by said power source to provide pulses adapted to be applied to body tissue to be stimulated, with at least some of the stimulator circuit means being exposable to body saline fluid when said stimulator is implanted in a body, the improvement comprising:
current conductive shield means surrounding at least the stimulator circuit means which is exposable to body saline fluid, and connected to a reference potential in said stimulator circuitry for substantially inhibiting the flow of current via body saline fluid to or from said circuit means which are exposable to the body saline fluid, by conducting said current to said reference potential.
14. In an implantable living tissue stimulator of the type comprising a plurality of stimulator circuit means which form the stimulator circuitry and include at least a power source, pulse generating means powered by said power source to provide pulses adapted to be applied to tissue to be stimulated, a coil and a circuit connected to said coil and responsive to a current induced in said coil by an alternating magnetic field external to said body, the improvement comprising:
said coil being wound about at least some of said stimulator circuit means; and
matter means of high magnetic permeability extending through the coil for at least diverting a substantial portion of the magnetic field which passes through said coil from the stimulator circuit means about which the coil is wound, the dimension of said matter means along the longitudinal axis of said coil, being not less than the extent of the stimulator circuit means about which said coil is wound, along said longitudinal axis.

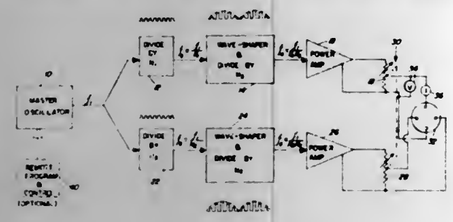
4,071,033
ELECTROTHERAPEUTIC DEVICE WITH MODULATED DUAL SIGNALS
Edward P. Nawracaj, 8349 Walredon Ave., Burr Ridge, Ill. 60521, and Henry A. Grelt, 3527 W. 80th St., Chicago, Ill. 60652
Filed Dec. 20, 1976, Ser. No. 752,597
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—420 A **6 Claims**

1. An electrotherapeutic device for applying thereapeutic

electrical currents to the body of a patient comprising: oscillator means for producing first electric signals of a predetermined first frequency;

first and second divider means connected to receive said first electrical signals and to divide the frequency thereof by first and second numbers respectively to produce second and third signals respectively;

first and second waveshaping means connected respectively to receive said second and third signals and to shape the envelopes for these signals in a corresponding predetermined manner to produce respectively fourth and fifth signals;



first and second power amplifier means connected respectively to amplify said fourth and fifth signals; amplitude control means associated with said first and second power amplifier means to control the output voltage level of the outputs of said first and second power amplifier means;

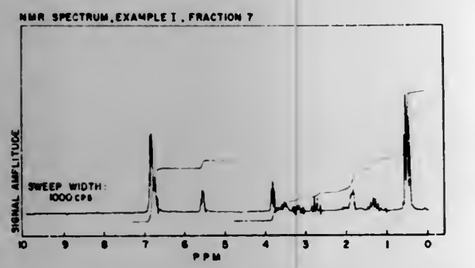
applicator means for receiving said amplified fourth and fifth signals from the first and second power amplifier means respectively and applying these signals to the body of the patient.

4,071,034

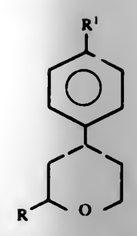
2-ALKYL-4-PHENYL-DIHYDROPYRANS AND PROCESSES FOR AUGMENTING THE ORGANOLEPTIC PROPERTIES OF TOBACCO USING ONE OR MORE OF SAID PYRANS

Joaquin Francisco Vinals, Red Bank, N.J.; Jacob Kiwala, Brooklyn, N.Y.; Denis E. Hruza, Sr., Brick Town, N.J.; John B. Hall, Rumson, N.J., and Manfred Hugo Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 12, 1976, Ser. No. 676,389
Int. Cl.² A24B *3/12*
U.S. Cl. 131—17 R **10 Claims**



1. A smoking tobacco product comprising smoking tobacco, said product having added thereto a small amount sufficient to augment or enhance the flavor or aroma of the smoking tobacco product of one or more pyran derivatives having the generic structure:



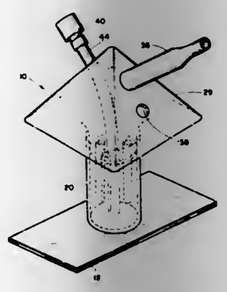
wherein one of the dashed lines is a carbon-carbon double bond, and the other of the dashed lines is a carbon-carbon single bond; R is one of C_2–C_4 alkyl, and R^1 is one of C_1–C_3 alkyl.

4,071,035

PYRAMID PIPE

Cecil E. Boyd, 2857½ E. Admiral Court, Tulsa, Okla. 74110, and Bruce K. McGillvray, 1346 N. 74th E. Ave., Tulsa, Okla. 74115

Filed Oct. 1, 1976, Ser. No. 728,597
Int. Cl.² A24F *1/14, 1/30*
U.S. Cl. 131—173 **10 Claims**



1. A double chamber smoke filtering apparatus comprising:

a. a first chamber for receiving a filtering liquid therein;

b. a second chamber disposed above the first chamber;

c. a plurality of fluid riser tubes connecting the bottom of the second chamber with the lower portion of the first chamber;

d. tobacco carrying means exterior of the chambers and including smoke passageway means operably connecting the tobacco carrying means in open communication with the bottom of the lower chamber below the riser tubes;

e. a mouthpiece passageway means exterior of the chambers and operably connected in communication with the second chamber;

f. a small smoke escape orifice disposed between the first and second chambers providing communication between the top of the first chamber and the bottom of the second chamber.

4,071,036

HOLDER FOR ELONGATE TOBACCO PRODUCT

James D. Jacobs, 1030 Old Orchard Drive, Wauseon, Ohio 43567

Filed Dec. 6, 1976, Ser. No. 747,886
Int. Cl.² A24F *13/02*
U.S. Cl. 131—187 **8 Claims**

1. A holder for an elongate tobacco product comprising a body having an outer end and an inner end, said body forming a passage extending from the outer end toward but stopping short of the inner end, said body having an opening communicating between an inner end portion of said passage and a side portion of said body, said passage being of sufficient size substantially throughout its length at least to the inner end portion thereof to receive an insert, whereby the tongue of a smoker can contact the insert in said passage through said opening when the inner end of said body is in the smoker's mouth, said body comprising two body portions, an inner body portion having the inner end and the inner end of said passage and an outer body portion having the outer end and the outer end of



said passage, one of said body portions having a recess and the other of said body portions having a projection to be received and held in said recess whereby said body portions can be disassembled to facilitate inserting the insert in the passage and removing it from the passage, said body portions forming a chamber at an intermediate portion of said passage between the insert in the passage and an elongate tobacco product received in the outer end of the passage.

4,071,037

PREPARATION AND METHOD OF USE OF ENZYME EFFECTIVE FOR CONVERSION AND DETECTION OF CARBON MONOXIDE

Israel Herbert Scheinberg, 5447 Palisade Ave., Bronx, N.Y. 10471

Continuation-in-part of Ser. No. 659,199, Feb. 19, 1976, Pat. No. 3,982,897, which is a continuation-in-part of Ser. No. 292,011, Sept. 25, 1972, which is a continuation-in-part of Ser. No. 151,153, June 8, 1971, abandoned, and Ser. No. 102,869, June 8, 1971, Pat. No. 3,693,327, which is a continuation-in-part of Ser. No. 85,087, Oct. 29, 1970, abandoned. This application Aug. 18, 1976, Ser. No. 715,479
The portion of the term of this patent subsequent to Sept. 28, 1993, has been disclaimed.
Int. Cl.² A24B *15/027*; G01N *31/14*; C07G *7/02*
U.S. Cl. 131—266 **47 Claims**

1. A filter for the conversion and detection of CO in a gas stream, comprising a container suitable for transit of a gas stream therethrough and a composition including enzyme carbon monoxidase, hereinafter referred to as CMase.

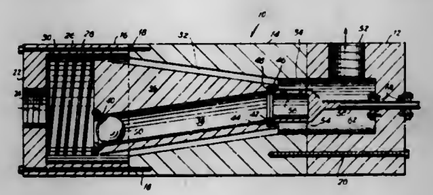
14. The filter as claimed in claim 1, wherein said filter is part of a smoking device.

4,071,038

FAILSAFE FLUID CONTROL VALVE

Dale D. Robinson, 225 Smith Road, Spring Valley, N.Y. 10977

Filed Oct. 1, 1976, Ser. No. 728,507
Int. Cl.² F16K *17/28*
U.S. Cl. 137—59 **9 Claims**



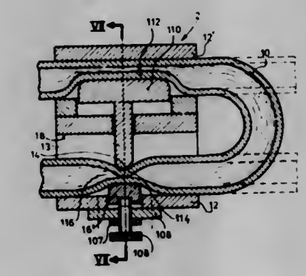
1. A failsafe fluid control valve comprising a hollow housing, a fluid inlet port at one end of said housing, a fluid outlet port at the other end of said housing, means to pass a fluid into said hollow housing through said inlet port, said housing having a central inner fluid flow control section, the inner surface of said central section converging in a downstream direction of fluid flow, a hollow channel, said channel being displaceably suspended within the central section of said housing, the outer surface of said channel converging in a downstream direction of fluid flow so that when said channel is displaced downstream, the outer surface of said channel mates with the inner surface of said central section to stop fluid flow, said hollow channel having an inner passage, said passage being inclined upwardly in a downstream direction, a substantially spherical ball, said ball being disposed in said passage, stop means at each end of said passage to prevent said ball from passing out of said passage, ball receiving means at the downstream end of said passage so that when said ball reaches said ball receiving means, fluid flow through said passage is terminated, the diameter of said ball being less than the height of said passage so that said ball may move freely upwards or downwards through said passage depending on differential pressure of fluid flow, a spring, said spring extending between said channel and the fluid inlet end of said housing, and a rod, said rod extending into the fluid outlet end of said housing to the downstream end of said channel, so that displacement of said rod moves said channel against the force of said spring.

4,071,039

FLUID PRESSURE CONTROLLED VALVE ASSEMBLY

Sven Karl Lennart Goof, Gammel Strandvej 236 B, Humlebaek, Denmark (DK-3050)

Filed Mar. 17, 1976, Ser. No. 667,832
Claims priority, application Denmark, Mar. 20, 1975, 1186/75
Int. Cl.² G05D *16/06*
U.S. Cl. 137—87 **9 Claims**



9. A fluid pressure controlled valve assembly comprising: a body portion; a first bore extending through said body portion; a second bore spaced from said first bore, extending through said body portion; a third bore in said body portion, extending between and in communication with said first bore and said second bore; and plunger means mounted in said third bore, having a control end and a head end, said control end formed to continually contact a first tube length received in said first bore, said head end formed to continually contact a second tube length received in said second bore, and said plunger means being movable toward and away from said first tube length responsive to pressure forces exerted on said head end by said second tube length so as to transfer corresponding compressive forces to said first tube length through said control end.

4,071,040

WATER-PROOF AIR-PRESSURE EQUALIZING VALVE

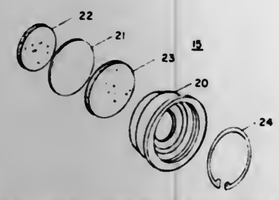
Lawrence James Moriarty, Galion, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Mar. 18, 1976, Ser. No. 667,895
Int. Cl.² H04M *1/03*
U.S. Cl. 137—199 **2 Claims**

1. A gaseous relief valve for an enclosure containing delicate electronic communication equipment which must be pressurized over a range of gas pressures and protected against immersion in a liquid comprising:

a. a housing for said equipment defining an aperture,

b. a first sheet of thin, gas-permeable, liquid-repellent material incapable of withstanding substantial liquid pressure without deformation or rupture;
c. second and third sheets of a mechanically-rigid gas-permeable material disposed on opposite sides of said first sheet, said second and third sheets each having one surface in physical contact with an adjoining surface of said first sheet over substantially the entire surface area thereof, thereby forming a mechanically-rigid sandwich without voids between adjoining surfaces of said sheets; and
d. sealing means for retaining said three sheets in a fixed position across said aperture.

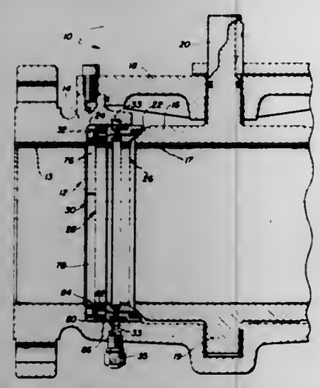


4,071,041

BALL VALVE SEAT RING CONSTRUCTION

George A. Moran, Jr., and Willard J. Sitton, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 7, 1976, Ser. No. 647,286
Int. Cl.[2] F16K *5/22*
U.S. Cl. 137—246.22 6 Claims



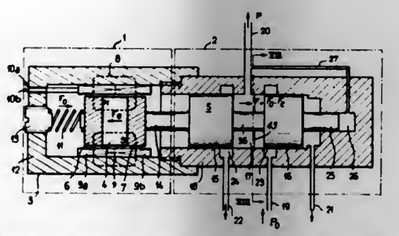
1. A spherical plug valve, comprising:
a. a valve body having a valve chamber therein, flow passageways through said valve body in communication with said valve chamber, a spherical plug member positioned in said valve chamber movable between open and closed positions relative to said flow passageways and a lubricant passageway through said valve body for seat lubrication,
b. an annular seat pocket in said valve body around at least one of said flow passageways and having a seat supporting abutment,
c. a seat ring positioned in said seat pocket having inner and outer concentric seat members of generally cylindrical form arranged in juxtapositioned relation to each other, and a seal ring mounted between said seat members and having an end portion in contact with the exterior surface of said spherical plug member, said outer seat member having an inside peripheral surface facing said inner concentric seat member, a seal ring mounting groove around said inside peripheral surface at one end portion thereof to receive and mount said seal ring, and said outer seat member having a lubricant groove around a mid-portion of the outer peripheral surface thereof, said inner seat member having an outer peripheral surface adjacent said outer seat member inside surface with one end of said outer peripheral surface overlying a mid-portion of said seal ring such that said inner seat member retains said seal ring in said seal ring mounting groove,
d. said outer seat member having a plurality of circumferentially spaced apertures therearound which are radially disposed relative to the seat members and located in said peripheral lubricant groove, said inner seat member having a plurality of circumferentially spaced apertures therethrough aligned with said apertures through said outer seat member, and a plurality of fasteners extending through said apertures in said seat members to secure said seat members together;
e. cooperating means on said inner seat member and said outer seat member to longitudinally position said seat members such that said circumferentially spaced apertures of both said seat members are aligned to facilitate mounting said fasteners,
f. said seat members each having an outer end which is opposite to said seal ring and oriented generally transverse to the longitudinal axis of said flow passageways, and
g. resilient means in said seat pocket contacting the outer ends of said seat members to urge said seat ring toward and into fluid-tight sealing contact with said spherical plug member.

4,071,042

ELECTROMAGNETIC ACTUATOR, NOTABLY FOR HYDRAULIC SERVO-CONTROL VALVE

Claude Edmond Lombard, and Jean-Marie Bouvet, both of Boulogne-Billancourt, France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed May 14, 1976, Ser. No. 686,505
Claims priority, application France, May 16, 1975, 75 15331; July 25, 1975, 75 23326
Int. Cl.[2] F16K *29/00, 31/08*
U.S. Cl. 137—332 12 Claims



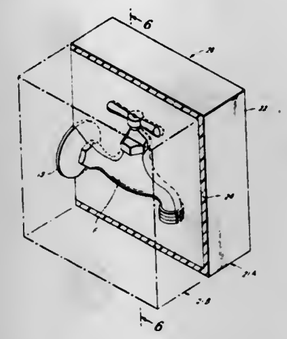
1. An electromagnetic actuator comprising a tubular magnetic shell, an annular field coil means disposed concentrically within the shell and adapted to be connected to a control direct electric current, an armature means formed of a permanent magnet disposed axially within the field coil and having an axial magnetization and two pole pieces attached to the side faces of the permanent magnet, one of said armature and field coil means being fixed and the other of said means being axially movable relative to said shell, and a repulsion member interposed between said shell and said movable means to exert on the latter a force opposed to the electromagnetic force exerted on said movable means by the control direct current supplied to said field coil means, said field coil means being axially longer than said armature means and pole pieces combined and including a pair of adjacent half-coils wound in opposite directions, each one of said half-coils overlapping respectively one of the two pole pieces.

4,071,043

APPARATUS FOR PROTECTING A WATER FAUCET OR THE LIKE FROM FREEZING TEMPERATURES

Cleo D. Carlson, P.O. Box 147, Lake Jackson, Tex. 77566

Filed June 4, 1976, Ser. No. 693,090
Int. Cl.[2] F16K *51/00*
U.S. Cl. 137—375 3 Claims



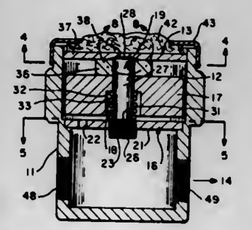
1. Apparatus for freeze protecting a water faucet which extends from a wall, comprising a pair of bodies of foamed plastic material having inner sides disposable on opposite sides of the faucet with their inner ends adjacent the wall and their outer ends beyond the outer end of the faucet, and a sleeve of relatively rigid, moisture impervious material having an open end for fitting over the bodies for forcing them toward one another, when so disposed, in order to cause their inner sides to be deformed into conformity with the faucet and tightly engaged with one another in surrounding relation to the faucet adjacent its extension from the wall and their inner ends to tightly engage with the wall from which the faucet extends, and an opposite closed end so as to enclose said bodies when said open end is moved against the wall, said sleeve holding said inner sides in such tight engagement so as to maintain a substantially air-tight enclosure about the top, bottom, sides and outer end of the faucet, but being releasable to permit removal of said bodies from said faucet.

4,071,044

AIR MONITORING VALVE FOR COMBUSTION ENGINES

Ralph E. Jones, 2634 Evelyn Court, Alameda, Calif. 94501

Continuation-in-part of Ser. No. 711,553, Aug. 4, 1976, abandoned. This application Sept. 15, 1976, Ser. No. 723,520
Int. Cl.[2] F02M *23/00;* F16K *17/24*
U.S. Cl. 137—479 4 Claims



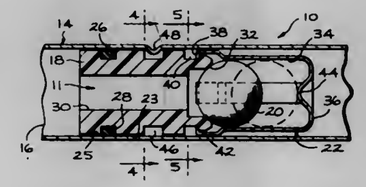
1. An air monitoring valve for combustion engines comprising:
a housing providing an air cylinder having an air inlet opening and an air discharge passage, the latter being adapted for connection to an engine intake manifold;
means providing a valve seat in said cylinder and a pressure-responsive valve mounted in said cylinder for movement to and from said seat to regulate airflow in said discharge passage as a function of intake manifold pressure, said piston being formed to simultaneously provide a predetermined airflow past said piston and said pressure-responsive movement of said piston;
a stem threadably mounted in said cylinder and extending therefrom longitudinally thereof in the direction of, and having an end accessible through, said air inlet opening, said valve being mounted on said stem for longitudinal reciprocation in said cylinder to and from said seat;
spring means mounted between said stem and valve for biasing said valve away from said seat; and
a resiliently deflectable plate supported by said housing adjacent said inlet opening and formed with an opening aligned with and providing an interference fit with said stem end and affording access to said stem end for turning, said plate resiliently deflecting with rotative adjustment of, and applying longitudinal pressure to, said stem.

4,071,045

CHECK VALVE CONSTRUCTION

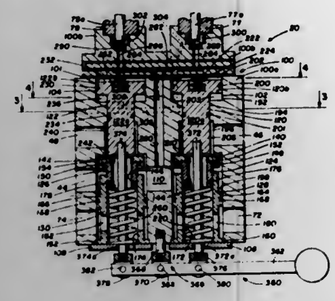
Theodore C. Brandt, Tyler, Tex., assignor to General Electric Company, Louisville, Ky.

Filed Sept. 7, 1976, Ser. No. 720,580
Int. Cl.[2] F16K *15/04*
U.S. Cl. 137—528 5 Claims



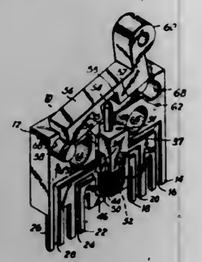
1. A one-way ball check valve arranged in a refrigerant carrying tube member comprising:
a substantially cylindrical body member positioned in said tube member having an outer diameter less than the inner diameter of said tube member;
a centrally arranged passageway extending axially through said body member;
a valve seat arranged on one end of said axial passageway;
a first and second annular groove in said body member;
an annular sealing means arranged in said first groove engaging the inner wall of said tube to prevent refrigerant from leaking past said body member;
a valve cage in said tube member including circumferentially spaced axially extending guide members connected together at one end to form a cap portion;
a contact portion formed integral with said cap portion and projecting axially toward said valve seat;
tab portions extending radially inwardly from the other end of said guide members;
tab receiving means arranged in said body member for receiving said tab portions for holding said cage and said body member and for positioning said end cap portion relative to said valve seat;
a plurality of circumferentially spaced holding means formed in said tube member projecting radially inwardly into engagement with said second groove in said body member for preventing movement of said body member relative to said tube member; and
a valve member arranged in said valve cage being operable under action of said refrigerant between a closed position on said valve seat and an open position in point contact against said contact portion.

4,071,046
DIRECTIONAL CONTROL POPPET VALVE
H. Alton Cates, 1119 Elmherst, Dallas, Tex. 75224
Filed Oct. 7, 1976, Ser. No. 730,651
Int. Cl.² F15B 13/04, 13/043
U.S. Cl. 137—596.15 22 Claims



17. A valve system for controlling the flow of pressurized fluid, comprising:
a valve housing;
an inlet port for receiving pressurized fluid;
a cylinder port in the housing;
an exhaust port in the housing;
a first passageway extending from the inlet port to the cylinder port;
a second passageway extending from the cylinder port to the exhaust port;
a poppet valve slidably positioned within the housing and normally seated against a valve seat within the housing to close the first passageway;
a piston slidable within the housing and normally seated against the poppet valve to close the second passageway; and
means for selectively moving the piston to open and close the first and second passageways to control the flow therethrough.

4,071,047
FLUID SWITCH
Sanford I. Greene, Hollywood, Fla., assignor to Micro Pneumatic Logic Inc., North Miami Beach, Fla.
Filed Sept. 30, 1975, Ser. No. 618,015
Int. Cl.² F16K 3/36, 11/06
U.S. Cl. 137—625.18 9 Claims

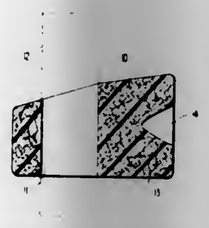


1. A fluid switch comprising:
a housing having first and second pairs of ports, a predetermined one of each of said pairs of ports having a fluid applied thereto under pressure;
a cavity in said housing, and a venting port in communication with said cavity;
first and second conduits extending between said first and second pairs of ports, respectively, the diameters of said conduits, and the pressure and viscosity of said fluid being such that the Reynolds number is approximately 2000, whereby fluid flows through said conduits in laminar flow, each of said conduits having a gap therein determined by said cavity intermediate said respective pairs of ports, the length of each gap being less than that wherein said laminar flow becomes turbulent;
a piston movable in said cavity in the absence of separate sealing means and in response to a force exerted thereon and having a transverse channel therethrough, said channel being selectively alignable with said first and second conduits in accordance with the displacement of said piston;
an actuator responsive to a minimum actuation force to exert a force on said piston and cause said piston to be displaced; and
a bias spring disposed in said cavity for exerting a bias force on said piston so as to maintain said piston in a quiescent position in the absence of said minimum actuation force, whereby said transverse channel is aligned with said first conduit.

4,071,048
COATED HOLLOW METAL TUBES AND PROCESS FOR PRODUCING COATED HOLLOW METAL TUBES PROCESSED BY BENDING, PRESSING OR PUNCHING
Hideo Watase, Hino, Japan, assignor to Teijin Chemicals, Ltd., Tokyo, Japan
Filed May 18, 1976, Ser. No. 687,449
Claims priority, application Japan, Aug. 18, 1975, 50-99516
Int. Cl.² F16L 9/14
U.S. Cl. 138—145 17 Claims

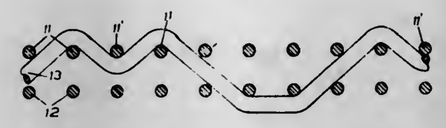
1. A hollow metal tube coated with a thin film of a thermoplastic crystalline copolyester and being processable by bending, pressing or punching without the cracking or peeling of the coating; said hollow metal tube having a thin coating adhered tightly to the outer surface thereof of a thermoplastic crystalline copolyester composed of 95 to 70 mole%, based on its entire recurring units, of ethylene terephthalate units and 5 to 30 mole%, based on its entire recurring units, of a copolymerizable ester-forming unit other than the ethylene terephthalate unit and having a second order transition point of at least 50° C., said coating having a degree of crystallization of more than 1% and not more than 15%, and not more than 1/2.5 of its crystallizing ability, said crystallizing ability being the degree of crystallization attained when the copolyester in a substantially amorphous state is maintained at 150° C. for 3 hours.

4,071,049
LOOM PICKER
Charles H. Crumpton, P.O. Box 386, Lancaster, S.C. 29720
Filed Jan. 12, 1977, Ser. No. 758,672
Int. Cl.² D03D 49/36
U.S. Cl. 139—159 5 Claims



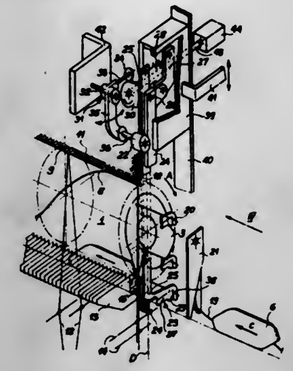
1. A loom picker comprising a substantially homogeneous molded body consisting of at least 90% asbestos, substantially 5% elastomer, and the balance by weight being a resin and a solid lubricant.

4,071,050
DOUBLE-LAYER FORMING FABRIC
Francisco Lorente Codorniu, Halmstad, Sweden, assignor to Nordiska Maskinfilt Aktiebolaget, Halmstad, Sweden
Continuation of Ser. No. 379,322, July 16, 1973, abandoned.
This application June 9, 1977, Ser. No. 804,950
Claims priority, application Sweden, Sept. 1, 1972, 11347/72
Int. Cl.² D03D 15/00
U.S. Cl. 139—383 R 15 Claims



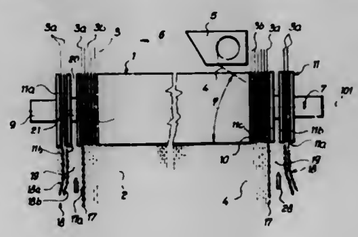
1. An improved forming fabric for paper-making, cellulose or similar machines, said fabric comprising two layers of synthetic weft threads and synthetic warp threads interconnecting said weft threads, the improvement comprising an upper one of said layers of weft threads arranged to face the material to be formed during position of use of said fabric, said upper layer as well as said warp threads interconnecting said weft layers being essentially tangents to the fabric plane intended to face said material, and each of said warp threads passing over at least one weft thread, under at least one following weft thread and over at least one thereon following weft thread of said upper weft layer before running down to interconnect the lower weft layer with the upper weft layer.

4,071,051
UNDULATED SHED LOOM WITH FILLING-THREAD CLAMPING DEVICE
Edgar Strauss, Agincourt, Canada, assignor to Ruti Machinery Works Ltd., Ruti, Switzerland
Filed June 7, 1976, Ser. No. 693,511
Claims priority, application Switzerland, June 17, 1975, 7823/75
Int. Cl.² D03D 45/50
U.S. Cl. 139—436 5 Claims



1. An undulated shed loom having an end of the shed a filling thread insertion point and a filling thread clamping device arranged at the insertion end of the shed and adapted to clamp the filling thread fast behind each shuttle, to convey said filling-thread part to the fell of the cloth, and to hold the filling thread fast until it is woven into cloth, characterized by the fact that the filling-thread clamping device is formed by a tong-like thread gripper having drive means for reciprocating said tong-like gripper along a straight line lying in a central plane of the warp threads, said thread clamping device arrangement comprising an elongated L-shaped guide part and an elongated L-shaped clamping arm swingably supported in said guide part, and the free end of the short arm of said clamping arm is bent around the free end of the short arm of the guide part and, together with the end of the last-mentioned arm, forms the actual clamping part of said thread gripper.

4,071,052
ROTARY REED HAVING FACILITIES FOR ADJUSTABLY SEPARATING GROUPS OF LENO WARP THREADS
Vitezslav Vasek; Pavel Koblizek, and Karel Prazak, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia
Filed Sept. 24, 1976, Ser. No. 726,164
Claims priority, application Czechoslovakia, Oct. 3, 1975, 6720/75
Int. Cl.² D03D 47/26, 5/00, 49/68
U.S. Cl. 139—436 12 Claims

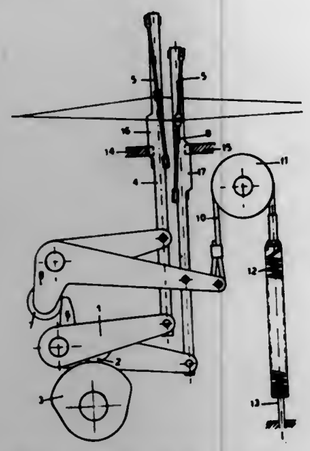


1. In a rotary reed for a travelling wave loom, the reed comprising a reed shaft, a plurality of first relatively thin discs arranged in axially spaced relation at first intervals on the reed shaft for guiding fabric warp threads therebetween, and means including relatively thick second discs disposed on the reed shaft on respectively opposite sides of the first discs, the peripheries of the successive first and second discs along the reed shaft exhibiting angularly offset recesses which cooperate to establish a substantially helical weft-receiving passage, the improvement wherein first and second sets each including at least three of the second discs are arranged on respectively opposite sides of the first discs for guiding a plurality of leno warp threads, each set of the second discs being arranged to define a warp-free zone therein separating selected ones of the leno warp threads so that said selected threads establish, with an inserted weft, a main inner fabric leno weave and a reinforcing outer leno weave separated by a distance greater than the first interval, and wherein variable spacing means are disposed between and in contact with the opposed surfaces of a predetermined pair of adjacent second discs in each set for establishing the warp-free zone therebetween.

4,071,053
DEVICE FOR THE FORMATION OF THE SHED IN A MULTISHED LOOM
Nicola Santucci, Schio (Vicenza), Italy; Zabotin Aleksandr Aleksandrovic; Loschilin Evgheniĭ Dmitrievich; Galperin Aleksandr Lvovich, and Onikov Eduard Archakovich, all of Moscow, U.S.S.R., assignors to Nuovo Pignone S.p.A., Italy
Filed Sept. 30, 1976, Ser. No. 728,239
Claims priority, application Italy, Oct. 3, 1975, 27954/75
Int. Cl.² D03D 47/26; D03C 5/00, 13/00
U.S. Cl. 139—436 3 Claims

1. A device for the formation of the shed in a multished loom having a shaft on which cams are mounted in a cylindrical helix array, said cams being the motive member of the mechanism which has as its purpose to drive the beams carrying the healds which displace the warp threads to obtain the formation of the shed, wherein said device is in one place and includes: matched levers which are separated from each other, cam

means connected to one of said levers for controlling the same, spring means operatively connected to the other of said levers for controlling the same, said levers being maintained in opposing relationship to each other by said cam and spring means,



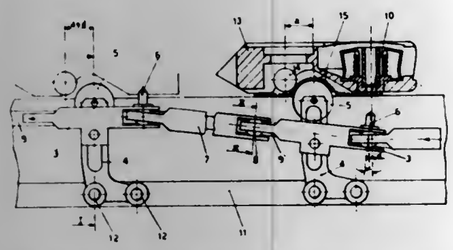
flexible means interconnecting said spring means and said other lever, and guides positioned beneath the warp threads which operatively cooperate with the healds to give stability to the heald-carrying beams.

4,071,054

DEVICE FOR DISPLACING THE WEFT-CARRIERS IN A MULTISHED LOOM

Nicola Santucci, Schio (Vicenza), Italy; Zabotin Aleksandr Aleksandrovic; Loschilin Evgheni Dmitrievich; Galperin Aleksandr Lvovich; Onikov Eduard Archakovich; Sakharov Boris Aleksandrovich, and Borodin Valerian Alekseevich, all of Moscow, U.S.S.R., assignors to Nuovo Pignone S.p.A., Italy and ANIKHBI: Tsentralny Nauchne-issledovatelsky institut khlopchatobumiezhnoi promyshlinnesti, U.S.S.R.

Filed Sept. 30, 1976, Ser. No. 728,240
Claims priority, application Italy, Oct. 3, 1975, 27955/75
Int. Cl.² D03D *47/26*
U.S. Cl. 139—436 **9 Claims**



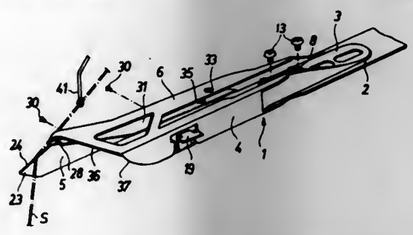
1. A device for driving shuttles of a weaving loom, comprising an endless chain made up of links interconnected by hinges and including a plurality of carrier links and carriages, wherein each of said carrier links is connected to one of said carriages for driving its carriage around a path in the form of a closed loop, each of said carriages having a drive member for moving a shuttle of the loom, each carrier link having a pin for engagement with a hole in a shuttle, the engagement between each carriage and its carrier link being such as to allow relative movement between said carriage and the said carrier link in a direction transverse to the intended direction of movement of the carriage, chain guide means and carriage guide means for guiding said chain and each carriage, wherein when said chain is driven, each carrier link is guided by said chain guide means into and out of an engagement position in which the said pin of said carrier link is presented for engagement with the hole of the shuttle and during such movement is pivoted to cause the shuttle, when engaged by said pin, to be advanced relatively to the drive member of said carriage.

4,071,055

INSERTING CARRIER FOR LOOMS WITH REMOVAL OF A FILLING YARN FROM STATIONARY BOBBINS

Paul Haltmeier, Brugg; Erhard Freisler, Bubikon, and Willy Rohr, Hinwil, all of Switzerland, assignors to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Sept. 23, 1976, Ser. No. 726,005
Claims priority, application Switzerland, Sept. 29, 1975, 12575/75
Int. Cl.² D03D *47/22*
U.S. Cl. 139—448 **6 Claims**



1. An inserting carrier for looms with removal of the filling yarn from stationary bobbins, said filling yarn being presented in the carrier in a vertical plane essentially, said carrier having a filling yarn clamping device and a warp divider piece attached to the top of the rear side wall of the carrier facing away from the point of formation of the shed, the upper edge of said divider piece being developed as an ascending first yarn guide curve and passing into an open yarn groove which is covered by a horn which protrudes in a direction away from the point of formation of the shed, characterized by the fact that the filling yarn clamping device is formed from a spring-loaded clamping tongue which is swingable perpendicularly to the central plane of the warp yarn and supported on the bottom surface of the carrier; a second yarn guide curve extending from the rear side wall of the carrier towards the front side wall is connected to the first yarn guide curve; and a third yarn guide curve leads from the horn up to the clamping slot of the clamping tongue.

4,071,056

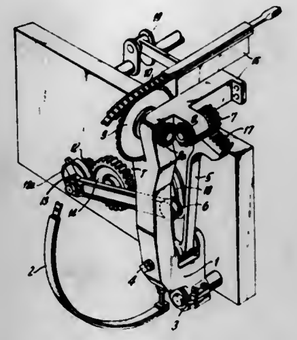
LANCE DRIVING MECHANISM FOR SHUTTLELESS LOOMS

Amselmo Bolea Camprubi, Barcelona, Spain, assignor to Ingenieria Aplicada, S.A., Barcelona, Spain

Filed June 23, 1976, Ser. No. 698,857
Claims priority, application Spain, June 27, 1975, 213546
Int. Cl.² D03D *47/00*
U.S. Cl. 139—449 **4 Claims**

1. A lance driving mechanism for shuttleless looms comprising a sley mounted for reciprocal pivotal movement, a pivotally mounted sector unit including a sector gear, a lance band mounted on said sley for reciprocating motion relative thereto, lance band driving means coupling said sector gear with said lance band to impart driving motion thereto upon pivotal movement of said sector unit, a connecting rod having a first end and a second end, said first end of said connecting rod being coupled to said sector unit, crank means having said second end of said connecting rod coupled thereto to transmit reciprocal motion to said sector unit through said connecting rod, said crank means being driven to undergo two revolutions

for each stroke of said sley, and a support member mounted for reciprocal pivotal motion with said sley and having mounted thereupon said lance band driving means, said sector unit being



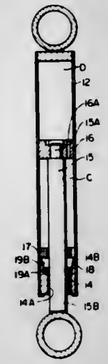
mounted upon said support member for pivotal movement relative thereto about an axis other than the axis of rotation of said support member, said support member including eccentric mounting means for permitting adjustable positioning thereof.

4,071,057

METHOD FOR FILLING GAS INTO SEALED CYLINDER DEVICE

Toshiro Nagase, Sagamihara, Japan, assignor to Tokico Ltd., Japan

Filed July 12, 1976, Ser. No. 704,615
Claims priority, application Japan, July 21, 1975, 50-88999
Int. Cl.² B65B *3/04*
U.S. Cl. 141—4 **6 Claims**



1. A method for filling gas into a sealed cylinder device of the type including a cylinder having a closed first end, a rod guide disposed in a second end of said cylinder, a rod slidably extending through said rod guide into said cylinder, and an annular seal sealingly surrounding said rod and sealingly contacting said rod guide; said method comprising:

forming said rod guide to have a cavity including a cylindrical portion sealingly receiving said annular seal and an inwardly divergent portion continuous with said cylindrical portion and opening into the interior of said cylinder;

displacing said annular seal inwardly from said cylindrical portion of said cavity to said divergent portion thereof, to thereby form an annular gap between the outer periphery of said annular seal and the wall of said divergent portion;

filling gas under pressure through said annular gap into the interior of said cylinder; and

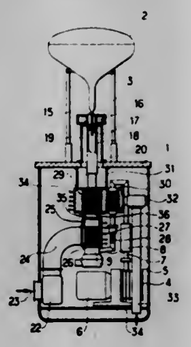
thereafter displacing said rod and thereby said annular seal outwardly until said annular seal contacts the wall of said cylindrical portion of said cavity and closes said annular gap, whereby said annular seal is retained in sealing position within said cylindrical portion by gas pressure within the interior of said cylinder.

4,071,058

PUMPING UNIT FOR TELEVISION TUBES

Michel Albertin, Annecy, and Louis Maurice, Paris, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel S.A., Paris, France

Filed Apr. 27, 1976, Ser. No. 680,567
Claims priority, application France, May 5, 1975, 75 13953
Int. Cl.² B65B *31/04*
U.S. Cl. 141—65 **6 Claims**



1. In a two stage pumping unit for evacuating tubes terminating in a stem, said unit comprising a frame, an air-cooled mechanical vacuum pump supported by said frame, an oil diffusion pump, a discharge pipe connecting said mechanical vacuum pump and said oil diffusion pump in series with said mechanical vacuum pump acting as a first stage pump and said oil diffusion pump acting as a second stage pump, a suction pipe connected to said diffusion pump and having an inlet for receiving the stem of said tube to be evacuated, said oil diffusion pump including a pump body, a seal surrounding the inlet and an oil vapor baffle carried by said suction pipe and disposed between the inlet and the pump body, a main housing for enclosing said diffusion pump body, said discharge pipe having a portion extending parallel to and to the side of said oil diffusion pump, the improvement comprising: said unit having forced draft generator means for drawing air from a relatively cool region of said frame, and forcing a cooling draft through said first housing across said parallel portion of said discharge pipe extending parallel to said oil vapor baffle, and across said baffle and said suction pipe in the vicinity of the seal surrounding the inlet.

4,071,059

PROGRAMMABLE MANUAL ACTUATOR

William B. Hansel, Media, Pa., assignor to Suntech, Inc., Wayne, Pa.

Continuation-in-part of Ser. No. 672,580, April 1, 1976. This application Aug. 30, 1976, Ser. No. 719,019
Int. Cl.² B65B *3/26*
U.S. Cl. 141—206 **26 Claims**

1. In a dispensing nozzle for filling a tank with a liquid where, when the tank becomes filled, the nozzle shuts itself off and an operator can reinitiate gasoline dispensing causing gasoline to be further pumped into the tank which can result in gasoline being pumped into a vapor receiving system, said nozzle being optionally in a storage position in a pump housing or in a dispensing position and having,

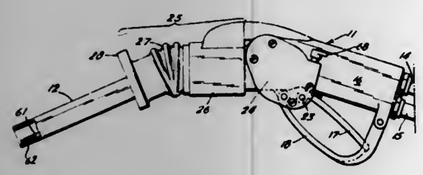
a. a nozzle valve,

b. means for actuating the nozzle valve into an open or closed position;

c. automatic shut-off means, responsive to the liquid in the tank reaching a predetermined level, for placing the actuating means in a disabled condition wherein the nozzle valve cannot be actuated, said shut-off means having an enabling mode wherein the actuating means can actuate the nozzle valve and a disabling mode wherein the actuating means cannot actuate the nozzle valve; and

d. locking means, responsive to the automatic shut-off means obtaining its disabling mode, for locking the actuating means in the disabled condition so that the nozzle valve cannot be actuated by the actuating means, said locking means having the capability of being reset to its normal position by being displaced linearly, wherein the actuating means and automatic shut-off means can function in their normal manner;

the improvement which provides a locking system operating in conjunction with the gasoline dispensing nozzle to prevent, until reset, further dispensing of gasoline after the nozzle has automatically shut itself off comprising a reset actuator for resetting the locking means to its normal position wherein the actuating means can actuate the nozzle valve to permit further dispensing of liquid until the automatic shut-off means and the locking means is actuated again, and wherein a predetermined number of reset operations by said reset actuator is permitted, after which movement of the nozzle to a position for storage in a pump housing and back to the position for dispensing is required to permit another series of reset operations, said reset actuator comprising in combination:



e. a driving element, said driving element having a first position and a second position;

f. a driven element having a first position and a second position, said driven element communicating with the locking means so that when the driven element is in its first position, the locking is in its locked position, and when the driven element is in its second position, the locking means is moved into an unlocked position;

g. at least one motion transferring means for transferring the motion of the driving element to the driven element so that the movement of the driving element from its first position to its second position achieves a corresponding movement of the driven element from its first position to its second position; only when said motion transferring means is in communication with the driving and driven elements to provide a reset operation;

h. means cooperating with said driving and driven elements for removing the motion transferring means from communication with the driving and driven elements when the driven element reaches its second position; and

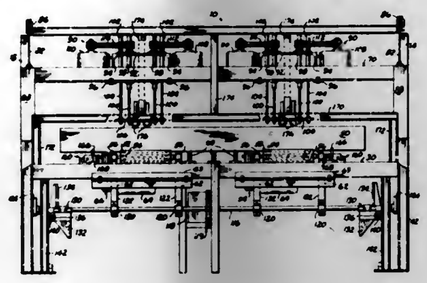
i. means, responsive to the movement of the reset actuator through a predetermined arc and back to its original storage position for dispensing, for placing the motion transferring means into communication with the driving and driven elements, so that a corresponding movement of the driven element takes place in response to movement of the driving element to its second position to reset the locking means.

4,071,060

CROSSTIE ADZING AND BORING MACHINE

Glen D. Busch, P.O. Box 29, Mena, Ark. 71953

Filed Feb. 20, 1976, Ser. No. 659,888
Int. Cl.[2] B27C 9/04
U.S. Cl. 144—3 H 7 Claims



1. A railroad crosstie adzing and boring machine, comprising:

a rectangular open type main frame;

rack means extending transversely through said main frame and forming a horizontal travel path for crossties;

adzing means supported by said main frame adjacent the travel path for acting on crossties moved through said main frame;

reciprocable carriage means disposed transversely within said main frame below the travel path for engaging and moving crossties along the travel path in step-by-step fashion;

boring tool means supported by said main frame for vertical movement toward and away from crossties within the travel path; and,

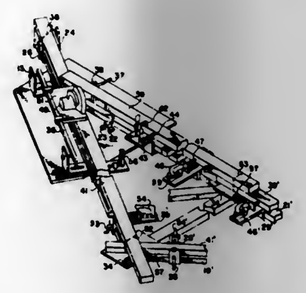
control means including cam means and an eccentric mounted on a control shaft extending longitudinally of said main frame below said carriage means for respectively reciprocating said carriage means horizontally and vertically reciprocating said boring tool means toward and away from a crosstie in the travel path in unison with crosstie movement along the travel path.

4,071,061

ON-SITE CONSTRUCTION OF ROOF TRUSSES

Fredric H. Schneider, 4521 Merrill Ave., Oakland, Calif. 94619

Filed Oct. 20, 1976, Ser. No. 734,335
Int. Cl.[2] B25H 5/00
U.S. Cl. 144—314 R 19 Claims



1. Apparatus for constructing a roof truss comprising a truss template which includes roof and base chord defining members having the length and angular relationship of the base and roof chords of a roof truss to be constructed; chord alignment and positioning members secured to said template along said chord defining members adjacent each end of said template, at least one of which includes a lumber end positioning guide adapted to position at its associated end of said template a first piece of lumber to be used for forming an angled end joint of a roof truss; and lumber positioning stops secured directly to said template chord members at spaced locations to position lumber along the lengths of said template members, whereby said template provides an assembly surface for supporting lumber for construction of said truss chords, as well as defines the length and angular relationship of said chords.

4,071,062

ATTACHMENTS FOR GOLF BAGS

Henry Robert Ianetta, 832 Pendley Road, Willowick, Ohio 44094

Filed June 30, 1976, Ser. No. 701,101
Int. Cl.[2] A63B 55/04
U.S. Cl. 150—1.5 B 8 Claims



1. In combination with a golf bag having a bottom, an attachment for enabling the bag to be supported on the ground during selection of a club therefrom, said attachment comprising a holder element secured to the bottom of the bag, and a ground-penetrating element having a head secured to said holder element, said holder element comprising a base plate having depending spaced flanges terminating in inturned flanges which are disposed in a plane parallel with and spaced from said base plate and are spaced from each other, and said ground-penetrating element comprising a head insertable in the space between said base plate and inturned flanges, and a shank extending from said head and downwardly through the space between said inturned flanges, and terminating in a spiked portion.

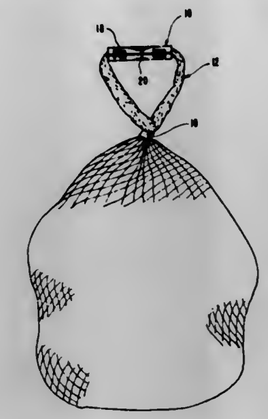
4,071,063

NON-RELEASABLE HAND GRIP FOR PACKAGE OR LOOP HANDLE OF A BAG

Frank B. Russell, Chicago, Ill., assignor to Swift & Company, Chicago, Ill.

Continuation-in-part of Ser. No. 697,141, June 17, 1976, abandoned. This application May 11, 1977, Ser. No. 795,893
Int. Cl.[2] B65D 63/18
U.S. Cl. 150—12 14 Claims

1. An improved hand grip for use on packages having a handle means, said hand grip comprising: a pair of semi-cylindrical portions, said portions being hinged together along a pair of adjacent edges, the convex surfaces of said portions being relatively smooth; and latch means formed on the concave surfaces of said portions adjacent the opposite edges of said portions, said latch means including at least one male member terminating in a pawl and at least one female member having a detent arranged to receive and non-releasably engage said pawl whereby said latch means cooperate to substantially permanently secure said semi-cylindrical portions together when said portions are closed about said handle means.

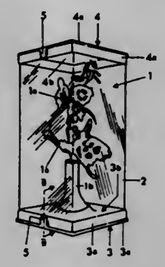


4,071,064

PACKING CONTAINER OR RECEPTACLE

Franz J. Saul, Guerzenicher Strasse 61, 5160 Dueren, Germany

Filed May 12, 1976, Ser. No. 685,905
Claims priority, application Germany, May 13, 1975, 2521252; Nov. 5, 1975, 2549604
Int. Cl.[2] B65D 11/20, 37/00
U.S. Cl. 150—48 10 Claims



1. A container closure means comprising

a planar wall with an aperture therein for juxtapositioning to the edge region of a wall of a container,

a clip flap that is integral with the edge of said planar wall and is pivotally moveable with respect thereto at a bendline,

an elongated lug, which

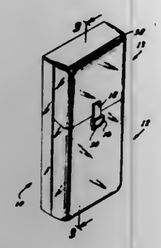
1. has one end integral with, and is substantially perpendicular to, the surface of said clip flap which, when said clip flap is in the unpivoted position with respect to said planar wall, faces in the same direction as does the surface of said planar wall to be juxtaposed to said container wall, and

2. is substantially the same distance from said bendline as is said aperture,

and retaining means for causing said lug to resist withdrawal from said aperture when said lug has been inserted therein.

4,071,065
ONE PIECE CONTAINER PARTICULARLY ADAPTED FOR CALCULATORS

Frank Halbich, 11983 Salem Drive, Granada Hills, Calif. 91344
Filed Dec. 16, 1976, Ser. No. 751,119
Int. Cl.² A45C 11/00
U.S. Cl. 150—52 R 7 Claims

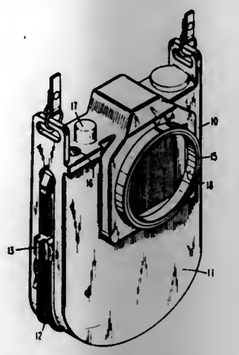


1. An article which is a container which is formed from substantially a single piece of material which includes a piece of material formed in sections, the sections being joined by hinge parts of the material which is sufficiently thin to allow hinging movement of the material, whereby sections adjacent to a hinge part can be moved relatively with respect to the hinge part, certain of said sections being preformed to constitute portions of a container and to form a container when the sections are moved relatively with respect to a joining hinge part, and a further section being preformed to constitute a closure and moveable relative to a hinge part to provide a closure for a container formed by other sections, there being three sections, which lie in a plane before movement about the hinge parts, said sections including a back section having at least partial side walls and at least a partial bottom wall portion, a front section having at least partial side walls and at least a partial bottom wall portion, said front and back sections being constructed to be moved relatively about a hinge part so that the said partial side walls and partial bottom walls on the front and back sections come into juxtaposed abutting relationship, and a third section forming a cover section attached to the back section by a hinge part, the cover section having a front portion and at least partial side walls constructed to come into juxtaposed abutting relation with partial side walls on the back section with the cover section forming a closure for a portion of the front of the container.

4,071,066
UNDERWATER CAMERA CASING

Merle J. Schaeffer, Silver Spring, Md., assignor to National Geographic Society, Washington, D.C.
Filed Mar. 15, 1977, Ser. No. 777,937
Int. Cl.² G03B 17/56
U.S. Cl. 150—52 J 6 Claims

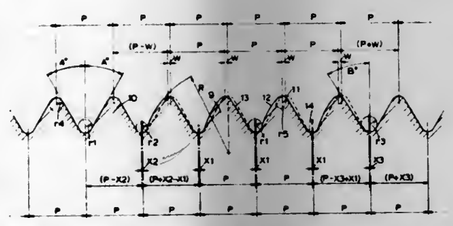
1. An underwater camera casing comprising, a pouch of molded flexible waterproof material having front, back and side walls formed in a contour to provide an upper body space into which a camera may be inserted and a lower body space into which a human hand may be inserted for insertion and placement of a camera body within the pouch, the side wall of said pouch having a side opening extending around the upper and lower body spaces from one side to the other side, a water pressure resistant closure for said side opening, the front wall of said pouch in the upper body space having a lens opening with a relatively hard inner ring surface into which a removable waterproof lens unit may be passed to be detachably secured to a camera body within the pouch thus aligning and



removably securing the camera body within the pouch, and sealing means for said lens opening.

4,071,067
SELF-LOCKING SCREW THREADS

Richard Charles Goldby, Willenhall, England, assignor to Charles Richards Fasteners Limited, Wednesbury, England
Filed Apr. 15, 1976, Ser. No. 677,290
Int. Cl.² F16B 39/30
U.S. Cl. 151—22 10 Claims

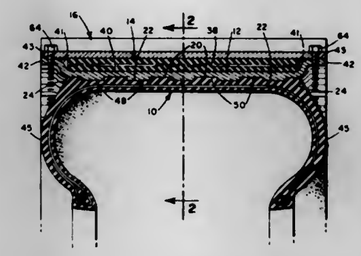


1. A screw threaded member having a first portion of thread of a standard form having constant profile, pitch, root diameter and crest diameter, and a second portion of thread of a locking form continuous with said standard portion of thread and having said constant root diameter and constant crest diameter but having a root lead offset from the standard root lead, a crest lead offset from the standard crest lead, the crest offset being greater than the root offset, the flanks of said locking form of thread being displaced from the position of the flanks of thread of said standard form by an amount corresponding to said root and crest lead offsets, a first of the displaced flanks being bulged outwardly, the bulging being greatest in a central region of the flank and decreasing continuously towards the crest and towards the root thereof, the second of the displaced flanks being offset in the direction of said bulged flank.

4,071,068
REMOVABLE TRACK BELT WITH REMOVABLE KEEPER BAR

Richard J. Olsen, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 5, 1976, Ser. No. 646,621
Int. Cl.² B60C 11/02
U.S. Cl. 152—176 23 Claims

1. A removable track belt assembly for installing about the circumferential surface of a tire carcass comprising:
an annular belt matrix having a plurality of spaced axially oriented recesses in the inner circumferential surface thereof and further having a first pattern of raised and lowered portions, comprising at least one raised portion or one lowered portion, on the inner circumferential surface thereof to interlock with a complementary pattern of raised and lowered portions on the outer circumferential surface of the tire carcass to prevent relative movement of said belt matrix axially with respect to said carcass;
a plurality of removable keeper bars positioned in said recesses, each of said keeper bars having an inner surface configured so as to be substantially in alignment with the



inner circumferential surface of said belt matrix when said keeper bars are positioned in said recesses and further having a second pattern of raised and lowered portions, comprising at least one raised portion or one lowered portion, on the inner surface thereof to interlock with a complementary pattern of raised and lowered portions on the outer circumferential surface of the tire carcass to prevent relative movement of said keeper bars axially with respect to said carcass;
and means attached to each of said keeper bars for supplying traction to said assembly.

4,071,069
SNOW CHAIN FOR TIRES OF MOTOR VEHICLES FOR QUICK MOUNTING

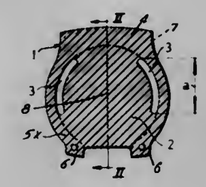
Jernej Raspet, Radovljica, and Marjan Zagar, Jesenice, both of Yugoslavia, assignors to Slovenske zelezarne Tovarna Verig s.p.o., Lesce, Yugoslavia
Filed July 14, 1976, Ser. No. 705,110
Claims priority, application Yugoslavia, July 29, 1975, 1932/75
Int. Cl.² B60C 27/12
U.S. Cl. 152—213 A 1 Claim



1. A quick-mounting snow-chain assembly for a motor vehicle tire, comprising:
a continuous inner chain formed at one end with a hook and at its other end with an eye adapted to receive said hook, said inner chain having a length equal substantially to the diameter of said tire along a flank thereof against which said inner chains is intended to lie;
an outer chain comprising a relatively short chain member and a relatively long chain member, and a releasable hook and eye connection between proximal ends of said members, said relatively short chain member having a length approximately equal to half the circumference of said tire along the flank thereof at which said outer chain is intended to lie, said relatively long chain member having a length in excess of half of the latter circumference;
an eye on the free end of said relatively short chain member adapted to receive said relatively long chain member;
a hook on the free end of said relatively long chain member;
a first mounting spring having a pair of arms anchored to spaced apart locations along one of said chain members and a second mounting spring having arms connected to spaced apart locations along the other of said chain members, each of said springs defining an eyelet between the respective arms whereby said relatively long chain member can pass through said eye at the free end of said relative short chain member and thence through one of said eyelets to that said hook at said free end of said relatively long chain member can engage in the other eyelet; and
respective elastic inserts received in each of said eyelets.

4,071,070
MOLDED VEHICULAR TIRE WITH INTERNAL REINFORCING WEBS

Oskar Schmidt, Chicago 5, Kittsee, Austria (2421)
Filed Mar. 17, 1976, Ser. No. 667,498
Claims priority, application Austria, Mar. 24, 1975, 2302/75
Int. Cl.² B60C 5/00, 17/00
U.S. Cl. 152—333 6 Claims



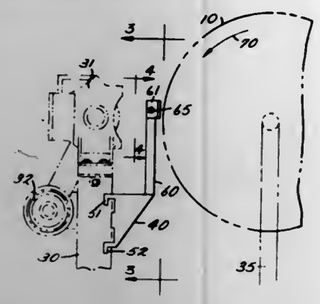
1. In a molded vehicular tire whose body comprises a toroidal casing with a sole and with a pair of axially separated oppositely outwardly bulging sidewalls bounded by axially spaced annular beads remote from said sole, the interior of said casing being partitioned into a multiplicity of air-filled compartments by as many peripherally separated, generally radial webs,
the improvement wherein each of said webs is integrally attached to said casing only at said sole and in the vicinity of said beads while terminating short of said sidewalls throughout a zone extending from the region of said sole toward said beads past a line of maximum axial spacing of said sidewalls whereby the periphery of each web is separated from said sidewalls in said zone by a pair of arcuate lateral gaps interconnecting adjacent compartments.

4,071,071
TIRE BELT REMOVAL

Thomas W. Graves, and Ronald Seiler, both of Muscatine, Iowa, assignors to Bandag Incorporated, Muscatine, Iowa
Filed Sept. 21, 1976, Ser. No. 725,159
Int. Cl.² B29H 21/00
U.S. Cl. 157—13 12 Claims

12. Apparatus for preparing a tire for recapping comprising: means for mounting a tire in a vertical plane for rotation about a horizontal axis; a stand movable generally parallel to the tire rotation axis and toward and away from said tire mounting means; a rotatably driven rasp mounted on said stand in a position to contact a tire mounted on said mounting means; an upright knife-supporting frame having a lower end detachably fixed to said stand at a location below the rasp; a straight flat knife extending generally transversely of a tire mounted on

said mounting means and means connecting the knife to the upper end of said frame, said connecting means being adjust-



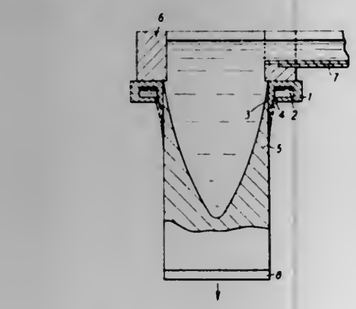
able to permit the plane of the knife to be rotatably adjusted about a horizontal axis.

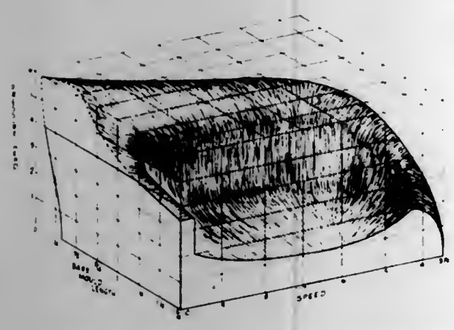
4,071,072

METHOD OF DIRECT CHILL CASTING OF ALUMINUM ALLOYS

John Gordon McCubbin, Kingston, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada

Continuation-in-part of Ser. No. 521,371, Nov. 6, 1974, abandoned. This application Sept. 2, 1976, Ser. No. 719,859
Claims priority, application United Kingdom, Nov. 6, 1973, 51560/73
Int. Cl.² B22D *11/16*
U.S. Cl. 164—89 **7 Claims**





1. In a process for the production of smooth-surfaced aluminum ingots by the direct chill continuous casting process comprising the steps of

a. pouring molten metal into an open-ended thermally insulated "hot top" section having a flat bottom surface;

b. allowing the molten metal to descend from said hot top section into a lower chilled mold section axially aligned with said hot top section and bringing said molten metal into contact with said chilled mold section to produce a solidified peripheral layer;

c. withdrawing the metal continuously from the chilled mold section at a predetermined casting rate and applying coolant directly to the surface of the solidified peripheral layer of metal emerging from the chilled mold section,

the improvement which comprises

d. performing steps (b) and (c) with a chilled mold section having a selected vertical extent within a range of values between ½ and ¾ inch, and

e. maintaining said casting rate at a selected value within a range between 6 and 10 inches per minute,

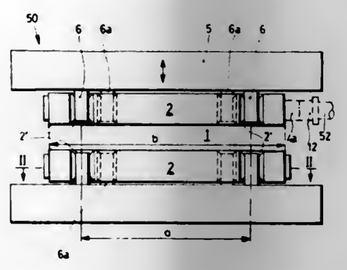
f. maintaining, in the hot top section, a head of molten metal within a range of head values of 2½ – 4 inches according to the values selected in steps (d) and (e).

4,071,073

CONTINUOUS CASTING ROLLER APRON WITH OVERHANG GUIDE RINGS

Georg Bollig, Sao Paulo-Santa Amaro, Brazil, and Hans Streubel, Dusseldorf, Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 4, 1975, Ser. No. 601,720
Claims priority, application Germany, Aug. 16, 1974, 2439359
Int. Cl.² B22D *11/12*
U.S. Cl. 164—448 **10 Claims**



1. A roller apron framework for supporting a partially solidified strand on two opposite sides of the strand in a continuous casting installation, especially for the casting of slabs, comprising a plurality of cooperating pairs of rollers, means for mounting each of said rollers within a maximum slab supporting width, each said roller comprising an intermediate strand supporting portion and bearing journals extending outwardly of said intermediate strand supporting portion, said roller mounting means including support means arranged on said opposite sides of the strand for supporting the rollers and a bearing provided for each bearing journal for connecting the rollers to their associated support means, each bearing being mounted at its associated support means within the maximum slab supporting width, each bearing journal of each roller extending outwardly past the bearing thereof, and a guide ring for supporting the strand arranged in an overhang fashion at least at one bearing journal of each roller.

4,071,074

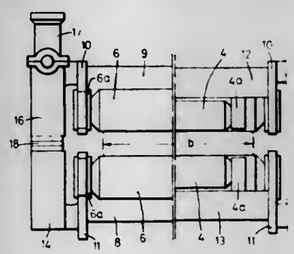
ROLLER APRON FOR A CONTINUOUS CASTING INSTALLATION

Georg Bollig, Sao Paulo-Santa Amara, Brazil; Hans Streubel, and Manfred Kolakowski, both of Dusseldorf, Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany

Filed June 5, 1975, Ser. No. 584,183
Claims priority, application Germany, June 11, 1974, 2428213
Int. Cl.² B22D *11/12*
U.S. Cl. 164—448 **14 Claims**

1. A roller apron assembly for supporting a partially solidified strand at a continuous casting installation, especially for

casting steel strands, comprising a plurality of pairs of cooperating rollers having roller ends and following one another in spaced relationship in the direction of travel of the cast strand, at least one roller pair possessing rollers having a different diameter of its rollers than the diameter of the rollers of another roller pair of said plurality of pairs of cooperating rollers, said pairs of rollers of respectively different diameter following one another in sequence, each of said rollers being rotatably mounted by only two bearings, said at least one roller pair defining larger size rollers each having a strand supporting portion, the bearings of said larger size rollers being mounted



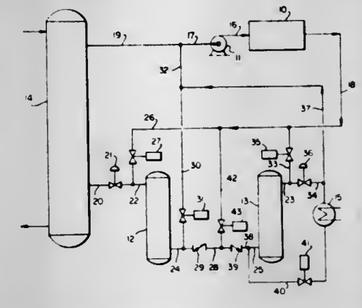
externally of the strand supporting portion, said another roller pair defining smaller size rollers, at least one smaller size roller having at least one of its bearings mounted within the strand supporting portion of the larger size rollers, said at least one smaller size roller having a strand supporting portion extending only between its two bearings such that said strand is adapted to be unsupported outwardly of the said at least one of the bearings of said one smaller size roller, whereby said one smaller size roller is adapted to rely upon the self-supporting effect of the strand edge for supporting the cast strand at that location.

4,071,075

PROCESS AND APPARATUS FOR THE CYCLIC HEATING AND COOLING OF PROCESSING EQUIPMENT

Richard E. Hinkle, Bayshore, N.Y., assignor to American Hydrotherm Corporation, New York, N.Y.

Filed May 26, 1976, Ser. No. 690,166
Int. Cl.² F25B *13/00*
U.S. Cl. 165—2 **5 Claims**



1. In a process for heating and cooling user equipment utilizing pressurized water as a heat transfer fluid in a closed system wherein said system includes heating and cooling zones for heating and cooling said heat transfer fluid and wherein said system includes a zone for storing heat transfer fluid at intermediate temperature levels, the improvement comprising:

a. introducing heat transfer fluid from an upper portion of a first storage zone into said user equipment during a first stage of a heating cycle, said heat transfer fluid being at a temperature above the temperature of said user equipment;

b. introducing heat transfer fluid withdrawn from said user equipment into a lower portion of said first storage zone during step (a) thereby upwardly displacing the heat transfer fluid therein;

c. discontinuing the flow of heat transfer fluid to said first storage zone;

d. introducing heat transfer fluid from said heating zone into said user equipment during a second stage of said heating cycle;

e. introducing heat transfer fluid withdrawn from said user equipment during said second stage of said heating cycle into a lower portion of a second stage storage zone thereby displacing heat transfer fluid contained therein;

f. passing said displaced heat transfer fluid of step (e) to said heating zone;

g. switching to said heating zone the flow of heat transfer fluid withdrawn from said user equipment to initiate and finalize said heating cycle;

h. discontinuing the flow of heat transfer fluid to said user equipment from said heating zone at completion of said heating cycle;

i. subsequently introducing heat transfer fluid withdrawn from said user equipment into said upper portion of said second storage zone during a first stage of a cooling cycle thereby downwardly displacing heat transfer fluid therein, said heat transfer fluid being at a temperature below the temperature of said user equipment;

j. withdrawing and passing to said user equipment, said displaced heat transfer fluid of step (i);

k. discontinuing the flow of heat transfer to said second storage zone;

l. introducing heat transfer fluid from said cooling zone into said user equipment during a second stage of said cooling cycle;

m. introducing heat transfer fluid withdrawn from said user equipment during step (1) into said upper portion of said first storage zone therein by downwardly displacing heat transfer fluid therein;

n. passing said displaced heat transfer fluid of step (m) to said cooling zone; and

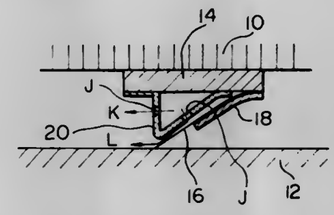
o. switching the flow of heat transfer fluid withdrawn from said user equipment from said first storage zone to said cooling zone to initiate and finalize said cooling cycle.

4,071,076

SEALING MEMBER FOR A ROTARY HEAT-ACCUMULATOR TYPE HEAT EXCHANGER FOR A GAS TURBINE ENGINE

Yoshihiro Sakaki, Suwa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 20, 1976, Ser. No. 678,652
Claims priority, application Japan, Apr. 21, 1975, 50-47580
Int. Cl.² F28D *19/04*
U.S. Cl. 165—9 **7 Claims**



1. In a sealing member for a rotary heat-accumulator type heat exchanger of a gas turbine engine which sealing member includes a sliding plate slidable on a heat accumulator, a shield panel secured to said sliding plate, and a backing plate for

backing said shield panel, said shield panel having a low-temperature side and a high-temperature side, the improvement comprising:

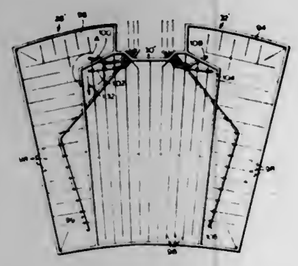
a. an elongate cover defining an interior chamber therethrough constituting a flow path for low-temperature air,
b. said cover extending along the sliding plate and being disposed between said sliding plate and said shield panel at the low-temperature side of the shield panel,
c. said cover extending radially of said heat accumulator and having openings at each end thereof to admit low-temperature and high-pressure air to the interior chamber of said cover and having a plurality of holes such that said air will cool portions of said sealing member.

4,071,077

HEATING SYSTEM FOR BUILDING

Gerhard W. Moog, Toronto, and Kenneth R. Cooper, Don Mills, both of Canada, assignors to Canada Square Management Ltd., Toronto, Canada

Division of Ser. No. 579,341, May 21, 1975, Pat. No. 4,049,045. This application Aug. 30, 1976, Ser. No. 718,715
Int. Cl.² F24D *11/00*
U.S. Cl. 165—18 **8 Claims**



1. In a system for controlling the temperature of a building having a heating load or a cooling load, the system including: a circulation circuit for a temperature control fluid; means in said circuit for varying the heat energy in said fluid; and means for circulating said fluid in said circuit; the building load being connectible in said circuit so that said fluid can pass through the building load;

the improvement comprising a heat energy storage reservoir containing a fluid, the reservoir comprising a tank having therein a plurality of upright baffles disposed in spaced, generally parallel positions, each baffle extending from the bottom of the tank to a position above the level of the fluid, and from an upright wall of the tank to a position spaced from an opposite upright wall so that the baffles together define an elongate fluid flow path of serpentine form along which the fluid can flow in the form of a column in a generally horizontal direction, the tank having an inlet connection communicating with one end of said path and an outlet connection communicating with the opposite end of said path, said inlet and outlet connections of the reservoir being coupled to said circulation circuit so that heat energy derived from said circuit can be stored in the reservoir for subsequent transfer back to the said circuit to assist the action of said heat energy varying means.

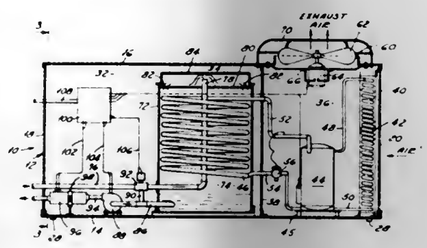
4,071,078

HYDRONIC HEATING AND COOLING SYSTEM

William R. Padden, 13823 Heritage Drive, Riverview, Wayne County, Mich. 48192

Filed Nov. 3, 1976, Ser. No. 738,424
Int. Cl.² F25B *29/00*
U.S. Cl. 165—27 **28 Claims**

25. A hydronic heating and cooling system having heating and cooling modes and adapted to be connected to a terminal system to be heated or cooled comprising a chiller tank provided with a water reservoir in the bottom portion thereof, a refrigeration system operative during the cooling mode to cool the water in said chiller tank, said refrigeration system including an evaporator located in said chiller tank above said reservoir, a first conduit adapted to be connected on one end to the terminal system and extending therefrom into said chiller tank at a point below said evaporator, said first conduit including a riser portion extending upwardly through said evaporator and terminating above said evaporator to permit the water therein to be discharged therefrom and gravity fed across the evaporator into said reservoir during the cooling mode, a circulating pump, a second conduit connecting the reservoir in said chiller tank to the inlet side of said pump, a third conduit intersecting said first and second conduits, control valve means for controlling flow in said first and third conduits, a fourth conduit connected on one end to the discharge side of said pump and adapted to be connected on the other end to the terminal system, and heating means for heating the water in said fourth conduit during the heating mode, said heating means being of tubular construction and being interposed in and forming part of said fourth conduit with the water flowing through said tubular heating means during the heating and cooling modes.

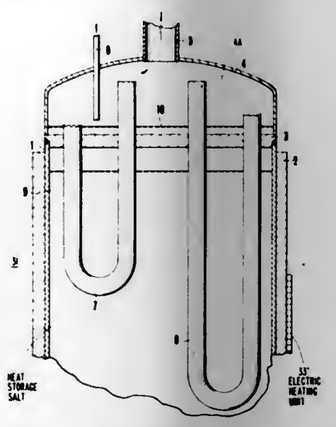


4,071,079

HEAT-STORAGE UNIT AND SYSTEM

Hans Engelbrecht, Siegen-Eisern, Germany, assignor to Sadao Shimoda, Kamagaya, Japan

Filed July 16, 1975, Ser. No. 596,106
Claims priority, application Australia, July 31, 1974, 71882/74; Oct. 23, 1974, 74621/74
Int. Cl.² F25B *29/00*; F24H *7/00*; F22B *1/02*; H05B *1/00*
U.S. Cl. 165—48 **9 Claims**



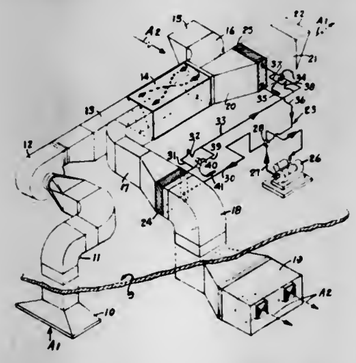
1. A heat accumulator unit comprising an accumulator medium comprising a salt, a container for said medium, means for supplying heat to the accumulator medium, a steam generator forming a part of said container and having a steam outlet adapted to be coupled to a heat utilization means, said generator including steam generating pipes of different lengths immersed to different depths into the salt, means for feeding water to the steam generator in predetermined quantities, including means for supplying the water inlets of the pipes by overflow, each pipe having a water inlet and a steam outlet, the pipe inlets being so arranged in the steam generator that the pipe with the least immersion depth is supplied by overflow with water first and each successively more deeply immersed pipe is successively supplied with water by overflow with the most deeply immersed pipe supplied last.

4,071,080

AIR CONDITIONING SYSTEM

Frank H. Bridgers, 712 Hermosa Drive, NE., Albuquerque, N. Mex. 87110

Filed Jan. 14, 1976, Ser. No. 648,879
Int. Cl.² F24C *15/20*; F24F *7/00*; A23C *3/02*
U.S. Cl. 165—59 **2 Claims**



1. An air conditioning system for heating and cooling the air in an enclosed area; means for exhausting a portion of the air from the enclosed area; an outlet from which the air exhausted from the enclosed area is discharged; an inlet for supplying ambient make-up air to the system to replace the air discharged; a heat exchanger disposed between the exhaust means and the discharge outlet to enable the exhaust air passing therethrough to treat the make-up air by conduction; means for introducing the treated make-up air to the enclosed area; a heat pump in the system for providing supplemental treatment of the make-up air to that induced by the heat exchanger; said heat pump embodying a compressor; a first coil member disposed in the path of the exhaust air between the heat exchanger and the discharge outlet and alternating as an evaporator and a condenser; a second coil member disposed in the path of the make-up air between the heat exchanger and the blower for introducing the make-up air to the enclosed area and alternating as a condenser and an evaporator; and valve means operating alternately to direct the flow of fluid through the first and second coil members thereby providing heating and cooling as required for the make-up air supply.

4,071,081

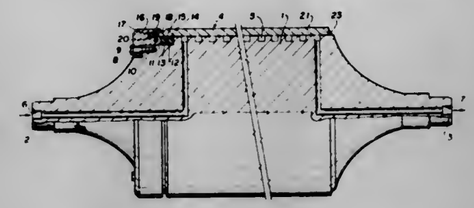
INTERNALLY COOLED ROLLER

Alain Chielens, Marcq-en-Baroeul, and Jean-Pierre Hénin, Lille, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed June 17, 1976, Ser. No. 697,241
Claims priority, application France, June 17, 1975, 75 18833
Int. Cl.² F28F *7/00*
U.S. Cl. 165—82 **7 Claims**

1. An internally cooled roller comprising

1. a roller body having an axis, an axially extending circumferential surface about the axis, a first end face extending substantially perpendicularly to the surface at one end thereof and a second end face, the one end of the circumferential surface having a reduced diameter,
2. a sleeve mounted on the circumferential surface of the roller body and surrounding the surface,
   a. the circumferential roller body surface and the sleeve defining therebetween a conduit for circulating a cooling fluid,
3. a flange fixed on the first end face along a plane extending parallel to the first end face, the flange having
   a. a first tubular member extending perpendicularly to the plane and projecting between the sleeve and the reduced



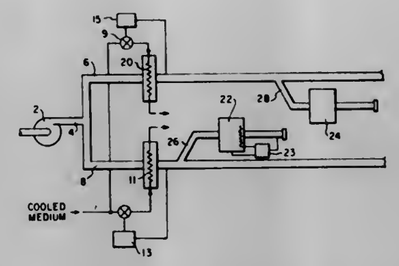
diameter end of the roller body surface, the first tubular member defining a first annular seat with the sleeve and roller body surface, and
   b. a second tubular member of larger diameter than the first tubular member and extending concentrically thereabout, the tubular members defining a second annular seat therebetween, an end of the sleeve projecting into the second annular seat and being gripped thereby to prevent radial expansion of the sleeve end, and
4. a fluid-tight element mounted in the first annular seat and compressed by the projecting first tubular member, the gripped end of the sleeve preventing loosening of the fluid-tight element in the first annular seat.

4,071,082

CONVERSION OF A DUAL DUCT, DUAL TEMPERATURE AIR CONDITIONING SYSTEM TO A SINGLE TEMPERATURE SYSTEM

Leander Economides, New York, N.Y., assignor to Economides & Goldberg, New York, N.Y.

Filed Nov. 17, 1975, Ser. No. 632,765
Int. Cl.² F28F *27/02, 7/02*
U.S. Cl. 165—101 **9 Claims**



7. A method for converting a dual duct, dual temperature constant volume air conditioning system for increased cooling capacity, said system having a fan with a capacity for propelling air through first and second ducts, means for heating the air in said first duct, means for cooling the air in said second duct, and means for mixing the air in said first duct with the air in said second duct in suitable proportions to deliver to a controlled environment air of suitable temperature, comprising:

replacing said means for heating the air in said first duct with means for cooling the air in said first duct, and

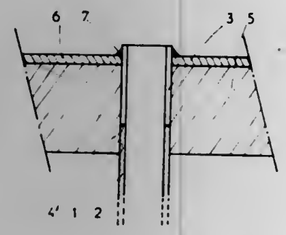
replacing said means for mixing the air in said first and second ducts in suitable proportions to achieve a desired temperature with terminal means for receiving the air from at least one of said first and second ducts and delivering the air to the controlled environment.

4,071,083

TUBULAR EXCHANGER

René Henri Droin, Saint-Etienne, France, assignor to Creusot-Loire, Paris, France

Filed Mar. 18, 1976, Ser. No. 668,261
Int. Cl.² F28D 1/04; F28F 9/18
U.S. Cl. 165—173 **7 Claims**



1. A tubular exchanger for working under heat and pressure, comprising a set of tubes made of ferritic steel of high chrome content having the following composition:

C < 0.010%,
Cr: 25 to 30%,
Mo < 4%,

relatively short tubular ferrules of austenitic stainless steel, weld means joining said ferrules respectively to said tubes with a low degree of contamination, said stainless steel of said ferrules having the following composition:

C < 0.020%,
Cr: 20 to 26%,
Ni: 6 to 26%,
Mo: 1 to 5%,

a tube plate receiving said ferrules, said tube plate being clad with an austenitic stainless steel having the following composition:

C < 0.030%,
Cr: 18 to 22%,
Ni: 14 to 18%,
Mo: 1 to 3%,
Mn: 4 to 6%.

and second weld means joining said ferrules to said cladding of said tube plate.

4,071,084

WELL PACKER

Joe R. Brown, and Chudleigh B. Cochran, both of Houston, Tex., assignors to Brown Oil Tools, Inc., Houston, Tex., by said Chudleigh B. Cochran

Filed Dec. 15, 1976, Ser. No. 750,801
Int. Cl.² E21B 23/00, 33/12
U.S. Cl. 166—129 **49 Claims**

1. Apparatus for use in a conduit comprising:

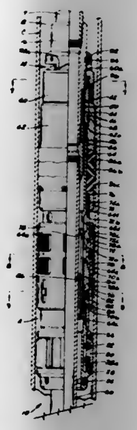
a. sealing means for selectively sealing said apparatus to said conduit by sealing engagement with said conduit;

b. body means including a first component and a second component, and carrying said sealing means, such that said apparatus may be selectively set, with said sealing means in said sealing engagement with said conduit, by non-rotative first phase motion of said first and second components toward each other;

c. mandrel means passing generally through said body means and selectively moveable relative thereto; and

d. tightening means for selectively increasing forces maintaining said sealing means in sealing engagement with said conduit, when said apparatus is set, operable by second phase motion of said first and second components toward each other effected by relative rotational motion between said first and second components.

47. A method of using a packer in a well comprising the steps of:



a. positioning said packer in said well by manipulation of a tubing string connected to said packer;

b. setting said packer in said well by downward movement of said tubing string relative to said well;

c. tightening said packer in set configuration by rotation of said tubing string; and

d. selectively opening and closing a bypass flow passage by said packer in set and tightened configuration by limited longitudinal movement of said tubing string relative to said well.

4,071,085

WELL HEAD SEALING SYSTEM

Donovan B. Grable, 2515 San Francisco Ave., Long Beach, Calif. 90806, and Bill C. Laney, Suite I-308, 4445 Pacific Coast Highway, Torrance, Calif. 90505

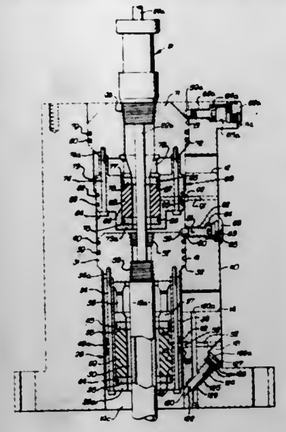
Filed Oct. 29, 1976, Ser. No. 736,721
Int. Cl.² E21B 33/03
U.S. Cl. 166—84 **26 Claims**

1. In well flow control apparatus,

a. a tubular well head having side porting for flowing well production fluid sidewardly through the head, and

b. blow-out preventer means downwardly received in the head interior for controlling the flow of well fluid sidewardly through the head via said porting, said means including generally radially deflectible annular packer structure, and

c. an annular hanger landed in the head and suspending said packer structure, there being a zone in the head and within



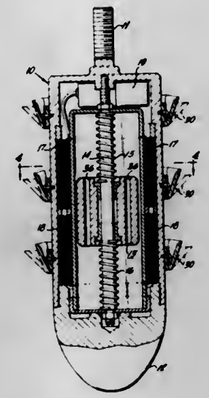
the packer structure to generally centrally receive an elongated member.

4,071,086

APPARATUS FOR PULLING TOOLS INTO A WELLBORE

John D. Bennett, Denton, Tex., assignor to Suntech, Inc., Wayne, Pa.

Filed June 22, 1976, Ser. No. 698,658
Int. Cl.² E21B 19/08
U.S. Cl. 166—177 **3 Claims**



1. An apparatus for pulling tools down into a wellbore, said apparatus comprising:

a. a shell structure forming the body of the pulling tool, said body having a first, downwardly directed end and a second, upwardly directed end;

b. means connected to the shell for providing physical coupling to the tool;

c. a mass slidably mounted in said shell for sliding movement along the longitudinal axis of said shell between first and second positions disposed nearer said first and second ends, respectively;

d. electromagnetic means for sequentially propelling said mass to said second position at a first average rate of speed and returning the mass back to said second position at a second average rate of speed, said first average rate of speed exceeding said second rate of speed so that the net movement of the pulling apparatus is in the lower or downward direction because of reaction to the movement of said mass; and

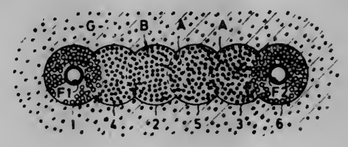
e. at least one fin structure mounted on the outside of said shell structure, said fin structure being designed to offer more resistance to movement of the pulling apparatus in one longitudinal direction than in the opposite direction.

4,071,087

WELL CONSTRUCTION

Kurt Ingerle, Gotzens, and Karl Meister, Simbach, both of Germany, assignors to Ferdinand Aufschlager KG., Munich, Germany

Continuation of Ser. No. 526,937, Nov. 25, 1974, abandoned. This application Aug. 5, 1976, Ser. No. 711,901
Claims priority, application Germany, Nov. 28, 1973, 2359231
Int. Cl.² E21B 43/04
U.S. Cl. 166—278 **6 Claims**



1. In a method of constructing a filter water well in a region of water-bearing strata which comprises the steps of:

i. sinking in said water-bearing strata a plurality of first cavities and providing a respective lining piping in each first cavity, said first cavities being spaced laterally at a selected spacing;

ii. withdrawing the lining piping from each first cavity and simultaneously filling said cavity with a first gravel filling of a size selected for use as a filter;

iii. thereafter sinking in said water-bearing strata at least one cavity, of width greater than said selected spacing, so as to intersect at least one of said first cavities along the whole of the depth of said first cavities and providing a lining piping in said second cavity;

iv. providing in at least one second cavity a filter pipe which includes in its wall a plurality of openings: the improvement which includes withdrawing the lining piping from said second cavity while simultaneously filling the space of said second cavity externally of said filter pipe with a second gravel filling of a larger size than said first gravel filling.

4,071,088

RETRIEVABLE SAFETY VALVE

James D. Mott, Houston, Tex., assignor to Hydril Company

Continuation of Ser. No. 542,603, Jan. 20, 1975, abandoned, which is a continuation of Ser. No. 363,532, May 24, 1973, abandoned, which is a division of Ser. No. 131,661, April 6, 1971, Pat. No. 3,763,933. This application Sept. 19, 1975, Ser. No. 614,989
Int. Cl.² E21B 43/12
U.S. Cl. 166—321 **22 Claims**

1. A method of operably replacing a first controlled subsurface safety valve connected in and forming a portion of a well tubing, comprising the steps of:

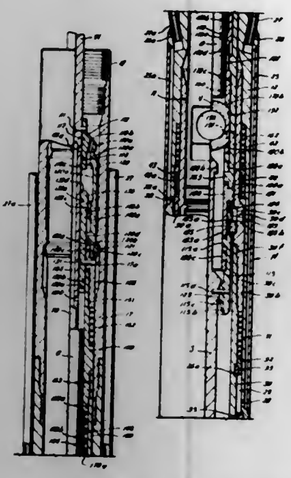
mounting the first controlled subsurface safety valve in the well tubing at a subsurface location in a well;

operating the first controlled subsurface safety valve in response to increased control fluid pressure communicated to the valve by a passageway separate from the well tubing for enabling flow through the well tubing;

moving a second subsurface safety valve into the well tubing when the first controlled subsurface safety valve malfunctions;

positioning the second safety valve within the first controlled subsurface safety valve; and

operating the second safety valve in response to the operation of the first safety valve by the increased control fluid



pressure communicated to the first controlled safety valve.

4,071,089

SOIL CULTIVATING IMPLEMENTS

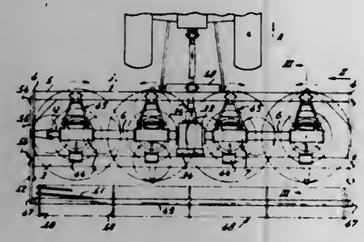
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed June 2, 1976, Ser. No. 691,986

Claims priority, application Netherlands, June 5, 1975, 7506652

Int. Cl.² A01B *33/06*

U.S. Cl. 172—59 **15 Claims**



1. A cultivator implement comprising a frame and at least one group of soil working members being supported on said frame, each of said soil working members being rotatable about an upwardly extending axis and driving means connected to rotate said soil working members, a ground engaging supporting member being positioned to the rear of said soil working members and said supporting member being interconnected to said frame with setting means that fixes the relative horizontal positions of said frame and supporting member, said group of soil working members being mounted on a substantially horizontal support and said support being pivoted to said frame by at least one linkage, said support together with said soil working members being vertically displaceable about pivot means of the linkage relative to both said frame and said ground engaging member to avoid obstacles during operation, stop means on said implement being positioned to limit the extreme vertical movement of said group of soil working members in at least one direction with respect to said frame.

4,071,090

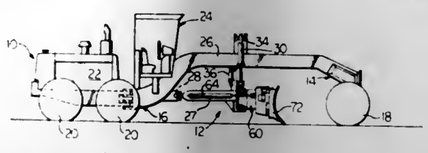
MOTORGRADER IMPLEMENT MOUNTING ARRANGEMENT

Gene B. Easterling, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 19, 1976, Ser. No. 715,743

Int. Cl.² E02F *3/76*

U.S. Cl. 172—788 **8 Claims**



1. An implement mounting arrangement, operatively associated with a longitudinally oriented main frame of a vehicle, comprising:

a base frame assembly having an inner end and an outer end and being universally secured at said inner end to said main frame;

first actuator means interconnected between said main frame and said outer end of said base frame assembly for suspended raising, lowering and tilting thereof;

an implement support assembly hingedly mounted on said outer end of said base frame assembly;

angling means interconnected between said base frame assembly and said implement support assembly for angling it relative to the direction of travel of the vehicle; and

second actuator means interconnected between said main frame and said outer end of said base frame assembly for stabilizing and side shifting said base frame assembly.

4,071,091

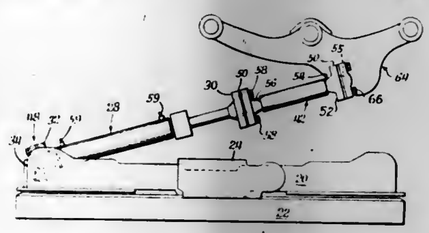
MOTOR GRADER WITH DETACHABLE LINK FOR REDUCED BLADE ANGLE OPERATION

Carlisle S. Morris, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 21, 1976, Ser. No. 697,903

Int. Cl.² E02F *3/76*

U.S. Cl. 172—797 **10 Claims**



1. In a motor grader which comprises:

a power unit having a main grader frame extending forwardly therefrom, said frame being supported adjacent its forwardmost end by ground engaging means;

a circle drawbar mounted below said frame intermediate said power unit and said ground engaging means;

a circle member mounted below said circle drawbar;

gear means for rotating said circle member relative to said circle drawbar;

a blade mounted to said circle member and therebelow;

first hydraulic cylinder means rotatably mounted at a first end thereof adjacent said frame and at a second end thereof adjacent a periphery of said circle drawbar; said first cylinder means including a rod which is retractible therein, said first cylinder means with said rod fully retracted therein defining a minimum total length;

second hydraulic cylinder means rotatably mounted adjacent a first end thereof adjacent the periphery of said circle drawbar and adjacent a second end thereof adjacent said frame; and an improvement which includes

means for permitting operation of said motor grader at a reduced angle of said blade to a surface being graded, including a detachable link connected in line with said first cylinder means to extend the length thereof, said link having a length such that when said link is connected to said first cylinder means in line therewith and said first cylinder means is at said minimum total length thereof, said first cylinder means and said link are of a collective length which prevents rotation of said blade beneath said frame from a first of said motor grader to a second side thereof, said first cylinder means, when said link is removed therefrom and said first cylinder means is at said minimum total length, allowing said blade to be rotated beneath said frame from said first side to said second side.

4,071,092

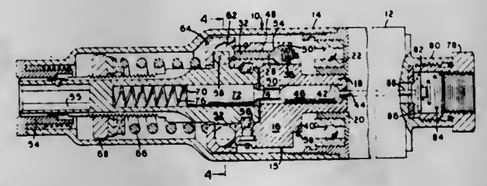
PNEUMATIC SCREWDRIVER WITH TORQUE RESPONSIVE SHUT-OFF

William K. Wallace, Barneveld, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Mar. 9, 1977, Ser. No. 775,766

Int. Cl.² B25B *23/14*

U.S. Cl. 173—12 **7 Claims**



1. In a pneumatically powered screwdriver, a motor housing, a clutch housing affixed to the motor housing, a valve movable to control flow of pneumatic fluid to the motor housing for operation of a rotary motor therein, a push rod for unseating of the valve to allow flow of pneumatic fluid to the motor, a valve spring which is biased to seat the valve to shut off flow of pneumatic fluid to the motor, a clutch member in the clutch housing and rotatably driven by the motor, a spindle in the clutch housing adapted for receipt of a tool bit shank, a plurality of balls arranged to convey rotary motion from the clutch member to the spindle, and a ball compression means urging the balls into engagement with the clutch member, a torque responsive shut-off means for the screwdriver comprising: movable means slidingly supported in the spindle and clutch member, compression means biasing said movable means into engagement with the push rod for unseating of the valve, a latch pin arranged in the clutch member, a spring biased for movement of the latch pin into the path of movement of one of said balls, and a lock pin arranged in the clutch member between the latch pin and the movable means for preventing sliding movement of said movable means, said lock pin responsive to movement of said latch pin caused by said one of said balls to release said movable means for sliding movement to enable said valve spring to overcome the bias of said compression means and seat said valve is seated.

4,071,093

AIR PERCUSSION BORING MACHINE

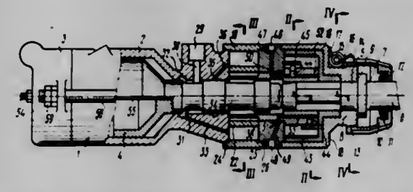
Anatoly Ivanovich Zubarev, ulitsa Rozybakieva, 362, kv. 1; Lev Fedorovich Osipovsky, 5 mikroraion, 3, kv. 28, and Stanislav Valeryanovich Shipov, ulitsa Dzerzhinskogo, 126, kv. 3, all of Alma-Ata, U.S.S.R.

Filed Sept. 25, 1975, Ser. No. 616,600

Int. Cl.² E21C *3/28*

U.S. Cl. 173—105 **4 Claims**

1. An air percussion boring machine comprising: percussion means having a hollow cylindrical housing; a rear head having air distribution means disposed within said housing; a percussion piston located inside said housing for reciprocating under the effect of compressed air and for delivering impacts at the end of the power stroke to a tail piece of the boring tool; a front head disposed coaxially with respect to said percussion piston and said tail piece of the boring tool; a boring tool holder connected to said front head and having a central hole for permitting said boring tool to extend axially outwardly therefrom; a boring tool rotation mechanism, installed in the front portion of the boring machine, having a stator with a plurality of stator blades secured on its internal surface equidistant from each other, a rotor installed inside said stator and provided with a plurality of rotor blades whose number is equal to that of said stator blades, a sleeve installed inside said rotor, a ratchet installed in said front head and coupled to the tail piece of said boring tool for rotating same, at least one pair of hinged



pawls in said sleeve, said pawls of each of said pair of pawls being coupled to each other, and said pawls having a common axle of rotation parallel to the central axis of the boring machine and directed in different senses whereby one of the pawls in each pair is used to rotate said ratchet in one direction whereas the other pawl in each pair is used to rotate said ratchet in an opposite direction, each of said pairs of pawls comprising a rigid coupling in the form of a lug provided on one pawl and a mutually cooperatively associated slot provided on the other pawl; means for urging said pawls to said ratchet comprising air power cylinders with pistons contacting said pawls; and an air pressure source in communication with a first group of air power cylinders designed to rotate said ratchet in one direction when said pawls are in mesh with said ratchet, while a second group of air power cylinders designed to rotate said ratchet in an opposite direction is in communication with the atmosphere.

4,071,094

PORTABLE PNEUMATIC PERCUSSIVE TOOL

Viktor Evdokimovich Kilin, ulitsa Posadochnaya, 44, korpus 2, kv. 40; Anas Galimovich Galimov, ulitsa Kuibysheva, 115, kv. 13; Oleg Alexandrovich Yankovsky, ulitsa Soni Morozovoi, 175A, kv. 95, all of Sverdlovsk; Nikolai Alexandrovich Klushin, ulitsa Narodnaya, 1, kv. 23, and Petr Avramovich Maslakov, ulitsa Voskhod, 7, kv. 42, both of Novosibirsk, all of U.S.S.R.

Filed June 21, 1973, Ser. No. 372,416

Int. Cl.² B25D *17/04, 17/08*

U.S. Cl. 173—139 **7 Claims**

1. A portable pneumatic percussive tool comprising: a cylinder; a hammer accommodated in said cylinder and adapted to reciprocate under the action of compressed air and to impart blows to a working implement received in the front end portion of said cylinder; an air-distribution means arranged on the rear end face of said cylinder, said means being communicated during the operation of said tool with a compressed air source and adapted to distribute the compressed air provenient from the source; a housing mounted on the rear end part of said cylinder and fixed thereto, said housing being adapted to fix said air-distribution means to said cylinder; a handle mounted on said housing and axially movable within certain limits along the outer surface of said housing, said handle being adapted to control said tool and to communicate said air-distribution means with the compressed air source in the manner known per se during the movement of the handle forwardly along the

housing into the operative position; a shock absorber disposed between said housing and said handle, said shock absorber being adapted to return said handle into the rearmost idle position and to lower vibration of said handle; said working implement being provided at its rear end part with a shoulder adapted to fix the position of said working implement relative to the cylinder; a sleeve composed of a plurality of longitudinally extending parts located on the front end part of said cylinder and embracing said working implement, the outer surface of the sleeve being tapered to converge in the direction toward said working implement, said sleeve being adapted to fix said working implement relative to said cylinder; a differential spring, the end of the spring, which has a greater diameter, being of a cylindrical shape and wound about the front end part of said cylinder, while the end of the spring, which has a smaller diameter, being tapered and being urged against said



tapered surface of said sleeve in the direction toward the rear end of said cylinder so as to urge said sleeve with its rear end face against the front end face of the cylinder and with the inner surface against the outer surface of said working implement, whereby said sleeve together with said spring form a resilient coupling between said cylinder and said working implement, said coupling allowing said working implement to move forward relative to the cylinder at the instant of blow, with working implement being jammed in the material being demolished, due to an additional expansion of said spring, while after the delivery of a blow said coupling contributing to the cylinder movement forwardly toward the working implement due to the contraction of the expanded spring, thereby lowering vibration of the cylinder in the direction toward the operator and reducing the thrust force to be exerted upon the handle.

4,071,095

METHODS OF AND APPARATUS FOR WINNING REEF

Lorne Robert Herron, Benoni, South Africa, and Axel Stromnes, Borlange, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

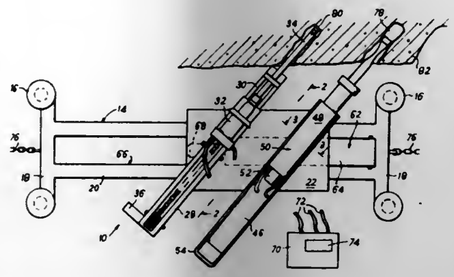
Filed Apr. 23, 1976, Ser. No. 679,683

Claims priority, application South Africa, Apr. 23, 1975, 75/2609

Int. Cl.² B23Q *5/00*

U.S. Cl. 173—152 **14 Claims**

1. A reef winning machine comprising:
a frame,
means for fixing the frame in position in a stope,
a saddle on the frame,
moving means coupled to the saddle for moving the saddle along the frame, the moving means including a hydraulic jack coupled to the saddle and means for supplying measured amounts of hydraulic fluid to the hydraulic jack so that the hydraulic jack moves the saddle in substantially equal steps,
a first boom carried by the saddle,
a rock drill mounted on the boom,



means coupled to the rock drill to advance the rock drill forwardly on the boom,
tool carrying means carried by the saddle, and
rock breaker means mounted on the tool carrying means and operating simultaneously with the rock drill.

4,071,096

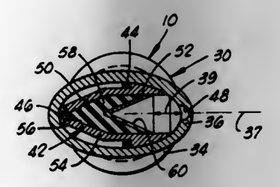
SHAPED CHARGE WELL PERFORATING APPARATUS

Jack E. Dines, Fort Worth, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Filed Jan. 10, 1977, Ser. No. 758,299

Int. Cl.² E21B *7/00*

U.S. Cl. 175—4.6 **15 Claims**



1. A shaped charge well perforating carrier which comprises a closed tubular housing adapted to be lowered and raised through tubing in a well bore having at least a portion thereof formed in the shape of an elliptic cylinder so that when shaped charge perforating means disposed therein are detonated, the ellipticity of said elliptic cylindrical portion is reduced.

4,071,097

PROCESS AND APPARATUS FOR SUPERSONIC DRILLING IN UNDERGROUND ROCKY STRATA

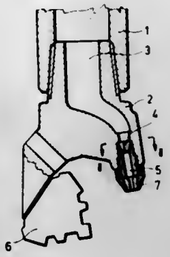
Miklós Füllöp, and Géza Rákár, both of Budapest, Hungary, assignors to Koolaj es Foldgazbanyaszati Ipari Kutato Laboratorium, Budapest, Hungary

Continuation-in-part of Ser. No. 322,750, Jan. 11, 1973, abandoned. This application May 30, 1975, Ser. No. 582,249

Int. Cl.² E21B *7/04, 9/08*

U.S. Cl. 175—56 **10 Claims**

1. A process for ultrasonic drilling in underground rocky strata with a mechanical drilling tool such as a rotary drill bit containing at least one rock-breaking element, comprising the steps of; making a flushing medium flow through a passageway in the drilling tool; superposing a pressure wave on the static pressure of the flowing medium at the location of rock breaking; and setting the frequency of the pressure wave in the ultrasonic range, between 20 and 100 kHz; wherein the frequency of the pressure wave is equal to at least the natural frequency of the at least one rock-breaking element.



4,071,098

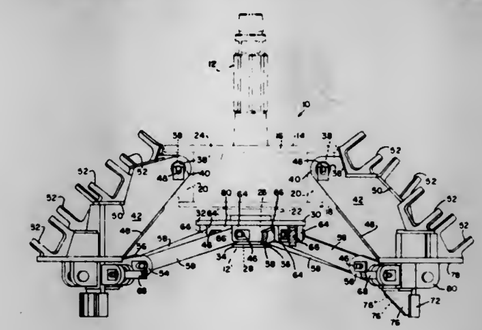
CUTTER MOUNTING EXTENSION APPARATUS

Charles R. Dively, and R. Kenneth Peterson, both of Seattle, Wash., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 28, 1976, Ser. No. 736,521

Int. Cl.² E21B *9/26;* E21C *13/12, 23/00*

U.S. Cl. 175—53 **17 Claims**



1. For use in combination with a raise boring head having a drive stem coupled to an earth cutter mounting platform, cutter mounting extension apparatus for extending the effective cutting radius of the raise boring head, comprising:
a raise boring head radius extension element;
said extension element having means for replaceably mounting and supporting earth cutters thereon;
means, having a radial center, for immovably engaging a portion of said raise boring head drive stem;
means for replaceably fastening said extension element to said earth cutter mounting platform of said raise boring head; and
strut means replaceably fastening said extension element immovably to said drive stem engaging means.

4,071,099

METHOD AND APPARATUS FOR STABILIZING BOREHOLE CORES

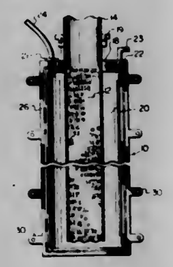
Wilber M. Hensel, Jr., Richardson, Tex., assignor to Sun Oil Company, Dallas, Tex.

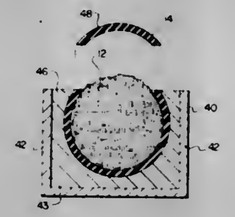
Filed July 19, 1976, Ser. No. 706,649

Int. Cl.² E21B *49/02;* G01N *1/02*

U.S. Cl. 175—59 **15 Claims**

1. A method of stabilizing a columnar mass of core material containing fluids therein and encapsulated within an expandable sleeve, said method comprising:
providing a container for housing an encapsulated core;
receiving the encapsulated core within the housing;
supplying a subtemperature mass of material having a temperature substantially less than that of the core;
introducing the subtemperate mass within the housing and substantially around the core for solidifying the fluids contained therein;
allowing the core to reach a temperature beneath the freezing point of the fluids contained therein for solidification thereof to permit the core to be handled in a conventional manner without adversely affecting the physical properties thereof; and
casting the core in a solidifying medium for imparting longitudinal rigidity thereto.





6. Apparatus for utilizing a subtemperature mass to stabilize a columnar mass of core material containing fluids therein and encapsulated within an expandable sleeve, said apparatus comprising:
an elongated housing adapted for the receipt and containment of the encapsulated core, said housing including at least two longitudinal sections substantially separable one from the other for exposing the encapsulated core therebetween;
means for introducing a subtemperate mass within said housing and substantially around the core disposed therein for solidifying the fluids contained therethrough; and
means for providing access to the solidified encapsulated core within said housing for the subsequent analysis thereof.

4,071,100

METHOD OF MAKING HOLES OF SELECTED EXTERNAL CONFIGURATION IN PREFERABLY ROCK OR GROUND FORMATION, AND A DRILLING MACHINE FOR CARRYING OUT THE METHOD

Gustaf Hakan Oscar Wibom, Skogsvagen 12, Lidingo, Sweden (181 41)

Filed May 27, 1976, Ser. No. 690,723

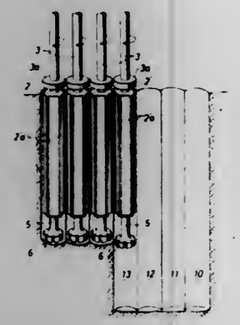
Claims priority, application Sweden, May 29, 1975, 7506169; Sept. 30, 1975, 7510957

Int. Cl.² E21B *5/00, 7/00, 17/00*

U.S. Cl. 175—69 **16 Claims**

1. A method of making holes of selective external configuration in a rock or earth formation, comprising the steps of providing two or more rotatable drills each provided with drill

crowns, by arranging the drill crowns on drill rods and providing guide means around said drill rods, each drill crown being arranged to drill a hole, which holes together have a smaller total area than the area of the finished hole, positioning the rotatable drills adjacent to each other so that the drill crowns will touch each other or are radially spaced a small distance from each other and positioning the rotatable drills so that the drill crowns are substantially on the same level with each other, driving said rotatable drills into the ground, simultaneously displacing the drill crowns axially while rotating each of the drill crowns about its own axis only, and driving the guide means into the ground substantially simultaneously with the drill crowns.



11. A drilling machine comprising two or more rotatable boring means for boring holes, each of said boring means provided with a bore crown, drill rods, means for mounting the bore crowns on said drill rods, guide means for guiding the drill rods and means for joining the guide means to one another, means for positioning said bore crowns substantially at the same level and for arranging said bore crowns in such close adjacent relationship that they touch each other or are located at a small radial distance from each other, means for driving said bore crowns into the ground, means for axially displacing said bore crowns simultaneously with said driving means, means for rotating each bore crown about its own axis only, and a sinker drill wherein the guide means further comprises means for embracing said sinker drill.

4,071,101

STABILIZER FOR SINGLE OR DUAL TUBE DRILLING

George Alan Ford, Houston, Tex., assignor to Walker-Neer Mfg. Co., Inc., Wichita Falls, Tex.

Filed Mar. 8, 1976, Ser. No. 664,958
Int. Cl.² E21B *17/10*
U.S. Cl. 175—325 **8 Claims**

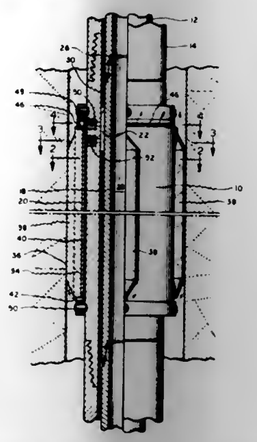
1. A stabilizer for use with a string of dual concentric drill pipe above a tool, comprising:

an inner tubular member adapted for fluid-tight interconnection with the inner pipe of said string to provide a conduit for drilling fluid and cuttings from tool to surface;

an outer tubular member arranged concentrically with said inner member and adapted for fluid-tight interconnection with the outer pipe of said string to provide an annular conduit for drilling fluid from surface to tool;

a stabilizer means encircling said outer member and adapted to contact the hole wall, said stabilizer means including a sleeve bearing mounted to rotate with respect to said outer member and a stabilizer sleeve mounted stationary on said sleeve bearing, said outer tubular member and sleeve bearing forming a clearance space between their adjacent surfaces;

a port means in said outer tubular member providing fluid communication between said annular conduit and said clearance space; and



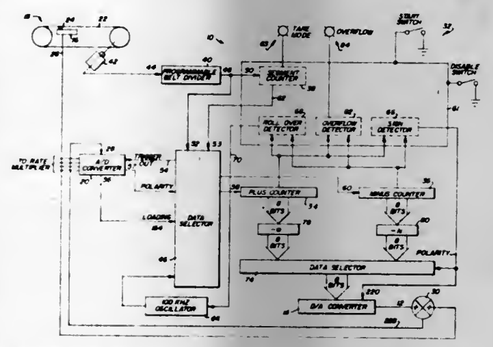
an exit port means in the lower end of the stabilizer means providing fluid communication between said clearance space and the outside of the stabilizer.

4,071,102

AUTO ZERO CIRCUIT

Ron Van Ostenbridge, Glassboro, and Michael E. Sturgeon, Sicklerville, both of N.J., assignors to K-Tron Corporation, Glassboro, N.J.

Filed Sept. 27, 1976, Ser. No. 727,110
Int. Cl.² G01G *13/14, 23/14*
U.S. Cl. 177—165 **12 Claims**



1. Apparatus for generating a belt tare compensation signal for use with a load cell in operative contact with a conveyor belt dividable into N equal segments comprising:

first means for generating N loading and N polarity signals, one said loading and one said polarity signal being generated each time said belt advances one said segment, said loading signal being a pulse train representative of the magnitude of the instanteous output of said load cell, said polarity signal indicating whether the output of said load cell is greater than or less than a predetermined value;

second means for generating a difference signal representative of the difference between the number of pulses generated by said first means when said polarity signal indicates that the output of said load cell is greater than said predetermined value and the number of pulses generated by said first means when said polarity signal indicates that the output of said load cell is less than said predetermined value; and

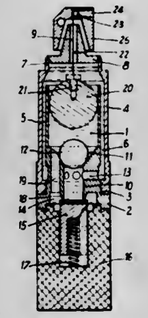
divide by N means responsive to said difference signal for generating a belt tare compensation signal representative of the output of said load cell for a single non-loaded revolution of said conveyor belt.

4,071,103

AUXILIARY DYNAMIC COMPENSATION DEVICES FOR GRAVIMETRIC DISPENSERS

Basile Rouban, Clamart, France, assignor to Trayvou S.A., Vincennes, France

Filed Mar. 11, 1977, Ser. No. 776,779
Claims priority, application France, Mar. 16, 1976, 76 07483
Int. Cl.² G01G *23/06*
U.S. Cl. 177—188 **9 Claims**



1. An auxiliary dynamic compensation device for a gravimetric dispenser, comprising a piston suspended by a pliant and non-extensible connection which is adapted for attachment to the beam or equivalent weighing member of the weighing device of the dispenser and is vertically movable with limited lateral clearance in a vessel containing a liquid in which the piston does not float, a bypass passage interconnecting the interior of the vessel below the piston and the interior of the vessel above the piston and containing a non-return valve arranged so as to close the said passage if the piston begins to descend in the vessel and to open it if the piston begins to rise, whereby the piston can follow upward movements of the beam, but those downward movements thereof which are more rapid than those of the piston, are accompanied by a variation in the load applied by the pliant connection due to the retardation of the descent of the piston.

4,071,104

SCALE ADJUSTMENT DEVICE

Leonard J. Macari, Stamford, and Louis T. Canevari, Norwalk, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Oct. 26, 1976, Ser. No. 735,581
Int. Cl.² G01G *3/08, 23/14*
U.S. Cl. 177—229 **6 Claims**

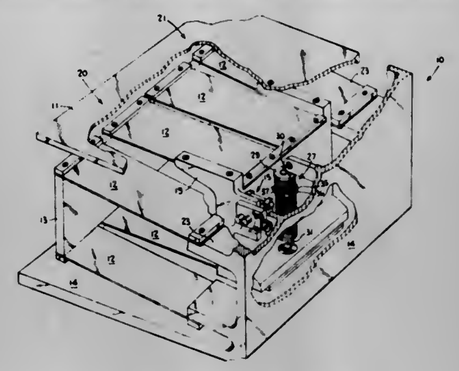
1. In combination, an adjustment spring and a leaf spring scale, said adjustment spring for correcting for differences in spring rates of the leaf springs of the scale which result from differences in manufacturing tolerances, the combination comprising:

a scale support;

a weighing pan for receiving a load to be weighed, said weighing pan moving through at least a portion of a weighing range in response to said load;

a first and second leaf spring means operatively connected together for forming and effectively functioning as a unitized leaf spring means, said weighing pan being supported by said first and second leaf spring means, said first and second leaf spring means being carried by said scale support; and

an adjustment spring means operatively connected between the movable weighing pan and the scale support, said adjustment spring means including a coil spring having a spring support means on one end thereof, a screw thread means affixed to the spring support means, said screw thread means extending through a middle portion of said coil spring, an adjustable rotative nut-type element rotatively disposed upon said screw thread means and extending between coil elements of said coil spring, the nut-type element being rotatively adjustable to different positions



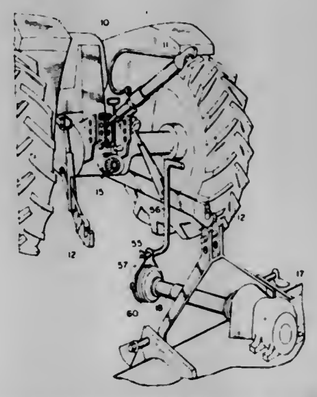
upon said screw thread means to vary an effective working length of said coil spring, and hence, to vary a spring rate of said coil spring, whereby the adjustment spring means in combination with said first and second leaf spring means can effectively adjust an overall spring rate of the scale and correct for inherent differences due to manufacturing tolerances of said first and second leaf spring means.

4,071,105

COUPLING DEVICE FOR A POWER TRANSMISSION SHAFT

Wilhelm von Allwörden, Lohmar, Germany, assignor to Jean Walterscheid GmbH, Lohmar, Germany

Filed Aug. 23, 1976, Ser. No. 716,835
Claims priority, application Germany, Aug. 23, 1975, 2537601
Int. Cl.² B60D *1/08*
U.S. Cl. 180—14 R **9 Claims**



1. A device for releasably coupling a power take-off shaft of a tractor to a transmission shaft of a trailer towed by said tractor, said device comprising a coupling hub, means drivingly mounting said hub on said power take-off shaft, a coupling drum co-axially surrounding and spaced from said hub, said drum being substantially fixed relative to said tractor, a pivot support mounted on an outer surface of said drum, a coupling sleeve drivingly mounted on said transmission shaft, a

first arm having a first end, means for pivotally connecting said first end to said sleeve, an actuating member non-rotatably connected to the other end of said first arm, a second arm having a first end non-rotatably connected to said actuating member, the other end of said second arm extending from said member whereby when said actuating member is positioned on said pivot support, pivotal movement of said second arm about the axis of said support will move said sleeve to a position co-axially between said hub and said drum for driving engagement with said hub, and quick-release fastener means for detachably connecting said sleeve to said hub when in said engagement.

4,071,106

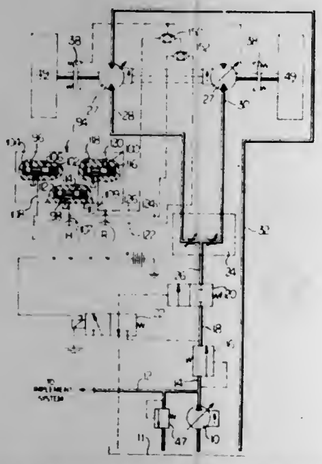
AUXILIARY HYDROSTATIC WHEEL DRIVE

John A. Junck, Joliet; Joseph A. Dezelan, Western Springs; Donald J. Larson, and Robert W. White, both of Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 432,968, Jan. 14, 1974, abandoned. This application Sept. 27, 1976, Ser. No. 727,187

Int. Cl.² B60K *25/00*

U.S. Cl. 180—44 F **3 Claims**



1. In a vehicle having a variable transmission control for determining a drive speed of the vehicle, an auxiliary drive system for said vehicle associated with a wheel thereof comprising a variable displacement fluid motor associated with said wheel thereof, means for transmitting power from the motor to drive the wheel, a fluid pump, fluid circuit means operatively connecting the pump and motor, and means operatively connecting the transmission control and motor to vary the displacement of the motor in response to said transmission control to provide a rotative speed of the motor corresponding to the drive speed of the vehicle, wherein the means for transmitting power from the motor to drive said wheel comprise clutch means engagable upon application of fluid pressure thereto to effect a driving condition between the motor and wheel, and disengagable to disconnect the motor and wheel, and means operatively connecting the clutch means and transmission control for engaging and disengaging the clutch means in response to said transmission control.

4,071,107

ENGINE SIDE GUARD MOUNTING

Conard E. Leighty, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

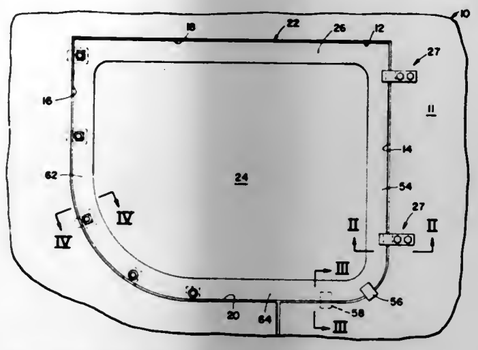
Filed Sept. 27, 1976, Ser. No. 727,188

Int. Cl.² B62D *25/12*

U.S. Cl. 180—69 R **12 Claims**

1. In an engine compartment of a vehicle which includes an opening through a sidewall thereof and a panel secured to cover said opening and removable to allow access to components within said compartment, an improved means for mounting said panel to said engine compartment, comprising:

a metallic plate rigidly affixed to a first side of said sidewall, and having a portion thereof extending to the vicinity of said opening; and



a metal leaf rigidly affixed to a second side of said sidewall, and having a portion thereof extending to the vicinity of said opening in alignment with and a spaced distance from said extending plate portion, said extending leaf portion and extending plate portion defining a mouth for accepting said panel, said spaced distance being smaller than the thickness of said panel thereadjacent.

4,071,108

STEERING SYSTEM FOR ARTICULATED VEHICLES

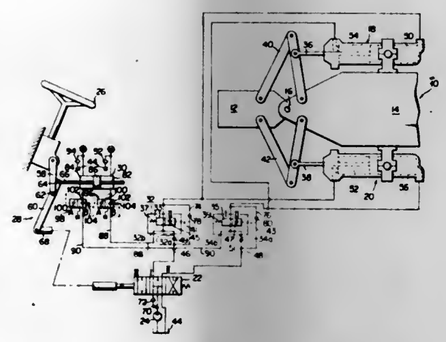
Akio Iida, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation-in-part of Ser. No. 673,942, April 5, 1976, abandoned. This application Dec. 22, 1976, Ser. No. 753,227

Claims priority, application Japan, Apr. 4, 1975, 50-44792[U]; Apr. 4, 1975, 50-44793[U]

Int. Cl.² B62D *5/06*

U.S. Cl. 180—139 **9 Claims**



1. In a steering system for an articulated vehicle having a forward portion and a rearward portion pivotally connected to each other, wherein the steering system includes fluid actuated steering cylinder means adapted to cause angular motion of the forward portion of the vehicle relative to its rearward portion as dictated by a steering member, the combination thereof with:

a source of fluid under pressure;

a steering control valve adapted to control communication between said source and said steering cylinder means, said steering control valve being normally held closed in a center position and displaced on actuation to either of two offset positions;

linkage means operatively connecting said steering member to said steering control valve whereby said steering control valve is actuated by said steering member;

a fluid actuated follow-up cylinder having a piston operatively connected to said linkage means via a piston rod, said follow-up cylinder having a pair of opposed fluid chambers;

locking means for normally locking said piston of said follow-up cylinder against movement in either direction; and

follow-up cylinder actuating means operatively connected between said steering control valve and said steering cylinder means to selectively supply fluid under pressure to said fluid chambers of said follow-up cylinder upon actuation of said steering cylinder means, said locking means being adapted to unlock said piston of said follow-up cylinder when the fluid pressure in either of its fluid chambers builds up to a predetermined degree;

whereby said follow-up cylinder when actuated by said actuating means functions to cause said linkage means to return said steering control valve to its center position.

4,071,109

POWER STEERING CONTROL WITH DAMPING ACTION AGAINST RAPID CHANGE IN VEHICLE SPEED

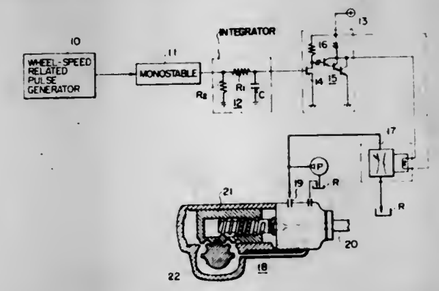
Mitsuhiko Ezoe, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed July 19, 1976, Ser. No. 706,377

Claims priority, application Japan, July 17, 1975, 50-86651

Int. Cl.² B62D *5/08*

U.S. Cl. 180—143 **6 Claims**



1. In a wheeled vehicle hydraulic power steering system including a source of pressurized working fluid and a power steering unit supplied with said working fluid to give increased power to steering operation, a control apparatus for preventing a sudden relief of thrust on a steering shaft in response to sudden acceleration or deceleration of the vehicle, comprising:

means for generating an electrical signal of which the magnitude is representative of the speed of rotation of the vehicle wheels;

a timing circuit having a capacitor, a charge circuit for charging the capacitor with said electrical signal, and a discharge circuit for discharging the energy stored in said capacitor when said signal falls below the voltage developed across said capacitor, the time constant values of said charge and discharge circuits being such that the voltage developed across said capacitor varies at a rate lower than the minimum rate at which the speed of said vehicle wheels varies in response to sudden acceleration and deceleration of the vehicle;

an electromagnetically operated control valve for regulating the flow of said working fluid supplied to the power steering unit in response to an electric current supplied thereto; and

amplifier means including a field-effect transistor having a control gate connected to said capacitor for providing amplification of said voltage developed across said capacitor and a current amplifier connected to said field-effect transistor for providing an electric current in response to said amplified voltage to operate said control valve.

4,071,110

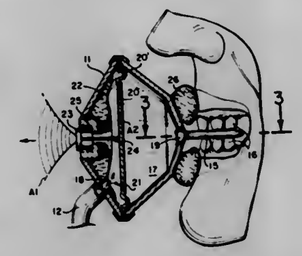
UNDERWATER VOICE COMMUNICATOR

Philip Wallace Payne, 157 Cocoa Ave., Indiatlantic, Fla. 32903

Filed Sept. 17, 1976, Ser. No. 724,349

Int. Cl.² G10K *9/10, 11/02*; A62B *7/02*; H04R *25/00*

U.S. Cl. 181—127 **8 Claims**



1. An underwater voice communicator including, in combination:

a. means defining an air chamber for communication with a diver's mouth so that the diver can speak into said chamber;

b. an acoustically responsive air diaphragm in said chamber;

c. an emitter means carried by said air chamber and having a sound emitting surface in direct physical contact with the surrounding water when said air chamber is submerged; and,

d. mechanical means physically connected to said diaphragm and emitter to transform acoustical energy from said diaphragm to said emitter in a manner to approach an acoustical impedance match between acoustic energy absorbed by said diaphragm in said air chamber and acoustic energy generated in the surrounding water by said emitter means.

4,071,111

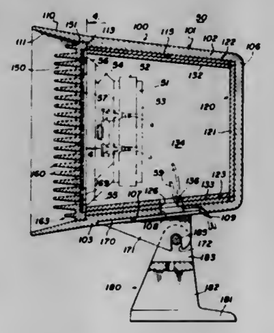
WEATHERPROOF LOUDSPEAKER ASSEMBLY AND METHOD OF MAKING SAME

Robert E. Croup, Indianapolis, Ind., assignor to Acoustic Fiber Sound Systems, Inc., Indianapolis, Ind.

Filed Apr. 28, 1976, Ser. No. 681,022

Int. Cl.² H05K *5/00*; A47B *81/06*

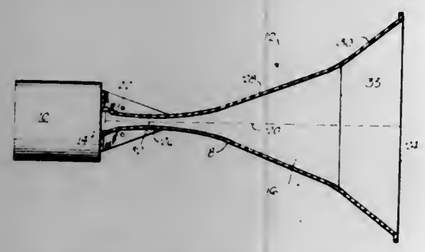
U.S. Cl. 181—149 **32 Claims**



1. A weatherproof loudspeaker assembly comprising a housing formed of water-impermeable material and having an aperture therein to facilitate the emission of sound waves there-

from, corrugated material disposed within said housing and lining at least a substantial portion thereof with two layers of corrugations arranged to facilitate suppression of undesirable sound waves in said housing, loudspeaker means disposed within said housing and said corrugated material and having a water-repellent front portion, and means mounting said loudspeaker means on said housing with said water-repellent front portion closing said aperture and forming a watertight seal between said front portion and said housing around the entire perimeter of said aperture, thereby to render said loudspeaker assembly watertight.

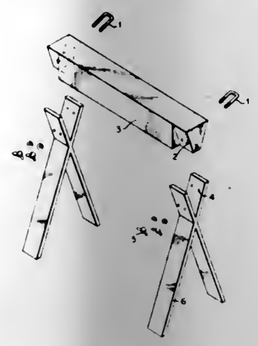
4,071,112
HORN LOUDSPEAKER
D. Broadus Keele, Jr., Galien, Mich., assignor to Electro-Voice, Incorporated, Buchanan, Mich.
Filed Sept. 30, 1975, Ser. No. 618,077
Int. Cl.² G10K *11/00*
U.S. Cl. 181—187 **17 Claims**



1. A loudspeaker comprising a driver for generating sound waves over a range of frequencies having a sound outlet port, and a horn having a channel extending therethrough from an inlet end to a mouth, said horn being mounted on the driver with the inlet end of the channel acoustically sealed on the port of the driver, the channel having a first portion extending from the driver and a second portion extending from the first portion, the first portion of the channel having a throat of minimum cross section adjacent to the port of the driver, the second portion of the channel of the horn having cross sectional areas increasing as the square of the distance from the first portion of the channel, said first and second portions of the channel having substantially the same cross sectional area at the interface of said first and second portions, and the cross sectional area of the first portion of the channel increasing with distance from the throat of the channel at a rate of increase increasing with distance from the throat of the channel from a rate less than the rate of increase of the second portion of the channel at the interface between the first and second portions of the channel.

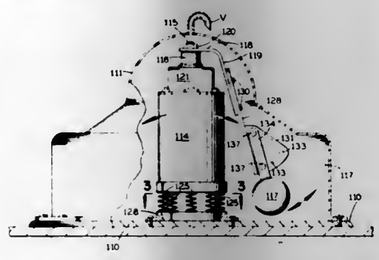
4,071,113
SUPPORT STRUCTURE
Eric W. Pelser, 1160 Heald Road, Victoria, British Columbia, Canada
Filed Dec. 12, 1975, Ser. No. 640,243
Int. Cl.² F16M *11/00*
U.S. Cl. 182—181 **1 Claim**

1. A support structure comprising a cross-beam and leg assemblies, wherein the cross-beam is reduced in its end portions in the shape of trapeziums that wedgingly engage Vee-shaped crotches that are defined in the upper portions of the leg assemblies, said wedging engagement leaving spaces between the undersides of the trapeziums and the bottoms of the Vee crotches in the leg assemblies, holes in said cross-beam end portions and said upper portions of said leg assemblies, and U-bolts having an angle of entry through said holes that bears an oblique relationship to one inclined face of each trapezium and a 90° relationship to the opposite inclined face of each trapezium, and wherein wing nuts engage the protruding ends of each U-bolt adjacent to the inclined trapezium face that



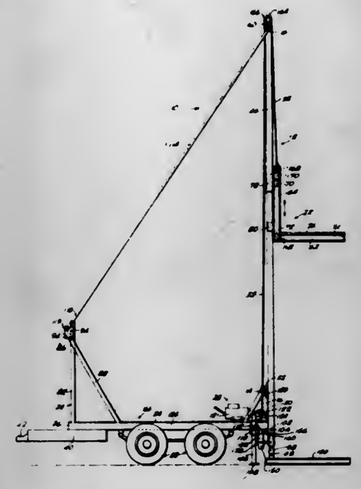
bears said 90° relationship, wherein all the components are locked into a rigid assembly.

4,071,114
MOTION OPERATED POWER APPARATUS
Enos L. Schera, Jr., 8254 S.W. 37 St., Miami, Fla. 33155
Continuation-in-part of Ser. No. 566,027, April 7, 1975, abandoned. This application Mar. 26, 1976, Ser. No. 670,697
Int. Cl.² F03B *13/12*
U.S. Cl. 185—30 **7 Claims**



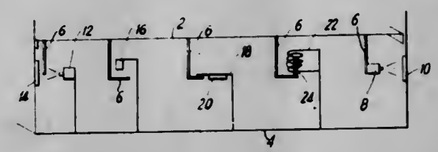
1. In an apparatus for converting fluctuating movements into useful work comprising:
a base adapted to rock in response to fluctuating movements;
a shaft-driven power device supported from said base and extending above said base;
and a rotatable input shaft extending up from said power device and operatively coupled in driving relationship to the latter;
the improvement which comprises the combination of:
a weight located off-center from said input shaft and closely above said base at an elevation substantially closer to the base than to said input shaft;
a rigid coupling arm connected to said input shaft above said power device and extending laterally outward from said input shaft across the top of said power device and downward to one side of said power device, said coupling arm at its lower end carrying said weight so that the weight revolves about the axis of the input shaft and imparts rotation to the input shaft in response to rocking of the base, said weight having an unobstructed path through which it can revolve about the axis of the input shaft; and
yieldable means mounting said power device on said base.

4,071,115
MULTI-STORY LIFT DEVICE
Frank Garcia, 3047 Terrace Ave., Naples, Fla. 33942
Filed Apr. 1, 1976, Ser. No. 672,525
Int. Cl.² B66B *9/20*
U.S. Cl. 187—2 **5 Claims**



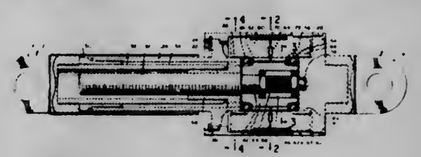
1. A multi-story lift device for attachment to a trailer of the type including a main frame, a bed, a wheel assembly supporting the main frame and bed, and a tongue and hitch means for attachment to a tow vehicle for over-the-road travel, comprising:
elongated lift guide means pivotally connected to a first support means, fixed to the trailer, for pivotal movement between a retracted position and an elevated, generally vertical position,
a lift platform means slidably journaled along the main length of said lift guide means for movement between a ground level, load position and selective elevated positions, with said lift guide means in the elevated position,
a second support means for engagement by said elongated lift guide means, intermediate the length thereof, to support said lift guide means in said retracted position,
winch means, fixed relative to the trailer, and a first cable, operably attached between said winch means and a lower end of said elongated chain means to pivot said elongated guide means between said retracted and elevated positions, and a second cable, operably attached between said winch means and said lift platform means to move said lift platform means between said ground level, load position and selective elevated positions, and
reversible drive means, drivingly connected to said winch means,
said elongated lift guide means comprising a pair of spaced apart, parallel, elongated beams, interconnected by transverse beams at their respective upper and lower ends,
said lift platform means being generally L-shaped in side elevation and including a first pair of spaced apart, parallel beams, parallel with and in close proximity to the respective lift guide beams, a second pair of spaced apart, parallel beams, fixed to and extending outwardly from said first pair to define said L-shape, a platform, fixed in a spanning relation to said second pair, and a plurality of transverse tie beams connecting between said first and second pairs,
said lift guide beams being tubular and including a pair of tubular segments enlarged somewhat in cross section relative to said lift guide beams for respective attachment as by welding to the upper end portions of said first pair in positions for sliding engagement along said lift guide beams,
said device including a pair of generally C-shaped segments, fixed to the respective lower end portions of said first pair and being sized and configurated in cross section for a stabilizing, sliding engagement along said lift guide beams,
said first support means comprising a first pair of spaced apart vertical posts, fixed relative to respective rear end sides of the trailer and said pivotal connections comprising a transverse pivot pin extending through the upper end portion of each of said vertical posts and an ear, fixed as by welding to each of said lift guide beams somewhat inwardly of said lower ends thereof, and
said second support means including a second pair of vertical posts fixed at lower ends to front end portions of respective sides of the main trailer frame, and a transverse post, fixed in a spanning relation to said second pair of vertical posts, a predetermined distance downwardly from the top ends thereof, said transverse post including outwardly extending end portions beyond the respective second vertical posts for supporting engagement with said elongated beams in said retracted position.

4,071,116
LOAD CANCELLING DEVICE FOR CONVEYANCE SYSTEMS
Levi Ytzhak Halperin; Dov Zioni, and David Bennet, all of Jerusalem, Israel, assignors to Shaare Zedek Hospital, Jerusalem, Israel
Filed Nov. 6, 1975, Ser. No. 629,365
Claims priority, application Israel, Nov. 12, 1974, 46035
Int. Cl.² B66B *1/32*
U.S. Cl. 187—29 R **10 Claims**



1. A load-cancelling system, for conveyance systems having a power source, driving means and braking means, said load cancelling system being adapted to cancel the effect of a load weight on the requirements from the power source and comprising at least one weighing device adapted to determine the weight of the load on the conveyance, a supplementary braking device adapted to dissipate energy supplied to the system by the load and interface means between said devices for translating the result of the weighing operation to a corresponding braking operation.

4,071,117
MECHANICAL SHOCK ARRESTOR
Elmer Chensheng Yang, Orange, Calif., assignor to Pacific Scientific Company, Anaheim, Calif.
Filed Mar. 10, 1977, Ser. No. 776,397
Int. Cl.² F16F *7/10*
U.S. Cl. 188—1 B **23 Claims**



1. A motion snubbing device comprising:
a pair of members mounted for relative movement;
a pair of inertia elements mounted to be freely rotated;
means connecting said members to said elements so that relative movement of said members in one direction will drive one of said inertia elements, and relative movement

of said members in an opposite direction will drive the other inertia element; and

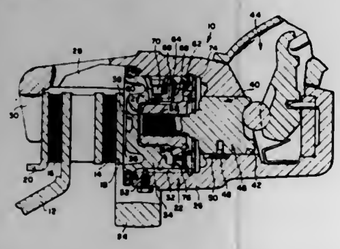
means connecting said inertia elements in a manner such that rotating either of the elements below a predetermined motion threshold causes such element to rotate the other inertia element, and attempting to rotate said other inertia element above said threshold initiates braking action on said elements and said members which limits motion to said threshold.

4,071,118

VARIABLE ADJUSTER FOR DISC BRAKE

Donald Dixon Johannesen, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Oct. 22, 1976, Ser. No. 734,909
Int. Cl.² F16D 65/56
U.S. Cl. 188—71.9 **3 Claims**



1. In a disc brake, a rotor having a pair of friction faces, a pair of friction elements, one of said elements being disposed adjacent each of said friction faces, a fixed support, a caliper housing slidably mounted on said fixed support for urging the friction elements into braking engagement with their corresponding friction faces, and actuating means for causing said caliper housing to urge said friction elements into braking engagement with said friction faces, said actuating means including automatic adjustment means for limiting retraction of said piston to a predetermined running clearance, said adjustment means including an extensible member comprising a pair of relatively rotatable components, and a ratchet mechanism for rotating one of said components relative to the other component, said ratchet mechanism including a pivoting pawl and a toothed member for engagement by the pawl, said pawl including a pair of keys axially facing the toothed member and engageable therewith to rotate said one component a predetermined increment when one of said pair of keys engages the toothed member and a second predetermined increment when the other of said pair of keys engages the toothed member, caused by movement of said toothed member axially away from said pawl and said pair of keys being rotationally disposed to each other relative to the pivot of said pawl so that said pair of keys are engageable with the toothed member separately.

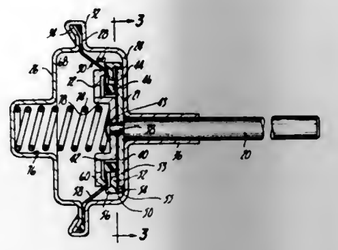
4,071,119

DASHPOT ASSEMBLY

Benjamin C. Benjamin, Flint, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Filed Aug. 9, 1976, Ser. No. 712,925
Int. Cl.² F16F 9/04
U.S. Cl. 188—298 **10 Claims**

1. A dashpot comprising; a housing, a plunger assembly movable axially in said housing and being formed with an annular cavity open radially outwardly, an annular diaphragm having its outer periphery connected to said housing in fluid tight relationship, said plunger having an annular wall in said cavity, an annular valve formed at the inner periphery of said diaphragm and being disposed in said cavity for engagement with said annular wall to form first and second fluid chambers on opposite sides of said diaphragm, a metering notch formed in said annular wall of said plunger assembly and extending radially between said valve and wall to permit continuous restricted fluid communication between said first and second chambers, a ring positioned for limited movement relative to said plunger assembly between said diaphragm and said annular wall at the outer periphery of said plunger assembly to maintain said annular valve in said cavity, said plunger assembly being movable in one direction with said valve in engagement with said wall of said plunger assembly to resist fluid flow from said first to second chamber through said metering notch to restrict movement of said plunger assembly, said plunger assembly being movable in the opposite direction to flex said annular valve out of engagement with said wall of said plunger assembly to permit relatively free fluid movement from said second chamber to said first chamber for rapid return movement of said plunger assembly.

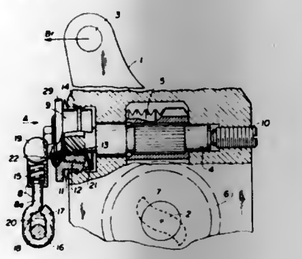


4,071,120

SLACK ADJUSTER FOR CAM BRAKES

Faust Hagin, Fortnerstrade 35/I, 8000 Munich 45, Germany

Filed Sept. 5, 1975, Ser. No. 609,890
Claims priority, application Germany, Sept. 7, 1974, 2443004
Int. Cl.² F16D 65/52
U.S. Cl. 188—79.5 K **18 Claims**



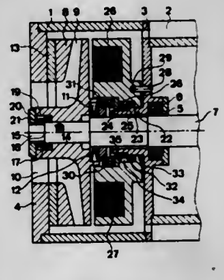
1. In an apparatus for adjusting a predetermined clearance between a brake shoe (37) and a corresponding brake drum (38), including a housing rotatable about an axis, actuating lever means (1) forming part of said housing, a worm wheel (6) journalled in said housing, brake adjusting means (7) operatively interposed between said worm wheel (6) and said brake shoe (37), shaft means (4) journalled in said housing and having a free end, worm means (5) supported by said shaft means for meshing engagement with said worm wheel (6), force transmitting means including a force limiting member operatively arranged to respond to a movement of said lever means rotating said housing about said axis (2) for rotating said worm means, the improvement wherein said force transmitting means comprise a one-way clutch mechanism and linkage means (8, 15, etc.) operatively arranged to transmit a rotational movement of said actuating lever means and thus of said housing through said clutch mechanism to rotate said worm means (5), said one-way clutch mechanism comprising first bushing means (9) operatively connected to said linkage means and rotatably supported in said housing around said free end of said shaft means, second bushing means (12) operatively located within said first bushing means, said first and second bushing means having respective inner and outer cooperating conical surface means, said second bushing means (12) and said free end of said shaft means comprising cooperating helical threaded means adapted to mesh for transmitting torque to said shaft means, whereby said worm means may be rotated in a stepless manner in the direction of adjustment.

4,071,121

AUTOMATIC ADJUSTMENT APPARATUS FOR A FRICTION BRAKE

Peter Daniel, Pratteln, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Dec. 13, 1976, Ser. No. 750,253
Claims priority, application Switzerland, Dec. 22, 1975, 16577/75
Int. Cl.² F16D 65/54
U.S. Cl. 188—196 P **5 Claims**



1. An automatic adjustment apparatus for a friction brake comprising at least two braking elements between which there is arranged a brake lining and which are adapted to be urged toward one another in a braking position, at least one of the braking elements being adjustably movable, comprising the combination of:

a substantially cylindrical portion having a

said cylindrical portion including a larger diameter part and a smaller diameter part;

substantially disc-shaped adjustment elements arranged to both sides of said shoulder on said larger and smaller diameter parts;

said disc-shaped adjustment elements being directly engageable with and displaceable by means of the adjustable braking element which is adjustably movable relative to the shoulder and the other braking element upon wear of the brake lining;

the adjustment element arranged directly at the shoulder upon the larger diameter part of the cylindrical portion being displaceable onto the smaller diameter part of the cylindrical portion upon wear of the brake lining;

the disc-shaped adjustment elements seated upon the larger diameter part of the cylindrical portion comprising shaft securing rings which are under constant radial stress during displacement along the larger diameter part and upon transfer to the smaller diameter part of the cylindrical portion lose their radial stress.

4,071,122

ADJUSTABLE SHOCK ABSORBER

Willard J. Schupner, Palatine, Ill., assignor to Efdyn Corporation, Chicago, Ill.

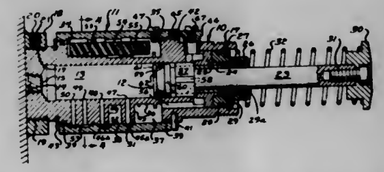
Continuation of Ser. No. 678,894, April 21, 1976. This application Mar. 14, 1977, Ser. No. 777,019
Int. Cl.² F16F 9/44
U.S. Cl. 188—285 **3 Claims**

1. In an adjustable energy absorber comprising a body member having a cylinder cavity therein formed about an axis, a piston movably mounted in said cylinder cavity, a reservior cavity and means providing an adjustable flow metering duct from the cylinder cavity to the reservoir cavity, the improvement comprising:

said body having an exterior face generally surrounding said cylinder cavity;

a sleeve surrounding said face and in annular contact with said body in two planes spaced along said axis and transverse thereto, said sleeve being rotatable with respect to the body about an axis generally parallel to said cylinder cavity axis and having an inner face, said inner face being spaced from said exterior face to define said reservoir cavity therebetween;

said means comprising a projection means extending radially through said reservoir cavity from one of said faces to contact the other of said faces with parts of said reservoir circumferentially at each side of said projection means,



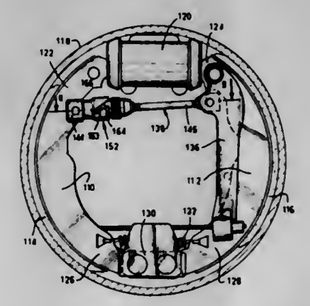
said projection means being fixed in position with respect to the one face and having an opening therethrough in communication with one of said cavities, said other face being annular about said rotational axis and having a generally circumferential slot therein which is, at at least most positions of rotation of said sleeve, overlapping a part of said projection opening to permit fluid communication between the opening and the slot, said slot being in communication with the other of said cavities whereby communication is established between said cavities through said slot and projection opening and the overlap therebetween to form said duct, and means for varying the cross-sectional size of a part of the duct at said other face in response to the varied rotational position of the sleeve on the body.

4,071,123

AUTOMATIC ADJUSTING DEVICE FOR A DRUM BRAKE

Pierre Courbot, Villiers le Bel, and Yves Meyer, Taverny, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Dec. 9, 1976, Ser. No. 748,999
Int. Cl.² F16D 51/52
U.S. Cl. 188—331 **7 Claims**



1. An automatic adjusting device for a drum brake having brake shoes adapted for engagement with a rotary drum by actuating means between adjacent ends of the brake shoes, said adjusting device comprising:

an extensible member for disposing said brake shoes relative

to said rotary drum, said extensible member including a pair of elements, extension of said extensible member being controlled by relative rotation between said elements; and

driving means interconnecting with a first shoe of said brake shoes and a first element of said pair of elements to control rotation of said first element upon actuation of the actuating means, the second element of said pair of elements being nonrotatably connected to a second shoe of said brake shoes, the first element having a pair of grooves;

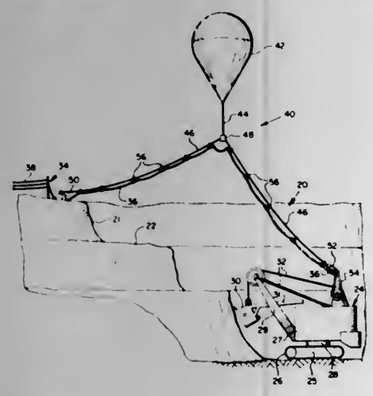
said driving means including a cam forming means movable in response to movement of said first shoe and repair of resilient wires engaging said cam forming means, each said wire frictionally engaging a respective groove on the first element to rotate the latter when said cam forming means moves, the frictional engagement between each resilient wire and its corresponding groove varying according to the direction of movement of said cam forming means.

4,071,124

ELECTRICAL POWER SUPPLY METHOD AND SYSTEM FOR OPEN PIT MINING EQUIPMENT

Donald L. Price, B.B. 2, Century Drive, Bend, Oreg. 97701

Filed Aug. 26, 1976, Ser. No. 718,044
Int. Cl.² H02G *11/00*
U.S. Cl. 191—12 R **9 Claims**



1. An electrical power supply system for supplying electrical power to electric motor-operated mining vehicles working on the floor of an open pit mine provided with haul roads on said floor and along terraced walls of said mine, said system comprising:

a source of electrical power sited on land above and adjacent to the mine pit,

an electrical power-operated mining vehicle movable within the mine pit on the floor thereof,

a flexible electrical power extension cable extending between and in electrical communication with said source and said vehicle for transmitting electrical power from said source to said vehicle,

a flexible suspension support cable connected at one end to an anchor means outside said mine pit, and at an opposite end to said vehicle,

cable connector means positioned at plural fixed spaced intervals along said support cable between its opposite ends and connecting said power cable to said support cable,

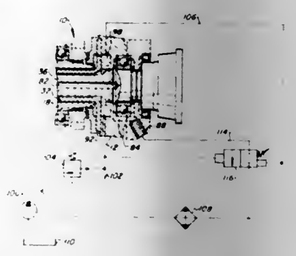
and lighter-than-air balloon suspension means connected to said support cable so as to elevate said cables above the floor of said pit and above said haul roads while said power cable remains connected to said source and said vehicle so as to enable said vehicle and other vehicles to move within said pit and along said roads without being obstructed by or traveling over said cable, thereby obviating the need to move or avoid said cable.

4,071,125

POWER TRANSMISSION WITH TORQUE CONVERTER LOCKUP CLUTCH

James J. Jameson, Coffeyville, Kans., assignor to Gardner-Denver Company, Dallas, Tex.

Filed July 21, 1976, Ser. No. 707,475
Int. Cl.² F16D *33/00, 35/00, 37/00*
U.S. Cl. 192—3.3 **2 Claims**



1. A transmission mechanism comprising: a hydrokinetic torque converter including a rotatable housing defining an interior space;

an input drive member connected to said housing;

fluid impeller means disposed in said interior space;

a turbine member disposed in said interior space and drivingly connected to an output shaft;

a torque converter lockup clutch including driving and driven members operable to be engaged to form a positive mechanical driving connection between said housing and said output shaft;

a piston disposed in said housing and dividing said interior spaced into first and second fluid chambers; said piston being responsive to fluid pressure forces acting thereon for effecting the engagement of said lockup clutch;

said impeller means and said turbine member being disposed in said first chamber;

restricted passage means interconnecting said first and second chambers for conducting torque converter working fluid from said first chamber to said second chamber;

a fluid circuit including means for conducting torque converter working fluid to said first chamber, means for conducting said fluid from said second chamber, and means for conducting fluid from said first chamber without passing through said second chamber; and,

a control valve adapted to be in a first condition to provide for relatively free flow of fluid out of said second chamber so that the fluid pressure in said first chamber acts on said piston to effect the engagement of said clutch to provide said driving connection between said housing and said output shaft, said control valve is adapted to be in a second condition to substantially block the flow of fluid out of said second chamber whereby the fluid pressure difference between said first and second chambers is minimized, and

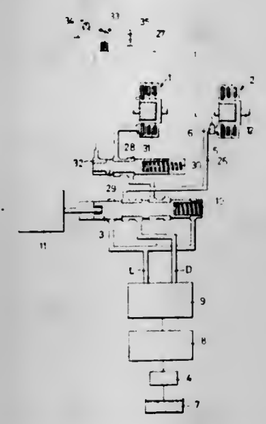
said control valve includes means responsive to a pressure rise of fluid flowing to said first chamber to cause said control valve to be in said first condition.

4,071,126

SAFETY APPARATUS IN AN AUTOMATIC TRANSMISSION FOR A VEHICLE TO PREVENT ENGAGEMENT OF THE LOW SPEED CLUTCH AT HIGH SPEEDS

Torao Hattori, 1-13-28, Shiraka, Wako, Saitama, and Masakazu Maezono, 1480, Owada, Niiza, Saitama, both of Japan

Division of Ser. No. 536,309, Dec. 24, 1974, abandoned. This application Mar. 11, 1976, Ser. No. 666,155
Int. Cl.² F16D *25/10, 43/284*
U.S. Cl. 192—87.12 **4 Claims**



1. In an automatic transmission apparatus for a vehicle of the type having a high speed clutch of an oil pressure operated type interposed in a high speed power transmission system and a low speed clutch of an oil pressure operated type interposed in a low speed power transmission system, a shift valve, the clutches being selectively connected through said shift valve to an oil pressure source, said low speed clutch being provided with an oil pressure chamber connectible to the pressure source, a safety apparatus comprising an automatic control valve coupled to said low speed clutch having a valve chamber in communication with said oil pressure chamber, said valve chamber having an outlet for relieving pressure in said oil pressure chamber, and a speed responsive valve member in said valve chamber for selectively opening said outlet thereof when the speed of rotation of the low speed clutch reaches a predetermined value; and said high speed clutch having a pressure chamber, said apparatus further comprising means connected to said outlet and to said pressure chamber of the high speed clutch for supplying pressure fluid fed to the low speed clutch to said high speed clutch when said automatic control valve is open.

4,071,127

METHOD OF WORKING FOR BENDING METAL MATERIAL AND THEREBY OBTAINED FRICTION CORE PLATE OF FRICTION CLUTCH

Hiroichi Suzuki, 1232 Kakezuka, Ryuyo, Iwata, Shizuoka, Japan

Filed Feb. 4, 1976, Ser. No. 655,191
Claims priority, application Japan, Feb. 6, 1975, 50-14876
Int. Cl.² B21D *53/26*
U.S. Cl. 192—107 R **3 Claims**

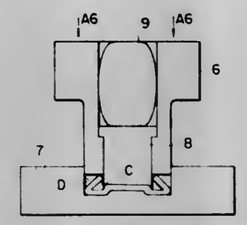
1. The method of working for metal bending comprising providing a press consisting of a lower die having a bottom wall and therefrom a perpendicular rising side wall and an upper die in slide contact with said side wall and a movable guide having a side wall in slide contact with another side wall of said upper die;

bending with another press a metal material piece folding it into an acute angle so that the length of the folded portion is larger than the distance between the side wall of said lower die and the side wall of said movable guide;

placing the folded piece upon the lower die bottom wall;

placing the folded portion between the side wall of the lower die and the side wall of said movable guide;

pressing said folded portion in a direction perpendicular to said bottom wall at the same time slide contacting said



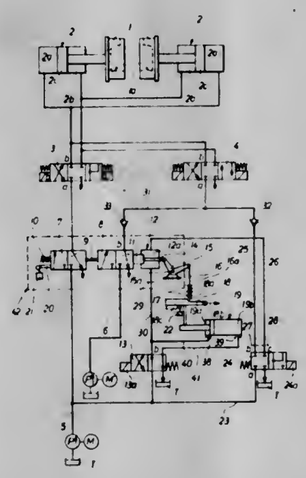
upper die both with the side wall of said lower die and the side wall of said movable guide buckling the folded portion in the direction of its length so that at the outside of the folded line of said folded portion a flat portion is formed which is perpendicular both to said folded portion and of said folded piece, with said folded portion bearing against and parallel to the folded piece.

4,071,128

APPARATUS FOR SHIELDING MOVING PARTS IN FLUID-OPERATED MACHINES

Walter Schmeisser, and Johann Talasz, both of Heidenheim, Germany, assignors to J. M. Voith GmbH, Heidenheim, Germany

Filed Oct. 22, 1976, Ser. No. 735,085
Claims priority, application Germany, Nov. 8, 1975, 2550204
Int. Cl.² F16P *3/08*
U.S. Cl. 192—133 **16 Claims**



1. Apparatus for shielding the moving parts of machines wherein the moving parts receive motion from at least one fluid-operated motor which is connected with a source of fluid by at least one conduit, comprising a shield which is movable to and from an operative position; means for locking said shield in said operative position, including a blocking member movable to and from an arresting position in which said locking means maintains said shield in said operative position; a valve installed in said conduit and having a valve element movable between first and second positions in which said valve respec-

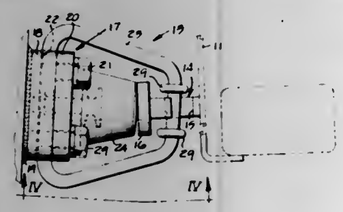
tively seals said source from said motor and allows fluid to flow therethrough; and means for mechanically coupling said valve element with said blocking member so as to move said valve element to said first position in response to movement of said blocking member from said arresting position.

4,071,129

DOOR HOLD-BACK APPARATUS

Elmer Ray Crabb, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 19, 1976, Ser. No. 715,947
Int. Cl.² E05C 3/04
U.S. Cl. 292—246 **16 Claims**



1. A door hold-back apparatus comprising
a mounting means adapted for attachment to a panel of a vehicle comprising a block member adapted for securance to a panel of a vehicle, a plate mounted on an outboard side of said block member and fastening means releasably attaching said plate to said block member,
hook means pivotally mounted on said mounting means for swinging movements between latched and unlatched positions thereon, and
means defining an elongated slot between said block member and said mounting plate, said hook means disposed in and pivotally mounted in said slot, and
cushioning means attached to said mounting means and disposed adjacent to said hook means adapted to aid said hook means in latching a door thereto comprising an elastomeric pad adjustably mounted on said mounting means for axial movement relative thereto.

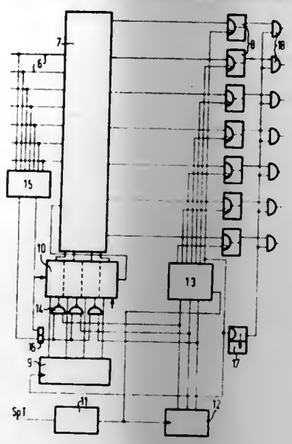
4,071,130

ARRANGEMENT FOR RECORDING CHARACTERS COMPOSED OF MATRIX-LIKE RASTERED CHARACTER ELEMENTS

Reiner Lichti, Unterpfaffenhofen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 7, 1977, Ser. No. 757,656
Claims priority, application Germany, Jan. 29, 1976, 2603347
Int. Cl.² B41J 3/04
U.S. Cl. 197—1 R **5 Claims**

1. In an arrangement for recording characters composed of matrix-like rastered character elements by means of a matrix printer controlled by binary signals supplied column-wise in parallel thereto from a character generator, to normally produce recorded characters having the portions thereof, extending transverse to the direction of the recording line, disposed at a predetermined angle relative thereto, in which such angle may be selectively changed, without change in the disposition of the matrix printer, to provide recorded characters having an appearance different from normal recorded characters, the combination of storage means to which the respective binary signals from the character generator are supplied in parallel, interrogation means connected to said character generator and to the storage means for effecting a time differential between the supply of respective character elements of a column to said storage means, and means for effecting the parallel release of



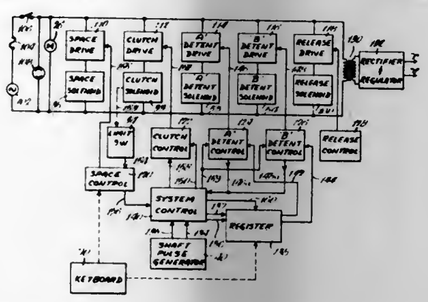
the contents of the storage means to the matrix printer in synchronism with said time differential.

4,071,131

ELECTRONIC CONTROL SYSTEM

Clarence W. Turek; Aaron B. Aronson, both of Glenview, and Dale C. Wittlock, Morton Grove, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Nov. 13, 1975, Ser. No. 631,690
Int. Cl.² B41J 7/96
U.S. Cl. 197—6.4 **19 Claims**



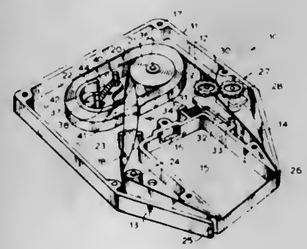
8. An electronic control system for a marking machine of the type having:
a marking member carrying a plurality of marking symbols,
means for driving said marking member to sequentially move said symbols past a marking location,
manually actuatable and deactuatable means for selecting one of said symbols, and
means for momentarily displacing said marking member into engagement with a workpiece to effect marking thereof with said selected one of said symbols at said marking location;
said control system comprising:
means for generating a plurality of pulses in response to movement of said marking member and in synchronism with the movement of said symbols past said marking location;
means responsive to said plurality of pulses for producing a plurality of outputs corresponding to said symbols;
means responsive to actuation of said symbol selecting means for selecting one of said outputs corresponding to said selected symbol;
means responsive to said selected output for effecting energization of said marking member displacing means to effect said momentary displacement of said marking member;
said pulse generating means generating said plurality of pulses as a sequential pulse train of individual encoded pulses; and
said pulse responsive means being responsive to each individual pulse of said pulse train for sequentially producing a different one of said outputs, each of which corresponds to that one of the symbols located at the marking location;
whereby the workpiece is marked by the selected one of said symbols located at said marking location.

4,071,132

ENDLESS INKED RIBBON CARTRIDGE

James Marion Steinke, and Justin Gaskins, both of Longwood, Fla., assignors to TRW, Inc., Los Angeles, Calif.

Filed May 10, 1976, Ser. No. 684,770
Int. Cl.² B41J 33/10
U.S. Cl. 197—168 **6 Claims**



1. An endless printer ribbon cartridge, comprising in combination:
a housing;
a roller rotably attached to said housing;
a slidably mounted ribbon holding member, having an arcuate ribbon wrapping portion and a base portion fixedly attached thereto;
guide means coupling said slidably mounted ribbon holding member to said housing for guiding said ribbon holding member in a predetermined path, said guide means having a slot in said slidably mounted ribbon holding member and a post attached to said cartridge housing and passing through said slot in said holding member;
an endless inked ribbon partially wrapped around said roller a plurality of turns and slidably mounted ribbon holding member for a plurality of turns to form a space therebetween, said ribbon having a predetermined path coming off the wrapped portion between said roller and said ribbon holding member and being fed through a predetermined path and back onto said partially wrapped portion of said ribbon; and
biasing means for biasing said slidably mounted ribbon holding means against said partially wrapped portion of said ribbon, said biasing means having a spring attached to said slidably mounted ribbon holding member and to said post passing through said slot in said ribbon holding member, whereby said endless ribbon cartridge compensates for variations in ribbon length.

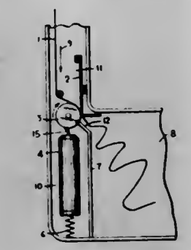
4,071,133

CASSETTE FOR DYE IMPREGNATED RIBBON

Herbert Scherrer, Pfaffikon; Ernst Bopp, and Ennio Cecchetto, both of Zurich, all of Switzerland, assignors to Franz Buttner AG., Zurich, Switzerland

Filed Mar. 31, 1976, Ser. No. 672,127
Claims priority, application Germany, Nov. 8, 1975, 2551677
Int. Cl.² B41J 33/10
U.S. Cl. 197—168 **1 Claim**

1. A cassette, for use in connection with a device for printing characters on a surface from the stroke impact of a central portion of an endless dye impregnated ribbon such as a typewriter, said device defining a stroke region,
comprising, in combination:
a housing defining two chambers, one of said chambers providing a storage region, said housing having a passageway for said ribbon, said passageway intercommunicating with said storage region and communicating with said stroke region, said ribbon being movable between said stroke region and said storage region;



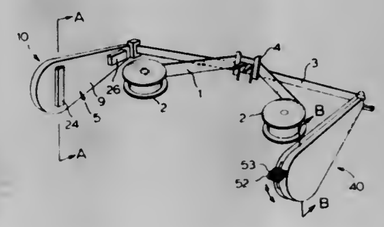
re-impregnating means disposed in the other chamber and comprising a forked member and being operable for re-impregnating said ribbon with dye by impregnating portions of said ribbon adjacent to said central portion; and
transport means disposed substantially between said chambers and said passageway and operable for transporting said ribbon and for maintaining said ribbon substantially stretched in said stroke region.

4,071,134

TYPING ERROR CORRECTION DEVICE

Frederick Harold Humphrey, 7 Orchard St., Markham, Ontario, Canada (L3P 2S9)

Filed Feb. 24, 1976, Ser. No. 660,835
Int. Cl.² B41J 29/36
U.S. Cl. 197—181 **5 Claims**



1. Apparatus for use with a typewriter, comprising:
a first support means supporting a first spool for holding correction ribbon, the spool being mounted for rotation with respect to the first support means,
first attachment means permitting the first support means to be affixed to the outer cover of a typewriter at one side thereof,
a first ribbon guide pivotally mounted on said first support means, and having a first guide edge around which the ribbon can bend, whereby the orientation of said first guide edge can be manually determined, the first ribbon guide having visible alignment means to allow the user to know when the first guide edge is oriented perpendicular to a table surface supporting a typewriter to which the apparatus is affixed,
a second support means supporting a second spool for receiving correction ribbon, the second spool being mounted for rotation with respect to the second support means,

an indexing member adapted positively to rotate the second spool by increments,

second attachment means permitting the second support means to be affixed to the outer cover of a typewriter at the other side thereof,

and a second ribbon guide pivotally mounted on said second support means, and having a second guide edge around which the ribbon can bend, whereby the orientation of said second guide edge can be manually determined, the second ribbon guide having visible alignment means to allow the user to know when the second guide edge is oriented perpendicular to a table surface supporting a typewriter to which the apparatus is affixed,

each said support means including a housing which defines a protective compartment containing the respective spool, the correction ribbon having access to and egress from each compartment through an opening configured to allow unrestricted movement of the ribbon therethrough regardless of the angular orientation of the ribbon with respect to the housing, the respective guide edge for each support means being located outside of but adjacent to the respective said opening;

each said visible alignment means being constituted by an alignment finger extending perpendicular to the respective guide edge, whereby the alignment finger when oriented parallel to a table surface ensures that its respective guide edge is perpendicular to the table surface;

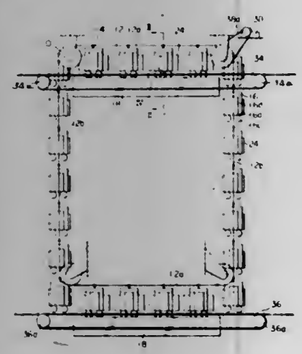
each ribbon guide being frictionally mounted to its respective support means such that it will remain in any orientation until torque is applied to change the orientation.

4,071,135

PASSENGER TRANSPORTATION APPARATUS

Riichi Ishikawa, Tokyo, and Toshio Takase, Inazawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1976, Ser. No. 678,720
Claims priority, application Japan, Apr. 28, 1975, 50-51806
Int. Cl.² B65G *17/16*
U.S. Cl. 198—324 **5 Claims**



1. An apparatus for transporting passengers between two vertically spaced positions, said apparatus comprising

first and second horizontal track blocks vertically spaced from each other;

a plurality of passenger car means rollable along said first and second track blocks for transporting passengers therein, said passenger car means having at least one open side;

continuous drive chain means connected to said passenger car means and positioned horizontally above and vertically between both of said horizontal track blocks, said chain means being substantially rectangular in overall configuration, for moving said passenger car means connected thereto horizontally along and vertically between said first and second horizontal track blocks;

motor means operatively connected to said chain drive means for continuously driving said chain drive means and said passenger car means connected thereto;

first horizontal moving platform means adjacent and parallel to said first track block on the same side as said opening into said passenger car means on said first track block and movable in the same direction and at the same speed as said passenger car means on said track block for carrying passengers to and from said passenger car means;

second horizontal moving platform means adjacent and parallel to said second track block on the same side as said opening into said passenger car means on said second track block and movable in the same direction and at the same speed as said passenger car means for carrying passengers to and from said passenger car means on said second track block; and

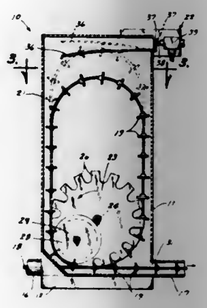
rotatable side guard plate means connected to each of said passenger car means and rotatable toward the passenger car means adjacent thereto when said passenger car means are moved horizontally along said track blocks for closing the spacing between said moving passenger car means moving along said track blocks and rotatable toward the passenger car means to which it is connected when said passenger car means is moved vertically on said chain drive means between said first and second horizontal track blocks.

4,071,136

CABLE CONTROL APPARATUS

Robert D. Jones, Oskaloosa, Iowa, assignor to Intraco, Inc., Oskaloosa, Iowa

Filed Jan. 22, 1976, Ser. No. 651,450
Int. Cl.² B65G *19/00*
U.S. Cl. 198—735 **16 Claims**



1. A drive apparatus for a cable conveyor system comprising:

a housing;

drive wheel means rotatably attached to said housing;

a continuous cable having a plurality of spaced members rigidly attached thereto, a portion of said cable being disposed around one side of said drive wheel means, said drive wheel means engaging said cable for pulling said cable through said cable conveyor system, said one side of the drive wheel means being defined as the portion of said drive means having said cable in contact therewith at all times; and

channel means attached to said housing for receiving and guiding a partial loop of excess cable and for allowing movement of said partial loop due to a change in size of said partial loop from a point in which an intermediate part of said partial loop is in contact with the other side of said drive wheel means to a point in which said intermediate part is spaced a substantial distance from said drive wheel means whereby said channel means comprises the sole support for said partial loop, said partial loop of excess cable extending from the point at which said cable departs contact with said drive wheel means to a point at which said cable departs said channel means.

4,071,137

WALKING BEAM CONVEYOR APPARATUS AND METHOD OF OPERATING THE SAME

Richard A. Fink, Auburn, Ind., assignor to Auburn Foundry, Inc., Auburn, Ind.

Filed Dec. 13, 1976, Ser. No. 750,116
Int. Cl.² B65G *25/04*
U.S. Cl. 198—774 **24 Claims**



1. In walking beam-type conveyor apparatus having at least one elongated, stationary member, means for supporting said stationary member, and at least one elongated, longitudinally movable member adjacent and parallel with said stationary member, said members having upper surfaces for supporting a load thereon, the improvement comprising: inflatable fluid bearing means for supporting by a film of escaping fluid said movable member on said supporting means for longitudinal movement thereon between first and second positions; first means for supplying fluid under a first predetermined pressure to said bearing means during movement of said movable member in one direction from said first to said second position thereof, said first pressure being such that said movable member applies sufficient force to the load thereon that said load and movable member are moved in unison in said one direction; second means for supplying fluid under a second predetermined pressure to said fluid bearing means during movement of said movable member in the opposite direction from said second to said first position thereof, said second pressure being lower than said first pressure and being such that said load remains supported on said stationary member at the position to which it was previously moved while said movable member is moved in said opposite direction; and means for longitudinally moving said movable member at least in said opposite direction from said second to said first position thereof.

4,071,138

COTTON BALE COVER

Herbert J. Wright, Rte. 4, Box 233, Piedmont, S.C. 29673

Filed May 29, 1975, Ser. No. 581,726
Int. Cl.² B65D *71/00*
U.S. Cl. 206—83.5 **7 Claims**



1. A covered bale comprising:

a predetermined mass of cotton fibers contained and confined in compression in the form of a bale for transport to a textile mill,

a cover enshrouding the mass of fibers,

spaced tensioned strapping passing about said cover,

said cover formed from a fabric knitted from yarn consisting essentially of cotton fibers,

said yarn forming said knitted fabric being spun on open end spinning apparatus and possessing a coarse yarn count of from about 3 to 10 providing air permeability for aiding in avoiding mildew of said cotton fibers within said bale,

said fabric being warp knit from said yarn in a fabric construction including chain stitches in the length direction and cross lapping yarn tying said chain stitches together in a direction transverse to the chain stitches; and

said fabric construction of course cotton yarn being porous and air permeable to avoid mildew of said mass of cotton fibers within said bale,

said fabric being stretchable and stable in the direction of the chain stitch and in the direction of the cross lapping yarn to aid in maintaining compression of said bale, and

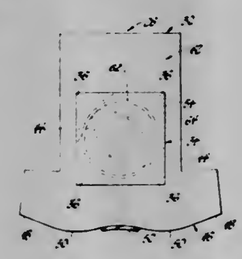
said cotton fibers of the cover engaging the mass of cotton fibers being compatible therewith avoiding contamination thereof.

4,071,139

PACKAGED SHIRT WITH RECORD ALBUM STIFFENER

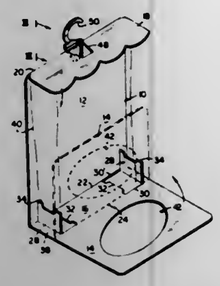
Vincent S. Pernicano, Boyne Falls, and Michael R. Wright, Detroit, both of Mich., assignors to Art-On Designs, Inc., Ferndale, Mich.

Filed Feb. 27, 1976, Ser. No. 661,936
Int. Cl.² B65D *85/18, 85/30*
U.S. Cl. 206—216 **3 Claims**



1. A packaged shirt assembly comprising: stiffener means having at least three interconnected stiff corners spaced apart from each other, said corners defining a display area, a shirt, a design disposed on said shirt, said shirt being disposed about said corners in a predetermined position with said shirt folded around the outer periphery of said display area and said design displayed over said display area, and securing means for securing said shirt about said stiffener means in said predetermined position, said shirt including front and back portions which coact to define an interior body cavity, said stiffening means being disposed exteriorly of said body cavity and said design being exteriorly of and on said front portion, said front and back portions including central sections covering said display area, said design being disposed on said central section of said front portion, said stiffener means including front and back surfaces extending between peripheral edges with said central sections extending over said front surfact, said stiffener means being defined by a record album assembly including a record album container and a record disposed within said container.

4,071,140
PACKAGE AND DISPLAY DEVICE
Richard G. Rattner, 137 Palmyra Ave., Woodmere, N.Y. 11598
Filed Feb. 23, 1977, Ser. No. 771,280
Int. Cl.² B65D *85/18*
U.S. Cl. 206—295 3 Claims



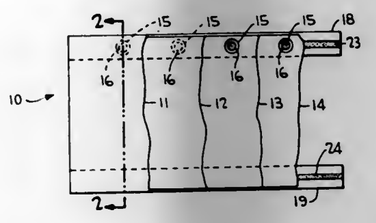
1. A display package for folded soft goods comprising a planar back portion, a folded up front portion, a bottom portion separating front and back portions and forming a space for the reception of the folded goods, a roof portion folded down from the other end of the back portion, fold lines along either side of the bottom portion, short score lines overlying part of said fold lines, a pair of U-shaped transverse cuts joining said score lines, said score lines and transverse cuts forming side flaps folded up from the bottom portion and to act as distance pieces between said front and back portions and impart rigidity to the package, the arrangement being such that the spaces, from which the side flaps are cut out, form windows in the bottom portion so that the contents of the package become visible and the side flaps act as lateral supports for the folded goods resting on the bottom portion.

4,071,141
METHOD AND PRODUCT FOR ATTACHING CUTTING TIPS TO CUTTING TOOLS
Gorman D. Gray, Eagle Creek, Oreg., assignor to Lifetime Carbide Co., Colton, Oreg.
Filed Dec. 5, 1975, Ser. No. 637,841
Int. Cl.² B65D *85/28*
U.S. Cl. 206—372 6 Claims



1. A cutting tip stick comprising: a plurality of individual elongate cutting tips pre-formed for separate attachment to the teeth of a cutting blade; each said elongate cutting tip having respective first and second longitudinally opposite ends, means defining a pre-formed contact surface extending along the majority of the length thereof for mating with a tooth of a cutting blade, and a pre-formed cutting edge separate from said contact surface formed at said first end thereof; said cutting tips being attached to one another by adhesive means in an adjoining series forming an elongate strip of said tips, said adhesive means being attached to the contact surface of each said cutting tip in an amount on each contact surface effective for bonding said contact surface operatively to a tooth of a cutting blade, said respective first end of each said tip being positioned adjacent the second end of a next adjoining one of said tips in said series in substantially end-to-end relation such that said majority of the length of each tip is free of abutment with any adjoining tips in said series, so as to permit each said respective contact surface along the length of a tip to be placed in operative attaching position against a respective tooth of a cutting blade while said tip remains attached to a next adjoining tip in said series.

4,071,142
STUBLESS MULTI-PART ASSEMBLY
Emil A. D'Luhy, Youngstown, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.
Continuation-in-part of Ser. No. 623,393, Oct. 17, 1975, Pat. No. 4,039,046. This application July 23, 1976, Ser. No. 708,176
The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.
Int. Cl.² B65D *27/34*
U.S. Cl. 206—629 6 Claims

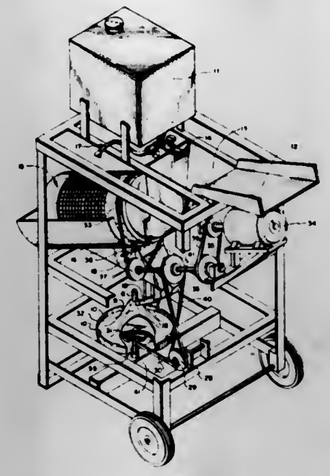


1. A multi-part mailer construction, comprising, superimposed first, second, third and fourth parts, said third part having at least one first hole therein of a predetermined first size along one of its margins, a quantity of detachable adhesive extending between said second and fourth parts and through said hole of said third part for securing said second and fourth parts together, said adhesive extending through said first hole having a cross-sectional size which is less than said predetermined size of said first hole so as to be spaced inwardly of the marginal edge of said first hole for retaining said third part in place, said first part having glue flaps on opposing sides thereof underlying said fourth part and being secured thereto whereby said first, second and fourth parts are connected together with said third part being immobilized to form a mailer construction having open sides at other than said opposing sides, one of said flaps having said adhesive thereon, said flaps being removably secured to said first part along opposed lines of weakening, and said parts each being devoid of any tear lines which may form a stub, whereby removal of said first part leaves said second, third and fourth parts intact, or separation of said second and fourth parts effects a break of said adhesive and frees said third part from the remaining of said parts while leaving said first and fourth parts interconnected, or removal of said first part together with separation of said second and fourth parts separates each of said parts from one another.

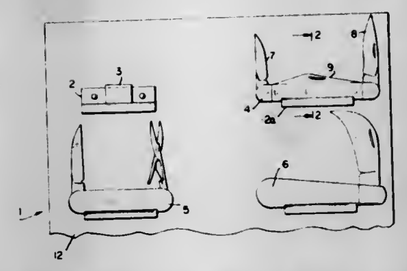
4,071,143
ORE SEPARATING METHOD AND APPARATUS
Max R. Richan, 545 N. 3rd East, Brigham City, Utah 84302
Filed Dec. 2, 1976, Ser. No. 746,955
Int. Cl.² B03B *5/74*
U.S. Cl. 209—444 25 Claims

1. An ore-separating apparatus comprising:
   a. an upright, rotatable conical cap having a truncated, rounded top, sides, a base, and a riffle extending vertically from the circumference of the base, the sides of the cap curving inwardly between the top and the base wherein the inwardly curving sides of the cap extend downward from the top at an angle of from about 30° to about 45° from the axis of the cap and form an arc having a subtended angle of from about 20° to about 30°;
   b. a means for rotationally agitating the cap; and
   c. a means for evenly introducing a uniform slurry of ore to the rounded top of the cap at a low velocity;

so that the slurry gravitationally and evenly flows down the sides of the agitating cap and changes flow direction with the inward curvature of the sides, whereby such change in direction contrifugally separates heavier precious metals in the slurry from lighter ore tailings with the result that the heavier metals are captured by the riffle and the lighter tailings are carried over the riffle and away.

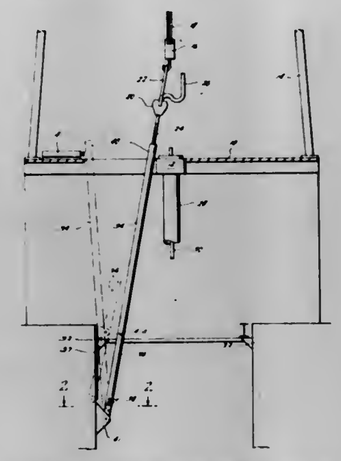


4,071,144
DISPLAY FOR KNIVES
George Krubski, Jersey City, N.J., assignor to Cooper Industries, Inc., Houston, Tex.
Filed July 15, 1976, Ser. No. 705,394
Int. Cl.² A47F *7/00*
U.S. Cl. 211—13 5 Claims



1. A display panel which comprises a base, a plurality of elongated rigid plastic holder means fastened to a surface of the base, each rigid non-brittle plastic holder means having a back member and a flange member extending transversely thereto for supporting an object to be displayed, a pair of spaced apart fastener means on said back member fastening each holder means to said base, the portion of each back member of each holder means between said fastener means being spaced from the base to form a pocket between the back member and the base, and a plurality of U-shaped clip means proportioned such that the legs thereof will straddle the back member of a holder means when one leg is inserted in a pocket of a holder means, the object to be displayed being secured to the holder means by engagement with the other leg of said clip means.

4,071,145
PIVOTAL AND RELEASABLE RAT HOLE ASSEMBLY
David C. Guinn; Archie K. Haggard, and John P. Thomas, all of P.O. Box 1126, Houston, Tex. 77001
Filed Oct. 4, 1976, Ser. No. 729,495
Int. Cl.² A47F *7/00*
U.S. Cl. 211—60 S 11 Claims



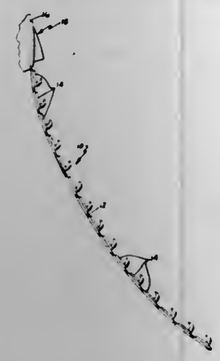
1. A rat hole assembly for storing a kelly used in the drilling of a well comprising,
   an elongate casing of a size sufficient to receive and support the kelly during storing,
   the elongate casing being perforated adjacent its lower end to permit passage of fluid on inserting and withdrawing the kelly into or from the casing, and
   a releasable pivot connection and anchor assembly for connection to a structural support member pivotally and releasably connecting the lower end of the casing to the structural support member arranged so that the upper end of the casing can be pivotally moved to receive the kelly, and the casing and kelly in it can be pivotally moved to an out of the way position during storing of the kelly and when not in use, the releasable connection including means permitting the casing to be released only in the out of the way stored position.

4,071,146
ARTICULATED ARTICLE SUPPORT
John H. Batts, Grand Rapids, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.
Filed Jan. 2, 1976, Ser. No. 646,178
Int. Cl.² A47F *7/19*
U.S. Cl. 211—87 33 Claims

1. An articulated article support for hook suspended article display devices, comprising:
   an elongaed, flexible tension load supporting member;
   a plurality of links slidably mounted end to end on said load supporting member, each of said links including an outwardly projecting hook and ends rounded in a fore and aft direction to permit said links to articulate about each other and to prevent the application of a severe tension load to said load supporting member when the lower end thereof is pulled outwardly; and
   means attached to said load supporting member for securing one end of said member to a support surface.

27. An articulated article support comprising an elongated flexible tension member of rectangular cross section having a width substantially greater than its thickness and a plurality of elongated links slidably arranged in tandem end to end relationship along said member; said links each having a lengthwise extending passage through which said member extends;

said passage having a transverse cross-sectional shape to seat closely about said member and a lengthwise cross-sectional shape to cause said member to trace a nonlinear path and increase the frictional force between said links and said tension



member whereby said links are restrained against rotation about said member and sliding on said member; each of said links having a hook projecting from one face thereof to provide an article support.

4,071,147

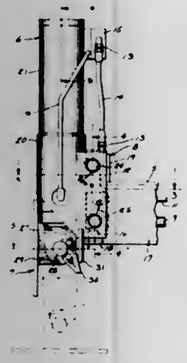
MOUNTING FOR AN OUTRIGGER CYLINDER ON A CRANE

John T. Hornagold, Waukesha, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Continuation of Ser. No. 412,374, Nov. 1, 1973, abandoned. This application July 17, 1975, Ser. No. 596,827

Int. Cl.² B66C *23/62*

U.S. Cl. 212—145 **7 Claims**



1. A mounting arrangement for the vertical cylinder of an extensible outrigger assembly for truck cranes or the like wherein the outrigger is mounted on said crane and includes an extensible and retractable hollow beam having an outer end with opposite side wall means, said beam being connected to and actuated by an extensible and retractable horizontal cylinder rod that extends outwardly within the beam, a power source on said crane for actuating said cylinder rod, a vertical hydraulic cylinder mounted at the outer end of the beam, a power source on said crane for actuating the vertical cylinder, said vertical cylinder including a casing, an extensible and retractable rod and a piston connected thereto and wherein said rod and piston are movable in the casing, the improvement comprising a mounting means fixed to the casing of the vertical cylinder comprising a pair of parallel vertically disposed plates extending respectively alongside said beam side wall means, a first connector pin extending through the said plates and side wall means for securing the beam and vertical cylinder in assembled relationship, a fitting secured to the outer end of the horizontal cylinder rod, and a second connector pin spaced from said first connector pin extending through the said plates and side wall means and said fitting to secure the beam and vertical cylinder and horizontal cylinder rod in assembled relationship.

4,071,148

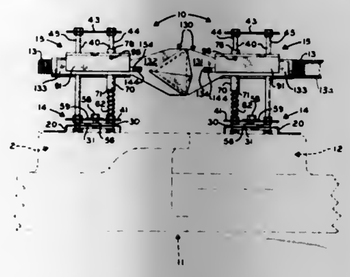
AUTOMATIC PNEUMATIC CONNECTOR FOR AIR BRAKES AND THE LIKE

Lilburn E. Tibbs, 3511 E. Rialto, Fresno, Calif. 93726

Filed July 23, 1976, Ser. No. 708,093

Int. Cl.² B61G *5/06*

U.S. Cl. 213—76 **10 Claims**



1. An automatic connector for air lines and the like having a pair of substantially identical oppositely facing pneumatic couplings each comprising a carriage assembly; a substantially cylindrical horizontal pneumatic conduit adapted to communicate with a pneumatic brake system slidably mounted on the carriage assembly for axial movement toward and from the opposite coupling having an opening directed toward the opposite coupling having an opening directed toward the opposite coupling, said conduit having a gasket mounted on the end of the conduit disposed toward the opposite coupling in circumscribing relation to the opening in the conduit, said cylindrical conduit having radially outwardly of the gasket a cylindrical pin and opposite cylindrical bore with respective axes substantially parallel to the conduit with the pin extending beyond the gasket toward the opposite coupling and with the pin and bore being adapted to mate with, respectively, the bore and pin of the opposite coupling; resilient means urging the conduit toward the opposite coupling and urging the gasket into compressive engagement with the gasket of the opposite coupling; a male preliminary alignment guide; a female preliminary alignment guide, said male and female preliminary alignment guides being slidably mounted on the carriage assembly projecting in the direction of the opposite coupling and oppositely disposed outwardly radially from the conduit with the male guide having an apex disposed toward the opposite coupling and with the female guide having a pocket opening toward the opposite coupling with the centrally disposed portion of the pocket adjacenet to the conduit being adapted to mate with the male guide of the opposite coupling and with the opposite portion of the pocket outwardly from the conduit having outwardly inclined planes adapted to direct the male guide of the opposite coupling into mating engagement with said inward portion of the pocket; resilient means urging the male and female preliminary alignment guides toward the opposite coupling; a mounting assembly having a post on which the carriage assembly is slidably mounted for vertical movement and having resilient means urging the carriage assembly toward an intermediate position on said post; a base plate on which the mounting assembly is slidably mounted for horizontal movement substantially perpendicularly to the axis of the conduit and pivotally mounted for movement about a substantially vertical axis; and resilient means urging each mounting assembly toward a predetermined rest position on its respective base plate.

4,071,149

APPARATUS FOR PILING APERTURED ARTICLES IN STACKS FOR STORAGE

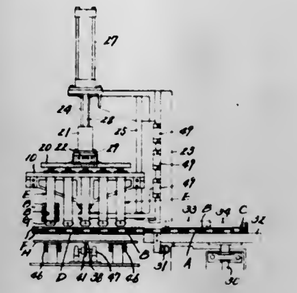
Osamu Deguchi, Iwata, Japan, assignor to NTN Toyo Bearing Co. Ltd., Osaka, Japan

Filed June 22, 1976, Ser. No. 698,595

Claims priority, application Japan, June 24, 1975, 50-78953; June 24, 1975, 50-78955

Int. Cl.² B65G *57/24*

U.S. Cl. 214—6 P **6 Claims**



1. An apparatus for piling apertured annular articles in vertical stacks for storage comprising an elongated, horizontally disposed rail member, means associated with said rail member for conveying a predetermined number of annular articles thereon in longitudinally aligned and successively positioned relationship, a plurality of vertically disposed and vertically reciprocable holder means corresponding in number to the number of apertured articles on said rail member positioned above said rail member with each holder means being adapted to be in vertical alignment with the aperture of an annular article when positioned thereon, each of said holder means having outwardly projectable retaining means adjacent its lower end thereof, actuating means for moving said holding means downwardly and upwardly and to simultaneously move the retaining means inwardly and outwardly respectively whereby each holder means on its downward movement will have its lower end pass through the aperture of a corresponding annular article and on its upward movement the retaining means will be projected outwardly thereby permitting the annular member to be carried upwardly and retained on the holding means, table means positioned below and at right angles to said rail member for receiving a plurality of vertically stacked apertured annular articles thereon from each of said holding means, and drive means for moving said table means at a predetermined time for a distance equal to the outer diameter of an apertured annular article being processed by the apparatus.

4,071,150

CONDUCTOR SUPPLY SYSTEM FOR COMMUNICATION CABLE MAKING APPARATUS

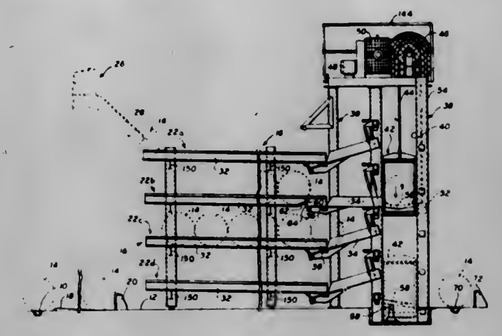
Walter F. Thompson, and Dennis M. Redo, both of Somerville, N.J., assignors to General Cable Corporation, Greenwich, Conn.

Filed Oct. 28, 1975, Ser. No. 626,219

Int. Cl.² B65G *11/08*

U.S. Cl. 214—16.4 R **17 Claims**

1. A bobbin supply rack and selective dispensing system for a communication cable manufacturing facility in which wire is wound on bobbins having flanges on both sides thereof and on which the bobbins roll from one location to another, including in combination a rack having a plurality of compartments in vertical alignment with one another and similar horizontally-spaced compartments in horizontal alignment with one another, a supply of bobbins, each having a drum portion and flanges at opposite ends of the drum portion, groups of the bobbins having wire wrapped thereon with insulation of different color coding on the wire than on other groups of the bobbins, each of the compartments being of a length to receive and accumulate a plurality of bobbins wrapped with insulation of the same color coding, each compartment having a discharge end, an elevator shaftway at the end of the rack at which each of the discharge ends of the compartments are located, an elevator in the shaftway and extending across the discharge ends of a plurality of the horizontally spaced compartments of the rack, guides along which flanges of the bobbins of a particular color coded insulation roll into a prese-



lected space on the elevator, and means for selectively discharging the bobbins onto the elevator from the selected horizontally spaced compartments in accordance with the color coded wires necessary for delivery to a cable making facility, said means for selectively discharging the bobbins including separate motor means at each compartment, and a stop operated by each of the separate motor means into a position to prevent discharge of a bobbin from the compartment of that motor means and into a position that permits the bobbin to roll from the compartment onto the elevator.

4,071,151

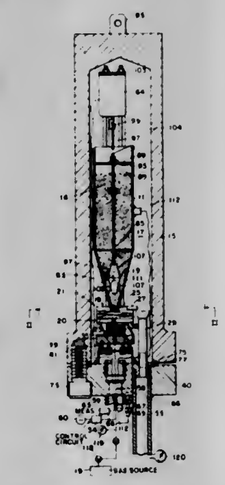
VIBRATORY HIGH PRESSURE COAL FEEDER HAVING A HELICAL RAMP

Gerald Farber, Elmont, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 24, 1976, Ser. No. 744,474

Int. Cl.² C10J *3/30*

U.S. Cl. 214—35 R **5 Claims**



1. Apparatus for feeding coal at an accurately controlled

rate to a feeder tube adapted to be connected to a high pressure, heated, reactor tube, comprising:

a. hopper means having top and bottom ends for receiving and transporting said coal in a first direction along a longitudinally extending axis;

b. valve means for selectively closing the bottom end of said hopper means selectively to hold and selectively to release the coal along the axis for the flow of coal out the bottom of the hopper means past and around the valve means;

c. pressure-tight housing means for selectively enclosing the hopper means in a closed pressurized space;

d. container means in said closed pressurized space into which the bottom end of the hopper means extends, said container means having an inner surface forming a helical ramp along the wall thereof terminating at the upper end of said container means in a spout;

e. feeder tube means connected through the bottom end of the high pressure housing means for receiving and transporting the coal from said spout;

f. solenoid means for vibrating the container means to cause the coal continuously to move up the ramp in a stream at a predetermined, selectively variable rate and from the ramp to spill out of the spout into the feeder tube at the same rate in accordance with the amplitude of the vibration of the container means;

g. means for supplying gas under pressure to the housing means for providing gas for the feeder tube for mixing with the coal means received thereby from the spout; and

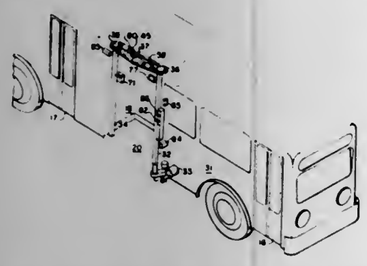
h. means for measuring the rate of coal flow through the hopper means.

4,071,152

WHEELCHAIR LIFT FOR PUBLIC TRANSPORTATION VEHICLE

Jordan A. Kinkead, Atherton; James T. Pott, Palo Alto; Roger M. Sherman, Los Gatos, and Eugene F. Sullivan, San Jose, all of Calif., assignors to County of Santa Clara, State of California, San Jose, Calif.

Filed Dec. 13, 1976, Ser. No. 750,205
Int. Cl.² B60P *1/44*
U.S. Cl. 214—75 R **17 Claims**



1. A lift for transporting passengers between ground level and passenger level and into and out of the vehicle, said vehicle having a well therein communicating with an opening in one wall to form an entrance into the vehicle, said well being defined by an opening in the floor of said vehicle, said lift comprising, in combination:

a platform having a horizontal top surface on which a passenger can ride and also being large enough to support a conventional wheel chair, said platform being of larger size than said well;

a support for said platform;

means fixing said platform to said support for pivoting movement of said platform about a pivot and between a first position situated completely within the vehicle and covering said well and a second position turned substantially normal to said first position in which said platform occupies the space in the well and extends through and beyond said wall opening of the vehicle;

first actuating means for rotating said platform between the first and second positions; and

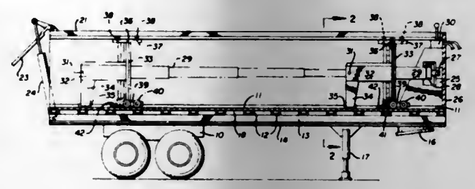
second actuating means for moving said support vertically between the passenger level and the ground level positions whereby the platform can be lowered below said floor when in said second position and raised above the floor and pivoted to said first position within the vehicle.

4,071,153

VERTICAL PUSHER PLATE FOR A HORIZONTALLY DISCHARGING SEMI-TRAILER

Howard Booher, Randolph, Ohio, assignor to Robert J. Bruce, New Castle, Pa. and Mark T. Tate, Atwater, Ohio

Filed Aug. 23, 1976, Ser. No. 716,988
Int. Cl.² B65F *3/20*
U.S. Cl. 214—82 **9 Claims**



1. A vertical pusher plate machanism for operation in a horizontally discharging semi-trailer having an elongated body with a floor and a discharge opening in one end, comprising:

a vertically oriented pusher plate slidably mounted in the trailer body for movement toward and away from the discharge opening;

a pusher plate moving means mounted to one side of said pusher plate on the trailer body, extending through said pusher plate and connected thereto on the other side of said pusher plate near the center of said pusher plate, said pusher plate moving means being oriented and connected to said pusher plate to apply horizontally directed force to said pusher plate near the center of said pusher plate;

a pusher plate supporting means which includes a first elongate portion connected at one end thereof to said pusher plate other side near the center of said pusher plate to extend horizontally and outwardly from said pusher plate and a second elongate portion connected at one end thereof to the other end of said first elongate portion, said second elongate portion extending downwardly from said first elongate portion and having the other end thereof slidably contacting the trailer body floor at a location between said pusher plate and the discharge opening so that forces acting on said pusher plate tending to tilt same as said plate moves toward the trailer discharge opening are transmitted to the trailer body via said pusher plate supporting means.

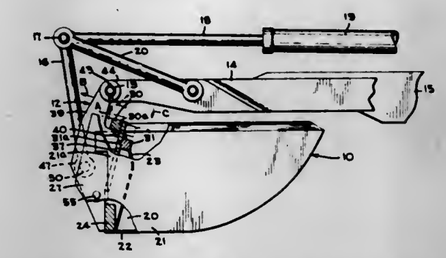
4,071,154

BRACKET CONNECTION FOR BACKHOE AND SKIP LOADER

Reynold R. Retzlaff, 552 Bean Creek Road No. 24, Scotts Valley, Calif. 95066

Filed Sept. 3, 1976, Ser. No. 720,260
Int. Cl.² E02F *3/70*
U.S. Cl. 214—145 A **7 Claims**

1. In a coupling mechanism for attaching an implement to the control arms of a backhoe or the like wherein a first coupling member is mounted on the control arms for engagement with a second coupling member carried by the implement, the improvement which comprises transversely extending spaced parallel bars carried by said second coupling member to define a socket and providing abutment means extending transversely across substantially the entire width of said implement, a transverse plate carried by said first coupling member and having an upper end portion adapted to be inserted into said socket with its transverse faces engaging said bars in an abutting relation, transverse means on said first coupling member adapted for



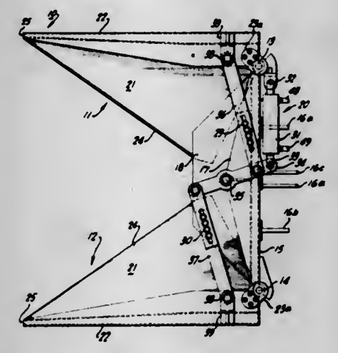
movement into contact with said abutment means as said plate is moved into said socket, and locking means for holding said coupling members together when said plate is disposed in said socket.

4,071,155

PINCER BUCKET

Samuel A. Hart, 720 Anderson Road, Davis, Calif. 95616, and William E. Hart, P.O. Box 1734, Fort Collins, Colo. 80522

Filed May 17, 1976, Ser. No. 687,360
Int. Cl.² B66C *3/02*
U.S. Cl. 214—147 G **5 Claims**



1. A pincer bucket comprising:

a. first and second pincer bucket halves mounted for relative pivotal movement about at least one vertical axis at the rear thereof;

b. generally planar upstanding side walls mounted on each of said pincer bucket halves, said side walls extending forwardly to define a generally rectilinear area therebetween when said halves are in open position and being movable to a position where their leading edges are in close juxtaposition when said halves are in closed position;

c. a substantially planar horizontal pincer blade of generally triangular configuration extending inwardly from each of said walls to form a partial bottom for said pincer bucket when said halves are in open position, said pincer blades moving into at least closely adjacent position when said halves are moved to closed position and therefore being adapted to undercut a pile of freestanding material on a substantially horizontal surface as said blades are closed with their bottom surfaces closely adjacent said horizontal surface;

d. means for opening and closing said pincer bucket halves; and

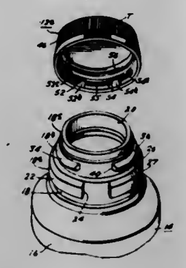
e. means for moving said pincer bucket forward in open position with said pincer blades disposed generally horizontally and closely above said horizontal surface; whereby major portions of said freestanding material are collected above the blades.

4,071,156

CHILD RESISTANT CONTAINER-CLOSURE ASSEMBLY

Allen D. Lowe, Montoursville, Pa., assignor to The West Company, Phoenixville, Pa.

Filed Aug. 13, 1976, Ser. No. 714,019
Int. Cl.² B65D *55/02, 85/56*
U.S. Cl. 215—224 **21 Claims**



1. A closure for a container having a neck with an access opening therein and means defining a locking rib on the outer surface of the neck interrupted at least at two circumferentially spaced locations to define gaps therein of predetermined differing arcuate dimensions, said closure including a cap having a top, a skirt depending from the outer edge of the top and at least a pair of primary locking lugs projecting radially inwardly from the skirt which in all positions, except one, engage under said locking rib to secure the cap in place, said primary lugs being of an arcuate span and circumferential spacing to register with said gaps in said one position and at least one auxiliary releasable locking lug of a shallower radial projection than said primary lugs engaging under said bead when said cap is in said one position, said auxiliary lug operable to snap over said bead in said one position when said cap is tilted relative to the neck of the container.

4,071,157

SAFETY STOPPERING DEVICE

Ramon Apellaniz, Lasne-Chapelle-Saint-Lambert, Belgium, assignor to Euracom S.A., Brussels, Belgium

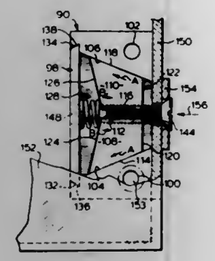
Filed Mar. 14, 1977, Ser. No. 777,444
Claims priority, application France, Apr. 14, 1976, 76 1106
Int. Cl.² B65D *41/34*
U.S. Cl. 215—252 **6 Claims**



1. Tamper-proof device for containers made of plastic materials provided with a threaded collar intended for fitting a screw cap, characterized by the fact that it comprises a rupturable platelet intended to be fitted between the container and the cap, around the collar, said platelet comprising at least one

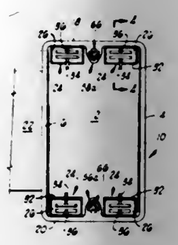
locking tooth for the purpose of being engaged by at least one tooth borne for this purpose by aforesaid stopper.

4,071,158
SCREW FASTENING DEVICE
Joseph S. Maheu, 10 Ruddington Drive, Apartment 10 North, Suite 307, Willowdale, Ontario, Canada
Continuation-in-part of Ser. No. 603,477, Aug. 11, 1975, abandoned. This application Mar. 12, 1976, Ser. No. 666,518
Int. Cl.[2] H02G 3/08
U.S. Cl. 220—3.2 5 Claims



1. An electrical box fitted with at least one screw fastening device to receive a screw for coupling an electrical component to the box, the device comprising:
a support;
fastening means attaching said support to a flat surface portion of said electrical box;
said support including: a base having a flat inner surface; two spaced side walls coupled to said electrical box and supporting said base with its said flat inner surface in spaced parallel relationship to that flat surface portion of the box, said side walls of the support defining two convergent flat inner wall surfaces disposed in opposed positions in planes normal to said flat inner surface of the base and to said flat surface portion of the electrical box; and an end wall extending between said side walls and defining, with said convergent wall surfaces, said base, and said flat surface portion of the electrical box, a rectangular section cavity of truncated triangular shape in plan having an opening between said side walls to receive said screw;
a pair of generally wedge-shaped screw-engaging members disposed side by side in said cavity for sliding movement between said inner surface of the base and said flat surface portion of the electrical box; each screw-engaging member including: flat parallel top and bottom faces; two opposite side faces, a first one of which extends parallel to the corresponding face of the other screw-engaging member, and the second one of which extends at an inclination with respect to said first face and parallel to the relevant one of said convergent wall surfaces of the support for sliding movement along said surface, the said first face of the screw-engaging member including co-operating recesses having internal grooves in which together define a thread complimentary to that of a screw to be received in said screw fastening device; and,
spring means extending between said end wall of the support and said screw-engaging members and biassing said members in the direction of convergence of said convergent wall surfaces of the support so as to maintain said first faces of the members in co-operating relationship and said second face in sliding contrast with said convergent wall surfaces;
whereby said screw can be inserted between said screw-engaging members, causing alternate relative movement of the members along said convergent wall surfaces of the support in directions against the biassing effect of the spring means and back to their normal positions under the action of said spring means as the thread on the screw rides over the corresponding thread defined by said recesses, the screw being held in its inserted position by said screw-engaging members and the thread defined by said recesses allowing the screw to be axially displaced by rotation in the appropriate direction.

4,071,159
ELECTRICAL JUNCTION AND SWITCH BOXES
Richard L. Robinson, Bryant, and Ivan L. Volgyesy, Camanche, both of Iowa, assignors to Indian Head Inc., New York, N.Y.
Filed June 30, 1976, Ser. No. 701,090
Int. Cl.[2] H02G 3/14
U.S. Cl. 220—3.2 1 Claim

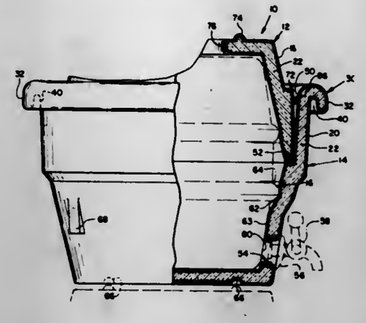


1. A molded synthetic resin electrical service box open at one side thereof and comprising:
at least two walls each intersecting a third wall at substantially a right angle and terminating in side edges opposite the edge intersecting said third wall and adjacent the boundary of the opening at one side of said box;
a flange projecting normal to and secured to each of said two walls adjacent the open side of the box, each of said flanges defining and carrying a tubular portion, and each of said tubular portions defining a screw hole having its axis extending substantially parallel to the adjacent one of said two walls;
break-out windows extending between pairs of intersecting walls at an acute angle to each of said intersecting walls, each of said break-out windows comprising:
a removable panel in a surrounding opening spacing the panel from the remainder of the box; and
means bridging across said surrounding opening and interconnecting the panel with said respective intersecting wall pair; and
spring metal screw-retaining clips pressed into said flanges and each including
a barb engaging a portion of said flange at a location adjacent said tubular portion; and
flange means defining a screw shank receiving opening coaxial with the axis of said screw hole and bounded by the flange means for engaging the threaded shank of a screw extended into the screw hole defined by said tubular portion, and through said flange means-defined opening, with said threaded shank engagement occurring on opposite sides of said screw shank.

4,071,160
INSULATED BEER KEG CONTAINER
Carl J. Vick, Portland, Oreg., assignor to Keg-Tainer, Inc., Portland, Oreg.
Filed Sept. 30, 1976, Ser. No. 728,317
Int. Cl.[2] B65D 7/02, 7/00, 25/00
U.S. Cl. 220—5 R 13 Claims

1. A container for a keg of beer or other liquid, comprising:
a pair of insulating tubs facing one another in interfitted telescopic relationship about the keg, and separable to facilitate replacement or removal of said keg,
one of the tubs being a deep lower tub of circular horizontal cross section and having a base and an upright sidewall terminating in an annular rim,

said rim providing a hand hold for lifting the container,
said sidewall being of a height exceeding one-half the height of the keg to be contained, so as to dispose said rim at a place above the center of gravity of the keg to avoid tipping tendencies when carrying the keg,
the other of said tubs being an inverted upper tub of smaller



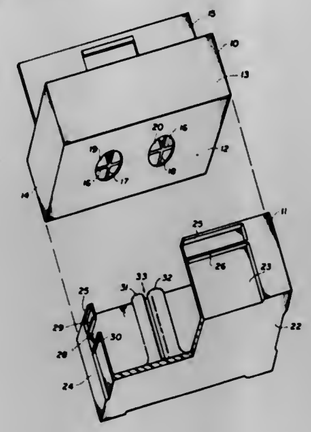
size than that of the lower tub and having a top wall and a depending sidewall of circular cross section telescoped downwardly within the upper portion of the lower tub in separable contact therewith,
at least one of said tubs having an opening formed therethrough to facilitate tapping the keg while it is insulated by said container.

4,071,161
CYLINDRICAL UNDERGROUND STORAGE TANK HAVING PARTICULARLY SHAPED END CAPS
Agnar Gilbu, Sandefjord, Norway, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Dec. 30, 1976, Ser. No. 755,752
Int. Cl.[2] B65D 89/06, 7/46
U.S. Cl. 220—18 6 Claims



1. A cylindrical storage tank formed of glass fiber reinforced plastic and adapted to be installed underground in a horizontally extending position, the tank comprising a hollow cylindrical body and two end caps joined respectively to opposite end portions of the cylindrical body, the end caps being outwardly convex and generally spherical at their central portions but being frusto-conical adjacent their junctions with the cylindrical body, the radius of curvature of the spherical portions being substantially equal to what it would be for completely hemispherical end caps corresponding in radius to the radius of the cylindrical body and the frusto-conical portion of each end cap forming an angle adjacent the bottom of the tank with an underground support surface when the tank is installed horizontally underground, said angle substantially corresponding to the natural angle of repose of recommended backfill material such as sand or gravel, whereby voids otherwise likely to occur beneath the end caps if the end caps were completely hemispherical are eliminated.

4,071,162
BOTTLE PACK CRATE AND BOTTLE PACK THEREFOR
Rudolf F. Steialein, Munich, Germany, and Christian Schoeller, Zuoz, Switzerland, assignors to Schoeller International GmbH & Co. KG, Munich-Solln, Germany
Filed Feb. 27, 1975, Ser. No. 553,845
Int. Cl.[2] B65D 1/24, 25/10
U.S. Cl. 220—21 2 Claims

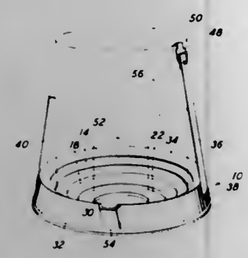


1. A crate for at least six bottles which is capable of crating bottles held in one or more partitioned packs removable from the crate so that the bottles can be held in the pack during loading into the crate and removal therefrom and is also, alternatively, capable of crating unpacked individual bottles without allowing contact of bottles with each other, said crate comprising a lattice-work crate bottom and upstanding side walls forming a rectangular enclosure comprising:
a plurality of clusters of bottle-separating pillars, extending upward from the crate bottom, each pillar cluster being spaced from the crate wall and composed of at least one pair of closely spaced pillars, the pillars of the same cluster being of similar shape and approximately the same size and being separated over substantially all of their height by at least one narrow substantially vertical-sided slot-like gap running parallel to a pair of said crate side walls for receiving bottle pack partitions,
said pillar clusters being provided at least at two locations on the bottom of said crate, each said location of a pillar cluster defining adjacent cell corner boundaries of four bottle-receiving areas, and the lateral surface of each of said pillars, which surface faces away from the center of the cluster to which the pillar belongs and towards the center of one of said bottle-receiving areas, having a concave portion concave with a smaller radius of curvature than the distance to a vertical axis through said bottle receiving area and presenting substantially vertical edges respectively at each side of the concave portion for engagement of a bottle by both of said edges.

4,071,163
APPARATUS FOR RECOVERING PAINT SPILLS
Michael Martin, 24 Jefferson St., Attleboro, Mass. 02703
Filed Sept. 8, 1976, Ser. No. 721,460
Int. Cl.[2] B65D 47/40
U.S. Cl. 220—69 5 Claims

1. Apparatus for recovering paint spills from a paint can comprising a receptacle adapted to fit about the bottom of a paint can, said receptacle having a plurality of side wall means extending for a distance beyond the outer periphery of the bottom of a paint can to which such apparatus is attached to provide a gutter for catching paint spills, and to hold any of a plurality of paint cans of varying sizes, said plurality of side

wall means each having a diameter which corresponds to the diameters of the bottom walls of paint cans of varying sizes, the first of said side wall means having a flange projecting inwardly at the bottom thereof to join the upper outer edge of intermediate side wall means in a stepwise manner, said intermediate side wall means extending downwardly from the flange of said first of said side wall means, intermediate side



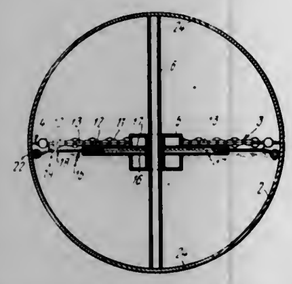
wall flange means projecting inwardly in a stepwise manner from the bottom of said intermediate side wall means, said intermediate side wall means and said intermediate side wall flange means providing a surface to receive any one of a plurality of paint can bottom walls, the bottom edge of the last of said side wall means extending inwardly to form a bottom wall of said receptacle, means for securing said apparatus to a paint can.

4,071,164

FLOATING ROOF OF A TANK FOR STORING LIQUIDS

Mikhail Grigorievich Skakunov, ulitsa Zelenaya, 6, kv. 60, Levoberezhnaya, Moskovskaya oblast, U.S.S.R.

Filed June 8, 1977, Ser. No. 804,588
Claims priority, application U.S.S.R., June 14, 1976, 2372520
Int. Cl.² B65D *87/207, 87/18*
U.S. Cl. 220—224 **4 Claims**



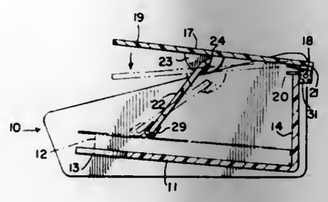
1. A floating roof of a tank for storing liquids, with an upright centrally secured therein, comprising a floating chamber fitted to said upright of said tank with provision for displacement along the upright when the level of liquid in the tank is changing; a space inside said floating chamber filled with a gaseous fluid under an excess pressure; an annular seal the outward edge whereof is in contact with the shell of the tank; said annular seal comprising a plurality of members pivotally interlinked one with another; a resilient disc-shaped diaphragm attached, leakproof fashion, to said floating chamber at the centre and to said floating seal all the way along its circumference; said resilient disc-shaped diaphragm made hollow and corrugated in the radial and circumferential directions; a plurality of cells formed by the corrugations of said resilient disc-shaped diaphragm; said plurality of cells enabling the disc-shaped diaphragm to expand up to the shell of the tank in all transverse directions when the level of liquid in said tank is changing; a framework resting whereon is said resilient disc-shaped diaphragm, said framework consisting of a plurality of radially disposed telescopic arms each attached with one of its ends to said floating chamber and resiliently connected at its free end to said annular seal.

4,071,165

PAPER DISPENSER HAVING A FRICTIONAL DISCHARGE ASSISTANT

Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill. 60613

Filed Dec. 29, 1975, Ser. No. 644,557
Int. Cl.² G65G *59/02*
U.S. Cl. 221—259 **3 Claims**



1. A paper dispenser comprising in combination:
a receptacle for storing therein a stack of paper sheets, said receptacle having an open top, a bottom wall, side walls and a rear wall, the front of said receptacle being open to provide a forward discharge opening;
a retainer member hingedly affixed at one end thereof to a top edge of said rear wall substantially centrally between said side walls and overlying said bottom wall;
resilient means engaged with said retainer member and said rear wall for supporting said retainer member in a normal position overlying a stack of paper sheets stored within said receptacle, said resilient means providing only a mild resistance to downward movement of said retainer member under finger pressure and restoring said retainer member to its normal position when finger pressure is released;
a dispenser element having a foot on one end thereof for frictional engagement with the top sheet of a stack of paper sheets stored within said receptacle, said dispenser element being freely pivotally affixed at the other end thereof to said retainer member and being maintained at a forward angle by stop means which prevents rearward motion of said dispenser element such that only forward angular pivotal movement of said dispenser member is permitted;
said retainer member being manually operable in downward movement by finger pressure and being restored to its normal position when finger pressure is released, the downward movement of said retainer member frictionally engaging said foot on the one end of said dispenser member with the top sheet of a stack of paper sheets stored in said receptacle and further causing said dispenser member to pivot in a forward angular movement toward said discharge opening to slide the top sheet of the stack of paper sheets toward said discharge opening, whereby the top sheet is dispensed from said receptacle.

4,071,166

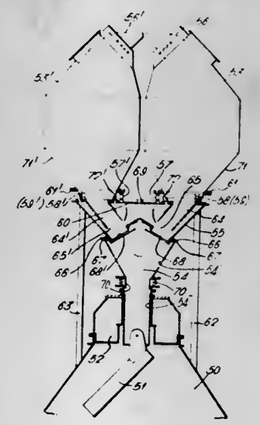
BLAST FURNACE CHARGING METHOD AND APPARATUS

Edouard Legille, Luxembourg, and Rene N. Mahr, Howald-Hesperange, both of Luxembourg, assignors to S.A. des Anciens Etablissements Paul Wurth, Luxembourg, Luxembourg

Filed Mar. 6, 1973, Ser. No. 339,297
Claims priority, application Luxembourg, Aug. 11, 1972, 66430
Int. Cl.² F27B *11/12*
U.S. Cl. 222—1 **19 Claims**

1. Apparatus for use in the delivery of materials to the interior of a shaft furnace, said furnace having a vertical axis and

operating with a high counter-pressure, said furnace further having a feed spout, said apparatus comprising:
at least one storage hopper for providing intermediate storage for a charge material to be delivered to the furnace, said storage hopper having a supply port and a discharge port;
frame means affixed to the furnace;
weighing means supporting said storage hopper from said frame means, said weighing means including a plurality of sensors displaced about the periphery of said storage hopper with respect to one another;
means for delivering material from said storage hopper to



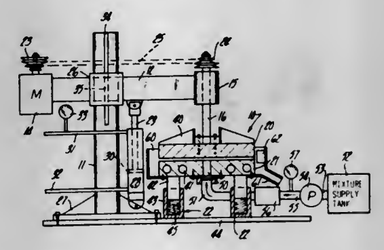
the furnace feed spout, said delivery means including a flow control metering valve, said delivery means being supported on the furnace;
compensating means hermetically coupling the exterior of said storage hopper to the exterior of the furnace, said compensating means being characterized by sufficient flexibility to absorb vertical dimensional changes of said furnace resulting from operating conditions while maintaining the hermeticity of the coupling; and
means for biasing said sensors to compensate for forces applied to said storage hopper as a result of furnace operating conditions other than the gravitational force representing the quantity of material in said storage hopper.

4,071,167

APPARATUS FOR DISPERSING AGGLOMERATES

Brian M. Kelly, 1007 Berkshire Road, Grosse Pointe Park, Mich. 48230

Filed Sept. 30, 1976, Ser. No. 728,266
Int. Cl.² B02C *7/08, 7/14*
U.S. Cl. 366—172 **2 Claims**



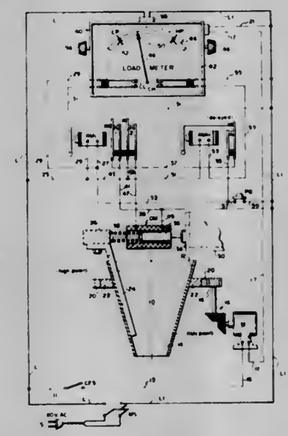
1. A mill for dispersing the components of a substance into one another comprising,
a stator platen,
a rotor platen,
said rotor platen being superposed on said stator platen in opposed relationship,
means rotatably supporting said rotor platen,
a drive connected to said rotor platen for rotating it relative to said stator platen to develop shear forces between said platens,
said stator platen having an outer periphery;
at least three springs resiliently supporting said stator platen adjacent its outer periphery at substantially equally spaced points;
said springs urging said stator platen toward said rotor platen;
said springs allowing said stator platen to move universally to a position conforming to the dynamic plane of said rotor platen;
power means for urging said rotor platen toward said resiliently supported stator platen;
said stator platen having a central orifice for feeding a substance through said stator platen against said rotor platen and radially outwardly between said platens in a layer;
a pipe leading to said orifice, for conducting a substance to said orifice; and
a pump connected to said pipe;
a substance to be milled supplied by said pump being forced by said pump under pressure through said pipe and said orifice between said platens urging said platens apart in opposition to said resilient supporting means and said power means;
the layer of the substance in traveling between said platens being subjected to the shear forces generated between said platens by their forced proximity and relative rotation to disperse the components of the substance into one another;
said universally supported stator platen in conforming to the dynamic plane of said rotor platen maintaining uniform spacing between said platens over their opposed surfaces obviating channeling and subjecting the substance being milled to uniform shear forces.

4,071,168

LEVEL CONTROL SYSTEM FOR A ROTARY CONE-TYPE FEED HOPPER

Milton Stone, Chicago, Ill., assignor to Pettibone Corporation, Chicago, Ill.

Filed Apr. 22, 1976, Ser. No. 679,211
Int. Cl.² B67D *5/08*
U.S. Cl. 222—56 **5 Claims**



1. The combination with a vertically disposed, rotatably mounted, feed hopper having a relatively large open upper end for the infeed of flowable material, and a relatively small open end for discharge of such material, an electric motor opera-

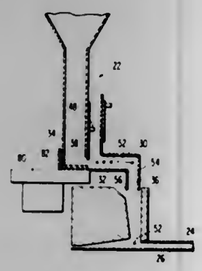
tively connected in driving relationship to said hopper, means establishing a supply of the material for delivery to the hopper, and gate means effective when open to admit material from said supply to the hopper, of a level control system effective to to give an indication of the quantity of material in the hopper during rotation of the latter and at any given instant in order that said gate means may be shifted as a result of said indication from its open to its closed position when the quantity of material in the hopper attains a predetermined maximum, said system embodying a load meter in the form of a dynamometer operatively connected to said motor and having a visible readout in the form of a movable pointer and scale combination, said pointer and scale combination being responsive to the voltage supplied to said motor, and also being responsive to the current consumed by the motor, and thus being responsive to the power expended by the motor in driving said hopper.

4,071,169

ELECTROSTATIC METERING DEVICE

John P. Dunn, 956 Graylea Circle, Elmira, N.Y. 14905

Filed July 9, 1976, Ser. No. 703,982
Int. Cl.² B67D *5/06*
U.S. Cl. 222—76 **6 Claims**



1. An electro-static metering device for finely divided particulate matter, said metering device comprising:
   a. two spaced electrodes, one of which is vertically positioned above the other but offset therefrom so that the lower electrode extends beyond the upper electrode on one side of the metering device by a short distance and the upper electrode extends beyond the lower electrode on the opposite side of the metering device by a short distance;
   b. means for placing finely divided particulate matter on the portion of said lower electrode which extends beyond said upper electrode; and
   c. output means positioned beneath the portion of said upper electrode which extends beyond said lower electrode.

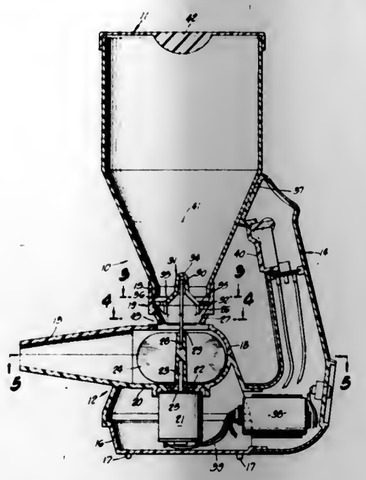
4,071,170

PORTABLE MOTOR DRIVEN DUSTING APPARATUS

Rudolph M. Guazel, Jr., San Marino, and Tony Radecki, Altadena, both of Calif., assignors to Meiko, Inc., Los Angeles, Calif.

Filed Dec. 29, 1975, Ser. No. 644,608
Int. Cl.² B67D *5/54*
U.S. Cl. 222—193 **17 Claims**

1. Dusting apparatus, comprising:
   a hopper of powdered material having an exit opening;
   a housing including an inlet port, an outlet and a chamber in communication with both said port and said outlet, the exit opening of said hopper being received in communication with said inlet port;
   a rotary blower in said chamber; and
   a valving element freely supported in said inlet port having convex portions facing into the hopper exit opening and concave portions facing oppositely;
   driving means intermittently contacting said concave portion of said element and interconnecting said rotary blower and said valving element for vibrating said element



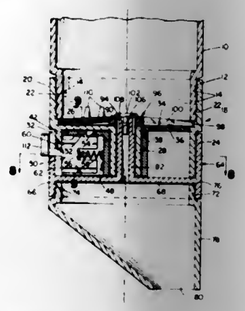
in two directions at substantially ninety degrees to one another on rotation of said blower.

4,071,171

MATERIAL MEASURING AND DISPENSING DEVICE

Anthony L. Bassignani, 17 King St., Norfolk, Mass. 02056

Continuation-in-part of Ser. No. 614,702, Sept. 18, 1975, Pat. No. 4,006,842. This application Jan. 24, 1977, Ser. No. 761,894
Int. Cl.² G01F *11/10*
U.S. Cl. 222—305 **11 Claims**



1. A closure member for attachment to an outlet from a container of granulated material for providing dispensing of the contents thereof in successive increments of variable volume, said closure member comprising:
   a support member arranged to be attached to said container outlet and having a generally hollow interior with means for supporting axially therein a hollow shaft;
   variable capacity dispensing means having an inlet end arranged for exposure to said container outlet, and an opposite outlet end;
   operating means for said dispensing means accessible from the exterior of said closure member and oppositely pivotable about an axis to alternately close said outlet end and thereafter open said inlet end to said compartment, and to close said inlet end and thereafter open said outlet end, said operating means including a pair of barrier members respectively associated with said opposite ends of said dispensing means and operable to effect the closing and opening of the ends thereof;

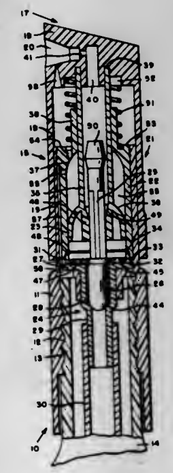
said barrier member associated with said outlet end of said dispensing means having an axial shaft adapted to be projected coaxially through and beyond said shaft of said support member toward the container end thereof, and being secured in a generally hollow operating member forming part of the exterior of said closure member;
the other said barrier member being provided with means for attachment thereof to the end of said barrier member shaft projected through and beyond said support member shaft for demountably rotatably mounting said barrier members to said support member shaft;
each of said barrier members being provided with an opening therethrough spaced angularly about the axis of said shafts so that on oppositely pivoting said barrier members about said axis by said operating member said openings are brought into alternate registry with said opposite ends of said dispensing means; and
adjustment means accessible from the exterior of said closure member for adjustably varying the capacity of said dispensing means, said adjustment means including:
a fixed side wall of a dispensing compartment mounted in said support member so that said side wall extends axially thereof;
an adjustment member carrying an opposite side wall for said compartment having an interior hollow support shaft fitting coaxially over said shaft of said support member to mount said adjustment member rotatably thereon within said hollow operating member for pivoting the compartment side wall carried thereby toward and away from the compartment fixed side wall to vary the capacity of the compartment;
ratchet and pawl means connected between said support member and said adjustment member providing incremental adjustment pivotal movements of said adjustment member; and
scale means cooperating with said ratchet and pawl means for indicating the different capacities of said compartment at the incremental adjustments provided by said ratchet and pawl means.

4,071,172

MANUALLY OPERATED LIQUID DISPENSER

Stephen M. Balogh, 142 Brentwood Ave., Fairfield, Conn. 06430

Filed Apr. 7, 1976, Ser. No. 674,416
Int. Cl.² G01F *11/32*
U.S. Cl. 222—321 **8 Claims**



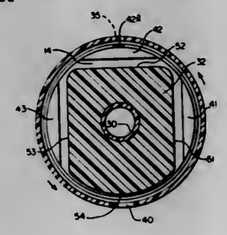
1. A liquid dispenser for attachment to a liquid container comprising two telescopic sleeves slidably connected together, one sleeve comprising a base section having means to engage the mouth of a container and the second sleeve comprising an actuator section having a finger rest and a spray nozzle; spring means located between said finger rest and said second sleeve for yieldably holding said base section and said actuator section in extended condition; and a pump unit sandwiched in toto between said base section and said actuator section, said pump unit having a cylinder having an inlet portion having a dip tube adapter and an outlet portion communicating with said spray nozzle of said actuator section to force liquid drawn from the container out through said nozzle when said base section and actuator section are reciprocated relatively by manual force applied to said finger rest and force applied by said spring.

4,071,173

COVER ENCLOSING FLAT SIDED BUTTON FOR ACTUATION PREVENTION

Paul F. Horan, Huntington, Conn., assignor to VCA Corporation, Baton Rouge, La.

Filed Nov. 22, 1976, Ser. No. 743,589
Int. Cl.² F16K *35/10*
U.S. Cl. 222—321 **8 Claims**



1. An actuator assembly for a dispensing device comprising, in combination:
   a. a cap body piece having means for attachment to a container and a series of tab means projecting upwardly from said cap body piece;
   b. an operable dispensing button and means movably mounting said button on said cap body piece for both turning and axial movement, said button having a series of flat sides and one curved side, said flat sides being arranged to be received within said tab means when properly positioned;
   c. cover means enclosing said button adapted to expose a portion of the button for finger engagement; and,
   d. guide means on said button and said cover piece for preventing relative turning therebetween while enabling relative axial movement to be had.

4,071,174

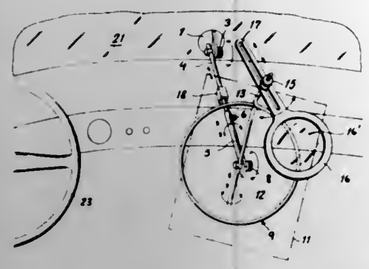
MAP HOLDER FOR AUTOMOTIVE VEHICLE

Rudolf Weiner, Friedberg, Germany, assignor to Firma Weiner Geratebau - Stahlmobel, Friedberg, Germany

Filed Feb. 26, 1976, Ser. No. 661,771
Claims priority, application Germany, Feb. 27, 1975, 2508599
Int. Cl.² B60R *1/00*
U.S. Cl. 224—29 M **10 Claims**

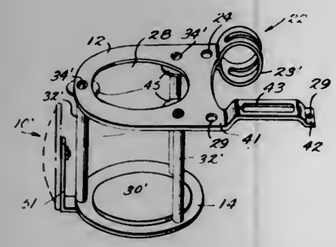
1. A map holder for an automotive vehicle, comprising:
   a coil spring with two closely adjoining circular turns of about 360° each adapted to clamp a map therebetween, said turns having a diameter sufficient to encompass a major area of the map, said spring terminating in a first and a second extremity lying in a common plane and extending from the ends of said two turns in generally opposite directions from a plane tangent to said turns;
   said second extremity being substantially perpendicular to said tangent plane;
   support means engaging said first extremity for securing said

spring to an inner vehicle surface adjacent a driver's seat; and



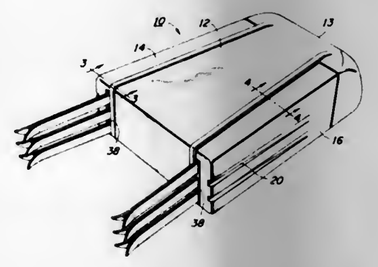
viewing-aid means for facilitating reading of the map on said second extremity in a position confronting the encompassed area of a map inserted between said turns.

4,071,175
ANTI-RATTLE BICYCLE BEVERAGE CONTAINER HOLDER
Van C. Wagnon, 27257 Wells Lane, Conroe, Tex. 77301
Continuation-in-part of Ser. No. 563,452, March 31, 1975, Pat. No. 3,928,284. This application July 6, 1976, Ser. No. 702,926
Int. Cl.² B62J 7/06
U.S. Cl. 224—36 **10 Claims**



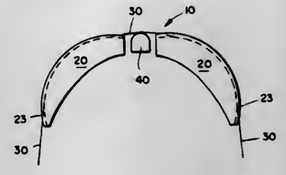
1. A holder for a beverage can or the like for mounting on a bicycle handlebar or the like, said holder comprising
- a top plate member, said top plate member having a generally circular opening therein of slightly larger diameter than the diameter of a can or the like to be held by the holder,
- a bottom plate member, said bottom plate member having dimensions generally the same as or greater than the diameter of the opening in said top plate member,
- a plurality of rods spacing and interconnecting said top and bottom plate members,
- said rods each being of a length substantially less than the length of a can or the like to be held by the holder, whereby a can or the like will have a portion thereof extending substantially upwardly from said top plate member,
- a resilient material washer disposed between each of said plurality of rods and said upper plate extending radially into said top plate member opening for engaging and preventing clattering of a beverage can or the like received by the top plate member opening, and
- extension means formed integrally with said top plate member for positioning said top plate member on a bicycle handlebar or the like so that the top surface of said top plate member is substantially level with the handlebar or the like, said extension means comprising an elongated strip integral with said top plate member at one end thereof and being free of the other end thereof, and having openings formed therein adjacent either end thereof for receipt of fastening means for holding the extension in the form of a loop wrapped around the handlebar or the like.

4,071,176
CAR TOP SKI AND SKI-GEAR CARRIER
John Tuzee, 2729 Jacquelyn Lane, Waukegan, Ill. 60085
Filed Feb. 11, 1976, Ser. No. 657,169
Int. Cl.² B60R 9/04
U.S. Cl. 224—42.1 E **7 Claims**



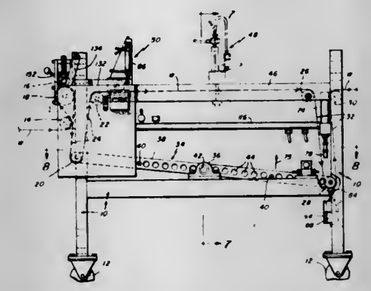
1. A streamlined carrier for skis and other articles comprising
- a rigid housing having interior storage space for said articles,
- said housing having a streamlined forward end wall, a rear end wall, opposite side walls disposed at the forward end only of said housing, and top and bottom walls,
- said top wall being generally T-shaped, having a longitudinal leg portion extending rearwardy from a transverse cross portion disposed at the forward end of said housing adjacent said side walls,
- said housing having side openings for permitting access to said space extending rearwardly from said side walls to said rear end wall,
- means for mounting said housing to the exterior of a vehicle with said forward end disposed toward the front of said vehicle,
- means mounted to said housing for supporting a plurality of skis across said openings with one end portion of each of said skis extending into the forward portion of said interior storage space beneath said transverse cross portion of said top wall and with the other end portions of said skis extending rearwardly from said carrier adjacent said rear wall,
- a pair of doors respectively mounted to said housing over said openings
- said doors each having a side wall portion, an upper wall portion and a rear wall portion,
- said upper and rear wall portions of each of said doors extending transversely of the side wall portion of each of said doors and being a part of the same contour of the respective adjacent portions of said top and rear walls of said housing when said door is closed, said side wall portion of each of said doors being a part of the same contour of the respective side wall of said housing when said door is closed,
- whereby said door prevents access to said storage space, prevents removal of said skis, and protects all but said other end portons of said skis from the elements.

4,071,177
SELF-CENTERING AIR GUIDE FOR TAPE TRANSPORTS
Donald L. Burdorf, Newport Beach, Calif., assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Continuation-in-part of Ser. No. 521,882, Nov. 7, 1974, Pat. No. 3,979,037. This application July 10, 1975, Ser. No. 594,855
Int. Cl.² B65H 17/32
U.S. Cl. 226—7 **11 Claims**



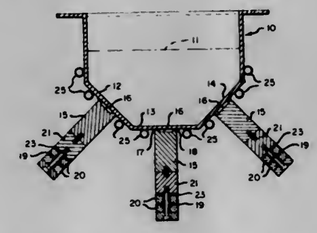
1. A method of guiding a span of recording tape in a self-centering relation to the center line of a support surface having a pair of beveled flanges formed along its longitudinal sides which are spaced apart at their base a distance less than the minimum width of the recording tape, said method comprising:
- transporting the recording tape along the support surface;
- tensioning the recording tape so as to maintain it in close proximity to said support surface; and
- providing air under pressure along a portion of said support surface so that a film of pressurized air is generated between said tape, support surface and beveled flanges sufficient to lift said tape off said support surface to a point where its width substantially equals the horizontal distance between said beveled flanges, thereby maintaining said tape in a centered relationship with respect to the centerline of said support surface.

4,071,178
MACHINE FOR USE WITH MOVING WEBS
Robert M. Copp, 271 Thames St., Bristol, R.I. 02809
Filed June 7, 1976, Ser. No. 693,165
Int. Cl.² B65H 23/18
U.S. Cl. 226—39 **11 Claims**



8. A machine for temporarily interrupting a segment of a web of continuously moving material comprising:
- a frame having a web receiving end and a web delivery end;
- roller means defining a path of web travel through the machine, said roller means being constructed and arranged to define web loops of variable size at the web receiving and web delivery ends of the frame;
- brake means mounted to the frame for gripping the web at a location between the web receiving and web delivery ends for stopping further advancement of a segment of the web;
- said roller means including a pair of nip rollers mounted to the frame at the web receiving end thereof and in advance of the variable size loop at the web receiving end;
- means responsive to a predetermined angular revolution of one of said nip rollers for operating the brake means and for beginning a new measurement of the angular rotation of said one of said nip rollers;
- said means responsive to said predetermined nip roll revolutions comprising an optical shaft encoder having an input shaft directly connected to said nip roller; and means mounting the shaft encoder for limited movement in all directions except for rotation about the axis of the nip roll; and
- said loop forming means being constructed and arranged to enable delivery of a previously looped segment from the loop at the delivery end and to enable take up of web from the nip roller while said brake means is in gripping engagement with the web.

4,071,179
APPARATUS AND METHODS FOR FLUXLESS SOLDERING
John N. Antonevich, Jamestown, N.Y., assignor to Blackstone Corporation, Jamestown, N.Y.
Filed Oct. 31, 1975, Ser. No. 627,761
Int. Cl.² B23K 3/06
U.S. Cl. 228—1 A **6 Claims**



1. A solder pot comprising in combination an elongated pot for containing molten solder, the cross section of said pot transverse to its length being in the form of a generally half octagon having two vertical sides, a flat bottom and two sloping sidewalls connecting the vertical sides and bottom at least one elongate coupling member extending longitudinally of said vessel on each of said bottom and sloping sidewalls and fixed on the outside thereof in energy transfer relation therewith, a multiplicity of vibratory transducers equally spaced along said coupling member and affixed thereto, a power generator and oscillator connected commonly to all said transducers for energizing the same and means for uniformly heating the vessel and metal therein, each of said coupling member having a lengthwise central recess along its top edge bordered by parallel spaced contact surfaces in contact with the vessel wall and attached to said wall.

4,071,180
APPARATUS FOR PREFORMING WIRE LEADS AND ALIGNMENT FOR BONDING
Jean Marcel Dupuis, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Oct. 4, 1976, Ser. No. 729,485
Int. Cl.² B23K 21/02; H01L 21/601
U.S. Cl. 228—1 R **23 Claims**

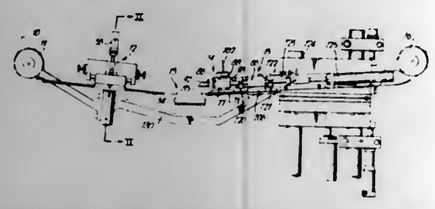
1. Apparatus for preforming unsupported inner ends of cantilever wire leads of lead frames, for bonding said inner ends of said leads to contacts, said lead frames being in a continuous strip and including perforations along each side of said strip and in a predetermined positional relationship with said lead frames, comprising:
- means for successively feeding lead frames to a preforming position;
- positioning means for positioning each lead frame in a prede-

termined position at said preforming position, said inner ends of said leads extending over a recessed die;

preforming means at said preforming position and including a support member and a support table extending under said support member, said recessed die supported on said support table;

said positioning means including locating plungers axially slidable in said support member, one on either side of said die and having lower ends for passing through said perforations;

said preforming means including a further plunger axially slidable in said support member and having a lower end



for bending said inner ends of said leads out of the plane of the lead frame, said further plunger positioned over said die;

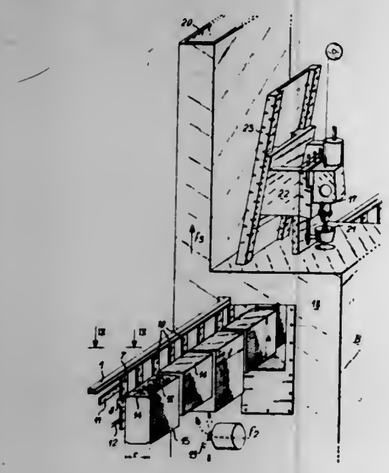
actuating means extending over the upper ends of said locating plungers and said further plunger and moveable towards said support member, initial movement of said actuating means sliding said locating plungers to engage their lower ends in said perforations and continued movement sliding said further plunger to preform said inner ends of said leads, each end preformed to include an inclined intermediate portion and a substantially flat end portion extending substantially parallel to the plane of said lead frame.

4,071,181

APPARATUS FOR BRAZING END PLATES AND THE LIKE

Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Oct. 15, 1975, Ser. No. 622,646
Claims priority, application France, Nov. 20, 1974, 74 38194
Int. Cl.² B23K *31/02*; F28F *9/16*
U.S. Cl. 228—43 **10 Claims**



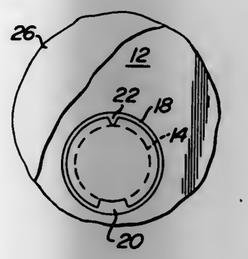
1. An apparatus for brazing of end plates and the like onto tubes of variable sized heat exchangers having a plurality of work stations, said apparatus including a brazing station and conveyor means comprising endless guiding means at least in part extending in a horizontal path, a plurality of upright support bars movably carried by said guiding means and connected together for common motion along said guiding means, each of said support bars carrying fitting means, the fitting means of adjacent support bars being adapted to engage the bottom side of the end plate of a given heat exchanger and each of said fitting means being disposed at a common height on said support bars whereby each of said heat exchangers may be successively conveyed through the brazing station with the uppermost end plates all arranged in a common horizontal plane to facilitate the brazing thereof.

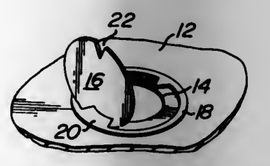
4,071,182

METHOD OF MAKING CONTAINER WITH EASY OPEN TOP

Thomas A. Walraven, West Chester; John G. Thomas, Berwyn, and James B. Hall, Chester Springs, all of Pa., assignors to Christiana Metals Corporation, West Chester, Pa.

Division of Ser. No. 720,533, Sept. 7, 1976, Pat. No. 4,036,397.
This application Feb. 22, 1977, Ser. No. 771,050
Int. Cl.² B23K *1/06*
U.S. Cl. 228—110 **4 Claims**





1. In a method of sealing a product within a container by hermetically sealing the periphery of a lid to the container after the product has been introduced in the container, the improved method of providing an easy access to the product in the container comprising the steps of providing the lid with a hole, placing a disk larger than the hole so that the disk is juxtaposed to the hole, ultrasonically welding the disk to the lid to thereby provide an annular weld circumscribing the hole before the lid is sealed to the container, providing said weld with a hinge spaced from a stress director having an apex adjacent the periphery of the hole to facilitate initiation of tearing of the disk adjacent the ID of the weld as finger pressure is applied directly to the disk for causing the disk to move into the container with said disk remaining connected to the lid at said hinge.

4,071,183

FABRICATION METHOD AND FABRICATED ARTICLE

Richard M. Cogan, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 569,183, April 18, 1975, Pat. No. 3,996,019.
This application Jan. 29, 1976, Ser. No. 653,591
Int. Cl.² B23K *19/00*
U.S. Cl. 228—173 A **4 Claims**

1. In a method of fabricating a non-planar article including a portion of non-uniform sectional thickness from a plurality of

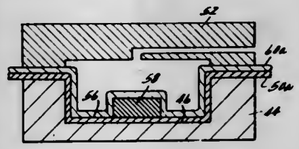
members including a plurality of cooperating sheet metal members and at least one insert member, each sheet metal member having a bonding surface which cooperates with a bonding surface of another member, the steps of:

placing a first metal sheet in a die;

shaping a first non-planar sheet metal member from the first metal sheet in the die by applying fluid pressure to a face of the first metal sheet;

with the first sheet metal member in the die, positioning at least one of the insert members on a surface of the first sheet metal member;

placing a second metal sheet in the die over the insert member and the first sheet metal member;



shaping a second sheet metal member by applying fluid pressure to a face of the second metal sheet to press the second metal sheet over the insert member and the first sheet metal member to retain the insert member between the sheet metal members and to provide a preliminary assembly;

placing the preliminary assembly in an autoclave; and then

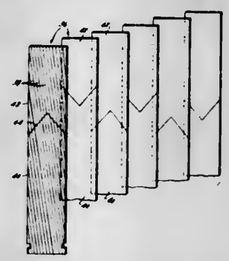
conducting a solid state diffusion bonding of the sheet metal members at cooperating bonding surfaces in the autoclave including the concurrent application of fluid pressure and heat.

4,071,184

IMPACT RESISTANT BLADE

Robert G. Carlson, Greenhills, and Robert W. Harrison, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 643,495, Dec. 22, 1975, Pat. No. 4,000,956.
This application Aug. 2, 1976, Ser. No. 710,389
Int. Cl.² B23P *15/04*; B32B *31/18, 15/14*
U.S. Cl. 228—159 **2 Claims**



1. In a method of fabricating a filament laminate for use in a composite article, the steps of:

bonding a plurality of collimated filaments between two sheets of a first material;

removing a portion of at least one sheet from the laminate;

replacing said removed portion with a second material characterized by an impact strength different from that of said removed portion; and

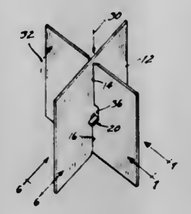
bonding said second material to said first material.

4,071,185

STRUCTURE FOR LOCKING PARTITIONS IN OPEN POSITION

Charles Luther Peters, Jr., Norco, Calif., assignor to Box Innards, Inc., Anaheim, Calif.

Filed June 28, 1976, Ser. No. 700,386
Int. Cl.² B65D *5/48*
U.S. Cl. 229—28 R **3 Claims**



1. A partition comprising:

a pair of vertical partition strips having respective vertical slots,

said strips being intersected via said slots, the inner portion of the slot in one strip being enlarged, the sides of said enlarged portion having shoulders adjacent the inner end of said portion;

tab means attached to the inner end of said enlarged slot portion,

said tab means prior to interlocking of said strips being coplanar with said one strip and filling said enlarged slot portion, whereby the outer end of said tab means spans the narrow portion of the slot of said one strip, and said outer tab end is engaged by the inner end of the slot in the other strip prior to interlocking of said strips,

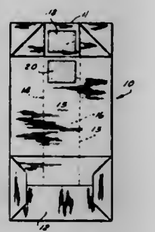
said tab means being collapsible via force applied to the outer end of said tab means via engagement therewith of the inner end of the slot of said other strip when said strips are at right angles, said tab means when collapsed extending along said other strip to prevent its rotation relative to said one strip, and the body of said tab means when collapsed by said other strip being captured between the inner end of said enlarged slot portion and said shoulders adjacent thereto, whereby said strips are automatically interlocked upon forcing them together when intersected via said slots.

4,071,186

SELF-CLOSING BAG

Raymond J. Ruda, Chicago, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

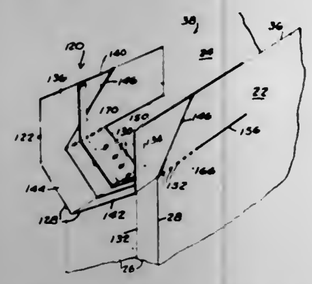
Filed June 15, 1976, Ser. No. 696,270
Int. Cl.² B65D *33/16*
U.S. Cl. 229—62 **5 Claims**



1. A self-closing bag comprising: a bag having a front side and a rear side extending to the mouth of the bag, said front side having an opening at the mouth of the bag, a first cohesive coating carried on an insert secured to the inner surface of said rear side in registration with said opening, said insert compris-

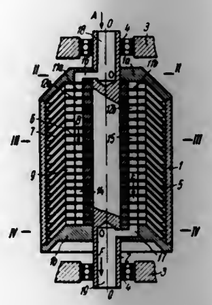
ing material removed from said front side to provide said opening, and a second cohesive coating carried on the outer surface of said front side adjacent to said opening and facing the same way for cooperation with said first cohesive coating when the mouth-end of the bag is folded over.

4,071,187
VALVE BAG
Arthur E. LaFleur, 273 River St., Manistee, Mich. 49660
Filed Mar. 15, 1976, Ser. No. 667,098
Int. Cl.² B65D *31/14*
U.S. Cl. 229—62.5 **11 Claims**



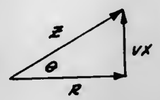
1. A vented bag formed of a thermoplastic sheet material having a pair of side walls connected along their vertical edges by inwardly gusseted end walls, said side walls being heat sealed together along a generally straight line at the upper ends thereof to form a top closure for the bag, at one upper corner portion of the bag one end wall having a portion thereof folded inwardly along a line extending between the adjacent vertical edges of the two side walls and spaced downwardly from the top closure seal such that in the flattened condition of the bag the inwardly folded portion of said end wall cooperates with the portion of the end wall immediately below it to define a pair of double thickness, triangularly-shaped panels sandwiched between the adjacent portions of the side walls, said side walls being folded inwardly along lines extending diagonally inwardly and upwardly from the opposite ends of the last-mentioned fold line on the end wall to the line of sealing at said top closure, said inwardly folded end and side walls defining an opening at said corner of the bag, a tubular sleeve of thermoplastic sheet material disposed in said opening, said sleeve comprising an axially outer end portion which extends outwardly from the inner edge of the inwardly folded portion of said end wall and an axially inner portion which extends downwardly from said inner edge of the inwardly folded portion of said end wall, said tubular sleeve being connected to the inner edge of said inwardly folded portion of said end wall by a continuous heat seal, said outer end portion of said sleeve being heat sealed to said inwardly folded portion of said end wall adjacent said fold line thereon and also being heat sealed to each side wall along said diagonal fold lines, said inner end portion of said sleeve being heat sealed along said top closure and to both side walls along lines which are spaced downwardly from and generally parallel to said top seal, said last-mentioned lines of sealing extending axially inwardly of the opening from the opposite ends of the heat seal along said inner edge of the inwardly folded portion of the end wall, said heat seals along said inner edge of the inwardly folded portion of the end wall and along said parallel lines on the inner end portion of said sleeve preventing the inner end portion of the sleeve from being displaced in a direction outwardly of the opening when the bag is filled with product, said seals defining a pair of first passageways extending from inside the bag in a direction outwardly of the opening to said diagonal seals between the sleeve and each side wall and a second air passageway extending circumferentially of the opening from the outer ends of the first passageways and between the inwardly folded portion of the end wall and the axially outer end portion of said sleeve, and means providing vent holes in said second passageway to permit the escape of air therefrom to the exterior of the bag while the bag is being filled with product through a filling spout inserted into said sleeve and also after the bag is filled and the sleeve is collapsed against itself into a flattened condition by the product in the bag.

4,071,188
CENTRIFUGAL SEPARATOR FOR TREATING LIQUIDS
Mikhail Egorovich Afonin, ulitsa Krasny Mayak 7, korpus 2, kv. 76; Petr Nikolaevich Belyanin, ulitsa Marshala Tukhachevskogo, 23, korpus 2, kv. 186, and Andrei Konstantinovich Ivanov, ulitsa Volgina, 31, korpus 1, kv. 87, all of Moscow, U.S.S.R.
Filed Aug. 23, 1976, Ser. No. 717,003
Int. Cl.² B04B *1/08, 11/02*
U.S. Cl. 233—29 **7 Claims**



1. In a liquid-treating centrifugal separator, support means, a shaft supported for rotation about its axis by said support means, a hollow shell rigidly coupled coaxially with and surrounding said shaft so as to rotate therewith, said shell having a hollow interior surrounding said shaft, tray means situated in the hollow interior of said shell, said tray means including a stack of trays of a given outer diameter respectively formed with central openings through which said shaft extends, and said trays of said tray means also being fixed to said shaft for rotation with said shaft and shell, and spacer means cooperating with said trays of said tray means for maintaining said trays spaced from each other, said spacer means including a plurality of disks respectively formed with central openings through which said shaft extends and also being fixed with said shaft for rotation therewith, said plurality of disks respectively having outer diameters substantially smaller than the outer diameters of said trays and said disks being respectively situated between said trays for spacing the latter apart from each other and for creating between said trays a plurality of intertray spaces which respectively circumferentially surround said disks, said tray means and spacer means cooperating with each other for defining in said shell at least one pair of liquid-flow paths extending parallel to said shaft and a plurality of arcuate liquid-flow paths respectively situated in said intertray spaces adjacent the outer peripheries of the disks and extending from one to the other of said pair of paths, said one path being a path for receiving liquid to be treated while said other path forms a discharge path for treated liquid, so that lighter liquid components will travel along said arcuate paths from said one to said other path, while heavier liquid components will due to centrifugal force move outwardly beyond said arcuate paths toward the peripheries of said trays to be separated from the lighter liquid components and to be prevented from discharging with the lighter liquid components through said other path.

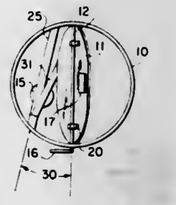
4,071,189
SLIDE RULE CURSOR
Faiz Mohammad Qureshi, 10456-19th South, Seattle, Wash. 98168
Filed Sept. 22, 1975, Ser. No. 615,395
Int. Cl.² G06G *1/02*
U.S. Cl. 235—70 B **6 Claims**



1. A cursor for slide rules, said cursor being adapted for use in association with a selected scale on the slide rule to determine a vector coefficient μ_θ which in turn is useful for computing the resultant of two known complex impedances when said two complex impedances are expressed in phasor vector form, wherein the ratio of the magnitudes of said two complex impedances is defined as ρ, the absolute difference between their angles is defined as θ, and μ_θ is defined as $(\rho^2 + 2\rho\text{Cos}\theta + 1)^{1/2}$, said cursor comprising:
   a. cursor face plate means having displayed on one surface thereof first and second co-ordinate axes and at least one coefficient curve defined relative thereto, said first co-ordinate axis representing values of ρ, said second co-ordinate axis representing values of μ_θ, and said coefficient curve being a precalculated locus of points relating μ_θ to ρ for one selected value of θ; and
   b. cursor frame means for holding said face plate means in operative relationship with said slide rule and adapted to permit movement of said face plate means along said selected scale of the slide rule, said frame means further including means permitting movement of said face plate means perpendicular to said selected scale, said second co-ordinte axis and hence said coefficient curve being so scaled and arranged relative to the selected scale on the slide rule that, in operation to determine μ_θ for two selected complex impedances,
      i. said face plate means is first positioned such that said first co-ordinate axis passes through the value of ρ on said selected scale for said two selected complex impedances, and
      ii. said face plate means is then moved sufficiently perpendicularly that said selected scale passes through said value of ρ on said first co-ordinate axis, such positioning of said face

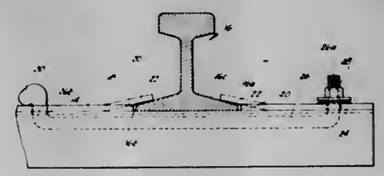
plate means resulting in said coefficient curve passing through the correct value of μ_θ on said selected scale for said two selected complex impedances, said value of μ_θ being useful to calculate the resultant of said two selected complex impedances.

4,071,190
THERMOSTATIC VENT CONTROL
Edward B. Ford, Jr., 6405 Bardu Ave., Springfield, Va. 22152
Filed June 8, 1976, Ser. No. 693,862
Int. Cl.² G05D *23/275*
U.S. Cl. 236—93 A **5 Claims**



1. Automatic thermostatically controlled damper means for a vent pipe comprising in combination, a flap plate substantially the same diameter as that of said pipe rotatable in said pipe about a pivot axis perpendicular to the axis of said pipe, a thermostat control device with a member movable above a predetermined temperature in an axial direction, mounting means positioning said control device inside said vent pipe to cause movement in the axial direction of said thermostat member to rotate said flap plate about said axis from a position substantially closing said pipe in a plane substantially perpendicular to the pipe axis to a position approaching a plane passed through the axis of the pipe, and structure in said mounting means holding the axial direction of movement of said control device disposed at a fixed acute angle with a plane passed through said pivot axis and including a lever member disposed to contact the thermostat movable member and said flap plate, wherein said actue angle is at an angle to a diametric line in said pipe formed by the pivot axis of said flap plate.

4,071,191
TIE PLATE FASTENER SYSTEM
Charles M. Hutton, Norval, Canada, assignor to Armco Steel Corporation, Middletown, Ohio
Filed June 28, 1976, Ser. No. 700,573
Claims priority, application Canada, Oct. 9, 1975, 237312
Int. Cl.² E01B *9/32*
U.S. Cl. 238—338 **10 Claims**



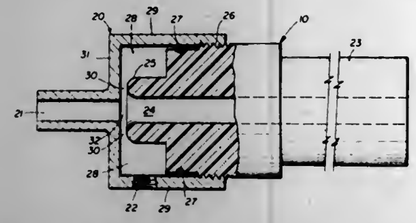
1. A tie plate fastener system for connecting a pair of spaced rails to a tie comprising:
   a. a metallic channel tie of U-shaped cross section with the legs thereof opening downwardly and the base thereof having at each end at least one pair of openings spaced from the edges of a rail base when in position on said tie;
   b. a pair of tie plates for each said rail located on either side thereof, each tie plate having forward edge portions lying substantially adjacent the sides of said rail base and a central raised and elonated portion overlying the upper surface of said rail base, said tie plates being of a width substantially identical to the width of said tie and of a length to be provided with openings therethrough in positions corresponding to said openings in said tie; and
   c. a single fastening means extending through each said at least one pair of openings for securing said pair of tie plates, and thus its respective rail, to said tie, said fastening means comprising a U-bolt, having an elongated base and upstanding legs, said legs being of a length just sufficient to enable mounting of said U-bolt with said elongated base portion thereof lying just under the underside of the base of said channel tie, the free end of one of said legs being threaded and provided with a nut and the free end of the other of said legs being hooked-shaped, with said hook-shaped end extending outwardly and away from said rail, said hook-shaped end and said nut bearing against the said tie plates and securing them tightly against said base of said channel tie, whereby said tie plates and said single fastening means results in a more positive connection of said rail to said tie and thus reduces rail spreading.

4,071,192

TRIBO-ELECTRO-GAS-DYNAMIC POWDER CHARGING APPARATUS

James Lewis Myers, Golden, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Mar. 29, 1976, Ser. No. 671,354
Int. Cl.² B05B 5/00; B44D 1/12
U.S. Cl. 239—3 **7 Claims**



1. A method of tribo-charging powder comprising
a. directing a propellant gas radially inwardly past a semi-toroidal section at the inner end of a barrel having a non-decreasing inner diameter from the inner end of the barrel to the outer end of the barrel, a first portion of said propellant gas following the semi-toroidal section under influence of the coanda effect to form a boundary layer against the inner wall of the barrel, and a second portion of the propellant gas detaching from the semi-toroidal section in turbulent fashion,
b. directing a supply of powder into said inner end of the barrel along a path axially aligned with the barrel axis and of path width no greater than the smallest diameter of the barrel at the inner end thereof,
c. turbulently mixing said powder with said second portion of the propellant gas in a zone near the inner end of the barrel, and
d. propelling said powder from the inner end through the outer end of the barrel under influence of the propellant gas to tribocharge the powder.

4,071,193

METHOD OF AND APPARATUS FOR FLOW SPREADING

Arthur J. Sternby, Middletown, and Ronald D. Cruea, Carlisle, both of Ohio, assignors to The Black Clawson Company, Middletown, Ohio

Filed July 19, 1976, Ser. No. 706,583
Int. Cl.² B05B 1/26
U.S. Cl. 239—11 **10 Claims**



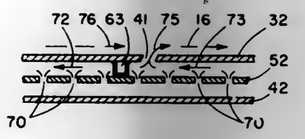
1. In combination with apparatus having a curved, relatively wide, material treating surface including an upstream end and a downstream end, an improved flow spreader for converting a relatively narrow flow of material to a relatively wide flow of material, said flow spreader comprising: a generally imperforate plate having a lower edge extending substantially coextensively with said upstream end of said material treating surface, said plate having a relatively sharply curved surface with respect to the curved surface of said material treating surface, and a conduit having a relatively narrow width with respect to the width of said material treating surface and having an outlet thereof directed non-tangentially with respect to said curved surface of said plate and towards an upper portion thereof, whereby material impinging on said curved plate surface from said conduit undergoes a smooth but rapid change of direction, resulting in an inertially induced redimensioning of the cross-sectional configuration of said flow from a stream of relatively deep depth and narrow width approximating the configuration of said relatively narrow conduit outlet to a stream of relatively shallow depth and wide width approximately the width of said relatively wide material treating surface.

4,071,194

MEANS FOR COOLING EXHAUST NOZZLE SIDEWALLS

Terry T. Eckert, Fairfield, Ohio, and Edward C. McDonough, Lawrenceburg, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 28, 1976, Ser. No. 736,299
Int. Cl.² B64D 33/08
U.S. Cl. 239—127.3 **9 Claims**



1. An exhaust nozzle sidewall heat shield and cooling means comprising:
spaced heat shield means positioned over the nozzle sidewall portion exposed to high temperature gases;
means included in said heat shield means for directing cooling air from areas in register with the sidewall portion to opposed surfaces of said heat shield means exposed to high temperature gases; and
means secured to said nozzle and slidably receiving said heat shield means,
said heat shield means exposed to high temperature exhaust gases secured to said nozzle at the forward end and allowed to expand longitudinally and transversely therefrom so as to avoid warping and distortion due to changing temperatures of the exhaust gases.

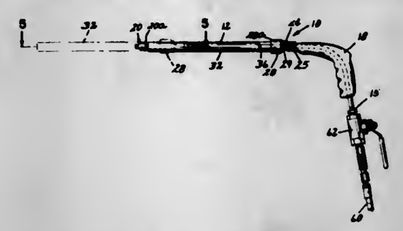
4,071,195

SPRAY AND FOAM PRODUCING NOZZLE APPARATUS

Garrett D. Kuhns, Eagan, Minn.; Norman E. Astorp, Sumner, Iowa; Richard V. Mullen, Cottage Grove, Minn., and John Ellwood Thomas, Riverfalls, Wis., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 612,865, Sept. 12, 1975, Pat. No. 3,961,754. This application June 7, 1976, Ser. No. 693,650
Int. Cl.² B05B 15/00
U.S. Cl. 239—289 **15 Claims**

1. A convertible spray and foam producing nozzle apparatus, comprising:
a. spray-forming nozzle means having an inlet port suitable for receiving a pressurized flow of surfactant bearing fluid therethrough, for forming a spray from fluid received by said inlet port and for directionally projecting said spray in a predetermined pattern outwardly from said nozzle means;
b. foam-forming means cooperatively connected with said spray-forming nozzle means and operatively movable between first and second positions relative to said spray-forming nozzle means for selectively producing foam from said spray, said foam-forming means being operative in said first position to enable said spray-forming means to uninterruptedly directionally eject its produced spray pattern externally of said nozzle apparatus, and being operable in said second position to intercept said spray, to convert said spray into a foam and to directionally project



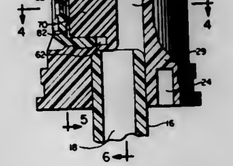
in a generally fan-shaped pattern said foam outwardly from said nozzle apparatus; and
c. positioning means cooperatively connecting said spray-forming nozzle means and said foam-forming means for selectively securing said foam-forming means relative to said spray-forming means, between its said first and second positions.

4,071,196

AEROSOL VALVE TIP AND INSERT ASSEMBLY

James E. Burke, Huntington, Conn., and Anthony J. Grzesiak, Burnham, Ill., assignors to VCA Corporation, Baton Rouge, La.

Continuation of Ser. No. 608,763, Aug. 28, 1975, abandoned. This application Oct. 26, 1976, Ser. No. 735,796
Int. Cl.² B05B 1/34
U.S. Cl. 239—492 **5 Claims**



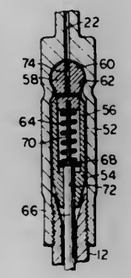
1. An aerosol valve tip and insert assembly which produces a fine, efficient spray over a broad pressure range comprising:
a. a tip member means having:
i. a central discharge bore means adapted to frictionally fit the discharge stem of a dispenser,
ii. an annular side recess means,
iii. a connecting passage means communicating with said bore and said recess means,
iv. a cylindrical post means having a generally flat, circular front face, said cylindrical post means being encircled by said annular side recess means, and
b. cup-shaped insert means adapted to be frictionally fitted onto said cylindrical post means, said insert means having:
i. a transverse front wall provided with a central discharge opening means, the inside surface of said front wall having a central circular swirl chamber means communicating with said central discharge opening means, and a plurality of tapered channel means extending outwardly from said swirl chamber means, said tapered channel means being tapered toward said swirl chamber means, said tapered channel means connecting said swirl chamber means with cylindrical manifold means, and
ii. a plurality of interconnected equilateral side walls perpendicular to said front wall which form a polygon and which fit into said annular side recess to form a plurality of longitudinal channel means for conveying fluids from said central discharge bore means to said cylindrical manifold means, each of said longitudinal channel means being positioned so that a major portion of said longitudinal channel means lies between two of said entrance ends of said plurality of tapered channels, the diameter of said discharge opening means being equal to from about 1/5 to about ½ of the diameter of said swirl chamber means, and the ratio of the width of the exit end of said tapered channels to the entrance end of said tapered channels varies from about ¼ to about ¾.

4,071,197

FUEL INJECTOR WITH SELF-CENTERING VALVE

John M. Bailey, Dunlap, and Ronald R. Robinson, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 659,611, Feb. 19, 1976, abandoned. This application Mar. 7, 1977, Ser. No. 775,349
Int. Cl.² B05B 1/30
U.S. Cl. 239—533.11 **1 Claim**



1. A fuel injection valve assembly comprising:
an elongated housing defining a chamber therein;
inlet means for communicating said chamber with a source of fuel;
outlet means at one end of said housing defining an orifice for communicating said chamber with a combustion chamber;
an elongated valve element reciprocably mounted within said chamber and operative to control communication of said chamber with said outlet orifice;
spring mounting means mounted in the end of said housing remote from said outlet and including guide means for one end of said valve member;
said spring mounting means including self-aligning means mounting said spring mounting means within said one end of said housing, wherein said self-aligning means comprise a spherical bearing surface formed on said spring mounting means cooperatively engaging a spherical surface formed in the end of said chamber, the housing defining said chamber being shaped so that the spherical bearing surface is retained within the spherical surface formed in the end of the chamber.

4,071,198

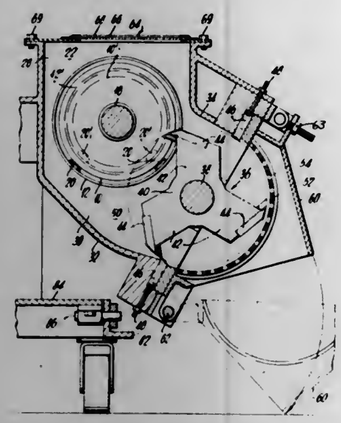
APPARATUS FOR GRANULATING MATERIAL

Merritt D. Tetreault, East Douglas, Mass., assignor to Amacoil Machinery, Inc., New Rochelle, N.Y.

Filed May 12, 1976, Ser. No. 685,641
Int. Cl.² B02C 13/286
U.S. Cl. 241—73 **5 Claims**

1. In an auger feed granulator, a cutting chamber having an inlet opening in one side wall, a feed hopper, a shaft extending

through said opening and supported at one end at said feed hopper and at its other end at the opposite wall of said cutting chamber, an auger mounted on a first portion of said shaft for feeding material from said hopper to said cutting chamber, said auger extending along a substantial length of said shaft, a second portion of said shaft, without said auger mounted thereon, being positioned within said cutting chamber, means for rotating said auger to move material from said feed hopper



into said cutting chamber, and means for removing from the second portion of the shaft, sprues and runners of material extruded from the auger, said means comprising a rotatable knife assembly having a plurality of peripherally attached knives, mounted in said cutting chamber, the peripheral cutting path of the attached knives intersecting the auger envelope to remove sprues and runners from the second portion of the shaft.

4,071,199

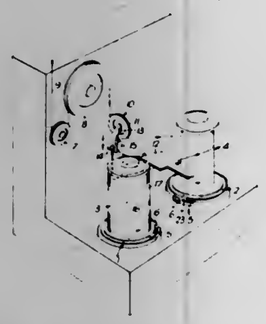
APPARATUS FOR WINDING WIRE OR OTHER ELONGATE MATERIAL

Edward Owen Jones, Aughton, England, assignor to BICC Limited, London, England

Filed Nov. 15, 1976, Ser. No. 741,613

Int. Cl.² B65H *54/00*

U.S. Cl. 242—25 A **7 Claims**



1. Wire-winding apparatus comprising: means for supporting a pair of reels in fixed positions; means comprising a respective torque motor for driving each said reel to rotate about its axis; means for guiding a wire to pass at least partially round a reel in one of said fixed positions and thence on to a reel in the other of said fixed positions; means for cutting a length of said wire extending between a pair of reels when supported in said positions; co-acting with said cutting means, means for engaging the said length of wire to cause it to be cut by said cutting means and for guiding a leading cut end of said wire to the said reel in the said first position; and means for adjusting the torque of each said motor.

4,071,200

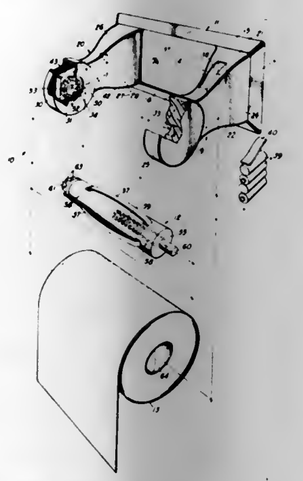
ELECTRIC TOILET TISSUE DISPENSER

Barry N. Stone, 662 Rockbridge Road, NW., Lilburn, Ga. 30247

Filed June 25, 1976, Ser. No. 699,678

Int. Cl.² A47K *10/38*

U.S. Cl. 242—55.2 **9 Claims**



1. A toilet tissue dispensing assembly, comprising in combination:

a. a housing including a frame and a pair of mounting arms extending from said frame, a portion of one of said arms being hollow,

b. drive means including a motor, drive gear means within one of said arms and connected to said motor and switch means on said housing to selectively actuate said motor; and

c. a core rotatably mounted within said housing and in engagement with said drive gear means, said core being adapted to receive thereon a roll of toilet tissue whereby actuation of said switch means selectively rotates said roller to dispense an amount of tissue from said roll.

4,071,201

REEL FOR TICKET ROLLS

Harvey B. Austin, Jr., Berwyn, Pa., assignor to Globe Ticket Company, Horsham, Pa.

Filed Apr. 6, 1977, Ser. No. 785,024

Int. Cl.² B65H *19/00, 35/10*

U.S. Cl. 242—55.2 **13 Claims**

1. A reel for ticket rolls comprising:

a base,

said base being comprised of a thin plate bent into a wall supporting configuration in which said base includes

a first portion arranged in a plane for mounting against a flat surface on which the ticket roll is to be supported and

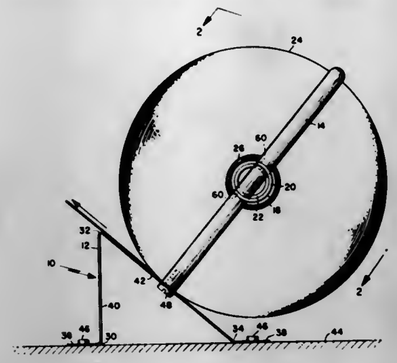
an angle shaped portion exending from said first portion,

a pair of guide posts,

means mounting said pair of guide posts on said angle shaped portion of said base to extend therefrom in spaced parallel relationship, and

a hub mounted on said guide posts for supporting a ticket roll between said guide posts,

said hub including a pair of axially spaced hole means arranged so that said hub fits over said guide posts with said guide posts extending through said hole means,



said hub being retained on said guide posts for slidable movement along the extent of said guide posts.

4,071,202

ROLL FILM CASSETTE

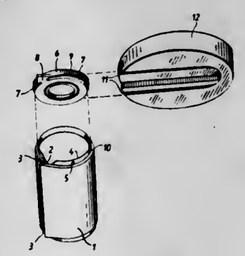
Josef Gersch, Unterhaching, and Otto Wiedemann, Starnberg, both of Germany, assignors to AGFA-Gevaert, AG, Leverkusen, Germany

Filed Mar. 9, 1977, Ser. No. 775,983

Claims priority, application Germany, Mar. 12, 1976, 7607694

Int. Cl.² G03B *1/04*

U.S. Cl. 242—71.1 **5 Claims**



1. A roll film cassette, comprising a casing having a tubular wall provided with an axially extending film slot and with an open axial end bounded by an axially projecting circumferential rib; and a cover for said open axial end, said cover being formed with a projection which enters into said film slot adjacent said open axial end and also being provided with a circumferentially extending recess into which said rib is adapted to enter so as to form with said cover a labyrinth-type light seal, said recess being in a circumferential direction interrupted at the location where the cover is formed with said projection.

4,071,203

LAYING OF FLEXIBLE PIPE

Robert C. Sneed, and Joseph C. Young, both of Odessa, Tex., assignors to Fas-Line Sales and Rentals, Inc., Odessa, Tex.

Division of Ser. No. 591,540, June 30, 1975, Pat. No. 3,995,355. This application July 12, 1976, Ser. No. 704,421

Int. Cl.² B65H *75/40*

U.S. Cl. 242—86.6 **1 Claim**

1. On a vehicle for temporarily laying and retrieving flexible pipe having

a. a truck frame,

b. ground engaging wheels supporting the frame,

c. a motor on the frame, and

d. truck drive means on the frame for driving the ground engaging wheels from the motor,

e. THE IMPROVEMENT COMPRISING:

f. a drive "A" support on one side of the frame,

g. a clutch "A" support on the other side of the frame,

h. an axle

i. extending from the drive "A" support to the clutch "A" support, and

ii. journaled to each "A" support,

j. a sprocket on the axle at the drive "A" support,

k. a shaft journaled to the truck frame,

m. reel drive means on the truck frame for rotating said shaft,

n. a sprocket on said shaft,

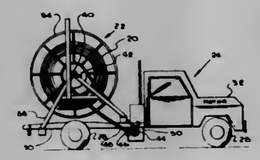
o. a chain connecting said sprockets,

p. a reel having a hub journaled on the axle between the "A" supports,

q. a clutch at the clutch "A" support interconnecting the axle and the reel,

r. a brake interconnecting the reel and one of the "A" supports,

s. flexible pipe coiled on said reel,



t. said reel drive means is a transmission interconnecting said motor and said shaft whereby the shaft is rotated at about 100 rpm,

u. the brake includes

i. a tube welded on the clutch "A" support,

ii. a rod through the tube,

iii. a brake shoe on the rod adapted to ride on the rim of the reel,

iv. a spring between the tube and the shoe, and

v. lock means on the rod for pulling the shoe from the rim; and

v. the clutch includes

i. a clover leaf cut-out on the reel hub,

ii. a sleeve keyed to the axle at the clutch "A" support,

iii. lugs on said sleeve so that in the engaged position the lugs mate with the clover leaf cut-out,

iv. a groove in the sleeve,

v. a fork in the groove, and

vi. means interconnecting the fork and clutch "A" support for moving the fork and thus the sleeve so the notches may be moved into and out of engagement with the reel.

4,071,204

MULTIPLE LOCKING RETRACTOR

Frederick C. Booth, Birmingham, Mich., assignor to Allied Chemical Corporation, Morris Township, N.J.

Division of Ser. No. 485,392, June 28, 1974, Pat. No. 3,985,314, which is a continuation of Ser. No. 276,867, July 31, 1972, abandoned. This application July 27, 1976, Ser. No. 709,145

Int. Cl.² B65H *75/48; A62B 35/02*

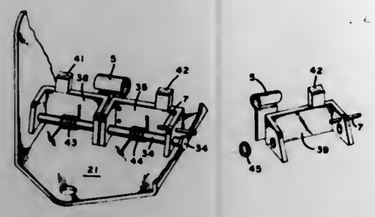
U.S. Cl. 242—107.4 B **14 Claims**

1. A safety belt retractor comprising:

a. a support;

b. a reel adapted for winding seat belt webbing thereon and journalled in said support on a axis for axial rotation in a wind direction and in the opposite unwind direction, said reel having two ratchet wheels connected thereto, each of said ratchet wheels provided with ratchet teeth;

c. a pawl bar associated with each ratchet wheel and biased for independent locking engagement with its associated ratchet wheel so as to lock said reel from rotation in the unwind direction, said pawl bars being longitudinally adjacent each other and rotatably positioned along a single axis which is substantially parallel to said axis of said reel, each of said pawl bars having a pawl, said pawl bars being positioned to provide independent locking action of said pawls such that when triggered one pawl is in full



locking engagement with a tooth on its associated ratchet wheel and the other pawl is not in full locking engagement with a tooth on its associated ratchet wheel;

d. means for blocking said pawls from engaging their associated ratchet wheels so as to permit unwinding of said webbing; and

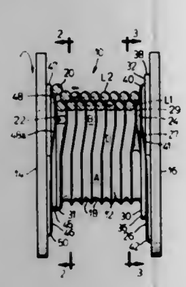
e. means for deactivating said blocking means and triggering said pawls for locking engagement with said ratchet wheels so as to prevent withdrawal of said webbing.

4,071,205

SPOOLING DRUM INCLUDING STEPPED FLANGES

John E. Wieschel, Hartland, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Aug. 27, 1976, Ser. No. 718,116
Int. Cl.² B65H 75/14, 75/34
U.S. Cl. 242—117 **3 Claims**



1. A rotatable spooling drum for spooling multiple layers of cable and comprising:

a cylindrical core having a longitudinal axis and opposite ends and for supporting said multiple layers of cable thereabout, each of said layers of cable including a plurality of winds of cable extending around and along the length of the core;

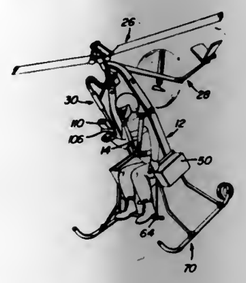
a pair of annular flanges secured to said opposite ends of said cylindrical core and extending radially outwardly from said cylindrical core, at least one of said flanges including a stepped inner face defining a plurality of ledges concentric to said cylindrical core and extending radially outwardly therefrom, each ledge adapted to support thereagainst an end wind of two of said layers of cable, each ledge having a thickness equal to half the diameter of said cable and the diametric distance between the circumferences of adjacent ledges being approximately equal to the radial thickness of at least two layers of cable, and a riser having a tapered ramp disposed along a portion of the circumference of each ledge and along the circumference of the end of said core nearest said one of said flanges, whereby as said cable is wound around said drum, an end wind of a layer is raised by said riser to a radially outward position to form a succeeding layer of cable.

4,071,206

PORTABLE HELICOPTER

Gilbert W. Magill, Odessa, Tex., assignor to Aerospace General Co., Odessa, Tex.

Filed Sept. 20, 1976, Ser. No. 724,528
Int. Cl.² B64C 27/50, 27/52
U.S. Cl. 244—17.11 **12 Claims**



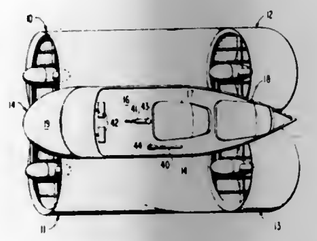
1. In a rotary wing aircraft, a substantially "A"-shaped frame having an upper vertex portion and a pair of downwardly diverging side bars, one each of which side bars is pivotally mounted to one of the free ends of the upper vertex portion, means for adjusting the upper vertex portion of the frame and the side bars to control the position of a vertical lift axis spaced forwardly of and laterally between said side bars, harness means for attaching the frame to at least one pilot of the aircraft, the vertical lift axis being adjustable to the individual trim of the pilot by means of the adjusting means, rotor means mounted by the frame and having rotor blades, rocket means mounted on said blades for powered rotation thereof about the vertical lift axis, tail boom means connected to the frame, and means for controlling the aircraft.

4,071,207

VERTICAL TAKE-OFF AIRCRAFT

Frank N. Piasecki, Haverford, and Donald N. Meyers, Philadelphia, both of Pa., assignors to Piasecki Aircraft Corporation, Philadelphia, Pa.

Filed Sept. 9, 1975, Ser. No. 611,739
Int. Cl.² B60V 1/11; B64C 15/06
U.S. Cl. 244—23 D **8 Claims**



1. A wingless vertical take-off and landing aircraft comprising a fuselage having a plurality of separate shrouded propeller ducts integrally mounted on each side thereof, each said duct being inclined downwardly at an acute angle to the longitudinal axis of the fuselage and having a propeller slipstream discharge exit to the atmosphere separate from that of each other duct, a portion of said plurality of ducts being located at the forward end of the fuselage and a portion of said plurality of ducts at the rear end with an equal number of ducts located oppositely on each side of the fuselage longitudinal axis, a propeller having controllable pitch blades mounted for rotation within each said duct, means for controlling the pitch of the blades of each said propeller, power means connected to each said propeller rotating said propellers within their respective ducts establishing said slipstream, a plurality of deflector vanes extending across each said duct transversely of the aircraft rearwardly of the propellers in the duct exit area, means for mounting said vanes for pivotable vertical movement between a raised position in which the chord of each vane is in general alignment with the duct axis and a lowered position in which said chord is angled downwardly at a substantial angle to the duct axis in a manner to direct said propeller slipstream downwardly sufficiently to establish a vertical component of said slipstream of which the momentum thereof sustains the aircraft in the air, a vertically extending rudder surface mounted in the exit area of each said rear duct for pivotal movement about a vertical axis, control means actuatable from a pilot station comprising:

a. altitude control means for concurrently changing the blade pitch of all said propellers,

b. hover control means for setting the position of said vanes,

c. attitude control means comprising (1) aircraft pitching control means operable by a pitching control for differentially changing the pitch of the propellers in said forward and in said rear ducts upon actuation of said pitching control, (2) aircraft roll control means operable by a roll control for differentially changing the pitch of the propellers in said ducts on opposite sides of said aircraft upon actuation of said roll control, (3) aircraft yaw control means operable by a yaw control for controlling the position of said rudder surfaces upon actuation of said yaw control, and (4) means interconnecting said roll and yaw control means for moving said rudder surfaces as will establish a de-coupling yawing moment upon actuation of said roll control.

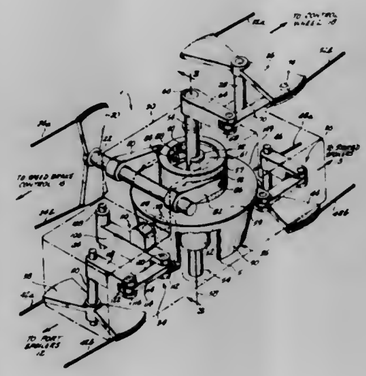
7. A method of controlling the flight path and attitude of a wingless VTOL aircraft deriving its vertical lift primarily from the thrust of shrouded propellers each rotating within a plurality of separate ducts mounted in the front and rear of the aircraft and in equal numbers on opposite sides of its centerline with the ducts aligned in a direction establishing an acute angle below the longitudinal axis of the aircraft and each duct having a separate propeller slipstream discharge exit to the atmosphere, said method comprising the steps of deflecting the slipstream from the shrouded propellers downwardly at such an angle as will establish the vertical and horizontal components of slip-stream momentum required to sustain the aircraft in flight at the desired forward velocity, changing the collective pitch of all propellers simultaneously in equal amounts to change altitude, changing the collective pitch of the propellers mounted forwardly of the aircraft center differentially from the propellers mounted rearwardly of the aircraft center to rotate the aircraft about its pitch axis, changing the collective pitch of the propellers mounted on the right side of the longitudinal centerline of the aircraft differentially from the propeller pitch on the left side of said longitudinal centerline to rotate the aircraft about its roll axis, deflecting the slipstream of the most rearwardly located propellers an amount transversely of the aircraft centerline to rotate the aircraft about its yaw axis, and upon applying said differential change in the collective pitch of the propellers on each side of the aircraft centerline to rotate the aircraft about its roll axis concurrently deflecting the slipstream of the most rearwardly located propellers transversely of the aircraft centerline in a direction and amount as will establish a de-coupling yawing moment about the aircraft yaw axis.

4,071,208

MECHANICAL MIXER FOR CONTROLLING AIRCRAFT SPOILERS

Thomas M. Baker, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sept. 13, 1976, Ser. No. 723,014
Int. Cl.² B64C 13/32
U.S. Cl. 244—83 G **10 Claims**



1. In an aircraft including first and second aerodynamic control surfaces arranged and movably mounted on the port and starboard wings, respectively, of such aircraft to function as spoilers, and a mixer apparatus for positioning said control surfaces in response to the combined settings of first and second, independently variable, pilot-controlled inputs, wherein said first input is a speed-brake setting and wherein the second input is a roll setting derived from the control wheel of the aircraft, said mixer apparatus comprising:

cam means defining first and second three-dimensional cam surfaces;

support means upon which said cam means is movably mounted;

means for translating said cam means relative to said support means along a predetermined axis in response to said first pilot-controlled input;

means for selectively rotating said cam means relative to said support means about said axis in response to said second pilot-controlled input;

first and second cam follower means mounted and arranged for movement relative to said support means, said first and second cam follower means cooperating with said first and second cam surfaces, respectively;

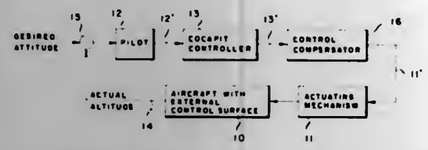
first and second coupling means coupling said first and second cam follower means to said first and second control surfaces, respectively; and

said first and second cam surfaces being so contoured that translation of said cam means along said axis in response to said first input, as determined by the speed-brake setting, varies the profiles of said cam surfaces that are followed by said cam follower means when said cam means is rotated in response to said second pilot-controlled input, as determined by said roll setting, in such a manner that causes a rate of roll of the aircraft in response to an increment of the roll setting to be substantially independent of the speed-brake setting.

4,071,209
VEHICLE CONTROL SYSTEM INCORPORATING A COMPENSATOR TO STABILIZE THE INHERENT DYNAMICS THEREOF

John Evans Hart, Atlanta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Aug. 23, 1976, Ser. No. 716,831
Int. Cl.² B64C 13/04
U.S. Cl. 244—83 D 10 Claims

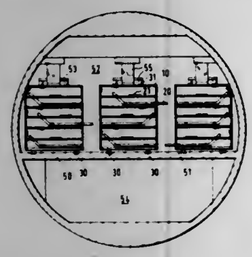


1. In combination with the control system of a vehicle having an adjustable directional control element, an actuating mechanism for said control element and a controller operable by the driver of said vehicle for the selected movement of said mechanism whereby said control element is adjusted and the direction of movement of said vehicle effected accordingly, a compensator, pre-set with dynamic motion characteristics essentially equal to and opposite from the inherent undesirable dynamic motion characteristics of said vehicle over a preselected operating range operably connected to said mechanism and actuated by movement of said controller at a predetermined motion different from that of said controller at all times during movement of said controller whereby the inherent undesirable dynamic motion characteristics of said vehicle are substantially negated.

4,071,210
ARRANGEMENT FOR THE TRANSPORTATION OF PERSONS IN A RECUMBENT POSITION IN PARTICULAR IN AIRCRAFT

H. Guido Mutke, Drygalski Allee 117, 8000 Munich 71, Germany

Filed Oct. 6, 1976, Ser. No. 729,993
Claims priority, application Germany, July 5, 1976, 2630210
Int. Cl.² A47C 19/20; B61D 31/00; B64D 11/00
U.S. Cl. 244—118 P 10 Claims



1. A unitized multiple passenger sleeping apparatus for expedited installation and removal in transportation bodies such as aircraft and the like and comprising:

a rack structure including the substantially integral combination of plural vertically spaced and longitudinally oriented rails, corner posts and cross rails, said longitudinal rails defining the lateral boundaries of said structure;

means extending between first laterally opposite pairs of longitudinal rails for sub-dividing said rack structure into a plurality of mutually exclusive, parallel, and vertically spaced passenger compartments;

a plurality of couches equal in number to the number of compartments and being individually disposed in said compartments immediately adjacent said sub-dividing means;

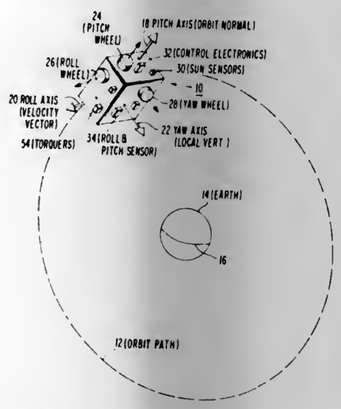
means displaceably supporting each of said couches between said first pairs of longitudinal rails whereby each couch may be at least partially displaced longitudinally out of the associated compartment;

and separate means disposed on the top and bottom of said rack structure for anchoring said structure within the interior of said transportation body, said means disposed on the bottom of said rack structure comprising guide rollers co-operable with suitable tracks mounted within the interior of said transportation body to permit rolling of said rack structure along an axis which is perpendicular to the longitudinal axis of said rack structure.

4,071,211
MOMENTUM BIASED ACTIVE THREE-AXIS SATELLITE ATTITUDE CONTROL SYSTEM

Ludwig Muhlfelder, Livingston; John Edward Keigler, Princeton, both of N.J., and Brian Stewart, Slough, England, assignors to RCA Corporation, New York, N.Y.

Filed Sept. 23, 1976, Ser. No. 724,577
Int. Cl.² B64G 1/20
U.S. Cl. 244—165 16 Claims



1. An attitude control system for a satellite having a pitch, roll, and yaw axis, each axis, being mutually perpendicular to the other axes comprising:

a. three or more reaction wheels mounted on respective axes in fixed angular relation to said three perpendicular axes,

b. attitude sensing means for determining the angular deviation of the satellite from a predetermined reference attitude, said sensing means including a sensor for generating attitude error signals relative to the earth, said sensing means further including at least two sun sensors for generating attitude error signals relative to the sun,

c. means for providing data signals corresponding to orbit ephemeris,

d. means responsive to said sun attitude error signals and said ephemeris data signals for computing attitude errors of said yaw axis relative to the sun,

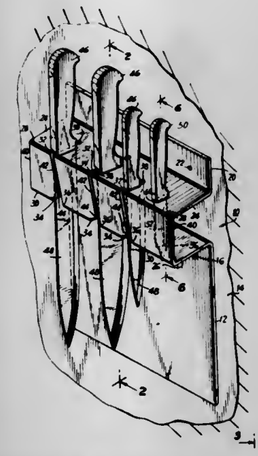
e. control means responsive to said earth attitude error signals and said sun attitude error signals for controlling the angular velocity of said wheels such that the respective attitude errors signals converge to zero,

f. control means responsive to the angular velocity of each of said wheels for controlling the velocity of said wheels such that the long time-average momentum along said roll and yaw axes is essentially zero, and a residual momentum bias is generated along said pitch axis to provide gyroscopic stiffness to said satellite.

4,071,212
IMPLEMENT RACK

Thomas M. Burrows, Barrington, and Harold P. Ashton, Providence, both of R.I., assignors to Imperial Knife Associated Companies, Inc., Providence, R.I.

Filed Feb. 7, 1977, Ser. No. 766,060
Int. Cl.² A47G 21/14
U.S. Cl. 248—37.6 10 Claims



1. A rack for supporting an implement constituting an elongated work member having a handle at one end and having its weight so distributed that the center of gravity of the implement is below the handle, said rack comprising

a. a support,

b. an upper member having a front edge,

c. a lower member beneath the upper member and having a front edge,

d. means providing a slot in the upper member running rearwardly from an opening in the front edge of said upper member,

e. means providing a slot in the lower member running rearwardly from an opening in the front edge of said lower member,

f. said slots being substantially parallel in a vertical plane with one edge of the slot of (e) laterally spaced from said vertical plane, so that said one edge of the lower slot is vertically disaligned from the corresponding edge of the upper slot,

g. said top slot being narrower than the corresponding dimension of said handle when the implement is in said support,

h. means permitting moving of the work member rearwardly from the front of the rack and into the slots and toward said support to a retained position, said means permitting moving of the work member rearwardly being vertically disaligned with a vertical plane,

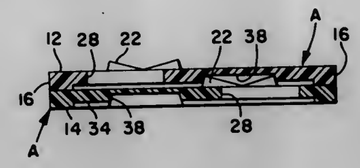
i. the opposite edge of the lower slot being less vertically disaligned from the corresponding edge of the upper slot whereby when an implement is introduced into said slots from the front of the rack by the means of (h) and released, the implement will pivot about the junction between the handle and the work member, so that the implement will swing to a retained position toward the opposite edge of the lower slot, and

j. means blocking moving of the work member forwardly out of the slots when the implement is in its retained position whereby the implement cannot be moved forwardly from the support without previously aligning the work member with the first named set of edges of the two slots.

4,071,213
CLAMP BACK SPACER FOR CONDUIT

George R. Dauberger, Pittsburgh, Pa., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Sept. 27, 1976, Ser. No. 726,773
Int. Cl.² F16L 3/10
U.S. Cl. 248—74 R 7 Claims

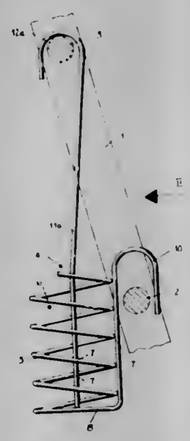


1. A clamp back spacer for rigid conduit or the like comprising; a generally flat base member having opposite upper and lower surfaces, projection means extending outwardly from said upper surface to define a cradle for cradling rigid conduit or the like, recess means in said lower surface for receiving said projection means on another identical base member when an identical pair of such base members are stacked on top of one another, said base member having opposite ends and opposite sides and a transverse centerline extending across said sides centrally between said ends, said projection means and said recess means being located on opposite sides of said transverse centerline so that a pair of identical base members are stackable by reversely positioning such members end-for-end relative to one another, and said projection means and recess means being shaped for preventing relative sliding movement in all directions between a stacked identical pair of said base members.

4,071,214
HOLDER FOR PAINT CANS AND THE LIKE

Robert A. Reidy, Lee Road, Somers, N.Y. 10589

Filed June 14, 1976, Ser. No. 695,823
Int. Cl.² E06C 7/14
U.S. Cl. 248—211 4 Claims



1. A holder for paint cans and the like, comprising in combination

a cage-like receptacle having an upright central axis;

first hook means comprising a U-shaped wire having a bight portion extending across the bottom of said receptacle, and two upright arms extending upwardly along opposite sides of said receptacle and having upper end portions shaped as two first hooks extending upwardly from said receptacle at diametrically opposite locations at the circumference of said recepta-

cle for suspending the same from a rung of a ladder and facing laterally away from one side of said axis; and

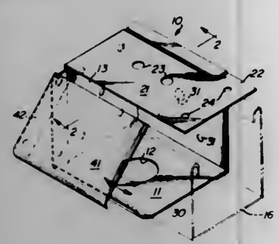
second hook means including a second hook facing laterally away from the opposite side of said axis at a location on said circumference which is intermediate said diametrically opposite locations, for connection with another rung of said ladder so as to stabilize said receptacle thereon, said receptacle being capable of being secured to the rungs of said ladder at an inner side of a ladder leg which faces away from an outer side thereof at which a user of the ladder climbs up and down due to the hooks of said hook means facing away from said axis in mutually opposite lateral directions.

4,071,215

VENETIAN BLIND HEADRAIL BRACKET

Anthony F. Marotto, Philadelphia, Pa., assignor to Marathon Manufacturing Company, Houston, Tex.

Filed Oct. 1, 1976, Ser. No. 728,607
Int. Cl.² B61L *11/08*
U.S. Cl. 248—251 **4 Claims**



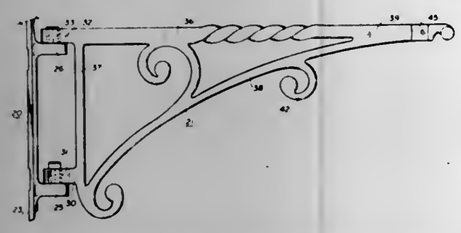
1. A venetian blind headrail bracket comprising a bottom wall for supporting a headrail, a side wall upstanding from said bottom wall, a rear wall upstanding from said bottom wall, a top wall spaced over said bottom wall extending between said side and rear walls, mounting means on at least one of said walls for mounting to a desired surface, an upstanding forward lip on the forward edge of said bottom wall for retaining a supported headrail on said bottom wall, against forward dislodgement from said bottom wall without deliberate raising over said lip, a front cover upstanding from said bottom wall in covering relation with a supported portion of a headrail, and pivot means mounting said front cover for swinging movement out of said covering relation.

4,071,216

WALL BRACKET ASSEMBLY

Ruediger Einhorn, Katonah, N.Y., assignor to Coats & Clarke, Inc., Stamford, Conn.

Filed Aug. 16, 1976, Ser. No. 714,471
Int. Cl.² A47F *5/00*
U.S. Cl. 248—290 **18 Claims**



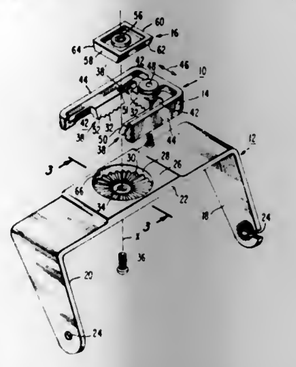
1. A wall bracket assembly comprising a wall plate and a bracket removably held therein, said wall plate comprising a base member having a wall mounting surface, first and second coaxial spaced apart pivot pins extending from said base member, said pins extending parallel to said surface with first ends affixed to said base member and second free ends, the free end of said first pin extending toward said second pin and the free end of said second pin extending away from said first pin, one of said pins being longer than the other of said pins, the longer of said pins having a portion thereof adjacent the first end of said longer pin with a non-circular cross section, said bracket having an article holding arm, and first and second spaced apart aligned projections, said projections having aligned holes with non-circular cross sections of the shape corresponding to the non-circular cross section of said portion of said one pin, said bracket being assembled with said aligned holes pivotally engaging said pins.

4,071,217

RELEASABLE MOUNTING SYSTEM

Robert Michael Kongelka, Washington, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 30, 1976, Ser. No. 728,427
Int. Cl.² B60R *1/04*
U.S. Cl. 248—309 R **7 Claims**



1. A mounting system for releasably securing an article to a support comprising:

a deformable first element for holding said article,

a deformable second element arranged to be secured to said support,

one of said first and second elements having an opening defined by deformable inner surfaces which deform with said one element, said one element includes tang means extending therefrom, and said other element includes wall means in engagement with said tang means,

a wedge member secured to the other of said elements for wedging the one element to the other element at said inner surfaces with said wedge member element wedging said tang means against said wall means,

said first element, in response to a sufficient force, disengaging said tang means from said wall means to permit enlargement of the opening by the wedging action of the wedge member and the latter to pass through the opening, whereby the two elements separate.

4,071,218

CAN MOUNTING CLIP

Richard D. Pecka, 1702 Harding Road, Northfield, Ill. 60093, and Raymond J. Templin, 2805 Henzada, McHenry, Ill. 60050

Filed Feb. 26, 1976, Ser. No. 661,429
Int. Cl.² A47K *1/08*
U.S. Cl. 248—221.4 **5 Claims**

1. A plastic clip for engaging the top chine of a can in hanging relationship when said clip is mounted to an upright support, said clip including

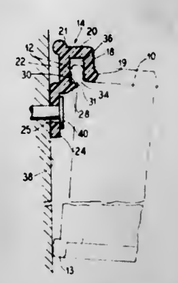
a rear wall,

a top wall,

a front wall spaced from the rear wall by said top wall and displaceable relative to the rear wall, but having memory of its nondisplaced position,

a capture space for the top chine of a can formed by the top, rear and front walls, said capture space having a dimension between the front and rear walls in nondisplaced condition which is substantially the same as the thickness of the top chine, and the capture space having a height between the shoulder and the top wall which is greater than the height of the top chine of a can,

a lip at the bottom of the rear wall extending toward the front wall and defining a mouth normally of smaller dimension than the top chine of a can, said lip having a



shoulder which lies in a plane parallel to the longitudinal axis of the top wall and a face boring in a plane normal to said top wall said shoulder supporting the bottom of a top chine positioned in the capture space, and said face of said shoulder abutting the continuous wall of a can, when positioned therein

a bracket extending from the rear wall,

the top and bottom of said rear wall having beads formed integrally therewith during the molding process, said beads spacing the rear wall from the upright support so a bottom chine of a can contacts the upright support, and

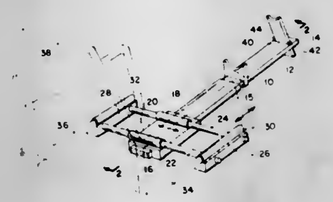
means for mounting the bracket to the front of an upright support such that the top chine clears the lip and is within the capture space, whereupon the memory returns the front wall to its nondisplaced position.

4,071,219

FISHING ROD SUPPORT DEVICE

Reuben Seager, Myerstown, Pa., assignor to Raymond Lee Organization, New York, N.Y.

Filed Dec. 30, 1976, Ser. No. 755,472
Int. Cl.² A47C *7/62*
U.S. Cl. 248—534 **5 Claims**



1. A fishing rod support device, comprising:

an extension,

a reel support member slidingly attached to the extension,

a rod support member passing through and pivotally supported on a distal end of the extension,

the extension slidingly received in a proximal larger member,

said larger member slidingly received in another member, whereby the largest member may move forward and backward in the other member,

the other member depending from a pair of cylindrical supports laterally slidingly supported on a pair of laterally extending rods,

the laterally extending rods mounted to a set of bars at their extremities, and

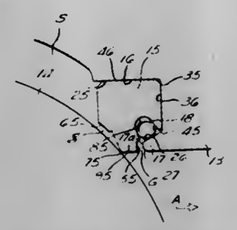
means of hookably dependably supporting the bars from the seat of a folding chair.

4,071,220

BALL VALVE

Tsuyoshi Iino, Nirasaki, Japan, assignor to Kitazawa Shoji Kabushiki Kaisha, Japan

Filed May 7, 1976, Ser. No. 684,311
Claims priority, application Japan, Sept. 25, 1975, 50-115882
Int. Cl.² F16K *5/20*
U.S. Cl. 251—174 **15 Claims**



1. A ball valve comprising an outer casing which consists of a plurality of parts and accommodates therein a movable valve body having a flow path therethrough, a valve operating shaft journaled in said outer casing and arranged to rotate said movable valve body, and annular seal members interposed between said movable valve body and said outer casing and serving as valve seats for said movable body, each of said seal members including an annular groove extending so as to surround said flow path through said movable body, each of said annular grooves forming an annular flexible edge which is urged against a spherical surface of said movable valve body, and an annular expansive resilient member associated with each of said seal members, each of said annular expansive resilient members being spirally wound around itself and forcibly engaged into said annular groove of its associated seal member to exert a pressure through said annular flexible edge upon said movable valve body while urging an outer end surface of its associated seal member against an annular bottom wall of an annular casing groove provided in said outer casing.

4,071,221

ISOLATION VALVE AFFORDING AN ABSOLUTE TIGHTNESS TOWARDS THE EXTERIOR AND BETWEEN THE SEAT AND THE SHUTTING MEMBER

Nicola Di Sciascio, and Michele Vinci, both of Bari, Italy, assignors to Nuovo Pignone S.p.A., Italy

Filed June 9, 1976, Ser. No. 694,355
Claims priority, application Italy, June 10, 1975, 24190/75
Int. Cl.² F16K *31/44*
U.S. Cl. 251—228 **3 Claims**

1. A gate adapted particularly for sealing off large cross sections, comprising

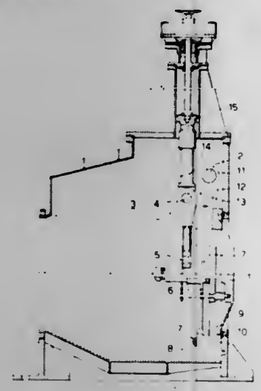
a housing having a valve seat and wedge members spaced about said seat,

a valve disk having a shaft operatively connected to said housing which pivotally connects said disk to said housing between the open and closed positions about an axis of rotation parallel to the plane of said disk,

said disk includes a pressure wheel on the side of said disk facing away from said seat,

said pressure wheel being adapted to rotate about on axis of rotation which is perpendicular to the plane of said disk, and including radially projecting spokes which engage said wedge members after said disk is moved to its closed position against said seat and said wheel is rotated in one direction to produce a pressing force for a tight valve seal, and which disengage from said members when said wheel is rotated in the opposite direction before said disk is moved to its open position away from said seat, and

a device which, by translational motion, rotates said disk between its open and closed positions in one plane and rotates said pressure wheel between its engagement and disengagement positions in a perpendicular plane, wherein said drive includes



an arc shaped guideway connected to said housing,

a rod movably positioned within said guideway,

a ram connected to said rod which itself moves in a translational direction and which moves said rod within said guideway,

a first pin connected to said rod and the outer end of one of said projecting spokes of said wheel for engaging and disengaging said spokes with said wedge members without rotation of said disk when said ram moves said rod in a portion of said guideway,

a link connected at one end to said rod,

a second pin connected at the other end of said link, and

an arm connected to said second pin and said disk, wherein through, said link, second pin and arm, said ram moves said rod in another portion of said guideway to open and close said disk without rotation of said wheel.

4,071,222

LIFTING PLATFORM

Howard Stanley Wright, 436 Devon St. West, New Plymouth, New Zealand

Filed Oct. 22, 1976, Ser. No. 734,889

Claims priority, application New Zealand, Oct. 24, 1975, 179054

Int. Cl.[2] B66F *7/08*

U.S. Cl. 254—8 C **12 Claims**



1. A lifting platform comprising:

a platform;

a base;

a pair of X-linkages supporting said platform above said base, a lower end of a first arm of each of said X-linkages being pivoted to said basethe lower end of the second arm of each of said X-linkages being slidably mounted to said base, the upper end of said second arm being pivoted to said platform;

a pair of swinging links, each having a first end pivotally connected to the upper end of a respective one of said first arms;

a pair of further links, each having a first end pivotally connected to the upper end of said second arm and a second end pivotally connected to a respective one of said swinging links at a point remote from said first end of said swinging link; and

means linking the second ends of said swinging links to said platform, whereby said platform is movable away from said base and said platform remains parallel to a fixed plane during the movement.

4,071,223

FENCES AND NOISE BARRIERS

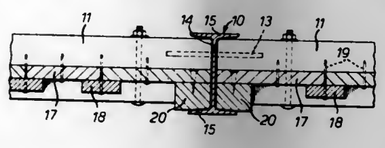
Vincent Demarest, 19 Mill Lane, Benson, Oxfordshire, England

Filed Apr. 26, 1976, Ser. No. 680,482

Claims priority, application United Kingdom, Apr. 26, 1975, 17409/75; Oct. 18, 1975, 42873/75

Int. Cl.[2] E04H *17/00*

U.S. Cl. 256—1 **9 Claims**



1. A barrier including a number of spaced upright posts, with inter-connecting horizontal rails and vertical boards, in which each of the upright posts is an integral rolled steel member of I-section providing grooves in opposite faces directed along the length of the fence, and the ends of the horizontal rails and the edges of adjacent boards, together with further vertical packing elements, are tightly fitted into the said grooves.

4,071,224

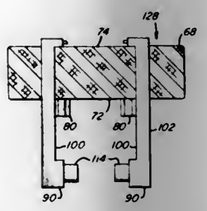
TRAFFIC SAFETY CONTROL MODULE SYSTEM

Herbert Allan Gilbert, 278 McKinley Road, Beaver Falls, Pa. 15010

Filed June 21, 1976, Ser. No. 697,767

Int. Cl.[2] E01F *13/00*

U.S. Cl. 256—64 **16 Claims**



1. A portable barrier system for use on roadways or the like comprising: a plurality of hollow elongated support modules formed of a resinlike material; at least one hollow elongated rail module formed of a resinlike material; first retaining means on one side of said support modules which are selectively cooperable with second retaining means on the other side of said support modules to releasably and captively retain adjacent support modules when said support modules are stacked one upon the other; said support modules including third retaining means adjacent one end portion thereof axially spaced from said first and second retaining means and selectively cooperable with a respective axial end portion of said rail module to releasably and captively retain said one end portion of said rail module; and said rail module including fourth retaining means on one side thereof which are selectively cooperable with said first retaining means to releasably and captively retain said rail module with respect to said support module.

4,071,225

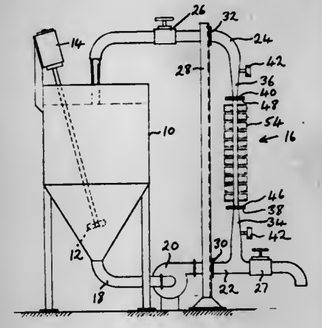
APPARATUS AND PROCESSES FOR THE TREATMENT OF MATERIALS BY ULTRASONIC LONGITUDINAL PRESSURE OSCILLATIONS

Richard A. Holl, St. Catharines, Canada, assignor to Holl Research Corporation, Mission Viejo, Calif.

Filed Mar. 4, 1976, Ser. No. 664,008

Int. Cl.[2] B01F *13/00*

U.S. Cl. 366—114 **24 Claims**



1. Apparatus for the treatment of material by the application thereto of ultrasonic longitudinal pressure oscillations comprising:

an enclosure having an inlet thereto and an outlet therefrom for material to be treated therein, the enclosure having two opposite closely-spaced walls at least one of which is an oscillation-applying wall, the spacing between the inner surfaces of the said walls being between about 0.1 mm and 25 mm;

at least one ultrasonic transducer mounted on the said oscillating-applying wall to apply longitudinal pressure oscillations to material contained within the enclosure interior;

and means for feeding material through the enclosure interior from said inlet to said outlet.

4,071,226

PORTABLE CONCRETE PROPORTIONING MIXER

Charles R. Miller, 2020 Placentia Drive, Hacienda Heights, Calif. 91745

Filed Nov. 16, 1976, Ser. No. 742,515

Int. Cl.[2] B28C *5/34;* B01F *7/08*

U.S. Cl. 366—64 **14 Claims**

1. In a portable proportioning mixer,

a plurality of separate hoppers having discharges at lower ends thereof,

a conveying and mixing trough adapted to receive materials from said hoppers, and

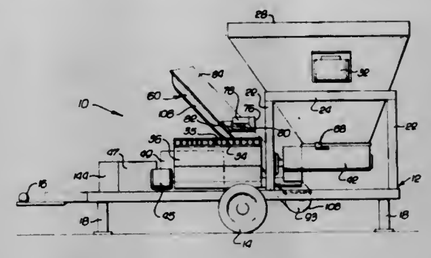
a transporting vehicle for traveling on land and having a frame supporting said hoppers and mixing trough,

the improvement comprising:

said mixing trough being adapted to be carried on said frame in a non-receiving position during transportation,

said mixing trough being pivotally mounted on said vehicle frame to be rotated from said non-receiving position to a receiving position to receive materials from said hoppers, said hoppers having lower ends at different levels relative to the trough in the receiving position,

said mixing trough having a lower end thereof under said hopper discharges in said receiving position,



said mixing trough being generally closed, having a plurality of receiving openings complementary to said hopper discharges in respective register therewith in said receiving position,

said mixing trough having an upper open discharge end, and the lowest level of the vehicle above the land during transportation being dependent upon the lowest hopper lower end.

4,071,227

SMALL MOVABLE HOT DESEAMER

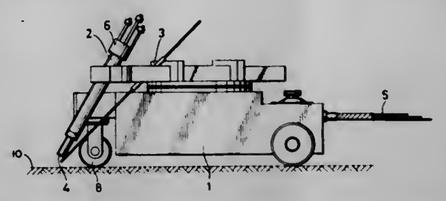
Bridget M. A. McDonald, Nassau, Bahamas, assignor to I. P. U. Limited, Nassau, Bahamas

Filed Nov. 13, 1975, Ser. No. 631,477

Claims priority, application Germany, Nov. 14, 1974, 2453989

Int. Cl.[2] B23K *7/06*

U.S. Cl. 266—51 **5 Claims**



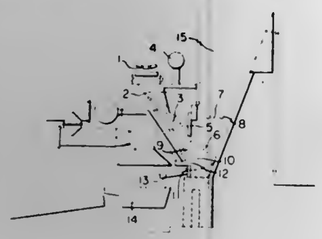
1. A small movable hot deseamer for selective deseaming of defective portions of a workpiece, said hot deseamer comprising a carriage, drive means and wheels rotatably mounted on said carriage for movement of said carriage along said workpiece in a first direction, a nozzle means mounted to said carriage, arms mounted to said carriage and selectively pivotal to a position in which said arms engage said workpiece and lift said carriage therefrom, said arms being mounted to said carriage to pivot about an axis parallel with said first direction whereby upon pivoting of said arms into engagement with said workpiece said deseamer is picked up from said workpiece and moved laterally in a second direction, said second direction being perpendicular to said first direction.

4,071,228

METHOD OF RECOVERING VALUABLE METALS FROM ZINC BEARING MATERIALS AND BLAST FURNACE RELEVANT THERETO

Hiroshi Tokunaga, Tokyo; Yoshikazu Tatehana, and Akira Umekawa, both of Ohmuta, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1976, Ser. No. 710,465
Int. Cl.[2] C22B *19/20*
U.S. Cl. 266—162 **9 Claims**



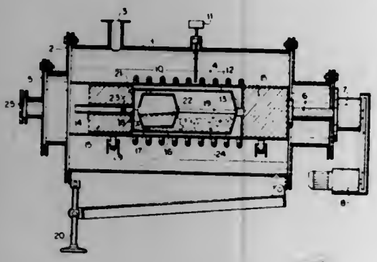
1. A blast furnace for recovering valuable metals from zinc-bearing material, which comprises a V-shaped hearth, tuyeres disposed along said hearth, a tap hole for discharging matte and/or slag, said tap hole being disposed substantially at the lowest point of the hearth, and damper means disposed above said hearth and said tuyeres to provide a space through which the zinc-bearing material can flow into a reaction zone above said hearth, said damper means defining a substantially V-shaped lower edge which is substantially parallel to and vertically upwardly spaced from said hearth and said tuyeres.

4,071,229

VACUUM REVOLVING CYLINDRICAL FURNACE

Hans-Günter Domazer, Essen-Stadtwald, and Horst Eggert, Essen-West, both of Germany, assignors to Th. Goldschmidt AG, Germany

Filed Mar. 25, 1977, Ser. No. 781,106
Claims priority, application Germany, Apr. 10, 1976, 2615767
Int. Cl.[2] C21B *11/06*
U.S. Cl. 266—173 **8 Claims**



1. A vacuum rotatable tubular furnace for metallothermal reactions comprising

an outer housing adapted to be evacuated and having on one end thereof a closable filler cap, and a vacuum-tight passage for a shaft on the other end,

rotatable tube means in said outer housing, said tube means being open on an end thereof facing said filler cap, and having a shaft connected to the other end of said tube and extending through said housing,

a cylindrical reaction chamber mounted in said rotatable tube means symmetrically to the longitudinal axis of the latter, and being detachably connected thereto, said reaction chamber being narrowed on a filling end thereof to a tube having a small lumen and being closed at the other end thereof,

a cylindrical evaporation chamber mounted in the area of the filling end of the reaction chamber and being adapted to contain metal effecting a metallothermal reaction, said evaporation chamber having an opening on an end thereof facing said filler cap,

heating means on said rotatable tube means at least within the area of the cylindrical reaction chamber,

means for evacuating the rotatable furnace,

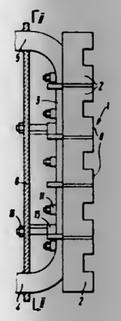
and drive means for rotating said rotatable tube means.

4,071,230

CONTRIVANCE FOR THE PROTECTION OF THE WALLS OF A SHAFT FURNACE FROM THE HEAT EFFECT OF METALLURGICAL PROCESS

Anatoly Vasilievich Zherdev, ulitsa Zhdanova, 9; Grigory Savvich Yakimenko, ulitsa Lenina, 9, kv. 16, both of Kommunarsk Voroshilovgradskoi oblasti; Lev Dmitrievich Gritsuk, ulitsa Kombainovskaya, 13, kv. 3, Kharkov; Anatoly Stepanovicy Gorbik, prospekt Lenina, 24, kv. 31, Kharkov; Evgeny Grigorievich Belkin, ulitsa Svetlaya, 19, kv. 156, Kharkov; Jury Ivanovich Tseluiko, prospekt Lenina, 17, kv. 55, Kharkov; Yakov Izrailievich Gorodetsky, prospekt Gagarina, 25, kv. 32, Kharkov; Vasily Fedorovich Severin, ulitsa Chapaeva, 168v, kv. 4, Kommunarsk Voroshilovgradskoi oblasti, and Alexei Ivanovich Tolochko, Pushkinsky viezd, 5, kv. 7, Kharkov, all of U.S.S.R.

Filed Mar. 23, 1977, Ser. No. 780,267
Int. Cl.[2] C21B *7/10*
U.S. Cl. 266—193 **2 Claims**



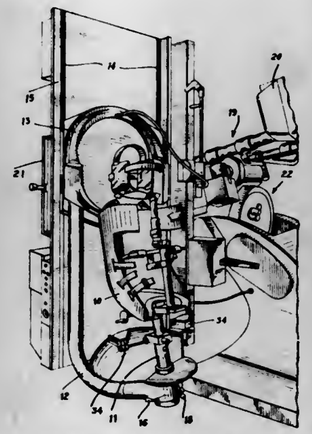
1. A contrivance for the protection of the walls of a shaft furnace from the heat effect of metallurgical process comprising blocks each whereof is more wider in the horizontal direction than long in the vertical one and which constitute all together a metal plate serving to shield the surface of walls facing the interior of the furnace and given a size which is two or three times longer in the vertical direction than wide in the horizontal one, at last two essentially U-shaped tubes for a coolant attached to the furnace wall with its open ends, grooves for said tubes provided in that surface of each of said blocks which faces the furnace wall, a layer of heat conductor provided in said grooves for said tubes, means of fastening each of said blocks to said tubes provided in the intervals between said grooves, fasteners welded to said tubes and holding down same to the furnace wall.

4,071,231

PNEUMOENCEPHALOGRAPHY CHAIR

Pieter Willem Kok, Trumbull, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed June 1, 1976, Ser. No. 691,289
Int. Cl.[2] A61G *13/00*
U.S. Cl. 269—325 **11 Claims**



1. Apparatus for supporting a patient for tomography exposures during pneumoencephalography, comprising:

annular bearing means having a first bearing portion detachably mountable on the surface of a tiltable tomography table, said annular bearing having a central aperture sufficiently larger than a patient's head so that said bearing does not interfere with tomography of a patient's head positioned on the axis of said bearing;

chair means for receiving and supporting a patient substantially immobile within a space defined by an imaginary cone of predetermined size, the patient's head being toward the apex of said cone with the isocenter of the patient's head lying on the axis of said cone;

shaft means supporting said chair means for rotating a patient about the axis of said cone;

means for adjusting the position of said chair means along the axis of said cone for positioning the isocenter of the patient's head at a predetermined point along the axis of said cone; and

means entirely supported by a second bearing portion for supporting said shaft means in a position such that a central ray extends through the isocenter which is the intersection of the axis of rotation of the annular bearing which is perpendicular to the table, the axis of the cone, and the horizontal tomographic rotation axis of a rod-like parallelogram extending through the isocenter.

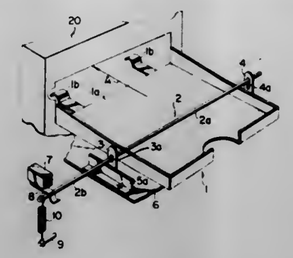
4,071,232

SHEET DETECTOR IN SHEET FEED STATION

Sakae Fujimoto, Chofu, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Sept. 27, 1976, Ser. No. 727,251
Claims priority, application Japan, Sept. 29, 1975, 50-117497
Int. Cl.[2] B65H *1/04, 7/04*
U.S. Cl. 271—8 R **8 Claims**

1. A sheet holding and detecting device adapted for use on a machine operating on sheet material for detecting the presence or absence of a sheet to be fed to a machine comprising a sheet supply means adapted to be mounted adjacent the sheet feeding end of such machine, said supply means being adapted to contain a supply of first sheets, a detecting means for supporting and detecting the presence or absence of a second sheet, means for mounting said detecting means relative to said sheet supply means so as to extend transversely of said supply means for movement between a second sheet presence position and a second sheet absence position, means for biasing said detecting means toward a second sheet absence position whereby the force exerted by said biasing means is equal to less than the gravity influence of one of said second sheets supported on said detecting means, means for limiting the movement of said detecting means when subjected to the bias of said biasing means, and switch means disposed so as to be responsive to the movement of said detecting means to produce a signal when said detecting means is subjected to the weight of a second sheet so as to indicate the presence of a second sheet on said detecting means.

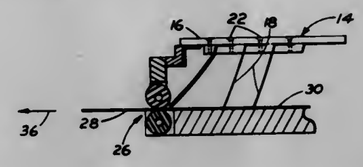


4,071,233

DOCUMENT HOLD-DOWN DEVICE

William David Morton, Jr., Mountain View, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Dec. 6, 1976, Ser. No. 748,088
Int. Cl.[2] B65H *5/36*
U.S. Cl. 271—8 R **2 Claims**



1. In a device for holding a generally flat moving document against a support deck, having a frame member adapted to be positioned above a document plane and oriented to the axis of document travel with a plurality of stiffly resilient hold-down flaps formed from a plastic film, and including means for mounting said hold-down flaps to said frame member at spaced intervals along the axis of document travel comprising a plurality of mounting blocks associated respectively with each of said hold-down flaps, wherein all but an end one of said flaps depends from said frame member by substantially equal lengths, and said end one of said hold-down flaps is longer than the other flaps, the improvement wherein:

said frame member and mounting blocks include mutually aligned screw holes and said mounting blocks are attached to said frame member by screws extending thereinto through said frame member;

a pair of mounting blocks are associated with each of said hold-down flaps, the blocks of each pair having mutually opposed parallel guide surfaces to guide their associated hold-down flap therebetween; and

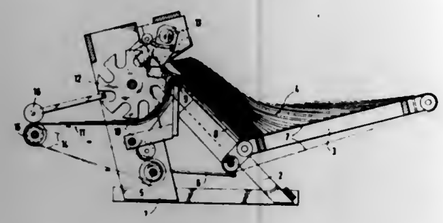
said mounting blocks are being arranged with two end blocks and at least one intermediate block, each of said intermediate blocks including guide surfaces along opposite sides cooperating with immediately adjacent blocks to guide a pair of flaps, one at each side.

4,071,234

HIGH PERFORMANCE SHEET-FEEDER MECHANISM

Gunther Schick, Bielefeld, Germany, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed July 12, 1976, Ser. No. 704,499
Claims priority, application Germany, July 12, 1975, 2531262
Int. Cl.² B65H *3/08, 3/40*
U.S. Cl. 271—11 **6 Claims**



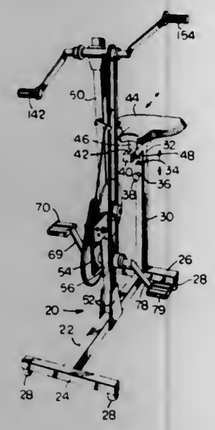
1. A sheet feeder apparatus, comprising receiver means for holding a supply of overlapping flexible sheets which include a foremost sheet having an edge portion that is exposed at one side thereof and a plurality of next-following sheets each having an edge portion which faces the edge portion of the preceding sheet; a plurality of staggered suction-operated sheet withdrawing devices; means for moving successive devices along discrete paths having sections extending along said edge portions of the foremost and next-following sheets of said supply so that a preceding device engages and deflects said edge portion of the foremost sheet away from the edge portion of the immediately following sheet and the oncoming device engages and deflects the thus exposed edge portion of the immediately following sheet, said moving means including discrete supports for said devices and means for articulately coupling said devices to the respective supports so that each device can lie substantially flush against the edge portion of the adjacent sheet during movement along said section of the respective path; and conveyor means including means for engaging the deflected edge portions of successive sheets and for transporting such sheets away from said supply.

4,071,235

ADJUSTABLE RESISTANCE EXERCISING APPARATUS

Lawson J. Zent, 1818 Dean St., Huntington, Ind. 46750

Filed Feb. 2, 1976, Ser. No. 654,609
Int. Cl.² A63B *21/22, 23/04, 69/16*
U.S. Cl. 272—73 **4 Claims**



1. A user actuated exercising apparatus comprising:
means for rotatably supporting a disc;
a braking pad mounted to frictionally engage said disc and provide a braking force to said disc;
manually actuated means for varying the magnitude of said braking force by said pad on said disc;
user operated means for providing rotation of said disc against said variable braking force,
said braking pad being engageable with a first disc side at the disc periphery;
a second braking pad spaced from and oppositely supported to said braking pad and engageable with said second disc side;
said manually actuated means comprising spaced means to vary the spacing between said pads to vary the braking force on said disc;
a first disc plate carrying at one end thereof said braking pad;
a second disc plate carrying at one end thereof said second braking pad; a spring being mounted to resiliently support said second plate relative to said first plate;
said spacing means varying the spacing between said plates relative one another against the force of said spring to vary the braking force applied by said pads to said disc,
said manually actuated means comprises a rotatably mounted manually operated pointer, an elongate threaded member extending through said plates and held against rotation relative to said first and second disc plates; a nut in threaded engagement with said threaded member and operable against one of said plates on rotation relative thereto; a link assembly being attached to said pointer and said nut to rotate said nut upon rotation of said pointer to thereby vary the braking force on said disc.

4,071,236

SWIMMER'S DRAG SUIT

George Oprean, 26 Chili Ave., Scottsville, N.Y. 14546

Filed Apr. 5, 1976, Ser. No. 673,377
Int. Cl.² A63B *69/00*
U.S. Cl. 272—116 **7 Claims**



1. A drag suit for a swimmer training for competition, the suit covering the swimmer's torso only, the suit having as an integral part thereof at least one drag creating pocket on both its front and back sides, the front and back pockets having substantially the same construction, each pocket being secured to the drag suit at its bottom and side edges only and including means for normally holding an upper edge of the pocket away from the suit whereby the pocket operates as a scoop when the swimmer moves through the water.

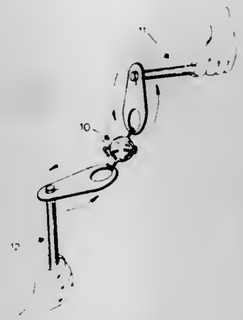
4,071,237

APPARATUS FOR EXERCISING MANUAL COORDINATION

Harold B. Hoogasian, 318 - 26th Ave., San Francisco, Calif. 94121

Filed Mar. 22, 1976, Ser. No. 669,342
Int. Cl.² A63F *9/00*
U.S. Cl. 273—1 R **5 Claims**

1. Apparatus for exercising manual coordination including in combination:
a ball having projections along each of three mutually perpendicular axes on each side of said ball, each projection extending out radially from said ball and then having a hooked portion making a slightly acute nearly right angle with the radial portion, and
a pair of ball manipulating devices, one to be held in each hand at right angles to each other, each said device comprising
a handle, and
a flexible member rotatably secured adjacent one end to one end of said handle and extending at a right angle to the axis of said handle, said flexible member including an opening distant from said one end, said opening being larger in width and in length than the hooked portions of said projections,



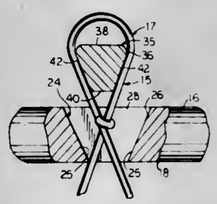
whereby an operator engages a hooked portion with a said flexible member at an edge of said opening while rotating with one hand said flexible member of one said device in a first plane, and rotates the flexible member of the other said device with the other hand in a second plane normal to said first plane and seeks to engage a hooked portion and transfer it from one flexible member to the other and then back again, and so on.

4,071,238

BASKETBALL GOAL ASSEMBLY

James C. Chapman, P.O. Box 559, Chester, Calif. 96020

Filed May 2, 1977, Ser. No. 792,516
Int. Cl.² A63B *63/00*
U.S. Cl. 273—1.5 R **10 Claims**



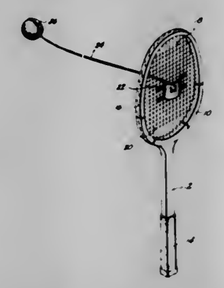
1. A basketball goal for supporting a depending goal net having a plurality of cord loop portions, comprising:
a. a goal ring having an upper surface and a lower surface,
b. said goal ring having a plurality of spaced apart slots extending peripherally around said ring and between said surfaces so as to receive a respective one of the cord loops therein,
c. each said slot including a pair of side walls angularly displaced relative to each other outwardly from said lower surface towards said upper surface so as to provide an enlarged open end,
d. a plurality of locking members dimensioned to simultaneously extend into each one of said slots, each said locking member comprising a body element having oppositely disposed top and bottom ends and spaced apart edges intermediate said ends, said edges being inclined relative to each other, and
e. said inclined edges of said body element being disposed in wedging relationship with the cord loop portions which are interposed between said inclined edges and said side walls so that upon the application of external forces to the goal net said locking members positively retain the goal net secured to said ring by means of the loops.

4,071,239

DEMOUNTABLE PRACTICE DEVICE ATTACHABLE TO THE STRINGS OF A STRINGED RACQUET

Thomas W. Ferguson, 801 S. 75th, Tacoma, Wash. 98408

Filed Apr. 19, 1976, Ser. No. 678,218
Int. Cl.² A63B *61/00*
U.S. Cl. 273—29 A **23 Claims**



1. A demountable practice device attachable to a conventional stringed racquet for practicing swings by striking a tethered ball, comprising:
a flexural anchor means having edge means configured to contact portions of the racquet strings on both string faces of the stringed racquet and be retained thereon solely by such contact;
an elastic tether having first and second ends, and sized to be received through an opening defined by the racquet strings, said first end being attachable to said anchor means and said second end being attachable to a ball which is strikable by the racquet face opposite the anchor means so that when said anchor means is positioned on said racquet strings, said first end is inserted through an opening defined by said racquet strings and attached to said anchor means, said second end is attached to said ball and said ball is struck by said racquet the tensioning caused by the struck ball at the outermost extent of ball travel generates potential energies in both the racquet strings and said anchor means to cause said ball to be returned towards said racquet face.

4,071,240

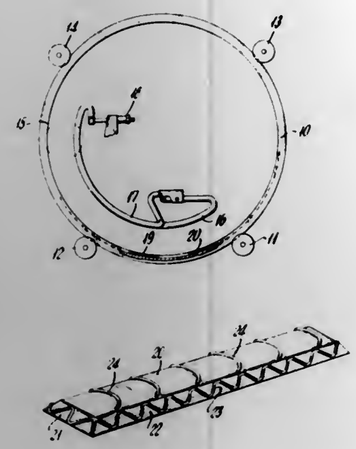
LIFTS FOR BALL ELEVATOR

Thomas M. Camilleri, 277 Avenue W., Brooklyn, N.Y. 11226

Filed Dec. 22, 1975, Ser. No. 642,913
Int. Cl.² A63D *5/02*
U.S. Cl. 273—49 **8 Claims**

4. In a ball elevator wheel for an automatic pinsetting machine the improvement comprising at least one substantially rectangular strip of flexible elastomeric material adhered to the inner circumference of the wheel, the strip covering only a

minor portion of the inner circumference of the ball elevator wheel, the strip being provided with a plurality of projections



which are concave with respect to the direction of rotation of the wheel.

4,071,241

LARGE FOOT BALLS OR SOCCER BALLS

Jose de Jesus Cortes Garcia, Arqueologos No. 57, Col. El Retono, Mexico City, Mexico

Continuation-in-part of Ser. No. 504,045, Sept. 9, 1974, abandoned. This application Nov. 13, 1975, Ser. No. 631,647
Claims priority, application Mexico, Sept. 10, 1973, 146062
Int. Cl.² A63B *43/02*
U.S. Cl. 273—55 B **1 Claim**



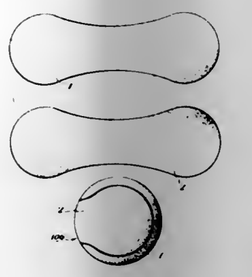
1. A soccer training device, comprising:
a. a soccer ball;
b. harpoon means piercing said soccer ball and secured thereto, said harpoon means having a neck portion passing through the soccer ball, a protruberance at one end of the neck portion inside the soccer ball and a swivel at the other end of the neck portion outside the soccer ball;
c. an elongated belt adapted to be worn around the waist of a player and an elongated tube longitudinally extending along and attached to the belt, the openings of the tube facing toward the front of the player when the belt is worn by the player;
d. cord means passing through said tube and attached at one end to the swivel and at the other end to a handle, said cord means being operable to be manually moved through the tube by means of said handle, whereby the distance between the soccer ball and the player is under the continual control of the player during use.

4,071,242

ELECTRICALLY CONDUCTIVE TENNIS BALL

Lyle David Supran, 18A Blackheath Rise, London S E 13, England

Continuation-in-part of Ser. No. 238,888, March 28, 1972, abandoned. This application Apr. 15, 1974, Ser. No. 460,805
Claims priority, application United Kingdom, Mar. 30, 1971, 8176/71
Int. Cl.² A63B *61/00*
U.S. Cl. 273—61 R **11 Claims**



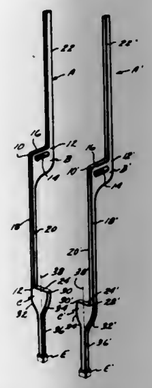
1. A tennis ball comprising suitably shaped panels of electrically conductive cloth bonded to a substantially spherical flexible core by means of a suitable adhesive and the application of heat, said cloth including electrically conductive material substantially uniformly distributed through said cloth from the outer surface of said flexible core to the outer surface of said ball.

4,071,243

STILT STRUCTURE

Lee Fink, 16591 Peale Lane, Huntington Beach, Calif. 92649

Filed June 30, 1976, Ser. No. 701,285
Int. Cl.² A63B *25/00*
U.S. Cl. 272—70.1 **8 Claims**



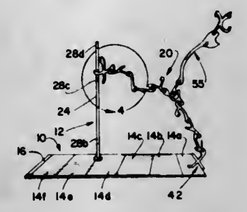
1. A pair of stilts that permit the user thereof to walk over a ground surface on said stilts, with said stilts being in either a first or a second position, with each of said stilts including:
a. an elongate handle that has a horizontally positionable upper edge and first and second portions;
b. a first elongate member having a second end secured to said handle, said member being vertically disposed when said upper edge is horizontally positioned, with said first elongate member having a longitudinally extending side and a first end;
c. a second elongate member that extends outwardly from said second end portion and is upwardly disposed when said upper edge is horizontally positioned;
d. A step secured to said first end of said first member, said step defining an elongate edge surface on which a foot of a user may rest, said edge surface being disposed perpendicular relative to said longitudinal side of said first member and to said handle; and
e. a third elongate member that extends outwardly from said step and is substantially centered relative to said edge surface, with said third member being downwardly positioned when said upper edge of said handle is horizontally positioned and said second member is vertically positioned, with said pair of stilts being capable of supporting said user when said pair of stilts are in either the first or second positions, with said pair of stilts being in a first position when they are laterally spaced to have said steps project towards one another and said second members extend upwardly to the rear of the shoulders of said user, and which stilts occupy said second position when the positions of said stilts are reversed from that position which they are occupied in said first position when each stilt is rotated one hundred and eighty degrees, with said steps in said second position projecting towards one another and said second members are disposed forwardly of the shoulders of said user.

4,071,244

SUSPENSION GAME

Marvin David Richards, 1109 E. Date, Brea, Calif. 92621

Filed Apr. 21, 1977, Ser. No. 789,572
Int. Cl.² A63F *3/00*
U.S. Cl. 273—275 **14 Claims**



1. A suspension game comprising:
at least one game board having playing zones indicated thereon;
a plurality of building block elements arranged to be interconnected to each other and to said board to form a bridge-like suspension structure;
interconnecting means formed on the ends of said building-block elements;
a ballast block arranged to be connected to any one of said building-block elements to provide structural support to said suspension structure; and
a height-metering means to be located on said game board to indicate height of said suspension structure during game play.

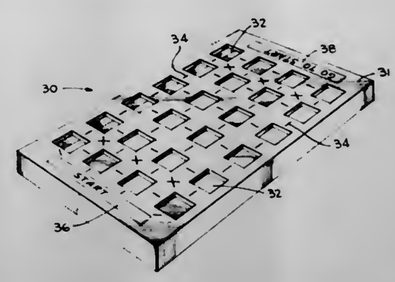
4,071,245

BOARD GAME

Robert H. Kendrick, 5007 W. 67th Terrace, Shawnee Mission, Kans. 66208

Filed Feb. 14, 1977, Ser. No. 768,188
Int. Cl.² A63F *3/00*
U.S. Cl. 273—243 GA **10 Claims**

1. A game comprising a plurality of generally cubical game pieces each having at least three different indicia on separate surfaces thereof, a three-dimensional game board having a playing surface and a plurality of recesses on the playing surface, each recess adapted to receive a game piece such that at least one surface of the game piece is visible, said game board further including indicia thereon for indicating a path between adjacent recesses, a plurality of movement pieces each having an indicium thereon which corresponds to one of the indicia on



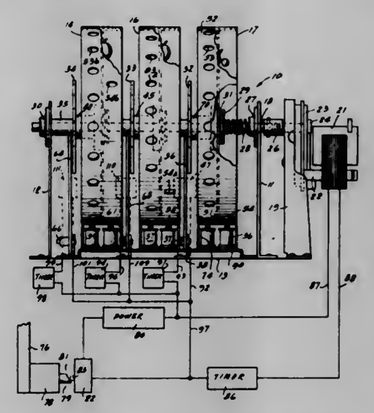
the game pieces, and chance means for determining movement of the movement pieces.

4,071,246

MAGNETIC REEL READING DEVICE

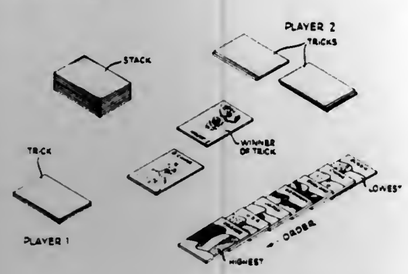
Donald E. Hooker, Wilmette, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Aug. 18, 1976, Ser. No. 715,525
Int. Cl.² A63F *5/04*
U.S. Cl. 273—143 R **7 Claims**



1. Means for detecting the position of a reel having a portion of magnetic material in an outer cylindrical rim portion with a first plurality of aligned openings formed in said magnetic material and circumferentially spaced about the rim portion, comprising, a first magnetic detector mounted adjacent said openings in said magnetic material such that an output pulse is produced each time an opening passes said detector, a counting means receiving the output of said first magnetic detector, an indexing opening formed in the magnetic material in said reel offset from said first plurality of openings, a second magnetic detector mounted adjacent said reel, an indexing pulse produced each time said indexing opening passes said second magnetic detector, the output of said second magnetic detector being connected to a reset terminal of said counting means, and said cylindrical rim being of magnetic material and said first plurality of openings and said indexing opening being formed in said rim.

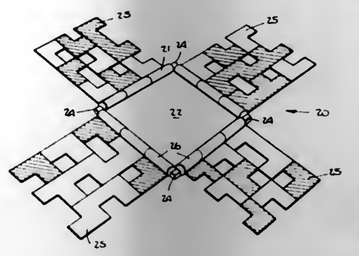
4,071,247
CARD GAME
Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 26, 1977, Ser. No. 762,408
Int. Cl.² A63F 1/00
U.S. Cl. 273—308 **7 Claims**



1. A playing card game for two or more players comprising:
a deck of playing cards, each card having playing indicia on a playing face and a non-playing decorative design on an opposite surface,
a plurality of flag cards, each with indicia on said playing face depicting the flag of a particular one of a plurality of different countries of the world,
a set of general cards for each flag card, each general card in each set having indicia on said playing face having a picture of a general officer of the armed forces of the respective country in uniform, plus a number thereon indicating the order of rank of each general in the set of general cards, and
at least one stop card having indicia on the playing face thereof calling for the stoppage of the procedure of discarding and selection of additional cards from a stack of said cards after a particular number of flag cards have been played, whereby,
said players, having initially dealt to them as their respective hands, a number of cards equal to the number of general cards in each set, and in rotation each player placing face up on a playing surface a card from his hand and thereafter picking another card from a face down stack comprised of the remaining cards not dealt out to the players initially, said rotation continuing until all or a selected number of flag cards as designated by a stop card have been played, the order of face up placement of said flag cards from the players' hands determining the order of strength or trump of the flag cards, and subsequent to the placement of the flag cards each player in rotation playing a general card from his hand, a general card of the highest order flag card winning each trick which comprises a card of each player as played from his hand, and the number on general cards of the same flag card determining the winner of a trick when two or more general cards of the highest order flag card remaining to be played are played in a trick, a winner of the card game requiring the winning of a selected number of tricks by a player.

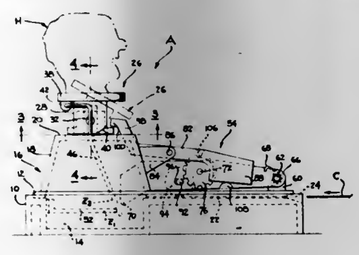
4,071,248
PUZZLE APPARATUS
Carl E. High, 110 Sullivan St., New York, N.Y. 10012
Filed Nov. 8, 1976, Ser. No. 739,795
Int. Cl.² A63F 9/08
U.S. Cl. 273—155 **10 Claims**

1. Puzzle apparatus comprising a frame defining a substantially square base playing area, said frame including a plurality of axle members, one each axially disposed along a respective side of said area, a plurality of socket members joining adjacent ends of said axle members to define the corners of said area, a plurality of strip members each having a mounting hub at one end thereof pivotally attached at said hub to a respective one of said axle members in side-by-side relation to other strip members to provide a corresponding number of strips on each axle member, said strips being adapted to be interleaved with one another to cover said area in overlying relationship to provide a preselected solution sequence determined by a particular



interleaved pattern, said hub of each strip member being adapted for relative pivotal and longitudinal movement of said strip members with respect to said axle members when said strip members are interleaved in said overlying relationship to permit said interleaved strip members to lie flat against one other in said overlying relationship.

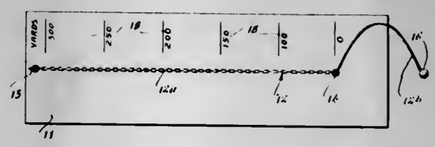
4,071,249
DOLL HEAD HAVING TWO RANDOMLY SELECTED MOVEMENTS
Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316
Filed Feb. 7, 1977, Ser. No. 765,928
Int. Cl.² A63F 9/18
U.S. Cl. 273—161 **11 Claims**



1. A random decision making device capable of providing a positive and a negative response on a random basis, said device comprising:
a. a support means capable of a first pivotal movement about a first generally transversely extending axis representative of a positive response and of a second pivotal movement about a second generally vertical axis representative of a negative response,
b. a doll's head carried by and being movable with said support means to signify the positive or negative response,
c. a separate actuating element used by a player of the device for operatively bearing against said support means at a point offset from said first axis and at a point offset from said second axis tending to bias said support means in both said first and second pivotal movements, but said support means tending to undergo only one of said movements in response to said bias if said support means is free to undergo either of said movements,
d. a latch intermittently engageable with said support means to permit said one of said movements when not engaging said support means and to permit only the other of said movements when engaging said support means,

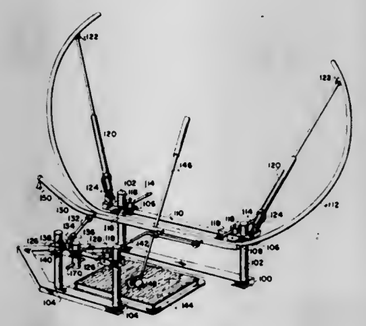
e. rotatable camming means operatively associated with said latch and having portions thereon which bias said latch out of engagement with said support means when said camming means is rotated to certain positions and permit said latch to be operatively engaged with said support means when rotated to other positions to thereby control the selection of the first or second movements, and
f. random selection means operatively associated with said camming means and being located to cause random rotation of said camming means through the action of said separate actuating element.

4,071,250
GOLF PRACTICE DRIVE ANALYZER
Ray L. Vroome, 43 Lawson Drive, Madison, Conn. 06443
Filed Mar. 24, 1976, Ser. No. 669,810
Int. Cl.² A63B 69/36
U.S. Cl. 273—185 C **4 Claims**



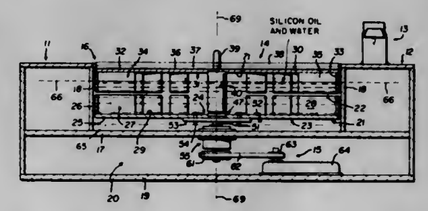
1. A golf ball driving practice device comprising
a. a practice mat having a first end and an opposite second end so that the mat may be disposed in the direction of the intended flight of the practice golf ball that is disposed adjacent the opposite second end;
b. a tether consisting of a first elongated flexible portion composed of uniformly distributed material heavy enough to gradually retard and bring to rest the practice golf ball when driven from a practice tee located adjacent the second end of the mat toward the first end of the mat and enable a substantial portion of the first portion of the tether to repose on the mat on termination of the flight; and
c. a second elongated flexible portion composed of a lightweight cord connecting the practice golf ball to one end of the first portion of the tether whereby the practice golf ball may be teed at a safe distance from the end of the first portion of the tether and driven into a brief substantially unrestricted flight pattern before being gradually retarded by said uniformly heavy first portion.

4,071,251
GOLF SWING TRAINING DEVICE
John Beckish, 228 W. Mitchell St., Milwaukee, Wis. 53204
Filed July 26, 1976, Ser. No. 708,992
Int. Cl.² A63B 69/36
U.S. Cl. 273—186 R **8 Claims**



1. A golf Swing training device comprising:
a. a base having a first pair and second pair of posts mounted thereon;
b. a first arcuate guide rail;
c. means for adjusting the elevation of the first guide rail said first guide rail elevation adjusting means being movably attached to each of said first pair of posts;
d. means for adjusting said first guide rail horizontally, said first guide rail horizontal adjusting means being pivotably attached to said first guide rail on one end, and movably attached to said first guide rail elevation adjusting means on the other end;
e. means for adjusting the angle of inclination of said first guide rail, said first guide rail angular adjustment means being pivotably attached to the elevation adjustment means at one end and pivotably attached to the first guide rail on the other;
f. a second arcuate guide rail positioned in proximity with said first guide rail and adjusted to provide a passageway between the two rails, slightly larger than the diameter of the shaft of a golf club.
g. means for adjusting the elevation of said second guide rail, said second guide rail elevation adjusting means being movably attached to said second pair of posts;
h. means for adjusting said second guide rail horizontally, said second guide rail horizontal adjustment means being pivotably attached to said second guide rail on one end and springingly attached to said second guide rail elevation adjusting means on the other end so that the second guide rail will swing away from the first guide rail in response to the impact of the shaft of a golf club.

4,071,252
FLUIDICALLY DRIVEN TURNTABLE
David M. Gillespie, 451 E. Fourteen Mile Road, Birmingham, Mich. 48009
Filed Sept. 8, 1976, Ser. No. 721,626
Int. Cl.² G11D 3/60
U.S. Cl. 274—39 R **18 Claims**



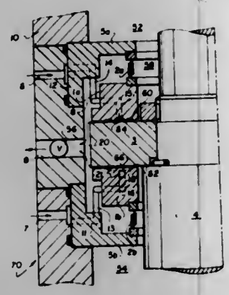
18. A fluidically driven turntable assembly comprising:
a stationary tank;
a generally symmetrical member disposed at least partially within said tank for rotation therein in a generally horizontal plane, the lower side of said member having a plurality of spaced vane elements and the upper side forming a turntable platter means for supportively positioning said member centrally in said tank for rotation in a horizontal plane;
means for positively rotatably circulating said liquid means about said stationary tank such that said rotatably circulating liquid means at least partially floats and rotatably drives said member for effectively isolating said member from mechanical vibration while substantially reducing the effect of fluctuations in drive speed by said member and said rotating liquid means combining to achieve a flywheel effect.

4,071,253

GAS-SEALED SHAFT PACKING

Manfred Heinen, and Joachim Kotzur, both of Oberhausen, Germany, assignors to Gutehoffnungshutte Sterkrade A. G., Germany

Filed Mar. 11, 1977, Ser. No. 776,869
Claims priority, application Germany, Mar. 11, 1976, 2610045
Int. Cl.² F16J *15/40*
U.S. Cl. 277—3 **6 Claims**



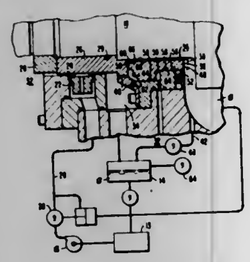
1. A gas-sealed shaft packing, comprising a rotary sealing ring adapted to be fixed to the shaft for rotation therewith, and having first and second movable ring seal surfaces on respective ends thereof, first and second fixed sealing rings having respective first and second fixed ring surfaces opposed to respective ones of said rotary sealing ring first and second ring seal surfaces and spaced away from said surfaces to define respective first and second sealing gaps therebetween, resilient means biasing said first and second fixed rings toward said rotary seal ring, separate first and second sealing gas feed conduits connected to each of said first and second fixed sealing rings and including a conduit portion extending through respective first and second fixed sealing rings and terminating in the respective first and second sealing gaps.

4,071,254

STATIC SEALING MECHANISM FOR A COMPRESSOR

Albert A. Raimondi; Howard N. Kaufman, both of Monroeville, Pa., and Norman J. Wood, San Jose, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1976, Ser. No. 736,803
Int. Cl.² F16J *15/34*
U.S. Cl. 277—3 **7 Claims**



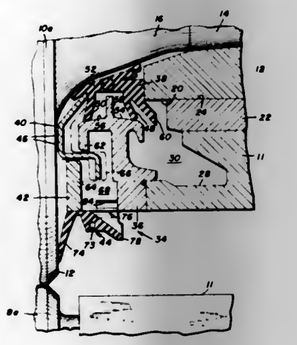
1. A machine containing a sealed fluid comprising:
a non-rotatable, fluid-tight casing which envelops said sealed fluid;
a rotatable shaft extending through said casing;
a dynamic sealing means for preventing sealed fluid leakage from the casing along said shaft through a clearance between said shaft and said casing during shaft rotation, said dynamic sealing means having an operative sealing capability which is selectively actuatable and is independent of shaft rotation;
a static sealing apparatus including an axially displaceable member which is selectively displaceable across said clearance into and out of contact with a seating member, said seating member being rotatable with and extending substantially radially from said shaft; and
controlling means for displacing said displaceable member by providing selected fluid pressures to a portion of the clearance, said portion being defined by said dynamic sealing means and said displaceable member, said pressures being selected to interact with an opposing force to move said displaceable member between positions where it is separated from and where it is in contact with said seating member, the fluid providing the separating pressure comprising said sealed fluid.

4,071,255

FLEXIBLE SEAL ELEMENT WITH REINFORCED DRAIN LABYRINTH

Lowell S. Salter, Jr., Shrewsbury, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Oct. 12, 1976, Ser. No. 731,630
Int. Cl.² F16J *15/44*
U.S. Cl. 277—57 **5 Claims**



1. In a rolling mill wherein the neck of a roll is rotatably supported in a lubricated bearing contained in a bearing chock, with a seal assembly located between the roll end face and the bearing chock for retaining lubricant in the bearing while excluding contaminants such as cooling water, dirt and mill scale therefrom, the said seal assembly including a stationary outer seal ring spaced from the roll end face with a drainage port therein, the improvement comprising: a flexible seal element having a circular body portion adapted to tightly surround the outer seal ring, a circular first lip integral with and extending outwardly away from said body portion at an angle relative to the axis thereof, said lip being arranged to sealing contact the roll end face, a drain opening in said body portion arranged for alignment with said drainage port, a second lip on said body portion surrounding said drain opening, and a baffle member attached to said body portion, said baffle member cooperating in radially spaced relationship with said second lip to provide a sealing labyrinth at said drain opening, said baffle member being sufficiently stiff to also reinforce said body portion against distortion at said drain opening.

4,071,256

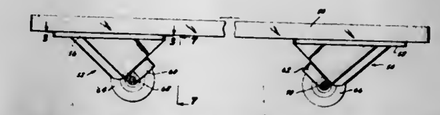
TRUCK FOR SKATEBOARD OR THE LIKE

Steven Donald Kimmell, Granada Hills, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 5, 1976, Ser. No. 739,079
Int. Cl.² B62B *11/00*
U.S. Cl. 280—11.28 **14 Claims**

1. In a truck for use with a skateboard or the like, the combination comprising:

a generally cup-shaped housing having an open end and a bottom;
mounting means secured to said housing adjacent said open end, said mounting means extending in a plane transverse to the axis of said housing,
trunnion means rotatably secured to the bottom of said housing for rotation on said axis;



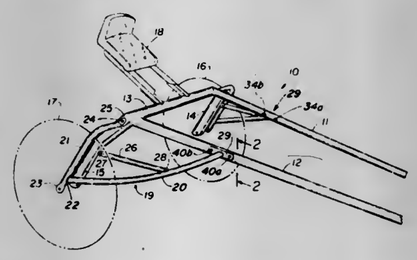
cushion means within said housing, said cushion means being circumferentially positioned about said axis; and
other means within said housing coupled for rotation with said trunnion means, said other means having portions thereof engaging said cushion means whereby to apply circumferential compressive forces to parts of said cushion means upon pivoting of said trunnion means.

4,071,257

SULKY

Bernard Discount, c/o United Stellar Industries, Inc., 131 Sunnyside Blvd., Plainview, N.Y. 11803

Filed Sept. 30, 1976, Ser. No. 728,213
Int. Cl.² B62C *1/00*
U.S. Cl. 280—63 **7 Claims**



1. A sulky for carrying a rider behind a horse comprising a frame, a pair of wheels, a fork assembly for each wheel coupling the wheel to the frame, and a pair of substantially horizontal rails connected both to the frame and respective fork assemblies and adapted to embrace the flanks of the horse, the connection between the respective rails and fork assemblies including a frictionally loaded lost-motion coupling having means to stop the relative motion at predetermined distances to define the limits of the frictionally loaded lost motion.

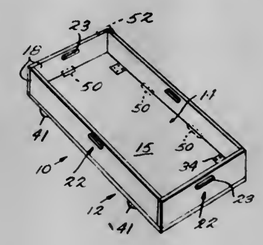
4,071,258

MOBILE UNDER-BED STORAGE CONTAINER

Mabel D. Wallace, 605 Alabama St., Columbus, Miss. 39701

Filed Aug. 17, 1976, Ser. No. 715,205
Int. Cl.² B62D *53/06*
U.S. Cl. 280—79.2 **8 Claims**

1. A mobile storage container readily disposable under the frame of a bed supported off the ground by legs, said container comprising:
a box-like body structure having a bottom wall with upper and lower surfaces, a plurality of side walls, and an open top, the upper surface of said bottom wall adapted to support articles to be stored thereon; means for ventilating said body structure and for providing grasping thereof, said means including means defining at least one hand-hold cutout in a side wall; a plurality of caster assemblies having wheels extending downwardly from the lower surface of said bottom wall for supporting said body structure for rolling movement; means for mounting each of said caster assemblies in a recessed position with respect to said body bottom wall, and inwardly of the side walls of said body, including a metal plate member having one portion thereof substantially flush with the upper surface of said bottom wall, and having another vertically and longitudinally displaced portion thereof mounted on the lower surface of said body bottom wall; a flexible material



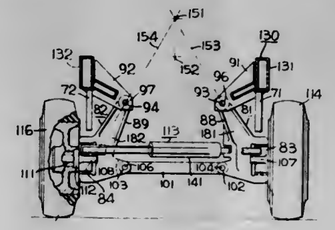
cover for said body structure to cover the open top thereof and to fit and extend over said side walls of said body structure; means defining at least one opening in said flexible cover corresponding to the hand-hold cutout in said at least one side wall of said body structure; and the height D of the container from the bottom of said caster assemblies to the top of said side walls being less than the height of the bed frame supported off the ground by legs.

4,071,259

VEHICLE WHEEL SUSPENSION SYSTEM

David A. Ernest, Park Forest, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 27, 1976, Ser. No. 690,541
Int. Cl.² B60G *1/00*
U.S. Cl. 280—95 R **10 Claims**



1. A vehicle comprising:
a rigid longitudinally extending frame,
a first pair of laterally spaced ground engaging support wheels for said frame,
mounting means rotatably connecting said first pair of wheels to one longitudinal end of said frame at laterally opposite sides thereof, said mounting means preventing relative vertical displacement between said first pair of wheels and said frame,
a pair of axle structures disposed at laterally opposite sides of the other end of said frame and having upper portions pivotally connected directly to said frame on a pair of laterally spaced longitudinal axes,
a second pair of laterally spaced ground engaging wheels rotatably mounted, respectively, on the laterally outer portions of said axle structures for rotation about horizontal axes, said second pair of wheels being held against vertical displacement relative to said axle structures, and
a transversely extending link pivotally connected at its opposite ends to the laterally inner portions of said axle struc-

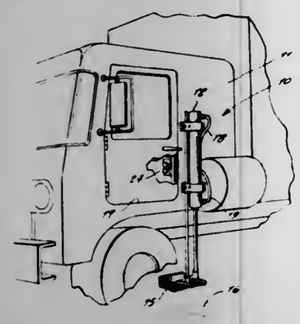
tures, respectively, on a pair of laterally spaced pivot centers disposed below said pair of longitudinal axes.

4,071,260

EASY CAB ENTRY AND EXIT

James A. Marshall, Sr., 106-17 Corona Ave., Corona, N.Y. 11368

Filed Oct. 5, 1976, Ser. No. 729,655
Int. Cl.² B60R *3/02*
U.S. Cl. 280—166 **2 Claims**



1. An easy cab entry and exit device comprising in combination, a cab for an automotive truck, and an accessory mounted outside said cab said accessory including a stationary cylinder, a vertically slidable piston inside said cylinder, a piston rod out of a lower end of said cylinder being affixed to a foot plate, power means for moving said piston including a pump driven by an electric motor in circuit with a battery of said truck and a switch unit inside said cab, wherein a rod parallel to said piston rod is affixed to said foot step, said rod being slidable in a pipe stationarily positioned alongside said cylinder.

4,071,261

LOCK BAR FOR CAMBERING VEHICLE

Frank J. Winchell, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1976, Ser. No. 728,723
Int. Cl.² B62K *5/02*
U.S. Cl. 280—220 **4 Claims**



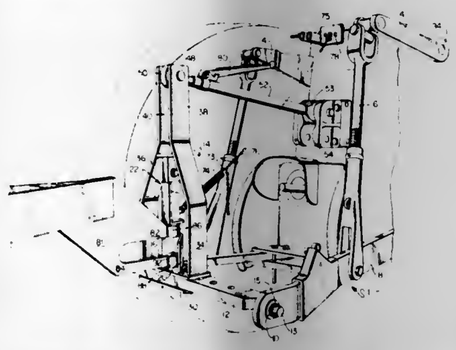
1. A three point contact cambering vehicle having a longitudinally extending roll axis comprising a steering frame, an elongated steering shaft mounted for turning movement in said steering frame, a steerable front contact means operatively connected to one end of said steering shaft for engagement with a support surface, a manual steering device operatively connected to the other end of said steering shaft, said steering frame further comprising a pair of elongated trailing arms extending rearwardly from said steering frame, laterally spaced rear contact means operatively connected to end portions of said trailing arms for engagement with the support surface, foot support means for an operator of the vehicle mounted on each of said trailing arms adjacent to each of said rear contact means, pivot means swingably mounting said trailing arms to said steering frame on an axis extending laterally thereof to permit said rear contact means to swing in separate planes allowing the operator to roll said vehicle with respect to said roll axis, a cambering device interconnecting said trailing arms so as to cause the latter to move through equal amounts in opposite directions so that the rear contact means camber by an amount equal to vehicle roll, and a lock bar pivotally connected adjacent one end thereof to one of said trailing arms and having a portion located adjacent the other end thereof that is normally maintained adjacent said one of said arms and is movable along an arc into engagement with the other of said trailing arms for preventing relative movement thereof.

4,071,262

TRAILER HITCH APPARATUS WITH LOCKING MEANS

Horace D. Griffin, Jr., 7704 Whaleyville Blvd., Suffolk, Va. 23438

Filed Dec. 13, 1976, Ser. No. 750,120
Int. Cl.² B60D *1/04*
U.S. Cl. 280—479 A **7 Claims**



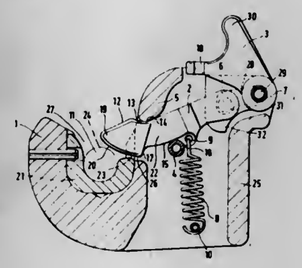
1. A trailer hitch apparatus for connecting a trailer tongue to a tractor, comprising:
a hitch assembly coupled with said tractor;
said hitch assembly including a connecting pin adapted to fit into an aperture at the forward end of the trailer tongue;
power means connected with said hitch assembly;
said power means being operative to selectively lower said hitch assembly to position said connecting pin beneath the level of said trailer tongue;
said power means being operative to selectively raise said hitch assembly to position said connecting pin within said trailer tongue aperture;
said hitch assembly including a movable locking device having a locking arm;
said locking device being moved to a release position when said hitch assembly is lowered;
said locking device being moved to an operative position after said hitch assembly is raised; and
said locking arm being engaged against the top of said trailer tongue when said locking device is in its operative position to thus retain said trailer tongue coupled with said hitch assembly while said connecting pin is disposed within said trailer tongue aperture;
said locking device including a biasing spring normally urging said locking arm to a position where it is axially aligned with and disposed above said connecting pin;
said locking device further including means pivotally mounting said locking arm, a lug projecting from said locking arm and coupled to a control rod, and said biasing spring being operative to normally urge said control rod and said lug to a position which resists pivoting of said locking arm.

4,071,263

COUPLING HOOK FOR A THREE-POINT CONNECTION ON A TRACTOR

Dieter Kunze, Clarendon Hills, Ill., assignor to Jean Walterscheid GmbH, Lohmar, Rhineland, Germany

Filed Mar. 29, 1977, Ser. No. 782,569
Claims priority, application Germany, Apr. 17, 1976, 2617021
Int. Cl.² B60D *1/10*
U.S. Cl. 280—508 **5 Claims**



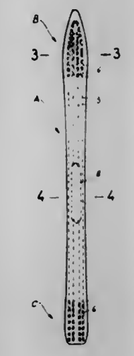
1. A coupling hook for a guide member of a three-point attachment of a tractor comprising a hook member having a hook opening to receive a coupling pin on an implement and the like, said hook member having a pocket therein and there being a passage between said pocket and said hook opening, there being a slot in said pocket and a pivot element slidably received within said slot, an operating lever pivotally mounted on said pivot element and said pivot element being slidable in said slot when said operating lever is pivoted to a predetermined angle, a latch pivotally connected to said operating lever and having one end extending through said passage towards said hook opening, means defining a guide surface within said pocket and said latch having a first supporting surface pivotable and slidable on said guide surface, said latch having a second supporting surface engageable with an edge of said passage and said one end of said latch having an unlocking surface and a locking surface such that a coupling pin acting upon said latch unlocking surface during the coupling operation will slide said latch upon said guide surface into said pocket and when a coupling pin is locked within said hook opening said coupling pin acts upon said latch locking surface to urge said latch second supporting surface against said passage edge to produce a moment acting upon said latch and operating lever urging said latch into said hook opening.

4,071,264

SKI AND METHOD OF MAKING SAME

Maurice Francois Legrand, Voiron, and Gerard Cholat-Serpoud, Sillans, both of France, assignors to Skis Rossignol S.A. Club Rossignol S.A., Voiron, France

Filed June 18, 1976, Ser. No. 697,612
Claims priority, application France, June 20, 1975, 75 20180; Dec. 3, 1975, 75 37693; Dec. 3, 1975, 75 37695; Apr. 8, 1976, 76 11270
Int. Cl.² A63C *5/00*
U.S. Cl. 280—610 **12 Claims**



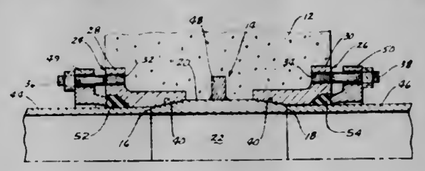
1. A ski comprising:
a protective upper plate;
a lower sliding plate spaced from said upper plate;
at least one layer of transversely spaced longitudinally extending steel reinforcing wires lying between said plates;
an elongated core of synthetic-resin material having front and rear regions, said core being disposed between said plates and surrounding said wires, said wires being in contact with and fixed to the synthetic resin of the core without play over the length of the ski except at front and rear regions thereof; and
elastic means interposed between said core and surrounding each of said wires at said regions for preventing contact between said synthetic resin of the core and said wires at said regions, while permitting relative displacement between said wires and the synthetic resin at said regions.

4,071,265

THREADED MECHANICAL JOINT WALL SLEEVE

Thomas J. Wallace, 4909 N. 104th St., Omaha, Nebr. 68134

Filed Sept. 24, 1975, Ser. No. 616,435
Int. Cl.² F16L *5/02*
U.S. Cl. 285—158 **3 Claims**



1. A threaded mechanical joint wall sleeve for use in a concrete wall member, comprising,
a cylindrical member having opposite ends and inside and outside surfaces, said cylindrical member being adapted to be substantially centrally positioned in said wall member,
a pair of end members threadably secured to the opposite ends of said cylindrical member and extending outwardly therefrom, said end members having flange portions at their outer end portions which are substantially flush with said wall member, said cylindrical member having a

length substantially less than the thickness of said wall member,

each of said end members adapted to receive a sealing O-ring therein which is adapted to sealably embrace a pipe member extending therethrough,

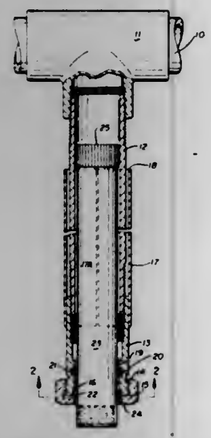
a retainer operatively secured to each of said flanges for maintaining said O-rings in said sealing relationship.

4,071,266

ADJUSTABLE DROP NIPPLE

George S. Mountford, Chippewa Lake, Ohio, assignor to A-T-O Inc., Willoughby, Ohio

Filed Nov. 1, 1976, Ser. No. 737,499
Int. Cl.² F16L *27/12*
U.S. Cl. 285—14 **10 Claims**



1. An adjustable drop nipple for a fire extinguishing sprinkler system to connect a sprinkler at the underside of a room ceiling with a nipple in water distributing piping above the room ceiling, said adjustable drop nipple comprising a sealing coupling having one end engaging said nipple, an elongated sleeve on the exterior of said sealing coupling extending toward said distributing piping and partially overlying said nipple, a tube telescopically arranged in said sealing coupling and nipple and extending outwardly of the other end of said sealing coupling, a tapered surface formed in said sealing coupling with the largest diameter of said tapered surface being adjacent said other end thereof, a rotatable lock nut on said sealing coupling through which said tube extends and enclosing a split ring movable toward and away from said tapered surface upon rotation of said rotatable lock nut, said split ring arranged for wedging action between said tube and said tapered surface of said coupling and resilient seal means in said sealing coupling engaging said tube and spaced with respect to said tapered surface and said split ring.

4,071,267

SHROUDED PIPE WALL CASTING FOR USE WITH SPLIT-CLAMP COUPLINGS

Samuel H. Davis, 111 Forest Drive, Jericho, N.Y. 11753

Filed Apr. 27, 1976, Ser. No. 680,740
Int. Cl.² F16L *3/00*
U.S. Cl. 285—64 **8 Claims**

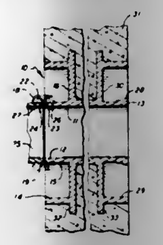
1. A pipe fitting adapted for use as a wall casting in a poured concrete wall having a predetermined thickness, the pipe fitting comprising:

a cylindrical pipe barrel having a first end and a second end, the first end being adapted to be connected to another pipe end by a split clamp type of coupling, and the length of the pipe barrel between the first and second ends being equal to the predetermined thickness of a poured concrete wall in which the fitting is intended to be installed,

an annular shroud surrounding the first end in radially spaced relation to the outer surface of the pipe barrel,

a circumferential continuous blank flange extending radially from the periphery of the shroud at a location spaced axially inward from said first end to serve as a water stop when the fitting is installed in a concrete wall;

a circumferential wall connecting the shroud to the pipe barrel at a location spaced from the first and second ends,



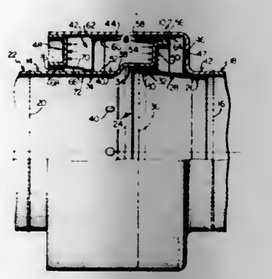
the shroud terminating at the circumferential wall so that at least a portion of the pipe barrel between the circumferential wall and the second end is unshrouded, and the shroud extending axially from the circumferential wall toward the first end to terminate in the plane of said first end to form with said circumferential wall an open well having sufficient space to provide access for mounting a split clamp coupling on said first end after the fitting has been installed on such a poured concrete wall with the shroud and the first end terminating flush with one side of the wall.

4,071,268

PRESSURE COMPENSATED SLIDE JOINT

Horace P. Halling, Laurel, and Bernard J. Sadoff, Jr., Rockville, both of Md., assignors to Pressure Science Incorporated, Beltsville, Md.

Filed May 28, 1976, Ser. No. 691,157
Int. Cl.² F16L *17/00, 27/04*
U.S. Cl. 285—95 **10 Claims**



1. A pressure compensated slide joint for sealing first and second tubes having high pressure fluid flowing therethrough, the combination comprising;

a metallic, resilient sealing element having a free diameter greater than the interior diameter of the second tube and extending from the first tube into an interference fit with the interior surface of the second tube sufficient to cause elastic deformation of the sealing element and thereby forming a fluid-tight seal therebetween;

means defining an annular chamber which is variable lengthwise in the axial direction, said means comprising

an annular outer wall coupled to the first tube and having an inner diameter larger than the outer diameter of the second tube,

a first end wall extending inwardly from said outer wall to a position adjacent the second tube,

an annular inner wall formed by the outer surface of the second tube, and

a second end wall extending outwardly from the outer surface of the second tube to a position adjacent said outer wall;

first fluid-tight sealing means for sealing said first end wall and said inner wall during relative sliding movement thereof;

second fluid-tight sealing means for sealing said second end wall and said outer wall during relative sliding movement thereof;

said end walls having equal surface areas, each of which is equal to the cross-sectional area of the tubes, and

vent means in said second tube for venting the high pressure fluid therein into said chamber, said vent means being located between said end walls,

said first sealing means comprising a first metallic, resilient sealing member,

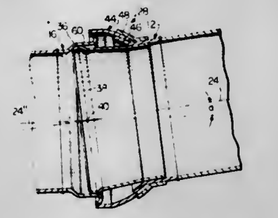
said second sealing means comprising a second metallic, resilient sealing member, coupled to said second end wall adjacent said outer wall and having a curved surface with a maximum free diameter greater than the interior diameter of said outer wall, said curved surface being in an interference fit with the interior surface of said outer wall sufficient to cause elastic deformation of said second sealing member.

4,071,269

FLEXIBLE PIPING JOINT

Horace P. Halling, Laurel, and Bernard J. Sadoff, Jr., Rockville, both of Md., assignors to Pressure Science Incorporated, Beltsville, Md.

Filed May 28, 1976, Ser. No. 691,159
Int. Cl.² F16L *27/04*
U.S. Cl. 285—165 **13 Claims**



1. A fluid-tight coupling and sealing apparatus for a first cylindrical tube and a second cylindrical tube having high pressure fluid flowing therethrough, the combination comprising:

a metallic, resilient annular sealing element extending from the first tube,

said sealing element having a ring portion having an outer surface with a maximum free diameter greater than the diameter of the interior cylindrical surface of the second tube and in contact via an interference fit with the interior cylindrical surface of the second tube sufficient to cause elastic deformation of said sealing element, thereby forming a fluid-tight seal therebetween; and

guiding means, coupled at least to the first tube, for maintaining the intersection point of the center lines of the tubes during angular misalignment thereof in the plane containing the line of contact of said annular sealing element and the interior cylindrical surface of the second tube;

said guiding means comprising a guide assembly formed of first and second arcuate ring members spaced apart to define an arcuate annular cavity therebetween, said first and second arcuate ring members being coupled to the first tube,

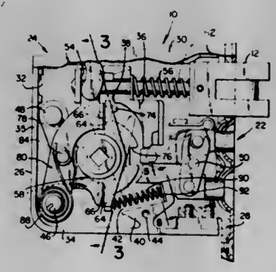
said guiding means further comprising a follower assembly coupled to the second tube and having an arcuate follower movable in said cavity, said follower having a thickness substantially equal to the thickness of said cavity.

4,071,270

MORTISE LOCK HAVING INTERNAL AUXILIARY SPRING FOR LEVER

Gordon A. Alexander, Newington, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Continuation of Ser. No. 542,281, Jan. 20, 1975. This application Oct. 8, 1976, Ser. No. 730,948
Int. Cl.² F05C *1/16*
U.S. Cl. 292—169.22 **13 Claims**



1. In a mortise latch having a case including opposing side walls, a latch bolt supported in the case for movement between projected and retracted positions relative thereto, a latch bolt spring normally biasing the latch bolt to its projected position, inner and outer hubs supported in the case between the side walls and journalled for independent coaxial angular movement relative to said case and each other, a linkage for retracting the latch bolt in response to angular movement of either of the hubs, and a first spring acting between the linkage and the case for yieldably resisting angular movement of either and both of the hubs, the improvement comprising means in said case for limiting angular movement of at least one of said hubs in one direction relative to said case, said one hub having a radially extending arm, a second spring in said case engaging and acting between said arm and said case for yieldably resisting angular movement of said one hub in the other direction, said second spring comprising a spiral spring having one end secured in fixed position relative to said case and another end engaging said one hub and biasing it in said one direction, and a spacer having one portion disposed between said inner and outer hubs and another portion extending outward beyond said hubs and disposed adjacent said spiral spring, said other portion retaining said spiral spring in an associated side portion of said case.

4,071,271

AUTOMATIC RELEASE AND EJECTION LOCKING MECHANISM

Georges E. Bourrié, Neuilly sur Seine, and Robert Marc Lensel, Bourg la Reine, both of France, assignors to R. Alkan & Cie., Valenton, France

Filed July 26, 1976, Ser. No. 708,819
Claims priority, application France, July 29, 1975, 75 23624
Int. Cl.² E05C *19/16*
U.S. Cl. 292—201 **7 Claims**

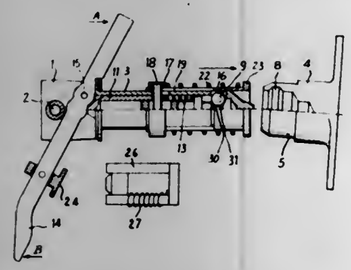
1. An automatic release and ejection mechanism, suitable particularly for the closure of safety equipment boxes on aircraft, comprising:

i. a fixed member for securing to a box, said fixed member defining a cylinder space, said fixed member having in its wall a plurality of radial openings,

ii. a latch member for securing to the closure of the box, said latch member having a recess adapted to receive a portion of said fixed member including said radial openings, said latching member having in its recess a radial groove which, when the latch member is fully engaged on the fixed member, is radially aligned with said plurality of openings,

iii. a set of balls disposed one in each of said radial openings

iv. a piston longitudinally slidable in the cylinder space of said fixed member, said piston having at its end adjacent said openings a first portion of a diameter which, when abutted by said balls, permits said balls to lie wholly within said fixed member, said piston having a second portion of a greater diameter which, when abutted by said balls, causes said balls to protrude from said fixed member into the radial groove of the latch member for locking the



latch member against withdrawal longitudinally off the fixed member

v. resilient loading means positioned to act between said latch member and said piston, said loading means being stressed by engagement of the latch member onto the fixed member, the force exerted by the loading means urging the piston in the direction to permit release of the balls from the groove of the latch member

vi. control means movably mounted on said fixed member and coupled to said piston, said control means having a first locking position of movement in which it prevents longitudinal movement of the piston by said loading means, said control means having a second releasing position of movement in which said piston is freed to be moved longitudinally by said loading means

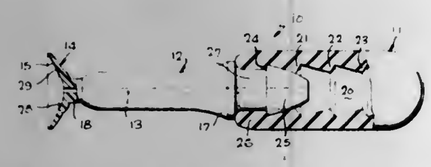
vii. means for retaining said control means releasably in said locking position.

4,071,272

CONTACT LENS APPLICATOR

Frank J. Drdlik, 6334 Bryn Mawr, Hollywood, Calif. 90028

Filed Sept. 27, 1976, Ser. No. 726,937
Int. Cl.² A61F *9/00*
U.S. Cl. 294—1 CA **7 Claims**



1. A contact lens applicator for inserting and removing a contact lens in and from the eye of a user comprising the combination of:

a pliable bulb-like element having an internal cavity;

an elongated flexible shank having one end detachable connected to said bulb-like element;

a cup-like element integrally carried on the opposite end of said shank and exposing a compound concave curvature surface establishing a lens seat for carrying said contact lens;

said shank provided with an open-ended passageway in communication with said bulb-like element cavity and said lens seat for expelling air from said cavity when said bulb-like element is compressed;

said cup-like element is joined to said shank by a shank portion of reduced diameter whereby the flexibility of said shank is greater than the flexibility of the remainder of said shank;

said compound concave curvature comprises a pair of concave surfaces of different diameter coaxially disposed with respect to said shank passageway; and

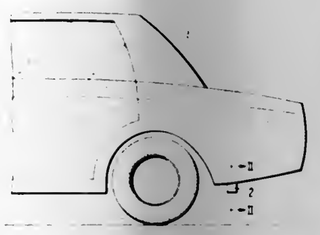
said bulb-like element includes a series of integrally formed reinforcement ribs projecting from the wall of said element into said cavity wherein said ribs strengthen said bulb-like element and bias the wall thereof to expand into its original shape.

4,071,273

WATER DISCHARGE, ESPECIALLY FOR HOLLOW SPACES IN MOTOR VEHICLE STRUCTURES

Albert Hack, Sindelfingen, and Heinz Faix, Boblingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Dec. 17, 1975, Ser. No. 641,435
Claims priority, application Germany, Dec. 20, 1974, 2460428
Int. Cl.² B62D *25/00*
U.S. Cl. 296—28 R **9 Claims**



4. A water discharge nozzle for hollow spaces of vehicle structures, the improvement comprising means for preventing penetration of water from the exterior of the nozzle through the discharge opening of the nozzle, wherein said means for preventing penetration of water minimizes pressure differences between the interior and the exterior of the nozzle during operation of the vehicle, wherein said means for preventing penetration of water includes an apron surrounding the outlet end of said nozzle, said apron having a height dimension and an opening dimension which are multiples of the discharge opening dimension of the nozzle, and wherein the ratio of the apron opening dimension to the discharge opening dimension is of the order of 6 : 1.

4,071,274

PIVOTAL AND DETACHABLE TRUCK BODY SYSTEM

Thomas B. Dalton, Muskegon; Theodore Wayne Pyatt, Twin Lake, and Michael Jay Oosterhouse, Fremont, all of Mich., assignors to Westran Corporation, Muskegon, Mich.

Filed Feb. 23, 1976, Ser. No. 660,126
Int. Cl.² B60P *1/34, 1/64*
U.S. Cl. 296—35 A **13 Claims**

5. A system for detachably securing a truck body onto the bed of a truck as said body is lowered onto said bed, said system comprising:

guide means secured to the bottom surface of said truck body,

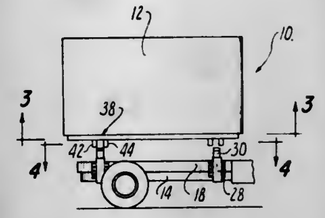
an adapter frame secured to said bed of said truck, and adapted to receive and guide said guide means as said truck body is lowered onto said truck bed,

means for locking said truck body onto said adapter frame when said truck body is in its lowermost position,

means for selectively unlocking said truck body from said adapter frame,

a hinge member laterally secured across the rear end of said adapter frame,

a bearing member secured to said truck body and abutting against said hinge member when said truck body is in its lowermost position,



said bearing member including an elongated semicylindrical abutment surface which abuts against said hinge member, and

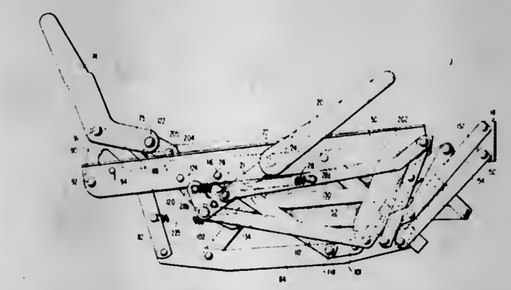
means for securing said bearing member to said hinge member comprising a downwardly extending hook member pivotally secured to said truck body at each axial end of said bearing member, said hook member operatively engaging around said hinge member as said truck body reaches it lowermost position.

4,071,275

RECLINER CHAIR WITH WALL AVOIDING ACTION

Walter Clark Rogers, Jr., Denton, N.C., assignor to Royal Development Company, Inc., High Point, N.C.

Filed Mar. 22, 1976, Ser. No. 669,270
Int. Cl.² A47C *1/02*
U.S. Cl. 297—85 **29 Claims**



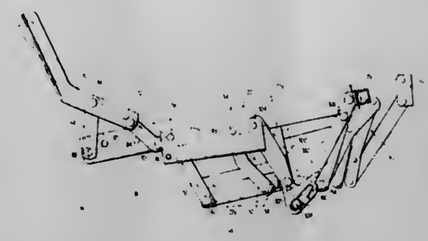
1. A wall-avoiding chair comprising in combination, a base, a seat, first linkage means mounting the seat relative to the base for movement between normal and reclining positions, a backrest, second linkage means mounting the backrest relative to the seat for movement relative to the seat between a generally upright position and a reclining position where the backrest extends at an incline relative to the seat, a footrest, third linkage means mounting the footrest for movement between a retracted position adjacent the seat and an extended position projected forwardly from the seat, a control handle connected to the third linkage means for moving the same between extended and retracted positions thereof, fourth linkage means connected between said first and third linkage means for moving the seat forwardly with wall-avoiding action relative to the base in response to movement of the footrest to extended position.

4,071,276

RECLINER CHAIRS

Nelson Lothair Cecil, Thomasville, N.C., assignor to Royal Development Company, Inc., High Point, N.C.

Filed Feb. 15, 1977, Ser. No. 768,742
Int. Cl.² A47C *1/02*
U.S. Cl. 297—85 **7 Claims**



1. A reclining chair including a base, a seat, seat linkage mounting the seat for movement relative to the base, a backrest, backrest linkage mounting the backrest to and for movement relative to the seat between a generally upright position and a number of reclining positions, a footrest, footrest linkage mounting the footrest to the seat for movement between a retracted position adjacent the seat and an extended position projected forwardly from the seat, sequencing and control linkage connected between the footrest linkage and the seat for permitting the backrest and the seat to be moved to an initial reclining position relative to the base while the footrest is in retracted position but preventing further movement of the backrest to a reclining position advanced from said initial position unless the footrest is moved to extended position, and wherein said sequencing and control linkage includes a first control link pivoted relative to the seat, a second control link pivoted to the footrest linkage and a lost motion connecting means interconnecting said first and second control links, and wherein said lost motion connecting means includes a pin fixed to one of said control links and a slot on the other of said control links receiving said pin, the pin being movable in said slot, and wherein said first control link is also pivotally connected relative to said base, and wherein said footrest linkage includes a footrest mounting link pivotally mounted relative to the seat linkage and wherein said second control link is pivotally connected to said footrest mounting link.

4,071,277

FORWARD DUMPING TRUCK CONSTRUCTION

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 11, 1976, Ser. No. 665,733
Int. Cl.² B60P *1/16*
U.S. Cl. 298—22 P **30 Claims**



1. A truck comprising

a frame mounted on a plurality of roadwheels and including a pair of laterally spaced and parallel side beams,

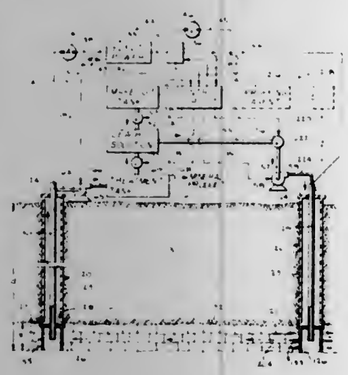
an operator's cab mounted forwardly on said frame, a dump body comprising a pair of laterally spaced and parallel support rails each normally disposed on a respective one of said side beams when said dump body is horizontally disposed and maintained in a carry position on said frame and four triangularly shaped bottom wall portions converging downwardly to meet at apexes thereof disposed below said side beams to form an inverse pyramidal construction.

4,071,278

LEACHING METHODS AND APPARATUS

Neil L. Carpenter, Rte. 1, Box 246J2, Kerrville, Tex. 78028, and Clark Goodman, 95 Antiqua Court, Coronado, Calif. 92118

Filed Jan. 27, 1975, Ser. No. 544,413
Int. Cl.² E21B *43/27, 43/28;* E21C *37/18, 41/06*
U.S. Cl. 299—5 **27 Claims**



1. A process for removing in situ a first chemically reactive element from a generally insoluble gangue material in an ore bearing formatio • comprising the steps of

drilling a borehole into said ore formation,

introducing a selected leaching solution containing a second chemically reactive element into said ore formation through said borehole,

passing an electric current through said leaching solution and said ore formation for chemically reacting said first and second chemically reactive elements which remain in solution in said leaching solution and

withdrawing said leaching solution and said first chemically reactive element through said borehole.

4. Apparatus for in situ leach mining of a first chemically reactive element from an ore bearing formation comprising

a borehole penetrating said ore bearing formation,

first means for introducing a selected leach solution having a second chemically reactive element into contact with said ore bearing formation through said borehole,

second means for passing an electrical current through said leach solution and said ore formation adjacent said borehole for chemically reacting said first and second chemically reactive elements, and

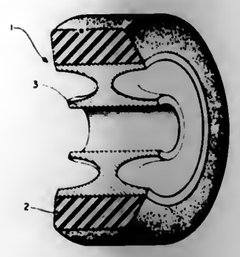
third means cooperating with said borehole for withdrawing said leach solution containing said first chemically reactive element.

4,071,279

SOLID POLYURETHANE TIRE AND WHEEL ASSEMBLY

Daniel A. Chung, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 21, 1975, Ser. No. 570,154
Int. Cl.² C08K *5/07, 5/10, 5/12*
U.S. Cl. 301—63 PW **6 Claims**



1. A substantially solid industrial polyurethane tire/wheel assembly is provided comprised of a solid polyurethane tire adhered to a centered rigid core adapted to fit to the axle of an industrial vehicle where said polyurethane is prepared by the method which comprises reacting (I) a complex of 4,4'-methylene dianiline and a salt selected from sodium chloride, sodium bromide, sodium iodide, sodium nitrile, lithium chloride, lithium bromide, lithium iodide, lithium nitrite and sodium cyanide, where the mole ratio of said dianiline to said salt is about 3/1, and where said complex is provided as a dispersion in a plasticizer selected from dioctyl phthalate, tetraethylene glycol di(2-ethylhexoate) and dibutoxy ethoxy ethyl formal, said dispersion containing about 50 to about 150 parts by weight plasticizer per 100 parts by weight complex, with (II) at least one prepolymer selected from the reaction product of a diisocyanate selected from 2,4- and 2,6-toluene diisocyanate, diphenyl methane-4,4'-diisocyanate, 3,3'--dimethyldiphenyl methane-4,4'-diisocyanate, 1,5-naphthylene diisocyanate and 3,3'-bitolylene-4,4'-diisocyanate with at least one polymeric polyol having a molecular weight in the range of about 800 to about 3200, preferably about 800 to about 2500, and a hydroxyl functionality in the range of about 2 to about 2.8, selected from

A. polyester polyols selected from (1) the product of ϵ-caprolactone with a diol selected from diethylene glycol and hydrocarbon diols selected from 1,4-butane diol, 1,5-pentane diol, and 1,6-hexane diol, (2) the condensation of low molecular weight saturated hydrocarbon diols containing 3 to 10 carbon atoms with an organic polycarboxylic acid selected from succinic acid, adipic acid and azelaic acid, as well as anhydrides of such acids,

B. polyol mixtures containing about 75 to about 100 weight percent of said polyester polyols of (A) and, correspondingly, about 25 to about zero weight percent of polyether polyols of the type prepared by (1) polymerizing or copolymerizing alkylene oxides selected from ethylene oxide, propylene oxide and butylene oxide, (2) polymerizing or copolymerizing low molecular weight glycols selected from ethylene glycol, 1,3-propane diol and 1,4-butane diol, (3) or by the reaction of one or more of said alkylene oxides with said glycols and, optionally, with the addition of a small amount of a triol such as trimethylol propane,

C. a polyol mixture containing about 25 to about 50 weight percent of said polyether polyols and, correspondingly, about 75 to about 50 weight percent of a polyester polyol selected from polyethylene adipate, polyethylene propylene adipate and polydiethylene adipate,

D. a polyol mixture comprising about 50 to about 100 weight percent of the polyester polyol of (A) and, correspondingly, about 50 to about 0 weight percent of a polyester polyol selected from polyethylene adipate, polyethylene propylene adipate and polydiethylene adipate,

E. about 75 to about 100 weight percent of the prepolymer of (A) and correspondingly about 25 to about 0 weight percent of a prepolymer derived from the reaction of said diisocyanate and at least one of said polyether polyols,

F. about 50 to about 75 weight percent of the reaction product of said diisocyanate and at least one polyester polyol selected from polyethylene adipate, polyethylene propylene adipate and polydiethylene adipate, and, correspondingly, about 50 to about 25 weight percent of the reaction product of a diisocyanate and said polyether polyol, and

G. about 50 to about 100 weight percent of the prepolymer of (A) and, correspondingly, about 50 to about 0 weight percent of the reaction product of said diisocyanate and a polyester polyol selected from polyethylene adipate, polyethylene propylene adipate and polydiethylene adipate;

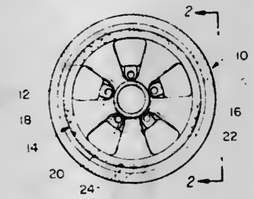
where the ratio of isocyanato groups of said diisocyanate to hydroxyl groups of said polymeric polyols is in the range of about 1.5/1 to about 3/1 and where the amino groups of said 4,4'-methylene dianiline complex to excess isocyanato groups over said hydroxyl groups is in the range of about 0.7/1 to about 1.2/1.

4,071,280

VEHICLE WHEEL APPARATUS

Dalton M. Davis, Palos Verdes Estates, Calif., assignor to Pyramid Enterprises, Inc., Torrance, Calif.

Filed Nov. 30, 1970, Ser. No. 93,724
Int. Cl.² B60B *1/08*
U.S. Cl. 301—65 **10 Claims**



1. A vehicle wheel assembly comprising:

a central spider section formed of nonferrous metal and providing a hub and a full outer peripheral ring, and having a plurality of circumferentially spaced, radially inwardly extending dimplelike depressions formed in the outer surface of said ring remote from said hub, said depressions being of diminishing cross section in at least the outer portion thereof; and a pneumatic tire rim of malleable metal surrounding said central spider section in concentric relationship therewith and with an inner surface engaging said ring;

said rim having dimples formed therein providing radially inwardly extending protuberances extending into the aforesaid depressions in the peripheral surface of said central spider section in a tight fit therewith and in intimate contact with at least the upper edge and the outer portion of the sides of said depressions, so as to hold said rim and said central spider section in a rigid unitary assembly.

4. The method of making a wheel assembly comprising the steps of:

a. providing a spider assembly having a plurality of radially extending, equiangularly spaced spokes;

b. forming radially inwardly a plurality of circumferentially spaced conical depressions in the periphery of each of said spokes;

c. locating the spider assembly within a circular rim, said step of locating including establishing an interference fit between the rim and the spider assembly; and

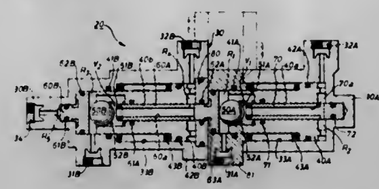
d. permanently deforming portions of the rim into and adjacent each of said conical depressions.

4,071,281

FLUID PRESSURE CONTROL DEVICE FOR CROSSED PIPING BRAKE SYSTEM

Nogami Tomoyuki, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 24, 1977, Ser. No. 762,121
Claims priority, application Japan, July 12, 1976, 51-82671
Int. Cl.² B60T *8/14, 17/18*
U.S. Cl. 303—24 A **7 Claims**



1. A fluid pressure control device for a brake system of a vehicle having two front wheels and two rear wheels, the system having a tandem master cylinder, a first braking fluid circuit connecting a first pressure chamber of said master cylinder to one front-wheel brake cylinder and the brake cylinder of one rear wheel diagonally opposite to said one front-wheel, and a second braking fluid circuit connecting a second pressure chamber of said master cylinder to the other front-wheel brake cylinder and the diagonally opposite other rear-wheel brake cylinder, comprising:

a housing provided thereon with first inlet and outlet ports disposed within said first fluid circuit and respectively in connection with the first pressure chamber of said master cylinder and the one rear-wheel brake cylinder, second inlet and outlet ports disposed within said second fluid circuit and respectively in connection with the second pressure chamber of said master cylinder and the other rear-wheel brake cylinder, and a bypass port in connection with the first pressure chamber of said master cylinder through said first fluid circuit, said housing being provided therein with a first bore communicating said first inlet and outlet ports to each other and a second stepped bore communicating said second inlet and outlet ports to each other and in communication with said bypass port at the small diameter portion thereof;

partition means provided between said first bore and said second stepped bore to isolate said two bores from each other;

a first valve seat provided within said first bore to permit fluid flow between said first inlet and outlet ports therethrough;

a first inertia-controlled ball housed within said first bore to co-operate with said first valve seat to cut-off communication between said first inlet and outlet ports when said ball is subjected to a deceleration in excess of a predetermined value;

a movable stepped spool slidably received by said partition means and including a larger end slidable within said first bore and a smaller end exposed within the large diameter portion of said second stepped bore, said spool being provided with a second valve seat at the smaller end thereof and a passage communicating said second inlet and outlet ports to each other through said second valve seat;

a second inertia-controlled ball housed within the large diameter portion of said second stepped bore to co-operate with said second valve seat to cut-off communication between said second inlet and outlet ports when said second ball is subjected to the said deceleration; and

a stepped piston slidably disposed within the large and small diameter portions of said second stepped bore to provide a pressure chamber in communication with said bypass port, wherein the smaller end of said piston is exposed in

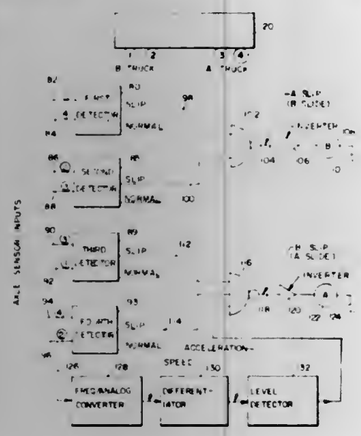
said pressure chamber and the larger end is exposed in the large diameter portion of said second stepped bore.

4,071,282

SLIP-SLIDE DETECTOR SYSTEM FOR RAILWAY CAR WHEELS

Bernard E. Callahan, Hoffman Estates, and Edward A. Christianson, Niles, both of Ill., assignors to Vapor Corporation, Chicago, Ill.

Filed Feb. 4, 1976, Ser. No. 655,199
Int. Cl.² B60T 8/02; G01P 3/58
U.S. Cl. 303—106 **9 Claims**



1. In a vehicle having at least first and second axle trucks, each truck having at least two axles thereon, a slip/slide detection system comprising:

first sensor means connected to a first axle on the first truck for generating digital signals indicative of the angular velocity of this axle;

second sensor means connected to a second axle on the first truck for generating digital signals indicative of the angular velocity of this axle;

third sensor means connected to a third axle on the second truck for generating digital signals indicative of the angular velocity of this axle;

fourth sensor means connected to a fourth axle on the second truck for generating digital signals indicative of the angular velocity of this axle;

first detecting means having its inputs connected to the outputs of the first sensor means and the fourth sensor means for detecting a preselected velocity difference between the first and fourth axles;

second detecting means having its inputs connected to the outputs of the second sensor means and the third sensor means for detecting a predetermined velocity difference between the second and third axles;

third detecting means having its inputs connected to the outputs of the third and first sensor means for detecting a preselected velocity difference between the third and first axles;

fourth detecting means having its inputs connected to the outputs of the fourth and second sensor means for detecting a preselected velocity difference between the fourth and second axles;

first gating means having inputs thereof connected to the outputs of the first and second detecting means for signifying a slip condition of the second truck or slide condition of the first truck;

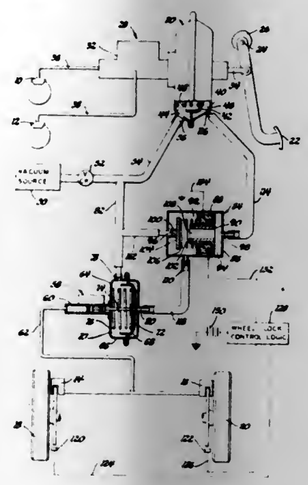
second gating means having inputs thereof connected to the outputs of the third and fourth detecting means for signifying a slip condition of the first truck or slide condition of the second truck.

4,071,283

MASTER AND SLAVE BREAK BOOSTERS FOR FRONT AND REAR WHEEL BRAKES WITH WHEEL LOCK CONTROL

Robert M. Van House, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 26, 1976, Ser. No. 690,191
Int. Cl.² B60T 8/04
U.S. Cl. 303—114 **2 Claims**



1. A vehicle brake system having front and rear brakes with wheel lock control of the rear brakes, said system comprising:

a source of vacuum;

a master brake booster and master cylinder assembly operable by a vehicle operator and connected to actuate the vehicle front brakes, the booster being a vacuum suspended booster having a vacuum chamber and a variable pressure chamber and pressures therein, the pressure in the variable pressure chamber being controlled during assembly actuation in accordance with operator operation of the booster;

a slave brake booster and master cylinder assembly connected to actuate the vehicle rear brakes, the slave booster being a vacuum suspended booster having a vacuum chamber and a variable pressure chamber and being capable of delivering a boost force to the slave master cylinder;

first conduit means connecting said master brake booster vacuum chamber and said slave brake booster vacuum chamber with said vacuum source;

second conduit means having a solenoid operated valve therein which when de-energized connects said master brake booster variable pressure chamber and said slave brake booster variable pressure chamber, said solenoid operated valve when energized disconnecting the variable pressure chambers and connecting said slave brake booster variable pressure chamber with said first conduit means to impose vacuum therein independently of the operation of said master brake booster and thereby reduce the braking action of the rear brakes by reducing the boost force of said slave brake booster;

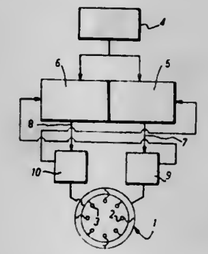
and wheel lock control logic and incipient wheel lock sensing means for the vehicle rear brakes connected to energize and de-energize said solenoid operated valve, thereby selectively cycling said valve to generate a pressure in said slave brake booster variable pressure chamber from vacuum and the variable pressure in said master brake booster variable pressure chamber, said pressure so generated causing a lesser pressure differential actuating said slave brake booster than the pressure differential actuating said master brake booster and tending to prevent rear wheel lock due to lesser brake energization by said slave brake booster and master cylinder assembly.

4,071,284

METHOD AND APPARATUS FOR EFFECTING DOUBLE-ACTING BRAKING

Jean Masclet, Paris, and Marcel Schott, Fontenay-le-Fleury, both of France, assignors to Messier-Hispano, Montrouge, France

Continuation-in-part of Ser. No. 602,516, Aug. 6, 1975, abandoned. This application Mar. 8, 1977, Ser. No. 775,636
Claims priority, application France, Aug. 7, 1974, 74 27479
Int. Cl.² B60T 7/12
U.S. Cl. 303—63 **8 Claims**



1. A method for effecting double-acting braking for a wheel permitting compensation of failures of at least one of the braking circuits of a double-acting braking arrangement of the type comprising at least two sets of braking members and two braking circuits for each brake, the method comprising using a single control action and acting simultaneously on the two braking circuits of each of the brakes and, in the case of a failure of one of the two braking circuits resulting in a drop in pressure in the failed braking circuit and consequently in a reduction of the braking torque applied by the brake, acting on the remaining circuit to increase the pressure in the remaining circuit and the braking torque automatically by a predetermined value, by applying the control action simultaneously to two relays having at least two operating pressure levels, each acting on one of the two sets of braking members by the two braking circuits, detecting failures that may occur in said braking circuit, increasing the pressure level of the relay associated with the braking circuit that remains in operation when a failure is detected in the other circuit, and disconnecting the failed circuit.

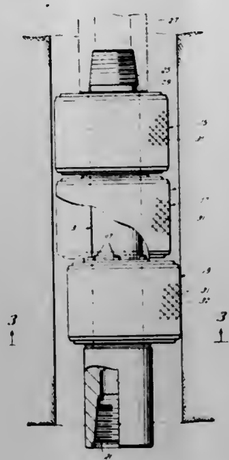
4,071,285

STABILIZER

Jackson M. Kellner, Midland, Tex., assignor to Smith International, Inc., Midland, Tex.

Filed Sept. 7, 1976, Ser. No. 720,695
Int. Cl.² F16C 17/00
U.S. Cl. 308—4 A **10 Claims**

1. Wall contacting tool comprising a mandrel having a plurality of eccentric roller assemblies disposed in tandem along the length of the mandrel, each of the assemblies being provided with orientation means independent of the mandrel to prevent the assemblies from being positioned in full axial engagement except when in any one of a predetermined limited number of fixed relative azimuthal orientations of the common eccentric diameters.

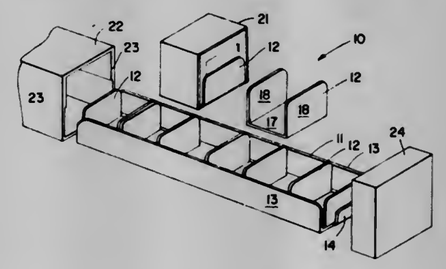


4,071,286

SLIDE STORING APPARATUS

John W. Moyer, 2342 Jackson St., Fremont, Calif. 94538

Filed Dec. 6, 1976, Ser. No. 747,503
Int. Cl.² A47B 88/00
U.S. Cl. 312—330 R **5 Claims**



1. Apparatus for storing slides, comprising:

an elongated tray member having a bottom and having two sides lower than the height of a slide;

a series of U-shaped slide storage units arranged in end-to-end succession in the tray member;

each U-shaped unit having a bottom and front and back end walls, open at sides and top, the distance between the top of one wall and the juncture of the other wall and the unit bottom being less than the height of a slide, so that the top of a single slide in the unit will not fall below the top of a wall; and

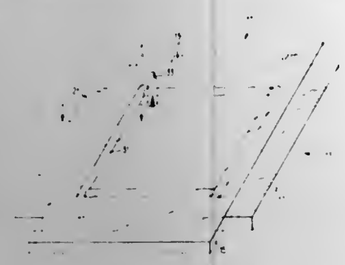
each U-shaped unit being sized to receive a cluster of vertically oriented slides facing the front and back end walls of the unit, and each unit being individually removable from the tray member without movement of the remaining units in the tray member.

4,071,287

MANUFACTURING PROCESS FOR GASEOUS DISCHARGE DEVICE

Thomas Albert Sherk, West Hurley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 15, 1976, Ser. No. 666,999
Int. Cl.[2] H01J *9/18*
U.S. Cl. 316—19 **5 Claims**



1. A method of fabricating a gaseous discharge display device without discrete spacers comprising the steps of

providing first and second glass plates, each of said glass plates having arrays of parallel lines overcoated with a dielectric material,

positioning preforms of devitrifiable glass sealant on one of said members in a frame-like border defining the display area of said first and second plates,

placing said second glass plate on said first glass plate to form an assembly wherein the parallel conductor array of said second glass plate extends orthogonally to the parallel conductor array of said first glass plate,

heating said assembly to a controlled temperature above the flow point of said glass sealant preform within a range of 440° - 480° C. for a predetermined time interval whereby said sealant preform deforms, crystallizes and fuses to said plates as it progresses from a viscous to a crystalline state to seal said plates spaced apart a predetermined distance corresponding to the discharge gap between said plates,

placing said upper plate under tension to assist said preformed glass sealant deformation in providing a uniform discharge gap between said plates, the boundaries of which are controlled solely as a function of the temperature and time parameters of said heating step and the composition and cross-dimensional area of said glass sealant preform, and,

evacuating and backfilling said chamber with an illuminable gas under a defined pressure.

4,071,288

METHOD OF IMPLANTING AN AMALGAMATIVE METAL IN A FLUORESCENT LAMP DURING MANUFACTURE

George S. Evans, Caldwell, and Henry Skwirut, Verona, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

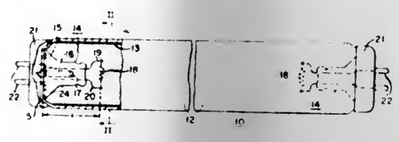
Division of Ser. No. 593,814, July 7, 1975, Pat. No. 4,015,162. This application Aug. 17, 1976, Ser. No. 715,257
Int. Cl.[2] H01J *9/18*
U.S. Cl. 316—19 **6 Claims**

1. In the manufacture of a mercury-vapor discharge device such as an electric discharge lamp which has an hermetically sealed envelope, the method of placing a measured quantity of a mercury-amalgamative metal at a predetermined fixed location within said envelope before the latter is hermetically sealed, which method comprises;

including a vitreous member as an integral stationary component of said device and arranging it so that a selected part of the member is positioned at said fixed location within the envelope,

heating the vitreous member so that at least the said selected part thereof is softened sufficiently to have an adhesive surface,

introducing the measured quantity of amalgamative metal into the unsealed envelope and orienting the latter so that the falling metal strikes and sticks to the adhesive surface of the selected heat-softened part of said vitreous member,





cooling the vitreous member to anchor the amalgamative metal in place on the selected part of said member, and then

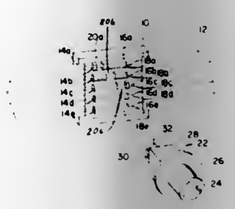
completing the fabrication of said device.

4,071,289

ELECTRICAL CONNECTOR ASSEMBLY FOR RIBBON TYPE ELECTRICAL CABLE

Robert G. Szudarek, Warren, Mich., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Jan. 21, 1977, Ser. No. 761,506
Int. Cl.[2] H01R *9/12*
U.S. Cl. 339—17 F **3 Claims**



1. An electrical connection assembly, comprising:

an elongated ribbon type electrical cable having a plurality of elongated, flat, coplanar, flexible electrical conductors, and a continuous insulative sheath in intimate contact with and surrounding said flat conductors, an entire intermediate segment of said insulative sheath being removed so as to expose said flat electrical conductors, the exposed portion of said flat electrical conductors being axially twisted so that the plane defined by each such exposed portion is generally perpendicular to the plane defined by said cable;

an insulative base member adapted for cooperation with said ribbon type cable, said base member including means thereon for electrically insulating said twisted conductors from one another;

an insulative cover member adapted to mate with said base member so as to form an enclosure for the exposed portion of said electrical conductors; and

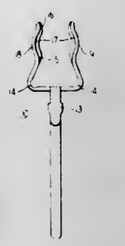
electrical terminal means in said cover member and engaging the exposed portion of said electrical conductors for making contact to said electrical conductors.

4,071,290

UNITARY FUSE CLIP HAVING A WIRE WRAP TERMINAL

Ernest Gerard DeNigris, Colts Neck, and Albert John Tutko, Belle Mead, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J. and Western Electric Company, Inc., New York, N.Y.

Filed Sept. 27, 1976, Ser. No. 726,965
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—258 F **3 Claims**



1. A spring tension fuse clip having a wire wrap leg formed integrally with the spring clip and having a U shape adapted for mating with and applying spring tension to one electrical terminal of an inserted fuse, said clip being formed from a single piece of electrically conductive material having a first gauge,

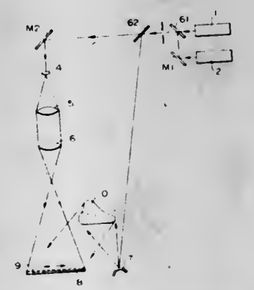
said U shape having two side portions and a lower portion, said side portions bent upward from said lower portion, wherein the material only within the bends formed between said side portions and said lower portion of said U is reduced in gauge so as to reduce the spring tension of said clip against an inserted fuse.

4,071,291

HOLOGRAPHIC METHOD FOR FORMING COLOR HOLOGRAMS

Masane Suzuki; Motonori Kanaya, and Takeshi Matsuoka, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Oct. 22, 1975, Ser. No. 624,831
Claims priority, application Japan, Oct. 23, 1974, 49-122678
Int. Cl.[2] G03H *1/30*
U.S. Cl. 350—3.5 **3 Claims**



1. A method for forming and reconstructing a color holographic image comprising the steps of:

placing a stripe filter on the surface of a holographic recording material, said stripe filter having transparent stripes of equal width at equal intervals separated by opaque stripes, the ratio of the width of the transparent stripes to the opaque stripes therebetween being 1: (number of different color light beams used for recording the color holographic image)-1,

exposing the recording material simultaneously to an object light beam of a first color and a reference light beam of the first color coherent to said object light beam through the stripe filter placed on the recording material, moving said stripe filter in one direction perpendicular to the stripes by the length equal to the width of one transparent stripe,

exposing the recording material simultaneously to an object light beam of a second color and a reference light beam of the second color coherent to said object light beam through the stripe filter placed and moved on the recording material,

repeating the above moving step and exposing step with different color light beams until the whole area of the recording material is occupied by the stripes of different color images,

developing and fixing the color holographic image on the holographic recording material, and

exposing the holographic recording material carrying the color holographic image thereon simultaneously to different color reference light beams through stripe filters inserted in the respective reference light beams, the colors of the reference light beams being the same as those of the light beams used for recording the color holographic image on the recording material, the stripe filters inserted in the reference light beams having transparent stripes for making the reference light beam of one color impinge upon the color holographic image recorded on the recording material of the same color as the one color.

4,071,292

FOCUSSING PLATE

Katsuhiro Ise, Sakai; Yoshio Kuramoto, Toyonaka, and Yasuo Yamazaki, Kawachi-Nagano, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 2, 1976, Ser. No. 710,987
Claims priority, application Japan, Aug. 27, 1975, 50-104233
Int. Cl.[2] G03B *21/60*
U.S. Cl. 350—128 **17 Claims**



12. In a single lens reflex camera a focussing device comprising a transparent base member having distributed on a face thereof a plurality of surfaces convergent from enlarged bases to respective apices and characterized in that said surfaces are each light diffusing and have fine light diffusing irregularities formed thereon.

4,071,293

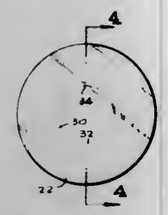
CONTACT LENS AND METHOD OF MAKING SAME

Theodore P. Avery, 511 W. 6th St., Oil City, Pa. 16301

Division of Ser. No. 516,140, Oct. 18, 1974. This application Apr. 23, 1975, Ser. No. 570,943
Int. Cl.[2] G02B *5/23*
U.S. Cl. 351—160 **7 Claims**

1. A contact lens comprising a plastic lens member having a central axis, a generally annular ring formed of metal susceptible to magnetic attraction and having a continuously varying cross-section embedded in said lens concentrically with respect to the axis of said lens, said ring member being of varying cross-section so that one portion of said ring is thicker than the

diametrically opposite portion of said ring so that the center of gravity of said lens and ring assembly is below the geometric



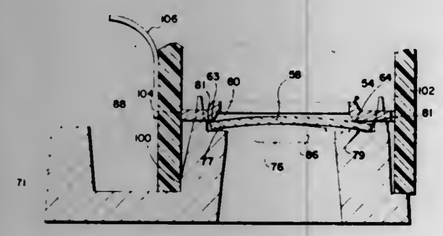
center of said lens so that said lens is rotated by gravity to a desired lens orientation in the eye of a person wearing said lens.

4,071,294

PHOTOGRAPHIC APPARATUS INCLUDING IMPROVED APERTURE PLATE

Peter A. Scibilia, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 416,080, Nov. 15, 1973, abandoned. This application Aug. 6, 1976, Ser. No. 712,381
Int. Cl.² G03B *1/48*
U.S. Cl. 352—72 **22 Claims**



1. A photographic system comprising:

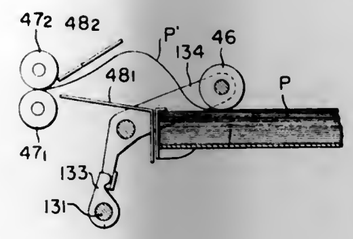
a cassette comprising a cassette housing for retaining a strip of photographic film material, said cassette housing including an opening in an edge wall thereof configured to present at least an incremental section of such film strip for cooperation with other apparatus for providing a photographic program with such film strip, and an apparatus comprising an aperture plate configured to engage at least a portion of such presented incremental section of such film strip and support such portion of such incremental section in a predetermined focal position when such cassette is operatively positioned within said apparatus, means for receiving said cassette with such presented incremental section of such film operatively located on said aperture plate, said receiving means being configured for translation of such presented incremental section laterally across said aperture plate as said cassette is operatively located in said receiving means, said aperture plate including a longitudinal channel laterally bounded by spaced film margin engaging surfaces for supporting the margins of such film strip when such film strip is operatively located on said aperture plate, and said aperture plate including a ramp-like portion extending substantially from the bottom of said channel to one of said margin engaging surfaces so as to urge said film out of said channel and to said one margin engaging surface when such film strip is translated laterally across said aperture plate towards said one margin engaging surface during the operation location of such film on said aperture plate, and means for cooperating with such incremental section of such film strip so as to provide such photographic program therewith when such incremental section is located in said predetermined focal position.

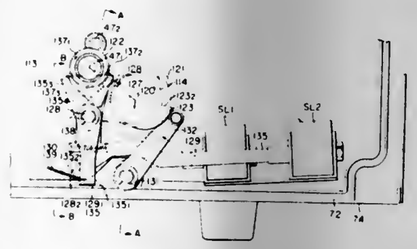
4,071,295

COPYING APPARATUS FOR SHEET ORIGINALS AND THICKER ORIGINALS

Shigehiro Komori; Hisashi Sakamaki, both of Yokohama; Hiroyuki Hattori, Mitaka; Toshihide Iida, Tokyo; Koichi Miyamoto, Tokyo, and Kazumi Umezawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 413,210, Nov. 6, 1973, abandoned, which is a division of Ser. No. 258,820, June 1, 1972, Pat. No. 3,804,512. This application Apr. 30, 1975, Ser. No. 573,144
Claims priority, application Japan, June 9, 1971, 46-48632; June 3, 1971, 46-38917; June 3, 1971, 46-38918; June 10, 1971, 46-41195; June 10, 1971, 46-41196; June 10, 1971, 46-41197; June 21, 1971, 46-44611; Aug. 30, 1971, 46-66740
Int. Cl.² G03G *15/00*; B65H *9/04*
U.S. Cl. 355—3 SH **3 Claims**





1. A copying apparatus including means for carrying an original to be copied; a photosensitive medium; an optical system for projecting on the photosensitive medium, an image of the original carried by said carrying means; means for forming an image on the photosensitive medium; means for developing the image formed by the image forming means; means operable at a transfer station for transferring the image onto a transfer medium; means for registering said transfer medium with said photosensitive medium at said transfer station; means for feeding the transfer medium to said registering means; means for conveying the transfer medium from the transfer station to a discharge port; a driving source; first clutch means for establishing a driving connection between said driving source and said feed means; second clutch means for establishing a driving connection between said driving source and said registering means; means for controlling said first clutch means to start driving said feeding means and for controlling said second clutch means to stop driving said registering means after said start of said feeding means wherein said control of said first and second clutch means is continued until the leading edge of said transfer medium is stopped by engaging the undriven registering means, and for subsequently controlling said first clutch means to cease driving the feeding means and said second clutch to start driving said registering means; and delay means for maintaining the driving of said registering means by said second clutch means for a predetermined time period after the commencement of feeding of a next successive transfer medium, wherein at the conclusion of said time period said second clutc interrupts the driving of the register rollers to

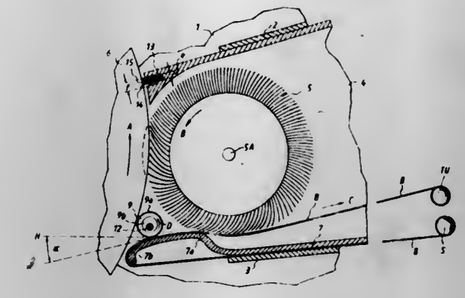
stop said next succeeding transfer medium at its leading edge engages said medium registering means.

4,071,296

ELECTROSTATIC-COPIER CLEANING DEVICE

Heinrich Ermel, Munich; Franz Fruth, Unterpfaffenhofen; Georg Fryda; Peter Lang, both of Munich; Fritz Rau, Unterhaching, and Jürgen Vossnacke, Hohenschaftlarn, all of Germany, assignors to AGFA-Gevaert, AG, Leverkusen, Germany

Filed Feb. 17, 1976, Ser. No. 658,603
Claims priority, application Germany, Feb. 19, 1975, 2507152
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 **6 Claims**



1. In an electrostatic copier of the type having a drum-shaped charge carrier rotatable about an axis of rotation and provided with a photosensitive surface which is electrostatically chargeable to form a latent image to which toner particles are attracted for subsequent transfer to an image carrier, and a cleaning arrangement for removing residual toner particles from said surface prior to the next electrostatic charging thereof, the improvement comprising a cleaning cartridge adapted for in toto insertion and removal from said copier, said cartridge having a leading open end in part bounded by two edges extending substantially parallel to said axis and cleaning means at said open end so as to engage said photosensitive surface when said cartridge is inserted into said copier, said cleaning means comprising a cleaning roller, a guide member below said cleaning roller and a cleaning tape which contacts the periphery of said cleaning roller and is trained about said guide member and has portions located proximal to said photosensitive surface in a position in which brushed-off toner particles drop onto said portions; and yieldable sealing means at said cartridge at least in part bounding said open end and yieldingly sealing said open end in engagement with said photosensitive surface in response to insertion of said cartridge into said copier, said sealing means comprising a sealing roller extending along said portions lengthwise of said drum and sealingly engaging said portions and said photosensitive surface.

4,071,297

METHOD AND APPARATUS FOR PHOTOELECTRICALLY DETERMINING THE POSITION OF AT LEAST ONE IMAGE FOCUS PLANE

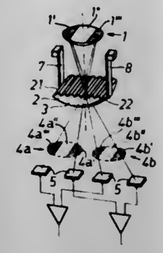
Ludwig Leitz; Knut Heitmann; Eckart Schneider, all of Wetzlar, and Klaus Dieter Schaefer, Braunfels, all of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Continuation-in-part of Ser. No. 479,525, June 14, 1974, abandoned. This application Apr. 5, 1976, Ser. No. 673,726
Claims priority, application Germany, June 18, 1973, 2330940
Int. Cl.² G01C *3/08*
U.S. Cl. 356—4 **47 Claims**

1. In a method for determining the position of a focusing plane of an image within an optical device including an optical imaging system, the improvement comprising the steps of defining the entrance pupil of said optical imaging system into a plurality of different regions ($1'$; $1''$; 1^{IV}; 1^{V}); imaging via said optical imaging system at least one object to be measured which is emitting light fluxes traversing said regions as a set of light fluxes on at least one spatial frequency filter (**2**; **12**) of an optical image correlator;

jointly modulating said set of light fluxes by means of said spatial frequency filter;

splitting said set of light fluxes corresponding to the respective pupil regions into a pair of sets of partial light fluxes;



applying each of said partial light fluxes to photoelectric receiving means (**5***c*, **5***d*; **5***g'*; **5***r*, **5***r'*) for generating electrical output signals corresponding to said partial light fluxes; and

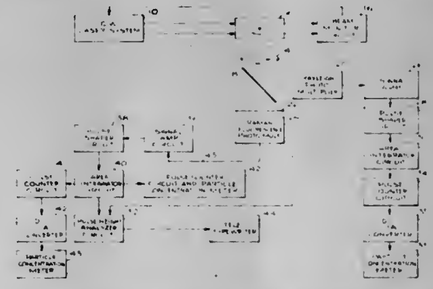
processing said signals to derive further electrical signals being indicative of positions of the focusing plane.

4,071,298

LASER RAMAN/FLUORESCENT DEVICE FOR ANALYZING AIRBORNE PARTICLES

David G. Falconer, Menlo Park, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Continuation-in-part of Ser. No. 483,786, June 27, 1974, abandoned. This application May 17, 1976, Ser. No. 686,942
Int. Cl.² G01N *15/02*
U.S. Cl. 356—73 **7 Claims**



1. Apparatus for determining the physical and chemical state of aerosol particles comprising

laser means for establishing a light beam,

means for passing a stream of aerosol particles through said light beam whereby each said particle generates Raman and fluorescent radiation in addition to Rayleigh radiation

dichroic filter means for separating said Raman and fluorescent radiations from said Rayleigh radiation,

bandpass filter means in the path of said Raman and fluorescent radiations for passing a selected portion of either the Raman or fluorescent radiation therethrough having frequencies in accordance with the chemical composition of the particles whose physical and chemical states it is desired to be determined.

photomultiplier means for generating pulse signals responsive to the radiation from each particle that has passed through said bandpass filter means,

means to which the output of said photomultiplier means is

applied for producing a display of particles in the stream passing through said laser beam sorted in accordance with the size of the masses,

means to which the output of said photomultiplier means is also applied to producing a display indicative of the mass concentration of particles in the stream passing through said laser beam,

Rayleigh photomultiplier means for generating a pulse signal responsive to the Rayleigh radiation from each particle, and

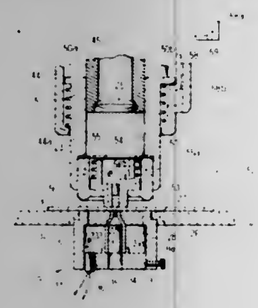
means responsive to a plurality of said pulse signals for providing a display representative of the particle size distribution for a given volume of said aerosol particle stream.

4,071,299

TRANSMITTANCE DENSITOMETER

Tadashi Amano; Yoshitaka Mukaihara, and Tadashi Nakamura, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 14, 1976, Ser. No. 686,268
Claims priority, application Japan, May 16, 1975, 50-65149
Int. Cl.² G01N *21/22*
U.S. Cl. 356—202 **11 Claims**



1. In a transmittance densitometer comprising an annular sample stage with a central measuring light path passing centrally therethrough which is illuminated interiorly by illumination light, and a vertically movable ambient light shielding cylinder disposed above the sample stage and along the extension of the measuring light path and surrounding a light path communicating in extension with the measuring light path, the improvement which comprises

an annular illumination plate made of a semi-transparent substance disposed centrally inside of said sample stage coaxially therewith annularly surrounding the measuring light path and capable of diffusing transmission light,

an internal light shielding box defining a light shielding cylinder and disposed beneath said illumination plate forming a local illumination chamber optically isolated from the illumination light in the measuring light path and the sample stage,

an electric switch means for responding to the level of the ambient light shielding cylinder relative to the sample stage, and

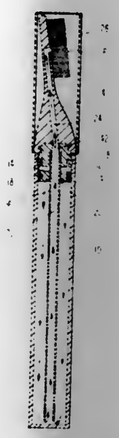
an illumination lamp disposed in said local illumination chamber and operatively connected to said electric switch means for being turned off by said electric switch means when said ambient light shielding cylinder is moved so as to be close to said sample stage.

4,071,300

SELF-PASTING TOOTHBRUSH

Roy A. Nichols, 6821 Racliffe St., Bristol, Pa. 19007, and Francis L. Anderson, 13110 Theiss Lane, Tomball, Tex. 77375

Filed Sept. 30, 1976, Ser. No. 728,435
Int. Cl.² B43K *5/06*
U.S. Cl. 401—175 **12 Claims**



1. A self-pasting toothbrush comprising in combination:

a. a brush head having a face portion and a bottom end;

b. brush bristles extending from said face portion of said brush head;

c. a replaceable cartridge comprising connector means, one end of said connector means removably secured to said bottom end of said brush head, said connector means also having a channel bored therein,

a hollow paste reservoir having an open end and a closed end, said open end of said paste reservoir engaged to the other end portion of said connector means, said paste reservoir being rotatable in relation to said brush head,

piston means having a threaded bore therethrough, said piston means being snugly positioned within said paste reservoir, and

a threaded feed rod, one end of which is fixedly anchored in said connector means, the other end of which is threaded through the bore contained within said piston means, said feed rod extending into said paste reservoir, said various means and members being adapted to permit said piston to move along the axis of said feed rod when said paste reservoir is rotated relative to said brush head, to force any toothpaste located in said reservoir to and through said channel formed in said connector means;

d. conduit means bored through said brush head to communicate with said channel bored in said connector means, said conduit means adapted to deliver toothpaste to the face portion of said brush and thus to said bristles.

4,071,301

CORNER GUSSETT

Roger D. Pritchard, 100 S. 17th St., Sebring, Ohio 44672

Filed Nov. 26, 1976, Ser. No. 745,437
Int. Cl.² E04B *1/38*; B25G *3/00*; F16B *7/00*
U.S. Cl. 403—231 **2 Claims**

1. A corner gusset for joining the end portions of two angularly related rails of a hollow frame structure having cooperating, inwardly opening channel shaped rail portions comprising,

a first member, generally in the form of an integrally formed angle bracket;

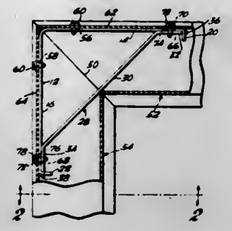
a second member in a spanning relation to extended end portions of first and second angular legs of said angle bracket;

interengaging lock means between opposed end portions of said second member and said extended end portions;

means to attach said gusset within the two angularly related rails to form a rigid corner structure,

an inwardly turned flange at the outer end of each of said extended end portions,

said second member includes a main central span portion defining an outer obtuse angle relative to each of said legs,



and a like obtusely angled outer end portion from each end thereof in an overlying relation to an inside face of said extended end portions,

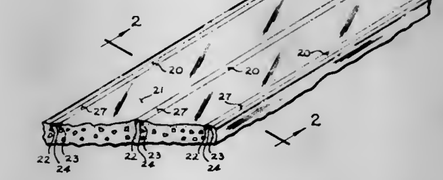
said interengaging lock means including a reduced width lug, extending outwardly from, and in a co-planar relation to each of said obtusely angled outer end portions for engagement through a companionately shaped and sized aperture through one of said flanges.

4,071,302

AISLE DESIGNATORS

Theodore Henry Allegri, Sr., 5617 Fairmont, Peoria, Ill. 61614

Filed Sept. 22, 1976, Ser. No. 720,300
Int. Cl.² E01F *9/08*
U.S. Cl. 404—12 **3 Claims**



1. An aisle designator for use with a surface having a groove structure formed therein, said aisle designator comprising:

indicator means having first and second surfaces and a peripheral edge, said first surface being convex in conformation, said second surface being planar, said peripheral edge being formed by the juncture of said first and second surfaces, said peripheral edge defining a circle, said indicator means having an axis of symmetry normal to said second surface and intersecting the center of said circle, said indicator means having a bore formed therethrough, said bore having a bore longitudinal axis normal to said second surface and offset from said axis of symmetry toward said peripheral edge;

anchor means having an annular configuration, said anchor means being attached normal to said second surface, the longitudinal axis of said anchor means being aligned with said axis of symmetry, said anchor means having a cross-sectional diameter less than the diameter of said circle, said second surface having an interior bearing portion and a peripheral bearing portion defined by said anchor means; and

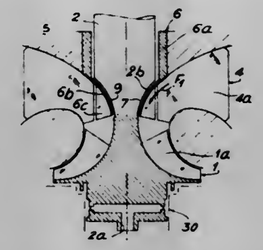
the groove structure being annular in conformation and normal to the surface, said anchor means fitting flush within the groove structure, said interior and peripheral bearing portions fitting against said surface.

4,071,303

ROTARY MACHINE HAVING A SUSPENDED SHAFT

Joël Guidez, Aix-en-Provence; Paul Lecouvreur, Fresnes, and Jean Roumailhac, Versailles, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 18, 1976, Ser. No. 667,980
Claims priority, application France, Mar. 18, 1975, 75 08543
Int. Cl.² F04D *29/04*
U.S. Cl. 415—112 **5 Claims**



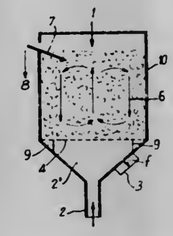
1 A rotary machine having a vertical drive shaft of varying diameter suspended from the upper end thereof and provided at the lower end thereof with an impeller-wheel surrounded by a casing in which is incorporated a suction chamber fitted with stationary radial vanes integral with the casing, wherein said shaft is rotatably mounted in a hydrostatic bearing placed beneath said impeller-wheel, a removable stationary sleeve being mounted coaxially with said shaft between said suction chamber and said impeller-wheel, said sleeve including a surface of revolution having its axis coincident with the axis of rotation of said shaft. said surface of revolution having a diameter varying in direct constant relation to the diameter of said shaft.

4,071,304

SEPARATION OF PRODUCTS IN GRANULAR FORM

Raymond Chauvin, Verneuil-en-Halatte, and Pierre M. M. Guillon, Paris, both of France, assignors to Charbonnages de France, Paris, France

Continuation-in-part of Ser. No. 490,033, July 19, 1974, abandoned. This application May 26, 1976, Ser. No. 690,064
Claims priority, application France, July 27, 1973, 73 27584; June 24, 1974, 74 21826; United Kingdom, Aug. 18, 1975, 34285/75
Int. Cl.² B05D *1/24*
U.S. Cl. 427—185 **23 Claims**



1. A method for processing granules in a bed of particles of a product partially fluidized by a fluidization agent in a predetermined range of temperature, utilizing at least a raw material formed and processed in a divided state, the said divided state being of the group consisting of drops and granules, the said method comprising the steps of

forming a vertical columnar fluidized bed zone in a container having sidewalls and at least one endwall, forming a vertical columnar non-fluidized zone in said container extending substantially the length of said sidewalls and parallel thereto, the vertical columnar non-fluidized zone constituting at least one horizontal channel having a horizontal direction, the channel not being subjected to the fluidizing agent;

vibrating the container with vibrations directed to apply to each point of each channel with vibrations oriented at an angle of 0° to 80° to the horizontal, in a vertical plane substantially in the direction of the channel, said vibrations serving to move the particles and the granules in the direction of the channel;

maintaining the said bed at a temperature within the predetermined range of temperature;

dropping the said material in the said divided state into the vertical columnar fluidized zone;

subjecting granules in the bed and the pulverulent product to circulation currents consequently formed during simultaneous fluidization and vibration;

simultaneously utilizing said circulation currents for feeding, within the container itself, vibrated screening and discharging means with the granules and the particles;

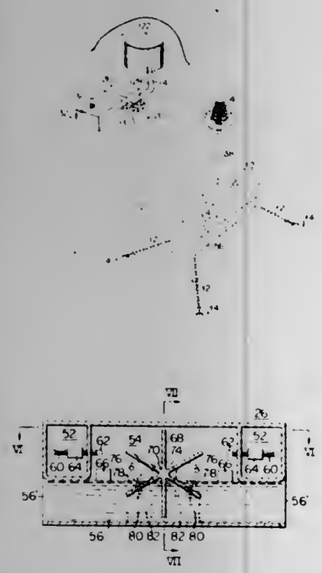
and extracting and discharging the granules to the outside.

4,071,305

TRANSDUCER FOR CONVERSION OF TIDAL CURRENT ENERGY

Fumio Ootsu, 6-4, Shirahae-cho, Saseho Nagasaki, Japan

Filed Oct. 13, 1976, Ser. No. 732,187
Int. Cl.² F04B *17/02*; F03B *4/10*
U.S. Cl. 417—334 **3 Claims**



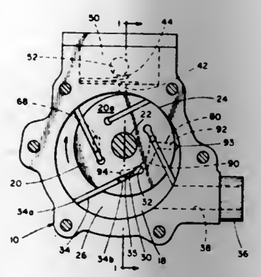
1. A transducer apparatus for converting an energy of a tidal current to an energy of a high pressure fluid, comprising, in combination, a housing in the form of a rectangular box, a pair of atmosphere compartments disposed on the opposite end portions of said housing thereof and in fluid communication with each other and with the atmosphere, a plenum space and a sea-water channel disposed between said pair of atmosphere compartments within said housing, said sea-water channel being overlain with said plenum space to communicate with the latter and having both ends opened into the exterior of said housing, an impeller disposed within said communicating plenum space and sea-water channel so that an upper half thereof is located in said plenum space and the substantial portion of its lower half is located in said sea-water channel, said impeller including a rotary shaft disposed slightly above and in parallel to an interface between the plenum space and the sea-water channel to project into both atmosphere compartments, and a mechanism for producing a motive fluid disposed in each of said atmosphere compartments to be operatively coupled to the end of said rotary shaft projecting into the associated atmosphere compartment, the arrangement being such that, with the apparatus submerged in the sea, a tidal current flows through said sea-water channel to drive said impeller to cause said mechanism for producing, as the motive fluid, high pressure air from the air.

4,071,306

ROTARY VANE COMPRESSOR WITH RELIEF MEANS FOR VANE SLOTS

Peter Trent Calabretta, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 568,747, April 16, 1975, abandoned, and a continuation-in-part of Ser. No. 568,748, April 16, 1975, abandoned, and a continuation-in-part of Ser. No. 568,749, April 16, 1975, abandoned. This application Feb. 9, 1976, Ser. No. 656,480
Int. Cl.² F04C *29/02*
U.S. Cl. 418—82 **2 Claims**



1. A rotary sliding vane compressor comprising: a housing providing a gas working chamber having a cylindrical wall and including end plates closing said chamber; a cylindrical rotor mounted for rotation in said chamber and having opposed end surfaces and a plurality of inwardly extending vane slots formed therein; said rotor being in sliding contact with said cylinder wall at a contact point; a gas inlet port communicating with said chamber; a gas discharge port adjacent said contact point communicating with said chamber; a gas discharge chamber associated with said housing, said gas discharge chamber having a sump portion for the accumulation of lubricating fluid separated from said gas; a plurality of vanes slidable in said vane slots each having one end thereof flush with one of the end surfaces of said rotor, a vane tip in contact with said cylindrical wall and a lower edge defining, in cooperation with the bottom of said vane slots and at least one of said end plates, an undervane space; means defining a first fluid passage in said one end plate having a fluid supply port at one end of said passage and an inlet at the opposite end, said supply port being located so that it communicates with an undervane space as the rotor moves in a direction from said gas inlet port to said gas discharge port, said fluid supply port being out of communication with said undervane space for a predetermined distance before said vane tip reaches said contact point; means for supplying a substantially incompressible fluid to said inlet whereby said fluid flows through said passage and fills said undervane spaces, trapping a predetermined quantity of fluid in said undervane spaces; said fluid being confined, except for high flow resistance leakage paths between said rotor and said

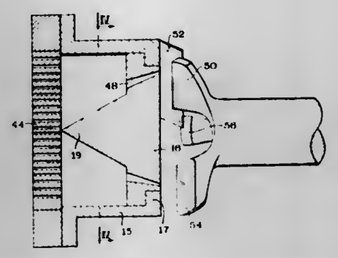
housing, and between said vanes and said vane slots, as said vane approaches said contact point, said last-named means including a conduit through which said fluid is transferred from said sump portion, having an outlet aligned with, but spaced from, said fluid supply passage inlet and a disc-like element interposed between said conduit outlet and said fluid supply passage inlet and driven with said rotor, said element having a plurality of apertures therein adapted to intermittently and periodically interconnect said conduit to said fluid supply passage and means defining a second fluid passage in one of said end plates, said passage having a first portion adapted to communicate with said undervane spaces, said second fluid passage having a portion which extends into said gas working chamber so as to relieve suction created by the vanes moving outwardly during the suction phase.

4,071,307

APPARATUS FOR MAKING CHIPS OF THERMOPLASTIC MATERIAL

Luigi Porro, via Torino 24-26, Villanova Canavese, Turin, Italy

Filed Dec. 10, 1975, Ser. No. 639,376
Claims priority, application Italy, Dec. 16, 1974, 70631/74
Int. Cl.² B29F *3/04*
U.S. Cl. 425—72 R **1 Claim**



1. An apparatus for making chips of a thermoplastic material such as polyethylene or polypropylene, comprising:

a die for extruding filaments and having heating means;

a rotatable shearing tool having one shearing blade, operatively associated with the die for shearing the filaments into chips;

an enclosure surrounding the shearing tool and the die, for leading the chips away from the shearing area and toward an outflow aperture;

a hopper placed beneath the outflow aperture of the enclosure for collecting the chips;

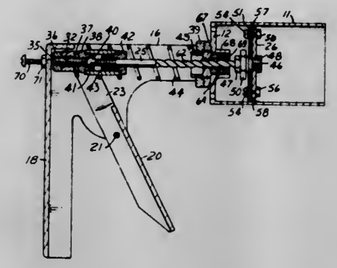
a rotatable impeller located immediately adjacent the lower outlet end of said hopper and cooperating with the hopper for generating an air stream into the hopper and the enclosure, said air stream cooling said shearing blade, and wherein the die comprises a mandrel having a flat plate-like portion and a rearwardly extending conical apex, a cylinder housing the mandrel and a breaker plate engaging the apex of the mandrel, said cylinder defining an extrusion chamber between its inner surface and the conical apex of said mandrel, said flat plate-like portion having extrusion holes in at least two coaxial circular arrays near the periphery thereof, the arrays being displaced by half an angular pitch with respect to each other, said extrusion holes extending at an angle relative to the axis of the die in a radial plane from a point near the center of said extrusion chamber to a point near the periphery of said flat plate-like portion and tapering from said extrusion chamber to said flat plate-like portion.

4,071,308

DISPENSER FOR ICE CREAM OR THE LIKE

John T. LaFreda, 29196 Piping Rock Road, Sun City, Calif. 92381

Filed Apr. 16, 1976, Ser. No. 677,706
Int. Cl.² A47J *43/28*
U.S. Cl. 425—284 **1 Claim**



1. A dispenser for ice cream or similar frozen material comprising:

a cylinder open at one end;

means forming a handle for supporting said cylinder at the opposite end thereof;

a piston movable along the axis of said cylinder;

a lever pivotally supported by the handle forming means, said lever extending adjacent said handle;

means connecting said lever to said piston whereby the squeezing of said handle and of said lever together causes said piston to move along said cylinder to eject a scoop of ice cream or similar frozen material therefrom; and

means responsive to the movement of said piston to rotate said piston about said axis;

said dispenser including a scraper connected to said piston so as to be rotatably movable therewith, said scraper being engageable with the inner surface of said cylinder whereby to scrape ice cream adhering to said inner surface therefrom;

said scraper comprising diametrically oppositely disposed scraper blades that extend lengthwise of said cylinder and on the side of said piston adjacent the open end of the cylinder;

said dispenser including means permitting free radial movement of said scraper relative to said piston.

4,071,309

METHOD AND APPARATUS FOR MAKING CEMENT WITH PREHEATER, KILN AND HEAT EXCHANGER FOR HEATING COMBUSTION AIR

Isao Yamane, Ichikawa, Japan, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

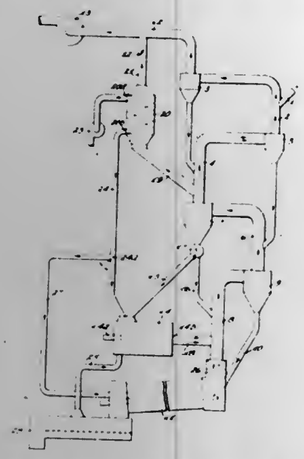
Filed May 28, 1976, Ser. No. 690,990
Int. Cl.² F27B *15/00, 7/00*
U.S. Cl. 432—14 **8 Claims**

1. A method of producing such as Portland cement clinker in a system including at least a preheater and a rotary kiln, with the cement being made from pulverant feed material pre-sintered in the preheater and then fed to the rotary kiln, with said pulverants being pre-sintered in a counterflow of kiln waste gases passing through multi-stages (**3**, **5**, **7** and **9**) of raw material preheating in the preheater, and in which a flow (e.g., in flue **4**) of said kiln waste gases from an identified one of said stages (e.g., stage **7**) contains more thermal energy than can be utilized to advantage in preheating the raw material in the remaining stages (e.g., stages **5** and **3**) through which such gases pass before dispersing in surrounding atmosphere, said method comprising the steps of:

a. extracting from said flow (e.g., in flue **4**) of gases from said identified stage (e.g., **7**) a portion of such gases;

b. conducting such extracted gases to pass through a heat

exchanger (20) into which air is introduced at a temperature lower than the temperature of the extracted gases to thereby transfer heat energy to such air while discharging the extracted gases and such air from the heat exchanger (20) in separate and unmixed streams (via 21 and 24); and

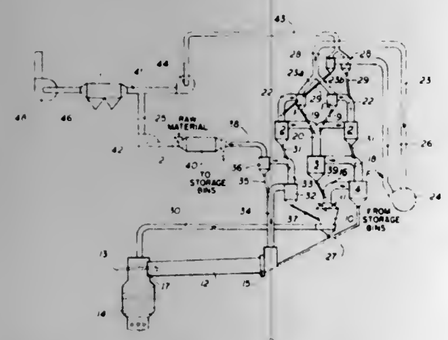


c. recycling the heat energy transferred to such air from said extracted gases by delivering and introducing such heated air to the system (via 24, 14, 18 or 24, 27) at a location within the system where material feed has at least passed through said identified stage (e.g., 7) but has not yet passed out of the kiln (11).

4,071,310
INSTALLATION FOR THE MANUFACTURE OF CEMENT

Gerard Ghestem, Lambersart, France, assignor to Fives-Cail Babcock, Paris, France

Filed Oct. 26, 1976, Ser. No. 735,908
Claims priority, application France, Oct. 28, 1975, 75 32852; Aug. 2, 1976, 76 23533
Int. Cl.² F27B *7/02*
U.S. Cl. 432—106 **6 Claims**

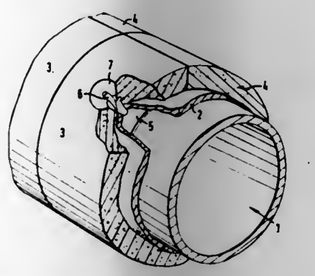


1. An installation for the manufacture of cement from dry raw material, comprising
a. a rotary tubular kiln having
1. an inlet for the material,
2. means for producing hot gases in the kiln for converting the material into clinker,
3. an outlet for the clinker, and
4. flue means for removing the hot gases from the kiln,
b. a chamber of combustion disposed upstream of the kiln inlet, the combustion chamber having
1. means for producing combustion gases in the chamber, and
2. flue means for removing the combustion gases from the chamber,
c. first and second preheaters for the raw material,
1. said first preheater being a multi-stage preheater, and flues interconnecting the stages of the first preheater,
2. means for introducing all of the raw material into a first stage of said first preheater, for heating therein,
3. one of the stages of the first preheater being arranged to divide the heated material into two fractions,
4. conduit means passing one of the material fractions sequentially into the second preheater and into the chamber of combustion and passing the other material fraction sequentially into successive ones of the stages of the first preheater and into the chamber of combustion,
5. one of said preheaters being in communication with the flue means for removing the hot gases from the kiln whereby the hot gases pass through said one preheater for heating the material therein, and
6. the other one of said preheaters being in communication with the flue means for removing the combustion gases from the combustion chamber whereby the combustion gases pass through said other preheater for heating the material therein, and
d. a cooler receiving the clinker from the outlet of the kiln.

4,071,311
REFRACTORY INSULATION

Paul Anthony Errington, Neston, England, assignor to Morgan Refractories Limited, Wirral, England

Filed May 6, 1976, Ser. No. 683,809
Claims priority, application United Kingdom, Feb. 12, 1976, 5588/76
Int. Cl.² F27D *13/06, 3/02*
U.S. Cl. 432—234 **3 Claims**



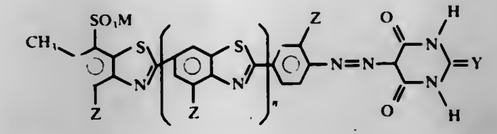
1. A furnace member comprising a generally horizontal metal pipe in a furnace and insulated by refractory sheathing consisting of metal coupling links which each rest on and fit around an upper part of the pipe, each link having substantially radially outwardly extending tile-engaging projections spaced apart around the coupling link, an inner resilient layer of refractory fibrous material covering the coupling links except for the tile-engaging projections which project through the inner layer, and an outer layer of refractory tiles which extend around and cover the inner layer, circumferentially adjacent tiles substantially meeting in abutment overlapping each coupling link and having holes engaged by said projections such that each link joins together two adjacent tiles, so that said tiles and links, with the inner layer interposed, positively interengage so as to embrace and hold in place around the pipe.

4,071,312
GREEN-YELLOW TO ORANGE MONOAZO PAPER DYES

John Blackwell, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

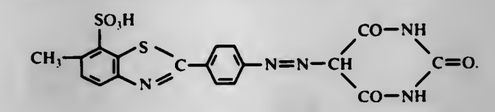
Continuation-in-part of Ser. No. 82,119, Oct. 19, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,957
Int. Cl.² D21H *1/46;* **C09B** *29/36*
U.S. Cl. 8—7 **10 Claims**

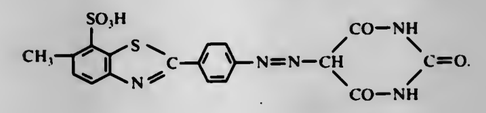
1. A green-yellow to orange fluorescent dye of the formula



where
Y = O or S
Z = H or CH_3
n = 0 or 1 and
M = H, Li, Na, K, NH_4 or the protonated form of a tertiary lower alkylamine or alkanolamine.

10. The paper as claimed in claim 9 wherein the dye in its free-acid form has the structural formula





4,071,313
POLYUREA POLYCARBAMOYL SULPHONATES

Geoffrey Bruce Guise, Highton, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Dec. 2, 1976, Ser. No. 746,730
Claims priority, application Australia, Dec. 5, 1975, 4204/75
Int. Cl.² D06M *15/52;* **C08L** *81/08*
U.S. Cl. 8—127.6 **17 Claims**

1. A composition for the treatment of fibrous materials which has the average molecular formula represented by the structure (I),

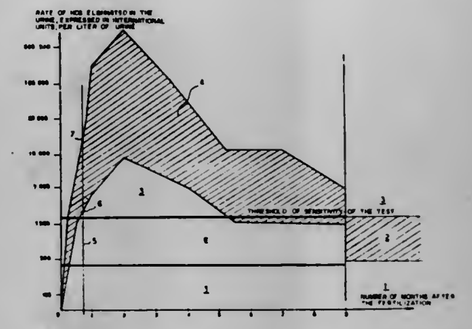
$$R(NHCONR'R'')_x(NHCOSO_3^-M^+)_y \quad (I)$$

where R is an organic radical, containing at least 6 carbon atoms; R' is an alkyl or aryl radical which may or may not contain substituents; R'' is either hydrogen or an alkyl radical; x and y are each greater than zero and $x + y \geqq 2$; M^+ is a monovalent cation or one equivalent of a polyvalent cation such that there is electrical neutrality in the molecule; and the molecular weight, as represented by the formula (I), is in excess of 500.

4,071,314
PROCESSES, REAGENTS AND MEANS FOR EARLY DIAGNOSIS OF PREGNANCY

Robert Louis Prugnaud, Paris, France, assignor to Laboratoire Theranol, Paris, France

Continuation-in-part of Ser. No. 430,935, Jan. 4, 1974, abandoned. This application June 29, 1976, Ser. No. 701,034
Claims priority, application France, Jan. 8, 1973, 73.00496
Int. Cl.² G01N *33/16;* **A61K** *37/38*
U.S. Cl. 23—230 B **9 Claims**



1. In a process for early diagnosis of pregnancy in mammals for whom pregnancy causes elimination of chorionic gonadotropin of placental origin in the urine comprising:
combining a predetermined quantity and dilution of urine from a subject being tested for pregnancy with a reagent comprising a storable, dry composition mixable with diluting liquid immediately prior to usage, said composition comprising a substrate of erythrocytes or synthetic polymer suitable for use as such a substrate on which are adsorbed chorionic gonadotropin endowed with antigen properties and said composition including a substance acting as an anti-serum with respect to this antigen;
allowing the mixture to stand from one-half to 2 hours; and
inspecting the mixture for the occurrence of agglutination reaction or the inhibition thereof, the improvement wherein
the ratio of said adsorbed chorionic gonadotropin endowed with antigen properties to said substance acting as an anti-serum with respect to this hormone is such that said reagent is sensitive to chorionic gonadotropin in the urine only when the latter is eliminated in the urine at a rate exceeding 1,500 I.U. of chorionic gonadotropin per liter of urine, and the agglutination reaction is prevented when the urine contains more than 1,500 I.U. of chorionic gonadotropin per liter of urine.
and wherein said composition comprises three superimposed dried layers, the lower layer comprising said substrate having adsorbed thereon said HCG antigen, the top layer comprising said antiserum, and a middle layer interposed between said bottom and top layers, said middle layer comprising a phosphate buffer containing a calcium ion chelating agent.

4,071,315
ANALYTICAL TAPE MEDIUM

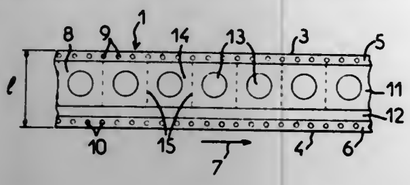
Guy Chateau, 7, rue des Ponts de Comines, Lille (Nord), France

Filed July 12, 1976, Ser. No. 704,694
Claims priority, application France, June 2, 1976, 76 17634
Int. Cl.² G01N *33/16, 21/30*
U.S. Cl. 23—230 B **20 Claims**

1. A method for the continuous immunological analysis of a plurality of samples of serum, which consists in detecting, in each sample, the possible presence of a first substrate of antibodies or antigens by fixation of the said first substrate possibly contained in the serum on a second substrate of the corresponding antigens or antibodies respectively, wherein the

second substrate is fixed on at least one zone of a longitudinal tape and by the fact that a longitudinal translatory displacement of the tape is effected in order to bring said zone, in succession,

opposite a station where there is deposited a sample possibly



containing the first substrate, in order to cause the fixation of the possible first substrate on the second substrate fixed on the tape,

opposite a station in which the said zone is rinsed to eliminate any possible excess of unfixed first substrate, and then

opposite a reaction reading station.

4,071,316

SILICONE COMPOSITION FOR ANALYZING BLOOD SAMPLES

John H. Wright, Elnora, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 634,563, Nov. 24, 1975, Pat. No. 4,018,564. This application Dec. 20, 1976, Ser. No. 752,057

The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.

Int. Cl.² C07F 7/18; G01N 33/16

U.S. Cl. 23—230 B **14 Claims**

8. A method for analyzing a blood sample composed of blood serum and blood clots in part comprising adding to said blood sample a small but effective amount of blood-separating composition having controlled rheological properties and a specific gravity that varies from 1.035 to 1.06 wherein said composition comprises (a) 100 parts by weight of a blend of diorganopolysiloxanes which are compatible with each other of a viscosity varying from 10,000 to 500,000 centipoise at 24° C where the organo groups are methyl and a mixture of methyl and tetrachlorophenyl; (b) from 3 to 50 parts by weight of a filler selected from the group consisting of a fumed silica and fumed silica treated with a silicone compound wherein the amount of treated fumed silica varies from 0 to 100% by weight of the total silica present; and (c) from 0.05 to 3 parts by weight of a stabilizing compound of the formula,

$$R'O\,(C_aH_{2a}O)_x(C_aH_{2a}O)_yH$$

wherein R' is a member selected from the group consisting of hydrogen and lower alkyl radicals having from 1 to 7 carbon atoms, *a* and *b* are integers equal to from 1 to 4 inclusive, *x* is an integer equal to from about 4 to 5 or more and *y* is a whole number equal to from 0 to 50; and centrifuging the blood sample and said blood-separating composition to separate said blood serum from said blood clost with said blood-separating composition forming an integral barrier between said blood clots and said blood serum.

4,071,317

TEST COMPOSITION AND DEVICE FOR DETERMINING PEROXIDATIVELY ACTIVE SUBSTANCES AND PROCESS FOR PREPARING SAME

Charles Tak Wai Lam, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 14, 1977, Ser. No. 777,002

Int. Cl.² G01N 31/22, 33/16

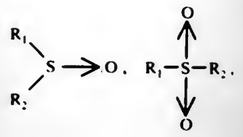
U.S. Cl. 23—253 TP **40 Claims**

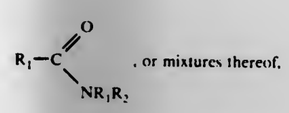
21. A test device for determining the presence of a peroxidatively active substance in a sample, the device having a carrier matrix incorporated with a test composition comprising

an organic hydroperoxide,

an indicator capable of producing a detectable response in the presence of a perioxide, and

a diluent comprising a compound having the structure





, or mixtures thereof,

in which R_1 and R_2, same or different, are hydrogen, alkyl or alkoxy having 1 to about 6 carbon atoms or aryl.

4,071,318

TEST COMPOSITION AND DEVICE FOR DETERMINING PEROXIDATIVELY ACTIVE SUBSTANCES

Charles Tak Wai Lam, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 14, 1977, Ser. No. 777,005

Int. Cl.² G01N 31/22, 33/16

U.S. Cl. 23—253 TP **30 Claims**

20. A test device for determining the presence of a peroxidatively active constituent in a sample, the device having a carrier matrix incorporated with a test composition comprising cumene hydroperoxide, o-tolidine and triethanolamine borate.

4,071,319

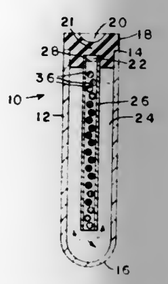
CONTAMINANT DETECTOR

Edward L. Nugent, North Caldwell, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Filed Nov. 26, 1976, Ser. No. 745,101

Int. Cl.² G01N 31/22, 21/06, 1/24

U.S. Cl. 23—254 R **6 Claims**



1. Apparatus for the detection of fluid-borne contaminants, which comprises:

a. a first tubular container having a portal therein;

b. a self-sealing, gas-proof, cannula-penetrable closure mounted in said portal, said closure together with said first tubular container defining a hermetically sealed chamber;

c. a partial vacuum in said chamber;

d. a second tubular container mounted in said first tubular container and having one end in open communication with said chamber and the other end closed by said closure; and

e. an indicator for the presence of said contaminants disposed in said second tubular container.

4,071,320

DEVICE FOR THE QUANTITATIVE DETERMINATION OF IMPURITIES, ESPECIALLY BACTERIA, ON FLAT SURFACES

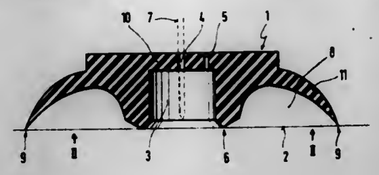
Martin Korbin, An der Eisenbahn 1a, 6392 Neu Anspach 1, Germany

Filed Apr. 14, 1977, Ser. No. 787,387

Claims priority, application Germany, Apr. 27, 1976, 2618334

Int. Cl.² C12B 1/04; G01N 1/02, 13/00

U.S. Cl. 23—259 **10 Claims**



1. A device for quantitative determination of impurities, especially bacteria, on a flat surface, said device comprising a body member provided with a rinsing chamber having an opening adapted to be placed on the flat surface to be investigated in open communication therewith, aperture means spaced from said opening and connecting said rinsing chamber with the atmosphere outside said body member for permitting both liquid passage and air passage from outside said body member into said rinsing chamber and vice versa, and sealing means on said body member for providing a liquid-tight and an air-tight seal between said rinsing chamber and the flat surface being investigated.

4,071,321

TEST COMPOSITION AND DEVICE FOR DETERMINING PEROXIDATIVELY ACTIVE SUBSTANCES

Charles Tak Wai Lam, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 14, 1977, Ser. No. 777,001

Int. Cl.² G01N 31/22, 33/16

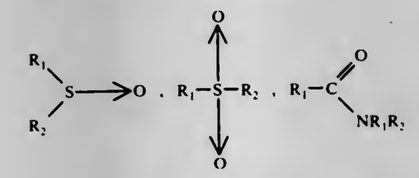
U.S. Cl. 23—253 TP **63 Claims**

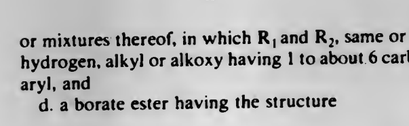
51. A test device for determining the presence of a peroxidatively active substance in a test sample, said device having a carrier matrix incorporated with a test composition comprising

a. an organic hydroperoxide,

b. an indicator capable of producing a detectable response in the presence of said hydroperoxide and a peroxidatively active substance,

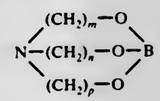
c. a diluent having the structure





or mixtures thereof, in which R_1 and R_2, same or different, are hydrogen, alkyl or alkoxy having 1 to about 6 carbon atoms, or aryl, and

d. a borate ester having the structure



in which *m*, *n* and *p*, same or different, are integers of 1 to about 4.

4,071,322

APPARATUS FOR PRODUCING AN INERT GAS

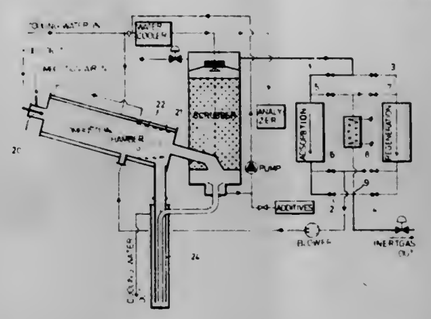
Johannes W. Graat, Overasselt, Netherlands, assignor to Smit Nijmegen B.V., Nymegen, Netherlands

Continuation of Ser. No. 487,424, July 10, 1974, abandoned. This application May 3, 1976, Ser. No. 682,546

Claims priority, application Germany, May 16, 1974, 2424064; May 16, 1974, 7417281[U]

Int. Cl.² B01J 1/00, 7/00; F23D 11/00

U.S. Cl. 23—262 **8 Claims**



1. In an apparatus for producing an inert gas of the type wherein liquid or gaseous hydrocarbons are burnt with air, comprising:

an elongated chamber having a combustion portion including one end of the chamber and a contiguous cooling portion including the other end of the chamber, an inlet at the combustion end for receiving fuel and air to be burned and an outlet at the cooling end thereof, said chamber comprising inner and outer walls defining a water jacket therebetween along the entire length and periphery of the chamber for receiving cooling water at the combustion end, and a plurality of spray nozzles disposed along the length of the cooling portion and around the periphery thereof, said spray nozzles receptive of water from the water jacket for spraying into the cooling portion of the chamber.

4,071,323

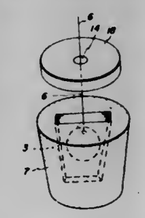
DIFFUSION CRUCIBLE AND SLAB MEMBER WITH COMMON METAL COMPONENT IN THE VAPOR PHASE

Robert L. Holman, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 8, 1976, Ser. No. 730,918

Int. Cl.² B01D 9/00

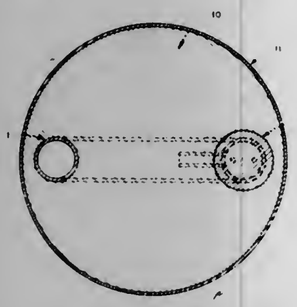
U.S. Cl. 23—273 R **8 Claims**



1. A crucible and crystalline slab member for vapor phase diffusion under equilibrium conditions between the crucible and the crystalline slab member, comprising: a porous, multiphase solid crucible provided with at least one non-cylindrical cavity in which said crystalline slab member can be placed, said non-cylindrical cavity having dimensions about 1 to about 3 millimeters greater than said crystalline slab member, the said

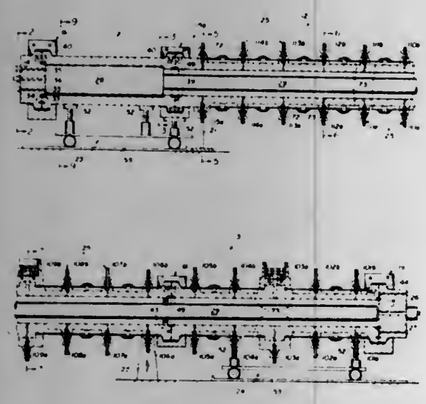
crucible and slab member comprising material which gives off the same chemical metal component in the vapor phase as said crystalline member at some temperature and whose common vapor phase is one having a pressure less than about 10^{-4} atmosphere.

4,071,324
CHEMICAL REACTOR
Luther James Reid, 196 Bishops Drive, Aston, Pa. 19014
Filed June 1, 1976, Ser. No. 691,892
Int. Cl.² F27B *17/02*; B01J *8/06*
U.S. Cl. 23—288 K **3 Claims**



1. In an apparatus for contacting a fluid stream with a particulate solid contact material a supported heat exchange body, temperature regulating means surrounding said heat exchange body, a vertically disposed open ended tube extending through said heat exchange body, upper closure means and lower closure means for said tube, a support means attached to said lower closure and extending into said tube and a supply conduit dispsed in said heat exchange body opening into said tube above said support means and below said upper closure means.

4,071,325
ETHYLENE POLYMERIZATION REACTOR
Gerald M. Platz, West Chester, Ohio, and Norris W. Walkup, Atwood, Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.
Filed Aug. 16, 1976, Ser. No. 714,451
Int. Cl.² B01J *3/04*; C08F *2/00*
U.S. Cl. 23—290 **5 Claims**



1. An apparatus for the polymerization of ethylene under high pressure, which comprises:
a. an elongated reactor vessel incorporating
i. a motor housing,
ii. a first reactor body section contiguous to and in communication with the motor housing,
iii. a second reactor body section communicating with the first reactor body section,
iv. a stirrer extending longitudinally from the motor housing through the first and second reactor body sections,
v. end heads for sealing the opposite ends of the motor housing and the second reactor body section, respectively, and
vi. closure straps removably and hermetically securing the motor housing and the respective reactor body sections in assembled relation with the end heads in sealing relation thereon;
b. means horizontally supporting the reactor, including fixed cradle means and movable cradle means,
i. the fixed cradle means including means for deflecting longitudinally of the reactor to accommodate the thermal expansion thereof, and,
ii. the movable cradle means facilitating movement of the motor housing and the reactor body sections relative to one another upon disengagement of the closure straps to permit disassembly and maintenance of the reaction;
c. a plurality of fluid conduit means disposed lengthwise of the first and second reactor body sections to permit the introduction and withdrawal of fluid streams therethrough, said means being secured to a plurality of side entry means spaced longitudinally of the reactor,
i. each of said side entry means having securing means disposed circumferentially thereof for mounting the fluid conduit means to the reactor and having a plurality of apertures extending therethrough, and
ii. adjacent pairs of the apertured side entry means defining reactor jacket sections for the passage of heat transfer fluids therethrough;
d. a product outlet conduit formed at the end of the end head on the reactor body section; and
e. pressure reduction means in the product outlet conduit to permit let-down of the pressure of the product stream removed therefrom.

4,071,326
GELLED GASOLINE
George B. Freda, Belpre, Ohio, assignor to Uniroyal, Inc., New York, N.Y.
Division of Ser. No. 89,881, Feb. 16, 1961. This application Nov. 30, 1962, Ser. No. 257,804
Int. Cl.² C10L *7/02*
U.S. Cl. 44—7 E **2 Claims**

1. A gelled gasoline composition comprising gasoline containing a non-ionic wetting agent and a latex composition, the said latex composition comprising 100 parts of a rubbery polymer selected from the group consisting of polybutadiene and copolymers of butadiene with up to 50% by weight of styrene, 30-60 parts of formamide, and 5-30 parts of N-(ethylene oxide substituted) amide of oleic acid containing about 10 moles of ethylene oxide per mole of amide, the said parts being by weight, the said latex composition being present in such amount that the gelled gasoline contains from 6 to 10% by weight of rubber, based on the weight of gasoline plus latex composition, the non-ionic wetting agent being present in amount of from 0.1 to 5% based on the weight of the gasoline.

4,071,327
SALTS OF MANNICH BASES AND DERIVATIVES THEREOF
Casper John Dorer, Jr., Lyndhurst, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Continuation-in-part of Ser. No. 413,480, Nov. 7, 1973, abandoned. This application Mar. 21, 1975, Ser. No. 560,902
Int. Cl.² C10L *1/22*
U.S. Cl. 44—66 **36 Claims**

1. A composition selected from the group consisting of (1) compounds of the formula

$$R^1\left(\begin{array}{c} R^2 \\ | \\ CH_2-N^{\oplus}-R^3Z^{\ominus} \\ | \\ R^4 \end{array}\right)_x, \text{ wherein:}$$

R^1 is a hydroxy-substituted aromatic radical, or a hydroxy-substituted aromatic radical which contains as a further substituent an aliphatic radical;
R^2 is a hydroxy-substituted lower alkyl radical or

$$-R^5N\begin{array}{l} R^6 \\ \\ R^7 \end{array};$$

each of R^3 and R^7 is hydrogen or a lower alkyl or hydroxy-substituted lower alkyl radical;
R^4 is hydrogen or a lower alkyl radical;
R^5 is a lower alkylene radical;
R^6 is a hydroxy-substituted lower alkyl radical;
Z is one equivalent of an anion; and
x is the valence of R^1;
and (2) epoxide adducts of such compounds.

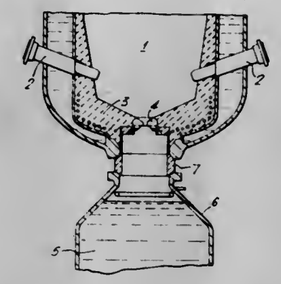
13. A composition comprising a major amount of a normally liquid fuel and, dissolved or substantially stably dispersed therein, a minor amount sufficient to improve dispersancy, anti-icing or rust inhibiting properties thereof of a composition according to claim 1.

4,071,328
METHOD OF REMOVING SULFUR FROM COAL
Gerard C. Sinke, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 22, 1976, Ser. No. 651,371
Int. Cl.² C10L *9/10*; C10B *57/00*
U.S. Cl. 44—1 R **16 Claims**

1. A process of reducing the total sulfur content of coal comprising:
hydrogenating the coal to convert at least a portion of the recoverable sulfur combined as pyritic sulfur to iron (II) sulfide;
contacting the hydrogenated coal with a sufficient amount of an aqueous hydrochloric acid solution to remove at least a portion of the sulfur combined as iron (II) sulfide.

13. A process of reducing the total sulfur content of coal comprising:
a. hydrogenating the coal under a pressure of from about 200 to about 550 pounds per square inch gauge at a temperature of from about 300° C to about 350° C for a sufficient time to convert at least a portion of the recoverable sulfur combined as pyritic sulfur to iron (II) sulfide;
b. contacting the hydrogenated coal at a temperature of from about 40° C to about 80° C with a sufficient amount of an aqueous hydrochloric acid solution to react with and thereby remove at least a portion of the sulfur combined as iron (II) sulfide.

4,071,329
COAL GASIFICATION PLANT
David Frank Eales, Kinross, Scotland, assignor to British Gas Corporation, London, England
Filed Nov. 22, 1976, Ser. No. 743,901
Claims priority, application United Kingdom, Nov. 27, 1975, 48808/75
Int. Cl.² B01J *3/00*
U.S. Cl. 48—62 R **14 Claims**



1. In a coal slagging gasifier comprising: a column-like vessel; means for introducing coal or other carbonaceous fuel into the top of said vessel; tuyere means for introducing oxygen and steam into said vessel for gasification of fuel therein; a hearth for collecting molten slag and iron which is formed during gasification of the fuel, said hearth having a slag tap orifice for periodically discharging slag downwardly; a quenching chamber located below said slag tap orifice for quenching slag discharged through said slag tap orifice, said quenching chamber being constructed and arranged to hold a body of quenching liquid therein; a burner located within said quenching chamber for directing hot combustion products adjacent the underside of the slag tap orifice to retain the slag and iron in the hearth; and means for initiating the tapping of molten slag comprising means for stopping or reducing the burner output and means for reducing the pressure in the quenching chamber relative to that in the gasifier vessel; the improvement which comprises means for supplying a secondary supply of combustion-sustaining gas comprising at least some of the oxygen required for combustion at the burner in the quenching chamber, from a position within said quenching chamber above the level of a body of quenching liquid to be held therein and remote from the burner in said quenching chamber.

4,071,330
STEAM REFORMING PROCESS AND APPARATUS THEREFOR
Richard A. Sederquist, Newington, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 22, 1976, Ser. No. 753,341
Int. Cl.² C01B *2/16*; B01J *7/00*
U.S. Cl. 48—94 **7 Claims**

1. A process for steam reforming a hydrocarbon feedstock comprising the steps of:
introducing a vaporous mixture of a hydrocarbon feedstock and steam into and through a first steam reforming catalyst bed disposed within an annular reaction chamber positioned within a furnace, said reaction chamber being defined by inner and outer concentric, spaced apart conduits;
burning a fuel and an oxidant within said furnace to provide heat to the first catalyst bed including flowing the hot furnace gases over the outer surface of the outer conduit countercurrent to the flow of said feedstock and steam mixture flowing through the first catalyst bed, wherein the reaction products leaving the first bed include unreacted hydrocarbons heavier than methane;
passing the reaction products, without further heating, from the first catalyst bed through a second steam reforming

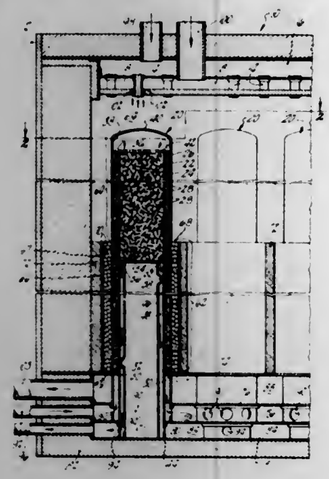
catalyst bed essentially adiabatically, the second bed being disposed within the inner conduit, wherein said unreacted hydrocarbons heavier than methane in the reaction products leaving the first bed are substantially reduced using essentially only the sensible heat within the reaction products leaving the first bed; and

returning, to the first bed, only the sensible heat in the reaction products leaving the second bed by passing the reaction products from the second bed through an annular heat regeneration chamber coaxial with said first bed and disposed inwardly of and adjacent said first bed and in heat exchange relationship thereto, the flow through the regeneration chamber being countercurrent to the flow through the first bed.

5. Steam reforming catalytic reaction apparatus comprising:

a furnace for supplying heat for an endothermic steam reforming reaction, including an enhanced heat transfer portion and wall means defining a burner cavity, said furnace also including means associated with said burner cavity for introducing fuel and an oxidant into said burner cavity;

a plurality of tubular reactors disposed within said furnace, each including a first portion positioned within said burner cavity and a second portion, said second portion being an extension of said first portion and positioned



within said enhanced heat transfer portion of said furnace, each of said reactors including inner and outer wall means defining an annular reaction chamber therebetween in heat exchange relationship to said enhanced heat transfer portion of said furnace and having a first bed of steam reforming catalyst therein, said first bed including an inlet end and an outlet end, said outlet end being disposed within said first portion of said reactor, said inner wall means defining a center tube coaxial with said reaction chamber and inwardly adjacent thereto;

said center tube including a catalyst portion and a regeneration portion, said catalyst portion having a second steam reforming catalyst bed therein, said bed including inlet means and outlet means, said reactor including means for directing reaction products from said outlet end of said first catalyst bed into said inlet end of said second catalyst bed and through said second catalyst bed, said reactor being constructed and arranged for essentially adiabatically reacting, in said second bed, the reaction products from said first bed, using only the sensible heat in the reaction products from said first bed;

cylindrical plug means disposed concentrically within said center tube and having an outer wall surface spaced inwardly from said center tube defining an annular heat regeneration chamber coaxial with and adjacent said reaction chamber and in heat exchange relationship thereto, said annular regeneration chamber having an inlet end in communication with said second bed outlet means and an outlet end adjacent said first catalyst bed inlet end, said reactor including means for directing the reaction products from said second catalyst bed outlet means into said regeneration chamber inlet end and through said regeneration chamber countercurrent to the flow through said first catalyst bed;

said furnace including heat transfer means disposed within said enhanced heat transfer portion for increasing the heat transfer effectiveness over said second portions of said reaction chambers, said furnace being constructed and arranged wherein the furnace gases flow over said second portions of said reaction chambers countercurrent to the flow through said first catalyst beds.

4,071,331

PROCESS FOR PRODUCING METHANE FROM CARBON MONOXIDE AND STEAM

Marvin M. Johnson, and Gerhard P. Nowack, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 618,722, Oct. 1, 1975, Pat. No. 4,017,424.
This application Nov. 19, 1976, Ser. No. 743,181
Int. Cl.² C10K *3/04*
U.S. Cl. 48—197 R **7 Claims**

1. A process for the conversion of a feed consisting essentially of carbon monoxide and steam to a gas containing methane and carbon dioxide which comprises contacting carbon monoxide and steam at an elevated temperature with a catalyst composition consisting essentially of nickel, a promoter selected from the group consisting of barium and uranium, combined oxygen and a calcium phosphate support having a Ca:P atomic ratio in the range of 1.4:1 to 2.3:1, wherein the components are present in approximate amounts as follows:

Calcium	5 to 35,
Phosphorus	2 to 20,
Nickel	10 to 50, and either
Barium	1 to 20, or
Uranium	2 to 40,

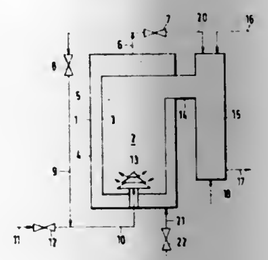
all said amounts expressed in terms of weight percent, based upon the weight of the total catalyst.

4,071,332

PROCESS OF GASIFYING SOLID FUELS, PARTICULARLY COAL

Carl Hafke, Frankfurt, and Rudolf Kohlen, Wehrheim, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 17, 1976, Ser. No. 715,075
Claims priority, application Germany, Feb. 26, 1976, 2607743
Int. Cl.² C10J *3/16*
U.S. Cl. 48—202 **3 Claims**



1. In a process of gasifying solid fuel such as coal comprising the steps of contacting a bed of solid fuel with oxygen and water vapor under a pressure of at least about 5 bars in a reaction chamber surrounded by a water-cooled zone, the reaction heat evaporating water in said zone, transferring the water vapor from said zone to the reaction chamber, removing product gas from the reaction chamber and feeding it into a scrubber-cooler, scrubbing and cooling said product gas in the scrubber-cooler, and periodically interrupting normal gasification, the improvement which comprises discontinuing the transfer of water vapor to the reaction chamber during such periods of other than normal gasification and instead transferring the water vapor to said scrubber-cooler.

4,071,333

ABRASIVE SCOURING BLOCK (AND SUPPORT THEREFOR)

Burton M. Like, East Brunswick, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 18, 1976, Ser. No. 733,647
Int. Cl.² C09K *3/14*
U.S. Cl. 51—304 **10 Claims**

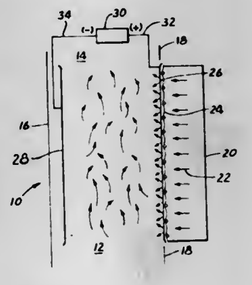
1. A hard surface scouring block composition consisting essentially of from about 65 - 85 percent by weight of an abrasive material, from about 10 - 20 percent by weight of a high melting, non-ionic detergent, from about 5 - 15 percent by weight of a long chain fatty alcohol and up to about 10 percent by weight of an alkali metal alkyl sulfate.

4,071,334

METHOD AND APPARATUS FOR PRECIPITATING PARTICLES FROM A GASEOUS EFFLUENT

Alan C. Kolb, Solana Beach, and James E. Drummond, Coronado, both of Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 502,103, Aug. 29, 1974, abandoned. This application Aug. 7, 1975, Ser. No. 602,730
Int. Cl.² B03C *1/00*
U.S. Cl. 55—2 **28 Claims**



1. A method of electrostatically precipitating particles from a gaseous medium carrying the same, comprising:

passing the medium through a channel in a precipitating station wherein said particles are brought into a first region containing ions of only one sign;

subjecting the medium to a supply of electrons from an electron beam generator to generate a supply of ions of both signs in a second region, said ions of one sign in said first region being supplied from said second region;

subjecting said medium to a generally uniform, strong electric field to drive said ions of one sign onto said particles, the average field strength of said electric field approaching the maximum field strength therein;

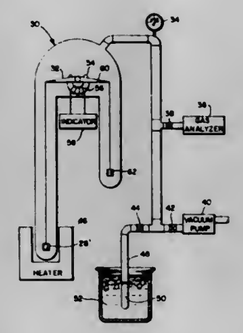
said electric field causing attraction of said charged particles to one or more electrodes having a charge of opposite polarity relative to the charged particles to thereby precipitate said particles out of the medium.

4,071,335

ZR_2NI AS A GETTER METAL AND NUCLEAR REACTOR FUEL ELEMENT EMPLOYING SUCH

Aldo Barosi, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Mar. 26, 1976, Ser. No. 670,953
Claims priority, application Italy, Apr. 10, 1975, 22211/75
Int. Cl.² B01D *53/04, 53/26*
U.S. Cl. 55—68 **9 Claims**



1. A process for sorbing both oxygen and hydrogen from water comprising contacting the water with a getter metal consisting essentially of Zr_2Ni

wherein the partial pressure of the water is less than 100 torr;

wherein the getter metal has a temperature of 150° to 700° C;

wherein the getter metal is capable of sorbing up to 5 weight percent of water.

9. A process for sorbing both oxygen and hydrogen from water vapor present in admixture with helium in a nuclear reactor fuel element the walls of which are constructed of a zirconium alloy, said process comprising contacting the water vapor with a getter metal consisting essentially of Zr_2Ni maintained at a temperature of 200° to 500° C

wherein the partial pressure of the water is less than 100 torr;

wherein the getter metal is capable of sorbing up to 5 weight percent of water.

4,071,336

GAS AND VAPOR SEPARATOR

Anthony S. Yamine, 4679 Pardee Road, Dearborn Heights, Mich. 48125

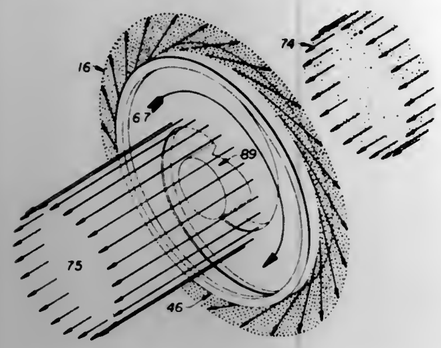
Continuation of Ser. No. 433,187, Jan. 21, 1974, abandoned. This application Dec. 1, 1975, Ser. No. 636,538
Int. Cl.² B01D *53/06*
U.S. Cl. 55—203 **9 Claims**

1. An apparatus for treating gases, comprising, in combination:

a rotating member including a hub member and a blade member, said blade member being attached at its innermost portion to said hub and carrying a desiccant material for absorbing absorbates of any specific gravity from incoming gases to be treated;

and power means operably connected to said hub member for rotating said rotating member at a high speed to propel axially a flow of gases purged of said absorbates and simultaneously to divert by centrifugal force radially and outwardly only said absorbates in said desiccant material to

reactivate and purge said desiccant material without any external gas-propelling means, without any desiccant



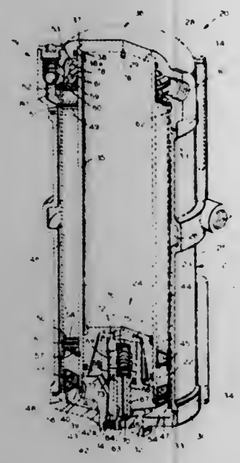
thermal re-activating means, and without any oxidizing means.

4,071,337

FILTER UNIT HAVING A CONSTANT RATE PURGING CYCLE

Bryce B. Evans, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Jan. 24, 1977, Ser. No. 761,817
Int. Cl.² B01D *53/04, 46/00*
U.S. Cl. 55—212 **9 Claims**



1. In a filtering unit for use in pressurized fluid systems of the type having an outer shell, an annular filter at the lower end of said shell, a dehydrating means thereabove, a distributing chamber at the top of said shell in communication with said filter and said dehydrating means, and a sump including a drain for exhausting said sump in the bottom of said shell, the improvement comprising:

a. a purge cylinder within said shell;

b. means for connecting said cylinder to said distributing chamber; and

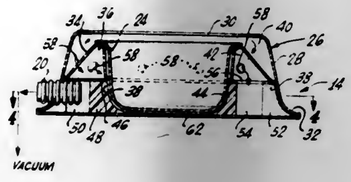
c. means in said cylinder for producing a high volume, constant velocity of air flow from said cylinder to said distributing chamber whereby said dehydrating means and said filter are backflushed by air flowing at a high volume and a constant velocity.

4,071,338

AIR EXHAUSTED MIXING BOWL

Charles G. Hutter, III, Hollywood, Calif., and Peter S. Hutter, Aspen, Colo., assignors to Physical Systems, Inc., North Hollywood, Calif.

Filed Jan. 27, 1976, Ser. No. 652,773
Int. Cl.² B01D *50/00*
U.S. Cl. 55—385 C **7 Claims**



1. Air exhausting means for a container which includes:

a housing adapted to surround the upper edge of said container, the upper edge of said housing being above the upper edge of said container;

a filter holder within said housing and adapted to surround said container, said filter holder having an annular shape and being spaced from said housing to form an annular chamber surrounding the upper edge of said container;

divider means within said filter holder dividing it into an upper plenum and a lower filter chamber, said filter holder having a first passageway establishing fluid connection between said annular chamber and said plenum, and said divider means having a second passageway therethrough establishing fluid connection between said plenum and said filter chamber;

outlet means in said filter chamber and passing out said housing adapted to be connected to exhaust means; and

absorption filter means in said filter chamber between said second passageway and said outlet means, whereby air and fumes from said container may be drawn from the space above said container and passed from said annular chamber into said plenum and into said filter chamber, through said filter means for absorption of said fumes and out said outlet means.

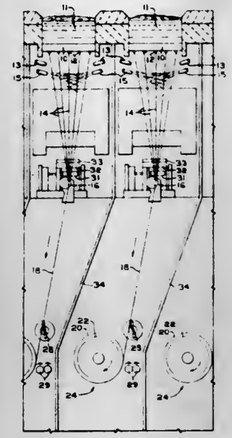
4,071,339

METHOD OF FORMING GLASS FIBERS

David H. Griffiths, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1977, Ser. No. 775,483
Int. Cl.² C03B *37/02*
U.S. Cl. 65—3 R **15 Claims**

1. A method of producing glass fibers comprising attenuating a plurality of filaments from a molten glass source at a slow speed, applying a lubricant other than a binder and/or size to the filaments as they are being slowly attenuated, positioning said strand in an attenuation device, increasing the speed of attenuation until desired filament diameters are obtained, upon attaining the desired filament diameter contacting the filaments with an application surface, applying the binder and/or size to the filaments and stopping the application of said lubricant to



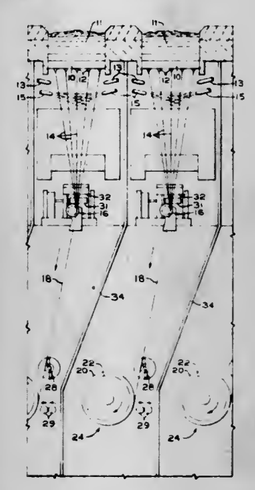
the filaments when they are in contact with the application surface.

4,071,340

APPARATUS FOR FORMING GLASS FIBERS

Carl A. Melle, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1977, Ser. No. 775,481
Int. Cl.² C03B *37/00*
U.S. Cl. 65—11 R **9 Claims**



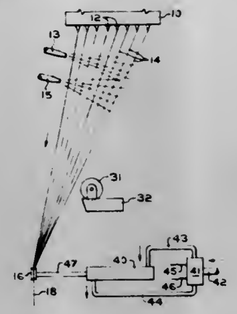
1. In an apparatus for forming glass fibers comprising a bushing having a plurality of bushing tips through which filaments are attenuated, an applicator having an application surface for applying binder and/or size to the filaments, a gathering means to combine the filaments into a unified strand and means for collecting the strand, the improvement wherein the applicator includes a movable cover having a bar which contacts the filaments, said bar being oriented to move the filaments from the application surface of the applicator when the cover is closed over the applicator during the attenuation of waste strand such that said waste strand is not coated with said binder and/or size.

4,071,341

APPARATUS FOR FORMING GLASS FIBERS

August G. Bohy, Lower Burrell, and Herbert W. Barch, Natrona Heights, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1977, Ser. No. 775,659
Int. Cl.² C03B *37/02*
U.S. Cl. 65—11 W **12 Claims**



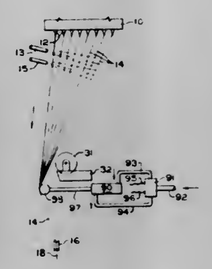
1. Apparatus for removing glass filaments from an application surface of an applicator containing a binder and/or size for coating onto said filaments during attenuation of waste filaments from a bushing comprising a gathering shoe and means connected to said gathering shoe for extending and retracting said gathering shoe from a given position, said gathering shoe being oriented with relation to said application surface such that upon extending said gathering shoe said filaments are removed from said application surface and upon retracting said gathering shoe said filaments contact said application surface.

4,071,342

APPARATUS FOR FORMING GLASS FIBERS

William L. Schaefer, Gibsonia, and Thomas J. Briar, Trafford, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1977, Ser. No. 775,482
Int. Cl.² C03B *37/00*
U.S. Cl. 65—11 R **11 Claims**



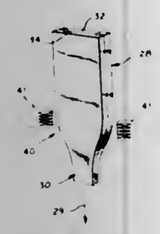
1. In an apparatus for forming glass fibers comprising a bushing having a plurality of bushing tips through which filaments are attenuated, an applicator having an application surface for applying binder and/or size to the filaments, a gathering means to combine the filaments into a unified strand and means for collecting the strand, the improvement comprising an extendable and retractable bar associated with the applicator for removing the filaments from the application surface of the applicator during attenuation of waste strand such that said waste strand is not coated with said binder and/or size, means for applying a lubricant other than said binder and/or size to waste filaments during attenuation of waste strand and means to coordinate the actions of said bar and said means for applying lubricant to activate said means for applying lubricant as said bar lifts said filaments from said application surface.

4,071,343

METHOD OF MAKING INTRAOCULAR LENSES

Walter P. Siegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 667,318, March 16, 1976, Pat. No. 4,025,465. This application Nov. 26, 1976, Ser. No. 745,272
Int. Cl.² C03C *19/00*; C03B *11/08*; C03C *15/00*
U.S. Cl. 65—23 **4 Claims**



1. The method of making a tangentially apertured lens for a pseudophakos comprising the steps of:

longitudinally drawing to reduced cross-sectional size an elongated wide and relatively thin substantially flat-sided preform of lens-forming material having a rectangular cross-sectional configuration, there being a pair of spaced parallel longitudinally extending openings internally of said preform of diametral sizes and relative juxtaposition selected and arranged according to the size and spaced parallel relationships desired of said tangentially directed apertures to be produced in said lens;

cutting through the thickness of said drawn preform in a direction from one flat side thereof to the other flat side around a closed generally circular path extending over said flat sides and across said openings to produce a lens blank having edges resulting from said cutting, opposite faces of said blank comprising portions of the original flat sides of said drawn preform within said circular path, the planes of said faces being disposed substantially perpendicularly to the thickness of said edges and parallel to the directions of portions of said longitudinal openings remaining in said blank whereby said remaining openings become disposed substantially tangentially oriented in said blank each along a line joining two points on the edge of said blank; and

shaping said opposite faces of said lens blank to curvature of radii and depth in said blank determined according to the center thickness and surface curvature configurations desired of the resulting tangentially apertured lens.

4,071,344

GLASS SHEET TEMPERATURE CONTROL APPARATUS AND METHOD

Richard H. Blausey, Jr., Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Oct. 14, 1976, Ser. No. 732,319
Int. Cl.² C03B *23/02*, *29/04*
U.S. Cl. 65—29 **9 Claims**



1. A method of accurately controlling the temperature of heated glass sheets comprising: supporting a plurality of glass sheets in a substantially horizontal plane and moving the same bodily in a generally horizontal path through a heating furnace at a preselected rate of speed, heating said sheets as they are advanced through said furnace, measuring the individual temperatures of a given series of heated glass sheets exiting the furnace and determining the average temperature deviation of said series of heated glass sheets from a desired temperature, varying the rate of speed of said glass sheets in said furnace in accordance with the amount of deviation of said average temperature from said desired temperature to vary the duration of time said sheets moving through said furnace are exposed to heat, and varying the duration of speed change in accordance with the amount of deviation of said average temperature from said desired temperature.

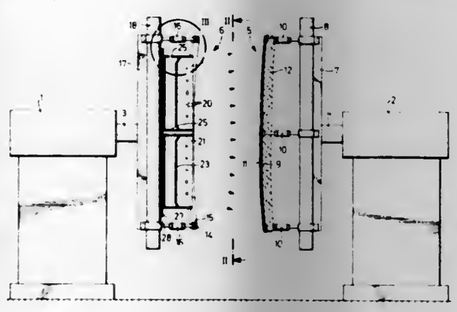
4. Apparatus for accurately controlling the temperature of heated glass sheets comprising: a heating furnace, a conveyor for supporting a plurality of glass sheets in a substantially horizontal plane and moving the same bodily along a generally horizontal path through said heating furnace at a preselected rate of speed, means in said furnace for heating said sheets, means exteriorly of said furnace for measuring the individual temperatures of a given series of heated glass sheets exiting the furnace, means computing the average temperature deviation of said series of heated glass sheets from a desired temperature, control means responsive to said average temperature deviation for generating a signal to vary the rate of speed of said conveyor to adjust the heat exposure time of said sheets moving through said furnace, and said control means including means for varying the duration of said signal in accordance with the variation in the temperature deviation.

4,071,345

APPARATUS FOR PRESS BENDING WINDOW GLASS

Alfons Werner; Mario Roth; Hans-Peter Siemonsen, all of Aachen, and Johann Winandi, Herzogenrath, all of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Nov. 5, 1976, Ser. No. 739,038
Claims priority, application France, Nov. 13, 1975, 75 34574
Int. Cl.² C03B *23/02*
U.S. Cl. 65—273 **13 Claims**



1. In a glass bending apparatus for bending sheets of glass, said apparatus including a convex bending mold having a convex bending surface shaped corresponding to the desired shape of the glass for contact therewith over generally the entire surface of one side thereof, a concave bending mold disposed in opposed relation to the convex mold for pressing a sheet of glass against the convex surface, the heating means for heating said convex mold to approximately the bending temperature of the sheet of glass prior to placement of the sheet between said molds, the improvement wherein:

a. said concave mold comprises a frame for contacting only the peripheral surface of the sheet of glass to be bent during pressing of the glass against the convex surface of the opposed convex mold, the center portion of said concave mold being an open space free of structure contacting the sheet of glass; and

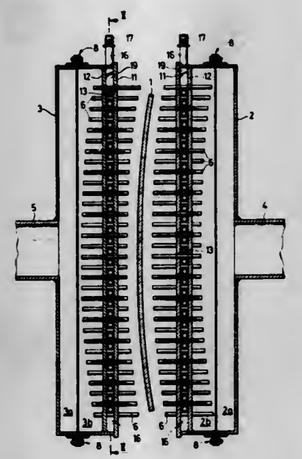
b. said heating means is disposed within the open space of the concave mold for heating the convex surface of the opposed convex mold to approximately said bending temperature.

4,071,346

APPARATUS FOR THERMAL TEMPERING SHEETS OF GLASS

Günther Schmidt, Aachen-Richterich, Germany, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Nov. 5, 1976, Ser. No. 739,037
Claims priority, application France, Nov. 19, 1975, 75 35302
Int. Cl.² C03B *27/00*
U.S. Cl. 65—351 **12 Claims**



1. In a compressed air tempering apparatus for sheets of glass, said apparatus including a plurality of blast nozzles for directing air against said glass, means for connecting each of said nozzles to a source of compressed air, and nozzle support means for holding said nozzles in individually adjusted axial position, the improvement wherein the nozzle support means includes:

a. hollow, flexible, inflated expandable means for engaging against the sides of each of said nozzles and with respect to which said nozzles are axially slidable; and

b. control means for expanding said expandable means laterally into pressure holding engagement with the sides of said nozzles to hold them in their individually adjusted axial positions.

4,071,347

NOVEL COMPOSITION FOR USE IN AGRICULTURE AS SOIL IMPROVERS AND FERTILIZERS AND PROCESS FOR THEIR PRODUCTION

Luigi Piccolo; Benedetto Calcagno, both of Milan; Marcello Ghirga, Bresso (Milan), and Antonio Paolinelli, Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Continuation of Ser. No. 449,576, March 8, 1974, abandoned. This application Nov. 12, 1975, Ser. No. 631,275
Claims priority, application Italy, Mar. 8, 1973, 21320/73
Int. Cl.² C05D *9/02*
U.S. Cl. 71—31 **9 Claims**

1. A process for preparing soil improvers and fertilizers characterized in that the dry by-products obtained in the production of titanium dioxide from ilmenite or ilmenite slag in the sulfate process and which substantially consist of dry ferrous sulfate heptahydrate with minor amounts of the sulfates of magnesium, manganese, calcium, aluminum and titanium are reacted with gaseous ammonia and the reaction product obtained, consisting substantially of ammonium sulfate and ferrous hydrate, is then subsequently oxidized until a composition is obtained which substantially consists of ammonium sulfate and ferric oxide hydrate and then the product consisting substantially of ammonium sulfate and ferric oxide hydrate is treated with sulfuric acid until ferric oxide hydrate has been converted to ferric sulfate to an amount of at least 5 mole percent.

4,071,348

PLANT GROWTH CONTROL

Walter W. Abramitis, Downers Grove, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Filed Apr. 5, 1973, Ser. No. 348,390
Int. Cl.² A01N *5/00*, *9/24*
U.S. Cl. 71—78 **17 Claims**

1. A composition for controlling the growth of suckers in tobacco plants, consisting essentially of:

a. from about 5% to about 50% by weight of a member of the group consisting of a monoalkyl ester of an organic dicarboxylic acid of the formula:

HOOC —X— COOR

wherein X is selected from the group consisting of $—CH_2—$, $—CH_2CH_2—$, $—CH_2CH(OH)—$, $—CH=CH—$, and —CHOH—, and R is alkyl having 6 to 12 carbon atoms, and the alkali metal, alkaline earth metal, ammonium, alkylammonium, and alkanolamine salts thereof;

b. from about 0.05% to about 10% by weight of a surfactant; and

c. from about 40% to about 80% of the total weight of the composition of an aliphatic alcohol having 6 to 12 carbon atoms.

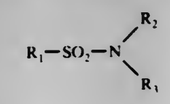
4,071,349

SULFONAMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE

Duane R. Arneklev, Antelope, Mont., and Don R. Baker, Orinda, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 285,971, Sept. 5, 1972, Pat. No. 4,021,229. This application Jan. 24, 1977, Ser. No. 761,843
Int. Cl.² A01N *9/00*
U.S. Cl. 71—88 **2 Claims**

1. A herbicide composition comprising a mixture of a thiocarbamate herbicide and an antidotally effective amount of an antidote compound corresponding to the formula



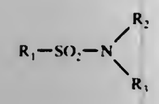
wherein R_1 is alkyl containing from 1 to 6 carbon atoms, inclusive; and R_2 and R_3 taken together form the ring structure alkyloxazolidyl wherein the alkyl substituents have from 1 to 4 carbon atoms, inclusive, and said alkyl substituent present as mono, di, tri or tetra substituents; wherein said antidote compound is present in an amount ranging between about 0.01 to about 15 parts by weight for each part by weight of the herbicide compound.

4,071,350
SULFONAMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE

Duane R. Arneklev, Antelope, Mont., and Don R. Baker, Orinda, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 285,971, Sept. 5, 1972, Pat. No. 4,021,229.
This application Jan. 24, 1977, Ser. No. 761,830
Int. Cl.² A01N *9/12*
U.S. Cl. 71—100 **34 Claims**

1. A herbicide composition comprising a mixture of a thiocarbamate herbicide and an antidotally effective amount of an antidote compound corresponding to the formula



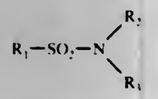
wherein R_1 is selected from the group consisting of phenyl, and substituted phenyl wherein said substituents can be selected from alkyl having from 1 to 4 carbon atoms, inclusive, alkoxy having from 1 to 4 carbon atoms, inclusive, halogen, nitro amino and haloalkylaminosulfonyl having from 1 to 4 carbon atoms, inclusive; R_2 and R_3 can be the same or different and are selected from the group consisting of hydrogen, alkyl containing from 1 to 6 carbon atoms, inclusive, haloalkyl containing from 1 to 6 carbon atoms, inclusive, alkoxy containing from 1 to 6 carbon atoms, inclusive, alkenyl containing from 3 to 6 carbon atoms, inclusive, alkynyl containing from 3 to 6 carbon atoms, inclusive, alkynoxycarbonyl containing from 3 to 6 carbon atoms, inclusive, carbamoyl, haloalkylthio containing from 1 to 6 carbon atoms, inclusive, phenyl, and substituted phenyl wherein said substituents can be selected from alkoxy containing from 1 to 4 carbon atoms, inclusive, halogen, hydroxy, nitro and carbamoyl, wherein said antidote compound is present in an amount ranging between about 0.01 to about 15 parts by weight for each part by weight of the herbicide compound.

4,071,351
SULFONAMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE

Duane R. Arneklev, Antelope, Mont., and Don R. Baker, Orinda, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 285,971, Sept. 5, 1972, Pat. No. 4,021,229.
This application Jan. 24, 1977, Ser. No. 761,837
Int. Cl.² A01N *9/12*
U.S. Cl. 71—100 **5 Claims**

1. A herbicide composition comprising a mixture of a thiocarbamate herbicide and an antidotally effective amount of an antidote compound corresponding to the formula



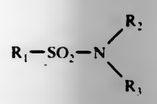
wherein R_1 is halogen, which includes chlorine, bromine, and fluorine; R_2 and R_3 can be the same or different and are selected from the group consisting of hydrogen, alkyl containing from 1 to 6 carbon atoms, inclusive, haloalkoxycarbonyl containing from 3 to 6 carbon atoms, inclusive and wherein halo includes, chloro, bromo and fluoro, carbamoyl, diacetonitrilocarbamoyl, wherein said antidote compound is present in an amount ranging between about 0.01 to about 15 parts by weight for each part by weight of the herbicide compound.

4,071,352
SULFONAMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE

Duane R. Arneklev, Antelope, Mont., and Don R. Baker, Orinda, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 285,971, Sept. 5, 1972, Pat. No. 4,021,229.
This application Jan. 24, 1977, Ser. No. 761,838
Int. Cl.² A01N *9/12*
U.S. Cl. 71—100 **2 Claims**

1. A herbicide composition comprising a mixture of a thiocarbamate herbicide and an antidotally effective amount of an antidote compound corresponding to the formula



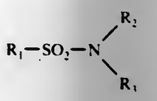
wherein R_1 is isocyanate; R_2 and R_3 can be the same or different and are selected from the group consisting of alkenyl containing from 3 to 6 carbon atoms, inclusive, wherein said antidote compound is present in an amount ranging between about 0.01 to about 15 parts by weight for each party by weight of the herbicide compound.

4,071,353
SULFONAMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE

Duane R. Arneklev, Antelope, Mont., and Don R. Baker, Orinda, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 285,971, Sept. 5, 1972, Pat. No. 4,021,229.
This application Jan. 24, 1977, Ser. No. 761,840
Int. Cl.² A01N *9/12*
U.S. Cl. 71—100 **3 Claims**

1. A herbicide composition comprising a mixture of a thiocarbamate herbicide and an antidotally effective amount of an antidote compound corresponding to the formula



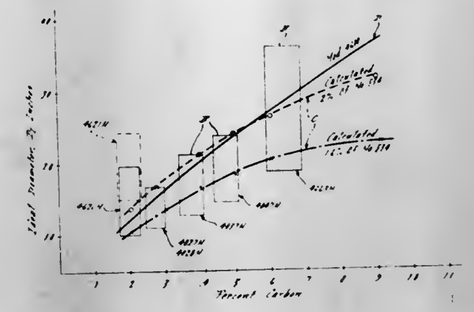
wherein R_1 is selected from the group consisting of alkenylamino, in which alkenyl contains from 3 to 6 carbon atoms, inclusive, and halophenylamino, in which halo includes chloro, bromo and fluoro,; R_2 and R_3 can be the same or different and are selected from the group consisting of, alkyl containing from 1 to 6 carbon atoms, inclusive, and alkenyl containing from 3 to 6 carbon atoms, inclusive, wherein said antidote compound is present in an amount ranging between about 0.01 to about 15 parts by weight for each part by weight of the herbicide compound.

4,071,354
MASTER ALLOY FOR POWDERS

Stanislaw Mocarski, Windsor, Canada, assignor to Ford Motor Company, Dearborn, Mich.

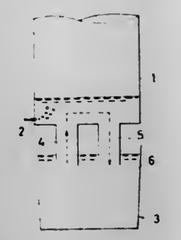
Division of Ser. No. 638,783, Dec. 8, 1975, which is a continuation-in-part of Ser. No. 535,527, Dec. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 403,240, Oct. 3, 1973, abandoned. This application July 6, 1976, Ser. No. 702,646
Int. Cl.² B22F *1/00*
U.S. Cl. 75—.5 R **9 Claims**

1. For use in a method of making sintered alloy steel parts by the compaction and sintering of admixed powders to obtain alloying, a low melting master powder admixture of alloying ingredients to be added to an iron based powder except for the addition of a desired quantity of graphite, the master powder admixture consisting of at least two but up to all of the powder elements selected from the group consisting of manganese, nickel, molybdenum, chromium, copper and iron, with molybdenum being in the range of 5-15% by weight of the master



powder admixture when selected along with the absence of copper, and iron being less than 20% by weight of said master powder admixture when selected, said selected elements being proportioned within said master powder admixture to possess a liquidus temperature residing between 1800°-2250° F and a melting range for all ingredients of no greater than 350°. F.

tuyere into the molten steel bath, the improvement which comprises blowing the gas into the bath at a position between



the bath surface and a depth of 50 cm from the bath surface in a substantially horizontal direction.

4,071,355
RECOVERY OF VANADIUM FROM PIG IRON

John O. Staggers, Downingtown, Pa., assignor to Foote Mineral Company, Exton, Pa.

Filed May 13, 1976, Ser. No. 685,971
Int. Cl.² C21B *3/04*
U.S. Cl. 75—30 **5 Claims**

1. A process for the production of a slag having a high weight ratio of vanadium to iron which can be used without further refining in production of ferrovanadium alloys containing at least about 40% by weight of vanadium which comprises introducing below the upper surface of a bath of molten pig iron containing from about 0.5 to about 3%, by weight, of vanadium, a highly oxidizing gas at a pressure of from about 40 to about 90 psig, together with a protective fluid at a pressure from about 20 to about 45 psig to increase the life of the means through which said oxidizing gas is introduced to said bath, while maintaining said bath of molten metal at a temperature in the range of about 2600° to 2900° F., continuing the introduction of said oxidizing gas and protective fluid until the carbon content of said pig iron has been reduced to an amount in the range of from about 2 to about 0.02%, whereby the vanadium in said pig iron is oxidized preferentially as compared to iron to obtain a slag containing at least 8%, by weight, of vanadium and in which the weight ratio of vanadium to iron is at least 0.5, and separating the slag from the hot metal.

4,071,356
METHOD FOR REFINING A MOLTEN STEEL IN VACUUM

Satomi Yamamoto, and Masataka Yoshii, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 24, 1976, Ser. No. 744,808
Int. Cl.² C21C *7/10, 5/34*
U.S. Cl. 75—59 **9 Claims**

1. In a method for refining molten steel in a vacuum using a R-H vacuum degassing apparatus by blowing a gas through a

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4,071,357
PROCESS FOR RECOVERING ZINC FROM STEEL-MAKING FLUE DUST

Mark A. Peters, Arvada, Colo., assignor to Hazen Research, Inc., Denver, Colo.

Filed Sept. 23, 1976, Ser. No. 725,929
Int. Cl.² C22B *19/24*
U.S. Cl. 75—103 **5 Claims**

1. A process for recovering metal values from a steel-making flue dust containing zinc, iron, lead, copper, chromium and cadmium as impurities comprising:

a. leaching the feed material with ammonia and carbon dioxide in high concentration and filtering to produce a leach residue and a filtrate containing zinc values and the impurities;

b. cementing the leach filtrate from step (a) with zinc to remove lead, copper and cadmium and performing a liquid/solids separation on the resulting slurry;

c. steam distilling the cementation filtrate from step (b) to precipitate basic zinc carbonate;

d. performing an initial liquid/solids separation on the steam distillation slurry of step (c) immediately after steam distillation has begun to scavenge out the iron content of the slurry and then continuing the steam distillation until all of the zinc has precipitated as zinc carbonate;

e. calcining the zinc carbonate precipitate of step (d) at a temperature between 200° C-1100° C to convert the zinc carbonate to zinc oxide; and

f. washing the zinc oxide product of step (e) in water to

remove sulfate and chromium converted to the soluble form by the calcination of step (e).

4,071,358

HEAT RESISTING COPPER BASE BRAZING FILLER METAL

Ichiro Kawakatsu, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 16, 1977, Ser. No. 769,097
Int. Cl.² C22C 9/05, 9/06, 9/02
U.S. Cl. 75—154 **3 Claims**

1. A heat resisting copper base brazing filler metal consisting essentially of by weight percent, about 10 to 20 manganese, about 2 to 10 nickel, about 0.5 to 4.0 tin, about 0.5 to 4.0 indium and balance copper.

4,071,359

COPPER BASE ALLOYS

Harvey P. Cheskis; Stanley Shapiro, both of New Haven, and Jacob Crane, Woodbridge, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 31, 1976, Ser. No. 672,130
Int. Cl.² C22C 9/01
U.S. Cl. 75—160 **10 Claims**

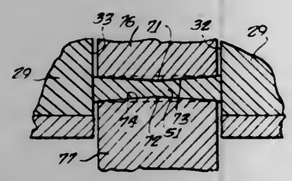
1. A copper base alloy having improved high temperature rupture properties consisting of from 2 to 9.5% aluminum, a grain refining element selected from the group consisting of iron from 0.001 to 5.0%, chromium from 0.001 to 1%, zirconium from 0.001 to 1.0%, cobalt from 0.001 to 5.0%, and mixtures of these elements, from 0.01 to 0.5% of a material selected from the group consisting of a material of the lanthanide series of the Periodic Table and mixtures thereof, balance copper.

4,071,360

METHOD OF FORMING A FRICTION DISC MEMBER

Anthony Mannino, Jr., Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 19, 1976, Ser. No. 650,572
Int. Cl.² B21D 31/02, 28/22
U.S. Cl. 72—329 **1 Claim**



1. The method of forming a friction disc member having circumferentially spaced teeth including pairs of spaced load bearing edge portions, including the steps of shearing excess material from a piece of sheet metal stock to define said disc member confining said disc member within a die cavity having wall portions adjacent said load bearing edge portions of said teeth, urging a shedder having a pattern of projections formed thereon into penetrating engagement with planar surfaces of said teeth between pairs of edge portions thereby spreading said pairs of edge portions on each tooth into engagement with said adjacent wall portions of said die cavity to form properly sized teeth with pairs of spaced, smooth load bearing edge faces, and moving said shedder with respect to said die cavity for ejecting said disc member from said die cavity.

4,071,361

ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS

Giichi Marushima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 8, 1966, Ser. No. 563,899
Claims priority, application Japan, Feb. 23, 1966, 41-10915; Dec. 1, 1965, 40-73379; Oct. 28, 1965, 40-65784; Dec. 24, 1965, 40-79869; Jan. 9, 1965, 40-53471; July 12, 1965, 40-41639
Int. Cl.² G03Q 13/22, 13/24
U.S. Cl. 96—1.4 **33 Claims**



1. A process for forming an electrostatic image on a photosensitive plate having a conductive base, a photoconductive layer overlying said base and an insulating layer overlying said photoconductive layer, said process comprising the steps of:
   a. applying a first charge substantially uniformly onto said insulating layer,
   b. exposing said photoconductive layer to a pattern of image light while applying a charge of a polarity opposite to that of said first charge onto said insulating layer, and then,
   c. uniformly exposing said photoconductive layer to light to which said photoconductive layer is sensitive.

4,071,362

ELECTROPHOTOGRAPHIC COPYING FILM

Haruo Takenaka; Toshiaki Okiyama, and Toshio Kawamata, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Jan. 5, 1973, Ser. No. 321,474
Int. Cl.² G03G 5/02
U.S. Cl. 96—1.4 **15 Claims**

1. An electrophotographic process comprising the steps of forming a toner image on a recording layer;
transferring said toner image to a copy film comprising a plastic film support having a thermal resistance withstanding temperatures of 100° C or more having coated on the surface thereof a coating layer formed of resins with contain a copolymer of at least 10% by weight of styrene with correspondingly at most 90% by weight of a comonomer selected from the group consisting of acrylic and methacrylic esters, said coating layer containing 0.1 to 10% by weight, based on the weight of copolymer, of one or more matting agents, said toner image being transferred to said coating layer of said film thereby enhancing the bonding compatibility for the toner, increasing the optical density of the transferred toner image, and decreasing the tendency for the films to be double fed.

4,071,363

METHOD OF MAKING COMPOSITE XEROGRAPHIC PHOTORECEPTOR WITH INJECTING CONTACT LAYER FOR A PHOTOCONDUCTIVE LAYER

Robert N. Jones, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 566,456, April 9, 1975, Pat. No. 4,015,985. This application June 22, 1976, Ser. No. 698,640
Int. Cl.² G03G 5/05
U.S. Cl. 96—1.5 R **1 Claim**

1. A method for joining a photoconductive layer and a base layer along a charge carrier injecting interface between said photoconductive layer and said base layer comprising:
   a. forming an intermediate layer on said base layer, said intermediate layer being adhered to said base layer, said intermediate layer comprising an electrically insulating organic resin binder having uniformly dispersed therein from 25 to 99 percent by volume based on the volume of said intermediate layer of conductive particles selected from the group consisting of silver, gold, platinum, copper and brass ranging in size from 0.1 to 5.0 microns;
   b. superimposing on said intermediate layer a photoconductive layer comprising a matrix containing therein photoconductive particles from 0.01 to 1.0 micron in size, with substantially all of the photoconductive particles being in substantial particle-to-particle contact in said member in a multiplicity of interlocking photoconductive paths through the thickness of said layer, said photoconductive particles being present in a volume concentration, based on the volume of said layer, of from about 1 to 25 percent, with the outer surface of said photoconductive layer comprising organic resin material;



   c. heating said intermediate layer and said photoconductive layer simultaneously and sufficiently to cause fusion of said intermediate layer and said photoconductive layer along an interface between said intermediate layer and said photoconductive layer with at least a portion of said photoconductive particles in said photoconductive layer contacting at least a portion of said conductive particles in said intermediate layer, said conductive particles having available charge carriers at suitable energy levels whereby said photoconductive particles to conductive particles contact points constitute individual charge carrier injecting contact points; and
   d. cooling the heated layers to solidify said matrix material in said layers.

4,071,364

PROCESS OF PHOTOETCHING A METAL COMB

William Frederick Clark, 67 Arkley Road, Walthamstow, London E. 17; Philip Noel Baxendale, 19 Melville Road, Edgbaston, Birmingham B16 9LN, and Michael Noel Peters, 60 Cromwell Road, Southend-on-Sea, Essex, SS2 5NQ, all of England

Continuation of Ser. No. 499,071, Aug. 20, 1974, abandoned. This application Oct. 30, 1975, Ser. No. 627,034
Claims priority, application United Kingdom, Aug. 22, 1973, 39873/73
Int. Cl.² G03C 5/00
U.S. Cl. 96—36 **5 Claims**

1. A process for producing a metal comb for use in a musical movement, wherein the process comprises the steps of preparing duplicate photographic negatives of the desired shape of the comb, covering both sides of a sheet of the metal from which the comb is to be formed by a resist, positioning said photographic negatives in accurate alignment with one another and in masking relationship with the resistcovered opposite sides of said sheet, hardening those parts of the resist that are in register with substantially transparent regions of said negatives, removing the negatives, removing the unhardened parts of the resist, chemically etching the areas of the metal sheet that are not protected by the remaining hardened parts of the resist to form individual teeth of the comb which are tonally accurate and require no subsequent mechanical tuning operation, and removing the hardened resist from both sides of the metal comb.

4,071,365

SILVER HALIDE EMULSION CONTAINING TWO-EQUIVALENT YELLOW DYE-FORMING COUPLER

Yasushi Usagawa; Kiyoshi Yamashita; Mamoru Nakatani; Kosaku Masuda, and Satoshi Kawakatsu, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sept. 14, 1976, Ser. No. 723,163
Claims priority, application Japan, Sept. 16, 1975, 50-111872
Int. Cl.² G03C 7/00, 1/40
U.S. Cl. 96—56.5 **10 Claims**

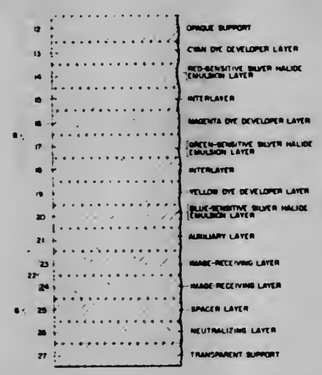
2. A color developer solution which contains, as a yellow dye image-forming coupler, a compound represented by the general formula A–Q, wherein A represents a yellow dye image-forming coupler residue having the active methylene group from which one hydrogen atom has been replaced and Q represents a tetrazolyl group substituted at the 5-position with hydrogen, a halogen, a cyano, an alkyl, an aralkyl, an aryl, an alkyl-amino or an arylamino group, the tetrazolyl group being attached at the 1 or 2 position, and a color developer.

4,071,366

POLYMERIC QUATERNARY DYE IMAGE RECEIVING LAYERS WITH OVERCOAT

Gerard J. Bourgeois, Lynn, and Ronald A. Sahatjian, Bedford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

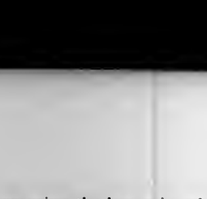
Continuation-in-part of Ser. No. 507,339, Sept. 19, 1974, abandoned. This application July 9, 1976, Ser. No. 704,026
Int. Cl.² G03C 7/00, 1/76, 1/40, 5/54
U.S. Cl. 96—73 **20 Claims**



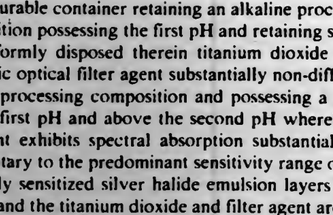
16. A photographic film unit adapted to be processed by passing the unit between a pair of juxtaposed pressure-applying members and which comprises, in combination:
   a photosensitive element including a composite structure containing, in order, a dimensionally stable opaque layer; at least two selectively sensitized silver halide emulsion layers possessing predominant spectral sensitivity to separate regions of the visible electromagnetic spectrum and a dye which is a silver halide developing agent and is soluble and diffusible, in alkaline processing composition, at a first pH associated with each of the silver halide emulsion layers and possessing a spectral absorption range subsequent to processing substantially complementary to the predominant sensitivity range of its associated emulsion layer; an alkaline solution permeable polymer layer comprising a mixture of polyacrylamide and a polyvinylpyridine; an alkali solution permeable polymeric layer comprising a polymeric mordant having quaternary nitrogen groups; a polymer layer possessing acid capacity effective to reduce alkaline processing composition possessing the first pH to a second pH at which the dyes are substantially nondiffusible; a dimensionally stable transparent layer;

and means securing the layers in substantially fixed relationship;

a rupturable container retaining an alkaline processing composition possessing the first pH and retaining substantially uniformly disposed therein titanium dioxide and an organic optical filter agent substantially non-diffusible from the processing composition and possessing a pKa below the first pH and above the second pH wherein the filter agent exhibits spectral absorption substantially complementary to the predominant sensitivity range of the selectively sensitized silver halide emulsion layers at the first pH and the titanium dioxide and filter agent are present in quantity sufficient, upon distribution of the alkaline processing composition possessing the first pH as a layer intermediate the dyeable polymeric sheet and next adjacent selectively sensitized silver halide emulsion layer, to provide to the layer an optical transmission density $> \sim 6.0$ density units with respect to incident radiation actinic to the silver halide emulsion layers and an optical reflection $< \sim 1.0$ density units with respect to incident visible radiation, and said rupturable container is positioned and extends transverse an edge of the photosensitive element to effect unidirectional discharge of the container's alkaline processing composition intermediate the polymeric layer comprising said mixture of polyacrylamide and a polyvinylpyridine and the selectively sensitized silver halide emulsion layer next adjacent; said polymeric mordant of said alkali solution permeable polymeric layer being a polymer selected from Formula A or Formula B below:



FORMULA A



FORMULA B

where each R can be the same or different substituent which does not interfere with polymerization of the vinyl group; Q is a covalent linking radical selected from the group consisting of alkylene, arylene, aralkylene or arylenealkyl; R^2 can be the same or different substituent chosen from the group consisting of alkyl or carbocyclic; each R' can be the same or different substituent chosen from the group consisting of hydrogen, hydroxyl, alkyl, alkoxy, alkanol or at least one R' can be carbocyclic and X^- represents an anion.

4,071,367

CHANNELED PHOTOSENSITIVE ELEMENT

John R. Collier, The Plains, Ohio, and Yvan P. Pilette, Lawrenceville, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 527,840, Nov. 27, 1974, Pat. No. 3,984,244. This application Apr. 21, 1976, Ser. No. 678,931

Int. Cl.² G03C *1/72*

U.S. Cl. 96—79 **3 Claims**

1. A photohardenable, thermoplastic element comprising a photohardenable thermoplastic layer having a surface containing a plurality of channels with a depth of at least 0.0005 inch and at least half as deep as the thickness of the photohardenable layer while the other surface has adhered thereto with low to moderate adherence a thin, flexible, polymeric film support.

4,071,368

MOLD RELEASE COMPOSITION

John R. Jones, Los Angeles, Calif., assignor to Lubeco, Inc., Compton, Calif.

Filed July 12, 1976, Ser. No. 704,338

Int. Cl.² B28B *7/36*; C03B *39/00*

U.S. Cl. 106—38.28 **20 Claims**

1. A mold release and lubricating composition comprising an oxidation resistant solid lubricant formed of a mixture of graphite and potassium titanate; and an inorganic binder, in proportions of about 6 to about 62 parts of graphite, and about 3 to about 56 parts of potassium titanate, to 100 parts of inorganic binder, by weight.

4,071,369

METHOD OF MANUFACTURING POROUS CERAMIC PRODUCTS BY REACTING FLUE GAS DUST AND FILTER DUST WITH CLAYS OR THE LIKE, SUCH AS EXPANDED CLAY

Fredrik Wilhelm Kurz, Nysatravagen 12, Lidingo, and Hans Rudmark, Robo, Uppsala, both of Sweden

Continuation of Ser. No. 588,053, June 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 235,079, March 15, 1972, abandoned. This application Nov. 11, 1976, Ser. No. 740,931

Claims priority, application Sweden, Mar. 19, 1971, 3620/71

Int. Cl.² C04B *21/00*

U.S. Cl. 106—40 R **3 Claims**

1. A method of manufacturing porous ceramic products consisting essentially of

mixing ceramic clay with

1 to 35%, based on the weight of said clay, of an amorphous fly dust having a specific surface area of at least 20 m^2/g and consisting essentially of 75–92% silica, metal oxides selected from the group consisting of MgO, Cr_2O_3, FeO, Fe_2O_3, Al_2O_3, ZnO, Ni_2O_3, TiO_2, CuO, PbO, MnO_2 and SnO_2, and a minor amount of carbon, and

heating the resulting composition to at least 800° C to convert said composition into a porous ceramic material.

4,071,370

MAGNESITE-CHROME REFRACTORY

Ben Davies, Pittsburgh, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 31, 1977, Ser. No. 783,128

Int. Cl.² C04B *35/04, 35/12*

U.S. Cl. 106—59 **13 Claims**

1. A burned basic refractory shape made from a refractory size graded brickmaking batch, said batch comprising dead burned magnesite and chrome ore, said shape having a lime dead burned magnesite and chrome ore, said shape having a lime to silica ratio between about 1.7 and 2.1 to 1 and a chromic oxide to aluminum oxide plus iron oxide ratio in excess of about 1.5 to 1.

4,071,371

HIGH TEMPERATURE CERAMIC MATERIAL SUITABLE FOR GAS TURBINE APPLICATIONS AND A PROCESS FOR PRODUCING SAME

Morton E. Milberg, Southfield, and Wayne M. Miller, Belleville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 6, 1975, Ser. No. 556,030

Int. Cl.² C04B *35/58*

U.S. Cl. 106—65 **2 Claims**

1. A method of making ceramics, comprising:

a. compact a desired powdered shape from a mixture of 99.9% pure Si_3N_4 powder, Al_2O_3 powder, and Y_2O_3 powder, said Y_2O_3 being present in said mixture at about essentially a 3% additive by weight and said Al_2O_3 being present in an amount at about essentially 16% by weight

b. with the absence of pressure, heat said shape to a temperature between 1550°–1700° C and hold at said temperature for a period of time at about essentially 12 hours, the resulting ceramic exhibiting a transverse rupture strength of at least 80,000 psi.

4,071,372

SILICON NITRIDE NGV'S AND TURBINE BLADES

Jack Raymond Bird, Chellaston, England, assignor to The Secretary of Defence, in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, United Kingdom

Continuation of Ser. No. 194,014, Oct. 29, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 392,005

Claims priority, application United Kingdom, Nov. 3, 1970, 52174/70

Int. Cl.² C04B *35/58*

U.S. Cl. 106—73.5 **7 Claims**

1. A method of manufacturing a unitary article from hot pressed silicon nitride having at least two portions, each portion thereof being formed in a separate hot pressing operation, the formed article having at least two sections of differing wall thickness, the method including the steps of

a. hot pressing a first mixture of silicon nitride powder and a fluxing agent for said silicon nitride in a first mold to form a first one of the said sections,

b. placing said first section in a second mould which is adapted to accommodate both of the said sections,

c. filling the mould with a sufficient quantity of silicon nitride powder and a fluxing agent for said silicon nitride to form the second one of the said sections by not pressing the said second mixture, and

d. hot pressing said second mixture, the resultant to densify the added silicon nitride powder and fluxing agent together to form a second section, while at the same time bonding said second section to the said first section, the entire article completely densified throughout.

4,071,373

PROCESS FOR THE MANUFACTURE OF ALUMINOUS CEMENT FROM ALUMINUM SMELTING RESIDUE

Keiichi Akiyama, Tokyo, Japan, assignor to Aluminum Alloy Refiners Association, Tokyo, Japan, a part interest

Filed July 6, 1976, Ser. No. 702,648

Int. Cl.² C04B *7/32*

U.S. Cl. 106—104 **3 Claims**

1. A process for the manufacture of aluminous cement from aluminum smelting residue, which comprises the steps of:

preparing a mixture of 150 parts of aluminum smelting residue containing at least one of aluminum carbide and aluminum nitride, 50 parts of limestone, 50 parts of blast furnace slag, 50 parts of converter slag, and 30 parts of aluminum hydrosilicate;

crushing said mixture;

burning said crushed mixture to form a clinker; and powdering said clinker to form the aluminous cement.

4,071,374

FRICTION COSMETIC GEL

Abraham Minton, Rego Park, N.Y., assignor to Gripsin Industries, Inc., Elizabeth, N.J.

Filed June 23, 1975, Ser. No. 589,398

Int. Cl.² C08L *1/08*; C09J *3/04*

U.S. Cl. 106—189 **14 Claims**

1. A grip-improving gel which comprises a fine particle size hydrophobic silica, said hydrophobic silica being formed from a reaction of silica with a silane, said silane having the general formula of SiR_nX_{4-n}, wherein R comprises a lower alkyl, X comprises a halogen, and n is from 1 to 3, a minor amount of a compatible gelling agent for improving the adherence of said gel, said compatible gelling agent being selected from the group consisting of cellulose gums, hydrous magnesium and aluminum silicates, organic derivatives of the hydrous magnesium and the aluminum silicates, and mixtures thereof, and a major amount of an aqueous solution of a C_1 through C_4 alcohol, so that upon the application of said gel a thin, non-tacky, strongly adhering dry film is formed.

4,071,375

PROCESS FOR PREPARING STABLE AQUEOUS DISPERSIONS OF ROSIN-BASE MATERIAL

Shuhei Ishibe, Nara; Toshiharu Okumichi, Suita; Yasushi Ishihara, Osaka, and Hisayoshi Naka, Sakai, all of Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1976, Ser. No. 732,209

Claims priority, application Japan, Oct. 21, 1975, 50-127019

Int. Cl.² C08J *3/02*; C08L *93/00*

U.S. Cl. 106—238 **14 Claims**

1. A process for preparing a stable aqueous dispersion of rosin-base material by dissolving in a water-immiscible organic solvent a rosin-base material composed of 0 to 95 wt. % of rosin and 100 to 5 wt. % of an adduct of rosin and α,β-unsaturated carboxylic acid or anhydride thereof, dispersing the organic solvent solution in water in the presence of a dispersant and removing the organic solvent from the resulting emulsion, the process being characterized in that the dispersant is an alkali metal salt of a half alkyl sulfate.

4,071,376

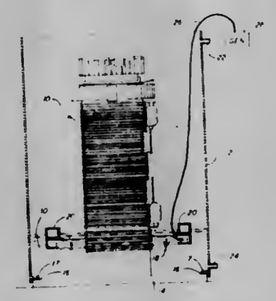
ULTRASONIC CLEANING WITH FLOATING TRANSDUCERS

Larry M. McNeer, 3 Green Fir Circle, Syracuse, N.Y. 13219

Continuation-in-part of Ser. No. 610,973, Sept. 8, 1975, abandoned. This application May 26, 1976, Ser. No. 690,000

Int. Cl.² B08B *3/12*

U.S. Cl. 134—1 **10 Claims**



1. A method of cleaning a surface comprising:

a. forming an enclosed, substantially liquid-tight chamber within which the surface to be cleaned is fully exposed;

b. attaching at least one ultrasonic transducer to floatation means capable of supporting said transducer in a liquid medium;

c. positioning said floatation means and transducer within said chamber at a vertical level at least as low as the lowest point on, and with the wave-emitting surface of said transducers facing toward said surface to be cleaned;
d. filling said chamber with a liquid medium from the lowest to the highest point to be cleaned on said surface, whereby said floatation means and transducer float from said lowest to said highest point;
e. applying power to said transducer during said filling sufficient to cause cavitation of said liquid medium, thereby cleaning said surface; and
f. draining said liquid medium from said chamber.

4,071,377

METHOD OF MECHANICAL DISHWASHING AND COMPOSITIONS

Milan Johann Schwuger, Haan; Heinz Smolka, Langenfeld; Theodor Altenschopfer, and Manfred Rostek, both of Dusseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Germany

Filed Apr. 5, 1974, Ser. No. 458,333

Claims priority, application Austria, May 7, 1973, 4012/73; June 29, 1973, 5757/73; Aug. 16, 1973, 7160/73; Nov. 9, 1973, 9450/73

Int. Cl.[2] A47L *15/00*; **C02B** *1/44*; **C11D** *3/12, 3/60*

U.S. Cl. 134—29 **1 Claim**

1. In the process of mechanically washing of soiled dishes by mechanically contacting soiled dishes with an alkaline aqueous solution at a pH of from 8 to 13 containing a sufficient amount of a water softening agent whereby the soil on said soiled dishes is dispersed or dissolved, rinsing said dishes with a clear rinse liquid and recovering said dishes substantially soil-free, the improvement which consists of using a composition for use in mechanical dishwashers consisting essentially of (A) 44 percent by weight on the anhydrous basis of a finely-dispersed water-insoluble aluminosilicate compound having primary particles in the size range of 100 μ to 0.1 μ, a calcium binding power of 150 mg CaO/gm of anhydrous substance when measured at 22° C by the Calcium Binding Power Test Method described in the specification and the formula

$$0.9\ Na_2O \cdot Al_2O_3 \cdot 2.05\ SiO_2 \cdot 4.3\ H_2O$$

(B) 40 percent by weight of Na_2SiO_3, (C) 2 percent by weight of the sodium or potassium salt of dichloroisocyanuric acid, (D) 1 percent by weight of a nonionic block polymer of ethylene oxide to polyoxypropylene glycol with a molecular weight of 1900 where the amount of polyethylene glycol ethers is 10% by weight and (E) 13 percent by weight of water, as said water softening agent, in such an amount that said alkaline aqueous solution contains from 3 to 5 gm per liter of said composition.

4,071,378

PROCESS OF MAKING A DEEP DIODE SOLID STATE TRANSFORMER

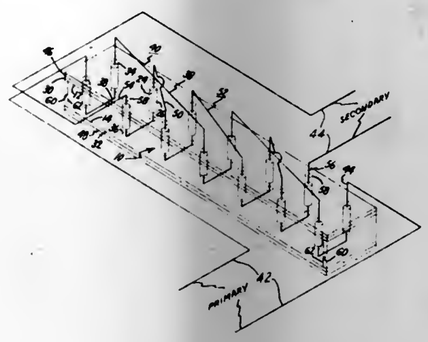
Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 553,903, Feb. 27, 1975, Pat. No. 4,024,565, which is a continuation of Ser. No. 410,999, Oct. 30, 1973, abandoned. This application Nov. 4, 1976, Ser. No. 738,709

Int. Cl.[2] H01L *21/225*

U.S. Cl. 148—1.5 **9 Claims**

1. A process for making a semiconductor device comprising the process steps of:
a. forming a plurality of droplets of a selective metal on a selective portion of a major surface area of a body of semiconductor material having two major opposed surfaces;
b. establishing a thermal gradient substantially along an axis of the body perpendicular to the two major opposed surfaces;
c. thermal migrating the plurality of droplets of selective metal through the body in the direction of the higher temperature of the thermal gradient from the one major surface to the, and terminating in, the other of the two major opposed surfaces to form a plurality of regions of recrystallized material of the body each having two opposed end surfaces, each end surface being coextensive with only one of the two major surfaces, solid solubility of the selective metal therein and a second and opposite type conductivity than the body and also forming a P-N junction at the contiguous surfaces of each of the regions and the body;



d. affixing electrical contact means to selective end surfaces of selective regions to form a series circuit thereof to function as a primary winding of a transformer, and
e. affixing electrical contact means to selective end surfaces of the remainder of the regions to form a series circuit thereof to function as a primary winding of the same transformer.

4,071,379

PHOSPHATING METHOD

Brian Alfred Cooke, Knotty Green, and Michael Brock, Reading, both of England, assignors to Imperial Chemical Industries Limited, Great Britain

Filed Apr. 19, 1976, Ser. No. 678,426

Claims priority, application United Kingdom, Jan. 28, 1976, 3288/76

Int. Cl.[2] C23F *7/10*

U.S. Cl. 148—6.15 Z **7 Claims**

1. In a continuous process of producing a phosphate coating on a ferrous metal substrate which comprises treating the ferrous metal substrate with an acidic solution of zinc phosphate in the presence of chlorate ions, and optionally nitrate ions, the improvement which consists in adding to the solution as coating proceeds a proportion of a rapid-acting secondary oxidant for ferrous ion which is sufficient to maintain the concentration of ferrous ion at less than 112 parts per million of the solution and which is selected from alkali metal nitrites, ammonium nitrite, hydrogen peroxide, compounds containing combined hydrogen peroxide which liberate hydrogen peroxide under acid conditions, sodium hypochlorite and peroxydiacid salts, there being present in the solution when in the steady state a proportion of the secondary oxidant of from 0 to 0.6 millimoles per liter of the solution.

4,071,380

METHOD FOR TREATING OXIDIZED STEEL SURFACES

George T. Shutt, 1421 Norman Place, St. Louis, Mo. 63122

Continuation of Ser. No. 601,379, Aug. 4, 1975, abandoned. This application Sept. 2, 1976, Ser. No. 719,737

Int. Cl.[2] C23F *7/00, 7/08*

U.S. Cl. 148—6.15 R **10 Claims**

1. A method for treating a corrosible steel substrate having a rusted oxidized layer thereon comprising applying to said oxidized layer a solution of a partially cured alkyl silicate wherein the alkyl group of said alkyl silicates contains 1 to 8 carbon atoms and zinc, if present, in quantities less than required to cause electrolytic action with the metal substrate, said solution being in such quantity as to saturate the oxidized layer, permitting the applied solution to cure for developing a film stably maintaining the rusted oxidized layer upon said substrate, and then applying a top coating upon said cured silicate film.

4,071,381

STEEL ABRASIVE MATERIALS

Fred J. Dunkerley, Broomall, Pa.; Albert J. Gaudino, Parma, and Robert P. Vilyus, Solon, both of Ohio, assignors to Cleveland Metal Abrasive, Inc., Cleveland, Ohio

Filed Sept. 7, 1976, Ser. No. 720,596

Int. Cl.[2] C04B *35/70*

U.S. Cl. 148—36 **12 Claims**

1. In a refined and alloyed steel abrasive material having a composition which includes carbon in about the range of from 0.60 to 1.20 percent by weight; manganese in about the range of from 0.10 to 2.26 percent by weight; silicon in about the range of from 0.30 to 1.50 percent by weight; sulphur in about the range of from 0.0 to 0.1 percent by weight; with the remainder substantially all iron and trace elements and impurities, the improvement which comprises a substantially martensite-free microstructure, the improved material being characterized by a hardness in about the range of 20 to 47 on the Rockwell C scale and an increase in breakdown life.

4,071,382

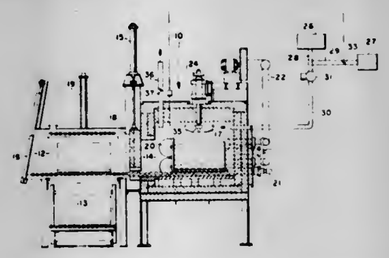
METHOD FOR CASE HARDENING POWDERED METAL PARTS

Joseph A. Riopelle, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed July 22, 1976, Ser. No. 707,843

Int. Cl.[2] B22F *3/00*

U.S. Cl. 148—126 **4 Claims**



1. A process for case hardening a powdered metal part having a porous, sintered body of a heat treatable steel composition comprised primarily of Fe, said process comprising the steps of:
heating said part in an oxidizing atmosphere for a time period sufficient to form oxides of iron substantially filling the pores of said part at the surface of said part; and
subjecting said part to a predetermined gaseous atmosphere at a predetermined temperature and time sufficient to react with said oxides of iron and said Fe to produce hardenable iron compounds.

4,071,383

PROCESS FOR FABRICATION OF DIELECTRIC OPTICAL WAVEGUIDE DEVICES

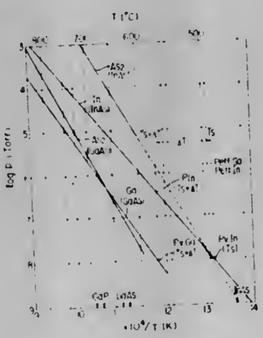
Seiichi Nagata, Sakai; Tsuneo Tanaka, and Masakazu Fukai, both of Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

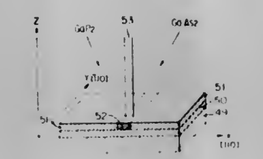
Filed May 11, 1976, Ser. No. 685,368

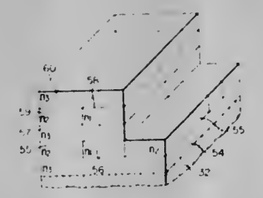
Claims priority, application Japan, May 14, 1975, 50-57638

Int. Cl.[2] H01L *21/203, 29/205*

U.S. Cl. 148—175 **10 Claims**







1. A process for fabrication of dielectric optical waveguide devices by utilizing thin films of epitaxially grown mixed crystals of compounds comprising applying molecular beams of elements which become the constituents of said compounds over a surface of a crystal substrate heated at a predetermined temperature in vacuum while locally irradiating a predetermined region of the surface of said substrate with concentrated energy to thereby produce epitaxial growth conditions which are different between the irradiated region and the non-irradiated region and consequently the composition of the mixed crystal grown in the irradiated region is different from the composition of the mixed crystal grown in the nonirradiated region, whereby a region having a higher refractive index is formed within a region having a lower refractive index.

4,071,384

METHOD AND DEVICES FOR ROAD SURFACE MARKING

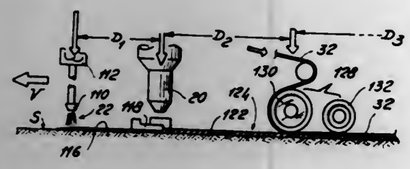
Ludwig Eigenmann, Vacallo, Ticino, Switzerland

Continuation-in-part of Ser. No. 652,253, Jan. 26, 1976. This application Nov. 11, 1976, Ser. No. 740,850

Claims priority, application Italy, Jan. 24, 1975, 19573/75; Nov. 12, 1975, 29203/75

Int. Cl.² E01C *23/16*

U.S. Cl. 156—71 **10 Claims**



1. A method for producing an indicium on a porous pavement without requiring preliminary heating and drying of the pores of the pavement, comprising the steps of applying a thin layer of a liquid hydrophilic agent to the pavement for permeation of the same by said agent; applying over said hydrophilic layer a heated primer layer which is in a flowable state and at a viscosity which is too high to allow the primer layer itself to penetrate the pavement, the hydrophilic layer promoting the bonding of said primer layer to the pavement without requiring preliminary heating and drying of the pores of the pavement and the primer layer undergoing an increase in its viscosity subsequent to application over said hydrophilic layer; and applying a marker tape over said primer layer when the viscosity thereof has increased, so that said marker tape becomes bonded to said primer layer.

4,071,385

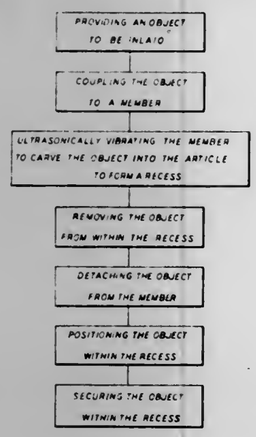
ULTRASONIC INLAID ARTICLE

Arthur Kuris, 3725 Henry Hudson Pkwy., Riverdale, N.Y. 10463

Filed May 19, 1976, Ser. No. 687,996

Int. Cl.² B29C *27/08;* B32B *31/16*

U.S. Cl. 156—73.1 **38 Claims**



1. The method of forming an inlaid product, comprising the steps of:

A. carving an object having a peripheral border into an article with ultrasonic energy to form a recess having the same peripheral configuration as said border, wherein said step of carving said recess further includes the steps of:

1. coupling said object to a member adapted to be ultrasonically vibrated,

2. bringing said object adjacent the article,

3. supplying an abrasive slurry between the object and the article to cause abrading machining of the article by said object,

4. simultaneously vibrating said member when said object is urged into contact with the article, and

5. advancing the object and the article relative to each other as the abrasive progressively removes material from the article at the area of contact, whereby said recess having the same peripheral configuration as said border is formed in the article,

B. positioning said object within the ultrasonically carved recess in the article, and

C. securing said object within said recess, whereby said object forms the inlaid portion of the product.

4,071,386

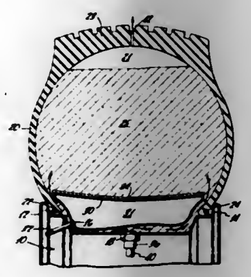
HYBRID SOLID FILLED PNEUMATIC TIRE

Edward N. Gomberg, Tustin, Calif., assignor to Synair, Tustin, Calif.

Division of Ser. No. 514,656, Oct. 15, 1974, abandoned, and a continuation-in-part of Ser. No. 397,940, Sept. 17, 1973, abandoned. This application Feb. 25, 1976, Ser. No. 661,304

Int. Cl.² B29H *13/00*

U.S. Cl. 156—113 **2 Claims**



1. The method of forming a solid fill tire and wheel assembly, said wheel having bead receiving rims and said tire including a casing having beads to be received by the wheel rims, said method comprising the steps of

mounting the tire casing upon the wheel with the casing beads seated upon the wheel rims, thereby to define a casing chamber between the wheel and the casing,

injecting into said casing chamber a liquid solidifiable fill material,

maintaining a portion of said casing chamber between said beads and rims substantially free of said fill material to thereby define a fluid chamber within said casing between said beads and rim,

solidifying said fill material within said casing chamber,

pressurizing said fluid chamber to urge said beads against said rims, and

limiting radially outward expansion of said fluid chamber by positioning an expansion limiting belt circumferentially around the periphery of said fluid chamber.

4,071,387

DECORATION OF SHEET MATERIALS

Robert J. Schlaepfer, Saint Gallen, near Lake Constance, Switzerland, assignor to Jacob Schlaepfer & Co. A.G., St. Gallen, Switzerland

Filed Sept. 18, 1975, Ser. No. 614,709

Claims priority, application United Kingdom, Sept. 19, 1974, 40872/74; Apr. 15, 1975, 15444/75

Int. Cl.² B44C *1/16;* B32B *3/10, 7/10*

U.S. Cl. 156—148 **6 Claims**

1. An embroidered article for application to a sheet material, comprising:

an embroidery pattern embroidered on a sheet-like substrate of thermally decomposable material, said substrate comprising on a first surface thereof a design of non-thermoplastic or high-melting thermoplastic embroidery threads defining said design, and on a second substrate surface a cooperating pattern of thermoplastic threads of a heat activatable adhesive material which becomes tacky at a predetermined temperature;

a heat stable carrier sheet adhesively and releasably adhered to said first surface;

said article being adapted to be positioned with its second surface juxtaposed the sheet material, and upon application of heat and pressure to said carrier sheet activate said adhesive to produce bonding of the embroidery pattern to the sheet material and facilitate removal of degraded particulate matter produced by heating said substrate upon stripping of said carrier sheet.



4. A method of applying embroidered designs to sheet material comprising the steps of:

forming the embroidery pattern on opposite sides of a thermally decomposable substrate from substantially oppositely disposed areas of thermoplastic and non-thermoplastic embroidery threads on the said opposite sides respectively, laminating a carrier sheet to said non-thermoplastic threads,

positioning the laminate into contact with a fabric with the thermoplastic threads juxtaposed to said fabric,

applying heat and pressure to said carrier sheet to produce decomposition of said substrate to cause said thermoplastic threads to adhere to said fabric, and

stripping the carrier sheet from the laminate to remove the degraded particulate matter produced by heating the laminate and destroying the thermoplastic threads of the embroidery design.

4,071,388

IMPULSE HEAT JOINING OF WRAPPING TAPES FOR WIRE CABLES

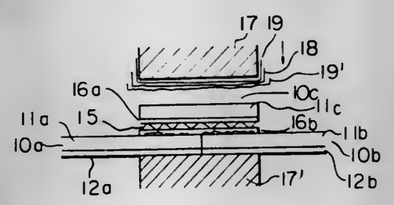
Kuniharu Usui, Fujisawa; Hiroshi Shimba, Yokohama; Kunihiro Nakagaki, Yokohama, and Hiroaki Mukunashi, Yokohama, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Kuniharu Usui, Fujisawa, both of, Japan

Continuation of Ser. No. 527,390, Nov. 26, 1974, abandoned. This application May 20, 1976, Ser. No. 688,194

Claims priority, application Japan, Nov. 26, 1973, 48-132923

Int. Cl.² B29C *19/00*

U.S. Cl. 156—157 **2 Claims**



1. A method of joining end abutting metal tapes in order to continuously supply the tapes for the production of sheathed cables formed by longitudinally wrapping cable cores with the tapes, the tapes being laminated on the side remote from the cable core with a plastic film having a relatively low melting temperature, said method comprising:

placing end abutting metal tape portions on a first, relatively fixed pressing block with the film layer of said metal tapes in contact with said block,

overlying the abutting ends of said metal tape on the side opposite the plastic film with an adhesive plastic film strip having a melting temperature above that of the plastic film laminated to said metal tape,

pressing said adhesive plastic film strip against said abutting ends of said metal tape by applying under pressure a second metal block of high thermal conductivity forming a heat dissipating sink and having an electric heating element of high electrical resistance mounted to the face of the second block which immediately faces said adhesive plastic film strip with said electric heating element being electrically insulated from said second block, and

applying an electrical current pulse to said electric heating element having an amplitude and duration sufficient to establish an acute temperature gradient across the metal tape assembly sufficient to melt the adhesive plastic film strip insufficient to melt the low melting temperature plastic film on said metal tape;

whereby, said abutting ends of said metal tape portion are quickly joined and the resulting joint has high mechanical strength and electrical continuity.

4,071,389

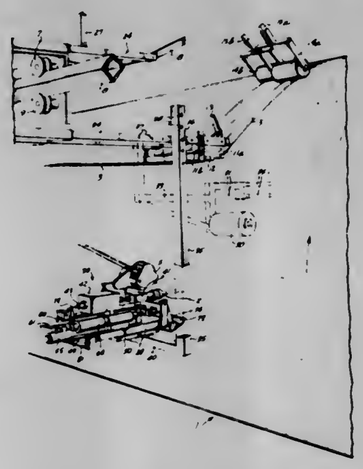
CYLINDER-MAKING APPARATUS AND METHOD

Frank Elmer Ives, 1862 Ives Ave., Kent, Wash. 98031

Filed Jan. 29, 1976, Ser. No. 653,435

Int. Cl.² B65H *8/00*

U.S. Cl. 156—175 **14 Claims**



1. In cylinder-making apparatus including a rotatable mandrel, resin spray means for applying settable resin on the surface of the mandrel, reinforcement supply means for supplying stranded reinforcement to be applied to the surface of the mandrel and traversing means for effecting relative movement of the resin spray means and the reinforcement supply means, on one hand, and the mandrel, on the other hand, in a direction axially of the mandrel, the improvement comprising shield means disposable in a position interposed between the resin spray means and the mandrel for blocking spray of liquid from the resin spray means onto the mandrel.

11. The method of applying settable resin onto the surface of a mandrel which comprises rotating the mandrel about its axis, traversing resin spray means axially along the mandrel while ejecting a spray of resin therefrom onto the mandrel, and turning the resin spray means while it is being traversed axially

of the mandrel about an axis extending generally parallel to the path along which resin is ejected from the resin spray means towards the mandrel to control the amount of resin applied to the mandrel by the resin spray means at a particular locations on the mandrel.

4,071,390

METHOD OF COATING FLEXIBLE SUBSTRATES WITH POLYURETHANE-POLYUREA ELASTOMERS AND PRODUCTS PRODUCED THEREBY

Albert Strassel, Oullins, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed July 1, 1975, Ser. No. 592,168
Claims priority, application France, July 5, 1974, 74.23417
Int. Cl.² B32B *31/00*
U.S. Cl. 156—239 **9 Claims**

1. A method of forming a polyurethane-polyurea coating having good resistance to repeated flexing, abrasion, scratching and aging which comprises applying to a release surface a top finishing coat comprising the reaction product of an aromatic diamine with a prepolymer prepared by reacting an excess of a polyisocyanate with a polyol consisting essentially of a diol or mixture of diols; at least partially curing said finishing coat; applying on said finishing coat an undercoat comprising the reaction product of an aromatic diamine with a prepolymer prepared by reacting an excess of a polyisocyanate with a polyol consisting essentially of a polyol having a hydroxy functionality of at least 3 or a mixture of polyols having an average hydroxy functionality greater than 2 and sufficiently high to substantially increase the flex resistance of the total assembly to the top finishing coat; applying a flexible substrate to the undercoat, and curing the entire assembly including the undercoat to bond the top finishing coat, the undercoat and the flexible substrate together.

4,071,391

METHOD OF MANUFACTURING LAMINATED PANELS OR FOILS OF LEAD AND PLASTICS, ESPECIALLY ACRYLIC ACID POLYETHYLENE COPOLYMERS, AND LAMINATED PANELS OR FOILS OBTAINED THEREBY

Günter Haberstroh, and Lothar Heistermann, both of Hamburg, Germany, assignors to Bleiindustrie KG Vorm. Jung & Lindig, Hamburg, Germany

Filed May 6, 1974, Ser. No. 467,474
Claims priority, application Germany, May 19, 1973, 2325482
Int. Cl.² C09J *5/02*
U.S. Cl. 156—325 **2 Claims**



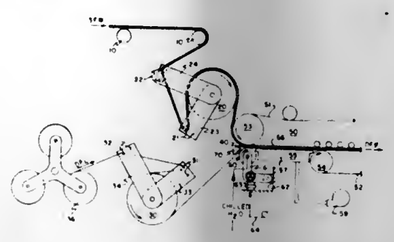
1. In a method for manufacturing a laminate of a polymeric film composed of polyethylene or polyethylene-acrylic acid copolymer and a layer of lead, consisting essentially of marrying the film and lead layer together by passing them through nip rollers, the improvement which comprises said lead layer being coated with a layer of a tin-lead alloy having a tin content in excess of 25 percent, said alloy layer being coated with a protective and adhesive film of a plasticizer for the polymeric film in a diluent prior to being married to the polymer layer.

4,071,392

AUTOMATICALLY CONTROLLED MACHINE FOR MAKING DOUBLE-FACED POLYBOARD

Partha S. Chaudhuri, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 10, 1977, Ser. No. 758,040
Int. Cl.² G05G *15/00*
U.S. Cl. 156—351 **9 Claims**



1. In a corrugated board machine having a web preheating cylinder rotationally driven by first motor means and wrap guide roller means mounted on swing arms secured for rotation about the axis of said preheating cylinder, the angular positionment of said swing arms being placed by transmission means driven by second motor means, the improvement comprising:

A. Velocity signal generating means for producing a signal range proportional to the surface velocity range of said preheating cylinder;

B. Feedback signal generating means for producing a signal range proportional to the angular location of said swing arms about said preheating cylinder over an arc of less than 360°, the proportional range of said feedback signal corresponding to the proportional range of said velocity signal;

C. Comparator means for receiving and comparing said velocity and feedback signals; and

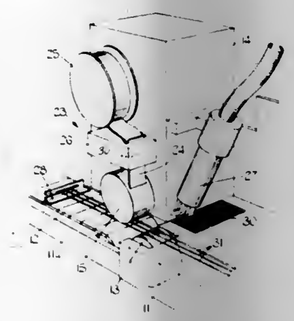
D. Logic means for emitting a second motor directional control signal according to the polarity of the difference between said velocity and feedback signals.

4,071,393

APPARATUS FOR USE IN THE MANUFACTURE OF A WIRING HARNESS

Robert Amphlett, Stoke on Trent, England, assignor to Lucas Industries Limited, England

Filed May 12, 1976, Ser. No. 685,934
Claims priority, application United Kingdom, May 23, 1975, 22536/75
Int. Cl.² H01B *13/00*
U.S. Cl. 156—353 **10 Claims**



1. Apparatus for use in the manufacture of a wiring harness of the kind including a plurality of conductive leads and a

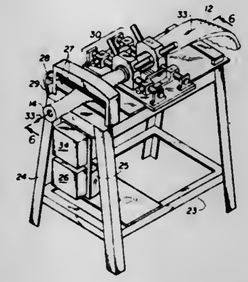
thermoplastic tape, each lead including a thermoplastic sheath containing the conductive core of the lead, the thermoplastic sheaths of the leads being fused to the thermoplastic tape to hold the leads in desired relative positions, the apparatus comprising first and second rollers between which the leads and the thermoplastic tape pass in use, whereby the rollers press the tape against the leads, means driving at least one of the rollers so that the leads and tape are driven between the rollers by rotation of the rollers, movable heater means for heating the mutually presented surfaces of the tape and the sheaths of the leads prior to their passage between the rollers whereby the pressure applied by the rollers causes the heated surfaces of the tape and sheaths of the leads to fuse together, means for moving said heater means between an operative position and a rest position wherein said heater means is spaced from said rollers, and a setable control mechanism operable at a predetermined point in the production of the harness, after a predetermined length of harness has been produced, to stop the roller drive and to return said heater means to its rest position, whereby a lead of the harness can be branched out of the harness or an additional lead can be introduced into the harness at said predetermined point in the harness.

4,071,394

APPARATUS FOR MANUFACTURING NON-WOVEN FABRIC TUBULAR FILTER

Harry Ball, Piscataway, N.J., assignor to Olympic Engineering Co., Piscataway, N.J.

Filed Mar. 18, 1977, Ser. No. 779,235
Int. Cl.² B29D *23/10*; D04H *18/00*
U.S. Cl. 156—465 **5 Claims**



1. Apparatus for manufacturing a tubular filter from a non-woven fabric web, comprising:

a cylindrical mandrel;

a guide sleeve coaxial with and surrounding at least a portion of the length of said mandrel;

means for drawing said web onto said mandrel between said sleeve and said mandrel to form said web into a tubular shape with the sides of said web in abutting relationship;

at least one needle having a plurality of barbed portions;

means for holding said needle in a first needling position extending transversely of said mandrel and sleeve through the space therebetween; and

means for transversely reciprocating said needle holding means.

4,071,395

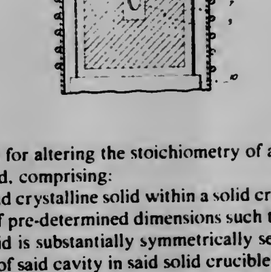
APPARATUS FOR CREATING SEGMENTED POLYETHYLENE PIPE TURNS

Arthur H. McElroy, 2789 E. 45th Place, Tulsa, Okla. 74105

Filed July 12, 1976, Ser. No. 704,382
Int. Cl.² B29C *19/00*
U.S. Cl. 156—499 **3 Claims**

1. In an apparatus for joining pipes by the fusion process, including a frame, a first clamp fixed to said frame and a movable clamp and insert jaw means in each of said clamps having circular cylindrical openings normally adapted to hold separate circular cylindrical pipes in alignment, along a horizontal axis line said movable clamp movably supported upon guide rods, said rods fixed to said frame on each side of said pipe, the axes of which lie in an imaginary plane which intersects the said horizontal axis line, the improvement comprising;

a. a first pair of insert jaws for said fixed clamp in which the circular cylindrical opening is inclined at a vertical angle A, where "A" is greater than 0° and less than 90°, to said horizontal axis line in a selected plane, through said axis line;



b. a second pair of insert jaws for said movable clamp in which the circular cylindrical opening is inclined at a vertical angle A to said horizontal axis line in said selected plane;

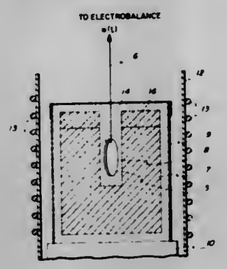
means to axially move said movable clamp towards and away from said fixed clamp, whereby two pieces of pipe can be fused together with their axes forming an angle of 2A°, each with a first face with its plane at an angle (90° − A) to the axis of the pipe, can be clamped, one in fixed clamp, and the other in said movable clamp, with their faces parallel and perpendicular to said horizontal axis line.

4,071,396

CONTROLLED ATMOSPHERE PROCESS FOR ALTERING THE NONSTOICHIOMETRY OF CRYSTALLINE MEMBERS

Robert L. Holman, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 8, 1976, Ser. No. 730,891
Int. Cl.² G02B *5/14*
U.S. Cl. 156—612 **20 Claims**



1. A method for altering the stoichiometry of a single phase crystalline solid, comprising:

a. placing said crystalline solid within a solid crucible having a cavity of pre-determined dimensions such that said crystalline solid is substantially symmetrically separated from the walls of said cavity in said solid crucible by a distance up to about three millimeters, said crucible comprising material which gives off the same chemical metal component in the vapor phase as said crystalline solid at a temperature, T; said chemical component in the vapor phase

having a vapor pressure less than about 10^{-4} atmosphere at said temperature T; and

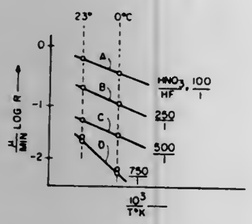
b. isothermally heating said crystalline solid and said solid crucible at said temperature T, to surround said crystalline solid with an atmosphere of substantially constant activity with respect to said chemical component in the vapor phase and within said cavity; said pre-determined dimensions of said cavity being effective to produce mass transport between said crystalline solid and said solid crucible under vapor phase equilibrium conditions.

4,071,397

SILICON METALLOGRAPHIC ETCH

Isabelle E. Estreicher, and James B. Price, both of Phoenix, Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed July 2, 1973, Ser. No. 375,403
Int. Cl.² H01L *21/306*
U.S. Cl. 156—662 **12 Claims**



3. In a process for use in the manufacture of MOS devices for stabilizing the threshold voltage of such a MOS device the improvement comprising the step of:

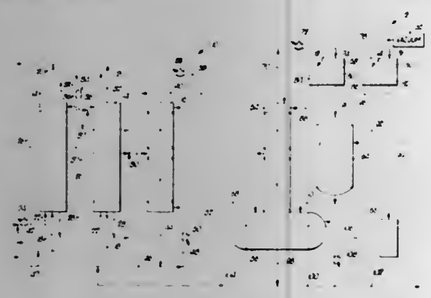
etching a lapped and polished wafer in which such MOS devices are built, in an etchant solution of a mixture of nitric acid and hydrofluoric acid having a ratio by volume of mixture lying within the range of 600:1 to 750:1 respectively.

4,071,398

CHEMICAL CONCENTRATION BY SEQUENTIAL ACTIVATED CARBON ADSORPTION AND FRACTIONATION

Kenneth W. Baierl, Appleton, Wis., assignor to Flambeau Paper Company, Park Falls, Wis.

Continuation of Ser. No. 587,850, June 18, 1975, abandoned. This application Oct. 18, 1976, Ser. No. 733,306
Int. Cl.² D21C *11/06*
U.S. Cl. 162—15 **12 Claims**



1. A method of continuously handling a dilute stream containing an adsorbable chemical which is continuously fed to a recovery system, and of recovering a highly purified and concentrated stream of the adsorbable chemical, said method comprising the steps of:

continuously directing said dilute stream to an adsorption zone having a plurality of adsorption columns each containing adsorption media;

continuously passing said dilute stream through one of said columns and adsorbing at least a fraction of said chemical on said media therein, thereafter diverting said dilute stream to another of said columns, and continuously passing said dilute stream therethrough for adsorption of at least a fraction of said chemical on the media within said other column;

desorbing said adsorbed chemical on the media within said one column by passing a regenerating agent through the latter during the diversion of said dilute stream to said other column whereby said one column is again capable of receiving said dilute stream and adsorbing said chemical therefrom, and producing a partially concentrated stream containing said chemical which is more concentrated than said dilute stream;

continuously directing at least a fraction of said partially concentrated stream to a second concentration zone which includes concentration apparatus usable on a batch basis, and continuously concentrating said directed fraction of the partially concentrated stream to a desired level in the second concentration zone to thereby produce a further concentrated stream of said chemical and a bottoms fraction;

collecting said bottoms fraction and recycling the same back to said adsorption zone for passage therethrough simultaneously with said dilute stream in order to readsorb any of said chemical within said bottoms fraction on said adsorption media;

continuously collecting said further concentrated stream of said chemical in a holding zone;

stopping the delivery of said partially concentrated stream for a sufficient period of time to permit batch reconcentration in the concentration apparatus of said second concentration zone of at least a part of the further concentrated stream of said chemical held in said holding zone, and redirecting said partially concentrated stream back to said first concentration zone for maintaining the continuity of said method without storage or disposal of said partially concentrated stream;

passing said redirected, partially concentrated stream through said absorption zone simultaneously with said continuous dilute stream, with consequent readsorption of said chemical from the redirected stream onto said adsorption media;

conveying at least a part of said chemical held in said holding zone back to the concentration apparatus of the second concentration zone, after said stoppage and redirection of said partially concentrated stream;

producing a finally concentrated stream of said chemical by a batch concentration of the conveyed part of said further concentrated stream in the batch concentration apparatus of the second concentration zone during said redirection and passage of said partially concentrated stream through said adsorption zone; and

recovering the finally concentrated stream of said chemical as the latter is produced by said batch concentration.

4,071,399

APPARATUS AND METHOD FOR THE DISPLACEMENT IMPREGNATION OF CELLULOSIC CHIPS MATERIAL

James R. Prough, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed Sept. 1, 1976, Ser. No. 719,656
Int. Cl.² D21C *3/24, 1/00, 7/06, 7/14*
U.S. Cl. 162—16 **15 Claims**

1. Apparatus for treating cellulosic chips material comprising

a. a high-pressure transfer valve for transporting cellulosic chips and liquid under pressure,

b. a high-pressure vertical treatment vessel having at least an impregnation zone in an upper portion thereof, and a top chamber above the impregnation zone,

c. a chips and liquid inlet to said top chamber of said vessel,

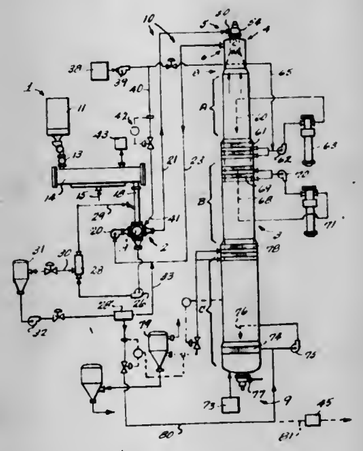
d. a feed system for feeding chips and liquid to said inlet and for returning liquid from said inlet to said high-pressure transfer valve, said feed system including conduits extending from said top chamber to said transfer valve,

e. means for establishing a countercurrent flow of digesting liquid in said impregnation zone of said vessel liquid, said means including means for withdrawing liquid from said impregnation zone through said top chamber of said vessel into said feed system,

f. means for withdrawing liquid from said feed system; so that essentially no free water enters said vessel impregnation zone,

g. means for withdrawing treated chips material from the bottom of said vessel, and

h. means for establishing a chips plug in said vessel below said inlet for isolation of said top chamber of said vessel from the impregnation zone thereof, said means for withdrawing liquid from said impregnation zone through said top chamber of said vessel including an outlet disposed above said chips plug in the top chamber of said vessel.



9. A method for treating cellulosic chips material utilizing high-pressure transfer valve connected by a feed system to at least one vertical treatment vessel having a top chamber, comprising the steps of continuously

a. feeding chips material and liquid to the high-pressure transfer valve to boost the pressure thereof,

b. transporting said high-pressure chips material and liquid to the top chamber of the vertical treatment vessel and introducing said chips into the top chamber of the vessel from the feed system, to establish a column of chips in the vessel below said top chamber of the vessel,

c. establishing a countercurrent flow of digesting liquid in the vessel impregnation zone to displace water, calcium and other minerals from the chips material, while impregnating the chips material with digesting liquid, by withdrawing liquid from said impregnation zone through said top chamber of the vessel into the feed system,

d. withdrawing liquid, including the displaced water, calcium, and other minerals, from the feed system; the withdrawals practiced in steps (c) and (d) insuring that essentially no free water enters the vessel impregnation zone, and

e. withdrawing treated chips material from the bottom of the vessel.

4,071,400

METHOD FOR CONTROLLING SOIL EROSION

Erwin M. Jankowiak, Sanford, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 5, 1976, Ser. No. 673,571
Int. Cl.² D21D *3/00*
U.S. Cl. 162—169 **6 Claims**

1. In a method for making a wind and rain resistant mat comprising the blending of plant fibers with at least 75 pounds per ton of fibers of a water resistant adhesive, consisting essentially of (1) an interpolymer of less than 60 weight percent of an alkenyl aromatic monomer wherein an alkenyl group is attached directly to an aromatic nucleus, at least 40 weight percent of an open chain conjugated diolefin having from 4 to about 9 carbon atoms, and an unsaturated carboxylic acid or anhydride (2) from about 0.5 to 2.5 weight percent based on polymer solids of a water soluble cellulose ether and (3) from about 0.70 to 2.5 weight percent of a water-soluble organo sulfonate having at least one sulfonate group attached to an aromatic ring and represented by the formula:

$$R[Ar - SO_3]M$$

wherein R is an alkyl chain having from about 8 to 20 carbon atoms, an alkenyl chain having from about 8 to 20 carbon atoms and combinations of said chains with ethoxy chains, phenyl, phenoxy, and alkyl or alkoxy substituted phenyl or phenoxy:

Ar is phenyl or naphthyl and M is an alkali metal or ammonia; distributing the coated fibers randomly into a layer, and drying the adhesive,

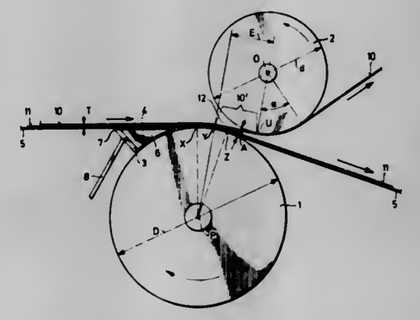
the improvement comprising mixing said cellulose ether with the latex containing from about 2.0 to about 25 weight percent polymer solids and then diluting the composition to the predetermined dilution level of less than about 1.0 weight percent total solids and adding the desired amount of plant fibers.

4,071,401

SEPARATING SYSTEM FOR SEPARATING TWO WIRES OF A DOUBLE-WIRE PAPER-MAKING MACHINE

Alfred Bubik, Ravensburg; Siegfried Reutter, Gerbertshaus; Hans-Joachim Schultz, Oberhofen, and Wolf-Gunter Stotz, Ravensburg, all of Germany, assignors to Escher Wyss G.m.b.H., Ravensburg, Germany

Filed Oct. 1, 1976, Ser. No. 728,591
Claims priority, application Switzerland, Oct. 2, 1975, 12777/75
Int. Cl.² D21F *1/40*
U.S. Cl. 162—300 **12 Claims**



1. A separating system for separating two wires in a double wire paper making machine comprising

a main wire of a given thickness;

an auxiliary wire of a given thickness for conveying a paper web with said main wire in a given direction;

a main roll having a solid circumferential surface with said main wire trained thereon; and

an auxiliary roll having said auxiliary wire trained thereon; said auxiliary roll being disposed downstream of said main roll relative to said direction and being spaced from said main roll at a distance less than 0.25 times the diameter of said auxiliary roll and greater than the combined thickness of said wires and said web whereby a conveyed paper web is separated from said auxiliary wire and advanced with said main wire during operation of said system.

4,071,402

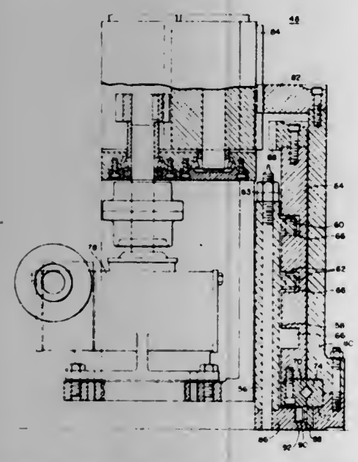
NUCLEAR REACTOR APPARATUS

Elman E. Wade, Ruffs Dale, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 540,203, Jan. 10, 1975, abandoned. This application Aug. 9, 1976, Ser. No. 712,442

Int. Cl.² G21C *19/22*

U.S. Cl. 176—27 **10 Claims**



1. Apparatus for independently lifting and rotating members of a nuclear reactor closure head above the nuclear reactor pressure vessel comprising:

a cylindrical first member;

a cylindrical, rotatable plug, said first member and said plug being members of said closure head;

an annular first support structure fixedly secured to said first member, said first support structure having a lifting bearing secured thereto;

an annular lifting structure having a thread continuous around the outward side of said lifting structure, said thread being vertically displaced along its length, said lifting bearing being located in said thread and engaged therewith;

a rotating bearing having an inner race and an outer race, said outer race being secured to the inward side of said lifting structure;

an annular second support structure secured to said plug and to said inner race of said rotating bearing, said lifting structure being continuous around the outward side of said second support structure;

means for driving said lifting structure;

means for rotating said second support structure; and

means for maintaining the engagement of said means for rotating said second support structure and said second support structure during vertical movement of said second support structure.

4,071,403

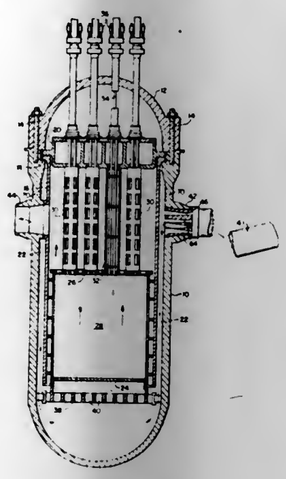
METHOD AND APPARATUS FOR PROTECTING THE CORE OF A NUCLEAR REACTOR

Harry N. Andrews, Export, and Walter G. Roman, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 1, 1974, Ser. No. 493,995

Int. Cl.² G21C *9/00*

U.S. Cl. 176—50 **1 Claim**



1. A nuclear reactor comprising:

a closed pressure vessel having at least one inlet nozzle an an outlet nozzle;

a core in the pressure vessel including fuel rods which generate heat during operation of the reactor;

inlet piping connecting to the inlet nozzle for supplying coolant therethrough which passes in heat exchange relationship with the fuel rods for absorbing heat therefrom prior to discharge out the outlet nozzle;

a removable casting positioned completely in said inlet nozzle, said casting having multiple substantially parallel venturies therein extending longitudinally of the inlet nozzle, each of said venturies having a design which permits unimpeded flow of coolant into the reactor during steady state reactor operation, but inhibits flow therethrough in a reverse direction upon the occurrence of a major break in the inlet piping connected to the inlet nozzle;

said venturies thereby being effective to cause said coolant to remain in contact with the fuel rods for a time sufficient to prevent said fuel rods from reaching an unacceptably high temperature.

4,071,404

RADIATION SHIELDING DEVICE FOR NUCLEAR FACILITIES

Masataka Aoki, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Dec. 13, 1976, Ser. No. 749,803

Claims priority, application Japan, Dec. 22, 1975, 50-151805

Int. Cl.² G21E *7/00*

U.S. Cl. 176—87 **6 Claims**

1. A radiation shielding device for nuclear facilities comprising:

a vessel exposed to fissible materials;

a radiation shielding layer surrounding said vessel;

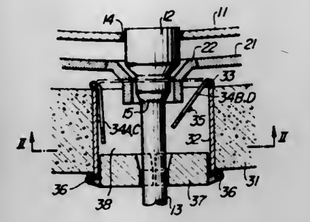
a nozzle joined at one end thereof by welding to said vessel;

a pipe joined at one end thereof by welding to the other end of said nozzle and extending through said radiation shielding layer;

a shielding frame secured to walls of an opening formed in said radiation shielding layer to define therein a manhole, said nozzle and said pipe extending through substantially the central portion of the manhole in spaced relation with the walls of said shielding frame;

a plurality of shielding blocks made of a first radiation shielding material and each hingedly supported at one end thereof by an outer end of said shielding frame or an end thereof remote from said vessel, said shielding blocks being adapted to plug the manhole and close an open space formed between said pipe and said shielding frame when said shielding blocks are all pivotally brought to a closed position; and

a plurality of shielding plates made of a second radiation shielding material and each hingedly supported at one end thereof by an inner end of said shielding frame or an end thereof near to said vessel, said shielding plates being adapted to close an open space formed between said nozzle and said shielding frame when said shielding plates are all pivotally brought to a closed position.



4,071,405

METHOD OF PRODUCING SULFUR CONTAINING L-AMINO ACIDS

Kenji Soda, Uji; Hidehiko Tanaka, Kyoto; Hidetsugu Nakazawa, and Koji Mitsugi, both of Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed June 15, 1976, Ser. No. 696,398

Claims priority, application Japan, June 19, 1975, 50-73774

Int. Cl.² C12D *13/06*

U.S. Cl. 195—29 **6 Claims**

1. A method for the production of substituted sulfur-containing L-amino acids in which the sulfur is attached to the β- or γ-carbon atom of the amino acid, which comprises:

a. contacting a β- or γ-substituted L-amino acid in an aqueous reaction medium containing methioninase together with a sulfur containing compound to accumulate the substituted sulfur-containing L-amino acid in the medium, and

b. recovering the substituted sulfur-containing L-amino acid from the medium, the said β- or γ-substituted L-amino acid being characterized as one which is converted to pyruvic or α-keto butyric acid when held in an aqueous medium with methioninase, the said sulfur-containing compound being characterized as one which contains an active hydrogen atom and at least one unshared electron pair associated with the sulfur atom, the substituted sulfur-containing L-amino acid being characterized as one in which the original β- or γ-substitute is replaced by the entire nucleophilic moiety of the sulfur-containing compound which remains after removal of hydrogen therefrom.

4,071,406

PROCESS FOR PRODUCING XANTHOMONAS POLYSACCHARIDE ON A SOYBEAN WHEY MEDIUM

Hiroshi Kanda, Zushi, Japan, assignor to The Nisshin Oil Mills, Ltd., Tokyo, Japan

Filed July 15, 1976, Ser. No. 705,491

Claims priority, application Japan, July 15, 1975, 50-85857

Int. Cl.² C12D *13/04*; C12B *3/04, 3/14*

U.S. Cl. 195—31 P **6 Claims**

1. A process for the production of Xanthomonas Polysaccharide which comprises culturing a strain of the bacterium *Xanthomonas campestris* in a soybean whey medium and recovering the *Xanthomonas polysaccharide*, said soybean whey medium being obtained by extracting water soluble constituents from defatted soybeans with water to give an aqueous product, precipitating proteins from the resulting aqueous product at the isoelectric point with acids, removing the proteins thus precipitated to obtain a supernatant liquid, neutralizing the resulting supernatant liquid with an alkali, and then adding to the resulting soybean whey liquid an amount of glucose and/or sucrose suitable for the culture of *Xanthomonas campestris*.

4,071,407

NOVEL MALTASE ENZYME PRODUCED BY A NEW YEAST STRAIN

Leo M. Hall, Homewood, Ala., assignor to The Board of Trustees of the University of Alabama, Birmingham, Ala.

Filed Nov. 16, 1976, Ser. No. 742,240

Int. Cl.² C12D *13/10*; C12K *1/00*

U.S. Cl. 195—62 **14 Claims**

1. Maltase enzyme characterized by hydrolyzing maltotetraose only about 1/100 as fast as maltose and maltopentaose only about 1/500 as fast as maltose and prepared by growing a strain of Saccharomyces, ATCC 20,488, in a growth medium containing at least one of maltose, maltotriose or malt extract derived from a plant source, releasing the enzyme from the yeast cells, and recovering the enzyme.

4,071,408

NEURAMINIDASE

Michael Flashner, Syracuse, and Stuart W. Tanenbaum, Manlius, both of N.Y., assignors to Research Corporation, New York, N.Y.

Filed Nov. 1, 1976, Ser. No. 735,521

Int. Cl.² C12D *13/10*

U.S. Cl. 195—62 **13 Claims**

13. Extracellular neuraminidase derived from the microorganism *Arthrobacter sialophilum* ATCC 31253 or a neuraminidase-producing mutant or variant or derivative thereof, said neuraminidase having a molecular weight of about 87,000 daltons as measured by gel filtration chromatography, a pH optimum of 5-6, an apparent K_m of about 2.08 mg/ml for Collocalia mucoid and 3.3×10^{-3} for N-acetylneuraminlactose, being insensitive to both Ca^{++} ions and EDTA and capable of hydrolyzing (α, 2-3), (α, 2-6) or (α, 2-8) linkages.

4,071,409

IMMOBILIZATION OF PROTEINS ON INORGANIC SUPPORT MATERIALS

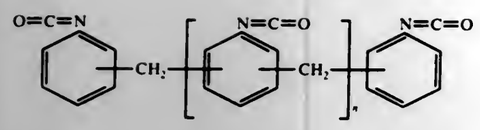
Ralph A. Messing, Horseheads, and Sidney Yaverbaum, Suffern, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 20, 1976, Ser. No. 688,469

Int. Cl.² C07G *7/02*

U.S. Cl. 195—63 **8 Claims**

1. A method of immobilizing biologically active proteins on the surfaces of a water insoluble porous high surface area inorganic material, the method comprising the steps of reacting a high surface area inorganic material having surface hydroxyl or oxide groups with an organic solution of a polymeric isocyanate represented by the formula



where *n* is at least 2, said reaction resulting in inocyanate groups of the polymeric isocyanate reacting with said hyroxyl or oxide groups of said material to form a carbonate and the reaction being under conditions sufficient to form a surface of free isocyanate groups on the material, and then reacting the material with a dispersion of biologically active proteins under conditions sufficient to bond the proteins to the material in a biologically active state.

4,071,410

PROCESS FOR PREPARATION OF PANCREATIC ELASTASE

Masayuki Yoshizawa, Kawagoe, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1976, Ser. No. 738,866
Claims priority, application Japan, Nov. 8, 1975, 50-133600
Int. Cl.² C07G *7/026*
U.S. Cl. 195—66 R **3 Claims**

1. A process for preparing pancreatic elastase, which comprises adding the duodenum of a mammalian animal or an extract thereof to pancreatic material containing a precursor of elastase to thereby activate the elastase precursor and separating pancreatic elastase.

4,071,411

ANTITUMOR ANTIBIOTICS ACLACINOMYCINS A AND B [RD-9187A]

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Masa Hamada, Hoya; Akira Takamatsu, Yokohama, and Toshikazu Oki, Kamakura, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Japan

Division of Ser. No. 596,682, July 16, 1975, Pat. No. 3,988,315. This application June 4, 1976, Ser. No. 692,827
Claims priority, application Japan, July 27, 1974, 49-86390
Int. Cl.² C12D *9/14*
U.S. Cl. 195—80 R **21 Claims**

1. The process for producing the antitumor antibiotic aclacinomycin which comprises culturing an aclacinomycin-producing strain of *Streptomyces galilaeus* having the identifying characteristics of A.T.C.C. 31133 under submerged aerobic conditions in a nutrient medium containing a carbon source and a nitrogenous nutrient until a substantial amount of aclacinomycin is produced by said organism in said nutrient medium.

8. The process for producing the antitumor antibiotic aclacinomycin A which comprises culturing an aclacinomycin A-producing strain of *Streptomyces galilaeus* having the identifying characteristics of A.T.C.C. 31133 under submerged aerobic conditions in a nutrient medium containing a carbon source and a nitrogenous nutrient until a substantial amount of aclacinomycin A is produced by said organism in said nutrient medium.

15. The process for producing the antitumor antibiotic aclacinomycin B which comprises an aclacinomycin B-producing strain of *Streptomyces galilaeus* having the identifying characteristics of A.T.C.C. 31133 under submerged aerobic conditions in a nutrient medium containing a carbon source and a nitrogenous nutrient until a substantial amount of aclacinomycin B is produced by said organism in said nutrient medium.

4,071,412

READY MADE STERILIZED CULTURE MEDIA AND PROCESS OF PREPARATION

Eli Eisenberg, Tel-Aviv; Gideon Altmann, Petah Tiqua; Bianca Bogokovsky, Tel-Hashomer, and Mordechai Lapidot, Bne Braq, all of Israel, assignors to The State of Israel and Isorad Isotope and Radiation Enterprise, Ltd., Israel

Filed May 5, 1975, Ser. No. 574,644
Claims priority, application Israel, May 17, 1974, 44853
Int. Cl.² C12K *1/10*
U.S. Cl. 195—102 **10 Claims**

1. A process for preparing sterile culture media in unit dosage form comprising the steps of:

preparing culture media compositions of several different conventional constitutions, at least some of said culture media including an indicator in their conventional constitutions;

adjusting said compositions by selectively adding radio protectors, enzymes adapted to pevent formation of toxic degradation products upon said media being subjected to ionizing irradiation, or additional quantities of indicator, said indicator being added only to those compositions of said conventional constitutions normally including an indicator; and

sterilizing the culture media by means of ionizing irradiation, the amount of said added constituents being such that after said sterilization step of each of said compositions a sterile culture medium of quality sufficient to produce satisfactory bacterial growth as compared to non ionizing radiation sterilized medium is obtained.

4,071,413

METHOD FOR DETERMINING FREE FATTY ACIDS IN BLOOD SERUM USING FATTY ACID ACTIVATING ENZYMES

Zyuro Takahashi, Itami, and Chozo Hayashi, Nishinomiya, both of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 30, 1976, Ser. No. 681,941
Claims priority, application Japan, July 30, 1975, 50-92134
Int. Cl.² G01N *31/14*
U.S. Cl. 195—103.5 R **12 Claims**

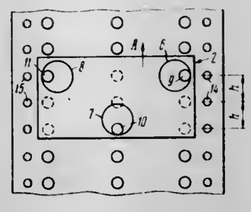
1. A method for determining free fatty acids in blood serum, which comprises (A) preparing a standard curve for determining free fatty acids by subjecting known amounts of free fatty acid to (I) reaction with an acyl coenzyme A-synthesizing enzyme in the presence of adenosine triphosphate and coenzyme A, (2) subjecting the resulting adenosine monophosphate to reaction with myokinase in the presence of adenosine triphosphate, (3) subjecting the resulting adenosine diphosphate to reaction with pyruvate kinase in the presence of phosphoenolpyruvic acid, and (4) measuring the amount of the resulting pyruvic acid; (B) carrying out said reactions (1) through (4) in the blood serum in the absence of the coenzyme A in said reaction (I); (C) after step (B) carrying out said reactions (1) through (4) in the blood serum with the addition of coenzyme A in said reaction (I); and (D) determining amount of free fatty acids in said blood serum by subtracting the value determined in step (B) from the value determined in step (C) and comparing the result with the standard curve.

4,071,414

METHOD OF SMOKELESS CHARGING OF COKE OVENS WITH COAL CHARGE AND COAL-CHARGING MACHINE FOR EFFECTING SAME

Leonid Nikolaevich Fidchunov, pereulok Traktorostroitelei 85, kv. 205; Stanislav Sergeevich Balyk, ulitsa Potebni, 8, kv. 7; Adolf Nikolaevich Silka, ulitsa Kostomarovskaya, 5/7, kv. 15; Nikolai Konstantinovich Kulakov, ulitsa Danilevskogo, 14a, kv. 21, all of Kharkov; Leonid Fedorovich Bakhtarov, ulitsa Nevskogo, 5, kv. 9, Lipetsk; Alexandr Abramovich Azimov, Donetskoi oblasti, bulvar Pushkina, 3, kv. 60, Slavyansk; Vladimir Mikhailovich Davydenko, Donetskoi oblasti, ulitsa Oktyabrskoi revoljutsii, 47, kv. 5, Slavyansk; Nikolai Vasilievich Balitsky, Donetskoi oblasti, ulitsa Bulvarnaya, 7, kv. 21, Slavyansk; Evgeny Petrovich Likhogub, ulitsa Kommunalnaya, 41, kv. 97, Kharkov, and Gersh Abramovich Dorfman, ulitsa Dmitrievskaya, 20, kv. 10, Kharkov, all of U.S.S.R.

Filed Mar. 5, 1976, Ser. No. 664,065
Int. Cl.² C10B *31/04, 37/02, 53/04*
U.S. Cl. 201—40 **7 Claims**



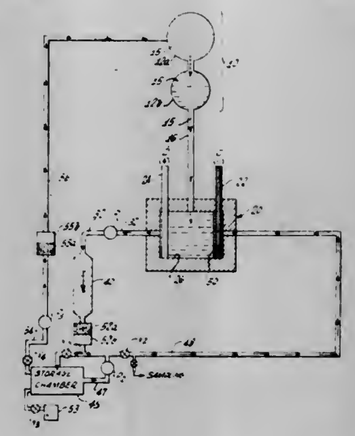
1. A method of smokeless charging of coke ovens with coal charge, said coke ovens having a plurality of chambers, each of said chambers having at least three charging holes, two of said charging holes being arranged near the extreme ends of each of said chambers and one of said charging holes being arranged in the center of each of said chambers, comprising pouring coal into a first chamber of the coke ovens through its extreme end and central holes from the outlets of a coal-charging machine in two stages, the first of said two stages including positioning a coal-charging machine having at least three outlets, two of said outlets being arranged near the extreme ends of said coal-charging machine and one of said outlets being arranged in the center of said coal-charging machine and displaced from the extreme outlets in the direction of movement of said coal-charging machine, over a first chamber such that the extreme outlets of said coal-charging machine are positioned over the extreme end holes of said first chamber, pouring a coal charge into said first chamber through said extreme end holes, withdrawing charging gases simultaneously through a gas discharge means, advancing said coal-charging machine into a position wherein the extreme outlets of said coal-charging machine are over the extreme end holes of a nearby second chamber which is next in terms of a charging schedule and the central outlet is over the central hole of said first chamber, and simultaneously holding the coal charge in said first chamber over a time period sufficient for said coal-charging machine to advance to said second chamber, the second of said two stages including pouring a coal charge into said first chamber through said central hole, withdrawing charging gases simultaneously through said gas discharge means, and pouring a coal charge through the extreme end holes of said second chamber in terms of said charging schedule simultaneously with the filling of said first chamber through said central hole.

4,071,415

METHOD OF ELECTROPLATING ALUMINUM AND ITS ALLOYS

Jack Yea Wong, 4791 Calle de Lucia, San Jose, Calif. 95124

Continuation-in-part of Ser. No. 645,552, Dec. 31, 1975, Pat. No. 4,003,804. This application Oct. 21, 1976, Ser. No. 734,679
Int. Cl.² C25D *3/44, 21/16, 21/18*
U.S. Cl. 204—14 N **23 Claims**



1. In a continuous plating process, the steps of:

a. forming a fresh electroplating solution containing an aluminum cationic plating species;

b. transferring said fresh electroplating solution to a plating cell;

c. depositing aluminum onto a cathodic substrate within said plating cell at low voltages on the order of less than five volts to produce an electroplating solution which is aluminum-cation poor;

d. transferring said aluminum-cation poor electroplating solution to a regeneration zone including activated aluminum for reaction of said aluminum-cation poor electroplating solution with said activated aluminum to produce an enriched electroplating solution, having an aluminum cationic plating species with an aluminum ion molarity greater than that of said aluminum-cation poor electroplating solution; and

e. returning said thusly enriched electroplating solution, to said plating cell for further plating of aluminum therefrom.

4,071,416

TREATMENT OF CHROMIUM-CONTAINING IRON ALLOYS

William H. Sutton, Birmingham, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Feb. 4, 1977, Ser. No. 765,442
Claims priority, application United Kingdom, Feb. 13, 1976, 5779/76
Int. Cl.² C25D *11/00, 5/00*
U.S. Cl. 204—38 R **6 Claims**

1. A method of providing a hard film on the surface of a stainless steel comprising treating the stainless steel in an aqueous solution of chromic and sulphuric acids, with or without other constituents to provide a film on the surface thereof, without heat treating the film subjecting the stainless steel bearing the film to electrolysis as the cathode in a hardening electrolyte and thereafter treating the stainless steel bearing the hardened film in an aqueous solution of a water soluble silicate for a period of time of at least about 5 minutes sufficient to harden the film.

4,071,417

PROCESS FOR DECREASING THE POROSITY OF GOLD

Donald Eldridge Koontz, Summit, and Peter Kenny Skurkiss, Short Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 29, 1977, Ser. No. 811,039
Int. Cl.[2] C25D 5/48, 11/38
U.S. Cl. 204—38 B **15 Claims**

1. A process for cathodically producing an article with at least one layer consisting essentially of at least 90 percent by weight of gold on a metallic surface consisting essentially of at least 50 weight percent of at least one metal selected from the group consisting of copper, nickel, tin, zinc and iron, said process comprising the step of passing current through an anode, aqueous solution and a cathode, with both cathode and anode at least partly immersed in the aqueous solution and in which said cathode includes the metallic surface with the layer characterized in that the aqueous solution comprises chromium-containing ions so as to decrease the porosity of the layer as evidenced by a decreased number of spots in an electrographic porosity test using dimethylglyoxime as the indicator, said aqueous solution and conditions capable of depositing chromium chemically combined with oxygen on the unlayered metallic surface.

4,071,418

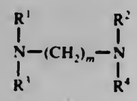
ELECTRODEPOSITION OF ZINC AND ADDITIVES THEREFOR

Barrie Sydney James, Kingswinford, England, assignor to W. Canning & Company, Ltd., Birmingham, England

Filed Apr. 9, 1976, Ser. No. 675,480
Claims priority, application United Kingdom, Apr. 15, 1975, 15482/75
The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.
Int. Cl.[2] C25D 3/22
U.S. Cl. 204—55 R **17 Claims**

1. In an aqueous alkaline, cyanide-free zinc electroplating bath containing zinc ions and hydroxyl ions, the improvement comprising said bath including an effective brightening amount of

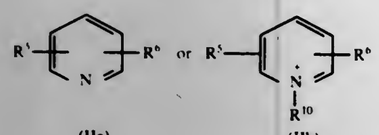
a. at least one linear polyamine obtained by condensing a diamine of the formula



(I)

where R^1 and R^3, which may be the same or different, each represent an alkyl group with 1 to 4 carbon atoms, and R^2 and R^4, which may be the same or different, each represent a hydrogen atom or an alkyl group with 1 to 4 carbon atoms, and where m is an integer from 1 to 5, with a 1,3-dihalopropan-2-ol; together with

b. at least one pyridine compound in the form of free base or as quaternised derivatives, in which the pyridine compound is a pyridine compound of Formula (IIa) or a pyridine compound having a cation of formula (IIb):

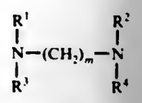


(IIa) (IIb)

where R^5 represents a hydrogen atom or an alkyl group with 1 to 5 carbon atoms; and R^6 represents a cyano group, a group $-COOR^7$ where R^7 represents a hydrogen atom, an alkali metal cation or an alkyl group with 1 to 5 carbon atoms; and R^{10} represents a radical selected from the group consisting of aralkyl, alkyl, alkenyl, esterified carboxyalkyl and hydroxyalkyl groups.

10. A brightener composition for addition to an alkaline, cyanide-free zinc electroplating bath, comprising a mixed solution of

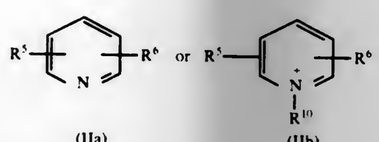
a. at least one linear polyamine obtained by condensing a diamine of the formula:



(I)

where R^1 and R^3, which may be the same or different, each represent an alkyl group with 1 to 4 carbon atoms, and R^2 and R^4, which may be the same or different, each represent a hydrogen atom or an alkyl group with 1 to 4 carbon atoms, and where m is an integer from 1 to 5, with a 1,3-dihalopropan-2-ol; and

b. at least one pyridine compound in the form of a free base or as a quaternised derivative, in which the pyridine compound is a pyridine compound of formula (IIa) or a pyridine compound having a cation of formula (IIb):



(IIa) (IIb)

where R^5 represents a hydrogen atom or an alkyl group with 1 to 5 carbon atoms; and R^6 represents a cyano group, a group $-COOR^7$ where R^7 represents a hydrogen atom, an alkali metal cation or an alkyl group with 1 to 5 carbon atoms; or a group $-CONR^8R^9$ where R^8 and R^9 which may be the same or different each represents a hydrogen atom or an alkyl group with 1 to 5 carbon atoms; and R^{10} represents an aralkyl, alkyl, alkenyl, esterified carboxyalkyl or hydroxyalkyl group.

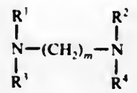
4,071,419

ELECTRODEPOSITION OF ZINC AND ADDITIVE THEREFORE

Barrie Sydney James, Kingswinford, England, assignor to W. Canning & Company, Ltd., Birmingham, England

Filed Apr. 9, 1976, Ser. No. 675,500
Claims priority, application United Kingdom, Apr. 15, 1975, 15482/75
The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.
Int. Cl.[2] C25D 3/22
U.S. Cl. 204—55 R **24 Claims**

1. In an aqueous alkaline, cyanide-free zinc electroplating bath containing zinc ions and hydroxyl ions, the improvement comprising: including in said bath an effective brightening amount of at least one linear polyamine obtained by condensing a diamine of the formula:



(I)

where R^1, R^2, R^3 and R^4, which may be the same or different, each represent a hydrogen atom or an alkyl group with 1 to 4 carbon atoms, and where m is an integer from 1 to 5, with a dihalide of the formula

$$X-(CH_2)_n-Y-(CH_2)_p-X \quad \text{(II)}$$

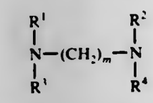
where X represents a halogen atom, Y represents an oxygen atom, an ethynylene group (—C≡C—), an ethenylene group (—HC=CH—), or a group



where Z represents a hydrogen atom or an alkyl group with 1 to 4 carbon atoms and n and p, which may be the same or different, are zero or an integer from 1 to 5.

8. In an aqueous alkaline, cyanide-free zinc electroplating bath containing zinc ions and hydroxyl ions, the improvement comprising: including in said bath an effective brightening amount of

a. at least one linear polyamine obtained by condensing a diamine of the formula:



(I)

where R^1, R^2, R^3 and R^4, which may be the same or different, each represent a hydrogen atom or an alkyl group with 1 to 4 carbon atoms, and where m is an integer from 1 to 5, with a dihalide of the formula

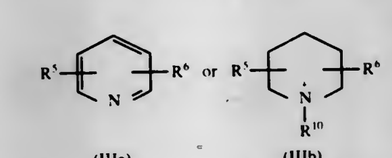
$$X-(CH_2)_n-Y-(CH_2)_p-X \quad \text{(II)}$$

where X represents a halogen atom, Y represents an oxygen atom, an ethynylene group (—C≡C—), an ethenylene group (—HC=CH—), or a group



where Z represents a hydrogen atom, an alkyl group with 1 to 4 carbon atoms or a hydroxy group, and n and p, which may be the same of different, are zero or an integer from 1 to 5; provided that when Z represents a hydroxy group and n and p are both 1, R^1 and R^2 in formula (I) both represent hydrogen atoms; together with

b. at least one of a pyridine compound of formula IIIa or a pyridine compound having a cation of formula III (*b*)

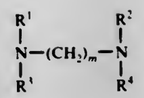


(IIIa) (IIIb)

where R^5 represents a hydrogen atom or an alkyl group with 1 to 5 carbon atoms; and R^6 represents a cyano group, a group -$COOR^7$ where R^7 represents a hydrogen atom, an alkali metal cation or an alkyl group with 1 to 5 carbon atoms; or a group $—CONR^8R^9$ where R^8 and R^9 which may be the same or different each represents a hydrogen atom or an alkyl group with 1 to 5 carbon atoms; and R^{10} represents a radical selected from the group consisting of aralkyl, alkyl, alkenyl, esterified carboxyalkyl and hydroxyalkyl groups.

15. A brightener composition for addition to an alkaline, cyanide-free zinc electroplating bath, comprising a mixed solution of

a. at least one linear polyamine obtained by condensing a diamine of the formula:

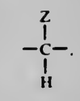


(I)

where R^1, R^2, R^3 and R^4, which may be the same or different, each represents a hydrogen atom or an alkyl group with 1 to 4 carbon atoms, and where m is an integer from 1 to 5, with an alkyl dihalide of the formula

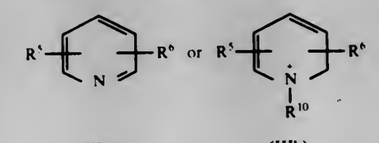
$$X-(CH_2)_n-Y-(CH_2)_p-X \quad \text{(II)}$$

where X represents a halogen atom; Y represents an oxygen atom, an ethynylene group (—C≡C—), an ethenylene group (—HC=CH—), or a group



where Z represents a hydrogen atom, an alkyl group with 1 to 4 carbon atoms or a hydroxy group, and n and p, which may be the same different, are zero or an integer from 1 to 5; provided that when Z represents a hydroxy group, n and p are both 1 and R^1 and R^2 in formula (I) both represent hydrogen atoms; and

b. at least one of a pyridine compound of formula IIIa or a pyridine compound having a cation of formula IIIb



(IIIa) (IIIb)

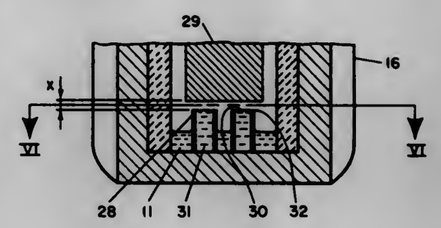
where R^5 represents a hydrogen atom or an alkyl group with 1 to 5 carbon atoms; and R^6 represents a cyano group, a group -$COOR^7$ where R^7 represents a hydrogen atom, an alkali metal cation or an alkyl group with 1 to 5 carbon atoms; or a group $CONR^8R^9$ where R^8 and R^9 which may be the same or different each represents a hydrogen atom or an alkyl group with 1 to 5 carbon atoms and R^{10} represents an aralkyl, alkyl, alkenyl, esterified carboxyalkyl or hydroxyalkyl group.

4,071,420

ELECTROLYTIC PRODUCTION OF METAL

Perry A. Foster, Jr., New Kensington, and Stanley C. Jacobs, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 645,534, Dec. 21, 1975, abandoned. This application Aug. 25, 1976, Ser. No. 717,699
Int. Cl.[2] C25C 3/06
U.S. Cl. 204—67 **8 Claims**



1. A method for the electrolytic production of metal, including electrolyzing, between anodic and cathodic surface areas, a

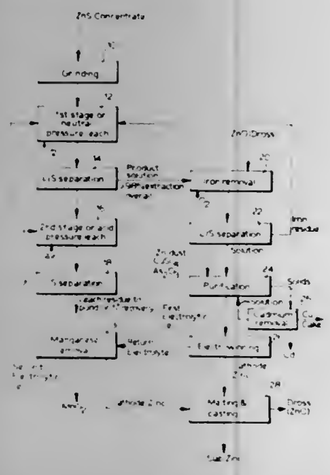
compound of the metal dissolved in a molten solvent, the electrolyzing being performed at a temperature such that the metal is formed in the molten state, the metal collecting in a molten metal pad, wherein the improvement comprises the provision of cathodic surface area formed from at least one hollow body protruding out of the pad into the solvent toward the anodic surface area, the hollow body containing molten material and being open at its end closest the anodic surface area and sealed at its end in the pad.

4,071,421

PROCESS FOR THE RECOVERY OF ZINC

Ian M. Masters; Gerald L. Bolton, both of Fort Saskatchewan, and Verner B. Sefton, Edmonton, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Sept. 17, 1976, Ser. No. 724,423
Claims priority, application Canada, Aug. 11, 1976, 258881
Int. Cl.² C25B *1/00*; C25C *1/16*
U.S. Cl. 204—96 **15 Claims**



1. A process for recovering zinc and manganese dioxide from material containing zinc and manganese compounds, including treating the material to provide an aqueous sulphate solution containing manganese and zinc ions, electrolyzing the solution in one electrolytic cell with conditions inhibiting the formation of manganese dioxide and favouring the deposition of zinc, said one electrolytic cell containing from about 5 to about 45 g.p.l. manganese ions, electrolyzing the solution in another electrolytic cell with conditions favouring the formation of manganese dioxide, said other electrolytic cell containing from about 30 to about 100 g.p.l. zinc ions, recovering zinc from said one electrolytic cell, and recovering manganese dioxide from said other electrolytic cell.

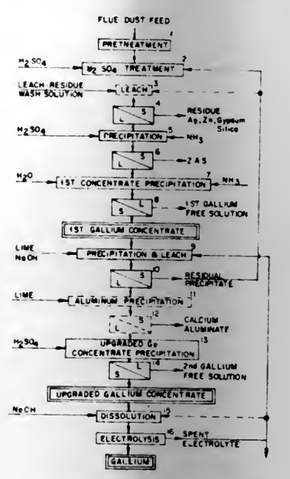
4,071,422

PROCESS FOR CONCENTRATING AND RECOVERING GALLIUM

Thomas L. Charlton, Rossland; Robert F. Redden, Fruitvale; Horst E. Hirsch, Trail, all of Canada, and Shou C. Liang, Spokane, Wash., assignors to Cominco Ltd., Vancouver, Canada

Filed July 8, 1976, Ser. No. 703,409
Claims priority, application Canada, Apr. 15, 1976, 250752
Int. Cl.² C25C *1/00*
U.S. Cl. 204—105 R **24 Claims**

1. A process for treating phosphorus-furnace flue dust containing gallium and zinc which comprises the steps of:
1. treating flue dust with sulfuric acid for formation of a leach solution and a leach residue;
2. separating the leach solution from the leach residue;
3. precipitating zinc in the leach solution in the presence of ammonium sulfate as zinc ammonium sulfate hexahydrate;
4. separating precipitated zinc from the solution;



5. adding an alkaline material to said solution for precipitation of a first gallium concentrate and formation of a first gallium-free solution; and
6. separating first gallium concentrate from said first gallium-free solution for recovery of said first gallium concentrate.

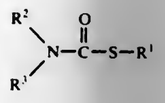
4,071,423

USE OF FREE RADICAL INITIATORS IN THIOLCARBAMATE PREPARATION

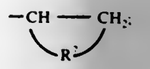
Harold M. Pitt, Lafayette, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 29, 1977, Ser. No. 792,364
Int. Cl.² B01J *1/10*; C07C *155/02, 155/03*
U.S. Cl. 204—158 R **12 Claims**

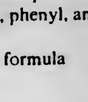
1. A process for the manufacture of a thiolcarbamate having the formula



in which
R^1 is selected from the group consisting of $-CH_2-CH=CR^4R^5$, $-CH_2-CH_2-R^6$, and

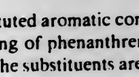


R^2 and R^3 are independently selected from the group consisting of the following substituted or unsubstituted groups: C_1-C_{10} alkyl, C_2-C_6 alkenyl, C_2-C_4 alkynyl, aralkyl containing a C_1-C_6 alkyl, and C_3-C_7 cycloalkyl; wherein the substituents are independently selected from the group consisting of halo, cyano, nitro, trifluoromethyl, C_1-C_4 alkoxy, and C_1-C_4 alkyl; or
R^2 and R^3 are joined to each other to form, together with the nitrogen atom, a nitrogen-containing heterocyclic ring;
R^4, R^5, and R^6 are independently selected from the group consisting of hydrogen and the following substituted or unsubstituted groups: C_1-C_{10} alkyl, C_2-C_6 alkenyl, C_2-C_4 alkynyl, aryl, aralkyl containing a C_1-C_6 alkyl, C_3-C_7 cycloalkyl, C_4-C_7 cycloalkenyl, C_1-C_{10} alkoxy, C_2-C_6 alkenoxy, C_2-C_{10} alkoxyalkyl, C_2-C_{10} alkylthioalkyl, C_3-C_{10} alkoxyalkenyl, C_3-C_{10} alkylthioalkenyl, and heterocyclic ring groups; wherein the substituents are independently selected from the group consisting of halo, cyano, nitro, trifluoromethyl, C_1-C_4 alkoxy, and C_1-C_4 alkyl; and
R^7 is selected from the group consisting of C_1-C_5 alkylene and C_3-C_5 alkenylene;
which comprises reacting a secondary amine having the formula



in which R^2 and R^3 are as defined above, with carbonyl sulfide and an unsaturated compound selected from the group consisting of

$CH_2=C=CR^4R^5$, $CH_2=CH-R^6$, and



in which R^4, R^5, R^6, and R^7 are as defined above, in the presence of at least one free radical initiator selected from the group consisting of
a. an azonitrile having the formula

in which R^8 and R^9 are independently selected from the group consisting of C_1-C_6 alkyl, phenyl, phenylalkyl containing a C_1-C_3 alkyl, and C_3-C_6 cycloalkyl; or R^8 and R^9 conjointly form C_3-C_9 alkylene;
b. a phosphite having the formula $(R^{10})_2POH$ or $(R^{10})_3P$ in which R^{10} is selected from the group consisting of C_1-C_6 alkyl, C_1-C_6 alkoxy, phenoxy, and phenylthio;
c. a ketone in the presence of ultraviolet light, said ketone having the formula

in which R^{11} and R^{12} are independently selected from the group consisting of C_1-C_6 alkyl, phenyl, and phenylalkyl containing a C_1-C_3 alkyl;
d. a dione having the formula

in which R^{13} and R^{14} are independently selected from the group consisting of C_1-C_6 alkyl and phenyl, and n is an integer ranging from 0 to 6;
e. a substituted or unsubstituted aromatic compound selected from the group consisting of phenanthrene, naphthalene, and quinoline; wherein the substituents are halo or methyl.

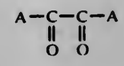
4,071,424

PHOTOPOLYMERIZABLE COMPOSITION

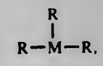
Edward Charles Dart, and Josef Nemcek, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, Great Britain

Continuation of Ser. No. 294,781, Oct. 4, 1972, abandoned. This application Feb. 11, 1975, Ser. No. 549,052
Claims priority, application United Kingdom, Oct. 18, 1971, 48365/71; Mar. 2, 1972, 9807/72
Int. Cl.² C08F *8/00, 8/18, 2/46*
U.S. Cl. 204—159.15 **12 Claims**

1. A photopolymerisable composition comprising at least one polymerisable ethylenically unsaturated material and a photosensitive catalyst comprising
a. at least one photosensitizer having the structure



wherein the groups A, which may be the same or different, are hydrocarbyl or substituted hydrocarbyl groups, and wherein the groups A may be further linked together by a direct link or by a divalent hydrocarbyl group or wherein the groups A together form a fused aromatic ring, and
b. at least one reducing agent capable of reducing the photosensitiser when the photosensitiser is in an excited state, the reducing agent having the structure



where M is an element of Group Vb of the Periodic Table of the Elements and the units R, which may be the same or different, are hydrogen atoms, hydrocarbyl groups, substituted hydrocarbyl groups, or groups in which two units R together with the element M form a cyclic ring system, no more than one of said groups R being substituted hydrocarbyl groups, no more than two of the units R being hydrogen atoms and the element M not being attached directly to an aromatic group R.

4,071,425

RADIATION CURABLE COATING

John P. Guarino, Trenton, and William H. McCarty, White House Station, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

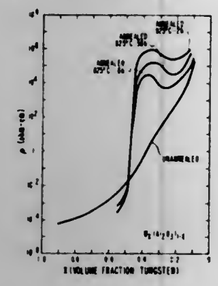
Continuation-in-part of Ser. No. 471,375, May 20, 1974, abandoned. This application Dec. 23, 1976, Ser. No. 753,755
Int. Cl.² C08F *2/46, 4/00*
U.S. Cl. 204—159.24 **6 Claims**

1. In a coating composition for curing by UV light that comprises, by weight of said composition, 10–30% of a diacrylate of a diglycidyl ether of a bisphenol or of a diacrylate of a diglycidyl ether of a bisphenol further esterified with 0.1–1 mole, per mole of said diacrylate, of a dicarboxylic acid anhydride, 30–60% of an ester of acrylic acid, 25–60% of a pigment, and a sensitizer combination 0.1–6% of 2-chlorothioxanthone and 0.5–6% of a tertiary amine; the improvement of increasing the gloss of a UV cured film thereof consisting essentially of using in said coating composition 0.1–6% of a phenone.

4,071,426
METHOD OF MAKING HIGH RESISTANCE CERMET FILM

Harry Louis Pinch; Benjamin Abeles, both of Princeton, and Jonathan Isaac Gittleman, Trenton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 543,629, Jan. 23, 1975, Pat. No. 4,010,312.
This application Nov. 26, 1976, Ser. No. 745,411
Int. Cl.² C23C *15/00*
U.S. Cl. 204—192 F 18 Claims



12. A method of making a high resistance cermet film, comprising the steps of:

a. sputtering a granular film of a metal and an insulator onto a substrate at a pressure low enough so as to substantially prevent impurities from developing in said film, said granular film having a metal percent volume no greater than the metal percent volume at which the percolation threshold appears; and then

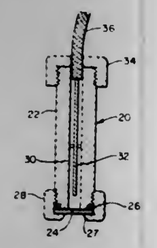
b. annealing the deposited film in a reducing atmosphere so as to result in a controlled upward adjustment of the resistivity of said film, said upward adjustment being substantially independent of the composition of said film.

14. A method in accordance with claim 12 in which said metal is selected from the group consisting of molybdenum, tungsten, cobalt and nickel.

4,071,427
ARSENITE ELECTRODE

Kuang Lu Cheng, Kansas City, Mo., and Eric En-Kuang Chao, Waterloo, Canada, assignors to Curators of the University of Missouri, Columbia, Mo.

Filed Nov. 17, 1976, Ser. No. 742,597
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 M 8 Claims



1. In an electrode for potentiometric determination of the activity of ions in solution, an element sensitive to arsenite ions comprising a membrane of a mixture of Ag_2S and Ag_3AsO_3.

4,071,428
PROCESS FOR ELECTRODEPOSITION OF QUATERNARY AMMONIUM SALT GROUP-CONTAINING RESINS

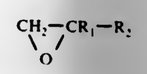
Joseph F. Bosso, Lower Burrell, and Marco Wismer, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1976, Ser. No. 744,534
Int. Cl.² C25D *13/06*
U.S. Cl. 204—181 C 10 Claims

1. A method of electrocoating an electrically conductive surface serving as a cathode in an electrical circuit comprising said cathode, an anode and an aqueous dispersion of an electrodepositable composition, wherein the electrodepositable composition comprises the reaction product of:

1. a polymeric tertiary amine,

2. a 1,2-epoxy-containing material having the structural formula:

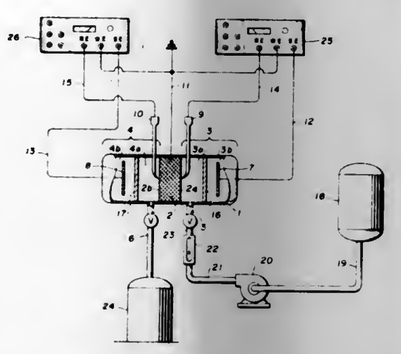


where R_1 is selected from the class consisting of hydrogen and methyl and R_2 is selected from the class consisting of hydrogen, alkyl including cycloalkyl, aryl and substituted alkyl and aryl; said reaction being conducted in the presence of acid and/or water to form the quaternary ammonium base group-containing polymer through reaction of the epoxy moieties with the tertiary amine moieties.

4,071,429
ELECTROLYTIC FLOW-CELL APPARATUS AND PROCESS FOR EFFECTING SEQUENTIAL ELECTROCHEMICAL REACTION

John H. Wagenknecht, Kirkwood, Mo., and Dean G. Laurin, Mount Prospect, both of Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1976, Ser. No. 755,312
Int. Cl.² C25B *9/00, 11/00, 13/00*
U.S. Cl. 204—231 16 Claims



1. An electrolytic flow-cell apparatus suitable for effecting sequential electrochemical reactions of redoxidative compounds in a liquid electrolysis medium comprising such redoxidative compound, solvent, and supporting electrolyte, which apparatus comprises:

a. a container for holding the electrolysis medium;

b. a porous working electrode dividing the container into a first compartment and a second compartment, the electrode having a first face in the first compartment and a second and opposite face in the second compartment, at which faces the sequential reactions are conducted;

c. at least one first secondary electrode located in the first compartment and spaced from the first face of the working electrode;

d. at least one second secondary electrode located in the second compartment and spaced from the second face of the working electrode;

e. a first means for establishing a selectible electrical potential at the first face of the working electrode;

f. a second means for establishing a selectible electrical potential at the second and opposite face of the working electrode;

g. inlet means for admitting the electrolysis medium to the first compartment;

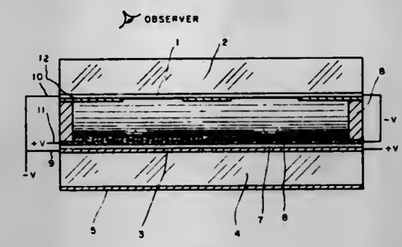
h. means for effecting flow of the electrolysis medium into the first compartment, through the working electrode, and thence into the second compartment; and

i. outlet means for withdrawing the sequentially electrolyzed electrolysis medium from the second compartment.

4,071,430
ELECTROPHORETIC IMAGE DISPLAY HAVING AN IMPROVED SWITCHING TIME

Richard B. Liebert, Ridgefield, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 6, 1976, Ser. No. 747,559
Int. Cl.² G03G *15/00*; C25D *13/00*
U.S. Cl. 204—299 R 6 Claims



1. An electrophoretic visual display device comprising:

an electrophoretic suspension comprising a dispersion of pigment particles in a dielectric suspending liquid, a dye adapted to provide the suspending liquid with a color contrasting to that of the pigment particles and a charging material for introducing a charge on the pigment particles;

a first transparent electrode;

at least one segmented electrode having a major surface in opposition to the major surface of said first transparent electrode and spaced therefrom by at least one thin insulating member, said electrodes and said thin insulation members forming a cell for containing said electrophoretic suspension;

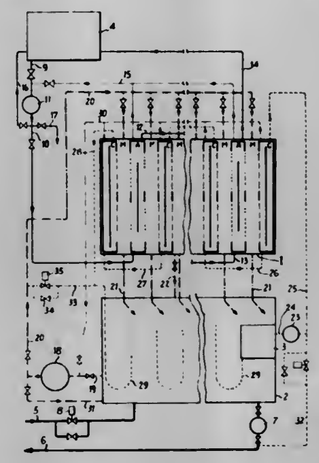
a transparent insulating layer positioned on the major surface of said segmented electrode opposed to said first transparent electrode;

a mesh electrode in the shape of the segment electrode having holes barely visible to the naked eye positioned on said transparent insulating layer between said segmented electrode and said transparent insulating layer; one of said mesh electrode and said segmented electrode being formed of light reflective metal and voltage supply means for supplying a reversible electric field between said mesh electrode and said segmented electrode.

4,071,431
INSTALLATION FOR THE TREATMENT OF METALS PICKLING SOLUTIONS

Oliver Nicou, Chatillon-sur-Bagneux, and Roger Lumbroso, Paris, both of France, assignors to Socomaten, Clamart, France

Filed June 18, 1976, Ser. No. 697,464
Claims priority, application France, June 18, 1975, 75 19081
Int. Cl.² B01D *13/02*; C25C *1/06*
U.S. Cl. 204—301 10 Claims



1. An installation for treatment of solutions used for pickling metals which comprises:

a treatment tank,

a plurality of sealed cases comprising anode compartments suspended in said tank, each of said anode compartments comprising a pair of longitudinal side walls extending into said tank and containing an electrical anode, at least one ion exchange membrane mounted on each of said side walls, each of said anode compartments being removable from said tank,

a plurality of sealed cases comprising cathode compartments suspended in said tank and spaced apart from said anode compartments, each of said cathode compartments comprising a pair of longitudinal side walls extending into said tank and containing an electrical cathode, at least one ion exchange membrane mounted on each of said side walls, said cathode compartments being removable from said tank, and

a plurality of central compartments within said tank, each of said central compartments being defined by one side wall of an anode compartment and one side wall of a cathode compartment.

4,071,432
STAGED HEATING BY OXIDATION OF CARBONACEOUS MATERIAL

Everett W. Knell, Los Alamitos, and Norman W. Green, Upland, both of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed June 25, 1976, Ser. No. 700,042
Int. Cl.² C10G *1/02*
U.S. Cl. 208—8 26 Claims

1. In a continuous process for pyrolyzing a carbonaceous material in which heat for pyrolysis is obtained by partially oxidizing a carbon containing solid residue of said pyrolysis in the presence of oxygen in a combustion zone to form a particulate source of heat which is combined with the carbonaceous material in a pyrolysis reaction zone to initiate pyrolysis of the carbonaceous material, the improvement comprising the steps of:

a. at least partially oxidizing in the combustion zone a portion of a preheated carbon containing solid residue in the presence of oxygen to yield the particulate source of heat and gaseous combustion products including carbon monoxide;
b. separating the particulate source of heat from the gaseous combustion products of the preheated carbon containing solid residue in a first cyclone separation zone;
c. passing the particulate source of heat to the pyrolysis reaction zone to provide at least a portion of the heat required for pyrolysis of the carbonaceous material to produce the carbon containing solid residue;
d. preheating said carbon containing solid residue by combining in direct contact, in a heating zone maintained at a temperature less than the temperature in the combustion zone, the carbon containing solid residue, at least a portion of the carbon monoxide containing gaseous combustion products formed by combustion of the preheated carbon containing solid residue and a source of oxygen in an amount sufficient to completely oxidize the carbon monoxide in the gaseous combustion products; and
e. separating in a second cyclone separation zone the preheated carbon containing solid residue from at least the bulk of the gases present in the heating zone for feed to the combustion zone.

4,071,433

RECOVERY OF OIL FROM TAR SANDS

Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 28, 1976, Ser. No. 736,283
Int. Cl.[2] C10G *1/04;* C10B *57/04;* C10G *9/00*
U.S. Cl. 208—11 LE **7 Claims**

1. A process for recovering oil from tar sands which comprises:
a. blending in a mixing zone tar sand with a sufficient amount of solvent oil to make a flowable slurry;
b. subdividing said flowable slurry in a subdividing zone into an underflow stream containing coarse sand particles and an overflow stream containing fine sand particles;
c. passing the underflow stream through a solids removal zone to remove coarse sand particles contained therein;
d. introducing the overflow stream into a coking zone and therein subjecting it to such conditions as to produce coke and vapors;
e. feeding the vapors produced in step (d) and the underflow stream after it passes the solid removal zone into the bottom section and the midsection of a fractionation zone respectively;
f. maintaining such temperature and pressure in said fractionation zone as to separate the feed introduced therein into cuts including an overhead comprising mainly gas, gasoline and water, a first intermediate cut comprising mainly kerosine, a second intermediate cut comprising mainly light gas oil, a third intermediate cut comprising mainly heavy gas oil and heavy bottoms comprising mainly high boiling fractions; and,
g. withdrawing each of the cuts as a separate stream from said fractionation zone.

4,071,434

RECOVERY OF OIL FROM TAR SANDS

Phillip H. Gifford, II, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1976, Ser. No. 718,646
Int. Cl.[2] C10G *1/04;* C10B *57/04;* C10G *9/00*
U.S. Cl. 208—11 LE **5 Claims**

1. A process for recovery of oil and other valuable components from tar sand which comprises:
a. introducing into a mixing zone tar sand and a sufficient amount of a solvent to form a flowable slurry;
b. mixing tar sand and solvent in the mixing zone until a slurry of desired viscosity is produced;
c. subdividing the slurry produced in step (b) into two streams, a first stream containing coarse solids and a second stream containing fine solids;
d. passing the said first stream through a solids removal zone to remove the coarse solids therein; and
e. introducing the first stream, after it has passed through the solids removal zone, and the second stream, still containing the fine solids, into a coking zone to produce vapors and coke.

4,071,435

DENITROGENATION OF SYNCRUDE

Robert H. Smith, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 6, 1977, Ser. No. 803,832
Int. Cl.[2] C10G *25/00, 13/02*
U.S. Cl. 208—91 **6 Claims**

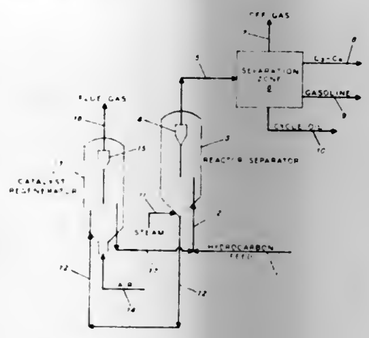
1. A method for reducing the nitrogen content of a syncrude feed obtained from at least one of oil shale, tar sands, and coal, comprising
a. mixing an extractant-catalyst with said feed, said extractant-catalyst being effective for extracting, nitrogen materials from said syncrude feed and also for serving as a hydrocracking catalyst for said syncrude feed,
b. settling the mixture from step (a) into a first phase composed essentially of a first low nitrogen syncrude product, and a second phase composed essentially of said extractant-catalyst and high nitrogen-containing syncrude liquid,
c. separating said first and second phases from one another, and
d. hydrocracking said second phase to produce a second low nitrogen syncrude product.

4,071,436

PROCESS FOR REMOVING SULPHUR FROM A GAS

William A. Blanton, Jr., and Robert L. Flanders, both of San Anselmo, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 11, 1976, Ser. No. 666,115
Int. Cl.[2] C10G *11/02;* C01B *17/16, 17/00*
U.S. Cl. 208—120 **1 Claim**



1. In a fluid catalyst cracking process including the steps of (a) cracking a sulfur-containing hydrocarbon stream in contact with a fluidized bed of a particulate cracking catalyst in a cracking zone at cracking conditions including a temperature in the range from 800° F to 1300° F, whereby sulfur-containing coke is deposited on said catalyst, and removing the hydrocarbon stream from said cracking zone; (b) passing coke-containing catalyst from said cracking zone and an oxygen-containing gas into a cracking catalyst regeneration zone, burning off said sulfur-containing coke therein at a temperature in the range from 1000° F to 1500° F to form a flue gas containing sulfur oxides, and removing said flue gas from said catalyst regeneration zone; and (c) returning the resulting coke-depleted catalyst from said catalyst regeneration zone to contact with said hydrocarbon stream in said cracking zone; the method for decreasing the amount of sulfur oxides in said flue gas which comprises the steps of:
1. reacting sulfur oxides in said flue gas with reactive alumina contained in a particulate solid other than said catalyst, the particulate solid being physically admixed with said particulate catalyst, in said regeneration zone to form at least one solid compound including sulfur atoms and aluminum atoms in said particulate solid, and removing said flue gas from said regeneration zone; and
2. forming hydrogen sulfide from said solid compound and said hydrocarbon stream by contacting said particulate solid with said hydrocarbon stream in said cracking zone in physical admixture with said particulate cracking catalyst, and removing hydrogen sulfide from said cracking zone in said hydrocarbon stream.

4,071,437

CATALYSTS FOR THE HYDROTREATMENT OF HYDROCARBONS AND A PROCESS FOR THE PREPARATION AND UTILIZATION THEREOF

Philippe Engelhard; Joseph Edouard Weisang, and Guy Paris, all of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Apr. 8, 1975, Ser. No. 566,095
Claims priority, application France, Apr. 8, 1974, 74 12329
Int. Cl.[2] C10G *35/06;* B01J *21/04, 23/74*
U.S. Cl. 208—137 **47 Claims**

1. In a process for the preparation of a hydroreforming non-platinum-metal-group containing catalyst, which comprises a non-cracking refractory-mineral carrier having the following metals in a free or combined state on said carrier:
a. from 0.05 to 5%, based on the total catalyst weight, of at least one first metal, and
b. at least one second metal, said catalyst being adapted for use in the reduced state,
the improvement in said process comprising:
said first metal being selected from the group consisting of iron, cobalt and nickel; and said second metal being selected from the group consisting of tin, germanium and lead whose weight percentages, based on the total catalyst weight, are between 0.02 and 5%, 0.01 and 4%, and 0.01 and 10% respectively;
said refractory carrier being impregnated by at least one impregnation solution containing cations and/or anions formed from at least one of said first metals and by the same or at least a second solution containing cations and/or anions formed from at least one of said second metals;
each second metal being deposited on said carrier, dried if necessary, and calcined between 400 and 700° C, and
said catalyst being dried after deposit of the first metals and any calcination of any of the first metals not exceeding 500° C.

4,071,438

METHOD OF RECLAIMING WASTE OIL BY DISTILLATION AND EXTRACTION

Richard H. O'Blasny, Overland Park, Kans., assignor to Vacsol Corporation, Kansas City, Kans.

Filed June 3, 1976, Ser. No. 692,443
Int. Cl.[2] C10M *11/00*
U.S. Cl. 208—180 **8 Claims**

1. A method of reclaiming additive-supplemented waste oil, comprising the steps of:
providing a quantity of additive-supplemented waste oil having impurities therein;
heat treating said waste oil to remove at least a portion of any water therein, and further treating the oil by fractional distillation to remove at least a portion of the light ends therefrom;
removing a substantial portion of the impurities in the fractionally distilled waste oil by sequentially vacuum distilling the same to give at least one overhead fraction, and a bottoms fraction, said overhead fraction having a boiling point lower than that of said bottoms fractions, and thereafter contacting said overhead fraction with a quantity of nitrobenzene, the ratio of nitrobenzene to oil being from about 0.5:1 to 1.5:1, for effecting separation of the contacted oil and solvent into a first oil-rich layer and a second solvent-rich layer having a substantial portion of the impurities remaining in said overhead fraction dispersed therein; and
recovering the oil from said first oil-rich layer.

4,071,439

HYDRODESULFURIZATION SHUTDOWN METHOD

Stephen Joseph Yanik, Valencia, and James Albert Frayer, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 4, 1976, Ser. No. 729,185
Int. Cl.[2] C10G *23/02*
U.S. Cl. 208—216 **6 Claims**

1. In a process for the hydrodesulfurization of a sulfur-containing residual hydrocarbon feedstock wherein said hydrocarbon feedstock is contacted under hydrodesulfurization conditions in a hydrodesulfurization zone with hydrogen and a catalyst, wherein said catalyst consists essentially of a hydrogenating metal selected from Group VI-B and at least one hydrogenating metal selected from Group VIII, said hydrogenating metals being in the sulfided form and being supported on a refractory oxide carrier selected from the group consisting of alumina, a silica-stabilized alumina containing up to about 5 percent by weight based upon the carrier of silica, silica gels, acid leached boro-silicate glass, and spinels and wherein said catalyst is being promoted with from about 1.0 to about 10.0 weight percent of a Group IV-B metal; a shutdown procedure for said process which comprises lowering the reaction temperature in said hydrodesulfurization zone while maintaining the flow of residual hydrocarbon feedstock and hydrogen to said hydrodesulfurization zone, substituting a distillate feed for the residual hydrocarbon feedstock to said hydrodesulfurization zone after said temperature has been lowered, eliminating the flow of hydrogen to said hydrodesulfurization zone after said substituting step, and continuing to cool said catalyst in the absence of hydrogen by passing said distillate hydrocarbon through said hydrodesulfurization zone.

4,071,440

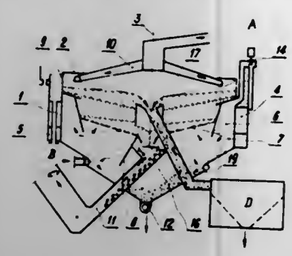
METHOD AND APPARATUS OF STRATIFICATION WITH TANGENTIAL FEED

Antoni Jędo, Gliwice; Wacław Jachna, Tychy, and Adolf Szczęsny, Zabrue, all of Poland, assignors to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag", Gliwice, Poland

Filed July 22, 1976, Ser. No. 707,663
Claims priority, application Poland, July 28, 1975, 182377
Int. Cl.[2] B03B *5/20*
U.S. Cl. 209—44 **11 Claims**

1. A method for separation of a mixture of mineral grains having different specific gravities comprising introducing a raw mixture of mineral grains with water tangentially at the outer wall of a trough with an initial velocity to produce circulation of the stream of the mixture at least near an upper edge of said outer wall along a path around a central axis causing the mineral grains to selectively flow along spiral trajectories within the trough from the outer wall towards the central axis in accordance with the specific gravities of the grains, supplying pulsating water into said trough in alternate upward and downward direction to facilitate separation

therein of the grains into light and heavy fractions along said spiral trajectories and discharging the separated light and



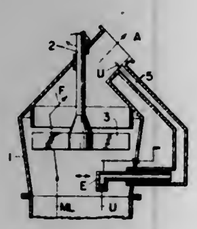
heavy fractions separately into the region of the central axis in the trough.

4,071,441

BYPASS SEPARATOR

Siegfried Schauer, Kaiserslautern-Hohenecken, Germany, assignor to Gebr. Pfeiffer AG, Kaiserlougen, Germany

Filed Nov. 28, 1975, Ser. No. 636,210
Claims priority, application Germany, Dec. 3, 1974, 2456970
Int. Cl.² B07B *7/083*
U.S. Cl. 209—144 **6 Claims**



1. A separator for separating the larger particles from a powder-air stream such as obtain from a grinding mill and for recovering a power-air stream with a reduced but adjustable powder size distribution, said separator being of the type comprising a housing, means to create a swirl of air moving in one direction to provide a separation zone having an upstream side and a downstream side within said housing, means to admit a particle-air stream to the housing on the downstream side of said separation zone, and means to discharge a powder-air stream from which larger particles have been removed from the housing on the upstream side of the separation zone, the improvement comprising by-pass conduit means having an opening for receiving a portion of the powder-air stream extending into the downstream side of the separation zone and an opening for discharging said portion of the powder-air stream with the powder-air stream from which larger particles have been removed at the upstream side of said separation zone whereby a portion of the original powder-air stream by-passes the separation zone.

4,071,442

METHOD AND APPARATUS FOR RECOVERY OF ALUMINUM FROM SOLID WASTE

Booker W. Morey, Pasadena, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

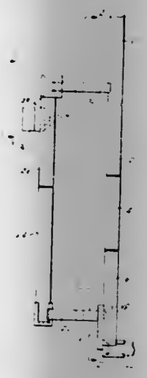
Filed Aug. 11, 1975, Ser. No. 603,869
Int. Cl.² B03C *1/22*
U.S. Cl. 209—212 **6 Claims**

1. A process for separating non-magnetic conductive materials from a comminuted particulate trash mixture, comprising the steps of:

a. transferring the particulate trash mixture to a first transport line formed of a first group of serially aligned conveyor belts each having an upper belt portion and causing, by operating each successive conveyor belt at a higher linear velocity than the previous conveyor belt, the mixture to undergo stage wise increased in linear velocity to disperse the particles of trash during travel on said first transport line;

b. subjecting the travelling dispersed particulate trash mixture to a transverse moving magnetic force field formed by at least one linear motor positioned below the upper belt portion of the conveyor belt of the first group having the highest linear velocity, to transversely withdraw and concentrate the non-magnetic conductive particles in a separate fraction;

c. transferring the separated fraction to a second transport



line formed of a second group of serially aligned conveyor belts each having an upper belt portion and dispersing the particles of the fraction on said second transport line by stage wise increases in linear velocity of the conveyor belts of the second group;

d. subjecting the dispersed fraction of the second transport line to a second transverse moving magnetic force field, formed by at least one additonal linear motor positioned below the upper belt portion of the conveyor belt of the second group having the highest linear velocity, to selectively and transversely remove and further concentrate the non-magnetic conductive particles; and

e. returning the remaining particles not removed by the second moving magnetic force field to the first transport line.

4,071,443

REGULATING OXYGEN INPUT IN TREATMENT OF EFFLUENT

Theodor Gorski; Adolf Heinen, and Kurt Mack, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 30, 1976, Ser. No. 709,977
Claims priority, application Germany, Aug. 12, 1975, 2535837
Int. Cl.² C02C *1/08*
U.S. Cl. 210—7 **1 Claim**

1. In the introduction of a finely dispersed gas containing at least about 20% of oxygen by volume with intensive mixing into a vessel having a gas space and effluent containing biochemically oxidizable constituents, in the presence of activated sludge particles, the improvement which comprises

a. introducing oxygen into the gas space of said vessel in such amount that the oxygen content is from about 40 to 80% by volume,

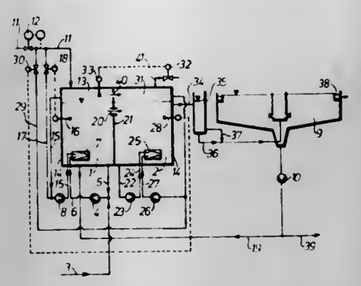
b. a component volume of the gases in the gas space being ejected as a fine dispersion into the effluent,

c. directly introducing oxygen into the effluent in such amount that the oxygen content in the effluent is from about 1 to 4 mg/l,

d. forwarding effluent from said vessel to a second vessel having a gas space and establishing an oxygen content of about 30 to 60% by volume in said second vessel gas space,

e. ejecting a component volume of the gases in the second vessel gas space as a fine dispersion into the effluent in said second vessel,

f. directly introducing oxygen into the effluent of said sec-



ond vessel in such amount that the oxygen content in the effluent therein is from about 4 to 8 mg/l, and

g. recycling partially treated effluent in an amount ranging from about 10 to 300% by volume of fresh effluent and ejecting them together,

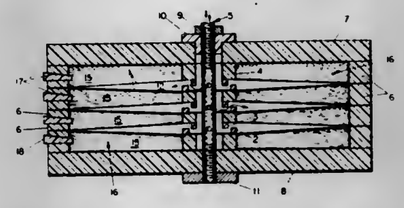
h. the conditions of ejection in (b) and (e) being such that the activated sludge particles are sub-divided to from about ½ to 1/20 their normal size due to the action of shear forces, whereby there is obtained an improved utilization of oxygen even in the event of fluctuations in load of the effluent.

4,071,444

PORTABLE CHEMICAL REACTOR FOR USE AS AN ARTIFICIAL KIDNEY

Stephen R. Ash, Lafayette; Philip G. Wilcox, and David P. Kessler, both of West Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Oct. 12, 1976, Ser. No. 731,826
Int. Cl.² B01D *31/00*
U.S. Cl. 210—22 A **11 Claims**



1. A dialysis device, comprising a sealed outer casing which is divided internally by at least one flexible membrane into at least one chamber adapted to receive blood, and at least one other chamber adapted to receive dialysis material,

a blood flow passage directly connected to said one chamber to provide blood flow in one direction into said one chamber through said blood passage and to provide blood flow in the opposite direction away from said one chamber through said blood passage,

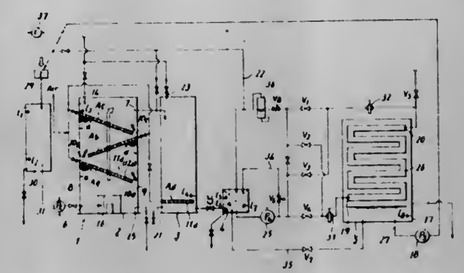
pressure control means connected to said other chamber, whereby decreasing the pressure in said other chamber causes blood to be drawn into said one chamber through said blood passage, and increasing the pressure in said other chamber causes blood to be forced out of said one chamber through said blood passage.

4,071,445

METHOD AND APPARATUS FOR TREATING WASTE WATER ON SHIPS

Sakae Katayama, Kobe; Sadaoki Kanada, Ibaragi; Michitake Kamata, Takatsuki; Yasuhiro Sakaguchi, Yokohama, and Katsumi Kojima, Saitama, all of Japan, assignors to Daicel, Ltd., Sakai and Katayama Chemical Works Co., Ltd., Osaka, both of, Japan

Filed Mar. 22, 1976, Ser. No. 668,904
Claims priority, application Japan, Apr. 12, 1975, 50-44577
Int. Cl.² B01D *13/00*
U.S. Cl. 210—23 H **11 Claims**



1. A method of treating waste water on a ship comprising the steps of passing waste water through a coarse mesh filter and a crushing means; causing the filtered waste water to flow upward; passing the waste water through a plurality of downwardly slanting open cellular plate-like members projecting alternately from a pair of opposed walls defining a passage for the upward flow of the waste water, with a small space provided between the free end of each of the plate-like members and the wall opposed thereto, while causing large suspended solids to be separated from the waste water and accumulated in a concentrated state beneath each of the plate-like members by flotation with bubbles generated in the interior of each of the plate-like members to thereby reduce suspended solids in the waste water to below 1,000 ppm and clarifying the resulting treated water by passing the treated water through a semipermeable membrane.

4,071,446

METHOD FOR REGENERATION OF WEAK ACID CATION EXCHANGE RESIN

Robert Kunin, Yardley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed June 21, 1976, Ser. No. 698,459
Int. Cl.² B01D *15/06*
U.S. Cl. 210—32 **1 Claim**

1. A process for regenerating a weak acid cation exchange resin comprising contacting the resin with a solution of 70 to 80 weight percent alkali metal chloride, about 5 to 15 percent alkali metal carbonate and the balance alkali metal chelating polycarboxylate.

4,071,447

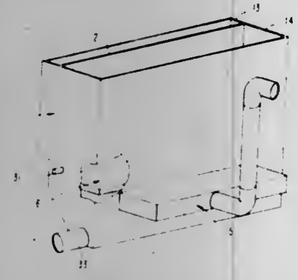
DEWATERING OF WASTEWATER TREATMENT WASTES

Ernest R. Ramirez, Lemont, Ill., assignor to Swift & Company, Chicago, Ill.

Continuation-in-part of Ser. No. 568,382, April 16, 1975, abandoned. This application Sept. 1, 1976, Ser. No. 719,438
Int. Cl.² C02C *3/00*; B03D *1/00*
U.S. Cl. 210—44 **20 Claims**

1. A process for dewatering wastewater treatment wastes such as skimmings or sludges, comprising: supplying wastewater treatment wastes of water and buoyant or precipitated impurities that had been previously coagulated during a primary treatment of the wastewater; entering said wastewater

treatment wastes into a lower portion of a vertical column, said entering step being downwardly through a vertical zone; spreading said wastes at the lowermost portion of said vertical zone; passing a dense supply of small gas bubbles from a source lower than said lowermost portion of the vertical zone upwardly through said spread wastes; upwardly feeding a polymer flocculant at a location lower than said lowermost portion of the vertical zone and above the source of bubbles; permitting said spread wastes to contact said gas bubbles and floc to thereby form buoyant composites with the previously coagulated impurities within said wastes, confining said composites within said column, said confining step enhancing vertical movement of water and composites while limiting their horizontal movement; dewatering said wastes by permitting said dense supply of small gas bubbles to continue to rise within the vertical column and thereby downwardly displace all but a residual amount of water from said wastes to form an upper stratum of buoyant composites in wastes that have an impurities content significantly greater than that of said supplied



wastes and a lower stratum of substantially clarified water; and separating said upper stratum and said lower stratum.

14. An apparatus for dewatering primary wastewater treatment wastes such as skimmings or sludges, comprising: a vertical chimney; a vertical inlet means opening into said chimney for introducing primary wastewater treatment wastes into the lower portion of the chimney; bubble supply means within said chimney and below said vertical inlet means; an injector located below said vertical inlet means and above said bubble supply means; a deflecting means communicating with said vertical inlet means for spreading said wastes into extensive contacting relationship with bubbles from said bubble supply means and with polymer flocculant supplied through said injector; an efflux means that is in communication with a vertical side of said chimney at a location below said bubble supply means, the horizontal distance between said vertical inlet means and said efflux means being less than the height of the vertical chimney; and said efflux means has a maximum height at least as high as the height of the wastes in the chimney.

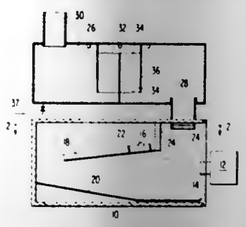
4,071,448

METHOD FOR TREATMENT OF CYANIDE-CONTAINING WASTE WATER

Hiroo Watanabe, Hujisawa; Kunihiko Toyoshima; Masaru Noutomi, both of Yokohama, and Kouichi Yamakawa, Hujisawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation-in-part of Ser. No. 394,802, Sept. 6, 1973, abandoned. This application Dec. 1, 1975, Ser. No. 636,657
Claims priority, application Japan, Sept. 18, 1972, 47-92933; Nov. 30, 1972, 47-119364; Jan. 29, 1973, 48-11177
Int. Cl.² C02C *5/04*
U.S. Cl. 210—50 **2 Claims**

1. A method for treating a cyanide-containing waste water which comprises mixing said waste water with formaldehyde in an amount of from 1.0 to 1.3 mols per mol of cyano component contained in said waste water, and immediately subjecting said mixture to treatment at a temperature of from 300 ° to 1200° C. in an atmosphere containing oxygen in an amount sufficient to provide an oxygen content in the exhaust gases within the range of from 2 to 11% by volume to evaporate water and volatile materials from the mixture and decompose the cyanide-containing components thereof and to burn said



decomposed cyanide components and other combustible materials whereby the cyano component contained in the exhausted gases is substantially reduced, the metals contained in the original cyanide-containing waste water are recovered as solids and no toxic components are released into the atmosphere or discarded as waste.

4,071,449

PROCESS FOR TREATMENT OF WASTE WATER EXHAUSTED FROM WATER-WASH SPRAY BOOTH USING WATER-SOLUBLE PAINT

Tuyosi Inoue, Kakogawa; Masao Kimura, Itami, and Humikazu Matuda, Kobe, all of Japan, assignors to Nippon Paint Co., Ltd., Japan

Continuation of Ser. No. 658,664, Feb. 17, 1976, abandoned. This application Apr. 15, 1977, Ser. No. 787,941
Claims priority, application Japan, Feb. 19, 1975, 50-21331
Int. Cl.² C02B *1/20*
U.S. Cl. 210—53 **7 Claims**

1. A process for the treatment of waste water containing a water-soluble paint in uncoagulated form which comprises alternately adding an acidic agent and an alkaline agent to said water to form an insoluble or slightly soluble salt in said water, while keeping said water at a pH value in the range of about 6 to 9, so as to cause the water-soluble paint to be deposited as a non-adhesive coagulation product and eliminating said non-adhesive product from the waste water so treated by liquid-solid separation, said acidic and alkaline agent being added in an amount effective to substantially coagulate said paint.

4,071,450

PRECIPITATION OF IRON RELATED COLOR BODIES

Stewart N. Paul, Mississauga, Canada, assignor to Chemed Corporation, Cincinnati, Ohio

Filed Dec. 13, 1976, Ser. No. 749,625
Int. Cl.² C02B *1/20*
U.S. Cl. 210—53 **8 Claims**

1. The method of clarifying iron waste waters containing red iron-containing particles suspended therein comprising adding thereto an effective amount of a dye selected from the group consisting of basic blue and green dyes, thereby to flocculate the particles, and recovering a clarified correspondingly blue or green tinted water.

4,071,451

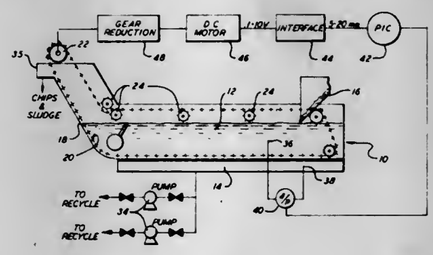
LIQUID FILTRATION SYSTEM

Norman E. Wood, Rochester, N.Y., assignor to The French Co., Webster, N.Y.

Continuation-in-part of Ser. No. 675,295, April 9, 1976, abandoned. This application Jan. 31, 1977, Ser. No. 764,019
Int. Cl.² B01D *37/00, 35/16*
U.S. Cl. 210—79 **8 Claims**

1. A filtration process for purifying contaminated liquid used in machining operations comprising:

a. supplying contaminated liquid to an upper compartment of a filtration tank having a liquid permeable filter element separating said upper compartment from a substantially vacuum-tight lower compartment;
b. said liquid containing both large, bulky contaminants which provide minimal resistance to flow of liquid through said filter element when deposited thereon, and small, compactible contaminants which provide resistance to flow of liquid through said filter element in proportion to the depth of the bed of said small contaminants deposited thereon;
c. determining the volumetric rate at which said large contaminants are supplied to said upper compartment;
d. pumping liquid from said lower compartment at a substantially constant rate;
e. sensing the pressure within said second compartment;
f. determining the pressure at which the flow of liquid through said filter element and bed of small contaminants produces a desired degree of clarity of the liquid in said second compartment;
g. removing both said large and small contaminants from said upper compartment by power-driven means moving therethrough at a variable, automatically controlled speed;
h. establishing a minimum speed at a value greater than zero sufficient to remove said large contaminants in accordance with the volumetric rate of supply thereof, irrespective of said pressure; and
i. increasing the speed from said minimum value in response to a decrease of said pressure below that determined to



provide said desired degree of clarity, irrespective of the rate of supply of said large contaminants.

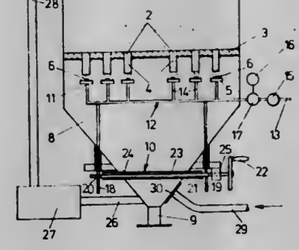
6. A filtration system for removing from a liquid used in machining operations both large, bulky and small, compactible contaminants, at least the large, bulky contaminants being supplied in the liquid delivered to the system at a relatively constant, determinable volumetric rate, said system comprising, in combination:
a. a single tank having an upper compartment adapted to receive contaminated liquid arranged directly above a substantially vacuum-tight lower compartment;
b. a filter element separating said upper and lower compartments for drainage of liquid from the former to the latter with contaminants being retained in said upper compartment, the large contaminants presenting little resistance to flow of liquid through said filter element irrespective of the accumulation thereof and the small contaminants presenting a resistance to such flow proportional to the accumulation of small contaminants on said filter element;
c. pump means for evacuating liquid from said lower compartment at a substantially constant rate, thereby creating a pressure differential between said upper and lower compartments having a magnitude proportional to the resistance to flow of liquid through said filter element and thereby to the depth of the bed of small contaminants thereon;
d. movable, power-driven means for removing contaminants from said upper compartment;
e. means for sensing said pressure differential; and
f. control means establishing the speed of movement of said movable means, said control means having a first set point establishing the minimum speed of movement at a value greater than zero sufficient to remove large contaminants in accordance with said volumetric rate of supply thereof irrespective of said pressure differential and a second set point for increasing the speed of movement above said minimum value in response to increase of said pressure differential above a predetermined value, as determined by the accumulation of small contaminants on said filter element irrespective of the rate of supply of large contaminants.

4,071,452

DEVICE FOR DISCHARGING PARTICULATE MATERIALS

Gunther Friese, Zurich, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 21, 1976, Ser. No. 688,612
Claims priority, application Switzerland, May 28, 1975, 6817/75
Int. Cl.² B01D *41/02*
U.S. Cl. 210—189 **7 Claims**



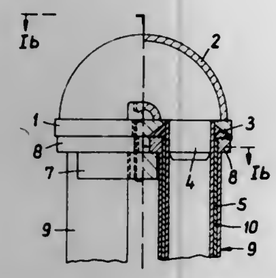
1. A device for controlling the discharging of particulate material, comprising, in combination:
a container including a bottom for storing said materal;
a pluraity of outlet ports defined in said bottom for the discharge of said material;
receiving means disposed below each of said outlet ports and operable for receiving and accumulating a sufficient amount of the discharged material to block controllably the continued discharge of said material from said outlet ports;
fluid expulsion means associated with each of said receiving means and being controllably operable to eject a fluid under pressure into the accumulating material for restraining the accumulation of said material on said receiving means and
movable support means connected to said receiving means, whereby the position of said receiving means with respect to said outlet ports can be adjusted within a predetermined range of settings.

4,071,453

DIAPHRAGM FILTRATION SYSTEM

Günter Koslowski, Kirchhellen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 7, 1976, Ser. No. 730,522
Claims priority, application Germany, Oct. 11, 1975, 2545716
Int. Cl.² B01D *13/00*
U.S. Cl. 210—232 **3 Claims**



1. In a diaphragm filtration system including a pipe; a filtering diaphragm supported substantially coaxially within the pipe and lying, at least indirectly, tightly against the inner pipe wall as filtration proceeds in a radially outward direction; the improvement wherein said diaphragm is a sheet member bent cylindrically and having liquid impervious, unbonded overlapping surfaces; the cross section of said diaphragm being an annulus having overlapping ends and a non-continuous area and the end-to-end circumference of said diaphragm being greater than the circumference of said inner pipe wall.

4,071,454

HOLLOW POLYVINYL ALCOHOL FIBERS

Kohzo Yamamoto; Syuji Kawai, and Akio Ohmori, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Sept. 10, 1976, Ser. No. 722,024
Claims priority, application Japan, Sept. 19, 1975, 50-113276
Int. Cl.² B01D *13/00*
U.S. Cl. 210—321 A **2 Claims**

1. A polyvinyl alcohol hollow fiber of substantially homogeneous structure having a degree of orientation (π) in the range of 60% $\leqq \pi \leqq$ 98% and a degree of swelling (ζ) in the range of 1.05 $\leqq \zeta \leqq$ 1.80 times, said fiber produced by extruding a polyvinyl alcohol spinning dope from an annular nozzle, said nozzle having a clearance between orifice diameter and its outer diameter of at least 0.3 mm, into a coagulation bath, and drawing the resultant hollow fiber in the coagulation bath.

4,071,455

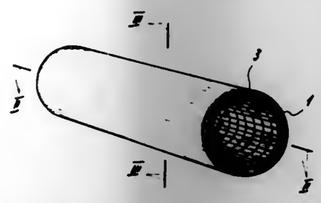
FILTER ELEMENT AND METHOD OF MAKING THE SAME

Eitel Fritz Haver, Oelde, Germany, assignor to Haver & Boecker, Oelde, Germany

Filed Aug. 5, 1976, Ser. No. 711,875
Claims priority, application Germany, Sept. 17, 1975, 2541383
Int. Cl.² B01D *29/20*
U.S. Cl. 210—497.1 **31 Claims**

1. A method of making a filter, comprising the steps of providing at least one material which is capable of being sintered and which has apertures of a predetermined size, convoluting the material to form a hollow filter body which is composed of a plurality of superimposed layers, each having a plurality of said apertures; sintering said hollow body at a temperature which is below the melting point of said material so as to bond said superimposed layers together without substantially altering the size of the apertures therein and thereby produce a filter having a predetermined uniform filtration capability over its entire filter surface area.

14. A filter element, comprising a multilayered hollow filter body having a predetermined uniform filtration capacity over its entire filter surface area, said filter body comprising a plurality of convolutions of at least one material which has apertures of a predetermined size, and convolutions being sintered



together without substantial alteration in the size of said apertures; and at least one reinforcing element for said filter body, said reinforcing element having apertures which are at least as large as those of said convoluted material.

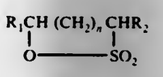
4,071,456

FABRIC-SOFTENING COMPOSITIONS

Thomas McGee, and David William Roberts, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 6, 1974, Ser. No. 516,943
Claims priority, application United Kingdom, Oct. 23, 1973, 49295/73
Int. Cl.² D06M *7/02, 13/30, 13/32*
U.S. Cl. 252—8.7 **10 Claims**

1. A fabric-softening composition comprising a dispersing agent and a sultone of from 14 to 30 carbon atoms of the structure



in which each of R_1 and R_2 is H or an aliphatic hydrocarbon radical having a chain of from 1 to 27 carbon atoms, at least one of R_1 and R_2 has a chain of at least 10 carbon atoms, and n is 1 or 2, containing from 2 to 30% by weight of sultone and from 0.2 to 200 parts of sultone being present to 1 part by weight of dispersing agent; where the dispersing agent includes a detergent-active compound comprising an olefin sulfonate, the composition contains 1-20 parts of detergency builder per 1 part by weight of the detergent-active compound.

4,071,457

OIL RECOVERY PROCESS USING VISCOSIFIED SURFACTANT

John J. Meister, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 654,435, Feb. 2, 1976, Pat. No. 4,007,792. This application Sept. 30, 1976, Ser. No. 728,377
Int. Cl.² E21B *43/22, 43/26;* C09K *7/02*
U.S. Cl. 252—8.55 D **2 Claims**

1. A process for recovering oil from subterranean formations comprising

A. injecting into the formation via at least one injection well, a composition of matter comprising in admixture:
   a. a fluid consisting essentially of
      10-90 weight percent of water,
      90-10 weight percent of chloroform,
   b. 1-5000 ppm of a cationic surfactant,
   c. 1-5000 ppm of an anionic surfactant,
   d. 50-20,000 ppm acid in a quantity sufficient to reach a pH of $\leqq$4.5 in the aqueous phase, and
   e. 50-20,000 ppm buffer salt in mol ratio of buffer salt to acid component d in the range of 0.1:1 to 5:1,

the ppm values being based on the combined weight of water and chloroform,

B. moving the composition through the formation towards at least one production well, so that said composition displaces the oil in the formation toward said production well or wells, and

C. recovering oil and at least a portion of said composition from said production well or wells.

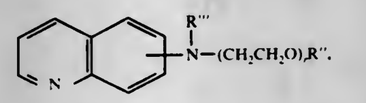
4,071,458

OIL DISPLACEMENT FLUID CONTAINING A SOLUBILIZING AGENT

Joseph C. Allen, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 645,185, Dec. 29, 1975, abandoned, which is a division of Ser. No. 560,425, March 20, 1975, abandoned. This application Sept. 17, 1976, Ser. No. 724,184
Int. Cl.² E21B *43/22, 43/24*
U.S. Cl. 252—8.55 D **6 Claims**

1. An oil-displacement fluid which comprises a material selected from the group consisting of water, steam and superheated steam together with a minor amount of a solubilizing agent of the formula:



wherein r is an integer of from about 5 to about 50; R'' is selected from the group consisting of hydrogen and $-SO_3M$ wherein M is selected from the group consisting of hydrogen, sodium, potassium, and the ammonium ion and R''' is selected from the group consisting of hydrogen and $-(CH_2CH_2O)_rR''$ and with the proviso that when R'' is hydrogen then R''' is $-(CH_2CH_2O)_rH$; and wherein the said solubilizing agent is present in amount of from 0.001 to 0.05 weight percent.

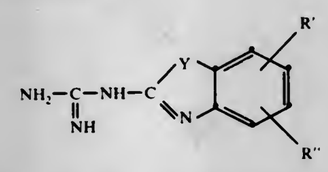
4,071,459

ALKYL-GUANIDINO-HETEROCYCLIC COMPOUNDS, THEIR MANUFACTURE AND USE AS ADDITIVES FOR FUELS AND LUBRICANTS

Choua Cohen, and Bernard Sillion, both of Grenoble, France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 29, 1975, Ser. No. 608,966
Claims priority, application France, Sept. 10, 1974, 74 30819
Int. Cl.² C10M *1/32*
U.S. Cl. 252—50 **17 Claims**

1. An alkyl-guanidino heterocyclic compound produced by alkylation at 100°-250° C. with a halogenated hydrocarbon of the general formula RX_n, of a guanidino-heterocyclic compound (A) of the formula:



in which R is a hydrocarbon radical containing about 10 to 200 carbon atoms, X is a halogen atom and n is 1 or 2; Y is —NH—, R' and R'' are each a hydrogen atom, or an alkyl radical having from 1 to 10 carbon atoms, or a —Z—Ar group in which Z is —O—, —S—, or alkylene and Ar is aromatic hydrocarbyl or R' and R'' together, when they are in ortho position, represent a carbocyclic ring fused to the benzene ring, the proportion of the reactants being 0.7-2.5 moles of (A) per gm. atom of halogen in RX_n.

9. A lubricating composition comprising a major amount of a mineral oil, and in a sufficient proportion to obtain dispersing properties at least one compound according to claim 1.

4,071,460

LUBRICANTS COMPRISING DIALKANOLAMINE DERIVATIVES

Robert P. Pardee, Boulder, Colo., assignor to Ball Brothers Research Corporation, Boulder, Colo.

Filed Sept. 10, 1976, Ser. No. 722,175
Int. Cl.² C10M *1/32*
U.S. Cl. 252—51.5 R **14 Claims**

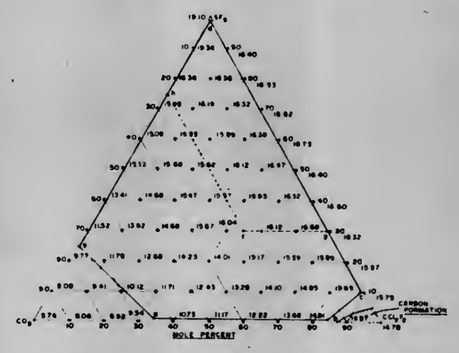
1. A composition for imparting wear resistance to a surface having dynamic presentations thereon consisting essentially of a solution of an essentially nonvolatile N-alkyl-substituted N,N-dialkanolamine in an amount ranging from about 1.0 to about 0.001 weight percent and a volatile carrier selected from the group consisting of alcohols, ketones, esters, halogenated hydrocarbons and hydrocarbons.

4,071,461

GASEOUS DIELECTRIC MIXTURES FOR SUPPRESSING CARBON FORMATION

Whitney H. Mears, Buffalo, and Sabatino R. Orfeo, Orchard Park, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

Continuation-in-part of Ser. No. 589,496, June 23, 1975, abandoned. This application July 28, 1976, Ser. No. 709,343
Int. Cl.² H01B *3/56*
U.S. Cl. 252—63.5 **29 Claims**



1. A process for suppressing carbon formation in a dielectric fluid during an electrical discharge from an electrical conductor which comprises contacting the electrical conductor during operation with a gaseous dielectric mixture consisting essentially of at least one halogenated alkane plus one member selected from the group consisting of CO_2, in an amount of at least 15 mole percent, and a combination of SF_6 and CO_2 which, when plotted on a ternary diagram in mole percent of SF_6-CO_2-halogenated alkane, lies in regions rich in SF_6 and CO_2 defined by a line having at its extremities the points defined by
1 SF_6 - 15 CO_2 - 84 halogenated alkane
10 SF_6 - 1 CO_2 - 89 halogenated alkane,
said halogenated alkane containing from 1 to 4 carbon atoms and at most one hydrogen atom, with the remaining hydrogen atoms replaced by at least one halogen selected from the group consisting of fluorine, chlorine and bromine, and having a vapor pressure of at least about 100 torr at 20° C.

14. A process for suppressing carbon formation in a dielectric fluid during an electrical discharge from an electrical conductor which comprises contacting the electrical conductor during operation with a gaseous dielectric mixture consisting of a mixture selected from the group consisting of

a. 40 to 80 mole percent of SF_6, balance CCl_2F_2;
b. 75 to 85 mole percent of SF_6, balance $CClF_3$;
c. 60 to 85 mole percent of SF_6, balance $CBrF_3$;
d. 40 to 50 mole percent of SF_6, balance $CHClF_2$;
e. 25 to 90 mole percent of SF_6, balance $CClF_2CF_3$;
f. a composition within an area on a ternary diagram defined by a polygon having at its corners the points defined by
45 SF_6 - 5 CHF_3 - 50 $CHClF_2$
49 SF_6 - 1 CHF_3 - 50 $CHCF_2$
98 SF_6 - 1 CHF_3 - 1 $CHClF_2$
94 SF_6 - 5 CHF_3 - 1 $CHClF_2$;
g. a composition within an area on a ternary diagram defined by a polygon having at its corners the points defined by
30 SF_6 - 55 CCl_2F_2 - 15 $CClF_2CF_3$
30 SF_6 - 1 CCl_2F_2 - 69 $CClF_2CF_3$
98 SF_6 - 1 CCl_2F_2 - 1 $CClF_2CF_3$
44 SF_6 - 55 CCl_2F_2 - 1 $CClF_2CF_3$; and
h. a composition within an area on a ternary diagram defined by a polygon having at its corners the points defined by
30 SF_6 - 15 $CClF_3$ - 55 $CClF_2CF_3$
30 SF_6 - 1 $CClF_3$ - 69 $CClF_2CF_3$
98 SF_6 - 1 $CClF_3$ - 1 $CClF_2CF_3$
84 SF_6 - 15 $CClF_3$ - 1 $CClF_2CF_3$

15. A carbon formation suppressant composition consisting essentially of at least one halogenated alkane plus both SF_6 and CO_2, said halogenated alkane containing from 1 to 4 carbon atoms and at most one hydrogen atom, with the remaining hydrogen atoms replaced by at least one halogen selected from the group consisting of fluorine, chlorine and bromine, and having a vapor pressure of at least about 100 Torr at 20° C, said composition, when plotted on a ternary diagram, lying in the regions rich in SF_6 and CO_2 defined by a line having at its extremities the points defined by
1 SF_6 - 15 CO_2 - 84 halogenated alkane
10 SF_6 - 1 CO_2 - 89 halogenated alkane.

4,071,462

PROCESS FOR PREPARATION OF SODIUM PERCARBONATE OR SODIUM PERBORATE OF HIGH SPECIFIC VOLUME

Kinjiro Matsunaga, Funabashi; Yunosuke Nakagawa, Koshigaya, and Haruhiko Arai, Narashino, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1975, Ser. No. 605,426
Claims priority, application Japan, Aug. 20, 1974, 49-95235
Int. Cl.² C11D *7/38, 7/18*
U.S. Cl. 252—99 **9 Claims**

1. A process for preparing sodium percarbonate having a specific volume of from 5 to 10 cc/g, which consists essentially of the steps of: mixing (1) sodium carbonate or an aqueous solution of sodium carbonate, with (2) an aqueous solution of hydrogen peroxide, wherein at least one of said solutions has dissolved therein a water-soluble anionic organic surfactant selected from the group consisting of the sodium, potassium, ammonium and alkylol ammonium salts of higher fatty acids or resin salts containing about 8 to 20 carbon atoms; alkyl benzene sulfonates, alkyl phenol sulfonates and alkyl naphthalene sulfonates in which the alkyl group has from 8 to 18 carbon atoms; olefin sulfonates, hydroxyalkane sulfonates and mixtures thereof obtained from olefins having 8 to 25 carbon atoms; alkyl sulfonates and disulfonates in which the alkyl group has from 10 to 20 carbon atoms; salts of higher fatty acids having 8 to 20 carbon atoms esterified with isethionic acid; sulfates of higher alcohols having 8 to 18 carbon atoms; sulfates of mono- or di-glycerides of higher (C_{10} - C_{18}) fatty acids; polyoxyethylene alkyl ether sulfates containing 1 to 6 moles of ethylene oxide and in which the alkyl contains from 8 to 18 carbon atoms; polyoxyethylene alkylphenol ether sulfates containing 1 to 10 moles of ethylene oxide and in which the alkyl contains 8 to 12 carbon atoms; and sulfates of alkanolamides of higher fatty acids having 12 to 18 carbon atoms, wherein the concentration of said surfactant in the mixture of (1) and (2) is higher than the critical concentration for micelle formation of said surfactant and is less than about 5 percent by weight, based on the weight of said mixture, whereby to precipitate crystals of sodium percarbonate; and recovering said crystals of sodium percarbonate from said mixture.

4,071,463

STABLE CLEANING AGENTS OF HYPOCHLORITE BLEACH AND DETERGENT

Alfred F. Steinhauer, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 612,414, Sept. 11, 1975, abandoned. This application May 24, 1976, Ser. No. 689,271
Int. Cl.² C11D *7/54*
U.S. Cl. 252—103 **8 Claims**

1. A liquid cleaning formulation consisting essentially of an aqueous solution of (1) from 0.5 weight percent up to its limit of aqueous solubility of a synthetic detergent selected from the group consisting of (a) a water soluble alkali metal alkyl sulfate wherein said alkyl group is a straight chain moiety containing from about 6 to 20 carbon atoms, or (b) a water soluble branched chain alkyl aryl sulfonate wherein the alkyl group contains from 8 to 18 carbon atoms, or (c) water soluble mixtures thereof, (2) not more than one weight percent of said formulation of sodium hypochlorite and (3) a sufficient amount of a water soluble alkaline builder to maintain the pH of said formulation at above about 11.0 and wherein said detergent is present in excess over the hypochlorite.

4,071,464

USES OF METHYLENE PHOSPHONATES OF POLY-DIEPOXIDIZED POLYALKYLENE POLYAMINES

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 148,216, May 28, 1971, Pat. No. 4,035,412. This application Jan. 31, 1977, Ser. No. 764,252
Int. Cl.² C02B *5/06*
U.S. Cl. 252—180 **10 Claims**

1. A process of inhibiting the formation of scale in aqueous systems which comprises adding to the aqueous system a scale inhibiting amount of methylene phosphonates of poly-diepoxidized polyalkylene polyamines having

1. nitrogen-bonded methylene phosphonate units of the formula $-CH_2PO(OM)_2$ where M is alkali metal, alkaline earth metal, hydrogen, amine-derived ammonium or ammonium,
2. at least one unit of the formula

$$-CH_2-CH-$$
$$\quad\quad|$$
$$\quad\quad OH$$

and
3. at least one unit of the formula

$$-CH-CH_2-,$$
$$\quad|$$
$$OH$$

the $-CH_2-$ of the

$$-CH_2-CH-$$
$$\quad\quad|$$
$$\quad\quad OH$$

unit (2) being bonded to one terminal nitrogen of the polyalkylene polyamine and the $-CH_2-$ of the

$$-CH-CH_2-$$
$$\quad|$$
$$OH$$

unit (3) being bonded to the other terminal nitrogen of the polyalkylene polyamine, the poly-diepoxidized polyalkylene polyamine being the reaction product of polyalkylene polyamine and diepoxide.

6. The process of chelating metal ions in an aqueous system which comprises adding to the aqueous system a chelating amount of methylene phosphonates of poly-diepoxidized polyalkylene polyamines having

1. nitrogen-bonded methylene phosphonate units of the formula $-CH_2PO(OM)_2$ where M is alkali metal, alkaline earth metal, hydrogen, amine-derived ammonium or ammonium,
2. at least one unit of the formula

$$-CH_2-CH-$$
$$\quad\quad|$$
$$\quad\quad OH$$

and
3. at least one unit of the formula

$$-CH-CH_2-,$$
$$\quad|$$
$$OH$$

the $-CH_2-$ of the

$$-CH_2-CH-$$
$$\quad\quad|$$
$$\quad\quad OH$$

unit (2) being bonded to one terimal nitrogen of the polyalkylene polyamine and the $-CH_2-$ of the

$$-CH-CH_2-$$
$$\quad|$$
$$OH$$

unit (3) being bonded to the other terminal nitrogen of the polyalkylene polyamine, the poly-diepoxidized polyalkylene polyamine being the reaction product of polyalkylene polyamine and diepoxide.

4,071,465

DEEP-RED EMITTING PHOSPHOR

Frank M. Vodoklys, Wayne, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 18, 1977, Ser. No. 788,209
Int. Cl.² C09K *11/38*
U.S. Cl. 252—301.4 F **3 Claims**

1. A luminescent composition which can be excited to luminescence by ultraviolet or by visible wavelength radiations of deep violet or green to emit in the deep red, said composition consisting essentially of $Al_2O_3{:}xGeO_2{:}yCr$, wherein "x" is from about 0.012 to about 0.20 and "y" is from about 0.006 to about 0.035.

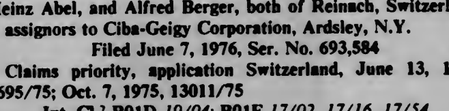
4,071,466

OPTICAL BRIGHTENERS

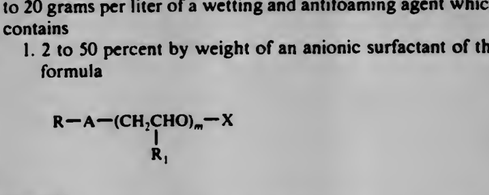
Josef Schroeder, Cologne, and Carl-Wolfgang Schellhammer, Schildgen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 447,211, March 1, 1974, abandoned. This application Jan. 13, 1976, Ser. No. 648,658
Claims priority, application Germany, Mar. 2, 1973, 2310446; Mar. 2, 1973, 2352245
Int. Cl.² D06L *3/12*
U.S. Cl. 252—301.22 **2 Claims**

1. Process for brightening of synthetic macromolecular substances by treating said substances with a mixture of 95-10 percent by weight of a compound of the formula



with the remaining 5-90 percent by weight of a compound of the formula



2. Process of claim 1 wherein said macromolecular substance is a cellulose ester spinning composition.

4,071,467

SELF-COMPLEXING GALACTOMANNAN GUMS

Robert Nordgren, Minneapolis, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Nov. 1, 1976, Ser. No. 737,814
Int. Cl.² B01J *13/00*
U.S. Cl. 252—316 **3 Claims**

1. A self-complexing blend consisting essentially of galactomannan gum, a water-soluble antimony salt in which the antimony ion is trivalent in amounts of from about 0.40 to 1.75% by weight based upon the weight of the galactomannan, and an oxidizing agent selected from the alkali metal periodate and permanganate salts in sufficient amounts to oxidize the trivalent antimony ion to a pentavalent antimony ion upon solvation.

4,071,468

WETTING AND ANTI-FOAMING AGENTS, AND PROCESS FOR REMOVING FOAM FROM AQUEOUS SYSTEMS

Heinz Abel, and Alfred Berger, both of Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 7, 1976, Ser. No. 693,584
Claims priority, application Switzerland, June 13, 1975, 7695/75; Oct. 7, 1975, 13011/75
Int. Cl.² B01D *19/04;* B01F *17/02, 17/16, 17/54*
U.S. Cl. 252—321 **32 Claims**

30. A process for removing foam from aqueous systems which comprises incorporating into the aqueous system 0.001 to 20 grams per liter of a wetting and antifoaming agent which contains

1. 2 to 50 percent by weight of an anionic surfactant of the formula

$$R-A-(CH_2CHO)_m-X$$
$$\quad\quad\quad\quad|$$
$$\quad\quad\quad\quad R_1$$

wherein
R is an aliphatic hydrocarbon radical of 8 to 22 carbon atoms or a cycloaliphatic or aliphatic-aromatic hydrocarbon radical of 10 to 22 carbon atoms,
R_1 is hydrogen or methyl,
A is —O— or

$$-C-O,$$
$$\quad\|$$
$$\quad O$$

X is the acid radical of an inorganic acid which contains oxygen or the radical of a carboxylic acid, and the alkali metal, ammonium or amine salts thereof, and

m is an integer from 1 to 20; 6 to 50 percent by weight of components (2) and (3), said component

2. being a reaction product, which is insoluble or sparingly soluble in water, with a molecular weight of approximately 2000 to 7000, of

a_1. monohydric to hexahydric alcohols containing 1 to 6 carbon atoms, monoalkyl- or monoalkylolamines or polyalkylenepolyamines, and

a_2. 1,2-propylene oxide, and component

3. being a water-insoluble aliphatic monoalcohol of at least 8 carbon atoms,

a reaction product of alkylene oxides and a water-insoluble aliphatic monoalcohol containing at least 8 carbon atoms,

a reaction product of alkylene oxides and an alkylphenol,

a reaction product of a saturated dicarboxylic acid containing 3 to 10 carbon atoms and 1,2-propylene oxide or polypropylene glycols,

a reaction product of a fatty acid containing 10 to 18 carbon atoms and 1,2-propylene oxide or polypropylene glycols,

a reaction product of a fatty acid containing 10 to 18 carbon atoms, a trihydric to hexahydric alcohol and 1,2-propylene oxide,

or

a reaction product of a fatty acid containing 10 to 18 carbon atoms, a polyalkylenepolyamine and 1,2-propylene oxide,

and wherein the weight ratio of component (2) to component (3) is (10 to 2):1,

4. 0 to 30 percent by weight of an organopolysiloxane silicone oil which is optionally blocked with hydroxyl, and

5. 2 to 92 percent by weight of water.

4,071,469

SOLVENT COMPOSITION FOR USE IN CARBONLESS COPY SYSTEMS

David N. Vincent, Glenview, and Cheng Hsiung Chang, Naperville, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 353,809, April 23, 1973, abandoned. This application Aug. 26, 1974, Ser. No. 500,903

Int. Cl.² B01F *1/00*

U.S. Cl. 252—364 **18 Claims**

1. A solvent composition for use in carbonless copy systems in the absence of a halogenated solvent, wherein said solvent consists essentially of a combination of a mono-alkyl naphthalene, wherein said alkyl group contains from 1 to 3 carbon atoms per molecule, and a di-alkyl naphthalene, wherein each of said alkyl groups in said di-alkyl naphthalene contains from 2 to 4 carbon atoms per molecule, said mono-alkyl naphthalene being present in an amount between about 25 and about 40% by weight of the alkylated naphthalenes present in said solvent.

4,071,470

METHOD AND COMPOSITION FOR INHIBITING THE CORROSION OF METALS

Jerry R. Davidson, Clute, and Hans R. Friedli, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 15, 1976, Ser. No. 705,738

Int. Cl.² C09K *3/00*

U.S. Cl. 252—389 R **5 Claims**

1. In a method for inhibiting the corrosion of metals in contact with a circulating absorbent medium, which is used for removal of acid-gases from natural or synthetic gas streams wherein the circulating, rich absorbent is heated in order to release the acid-gases, the resulting lean absorbent is contacted with the acid-gas containing gas stream, the improvement which consists of introducing into the said medium, a product derived by reacting monoalkanolamine at from about 21° to about 100° C, with sulfur or a sulfide and an oxidizing agent, along with copper or a copper salt, sulfide or oxide, for from 0.1 to about 20 hours, until the resulting mixture is stable when diluted with water, said sulfur or sulfur compounds being present, based on sulfur, in a ratio of 3 to about 30 parts by weight per part of copper; and, in an amount of from 1 to about 40 percent by weight of the total composition, said product being added to the absorbent medium in an amount which maintains at least 0.00002 pounds each of copper and 0.0002 pounds of sulfur per pound of medium per day.

4,071,471

CATALYSTS FOR CONVERSION OF OLEFINS

Robert L. Banks, and Joseph R. Kenton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 535,299, Dec. 23, 1974, Pat. No. 3,996,166, which is a division of Ser. No. 205,350, Dec. 6, 1971, Pat. No. 3,865,751, which is a division of Ser. No. 6,045, Jan. 26, 1970, Pat. No. 3,660,506, which is a continuation of Ser. No. 678,499, Oct. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 627,668, April 3, 1967, abandoned. This application Aug. 2, 1976, Ser. No. 711,027

Int. Cl.² B01J *27/24, 27/02*

U.S. Cl. 252—437 **8 Claims**

1. A composition active for converting an olefin to obtain the product of the olefin reaction which, as defined herein, can be visualized as comprising the reaction between two first pairs of carbon atoms, the two carbon atoms of each first pair being connected by an olefinic double bond, to form two new pairs from the carbon atoms of said first pairs, the two carbon atoms of each of said new pairs being connected by an olefinic double bond comprising magnesium oxide admixed with a separate disproportionation catalyst selected from the group consisting of

1. one or more of the group aluminum phosphate, zirconium phosphate, calcium phosphate, magnesium phosphate or titanium phosphate promoted by one or more of a sulfide of molybdenum or tungsten, or an oxide or compound convertible to the oxide by calcination of molybdenum, tungsten or rhenium, or magnesium tungstate or beryllium phosphotungstate; and

2. silica, alumina, aluminum phosphate, zirconium phosphate, calcium phosphate, magnesium phosphate, or titanium phosphate promoted by hexacarbonyl of molybdenum or tungsten;

said magnesium oxide being present in an amount in the range of 0.1 to 20 parts by weight per part by weight of said disproportionation catalyst.

4,071,472

CATALYST FOR THE PURIFICATION OF EFFLUENT GASES CONTAINING OXIDES OF NITROGEN AS IMPURITY

Michel Sénés, La Baule; Yannick Le Goff, and Jean-Francois Gourdier, both of Saint Nazaire, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Paris, France

Filed Jan. 30, 1976, Ser. No. 653,831

Claims priority, application France, Feb. 4, 1975, 75 03430

Int. Cl.² B01J *21/04, 21/12, 23/10, 23/74*

U.S. Cl. 252—455 R **10 Claims**

1. A catalyst for use in the removal of oxides of nitrogen from effluent gas consisting essentially of (a) 96–99.5% by weight of an oxide of at least one of the metals iron, chromium and vanadium, (b) a promoter selected from the group consisting of an oxide of at least one rare earth metal, present in an amount of 4–0.5% by weight, said catalyst having a specific surface within the range of 20–100 m^2/gm and having the pores therein with a maximum dimension within the range of 100–5000 A, said catalyst being prepared by the thermal decomposition of an intimate mixture of the nitrate of at least one of the metals iron and chromium and, when vanadium is to be present, of vanadium pentoxide powder and a water-soluble form of one of the said promoters, said thermal decomposition taking place in a series of steps the first of which is effected at substantially 200° C for substantially 1 hour, each succeeding heating step taking place at a temperature substantially 50° C higher than the preceding step and lasting substantially 1 hour with the final heating step taking place at substantially 600° C and lasting substantially 1 hour.

4,071,473

PREPARATION AND USE OF HIGH SURFACE AREA TRANSITION METAL CATALYSTS

Gary B. Atkinson, and Larry J. Nicks, both of Reno, Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Nov. 3, 1976, Ser. No. 738,201

Int. Cl.² B01J *21/04, 23/10, 23/76*

U.S. Cl. 252—462 **11 Claims**

1. A method for preparing a catalyst which comprises:

a. forming an alloy of a first metal selected from the group consisting of nickel, cobalt, iron and mixtures thereof with a second metal selected from the group consisting of yttrium, the rare earth metals and mixtures thereof, said first metal comprising from 5 to 95 wt-pct of said alloy; and

b. reacting said alloy with a gas comprising hydrogen and carbon monoxide at a temperature sufficiently high for a time sufficiently long to oxidize said second metal.

4,071,474

SECONDARY-ELECTRON MULTIPLIER DYNODE

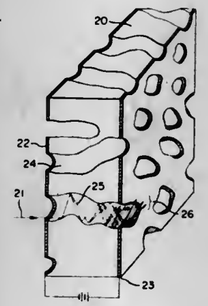
Yoshio Kishimoto, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

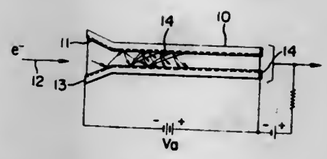
Filed Oct. 14, 1975, Ser. No. 621,794

Claims priority, application Japan, Oct. 14, 1974, 49-119085; Nov. 19, 1974, 49-133969

Int. Cl.² H01B *1/04*

U.S. Cl. 252—500 **14 Claims**





1. In a dynode for a secondary electron multiplier having a dynode support or substrate made of an electrically insulating material and a secondary electron emissive and electron conductive layer formed upon a surface of said support or substrate the improvement which comprises forming said electron emissive and electron conductive layer from a high polymer composition emitting more secondary electrons than primary electrons by coating said support or substrate with a paint comprising said polymer composition dissolved in a solvent into which are dispersed electro-conductive particles.

4,071,475

TRANSPARENT HIGHLY VISCOUS LIQUID SHAMPOO COMPOSITION

Eiji Iijima, Chiba; Hiroshi Watanabe, Funabashi, and Shizuo Hayashi, Sugito, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Sept. 10, 1976, Ser. No. 722,129

Claims priority, application Japan, Sept. 16, 1975, 50-111860

Int. Cl.² C11D *1/14, 1/83*

U.S. Cl. 252—545 **4 Claims**

1. A transparent, highly viscous, liquid shampoo composition consisting essentially of

A. from about one to about 10 weight percent of one or a mixture of compounds having the formula

$$R_1-CH(R_2)-O-(CH_2CH_2O)_nH$$

wherein R_1 is alkyl having 8 to 14 carbon atoms, R_2 is hydrogen or alkyl having one to 7 carbon atoms, and wherein

1. n is a number of from zero to one, for from zero to 10 weight percent of the total weight of component A,

2. n is a number of from 2 to 4, for from 90 to 100 weight percent of the total weight of component A, with the proviso that n is 3 for from 50 to 100 weight percent of the total weight of component A, and

3. n is a number of 5 or more, for from zero to 10 weight percent of the total weight of component A;

B. from about 5 to about 40 weight percent of alkyl (C_{11} to C_{15}) sulfate alkylolamine (C_2 to C_3) salt, and

C. the balance is essentially water.

4,071,476

DETERGENT BUILDERS AND COMPOSITION CONTAINING THE SAME

John A. Patterson, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 437,252, Jan. 28, 1974, Pat. No. 4,039,464. This application Sept. 30, 1976, Ser. No. 728,095

Int. Cl.² C11D *3/20, 3/34*

U.S. Cl. 252—557 **2 Claims**

1. A detergent builder selected from the group consisting of sodium carboxymethyl phthalate, sodium carboxymethyl tetrahydrophthalate, sodium carboxymethyl hexahydrophthalate, sodium carboxymethyl maleate and sodium sulfoethyl maleate.

4,071,477

HYDANTOIN DIGLYCIDYL COMPOUNDS

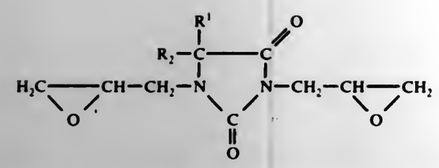
Raymond Seltzer, New City, and David A. Gordon, Scarsdale, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 10, 1976, Ser. No. 694,741

Int. Cl.² C08G *59/26;* **C07D** *233/78*

U.S. Cl. 260—2 N **10 Claims**

1. A hydantoin diglycidyl compound of the formula



wherein R_1 is hydrogen, alkyl containing 1 to 8 carbon atoms or cycloalkyl containing 5 to 6 carbon atoms; and R_2 is alkyl containing 5 to 8 carbon atoms or cycloalkyl containing 5 to 6 carbon atoms.

8. A curable composition comprising a diglycidyl hydantoin compound of claim 1 and a curing agent for epoxy resins.

4,071,478

CONTROLLED PARTIALLY CROSS-LINKED 3,3-IONENES

Tsung-Ying Shen, Westfield, and Arthur F. Wagner, Princeton, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed June 7, 1976, Ser. No. 693,589
Int. Cl.² C08G 73/02
U.S. Cl. 260—2 R **15 Claims**

1. The process which comprises reacting a poly-[(methylimino)trimethylene] polymer with about 1% to 20% of the stoichiometric equivalent (based on the tertiary amine content of the polymer) of 1,3-dihalopropane or 2-hydroxy-1,3-dihalopropane, thereby forming a partially (1% to 20%) cross-linked, partially-quaternized polymeric mixture, wherein nitrogen atoms in adjacent poly-[(methylimino)trimethylene] linear chains are, by quaternization, joined through trimethylene or 2-hydroxy-trimthylene bridges; and reacting the said partially cross-linked, partially quaternized polymeric mixture with an excess of alkyl halide or trialkylammoniopropyl halide, thereby quaternizing any residual tertiary amine groupings present in the said polymeric mixture to form the corresponding substantially completely quaternized, 1% to 20% (1,3-trimethylene or 2-hydroxy-1,3-trimethylene)-cross-linked, poly-[(alkyl-methyliminio)trimethylene halide] or poly-[{methyl-(3-trialkylammoniopropyl)iminio}trimethylene dihalide].

4,071,479

RECLAMATION PROCESSING OF VINYL CHLORIDE POLYMER CONTAINING MATERIALS AND PRODUCTS PRODUCED THEREBY

Barret Broyde, Decatur; Judith Archer Delles, Duluth, and Steven Forrest North, Chamblee, all of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

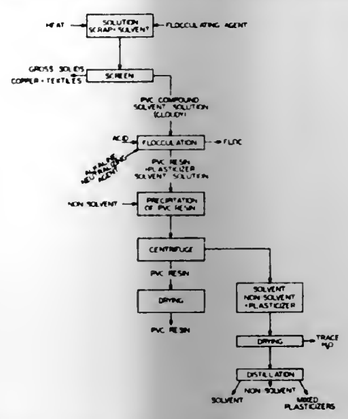
Filed Mar. 25, 1976, Ser. No. 670,469
Int. Cl.² C08J 11/00, 11/02, 11/04
U.S. Cl. 260—2.3 **26 Claims**

1. A process for recovering a reusable essentially pure vinyl chloride polymer resin from a polymer mixture which comprises plasticized polyvinyl chloride and insoluble particulate additives, which includes the steps of:

contacting a polymer mixture which comprises plasticized polyvinyl chloride and insoluble particulate additives with a solvent for vinyl chloride polymers to form a solvent mixture comprising a solvent solution of dissolved vinyl chloride polymer and plasticizers and insoluble particulate additives in suspension;

treating the solvent mixture with at least an acid which is selected from the group consisting of an inorganic acid and an inorganic acid solution and which is substantially soluble in the solvent to flocculate and remove the suspended particulate additives; and

treating the solvent solution with a non-solvent which is miscible with the solvent in substantially all proportions



and which is a solvent for the plasticizer to precipitate an essentially pure vinyl chloride polymer resin therefrom.

4,071,480

HARDENER FOR PRODUCTION SOLID FOAMS OR COMPACT STRUCTURE FROM AQUEOUS SOLUTIONS

Jakob Rademachers, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 23, 1974, Ser. No. 463,640
Claims priority, application Germany, May 10, 1973, 2323488
Int. Cl.² C08J 9/14
U.S. Cl. 260—2.5 F **8 Claims**

1. In the production of foams or compact materials by adding an acidic hardener to an aqueous system containing a resin selected from the group consisting of urea-formaldehyde and thiourea-formaldehyde component capable of being hardened thereby, and allowing said system to set to a hardened mass, the improvement which comprises employing about 3 to 15% by weight of boron phosphate as said hardener.

4,071,481

MANUFACTURE OF PHENOLIC FOAM

Daniel Hanton, Estrees Saint Denis, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation of Ser. No. 445,433, Feb. 25, 1974. This application July 11, 1975, Ser. No. 594,956
Int. Cl.² C08J 9/10
U.S. Cl. 260—2.5 F **36 Claims**

1. A foamable phenolic resin mixture stable at room temperature from which cured and set foamed articles may be formed by heating alone in the absence of the addition of an agent for setting the resin, comprising a solid, reactive, heat-fusible water-insoluble phenolic resol resin of the resol type in particulate form, a blowing agent, and a surfactant, said mixture being devoid of any agent for setting the resin.

4,071,482

REDUCED-FRIABILITY, HIGHLY CROSS-LINKED, FLAME-RESISTANT, POLYURETHANE FOAMS

Henry S. Hopkins, Jr., Ashland, and Donald L. Vargo, Columbus, both of Ohio, assignors to General Latex and Chemical Corporation, Cambridge, Mass.

Filed Oct. 27, 1976, Ser. No. 735,883
Int. Cl.² C08G 18/14
U.S. Cl. 260—2.5 AJ **15 Claims**

1. An improved, rigid, cross-linked, polyurethane foam characterized by ASTM E-84 flame-spread values of 25 or less and low smoke-generation values of 400 or less, and having improved friability properties, which foam comprises the reaction product of a polyisocyanate and a halogenated polyether polyol having a hydroxyl number of about 300 to 600 and a functionality of three to eight, the reaction carried out in the presence of a catalyst and a blowing agent, and which foam contains from about 1 to 10% by weight of a liquid C_2–C_6 alkylene carbonate having a boiling point of greater than about 230° C.

4,071,483

POLYSILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS AS STABILIZERS IN THE PRODUCTION OF URETHANE FOAM

Carl James Litteral, Marietta, Ohio, and David Lee Mullins, Williamstown, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 507,998, Sept. 20, 1974, Pat. No. 3,980,688. This application July 1, 1976, Ser. No. 701,669
Int. Cl.² C08G 18/14
U.S. Cl. 260—2.5 AH **23 Claims**

1. A process for preparing flexible polyether polyurethane foam, said process comprising reacting and foaming a mixture comprising (a) a polyether containing at least two hydroxyl groups per molecule, (b) an organic polyisocyanate, (c) a catalyst for the reaction of (a) and (b) to produce the polyurethane, (d) a blowing agent and (e) as the foam stabilizer a polysiloxane-poly(oxyethylene-oxypropylene) block copolymer consisting essentially of from about 15 to about 35 percent by weight of polysiloxane blocks and from about 85 to about 65 percent by weight of polyoxyalkylene blocks, and further consisting essentially of siloxy units of the formula R_2SiO, siloxy units selected from the group consisting of those of the formulas (R)(Q)SiO and RSiO3/2 and terminal siloxy units selected from the class consisting of those of the formulas $R_3SiO1/2$ and (R_2) (Q)SiO1/2, wherein the average number of total siloxy units per molecule of the polysiloxane-polyoxyalkylene block copolymer ranges from about 20 to about 200, wherein from about 6 to about 15 percent of said total siloxy units are selected from the group consisting of (R)(Q)SiO and (R_2) (Q)SiO1/2 and wherein there are no more than about four RSiO3/2 siloxy units per average polysiloxane molecule, wherein each R individually represents a monovalent hydrocarbon radical or a substituted monovalent hydrocarbon radical, said radicals being free from aliphatic multiple carbon to carbon bonds, and wherein each Q individually represents a polyoxyalkylene polyether block having the formula —MX wherein each M is a bridging group individually selected from the class consisting of —O— and $-C_nH_{2n}O-$ wherein n has a value of 2 or 3, and X is a polyoxyalkylene radical consisting essentially of an admixture of Units A and B of the formula $(C_2H_4O)_x(C_3H_6O)_yZ$ wherein Z is a terminal group selected from the class consisting of alkyl, aryl and aralkyl radicals, with the proviso that when M is $-C_nH_{2n}O-$ as defined above, Z can also be a terminal acyl radical, the values of x and y being determined by the following conditions prevailing for Units A and B;

Unit A representing from about 20 to about 80 percent by weight of low molecular weight polyoxyalkylene polyether based on the total weight of Units A and B in said admixture; said polyether being selected from the class consisting of (i) a polyoxyalkylene copolymer having an average molecular weight in the range of from about 800 to about 2300 wherein about 20 to about 60 weight percent of the oxyalkylene groups of said copolymer are oxyethylene, the remainder of the oxyalkylene groups being oxypropylene, and (ii) a blend of at least two polyoxyalkylene copolymers having different average molecular weights in the range of from about 500 to about 2900 and wherein about 20 to about 60 weight percent of the oxyalkylene groups of the copolymers in said blend are oxyethylene, the remainder of the oxyalkylene groups being oxypropylene, with the proviso that said blend has an average molecular weight in the range of from about 800 to about 2300; and

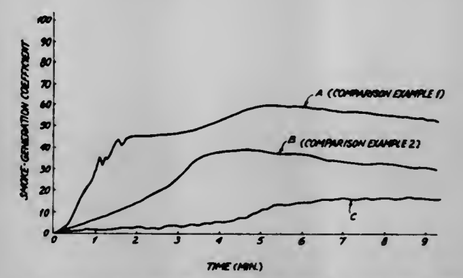
Unit B representing from about 80 to about 20 percent by weight of high molecular weight polyoxyalkylene polyether based on the total weight of Units A and B in said admixture said polyether being selected from the class consisting of (i) a polyoxyalkylene copolymer having an average molecular weight in the range of from about 3400 to about 5500 wherein about 20 to about 60 weight percent of the oxyalkylene groups of said copolymer are oxyethylene, the remainder of the oxyalkylene groups being oxypropylene, and (ii) a blend of at least two polyoxyalkylene copolymers having different average molecular weights in the range of from about 3000 to about 5500 and wherein about 20 to about 60 weight percent of the oxyalkylene groups of the copolymers in said blend are oxyethylene, the remainder of the oxyalkylene groups being oxypropylene, with the proviso that said blend has an average molecular weight in the range of from about 3400 to about 5500; and with the added proviso that said admixture of Units A and B has an average molecular weight in the range of from about 1600 to about 2900.

4,071,484

PROCESS FOR PREPARING FLEXIBLE FLAME RETARDING POLYURETHANE FOAMS

Yasumasa Sawachika, Ashikaga, and Hiroshi Kawakami, Tanuma, both of Japan, assignors to Kohkoku Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 618,170, Sept. 30, 1975, abandoned, which is a continuation of Ser. No. 464,620, April 26, 1974, abandoned. This application July 7, 1976, Ser. No. 703,219
Claims priority, application Japan, Oct. 23, 1973, 48-119201
Int. Cl.² C08G 18/78
U.S. Cl. 260—2.5 AT **7 Claims**



1. A process for preparing unshrinking flexible and flame retarding polyurethane foams, comprising mixing;

A. diisocyanate mixture which contains 80 to 45% by weight of diisocyanate and 20 to 55% by weight of urethane-modified diisocyanate obtained by reacting

A-1. one mole of a dihydroxyl aromatic compound selected from the group consisting of 1,2-dihydroxybenzene, 1,3-dihydroxybenzene, 2,4-dihydroxytoluene, 2,2'-dihydroxydiphenyl, 4,4'-dihydroxydiphenyl, 2,2'-dihydroxybenzophenone and 3,3'-dihydroxydiphenylmethane with

A-2. 4 to 15 moles of diisocyanate at a temperature from 80° C to 130° C for 3 to 35 hours

B. a polyhydroxyl compound having at least two active hydrogen atoms and a molecular weight between 1000 and 10000, at least 10% by weight thereof being primary hydroxyl,

C. a foaming agent, and

D. a catalyst, and foaming and curing the thus obtained foam in the conventional manner.

4,071,485
FOUNTAIN SOLUTIONS AND FOUNTAIN CONCENTRATES FOR LITHOGRAPHIC PRINTING COMPRISING AQUEOUS SOLUTIONS OF POLYACRYLAMIDE BASED POLYMERS, AND BLENDS OF POLYACRYLAMIDE AND POLYACRYLIC ACID

Walter L. Garrett, Freeland, and Ralph G. Czerepinski, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 586,451, June 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 565,916, April 7, 1975, abandoned. This application Sept. 27, 1976, Ser. No. 727,320
Int. Cl.[2] C08L *1/28*
U.S. Cl. 260—17 R 45 Claims

1. An aqueous solution for rendering hydrophilic, the non-image areas of an image-bearing lithographic printing plate which comprises: water; a phosphate compound selected from the group consisting of (1) alkali metal phosphates, ammonium phosphate, and mixtures thereof, and (2) phosphoric acid; and an active polymer component selected from the group consisting of

a. a polyacrylamide-based polymer wherein from about 3 to about 70 percent of the carbonyl sites are carboxyl groups and the balance of said sites are amide moieties,

b. a physical blend comprised of from about 97 to about 30 weight per cent polyacrylamide and from about 3 to about 70 weight percent polyacrylic acid or an alkali metal or ammonium salt thereof,

c. a physical blend comprised of polyacrylamide, or polyacrylic acid or an alkali metal or ammonium salt thereof, and at least one polyacrylamide-based polymer as described in (a), said polymers being employed in proportions such that of the total carbonyl sites present in the blend, from about 3 to about 70 percent are carboxyl groups and the balance are amide moieties

d. a mixture of any two or more of the foregoing (a) - (c), the weight average molecular weight of each of said polyacrylamide-based polymer, polyacrylamide, and polyacrylic acid or salt thereof being in the range of from about 5000 to about 1,000,000 and

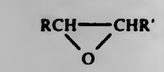
e. a co-mixture of one or more of the foregoing (a) - (d) with up to 30 weight percent hydroxypropyl methylcellulose based on the total weight of the co-mixture, said hydroxypropyl methylcellulose being of a type which produces a 2 weight percent aqueous solution having a viscosity of from about 1 to about 100 cP when measured according to ASTM Method D 2363-72.

4,071,486
EPOXIDE THERMAL STABILIZATION ADDITIVE FOR POLYPYRROLIDONE

Phillip H. Parker, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 20, 1976, Ser. No. 752,502
Int. Cl.[2] C08J *3/20*
U.S. Cl. 260—18 N 16 Claims

1. A composition of matter comprising a major amount of normally solid poly-2-pyrrolidone and a thermal stabilizing amount, effective to reduce the thermal degradation of said poly-2-pyrrolidone to its monomer, of an alkyl epoxide, containing less than about 60 carbon atoms, of the formula



wherein R is hydrogen, alkyl or epoxyalkyl and R' is alkyl, polyalkylene oxide, epoxyalkyl, epoxypolyalkyl oxide, alkylester, epoxyalkylester, hydroxyalkyl or hydroxyalkylester.

4,071,487
ANTI-SETTLING AGENTS FOR PIGMENTED AQUEOUS LACQUER AND PROCESS FOR THE MANUFACTURE OF SAID AGENTS

Heinz Linden, Dusseldorf-Holthausen; Wolfgang Gress, Wuppertal-Elberfeld, and Wilhelm Offermann, Dusseldorf, all of Germany, assignors to Henkel KGaA, Dusseldorf, Germany

Filed Jan. 22, 1976, Ser. No. 651,476
Claims priority, application Germany, Jan. 27, 1975, 2503166
Int. Cl.[2] C09D *3/64, 5/02, 7/02*
U.S. Cl. 260—22 TN 23 Claims

1. A water-dispersible amine salt of the reaction product of a substantially neutral ester of a C_{14-20} ethylenically unsaturated fatty alcohol with an α, β-unsaturated-ethylenedicarboxylic acid with about 1/7 to 1/35 of its weight of an α, β-unsaturated ethylenedicarboxylic compound of acidic character, said reaction product being formed by heating said neutral ester and said ethylenedicarboxylic compound at 200° C. to 250° C. for about 1 to 25 hours; said ethylenedicarboxylic acid and said ethylenedicarboxylic compound each containing not more than six carbon atoms.

15. An aqueous lacquer comprising a water-soluble film-forming component, a pigment, and an effective amount of an amine salt according to claim 1 as agent inhibiting settling of said pigment.

4,071,488
LATEX COMPOSITION

George B. Freda, Belpre, Ohio, assignor to Uniroyal, Inc., New York, N.Y.

Filed Feb. 16, 1961, Ser. No. 89,881
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—23.7 A 2 Claims

1. A latex composition comprising 100 parts of a rubbery polymer selected from the group consisting of polybutadiene and copolymers of butadiene with up to 50% by weight of styrene, 30–60 parts of formamide, and 5–30 parts of N-(ethylene oxide substituted) amide of oleic acid containing about 10 moles of ethylene oxide per mole of amide, the said parts being by weight.

4,071,489
COATING COMPOSITIONS FROM DICYCLOPENTENYL ACRYLATE AND/OR METHACRYLATE

William D. Emmons, Huntingdon Valley; Kayson Nyi, Sellersville, and Peter R. Sperry, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 8, 1976, Ser. No. 665,017
Int. Cl.[2] C09D *3/66*
U.S. Cl. 260—22 CB 24 Claims

1. An autoxidizable composition adapted to be used for coating and/or impregnating a substrate consisting essentially of:

a. reactive non-volatile monomeric material selected from
1. a monomeric material consisting essentially of dicyclopentenyl acrylate or dicyclopentenyl methacrylate or a mixture thereof, such material being referred to generically by the term DCP(M)A, and
2. a monomeric material comprising a predominant proportion of DCP(M)A and a minor proportion of an ester of an aliphatic alcohol having 10 to 20 carbon atoms with acrylic acid or methacrylic acid;

b. a polyol-polycarboxylic acid alkyd or polyester resin having at least one unsaturated component selected from (1) maleic acid or anhydride or furmaric acid moieties and (2) drying or semi-drying oil moieties, said resin being formed from a polycarboxylic acid or anhydride, the alkyd being selected respectively from
1. alkyds in which the polycarboxylic acid precursor component comprises a dicarboxylic acid which is predominantly to exclusively an aliphatic dicarboxylic acid or anhydride having at least 4 carbon atoms, this alkyd being used with reactive monomer (1) above, and
2. alkyds in which the polycarboxylic acid precursor component comprises a dicarboxylic acid which is predominantly to exclusively an aromatic dicarboxylic acid or anhydride, this alkyd being used with reactive monomer (2) above; and

c. an effective amount of a metal salt or complex drier or siccative.

4,071,490
PLASTICS FOIL FOR THE MANUFACTURE OF AUDIO-VISUAL INFORMATION CARRIERS

Hans-Joachim Andrascheck; Rainer Mücke; Werner Lorz, all of Burgkirchen (Alz); Heinz Borchard; Jürgen Buck, both of Nortorf; Herbert Knothe, Neumunster, and Bruno Rybka, Nortorf, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 8, 1976, Ser. No. 721,308
Claims priority, application Germany, Sept. 12, 1975, 2540654
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—23 XA 3 Claims

1. Rigid polyvinyl chloride foil free from plasticizer and having modified impact resistance, suitable for the manufacture of audio-visual information carriers with stamped in spiral grooves carrying the information reproducible by pressure scanning characterized by the following properties:

a. a flow corresponding to a melt viscosity in the range of from 20 to 72 g/10 minutes,

b. a reduction in length of at most 20 % at 160° C,

c. a toughness corresponding to a factor of at least (25% . mm^2)/newtons in longitudinal and transverse directions

d. a surface resistance of at most 10^{10} ohms,

e. an elasticity corresponding to an elastic modulus in the range of from 2,500 to 5,000 newtons/mm^2,

f. a peak-to-valley height corresponding to a Perth-O-Meter value of less than 0.4 μm, and

g. a surface deposit corresponding to a foil extraction residue of less than 0.012% by weight.

4,071,491
ADHESIVE FORMULATION CONTAINING ISOBUTYLENE RUBBER

Dale C. Wiesman, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Apr. 29, 1977, Ser. No. 792,331
Int. Cl.[2] C08L *9/00*
U.S. Cl. 260—28.5 B 7 Claims

1. As an adhesive formulation, an aqueous dispersion comprising, on a weight basis, about 45 to 55 parts of an isobutylene rubber, about 5.2 to 2.8 parts of an aliphatic hydrocarbon wax having a melting point of at least about 130° Fahrenheit, about 4.7 to 2.5 parts of a lower polyolefin, and water in an amount sufficient to provide 100 parts of said formulation, said dispersion having a viscosity of about 2,500 to 6,000 centipoises.

4,071,492
POLYURETHANE-UREA ELASTOMERS BASED ON PROPYLENE OXIDE-TETRAHYDROFURAN COPOLYMERS

Tristram Walker Bethea, Fairlawn, and Shingo Futamura, Seville, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 7, 1976, Ser. No. 674,459
Int. Cl.[2] C08G *18/32, 18/48;* C08K *5/12*
U.S. Cl. 260—31.8 R 18 Claims

1. A polyurethane-urea elastomer, comprising,

the reaction product of propylene oxide-tetrahydrofuran copolymers, polyisocyanates and aromatic diamine chain extenders, said copolymers having a molecular weight of from about 300 to about 10,000 and containing from about 5 percent to about 75 percent of propylene oxide based upon the total weight of said copolymer,

said copolymers containing hydroxyl end groups,

said polyisocyanates reacted with said hydroxyl terminated copolymers to form prepolymers having isocyanate end groups, the equivalent ratio of said isocyanate groups of said polyisocyanates to said hydroxyl end groups ranging from about 1.25 to about 3.0,

said aromatic diamines having from 6 to about 20 carbon atoms and selected from the class consisting of shielded aromatic diamines and non-shielded aromatic diamines,

said prepolymer containing said isocyanate end groups chain extended through either bulk polymerization by reaction with said shielded aromatic diamines or through a solution polymerization by reaction with said non-shielded diamines to produce said polyurethane-urea elastomers, the equivalent ratio of amine groups of said aromatic diamines to said isocyanate end groups ranging from about 0.8 to about 1.2,

said copolymer containing hydroxyl end groups having a low viscosity,

said polyurethane-urea elastomers having good tensile strength at ambient temperatures and at 100° C, and good flex properties.

4,071,493
PRODUCTS WITH A FLUIDIFYING ACTION FOR MINERAL PASTES AND BINDERS

Patrick Begou, Moirans, France, assignor to Societe Chimique des Charbonnages, Paris, France

Filed Jan. 3, 1977, Ser. No. 756,407
Claims priority, application France, Jan. 2, 1976, 76 00027
Int. Cl.[2] C04B *7/02, 33/13;* C08K *3/00*
U.S. Cl. 260—42.13 2 Claims

1. A mineral paste or binder with increased fluidity said increased fluidity accomplished by inclusion of an alkali metal salt of a sulphonated styrene-indene hydrocarbon resin said resin prepared by polymerisation of an aromatic petroleum fraction, derived from vapor cracking, using a Friedel-Krafts catalyst, so as to yield a resin having a KS softening point between 60° and 150° C and a low degree of polymerisation, followed by sulphonation of the styrene-indene hydrocarbon resin in solution to produce a product having a content of unsulphonated material of less than 10%, with subsequent neutralization with an alkali.

4,071,494
COMPATIBILIZATION OF HYDROXYL-CONTAINING FILLERS AND THERMOPLASTIC POLYMERS

Norman G. Gaylord, New Providence, N.J., assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 66,107, Aug. 21, 1970, Pat. No. 3,956,230, which is a continuation-in-part of Ser. No. 702,204, Feb. 1, 1968, Pat. No. 3,645,939. This application Dec. 23, 1975, Ser. No. 643,820
The portion of the term of this patent subsequent to May 11, 1993, has been disclaimed.
Int. Cl.[2] C08K *9/04, 9/10*
U.S. Cl. 260—42.14 28 Claims

1. A process for compatibilizing a hydroxyl group containing inorganic filler with a thermoplastic polymer having labile atoms which provide sites for the formation of free radicals which comprises mixing said filler and said thermoplastic polymer in the presence of an ethylenically unsaturated carboxylic acid or anhydride and a free radical catalyst under conditions which will generate free radicals on the thermoplastic polymer and which will permit the acid or anhydride to react simultaneously with the thermoplastic polymer and the hydroxyl group containing filler, whereby said acid or anhydride reacts with and couples said thermoplastic polymer and said hydroxyl group containing filler to provide a filled thermoplastic polymer composition.

4,071,495

REINFORCED POLYVINYLIDENE FLUORIDE MOLDING COMPOSITIONS

Ernst-Joachim Stark, Troisdorf; Peter Vanhalden, Boan-Hersel, and Herbert Klinkenberg, Troisdorf-Eschmar, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Feb. 24, 1977, Ser. No. 771,720
Claims priority, application Germany, Mar. 4, 1976, 2608898
Int. Cl.[2] C08K 7/14
U.S. Cl. 260—42.18 10 Claims

1. A reinforced polyvinylidene fluoride-containing composition comprising a polyvinylidene fluoride polymer and reinforcing glass fibers, said fibers having between 10 and 28 weight percent of basic oxides and up to 6 weight percent of boron oxide, the amount of boron oxide being no more than twice as great as the amount of alkali oxides contained in said basic oxides.

4,071,496

CARBON BLACK FOR LOW-HYSTERESIS RUBBER COMPOSITIONS

Gerard Kraus, and Harold R. Hunt, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 30, 1976, Ser. No. 681,977
Int. Cl.[2] C08K 3/04; C01B 31/00
U.S. Cl. 260—42.36 5 Claims

1. A carbon black having a tint residual of −6 or less and a tint in the range of about 70 to 100.

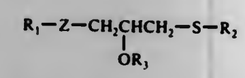
4,071,497

HINDERED HYDROXYPHENYLALKANOATES OF THIOETHER ISOPROPANOLS AND STABILIZED COMPOSITIONS

Martin Dexter, Briarcliff Manor, and David Herbert Steinberg, Bronx, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 532,127, Dec. 12, 1974, Pat. No. 3,954,839.
This application Jan. 14, 1976, Ser. No. 649,007
Int. Cl.[2] C08K 5/37
U.S. Cl. 260—45.85 B 12 Claims

1. A stabilized composition of matter comprising a polyolefin and from 0.01 to 5% by weight of a stabilizing compound of the formula

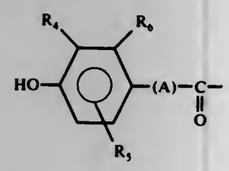


wherein

R_1 and R_2 are each independently alkyl of 1 to 30 carbon atoms, cycloaklyl of 5 to 12 carbon atoms, alkylthioethyl of 4 to 27 atoms in the chain or alkyl polyoxyalkylene of 4 to 27 atoms in the chain having the general structure $R'(OC_nH_{2n})_h$ or $R'(OCH_2CHR')_h$ where R' is alkyl of 1 to 18 carbon atoms, n is 2 to 4, R' is hydrogen, methyl or ethyl and h is 1 to 3,

Z is oxygen or sulfur,

R_3 is the group



R_4 is hydrogen, alkyl of 1 to 8 carbon atoms, cycloakyl of 5 to 6 carbon atoms or α-methylbenzyl,

R_5 is alkyl of 1 to 8 carbon atoms or cycloalkyl of 5 to 6 carbon atoms,

R_6 is hydrogen or lower alkyl of 1 to 4 carbon atoms, or R_4 and R_6 together are a butylene chain which, together with the phenyl ring, form a tetrahydronaphthyl group, and provided when R_4 is hydrogen, R_6 is alkyl and R_5 is located on the carbon atom ortho to the hydroxyl group, and

A is a covalent carbon bond or a straight or branched lower alkylene having 1 to 8 carbon atoms.

4,071,498

METHOD OF CHAIN EXTENDING ORGANOSILOXANES

Cecil L. Frye, Midland, and Jerome M. Klosowski, Monitor Township, Bay County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 29, 1975, Ser. No. 644,380
Int. Cl.[2] C08G 77/04
U.S. Cl. 260—46.5 G 3 Claims

1. A method of increasing the molecular weight of a hydroxyl endblocked polydiorganosiloxane having silicon-bonded hydroxyl radicals consisting essentially of mixing the polydiorganosiloxane wherein the organic groups are monovalent hydrocarbon radicals or monovalent halogenated hydrocarbon radicals and methylvinyldi-(epsiloncaprolactamo)silane, thereafter recovering a product polydiorganosiloxane having a molecular weight higher than the polydiorganosiloxane mixed with the silane and having methylvinylsiloxane units in the product polydiorganosiloxane.

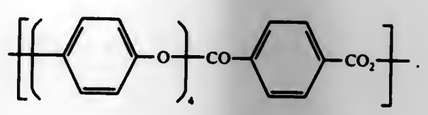
4,071,499

HIGH TEMPERATURE POLYESTER RESINS FROM 4,4'-BIS(P-HYDROXYPHENOXY)DIPHENYL ETHER AND TEREPHTHALIC ACID

Robert W. Stackman, Morristown, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 12, 1976, Ser. No. 713,722
Int. Cl.[2] C08G 63/18
U.S. Cl. 260—47 C 6 Claims

1. A polyester resin composition which consists essentially of the recurring structural unit:



4,071,500

PROCESS FOR RECOVERY OF CATALYST FROM POLYMERIZATION OF POLYPHENYLENE ETHERS

Glenn Dale Cooper, Delmar, and Daniel Edwin Floryan, Glenmont, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 13, 1976, Ser. No. 749,761
Int. Cl.[2] C08G 65/44, 65/45
U.S. Cl. 260—47 ET 23 Claims

1. In a process for forming a polyphenylene ether by an oxidative coupling reaction in the presence of a copper-amine complex catalyst comprising passing an oxygen-containing gas through a reaction solution of a phenol and said complex catalyst and terminating the reaction and separating the copper component of said catalyst by contacting the reaction solution with a chelating agent comprising an amino acid to form a chelated complex of copper and said chelating agent, the improvement which comprises separating the chelated complex from the reaction solution and contacting said chelated complex with at least 0.20 moles per mole of copper of a reducing sugar in an alkaline medium, said reducing sugar being selected from the mono-, di- or polysaccharides containing free aldehyde or keto groups not in glucoside combination with other molecules, to precipitate the copper in the form of an oxide.

4,071,501

WATER SOLUBLE ADDUCT OF HYDROXYMETHYL PHOSPHOROUS COMPOUND AND AMMONIA OR AMINE COMPOUND AND METHOD OF PREPARATION

Armand B. Pepperman, Jr., Metairie; Donald J. Daigle, New Orleans, and Sidney L. Vail, River Ridge, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 499,804, Aug. 22, 1974, Pat. No. 3,953,166.
This application Jan. 14, 1976, Ser. No. 648,834
Int. Cl.[2] C08G 79/06
U.S. Cl. 260—67 R 2 Claims

1. A process for preparing a water soluble adduct polymer comprising:

a. reacting a hydroxymethyl phosphorus compound selected from the group consisting of tris(hydroxymethyl)phosphine and tetrakis (hydroxymethyl) phosphonium hydroxide with a nitrogenous compound selected from the group consisting of ammonia, hexamethylenetetramine, ethylenediamine and 1,6-hexamethylene diamine at a mole ratio of 1:4 to 4:1 of amine to phosphorus compound to form an insoluble polymeric precipitate; and

b. dissolving the precipitate from (a) in the presence of formaldehyde and an inorganic or organic acid with a mole ratio of 1:4 to 4:1 of formaldehyde to phosphorus contained in the precipitate and a 1:10 to 2:1 ratio of acid to phosphorus contained in the precipitate.

4,071,502

POLYESTER FIBER HAVING ANTI-PILLING PROPERTY AND ITS PRODUCTION

Hiroshige Sugiyama, and Hiroshi Yasuda, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 415,473, Nov. 13, 1973, abandoned.
This application Apr. 14, 1975, Ser. No. 568,535
Claims priority, application Japan, Nov. 14, 1972, 47-114559
Int. Cl.[2] C08G 63/70, 63/18
U.S. Cl. 260—75 T 5 Claims

1. An anti-pilling polyester fiber having an intrinsic viscosity of 0.32 to 0.48 as determined in a solvent mixture consisting of phenol and tetrachloroethane in a weight ratio of 6:4 at 30° C. which has the following physical properties:

Tenacity = 3.5 to 5.0 g/d;

Knot Tenacity = not more than 3.0 g/d;

Ratio of Tenacity to Knot Tenacity = not less than 1.5;

Birefringence = not less than 0.170; and

Tensile elongation at break = 10 to 20%.

4,071,503

POLYCARBODIIMIDE MODIFICATION OF POLYESTERS FOR EXTRUSION APPLICATIONS

Norman W. Thomas, Warren; Frank M. Berardinelli, Millington, both of N.J., and Robert Edelman, Staten Island, N.Y., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 558,982, March 17, 1975, abandoned. This application Aug. 19, 1976, Ser. No. 715,946
Int. Cl.[2] C08G 63/46; B29C 5/06
U.S. Cl. 260—75 N 14 Claims

1. A process for preparing a polycarbodiimide modified thermoplastic polyester of increased melt strength and intrinsic viscosity as well as improved die swell and shear sensitivity, which process comprises incorporating into the structure of a thermoplastic saturated polyester, having at least one carboxyl end group, at least one polycarbodiimide which polycarbodiimide both (a) is derived from at least one aromatic diisocyanate which is either unsubstituted or contains up to one methyl substituent on each aromatic ring, and (b) contains at least three carbodiimide units per polycarbodiimide molecule, by reacting the carboxyl end group of the polyester, at a temperature not less than the melting point of the polyester and below the decomposition temperature of the polyester and the polycarbodiimide, with the carbodiimide groups of the polycarbodiimide, wherein the polycarbodiimide modified thermoplastic polyester has a melt strength of less than about 2.0 at 235° C, less than about 10 micro equivalents of carboxyl end groups per gram of polyester, an intrinsic viscosity of about 1.1 to about 2.5, and is useful in extrusion applications.

8. A polycarbodiimide modified thermoplastic polyester having a melt strength ratio of T_1/T_2 of less than about 2 wherein said polycarbodiimide modified thermoplastic polyester comprises the reaction product of (a) a thermoplastic saturated polyester, and (b) a polycarbodiimide which both (1) is derived from at least one aromatic diisocyanate which is either unsubstituted or contains up to one methyl substituent on each aromatic ring, and (2) contains at least three carbodiimide units per polycarbodiimide molecule which polycarbodiimide modified thermoplastic polyester is useful in extrusion applications.

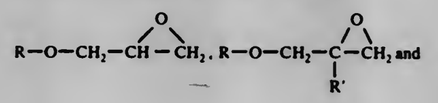
4,071,504

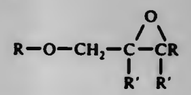
PROCESS FOR PRODUCING LOW CARBOXYL POLYESTER FIBERS AND OTHER ARTICLES

Gailerd L. Korver, Hartville, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 574,171, May 2, 1975, abandoned. This application Feb. 17, 1976, Ser. No. 658,315
Int. Cl.[2] D01F 1/00; C08G 51/36
U.S. Cl. 260—75 EP 8 Claims

1. In the process for producing textile and industrial fibers both multifilament and monofilament or molded articles by melt extruding a polyester resin, having an intrinsic viscosity of at least 0.4 as measured in a 60/40 phenol/tetrachloroethane or 50/50 trifluoroacetic acid/dichloromethane mixed solvent at 30° C. from melt spinning apparatus to form the desired article while adding to and reacting with said polyester resin, while in said apparatus for a period of from 1 to 6 minutes, at least one monofunctional epoxide of the formulas





where R is selected from the group consisting of alkyl, cycloalkyl, alkenyl, aryl, substituted aryl and aralkyl radicals and R' is H or alkyl radical containing from 1 to 8 carbon atoms the improvement which comprises incorporating in said polyester resin prior to extrusion thereof at least one catalytic compound consisting of an alkali metal salt corresponding to the formula $R(COOM)_n$ where R is selected from the group consisting of hydrogen, hydroxyl radical, alkyl radicals containing from 1 to 20 carbon atoms and aryl radical, n is selected from 1 and M is selected from the group consisting of alkali metals and in the formula MX, X = hydroxyl, alkoxyl or halide, said catalytic compound being incorporated in an amount ranging from 0.01 to 10.0 parts by weight, based on the alkali metal, per 1000 parts by weight of the polyester.

4,071,505
MOLECULAR WEIGHT CONTROL OF POLYURETHANE ELASTOMERS

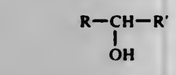
Walter Meckel, Neuss, Germany, and J. W. Britain, New Martinsville, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa. and Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 490,528, July 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 417,988, Nov. 21, 1973, abandoned, which is a continuation of Ser. No. 252,642, May 12, 1972, abandoned. This application Oct. 15, 1975, Ser. No. 622,594

Int. Cl.² C08G *18/30*

U.S. Cl. 260—77.5 MA 8 Claims

1. A process for producing elastomeric polyurethanes comprising reacting organic polyisocyanates with organic polyhydroxyl compounds having a molecular weight of from about 800 to about 5,000, containing at least two OH groups reactive with NCO groups such that the NCO/OH ratio is from about 0.9:1 to about 1.1:1 and incorporating into the reaction mixture a chain terminator having the general formula:



wherein R and R' are the same or different and represent alkyl groups containing at least 3 carbon atoms which may be branched in the α- or β-positions, which may be substituted with halogen atoms, and which may contain hetero atoms in the form of esters or ethers, and wherein the chain terminator is present in an amount from about 0.1 percent to about 3 percent based on the molecular equivalent of all available OH groups.

4,071,506
CRYSTAL-CLEAR POLYAMIDES FROM 1,3-BIS(AMINOMETHYL)CYCLOHEXANE

Ludwig Brinkmann, Frankfurt am Main, and Lothar Bohn, Glashutten, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 439,878, Feb. 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 366,311, June 4, 1973, abandoned, which is a continuation of Ser. No. 206,138, Dec. 8, 1971, abandoned. This application May 19, 1975, Ser. No. 578,918

Claims priority, application Germany, Dec. 10, 1970, 2060704

Int. Cl.² C08G *69/08, 69/14*

U.S. Cl. 260—78 A 5 Claims

1. A crystal-clear polyamide consisting essentially of the polymeric condensation product of

a. 1,3-bis-(aminomethyl)-cyclohexane or a mixture of at least 50 mol % of 1,3-bis-(aminomethyl)-cyclohexane and up to 50 mol % of 1,4-bis-(aminomethyl)-cyclohexane,

b. terephthalic acid or isophthalic acid or a mixture of terephthalic acid and isophthalic acid, and

c. at least one aliphatic amino-carboxylic acid containing from 4 to 12 carbon atoms, or at least one lactam of such an acid, the proportion of the amino-carboxylic acid or the lactam being in the range of from 5 to 60% by weight, based on the total weight of the polyamide, said polyamide having a reduced specific viscosity of 1.0 to 2.5 dl/g measured at 25° C. in a solution of one gram of polyamide in 100 ml. of a 60:40 weight ratio mixture of phenol and tetrachloroethane.

4,071,507
PREPARATION OF LACTONE POLYESTERS

Löwhardt A. A. Schoen, Geleen, Netherlands, assignor to Stamicarbon, N.V., Geleen, Netherlands

Continuation of Ser. No. 109,570, Jan. 25, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,532

Claims priority, application Netherlands, Jan. 29, 1970, 7001237

Int. Cl.² C08G *63/10*

U.S. Cl. 260—78.3 R 15 Claims

1. A process for preparing polymeric lactones free of terminal reactive hydrogen substituents comprising polymerizing a polymerizable lactone with an initiator and in the presence of a catalyst, said initiator selected from the group consisting of ethyl acetate, propyl acetate, butyl acetate, 2-ethyl-hexyl acetate, ethyl benzoate, ethylene glycol diacetate, ethylene glycol dipropionate, ethylene glycol dibutyrate, ethylene glycol dibenzoate, diethylene glycol diacetate, diethylene glycol diproprionate, diethylene glycol dibutyrate, diethylene glycol dibenzoate, dimethyl terephthalate, di-(2-ethyl-hexyl)-adipate, diethyl adipate, dipropyl adipate, dibutyl adipate, dibenzyl adipate, triethylene glycol diacetate, triethylene glycol dipropionate, triethylene glycol dibutyrate and triethylene glycol dibenzoate.

4,071,508
ANIONIC HYDROGELS BASED ON HYDROXYALKYL ACRYLATES AND METHACRYLATES

Robert Steckler, San Diego, Calif., assignor to Plastomedical Sciences, Inc., Briarcliff Manor, N.Y.

Filed Feb. 11, 1975, Ser. No. 549,098

Int. Cl.² C08F *220/20*

U.S. Cl. 260—79.3 MU 6 Claims

1. The anionic, polymeric hydrogel produced by simultaneous polymerization and cross-linking in the presence of a free radical polymerization catalyst in an amount of from about 0.05 to about 4 weight percent, based on the total weight of monomers, and at a temperature of from about 20° C. to about 125° C., of a mixture consisting essentially of the following monomers:

A. About 40 to about 95 weight percent, based on the total weight of monomers of an acrylic monomer selected from the group consisting of glyceryl monoacrylates and monomethacrylates and acrylic monomers having the formula:

wherein:

R and R' each represents hydrogen or lower alkyl of 1 to about 6 carbon atoms;

N represents an interger of from 1 to about 50;

B. About 50 to about 0.05 weight percent, based on the total weight of monomers, of a monoethylenically unsaturated anionic monomer, capable of copolymerizing with (A), and which contains in its molecular structure a sulfonic acid group and is selected from the group consisting of acrylamido aryl sulfonic acids, acrylamido alkyl sulfonic acids, glycidyl acrylate sulfonic acid, glycidyl methacrylate sulfonic acid, and esters of α-methylene carboxylic acids with hydroxysulfonic acids which esters have the formula:

$$R''—COO—Q—SO_3M,$$

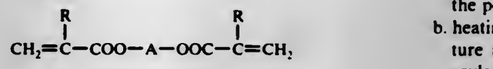
wherein

R'' represents a member of the group consisting of vinyl and α substituted vinyl,

Q represents a divalent hydrocarbon radical having its valence bonds on different carbon atoms, and

M is a cation, selected from the group consisting of hydrogen, ammonium, amino, alkali metal and alkaline earth metal;

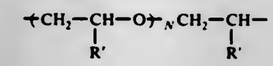
c. about 0.2 to about 12 weight percent, based on the total weight of monomers, of a polymerizable cross-linking agent, capable of copolymerizing with (a) and (b) and having the formula:



wherein

R represents a member of the group consisting of hydrogen and alkyl of from 1 to about 4 carbon atoms;

A represents alkylene of from 2 to about 10 carbon atoms or a polyglycol ether group of the formula:



in which;

R' represents a member of the group consisting hydrogen and alkyl of 1 to 2 carbon atoms;

N represents an integer of from 1 to about 20;

d. from 0 to about 50 weight percent, based on the total weight of monomers, of other monoethylenically unsaturated monomers capable of copolymerizing with (A), (B) and (C) and selected from the group consisting of: Acrylamides, Methacrylamides, acrylonitrile, alkyl acrylates, alkyl methacrylates, N-vinyl lactams, N-vinyl succinimide, N-vinyl diglycoylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone, N-vinyl-5-methyl-3-morpholinone and N-vinyl imidazole; Provided that (A) ≧ (D) and (A) + (D) = about 40 to about 95 weight percent; and when an N-vinyl lactam, N-vinyl succinimide, N-vinyl diglycoylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone, N-vinyl-5-methyl-3-morpholinone or N-vinyl imidazole is used it is present in an amount of less than 20 weight percent.

4,071,509
ARYLENE SULFIDE POLYMER PURIFICATION

James T. Edmonds, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 13, 1976, Ser. No. 714,160

Int. Cl.² C08F *28/00*

U.S. Cl. 260—79 10 Claims

1. A process for the reduction of ash-forming impurities contained in arylene sulfide polymers without extensive degradation of the polymer which comprises:

a. forming a mixture comprising an arylene sulfide polymer containing at least 0.10 weight percent ash-forming impurities or materials, an organic amide, and at least one alkali metal salt selected from the group consisting of alkali metal carboxylates, alkali metal carbonates, and lithium halides selected from the group consisting of lithium chloride, lithium bromide, and lithium iodide, the amount of alkali metal salt present being sufficient to inhibit degradation of the polymer or to increase the molecular weight of the polymer, and

b. heating said mixture formed in (a) at an elevated temperature and for a period of time sufficient to produce an arylene sulfide polymer of appreciably reduced ash content without extensive degradation of said polymer.

4,071,510
PEPTIDES HAVING A HIGH ADRENOCORTICOTROPIC EFFECT AND A METHOD OF PRODUCING THE SAME

Lars Ake Ingemar Carlsson, and Jan Louis Mulder, both of Ferring AB, Fack, S-200 60 Malmo 30, Sweden

Continuation of Ser. No. 533,403, Dec. 16, 1974, abandoned. This application May 4, 1976, Ser. No. 683,144

Int. Cl.² C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 R 2 Claims

1. Peptides having the general formula X—Glu—His—Phe—Arg—Trp—Gly—Lys—Pro—Val—Gly—Lys—Lys—$(Y)_n$—NH_2 wherein X represents ethyloxy carbonyl, benzyloxy carbonyl or D—Ser—Met, and Y represents a residue of a diaminomonocarboxylic acid and n is an integer of 2-4.

4,071,511
METHOD OF REMOVING FORMYL GROUPS FROM N-FORMYL-AMINO ACID AND N-FORMYL-PEPTIDE ESTERS HAVING FREE CARBOXYL GROUPS

Tadashi Takemoto, Toyonaka; Fusayoshi Kakizaki, Kawasaki, and Yasuo Ariyoshi, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 10, 1976, Ser. No. 713,270

Claims priority, application Japan, Aug. 14, 1975, 50-98817

Int. Cl.² C07C *103/52*

U.S. Cl. 260—112.5 R 9 Claims

1. A method of removing the formyl group from the nitrogen atom of an N-formyl-amino acid ester or N-formyl-peptide ester having a free carboxyl group which comprises contacting said ester with a strong acid in a mixture of water and a specific organic solvent, said strong acid having a first dissociation constant of not less than 1.0×10^{-1} at 25° C, said specific organic solvent being selected from the group consisting of monohydric alkanols having 3 or 4 carbon atoms, aliphatic ketones having 3 to 5 carbon atoms and acetonitrile, and said water being used in a volume of from 5 to 30% of that of said specific organic solvent.

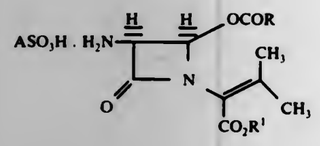
4,071,512

PREPARATION OF 1-OXAPENICILLINS AND INTERMEDIATES THEREFOR

Saul Wolfe, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed June 17, 1975, Ser. No. 587,571
Claims priority, application Canada, June 19, 1974, 202890
Int. Cl.² C07D *205/08, 498/04*
U.S. Cl. 260—239 A **3 Claims**

1. The compound of the formula



wherein A is the residue of a sulfonic acid selected from the group consisting of benzenesulfonic acid and toluenesulfonic acid,

R is benzyl phenoxymethyl, thienylmethyl, allylthionylmethyl, or pentyl,

R^1 is loweralkyl of 1 to 10 carbon atoms, or benzyl.

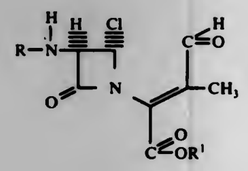
4,071,513

SUBSTITUTED AZETIDINONE ALDEHYDES

Choung Un Kim, North Syracuse, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

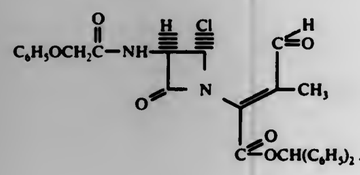
Filed Oct. 1, 1976, Ser. No. 728,697
Int. Cl.² C07D *205/08*
U.S. Cl. 260—239 A **2 Claims**

1. A compound having the formula



wherein R is an amine protecting group and R^1 is the residue of an ester group which can be removed readily.

2. The compound having the formula



4,071,514

WATER DISPERSIBLE ALKYD PAINT COMPOSITION

Lawrence F. Ribbecke, and Chi Chen Shu, both of New York, N.Y., assignors to Sapolin Paints, Inc., Danbury, Conn.

Filed May 20, 1977, Ser. No. 798,961
Int. Cl.² C09D *3/64, 3/72, 5/02*
U.S. Cl. 260—22 M **8 Claims**

1. A method of producing miscible and water dilutable alkyd coating polymers which compises forming of alkyd moiety by reacting a conjugated oil selected from the group consisting of linseed oil, soya oil, safflower oil, sunflower oil and menhaden oil, a dibasic acid anhydride and a polyglycol of molecular weight 600 to 1,200, whereby a miscible and water dilutable alkyd coating polymer is produced, the proportions employed being from 0.2 to 0.4 equivalents of anhydride and 0.4 to 0.8 equivalents of said polyglycol per one equivalent of oil, said method including process temperatures ranging from 350° F. to 550° F.

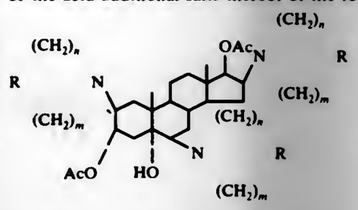
4,071,515

TRIAMINO-ANDROSTANES AND A PROCESS FOR THE PREPARATION OF THE SAID COMPOUNDS

Zoltan Tuba; Maria Marsai; Katalin Biro; Laszlo Szporny; Egon Karpati, and Szabolcs Szeberenyi, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed July 28, 1976, Ser. No. 709,323
Claims priority, application Hungary, Aug. 1, 1975, OE 574
Int. Cl.² C07J *17/00*
U.S. Cl. 260—239.5 **22 Claims**

1. A process for the preparation of new triaminoandrostanes or the acid additional salts thereof of the formula



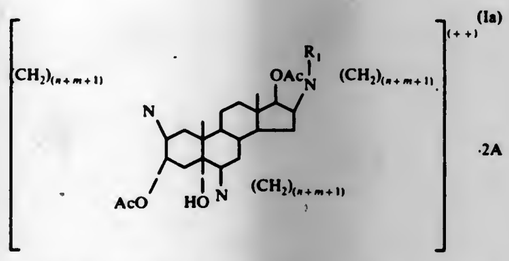
wherein

Ac is an alkylcarbonyl group having 1 to 4 carbon atoms in the alkyl moiety

R is methylene or N-R_2 wherein R_2 is C_{1-3} alkyl and all three substituents R of the same meaning,

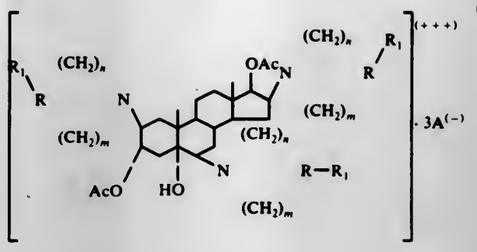
n is 2

m is 2 and for the preparation of di-quaternary salts thereof of the formula



(Ia)

and for the preparation of tri-quaternary salts thereof of the formula



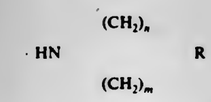
(Ib)

wherein

Ac, R, *n* and *m* are defined above,

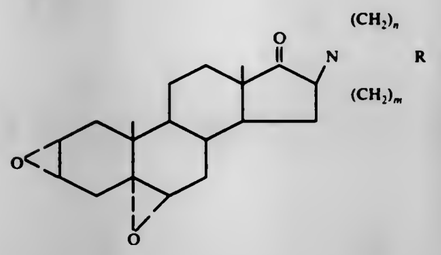
R_1 is alkyl having 1 to 5 carbon atoms and

A is a halogen atom, which comprises reacting an epoxy-androstane with a compound of the formula



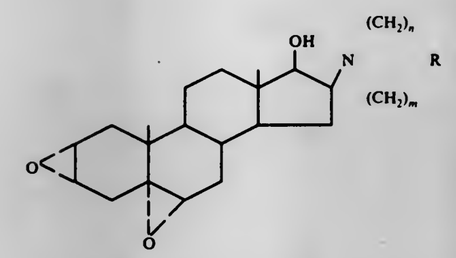
(V)

wherein R, *n*, and *m* are as defined above and reducing the compound of the formula



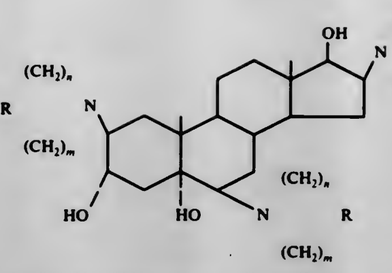
(IV)

thus formed, and reacting a compound of the formula



(III)

thus obtained again with a compound of the formula V — wherein R, *n* and *m* are defined above — with the restriction that R in the latter compound of the formula V is the same as in the first step — and acylating the compound of the formula



(II)

wherein the substituents are as defined above — with a C_{1-5} aliphatic carboxylic acid, carboxylic acid halogenide or carboxylic acid anhydride and converting the obtained compound of the formula I, if desired, into acid addition salts or quaternary salts of the formulae *1a* or *1b*.

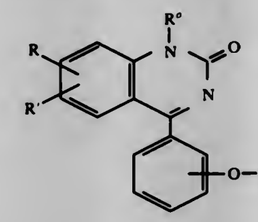
4,071,516

4-(ACYLOXYPHENYL)-QUINAZOLIN-2(1H)-ONES

Hans J. Schwarz, Parsippany, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Aug. 20, 1976, Ser. No. 716,138
Int. Cl.² C07D *239/82, 295/06, 295/10*; A61K *31/505*
U.S. Cl. 260—251 QB **22 Claims**

1. A compound of the formula



wherein

R^o is alkyl of 1 to 6 carbon atoms,

R is hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, nitro or —COOR‴,

R′ is hydrogen, fluoro, chloro, bromo or alkyl of 1 to 4 carbon atoms,

R″ is a carboxylic acid acyl group hydrolyzable in blood by esterases therein, and

R‴ is hydrogen, alkyl of 1 to 4 carbon atoms or a pharmaceutically acceptable cation, with the proviso that R′ is hydrogen or halo when R is —COOR‴.

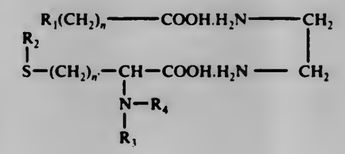
4,071,517

SOLUBLE SALTS CONTAINING SULPHUR

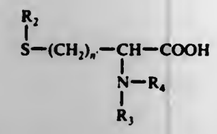
Claude Dufour, 4, Rond-Point Saint-James, 92200 Neuilly, France

Filed Sept. 10, 1975, Ser. No. 611,988
Claims priority, application France, Sept. 10, 1974, 74 30693
Int. Cl.² C07D *473/08*
U.S. Cl. 260—253 **15 Claims**

1. A double salt of ethylenediamine having the general formula:



wherein R_1 is a theophylyl or a theophylyl group substituted in the 8-position with a chloro or bromo group, *n* is an integer from 1 to 4 and



represents an aminocarboxylic acid, wherein R_2 represents a hydrogen atom, a methyl group or a $-CH_2COOH$ group; *n'* is an integer equal to 1 or 2; R_3 represents a hydrogen atom or a $-COCH_3$ group; R_4 represents a hydrogen atom and when sulphur and nitrogen are in a heteromonocyclic ring, *n'* is 1, and R_2 and R_4 represent a methylene group.

4,071,518

DI-AND TRI-SUBSTITUTED 1,2,4-TRIAZOLES

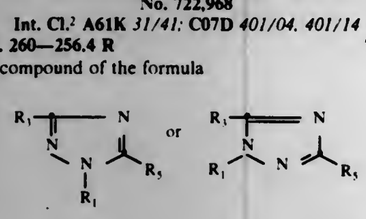
John J. Balcwin, Lansdale, and Frederick C. Novello, Berwyn, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 529,151, Dec. 3, 1974, Pat. No. 4,011,218, which is a continuation of Ser. No. 269,684, July 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 75,785, Sept. 25, 1970, abandoned. This application Sept. 13, 1976, Ser. No. 722,968

Int. Cl.² A61K *31/41*; C07D *401/04*, *401/14*

U.S. Cl. 260—256.4 R **7 Claims**

1. A compound of the formula



and the amine oxides and non-toxic salts thereof, wherein R_1 is hydrogen, lower alkyl, lower alkanoyl, benzyl, menaphthyl carbamoyl, lower alkylcarbamoyl or di-lower alkylcarbamoyl;

R_3 is pyrimidinyl; and

R_5 is pyridyl or pyrimidinyl.

4,071,519

1-CARBAMOYL-5-FLUOROURACIL DERIVATIVES

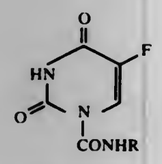
Shoichiro Ozaki, Kamakura, and Haruki Mori, Yokohama, both of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Nov. 5, 1975, Ser. No. 628,974

Int. Cl.² C07D *239/10*; A61K *31/505*

U.S. Cl. 260—256.4 C **7 Claims**

1. A 1-carbamoyl-5-fluorouracil compound having the formula



wherein R represents C_{3-8} alkyl.

4,071,520

METHOD FOR PREPARING CARBOSTYRIL DERIVATIVES

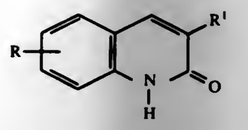
Herbert Louis Wehrmeister, Terre Haute, Ind., assignor to IMC Chemical Group, Inc., Terre Haute, Ind.

Division of Ser. No. 602,602, Aug. 6, 1975, Pat. No. 4,006,148. This application May 24, 1976, Ser. No. 689,400

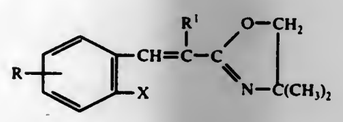
Int. Cl.² C07D *215/22*

U.S. Cl. 260—287 K **11 Claims**

1. A method for preparing carbostyril derivatives represented by the formula:



where R is 5 or 7-chloro, or 7-dimethylamino and R^1 is hydrogen, methyl, phenyl, p-methoxyphenyl, acetamido or 2,4-dichlorophenoxy with the proviso that when R is 7-chloro, R^1 cannot be hydrogen comprising the step of heating at 200°–220° C a phenylethenyl oxazoline represented by the formula



wherein X is a chlorine or bromine atom and R and R^1 have the same meanings defined above until said carbostyril derivative is formed.

4,071,521

PROCESS FOR MAKING 2,6-DIFLUORO PYRIDINE

Terry G. Muench, Prescott, Ariz., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 23, 1976, Ser. No. 716,864

Int. Cl.² C07D *213/04*

U.S. Cl. 260—290 HL **10 Claims**

1. In the process of preparing 2,6-difluoropyridine by reacting KF with an alpha-chloropyridine which is 2,6-dichloro- or 2-chloro-6-fluoropyridine, in dimethyl sulfoxide (DMSO) at an elevated temperature, essentially in the absence of initiators or catalysts, and distilling out the difluoropyridine as formed, the improvement whereby distilled difluoropyridine yields of at least 90% can be attained in reaction periods of 15 hours or less, without employing large excesses of KF or temperatures so elevated as to result in substantial DMSO alteration, said improvement comprising carrying out the reaction by:

a. providing a mixture of solid KF particles and a solution, in DMSO, of said alpha-chloropyridine, said mixture containing

1. less than such amount of any HF source materials as to provide a total of 0.015 grams of HF per 100 grams of KF,
2. a total of less than 0.5 grams of K_2CO_3 and $KHCO_3$ per 100 grams of KF,
3. less than 0.5 grams of water per 100 grams of DMSO; and

b. intensely stirring said mixture and maintaining the temperature thereof within the range of from about 175° to about 192°.

4,071,522

TRITIATED O-BENZOYLECGONINE

James Gordon Christenson, North Caldwell, and Richard R. Muccino, Verona, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 6, 1977, Ser. No. 757,420

Int. Cl.² A61K *43/00*; C07D *471/04*

U.S. Cl. 260—292 **3 Claims**

1. O-(o-iodobenzoyl)ecgonine

2. O-benzoylecgonine-^{3}H having a specific activity greater than 1mCi/mg.

4,071,523

DETERGENT COMPOSITION

William Price Evans, Wirral, and Appayya Raghunath Naik, Birkenhead, both of England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 637,249, Dec. 3, 1975, Pat. No. 4,020,100, which is a continuation of Ser. No. 396,933, Sept. 13, 1973, abandoned. This application Dec. 27, 1976, Ser. No. 754,724

Claims priority, application United Kingdom, Sept. 19, 1972, 43274/72

Int. Cl.² C07D *211/34*

U.S. Cl. 260—293.76 **1 Claim**

1. β(N-para-dodecylbenzyl-piperid-N-yl)propionohydroxamic betaine.

4,071,524

DERIVATIVES OF UREA

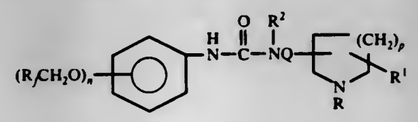
Elden H. Banitt, Woodbury, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Nov. 8, 1976, Ser. No. 739,612

Int. Cl.² C07D *211/56*

U.S. Cl. 260—293.77 **12 Claims**

1. A compound of the formula:



wherein R_f is a perfluoroalkyl radical containing one to three carbon atoms, *n* is one to three, *p* is one or two, Q is a carbon-nitrogen bond, methylene or methylmethylene, R and R^1 are hydrogen, methyl or ethyl, and R^2 is lower alkyl or hydrogen, provided that when Q is a carbon-nitrogen bond it is bonded to the 3 position of the heterocyclic ring and when it is methylene or methylmethylene it is bonded to the 2 position, and pharmaceutically acceptable salts thereof.

4,071,525

SUBSTITUTED PHENYL KETONES

Cedric Herbert Hassall, Welwyn; William Henry Johnson, Hitchin; Antonin Krohn, London; Carey Ernest Smithen, Welwyn, and William Anthony Thomas, Huntingdon, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

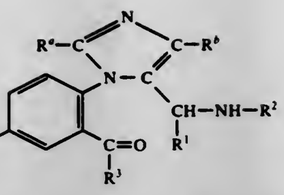
Division of Ser. No. 605,580, Aug. 18, 1975, Pat. No. 4,007,219. This application Nov. 11, 1976, Ser. No. 740,917

Claims priority, application United Kingdom, Aug. 20, 1974, 36567/74; May 21, 1975, 21821/75; Aug. 11, 1975, 36567/75

Int. Cl.² C07D *233/64*

U.S. Cl. 260—295 AM **2 Claims**

1. A compound of the general formula



wherein R^a is selected from the group consisting of a hydrogen atom, lower alkyl and a hydroxymethyl group; R^b is selected from the group consisting of a hydrogen atom, lower alkyl and a hydroxymethyl group; R is selected from the group consisting of a halogen atom, nitro and a trifluoromethyl group; R^1 is a hydrogen atom or a lower alkyl group; R^2 is an acyl group derived from a naturally occuring amino acid and R^3 is a 2-pyridyl group or acid addition salts thereof.

4,071,526

METHOD FOR THE PREPARATION OF ADDITIVES IN ORGANO-ALUMINUM ELECTROLYTE MEDIA

Richard Dotzer, Nurnberg; Hans-Georg Hauschildt, Erlangen, both of Germany; Enno Todt, deceased, late of Erlangen, Germany; by Susanne Todt, heir, Erlangen, Germany; by Ruth Katharina Todt, heir, Erlangen, Germany, and by Ernst Josef Todt, heir, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 12, 1975, Ser. No. 630,949

Claims priority, application Germany, Nov. 13, 1974, 2453829

Int. Cl.² C07F *5/06*

U.S. Cl. 260—299 **9 Claims**

1. A method for the preparation of an additive for influencing the electrocrystalline growth in aprotic oxygen — and water-free organo-aluminum electrolyte media comprising adding at least one organo-aluminum compound of the general formula AlR_3, wherein R is an alkyl radical having from 1 to 4 carbon atoms to a sulfonamide compound selected from the group consisting of o-benzoic acid sulfonimide, N-benzoylbenzene sulfonimide, di-benzene sulfonimide, benzene-o-disulfonimide and benzene sulfonic acid amide in the presence of inert organic solvent at a temperature not exceeding 100° C to form a reaction product of said organo-aluminum compound and said sulfonamide compound dissolved in said inert organic solvent, said reaction product containing an aromatic ring substituent and an alkyl group bound to aluminum.

9. A brightener additive for the direct electrodeposition of bright or mirror-like aluminum on metals and conductive materials comprising the reaction product of claim 1.

4,071,527

CERTAIN BENZOTHIAZOLE COMPOUNDS

Takashi Kamiya, Suita; Tsutomu Toyonaka Teraji; Masashi Hashimoto, Toyonaka; Teruo Kyoto Oku; Osamu Nakaguti, Osaka; Yoshihisa Saito, Takarazuka, and Hitoshi Nakamura, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaki, Japan

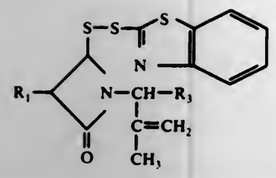
Division of Ser. No. 430,688, Jan. 4, 1974, Pat. No. 3,993,646, which is a continuation-in-part of Ser. No. 266,470, June 26, 1972, abandoned. This application Aug. 5, 1976, Ser. No. 711,980

Claims priority, application Japan, Aug. 18, 1971, 46-62687; June 24, 1971, 46-46158; Aug. 14, 1971, 46-61776; Aug. 14, 1971, 46-61777; Aug. 21, 1971, 46-63885; Aug. 21, 1971, 46-63886; Sept. 9, 1971, 46-70018; Dec. 23, 1971, 46-2516

Int. Cl.² C07D *277/78*

U.S. Cl. 260—306.5 **18 Claims**

1. An oxoazetidine derivative compound of the formula:



wherein R_1 represents cyano(lower)alkanoylamino, phenyl(lower)alkanoylamino, phenoxy(lower)alkanoylamino, phenyl(lower)alkanoylamino substituted by lower alkoxycarbonylamino, phenyl(lower)alkanoylamino substituted by trihalo(lower)alkoxycarbonylamino, hydroxyphenyl(lower)alkanoylamino substituted by lower alkoxycarbonylamino, thienyl(lower)alkanoylamino, sydononyl(lower)alkanoylamino or lower alkoxycarbonyl(lower)alkylideneamino, R_3 represents carboxy, lower alkyl ester, trihalo(lower)alkyl ester, phenyl(lower)alkyl ester wherein phenyl is substituted by hydroxy and two lower alkyl groups or ester with acetoxime and wherein "lower" refers to from 1 to 5 carbon atoms.

4,071,528

CERTAIN THIAZOLIDINE AND TETRAHYDROTHIAZINE COMPOUNDS

Sally Elizabeth Dalton, Brentwood; William George Gingell, Stondon Massey, near Brentwood; David Conwil Jenkins, Barkingside; Leslie George King, London; Glyn Evan Lee, Thorpe Bay, and Garth Molesdale Thompson, Brentwood, all of England, assignors to May & Baker Limited, England

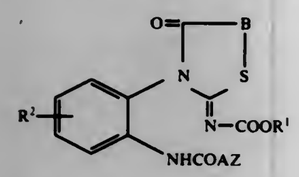
Filed Oct. 27, 1976, Ser. No. 736,170

Claims priority, application United Kingdom, Oct. 29, 1975, 44717/75

Int. Cl.² C07D *277/54, 279/06*

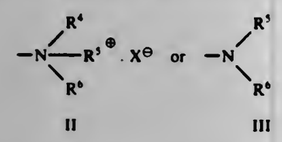
U.S. Cl. 260—306.7 T **17 Claims**

1. A benzene derivative of the formula:



I

wherein R^1 is alkyl of 1 through 4 carbon atoms, R^2 is $-SR^3$, $-SOR^3$, $-SO_2R^3$ or $-OR^3$, where R^3 is alkyl of 1 through 6 carbon atoms, allyl, phenyl, benzyl, cyclopentyl, or cyclohexylmethyl, the position of R^2 on the benzene ring being either para to the group $-NHCOAZ$ or para to the heterocyclo group shown in the formula, A is a bivalent straight-chain aliphatic hydrocarbon radical of 1 through 4 carbon atoms or a said hydrocarbon radical substituted by at least one methyl group, Z is a group of the formula:



II III

wherein R^4 is hydrogen or alkyl or 1 through 4 carbon atoms, R^5 and R^6 are each methyl or ethyl, and X^- represents a pharmaceutically acceptable or agriculturally acceptable anion, and B represents a bivalent methylene or ethylene group, or a bivalent methylene or ethylene group substituted by at least one methyl group.

4,071,529

DERIVATIVES OF 6-AMINOPENICILLANIC ACID

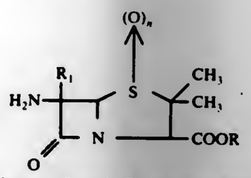
Burton G. Christensen, Scotch Plains, and Lovji D. Cama, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 149,349, June 2, 1971, abandoned. This application Aug. 5, 1974, Ser. No. 495,010

Int. Cl.² C07D *499/42*

U.S. Cl. 260—306.7 C **4 Claims**

1. A compound having the formula:



where *n* is the integer 0 or 1; R_1 is lower alkylthio; and R is selected from the group consisting of hydrogen, lower alkyl, trimethylsilyl, benzyl, methoxybenzyl, and trichloroethyl; and pharmaceutical acceptable salts thereof.

4,071,530

PYRROLIDONES AND PROCESS FOR PREPARING THEM

Klaus Kühlein, Kelkheim, Taunus; Dieter-Bernd Reuschling, Butzbach; Milos Babej, Frankfurt am Main; Wilhelm Bartmann, Neuenhain, Taunus, and Gerhard Beck, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

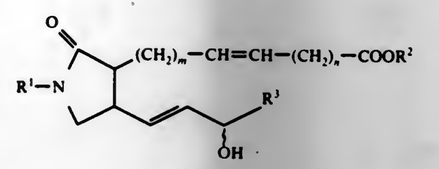
Filed Nov. 4, 1975, Ser. No. 628,479

Claims priority, application Germany, Nov. 6, 1974, 2452536; June 24, 1975, 2528036

Int. Cl.² C07D *207/26*

U.S. Cl. 260—326.45 **4 Claims**

1. A pyrrolidone of the formula



(I)

the corresponding free acid, or a physiologically compatible métal or amine salt thereof, wherein R^1 is straight-chain or branched alkyl having 1 to 6 carbon atoms; R^2 is straight-chain or branched alkyl having 1 to 4 carbon atoms; R^3 is straight-chain or branched alkyl having 1 to 10 carbon atoms; *m* is 1 or 2; *n* is 2 or 3; and wherein the side chains in the 3- and 4-positions in the pyrrolidone ring are in transposition to each other.

4,071,531

OXATHIINO- AND DITHIINO-AMINOACETIC ACIDS

Christian Berger, Le Plessis Robinson; Daniel Farge, Thiais; Georges Gros, Bourg-la-Reine; Mayer Naoum Messer, Bievres, and Claude Moutonnier, Le Plessis-Robinson, all of France, assignors to Rhone-Poulenc Industries, Paris, France

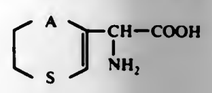
Filed Sept. 26, 1975, Ser. No. 616,991

Claims priority, application France, Sept. 27, 1974, 74 32702

Int. Cl.² C07D *501/60, 327/06, 339/08;* A61K *31/54*

U.S. Cl. 260—327 P **5 Claims**

1. An oxathiino- or dithiino-aminoacetic acid of formula:



(I)

in which A is oxygen or sulphur, in racemic or optically active form, as the free acid or as a derivative thereof selected from an acid addition salt, an acid halide, and the anhydride.

4,071,532

METHOD FOR MANUFACTURING PLASTICS BLANKS

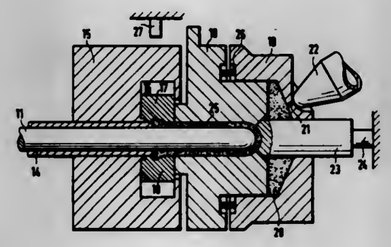
Peter Rose, Henstedt-Ulzburg, Germany, assignor to Heidenreich & Harbeck Zweigniederlassung der Gildemeister AG, Hamburg, Germany

Division of Ser. No. 515,831, Oct. 18, 1974, Pat. No. 3,947,203. This application Nov. 14, 1975, Ser. No. 631,985

Claims priority, application Germany, Dec. 21, 1973, 2364004

Int. Cl.² B29F *1/06, 1/14*

U.S. Cl. 264—328 **1 Claim**



1. In a method of forming plastic blanks, the steps of:

1. accumulating flowable plastic material in a chamber defined by a fixed accumulator and an end portion of an outer movable mold, said outer mold including a cavity in which a movable cylindrical core pin is concentrically positioned to define a mold cavity for forming plastic blanks, and said outer mold including a passageway extending from the end thereof to said cavity;
2. during Step (1), (A) closing the mold passageway with a retractable shaft which extends through the accumulator chamber and (B) axially confining a pair of radially movable neck rings between the outer mold and an axially displaceable end plate;
3. thereafter, displacing the shaft from the closing position to a retracted position to establish fluid communication between the accumulator chamber and the mold cavity;
4. relatively moving the accumulator with respect to the outer mold, the core pin, the neck rings, and the end plate to move the mold end portion into the accumulator chamber to force plastic material through the passageway into the mold cavity;
5. during Step (4), (A) relatively moving the retractable shaft and the mold passageway toward each other, (B) retracting a tubular sleeve from within the mold cavity against a biasing force in response to the flow of plastic material into the cavity, (C) withdrawing the sleeve through the neck rings to expose a neck ring cavity, and (D) axially confining the neck rings between the outer mold and the end plate;
6. terminating the relative movement of the accumulator and the outer mold upon re-engagement of the mold passageway and the retractable shaft;
7. axially displacing the end plate, neck rings, core and sleeve away from the accumulator to telescopically withdraw the core with the plastic material thereon from the mold cavity;
8. during the performance of Step (7), maintaining the end plate, neck rings, sleeve and core pin in a fixed relationship with respect to each other;
9. radially displacing the neck rings away from the core pin to release the molded neck of the plastic material; and
10. displacing the sleeve relative to the core toward the outer mold to eject the plastic material from the core as a molded article.

4,071,533

PHOSPHORAMIDATES AND THIOPHOSPHORAMIDATES AS PESTICIDES

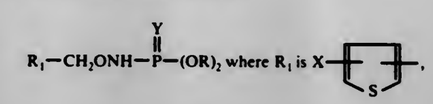
Robert George Stein, Kenosha, Wis., and Terry Lee Couch, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 11, 1976, Ser. No. 665,975

Int. Cl.² C07D *333/12;* A01N *9/36*

U.S. Cl. 260—332.5 **5 Claims**

1. A compound of the formula



and X is hydrogen, halo, alkyl, cyano or nitro, Y is oxygen or sulfur and R is lower alkyl.

4,071,534

PROCESS FOR PRODUCING L-ASCORBIC ACID-2-SULFATE

Eiichi Hayashi, Shizuoka; Kiyoshi Takita, Shimizu; Hironari Sugiyama, Shimizu, and Yukio Nezu, Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 521,767, Nov. 7, 1974, abandoned. This application Aug. 3, 1976, Ser. No. 711,410

Claims priority, application Japan, Nov. 7, 1973, 48-124395; Nov. 8, 1973, 48-124951; United Kingdom, Oct. 29, 1974, 46760/74; Aug. 21, 1975, 34845/75; Germany, Nov. 6, 1974, 2452719; France, Nov. 6, 1974, 74 36797; Canada, Nov. 4, 1974, 212951; Switzerland, Nov. 6, 1974, 14919/74; U.S.S.R., Nov. 6, 1974, 2075017/234

Int. Cl.² C07D *307/62*

U.S. Cl. 260—343.7 **6 Claims**

1. A process for producing a mono- or di-alkali metal salt or alkaline earth metal salt of L-ascorbic acid-2-sulfate which comprises:

A. reacting L-ascorbic acid in which the 5 and 6 positions are protected by a ketone or aldehyde, with dimethyl formamide-sulfur trioxide complex produced by mixing dimethyl formamide and chlorosulfonic acid in an inert solvent and thereafter adding a dehydrohalogenating agent of a tertiary amine, so as to produce a sulfate, and

B. neutralizing the product with an alkali metal hydroxide or an alkaline earth metal hydroxide, and

C. removing said protecting aldehyde or ketone at the 5- and 6-positions.

4,071,535

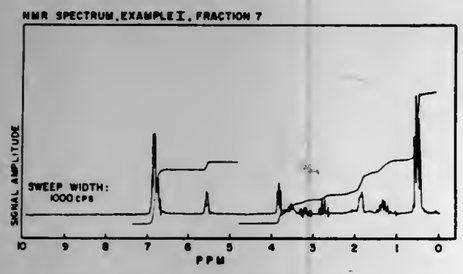
2-ALKYL-4-PHENYL-DIHYDROPYRANS AND PROCESSES FOR AUGMENTING THE ORGANOLEPTIC PROPERTIES OF FOODSTUFFS AND TOBACCO USING ONE OR MORE OF SAID PYRANS

Joaquin Francisco Vinals, Red Bank, N.J.; Jacob Kiwala, Brooklyn, N.Y.; Denis E. Hruza, Sr., Brick Town, N.J.; John B. Hall, Rumson, N.J., and Manfred Hugo Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

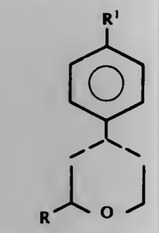
Division of Ser. No. 676,389, April 12, 1976. This application Mar. 23, 1977, Ser. No. 780,684

Int. Cl.[2] C07C *309/20*; A23L *1/226*; A24B *15/04*

U.S. Cl. 260—345.1 **4 Claims**

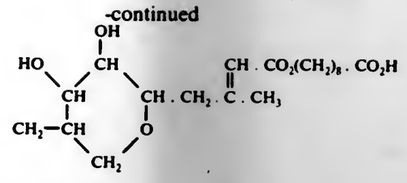


1. A compound having the generic structure:



wherein one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond and R is one of C_2-C_4 alkyl and R^1 is one of C_1-C_3 alkyl.

-continued



, the double bond being in the trans-configuration.

4,071,537

STEROID TOTAL SYNTHESIS PROCESS UTILIZING A CYANOALKYL A-RING PRECURSOR

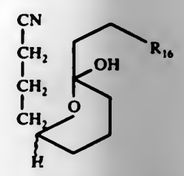
Noal Cohen, Montclair; Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Falls, all of N.J., assignors to Hoffman-La Roche, Inc., Nutley, N.J.

Division of Ser. No. 642,817, Dec. 22, 1975, Pat. No. 4,045,452, which is a division of Ser. No. 450,701, March 13, 1974, Pat. No. 3,991,084, which is a division of Ser. No. 67,296, Aug. 26, 1970, Pat. No. 3,813,417. This application Oct. 26, 1976, Ser. No. 735,570

Int. Cl.[2] C07D *309/22*

U.S. Cl. 260—345.9 S **5 Claims**

1. A compound of the formula



where R_{16} is di(lower) alkylamino mineral, non-optically active hydrocarbyl monocarboxylic or non-optically active hydrocarbyl dicarboxylic acid addition salt or desoxyephedrine mineral, non-optically active hydrocarbyl monocarboxylic or non-optically active hydrocarbyl dicarboxylic acid addition salt.

4,071,536

ANTIBIOTICS

Kevin David Barrow, Kensington, Australia, and Graham Mellows, London, England, assignors to Beecham Group Limited, Great Britain

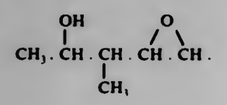
Continuation-in-part of Ser. No. 463,197, April 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 261,042, June 8, 1972, abandoned. This application May 7, 1976, Ser. No. 684,077

Claims priority, application United Kingdom, June 12, 1971, 27653/71

Int. Cl.[2] C07D *309/10*

U.S. Cl. 260—345.8 R **4 Claims**

1. A compound which is the free acid form of pseudomonic acid having the formula (I) or an alkali metal salt or methyl ester of the carboxylic acid group thereof :



(I)

4,071,538

PYRAN ALDEHYDES

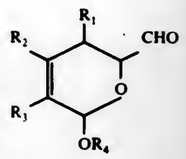
Gary Lee Olson, Westfield, NJ, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 618,708, Oct. 1, 1975, Pat. No. 3,997,529, which is a continuation-in-part of Ser. No. 594,377, July 9, 1975, abandoned. This application Oct. 8, 1976, Ser. No. 731,056

Int. Cl.[2] C07D *309/30*

U.S. Cl. 260—345.9 R **3 Claims**

1. A compound of the formula:



IIa

wherein R_1, R_2 and R_3 are hydrogen or lower alkyl and R_4 is lower alkyl.

4,071,539

PROCESS FOR PREPARING MALEIC ANHYDRIDE FROM C_4 HYDROCARBONS

Ralph O. Kerr, and Bruno J. Barone, both of Houston, Tex., assignors to Denka Chemical Corporation

Division of Ser. No. 473,489, March 28, 1974, Pat. No. 3,980,585. This application Mar. 17, 1976, Ser. No. 667,623

Int. Cl.[2] C07D *307/60*

U.S. Cl. 260—346.75 **6 Claims**

1. A process for the production of maleic anhydride comprising contacting a feed of normal C_4 hydrocarbons comprising at least 90 mol percent n-butane in vapor phase at elevated temperatures with oxygen and a catalyst complex consisting essentially of vanadium, phosphorus, copper and Ce as the active components in the atom ratios, vanadium 1: phosphorus 0.90 to 1.3:copper 0.005 to 0.3:Ce 0.005 to 0.25.

5. A process for the production of maleic anhydride comprising contacting a feed of normal C_4 hydrocarbons in vapor phase at elevated temperatures with oxygen and a catalyst complex consisting essentially of vanadium, phosphorus, copper, tellurium, cerium, and an alkali or alkaline earth metal, as the active components, in the atom ratios vanadium 1:phosphorus 0.90 to 1.3:copper 0.005 to 0.3:tellurium plus cerium 0.005 to 0.25: alkali or alkaline earth metal 0.001 to 0.1.

4,071,540

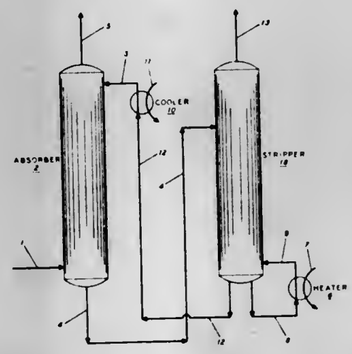
ANHYDRIDE SEPARATION PROCESS

David M. Marquis, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 703,478, July 8, 1976, abandoned, which is a continuation of Ser. No. 550,070, Feb. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 452,488, March 18, 1976, abandoned. This application Aug. 6, 1976, Ser. No. 712,413

Int. Cl.[2] C07D *307/60*, *307/89*

U.S. Cl. 260—346.76 **13 Claims**



1. An absorption process for separating maleic or phthalic anhydride from a gaseous mixture containing the anhydride which comprises contacting the gaseous mixture with a liquid absorbent comprising polymethylbenzophenones, at least a portion of which benzophenones contain at least 3methyl groups, at a temperature for the liquid absorbent between about 20° and 235° C and at a pressure sufficient to effect absorption of the anhydride into the absorbent.

4,071,541

EPOXIDATION

Anthony MacDonald Hildon, Tattenhall, and Peter Frederick Greenhalgh, Widnes, both of England, assignors to Interox Chemicals Limited, London, England

Filed Jan. 16, 1976, Ser. No. 649,747

Claims priority, application United Kingdom, Feb. 4, 1975, 4692/75

Int. Cl.[2] C07D *301/14*

U.S. Cl. 260—348.25 **14 Claims**

1. A continuous process for the epoxidation of an alkene by reaction with a peracid to produce an oxirane, comprising the cyclic steps of:

a. providing an aqueous phase comprising sulfuric acid, hydrogen peroxide and water;

b. providing an organic phase comprising a chlorinated hydrocarbon solvent and a carboxylic acid selected from the group consisting of acetic acid and propionic acid;

c. continuously contacting said aqueous and organic phases countercurrently to produce an aqueous solution comprising sulfuric acid and water and a separate organic solution comprising said chlorinated hydrocarbon solvent and a peracid selected from the group consisting of peracetic acid and perpropionic acid, said peracid being produced by reaction of said carboxylic acid and said hydrogen peroxide;

d. recycling said aqueous solution to said aqueous phase of step (a);

e. contacting said organic solution and an alkene to react the alkene and the peracid of said organic solution to produce a product mixture comprising oxirane, carboxylic acid and chlorinated hydrocarbon;

f. effecting distillation of said product mixture to produce a product phase comprising the oxirane and a recycle phase comprising carboxylic acid and chlorinated hydrocarbon; and

g. recycling said recycle phase to said organic phase of step (b).

4,071,542

SYNTHESIS OF HYDROXYCYCLOPENTEN-1-ONES

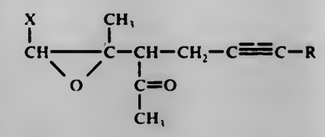
George Buchi, Cambridge, Mass., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 680,949, April 28, 1976, Pat. No. 4,032,577, which is a division of Ser. No. 547,688, Feb. 6, 1975, Pat. No. 3,978,093, which is a division of Ser. No. 158,080, June 29, 1971, Pat. No. 3,884,979. This application Mar. 25, 1977, Ser. No. 781,099

Int. Cl.[2] C07D *303/32*

U.S. Cl. 260—348.48 **2 Claims**

1. The compound of the formula:



wherein R is hydrogen, lower alkyl or lower alkenyl; X is chloro; and the dotted bond can be optionally hydrogenated.

4,071,543

PROCESS FOR THE PREPARATION OF ACYLTAURIDES

Günther Boehmke, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 24, 1976, Ser. No. 717,210
Claims priority, application Germany, Aug. 26, 1975, 2537914
Int. Cl.² C07C *143/90;* C11D *1/28*
U.S. Cl. 260—401 **5 Claims**

1. Process for the preparation of acyltaurides of the general formula:

R-CO-NH-CH_2-CH_2-SO_3M

wherein

R is C_7-C_{21}-alkyl or -alkenyl which is unsubstituted or mono- or di-substituted with hydroxyl; and

M is an alkali metal or alkaline earth metal cation, ammonium, or mono-, di-, or tri-alkanol ammonium comprising reacting a corresponding fatty acid or mixtures thereof with an alkali metal or alkaline earth metal hydroxyethane sulfonate and urea, in a reaction medium consisting essentially of said corresponding fatty acid or mixtures thereof, said alkali metal or alkaline earth metal hydroxyethane sulfonate, and said urea.

4,071,544

PROCESS FOR THE MANUFACTURE OF CITRIC ACID ESTERS OF PARTIAL FATTY ACID GLYCERIDES

Volkbert Bade, Essen, Germany, assignor to Th. Goldschmidt AG, Essen, Germany

Filed Nov. 20, 1975, Ser. No. 633,718
Claims priority, application Germany, Nov. 27, 1974, 2455989
Int. Cl.² C11C *3/02*
U.S. Cl. 260—410.7 **4 Claims**

1. In a method for the manufacture of citric acid esters from the esterification reaction of fatty acid monoglycerides and fatty acid diglycerides with citric acid at elevated temperature, the improvement which comprises carrying out the reaction in acetic acid as a solvent and removing the acetic acid during the reaction by distillation at a rate sufficient to maintain a clear reaction solution with no precipitate therein.

4,071,545

PREPARATION OF S-TRICYCLOHEXYLTIN-O,O-DIISOPROPYL DITHIOPHOSPHATE

Alexander Mihailovski, Kensington, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 619,136, Oct. 2, 1975, abandoned. This application Apr. 6, 1976, Ser. No. 674,257
Int. Cl.² C07F *7/22*
U.S. Cl. 260—429.7 **9 Claims**

1. A process for the production of S-tricyclohexyltin-O,O-diisopropyl dithiophosphate comprising reacting tricyclohexyltin chloride, diisopropyl dithiophosphoric acid and a base selected from the group consisting of alkali metal hydroxides and ammonium hydroxide in a substantially two-phase system comprising an aqueous phase and an organic phase.

4,071,546

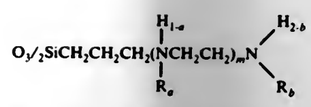
SILICON-CONTAINING CHELATING COMPOSITION AND METHOD THEREFOR

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 30, 1976, Ser. No. 719,015
Int. Cl.² C07F *7/10*
U.S. Cl. 260—448.2 N **17 Claims**

1. A composition comprising a siliceous support having bonded to the surface thereof an organosiloxane consisting essentially of at least 50 mol percent of

A. siloxane units having the formula



wherein R is $-CH_2COOH$ or $-CH_2COO^-M^+$, M^+ is an alkali metal anion, m is 0 or 1, a is 0 or 1 and b is 1 or 2, the total of $(m\text{-}a) + b$ having a value of at least 2; and up to 50 mol percent of

B. siloxane units having the formula

$O_{3/2}SiZ$

wherein Z is a monovalent hydrocarbon radical having from 1 to 6 inclusive carbon atoms, the total of (A) and (B) being 100 mol percent.

4,071,547

3-BROMO-2,2-BIS(BROMOMETHYL)PROPYL BROMOMETHANESULFONATE

Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 4, 1976, Ser. No. 738,813
Int. Cl.² C07C *143/68;* A61K *31/255*
U.S. Cl. 260—456 R **1 Claim**

1. 3-Bromo-2,2-bis(bromomethyl)propyl bromomethanesulfonate.

4,071,548

LUBRICATING OIL ADDITIVE, PROCESS FOR THE SYNTHESIS THEREOF AND LUBRICATING OIL ADDITIVE COMPOSITION

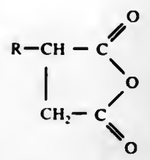
Nobukazu Okamoto, Ohimachi, Japan, assignor to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 310,095, Nov. 28, 1972, Pat. No. 3,991,098. This application Aug. 16, 1976, Ser. No. 714,320
Claims priority, application Japan, Nov. 30, 1971, 46-96580; Nov. 30, 1971, 46-96581
Int. Cl.² C07F *5/04*
U.S. Cl. 260—462 R **1 Claim**

1. A lubricating oil additive composition comprising a reaction product obtained by

I. reacting

A. an alkyl- or alkenylsuccinic anhydride of the formula



wherein R is alkyl or alkenyl having from 40 to 200 carbon atoms, with

B. polyethylene glycol or polypropylene glycol of the formula

$HOR'''(OR''')_pOH$

wherein both R''' in the formula are the same and wherein R''' is ethylene or propylene, and p is an integer from 4 to 19

at a molar ratio of A:B in the range of 1:1 to 1:0.1, at a temperature in the range of 150° to 220° C, until the infrared absorptions for $\nu_{C=O}$ at 1870cm^{-1} and 1790cm^{-1} disappear, an infrared absorption for $\nu_{C=O}$ is present at 1750cm^{-1}, and an infrared absorption for ν_{OH} is present at about 3450cm^{-1}, to obtain a first intermediate product, and then

II. reacting said first intermediate product with

C. a secondary alkanolamine of the formula

$NH(R''' OH)_2$

wherein R''' is as defined above at a molar ratio of said first intermediate product:C in the range of 1:0.3 to 1:1, under reduced pressure, at a temperature in the range of from 150° to 200° C, until infrared absorptions are present for $\nu_{C=O}$ at 1750cm^{-1} and 1650cm^{-1}, an infrared absorption is present for ν_{OH} at about 3450cm^{-1} and no turbidity is observed when the reaction mixture is dissolved in n-pentane and is cooled, and then

III. reacting the product of step II with boric acid or boric acid anhydride at a molar ratio of from 0.3 to one mole of boric acid or boric acid anhydride per one mole of A, under reduced pressure, at a temperature of 100° to 200° C until the infrared absorption for ν_{OH} at about 3450cm^{-1} disappears and no turbidity or precipitate appears when the reaction mixture is dissolved in n-pentane and is cooled.

4,071,549

PROCESS FOR THE PREPARATION OF BIS-(BETA-CYANOETHYL) ALKYL PHOSPHINE FROM TRIS-CYANOETHYL PHOSPHINE

Glenn R. Wilson, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 7, 1977, Ser. No. 775,027
Int. Cl.² C07C *120/00*
U.S. Cl. 260—465.8 R **5 Claims**

1. Process for the preparation of C_1-C_6 clkyl bis-(β-cyanoethyl) phosphine from tris-cyanoethyl phosphine comprising

a. preparing a phosphonium sulfate of tris-cyanoethyl phosphine by alkylating tris-cyanoethyl phosphine with di(C_1-C_6 alkyl) sulfate in an essentially oxygen-free reaction zone;

b. dequarternizing the phosphonium sulfate of tris-cyanoethyl phosphine with methanolic potassium hydroxide in an essentially oxygen-free reaction zone to produce a first reaction mixture including C_1-C_6 alkyl bis-(β-cyanoethyl) phosphine and a precipitate being potassium methyl sulfate; and

c. separating the precipitate from the remainder of the first reaction mixture.

4,071,550

PROCESS FOR THE PRODUCTION OF AMINOCYANOACETIC ACID ETHYL ESTER

Enrico Catalucci, Visp, VS, CH Switzerland, assignor to Lonza, Ltd., Gampel, Valais, Switzerland

Filed Jan. 13, 1977, Ser. No. 759,027
Claims priority, application Switzerland, Jan. 13, 1976, 312/76
Int. Cl.² C07C *120/00*
U.S. Cl. 260—465.4 **3 Claims**

1. In the process for the production of the ethyl ester of aminocyanoacetic acid by reduction of the ethyl ester of nitrosocyanoacetic acid, the improvement characterized in that said ethyl ester of nitrosocyanoacetic acid is hydrogenated in a solvent which is selected from the group consisting of methanol, ethanol and a propanol in the presence of Raney nickel at an excess pressure with hydrogen of 1 to 10 atms. and at a temperature of 10° C. for 40 hours to 60° C. for 8 hours.

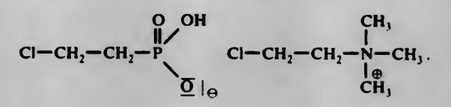
4,071,551

SALTS OF PHOSPHONIC ACIDS

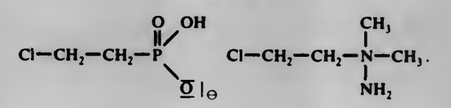
Johann Jung, Limburgerhof; Karl Kiehs, Lampertheim; Bernd Zeeh, Ludwigshafen, and Hans Theobald, Limburgerhof, all of Germany, assignors to VASE Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 14, 1975, Ser. No. 568,147
Int. Cl.² C07C *87/30;* C07D *295/02;* A01N *21/02*
U.S. Cl. 260—501.15 **2 Claims**

1. A salt of a phosphonic acid having the formula



2. A salt of a phosphonic acid having the formula



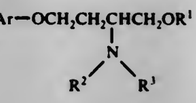
4,071,552

ARYLOXY AMINOBUTANOLS, THEIR PREPARATION AND USE THEREOF

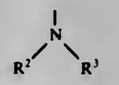
Jean-Marie Ferland, St. Laurent; Real Laliberte, Chomedey; Wilbur Lippmann, Montreal, and Thomas A. Pugsley, Kirkland, all of Canada, assignors to Ayerst McKenna and Harrison Ltd., Montreal, Canada

Filed May 19, 1976, Ser. No. 687,852
Int. Cl.² C07C *91/16;* A61K *31/135;* C07C *93/18*
U.S. Cl. 260—501.17 **15 Claims**

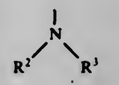
1. A compound of Formula I



in which Ar is phenyl or 1-naphthyl; R^1 is hydrogen or lower alkyl; and R^2 and R^3 are either the same or different selected from the group consisting of hydrogen or lower alkyl having 1-2 carbons; with the proviso that when Ar is 1-naphthyl then



is selected from the group consisting of amino, ethylamino and dimethylamino; and with the proviso that when Ar is phenyl then



is methylamino; and with the further proviso that when R^1 is lower alkyl then R^2 is the same lower alkyl; or a therapeutically acceptable acid addition salt thereof.

4,071,553

METHOD FOR THE PRODUCTION OF TRANS-4-AMINOMETHYL CYCLOHEXANE-1-CARBOXYLIC ACID

Masaaki Takahashi, Tokyo; Akira Iizuka, Higashimurayama, and Kiro Asano, Kukizaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1976, Ser. No. 690,516
Claims priority, application Japan, May 27, 1975, 50-62453
Int. Cl.[2] C07C *51/42, 99/12*
U.S. Cl. 260—514 J 2 Claims

1. A method for the production of trans-4-aminomethyl cyclohexane-1-carboxylic acid, which comprises:

a. thermally melting cis-4-aminomethyl cyclohexane-1-carboxylic acid hydrochloride or a mixture of cis-4-aminomethyl cyclohexane-1-carboxylic acid hydrochloride and trans-4-aminomethyl cyclohexane-1-carboxylic acid hydrochloride without a solvent in an atmosphere of hydrogen chloride gas at a temperature in the range of from 160° C to 248° C, to convert the cis-4-aminomethyl cyclohexane-1-carboxylic acid hydrochloride into trans-4-aminomethyl cyclohexane-1-carboxylic acid hydrochloride; and

b. subsequently dehydrochlorinating the trans-4-aminomethyl cyclohexane-1-carboxylic acid hydrochloride.

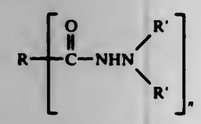
4,071,554

METHOD FOR THE PREPARATION OF N,N-DIALKYL HYDRAZIDES

Robert A. Grimm, Columbus, Ohio; Neil A. Randen, Stillwater, Minn., and Christopher L. Demas, Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 559,806, March 19, 1975, abandoned. This application Aug. 27, 1976, Ser. No. 718,223
Int. Cl.[2] C07C *109/087, 109/10*
U.S. Cl. 260—558 H 6 Claims

1. A method for the preparation of an N,N-dialkyl acid hydrazide of the formula:



wherein *n* is the integer 1 or 2; R is alkylene, m-phenylene or p-phenylene when *n* is 2; R is alkyl or aryl when *n* is 1; R' is lower alkyl; which comprises the steps:

a. reacting hydazine with a lower alkyl ester of a carboxylic acid of the formula R—[COOH]$_n$ wherein R and n have the above-defined meanings to form the corresponding unsubstituted acyl hydrazine;

b. adjusting the pH of the reaction mixture of step (a) to not in excess of 7.5, and thereupon slowly and continuously adding at least 2 moles of a C_1-C_6 aldehyde for each equivalent of acyl hydrazine formed in step (a) in the presence of hydrogen and a Group VIII metal catalyst while maintaining the reaction temperature at from about 40° to 100° C.; and

c. recovering said dialkyl acid hydrazide from the reaction mixture of step (b).

4,071,555

BENZENE-1,3,5-TRIS-ACETOXIME AND THE PROCESS FOR MAKING PHLOROGLUCINOL THEREWITH

Hans Zengel, Kleinwallstradt, and Manfred Bergfeld, Erlenbach, Main, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed May 12, 1977, Ser. No. 796,109
Claims priority, application Germany, May 14, 1976, 2621431
Int. Cl.[2] C07C *131/00*
U.S. Cl. 260—566 A 1 Claim

1. Benzene-1,3,5-tris-acetoxime.

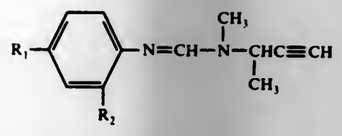
4,071,556

FORMAMIDINE INSECTICIDAL COMPOUNDS

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 11, 1974, Ser. No. 449,792
Int. Cl.[2] C07C *123/00*
U.S. Cl. 260—564 RF 6 Claims

1. The compound having the formula:



wherein R_1 and R_2 are independently methyl or halogen.

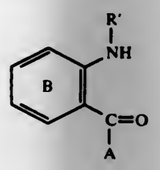
4,071,557

PREPARATION OF 2-SUBSTITUTED AMINOPHENYL KETONES

Paul G. Mattner, Brooklyn, N.Y., and Joseph A. Smith, Fanwood, N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Jan. 29, 1976, Ser. No. 653,362
Int. Cl.[2] C07C *97/10*
U.S. Cl. 260—570 AB 23 Claims

1. The process for producing a 2-monosubstitutedaminophenyl ketone of the formula:



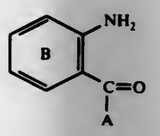
wherein

R' is sec.-alkyl of 3 to 7 carbon atoms, cycloalkyl of 5 to 7 carbon atoms optionally monosubstituted by alkyl of 1 to 4 carbon atoms, optionally mono- or di-substituted benzyl or optionally monosubstituted furylmethyl,

Ring B is optionally mono- or di-substituted or substituted by alkylenedioxy of 1 or 2 carbon atoms, and

A is optionally mono- or di-substituted monocyclic aryl or optionally mono- or di-substituted naphthyl;

from a corresponding 2-unsubstitutedaminophenyl ketone of the formula:



wherein A and B are as above defined, and a carbonyl bearing compound of the formula:



wherein either: (1) R_1' and R_2' are each alkyl of 1 to 5 carbon atoms with the proviso that R_1' and R_2' do not exceed a total of 6 carbon atoms; (2) R_2' is hydrogen and R_1' is optionally mono- or di-substituted phenyl or optionally mono-substituted furyl; and (3) R_1' and R_2' together form an alkylene bridge of 4 to 6 carbon atoms optionally mono-substituted by alkyl of 1 to 4 carbon atoms: comprising reacting at a temperature of from 0° to 35° C.; (A) said 2-unsubstitutedaminophenyl ketone, (B) a strong acid defined by having a strength of at least pH 2.0 in a 10% by weight aqueous solution, (C) a borohydride and (D) a stoichiometric amount of said carbonyl bearing compound, in a multi-component solvent comprising water and at least a 20% molar excess of said carbonyl bearing compound, the mol ratio of borohydride to the unsubstitutedaminophenyl ketone being at least 1.7:1, the mol rato of said acid to borohydride on a hydrogen ion mol equivalent basis being in excess of 1:1 and the individual solvent components and said acid each being in an actual amount and proportioned relative to each other and to said 2-unsubstitutedaminophenyl ketone such as to substantially initiate reaction within said temperature range in a substantially homogeneous solution.

4,071,558

AROMATIC POLYAMINES AND THEIR PREPARATION

Floyd E. Bentley, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Continuation of Ser. No. 671,200, Sept. 28, 1967, abandoned, which is a continuation-in-part of Ser. No. 335,396, Jan. 2, 1964, abandoned, which is a continuation-in-part of Ser. No. 243,648, Dec. 10, 1962, abandoned. This application Dec. 12, 1969, Ser. No. 884,730
Int. Cl.[2] C07C *85/24*
U.S. Cl. 260—570 D 12 Claims

1. A method for preparing a mixture of diaminodiphenylmethanes containing a predetermined percentage of 2,4'-isomers within the range of about 15 wt. % to about 90 wt. % which comprises the steps of:

A. reacting about 1 to about 10 mols aniline per mol formaldehyde in the presence of a solid acidic siliceous catalyst at a first temperature within the range of about 80° to about 150° C. to thereby provide a reaction product comprising diaminodiphenylmethane isomers, secondary amines and higher molecular weight condensation products of aniline and formaldehyde;

B. heating said mixture at a second temperature within the range of about 175° to about 250° C. for about 1 to about 5 hours to thereby convert said secondary amines to polyaminopolyphenylmethane compounds;

C. recovering said diaminodiphenylmethane isomers and higher molecular weight condensation products from the reaction mixture;

whereby the predetermined percentage of 2,4'-isomers is formed by selecting at least one of said first temperature or said second temperature as being the temperature at which the predetermined percentage of 2,4'-isomer is formed.

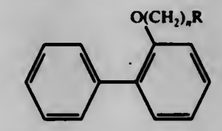
4,071,559

PHARMACEUTICALLY ACTIVE 2-OMEGA-AMINOALKOXYDIPHENYLS

Ryoji Kikumoto, Machida; Akihiro Tobe, Kawasaki; Shinji Tonomura, Tokyo; Hidenobu Ikoma, Kawasaki, and Kazuo Honda, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Apr. 14, 1976, Ser. No. 676,871
Claims priority, application Japan, June 19, 1975, 50-74741
Int. Cl.[2] C07C *93/06*
U.S. Cl. 260—570.7 5 Claims

1. A compound having the formula (I):



(I)

wherein R is selected from the group consisting of amino, C_1-C_5 alkylamino and C_2-C_6 dialkylamino; n is 4; or a pharmaceutically acceptable acid addition salt thereof.

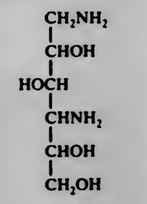
4,071,560

DIAMINOALDITOLS USEFUL IN THE PREPARATION OF ANTIBACTERIAL ANTIBIOTICS AM31α, AM31β, AND AM31γ

Jane Parsons Kirby, New City, and Donald Bruce Borders, Suffern, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 719,226, Aug. 31, 1976, abandoned, which is a division of Ser. No. 559,998, March 19, 1975, Pat. No. 3,987,029, which is a continuation-in-part of Ser. No. 436,008, Jan. 23, 1974, abandoned. This application Mar. 8, 1977, Ser. No. 775,505
Int. Cl.[2] C07C *91/12*
U.S. Cl. 260—584 R 3 Claims

1. A compound selected from the group consisting of a diaminoalditol of the formula:



and the acid-addition salts thereof.

4,071,561

METHOD OF PREVENTION OF DISTURBANCES AND/OR EFFECTS OF DISTURBANCES IN THE REACTION SYSTEM OF OXIDATION OF HYDROCARBONS IN A LIQUID PHASE UNDER PRESSURE WITH GASES CONTAINING OXYGEN

Stanislaw Ciborowski, Warsaw; Zbigniew Szczypinski, Tarnow; Kazimierz Balcerzak; Andrzej Jaworski, both of Warsaw; Andrzej Kasznia; Andrzej Krzysztoforski, both of Tarnow; Stanislaw Kurowski, Warsaw; Jan Redzi, and Jozef Szparski, both of Tarnow, all of Poland, assignors to Zaklady Azotowe im. F. Dzierzinskiego, Tarnow, Poland

Filed Oct. 10, 1975, Ser. No. 621,530
Claims priority, application Poland, Oct. 12, 1974, 174794
Int. Cl.[2] C07C *27/12, 29/00, 45/02, 51/33*
U.S. Cl. 260—586 P 5 Claims

1. A method for the prevention of disturbances and effects of disturbances in a reaction system for the oxidation of hydrocarbons in the liquid phase under pressure with oxygen containing

gases which comprises lowering in the system, the temperature and pressure in the reactor and/or other apparatus of the reaction system by introduction of water in an intensive way at a rate and volume sufficient to lower the temperature of the hydrocarbon to at least 5° C. lower than the boiling point of its hydroazeotrope under atmospheric pressure, or to a temperature at which there does not occur an uncontrolled decomposition of hydroperoxides, while simultaneously preventing a momentary pressure increases due to hydroazeotrope evaporation.

4,071,562

4,5-DIALKOXY-6 OR 7-INDANALDEHYDES

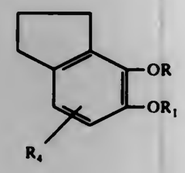
Ian William Mathison; William Ebenezer Solomons, both of Memphis, Tenn., and Raymond Henry Jones, Northport, N.Y., assignors to Marion Laboratories, Inc., Kansas City, Mo.

Division of Ser. No. 689,077, March 24, 1976, which is a division of Ser. No. 455,574, March 28, 1974, Pat. No. 3,963,723. This application Dec. 6, 1976, Ser. No. 747,533

Int. Cl.² C07C *47/52*

U.S. Cl. 260—600 R **2 Claims**

1. A compound of the formula



wherein R and R_1 are the same or different lower alkyl groups, and R_4 is CHO—.

4,071,563

MANUFACTURE OF PENT-4-EN-1-AL

Rudolf Kummer, Frankenthal; Kurt Schwirten, Ludwigshafen, both of Germany; Hans-Dieter Schindler, deceased, late of Neuried, Germany (by Maria Elisabeth Schindler, heir-at-law); by Ute Lang nee Schindler, heir-at-law, Neuried, and by Rainer Schindler, heir-at-law, Hechendorf, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

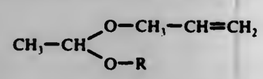
Filed Mar. 24, 1976, Ser. No. 669,844

Claims priority, application Germany, Apr. 19, 1974, 2517447

Int. Cl.² C07C *47/20*

U.S. Cl. 260—601 R **6 Claims**

1. A process for the manufacture of pent-4-en-1-al, wherein an acetaldehyde-acetal of the general formula



[I]

where R is allyl or alkyl of 1 to 3 carbon atoms, is passed in the gas phase and at from 350° to 450° C, over a non-oxidizing, active-surface, particulate catalyst selected from the group consisting of activated carbon, coke, pumice, silica, aluminum oxide, titanium dioxide, zinc oxide and aluminum oxide on which a thin layer of carbon has been applied.

4,071,564

PROCESS FOR THE PRODUCTION OF 2-ALKOXY-4-ALKENYL PHENOLS

Kurt Bauer, Holzminden; Reiner Mölleken, Golmbach Ortsteil Warbsen, and Fritz Exner, Holzminden, all of Germany, assignors to Haarmann & Reimer Gesellschaft mit beschrankter Haftung, Holzminden, Germany

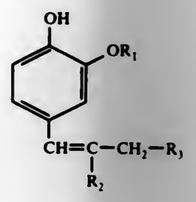
Filed Apr. 14, 1975, Ser. No. 568,090

Claims priority, application Germany, Apr. 19, 1974, 2418972

Int. Cl.² C07C *41/00*

U.S. Cl. 260—613 D **11 Claims**

1. A process for the production of 2-alkoxy-4-alkenyl phenols of the formula

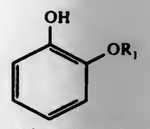


in which

R_1 is methyl or ethyl whilst

R_2 and R_3 which are different from one another, are hydrogen or methyl

comprising reacting in a first stage 2-alkoxy phenols of the formula



in which R_1 has the meaning given above with butyraldehyde or isobutyaraldehyde at a temperature from 0° to 100° C in the presence of an acid catalyst selected from the group consisting of sulphuric acid, hydrochloric acid, phosphoric acid, pyrophosphoric acid, sulphonic acid and acidic inorganic or organic ion exchangers and subsequently thermally splitting the condensation product obtained in a second stage by heating it at a temperature from 150° to 300° C in the presence of a basic catalyst selected from the group consisting of alkali or alkaline earth metals, aluminium, zinc, cadmium and lead and the oxides, hydroxides, alcoholates, phenolates, alkyl carboxylates, carbonates, amides or hydrides of the aforementioned metals.

4,071,565

BUTYLATED, α-METHYL STYRENATED PHENOLIC ANTIOXIDANTS

William S. Hollingshead, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 542,333, Jan. 20, 1975, Pat. No. 3,989,665. This application Feb. 23, 1976, Ser. No. 660,078

Int. Cl.² C07C *39/12*

U.S. Cl. 260—619 R **2 Claims**

1. A phenolic reaction product prepared by a two-step reaction comprising

a. reacting a combination comprising phenol and α-methyl styrene in the presence of a Friedel-Crafts catalyst, and

b. subsequently reacting the phenol/α-methyl styrene reaction product with isobutene in the presence of a Friedel-Crafts catalyst,

wherein the phenol/α-methyl styrene/isobutene molar ratio is from 1:0.5:0.5 to 1:2.5:2.5 and wherein the total molar amount of α-methyl styrene plus isobutene charged is from 2.5 to 3.5 moles per mole of phenol.

4,071,566

PREPARATION OF CRESOLS AND XYLENOLS FROM TETRAMETHYLPHENOLS AND PENTAMETHYLPHENOL

Bruce E. Leach, and Charles M. Starks, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Jan. 22, 1976, Ser. No. 651,667

Int. Cl.² C07C *39/04*

U.S. Cl. 260—621 D **10 Claims**

1. A process for preparing cresols and xylenols which comprises reacting a mixture of tetramethylphenols and pentamethylphenol with phenol in the liquid phase in the presence of an effective amount of a catalyst selected from the group consisting of activated carbon, magnesium oxide, magnesium carbonate and magnesium hydroxide, said process being characterized further in that it is conducted at a temperature in the range of about 375° to about 500° C. and a pressure in the range of about 30 to about 125 atmospheres.

4,071,567

PROCESS FOR THE PRODUCTION OF METHYL TERT-BUTYL ETHER

Francesco Ancillotti, San Donato Milanese; Gianni Oriani, and Ermanno Pescarollo, both of Milan, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Continuation of Ser. No. 579,661, May 21, 1975, abandoned. This application Aug. 12, 1976, Ser. No. 713,981

Claims priority, application Italy, May 21, 1974, 23013/74

Int. Cl.² C07C *41/06*; C06C *41/10*

U.S. Cl. 260—614 A **6 Claims**

1. In a process for the production of methyl tert-butyl ether by reacting isobutylene with methanol at a pressure sufficient to maintain the liquid phase in the presence of a catalyst consisting of an acid ion exchange resin, the improvement which comprises the steps of:

(a) reacting in a first reactor in the presence of the catalyst at a temperature of from 60°–70° C (i) methanol and (ii) a mixture comprised of isobutylene, linear olefins, and methanol, the total quantity of methanol being in stoichiometric excess of the quantity of isobutylene;

(b) subjecting the product of step (a) to distillation to obtain an off gas comprised of linear olefins and less than 2 percent of isobutylene and a bottoms product comprised of methanol and tert-butyl ether;

(c) reacting in a second reactor in the presence of the catalyst at a temperature of from 60° to 70° C the bottoms product of step (b) with a mixture comprised of isobutylene and linear olefins, the space velocity of the mixture being in the range of 20 to 50 LHSV and the respective total quantities of methanol and isobutylene reacted in steps (a) and (c) being stoichiometrically equivalent; and

(d) subjecting the product of step (c) to distillation to produce an off gas comprised of isobutylene, linear olefins, and methanol, and a bottoms product comprised of methyl tert-butyl ether, the off gas being recycled as feed to the reactor in step (a).

4,071,568

PROCESS FOR PRODUCING GLYCOL MONOETHER

Takeru Onoda, Yokohama, and Shimpei Tomita, Kurashiki, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Nov. 29, 1976, Ser. No. 745,927

Claims priority, application Japan, Dec. 12, 1975, 50-148002; Dec. 17, 1975, 50-150386

Int. Cl.² C07C *41/00. 41/10*

U.S. Cl. 260—615 R **19 Claims**

1. A process for producing a glycol monoether which comprises reacting

A. at least one member selected from the group consisting of

i. an acetal having the general formula:

$R^1OCHR^3OR^2$

wherein R^1 and R^2 are the same or different and represent an aliphatic or alicyclic radical of 1 to 8 carbon atoms, or aromatic hydrocarbon radicals of 6 to 7 carbon atoms, R^3 represents hydrogen, an aliphatic or alicyclic radical of 1 to 8 carbon atoms or aromatic hydrocarbons radicals of 6 to 7 carbon atoms and the hydrocarbon radicals may have a substituent inert to the reaction,

ii.

a. an aldehyde having the general formula:

R^3CHO

wherein R^3 is the same as defined above and

b. an alcohol having the general formula:

R^4OH

wherein R^4 is the same as R^1 or R^2, and

iii.

c. paraformaldehyde or trioxane and

d. an alcohol as defined above (b), with

B. carbon monoxide and

C. hydrogen

wherein the molar ratio of hydrogen/carbon monoxide is 0.1 to 10, in the presence of

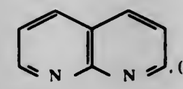
D. a catalyst comprising

1. a cobalt compound selected from the group consisting of cobalt carbonyl, cobalt oxide, organic acid salts of cobalt and inorganic acid salts of cobalt, and

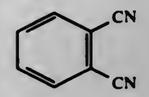
2. at least one compound selected from the group consisting of

e. trivalent organic phosphorus compounds selected from the group consisting of tertiary phosphines having an alkyl group of 1 to 8 carbon aton s, an aryl group of 6 to 7 carbon atoms or a cyclohexyl group, phosphines having two phosphorus atoms and tertiary phosphites corresponding to the above-mentioned phosphines,

f. nitrogen-containing bidentate chelate ligand selected from the group consisting of



$(CH_3)_2NCH_2CH_2N(CH_3)_2$



and dinitriles having the general formula: $NC(CH_2)_nCN$, wherein n is an integer of 1 to 10, and

g. oxygen-containing bidentate chelate ligand selected from the group consisting of $CH_3COCH_2COCH_3$, $CH_3CH_2OCOCH_2COOCH_2CH_3$ and



at a temperature of 50° to 300° C and under the pressure of 10 to 1,000 kg/cm² gauge.

4,071,569

PROCESS FOR PRODUCING PHENOLS

Takeshi Yamahara, Chiba; Tetsuo Takano, Takatsuki; Mitsuhisa Tamura, Osaka, and Hiroshi Yoshihara, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

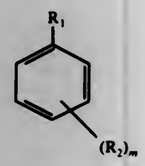
Filed Apr. 26, 1976, Ser. No. 680,445

Claims priority, application Japan, May 2, 1975, 50-53481; May 23, 1975, 50-62321; June 4, 1975, 50-67763

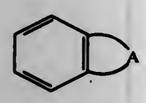
Int. Cl.² C07C *39/06, 39/12*

U.S. Cl. 260—621 C **4 Claims**

1. In the process for producing a phenol by cleaving a secondary alkylbenzene hydroperoxide selected from the group consisting of mono- and di-hydroperoxides of alkylbenzenes of the formula



wherein R_1 is ethyl, β-phenylethyl, benzyl or $-C_nH_{2n+1}$ in which n is an integer of 3 to 12, R_2 is hydrogen, C_1-C_8 alkyl, C_1-C_6 alkoxy or nitro, and m is an integer of 1 to 3, and monohydroperoxides of alkylbenzenes of the formula



wherein A is C_3-C_5 alkylene, which comprises dissolving said secondary alkylbenzene hydroperoxide in an organic solvent which is inert to both the hydroperoxide and the cleavage product to form a solution, heating the solution in the presence of a catalyst at a temperature of 60° to 180° C and separating the desired phenol from the cleavage product, the said solution containing 5 to 30% by weight of the secondary alkylbenzene hydroperoxide, the improvement comprising using sulfur as said catalyst in an amount of 0.001 to 5% by weight based on the weight of the secondary alkylbenzene hydroperoxide.

4,071,570

ARYLPERFLUOROALKANES

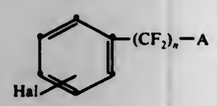
Edward L. Engelhardt, Gwynedd Valley, and Marcia E. Christy, Perkasie, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 470,500, May 16, 1974, Pat. No. 3,978,127, which is a division of Ser. No. 102,130, Dec. 28, 1970, Pat. No. 3,812,177, which is a continuation-in-part of Ser. No. 799,945, Feb. 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 712,616, March 13, 1968, abandoned. This application Feb. 20, 1976, Ser. No. 659,624

Int. Cl.² C07C *25/00*

U.S. Cl. 260—649 F **4 Claims**

1. Compounds having the formula



wherein

n is an integer selected from the group consisting of 2 and 3;

A is a phenyl ring;

Hal is a halogen selected from the group consisting of bromine and iodine.

4,071,571

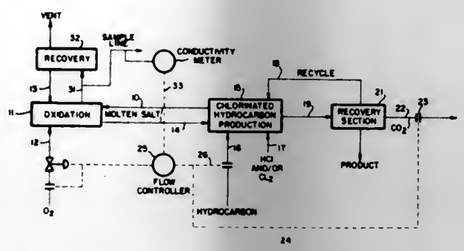
CONTROL OF MOLTEN SALT OXIDATION IN PRODUCTION OF CHLORINATED HYDROCARBONS

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Feb. 23, 1976, Ser. No. 660,251

Int. Cl.² C07C *21/00*

U.S. Cl. 260—654 R **6 Claims**



1. In a process for producing a chlorinated hydrocarbon in a chlorinated hydrocarbon production system by contacting in a first reaction zone a molten salt containing the higher and lower valent chlorides of a multivalent metal with molecular oxygen to produce the oxychloride of the multivalent metal, contacting in a second reaction zone the salt containing the oxychloride with a hydrocarbon to produce an effluent containing chlorinated hydrocarbon and carbon dioxide and venting a carbon dioxide containing stream from the chlorinated hydrocarbon production system, the improvement comprising:

decreasing the amount of oxygen employed in producing the oxychloride in the first reaction zone in response to an increase in the quantity of carbon dioxide in the vented carbon dioxide containing stream to decrease the quantity of oxychloride present in the molten salt and maintain the quantity of oxychloride present in the molten salt to below a predetermined amount and thereby limit carbon dioxide production.

4,071,572

CYCLIC ETHYLENE OXYHYDROCHLORINATION PROCESS WITH REDUCED HYDROCARBON EMISSIONS

Wayne S. Amato, Syracuse; Bhaskar Bandyopadhyay, Camillus; Robert Herbert Fitch, Syracuse, and Bruce Edward Kurtz, Marcellus, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed June 17, 1975, Ser. No. 587,781

Int. Cl.² C07C *17/02*

U.S. Cl. 260—659 A **7 Claims**

1. In a process for producing ethylene dichloride by the oxyhydrochlorination of ethylene wherein (1) ethylene, hydrogen chloride and substantially pure oxygen are fed to a reaction zone containing a Deacon-type catalyst and reacted therein to form ethylene dichloride, (2) a product stream containing ethylene dichloride, water, carbon dioxide, carbon monoxide and unreacted ethylene and oxygen is withdrawn from the reaction zone, and (3) ethylene dichloride and water are removed from the product stream and a major portion of the product stream is thereafter recycled to the reaction zone as a recycle stream, the improvement which comprises: monitoring the oxygen and ethylene content of the recycle stream and adjusting the feed rates of ethylene, hydrogen chloride and oxygen to the reaction zone so as to maintain in the recycle stream a concentration of ethylene within the range of from about 0.1 to 10% by volume, and a concentration of oxygen within the range of from about 0.1 to 10% by volume.

4,071,573

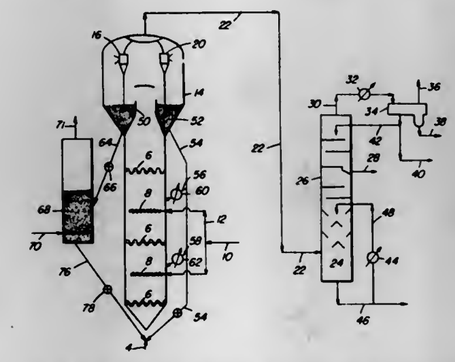
PROLONGING ZEOLITE CATALYST LIFE IN METHANOL CONVERSION TO GASOLINE BY DISPOSING OF EXOTHERMIC REACTION HEAT

Hartley Owen, Belle Mead, and Paul B. Venuto, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 506,157, Sept. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 470,084, May 15, 1974, abandoned. This application Oct. 20, 1976, Ser. No. 733,981

Int. Cl.² C07C *15/02*

U.S. Cl. 260—668 R **4 Claims**



1. In a fluid catalyst operation for effecting the exothermic conversion of chemical reactants comprising hetero compounds selected from the group consisting of alcohols, halides, mercaptans, sulfides, amines, ethers and carbonyl compounds over catalyst particles comprising a crystalline zeolite selected from a class of crystalline zeolites represented by ZSM-5 crystalline zeolite providing a pore opening greater than 5 Angstroms, a silica-to-alumina ratio greater than 12 and a constraint index in the range of 1 to 12, wherein said catalyst with carbonaceous deposit is passed to a catalyst regeneration zone, wherein a mixture of catalyst particles and a reactant hetero compound in a ratio greater than 20 to 1 is formed at a temperature in the range of 400° to 900° F and is passed upwardly through a confined reaction zone as a suspension through a plurality of gas bubble dispersion zones within the reaction zone, and the suspension in the reaction zone is restricted to an exothermic temperature rise not to exceed 100°, followed by separating the suspension upon discharge from the reaction zone into a gasiform product phase and a catalyst particle phase, and directly recycling a portion of the separated catalyst particle phase for admixture with reactant material charged to said reaction zone; the improvement which comprises preheating said chemical reactants by indirect heat exchange within said gas bubble dispersion zones before being introduced into said reaction zone and maintaining the catalyst circulation rate to limit incremental carbon laydown to no more than 1 weight percent.

4,071,574

CONVERSION OF FISCHER-TROPSCH HEAVY PRODUCT TO HIGH QUALITY JET FUEL

Donald Milstein, and Thomas R. Stein, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 29, 1976, Ser. No. 671,451

Int. Cl.² C07C *1/04;* C10G *34/00*

U.S. Cl. 260—676 R **9 Claims**

1. A process for producing a high-quality jet fuel which comprises hydrotreating a wide boiling range hydrocarbon fraction of Fischer-Tropsch synthesis comprising olefins and oxygenates and boiling in the range of about 350° to 850° F;

separating the product of hydrotreating to produce a 650° F minus overhead fraction and a 650° F plus bottoms fraction;

separating the overhead 650 minus fraction to produce a first overhead naphtha fraction comprising 350° F minus material from a 350° F plus bottoms fraction;

admixing at least a portion of said 350° F plus bottom fraction with said 650° F plus bottoms above recovered;

contacting the mixture thus formed with a catalyst comprising a special zeolite having a silica to alumina ratio of at least 12, and a constraint index of 1 to 12 at a temperature in the range of about 500° to 800° F, under hydrogen pressure in the range of about 100 to 800 psig and at a space velocity in the range of about 0.5 to 5 LHSV, to produce a product comprising a C_5 to 350 naphtha boiling range hydrocarbon fraction and a higher boiling distillate boiling range fraction; and

separating said higher boiling distillate fraction into a jet fuel boiling fraction and a higher boiling diesel fuel fraction.

4,071,575

PROCESS FOR PRODUCING 2,6-DIMETHYL-1,3,6-OCTATRIENE

Hiroyuki Morikawa, and Shoji Kitazume, both of Amimachi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed Nov. 1, 1976, Ser. No. 737,069

Claims priority, application Japan, Nov. 11, 1975, 50-135541

Int. Cl.² C07C *3/18*

U.S. Cl. 260—677 R **12 Claims**

1. A process for producing 2,6-dimethyl-1,3,6-octatriene which comprises contacting isoprene with a dimerization catalyst thereby to dimerize the isoprene, said dimerization catalyst comprising a combination of:

I. a zirconium compound selected from the group consisting of:

1. compounds having the general formula

$ZrX_{4-n}Y_n$,

2. compounds having the general formula

$ZrOY'_2$, and

3. complexes of the compound (1) or (2) with a coordinating compound, wherein X represents a halogen atom; Y and Y' respectively represent a member selected from the group consisting of (i) alkoxy and chloroalkoxy groups each having from 1 to 20 carbon atoms, (ii) aryloxy and chloroaryloxy groups wherein each aryloxy group is a member selected from the group consisting of phenoxy and methyl-substituted phenoxy groups, and (iii) acyloxy groups each having the general formula RCOO-wherein R is a member selected from the group consisting of alkyl groups each having from 1 to 20 carbon atoms and aryl groups each having from 6 to 20 carbon atoms; and n is an integer of 1 to 4:

II. an iodine compound which is a member selected from the group consisting of those having either of the general formulas

$R'I_A$ and MeI_B

wherein R' represents a member selected from the group consisting of hydrogen, halogen atoms, straight and branched chain hydrocarbon groups each having from 1 to 20 carbon atoms and cyclic hydrocarbon groups each having from 3 to 10 carbon atoms; A is an integer of 1 to 3; Me represents a metal of Groups I through IV of the periodic table; and B represents the valence of the metal; and

III. an organoaluminum compound having the general formula.

AlR''_mCl_{3-M}

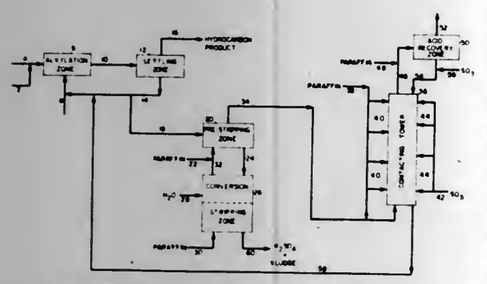
wherein R'' represents a member selected from the group consisting of alkyl groups each having from 1 to 10 carbon atoms, cyclic alkyl groups each having from 3 to 10 carbon atoms, and aryl groups each having 6 to 10 carbon atoms; and m is 1.5 or 2; in which dimerization catalyst, when iodine is present as a ligand in the zirconium compound I, the iodine compound II may be excluded.

4,071,576

PROCESS FOR REGENERATING FLUOROSULFURIC ACID CATALYST

William C. Behrmann, and Robert H. Caulk, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Feb. 28, 1977, Ser. No. 772,643
Int. Cl.² C07C *3/54*
U.S. Cl. 260—683.47 **18 Claims**



1. In an alkylation process which comprises:

a. contacting an olefin with a paraffin in an alkylation zone under alkylation conditions and with a catalyst comprising fluorosulfuric acid to form a reaction mixture of fluorosulfuric acid catalyst phase containing an organic sludge formed during said process and a hydrocarbon phase containing alkylate product;

b. separating said hydrocarbon phase containing alkylate product from said fluorosulfuric acid catalyst phase the improvement which comprises regenerating said acid catalyst phase according to the following steps:

c. stripping a portion of the fluorosulfuric acid from the acid catalyst phase separated in step (b) with a paraffin to form a stripped acid phase containing fluorosulfuric acid and said organic sludge and a gaseous phase containing paraffin and fluorosulfuric acid;

d. contacting said stripped acid phase formed in step (c) with water to form an acid-water mixture, thereby converting at least a portion of the fluorosulfuric acid contained therein to hydrogen fluoride and sulfuric acid;

e. stripping at least a portion of the hydrogen fluoride from said acid-water mixture formed in step (d) with a paraffin to form a gaseous phase comprising hydrogen fluoride and paraffin and a liquid phase comprising sulfuric acid and sludge;

f. passing the gaseous phases formed in step (c) and step (e) into a contacting zone and cooling said phases therein with liquid paraffin to form a liquid-vapor mixture comprising a liquid phase containing fluorosulfuric acid and a vapor phase containing hydrogen fluoride, fluorosulfuric acid and paraffin;

g. treating the vapor phase formed in step (f) in said contacting zone with at least a stoichiometric amount of liquid sulfur trioxide based on hydrogen fluoride, a portion of said liquid sulfur trixoide being dissolved in a liquid stream of fluorosulfuric acid flowing countercurrent to the flow of said vapor to convert the hydrogen fluoride present therein to fluorosulfuric acid, thereby forming a liquid phase of regenerated fluorosulfuric acid and a gas phase containing predominantly paraffin and a minor amount of fluorosulfuric acid;

h. cooling the gas phase formed in step (g) to a temperature at which substantially all of the fluorosulfuric acid present therein in condensed, thereby forming a liquid phase containing predominantly regenerated fluorosulfuric acid and a gas phase containing substantially pure paraffin, and

i. using at least a portion of the liquid phase formed in step (h) as said liquid fluorosulfuric acid stream in step (g).

4,071,577

TOUGHENED MERCAPTOSILOXANE MODIFIED EMULSION POLYMERIZED VINYLIC POLYMERS

James R. Falender, Sanford; Claudia M. Mettler, and John C. Saam, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 23, 1976, Ser. No. 679,595
Int. Cl.² C08L *83/10*
U.S. Cl. 260—827 **7 Claims**

1. A thermoplastic vinylic polymer having improved impact strength made by the method which comprises polymerizing (1) a vinylic monomer selected from the group consisting of styrenic monomers, methyl methacrylate, mixtures of major amounts of styrenic monomers and minor amounts of monomers selected from the group consisting of acrylic monomers, alpha-methylstyrene, vinyl halide monomers, vinyl acetate, butadiene monomers and acrylonitrile monomers and mixtures of major amounts of methyl methacrylate and minor amounts of monomers selected from the group consisting of other acrylic monomers, styrenic monomers, butadiene monomers, vinyl halide monomers, vinyl acetate, alpha-methylstyrene, and acrylonitrile monomers, in an aqueous emulsion of (2) a copolymer of dimethylsiloxane, from 0.3 to 10 mol percent mercaptosiloxane of the unit formula $HSR'SiR''_nO_{3-n/2}$ in which R' is a divalent or trivalent saturated aliphatic hydrocarbon radical of 1 to 18 carbon atoms, two valences of R' being attached to the same silicon atom when R' is trivalent, R is a monovalent hydrocarbon radical free of aliphatic unsaturation of 1 to 6 carbon atoms and n is 0 to 2 and sufficient $R''SiO_{3/2}$ or SiO_2 units to give a percent volume swell of the copolymer of 500 to 1,600 percent in benzene, R'' being of the group HSR'— and R groups, in the presence of a free radical generator, whereby a thermoplastic matrix having dispersed therein particles of (2) is obtained, the proportions of (1) and (2) being from 1 to 40 percent by weight (2) based on the combined weights of (1) and (2).

4,071,578

ONE-COAT POLYESTER-BASED COATING AND METHOD OF MAKING SAME

Edward A. Lasher, Beverly Hills, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Division of Ser. No. 331,228, Feb. 9, 1973, abandoned. This application June 30, 1975, Ser. No. 591,739
Int. Cl.² C08L *61/32, 29/08*
U.S. Cl. 260—850 **4 Claims**

1. A method of making a one-coat, coatings formulation, comprising the steps of: esterifying a reaction mixture comprising

a. about 5% to about 9% by weight of a triol selected from the group consisting of trimethylol ethane, trimethylol propane, trimethylol butane, hexanetriol and pentanetriol,

b. about 35% to about 48% by weight of a diol selected from the group consisting of 1,2 and 1,3 propylene glycol, 1,3 and 1,4 butylene glycol, 1,5 pentane diol, 1,6 hexanediol, cyclohexane dimethanol, 2-ethyl, 2-methyl, 1,3 propane diol, neopentyl glycol, diethylene glycol and dipropylene glycol,

c. about 21% to about 42% by weight of a cyclic dicarboxylic acid selected from the group consisting of orthophthalic acid, isophthalic acid, terephthalic acid, tetrahydrophthalic acid, hexahydrophthalic acid, endomethylene tetrahydrophthalic acid, and anhydrides thereof,

d. about 5% to 15% by weight of an unsaturated aliphatic dicarboxylic acid selected from the group consisting of maleic acid, itaconic acid, fumaric acid, citraconic acid, mesoconic acid, teraconic acid, and anhydrides thereof,

e. about 16% to about 23% by weight of a saturated, aliphatic dicarboxylic acid selected from the group consisting of malonic acid, succinic acid, glutaric acid, adipic acid, suberic acid, azelaic acid, trimethyl adipic acid, sebacic acid, dodecyl succinic acid and anhydrides thereof, and then reacting the resulting first, polyester resin obtained by said esterification with

f. a styrene-allyl alcohol copolymer having a molecular weight of about 1600 and a styrene/allyl alcohol weight ratio of about 3:1, and being present in an amount up to about 12% by weight sufficient to provide improved coating resistance to boiling water when subjected to severe bending, to produce a second polyester resin; and reacting said second polyester resin with an aminoplast resin, with the latter being present in an amount between about 5% and about 25% by weight of the total weight of said second polyester and aminoplast resins, to cross-link said second polyester resin.

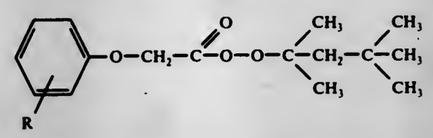
4,071,579

NOVEL PERESTERS SUITABLE FOR INITIATING THE POLYMERIZATION OR COPOLYMERIZATION OF ETHYLENICALLY UNSATURATED COMPOUNDS

Hendrik Harm Jannes Oosterwijk, Diepenveen, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 592,080, June 30, 1975, Pat. No. 4,016,187. This application Sept. 7, 1976, Ser. No. 721,045
Claims priority, application Netherlands, July 5, 1974, 7409110
Int. Cl.² C08F *14/06, 4/34*; C08K *5/04*; C08L *67/06*
U.S. Cl. 260—866 **8 Claims**

1. A process for polymerizing an ethylenically unsaturated compound or the copolymerization of at least two ethylenically unsaturated compounds in the presence of an initiating amount of a perester having the formula



where R represents hydrogen or an alkyl group or an alkoxy group having 1–6 C-atoms.

4,071,580

GRAFT POLYMERS

Heinrich Alberts, Cologne, and Herbert Bartl, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Feb. 27, 1976, Ser. No. 662,263
Claims priority, application Germany, Mar. 4, 1975, 2509403
Int. Cl.² C08F *255/02, 263/04, 263/02*
U.S. Cl. 260—878 R **14 Claims**

1. A process for preparing a graft polymer from ethylene homopolymer or copolymer and olefinically unsaturated monomers in the presence of a radical forming agent in homogeneous or heterogeneous phase, wherein a monomer mixture of acrylonitrile or methacrylonitrile, at least one aromatic monovinyl compound and vinyl chloride are polymerized in the presence of an ethylene homopolymer or copolymer.

4,071,581

PROCESS FOR PREPARING MODIFIED POLYOLEFIN WAXES

Nobuo Yokoyama, Yokohama, Japan, assignor to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1977, Ser. No. 773,717
Claims priority, application Japan, Mar. 8, 1976, 51-24078
Int. Cl.² C08F *8/46, 255/02*
U.S. Cl. 260—878 R **4 Claims**

1. A process for preparing a modified polyolefin wax having improved hardness and gloss, comprising reacting a waxy polyolefin having a molecular weight of 400 - 5,000 with maleic anhydride at a temperature of 120° -300° C to obtain a maleinised wax and then reacting the thus-obtained maleinised wax with water in an amount of 2 - 80 parts by weight per 100 parts by weight of the maleic anhydride reacted with the waxy polyolefin, at a temperature of 100° - 180° C.

4,071,582

METHOD OF POLYMERIZING VINYL HALIDE WITH OLEFIN POLYMERS AND COPOLYMERS AND COMPOSITIONS THEREOF

Akio Takahashi, Amherst, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 427,895, Dec. 26, 1973, which is a continuation-in-part of Ser. No. 251,099, May 8, 1972, abandoned. This application Apr. 5, 1976, Ser. No. 674,202
Int. Cl.² C08F *279/00*
U.S. Cl. 260—878 R **28 Claims**

1. In a process for the preparation of a vinyl chloride polymer comprising polymerizing in bulk in liquid phase in the presence of a trunk polymer and a free radical initiator compound for said polymerization, a vinyl halide monomer either alone or in combination with up to 50% by weight based on the total weight of monomer, of another ethylenically unsaturated monomer copolymerizable therewith, the improvement which comprises carrying out the polymerization in the presence of about 0.05% to about 20% by weight, based upon said vinyl halide monomer, of a trunk polymer consisting essentially of an olefin trunk polymer of at least two aliphatic hydrocarbon olefin monomers of 2 to 8 carbon atoms and no more than 15% by weight, based on the weight of said olefin polymer of an aliphatic hydrocarbon non-conjugated polyene of 4 to 18 carbon atoms, said olefin polymer being soluble, partially soluble, or dispersible in said monomer or monomers, and said olefin polymer having a weight average molecular weight of about 50,000 to about 1,000,000.

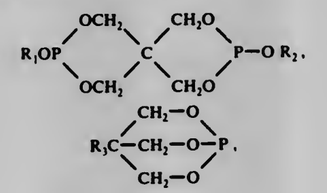
4,071,583

CYCLIC PHOSPHONATES

Ingenuin Hechenbleikner, West Cornwall, Conn., assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 565,699, April 7, 1975, Pat. No. 3,978,166. This application June 10, 1976, Ser. No. 694,580
The portion of the term of this patent subsequent to Aug. 31, 1993, has been disclaimed.
Int. Cl.² C07F *9/40*
U.S. Cl. 260—927 R **81 Claims**

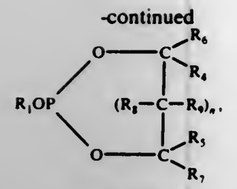
1. A process of (A) preparing a phosphonate consisting essentially of heating an alcohol with a phosphite until said phosphonate forms, said phosphite having a formula selected from the group consisting of:

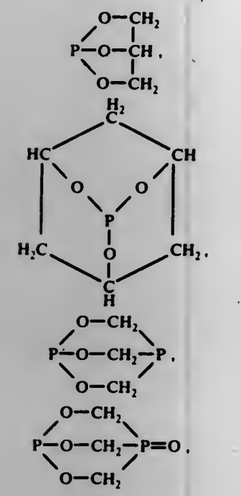


(1)

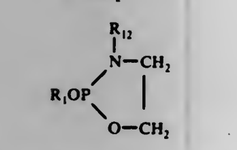
(2)

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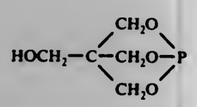


and



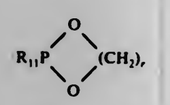
where R_1 and R_2 are alkyl, alkenyl or aralkyl, R_3 is alkyl of 1 to 17 carbon atoms or hydroxymethyl, R_4, R_5, R_6, R_7, R_8 and R_9 are hydrogen or lower alkyl and R_{12} is alkyl of 1 to 18 carbon atoms and n is 0, 1 or 2,

said alcohol having the formula R_{13} OH or the formula $HOR_{15}OH$ where R_{13} is normal alkyl of 3 to 4 carbon atoms or the residue of a monohydric alcohol having a pKa below that of n-propyl alcohol from which residue the OH is removed and R_{15} is $—CH_2—(R_{16})_m—CH_2—$ where R_{16} is alkylene and m is zero or an integer, or (B) preparing a chass-linked polymeric phosphonate by heating at 160° to 250° C. pentaerythritol phosphite of the formula



(9)

without another alcohol until it self polymerizes to form said phosphonate, or (C) preparing a phosphinate by heating a phosphonite with an alcohol until said phosphinate forms, said phosphonite having the formula



(10)

where R_{11} is aryl or alkyl of 1 to 18 carbon atoms and r is 1 to 2, said alcohol having the formula $R_{13}OH$ or $HOR_{15}OH$.

65. The product prepared by the process of claim 1.

4,071,584

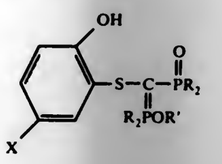
(3) **HYDROXYPHENYLTHIOPHOSPHORANYLIDENE ORGANOPHOSPHORUS COMPOUNDS**

Gail H. Birum, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 3, 1977, Ser. No. 756,504
Int. Cl.² C07F 9/08; C08K 5/53
U.S. Cl. 260—932 **6 Claims**

1. As a composition of matter

(4)



(5)

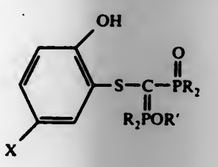
where
X is Br, Cl, F, CF_3, NO_2, CN, CO_2R', SO_2R' or



(6)

R is phenyl, alkyl of 1 to 3 carbon atoms, OR', and
R' is alkyl of 1 to 6 carbon atoms.

(7) 2. Process for the production of compounds of the formula

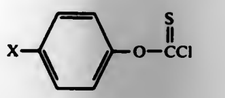


(8)

where
X is Br, Cl, F, CF_3, NO_2, CN, CO_2R', SO_2R', or



and R is phenyl, alkyl of 1 to 3 carbon atoms, OR', and
R' is alkyl of 1 to 6 carbon atoms, which comprises contacting at least 2 molar proportions of an ester of a trivalent phosphorus acid, having the formula, R_2POR', with 1 molar proportion of a compound having the formula



at a temperature of 0° to 100° C.

4,071,585

VARIABLE VENTURI TYPE CARBURETOR

Masami Konishi, Toyota; Norihiko Nakamura, Mishima; Takaaki Itou, and Kazuo Kikuchi, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisan Industry Company, Limited, both of, Japan

Filed Mar. 29, 1977, Ser. No. 782,394
Claims priority, application Japan, Dec. 29, 1976, 51-15947
Int. Cl.² F02M 1/10
U.S. Cl. 261—36 A **17 Claims**

1. A variable venturi type carburetor of an internal combustion engine, comprising:

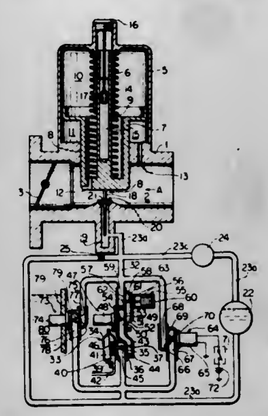
a housing;

a bore extending through said housing and having an inner wall defining an intake passage;

a suction piston movably mounted in said housing and having a bottom end face projecting into said intake passage, said bottom end face of said suction piston and said inner wall of said intake passage defining a venturi, said suction piston moving up and down in response to a change in the vacuum produced in said intake passage downstream of said venturi for maintaining the velocity of air flowing into said venturi at a constant value;

a jet disposed on the inner wall of said intake passage at a position facing said bottom end face of said suction piston;

a needle fixed onto said bottom end face of said suction piston and entering into said jet, said jet and said needle



defining an annular opening throough which fuel is injected into said intake passage;

a fuel reservoir;

a fuel recirculating pump having a suction side;

a fuel recirculating passage communicating said fuel reservoir with the suction side of said fuel recirculating pump;

a restricted opening disposed in said fuel recirculating passage for forming a vacuum zone in said fuel recirculating passage located between said restricted opening and the suction side of said fuel recirculating pump, and;

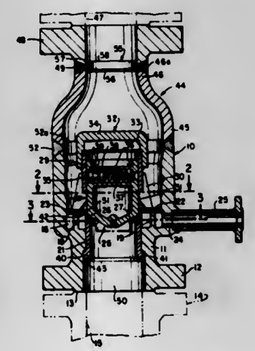
a fuel supply passage communicating said vacuum zone with said jet.

4,071,586

VARIABLE ORIFICE DESUPERHEATER

Fritz O. Seger, Fairview, Pa., assignor to Copes-Vulcan, Inc., Lake City, Pa.

Filed Oct. 26, 1976, Ser. No. 735,279
Int. Cl.² B01F 3/04
U.S. Cl. 261—62 **11 Claims**



1. In a variable orifice steam desuperheater unit adapted for in-line operation in conjunction with steam piping upstream and downstream therefrom and of the type comprising

a. upper and lower housing sections joined together to form a mixing chamber of enlarged diameter relative to the upstream and downstream piping,

b. said joined housing sections being adapted for connection to said upstream and downstream piping,

c. an orifice plate fixed in said lower housing and forming therewith an annular water injection chamber provided with an annular atomizing orifice,

d. said water inlet chamber being adapted for connection to water inlet piping, to supply water to said orifice,

e. an axially disposed valve guide structure mounted on the downstream side of said orifice plate,

f. a generally cylindrical valve plug slideably received in said guide structure, and

g. annular means forming a valve seat for cooperation with said valve plug in the region of said atomizing orifice, the improvement characterized by,

h. said lower housing being of unitary construction and extending from a region substantially below said orifice to a region substantially above said orifice,

i. said upper and lower housings being secured together by an annular housing weld in the general region of said valve and valve guide structure,

j. said lower housing having an inlet opening sufficiently large to accommodate axial insertion of said valve plug through said inlet opening and into said valve guide structure,

k. said inlet opening being adapted for connection with the upstream steam piping,

l. said annular means comprising a sleeve-like insert adapted for upward axial telescopic insertion into said inlet opening after insertion of said valve plug and being fixedly secured therein below said valve plug,

m. said sleeve-like insert forming an annular valve seat for cooperation with said valve plug.

4,071,587

METHOD OF MAKING ZRH FUEL ELEMENT

George H. Eggers, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Sept. 25, 1975, Ser. No. 616,584
Int. Cl.² G21C 21/00
U.S. Cl. 264—.5 **10 Claims**

1. A method of making a nuclear fuel element for a nuclear fission reactor, which method comprises

providing a solid body of an alloy of zirconium and nuclear fuel metal containing nuclear fuel metal in an amount of between about 5 and about 20 weight percent,

exposing said body to hydrogen at an elevated temperature to transform said zirconium to zirconium hydride having a hydrogen-to-zirconium ratio of at least about 1.5 to 1,

exposing said hydrided alloy to oxygen at a temperature below said elevated temperature to form a continuous oxide layer about the exterior surface of said body and

enclosing said hydrided alloy in a gastight container to form a nuclear fuel element.

4,071,588

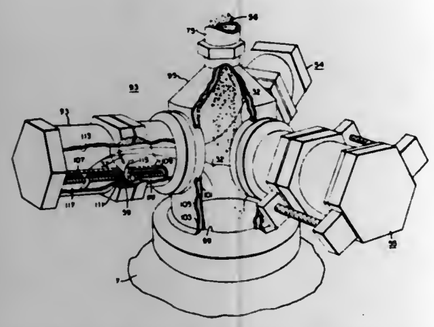
PROCESS FOR PRODUCTION OF MAGNETITE SPHERES WITH AN ARC HEATER

Maurice G. Fey, Plum Borough; Charles B. Wolf, Irwin; Paul E. Martin, West Mifflin Borough, and Francis J. Harvey, II, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 603,578, Aug. 11, 1975, abandoned. This application Dec. 9, 1976, Ser. No. 748,794
Int. Cl.² B29C 23/00
U.S. Cl. 264—15 **9 Claims**

1. A process for producing particulated magnetite spheres by thermal fusion of magnetite ore, comprising:

a. striking an electric arc in an axial gap between generally hollow, cylindrical electrodes, said electrodes forming a chamber for said arc,
b. causing the arc to rotate and form a substantially cylindrical arc path between the electrodes,
c. directing gas through the gap into the arc chamber to thereby form an elongated arc heated gas jet,



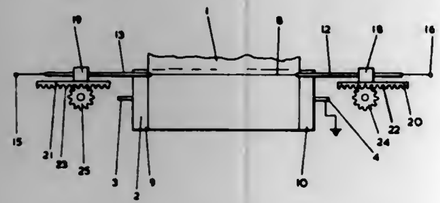
d. introducing particles of magnetite ore having a non-spherical shape with sufficient momentum into the arc heated gas jet to melt the particles to effect spheriodization by formation of droplets by surface tension, and
e. cooling the droplets to solid state to preserve sphericity.

4,071,589

QUENCHING OF POLYMERIC FILM

Raymond John Latham, Stoke-on-Trent, and Arthur John Holloway, Hertford, both of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 498,852, Aug. 19, 1974, Pat. No. 3,982,863, which is a continuation-in-part of Ser. No. 358,346, May 8, 1973, abandoned. This application Apr. 14, 1976, Ser. No. 676,673
Claims priority, application United Kingdom, May 12, 1972, 22341/72
Int. Cl.² B29D *7/22*
U.S. Cl. 264—22 **5 Claims**



1. In a process for casting a molten polymeric film upon an electrically earthed casting surface which comprises passing the film past a pinning wire electrode which extends transversely across the casting surface and is connected to a high voltage electrical source, the pinning wire being supported in spaced relation from the molten film and depositing electrostatic charges upon the molten film from the pinning wire electrode in the proximity of or prior to the region of first contact of the film and the casting surface, the pinning wire electrode being electrically insulated by dielectric insulators located beyond the film edges, the improvement which comprises monitoring the film by means of a sensor for any transverse fluctuations which may occur in the film edges and moving the dielectric insulators along the wire electrode by an amount corresponding to any such transverse fluctuations in response to said sensor whereby sparking between the wire electrode and the margins of the casting surface is impeded.

4,071,590

COMPOSITE ASYMMETRICAL MEMBRANES

Heinrich Strathmann, Tubingen, Germany, assignor to Forschungsinstitute Bergof GmbH, Turbingen, Germany

Filed Oct. 31, 1975, Ser. No. 627,684
Claims priority, application Germany, Nov. 2, 1974, 2452026
Int. Cl.² B01D *39/04*
U.S. Cl. 264—45.1 **4 Claims**

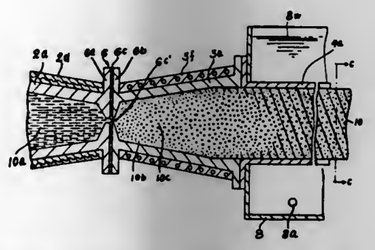
1. Process for the manufacture of composite asymmetrical membranes in the form of film, hollow fibre or tube membranes from polymers, by applying a thin film as filtration membrane onto a porous supporting membrane, characterized in that the supporting membrane and the filtration membrane of the composite asymmetrical membrane are prepared from the same polymer material and in such a way that from a solution of the first stage of a two-stage polymer, there is prepared an integral-asymmetrical porous supporting membrane which is then converted into the insoluble second stage of the two-stage polymer by means of a thermal or chemical cyclisation reaction, whereupon a solution of the first stage of the two-stage polymer is applied onto the surface of the supporting membrane thus formed, and the solvent is then evaporated, the filtration membrane being thus formed by conversion of the polymer into the insoluble second stage.

4,071,591

METHOD OF MANUFACTURING FOAMED THERMOPLASTIC RESIN PROFILES

Seizo Kobayashi; Toshiharu Hirayama, both of Yokohama; Takeshi Kamiya, Kamakura; Seiju Kezuka, and Hidesuke Takeuchi, both of Yokohama, all of Japan, assignors to Nippon Petrochemicals Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 367,806, June 7, 1973, abandoned. This application Aug. 11, 1975, Ser. No. 603,766
Int. Cl.² B29D *27/00*
U.S. Cl. 264—45.3 **6 Claims**



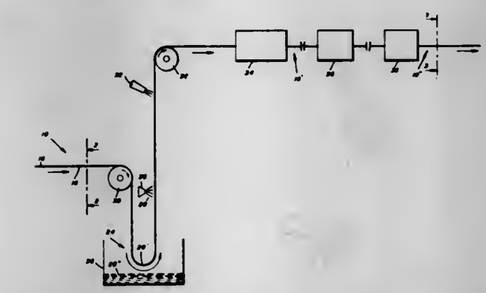
1. A method of continuously extruding a thermoplastic body having a foamed inner portion and a dense surface layer from a thermoplastic resin selected from the group consisting of polyethylene, polypropylene, polystyrene and a mixture thereof comprising:
a. a first step of melting and kneading in a screw extruder a mixture of a thermoplastic resin and a thermally decomposable foaming agent having a decomposition temperature higher than the softening temperature of the resin, at a temperature above the softening temperature of the resin and below the decomposition temperature of the foaming agent;
b. a second step of heating the resulting mass of molten mixture, under pressure without substantial mixing action, to a temperature above the decomposition temperature of the foaming agent, by forcing the mass through a thermally decomposing means provided with external heating means and having an outlet of such smaller cross-section than its inlet such that a sufficient pressure is maintained on the mass to suppress substantial foaming in the mass;
c. a third step of expanding the inner portion of the mass and simultaneously suppressing substantial foaming in the exterior surface of the mass under reduced pressure by forcing the mass through a foaming die having an outlet of larger cross-section than its inlet, said foaming die including a channel and walls, the walls of the channel being maintained at such low temperature, which is below the decomposition temperature of the foaming agent, but above the softening temperature of said resin, as to cool, and thereby suppress substantial foaming in the exterior surfaces of the mass which are in contact with those walls; and
d. a fourth step of rapidly cooling the mass to a temperature below the softening temperature of the resin, by forcing the mass through a sizing die, which is a channel having walls maintained at a sufficiently low temperature such that the exterior surfaces of the mass, being in contact with said walls, are solidified within 10 seconds after the mass has been introduced into the channel.

4,071,592

METHODS OF SALVAGING IMPROPERLY PROCESSED RESINOUS

Rudolf Frisch, Yardley, Pa., assignor to Congoleum Corporation, Kearny, N.J.

Filed Nov. 25, 1975, Ser. No. 635,197
Int. Cl.² B29D *7/20, 27/02*
U.S. Cl. 264—54 **10 Claims**



1. In the art of making chemically embossed sheets of resinous material, a method of salvaging a backing sheet material and a potentially foamable, gelled plastisol composition on which has been improperly applied a printing ink composition containing an organic anhydride blow-modifier which comprises: (1) applying a potentially foamable plastisol composition containing a blowing agent to a backing sheet material; (2) heating said potentially foamable plastisol composition to a temperature of from about 240° to about 420° F. whereby it gels and becomes firm without being blown or foamed; (3) applying a printing ink composition containing an organic anhydride blow-modifier to the gelled, potentially foamable plastisol composition; (4) inspecting the application of said printing ink composition containing said anhydride blow-modifier within about 4 hours after application to determine the appropriateness of such application and, if said printing ink composition is improperly applied; (5) treating said printing ink composition containing said anhydride blow-modifier and said potentially foamable, gelled plastisol composition with a neutralizing and negating composition capable of rendering substantially ineffectual the blow-modifying properties of said anhydride blow-modifier without rendering ineffectual the blowing properties of said potentially foamable, gelled plastisol composition, said neutralizing and negating composition comprising (a) a water soluble chemical having a solvent, swelling and softening effect on said printing ink composition and (b) a reactive chemical capable of reacting with said anhydride blow-modifier, said neutralizing and negating composition being in contact with said printing ink composition for a total exposure time of from about 2 seconds to about 30 seconds; (6) reprinting said potentially foamable, gelled plastisol composition with a printing ink composition containing a blow-modifier; and (7) blowing said potentially foamable, gelled plastisol composition, whereby chemically embossed effects are obtained as a result of said blow-modifier used in the reprinting process, rather than said blow-modifier used in the initial printing process.

4,071,593

PROCESS FOR MAKING A PITCH IMPREGNATED, COLD MOLDED REFRACTORY ARTICLE

Grant M. Farrington, Downingtown, Pa.; J. Donald Harris, Beamsville, Canada, and Alfred H. Foessel, Baltimore, Md., assignors to General Refractories Company, Bala Cynwyd, Pa.

Continuation-in-part of Ser. No. 413,250, Nov. 6, 1973, Pat. No. 3,903,025. This application Aug. 29, 1975, Ser. No. 608,904
Int. Cl.² C04B *35/84*
U.S. Cl. 264—62 **8 Claims**

1. A method for making a shaped refractory article comprising the steps of:
a. preparing a refractory molding mix by blending particulate refractory material with 3.0% to 8.0% by weight of a binder composition comprising:
i. 10% to 40% by weight pitch;
ii. 25% to 80% by weight of an aqueous solution of a water-soluble resin, which solution contains from 40% to 60% by weight of the watersoluble resin; and
iii. 10% to 35% by weight of an organic solvent solution of a thermosetting polymer, which solution contains from 60% to 100% by weight of the thermosetting polymer;
b. shaping the refractory molding composition into a shaped refractory article at room temperature;
c. heating the shaped article to a temperature in the range of from about 200° F to about 1,000° F to form a cold pitch bonded shaped article; and (d) impregnating the cold pitch bonded shaped article under vacuum with a liquid impregnation medium containing a material selected from the group consisting of coal tar pitch, petroleum pitch, and mixtures thereof.

4,071,594

PRODUCTION OF CONTINUOUS CERAMIC FIBERS

Alan Pearson, St. Louis, and Leroy D. Hart, Crestwood, both of Mo., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 502,676, Sept. 3, 1974, which is a continuation-in-part of Ser. No. 269,343, July 6, 1972, abandoned. This application Feb. 24, 1976, Ser. No. 660,813
Int. Cl.² D01D *5/04;* C04B *35/10*
U.S. Cl. 264—63 **17 Claims**

1. In the fabrication of polycrystalline ceramic oxide fibers the steps of
1. forming elongate green thread from a substantially non-aqueous slip consisting essentially of not more than 80 weight percent of discrete temperature stable phase crystalline particles of ceramic oxides selected from the group consisting of alumina, zirconia, zircon, magnesia, chromia, iron oxide, spinel or combinations thereof, the said particles constituting substantially all of the ceramic oxide content of said slip and having a median diameter of 0.05 to 2.5 microns, dispersed in a volatile organic solvent consisting essentially of a halogenated hydrocarbon which solvent contains dissolved therein a linear chain polyethylene oxide polymer binder having an average molecular weight of at least about 400,000 and present in amounts of 0.5 to 5% of the solvent weight, said organic solvent having a surface tension of not over 50 dynes per centimeter and being selected as to dissolve said amount of polyethylene oxide polymer and form a pituitous slip therewith,
2. displacing the green thread substantially concurrent with its formation through an evaporative environment to remove sufficient volatile fluid therefrom to render the thread substantially self-supporting, while attenuating said

green thread to increase its length and decrease its diameter by a factor of at least 4, said attenuation being effected by exerting on said green thread a tensile force to effect movement of the green thread at a higher rate than its rate of formation,

3. and sintering the green thread to produce a coherent polycrystalline ceramic oxide fiber in the said temperature stable phase having a ceramic bond intermediate the particles thereof.

4,071,595

METHOD OF FORMING FLUORITE BRIQUETTES

Karl R. Komarek, Chicago, and Richard K. Komarek, Elk Grove Village, both of Ill., assignors to Lost River Mining Corporation Limited, Toronto, Canada

Continuation of Ser. No. 450,601, March 13, 1974, abandoned. This application Jan. 6, 1976, Ser. No. 646,920

Int. Cl.² C04B 35/64; F27B 9/04; B29F 5/00; C22B 1/11

U.S. Cl. 264—66 1 Claim

1. A method of forming fluorite briquettes, from a +80% fluorite flotation concentrate of an ore floatation concentration process, in the form of a fine dry powder, without the addition of a binder, comprising the steps of:

a. preheating the fine powder concentrate to a temperature in the range of 250° F to 1000° F,

b. briquetting said preheated fine powder concentrate between the rollers of a roll press at pressures of the order of about 60,000 p.s.i., and discharging the briquettes from the roll press and thereafter

c. firing the briquettes to a temperature of about 1500° F to form solid dust free briquettes.

4,071,596

PROCESS FOR MAKING HIGH SHRINKAGE ACRYLIC FIBERS

Merton Louis Davis, Camden, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 588,610, June 20, 1975, Pat. No. 4,011,294, which is a continuation-in-part of Ser. No. 481,374, June 18, 1974, abandoned. This application Nov. 22, 1976, Ser. No. 743,674

Int. Cl.² D01F 6/18

U.S. Cl. 264—168 4 Claims

1. In the process of preparing acrylic fibers wherein as-spun, dry-spun filaments of acrylonitrile polymers are extracted to remove solvent by passing the filaments continuously through aqueous baths, drawn between 1.5 and 3.5× during passage through the baths and thereafter dried; the improvement for preparing high shrinkage fibers having high shrinkage force which comprises passing the as-spun filaments through the aqueous baths in which they are drawn at bath temperatures of 63° to 75° C and then cooling the filaments in a condition free to relax to a temperature below 50° C, then passing the filaments continuously through at least one aqueous bath at a temperature of 70° to 80° C while further drawing the filaments between 1.1× and 1.5× and then drying the filaments at a temperature no higher than 60° C.

4,071,597

CONTAINER WITH IMPROVED HEAT-SHRUNK CELLULAR SLEEVE

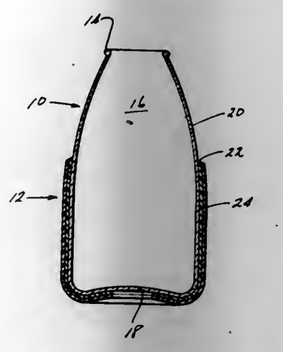
James A. Karabedian, Garden City, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 505,646, Sept. 13, 1974, abandoned. This application Feb. 3, 1976, Ser. No. 660,307

Int. Cl.² B29D 7/20

U.S. Cl. 264—230 8 Claims

1. In a method wherein a heat-shrinkable, polymeric sheet is formed into a sleeve, having a major orientation circumferentially of said sleeve, and the sleeve telescopically located about the sidewall of a container and heat-shrunk into snug engagement with said sidewall, the improvement wherein said polymeric sleeve is a composite structure of two adhering layers comprising a closed cellular polymeric layer preponderantly of polystyrene having incorporated therein, in an amount from zero weight percent up to compatible amounts, a copolymer of ethylene and vinyl acetate, or a copolymer of ethylene and an alkyl ester of an alpha-beta monoethylenically unsaturated carboxylic acid, or a copolymer of ethylene and an alpha-beta monoethylenically unsaturated carboxylic acid, or mixtures thereof, and a non-cellular polymeric layer having preponderantly ethylene moieties and incorporated therein moieties of



vinyl acetate, or an alkyl ester of an alpha-beta monoethylenically unsaturated carboxylic acid, or an alpha-beta monoethylenically unsaturated carboxylic acid, or mixtures thereof, the amount of said incorporated moieties in said non-cellular layer being sufficient to promote the adhesion of said layers to the extent that a portion of said cellular layer cohesively fails when said layers are peeled apart, said cellular layer being in snug engagement with said wall and said non-cellular layer being disposed outwardly of said cellular layer and in adhering engagement therewith.

4,071,598

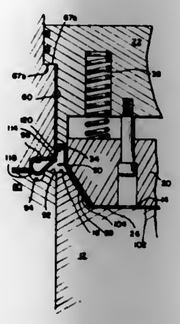
METHOD FOR COLD-FORMING PLASTIC SHEET

William R. Meadors, Marion, Ind., assignor to Peerless Machine & Tool Corporation, Marion, Ind.

Continuation of Ser. No. 619,377, Oct. 3, 1975, abandoned. This application Feb. 23, 1977, Ser. No. 771,407

Int. Cl.² B29D 23/12

U.S. Cl. 264—295 3 Claims



1. A method of cold-forming a plastic sheet to provide a container part such as a lid or dish, said method comprising the steps of engaging a sheet of plastic material between opposing die members, drawing said sheet over the edge of one of said die members to provide a central portion and a depending skirt having a proximal edge adjacent said central portion, an intermediate portion, and a distal free edge, providing a void having a predetermined shape in said die members adjacent said skirt,

then moving said free edge toward said proximal edge while holding said proximal edge to buckle said intermediate portion into said void, said void being defined in part by a radially and axially inwardly facing tapered surface for engaging the free edge and holding it against movement into said void whereby the shape of the buckled intermediate portion is determined generally by the shape of said void.

4,071,599

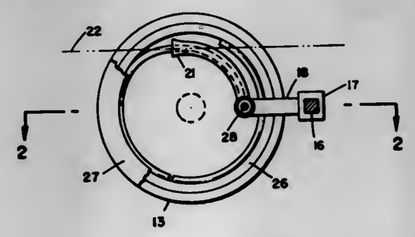
TUBULAR MEMBER AND PROCESS OF FORMING A TUBULAR MEMBER

Grant W. Walker, Sacramento, Calif., assignor to Energy Absorption Systems, Inc., Chicago, Ill.

Filed Aug. 20, 1973, Ser. No. 390,171

Int. Cl.² B29C 5/04; B29D 3/02

U.S. Cl. 264—311 4 Claims



1. A process of forming a tubular member comprising rotating a tubular form about a central axis, providing the interior surface of said rotating form with a coating of time-setting liquid material, embedding a free-ended strip of reinforcing roving having a length of the order of one-half the diameter of said form into said liquid coating on the interior of said rotating form by an endwise motion of said strip in an approximately chordal direction, continuing rotating said form while said strip is embedded substantially circumferentially in said coating by centrifugal force alone and until said coating is set enough to retain the shape of said form, and then separating the set material and roving embedded therein from said form.

4,071,600

PROCESS FOR IMPROVED 3-WAY EMISSION CONTROL

James C. Schlatter, Troy, and Kathleen C. Taylor, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 6, 1976, Ser. No. 747,806

Int. Cl.² B01D 53/34

U.S. Cl. 423—213.7 4 Claims

1. A process for improved three-way stoichiometric type automotive emissions control comprising the steps of contacting the emissions stream with a first catalyst consisting of rhodium supported on a refractory substrate to effect the selective chemical reduction of nitric oxide to nitrogen, said rhodium being present in an amount of at least about 0.002% by weight of the catalyst, said emissions stream being then contacted with a second catalyst separated from said first catalyst and consisting of at least one of the noble metals selected from the group of platinum and palladium, said noble metal being present in a small but effective amount to accomplish the oxidation of the hydrocarbons and carbon monoxide left in said emissions stream, said process being accomplished without the addition of oxygen to said emissions stream.

4,071,601

SELECTIVE REMOVAL OF NITROGEN OXIDES FROM WASTE GASES USING V-MO-W CATALYSTS

Tatsuo Shiraishi; Shinkichi Shimizu, and Tadashi Shindo, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 447,377, March 1, 1974, abandoned. This application Feb. 27, 1976, Ser. No. 662,284

Claims priority, application Japan, Mar. 6, 1973, 48-26759; Sept. 18, 1973, 48-105660

Int. Cl.² B01J 8/00; C01B 21/00

U.S. Cl. 423—239 15 Claims

1. A process for the selective removal of nitrogen oxides from waste gases containing 1,500 ppm or less in gas volume of nitrogen oxides, which comprises reducing said nitrogen oxides with ammonia by contacting said waste gases with ammonia in the presence of a complex metal oxide catalyst consisting essentially of vanadium oxide and at least one member selected from the group consisting of molybdenum oxide and tungsten oxide with an atomic ratio of the oxide forming elements of:

$$V_{12-x-y}Mo_xW_y$$

wherein $0 \leqq x \leqq 8$, $0 \leqq y \leqq 5$ and $0.3 \leqq x + y \leqq 8$.

4,071,602

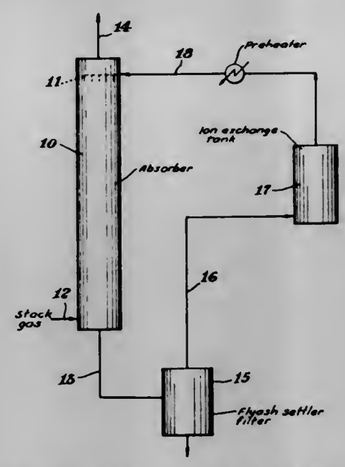
SELECTIVE SEPARATION OF SULFUR OXIDES FROM CARBON DIOXIDE IN AN EFFLUENT GAS STREAM

Roscoe L. Pearce, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 20, 1975, Ser. No. 633,746

Int. Cl.² B01D 53/34

U.S. Cl. 423—243 2 Claims



1. In a method for selectively separating sulfur oxides from gas streams containing the same and carbon dioxide by contacting the gas stream with an alkanolamine solution, the improvement which comprises carrying out the contacting of the gas stream with the alkanolamine solution at from about 200° to about 230° F and regenerating the alkanolamine-sulfur oxide containing solution by contacting said solution with a weak base anion exchange resin.

4,071,603

PROCESS FOR PREPARING PHOSPHORIC ACID

Thomas Alan Williams, Beckermet, England, assignor to Albright & Wilson Limited, West Midlands, England

Filed July 28, 1976, Ser. No. 709,388
Claims priority, application United Kingdom, Aug. 1, 1975, 32352/75
Int. Cl.[2] C01B *25/16;* C01F *11/46*
U.S. Cl. 423—320 17 Claims

1. A process for producing wet process phosphoric acid, which comprises the steps of (*a*) contacting phosphate rock with aqueous phosphoric acid and a slurry comprising gypsum, phosphoric acid and sulphuric acid recycled from step (*f*) of the process, to produce a first reaction mixture, (*b*) contacting said first reaction mixture with a hemihydrate containing slurry obtained from step (*e*) of the process to give a second reaction mixture, (*c*) allowing the acids in said second mixture to digest the rock to substantial completion to produce a slurry comprising gypsum, phosphoric acid and sulphuric acid, (*d*) withdrawing a first fraction of said slurry as product which is processed as set forth in step (*g*) and a second fraction which is processed as set forth in step (*e*) and a third fraction comprising the remainder of said slurry, the weight ratio of the first fraction to the second fraction being in the range 1 : 0.75 to 1 : 3, (*e*) adding sulphuric acid to said second fraction of slurry and mixing under conditions of acid concentration, temperature and time such as to convert at least a part of the gypsum in said slurry into calcium sulphate hemihydrate crystals in the slurry, and recycling said slurry containing hemihydrate to step (*b*) of the process, (*f*) recycling said third fraction of the slurry from step (*d*) to step (*a*), and (*g*) filtering the product first fraction of slurry of step (*d*) to yield an aqueous solution of phosphoric acid as filtrate, the total amount of sulphuric acid present in step (*c*) being sufficient to digest the rock.

4,071,604

METHOD OF PRODUCING HOMOGENEOUS CARBON AND GRAPHITE BODIES

Warren C. Schwemer, Arlington, Tex., assignor to Advanced Technology Center, Inc., Grand Prairie, Tex.

Continuation-in-part of Ser. No. 529,172, Dec. 3, 1974, abandoned. This application May 27, 1976, Ser. No. 690,697
Int. Cl.[2] C01B *31/00, 31/02, 31/04*
U.S. Cl. 423—445 34 Claims

1. The method of making a precursor for forming green bodies suitable for conversion to unitary bodies of carbon comprising the steps of:

a. producing a substantially infusible plastic residue having a volatile content of from about 3% to about 11% by heating a graphitizable carbon source which passes through a liquid phase during pyrolysis in a substantially non-oxidizing environment,
b. discontinuing said heating while the residue remains plastic, and
c. comminuting said substantially infusible plastic residue to form particles thereof having an average particle size less than about 1000 microns in the largest dimension.

18. The process of making a homogeneous unitary body of graphite comprising the steps of:

a. producing a substantially infusible plastic mass having a volatile content of from about 3% to about 11% by heating an organic material which passes through a liquid phase during pyrolysis in a non-oxidizing environment,
b. discontinuing said heating while said mass remains plastic,
c. comminuting said substantially infusible plastic mass into particles,
d. pressing said particles into a coherent body, and
e. heating said coherent body to a temperature of at least 1800° C in a non-oxidizing environment and until graphitization has occurred.

4,071,605

PROCESS FOR THE PRODUCTION OF DIBASIC MAGNESIUM HYPOCHLORITE

John A. Wojtowicz, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jan. 31, 1977, Ser. No. 763,969
Int. Cl.[2] C01B *11/00, 7/02, 11/06;* C01F *5/00*
U.S. Cl. 423—462 12 Claims

1. A process for the production of dibasic magnesium hypochlorite which comprises reacting a solid granular magnesium salt with a solid granular hypochlorite salt selected from the group consisting of alkali metal hypochlorites and calcium hypochlorite wherein at least one of said salts is present as a hydrate to form a reaction mixture, agitating said reaction mixture, and recovering said dibasic magnesium hypochlorite therefrom.

4,071,606

SULFUR DIOXIDE WITH COAL

Charles T. Ratcliffe, Denville, and Geza Pap, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Dec. 13, 1976, Ser. No. 750,044
Int. Cl.[2] C01B *17/04*
U.S. Cl. 423—569 2 Claims

1. In a process for producing sulfur by the reduction of sulfur dioxide with an agglomerating coal wherein a sulfur dioxide containing gas is passed into a bed of particles of the coal heated to a temperature of between 600° and 900° C and sulfur is recovered from the product gases leaving the bed, the improvement which comprises reducing the amount of tar in the product gases and reducing the tendency of the coal particles to agglomerate by employing coal particles having a particle size less than 500 microns.

4,071,607

PROCESS FOR PRODUCING SULFUR

Heinz Hiller, Rembrucken, and Herbert Fischer, Lollar, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 7, 1976, Ser. No. 748,219
Claims priority, application Germany, Dec. 8, 1975, 2555096
Int. Cl.[2] C01B *17/04*
U.S. Cl. 423—574 R 7 Claims

1. A process for producing sulfur from an acid gas containing hydrogen sulfide and other sulfur compounds, said process comprising

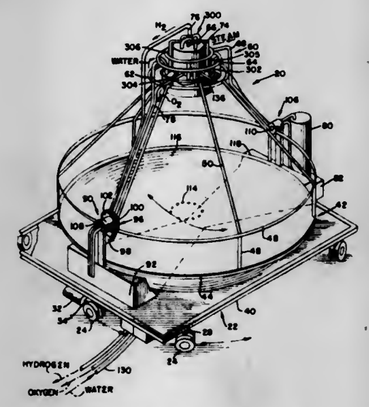
a. combusting said acid gas partially to produce a process gas stream containing hydrogen sulfide sulfur and sulfur dioxide;
b. catalytically reacting the hydrogen sulfide, with sulfur dioxide in said process gas stream in a Claus process reactor and condensing sulfur from the catalytically reacted stream with a cooling system to produce a further gas stream containing residual sulfurous components;
c. passing said further gas stream at a lower temperature than that of the catalytic reaction of step (b) over an active adsorbent to load said adsorbent with sulfur and produce another gas stream;
d. afterburning the gas stream produced in step (c) which still contains rasidual sulfur and residual H_2S with oxygen to produce a hot exhaust gas stream substantially free from hydrogen sulfide and sulfur and consisting mainly of sulfur dioxide;
e. desorbing the laden adsorbent from step (c)by
e_1. circulating a desorption gas in closed cycle through said laden adsorbent;
e_2. heating said desorption gas before it contacts said laden adsorbent along said closed cycle by passing it in heat exchange with said hot exhaust gas from step (d); and
e_3. condensing sulfur from said desorption gas after it has contacted said laden adsorbent along said cycle with said cooling system from step (b),
e_4. said cooling system containing water;
f. generating water vapor thereby by said cooling, and
g. condensing said generated water vapor and recycling same by gravity to step (e_3) to condense the sulfur.

4,071,608

DISSOCIATION OF WATER INTO HYDROGEN AND OXYGEN USING SOLAR ENERGY

Richard E. Diggs, S. 12A Road P.O. Box 776, Carthage, Mo. 64836

Division of Ser. No. 624,409, Oct. 20, 1975, Pat. No. 4,030,890. This application June 22, 1976, Ser. No. 698,753
Int. Cl.[2] C01B *1/03, 13/02*
U.S. Cl. 423—579 3 Claims



1. A process for dissociating hydrogen and oxygen from water, comprising:
providing a body of water in a container;
focusing solar energy onto said body of water container in a manner such that the temperature of the water is raised to the saturation temperature thereof to form steam;
reflecting solar energy from the container;
providing a dissociation container;
separating said steam from said body of water;
moving said steam into said dissociation container;
focusing additional solar energy on said dissociation container, and focusing said reflected solar energy onto said dissociation container so that said additional solar energy and said reflected solar energy cause the temperature of said steam to be raised to the dissociation temperature thereof to dissociate the hydrogen and oxygen contained therein;
separating said hydrogen and oxygen from each other by moving said hydrogen and oxygen along a curved path to subject them to centrifugal forces which cause oxygen to move radially outward and hydrogen to move radially inward; and
removing said separated hydrogen and oxygen from proximity with each other.

4,071,609

METHOD FOR PREPARING PARTICULATE ZINC OXIDE SHAPES OF HIGH SURFACE AREA AND IMPROVED STRENGTH

Victor S. Robinson, Brooklyn Heights, N.Y., assignor to The New Jersey Zinc Company, Bethlehem, Pa.

Filed July 9, 1975, Ser. No. 594,391
Int. Cl.[2] C01G *9/02*
U.S. Cl. 423—622 9 Claims

1. A process for producing high surface area and high crush strength particulate zinc oxide shapes, said process comprising:

a. forming normal zinc oxide having a specific surface area less than 10 square meters per gram into pre-determined shapes without the addition of extraneous binding material;
b. exposing said normal zinc oxide shapes to a carbon dioxide-containing atmosphere including water vapor;
c. converting at least about 45% of said zinc oxide into basic zinc carbonate; and
d. decomposing substantially all of said basic zinc carbonate into particulate zinc oxide shapes.

4,071,610

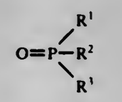
MANUFACTURE OF GAMMA-IRON(III) OXIDE

Eberhard Koester, Frankenthal; Gerd Wunsch, Speyer; Eduard Schoenafinger, Ludwigshafen, and Hans Henning Schneehage, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 19, 1976, Ser. No. 677,920
Claims priority, application Germany, May 9, 1975, 2520643
Int. Cl.[2] C01G *49/02*
U.S. Cl. 423—634 2 Claims

1. A process for the manufacture of acicular gamma-iron-(III) oxide of high coercive force and giving improved orientation, which comprises the steps of

a. mixing a suspension of non-magnetic, acicular alpha-FeOOH with a solution of a compound of the formula I


(I)

where R^1 and R^2 are



or O—R^5, R^3 is H, OH,

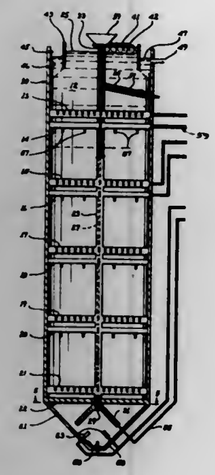


or O—R^5, R^4 is alkyl or cycloalkyl of 1 to 16 carbon atoms and the R^4's may be identical or different, and R^5 is alkyl, cycloalkyl or aralkyl of 3 to 18 carbon atoms, in water or alcohols of 1 to 4 carbon atoms, and then removing the solvent, the amount of said compound I being from about 0.5 to 10 percent by weight based on said non-magnetic iron oxide,
b. reducing the material, obtained according to (a), by means of gases containing hydrogen, at from b 350° to 600° C, to give magnetite, and
c. oxidizing the magnetite, by means of gases containing oxygen, at from 200° to 450° C, to give gamma-iron(III) oxide.

4,071,611
CONTINUOUSLY LEACHING AN ORE COLUMN

Richard E. Chilson, 8350 Tanque Verde Road, Tucson, Ariz. 85715

Division of Ser. No. 612,941, Sept. 12, 1975, abandoned. This application June 24, 1976, Ser. No. 699,385
Int. Cl.[2] B01J *8/12*
U.S. Cl. 423—658.5 2 Claims



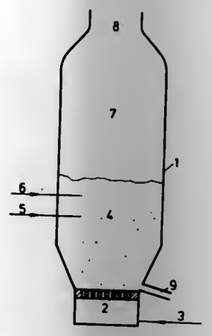
1. A method of continuously leaching ore comprising
a. continuously feeding crushed ore to the top of a column of crushed ore;
b. passing said crushed ore downwardly through a plurality of grids at predetermined spaced intervals along said column of crushed ore to turbulate said ore;
c. continuously airlifting said ore from the bottom of said column through a centrally disposed conduit extending from adjacent the bottom of said column through said column and discharging the airlifted ore laterally from the top of said column;
d. continuously introducing rinsing liquid upwardly into said crushed ore from near the bottom of said column;
e. continuously introducing leaching reagents into said column of crushed ore at said spaced intervals along said column, said solutions mixing with said rinsing liquid to form leaching solutions;
f. continuously sampling said leaching solutions at a plurality of predetermined spaced intervals along said column; and
g. continuously withdrawing said leaching solutions from the top of said column.

4,071,612
PROCESS FOR THE INCINERATION OF CONTAMINATED SALT-BEARING SOLUTIONS

Horst Weyer, Schwerte; Ludwig Muhlhaus, Hennen, and Gerhard Oberschachtsiek, Holzwickede, all of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Continuation of Ser. No. 514,437, Oct. 15, 1974, abandoned. This application Aug. 27, 1976, Ser. No. 718,170
Int. Cl.[2] C01B *31/20, 5/00*
U.S. Cl. 423—659 3 Claims

3. A process for the incineration of fusible salt-bearing aqueous waste effluent in a chemical process containing combustible organic substances in a fluidized bed while avoiding break down of the fluidized bed in an incinerator provided with a free space above the fluidized bed sufficient to provide in the incinerator two distinct burning zones of widely different temperatures, consisting essentially only of
A. injecting into the fluidized bed
i. said effluent
2. fuel and
3. combustion air under pressure upwardly into said bed so as to maintain said bed in a fluidized state;
B. adjusting the quantities of said injections and the fluidized bed material so as to maintain (a) incomplete combustion in the fluidized bed at a temperature at least 100° C below the fusion temperature of the fusible salt or salt mixture in



said effluent and which is also widely different from the temperature attained above the fluidized bed, and (b) substantially complete combustion of the combustible material leaving the fluidized bed at a temperature attaining at least 800° C at which combustion of all of the combustible materials takes place in a distinct burning zone in the free space above the fluidized bed.

4,071,613
STABILIZED ALCOHOL SOLUTION OF REDUCING SALT FORMULATIONS FOR USE IN PREPARING RADIOISOTOPE LABELED SCANNING AGENTS: LIVER SCANNING TECHNETIUM-99M COLLOID AND METHOD OF PREPARATION

William Ward Hunter, Jr., Fresno, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 26, 1976, Ser. No. 661,469
Int. Cl.[2] A61K *43/00, 29/00*
U.S. Cl. 424—1 7 Claims

1. An anhydrous stabilized organic solution for preparing a technetium-99m scanning agent, said solution comprising: a metal ion salt reductant for technetium and an anhydrous nonoxidizing organic solvent.

7. A radiolabeled scanning agent comprising a colloid of technetium-99m and the solution of claim 1.

4,071,614
DENTIFRICE CONTAINING ENCAPSULATED FLAVORING

John Edward Grimm, III, New York, N.Y., assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 583,380, June 3, 1975, Pat. No. 3,957,964, which is a continuation of Ser. No. 438,028, Jan. 30, 1974, abandoned, which is a continuation of Ser. No. 235,038, March 15, 1972, abandoned. This application Jan. 9, 1976, Ser. No. 647,693
The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.
Int. Cl.[2] A61K *7/16, 7/28*
U.S. Cl. 424—49 19 Claims

1. A dentifrice adapted to release a plural flavor burst comprising a distinctive flavor in thin walled microcapsules producing a distinctive initial flavor during early brushing of the teeth, and a different flavor in a thicker walled microcapsule than said thin walled microcapsule and producing a different flavor subsequent thereto, said flavor in said thin walled capsules being released when said dentifrice is extruded from a container by shearing contact with the container neck wall and by rupture on contact with the teeth, the flavor in said thicker walled microcapsules being released when latter microcapsules are ruptured during the course of brushing the teeth, said flavors encapsulated in a water insoluble, film forming synthetic organic polymeric plastic having an equivalent diameter of about one micron to 2 millimeters and having a wall thickness of about 0.1 micron to 1.0 millimeter, included in a concentration of about 0.1 to 10% into a dentifrice having a viscosity of under about 40,000 cps.

4,071,615
FLAVORED DENTIFRICE

Jordan B. Barth, East Brunswick, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 502,043, Aug. 30, 1974, Pat. No. 3,939,261. This application Oct. 16, 1975, Ser. No. 623,180
The portion of the term of this patent subsequent to Feb. 17, 1993, has been disclaimed.
Int. Cl.[2] A61K *7/18*
U.S. Cl. 424—52 17 Claims

1. An anhydrous dentifrice which contains about 10 to 90% by weight of a liquid vehicle including a hydroscopic humectant, about 0.1 to 10% by weight of a dipeptide sweetener selected from the group consisting of L-aspartyl-L-phenylalanine methyl and ethyl esters and L-aspartyl-L-hexahydrophenylalanine methyl and ethyl esters in admixture with about 0.1 to 15% by weight of a non-toxic acid anhydride selected from the group consisting of acetic-, succinic-, adipic-, fumaric-, lactic-, malic-, folic-, ascorbic-, aspartic-, benzoic-, isovaleric-, phenoxyacetic-, citric-, tartaric-, orthophosphoric-, lauric- and stearic acid anhydride and compatible mixtures thereof whereby the acid pH integrity of acid sweetener is maintained about 3 to 5 and excess-free water present is absorbed thereby providing stability in said sweetener, said dentifrice further including a fluorine compound in an amount having a beneficial but non-toxic effect on the care and hygiene of the oral cavity.

4,071,616
STARCH AIR FRESHENER GELS

Daniel Richard Bloch, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 634,724, Nov. 24, 1975, abandoned. This application Feb. 14, 1977, Ser. No. 768,296
Int. Cl.[2] A61L *9/01, 9/04;* B01J *13/00*
U.S. Cl. 424—76 12 Claims

1. A slow diffusing air freshener gel composition comprising about 2.5–15% by weight amylose, about 0.25–30% by weight perfume, up to about 5% by weight pigment, and the balance water, said amylose being present in the form of amylose starch having an amylose content of at least 50% by weight amylose, said gel having a gel strength of at least 75 grams.

4,071,617
AQUEOUS FLOWABLE CONCENTRATES OF PARTICULATE WATER-INSOLUBLE PESTICIDES

Thomas M. Graves, Richmond, and Theodore H. Koundakjian, Albany, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 206,516, Dec. 9, 1971, abandoned, which is a continuation of Ser. No. 829,769, June 2, 1969, abandoned. This application Feb. 9, 1976, Ser. No. 656,231
Int. Cl.[2] A61K *31/765, 31/40, 31/39;* A01N *9/00*
U.S. Cl. 424—78 11 Claims

1. A flowable, viscous, aqueous pesticidal concentrate which is compatible with other pesticides on dilution with water consisting essentially of water, 10 to 80% by weight based on the water, of a solid water-insoluble particulate pesticide having a particle size less than 20 microns and a vinyl alcohol/vinyl acetate polymer having about 5 to 15 mols of vinyl acetate per 100 mols of copolymer and a viscosity of 30 to 60 centipoises as measured in a 5% aqueous solution using a Brookfield viscometer with a number 1 spindle at 30 rpm at 20° C, the weight ratio of pesticide to copolymer being in the range of 1:1 and 1000:1.

4,071,618
PROCESS FOR PREPARING VIRUS DISEASE LIVE VACCINES

Takeo Konobe; Tetsuo Onoda, and Koichi Ono, all of Kanonji, Japan, assignors to Research Foundation for Microbial Diseases of Osaka University, Osaka, Japan

Continuation of Ser. No. 502,633, Sept. 3, 1974, abandoned, which is a continuation of Ser. No. 309,692, Nov. 27, 1972, abandoned, which is a continuation of Ser. No. 313,539, April 5, 1971, abandoned. This application July 6, 1976, Ser. No. 702,398
Int. Cl.[2] A61K *39/12;* C12B *3/00;* C12K *9/00*
U.S. Cl. 424—89 10 Claims

1. In a process for the production of a live virus vaccine by the tissue culture method comprising the adaptation, attenuation and propagation of a virus selected from the group consisting of rubella, mumps, influenza A, influenza B, distemper, Newcastle disease, Japanese encephalitis, dengue fever, rabies, and turkey Herpes viruses, the improvement comprising
a. incubating the virus in a culture of a quail embryonated egg or tissue culture of a quail embryo fibroblast, and
b. subjecting the virus to successive cultivation in a culture medium for a sufficient number of passages to propagate the virus, at least one passage in the successive cultivation being effected in a culture medium containing a quail embryonated egg or a quail embryo fibroblast.

4,071,619
METHOD OF PRODUCING VACCINES

Tamaz Vladimirovich Peradze, ulitsa Basseinaya, 53, kv. 353; Eidlya Abramovna Fridman, ulitsa Rudischeva, 19, kv. 2; Nina Vsevolodovna Zheleznova, ulitsa Khalturina, 13, kv.; Vsevolod Mikhailovich Kolikov, prospekt Engelsa, 100, kv. 59; Semen Khaimovich-Efimovich Bresler, Lesnoi prospekt, 61, kv. 244; Boris Viktorovich Mchedlishvili, Novoizmailousky prospekt, 3, kv. 211; Viktor Mikhailovich Molodkin; Ljudmila Mikhailovna Molodkina, both of prospekt Shaumiana, 2, kv. 11, and Nina Vasilievna Katushkina, Novoizmailovsky prospekt, 4, kv. 245, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 523,363, Nov. 13, 1974, abandoned. This application Sept. 2, 1976, Ser. No. 719,692
Claims priority, application U.S.S.R., Nov. 16, 1973, 1967101
Int. Cl.[2] A61K *41/00, 39/12;* C12K *7/00*
U.S. Cl. 424—90 8 Claims

1. A method for producing vaccines comprising purification of a viral culture by gel chromatography in columns packed with a porous silicate virion non-absorbing material having pore diameter of 50 to 10,000A, concentration by adsorption in columns packed with a porous silicate sorbent having a pore diameter of 50 to 10,000A and a porosity of 0.3 to 2.5 cm^3/g, followed by virus desorption by means of buffer solutions having a pH of 6 to 10 in two steps using a gradient of ionic strength of from 0.1 to 1.0:
a. at the beginning of the gradient, the columns are washed to eliminate the initial culture remaining between the sorbent granules, and
b. at the end of the gradient, virions are desorbed, with subsequent transfer of the viral suspension into physiological conditions of pH 7 to 7.8 with NaCl concentration of 0.14–0.15 mole/l and inactivation of the viral suspension.

4,071,620

STABILIZATION OF OXYGEN SENSITIVE DOSE FORMS

Stanley Sklar, Broomall, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jan. 10, 1977, Ser. No. 758,236
Int. Cl.[2] A61K *31/00, 31/54*
U.S. Cl. 424—175 10 Claims

1. A therapeutic composition of matter containing up to 50 milligrams per cubic centimeter of an active ingredient selected from the group consisting of promethazine and its pharmaceutically acceptable acid addition salts in a pharmaceutical carrier stabilized with at least 2 milligrams per cubic centimeter of monothioglycerol.

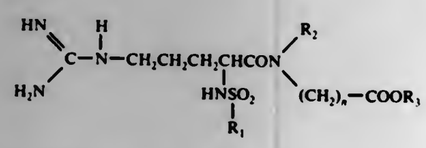
4,071,621

N^2-ALKOXYNAPHTHALENESULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Shosuke Okamoto; Akiko Hijikata, both of Kobe; Ryoji Kikumoto, Machida; Yoshikuno Tamao, Yokohama; Kazuo Ohkubo, Machida; Tohru Tezuka, Yokohama, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo and Shosuke Okamoto, both of, Japan

Continuation-in-part of Ser. No. 649,219, Jan. 14, 1976, Pat. No. 4,018,913. This application Jan. 19, 1977, Ser. No. 760,726
The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.
Int. Cl.[2] A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 5 Claims

1. N^2-alkoxynaphthalenesulfonyl-L-argininamides having the formula:



and the pharmaceutically acceptable salts thereof, wherein R_1 is naphthyl substituted with at least one C_1-C_5 alkoxy; R_2 is C_2-C_{10} alkylthioalkyl; R_3 is C_1-C_{10} alkyl, C_6-C_{10} aryl or C_7-C_{12} aralkyl; and n is an integer of 1, 2 or 3.

4,071,622

TREATMENT OF A MAMMARY OR DMBA INDUCIBLE TUMOR

Edwin Samuel Johnson, Antioch, and John Hunter Seely, Lake Forest, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 11, 1976, Ser. No. 657,344
Int. Cl.[2] A61K *37/02*
U.S. Cl. 424—177 9 Claims

1. The method of reducing the size of a mammary or DMBA-inducible tumor in a warm-blooded animal by administering to an animal having a mammary or DMBA-inducible tumor an effective daily amount to reduce the size of such a tumor of a nonapeptide of the formula

L-pGlu-L-His-L-Trp-L-Ser-L-Tyr-X-L-Leu-L-Arg-L-Pro-NH-C_2H_5

wherein X denotes the optically active D-form of Tyr, Trp or Phe.

4,071,623

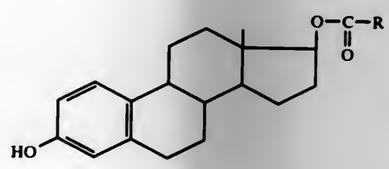
PHARMACEUTICAL PREPARATION ADAPTED FOR ORAL ADMINISTRATION

Johannes van der Vies, Oss, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed May 17, 1976, Ser. No. 687,267
Claims priority, application Netherlands, May 30, 1975, 7506407
Int. Cl.[2] C07J *1/00;* A61K *31/56*
U.S. Cl. 424—238 32 Claims

1. A pharmaceutical preparation with oestrogenic activity adapted for oral administration comprising

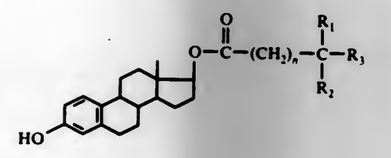
an oestrogenically effective amount when orally administered of at least one 17β-ester of oestradiol having the formula



the ester group thereof being derived from an aliphatic carboxylic acid having 9 to 16 carbon atoms, and

a pharmaceutically acceptable non-steroid lipoid carrier, wherein said 17-β ester of oestradiol constitutes from 0.01 to 50% by weight of said preparation and said non-steroid lipoid carrier is present in an amont of at least equal to the amount of said 17β-ester of oestradiol.

11. A 17β-ester of oestradiol having the formula:



wherein

n = 0, 1 or 2;

R_1 = alkyl having 1-10 carbon atoms;

R_2 = H or alkyl having 1-10 carbon atoms;

R_3 = an aliphatic group having 1-18 carbon atoms, which group may contain a ring having 5-12 carbon atoms;

or R_1 and R_3 form together with the carbon atom to which they are attached and a cycloaliphatic group having 7-12 carbon atoms, said cycloaliphatic group optionally being substituted by an aliphatic group having 1-6 carbon atoms, with the proviso that the total number of carbon atoms in the ester group is in the range of 8-20 carbon atoms.

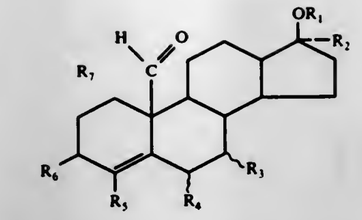
4,071,624

ANDROST-4-EN-19-ONES FOR THE ENHANCEMENT OF LIBIDO

Joyce F. Grunwell, Hamilton, Ohio, and Vladimir Petrow, Chapel Hill, N.C., assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 469,480, May 13, 1974. This application Feb. 7, 1977, Ser. No. 766,236
Int. Cl.[2] A61K *31/56;* C07J *1/00*
U.S. Cl. 424—238 4 Claims

1. A method of enhancing the libido of mammals in need thereof which comprises the administration to such mammal of a therapeutically effective amount of an androst-4-en-19-one having the formula



wherein

R_1 and R_8 are each selected from the group consisting of hydrogen, acyl having from 1 to 12 carbon atoms, lower alkyl having from 1 to 3 carbon atoms, trialkylsilyl in which the alkyl group has from 1 to 5 carbon atoms, triphenylsilyl, 2-tetrahydropyranyl, 4-tetrahydropyranyl, 1-cycloalkenyl having from 5 to 7 carbon atoms, 1-methoxycycloalkyl and 1-ethoxycycloalkyl in which the cycloalkyl group has from 5 to 7 carbon atoms,

R_2 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, lower alkenyl having from 2 to 6 carbon atoms, lower alkynyl having from 2 to 6 carbon atoms, and when R_2 and OR_1 are taken together is oxo,

R_3, R_4, R_5 and R_7 are hydrogen and methyl, and

R_6 is selected from the group consisting of H_2, oxo and $H(OR_8)$.

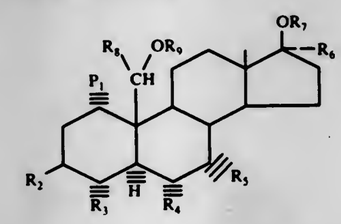
4,071,625

19-OXYGENATED-5α-ANDROSTANES FOR THE ENHANCEMENT OF LIBIDO

Joyce F. Grunwell, Hamilton, Ohio, and Vladimir Petrow, Chapel Hill, N.C., assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 469,478, May 13, 1974. This application Feb. 7, 1977, Ser. No. 766,237
Int. Cl.[2] A61K *31/56;* C07J *1/00*
U.S. Cl. 424—238 4 Claims

1. A method of enhancing the libido of mammals in need thereof which comprises the administration to such mammals of a therapeutically effective amount of a 19-oxygenated-5α-androstane having the formula



wherein

R_1, R_3, R_4 and R_5 are hydrogen and methyl,

R_2 is selected from the group consisting of H_2, oxo and $H(OR_{10})$,

R_6 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, lower alkenyl having from 2 to 6 carbon atoms, lower alkynyl having from 2 to 6 carbon atoms and when taken together with OR_7 is oxo,

R_7, R_9 and R_{10} are each selected from the group consisting of hydrogen, acyl having from 1 to 12 carbon atoms and an ether selected from the group consisting of lower alkyl having from 1 to 3 carbon atoms, trialkylsilyl in which the alkyl group has from 1 to 5 carbon atoms, triphenylsilyl, 2-tetrahydropyranyl, 4-tetrahydropyranyl, 1-cycloalkenyl having from 5 to 7 carbon atoms, 1-methoxycycloalkyl and 1-ethoxycycloalkyl in which the cycloalkyl group has from 5 to 7 carbon atoms,

R_8 is hydrogen and when taken together with OR_9 is oxo.

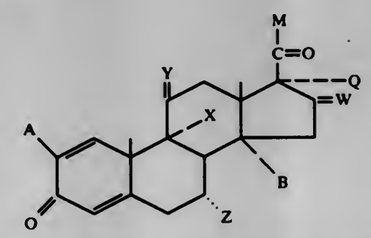
4,071,626

7α-HALOGENO-3,20-DIOXO-1,4-PREGNADIENES, METHODS FOR THEIR MANUFACTURE, THEIR USE AS ANTI-INFLAMMATORY AGENTS, AND PHARMACEUTICAL FORMULATIONS USEFUL THEREFOR

Michael J. Green, Kendall Park, and Ho-Jane Shue, Belleville, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 22, 1976, Ser. No. 753,256
Int. Cl.[2] A61K *31/58, 31/56*
U.S. Cl. 424—241 27 Claims

1. A 3,20-dioxo-7-halogeno-1,4-pregnadiene of the following formula:



wherein A is hydrogen, and provided Y is (H,βOH), chlorine, fluorine or methyl;

B is hydrogen or, together with Q, is a 14α,17α-alkylidenedioxy derivative;

X is a member selected from the group consisting of hydrogen and halogen having an atomic weight less than 100;

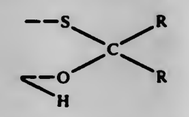
Y is a member selected from the group consisting of (H,H) provided X is hydrogen, oxygen, (H,βOH), (H,βOCOH); and (H,β-halogen) provided X is chlorine or bromine, said β-halogen having an atomic weight of less than 100 and being at least as electronegative as X;

Z is fluorine, chlorine, bromine and, provided X is hydrogen, iodine;

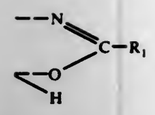
Q is a member selected from the group consisting of hydrogen provided W is a member selected from the group consisting of (H,H) and (H, lower alkyl); chlorine; bromine; and OV wherein V is a member selected from the group consisting of hydrogen and an acyl radical of a hydrocarboncarboxylic acid having up to 12 carbon atoms or of benzoic acid substituted by a halogen or methoxy group;

W is a member selected from the group consisting of (H,H); (H, lower alkyl); (H,α-OV_1) wherein V_1 is a member selected from the group consisting of hydrogen and an acyl radical of an acid selected from the group consisting of a hydrocarboncarboxylic acid having up to 12 carbon atoms, benzoic acid substituted by a halogen or methoxy group, retinoic acid, and isonicotinic acid; =CHT wherein T is a member selected from the group consisting of hydrogen, lower alkyl, fluorine and chlorine, and

W and Q taken together is a member selected from the group consisting of 16α,17α-lower alkylidenedioxy; 16α,17α-cycloalkylidenedioxy; the grouping



wherein R is lower alkyl; and the grouping



wherein R_1 is lower alkyl or phenyl;

M is a member selected from the group consisting of $—OR_2$ when Q is O-acyl, R_2 being lower alkyl or halogeno lower alkyl; —CHO, acetals, hemiacetals and acylals thereof; $—COOR_3$ wherein R_3 is an alkyl having up to 12 carbon atoms; $—CH_2G$ wherein G is a member selected from the group consisting of hydrogen, halogen having an atomic weight of less than 100, OV_2 wherein V_2 is a member selected from the group consisting of hydrogen and an acyl radical of an acid selected from the group consisting of a hydrocarboncarboxylic acid having up to 12 carbon atoms, benzoic acid substituted by a halogen or methoxy group, retinoic acid, isonicotinic acid, phosphoric acid and mono- and dialkali, and alkaline earth metals salts thereof; and V_2 together with V is a member selected from the group consisting of alkylidenedioxy and alkylorthoalkanoate;

when W is hydrogen, the D-homo analogs thereof.

19. A pharmaceutical composition for use in the treatment of inflammation, which comprises an effective amount of a 3,20-dioxo-7α-halogeno-1,4-pregnadiene of claim 1 together with a non-toxic, pharmaceutically acceptable carrier.

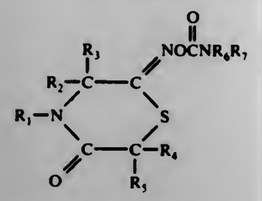
4,071,627

2-OXIMINO-TETRAHYDRO-1,4-THIAZIN-5-ONE COMPOUNDS AND PESTICIDAL CARBAMATE DERIVATIVES

John Apling Durden, Jr., South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 29, 1976, Ser. No. 727,634
Int. Cl.² C07D *279/12*; A01N *9/12*
U.S. Cl. 424—246 **46 Claims**

32. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of a compound of the formula:



wherein:

R_1, R_2, R_3, R_4 and R_5 are individually hydrogen or alkyl;

R_6 and R_7 are individually hydrogen, alkenyl, alkynyl, phenylalkyl or either substituted or unsubstituted alkyl or phenyl wherein the permissible substituents are one or more fluoro, chloro, bromo, nitro, cyano, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, carbamoyl, alkylcarbamoyl, or dialkylcarbamoyl substituents in any combination ; or when R_6 is other than hydrogen R_7 may also be alkanoyl, trihalomethanesulfenyl, dialkylaminosulfenyl, morpholinosulfenyl, pyrrolidylsulfenyl, piperidylsulfenyl, or either substituted or unsubstituted phenylsulfenyl wherein the permissible substituents are one or more fluoro, chloro, bromo, nitro, cyano, alkoxy, alkyl trihalomethyl, alkylthio, alkylsulfinyl or alkylsulfonyl substituents in any combination; with the proviso that R_1, R_2, R_3R_4 and R_5 substituents individually may not include more than eight aliphatic carbon atoms and R_6 and R_7 substituents individually may not include more than eighteen carbon atoms.

4,071,628

SYNERGISTIC ANTIMICROBIAL MIXTURES

Alfonso N. Petrocci, Glen Rock; John J. Merianos, Jersey City, both of N.J., and Harold A. Green, Havertown, Pa., assignors to Kewanee Industries, Bryn Mawr, Pa.

Filed Jan. 21, 1977, Ser. No. 761,319
Int. Cl.² A01N *9/00, 9/20, 9/22*
U.S. Cl. 424—249 **8 Claims**

1. A synergistic antimicrobial mixture consisting essentially of a dodecylguanidine salt and a condensation product formed by reacting substantially equimolar amounts of ethanolamine and formaldehyde at the reflux temperature of the reaction mixture until the stoichiometric amount of water is formed, said condensation product being present in the mixture in a ratio of about 1:1 to about 15:1 by weight relative to said dodecylguanidine salt.

4,071,629

NOVEL PHARMACEUTICAL COMPOSITIONS AND METHOD FOR TREATING PSYCHASTHENIA

Jacques Servier, Neuilly-sur-Seine, France, assignor to Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

Filed Aug. 27, 1976, Ser. No. 718,134
Int. Cl.² A61K *31/505*
U.S. Cl. 424—251 **2 Claims**

1. A method for treating depressive state in a human subject, and resulting psychic weakness and behavioural disturbance, which consists in administering parenterally, orally, sublingually, or rectally to said subject an amount of bis [(isobutyryloxyethyl) methylene] bis N-[(4-amino 2-methyl 5-pydimidinyl) methyl] formamide disulphide which is effective for said purpose.

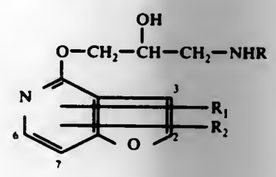
4,071,630

1-SUBSTITUTED-AMINO-3-(4-FURO[3,2-c]PYRIDINYLOXY)-2-PROPANOLS

Erik Wiskott, and Franz Troxler, both of Bottmingen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 605,972, Aug. 20, 1975, Pat. No. 3,998,835. This application Oct. 18, 1976, Ser. No. 733,565
Claims priority, application Switzerland, Apr. 8, 1975, 4432/75
Int. Cl.² A61K *31/44*; C07D *405/04*
U.S. Cl. 424—256 **14 Claims**

1. A racemic or optically active compound of formula I,



I

wherein

R is alkyl of 3 to 7 carbon atoms or cycloalkyl of 3 to 7 carbon atoms, cycloalkyl of 3 to 7 carbon atoms monosubstituted by alkyl of 1 to 4 carbon atoms, α-dialkylpropynyl of 5 to 9 carbon atoms or α-dialkyl-allyl of 5 to 9 carbon atoms, hydroxyalkyl of 2 to 7 carbon atoms or phenoxyalkyl of 8 to 11 carbon atoms, the oxygen atom of the last two radicals being separated by at least two carbon atoms from the nitrogen atom to which R is bound,

R_1 is

i. hydrogen or alkyl of 1 to 4 carbon atoms, in the 2,3,6 or 7 position, or

ii. chlorine or bromine, in the 2, 3 or 7 position,

iii. nitro or-NHA wherein A is alkanoyl of 1 to 4 carbon atoms, in the 2, 3 or 7 position, or

iv. fluorine, cyano or COOB, wherein B is alkyl of 1 to 4 carbon atoms, in the 2 or 3 position, and

R_2 is

i. hydrogen or alkyl of 1 to 4 carbon atoms in the 2, 3, 6 or 7 position,

ii. chlorine or bromine, in the 2, 3 or 7 position, or

iii. fluorine in the 2 or 3 position, or a pharmaceutically acceptable acid addition salt thereof.

2. A method of treating Angina pectoris, hyperkinetic heart syndrome and conditions resulting from muscular hypertrophic subvalvular aortic stenosis in animals which comprises administering to an anima in need of such treatment a therapeutically effective amount of a compound of claim 1.

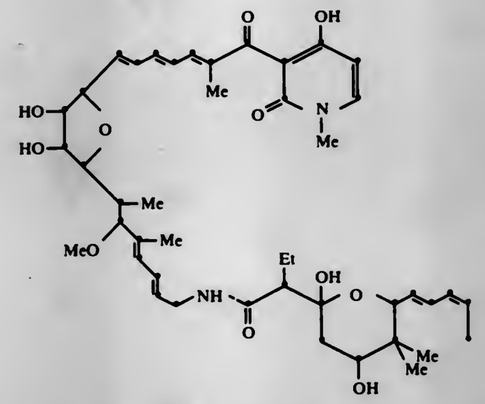
4,071,631

ANTIBIOTIC A21A

Sheldon B. Zimmerman, Springfield, N.J., and John H. Chalmers, Jr., Houston, Tex., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 29, 1976, Ser. No. 736,794
Int. Cl.² C07D *405/14*
U.S. Cl. 424—263 **3 Claims**

1. A compound having the following structure:



or its pharmaceutically acceptable salts or esters.

4,071,632

METHOD OF ALLEVIATING HYPERTENSION

James L. Butterfield, New Berlin, and George C. Wright, Norwich, both of N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Dec. 30, 1976, Ser. No. 755,457
Int. Cl.² A61K *31/44*
U.S. Cl. 424—263 **1 Claim**

1. A method for alleviating hypertension which comprises administering to a hypertensive host an antihypertensive amount of 3-amino-2-hydrazinopyridine hydrochloride in acceptable pharmaceutical dosage form.

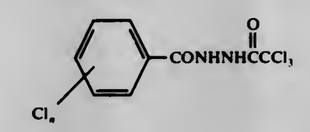
4,071,633

FUNGICIDAL N-TRICHLOROACETYL-N'-CHLOROBENZOYLHYDRAZINE DERIVATIVES

Katsumichi Aoki; Susumu Shimizu; Keigo Satake; Shiro Yamazaki, and Nobuo Hatakeyama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

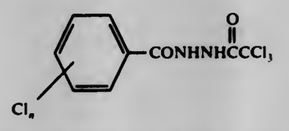
Filed Feb. 25, 1977, Ser. No. 772,131
Claims priority, application Japan, Mar. 2, 1976, 51-22811
Int. Cl.² A01N *9/20*; C07C *103/82*
U.S. Cl. 424—324 **7 Claims**

1. N-trichloroacetyl-N'-chlorobenzoylhydrazine derivative having the following formula:



where *n* stands for an integer of 1 or 2.

4. Agricultural fungicidal composition including N-trichloroacetyl-N'-chlorobenzoylhydrazine derivative having the following formula:



where *n* stands for an integer of 1 or 2; in a fungicidally effective amount, with a suitable carrier.

4,071,634

PROTEINACEOUS LOW FAT SPREAD

Inga Elna Maria Wilton, Stockholm; Lennart Olof Gunnemar Envall, Lidingoe; Kurt Lage Sundstroem, Helsingborg, all of Sweden, and David Patrick Joseph Moran, Potters Bar, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 2, 1976, Ser. No. 737,926
Claims priority, application United Kingdom, Nov. 7, 1975, 46214/75
Int. Cl.² A23D *3/00, 3/02*
U.S. Cl. 426—604 **6 Claims**

1. A low fat spread having a total fat content of 30 to 50% by weight comprising a continuous fatty phase containing a fat blend which is plastic at room temperature and a dispersed proteinaceous aqueous phase containing 0.01-2% of phosphatides, 2-8% of proteinaceous ingredients and 1-30% of dispersed fat, calculated on the weight of the low fat spread, the weight ratio of continuous to dispersed fat being from 1:1 to 40:1.

4,071,635

MIXES AND PROCESSES FOR PREPARING MEAT PRODUCTS

Willibald M. Lindl, Minneapolis; James R. Klande, Crystal, and Glenn J. VanHulle, Brooklyn Park, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jan. 12, 1976, Ser. No. 647,942
Int. Cl.² A23L *1/31*
U.S. Cl. 426—264 **18 Claims**

1. A dry mix composition for use in the preparation of cooked meat products of the nature of lunchmeat specialties consisting essentially of the identified ingredients in the following approximate %'s by weight:

	%
(1) Starch or starch source material	25 to 85
(2) Protein component	1.5 to 55
(3) Meat curing agent	0.10 to 3.0
(4) Alkaline phosphate salt	0.10 to 15.0
(5) Sodium Chloride	1.0 to 25.0

wherein the protein component (2) is made up of egg albumin and a second protein in the weight ratio range of 48:1 to 1:48.

4,071,636

METHOD OF PRODUCING SHEET-FORMED BACTERICIDAL ARTICLE

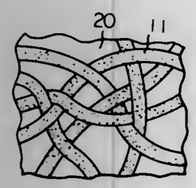
Atsushi Nishino; Kazunori Sonetake, and Hiroshi Kumano, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation-in-part of Ser. No. 414,134, Nov. 8, 1973, abandoned. This application July 11, 1975, Ser. No. 595,229

Claims priority, application Japan, Feb. 14, 1973, 48-18789; Nov. 9, 1972, 47-112698; Nov. 9, 1972, 47-112695; Nov. 9, 1972, 47-112691

Int. Cl.² B01D *39/08*

U.S. Cl. 427—2 **6 Claims**



1. A method of producing a sheet-formed bactericidal article for the sterilization of dechlorinated potable water in a water purifier, the article consisting of a cloth substrate and fine particles of silver chloride firmly deposited on the surfaces of the fiber filaments of the cloth substrate, the method comprising the steps of;

soaking a non-woven cloth sheet of partially acetal-formed polyvinyl alcohol in an aqueous solution of silver nitrate in the concentration range from 1 to 20% by weight, the hydroxyl radicals in said partially acetal-formed polyvinyl alcohol having been subjected to partial condensation with an aldehyde to form acetal radicals

$$-O-CH(R)-O-$$

such that the extent of the acetal formation is less than 50 mol% of polyvinyl alcohol;

drying the soaked sheet to remove water; and

soaking the dried sheet in an aqueous solution of sodium chloride in the concentration range from 1 to 20% by weight to convert said silver nitrate adhering to said sheet into silver chloride.

4,071,637

PROCESS FOR PUNCHING HOLES AND SLOTS IN STRUCTURAL TIMBER

Wolfhart Dittrich; Helmut Heuer; W. F. G. Kamm; Thorwald Kipp; Gerhard Lihr, and Erich Poggemeier, all of Bad Oeynhausen, Germany, assignors to Eisenwerk Weserhutte AG, Germany

Division of Ser. No. 666,576, March 15, 1976, abandoned. This application Dec. 28, 1976, Ser. No. 754,930

Int. Cl.² B05D *3/02, 1/18*

U.S. Cl. 427—12 **1 Claim**

1. A process for introducing holes or straight or circular slots approximately normal to the surface of a cut timber to an approximately predetermined depth, comprising directing at least one arc erosion beam of high energy or high energy density at the sites of said holes or slots to destroy the timber material at said sites corresponding to the desired hole diameters or slot widths.

4,071,638

METHOD OF APPLYING A METALLIC COATING WITH IMPROVED RESISTANCE TO HIGH TEMPERATURE TO ENVIRONMENTAL CONDITIONS

David R. Chang, Cincinnati, and John J. Grisik, Middletown, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 521,860, Nov. 7, 1974, Pat. No. 3,951,642. This application Oct. 9, 1975, Ser. No. 621,081

Int. Cl.² B05D *1/34, 7/14;* B32B *15/20*

U.S. Cl. 427—192 **8 Claims**

1. In a method of applying an oxidation and sulfidation resistant metallic coating to a metal article, the step of applying both Hf and Al so that Hf comprises 0.1 - 10 weight percent of the coating.

4,071,639

COATING MATERIAL AND METHOD

David Nelson Palmer, Tolland, and Stanley Heikoff, South Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 22, 1975, Ser. No. 624,695

Int. Cl.² B65B *33/00;* C08J *3/00;* C08L *61/00*

U.S. Cl. 427—156 **6 Claims**

1. A removable, temporary coating material for providing a lubricating and scratch protective coating on an object which is to be located in a nuclear reactor environment, said coating containing no contaminating chlorine, fluorine, sulfur, lead or mercury and comprising:

a. 100 parts by weight of a polymer selected from the group consisting of polymers formed from the methyl esters of methacrylic acid and polymer formed from the combination of the methyl esters of acrylic acid and methacrylic acid such that the molecular weight will be in the range of 10^3 to 10^6 and such that there will be from 1 to 25 percent active carboxylic acid groups on the polymer chain, said polymer being capable of being rendered soluble in water and capable of forming a matrix in which lubricants can be incorporated;

b. 200 to 450 parts by weight water;

c. 0.75 to 3.0 parts by weight of a surfactant;

d. 1.00 to 4.00 parts by weight of glycerin;

e. 0.50 to 1.50 parts by weight of a lubricant selected from the group consisting of polyvinyl silicone and polyphenyl silicone, and;

f. 10 to 30 parts by weight of a reactive solubilizing agent which will render said polymer soluble in water.

4,071,640

PENETRATION PHOSPHORS FOR DISPLAY DEVICES

Stanley F. Ignasiak, Holliston, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

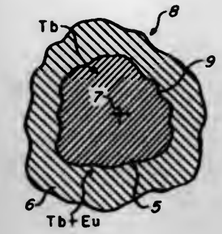
Filed Mar. 22, 1976, Ser. No. 669,426

Int. Cl.² C09K *11/14, 11/46*

U.S. Cl. 427—215 **14 Claims**

1. A method for making a cathodo-luminescent particle having a central region consisting of La_2O_2S with Tb_2O_2S uniformly distributed therethrough and a peripheral region of $La_2O_2SO_4$ with a distribution of $Tb_2O_2SO_4$ therethrough comprising:

selecting a host material consisting of La_2O_2S particles with a uniform distribution of Tb_2O_2S therethrough,



annealing said host material with oxygen for at least 25 minutes at a temperature in excess of 700° C, and

air cooling said material.

4,071,641

METHOD FOR PROTECTIVE COATING THE INSIDE OF SURFACES OF METAL TUBES BY VAPOR DEPOSITION

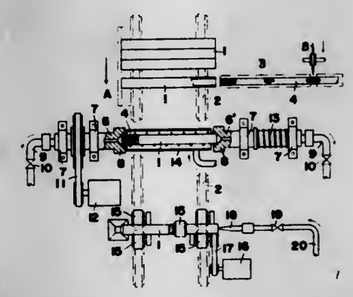
Sadao Susai, Higashi, Osaka, Japan, assignor to Daiwa Kogyo Co., Ltd., Osaka, Japan

Filed July 7, 1976, Ser. No. 703,150

Claims priority, application Japan, Sept. 3, 1975, 50-107388; July 4, 1975, 50-82914

Int. Cl.² B05D *1/00*

U.S. Cl. 427—234 **16 Claims**



1. A process for lining the inside surfaces of a metal tube with a protective coat which comprises:

shaping a resin into at least one solid form of a substantially perforated tubular member having a length substantially equal to that of the desired coating, inserting the form into said metal tube, forming a vacuum within said tube, rotating said tube at a first speed while heating it, whereby said resin forms a lining inside said tube, and cooling said tube and said resin.

4,071,642

METHOD OF REINFORCING POROUS MATERIALS

Katsuhiko Oka, Osaka, Japan, assignor to Asahi Fancy Plywood Co., Ltd., Osaka, Japan

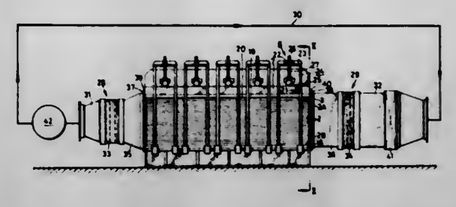
Filed July 23, 1976, Ser. No. 707,940

Claims priority, application Japan, Aug. 1, 1975, 50-94474

Int. Cl.² B05D *3/02, 7/00;* C23C *13/00*

U.S. Cl. 427—243 **8 Claims**

1. A method of reinforcing a porous material comprising coating a desired surface of a porous material having a specific gravity of 0.2 to 1.0 with 2 to 50% by weight of a polymerizable substance based on the weight of the porous material, placing the coated porous material into a container having a capacity approximately equal to the volume of the coated material, hermetically sealing the container, and without the application of pressure heating the closed container to diffuse at least part of the polymerizable substance through the porous



material upon vaporization and to subsequently polymerize the polymerizable substance.

4,071,643

METHOD OF MANUFACTURING BEARING MATERIAL

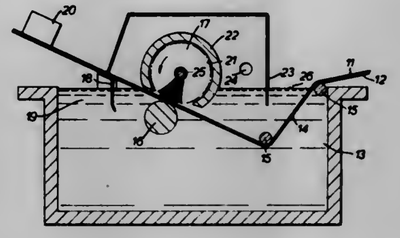
George Christopher Pratt, Chorleywood; Barry John Eastwood, High Wycombe; Anthony Dennis Michael, and Leonard Heath, both of London, all of England, assignors to The Glacier Metal Company Limited, Wembly, England

Division of Ser. No. 435,933, Jan. 23, 1974, abandoned. This application Nov. 20, 1975, Ser. No. 633,695

Claims priority, application United Kingdom, Jan. 24, 1973, 3551/73

Int. Cl.² C23C *1/06*

U.S. Cl. 427—292 **2 Claims**



1. A method of manufacturing a plain bearing, which comprises

bonding an aluminum or aluminum alloy interlayer to a continuous steel backing strip;

passing the resulting composite strip below the surface of a bath of molten lead/tin alloy coating material;

holding the composite strip under the surface of the bath of coating material until its temperature is substantially equal to that of the bath of coating material;

removing oxide from the surface of the interlayer, during its stay in the bath, and coating the resulting cleaned surface with said coating material;

withdrawing the coated composite strip from the bath over means retaining the strip straight across its width; casting a lead/tin alloy overlay onto the coated surface of the interlayer; and

forming the coated composite strip material with its overlay into a semi-cylindrical bearing shell without removing metal in a machining operation.

4,071,644

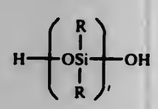
METHOD FOR RENDERING FLEXIBLE SHEET MATERIAL NON-ADHERENT

Maurice E. Grenoble, Ballston Lake, N.Y., assignor to General Electric Company Silicone Products Department, Waterford, N.Y.

Division of Ser. No. 523,898, Nov. 14, 1974, abandoned. This application Mar. 18, 1975, Ser. No. 559,488
Int. Cl.[2] B05D 7/04, 5/08, 3/10; B05P 1/36
U.S. Cl. 427—302 4 Claims

1. A method for rendering flexible sheet materials non-adherent to surfaces which normally adhere thereto, said method comprising applying to said flexible sheet material, an amount of a solventless composition that will render said flexible sheet material non-adherent to surfaces which normally adhere thereto, said solventless composition comprising:

a. from 5–20 parts by weight of a silanol chainstopped polysiloxane having the formula:



wherein R is a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical or a cyanoalkyl radical and *t* has a value which will give a viscosity between 300 and 1,000 cstks. at 25° C;

b. from 0.1 to 5 parts by weight of an organic hydrogenpolysiloxane of the formula:

$$(R)_a(H)_bSiO_{\frac{(4-a-b)}{2}}$$

wherein R is the same as hereinabove defined and *a* is 0 to 3, *b* is 0.005 to 2.0 and *a* plus *b* is 0.8 to 3.0; and a sufficient amount of a dialkyltin catalyst for curing said composition.

4,071,645

AQUEOUS COATING COMPOSITION

Joe E. Kahn, Hartland, Wis., assignor to Acme Chemical Company, Milwaukee, Wis.

Filed Mar. 12, 1976, Ser. No. 666,185
Int. Cl.[2] B05D 3/04
U.S. Cl. 427—340 21 Claims

1. An aqueous coating composition driable to provide a substantially clear finish on a substrate to which the coating composition is applied comprising

an aqueous phase;

a non-volatile, solid film former, which is capable of forming a smooth, substantially colorless, protective film on the substrate, uniformly dispersed in said aqueous phase;

a sufficient amount of a dispsersing agent to form a stable dispersion of said film former in said aqueous phase and to permit said film former upon evaporation of the water to deposit therefrom as a smooth film on the substrate; and

a water-soluble, acid-base indicator which is colored at a pH above a predetermined level and is colorless at a lower pH, said coating composition having a pH below said predetermined level and the amount of said indicator being sufficient to cause the resultant dried film to change to the color of said indicator when an aqueous stripping solution capable of disrupting the resultant dried film and having a pH above said predetermined pH is applied thereto;

whereby, after application of said coating composition on the substrate and evaporation of the water, a substantially colorless, protective film including said indicator is formed on the surface of the substrate, and, upon subsequent application of the stripper solution to the resultant dried film, the wetted film changes to the color of said indicator.

18. A method for treating and preserving the surface of a substrate comprising

applying on the surface of the substrate an aqueous coating composition which is driable to a substantially clear finish and includes as its essential ingredients:

an aqueous base;

a non-volatile, solid film former, which is capable of forming a smooth, substantially colorless, protective film on the substrate and includes an emulsifiable acrylic copolymer, uniformly distributed in said aqueous phase;

a sufficient amount of a dispersing agent to form a stable dispersion of said film former in said aqueous phase and to permit said film former upon the evaporation of the water to deposit therefrom as a smooth film on the substrate; and

an acid-base indicator which is colored at a pH above a predetermined level and is colorless at a lower pH, said coating composition having a pH below said predetermined level and the amount of said indicator being sufficient to cause the resultant dried film to change to the color of said indicator when an aqueous stripping solution capable of disrupting the resultant dried film and having a pH above said predetermined level is applied thereto;

whereby, after application of said coating composition on the substrate and evaporation of the water therefrom, a substantially colorless protective film including said indicator is formed on the surface of the substrate, and, upon subsequent application of the stripper solution to the resultant dried film, the wetted film changes to the color of said indicator.

4,071,646

HIGH SOLIDS CONTENT ACTIVE CLAY COATING FORMULATIONS AND METHODS FOR PRODUCING AND APPLYING THE SAME

Rodney E. Williams, Williamsville, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Division of Ser. No. 588,800, June 20, 1975, Pat. No. 4,042,412. This application Apr. 20, 1977, Ser. No. 789,264
Int. Cl.[2] C09C 1/42; B41M 5/22
U.S. Cl. 427—358 2 Claims

1. A method for coating paper comprising:

Preparing a coatable formulation comprising water, an active bentonite-type clay, an inactive clayey material selected from the group consisting of chalk and mixtures of chalk and kaolin and a binder, said inactive clayey material being present in the formulation in an amount sufficient to provide a total solids content in the formulation of from about 43 to about 60% by weight and a viscosity of from about 700 to about 7,000 cps; and

applying said formulation to a paper substrate using a blade coater.

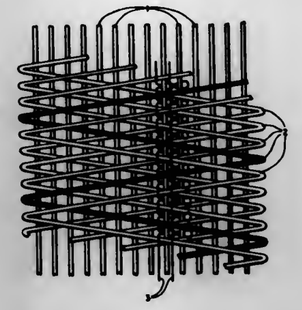
4,071,647

RUBBER GOODS

Philip B. McMullen, Ardmore, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 465,018, April 27, 1974, abandoned. This application June 21, 1977, Ser. No. 808,508
Claims priority, application United Kingdom, May 8, 1973, 21968/73
Int. Cl.[2] B32B 3/06
U.S. Cl. 428—102 3 Claims

1. A fabric structure for use in reinforcing material in polymeric structures comprising a plurality of parallel warp threads and at least one layer of a plurality of parallel weft threads extending transversely at an angle of 75° to 90° to said warp threads and positioned on one side thereof and means stitch-bonding said warp and weft threads into a unitary construction, each of said warp threads being formed of a plurality of continuous filaments and having no more than two twists per inch of length whereby the extensibility of said warp threads is reduced to a minimum, said unitary construction



providing increased penetration of the polymetric material into the fabric structure.

4,071,648

ELECTRON RADIOGRAPH RECEPTOR

Murray Samuel Welkowsky, Chatsworth, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Continuation-in-part of Ser. No. 532,053, Dec. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 398,484, Sept. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 362,430, May 21, 1973, abandoned. This application Apr. 21, 1976, Ser. No. 679,067
Int. Cl.[2] B32B 7/02; G03G 13/26, 15/00
U.S. Cl. 428—212 18 Claims

1. A three layer receptor sheet for positioning at an electrode of an imaging chamber to produce an electronradiogram, consisting essentially of an optically transparent dielectric plastic core layer of substantially constant resistivity arranged in contiguous relation between an optically transparent dielectric plastic image carrier layer and an antistatic electrical conducting layer, said image carrier layer having a substantially constant resistivity of at least 10^{14} ohms per square unit of area for receiving on its exposed face an electrostatic image of charges generated externally of the sheet and retaining said charge image while in contact with said core layer and exposed to light, said antistatic electrical conducting layer having a substantially constant resistivity in the range of about 10^{1} to about 10^{12} ohms per square unit of area.

4,071,649

FIREPROOF GLASSWORK

Francis Jacquemin, Monceau-sur-Sambre; Robert Terneau, Montignies-sur-Sambre, and Jean-Pierre Volturier, Gerpinnes, all of Belgium, assignors to Glaverbel-Mecaniver, Watermael-Boitsfort, Belgium

Continuation of Ser. No. 455,719, March 28, 1974, abandoned. This application May 21, 1976, Ser. No. 688,699
Claims priority, application United Kingdom, Mar. 30, 1973, 15466/73; Germany, Sept. 17, 1973, 43538/73; Sept. 17, 1973, 43536/73
Int. Cl.[2] B32B 17/06
U.S. Cl. 428—215 22 Claims

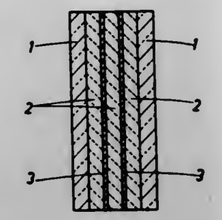
1. A fire screening glazing panel comprising

a first structural ply formed by a vitreous sheet,

a second structural ply formed by a vitreous or plastic sheet,

means for distributing heat uniformly from said first structural ply to said second structural ply upon one of said plies being subjected to heat, said means comprising a plastic membrane selected from the group consisting of polyvinylbutyral and polyurethane, and

a layer on each side of said plastic membrane, each layer comprising a material which is convertible to form a thermally insulating barrier of porous or cellular structure when said panel is subjected to sufficient heat, such as when said panel is subjected to a fire or the like, said heat-convertible barrier forming material being an hydrated metal salt selected from the group consisting of aluminates, plumbates, stannates, alums, borates, alkali



metal silicates and phosphates, said plastic membrane with a layer of heat-convertible material on each side thereof being sandwiched between said first and second plies and each of said layers of barrier forming material being between 0.1 and 8 mm. thick.

4,071,650

FILMS AND ABSORBENT ARTICLES MADE FROM COPOLYMERS HAVING A COPOLYMERIZED CROSSLINKER

James R. Gross, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 494,439, Aug. 5, 1974. This application Aug. 20, 1975, Ser. No. 606,148
Int. Cl.[2] B32B 27/30; C08F 220/34; B29D 7/02
U.S. Cl. 428—260 12 Claims

1. A substantially dry water swellable polyelectrolyte film prepared by the method which comprises

1. preparing a solution which comprises,

I. a solvent selected from the group consisting of water, lower alcohols and mixtures thereof, and

II. about 5 to about 60% by weight based on (I) of a crosslinkable carboxylic copolymer which contains in the copolymer

A. about 25 to about 98% by weight based on the total weight of the copolymer of units derived from an alkali metal salt of an olefinically unsaturated monosulfonic or monocarboxylic acid;

B. about 2 to about 50% by weight of units derived from an olefinically unsaturated monocarboxylic acid; and

C. about 0.1 to about 5.0% by weight of units derived from an N-substituted acrylamide or methacrylamide having the formula

$$H_2C{=}CR{-}C(O){-}NHCH_2{-}O{-}R'$$

wherein R is selected from hydrogen or methyl and R' is hydrogen or an alkyl group of 1–8 carbons,

2. spreading a coating of said solution on an impervious substrate,

3. heating said coated substrate to a temperature greater than about 30° C to crosslink said polyelectrolyte and

4. separating said crosslinked polyelectrolyte film from said substrate.

7. An absorbent article coated with a substantially dry water swellable polyelectrolyte prepared by the method which comprises

1. preparing a solution which comprises,

I. a solvent selected from the group consisting of water, lower alcohols and mixtures thereof, and

II. about 5 to about 60% by weight based on (I) of a crosslinkable carboxylic copolymer which contains in the copolymer

A. about 25 to about 98% by weight based on the total

weight of the copolymer of units derived from an alkali metal salt of an olefinically unsaturated monosulfonic or monocarboxylic acid:

B. about 2 to about 50% by weight of units derived from an olefinically unsaturated monocarboxylic acid; and

C. about 0.1 to about 5.0% by weight of units derived from an N-substituted acrylamide or methacrylamide wherein the substitutent group is a hydroxy methylene or an alkoxymethylene group having 1-8 carbons,

2. applying a solution of said composition on a relatively thin article,

3. heating said coated article to a temperature greater than about 30° C to crosslink said polyelectrolyte.

4,071,651

TREATMENT OF FIBROUS MATERIAL

Denis Raymond Hicklin, Bath; Derek Graham Walter White, and Brian William Attwood, both of Bristol, all of England, assignors to Karl Kroyer St. Anne's Limited, Bristol, England

Continuation of Ser. No. 617,647, Sept. 29, 1975, abandoned. This application Jan. 4, 1977, Ser. No. 756,713

Claims priority, application United Kingdom, Oct. 10, 1974, 43985/74; Apr. 9, 1975, 14475/75

Int. Cl.² B32B *7/00*

U.S. Cl. 428—284 **15 Claims**



1. A method of making a multi-ply consolidated dry-formed essentially cellulosic fibrous web having at least three plies including an outer ply, at least one intermediate ply and a second outer ply, and wherein the intermediate ply or plies is or are impregnated with a sizing agent and in continuous contact with the outer plies, comprising the steps of:

dry-forming said outer ply, dry forming at least one said intermediate ply and dry forming said second outer ply, including sandwiching the intermediate ply between said outer plies in continuous contact therewith and consolidating the three plies together by hot moist pressing thereof into a self-sustaining multi-ply web, each said dry forming step including laying down the cellulosic fibers as a ply in a dry state, and including adding moisture to the dry laid plies prior to said consolidating step,

impregnating said outer plies with a stiffening agent to render them stiffer than the intermediate ply or plies,

and wherein said sizing agent of the intermediate ply or plies has the characteristic of rendering the intermediate ply or plies relatively impervious to the stiffening agent of the outer plies.

4,071,652

THERMALLY CONDUCTIVE ELECTRICAL TAPE

Robert A. Brullo, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 29, 1976, Ser. No. 671,572

Int. Cl.² B32B *5/16, 27/20*

U.S. Cl. 428—323 **8 Claims**

1. A thermally conductive tape capable of insulating heated conductor surfaces carrying high current densities, said tape being a strip formed of a composition comprising a blend comprised of ethylene propylene elastomer and an elastomer based principally on isobutylene, sufficient semi-reinforcing or non-reinforcing, non-black filler having a thermal conductivity of at least 1.1×10^{-3} cal-cm/cm²·°C·sec to endow the tape with a thermal resistivity of no more than 350° C-cm per watt, a modulus at 50% elongation of less than about 350 psi, and an ultimate elongation greater than about 700%, about 10-50 parts per 100 parts by weight elastomer of thermoplastic resin selected from polyethylene and polypropylene or mixtures thereof, about 5-75 parts per 100 parts by weight elastomer of compatible tackifier for said elastomer, and about 10-50 parts per 100 parts by weight elastomer of compatible plasticizers and softeners for said elastomers.

4,071,653

POWDERY COPOLYMER COMPRISING METHYL METHACRYLATE AND MONOMER HAVING A BASIC NITROGEN ATOM

Hanns Boessler; Peter Quis, both of Darmstadt; Joachim Buechse, Astheim, and Hubert Rauch, Welterstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed Sept. 27, 1976, Ser. No. 727,013

Claims priority, application Germany, Sept. 30, 1975, 2543542

Int. Cl.² B32B *33/00*

U.S. Cl. 428—332 **9 Claims**

1. A powdery copolymer having a powder particle size from 0.1 to 200 microns, said copolymer comprising 50 to 99.8 percent by weight of methyl methacrylate, 0.2 to 10 percent by weight of at least one monomer having a basic nitrogen atom, 0 to 49.8 percent by weight of at least one other monomer selected from the group consisting of alkyl acrylates having 1 to 4 carbon atoms in the alkyl group, alkyl methacrylates having 2 to 4 carbon atoms in the alkyl group, acrylonitrile, styrene, vinyl toluene, α-methyl styrene, and vinyl esters, and 0 to 10 percent by weight of at least one member selected from the group consisting of vinyl pyrrolidone and the hydroxyalkyl esters, amides, methylolamides, and methylol ether amides of acrylic acid and methacrylic acid, said copolymer being prepared by emulsion copolymerization such that at least 50 percent by weight of the monomer or monomers having a basic nitrogen atom is first added to the monomer or monomers not having a basic nitrogen atom after the polymerization of at least half of said monomer or monomers not having a basic nitrogen atom, the resulting copolymer then being recovered from the resultant latex in powder form.

4,071,654

MAGNETIC RECORDING MEMBER

Hiroshi Ogawa; Kazuhide Ishii; Matsuaki Nakamura; Yasuo Tamai, and Goro Akashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 28, 1975, Ser. No. 608,500

Claims priority, application Japan, Aug. 28, 1974, 49-98468

Int. Cl.² G11B *5/78*

U.S. Cl. 428—336 **5 Claims**

1. A magnetic recording material comprising a nonmagnetic flexible support up to 50 μm thick having thereon a magnetic recording layer comprising a ferromagnetic powder dispersed in a binder, the surface of said non-magnetic flexible support having the magnetic recording layer thereon satisfying an S-factor expressed by the following relationship (I-1)

$$S_1 \leqq \frac{d + 1.15}{15} \qquad \text{(I-1)}$$

wherein S_1 is the surface roughness in μm of the surface of the non-magnetic flexible support having the magnetic recording layer thereon and d is the thickness in μm of the magnetic recording layer, with the thickness (d) of the magnetic recording layer being about 3 μm or less, and the back surface of said non-magnetic flexible support opposite that having said magnetic recording layer thereon satisfying an S-factor expressed by the following relationship (I-2).

$$\frac{d + 1.15}{15} < S_2 \leqq 0.8 \qquad \text{(I-2)}$$

wherein S_2 is the surface roughness in μm of the back surface of the non-magnetic support opposite that having said magnetic recording layer thereon and d is as described above.

4,071,655

TREATED FERROMAGNETIC CARRIER PARTICLES FOR DEVELOPMENT POWDERS

George Brana, Bridgeport, Conn., and Bheema Rao Vijayendran, Berkley Heights, N.J., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 20, 1976, Ser. No. 752,363

Int. Cl.² G03G *9/10, 9/14*

U.S. Cl. 428—403 **7 Claims**

1. A ferromagnetic carrier particle for use in electrophotographic development of latent images capable of inducing an electrostatic charge in a toner mixed therewith the surface of which has been treated with a sodium salt of polystyrene sulfonic acid having a minimum molecular weight of 50,000, said treated particle having a charge to mass ratio of 24×10^{-6} to 36×10^{-6} coul/gm.

4,071,656

PLATED POLYPROPYLENE COMPOSITION

Robert W. Miller, Mentor, and Samuel Garry Howell, Cincinnati, both of Ohio, assignors to ARCO Polymers, Inc., Philadelphia, Pa.

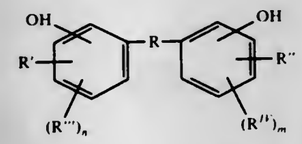
Continuation-in-part of Ser. No. 108,764, Jan. 22, 1971, Pat. No. 3,929,702, which is a continuation-in-part of Ser. No. 13,042, Feb. 20, 1970, abandoned. This application Oct. 29, 1975, Ser. No. 626,709

Int. Cl.² B23P *3/00*; C25D *5/56*

U.S. Cl. 428—626 **10 Claims**

1. A shaped plastic article having a predetermined surface configuration, formed from a polymer composition, a non-electroplated, electrically conductive coating intimately adhering to said surface; and at least one electroplated metal coating, electroplated to said electrically conductive coating; said polymer composition comprising a polymer selected from the group consisting of polypropylene homopolymers and copolymers or propylene and other alpha-olefins wherein at least 80 percent of the monomer units are propylene, said polymer having incorporated therein:

a. From about 0.1 to about 10.0 parts by weight per 100 parts by weight of polymer of a polyhydroxy aromatic compound selected from the group consisting of resorcinol, alkyl substituted gamma-resorcylic acids, aryl substituted gamma-resorcylic acids, aralkyl substituted gamma-resorcylic acids, and compounds with the scope of the formula:



wherein R is a member selected from the group consisting of sulfur atoms, sulfur containing radicals, and methylene radicals; wherein R' R'', R''' and R'' may be the same or different, and each is a member selected from the group consisting of hydrogen atoms alkyl radicals having less than 15 carbon atoms; and wherein n and m are integers which may be the same or different, and each may be 1, 2, or 3;

b. from about 0.25 to about 20.0 parts by weight per 100 parts by weight of polymer of a rosinous material, said rosinous material being a member selected from the group consisting of natural rosins, wood rosin esters, polymeric rosinous materials, hydrogenated wood rosins, polyterpene resins, and mixtures of at least two of said members.

4,071,657

METAL SHEET FOR DRAWING

Daniel Raymond Rault, Metz-Vallieres, France, assignor to Societe Lorraine de Laminage Continu, France

Filed Nov. 4, 1975, Ser. No. 628,600

Claims priority, application France, Nov. 6, 1974, 74 36872; Oct. 9, 1975, 75 30984

Int. Cl.² B32B *15/00*

U.S. Cl. 428—646 **7 Claims**

1. A metal sheet which is intended to be subjected to a drawing operation for the fabrication of a shaped metal part, the entire surface of said sheet comprising:

a plurality of substantially similar plateau portions of predetermined dimension and height spaced from one another in both the transverse and longitudinal directions to define valley portions therebetween;

the average ratio of the dimension of said valley portions to the dimension of said plateau portions being from 1:1 to 3:1;

the average dimension of the plateau portions being from 40 to 200 micrometers;

the height of said plateau portions being greater than 6 micrometers.

4,071,658

GLASS FOR METAL SEAL

Paul Millard Phillips, Sugar Grove, Pa., and John Gleason Donaldson, Tustin, Calif., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 3, 1976, Ser. No. 747,362

Int. Cl.² B32B *15/16, 15/18, 15/20*

U.S. Cl. 428—555 **7 Claims**

1. A glass to metal seal of a metallic composite, said composite comprising:

a central core portion of a wrought nickel-iron alloy wherein said nickel comprises about 42 percent by weight of said core with the balance iron;

a substantially uniformly thick sheath portion of a low carbon steel alloy bonded about said core portion; and

a substantially uniformly thick shell portion of a glass wetting metal bonded about said sheath portion, said composite having an average coefficient of thermal expansion within the range of from about 7.5 to about 10.0 cm/cm/° $C \times 10^{-6}$ over a temperature range of from about 25° C to about 400° C.

4,071,659

SOLAR ABSORPTION SURFACE PANEL

Teuvo J. Santala, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 13, 1975, Ser. No. 631,792

Int. Cl.² F24J *3/02*; B32B *15/18, 15/20*

U.S. Cl. 428—677 **4 Claims**

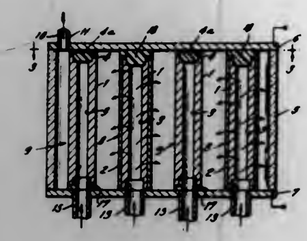
1. In a solar collector plate having a core and an absorption surface thereon, the improvement comprising said surface being made from an intermetallic compound of aluminum and nickel and formed by joining layer of aluminum and a layer of nickel which is at least 66 percent as thick as said aluminum layer and heating said joined layers to a temperature between 1000° F and 1550° for a period of 5 minutes to one hour, said intermetallic compound having a sponge like surface morphology which results in high absorptance and low infrared emittance values.

4,071,660

ELECTRODE FOR A ZINC-CHLORIDE BATTERY AND BATTERIES CONTAINING THE SAME

Thomas G. Hart, Royal Oak, Mich., assignor to Energy Development Associates, Madison Heights, Mich.

Filed Apr. 26, 1976, Ser. No. 680,141
Int. Cl.² H01M 10/38
U.S. Cl. 429—15 7 Claims



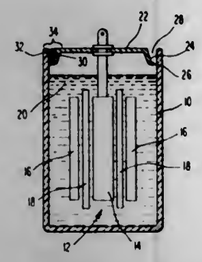
1. A zinc-chlorine high energy density battery comprising a chamber, means to withdraw gas from the chamber, at least one chlorine electrode within the chamber, at least one aqueous zinc chloride electrolyte porous zinc electrode within the chamber, means to introduce substantially dechlorinated electrolyte into the interior of the zinc electrode, and means to withdraw the electrolyte from the chamber.

4,071,661

PROCESS FOR REPAIRING DEFECTIVE BATTERY SEALS

Philip Bernstein, Yardley; James P. Coffey, Hatboro, both of Pa., and Stanley M. Davis, Princeton, N.J., assignors to ESB Incorporated, Phila, Pa.

Filed Aug. 12, 1976, Ser. No. 713,682
Int. Cl.² H01M 6/50
U.S. Cl. 429—49 9 Claims



1. A process for repairing while in service, a secondary battery which is comprised of a container, a cover, a cell element located in the container, the element having an anode, a cathode, a separator and electrolyte, and a sealant area comprised of a sealant space, a sealant located in the sealant space and areas of the container and cover near the sealant space, said sealant area being defective in that the sealant contains cracks and voids;

the process comprising

1 preparing the sealant area;

2 positioning a repairant tape over the defective sealant, the tape comprising

95-60% by weight atactic polypropylene, and

5-40% by weight non-conductive filler; and

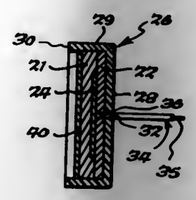
3 heating the repairant tape to a temperature sufficient to coat and repair the defective sealant area.

4,071,662

LITHIUM-IODINE BATTERY HAVING COATED ANODE

Ralph T. Mead, Kenmore; Wilson Greatbatch, Clarence, and Frank W. Rudolph, Depew, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Division of Ser. No. 525,051, Nov. 19, 1974, Pat. No. 3,957,533.
This application Jan. 7, 1976, Ser. No. 647,002
Int. Cl.² H01M 2/02
U.S. Cl. 429—178 12 Claims



1. An anode for a lithium-iodine cell wherein the cathode contains a charge transfer complex of an organic donor component and iodine, said anode comprising:

a. a lithium element having a surface adapted to be operatively associated with the cathode in the cell; and

b. a protective coating on said lithium anode surface consisting essentially of an organic electron donor component material, said protective coating preventing recrystallization of iodine on said lithium anode surface when the charge transfer complex contacts said lithium anode surface through said protective coating so as to maximize the area of said lithium anode surface operatively contacted by the charge transfer complex.

9. A method of making an anode for use in a lithium-iodine cell wherein the cathode contains a charge transfer complex of an organic donor component and iodine comprising the steps of:

a. providing an anode including a lithium element having a surface adapted to be operatively associated with the cathode in the cell; and

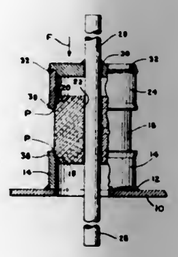
b. applying a protective coating to said anode surface, said coating consisting essentially of an organic electron donor component material.

4,071,663

BATTERY FEEDTHROUGH PENETRATOR

Ambrose M. Bredbenner, Jr., Averill Park, N.Y., assignor to Interpace Corporation, Parsippany, N.J.

Filed Apr. 1, 1977, Ser. No. 783,672
Int. Cl.² H01M 2/06
U.S. Cl. 429—181 8 Claims



1. In a battery having a housing provided with a circular opening, an electrical feedthrough penetrator comprising:

a first cylindrical metal sleeve outwardly extending from the housing of the battery and fixed to the peripheral edge of the housing surrounding the opening;

a tubular ceramic member of high compressive strength being provided with an axial passageway, said tubular ceramic member having a first end portion tapered from a first outside diameter which is less than the inside diameter of said first cylindrical metal sleeve to a second outside diameter which is greater than said inside diameter and a second end portion tapered from a third outside diameter to a fourth outside diameter, the tapered first end portion of said tubular ceramic member being compressively fitted in the end portion of said first cylindrical metal sleeve remote from the battery housing;

a second cylindrical metal sleeve having an inside diameter intermediate said third and fourth outside diameters, a metal cap fixed to and covering one end portion of said second cylindrical sleeve, said cap being provided with a central opening; and

a rod-like conductor fixed to said cap and extending through the central opening thereof in both directions;

the other end portion of said second cylindrical sleeve being fitted to the second end portion of said tubular ceramic member with said rod-like conductor extending through the axial passageway of said tubular ceramic member into the region encompassed by said first cylindrical sleeve.

8. A method of providing a feedthrough penetrator for a battery having a housing with a circular opening comprising the steps: plating with a malleable metal the inner wall of one end portion of a first cylindrical metal sleeve having a given inside diameter, fixing the other end portion of said first cylindrical sleeve to the housing about the circular opening, providing a tubular element of ceramic material with high compressive strength, said tubular element having a central passageway and being tapered at each end portion from a first outside diameter which is less than said given inside diameter to a second outside diameter which is greater than said given inside diameter, resting one end portion of said tubular element in the said one end portion of said first cylindrical sleeve, plating with said malleable metal the inner wall of one end portion of a second cylindrical metal sleeve having said given inside diameter, fixing to the other end portion of said second cylindrical sleeve a cap being provided with a central opening, fixing to said cap a rod-like conductor which extends in both directions from said central opening, resting the other end portion of said second cylindrical sleeve onto the other end portion of said tubular element with the rod-like conductor passing through the central passageway thereof into the region surrounded by said first cylindrical sleeve, and axially ramming said cylindrical sleeves toward each other whereby the plating material on the inner walls of said sleeve is smeared over the abutting surface of said tubular element to provide a seal.

4,071,664

ELECTROLYTE SALT ADDITIVE

Arabinda N. Dey, Needham, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Apr. 1, 1977, Ser. No. 783,585
Int. Cl.² H01M 6/14
U.S. Cl. 429—194 14 Claims

1. An electrochemical cell comprising an anode, a cathode depolarizer, a cathode collector, and an electrolyte comprising said depolarizer having dissolved therein a first electrolyte salt and a minor amount of a second salt having a metal cation and a clovoborate anion, said second salt being present in an amount sufficient to alleviate voltage delay.

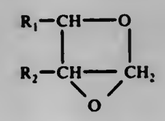
4,071,665

HIGH ENERGY DENSITY BATTERY WITH DIOXOLANE BASED ELECTROLYTE

Bruce Hollis Garth, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 289,592, Sept. 18, 1972, abandoned, and a continuation-in-part of Ser. No. 249,048, Aug. 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 112,413, Feb. 3, 1971, abandoned. This application July 29, 1974, Ser. No. 492,937
Int. Cl.² H01M 6/16
U.S. Cl. 429—197 2 Claims

1. In a high energy density galvanic battery comprising at least one voltaic cell comprising a lithium metal anode, an electrolyte solution and a cathode depolarizer reducible by the lithium anode, the improvement comprising a non-aqueous electrolyte solution in which the electrolyte solvent consists essentially of from 99.9 to about 50% by weight of a dioxolane of the formula



wherein R_1 and R_2 are the same or different and are hydrogen or alkyl of one to three carbon atoms, from 0 to about 50% by weight of an ether selected from aliphatic ethers and cycloaliphatic carbohydric ethers having a molecular weight of no more than about 165, an about from 0.1% to 10% by weight of a tertiary nitrogen base, dissolved therein sufficient nonreactive conductive salt to provide a conductivity at 25° C. of 1×10^{-4}ohm^{-1}cm^{-1}.

4,071,666

ELECTROCONDUCTIVE RESINS AND INTERMEDIATES AND ELECTROCONDUCTIVE COATED PAPER

Joseph L. Garner, Sanford, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 19, 1976, Ser. No. 668,335
Int. Cl.² C08K 5/03
U.S. Cl. 526—1 12 Claims

1. A composition comprising, by weight:

Component A. from about 85 to about 95 parts of a polystyrene characterized by a weight average molecular weight, $\overline{M}_w$, of about 5,000 to about 45,000 and an average molecular weight distribution, $\overline{M}_w/\overline{M}_n$, of about 2 to about 6; and

Component B. from about 15 to about 5 parts of a cyclic hydrocarbon of from 9 to about 25 carbon atoms which may contain up to two hetero-oxygen atoms, comprising 1 to 3 benzoaromatic rings;

which composition has been chloromethylated or bromomethylated to introduce chloromethyl or bromomethyl groups on about 70 to 90 percent of the aromatic rings thereof.

4,071,667

PROCESS OF PREPARING POLYESTERS HAVING CARBONYL GROUP AND ETHER LINKAGE IN THE PRINCIPAL CHAIN THEREOF

Sakuji Ikeda, Tokyo, and Kazuo Soga, Yokohama, both of Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

Filed Jan. 2, 1976, Ser. No. 646,013
Int. Cl.² C08G 67/00
U.S. Cl. 526—11.1 8 Claims

1. A process of preparing poylesters having carbonyl groups and ether likages in the principal chain thereof which consists essentially of reacting carbon dioxide with vinyl compounds or diene compounds having Alfrey-Prices values of less than −0.9.

4,071,668

ALUMINUM CONTAINING ALKENYLBENZENE RESIN

George G. Merkl, 46 Sunset Court, Haworth, N.J. 07641

Continuation-in-part of Ser. No. 305,819, Nov. 13, 1972, abandoned. This application Nov. 29, 1976, Ser. No. 745,835
Int. Cl.[2] C08F *30/04*; C08K *5/16*; C08G *2/00, 69/44*
U.S. Cl. 526—11.1 8 Claims

1. A method of preparing an aluminum containing resin which comprises:

contacting and reacting under resin promoting conditions

I. activated aluminum comprising high purity aluminum metal activated through permeation with a metal selected from mercury, gallium and indium/gallium alloys and

II. a resin forming alkenylbenzene monomer system

said activated aluminum being present in an amount effective to catalyze the resin formation and to introduce into the formed resin up to 5.0% by weight aluminum; and

terminating the resin formation reaction by withdrawing unreacted aluminum from the reaction system.

4,071,669

METAL SALTS OF MODIFIED ANHYDRIDE RESIN

James J. Tazuma, Stow, and Mario D. Zadra, Barberton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 24, 1976, Ser. No. 699,910
Int. Cl.[2] C08F *8/42*
U.S. Cl. 526—47.3 8 Claims

1. A metal salt of an anhydride-modified resin prepared by the method which comprises reacting in an aqueous medium (A) about 0.4 to about one equivalent of a water soluble salt selected from chlorides and nitrates of metals selected from zinc, aluminum, lead and cobalt andmone equivalent of (B) the sodium or potassium salt of the half acid/half ester of said anhydride-modified resin; where said half acid/half ester salt is prepared by (1) reacting said anhydride-modified resin to reduce its acid number about 40-60 percent with an alcohol selected from methanol, ethanol, isopropanol, n-butanol and isooctyl alcohol and (2) reacting the product thereof as a mixture with an aqueous solution of about 75 to 110 stoichiometric percent of a hydrozide selected from at least one of sodium hydroxide and potassium hydroxide; where said anhydride-modified resin is comprised of about 45 to about 55 mole percent units derived from maleic anhydride and, correspondingly, about 55 to about 45 mole percent units derived from a piperylene/methyl branched monoolefin backboned resin comprising about 40 to about 70 weight percent units derived from piperylene and correspondingly about 60 to about 30 weight percent units derived from at least one methyl branched α or β monoolefin containing 4 to 6 carbon atoms, where the weight ratio of piperylene to said branched monoolefin is in the range of about 0.8/1 to about 2/1.

4,071,670

METHOD OF SIZING MONOMER DROPLETS FOR SUSPENSION POLYMERIZATION TO FORM SMALL PARTICLES

Edward Vanzo, Webster, and Lewis S. Smith, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1976, Ser. No. 710,495
Int. Cl.[2] C08F *2/20, 12/08, 20/18*
U.S. Cl. 526—88 9 Claims

1. A method of small particle formation comprising mixing a monomer composition in an aqueous solution comprising water and a stabilization agent, subjecting the mixture to high shear agitation for a short time of about 0.5 to about 5 minutes to size the monomer, transferring the sized monomer to a reaction vessel, slowly agitating the sized monomer in said reaction vessel, polymerizing the monomer and recovering polymeric particles of small, uniform size distribution wherein 95 percent of said polymeric particles range between about 5 and about 25 microns as a result of said shear agitation to size the monomer.

4,071,671

COPOLYMER OF GLYCIDYL METHACRYLATE AND ALLYL GLYCIDYL ETHER

Sheldon I. Schlesinger, East Windsor Township, Mercer County, N.J., and Veronica Cochran, Armonk, N.Y., assignors to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 509,674, Sept. 26, 1974, abandoned, which is a division of Ser. No. 297,829, Oct. 16, 1972, abandoned. This application June 18, 1976, Ser. No. 697,654
Int. Cl.[2] C08F *216/14, 220/32*
U.S. Cl. 526—89 11 Claims

1. A copolymer of glycidyl methacrylate and allyl glycidyl ether having pendant epoxy groups, an inherent viscosity of at least about 0.25 as measured in butyronitrile at 25° C, an epoxide equivalent of at least about 0.65 epoxide equivalent per 100 grams of polymer and polymerizable to higher molecular weights through said epoxy groups by the action of a cationic catalyst; said copolymer being derived from reaction of a mixture of said monomers consisting of from about 4 to about 5 moles of glycidyl methacrylate per mole of allyl glycidyl ether in the presence of a catalyst effective to initiate polymerization through ethylenic unsaturation of the monomers in a solvent at a reaction temperature below about 100° C.

4,071,672

PROCESS FOR POLYMERIZING OR COPOLYMERIZING OLEFINS

Norio Kashiwa, Iwakuni, Japan, assignor to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 412,612, Nov. 5, 1973, abandoned. This application July 28, 1975, Ser. No. 599,582
Claims priority, application Japan, Nov. 10, 1972, 47-112151; Dec. 27, 1972, 48-130052
Int. Cl.[2] C08F *4/02, 10/02*
U.S. Cl. 526—122 26 Claims

1. In a process for polymerizing or copolymerizing olefins in the presence of a catalyst consisting essentially of:

A. from 0.001 to 0.5 millimols calculated as the titanium or vanadium atoms per liter of the inert organic liquid medium of a transition metal catalyst compound prepared by reacting in an inert organic liquid medium

1. a titanium or vanadium compound selected from the group consisting of compounds of the formula TiX_4 wherein X is a halogen atom, compounds of the formula $Ti(OR)_{4-n}X_n$ wherein X is the same as defined above, R is an alkyl group, and n is zero or a positive number of less than 4, compounds of the formula VOX_3 wherein X is the same as defined above, and compounds of the formula VX_4 wherein X is the same as defined above, with

2. a solid carrier of a magnesium compound; and

B. at least 0.01 millimol per liter of the inert organic liquid medium of an organometallic compound catalyst component of a metal of Groups I to III of the periodic table selected from the group consisting of: compounds of the formula RM wherein R is an alkyl or aryl group, and M is lithium, sodium, or potassium; compounds of the formula R_2M' wherein R is the same as defined above and M' is zinc or cadmium; compounds of the formula $R_{2-l}MgX_l$ wherein R is the same as defined above, X is a halogen atom, and l is zero or 1; compounds of the formula $MAlR_4$ wherein R and M are the same as defined above; compounds of the formula $R'_{3-m}AlX_m$ wherein R' is a hydrogen atom, or an alkyl or aryl group, X is the same as defined above, and m is zero or a positive numer not greater than 3; compounds of the formula $R'_{3-n}Al(OR)_n$ wherein R' and R are the same as defined above, and n is a positive number greater than zero but not greater than 3;

and compounds of the formula RAl(OR)X wherein R and X are the same as defined above; and with the proviso that where there are two or more of R, R', and X in the above formulae, they may be the same or different;

the improvement wherein the transition metal catalyst compound is formed by reacting together:

a. a magnesium compound adduct which is the reaction product of

aa. 1 mol of a magnesium dihalide, with

ab. from 0.1 to 10 mols of an electron donor selected from the group consisting of: water; aliphatic alcohols; aliphatic carboxylic acids; aliphatic carboxylic acid esters; aromatic carboxylic acid ester; aliphatic ketones; and aromatic ketones; with the proviso that the acids and alcohols each have from 1 to 12 carbon atoms, the esters have not more than 12 carbon atoms in each of their constituent acid and alcohol moieties, and the ketones have not more than 13 carbon atoms, said reaction being carried out at a temperature of -10 to $+100$° C.;

b. a compound of silicon or tin present in an amount of from 1/50 to 50 molar times per mol of the electron donor, having the formula $R_1R_2R_3XSi$, or $R_1R_2R_3XSn$, wherein R_1, R_2 and R_3 are the same or different, and are each selected from the group consisting of hydrogen, alkyl, aryl, alkoxy, aryloxy, and halogen, and wherein X is a halogen; and

c. a compound of titanium or vanadium selected from the group consisting of compounds of the formulae: TiX_4; $Ti(OR)_{4-n}X_n$; VOX_3; and VX_4, wherein X is a halogen atom, R is an alkyl group having 1 to 12 carbon atoms, and n is zero or a positive number of less than 4.

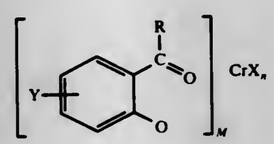
4,071,673

CATALYST AND METHOD

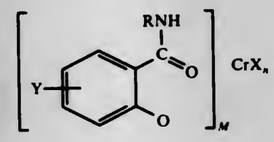
Yu-Tang Hwang, Clinton, Iowa, assignor to Chemplex Company, Rolling Meadows, Ill.

Filed Nov. 3, 1976, Ser. No. 738,555
Int. Cl.[2] C08F *4/78, 10/00*
U.S. Cl. 526—123 35 Claims

1. A catalyst prepared by dispersing on a finely divided, difficultly reducible, inorganic support of the class consisting of silica, alumina, thoria, zironia, titania, magnesia, and mixtures thereof a chromium chelate of an orthohydroxy carbonyl compound essentially of the formula of the class consisting of



and



wherein R is individually selected from hydrogen, alkyl, alkenyl, aryl, cycloalkyl, cycloalkenyl, and arylalkyl radicals and combinations of these radicals with each R containing 0–20 carbon atoms and a corresponding valence-satisfying number of hydrogen atoms, X is a negative group relative to chromium selected from the group consisting of halide, alkyl and alkoxy, Y is selected from hydrogen, hydroxyl, alkoxy, and alkyl groups, *m* is a whole number of 1 to 3, *n* is a whole number of 0 to 2, and *m* plus *n* is 2 or 3, and activating the resulting mixture by heating to and at an elevated temperature of from about 600–2000° F. in a non-oxidizing atmosphere.

4,071,674

PROCESS FOR POLYMERIZATION OR COPOLYMERIZATION OF OLEFIN AND CATALYST COMPOSITIONS USED THEREFOR

Norio Kashiwa, Iwakuni; Saburo Fuji, Otake, and Masahide Tanaka, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 396,137, Sept. 11, 1973, abandoned. This application Mar. 30, 1976, Ser. No. 672,067
Claims priority, application Japan, Sept. 14, 1972, 47-91807; Mar. 20, 1973, 48-31382
Int. Cl.[2] C08F *4/02, 10/02*
U.S. Cl. 526—125 10 Claims

1. A process for polymerizing or copolymerizing olefins in the presence of a catalyst consisting essentially of the reaction product of:

A. a transition metal catalyst component prepared by reacting

(1) a titanium or vanadium compound selected from the group consisting of compounds of the formula TiX_4 wherein X is a halogen atom, compounds of the formula $Ti(OR)_{4-n}X_n$ wherein X is the same as defined above, R is an alkyl group, and n is zero or a positive number of less than 4, compounds of the formula VOX_3 wherein X is the same as defined above, and compounds of the formula VX_4 wherein X is the same as defined above, with

(2) the product formed by a reaction at from -20° to $+100$° C between

(a) 1 mol of a magnesium dihalide solid carrier comprising an adduct formed by reacting at a temperature of from -10° to $+200$° C;

(aa) a magnesium dihalide; with

(ab) an aliphatic or aromatic alcohol having from 1 to 12 carbon atoms, present in an amount of from 0.1 to 10 mols per mol of magnesium dihalide; and

(b) an organometallic compound of a metal of Groups I to III of the periodic table selected from the group consisting of compounds of the formula RM wherein R is an alkyl or aryl group, and M is lithium, sodium or potassium, compounds of the formula R_2M' wherein R is the same as defined above and M' is zinc or cadmium, compounds of the formula $R_{2-l}MgX_l$ wherein R is the same as defined above, X is a halogen atom and *l* is 0 or 1, compounds of the formula $MAlR_4$ wherein R and M are the same as defined above, compounds of the formula $R'_{3-m}AlX_m$ wherein R' is a hydrogen atom, or an alkyl or aryl group, X is the same as defined above, and *m* is zero or a positive number of not greater than 3, compounds of the formula $R'_{3-n}(OR)_n$ wherein R' is the same as defined above, and *n* is a positive number greater than 0 but not greater than 3, and compounds of the formula RAl(OR)X wherein R and M are the same as defined above, wherein the organometallic compound (A)(2)(b) is reacted with the magnesium dihalide solid carrier (A)(2)(a) in an amount such that the amount of the organic groups, R and R', of the organometallic compound is 0.1 to 1.5 mols per mol of the alcoholic hydroxy group of the adduct; and

(B) an organometallic compound catalyst component of a metal of Groups I to III of the periodic table selected from the group consisting of compounds of the formula $R'_{3-m}AlX_m$ wherein R' is a hydrogen atom, an alkyl or aryl group, X is a halogen atom, and *m* is 0 or a positive number not greater than 3, compounds of the formula $R'_{3-n}Al(OR)_n$ wherein R' is the same as mentioned above, and *n* is a positive number greater than 0 but not greater than 3, compounds of the formula RAl(OR)X wherein R and X are the same as defined above, compounds of the formula $R_{2-l}MgX_l$ wherein R and X are the same as defined above and *l* is 0 or 1, and dialkyl zincs wherein the amount of the organometallic compound (B) is 1 to 10,000

mols per mol of the titanium or vanadium atom of the titanium or vanadium compound (A)(1).

4,071,675

EMULSION POLYMERIZATION OF VINYL CHLORIDE USING MIXED EMULSIFIER SYSTEM IN A SINGLE STEP IN THE ABSENCE OF SEED FORMATION

Arthur J. Yu, Stamford, Conn., and Donald F. Anderson, White Plains, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 3, 1977, Ser. No. 774,188
Int. Cl.[2] C08F 2/00, 4/00, 14/06
U.S. Cl. 526—193 **9 Claims**

1. In an emulsion polymerization procedure for forming vinyl chloride polymers by heating a monomer charge containing at least 50%, by weight, vinyl chloride in the presence of a water soluble initiator and an emulsifier, wherein the improvement comprises using as an emulsifier an effective amount to maintain a stable emulsion of a mixture of: (1) at least one C_{12}-C_{18} straight chain phosphate surfactant of the formula



wherein R is a straight chain alkyl or alkenyl group containing from about 12 to about 18 carbon atoms inclusive, M is an ammonium or alkali metal ion and x is 1 and/or 2 and (2) at least one C_{12}-C_{20} straight chain alkyl or alkenyl alcohol or saturated hydrocarbon having a chain of greater than 18 carbon atoms to effect information of the polymers in a single step in the absence of the initial introduction of seed particles.

4,071,676

HYDROCARBON RESINS

Gerhard Werner, Glashutten; Peter Gräfe, Geisenheim-Marienthal; Richard Sattelmeyer, Schlangenbad-Georgenborn, and Heinz Schmelzer, Rummelsheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 13, 1976, Ser. No. 686,086
Claims priority, application Germany, May 17, 1975, 2522080
Int. Cl.[2] C08F 232/06
U.S. Cl. 526—283 **15 Claims**

10. An olefinically unsaturated hydrocarbon resin having a molecular weight of from 400 to 2000, a melting point of from 20° to 140° C (by the capillary method) and a viscosity of from 10 to 5000 cP (as a 70% toluene solution at 20° C) and comprising (a) from 30 to 90% by weight of polymerised units of a dicyclopentadiene component comprising dicyclopentadiene and up to 30% by weight of an at most dialkylated dicyclopentadiene having from 1 to 4 carbon atoms in each alkyl substituent and (b) from 10 to 70% by weight of polymerised units of an aliphatic olefin containing 8 carbon atoms.

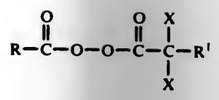
4,071,677

POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS EMPLOYING ALPHA-HALO SUBSTITUTED DIACYL PEROXIDES

Donald W. Wood, Concord, Calif., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 205,387, Dec. 6, 1971, Pat. No. 4,032,605, and a continuation-in-part of Ser. No. 675,360, Oct. 16, 1967, Pat. No. 3,652,681. This application Mar. 4, 1977, Ser. No. 774,344
Int. Cl.[2] C08F 4/32, 14/06
U.S. Cl. 526—231 **12 Claims**

1. A method for initiating the polymerization of a polymerizable monomer containing ethylenic unsaturation comprising subjecting said monomer to polymerization conditions in the presence of a catalytic amount of an organic peroxide of the formula:



wherein

X is hydrogen, chlorine, or bromine, at least one X being chlorine or bromine;

R^1 is saturated aliphatic hydrocarbon of from two to 19 carbon atoms, having from zero to five branches along the chain; and

R is an organic radical of from one to 19 carbon atoms and composed solely of carbon, hydrogen, oxygen and halogen of atomic number nine to 35, with the proviso that R has at least one atom of oxygen or halogen, when R^1 is straight chain.

4,071,678

RANDOM COPOLYMERS OF METHYL METHACRYLATE AND N-OCTADECYL METHACRYLATE

Henry Gisser, and Seymour Portnoy, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 29, 1976, Ser. No. 681,677
Int. Cl.[2] C08F 220/14, 220/16
U.S. Cl. 526—328 **3 Claims**

1. Random copolymers useful as a clad film or solid members such as gears, bearings, and the like, comprising the reaction products of the free radical bulk polymerization of n-octadecyl methacrylate and methyl methacrylate, said copolymers having a number average molecular weight ranging from about 7,000 to about 20,100, the mole percentage of the monomer units containing the octadecyl group in said copolymers ranging from about 7% to about 21%, the mole percentage of the monomer units in said copolymers originating from methyl methacrylate ranging from about 79% to about 93%, and said copolymers having coefficients of friction in the range between 0.35 and 0.19 when molded into disks under 3000 psi.

4,071,679

EMULSION POLYMERIZED COPOLYMERS OF 2,4-PENTADIEN-1-OL

Carl A. Uraneck; John E. Burleigh, and Paul W. Solomon, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 24, 1975, Ser. No. 625,746
Int. Cl.[2] C08F 236/14
U.S. Cl. 526—338 **25 Claims**

1. Copolymers of 2,4-pentadiene-1-ol with a conjugated diene, optionally with a further olefinically unsaturated comonomer, wherein said 2,4-pentadiene-1-ol represents a ratio of about 50:50 to 75:25 weight percent said conjugated diene:2,4-pentadiene-1-ol.

4,071,680

5'-DEOXY-5-FLUOROPYRIMIDINE NUCLEOSIDES

Alan Frederick Cook, Cedar Grove, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 20, 1976, Ser. No. 752,510
Int. Cl.[2] C07H 19/06
U.S. Cl. 536—23 **4 Claims**

1. A 5'-deoxy-5-fluoropyrimidine nucleoside selected from the group consisting of 5'-deoxy-5-fluorocytidine, 5'-deoxy-5-fluorouridine and the pharmaceutically acceptable acid addition salts thereof.

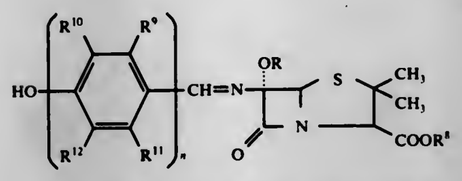
4,071,681

PROCESS FOR PREPARING BETA-LACTAM ANTIBIOTIC SUBSTANCES

Hiroaki Yanagisawa; Akiko Ando; Masami Fukushima, and Hideo Nakao, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 501,245, Aug. 28, 1974, Pat. No. 4,016,155. This application Sept. 28, 1976, Ser. No. 727,696
Claims priority, application Japan, Sept. 7, 1973, 48-100856
Int. Cl.[2] C07D 499/04
U.S. Cl. 542—420 **10 Claims**

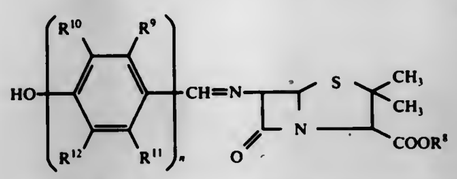
1. A process for preparing a compound having the formula



(VII)

wherein R^8 represents a group selected from the group consisting of straight or branched lower alkyl, lower alkoxymethyl, benzyloxymethyl, lower alkanoyloxy lower alkyl, benzoyloxymethyl, cyanomethyl, 2,2,2-trichloroethyl, phthalimidomethyl, benzyl, p-methoxybenzyl, p-nitrobenzyl, benzhydryl, phenacyl, p-bromophenacyl, p-methoxyphenacyl, p-nitrophenacyl, and tri lower alkylsilyl, R^9 to R^{12} may be the same or different and each represents hydrogen or a group selected from the group consisting of straight or branched lower alkyl, lower alkoxy, halogen, cyano, lower alkoxycarbonyl, or R^9 and R^{10} together and R^{11} and R^{12} together may be linked to form a ring fused with the benzene ring to which they are attached,

n is 1 or 2 and R represents a straight or branched alkyl having from 1 to 6 carbon atoms which comprises contacting a penam compound having the formula



(VIII)

wherein R^8 to R^{12} and *n* have the same meanings as defined above, with a metal oxide in an inert solvent or with a quinone compound substituted with an electron attractive group thereby oxidizing said panam compound to its quinoid form, and contacting the resulting oxidation product with a lower alkanol having the formula R—OH wherein R has the same meaning as defined above, said metal oxide and said quinone compound being one which oxidizes phenol to a quinoid form without destruction of the penam nucleus.

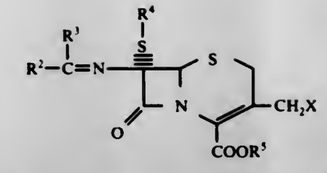
4,071,682

7-α SUBSTITUTED IMINO 7-β SUBSTITUTED THIO CEPHALOSPORIN DERIVATIVES

Joseph Edward Dolfini, Princeton; William A. Slusarchyk, Belle Mead, and William Henry Koster, Pennington, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 395,201, Sept. 7, 1973, abandoned. This application Mar. 18, 1976, Ser. No. 668,007
Int. Cl.[2] C07D 501/18
U.S. Cl. 544—21 **9 Claims**

1. A compound of the formula



wherein R^2 is lower alkyl, lower alkoxy-lower alkyl, cyano-lower alkyl, cyanomethylthio-lower alkyl, phenyl-lower alkyl, phenoxy-lower alkyl, thienyl-lower alkyl, phenyl or phenyl substituted with halo, lower alkyl, nitro or carbo-lower alkoxy, R^3 is chloro, bromo, lower alkoxy, lower alkylthio or phenoxy, R^4 is lower alkyl, phenyl, benzyl or phenyl or benzyl substituted with nitro, halo, lower alkyl or carbo-lower alkoxy, R^5 is t-butyl, nitrobenzyl, methoxybenzyl, trichloroethyl, benzhydryl, trimethylsilyl, acetoxymethyl or pivaloyloxymethyl and X is hydrogen or lower alkanoyloxy.

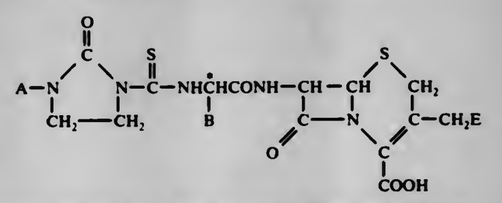
4,071,683

OXOIMIDAZOLIDINYLTHIOCARBONYL DERIVATIVES OF CEPH-3-EM-4-CARBOXYLIC ACIDS

Hans-Bodo König; Karl Georg Metzger, and Wilfried Schröck, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 518,178, Oct. 25, 1974, Pat. No. 3,966,709. This application Dec. 22, 1975, Ser. No. 643,542
Claims priority, application Germany, Oct. 30, 1973, 2354219
Int. Cl.[2] C07D 501/20, 501/22
U.S. Cl. 544—28 **10 Claims**

1. A compound selected from the group consisting of a cephalosporin of the formula:



and the pharmaceutically acceptable salts thereof wherein

the carbon atom designated Ċ constitutes a center of chirality;

A is hydrogen or alkyl of 1 to 4 carbon atoms;

B is phenyl, methylphenyl, chlorophenyl, hydroxyphenyl or cyclohexa-1,4-dien-1-yl; and

E is hydrogen, hydroxy or acetoxy.

4,071,684

PROCESS FOR PRODUCING 3-SUBSTITUTED 1,2,4-TRIAZINES

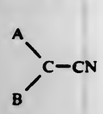
Albert J. Schuster, Jr., Midland, Mich., and John Martin, Carmel, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 21, 1977, Ser. No. 761,177
Int. Cl.[2] C07D 253/06
U.S. Cl. 544—182 **5 Claims**

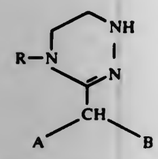
1. A process for preparing a 3-substituted 1,2,4-triazine which comprises reacting a nitrile with 2-aminoethylhydrazine in the presence of a catalytic amount of a transition metal salt or elemental sulfur wherein the 2-amino-ethylhydrazine is represented by the formula



and the nitrile is represented by the formula



wherein R is hydrogen or methyl and A and B independently represent hydrogen, an alkyl of from 1 to 5 carbon atoms, phenyl, substituted phenyl, benzyl, or substituted benzyl; said substitutions on the phenyl and benzyl rings being selected from the group consisting of halo, lower alkyl, lower alkoxy, nitro, napthyl, and pyridyl thereby forming said triazine having the formula



wherein A, B and R are as defined above.

4,071,685

1-ALKYLCARBAMOYL-3-(3,5-DICHLOROPHENYL)-HYDANTOINS

Costin Rentzea, Heidelberg; Bernd Zeeh, Ludwigshafen; Karl-Heinz Koenig, Frankenthal, and Ernst-Heinrich Pommer, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

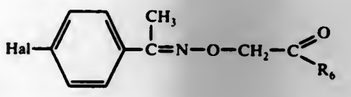
Filed Sept. 23, 1976, Ser. No. 725,843

Claims priority, application Germany, Nov. 13, 1975, 2550964

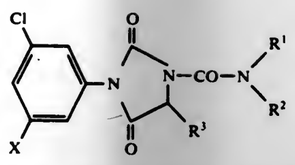
Int. Cl.² C07D *233/90*

U.S. Cl. 548—312 **11 Claims**

1. A hydantoin derivative of the formula



wherein Hal is a halogen selected from the group consisting of Cl and Br and R_6 is a moiety selected from the group consisting of OH, NH_2, OCH_3 and OR_7 wherein R_7 is a member selected from the group consisting of ammonium, hydroxy ethyl dimethyl ammonium, hydroxy ethyl diethyl ammonium and a metal ion selected from the group consisting of Na, Ca, Mg, Zn and K.



where R^1 denotes halogen-substituted, alkylmercapto-substituted or alkoxy-substituted linear or branched alkyl of 2 to 5 carbon atoms, haloalkenyl of 3 carbon atoms, alkynyl of 4 to 8 carbon atoms, tetrahydropyranyl, unsubstituted or halogen-substituted, alkyl-substituted or alkoxy-substituted cycloalkyl of 3 to 6 carbon atoms in the cycloalkyl ring, in which case R^2 denotes hydrogen; or R^1 denotes methyl, ethyl, isopropyl or cyclohexyl, in which case R^2 denotes methoxy; R^3 denotes hydrogen or methyl; and X denotes chloro or bromo.

4,071,686

NOVEL BENZYLIDENE AMINO-OXYALKYL CARBOXYLIC ACIDS AND CARBOXYLIC ACID DERIVATIVES

Jan van Dijk; Volkert Claassen, and Johannes Maria Antonius Zwagemakers, all of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 286,874, Sept. 7, 1972, abandoned, which is a continuation of Ser. No. 885,628, Dec. 16, 1969, abandoned. This application Dec. 17, 1976, Ser. No. 751,489

Claims priority, application Netherlands, Dec. 17, 1968, 6818074

Int. Cl.² C07C *79/46*; A61K *31/24*

U.S. Cl. 560—35 **5 Claims**

1. A compound of the formula

wherein Hal is a halogen selected from the group consisting of Cl and Br and R_6 is a moiety selected from the group consisting of OH, NH_2, OCH_3 and OR_7 wherein R_7 is a member selected from the group consisting of ammonium, hydroxy ethyl dimethyl ammonium, hydroxy ethyl diethyl ammonium and a metal ion selected from the group consisting of Na, Ca, Mg, Zn and K.

4,071,687

ELECTRIC ARC FURNACE FOR CONTINUOUS MELTING OF DIRECTLY REDUCED IRON OR DIRECTLY REDUCED IRON ORE

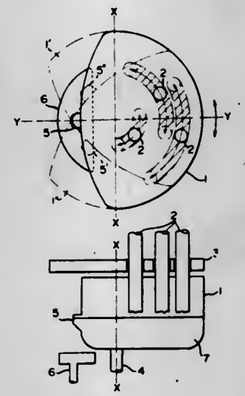
Ryuichi Nakagawa, Seki; Shiro Yoshimatsu, Tokyo; Takuya Ueda, Zushi; Akira Fukuzawa, Yokohama; Tsuyoshi Ozaki, Tokyo; Akira Sato, Ohmiya, and Tatsuro Mitsui, Sagamihara, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Mar. 15, 1976, Ser. No. 667,173

Claims priority, application Japan, Mar. 17, 1975, 50-31085; Mar. 17, 1975, 50-31086; Mar. 17, 1975, 50-31087; Mar. 17, 1975, 50-31088

Int. Cl.² H05B *7/20*

U.S. Cl. 13—10 **3 Claims**



1. A direct-heat arc furnace for the continuous melting of directly reduced iron or directly reduced iron ore and continuous tapping of resulting molten iron, said furnace comprising:

a furnace body which in its horizontal section has a shape surrounded by a furnace wall having a shape resulting from the connection of an arc of 180° having a smaller radius of curvature to an arc of less than 180° having a larger radius of curvature;

a plurality of electrodes which are fixed above the furnace body and surrounded by the arc having a smaller radius of curvature so that the tips of the electrodes face the surface of the charged stock in the furnace;

means for causing a horizontal rotation of the furnace body continuously and repeatedly at an angle of about 45° both in one direction and in the opposite direction about the center of a circle forming the arc having a smaller radius of curvature or its vicinity as a rotating axis;

a tapping port which is secured projectingly to the center of the furnace wall of the arc having a larger radius of curvature; and

a tundish which is disposed below the tapping port spaced apart from the furnace body so as to receive the resulting molten iron;

said continuous and repeated horizontal rotation of the furnace body serving to broaden the area within which to melt the continuously charged stock of the reduced iron or reduced iron ore and render the heat distribution within the furnace uniform, and said rotation of the furnace body of the defined shape in conjunction with the position of the tapping port, permitting the moving distance of the tapping port to be smaller than the maximum distance of the movement of the electrodes relative to the surface of the charged stock.

4,071,688

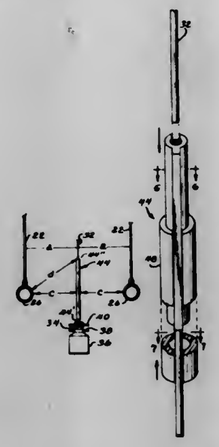
METHOD AND ARTICLE FOR PROTECTING A PRECIPITATOR DISCHARGE ELECTRODE

Jerome G. Lynch, Bridgeport, and William A. Quigley, Greenwich, both of Conn., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 18, 1976, Ser. No. 715,273

Int. Cl.² B03C *3/40*; H01B *17/58*

U.S. Cl. 174—138 R **7 Claims**



1. A method of protecting an installed electrostatic precipitator discharge electrode wire from power arc erosion adjacent its lower end comprising the step of placing a plastic insulating shroud completely around the wire along the length of the wire subject to power arc erosion.

3. A shroud assembly for protecting an installed electrostatic precipitator discharge electrode wire from power arc erosion comprising a pair of first and second elongated plastic insulating members, each of said members including a longitudinal slot on one edge having a depth greater than the diameter of an electrode wire with which the member is adapted to be used, each of said members including a surface portion which is adapted to contact the surface of said wire and the second of said members having a portion having a transverse cross-sectional configuration which is complementary to the transverse cross-section of that portion of the slot in said first member which extends radially outwardly of said wire when installed thereon, each of said first and second members being adapted to be moved normally into contact with said wire at spaced locations along the length of said wire and then axially along said wire into overlying interlocking engagement with each other.

4,071,689

LUCENT ELECTROGRAPHIC SENSOR FOR DETERMINING PLANAR COORDINATES

John E. Talmage, and L. Dexter Bates, both of Oak Ridge, Tenn., assignors to Elographics, Incorporated, Oak Ridge, Tenn.

Filed Sept. 27, 1976, Ser. No. 727,153

Int. Cl.² G08C *21/00*

U.S. Cl. 178—18 **7 Claims**

1. A lucent electrographic sensor for use in determining *x*- and *y*-coordinates of a point, which comprises:

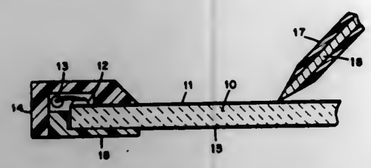
a rigid sheet of transparent substrate;

a substantially transparent, chemically stable uninterrupted resistive layer of a semiconducting metal oxide adherently deposited on one face of the substrate in an amount to produce a sheet resistivity of a selected value in the range of about 100 to 3000 ohms per square;

corner spot electrodes in each corner of the sensor in electrical contact with the resistive layer;

a plurality of spaced-apart edge spot electrodes along each edge of the sensor in electrical contact with the resistive layer;

a plurality of discrete first resistors connected between adjacent of all of the edge spot electrodes; and



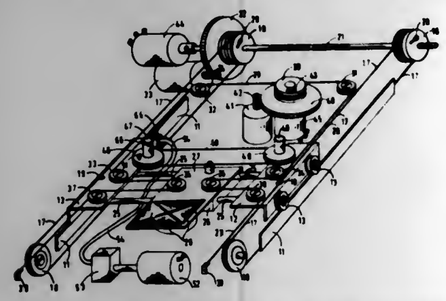
a plurality of discrete second resistors connected between the corner spot electrodes and adjacent edge spot electrodes whereby the first and second resistors form series resistor networks along each edge of the sensor.

4,071,690

DEVICE FOR GRAPHIC COMMUNICATION

Constantinos Joannou Joannou, 2008 Dorval Ave., Ottawa, Ontario, Canada (K1G 2N8)

Filed Nov. 19, 1976, Ser. No. 735,753
Int. Cl.² G08C *21/00*
U.S. Cl. 178—18 **10 Claims**



1. A device for sending or receiving graphic information comprising:

a. a plate of dielectric material on which writing paper may be affixed;

b. a first stylus for writing graphic information, said stylus being made to radiate an RF signal;

c. a movable electrode assembly located underneath said dielectric plate and arranged to sense said RF signal radiated by said first stylus;

d. servo systems arranged to move said electrode assembly in the *x* and *y*-directions in response to signals received by said electrode assembly, and in such a way as to follow said first stylus;

e. potentiometers connected to said servo systems via linkages and arranged to produce electrical signals corresponding to positions of said electrode assembly;

f. a first set of two shafts connected to said servo systems via linkages and arranged to be accessible through slots cut on each side of said dielectric plate, said shafts being arranged to move along said slots when one of said servo systems is operated and said shafts being arranged to rotate about their axes when another of said servo systems is operated;

g. a stylus holding assembly comprising a second stylus for reproducing graphic information, said assembly being removably attached to said first set of shafts so that when said first set of shafts rotates and/or moves along said slots said second stylus moves in the *x* and/or *y*-directions, said stylus holding assembly providing means for lowering and lifting said second stylus on and off said paper;

h. means for converting said signals produced by said potentiometers into suitable form for transmission through telephone line and/or into binary data for feeding into a computer or into signals capable of being recorded on and retrieved from a magnetic tape;

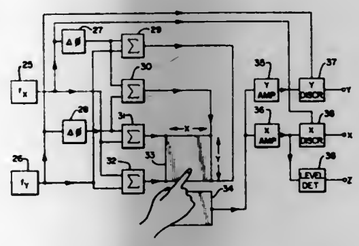
i. means for converting signals received from a computer, tape recorder, or from another similar device into signals suitable for operating said servo systems.

4,071,691

HUMAN-MACHINE INTERFACE APPARATUS

William Pepper, Jr., Bethesda, Md., assignor to Peptek, Inc., Bethesda, Md.

Filed Aug. 24, 1976, Ser. No. 717,192
Int. Cl.² G08C *21/00*
U.S. Cl. 178—19 **21 Claims**



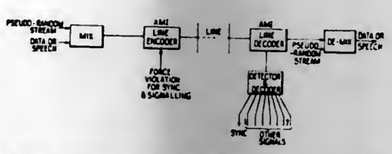
1. A human-machine interface apparatus for inputting information to a utilization device, comprising: means for defining a surface of predetermined length and having a reference point thereon; field-establishing means for establishing a low level electric field above said surface and along said predetermined length and into which a human finger can be inserted to touch a selected point on said surface and traverse a path therealong, said electric field having a parameter that varies continuously along said predetermined length as a function of distance from said reference point; and detector means for detecting the position of said touched point on said surface and the path traversed thereby with respect to said reference point and producing an electrical signal corresponding thereto as an input signal to said utilization device.

4,071,692

DATA TRANSMISSION SYSTEMS

Donald A. Weir, Goff's Oak; Eric S. Usher, Ware, and George A. Howells, Bishops Stortford, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 8, 1976, Ser. No. 730,876
Claims priority, application United Kingdom, Oct. 23, 1975, 43564/75
Int. Cl.² H04L *15/00*; H04B *1/04*
U.S. Cl. 178—68 **4 Claims**



1. A data transmission system in which intelligence is conveyed in a pulse code modulation (PCM) bit stream form with alternate bits of a first significance inverted comprising:

first means to convey additional information to said intelligence by violations of a rule that alternate bits of said first significance are inverted, so that two successive bits of said first significance with the same polarity indicates the presence of said additional information;

second means coupled to the input of said first means to mix said bit stream with a pseudo-random bit stream prior to

operation of said first means, the output signal of said first means being transmitted;

said second means mixing said bit stream and said pseudo-random bit stream by binary addition without carry;

said first means providing synchronization information for transmission in said bit stream by violating the alternate inversion rule with respect to a first bit of each PCM bit combination at least once in each PCM frame, and signalling information being conveyed by violating the alternate inversion rule with respect to a bit of each PCM bit combination other than said first bit; and

a line decoder coupled to the output of said first means to provide a first output signal when a bit of said first significance has a first polarity and a second output signal when a bit of said first significance has a second polarity;

a first bistable means coupled to said line decoder changing its state on each bit of said first significance;

a second bistable means coupled to said line decoder changing its state as the polarity of the bits of said first significance alternates; and

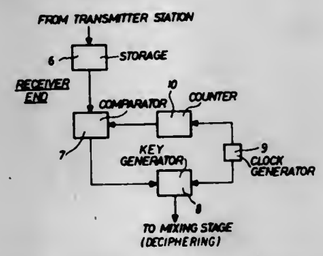
comparison means coupled to said first and second bistable means to compare the states of said first and second bistable means to provide an output signal when the states of said first and second bistable means are out of step, said output signal indicating that a violation of said rule has taken place.

4,071,693

METHOD AND APPARATUS FOR SYNCHRONIZING A RECEIVER END-KEY GENERATOR WITH A TRANSMITTER END-KEY GENERATOR

Peter Frutiger, Wangen, Switzerland, assignor to Anstalt Europaische Handelsgesellschaft, Vaduz, Liechtenstein

Filed Jan. 27, 1976, Ser. No. 652,757
Claims priority, application Switzerland, Feb. 5, 1975, 1365/75
Int. Cl.² H04L *7/00*
U.S. Cl. 178—69.1 **5 Claims**



1. A method of synchronizing a receiver end-Key Generator with a transmitter end-Key Generator, comprising the steps of:

a. coupling each of the Key Generators with an associated counter such that the counter state of each counter is characteristic of a position of a Key sequence produced by the associated Key Generator;

b. forming each counter state from the preceding counter state in accordance with a predetermined formation principle;

c. transmitting the counter state of the counter of the transmitter end-Key Generator to the receiver end;

d. comparing the thus transmitted counter state with the counter state of the counter of the receiver end-Key Generator;

e. upon determination of a difference between both counter states, forwardly advancing the receiver end-Key Generator until the difference between the counter states is reduced to null;

f. said forwardly advancing step (e) comprising:

i. forwardly advancing in steps the receiver end-Key Generator when the determined difference between the counter states is smaller than a threshold value; and

ii. forwardly advancing the receiver end-Key Generator in jumps encompassing a multiplicity of individual advancing steps when the difference between the counter states exceeds said threshold value;

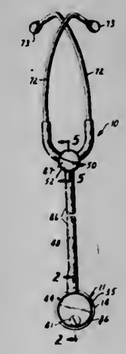
g. and producing at the receiver end by means of the formation principle for forming the counter states the next successive counter states which are to be expected owing to the received counter states of the transmitter end-counter, comparing such counter states produced at the receiver end with the correspondingly received counter states, and upon determining a difference of the receiver end produced counter state and the correspondingly received counter state determining the correct counter state based upon the majority of the coinciding places of the counter states.

4,071,694

STETHOSCOPE

G. William Pfeiffer, West Lakeland Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 31, 1976, Ser. No. 719,099
Int. Cl.² A61B *7/04*
U.S. Cl. 179—1 ST **7 Claims**



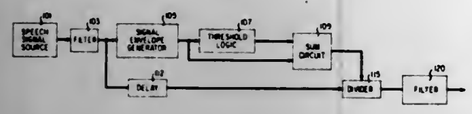
1. A combination acoustic and electronic stethoscope comprising a chestpiece having an acoustical transducer for picking up body sounds, a passageway coupling said acoustical transducer to a flexible conduit connected to said chestpiece at one end thereof and being bifurcated at the other end thereof, a pair of earpieces connected to said bifurcated conduit to transmit body sounds picked up by said acoustical transducer for listening by a physician, an electronic amplifier for sound amplification and frequency selection, a speaker located at the bifurcation of said conduit and connected to the output of said electronic amplifier, said chestpiece further including an acousto-electronic transducer connected to the input of said electronic amplifier, a power supply interconnected to said electronic amplifier, means for actuating said electronic amplifier to amplify body sounds picked up by said acousto-electronic transducer, said actuating means simultaneously uncoupling said acoustical transducer from said flexible conduit and isolating said acousto-electronic transducer from the output of said speaker, a volume control and a frequency selector operatively connected to said electronic amplifier, said volume control and frequency selector being operative only when said electronic amplifier is actuated to thereby transmit the amplified body sounds through said speaker and earpieces for listening by a physician, said stethoscope being similar in appearance and size to a conventional acoustic stethoscope and being capable of one-hand operation in either an acoustic mode or an electronic mode.

4,071,695

SPEECH SIGNAL AMPLITUDE EQUALIZER

James Loton Flanagan, Warren, and Susan Anne Webber, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 12, 1976, Ser. No. 713,930
Int. Cl.[2] H03G 7/00, 11/04
U.S. Cl. 179—1 VL 20 Claims



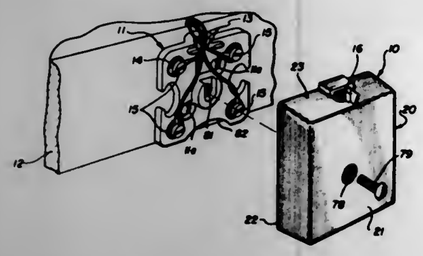
1. A signal conditioning circuit comprising a speech signal source; means responsive to a speech signal from said source for generating a signal representative of the envelope of said speech signal; a first threshold source; a second threshold source, said second threshold being less than said first threshold; means for producing a level signal of first value responsive solely to said envelope representative signal exceeding said first threshold and remaining above said second threshold and of second value responsive solely to said envelope representative signal decreasing below said second threshold and remaining below said first threshold; means for combining said envelope representative signal and said level signal to form a modified envelope signal; and means for dividing said speech signal by said modified envelope signal to produce a substantially unilevel amplitude output signal when said first value level signal is generated and a substantially zero valued output signal when said second value level signal is generated.

4,071,696

TELEPHONE WALL JACK COVER

Bruce W. Anderson, Rosemont, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 29, 1976, Ser. No. 681,500
Int. Cl.[2] H04M 1/00
U.S. Cl. 179—1 PC 19 Claims



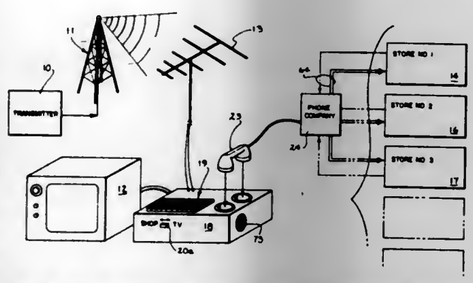
1. An electrical jack for a telephone of the like, comprising a cover member, a plurality of bi-ended wires carried in predetermined spaced relation within the cover member, each wire terminating at one end in a spring contact adapted and located for electrical contact with a screw connector carried on a terminal block, each wire terminating at its other end in a resilient reversely folded spring contact adapted and located for electrical contact with a multi-wire male electrical plug connector, a clip member adapted to mate with the cover member and form a female socket therewith to receive the male multi-wire plug, the clip member including a clip body defining a plurality of wire grooves for receiving said wire reversely folded spring contact ends and for mounting the wires in a fixed, electrically spaced apart relationship, the clip member further including a clip cover means adapted to be secured over the grooves to retain the wires in said relationship, and clip hinge means rotatably interconnecting the clip body and the clip cover to permit the clip cover to be folded over the clip body and retain the wires in and on the clip.

4,071,697

INTERACTIVE VIDEO/TELEPHONE TRANSMISSION SYSTEM

Nolan K. Bushnell, Los Gatos, and Joseph F. Keenan, San Jose, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Oct. 18, 1976, Ser. No. 724,013
Int. Cl.[2] H04M 11/00
U.S. Cl. 179—2 TV 6 Claims



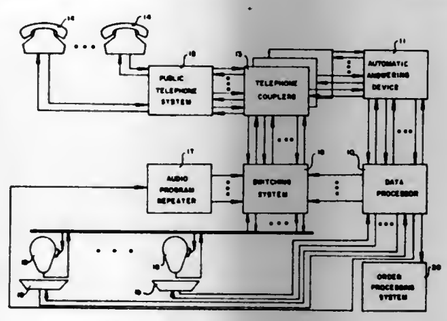
1. An interactive purchasing system comprising a transmitting station providing a general transmission of signals adapted to be received by a plurality of television receivers at viewing stations via a given channel thereof, said signals representing information relating to associated merchandise, telephone coupling means at said viewing stations adapted to cooperate with a telephone in information transfer relation with respect to a selected one of a plurality of stores, means at each viewing station for indicating the selection of merchandise to be purchased, and means operable in response to indicating said selection serving to a request to purchase the selected merchandise, the last named means serving via said telephone to place a call to a store relating to the selected merchandise.

4,071,698

TELEPHONE SYSTEM FOR AUDIO DEMONSTRATION AND MARKETING OF GOODS OR SERVICES

Franklin V. Barger, Jr., Long Beach; Richard M. Knox, and Jefery R. Roberts, both of Los Angeles, all of Calif., assignors to Franklin V. Barger, Jr., Long Beach, Calif.

Filed Jan. 10, 1977, Ser. No. 758,159
Int. Cl.[2] H04M 11/00, 11/08
U.S. Cl. 179—2 R 17 Claims



1. In a system for audio demonstration of merchandise or services offered over a telephone line, the combination comprising

an audio program means having a plurality of channels, one for each prerecorded demonstration,

a data processor for selecting a channel of said repeating means for connection to said telephone line,

switching means responsive to said data processor for connecting a selected channel to said telephone line, and

a plurality of customer service operator terminals selectively connected to said telephone line by said data processor through said switching means.

5. A method of marketing merchandise or services by telephone using brief prerecorded demonstrations stored in an audio program repeater to demonstrate selected merchandise or services to a customer under control of a data processor comprising the steps of

answering a customer's telephone call on an incoming line through automatic answering means and signalling to said data processor that a customer is on the line,

transmitting a prerecorded greeting message from said audio program repeater under control of said data processor to the customer to acknowledge receipt of the call and to instruct the customer what to do next in order to request a selected demonstration,

transmitting a selected demonstration from said audio program repeater to the customer under control of said data processor,

interrupting said data processor when the selected demonstration has been completed for the purpose of transmitting a further communication to the customer, and

transmitting the further communication to the customer as a prerecorded message from said audio program repeater transmitted under control of said data processor to determine whether any other demonstration is to be requested, the customer responding to each prerecorded message with a code entered from a push-button keyboard on the premises of a subscribing retailer, whereby all communications with the customer are automatically controlled by said data processor.

15. A method of marketing merchandise or services by telephone using brief prerecorded demonstrations stored in an audio program repeater to demonstrate selected merchandise or services to a customer under control of a data processor comprising the steps of

answering a customer's telephone call on an incoming line through automatic answering means and signalling to said data processor that a customer is on the line,

transmitting a prerecorded greeting message from said audio program repeater under control of said data processor to the customer to acknowledge receipt of the call and to instruct the customer what to do next in order to request a selected demonstration,

transmitting a selected demonstration from said auido program repeater to the customer under control of said data processor,

interrupting said data processor when the selected demonstration has been completed for the purpose of transmitting a further communication to the customer,

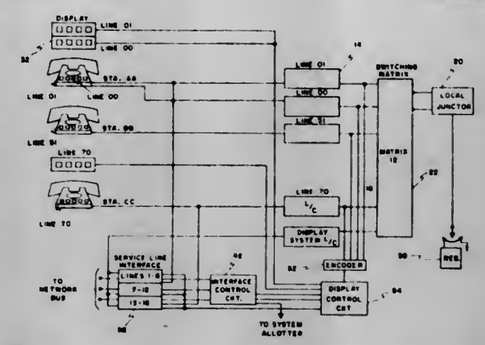
transmitting the further communicatin to the customer as a prerecorded message from said audio program repeater transmitted under control of said data processor to determine whether the customer wishes to order the merchandise or service just demonstrated and whether any other demonstration is to be requested, the customer responding to each prerecorded message transmitted with a code entered from a push-button keyboard on the customer's telephone, whereby all communications with the customer are automatically controlled by said data processor.

4,071,699

APPARATUS PROVIDING FOR THE REMOTE DISPLAY OF CALLING NUMBERS IN A TELEPHONE SYSTEM

Nicola Ljotic Jovic, Chicago, and Steven Allen Rinker, Rosemont, both of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 30, 1976, Ser. No. 653,711
Int. Cl.[2] H04M 15/06
U.S. Cl. 179—5.5 11 Claims



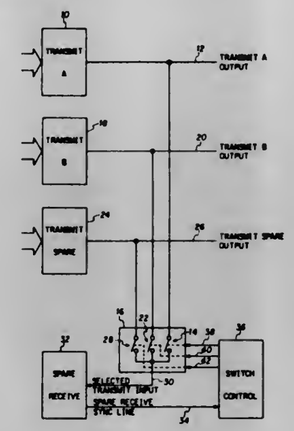
10. A system for displaying the identification number of a calling line, comprising means responsive to sensing of a call directed to a station equipped with a visual display, means for receiving signals representing the identification number of the calling line, means for storing the signals representing the identification number for a selected time period, display means coupled to receive said signals after the selected time period and provide a visual display of said identification number, and means operative at the end of the timed period for completing the call from the calling line to the called line.

4,071,700

TESTING APPARATUS

Charles E. Huffman, Garland; Robert J. McGuire, Richardson, and John W. Waddill, Plano, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 18, 1976, Ser. No. 742,813
Int. Cl.[2] H04J 3/14
U.S. Cl. 179—15 BF 6 Claims



1. A method of checking operativeness of at least one active transmitter passing a synchronized data stream and at least one spare transmitter using a spare receiver comprising, the steps of:

multiplexing signals in a spare transmitter to provide a synchronized data stream;

cyclically presenting multiplex data outputs from active and spare transmitters to a spare receiver for providing a given logic level output as synchronization is obtained with each data stream; and

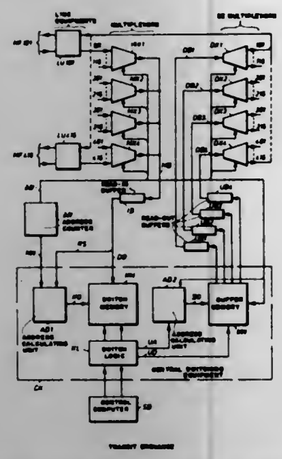
cyclically decoding synchronization logic level output results for determining operability of said transmitters and said spare receiver.

4,071,701

METHOD OF AND APPARATUS FOR ADDRESSING A BUFFER MEMORY IN A TRANSIT EXCHANGE FOR SYNCHRONOUS DATA SIGNALS

Gösta Karl Knutsson Leijonhufvud, Huddinge, and Per-Olof Thyselius, Tyreso, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 6, 1976, Ser. No. 674,101
Claims priority, application Sweden, Apr. 28, 1975, 75048959
Int. Cl.[2] H04J *3/00*
U.S. Cl. 179—15 AT 4 Claims



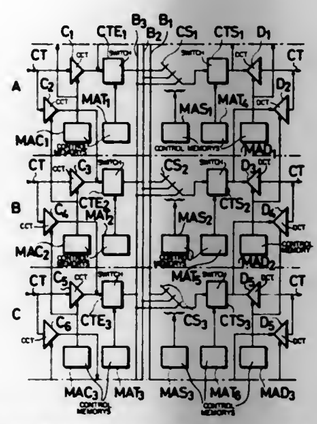
1. In a TDM-system having a transit exchange connecting incoming TDM-links to outgoing TDM-links which carry data channels with different data rates having one or more time slots in a TDM-frame in accordance with the data rates of the data channels wherein the transit exchange includes a switch memory for the storage of incoming data signals in memory positions, each of which is assigned to one of the incoming data channels in the incoming links, and a buffer memory to which the data signals are transferred and stored in memory positions assigned according to the sequence numbers of the time slots belonging to the respective data channels in the outgoing links before being sent out via the outgoing links, and wherein the write-in and read-out of the buffer memory occurs alternately at a repetition rate determined by the data rate of the respective channel in such a manner that the read-out to the outgoing TDM-links occurs cyclically with each cycle encompassing the reading of a time slot having a certain sequence number for each of the links, the method of minimizing the transfer time of data signals through the transit exchange by writing into a memory position of the buffer memory data signals of a data channel which is assigned more than one memory position, the memory position being the one which is next in turn for a read-out, comprising the steps of comparing the sequence number of the time slot read out last with the sequence number of the first appropriate time slot in the TDM-frame assigned to the actual data channel whose data signals are being transferred, then if the latter sequence number is higher, writing the data signals of said actual data channel into the memory position which corresponds to said appropriate time slot, if said latter sequence number is lower, comparing said last sequence number with the sequence number of the next appropriate time slot assigned to said actual data channel, repeating said comparing steps until a higher sequence number is found, writing the data signals of said actual data data channel into the memory position of the buffer memory which corresponds to said found higher sequence number, whereas, if the found sequence number of the time slot is equal to the sequence number of the time slot read out last, or if equality has already been found during the comparision of said last sequence number with the sequence number of the first appropriate time slot assigned to said actual data channel determining whether a readout has been made from the memory position corresponding to the sequence number of said first appropriate time slot to the outgoing TDM-link which transfers said actual data channel, said determining comprising comparing the sequence number of said outgoing TDM-link with the sequence number of the TDM-link to which read-out was made last, after which, if the comparision shows that a read-out of said time slot has been made to the TDM-link which transfers said actual data channel, writing the data signals of said actual channel into the memory position which is associated with the next appropriate time slot of said actual channel, while otherwise a write-in is made to the memory position which is associated with the time slot in the process of being read.

4,071,702

TIME DIVISION EXCHANGE AND A METHOD FOR THE RECONFIGURATION OF THIS EXCHANGE

Pierre Charransol; Jacques Hauri, and Serge Fontana, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 20, 1976, Ser. No. 659,631
Claims priority, application France, Feb. 25, 1975, 75 05799
Int. Cl.[2] H04Q *11/04*
U.S. Cl. 179—15 AT 4 Claims



1. A time-division exchange for connecting a plurality of incoming subscriber circuits in a number of groups to a plurality of output subscriber circuits in a number of groups, said exchange comprising:

at least three pairs of concentration means one each of said groups of incoming subscriber circuits being simultaneously connected to both concentration means of one each of said pairs of concentration means;

at least three pairs of deconcentration means, one each of said groups of output subscriber circuits being simultaneously connected to both deconcentration means of one each of said pairs of deconcentration means;

at least three interconnected switching means one each of said switching means being simultaneously connected to a first concentration means of one each of said pairs of concentration means, to a second concentration means of a different one each of said pairs of concentration means, to a first deconcentration means of one each of said pairs of deconcentration means, and to a second deconcentration means of a different one each of said pairs of deconcentration means;

at least three concentration control means, each of said concentration control means being connected to said first and second concentration means so as to share the load in the event part of said exchange becomes inoperative; and

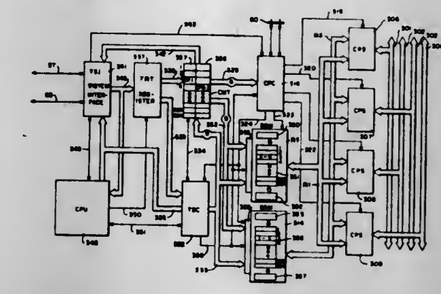
at least three deconcentration control means, each of said deconcentration control means being connected to said first and second deconcentration means so as to share the load in the event part of said exchange becomes inoperative.

4,071,703

TIME SLOT INTERCHANGER

Craig Schaffter, Sunnyvale, Calif., assignor to TRW, Inc., Los Angeles, Calif.

Filed Jan. 26, 1977, Ser. No. 762,811
Int. Cl.[2] H04Q *11/04*
U.S. Cl. 179—15 AQ 7 Claims



1. In a telephone system operating in time frames each consisting of a plurality of time slots, a time slot interchanger for connecting data samples between locations in the telephone system comprising:

first and second data memory means for storing and transmitting data samples where each memory means includes a number of separate data stores corresponding to time slots,

a number of cross point switches,

a first data bus for connecting data between said first memory means and a first one of said cross point switches,

a second data bus for connecting data samples between said second memory means and a second one of said cross point switches,

a number of third data buses connected between one of said cross point switches and a different one of said locations,

channel memory means having a plurality of control stores, selected ones of said control stores corresponding to selected ones of said data stores for storing instruction addesses comprising selected data store addresses for addressing said selected ones of said data stores and comprising selected cross point switch addresses,

cross point control means for controlling the connection of said first and second buses to said cross point switches in response to said cross point switch addresses,

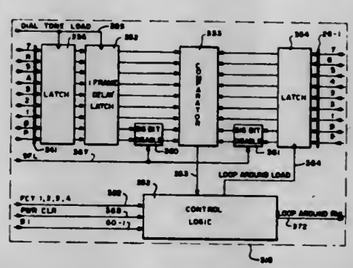
and time slot counter means for addressing said channel memory means, said counter means including means for alternately addressing said first and second data memory means in successive time frames whereby said first and second memory means are alternately addressed by said channel memory means and said counter means.

4,071,704

SERVICE GENERATOR CHECKING APPARATUS

Johannes A. R. Moed, San Jose, Calif., assignor to TRW, Inc., Los Angeles, Calif.

Filed Jan. 26, 1977, Ser. No. 762,808
Int. Cl.[2] H04M *3/46*
U.S. Cl. 179—15 BF 20 Claims



19. In a telephone system having an interface including an input portion connected to an input line for receiving input telephone signals and having an output portion connected to an output line for transmitting output signals, said system operating with the telephone signals in time frames each consisting of a plurality of time slots, service generator checking apparatus comprising:

tone generator means for generating, each time frame, pulse code modulated tone samples for a selected tone,

matrix means, connected to receive said selected tone sample, for connecting said selected tone samples to a selected one of said time slots in each frame to form a tone sample signal,

control means, connected to control said matrix means, for specifying said selected tone samplé and for specifying said selected one of said time slots,

store means, connected to said matrix means, for storing said tone sample signal,

first connection means for connecting said tone sample signal as an input to said output portion whereby said tone sample signal becomes an output signal,

means for connecting said output signal as an input to said input portion whereby said input signal becomes a check signal corresponding to said tone sample signal,

and comparator means connected to said store means and said input portion for comparing the stored sample signal with the check signal thereby verifying that said interface is operational.

4,071,705

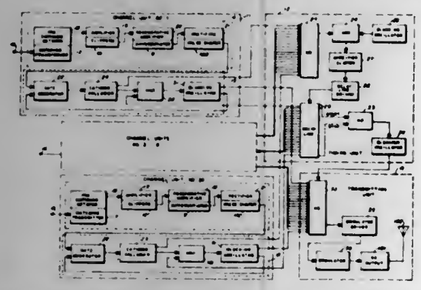
QUANTIZED NON-SYNCHRONOUS CLIPPED SPEECH MULTI-CHANNEL CODED COMMUNICATION SYSTEM

Ralph H. Miller, Jr.; William W. Dyer, both of La Mesa; John A. Waterbury, San Diego; Wayland A. Carlson, San Diego, and Richard O. Eastman, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1961, Ser. No. 107,591
Int. Cl.[2] H04J *3/00*
U.S. Cl. 179—15 BA 12 Claims

1. A quantized nonsynchronous clipped speech multichannel coded communications network comprising a multiplicity of transmitter terminals and receiver terminals; each of said transmitter terminals comprising a multiplicity of audio processing sections, including input means for coupling a composite waveform thereto, pre-emphasis means for generating crossover points corresponding to amplitude excursions in the input composite waveform, clipper means operatively receiving the output of said pre-emphasis means for infinitely clipping the composite waveform thereby removing the amplitude portion and leaving the frequency information, pulse generating means operatively coupled to the output of said clipper means and

receiving the output of said clipper means for generating output pulses corresponding to the zero crossover points in the infinitely clipped waveform; a multiplicity of encoding sections corresponding to the audio processing sections, including gate generator means operatively receiving the output of said pulse generating means for generating gate pulses corresponding to said output pulses; a timing unit including, OR circuit means operatively coupled to said gate generating means and receiving pulses therefrom, sampling means for generating pulses corresponding to a desired sampling rate, coincidence means operatively coupled to the output of said sampling means and said OR circuit means for generating an output pulse when pulses from said OR circuit means and said sampling means coincide therein, channel coding means comprising a delay line operatively receiving output pulses from said coincidence means for generating a start stop and channel pulses corresponding to desired channel codes; second coincidence circuit means in said channel unit operatively coupled to said channel coding means and said gate generating means for



generating an output pulse when pulses from said gate generating means and said channel coding means coincide therein; and transmitting means operatively coupled to said channel coder means and said second coincident circuit means for receiving start stop pulses from said channel coding means and output pulses from said second coincidence circuit means corresponding to channel codes and propagating pulse trains therefrom; each of said receiver terminals comprising; receiver means for receiving and detecting trains of pulses; channel decoder means for receiving said detected pulse trains, a multiplicity of channel coincidence means operatively coupled to the output of said channel decoder means for generating an output pulse when start stop and channel pulses are coincident therein; audio restorer means corresponding to said channel coincidence means including, flip-flop means operatively receiving output pulses from said channel coincidence means for generating a substantially square waveform in the output thereof, and integrator means receiving the output of said flip-flop and producing a waveform therefrom approximating said original composite waveform.

4,071,706
DATA PACKETS DISTRIBUTION LOOP
Charles Stewart Warren, Southbourgh, Mass., assignor to RCA Corporation, New York, N.Y.
Filed Sept. 13, 1976, Ser. No. 722,583
Int. Cl.² H04J *3/06*
U.S. Cl. 179—15 AL **10 Claims**

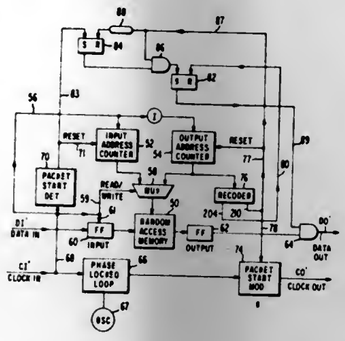
1. A synchronizer for inclusion in a data communications system loop in which packets of N information bits circulate together with clock pulses and packet-start pulses in a loop having S stations each of which introduces a delay corresponding with the time of *n* clock pulses, comprising

a random access memory,

an input address counter means counting to N, incremented by each clock pulse and reset by each packet-start pulse, to store successive information bits in successive memory locations, and

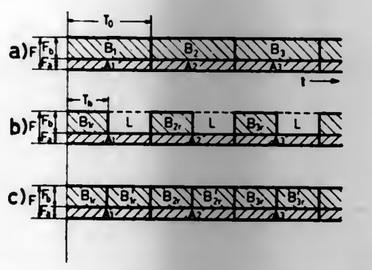
an output address counter means, incremented by each clock pulse and reset upon reaching a count equal to the number N of bits in the packet, to read out information bits successively from successive memory locations,

whereby the contents of said address counters differ by an amount *d* so that the memory introduces a delay equal to



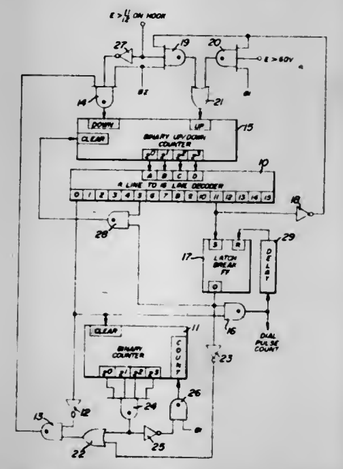
d clock pulses, which, when added to the number *n* times S of clock pulse delays introduced by the S stations connected in the loop, is an integral multiple, including unity, of the number of N of bits in each packet.

4,071,707
PROCESS AND APPARATUS FOR IMPROVING THE UTILIZATION OF TRANSMISSON CHANNELS THROUGH THINNING OUT SECTIONS OF THE SIGNAL BAND
Alban Graf, Gebenstorf, and Gustav Guanella, Zurich, both of Switzerland, assignors to Patelhold Patentverwertungs- & Elektro-Holding AG, Glaurus, Switzerland
Filed Aug. 17, 1976, Ser. No. 715,069
Claims priority, application Switzerland, Aug. 19, 1975, 10792/75
Int. Cl.² H04B *1/66*; H04J *3/18*
U.S. Cl. 179—15.55 R **15 Claims**



1. In the process for improving the utilization of transmission channels for audio signals as speech or music by which process the sound signals are divided into segments of definite length of which only a reduced part is transmitted and on reception the gaps in the reduced signal are again filled by a repetition thereof so that signals result which are at least partially understandable whereby the gaps produced in the signal transmitted can be employed for transmitting additional signals, the improvement comprising splitting the audio signal to be transmitted into at least two frequency bands including a lower frequency subband and a higher frequency subband, the lower frequency subband having a width from about 300 Hz to about 1100 Hz, transmitting the lower frequency subband in its entirety, periodically interrupting the higher frequency subband to produce short subband segments of 20–50 milliseconds length containing gaps of a time length at least equal to said segments therebetween for transmission, and, at the receiving end, reproducing the lower frequency subband and the segments of the gapped higher frequency subband and filling in the gaps in the higher frequency subband by repetition of the adjacent segments.

4,071,708
DIAL PULSE DETECTOR
Murray L. Kaplan, Cherry Hill; Terry N. Herbster, Willingboro, and Alan F. Holuen, Medford, all of N.J., assignors to Telesciences, Inc., Moorestown, N.J.
Filed Nov. 11, 1976, Ser. No. 741,047
Int. Cl.² H04G *1/36*
U.S. Cl. 179—16 E **35 Claims**



1. Apparatus for detecting the occurrence of dial pulses on telephone lines in the presence of severe signal distortions due to line conditions, comprising in combination,

a. first means responsive to the occurrence of a first signal level greater than a first selected threshold level to generate first count signals at regularly occurring spaced time intervals during the continuance of said first signal level,

b. second means responsive to the occurrence of a second signal level less than said first selected threshold level to generate second count signals at regularly occurring spaced time intervals during the continuance of said second signal level,

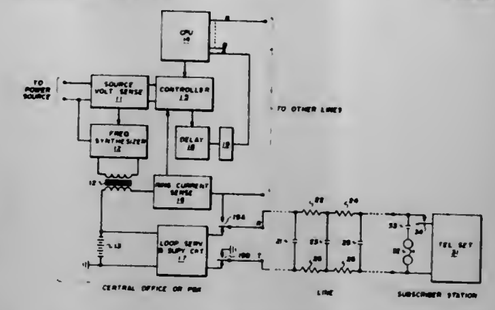
c. up/down counting means having input and output means,

1. said first means being coupled to a part of said counting means input means and causing an up-count for each said first count signal,

2. said second means being coupled to a part of said counting means input means and causing a down-count for each said second count signal,

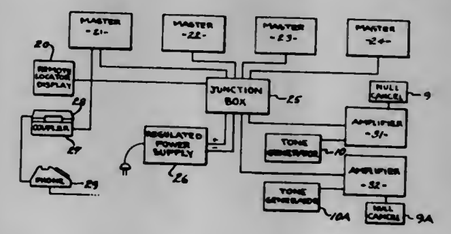
d. count signals interpreting means coupled to said counting means output means responsive to the detection of a selected up-count by said counting means followed by the detection of a selected down-count by said counting means to generate a dial pulse count signal designating that a valid dial pulse has been detected.

4,071,709
LINE CONDITIONING AND TRANSFER CIRCUIT
David Quon Lee, Chicago, and Richard Michael Rovnyak, Schaumburg, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Dec. 16, 1976, Ser. No. 751,287
Int. Cl.² H04M *3/04*
U.S. Cl. 179—18 HB **7 Claims**



1. A telephone system including, a telephone line connected to at least one subscriber station including a ringer; a central switching system including a central processor unit, line supervisory means, and line relay means connected to said central processor unit normally connecting said line to said line supervisory means, and a ringing signal generator connectable to a power source; the improvement comprising: voltage sensing means connected between said ringing signal generator and said power source; and a control circuit including circuit connections to said line relay, to said voltage sensing means and to said central processor unit, initially operated in response to said central processor unit to connect said power source to said ringing signal generator through said voltage sensing means and to operate said line relay, whereby ringing current from said ringing signal generator is connected to said telephone line to operate said subscriber station ringer.

4,071,710
COMMUNICATION-RECORDER SYSTEM
Roy Burnett, 29341 Hillrise Drive, Agoura, Calif. 91301
Filed Nov. 5, 1975, Ser. No. 629,034
Int. Cl.² H04M *9/06*
U.S. Cl. 179—37 **8 Claims**



1. An intercom system with a plurality of master stations which can be selectively operated to intercommunicate with one another, each station containing call generating means, station selecting means, a LINE, AUTO, IN, OUT and TLK relays, a common call line from each station to each of the other stations, a call enabling transistor and speaker-microphone means, and a talk switch;

plural common amplifier means each associated with a separate talk-listen relay and a separate ACT relay;

each call generating means comprising a pair of transistors in a monostable multivibrator configuration receiving a trigger voltage from an SCR connecting to a trigger source in the associated station selecting means, said mul-

tivibrator forward biasing a transistor which places an inhibiting voltage on a line which connects to the call generators of all other stations, said multivibrator also placing a call voltage through its associated OUT relay coil and station selecting means onto the call line connecting to the called station's ANN relay coil of the called stations IN relay, said IN relay latching in the instance where the other end of the said IN relay coil connects to a call enabling voltage present on contacts of the ACT relay associated with one of said common amplifier means, upon latching of said IN relay an associated call enabling transistor is forward biased by its connection to said IN relay contacts, wherein said transistor's collector connects to said call line to provide a low resistance termination for said call voltage enabling the caller's OUT relay to latch;

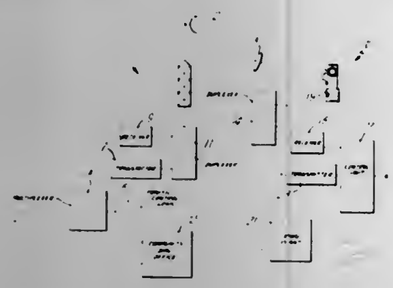
during a call, one of said amplifier means has an input and output connecting respectively to the speaker-microphones of the called and calling stations by contact means of their LINE, IN, OUT and TLK relays, said amplifier means having a talk-listen relay for the purpose of reversing said input and output connections and connecting for its actuation by voice line means to the talk switch of the calling station, each amplifier means having an ACT relay for the purpose of providing for proper amplifier availability.

4,071,711

TELEPHONE SUBSCRIBER DISTRIBUTION SYSTEM

Donald M. Beaupre, Beaconsfield, and Harold A. Ferris, St. Eugene, both of Canada, assignors to Farinon Electric of Canada Ltd., Montreal, Canada

Continuation-in-part of Ser. No. 494,305, Aug. 2, 1974. This application June 20, 1975, Ser. No. 588,691
Int. Cl.² H04J 3/12
U.S. Cl. 179—41 A **14 Claims**



1. A multipoint information distribution system comprising a central station and a plurality of physically separated outlying stations, each outlying station comprising at least one terminating circuit whereby said system comprises a plurality of terminating circuits;

said central station comprising a plurality of connecting ports equal in number to the plurality of terminating circuits;

and means for coupling selected ones of said terminating circuits to selected ones of said connecting ports one at a time;

characterized in that said coupling means comprises

means including a multiplexer means at said central station for time sampling contents of said connecting ports in an ordered sequence during cyclically recurring time slots to provide, at an output of said multiplexer means, a first sequentially ordered sample stream;

transmission means at said central station for sending said sample stream directly and in common to each outlying station on a first medium whereby identical sample streams are sent to each outlying station;

receiving means at each outlying station adapted to receive said sample streams;

control means at each outlying station coupled to said receiving means to permit only samples in preselected time slots to be applied to selected terminating circuits at said outlying station;

transmission means at each said outlying station; and

means for providing a signal to said transmission means;

said control means comprising means for gating said transmission means only during the preselected time slots of their respective terminating circuits to thereby provide samples of said signal, whereby each outlying station transmits, on a second medium, samples of the signal provided to their respective transmission means;

said outlying stations comprising means for arranging the transmission time slots at each station relative to one another so that samples will arrive at a receiving means of the central station in a second sequentially ordered sample stream;

distributor means comprising a demultiplexer means at said central station connected to an output of said receiving means and adapted to distribute said time distributed samples into their respective connecting ports;

said central station further comprising traffic control logic (TCL) means;

said TCL being adapted to poll the outlying stations in a predetermined sequence and in an unoccupied time slot selected at random by the TCL, to determine the circuit demand status of each outlying station;

said TCL being still further adapted to provide a communications channel, in said unoccupied time slot, between a respective terminating circuit and the central station when it detects a circuit demand condition at the terminating circuit or connecting port;

and means at said terminating circuit for locking its receiver means and transmitter means onto said unoccupied time slot;

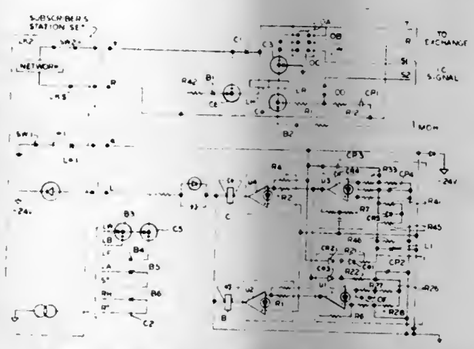
said TCL further comprising means for selecting another unoccupied time slot for further polling of the uncommitted outlying stations.

4,071,712

LINE CIRCUIT FOR KEY TELEPHONE SYSTEMS

John Anthony Barsellotti, Guelph, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 14, 1976, Ser. No. 732,237
Int. Cl.² H04M 1/00
U.S. Cl. 179—99 **7 Claims**



1. A line circuit for controlling a line of a key telephone system, including a first and a second relay for producing output signaling conditions of said line circuit; relay operating logic including a first and a second operational amplifier, ring detecting means responsive to ringing signals applied to said line for switching a first of said amplifiers to an operative condition for causing energization of said first relay, means

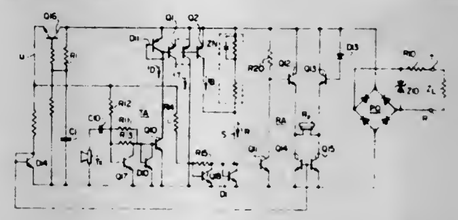
responsive to a hold signal applied to said line for switching said second amplifier to an operative condition to energize both said first and second relays, and means operative in response to a closed loop on said line for energizing said second relay independently of said amplifiers.

4,071,713

TELEPHONE SPEECH NETWORK

Mevhibe Gulay Sencer, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 27, 1976, Ser. No. 754,430
Int. Cl.² H04M 1/58
U.S. Cl. 179—81 A **4 Claims**



1. A telephone speech network for connecting a transmitter and receiver to a telephone line, comprising:

a plurality of transistors each having their emitter-collectors effectively connected in shunt across said telephone line for providing a signal varying impedance across the line terminals of the network;

a line powered transmit amplifier for coupling the output of said transmitter to the base of each of the plurality of transistors, the emitter-collector of one of said transistors being connected in series with the input to a line powered receive amplifier across the telephone line;

a balancing impedance connected in shunt with the emitter-collector of said one transistor for coupling receive signal currents from said line to said receive amplifier input and in conjunction with said one transistor to control the sidetone level of the transmit signals coupled to said input; and

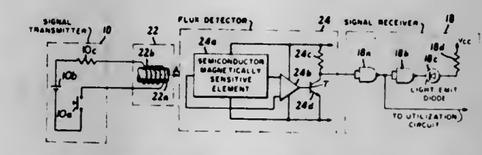
said receive amplifier coupling the amplified received signal currents to said receiver.

4,071,714

SIGNAL TRANSMISSION SYSTEM

Tsuyoshi Satoh, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed June 20, 1975, Ser. No. 588,722
Claims priority, application Japan, June 26, 1974, 49-73590
Int. Cl.² H04B 13/00
U.S. Cl. 179—82 **5 Claims**



2. A signal transmission system, comprising: magnetic flux transmitting means receptive in use of at least one DC electrical signal for transmitting a corresponding DC magnetic flux a signal in response to said DC electrical signal, and magnetic flux detecting means spaced from said magnetic flux transmitting means for magnetically coupling therewith and comprising a semiconductor element responsive to DC magnetic flux for detecting the transmitted DC magnetic flux signal and for developing an output electrical signal corresponding to the transmitted DC magnetic flux signal; wherein said magnetic flux transmitting means comprises a magnetic core; a coil having an inductance and wound around said core and being energizable by said DC electrical signal for developing a magnetic flux in said core and in a region of space beyond said core; and a resistor connected in series with said coil, said resistor having a resistance value selected in accordance with the inductance value of said coil to jointly define with said coil a filter to filter electrical noise from said DC electrical signal applied to said coil and prevent a noise component in said transmitted DC magnetic flux signal.

4,071,715

PUSH-BUTTON SWITCH FOR A MULTIFREQUENCY DIALLING TELEPHONE SET

Pierre D. Richard, and Claude R. Tessier, both of Chateaudun, France, assignors to Societe des Telephones Picart Lebas, Paris, France

Filed Nov. 1, 1976, Ser. No. 737,557
Claims priority, application France, Dec. 17, 1975, 75 38739
Int. Cl.² H04M 1/50
U.S. Cl. 179—90 K **8 Claims**



1. A push-button switch device for a multifrequency dialling telephone set which is provided with a multifrequency generator having a first terminal connected to a first wire of a telephone line, and with a printed board for the electronic switch parts as a base which is supported on the dial support plate of the telephone set on which the casing of the telephone set is secured, said printed circuit board providing, for each push-button, a pair of contacts and a simple contact of a circuit for selecting a frequency group of said multifrequency generator, said push-button switch comprising:

first means for connecting said simple contact with said pair of contacts of each said selecting circuit, said connecting means comprising a first rigid conducting horizontal reed pivotably mounted at one end which is tilted on said casing and having a pair of contacts at the other end and a simple contact between said ends, said simple contact and said pair of contacts of said first reed not being in contact with said selection circuit when vertical pressure is exerted on said push-button;

second means for connecting a second terminal of said multifrequency generator to a second wire of said telephone line, said connecting means comprising second and third rigid conducting right-angle reeds on said circuit board rotably mounted at one of their ends which are respectively connected by windings to said second wire of said telephone line and to said second terminal of said multifrequency generator, the other ends of said second and third reeds being movable and not being in contact when vertical pressure is exerted on said push-button, and a fourth

flexible conducting right-angle reed fixed at one of its ends on said circuit board which is connected to said first wire of said telephone line, the other end of said fourth flexible reed being free and being in contact with said movable end of said second rigid reed when pressure is exerted on said push-button; and mechanical means comprising first and second springs, the upward stress of said first spring being greater than the downward stress of said second spring and directed against the said downward stress of said second spring and said vertical pressure exerted downwardly on said push-button, and long draw coil springs for releasing said movable ends of said second and third reeds having downward stresses much smaller than said upward stress of said first spring, the downward stroke of said push-button comprising two consecutive phases, namely:

a first phase during which said pressure exerted on said push-button is directed against the differential force of said stresses of said first and second springs so that said second terminal of said multifrequency generator is disconnected from said second wire of said telephone line and at the end of which said selection circuit of said frequency group is connected to said multifrequency generator for selecting said frequency group; and

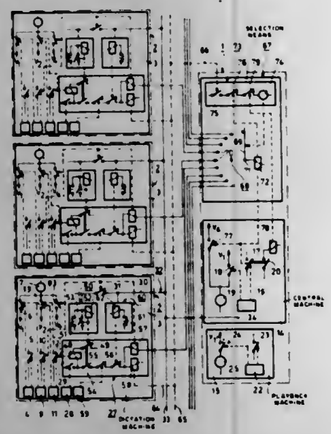
a second phase during which said pressure exerted on said push-button is only directed against said upward stress of said first spring, so that after the beginning of said second phase said second terminal of said multifrequency generator is connected to said second wire of said telephone line for transmitting said frequency group to said telephone line.

4,071,716

DICTATION SYSTEM

Hermann Bretschneider, Vienna, Austria; Herman Pieter Hueber, Eindhoven, Netherlands, and Friedrich Louzil, Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1975, Ser. No. 623,619
Claims priority, application Austria, Oct. 22, 1974, 8492/74
Int. Cl.² H04M *11/10*; G11B *5/86*
U.S. Cl. 179—100.1 DR **4 Claims**



1. A dictation system comprising a multiplicity of remote stations and one central station which can be selected by said remote stations and which comprises at least one recording and playback machine, which remote stations can optionally be connected to the central station when said central station is free for the transmission of dictations, wherein

each remote station comprises a recording and playback machine comprising means for recording dictation at a normal speed of transport of a record carrier transport;

said remote station machine includes a switching means for calling the central station and establishing a signal path between the remote station machine and the central station machine for the transmission of the dictation in response to actuation, effected upon completion of a recording procedure, when the central station is not busy;

the remote station machine comprises means for switching on a "playback transmission" mode for playing back recorded dictation at a first predetermined speed of transport of the remote station record carrier, the quotient of said first predetermined speed divided by the normal speed being a given quotient greater than one;

the central station machine comprises means for switching on and off a "recording transmission" mode for recording the dictation being transmitted at a second predetermined high speed of transport of the central station record carrier, and means for playing back a transmitted dictation which has been recorded on the central station machine at a third predetermined speed which is smaller than said second predetermined speed, the quotient of said second predetermined speed divided by said third predetermined speed being equal to said given quotient;

the central station comprises a priority selection means, responsive to selection by actuation of the switching means of the machine of a remote station which has priority over the switching means of the machines of all other calling remote stations, when the central station is engaged, for blocking the switching means of the machines of all other calling remote stations from switching on said "playback transmission" mode; and when the central station is free, for establishing a connection with a machine of one of said all other calling remote stations and unblocking the switching means of the machine of said one selected remote station; each remote station further comprising end stop means for automatically cancelling selected modes of operation of the remote station and clearing the "recording transmission" mode and initiating establishment of another connection by the priority selection means of the central station, upon completion of the transmission of a dictation to be recorded on the central station machine; and

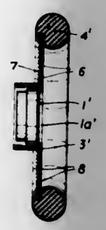
at least one remote station further comprises means, responsive to the switching means of said at least one remote station being actuated and being blocked by said priority selection means, for cancelling the actuation of the switching means of said at least one remote station, in response to changing the record carrier in the machine of said at least one remote station.

4,071,717

HEADPHONE EARPIECE

Werner Fidi, Baden, and Horst Moser, Vienna, both of Austria, assignors to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Austria

Filed Apr. 6, 1976, Ser. No. 674,090
Claims priority, application Austria, Apr. 8, 1975, 2643/75
Int. Cl.² H04R *1/10*
U.S. Cl. 179—182 R **14 Claims**



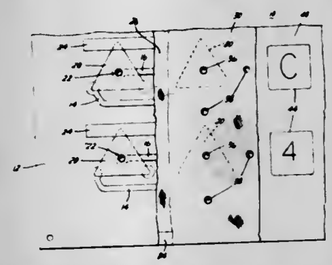
1. A headphone earpiece for engagement over a person's ear, comprising a sound permeable rigid plate forming an earpiece surface having a central opening therethrough, an electroacoustic transducer located adjacent said plate and supported within the opening by said plate, and an annular resilient pad surrounding and connected to the periphery of said plate, said plate having an acoustic frictional resistance which comprises a mass of acoustic material which is effective particularly in the range of high frequencies.

4,071,718

FLAT KEYBOARD ASSEMBLY HAVING COVER TYPE MEMBRANE WITH PROTRUSIONS TO ALIGN SWITCH COMPONENTS

Phillip L. Harden, Roanoke, Ind., assignor to Bowmar Instrument Corporation, Fort Wayne, Ind.

Filed Oct. 22, 1976, Ser. No. 734,824
Int. Cl.² H01H *13/04*, *9/02*
U.S. Cl. 200—5 A **11 Claims**



1. A flat, thin keyboard assembly comprising: a relatively thin support member having opposite sides, a plurality of spaced-apart switches supported on one side of said support member, said switches respectively including resilient metallic snap-acting dome elements actuatable from first to second positions in response to force exerted thereon, a switch-actuator member formed of relatively thin flexible material and having opposite sides with one side in facing relationship with said one side of said support member and covering said switch elements, said switchactuator member having thin-walled switch-actuating protrusions formed from a side thereof respectively in alignment with said switch elements and respectively defining corresponding indentations on the opposite side thereof, a flat keyboard member formed of relatively thin flexible material having opposite sides with one side in facing relationship with the side of said actuator member remote from said one side of support member, the other side of said keyboard member having keyboard indicia thereon respectively in alignment with said switch-actuating protrusions and switch elements, and means for holding said members in assembled relation with said switch-actuator member sandwiched between said support member and said keyboard member whereby deflection of said keyboard member in the region of a particular indicia in response to force manually exerted thereon causes the respective protrusions to apply actuating force on the respective switch element.

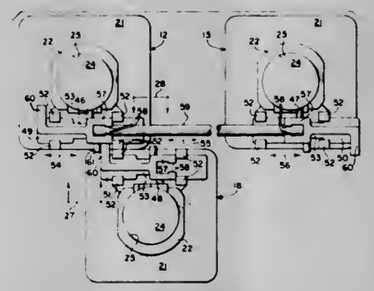
4,071,719

KEYBOARD SWITCH ASSEMBLY HAVING ACTUATOR INTERLOCKING KEYBOARD SHIFT AND SHIFT LOCK AND RELEASE MECHANISM

Robert Christen Madland, Mount Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed July 22, 1976, Ser. No. 707,742
Int. Cl.² H01H *3/20*, *9/20*; G06C *7/02*
U.S. Cl. 200—5 B **13 Claims**

1. A keyboard mechanism comprising a shift keyswitch and a shift lock keyswitch positioned adjacent said shift keyswitch wherein each of said keyswitches comprises a switching means, a housing for said switching means having an outer surface with an aperture therein, an actuating member having a cam associated therewith mounted for movement into said housing through said aperture from an initial undepressed position to a depressed position for actuating said switching means when said actuating member is in said depressed position, resilient means for returning said actuating member to its undepressed position and a slide member having a cam follower thereon which follows said cam wherein said slide member slides back and forth with respect to said outer surface, and wherein said mechanism further comprises a first engagement means on said slide member of said shift lock keyswitch and a second engagement means on said slide member of said shift keyswitch, which engages said first engagement means such that motion of one of said adjacent slide members causes a corresponding motion of the other of said adjacent slide members, said cam of said shift keyswitch being constructed to



allow for independent depression of said actuating member of said shift keyswitch when said actuating member of said shift lock keyswitch is undepressed and said cam of said shift lock keyswitch being constructed so as to lock said actuating member of said shift lock keyswitch in a depressed position upon a first depression of said actuating member of said shift lock keyswitch so that said switching means of said shift lock keyswitch thereby is maintained actuated, said cams of said shift and shift lock keyswitches being further constructed such that a subsequent depression of said actuating member of said shift keyswitch causes said actuating member of said shift lock keyswitch to be released from its locked depressed position and returned to its initial position thereby deactuating said switching means of said shift lock keyswitch.

4,071,720

BINARY CODED CAM SELECTOR SWITCH HAVING SPLIT HOUSING AND DENT STRUCTURE

Gary Edward Krajci, Antioch, and John Joseph Marrella, Broadview, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed June 17, 1976, Ser. No. 697,092
Int. Cl.² H01H *19/00*; G05G *5/06*
U.S. Cl. 200—6 B **12 Claims**

1. A binary coded cam selector switch assembly comprising in combination:

a rotary member molded of an abrasion resistant plastic and including integrally, axially displaced multiple coaxial cam surfaces, cylindrical bearing surfaces, a first detent member, and a control shaft;

two rigid metal contact bars;

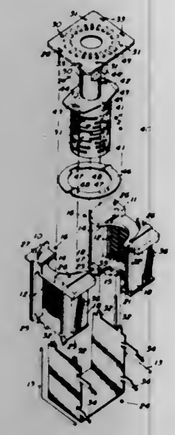
a plurality of resilient metal contacts individually movable by contact with portions of the cam surfaces from a normal position free of the contact bars into sliding contact with said bars;

a metal detent plate supported on the control shaft of the rotary member and axially displaced from the first detent member;

two spherical metal detent elements, retained between the first detent member of the rotary member and the metal detent plate for cooperating with said plate and said mem-

ber to position the cam surfaces at ones of a number of predetermined positions relative to said metal contacts;

two mating housing portions, molded of an abrasion resistant plastic, and including boss means having at least two different diameters, semi-cylindrical bearing surfaces, for cooperating with the cylindrical bearing surfaces of the rotary member, and each portion fixedly retaining one of the metal contact bars and a predetermined number of the metal contacts;



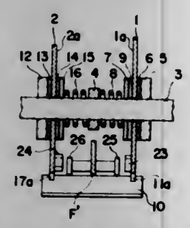
a metal housing clamp adapted to cooperate with the metal detent plate for retaining the housing portions in a tightly mated relationship, and including first tab means for retaining the metal detent plate and second tab means for mounting the switch assembly, and the metal detent plate having first apertures adapted to receive the boss means of the housing portions for proper orientation of the detent plate relative to the housing portions and second apertures adapted to receive the first tab means of the housing clamp only when the ends of the clamp are stressed toward each other.

4,071,721

SEQUENTIAL CONTROLLER

Tomoji Murata; Yoshibiro Nakamura, both of Toyokawa; Kenji Shibazaki, Aichi, and Matsuo Kuse, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 23, 1976, Ser. No. 660,405
Claims priority, application Japan, Mar. 8, 1975, 50-28413
Int. Cl.² H01H *43/10*
U.S. Cl. 200—38 B **13 Claims**



1. A sequential controller for use in an apparatus provided with a plurality of devices for controlling the operating periods of each of the devices, comprising:

a. at least first and second rotary members rotatably supported on a common axis and each having detent means thereon with said first rotary member having at least two detent means and the detent means on said second rotary member is different from the detent means on said first rotary member;

a. ' at least first and second switch means responsive to rotation of the corresponding one of said rotary members for controlling operating periods of a corresponding device;

b. a driving means for driving the rotary members, and friction means provided between the driving means and the rotary members through which the driving force is transmitted to the rotary members;

c. lock means urged against said rotary members and engageable with said detent means for preventing the rotary members from rotating and disengageable from said detent means for freeing said rotary members to be rotated by said driving means; and

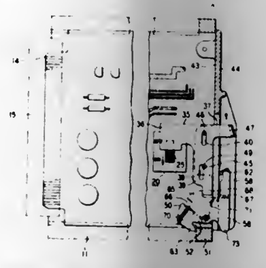
d. a single disengaging means associated with said lock means for disengaging said lock means from said detent means for a time sufficient to free all of said rotary members for rotation and then for causing said lock means to re-engage with said rotary members for engaging the detent means on one rotary member at a time different from the time of engagement of the lock means with the detent means on the other rotary member, whereby the rotation of one rotary member is terminated earlier by the engagement of said lock means with the detent means thereon and the rotation of the other rotary member is terminated thereafter and the operating periods of the devices are controlled in accordance with respective rotations of said rotary members and said switch means responsive thereto.

4,071,722

LATCH AND SWITCH INTERLOCK SAFETY STRUCTURE

Terry Jonathan Hart, Long Valley, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 31, 1976, Ser. No. 719,260
Int. Cl.² H01H *9/20*
U.S. Cl. 200—50 A **10 Claims**



1. A switch assembly for removing electrical power supplied to an electronic module during insertion and removal of the module with a mating connector on a support frame including

a switch fixedly mounted to said module and having a slidable member movable from a first position, wherein said switch is in an OFF state preventing electrical power from being supplied to said module, to a second position, wherein said switch is in an ON state permitting electrical power to be supplied to said module,

means for imparting a positional bias to said switch, said positional bias tending to maintain said switch in its OFF state,

a generally T-shaped member for overriding said positional bias and actuating said switch when said module is mated with said connector on said support frame, said T-shaped member having a first arm for engaging said slidable member and a second arm having means integral therewith to facilitate imparting a slidable motion to said T-shaped member, said member further having a stem portion which has first and second spaced-apart elongated apertures axially displaced from one another along an axis of said stem for guiding said T-shaped member during said slidable motion, said T-shaped member further including means for holding said switch in its ON state upon actuation,

first and second pins affixed to said module, said pins slidably engaging said first and second elongated apertures, and

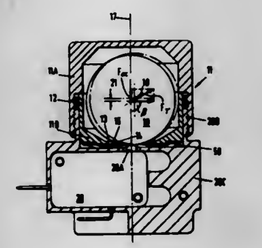
means, pivotally mounted on said module, for latching said module to said support frame, said latching means including means for engaging said T-shaped member so that upon insertion and removal of said module said latching means is pivotally rotated imparting an arcuate motion to said T-shaped member releasing said holding means and allowing said positional bias to return said switch to its OFF state.

4,071,723

PLUNGER-RELEASE SHOCK RESPONSIVE CONTROL APPARATUS HAVING ADJUSTABLE SEAT FOR SENSOR MASS

Peter Ronald Jackman, Basingstoke, England, assignor to Inertia Switch Limited, Hartley Wintney, England

Filed May 20, 1976, Ser. No. 688,337
Claims priority, application United Kingdom, May 13, 1975, 20161/75
Int. Cl.² H01H *35/00*
U.S. Cl. 200—61.45 R **3 Claims**



1. A plunger-release, shock-responsive control apparatus comprising:

a first housing having an upper wall, which is formed with a plunger aperture, and an external annular-section projection surrounding said aperture and extending vertically along a central axis passing through the plunger aperture;

a second housing having a cup member, which is axially movable in the annular-section projection and defines a coaxial concave seat of circular cross-section, and having a cover which is directed away from said upper wall;

screw-threaded means connecting the cover to the annular projection for moving the cup member relative to the first housing so as to effect vertical adjustment of the concave seat;

a two-mode control device operable, in different modes, to perform two different control functions and having a plunger which is axially aligned with said aperture and is operable, on actuating movement along the central axis between a depressed position and an elevated position, to effect a change of mode of said control device; and

a seismic roller, accommodated in the concave seat, above the plunger, for lateral movement, as a result of a predetermined variation of the resultant of all forces acting on the roller, from a rest position on the central axis where the weight of the roller prevents movement of the plunger from the depressed position to the elevated position, so as to allow the plunger to move to its elevated position;

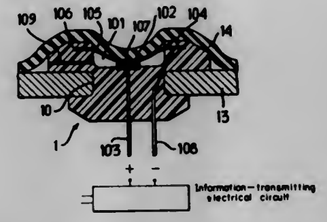
the seat defining a concave surface extending from said central axis and including a region which is engaged by the seismic roller during said lateral movement from its rest position and at which region there is an increase in the inclination of the surface of the seat to said central axis so that, in the axial plane of lateral movement of the roller the increased inclination is greater than the inclination of the tangent to the roller at the point of contact between the roller and the seat when the roller is in its rest position.

4,071,724

TIRE PRESSURE VARIATION DETECTOR

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, France

Filed Apr. 20, 1976, Ser. No. 678,617
Claims priority, application France, Apr. 21, 1975, 75 12433
Int. Cl.² B60C *23/04*; H01H *35/24*
U.S. Cl. 200—61.25 **5 Claims**



1. A tire pressure variation detector connected to an information-transmitting electrical circuit by on-off elements, said detector comprising a body adapted to be fastened in an opening of a wall of an airtight wheel rim for a pneumatic tire having two beads and an inside wall and containing an inner tube having an outside wall, said wall of the wheel rim extending between the two beads of the tire, said body comprising a portion intended to enter into contact with the inner tube and having a stiff elastic element bearing a movable electrical contact intended to enter into contact with a stationary electrical contact borne by another portion of said body, the two electrical contacts being electrically insulated from each other and constituting said on-off elements of said information-transmitting electrical circuit, the stiffness of the elastic element being such that the two electrical contacts touch each other when the inner tube is inflated to normal inflation air pressure and move away from each other when air pressure increases in a space outside the inner tube, said space outside the inner tube being formed by the inside wall of the tire, the outside wall of the inner tube and said wall of the wheel rim, the detector being characterized by the fact that the body is fastened in airtight manner in the opening of the wall of the wheel rim and comprises, in the portion thereof intended to enter into contact with the inner tube, a cavity which contains the stationary electrical contact and which is closed by a flexible airtight diaphragm which serves as the elastic element, said cavity being connected to said space outside the inner tube by a channel provided in the body of the detector.

4,071,725

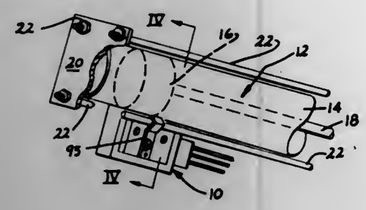
PROXIMITY SWITCH FOR FLUID CYLINDERS

John L. Smith, Cuyahoga Falls, and Clair B. Alexander, Akron, both of Ohio, assignors to Ibec Industries, Inc., New York, N.Y.

Filed Feb. 27, 1976, Ser. No. 661,951
Int. Cl.² H01H *35/38*
U.S. Cl. 200—82 E **24 Claims**

1. A magentic proximity apparatus for use with fluid cylinders of the type including a cylinder, a magnetically attractive piston mounted for movement within the cylinder, and tie rods extending along and spaced outwardly from the exterior surface of the cylinder between support means at the ends of the cylinder, said apparatus comprising a base means supporting said apparatus, switch means secured to said base means for completing an electrical circuit; actuator means for closing said switch means in response to the proximity of a piston of a fluid cylinder, said actuator means including a magnet, means for movably supporting said magnet, and means for engaging

said switch means; said magnet adapted to be attracted toward a fluid cylinder piston when the piston is in proximity to the magnet to move said engaging means to close said switch means; and clamping means securing said apparatus to one of the tie rods of the fluid cylinder, which tie rod is spaced outwardly therefrom, such that said magnet is positioned closely adjacent to and approximately tangentially to the fluid cylinder; said clamping means including a clamping arm having two ends and spacer means extending between one end of said clamping arm and said base means for spacing said one end of



said clamping arm from said base means, said spacer means including a body having a first portion received in a portion of said base means and a second portion received in a portion of said one end of said clamping arm at a position spaced from the other end of said clamping arm; and tightening means extending between said clamping arm and base means and positioned intermediate said body and said other end of said clamping arm for tightening said clamping arm toward said base means to securely clamp the tie rod between said clamping arm and base means.

4,071,726

ELECTRICAL SWITCH HAVING ACTUATOR LIGHT TRANSMISSIVE REGION, INTERMEDIATE LENS AND LIGHT SOURCE

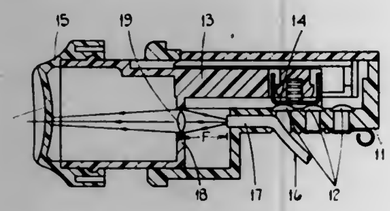
Konrad Werda, Clitheroe, England, assignor to Lucas Electrical Company, Limited, England

Filed Jan. 29, 1976, Ser. No. 653,603

Claims priority, application United Kingdom, Feb. 11, 1975, 5711/75

Int. Cl.² H01H *9/16*; G09F *9/00*

U.S. Cl. 200—311 **4 Claims**



3. An electrical switch assembly having indicator means comprising:

a body;

an operating member, mounted in said body, for movement relative thereto between first and second spaced positions;

a light transmissive region, located in said operating member, visible in both of said first and second operative positions;

light source means for emitting light and illuminating said light transmissive region;

lens means, disposed between said light source means and said light transmissive region and responsive to the distance from said light source means, for modifying the light illuminating said light transmissive region into varying levels of exposure area on said light transmissive region, said operating member further varying said distance between said light source means and said lens means.

4,071,727

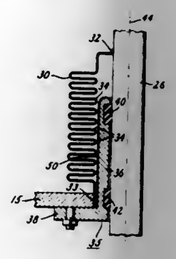
VACUUM-TYPE CIRCUIT INTERRUPTER WITH MEANS FOR PROTECTING ITS BELLOWS AGAINST MECHANICAL DAMAGE

Donald Wayne Crouch, Newtown Square, and Robert Wayne Nelson, Broomall, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed May 6, 1976, Ser. No. 683,869

Int. Cl.² H01H *33/66*

U.S. Cl. 200—144 B **7 Claims**



1. A vacuum-type circuit interrupter comprising:

a. an evacuated envelope,

b. a pair of relatively movable contacts within said envelope,

c. a conductive contact rod projecting through a wall of said envelope and carrying one of said contacts at one end of the rod,

d. a flexible metal bellows of a generally tubular configuration projecting into said envelope and surrounding said contact rod, said bellows containing annular convolutions axially-spaced along its length,

e. means for joining the inner end of said bellows to said contact rod and for joining the outer end of said bellows to said envelope wall,

f. a guide for said contact rod comprising a tubular metal sleeve surrounding said contact rod, located within said bellows, and fixed to said envelope wall for guiding said rod for axial movement, said sleeve having an inner end wall so located that some of said convolutions are located axially inwardly thereof,

g. means forming a slide bearing disposed between said sleeve and said contact rod, and

h. a coating of self-lubricating plastic material on the outer peripheral surface of said sleeve and on the inner end surface of said sleeve, which coating is sufficiently close to the internal surface of said bellows as to be contacted by said convolutions when said contact rod is axially moved during operation of the interrupter, the lubricating properties of said coating reducing friction between said convolutions and said coated sleeve.

4,071,728

CROSSPOINT SWITCH COMPRISING BISTABLE CROSSPOINTS

Reinhard Cornelis Greve, Baarn, and Cornelis Pieter van Luijk, Hilversum, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1974, Ser. No. 445,992

Claims priority, application Netherlands, Mar. 15, 1973, 7303599

Int. Cl.² H01H *63/33*

U.S. Cl. 200—175 **12 Claims**

1. A crosspoint switch comprising

a number of selection bars having a plurality of engaging surfaces and a corresponding plurality of disengaging surfaces,

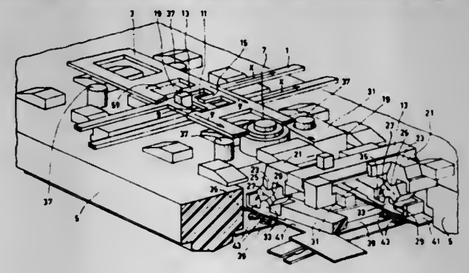
means for mounting said selection bars and for selectively moving said bars between a neutral position and a selection position,

a number of switching bars having a plurality of actuating surfaces and a corresponding plurality of releasing surfaces,

means for mounting said switching bars so as to cross said selection bars, and for selective movement of said switching bars between a neutral position and a switching position, crossings of a selection bar and a switching bar defining a plurality of crosspoints, each crosspoint having associated therewith a corresponding engaging surface, disengaging surface, actuating surface and releasing surface, movement of a corresponding actuating and releasing surface of a switching bar defining a switching path;

a plurality of catching members corresponding to said plurality of crosspoints, each catching member comprising a projection;

means for mounting respective ones of said catching members for movement along first and second directions, so disposed that each projection extends between a respective engaging and a respective disengaging surface of the selection bar defining the corresponding crosspoint for movement along said first direction in response to movement of said selection bar between the neutral and selection positions; said selection bar being in the selection position, each projection associated therewith being dis-



posed to extend across the corresponding switching path of said switching bar surfaces, such that movement of the switching bar moves said projection along the second direction; said selection bar being in the neutral position, each projection associated therewith being disposed to one side of said path;

a plurality of coupling members corresponding to said projections;

means for mounting respective ones of said coupling members, and for coupling corresponding coupling members to corresponding projections for movement between a neutral and a switched position in response to movement of said projection in said second direction only;

a plurality of switches associated with respective crosspoints; and

means for actuating a respective switch in response to the position of the respective coupling member, said surfaces, projections, and coupling members being so arranged that:

1. a coupling member and a corresponding switching bar being in the neutral position and the corresponding selection bar being in the selection position, the corresponding projection is adjacent an actuating surface such that movement of the switching bar to the switching position will move the projection along the second coordinate direction thereby moving the coupling member to the switched position, thus actuating the corresponding switch;

2. a coupling member and a corresponding switching bar being in the switched and switching position respectively, the corresponding selection bar being in the selection position, the corresponding projection is adjacent a releasing surface such that movement of the switching bar to the neutral position will move the projection thereby moving the coupling member to the neutral position; and

3. upon movement of a selection bar to the neutral position, each projection associated with that bar is moved out of the path of the surfaces of the respective switching bar so that the corresponding coupling members remain in their previous positions independent of movement of the switching bars.

11. In a crosspoint switch including a base having thereon fixed contacts and movable contacts extending from said base in engageable relationship with said fixed contacts; and a coupling member slidably supported by said base above said movable contacts, said coupling member including a surface for pressing said movable contacts into engagement with said fixed contacts upon movement of said coupling member from a first to a second position, an improved coupling member translating arrangement comprising:

a catching member movably connected to said coupling member, said catching member including a projection, said catching member being so arranged that said projection is movable with respect to said coupling member along a coordinate direction orthogonal to a direction of movement of said coupling member between said first and second positions;

a switching bar having a recess therein for selectively engaging said projection and moving said coupling member; and

a selection bar having engaging and disengaging surfaces, one of said engaging surfaces being selectively engageable with said projection for moving said projection into said recess of the associated switching bar, and one of said disengaging surfaces serving to move said projection out of engagement with said recess, said selection and switching bars cooperating with said projection on said catching member to selectively move said coupling member from said first to said second position and from said second to said first position.

4,071,729

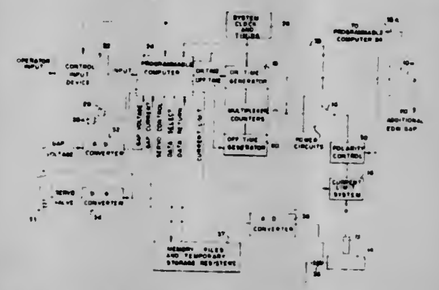
ADAPTIVE CONTROL SYSTEM AND METHOD FOR ELECTRICAL DISCHARGE MACHINING

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 475,573, June 3, 1974, abandoned. This application Jan. 19, 1976, Ser. No. 650,178

Int. Cl.² B23P *1/08*

U.S. Cl. 219—69 C **11 Claims**



1. In an electrical discharge machining apparatus including an electronic output switch operably connected between a power source and an EDM gap including an electrode and a workpiece for providing machining power pulses thereto, a current limiting system operably connected to the output switch for limiting the peak current of the machining power pulses being furnished to the gap, a digital pulse generator having controllable on and off times and a servo-feed system, wherein the improvement comprises:

a data input stage operably connected to the gap;

a memory file unit for storing previously accumulated control input data for like EDM operations; and

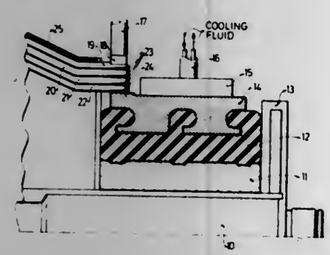
a programmable computer operably connected to and controlling said pulse generator, said programmable computer including a read-only memory unit, said programmable computer operable to determine maximum frequency of operation of the pulse generator responsive to difference between data transferred from said memory unit to said read-only memory unit and data entered into said memory unit from said gap data input stage, whereby maximum frequency is controlled with respect to current limit setting.

4,071,730

METHOD TO SECURE ARMATURE CONDUCTORS TO THE COMMUTATOR STRIPS IN DYNAMO ELECTRIC MACHINES

Gerd Bassler, Kornwestheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 24, 1976, Ser. No. 669,837
Claims priority, application Germany, Apr. 29, 1975, 2518973
Int. Cl.² B23K *1/12*
U.S. Cl. 219—85 CM **10 Claims**



1. In the manufacture of dynamo electric machines, a method to secure a plurality of superimposed armature winding conductors (19-22) to a commutator lamella (14) of the commutator of the machine comprising the steps of

superimposing the end portions of the conductors to form a stack of conductors;

locating the superimposed stack of conductors over a portion of the respective commutator lamella (14);

and, in a single operation, resistance-heating and soldering said superimposed conductors and said portion of the lamella to form a solid connection and to simultaneously secure together said conductors and said lamella,

said heating and soldering step comprising the step of contacting the uppermost of the stack of conductors with a first electrode;

contacting the lamella with a second electrode

and pressing said first electrode on said stack to press said stack against the lamella (14) while simultaneously supplying solder to the stack and lamella and passing current therethrough to effect resistance heating and soldering.

4,071,731

MATRIX ENGRAVING BY ELECTRON BEAMS

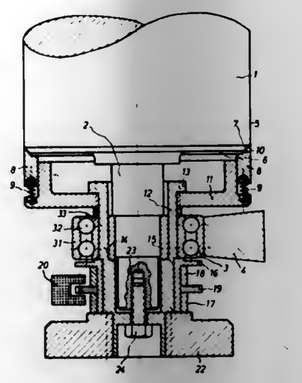
Walter Baar, Kiel-Wik, Germany, assignor to Dr. -Ing. Rudolf Hell GmbH, Kiel, Germany

Filed Feb. 18, 1975, Ser. No. 550,576
Claims priority, application Germany, Mar. 16, 1974, 2412685
Int. Cl.² B23K *15/00*
U.S. Cl. 219—121 EB **7 Claims**

1. In an apparatus for producing engraved printing forms via an electron beam device which is located in a vacuum chamber having an open side facing a peripheral surface of a printing form cylinder and defining therewith an air gap, and an arrangement for effecting relative movement of said vacuum chamber and printing form cylinder while maintaining said air gap, the improvment comprising:

an annular member having an outer circumferential surface of a diameter corresponding to the outer diameter of said printing form cylinder, said printing form cylinder having a trunnion;

cooperating annular bevelled contact faces provided on



respective axial ends of said annular member and printing form cylinder, and

a mounting device for said annular member secured on said trunnion and mounting said annular member for displacement axially of said printing form cylinder,

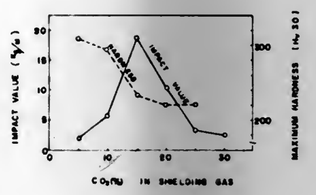
so that, when said contact faces are coaxial and urged into abutment with one another, said outer circumferential surface constitutes an extension of said peripheral surface.

4,071,732

METHOD OF LARGE CURRENT GAS SHIELDED ARC WELDING

Jinkichi Tanaka, and Itaru Watanabe, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Toyko, Japan

Filed Nov. 21, 1975, Ser. No. 634,322
Claims priority, application Japan, Nov. 27, 1974, 49-135559
Int. Cl.² B23K *9/16*
U.S. Cl. 219—137 R **4 Claims**



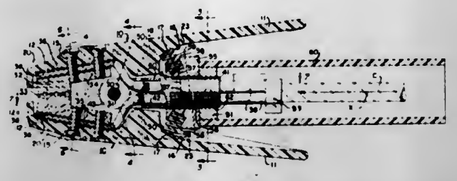
1. A method of high speed and large current gas shielded electric arc welding of steel using a mixture of inert gas and active gas as shielding gas, comprising the steps of: using at least one solid wire consumable electrode of low alloy steel material with a diameter substantially between 3.0 mm and 6.4 mm; feeding said electrode with a welding current of from 600 to 1500 amperes; supplying a shielding gas of from 50 to 200 l/min per electrode so as to shield an arc generated; and adjusting an arc voltage within a range of substantially from 23 to 36 volt.

4,071,733

HOLDER FOR WELDING ELECTRODE

Philip J. Pishloneri, 309 Joffre St., Ellwood City, Pa. 16117

Filed Jan. 6, 1977, Ser. No. 757,163
Int. Cl.² B23K *9/28*
U.S. Cl. 219—141 **9 Claims**



1. A holder for supporting a welding electrode and connecting it to a current carrying cable entering the holder, comprising:

a. an externally threaded tubular member having an axial bore therethrough receiving said cable at one end and having a transversely disposed pivot at the other end;

b. a pair of jaw support members disposed on opposite sides of said tubular member and each connected intermediate its ends with said pivot, each of the support members having a handle portion at one end overlying the tubular member and having at its other end a jaw portion extending beyond the pivot and having electrode gripping means, the electrode gripping means on the jaw support portions of the paired support members being mutually opposed;

c. a spring holding collar surrounding the tubular member and axially positionable thereon beneath said handle portions, the collar having spring locating means facing outwardly toward each handle portion, and the handle portions of the jaw support members each having a spring locating means facing toward said collar;

d. a pair of springs mounted in said spring locating means and each extending between the collar and a different one of said handle portions, thereby urging the handle portions apart and the jaw portions together, the springs and locating means being located at about the same distance from the pivot as the electrode gripping means of the jaw portions and on the other side of the pivot therefrom;

e. conductor means joining said electrode gripping means to said cable; and

f. sleeve means threadedly engaging said tubular member and abutting said collar, and operative to adjust the compression of said springs when the sleeve means is screwed axially back and forth on the tubular member.

4,071,734

POWDER ELECTRODE STRIP FOR SURFACING WITH WEAR-RESISTANT ALLOY

Anatoly Vasilievich Zarechensky, ulitsa Ilicha, 139, kv. 23; Alexei Afanasievich Kolechko, ulitsa Krasina, 19; Vladimir Mikhailovich Manov, prospekt Metallurgov, 35, kv. 89; Alla Grigorievna Korjukova, prospekt Stroitelei 70, kv. 118; Vasily Grigorievich Savran, ulitsa Volochaevskaya, 43a, and Alexandr Nikitich Serenko, prospekt Metallurgov, 25/27, all of Zhdanov, U.S.S.R.

Filed Dec. 8, 1975, Ser. No. 638,859
Int. Cl.² B23K *35/368*
U.S. Cl. 219—146.31 **2 Claims**

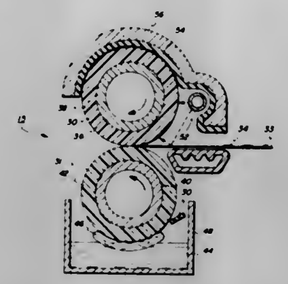
1. A powder electrode strip for surfacing with a wear-resistant alloy comprising a steel shell filled with a powdered mixture consisting essentially of, by weight of the powder electrode strip, from 12 to 13% chromium, from 20 to 22% iron, from 0.2 to 0.3% graphite, from 1 to 1.2% ferrochromium having 0.6 to 0.8% carbon, 0.6 to 0.8% of crystalline silicon or silicocalcium with the silicon content being not less than 60& of the silicocalcium, from 14 to 16% manganese, from 0.6 to 1% titanium, from 2 to 3% titanium dioxide and the balance is the iron represented by the steel shell.

4,071,735

EXTERNALLY HEATED LOW-POWER ROLL FUSER

Rabin Moser, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1976, Ser. No. 737,300
Int. Cl.² H05B *1/00*; G03G *15/00*
U.S. Cl. 219—216 **6 Claims**



1. Contact fuser apparatus for fusing toner images to copy substrates by passing the copy substrates through a nip formed between a pair of fuser members, said apparatus comprising:

a single source of radiant thermal energy, said radiant source of thermal energy being positioned adjacent the inlet of the nip of said fuser apparatus and externally of the fuser members so that a portion of said energy is directed toward one of said fuser members, said portion of said energy being sufficient to elevate the surface of said one of said fuser members to a level capable of fusing at least low density images; and

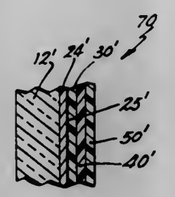
said position of said radiant thermal energy being such that another portion of this energy is directed toward toner images carried by said copy substrates whereby said another portion impinges upon said toner images prior to said copy substrate entering said nip, said another portion serving to pre-heat high density toner images.

4,071,736

DEFROSTING MIRROR

Marc A. Kamerling, Holland, Mich., assignor to Donnelly Mirrors, Inc., Holland, Mich.

Filed Feb. 12, 1976, Ser. No. 657,610
Int. Cl.² H05B *1/00*
U.S. Cl. 219—219 **23 Claims**



1. A defrosing mirror especially adapted for outdoor use on the exterior of vehicles or the like comprising:

a mirror element having a light-reflective coating on one surface thereof;

an electrically conductive, resistive, coating applied over at least one surface of said mirror element to generate heat when electricity is conducted therethrough, said coating including a layer of binder material adhering to said mirror surface and a plurality of graphite particles dispersed in contact with one another throughout said binder material;

conducting means for conducting electricity to and from respectively opposing portions of said electrically conductive coating to form an electrical circuit through said coating, said opposing portions being spaced apart across said one surface of said mirror element over which said electrically conductive coating is applied; and

an adhesion promoting, primer layer intermediate said one surface of said mirror element and said electrically conductive, resistive coating and uniformly contacting said mirror element surface and electrically conductive coating and bonded to said surface and coating to facilitate retention of said coating on said mirror element especially when said mirror is exposed to moisture, humidity, salt spray or solutions, or other environmental or weather conditions;

said electrically conductive, resistive coating being applied directly to and over said adhesion promoting primer layer and uniformly contacting said primer layer to ensure proper retention of said coating to said mirror element, while the electrically conductive coating ensures substantially constant electrical resistance and uniform heating of said mirror element.

4,071,737

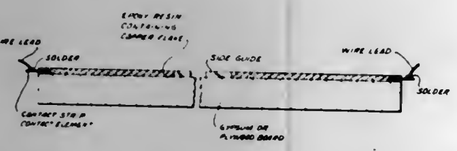
HEATING PANEL

David W. Marshall, North Reading, and Jagdish Chandra Agarwal, Concord, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Division of Ser. No. 481,527, June 21, 1974, Pat. No. 3,983,075. This application Sept. 23, 1976, Ser. No. 725,737

Int. Cl.² H05B *3/14*

U.S. Cl. 219—345 **2 Claims**



1. A heating panel comprising a pair of electrical leads, one on one end and the other on the other end thereof, a contact for said electrical lead with said panel and as heating medium of said panel, an epoxy resin cured with a polyamide curative, admixed to said resin from 60 percent to 25 percent of copper, in flake form, said copper flake having been cleaned to remove impurities and/or oxides until the total amount of impurities in the flake is less than 7000 ppm, said heating panel having, under a heating load, substantially invarient resistivity for a period of at least 120 days.

4,071,738

VENTILATED RANGE WITH CONVERTIBLE RADIANT CONVECTION OVEN

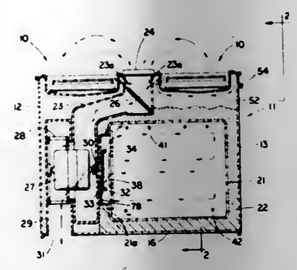
Louis J. Jenn, and Joseph J. Cerola, both of Indianapolis, Ind., assignors to Jenn Air Corporation, Indianapolis, Ind.

Filed Jan. 6, 1976, Ser. No. 646,906

Int. Cl.² F27D *11/02*; A21B *1/00*

U.S. Cl. 219—400 **5 Claims**

1. A range having ventilated surface cooking units and an oven operable in either a radiant mode or a convected mode and utilizing a first air moving means for providing ventilation of the surface units and a second air moving means for providing the convection air circulation in the oven, said range including a range housing supporting electrical surface cooking units and an oven enclosure having thermally insulated walls and having conventional upper and lower electrical heating elements therein, said oven enclosure being disposed below said surface units and having a frontal opening and an oven door for closing said opening, means forming an air plenum chamber along one sidewall of said oven enclosure and extending between an intake aperture adjacent the surface units and a discharge aperture adjacent the range housing base, said first air moving means being disposed in said plenum chamber, a housing inset in said one oven enclosure sidewall for accommodating said second air moving means, means for mounting said second air moving means including a switch-controlled electrical drive motor mounted in said plenum chamber, a drive shaft extending from said motor through said one oven



sidewall into said inset housing and supporting said second air moving means therein, said inset housing having an intake aperture communicating with the oven interior and an exhaust aperture adjacent each of said conventional upper and lower oven heating elements, whereby operation of said second air moving means provides forced circulation of air within said oven, the circulating air being heated by said conventional oven heating elements.

4,071,739

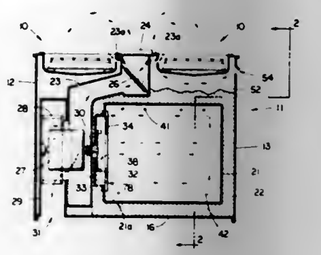
CONVERTIBLE RADIANT CONVECTION OVEN

Louis J. Jenn, and Joseph J. Cerola, both of Indianapolis, Ind., assignors to Jenn Air Corporation, Indianapolis, Ind.

Continuation of Ser. No. 646,906, Jan. 6, 1976. This application Mar. 10, 1977, Ser. No. 776,118

Int. Cl.² F27D *11/02*

U.S. Cl. 219—400 **4 Claims**



1. An oven operable in either a radiant mode or a convected mode and including an oven enclosure with conventional upper and lower heating elements therein, air moving means, a housing for said air moving means outside of said oven enclosure but disposed adjacent one wall thereof, said housing having an intake aperture and two discharge apertures communicating with the interior of the oven enclosure, one of said discharge apertures being located adjacent said upper oven heating element and the other adjacent said lower oven heating element, the location of said air moving means exteriorly of said oven enclosure and the placement of said discharge apertures adjacent said upper and lower heating elements permitting said oven to be selectively operated, when said heating elements are energized, in either the radiant mode when said air moving means is not in operation or in the convected mode when said air moving means is in operation.

4,071,740

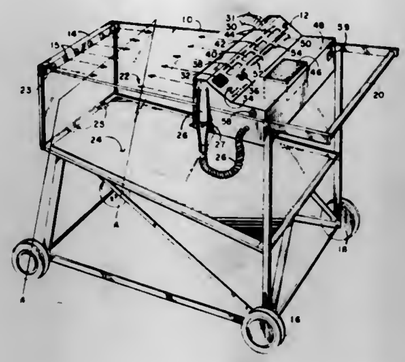
MOBILE AUTOMATED SHOPPING SYSTEM

Paul Gogulski, 7 Maple Circle, Scarborough, Maine 04074

Filed May 26, 1976, Ser. No. 689,968

Int. Cl.² G06K *15/18, 15/02*; E04H *3/04*

U.S. Cl. 235—431 **4 Claims**



1. An improved automated shopping system means for the purchasing of line-encoded identified products and articles utilized in stores of the type having shopping carts having associated therewith apparatuses providing product code indicia scanning means and weight sensing means utilized in conjunction and communication with a governing central computer, having stored product information related to said line-encoded indicia, by means of radio transmitting and receiving units wherein the improvement comprises:

a control panel and associated visual display unit affixed to said shopping cart for operation of a cart of said shopping system and for indication by display of said line-encoded product representative indicia;

a first line-encoded indicia scanner releasably mounted upon and connected with said control panel to read said line-encoded indicia upon said products having means responsive to said first scanner to decode and to display upon said visual display said product information derived by said first scanner from said products by means of transmission and reception of said product information with said central computer;

a second line-encoded scanner mounted within said control panel having means to decode and to cause display upon said visual display of said product line-encoded information derived from said products by means of transmission and reception of said information with said central computer;

a plurality of photocell sensing units positioned about the perimeter of the opening of said shopping cart to direct a plane of light across said cart opening to sense certain entries into said cart, said sensing units being responsive to said second scanner and decoding means such that said photocell sensing units deactivate for a predetermined period of time after said second scanner reads and decodes said line-encoded information to allow the insertion of a product or article in said cart and after said time period reactivates to provide a warning if an article is attempted to be inserted within said cart without first being scanned by said second scanner; and

said weight-sensing means being within the bottom of said cart and having an associated comparator circuit in said control panel in communication with said central computer to provide a means of comparison of actual and computer stored product weights and to provide a warning if said weights do not correspond.

4,071,741

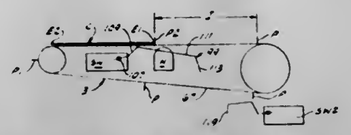
CARD VALIDATOR

Joseph R. Frattarola, Westford, and Peter W. Ford, Winchester, both of Mass., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Mar. 26, 1976, Ser. No. 670,698

Int. Cl.² G06K *13/07, 7/08*; G07F *1/06*; B65H *9/04*

U.S. Cl. 235—436 **15 Claims**



1. A validator for a card bearing a code readable by moving the card forward past a reader, comprising:

means for guiding a card for travel along a predetermined path, the card being movable forward in said guide means from a position of entry therein;

a reader for reading the code on the card as it travels forward along said path from said entry position;

card transport means comprising a plurality of pushers of which a first is movable forward from a starting position trailing the card in entry position to a second position to engage the trailing end of the card and push it forward from the entry position to a second position, and a second is movable forward with the first from a starting position leading the card in entry position to a second position and is movable in the reverse direction to push the card back in the guide means for return of the card; and

means for driving the card transport means in forward direction for the first pusher to push a card forward in the guide means from its entry position past the reader to read the code on the card and deliver the card to the second position, and for driving the card transport means in the reverse direction for the second pusher to push a card back in the guide means for return of the card, said driving means including means for maintaining the position of the pusher at the trailing end of a card in the second position for preventing the card from being pulled back out of the guide means while allowing the card transport means to be driven in the reverse direction.

4,071,742

ROTARY ELECTROMAGNETIC INDICATOR SYSTEM

Donald Whiting Fleischer, Wethersfield, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Continuation-in-part of Ser. No. 584,216, June 5, 1975, Pat. No. 4,012,623. This application July 16, 1976, Ser. No. 706,129

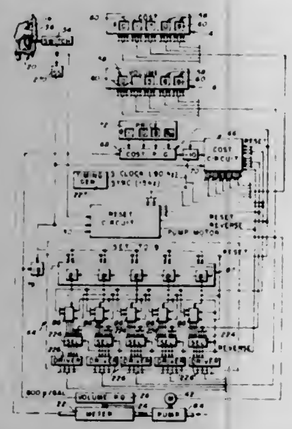
The portion of the term of this patent subsequent to Mar. 15, 1994, has been disclaimed.

Int. Cl.² B67D *5/06*; G08B *28/00*; G06M *1/10*

U.S. Cl. 235—92 FL **29 Claims**

1. In a volume and cost registration system for a fuel pump computer having resettable volume and cost registers for registering decimal counts respectively of the volume amount of fuel delivered and the cost amount of fuel delivered in accordance with the volume amount delivered and a pre-established unit volume price, each register comprising a bank of decimal counter wheels of increasing order and electromagnetic wheel indexing means operable for angularly indexing the bank of decimal counter wheels for registering the decimal count of the respective amount of fuel delivered, and cost and volume register drive means for operating the electromagnetic wheel indexing means of the volume and cost registers for indexing the banks of volume and cost counter wheels for registering decimal counts of the volume and cost amounts respectively of fuel delivered as the fuel is delivered, the improvement wherein the electromagnetic wheel indexing means of the cost register is operable for indexing each cost counter wheel digi-

tally for registering the decimal cost count in digital form, wherein the electromagnetic wheel indexing means of the volume register is operable for stepping the lowest order volume counter wheel a plurality of individual steps for each decimal count thereof for registering the decimal volume count in analogue form, and wherein the cost and volume register drive means operates the electromagnetic wheel indexing means of the cost register to register the decimal cost count of fluid delivered in said digital form and operates the electro-



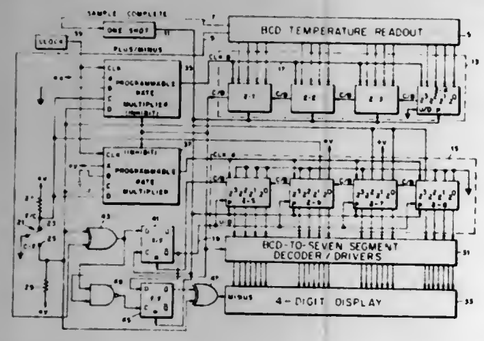
magnetic wheel indexing means of the volume register to register the decimal volume count of fluid delivered in analogue form with the lowest order volume counter wheel stepped said plurality of individual steps for each decimal count thereof as the fuel is delivered and so that the decimal volume count in said analogue form of the volume register continually substantially corresponds to said decimal cost count in said digital form of the cost register in accordance with said pre-established unit volume price.

4,071,743

DIGITAL SCALE CONVERTER

Richard G. Upton, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 7, 1977, Ser. No. 766,277
Int. Cl.² G06M *3/02*
U.S. Cl. 235—92 CV **3 Claims**



1. A digital scale converter for converting a binary coded decimal (BCD) value of a first scale to the equivalent value of a second scale according to a known ratio X/Y, comprising:

a readout means for registering the first scale value prior to conversion, said readout means having a plus/minus indicator output;

a first BCD counter having inputs for accepting said first scale value from said readout means in response to a reset pulse applied to a preset input thereof, said first counter having a count pulse input and a zero count output;

a second BCD counter having a count pulse input, a preset input and BCD count outputs;

means for generating and applying said reset pulse to said preset inputs of said first and second counters at the beginning of each conversion;

means for selecting an offset BCD value to be loaded into said second counter when said preset pulse is applied to said preset input thereof;

a first programmable pulse rate multiplier having a clock pulse input and programmed to produce count pulses at a rate B according to a selected binary code applied to binary coded inputs thereof and applying the count pulses to said count inputs of said first BCD counter to count said first counter in the down direction at said rate B;

a second programmable pulse rate multiplier having a clock pulse input and programmed to produce count pulses at a rate A according to a selected binary code applied to binary code inputs thereof and applying the count pulses to said count input of said second counter at said rate A during the count interval of said first counter, wherein the ratio of rate A to rate B is equal to said ratio X/Y;

a clock pulse source connected to said clock pulse input of said first and second rate multipliers;

switching means for selecting and applying said binary code to said binary coded inputs of said first and second rate multipliers according to the desired pulse rate ratio A/B;

a bistable switching means having a reset output connected to a count direction control input of said second counter;

gating means responsive to said plus/minus indicator output of said readout means for operating said bistable switching means in response to said reset pulse to switch said second counter to count in the up direction when said offset value is to be added to the converted value and to count in a downward direction when said offset value is to be subtracted from the converted value, said bistable switching means having a direct reset input connected to zero count output of said second counter so that said second counter is switched to count in the up direction when said offset value is counted down to zero during the conversion; and

means responsive to the zero count output of said first counter for reading the count pulses registered by said second counter and displaying said second counter registered value as said second scale value when said first counter is counted to zero.

4,071,744

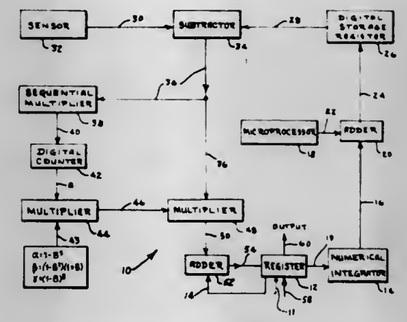
LOOP INTEGRATION CONTROL SYSTEM

Eugene J. Pollock, 3000 San Pasquale, Albuquerque, N. Mex. 87110

Filed May 13, 1976, Ser. No. 685,840
Int. Cl.² G05B *13/02*
U.S. Cl. 364—105 **14 Claims**

1. An In-Loop Integration Control System comprising means for receiving and storing a state vector measurement input, said state vector measurement being defined in terms of time, position, velocity and acceleration, means operatively connected to said receiving and storing means for receiving said acceleration term of said state vector measurement and for computing therefrom an estimate of a next actual measurement, means for providing systematic error terms for use within said system, means operatively connected between said systematic error term providing means and said computing means for combining the outputs therefrom thereby producing a corrected estimate of the next actual measurement, means operatively connected to said combining means for storing said corrected estimate of said next actual measurement, means for providing the next actual measurement, means operatively connected between said next actual measurement providing means and said storing means for comparing the outputs therefrom thereby producing sequential error measurements, means

operatively connected to said comparing and error measurement producing means for comparing two of said sequential error measurements and producing an output therefrom, means operatively connected to said comparing means for generating an adaptive gain signal from said output, means operatively connected to said adaptive gain signal generating means for combining said adaptive gain signal with a plurality of polynomial equations thereby producing a plurality of adaptive gain multipliers, means operatively connected between said comparing and error measurement producing means and said com-



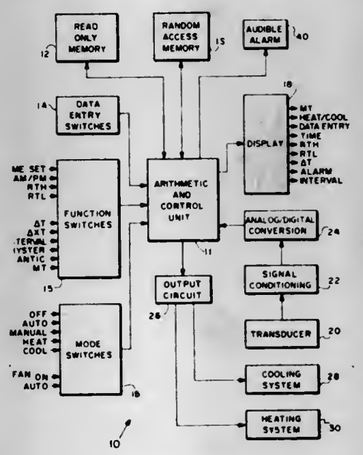
bining and multiplier producing means for computing correction terms therefrom, means operatively connected between said correction term computing means and said input storing and receiving means for combining said correction terms with said input state vector measurement to produce an updated state vector measurement which replaces said input state vector measurement in said system and said system continually comparing said corrected estimate of said next actual measurement with said next actual measurement maintaining the difference therebetween at zero.

4,071,745

PROGRAMMABLE TIME VARYING CONTROL SYSTEM AND METHOD

B. C. Hall, 5506 Commondore, Dickinson, Tex. 77539

Filed Mar. 4, 1977, Ser. No. 774,393
Int. Cl.² G05D *23/32*
U.S. Cl. 364—104 **19 Claims**



1. A system for controlling a measured temperature during a sequence of time intervals in accordance with a sequence of selected reference temperatures, each corresponding to one of the intervals, comprising:

means for storing a plurality of digital numbers, each representing a value of one of the reference temperatures;

means connectable to respond to a reference frequency source for repeatedly generating a digital number representative, at each generation, of the present time of day;

means for storing a digital number representative of a value of hysteresis;

updating means for repeatedly determining, from said time of day number, when one of said intervals embraces the present time and identifying the one of said reference temperatures corresponding to said embracing interval and for storing, as a current reference temperature value, a digital number representing the value of said identified reference temperature, said updating means including means for determining that as soon as said present time exceeds the last interval in said sequence, said time becomes embraced by the first interval in the sequence;

means connectable to be responsive to a sensor of said measured temperature for generating an electrical signal representation of said measured temperature;

comparison means responsive to said signal representation, to the current reference temperature number, and to the hysteresis number, for repeatedly generating control signals suitable for controlling thermal means affecting said measured temperature.

4,071,746

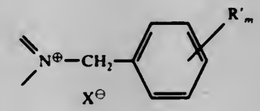
ALKYLBENZYL PYRIDINIUM COMPOUNDS AND USES

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 232,208, March 6, 1972, abandoned. This application June 22, 1976, Ser. No. 698,586
Int. Cl.² C23F *11/14*
U.S. Cl. 252—392 **14 Claims**

1. An acid corrosion inhibiting composition comprising

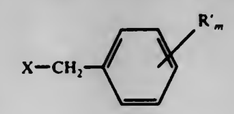
1. substituted benzyl pyridinium compounds having the formula



where



is a pyridinium group, R' is an alkyl group occurring as a substituent *m* times, and *m* is 1 to 2, X is an anion, said benzyl pyridinium compounds being formed by reacting a mixture of alkyl pyridines with the compound of the formula



and 2. an oxyalkylated surfactant or an alcohol.

4,071,747

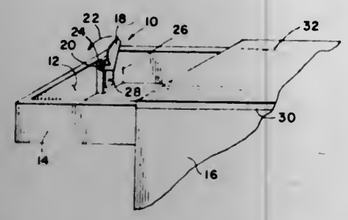
DRAWER ILLUMINATING DEVICE

Anthony C. Pantanella, 1215½ W. Ash St., Springfield, Ill. 62703

Filed Sept. 27, 1976, Ser. No. 726,674
Int. Cl.² A47B *97/00*
U.S. Cl. 362—127 **5 Claims**

1. A drawer illuminating device comprising a housing having a pair of compartments therein, a transparent lens remov-

ably secured to the housing covering an opening communicating to one of the compartments, a lamp having terminals, a socket, the lamp being removably secured within the socket, the lamp having a light emitting portion disposed in said one compartment, a battery having terminals, a switch having terminals, the terminals of the battery and the terminals of the switch and the terminals of the lamp being disposed in a series electrical circuit, the battery being removably secured within the other compartment, the switch being fixedly secured with the other compartment, the switch having an operating lever



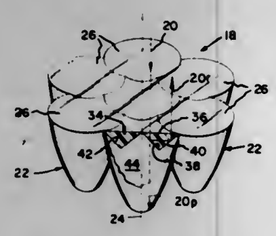
extending outwardly from said other compartment, the switch having normally closed contacts connecting to the terminals thereof, a bar, a shaft, a portion of the shaft extending outwardly from the housing and journaled thereto, means to bias the shaft about the axis of rotation thereof, the bar having a hole, the extended portion of the shaft beinb disposed removably engaged within the hole, the bar extending radially outwardly from the shaft and rotatable therewith when the bar is carried by the extended portion of the shaft, means to secure the housing to an interior vertical surface of a drawer.

4,071,748

LIGHTING PANEL WITH CONTROLLED DISTRIBUTION OF POLARIZED LIGHT

Thomas W. Dey, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 542,526, Jan. 20, 1975. This application Mar. 29, 1976, Ser. No. 671,900
Int. Cl.² F21V *9/14, 5/00*
U.S. Cl. 362—19 **8 Claims**



1. A lighting panel for use in locally unidirectional light to distribute the light within a control range to improve illumination at a task surface, comprising:

radial polarizing means for linearly polarizing and radially distributing the locally unidirectional light; and

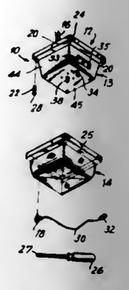
light refracting means for critically reflecting substantially all of the radially polarized light and then refracting all the critically reflected light within a control range to provide improved illumination at a task surface.

4,071,749

SELF-CONTAINED MAINTENANCE-FREE EMERGENCY LIGHTING

Andre Balogh, Tarrytown, N.Y., assignor to Tork, Inc., Mount Vernon, N.Y.

Filed July 22, 1976, Ser. No. 707,861
Int. Cl.² F21V *19/04*; H05B *37/00*
U.S. Cl. 362—20 **7 Claims**



1. An emergency lighting device operable to connect a battery supply to an emergency lamp or the like in response to failure of the normal AC supply, comprising

a. a base plate for mounting said device to a suitable surface;

b. means in the form of a dome-like, tough plastic, cover defining a housing for said device, said cover completely surrounding all components including said base plate, and said cover being free of any magnetic material adjacent the magnetically operated test switch recited hereinafter;

c. means for holding said cover in engagement with said base plate so as to secure said cover against tampering;

d. means within said housing for responding to a failure of AC power and for connecting the battery supply to the emergency lamp;

e. a reflector mounted to said base plate for reflecting light from said emergency lamp;

f. a magnetically operated test switch disposed immediately adjacent and inside said cover, said test switch being operable for simulating failure of AC power by disconnecting said power from the aforesaid means for responding, whereby the emergency lamp becomes illuminated in the event that said components are functioning properly;

g. means in the form of a removable magnet normally located remotely from the test switch for operating said switch.

4,071,750

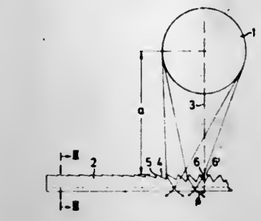
LIGHT DIFFUSER AND LAMP INCORPORATING THE SAME

Richard Schneppendahl, Konigsdorf; Heinrich Kramer, Lovenich, and Franz Pepping, Pulheim, all of Germany, assignors to Nova-Lux-Gesellschaft Brandenburg & Co., Cologne, Germany

Filed Nov. 14, 1975, Ser. No. 632,171
Claims priority, application Germany, Dec. 16, 1974, 2459327
Int. Cl.² F21V *5/00*
U.S. Cl. 362—217 **23 Claims**

1. In a lamp including a light source having a center and a light diffuser disc having two opposite faces and supported at a distance from the light source; the improvement comprising a prism structure on one face of said light diffuser disc, said prism structure being symmetrical with respect to a normal passing through the center of the light source and being perpendicular to the faces of said light diffuser disc, said prism structure being formed of a plurality of prisms extending parallel to one another, each prism having a frontal flank oriented towards the normal and a rear flank oriented away from the normal; the angle of inclination of the frontal flanks gradually

decreasing from prism to prism in a direction away from the normal and the angle of inclination of the rear flanks gradually



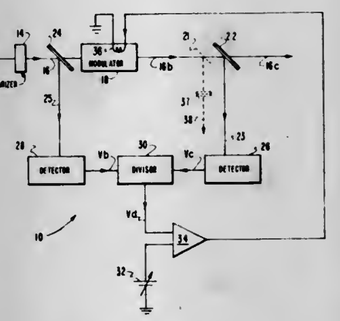
increasing, at a decreasing rate, from prism to prism towards an upper limit value in a direction away from the normal.

4,071,751

AUTOMATIC OPTICAL BIAS CONTROL FOR LIGHT MODULATORS

Armand Waksberg, Dollard-des-Ormeaux, Canada, assignor to RCA Limited, Canada

Filed June 23, 1976, Ser. No. 698,836
Claims priority, application United Kingdom, Apr. 26, 1976, 250978/76
Int. Cl.² G01J *1/20*
U.S. Cl. 250—201 **6 Claims**



1. An apparatus for providing modulation of light, of the type which comprises: a light source for providing a beam of coherent light radiation and polarized in a given direction; a polarization splitter positioned in the path of said beam; an electro-optic crystal modulator positioned in the path of said beam between said source and said polarization splitter for modulating the polarization of said beam about said given direction so that the polarization modulation of the beam is converted into an intensity modulated output beam, emerging from said polarization splitter, of a given intensity value about which said intensity modulation takes place; the improvement therein comprising:

a first light beam detector means positioned to detect the intensity of the light beam at the input of said crystal modulator and a second light beam detector means positioned to detect the light intensity of a polarization component of said output beam, said detector means converting said respective input and output beams into electrical signals,

a divisor means for establishing the ratio of the electrical signals obtained by said first and second detector means,

a variable compensator means for said modulator adapted to produce a rotation of the polarization of the beam at the output of said modulator and consequently vary the intensity of the beam emerging from said splitter,

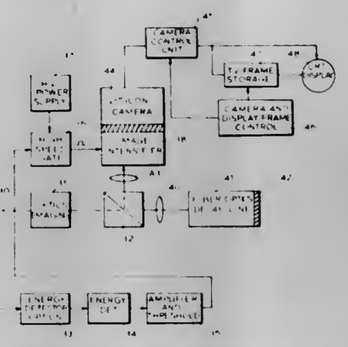
means connected between said divisor means and said compensator means for operating said compensator means to maintain a constant ratio between said electrical signals detected by said detector means and consequently between the intensities of said input and output beams.

4,071,752

SELF-SYNCHRONIZING OPTICAL IMAGING SYSTEM

Richard J. Manning, Altamonte Springs, Fla., assignor to International Laser Systems, Inc., Orlando, Fla.

Filed May 7, 1976, Ser. No. 684,249
Int. Cl.² H01J *31/50*
U.S. Cl. 250—213 VT **15 Claims**



1. A self-synchronizing optical radiation imaging device comprising in combination:

optical receiving means for receiving optical radiation;

optical image delay means for delaying at least a portion of the optical radiation received by the optical receiving means;

optical radiation detection means for detecting optical radiation received by said receiving means;

means to direct the optical radiation received by said optical receiving means to said optical image delay means and to said optical detection means;

gating means coupled to said optical radiation detecting means for actuating a high voltage gating signal responsive to said optical receiving means receiving a predetermined level of optical radiation;

image intensifier means for intensifying optical radiation received by said optical receiving means; and

means to direct the delayed optical radiation from said optical delay means to said image intensifier means after a predetermined delay whereby said gating means activites said image intensifier means upon receiving optical radiation of a predetermined level in time to receive delayed optical radiation of a predetermined level for the duration of the predetermined level of said optical radiation.

4,071,753

TRANSDUCER FOR CONVERTING ACOUSTIC ENERGY DIRECTLY INTO OPTICAL ENERGY

John E. Fulenwider, Concord, and John Gonsalves, Woburn, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 31, 1975, Ser. No. 563,869
Int. Cl.² G02B *5/14*
U.S. Cl. 250—227 **5 Claims**

1. A transducer for converting acoustic energy directly into optical energy without first converting the energy into electrical form comprising:

an input optical fiber for carrying steady state optical power and having an output end;

a source of steady state optical power connected to the input optical fiber;

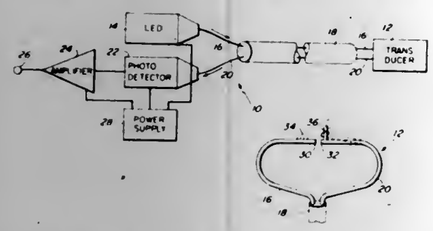
an output optical fiber for carrying modulated optical power and having an input end, the input end being normally optically positioned relative to the output end of the input

fiber so that a predetermined portion of the optical power carried by the input optical fiber is coupled into the output optical fiber;

a diaphragm for receiving acoustic information containing energy from a source and for producing at an output an oscillatory mechanical motion indicative of the acoustic information;

means responsive to the mechanical output of the diaphragm for varying the portion of optical power coupled between the input optical fiber and the output optical fiber; and

a transducer housing to which the output end of the input optical fiber, the input end of the output optical fiber, the diaphragm and the means for varying the portion of coupled optical power are physically connected for support and protection,



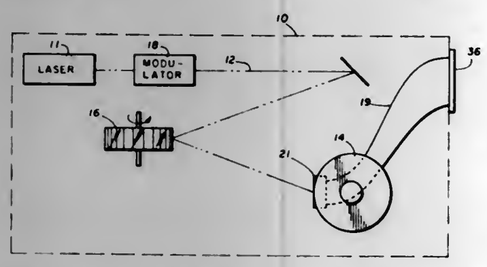
the means for varying the coupled optical power including the respective end of one of the optical fibers being fixedly positioned within the transducer housing and the respective end of the other of the optical fibers being connected to the diaphragm so that upon impingement of information containing acoustic energy against the diaphragm relative oscillatory lateral movement is established between the respective ends of the optical fibers to cause a variance in the optical power coupled into the output optical fiber thereby providing amplitude modulation of the optical power carried by the output optical fiber.

4,071,754

BEAM ALIGNMENT DETECTOR

Poul B. Roulund, Irving, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 22, 1976, Ser. No. 679,640
Int. Cl.² G02B 5/14; H01J 5/16, 39/12
U.S. Cl. 250—227 **9 Claims**



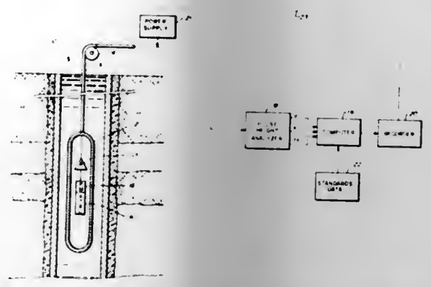
1. In a scanning system: an illumination source generating a beam; means for scanning said beam as a spot across a target area; a detector located at said target area; an indicator for indicating alignment and misalignment of said beam with said detector; said indicator comprising at least three fiber-optic bundles, each of said bundles having an input end and an output end; said detector being aligned with one of said bundle input ends in the direction of scan; the remaining bundle input ends being located one on each side of said one bundle input end in a direction transverse to said direction of scan; the output ends of said bundles being located at an observation area remote from said target area.

4,071,755

METHOD FOR IN SITU EVALUATION OF THE SOURCE ROCK POTENTIAL OF EARTH FORMATIONS

Irwin R. Supernaw; Dan McCay Arnold, both of Houston, and Arthur Jürgen Link, Wallis, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed July 1, 1976, Ser. No. 701,702
Int. Cl.² G01V 5/00
U.S. Cl. 250—253 **5 Claims**



1. A method for determining the source rock potential of shale formations penetrated by a well borehole, comprising the steps of:

moving a well tool having a gamma ray detector past earth formations penetrated by a well borehole;

detecting natural gamma radiation occurring in earth formations in the vicinity of a well borehole and generating signals functionally related to the energy and frequency of occurrence of such gamma radiation;

separating said signals into at least three energy regions corresponding to gamma radiation produced by radioactive isotopes of uranium, potassium and thorium occurring in said earth formations and producing count signals representative of the gamma radiation occurring in said at least three energy regions;

comparing said count signals with standard gamma ray spectra of radioactive isotopes of uranium, potassium and thorium to derive a quantitative indication of the relative abundances of these three elements in the earth formation; and

deriving by comparing said relative abundances according to a predetermined relationship an indication of the organic carbon content of the earth formations, thereby obtaining an indication of the source rock potential of the earth formation.

4,071,756

DETERMINATION OF RESIDUAL OIL IN A SUBTERRANEAN FORMATION

Burton M. Casad, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed May 10, 1976, Ser. No. 684,989
Int. Cl.² G01V 5/00
U.S. Cl. 250—260 **8 Claims**

1. A method for obtaining logging data, for use in determination of the amount of residual oil in a subterranean oil-bearing formation which has been penetrated by the wellbore of a well and which has been subjected to waterflooding for the secondary recovery of oil therefrom, said method comprising;

a. logging the formation to obtain logging data measurements of the natural radioactivity of the formation;

b. injecting into the formation through said wellbore a first aqueous solution of a first compound, said first compound

1. being water-soluble and substantially insoluble in said residual oil;

2. containing at least one radioactive constituent; and,

3. being present in said first aqueous solution in an amount sufficient to provide from about 0.05 to about 5.0 microcuries of radioactivity per cc of injected fluid,

said first aqueous solution being injected in an amount sufficient to displace substantially all of the formation water present in the zone under investigation;

c. logging the formation after the injection of said first aqueous solution to obtain logging data measurements of the radioactivity of said formation after the injection of said first aqueous solution;

d. injecting into said formation through said wellbore a second aqueous solution of a second compound, said second compound

1. being soluble in both oil and water;

2. having an equilibrium partition ratio, $R_{o/w}$, greater than 1.0, $R_{o/w}$ being defined as the concentration of said second component in said residual oil divided by the concentration of said second component in water at equilibrium;



3. containing the same radioactive constituent present in said first compound; and,

4. being present in said second aqueous solution in an amount sufficient to provide from about 0.05 to about 5.0 microcuries of radioactivity per cc of injected fluid said second solution being injected in a sufficient volume to result in substantial equilibrium between the concentration of said second compound in said residual oil and said second aqueous solution in said zone under investigation; and,

e. logging the formation after the injection of said second aqueous solution to obtain logging data measurements of the radioactivity of said formation after the injection of said second aqueous solution.

4,071,757

DETECTION OF BEHIND CASING WATER FLOW AT AN ANGLE TO THE AXIS OF A WELL BOREHOLE

Dan M. Arnold, and Hans J. Paap, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 21, 1976, Ser. No. 698,398
Int. Cl.² G01V 5/00
U.S. Cl. 250—265 **12 Claims**

1. A method for measuring the location, linear flow rate, volume flow rate and angle of flow of undesired water flow at an angle θ to the borehole axis behind well casing in a producing well, comprising the steps of:

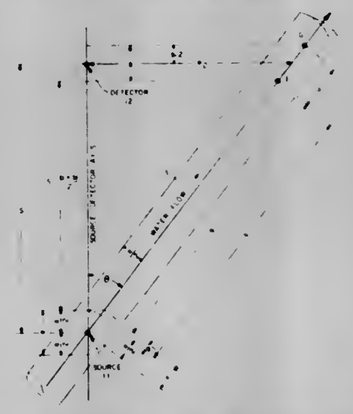
a. locating a well tool sized for passage through a well bore and having a source of high energy neutrons at least some of which have sufficient energy to cause the nuclear reaction $O^{16}(n,p)N^{16}$ and at least two gamma ray detectors longitudinally spaced from said source and each other in a well bore at a depth to be investigated;

b. irradiating the borehole environs with high energy neutrons from said source;

c. detecting at said detectors gamma rays resulting from the decay of the unstable isotope N^{16} comprising a portion of any undesired behind casing flow present and generating count signals representative thereof;

d. separating said count signals from each of said detectors into at least two separate energy dependent signals related to the energy of the gamma rays causing said signals and generating a ratio signal representative of the ratio of the at least two separate energy dependent signals at each of said detectors;

e. combining said count signals from said detectors according to a first predetermined relationship to derive an indication of the linear flow rate of undesired behind casing water flow in a preferred direction;



f. generating from said ratio signals according to a second predetermined relationship an indication of the radial distances R_1 and R_2 from said dual spaced detectors to the undesired behind casing water flow;

g. combining said indication of linear flow rate and at least one of said indications of radial distance according to a third predetermined relationship to derive an indication of the volume flow rate of the undesired behind casing flow; and

h. deriving from said indicatios of radial distances R_1 and R_2 at each of said detectors, an indication of θ, said angle of flow with respect to the borehole axis.

4,071,758

MULTIPLE TEST X-RAY GONIOMETER

Alfred Steinbichler, Munich, Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschafter e.V., Gottingen, Germany

Filed July 30, 1976, Ser. No. 710,301
Claims priority, application Germany, Aug. 4, 1975, 2534790
Int. Cl.² G01M 23/20
U.S. Cl. 250—277 CH **10 Claims**

1. Multiple test X-ray goniometer for X-ray analysis of crystals, selectively, with respect to precession and rotation, without disturbance of crystal position with respect to an X-ray beam, comprising

a precession camera unit (14)

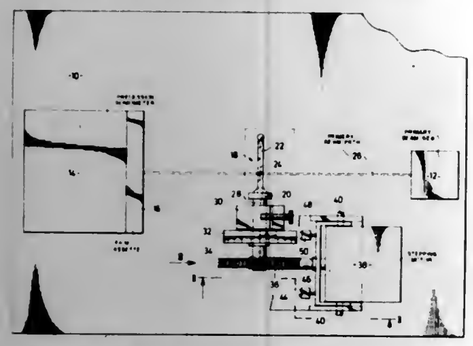
a goniometer head (18) located in the path (26) of a primary beam and having means (22) to hold a crystal test sample (24) in a predetermined position relative to said precession camera;

a shaft (28) rotatably supporting said goniometer head (18) and hence said crystal test sample (24);

a drive gearing (34, 36) coupled to the shaft (28) to rotate the shaft and hence the goniometer head (18), and with it the crystal test sample (24) in the holding means (22);

motor drive means (38) coupled to the drive gearing (34, 36), the drive gearing (34, 36) and the shaft forming a drive train for the goniometer head (18);

locking means (48) engageable with the shaft (28) of the goniometer head (20) to fix the goniometer head shaft (28) and hence the crystal test sample (24) in position;



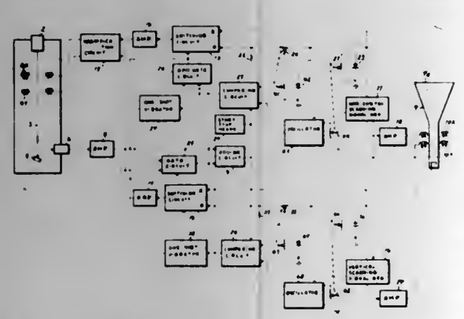
and wherein the drive continuity of said drive train is selectively interruptable to interrupt transmission of rotary movement between said shaft (28) of the goniometer head (20) and the drive motor (38) and prevent application of drive power to said shaft when the locking means have engaged the shaft to fix it in position.

4,071,759

SCANNING ELECTRON DEVICE

Takao Namae, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1976, Ser. No. 750,643
Claims priority, application Japan, Dec. 19, 1975, 50-152073
Int. Cl.² H01J *37/26*
U.S. Cl. 250—310 **6 Claims**



1. In a scanning electron device comprising:

an electron gun for generating an electron beam;

deflecting means, which in response to X and Y deflecting signals, deflect said electon beam in a two-dimensional raster over a specimen;

a cathode ray tube having deflecting means which in response to X and Y deflecting signals scans an electron beam over the face of the cathode ray tube;

a scanning signal generator generating normal condition X and Y deflecting signals for the cathode ray tube and the deflecting means for the scanning electon beam such that they are scanned in synchronism;

a detector for detecting signals emanating from the specimen, the output of said detector being supplied to modulate the brightness of the beam scanning the cathode ray tube screen thus producing an image;

a magnification circuit arranged between the signal generator and the electron beam deflecting means for varying the amplitude of the electron beam X and Y deflecting signals and thus the magnification of the image produced on the cathode ray tube;

the improvement for enabling the simultaneous display of a low magnification image and a high magnification inset image simultaneously comprising

a modifying circuit for producing X and Y inset image scan deflecting signals having amplitudes and d.c. signal levels different from the output of the scanning signal generator output signals but of the same frequency;

switching means arranged between the magnification circuit and the scanning signal generator and between the magnification circuit and the modifying means for switching between normal condition deflecting signals produced by the scanning signal generator and inset image deflecting signals produced by the modifying circuit;

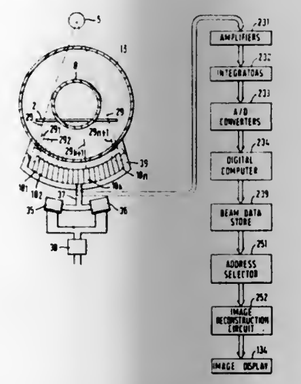
and a switching signal generator for generating signals to control the switching means.

4,071,760

RADIOGRAPHY APPARATUS WITH PHOTOCELL DRIFT COMPENSATING MEANS

Christopher Archibald Gordon LeMay, Osterley, England, assignor to EMI Limited, Hayes, England

Filed Jan. 23, 1975, Ser. No. 543,338
Claims priority, application United Kingdom, Jan. 31, 1974, 4561/74
Int. Cl.² G01T *1/20*
U.S. Cl. 250—363 S **16 Claims**



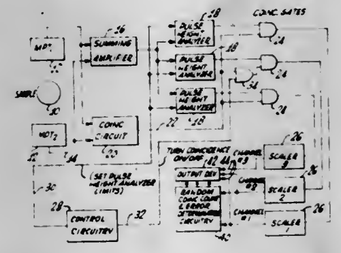
10. Medical radiographic apparatus for examining a section of a patient's body by means of X-radiation, the apparatus comprising a source for projecting a substantially planar spread of said radiation through said section, a plurality of detectors for detecting the radiation projected through said section along respective beam paths irradiated by the spread, scanning means for orbiting the source and detectors around the body about an axis intersecting said spread and passing through said section, said detectors each producing successive output signals during an orbital movement through a substantial angle, each signal relating to a respective beam path through said section, means for effecting relative movement, at least between said detectors and said body, after said orbital movement has been effected so that each detector receives radiation projected through said section along a beam path which substantially overlies a beam path in respect of which another detector produced output signals during said orbital movement, means for comparing the output signals produced by different detectors and relating to radiation projected through the section along substantially the same beam path so as to generate comparison signals indicative of the relative sensitivities of said different detectors, and processing means for modifying the output signals produced by said detectors during said orbital movement, in dependance upon said comparison signals, to allow for said relative sensitivities, and for operating upon the modified output signals to evaluate the absorption or transmission coefficient, with respect to said radiation, at each of a plurality of locations in said section.

4,071,761

METHOD FOR DETERMINING RANDOM COINCIDENCE COUNT RATE IN A SCINTILLATION COUNTER UTILIZING THE COINCIDENCE TECHNIQUE

Donald L. Horrocks, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed June 7, 1976, Ser. No. 693,652
Int. Cl.² G01T *1/20*
U.S. Cl. 250—369 **11 Claims**



1. For use with a scintillation counter utilizing at least two detectors in a coincidence counting technique, a method for determining a random coincidence count due to events resulting in single-quantum emissions which may chance to occur in such a manner that pairs of essentially coincident single-quantum events are detected one in each detector and are erroneously counted as radioactive disintegrations occurring in a sample, said method comprising the steps of:

counting the number of essentially coincident events detected in both detectors of the counter;

counting the number events detected in both detectors, regardless of coincidence in time; and

determining from the results of said counting steps a random coincidence count rate attributable to chance coincidences of single-quantum events in accordance with the expression

$$S_c = (\tau c/2)\,(CPM_2 - CPM_1)^2,$$

where:

S_c = random coincidence count rate,

τ_c = coincidence resolving time, which is the longest time by which events can be separated and still considered coincident,

CPM_2 = counts per minute recorded in said second counting steps, and

CPM_1 = counts per minute recorded in said first counting step.

4,071,762

SCINTILLATION CAMERA WITH IMPROVED OUTPUT MEANS

Kai Lange, Vedbaek, Denmark; Ernest J. Wiesen, Wauwatosa, and Eric M. Woronowicz, West Allis, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 12, 1976, Ser. No. 731,150
Int. Cl.² G01T *1/20. 1/164*
U.S. Cl. 250—369 **8 Claims**

1. Radiation imaging apparatus including means for producing scintillations in response to intercepted radiation, a plurality of photosensitive devices arranged adjacent each other on one side of said means for producing scintillations, said devices producing electric pulses, respectively, in response to occurrence of each scintillation, the positional relationship of said devices relative to said means for producing scintillations being such as to cause distortion in the relationship between the coordinates of the scintillations and the electric pulses,

signal converting means having input means for receiving said electric pulses as input signals and having output means, said signal converting means producing output signals which are generally representative of the coordinates of said scintillations,

first means responsive to occurrence of input signals above a first range of amplitudes and within a higher second range



of amplitudes by altering the gain of said signal converting means such that signals in said second range are suppressed to thereby improve correspondance between said signals and the coordinates of said scintillations, and

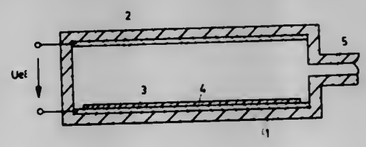
second means responsive to occurrence of input signals in a third range of amplitudes higher than said second range by further altering the gain of said converting means such that the signals in said third range are suppressed to thereby further improve correspondance between said signals and the coordinates of said scintillations.

4,071,763

ELECTRORADIOGRAPHIC DEVICE

Kristian Peschmann, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 24, 1976, Ser. No. 699,343
Claims priority, application Germany, June 28, 1975, 2529037
Int. Cl.² G01T *1/18*
U.S. Cl. 250—374 **6 Claims**



1. An electroradiographic device comprising:

two facing planar electrodes for connection to a voltage source;

a rare gas at superatmospheric pressure between said facing electrodes for absorbing x-radiation;

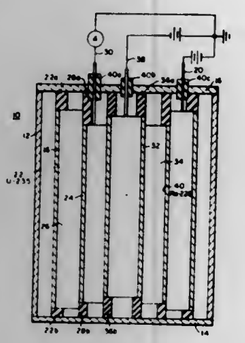
an insulating foil on one of said electrodes on the side facing the other of said electrodes for producing a charge image thereon; and

less than 2% by volume of a different gas mixed with said rare gas, said different gas having an ionization energy which does not exceed the ionization energy of the lowest metastable levels of the atoms of the rare gas.

4,071,764
GAMMA AND ALPHA COMPENSATED FISSION CHAMBER

Norman C. Thurlow, II, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 31, 1976, Ser. No. 719,212
Int. Cl.² G01T 3/00
U.S. Cl. 250—390 4 Claims

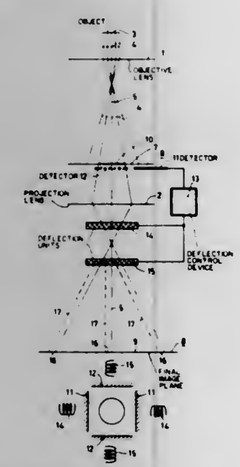


1. A fission chamber neutron detector comprising, a neutron sensitive volume which volume includes a high neutron cross section fissionable material and a predetermined gas fill with at least two electrical signal electrodes within the neutron sensitive volume, and a gamma and alpha signal compensation volume which volume includes a low neutron cross section alpha particle emissive isotope and a predetermined gas fill, with at least two compensation electrical signal electrodes within the compensation volume, whereby the respective volume output signals are combinable to give a resultant gamma and alpha compensated signal.

4,071,765
ELECTRON MICROSCOPE

Karel Jan van Oostrum, and Gerardus Gegorius Petrus van Gorkom, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 11, 1975, Ser. No. 639,863
Claims priority, application Netherlands, Dec. 17, 1974, 7416395
Int. Cl.² H01J 37/26
U.S. Cl. 250—397 9 Claims

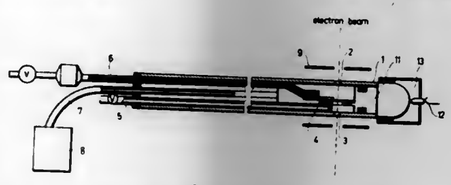


1. Electron beam apparatus, comprising:
an electron-optical lens system for forming a final image of an object with an electron beam, said system also forming with the electron beam at least one intermediate image of the object;
electron detection apparatus at the periphery of the intermediate image for detecting the difference between the actual position of the intermediate image and a reference position, said detection apparatus producing a signal indicative of the difference; and
beam deflection apparatus responsive to said signal for automatically deflecting the electron beam in a
direction which compensates for the difference, whereby the position of the final image of the object is thereby stabilized against movements of the object relative to the electron-optical lens system.

4,071,766
MICRO-CHAMBER FOR ELECTRON OPTICAL EXAMINATIONS PARTICULARLY FOR THE ELECTRON MICROSCOPIC EXAMINATION OF BIOLOGICAL OBJECTS

Erika Kalman; Lajos Haklik; Anna Eke, and Pál Kovács, all of Budapest, Hungary, assignors to MTA Kozponti Kemiai Kutato Intezet, Budapest, Hungary

Continuation of Ser. No. 559,709, March 19, 1975, abandoned. This application May 6, 1976, Ser. No. 683,832
Claims priority, application Hungary, Mar. 28, 1974, MA 2555
Int. Cl.² G01N 21/00; G21K 5/06
U.S. Cl. 250—443 4 Claims



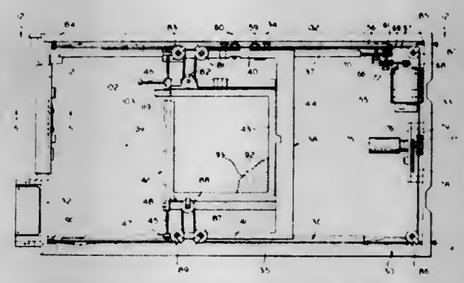
1. A micro-chamber for the electron optical examination of liquids or wet specimens, comprising a casing having at least one small bore for the passage therethrough of an electron optical beam in alignment with said at least one small bore, a holder within the casing for a liquid or specimen wet with a liquid, a pressure-balancing buffer system to retard evaporation of the specimen by supplying vapor to the interior of the chamber, the chamber being closed to the escape of said vapor from the chamber other than through said at least one small bore, cooling means at least partially surrounding the casing for condensing vapors that escape from the chamber, there being two said bores, and a closing element arranged over at least one of said bores.

4,071,767
PALPATOR FOR X-RAY SPOT FILM DEVICE

Thomas Pury, Brookfield; Robert L. Konle, New Berlin, and Marvin L. Sivertsen, Milwaukee, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 10, 1976, Ser. No. 740,571
Int. Cl.² G01N 21/34
U.S. Cl. 250—444 2 Claims

1. Palpator means for a spot film device adapted to cooperate with an x-ray table having a patient supporting top, an x-ray source on one side of said top and a fluoroscopic device on said spot film device spaced from and on the opposite side of said top from said source, said spot film device having guide means on which said palpator means may be translated alternately between a rectracted inactive position and an active position in the path of the beam from said x-ray source, said palpator means comprising:
translatable means mounted for translation on said guide means,
reversible motor means mounted on said spot film device,
belt means extending along the path of travel of said translatable means,
means for coupling said motor means in driving relation with said belt means,
a latch member mounted on said translatable means for pivoting about an axis in opposite directions,
first spring means for urging said latch member to rotate in one direction,
second spring means coupled between said belt means and said latch member for urging it to rotate in a direction opposite of said one direction,
stationary means that are engageable and disengageable by said latch member, said latch member being actuated

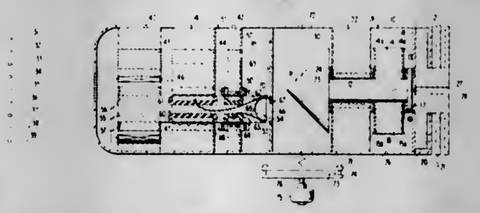


rotationally in opposition to said first spring means to engage with said stationary means when said translatable means is advanced to a predetermined position,
third spring means coupled between said belt means and said translatable means,
translation of said belt means by said motor means in one direction causing a force to be exerted through said third spring means for moving said translatable means to a position for said latch member to engage said stationary engageable means and operation of said motor means for translating said belt means in an opposite direction causing a force to be exerted through said second spring means to overcome the latching force of said first spring means to thereby release said translatable means for translating by said motor means.

4,071,768
X-RAY APPARATUS WITH ROTATIONALLY SYMMETRIC GAUSSIAN-LIKE FOCAL SPOT

David J. Goodenough, Buckeystown, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 703,378, July 8, 1976. This application June 23, 1977, Ser. No. 809,460
Int. Cl.² G01N 21/34, 23/04
U.S. Cl. 250—444 7 Claims

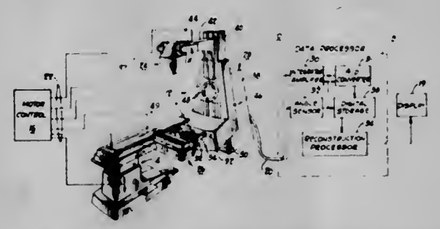


1. An X-ray apparatus comprising an envelope, an anode, a cathode and means for providing a rotationally symmetric, Gaussian-like focal spot distribution, including a support for an object to be subjected to X-ray radiation, and an image receptor holder positioned near said support, and wherein said apparatus includes an X-ray tube which produces an X-ray field having a central emergent beam which travels along a path, and said means for providing a rotationally symmetric, Gaussian-like focal spot distribution comprise means for effecting relative rotation between said X-ray tube and each of said support and said holder about an axis defined by said path of said central emergent beam.

4,071,769
TOMOGRAPHY SYSTEM HAVING NONCONCURRENT, COMPOUND AXIAL SCANNING

Carl J. Brunnett, Mayfield Hts., Ohio; Jerome R. Cox, Jr., St. Louis; Donald L. Snyder, Clayton, both of Mo., and Rodney A. Mattson, Mentor, Ohio, assignors to Picker Corporation, Cleveland, Ohio

Division of Ser. No. 559,411, March 18, 1975, Pat. No. 3,976,885. This application Mar. 1, 1976, Ser. No. 662,593
Int. Cl.² G01N 23/00
U.S. Cl. 250—445 T 20 Claims



1. A method of successively scanning the interior section of a body with an X-ray beam for determining the coefficients of absorption or transmission at spaced points in a plane through the body, the beam emanating from a source and detected by a detector in a source-detector assembly which maintains the detector in beam receptive alignment with the source, the assembly being rotatable through a set of angles γ_j about the body for orbiting the source and the detector through approximately 180° about the body and being rotatable about the source through a set of angles ϕ_i, where i and j are series of integers, comprising the steps of:
(a) rotating said assembly while maintaining the source and detector in alignment to orbit the source and detector about the body through the angles γ_j for a first preselected value of the angles ϕ_i;
(b) measuring the intensity of said beam after it has passed through the body, the intensity being measured at a first set of values of the angles γ_j;
(c) after completion of said step of successively rotating, incrementally moving the assembly about the source to provide a new value of the angle ϕ_i;
(d) re-rotating said assembly about the body through the angles γ_j; and,
(e) during the step of re-rotating, measuring the intensity of the beam after it has passed through the body, the intensity being measured at a second set of values of the angles γ_j, the values of said second set being different from the values of said first set.

4,071,770
METHOD FOR EVALUATING PERINATAL LUNG MATURITY

Meir Shinitzky, Rehovot, and Abraham Bruck, Haifa, both of Israel, assignors to Elscint, Ltd., Haifa, Israel

Filed Apr. 14, 1976, Ser. No. 676,798
Claims priority, application Israel, Mar. 2, 1976, 49130
Int. Cl.² G01N 21/38
U.S. Cl. 250—461 B 9 Claims

2. A method for evaluating perinatal lung maturity comprising:

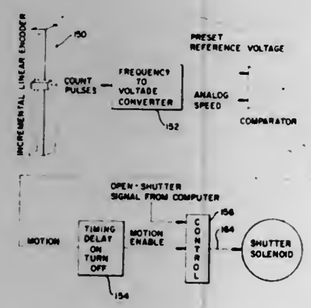
a. obtaining a sample of pulmonary effluent containing pulmonary surfactant;
b. labeling the surfactant with a fluorescent dye;
c. exciting the sample with polarized radiation for causing the sample to fluoresce; and
d. measuring the intensities of fluorescence polarized in directions parallel to, and perpendicular to, the direction of polarization of the excitation radiation.

4,071,771

SHUTTERS FOR X-RAY SCANNERS

John Covic, Wickliffe, and Thomas R. McBride, Chardon, both of Ohio, assignors to Ohio-Nuclear, Inc., Solon, Ohio

Filed June 28, 1976, Ser. No. 700,538
Int. Cl.² G21F 5/04
U.S. Cl. 250—505 **9 Claims**



1. A safety shutter mechanism for use in an X-ray scanner of the type wherein a source of radiation and a detector means are mounted for movement on opposite sides of a medium in order that the radiation passes through successive planar sections of medium and is attenuated and detected to give an output, comprising:
a housing adapted to be positioned adjacent the outlet aperture of the radiation source and having a passage through which can pass radiation leaving the outlet aperture and a generally cylindrical bore extending transversely to said passage;
a generally cylindrical shutter means rotatably mounted in said bore for selective arcuate movement between a first position which permits radiation to pass through said passage and a second position which blocks the flow of radiation through said passage;
biasing means engaging said shutter member and acting to continually bias said member toward the second position; and,
a rotary solenoid aligned with and drivingly connected with said shutter member for selectively moving said shutter member to said first position against said biasing means said rotary solenoid being operatively connected to the source of radiation so that it is actuated by a predetermined condition of movement of the source.

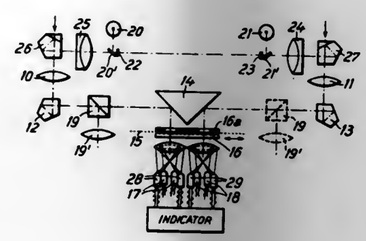
4,071,772

APPARATUS FOR MEASUREMENT OF MECHANICAL ABERRATIONS AFFECTING STEREOSCOPIC IMAGE ANALYSIS

Ludwig Leitz; Knut Heitmann, both of Wetzlar, and Horst Schmidt, Nauborn, all of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed Oct. 23, 1975, Ser. No. 625,030
Claims priority, application Germany, Nov. 20, 1974, 2454883
Int. Cl.² G02B 27/38; G01C 11/12
U.S. Cl. 250—558 **17 Claims**

1. In an apparatus for analyzing stereoscopic images and determining the maximum correlation rate of two identical images of an object, having two objectives forming said images and including at least one spatial frequency filter superimposing said images, further containing a photoelectric receiver system coordinated to said spatial frequency filter and producing electrical output signals used in indicating and/or controlling means, the improvements comprising:
a. means generating at least one reference beam reacting on mechanical variations of said apparatus which influence the position of at least one image projected by said objective onto said spatial frequency filter, and projecting an image of a reference mark onto said spatial frequency filter;



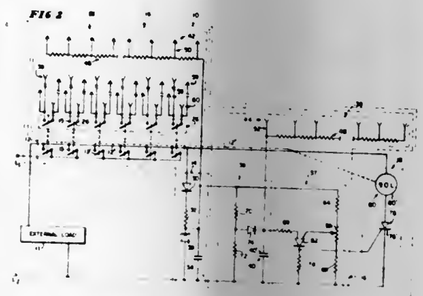
b. photoelectric receiver means responsive to light fluxes leaving said spatial frequency filter and being associated to said image of said reference mark projected by said reference beam biased by said mechanical variations and producing electrical output signals corresponding to said mechanical variations; and
c. indicator means fed by said electrical output signals for indicating said mechanical variations.

4,071,773

PATCH CORD TIMER

Charles E. Scott, Noblesville, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Aug. 18, 1976, Ser. No. 715,293
Int. Cl.² G08B 1/00
U.S. Cl. 307—141 **11 Claims**



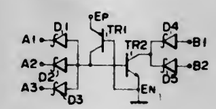
1. A timer comprising:
a. power switching means for switching power on and off to the timer,
b. power supply means for regulating power to the timer responsive to said power switching means,
c. timing means for preselecting a maximum number of various time intervals responsive to said power supply means including a bank of individual switching means, at least two banks of individual impedance means, a plurality of patch cords and terminal means coupling at least one of said individual switching means to at least one impedance means from each of said banks of individual impedance means whereby at least one of said individual switching means has a preselected timing interval, and capacitance means connected in series to said banks of individual impedance means, and
d. power turn-off means responsive to said timing means to de-energize said power switching means.

4,071,774

INTEGRATED INJECTION LOGIC WITH BOTH FAN IN AND FAN OUT SCHOTTKY DIODES, SERIALLY CONNECTED BETWEEN STAGES

Yukuya Tokumaru, and Masanori Nakai, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1975, Ser. No. 644,085
Int. Cl.² H01L 27/04
U.S. Cl. 307—215 **4 Claims**



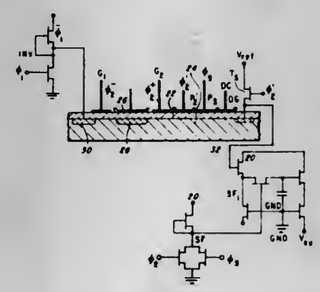
1. A semiconductor circuit having a plurality of stages, each stage comprising at least one output terminal, at least one input terminal, a first transistor having an emitter connected to a power source, and collector connected to said input terminal through a first diode and a second transistor having conductivity type opposite to that of said first transistor and including an emitter and base respectively connected to the base and collector of said first transistor and at least one collector connected to said output terminal through a second diode, the output terminal of one of said stages being connected to the input terminal of a succeeding stage.

4,071,775

CHARGE COUPLED DIFFERENTIAL AMPLIFIER FOR TRANSVERSAL FILTER

Charles Robert Hewes, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 2, 1976, Ser. No. 672,939
Int. Cl.² G11C 19/28; H01L 29/78; H03H 7/28
U.S. Cl. 307—221 D **15 Claims**



1. A charge coupled device transversal filter comprising:
a. a semiconductor substrate having an insulating layer on one surface thereof;
b. charge carrier source means in said substrate for injecting signal charge packets into said substrate in response to a sampled analog voltage signal $v_{in}(nTc)$ where Tc is the sampling period;
c. a plurality of charge transfer electrode means on said insulating layer and overlying a signal propagation channel defined in said substrate for propagating said signal charge packets down said channel in response to clock signals applied thereto, said electrode means including N split electrodes having first and second sections over preselected portions of said channel, each of said split electrodes defining a weighting coefficient *hm;*
d. a second charge carrier source in said substrate;
e. first and second gate electrodes on said insulating layer and spaced apart from each other, said first gate electrode lying over a substrate region adjacent to said second charge carrier source;
f. coupling means electrically coupling said first gate electrode to said first sections of said split electrodes, and coupling said second gate electrode to said second sections of said split electrodes;
g. a storage electrode on said insulating layer between said first and second gate electrodes;
h. clock means for selectively applying clock pulses to said second charge carrier source and said first and second gate electrodes to inject convolution charge packets proportional to

$$\sum_{m=1}^{N} v_{in}(nTc-mTc)hm$$

into said substrate under said second gate electrode and said storage gate electrode.

4,071,776

SAWTOOTH VOLTAGE GENERATOR FOR CONSTANT AMPLITUDE SAWTOOTH WAVEFORM FROM VARYING FREQUENCY CONTROL SIGNAL

Robert Haynes Isham, II, Piscataway, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 19, 1976, Ser. No. 715,852
Int. Cl.² H03K 4/08
U.S. Cl. 307—228 **6 Claims**



1. A circuit for producing sawtooth voltage waves having substantially constant amplitude in response to a command signal whose frequency may vary comprising, in combination:
first and second voltage terminals across which an operating voltage may be applied;
an amplifier having input, output and common terminals;
first resistance means for coupling the first voltage terminal to the amplifier common terminal via a direct current conductivity path;
second resistance means connecting the amplifier input terminal to the second voltage terminal for providing effectively the sole direct current path to or from the amplifier input terminal;
a first energy storage element connected between the amplifier input terminal and one of the voltage terminals;
a second energy storage element connected between the amplifier output terminal and one of the voltage terminals; and
switching means having a conduction path and a control electrode, said conduction path connected in parallel with

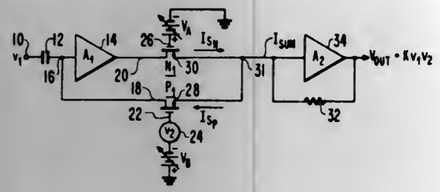
the second energy storage element, the control electrode connected to a source of command signals the frequency of which varies.

4,071,777

FOUR-QUADRANT MULTIPLIER

Eric Peter Herrmann, Bound Brook, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 6, 1976, Ser. No. 702,403
Int. Cl.² G06G 7/12
U.S. Cl. 307—229 **8 Claims**



1. A multiplier for developing a product signal proportional to a multiplicand signal multiplied by multiplier signal comprising, in combination:

first and second field effect transistors respectively of first and second conductivity types complementary to each other, each having source and drain electrodes and a channel therebetween and having a gate electrode;

means for maintaining the source electrodes of said first and second transistors at a reference potential;

means for applying to the drain electrode of said first transistor a first drain potential having a direct component equal to said reference potential and having a component indicative of said multiplier signal superimposed on its direct component;

means for applying to the gate electrode of said first transistor a first gate potential having a direct component for operating said first transistor in its triode region and having a component indicative of said multiplicand signal superimposed on its direct component;

means for applying to the drain electrode of said second transistor a second drain potential having a direct component equal to said reference potential and having a component indicative of said multiplier signal superimposed on its direct component, the components of said first and second drain potentials indicative of said multiplier signal being complementary or anti-phase to each other;

means for applying to the gate electrode of said second transistor a second gate potential for operating said second transistor in its triode region; and

means connected to additively combine the currents flowing in the channels of said first and second field effect transistors responsive to the potentials applied to them to derive said product signal substantially free of first-order and second-order multiplier signal terms.

4,071,778

ANALOG OPERATION CIRCUIT USING A MULTI-COLLECTOR LATERAL TRANSISTOR

Yoshiyuki Nakagomi, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

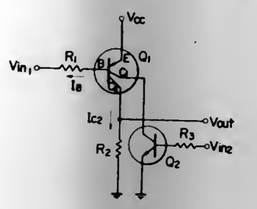
Filed July 13, 1976, Ser. No. 704,991
Claims priority, application Japan, July 30, 1975, 50-91915
Int. Cl.² G06G 7/12; H01L 29/72
U.S. Cl. 307—229 **6 Claims**

1. An analog operation circuit comprising:

a lateral transistor element having an emitter region having an emitter electrode, a base region having a base electrode, a first collector region having a first collector electrode and formed between said emitter region and part of said base region, and a second collector region having a second collector electrode and formed outside the first collector region between the outside of said first collector region and part of said base region, said emitter electrode being supplied with an operating voltage;

means for applying a first input signal to the base electrode of said lateral transistor;

means for applying a second input signal to the first collector electrode of said lateral transistor;



output means for deriving an output signal from the second collector electrode of said lateral transistor; and

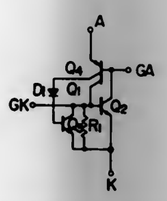
biasing means for biasing the lateral transistor element using said first collector electrode as its sole collector to operatein the transition region between the active region and the saturation region of its operating characteristics.

4,071,779

SEMICONDUCTOR SWITCH

Mitsuru Kawanami; Ichiro Ohhinata, both of Yokohama, and Shinzi Okuhara, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 17, 1976, Ser. No. 715,156
Claims priority, application Japan, Aug. 20, 1975, 50-100190
Int. Cl.² H03K 17/02, 17/60
U.S. Cl. 307—255 **21 Claims**



1. A semiconductor switch comprising a PNPN switch of an equivalently four-layered PNPN structure including a P-type anode, N-type cathode, N-type gate and P-type gate, a first NPN transistor, a second PNP transistor, and a level shifting circuit, wherein said first transistor has its collector and emitter connected to the P-type gate and N-type cathode of said PNPN switch, respectively, and said second transistor has its emitter and base connected to the P-type anode and N-type gate of said PNPN switch, respectively, and has its collector connected to the base of said first transistor through said level shifting circuit.

4,071,780

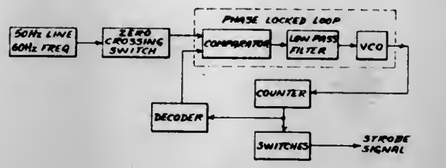
TRANSIENT GENERATOR

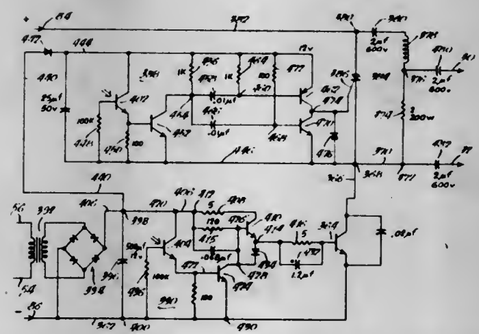
Ronald H. Burnett, Wheeling, Ill., assignor to Corcom, Inc., Chicago, Ill.

Filed Sept. 10, 1976, Ser. No. 722,282
Int. Cl.² H03K 5/15, 5/01, 3/35
U.S. Cl. 307—262 **19 Claims**

15. A transient generator for producing a series of transients at any desired repetition rate within a range, comprising a series discharge circuit which includes a capacitor, a pair of output terminals, and the anode and cathode of a silicon controlled rectifier; DC circuit means for charging said capacitor,

means for supplying triggering pulses to said silicon controlled rectifier at said rate, and means for interrupting said charging circuit during capacitor discharge and thereafter restoring said circuit, said pulse supplying means including a phase locked loop having a reference input terminal, a feedback input terminal, and a pulse output, a reference frequency source for supplying a reference frequency to the reference input terminal of said phase locked loop, pulse counting means connected to the





output of said phase locked loop adjustable to any count within the range of said counting means, circuit means for delivering a synchronizing pulse from said counting means to the feedback input terminal of said phase locked loop and for resetting said counting means upon the arrival at said count, and circuit means connected to the output of said phase locked loop for delivering the pulses thereof to the gate of said silicon controlled rectifier.

4,071,781

PULSE DURATION CORRECTION CIRCUIT

Inanc Kayalioglu, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 15, 1976, Ser. No. 741,791
Int. Cl.² H03K 1/18
U.S. Cl. 307—265 **7 Claims**



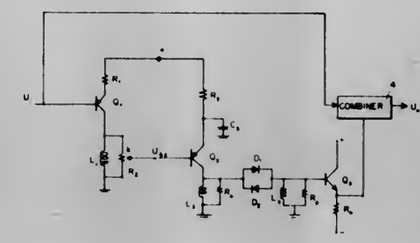
1. A pulse duration correcting circuit comprising: a comparator having two inputs, a predetermined one receiving incoming pulses through resistive circuit means, and the other receiving the incoming pulses through a bipolar averaging circuit; the output of said comparator being the output of the pulse correcting circuit; and said resistive circuit means comprising two switching transistors of opposite polarity shunted to a resistor connecting the incoming pulses with said one predetermined input of said comparator, and said switching transistors being controlled at their electrodes by the output of said comparator.

4,071,782

PHASELESS EQUALIZER

Nikola Vidovic, Santa Clara, Calif., assignor to International Video Corporation, Sunnyvale, Calif.

Filed June 28, 1976, Ser. No. 700,483
Int. Cl.² H03K 5/01
U.S. Cl. 307—268 **28 Claims**



1. Apparatus for generating an output signal corresponding to the double differentiation of the input signal without introducing phase shift comprising

amplifier means including a transistor having a control electrode and a first and a second output electrode,

means including a first differentiating circuit for applying said input signal to said control electrode, said first differentiating circuit having a selectable time constant,

means including a second differentiating circuit connected between one of said output electrodes and AC ground,

means including a circuit having a selectable time constant connected between the other of said output electrodes and AC ground, the time constant of said circuit being substantially equal to the time constant of said first differentiating circuit, and

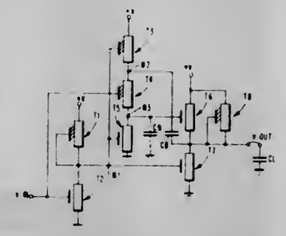
means connected to said one of said output electrodes for providing said output signal.

4,071,783

ENHANCEMENT/DEPLETION MODE FIELD EFFECT TRANSISTOR DRIVER

Ronald William Knepper, La Grangeville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1976, Ser. No. 745,735
Int. Cl.² H03K 17/04, 17/60, 17/12, 3/353
U.S. Cl. 307—270 **13 Claims**



1. An improved driver circuit comprising:

a first source of potential;

a second source of potential;

a push-pull output circuit, having first and second inputs and an output, connected between said first and second sources of potential;

said first input of said push-pull output circuit adapted to receive an input signal; and

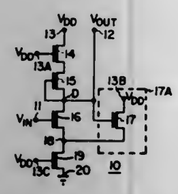
a circuit path, including a series connected capacitance and first field effect transistor, connecting said second input and said output, said first field effect transistor having a gating electrode for receiving one phase of said input signal while said first input of said push-pull output circuit adapted to receive an input signal receives another phase of said input signal.

4,071,784

MOS INPUT BUFFER WITH HYSTERESIS

Heinz Bernhard Maeder, Weinfelden, Switzerland, and Gene Arnold Schriber, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 12, 1976, Ser. No. 741,446
Int. Cl.² H03K *3/295, 3/353*
U.S. Cl. 307—279 **6 Claims**



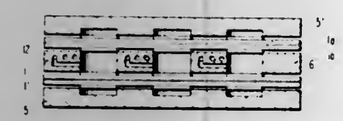
1. An input circuit having an input and output comprising:
a first field effect transistor coupled between a first voltage conductor and a first node;
a second field effect transistor coupled between said first node and said output;
a third field effect transistor coupled between said output and a second node and having its gate coupled to said input;
a fourth field effect transistor coupled between a second voltage conductor and said second node, and having its gate coupled to said first voltage conductor; and
a fifth field effect transistor coupled between said first voltage conductor and said second node and having its gate coupled to said output, said second, fourth, and fifth field effect transistors being depletion mode.

4,071,785

LAMINATED PIEZOELECTRIC MATRIX SWITCH

Masafumi Yoshida, and Hiroshi Obara, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1976, Ser. No. 681,934
Claims priority, application Japan, May 2, 1975, 50-53727
Int. Cl.² H01L *41/04*
U.S. Cl. 310—331 **1 Claim**



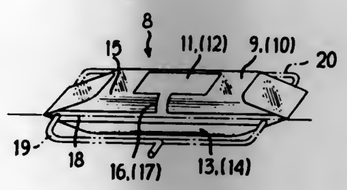
1. A matrix switch comprising, a first lamination of at least two piezoelectric plastic film layers, each being provided with a plurality of operating electrodes on respective first surfaces thereof and with a ground electrode on respective second surfaces thereof, said ground electrode covering at least areas corresponding to those of said operating electrodes on each of said first surfaces, said operating electrodes on one of said film layers being arranged in parallel rows, said operating electrodes in each row being electrically connected to one another, said operating electrodes on the other of said film layers being arranged in parallel columns, said operating electrodes in each column being electrically connected to one another, said film layers being positioned in said lamination such that said operating electrodes of said one film layer are positioned correspondingly to said operating electrodes of said the other film layer respectively so that each of said rows crosses said columns at positions of said operating electrodes, and said crossing points are used as key operating points, said ground electrodes comprise physically distinct ground electrodes, one for each said film layer, facing and in direct contact with each other, a second lamination of at least two piezoelectric plastic film layers identical with said first lamination, said first and second laminations being positioned so that the operating electrodes of each are in registry with one another, and a porous plate separating said first and second laminations, wherein said porous plate has windows in registry with the operating electrodes of said first and second laminations and gas passages communicating with said windows, further comprising a pair of substrates stacked on opposite surfaces of the composite lamination including said first and second laminations and said porous plate, said substrates each having recesses in the surface facing the composite lamination, said recesses being in registry with the operating electrodes of said first and second laminations.

4,071,786

THICKNESS-SHEAR CRYSTAL VIBRATOR

Shiro Yamashita, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Mar. 31, 1976, Ser. No. 672,460
Claims priority, application Japan, Apr. 8, 1975, 50-47196[U]
Int. Cl.² H01L *41/04*
U.S. Cl. 310—361 **4 Claims**



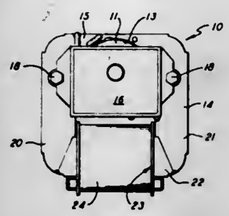
1. In a thickness-shear mode crystal vibrator including a pair of opposed planar surfaces having a pair of driving electrodes each formed on a respective one of said opposed planar surfaces, a pair of side planar surfaces adjacent to said planar surfaces on which said driving electrodes are formed, a pair of electrode leads which extend from said driving electrodes to the thickness center line or an adjacent area of the side planar surfaces, and a respective conductive supporting member connected with each of said electrode leads, the improvement wherein the crystal electrical X axis extends in the length direction of said side and opposed planar surfaces, a bevel cut is formed at the edge portion of said opposed planar surfaces where said driving electrode leads are formed and the adjacent side planar surfaces, said electrode leads are formed to extend from said opposed planar surfaces to the respective side planar surface over the respective bevel cuts therebetween and to extend along a major portion of the length of said side planar surfaces in the direction of the X axis and along the thickness center line of said side planar surface at the nodal plane of vibration, and said conductive supporting members are dimensioned to connect with the respective electrode leads at opposite ends of the respective electrode leads.

4,071,787

WELDED STATOR FOR ELECTRIC MOTORS

Max E. Lautner, Watertown, and Bernard J. West, Chaumont, both of N.Y., assignors to Gould Inc., Rolling Meadows, Ill.

Filed June 3, 1976, Ser. No. 692,448
Int. Cl.² H02K *15/00*
U.S. Cl. 310—42 **8 Claims**



1. In a small shaded pole electric motor having a two-portion stator comprising a first laminated portion having two integral parallel spaced leg portions projecting in the same direction therefrom, and a second laminated elongated polepiece portion fitting closely within a field coil support having a field coil wound therearound, each laminated portion comprising a plurality of identical laminations all of the same thickness and piled together to form the respective stator portion, the ends of the legs of the first portion each terminating along a continuous contact line thereacross, the ends of the polepiece portion extending beyond the field coil support, the projecting ends of the polepiece portion each having a continuous contact line reversely similar and complementary to the contact line of its corresponding leg portion for mating therewith along the entire contact line when the piled laminations of the projecting ends of the polepiece portion and the piled laminations of the legs of the first portions are temporarily held together and advanced toward one another in a direction diammetrically opposite to the direction in which the legs project while the piled laminations are guided on a common flat surface on which the laminations lie lowermost face down, each contact line for each leg and its corresponding polepiece end lying along a line which continually diverges laterally and outwardly endwise of the leg at an angle to the contact line between the other leg and its corresponding polepiece end, whereby contact between each leg and corresponding polepiece end is made instantaneously all along the contact lines, each leg and its corresponding polepiece end being thereafter strip welded together at the outer end of their contact line, the strip weld extending across the edges of the laminations of both portions for securing together the laminations of both portions as well as securing the portions together.

4,071,788

DYNAMOELECTRIC MACHINE FIELD ASSEMBLY

Ronald A. Martin, Anderson; Charles R. Ashton, Middletown, and Richard D. Watson, Chesterfield, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 14, 1976, Ser. No. 732,499
Int. Cl.² H02K *15/02*
U.S. Cl. 310—42 **4 Claims**



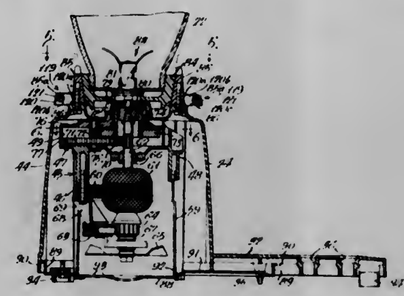
1. A field and housing assembly for a dynamoelectric machine comprising, a tubular outer frame member formed of magnetic material, a field assembly located within said outer tubular frame member, said field assembly including a unitary inner frame formed of magnetic material, said inner frame having an outer circumferentially extending wall defined by circumferentially spaced outer arcuate segments separated by circumferentially spaced axially extending grooves, said outer arcuate segments having a press fit with the inner wall of said outer frame, the inner wall of said inner frame being defined by circumferentially spaced inner arcuate segments separated by circumferentially spaced radially inwardly extending integral pole portions having arcuate end faces, said pole portions being aligned with said grooves, a field coil disposed about each integral pole portion, an arcuate pole plate engaging each end face of a pole portion for retaining said field coils in position between said pole plates and said inner wall of said inner frame, a plurality of openings extending through each pole portion that communicate with said grooves, means for securing a respective pole plate to a respective pole portion comprising fastener means carried by and extending from a respective pole plate located in said openings, first and second end frames respectively engaging opposite ends of said outer frame, and end frame fastener means extending between and secured to said end frames for clamping said outer frame between said end frames, each said end frame fastener means extending through a respective space defined by a respective groove wall and an inner wall of said outer frame.

4,071,789

MULTI-PURPOSE KITCHEN APPLIANCE

Peter Jacob Ernster, Glendale; William Joseph Collins, Milwaukee, and George Henry Schaefer, Wauwatosa, all of Wis., assignors to Oster Corporation, Milwaukee, Wis.

Division of Ser. No. 478,905, June 13, 1974, Pat. No. 3,951,351.
This application Feb. 26, 1976, Ser. No. 661,721
Int. Cl.² H02K *7/14*
U.S. Cl. 310—50 **5 Claims**



1. A power unit for a food preparation appliance comprising a housing having side walls and a top wall, attachment support means fastened to said top wall of said housing to receive and support various alternatively usable attachments which are to be driven by said power unit, a motor enclosed within said housing including an armature carried by a shaft, said shaft being journaled by upper and lower armature bearings, a laminated field, commutator means supported on said armature shaft, a combined upper frame member supported within said power unit housing from the top wall thereof, said upper frame member supporting said laminated field and said upper armature bearing, a lower frame member supported by said upper frame member, said lower frame member supporting said lower armature bearing and commutator brushes in engagement with said commutator means, assembly means mounting said upper frame member in said housing to permit relative movement between said motor and said housing to obtain alignment of said motor and gearing assembly with said attachment support means, said upper frame member being formed

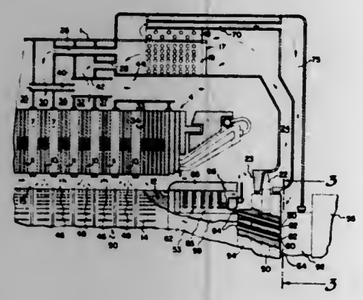
with a recess within which reduction gearing is enclosed, said shaft extending into said recess into driving engagement with said reduction gearing and having coupling means extending through said top wall to provide a high speed output shaft, said reduction gearing having a low speed output shaft which is concentric with and surrounds said high speed output shaft, said high speed output shaft having a speed on the order of 18,000 RPM and said low speed output shaft having an output speed on the order of 250 RPM.

4,071,790

COOLING ARRANGEMENT FOR ROTOR END TURNS OF REVERSE FLOW COOLED DYNAMOELECTRIC MACHINES

William L. Darby, Scotia; Robert H. Monz, and Stephen J. Molis, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 1, 1976, Ser. No. 691,360
Int. Cl.² H02K 9/00
U.S. Cl. 310—59 **3 Claims**



1. A reverse flow cooled dynamoelectric machine comprising:
a. a stator;
b. a rotor disposed within the interior of said stator and defining with said stator a gas gap;
c. said rotor including a spindle and a winding including end turns disposed radially outward from said spindle;
d. a cylindrical turbine coupling formed integrally with said rotor spindle on the turbine end of said spindle for connecting said rotor to a driving turbine;
e. a fan ring formed integrally with said spindle, said fan ring located axially inward from and proximate to said turbine coupling and having an inner diameter less than the outer diameter of said coupling;
f. a fan mounted on said ring for circulating cooling gas through said rotor and said stator; and
g. a plurality of passages extending through said fan ring and a portion of said spindle for the conduction of cooling gas to said end turns, said passages extending in a direction at an angle to the axis of said rotor and corresponding to the most practicable extent to the vector sum of the axial and tangential components of the velocity of the cooling gas entering said passages to minimize pressure losses in the flow of cooling gas through said passages.

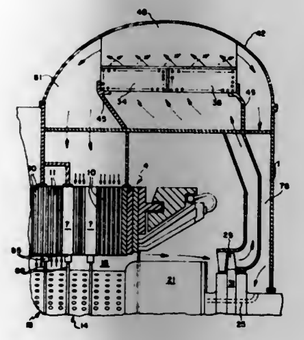
4,071,791

REVERSE FLOW COOLED DYNAMOELECTRIC MACHINES WITH NOVEL COOLING SYSTEM

Anthony F. Armor, Schenectady, and Casmer P. Stanwick, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 1, 1976, Ser. No. 691,365
Int. Cl.² H02K 9/00
U.S. Cl. 310—59 **5 Claims**

1. A reverse flow cooled dynamoelectric machine comprising:
a. a gas-tight casing containing cooling gas;
b. a stator core including radial passages for flow of gas;
c. a rotor defining a gas gap with the stator core and having a body portion and an end turn portion;
d. fan means mounted on said rotor for circulating cooling gas from said gas gap to gas coolers;
e. first and second gas coolers mounted in said casing in side-by-side relationship, said gas coolers communicating with an outlet of said fan means to receive and cool gas pumped therefrom;
f. first conduit means for conducting gas from both said first and second coolers to said rotor end turn portion;



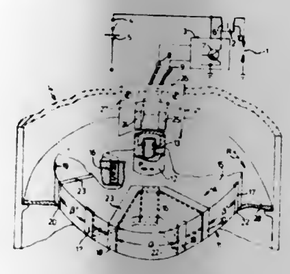
g. second conduit means conducting gas from both said first and second coolers to said stator cooling passages and said rotor body portion; and
h. baffle means disposed in said casing in abutting spaced relationship with both said coolers and extending radially outward from said coolers to an inner wall of said casing, said baffle means being shaped to direct a portion of the gas cooled by each of said coolers to both first and second conduit means, thereby ensuring a flow of cooling gas both to said stator and said body portion of said rotor and to said end turn portion of said rotor with only one of said coolers operating.

4,071,792

ENGINE IGNITION TIMING SIGNAL GENERATOR HAVING A REDUCED NUMBER OF PERMANENT MAGNETS

Harald Kalippke, Hohenacker; Richard Gerber, and Karl Ehrmann, both of Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 3, 1976, Ser. No. 738,441
Claims priority, application Germany, Nov. 25, 1975, 2552754
Int. Cl.² H02K 21/22
U.S. Cl. 310—70 R **5 Claims**



1. A timing signal generator for an electrical ignition system of an internal combustion engine having a rotor in the form of a pole wheel in which permanently magnetized magnet ele-

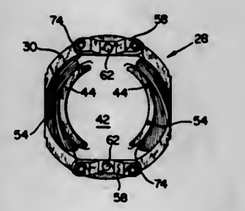
ments are set, which rotor is mounted on a shaft for rotation within a stator having an electrically transmitting element (21) responsive to the rotation of the rotor past the transmitting element for producing a signal in a control circuit of said ignition system, in which there is the improvement that said rotor comprises:
a disk-like matrix body (15) of non-magnetic material centered on said shaft (13) for carrying permanent magnets (16) and pole pieces (17,18,19,20) embedded therein, said matrix body (15) filling the angular intervals between said permanent magnets, having a cylindrical surface defining its periphery and being mounted on said shaft in a way that enables rotation of said shaft to produce coaxial rotation of said disk in the same direction of rotation;
a plurality of permanent magnets (16) embedded in said matrix body (15) at locations intermediate between said shaft and said periphery, and
a group of pole pieces (17,18,19,20) for each of said magnets (16) embedded in the periphery of said matrix body (15) and each connected to a pole of the magnet by an elongated magnetically conducting body embedded in said matrix body.

4,071,793

FIELD SUBASSEMBLY FOR ELECTRIC MOTORS

Denis Charles Cox, Niedernhausen, Germany, assignor to The Black and Decker Manufacturing Company, Towson, Md.

Continuation of Ser. No. 711,902, Aug. 5, 1976, abandoned, which is a continuation of Ser. No. 590,076, June 25, 1975, abandoned. This application Mar. 23, 1977, Ser. No. 780,521
Int. Cl.² H02K 11/00
U.S. Cl. 310—71 **24 Claims**



1. A stator assembly for a dynamo electric machine comprising a plurality of laminations secured together to form a stack, the stack having at least two spaced pole pieces and a pair of coil slots per pole piece, a field coil in each one of the pairs of slots, apertures in said stack, each aperture being located in one of the regions between adjacent pole pieces, and electrically insulating terminal block positioned on said stack, each of said blocks being associated with one of said apertures, and each of said blocks having an external configuration corresponding to the region between said pole pieces and such that said blocks do not extend either externally of said stack in a radial direction or within said stack.

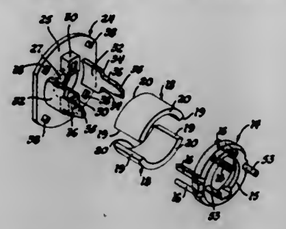
4,071,794

DC MOTOR-WITH PERMANENT MAGNET RETAINING STRUCTURE

Roy C. Schoen, West Milton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1975, Ser. No. 630,213
Int. Cl.² H02K 21/26
U.S. Cl. 310—154 **4 Claims**

1. In a dynamoelectric machine having a cylindrical case with closed and open axial ends and a plurality of arcuate permanent magnets having circumferential and axial ends and being positioned circumferentially within the case, magnet retention apparatus adapted for easy drop-in assembly from the open end of the case and comprising:
a magnet retention member comprising a ring disposed within the case adjacent its closed end and a plurality of resilient arms extending axially therefrom toward the open end of the case, the arms comprising a pair for each permanent magnet, each pair of arms being adapted to receive the associated permanent magnet inserted axially therebetween and to abut opposite circumferential ends of the magnet inserted,
an end cover adapted to close the open end of the case, the end cover including a plurality of fingers projecting axially inward therefrom for insertion between adjacent pairs of arms and engagement with one arm of each adjacent



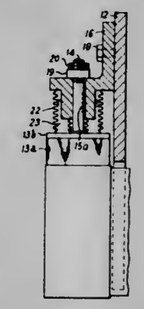
pair, each finger having a tapered end for aid in insertion between the arms and a constant-width portion effective to compress the resilient arms against the magnet circumferential ends and thereby retain the magnets radially and circumferentially between the arms and case, the end cover further including a plurality of shoulders effective to engage the permanent magnets on axial ends thereof and bias the permanent magnets with their opposite axial ends into engagement with the ring, whereby the permanent magnets are axially retained between the end cover and the magnet retention member.

4,071,795

BRUSH GEAR FOR ELECTRICAL MACHINERY

Peter Philip Dobbing, and Peter William Kendall, both of Newcastle-upon-Tyne, England, assignors to International Research & Development Company Limited, Newcastle-upon-Tyne, England

Filed Sept. 2, 1975, Ser. No. 609,185
Int. Cl.² H02K 13/00
U.S. Cl. 310—219 **7 Claims**



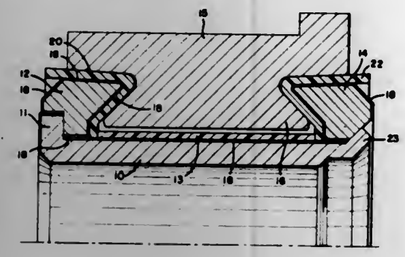
1. Brush gear for electrical machinery comprising a current transfer brush composed for resilient fibres, a support for said brush, means mounting said brush on said support for movement towards and away from a current transfer surface, positive drive adjusting means for effecting said movement of the brush relative to the support, a flexible housing sealed to the brush and the support and a quantity of liquid metal enclosed in said housing, said housing permitting said movement of said brush relative to said support and said liquid metal being in electrical contact with the brush and with the support throughout said movement for the flow of current between the brush and the support.

4,071,796

DOUBLE INSULATED COMMUTATOR

Russell A. Nippert, Delaware, Ohio, assignor to The Nippert Company, Delaware, Ohio

Continuation of Ser. No. 568,503, April 16, 1975, abandoned. This application June 11, 1976, Ser. No. 695,013
Int. Cl.[2] H02K 13/04
U.S. Cl. 310—236 4 Claims



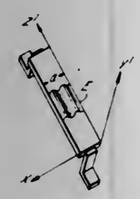
1. A commutator for an electric motor comprising an assembly with a steel shell having an integral shoulder against which there fits a V-shaped end ring at one end, a second V-shaped end ring at the opposite end of said shell, said V-shaped end rings forming annular dovetail grooves, said shell and said end rings having an insulating coating of resin deposited thereon as a thin uniform layer over their entire outer surface, said resin coating being in a thermoset condition and providing a complete insulating layer, a separate second insulating layer of laminated sheet material overlying said resin coating on said end rings and on said shell, a plurality of commutator bars insulated from each other and having dovetails fitting into said grooves and held in place by said end rings, and an end of said shell engaging said second V-shaped end ring to thereby lock said commutator bars in said assembly.

4,071,797

QUARTZ PIEZO-ELECTRIC ELEMENT VIBRATING IN A COUPLED MODE

Alphonse Ernst Zumsteg; Jean Engdahl, both of Bienne, and Raymond Huguenin, Port, all of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Jan. 20, 1976, Ser. No. 650,643
Int. Cl.[2] H01L 41/04
U.S. Cl. 310—361 9 Claims



1. A piezo-electric resonator in rectangular bar form cut from a quartz crystal in a rotated Y orientation of 34°48′ ± 20′ and having its greatest dimension along Z′ (YZW 34°48′ ± 20′ arranged to vibrate in a mode which is the resultant of coupling of a thickness shear (XY′) mode and a flexural (XY′) mode, the width (X)–thickness(Y′) ratio of the resonator being selected from the following ranges:

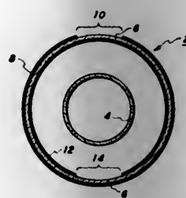
between 1.1 and 1.9 for the second flexure harmonic
between 2.2 and 3.6 for the fourth flexure harmonic
between 3.6 and 5.3 for the sixth flexure harmonic
between 5.1 and 6.8 for the eighth flexure harmonic said quartz crystal being provided with electrodes on its opposed XZ′ surfaces, such electrodes extending over the entire width X of the resonator but having a length in the Z′ direction less than the length of the resonator thereby to establish an energy trapping zone within the portion of the resonator between the electrodes.

4,071,798

SODIUM VAPOR LAMP WITH EMISSION APERTURE

Thomas J. Hammond, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1977, Ser. No. 783,905
Int. Cl.[2] H01J 61/52
U.S. Cl. 313—18 3 Claims



1. A sodium vapor discharge lamp comprising an inner discharge tube within an outer envelope,

said outer envelope having on the surface thereof a light-reflective coating defining a light aperture for the transmission of visible light in a desired direction and an infra-red-reflective coating defining a heat aperture for the transmission of infrared radiation,

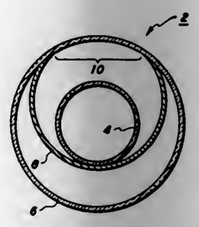
said heat aperture disposed on an area of said outer envelope away from said light aperture, thereby to correspondingly locate the coolest area of said discharge tube, where any sodium condensation occurs, away from said light aperture.

4,071,799

SODIUM VAPOR LAMP WITH EMISSION APERTURE

Thomas J. Hammond, Penfield, and William L. Lama, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1977, Ser. No. 783,904
Int. Cl.[2] H01J 61/52
U.S. Cl. 313—44 3 Claims



1. A sodium vapor discharge lamp including a sodium vapor discharge tube and a light reflector extending along and partially surrounding said discharge tube,

said light reflector defining a light source aperture for the transmission therethrough of visible light in a desired direction,

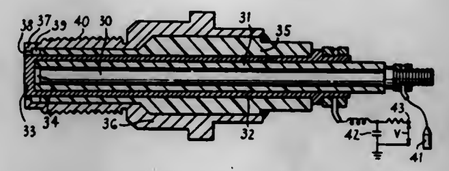
said light reflector being in contact with said discharge tube on a surface thereof away from said light aperture, said contact effecting a thermal coupling of said discharge tube and said light reflector for the conduction of heat through said thermal coupling from said discharge tube to said light reflector, thereby to locate the coolest area of said discharge tube at the area of said contact, where any sodium condensation occurs, away from said light aperture.

4,071,800

THREE ELECTRODE ARC PLASMA FLAME IGNITION DEVICES

Francis James Atkins, Leamington Spa, England, assignor to Associated Engineering Limited, Leamington Spa, England

Filed Nov. 15, 1976, Ser. No. 741,696
Claims priority, application United Kingdom, Dec. 5, 1975, 50092/75
Int. Cl.[2] H01T 13/20, 13/46
U.S. Cl. 313—123 4 Claims



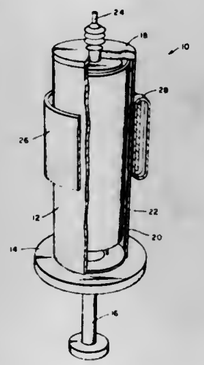
1. A three electrode arc plasma flame ignition device having an outer first electrode surrounding an intermediate second electrode and insulation between said first and second electrodes, a third electrode surrounded by said second electrode and insulation between said second and third electrodes, said first electrode having an end part which surrounds said second electrode and defines with it an annular gap across which a potential from a first source connected to said first and second electrodes is discharged when a higher potential from a second source is applied to said third electrode so that said higher potential discharges in series across a gap between the third electrode and the second electrode and radially across said annular gap between said second electrode and said first electrode.

4,071,801

CROSSED-FIELD SWITCH DEVICE AND METHOD FOR OFF-SWITCHING

Robin J. Harvey, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 9, 1976, Ser. No. 749,125
Int. Cl.[2] H01J 1/50
U.S. Cl. 313—154 9 Claims



1. A crossed-field switch device comprising:

an anode electrode;

a cathode electrode spaced from said anode electrode and defining an interelectrode space therebetween so that an electric potential can be applied between said electrodes to define an electric field across said interelectrode space, said interelectrode space being a continuous closed path and being arranged to contain a selected gas under a selected pressure;

main magnetic field means for producing a magnetic field in the interelectrode space at an angle with respect to the electric field and at an angle with respect to the continuous closed path in the interelectrode space so that in the presence of the main magnetic field and the electric field electrons are caused to spiral through the interelectrode space in a sufficiently long closed path before intercepting the anode to cause cascading ionizing collisions to cause electric conduction between said electrodes, the improvement comprising:

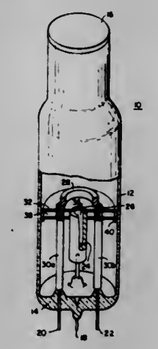
auxiliary magnetic field means positioned with respect to said interelectrode space for causing a net distorted portion of the magnetic field in only a portion of the interelectrode space in the closed path direction so that the distorted portion prevents continuity of the closed electron path to terminate cascading ionizing collisions to cause off-switching of the device.

4,071,802

HOLLOW-CATHODE SPECTRAL LIGHT SOURCE WITH MEANS TO PREVENT HIGH VOLTAGE ARCING

George K. Yamasaki, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1976, Ser. No. 687,839
Int. Cl.[2] H01J 61/04
U.S. Cl. 313—209 5 Claims



1. A hollow-cathode type spectral light source comprising a hermetically sealed generally cylindrical envelope at least a portion of which is transmissive of the spectral light generated, a selected fill gas within the envelope defined space, a hollow cathode disposed within the space aligned with longitudinal axis of the envelope, an anode spaced from the hollowed end of the hollow cathode, at least one insulating disc disposed between the anode and the exterior portion of the hollow cathode with a central aperture provided through the disc aligned with the hollow in the hollow cathode, which insulating disc has a diameter which is slightly less than the cylindrical envelope diameter, the improvement wherein a resilient, annular, highvoltage shield member is disposed about the insulating disc between the disc and the envelope to prevent high-voltage breakdown between the anode and the cathode exterior.

4,071,803

ELECTRON GUN ASSEMBLY

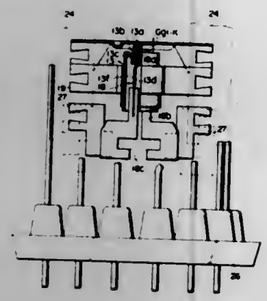
Yukio Takanashi, Hiratsuka; Fumiyuki Sato, Kawasaki, and Masanori Shinpo, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sept. 17, 1975, Ser. No. 613,975

Claims priority, application Japan, Sept. 19, 1974, 49-107967; July 18, 1975, 50-99773[U]

Int. Cl.² H01J *29/02, 29/50*

U.S. Cl. 313—409 **9 Claims**



1. An electron gun assembly comprising at least one electron gun unit constituted by a cathode electrode assembly having an inner cathode cylinder, a heater located in said inner cathode cylinder, and an outer cathode cylinder coaxially supporting the inner cathode cylinder; a plurality of grid electrodes sequentially arranged coaxially with the cathode electrode assembly; electrode supporting pieces for supporting the cathode and grid electrodes, the electode supporting pieces being fitted to one or more insulating support pillars, the inner cathode cylinder being supported to the tip end portion of the outer cathode cylinder by a plurality of supporting strips so that the tip portion of said inner cathode cylinder is projected from the tip end of the outer cathode cylinder and having a diameter small enough so that there is formed between the inner and outer cathode cylinders a space to effectively disperse heat; the outer cathode cylinder being inserted in and fitted to a cylindrical cathode holder at first supporting points in the axial direction of the outer cathode cylinder, the cylindrical cathode holder being fitted to a supporting piece at second supporting points in the axial direction of the outer cathode cylinder which are separated from the first supporting points, respective portions of the outer cathode cylinder and cathode holder, at least between the first and second supporting points, being formed respectively of materials having substantially the same thermal expansion coefficient.

4,071,804

MAGNETRON DEVICE HAVING MAGNETIC MEANS FOR GENERATING A UNIFORM INTERACTION FIELD

Tokuju Koinuma, Kawasaki; Hideki Yamamiya, Yamato, and Norio Tashiro, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

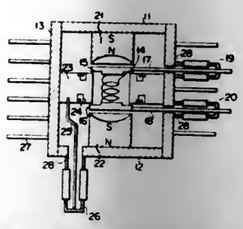
Continuation of Ser. No. 654,532, Feb. 2, 1976. This application Feb. 25, 1977, Ser. No. 772,142

Claims priority, application Japan, Jan. 31, 1975, 50-13227; Mar. 8, 1975, 50-28281

Int. Cl.² H01J *25/50*

U.S. Cl. 315—39.71 **15 Claims**

1. A magnetron device for generating a substantially uniform magnetic field which comprises a cathode electrode and an anode electrode disposed concentrically with said cathode electrode so as to jointly constitute a cylindrical electrode assembly; a plurality of vanes inwardly projected from the inner surface of said anode electrode; a resonance cavity circuit defined by a portion of said anode and vanes and for oscillating electric waves when supplied with the energy of electrons emitted from the cathode electrode; an output circuit for drawing out an oscillated output from said resonance cavity circuit; and a magnetizing device in which a pair of permanent magnets are disposed on the opposite sides of an interaction space formed between the cathode and anode, at least one



of the mutually facing magnetic pole surfaces of said permanent magnets being formed into a concave shape, thereby controlling the orbit through which electrons emitted from the cathode electrode revolve about the axis of said cathode electrode.

4,071,805

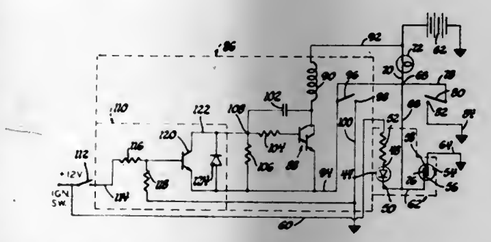
INTERIOR LIGHTING DELAY CIRCUIT

Eugene W. Brock, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 16, 1976, Ser. No. 723,764

Int. Cl.² B60Q *7/00*

U.S. Cl. 315—84 **3 Claims**



1. In a vehicle lamp control system for selectively energizing a vehicle interior lamp from a vehicle battery in response to operation of a door jamb switch selectively opened and closed in response to the door being positioned closed and open, respectively, the combination of: first circuit means including the door jamb switch for energizing the interior lamp when the door is opened, second circuit means including a relay switch for energizing the lamp independently of said door jamb switch, a relay switch control circuit for operating said relay switch closed when said door is momentarily opened for maintaining the interior lamp energized when the door is closed, timer circuit means including said relay switch for terminating energization of said lamp a predetermined delayed period after door closure, said relay switch control circuit including a coil and a series connected first transistor having its emitter and base connected to the vehicle battery source only when the vehicle door is closed to maintain the transistor nonconductive and being responsive to the door being opened to ground said emitter to cause the first transistor to be conductive from the collector to emitter terminals thereof, said timer circuit means being responsive to conduction of said first transistor and closure of said relay switch to remove battery potential from the base of said first transistor at a rate to maintain the relay switch conditioned for the predetermined delay period for maintenance of interior light energization following door closure, a vehicle ignition switch, means including a second transistor responsive to operation of the ignition switch to remove base potential from the first transistor when the ignition switch is turned on to immediately turn off the interior light before the vehicle is started and shifted to a drive mode.

4,071,806

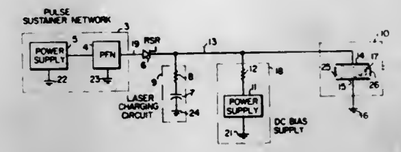
SELF-TRIGGERING CIRCUIT FOR GAS-FILLED LASER

William F. List, Linthicum, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 2, 1976, Ser. No. 720,024

Int. Cl.² H01S *3/092*

U.S. Cl. 315—150 **4 Claims**



1. A self-triggering apparatus and circuit for use in producing an output from a gas-filled laser comprising:

a. a gas-filled laser having a cavity including means for injecting an ionizing radiation pulse into said laser cavity for ionizing the gas therein;

b. bias circuit means for generating a low current discharge to initiate a glow discharge in said laser cavity in response to ionization of said gas;

c. pulse generating means for generating a laser sustaining discharge pulse voltage across said laser cavity; and

d. switching means, including an active semiconductor device, responsive to the ratio of the change in electrical parameters with respect to a change in time occurring in the laser in response to the initiation of said low current discharge by introduction of the ionizing radiation pulse, for electrically connecting said laser sustaining discharge pulse voltage to said laser cavity for transferring pulse energy from said pulse generating means to said glow discharge.

4,071,807

FLUORESCENT LAMP LIGHTING DEVICE

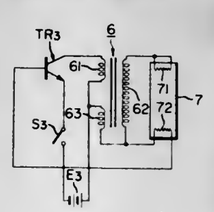
Yoshinobu Ichinose, No. 4-8, 5-chome, Soshigaya, Setagaya, Tokyo, Japan

Filed Oct. 18, 1976, Ser. No. 733,302

Claims priority, application Japan, Aug. 13, 1976, 51-96853

Int. Cl.² H05B *41/29;* H03K *3/28*

U.S. Cl. 315—219 **2 Claims**



1. Apparatus for energizing a fluorescent lamp having a pair of filaments, each having first and second ends, from a d.c. power source comprising

a transistor having first, second and third electrodes,

a transformer including a primary winding having one end connected to the first electrode of said transistor and the other coupled through said d.c. power source to the second electrode of said transistor, a first secondary winding having one end connected to the first and second ends of one of the filaments of said fluorescent lamp and the other end connected directly to the first end of the other filament of said fluorescent lamp, and a second secondary winding connected between the other ends of said primary and first secondary windings, and

means coupling the second end of the other filament of said fluorescent lamp to the third electrode of said transistor.

4,071,808

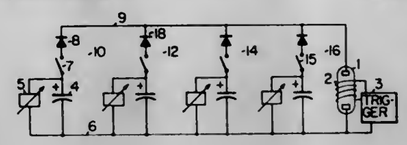
METHOD AND CIRCUIT FOR OPERATING AN ELECTRICAL FLASH-TUBE

John Hobart Zentmyer, 124-F N. Brighton St., Burbank, Calif. 91506

Filed July 15, 1976, Ser. No. 705,731

Int. Cl.² H05B *41/32*

U.S. Cl. 315—241 R **9 Claims**



2. A flash-tube electrical circuit, comprising;

a. a triggerable electrical flash-tube (1 or 38),

b. plural separate capacitors (4,etc.,20,21,etc.) having comparable capacitances,

c. separate means to charge a capacitor (5,etc.,23,etc.), individually connected to each said separate capacitor, at least one of said means being variable, and

d. separate unidirectionally conductive means (8,etc.,22,25,etc.) individually connected to each said separate capacitor and collectively to said flash-tube,

whereby, upon said flash-tube being triggered, each said separate capacitor is discharged through a said unidirectionally conductive means and through said flash-tube.

4,071,809

APPARATUS FOR SYNTHESIZING OF COLORS

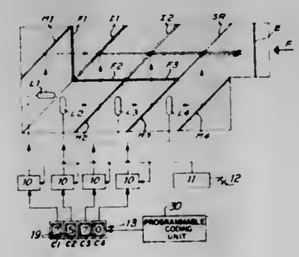
Jean Michel Weiss, 50, rue Sebastien Mercier, 75015 Paris, France, and Pierre-Regis Marie Irissou, 2, rue Albert de Mun, Meudon, France (92190)

Filed Nov. 13, 1975, Ser. No. 631,457

Claims priority, application France, Nov. 18, 1974, 74 37977

Int. Cl.² H05B *41/34, 41/44*

U.S. Cl. 315—312 **11 Claims**



1. A colour synthesizer comprising:

a discharge lamp source;

a plurality of colour filters;

means mounting said filters relative to said source to produce radiation in each of a predetermined number of primary colours along a common path, said mounting means comprising:

a movable support carrying said plurality of colour filters;

means rotating said support to pass said colour filters in succession in front of said lamp;

a trigger circuit for said lamp; and

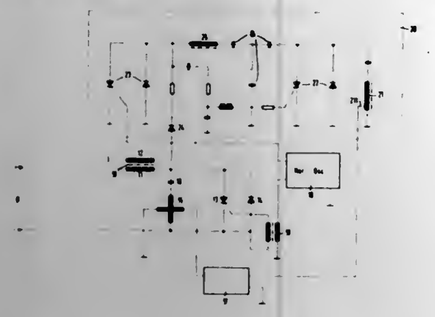
a synchronization circuit responsive to the rotation of said support connected to said trigger circuit to control the discharge of said lamp; and

means for varying the luminous intensity of said source thereby varying the luminous intensity of the primary colour radiation from said filters.

4,071,810
SUPPLY CIRCUIT FOR A TELEVISION RECEIVER

Gerd Dobbert, Deizisau, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 2, 1976, Ser. No. 692,064
Int. Cl.² H01J 29/70, 29/76
U.S. Cl. 315—400 7 Claims



1. A supply circuit for a television receiver having a horizontal output stage including means for controlling line sweep and commutation, the energy required by said horizontal output stage being provided by a power source through a controllable supply circuit that isolates the power source from the horizontal output stage, said controllable supply circuit comprising:

an input transformer having a secondary winding connected to the horizontal output stage for providing the energy required thereby and a primary winding adapted for connection to the power source and being electrically isolated from the secondary winding and the horizontal output stage;

electronic switch means connected in series with the primary winding of the transformer;

first switching control means for switching on the electronic switch means as a function of line frequency; and

second switching control means for switching off the electronic switch means as a function of the energy required by the horizontal output stage, whereby the supply circuit provides the horizontal output stage with the required energy from the power source while also electrically isolating the horizontal output stage from the power source.

4,071,811
MODEL HELICOPTER THROTTLE GOVERNOR/COLLECTIVE PITCH CONTROL APPARATUS

Arlyle Floyd Irwin, 1312 W. Hill St., Champaign, Ill. 61820

Filed Mar. 1, 1976, Ser. No. 662,694
Int. Cl.² H04Q 7/02; B61B 13/08
U.S. Cl. 318—16 8 Claims

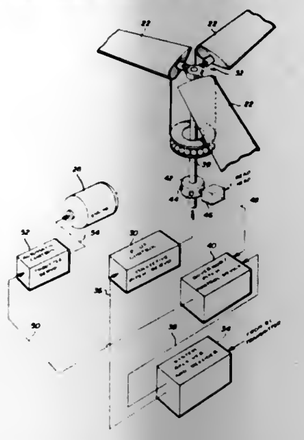
1. A throttle governor control apparatus for radio controlled model helicopters having an engine throttle servo for varying the rotational speed of the helicopter rotor and a collective pitch of said rotor, said apparatus comprising:

sensing means for periodically sensing changes in the model helicopter rotor speed in response to a first variation in collective pitch, including means for generating a timing signal corresponding to the sensed rotor speed;

reference means responsive to said timing signal for providing a reference signal representing a first sensed rotor speed;

comparison means coupled to said sensing means and said reference means for comparing said reference signal representing said first sensed rotor speed with said timing signal for a subsequently sensed rotor speed, including means for generating an error signal proportional to changes between said first and substantially sensed rotor speeds;

control signal means connected to said comparison means and responsive to said error signal for generating a control signal proportional to said error signal; and

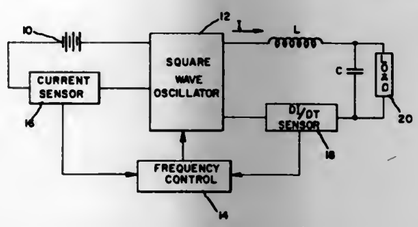


means for coupling said control signal to said throttle servo for proportionately varying said rotor speed in response to said first variation for maintaining said rotor speed substantially constant in response to variations in collective pitch.

4,071,812
AC INVERTER WITH CONSTANT POWER OUTPUT

Loren H. Walker, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1976, Ser. No. 662,653
Int. Cl.² H02M 7/00
U.S. Cl. 363—80 29 Claims



1. A constant power electrical source comprising in combination:

power supply means connected to furnish a variable frequency electric power output at substantially constant voltage;

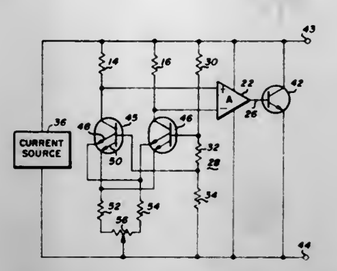
an output circuit including a first capacitor and an inductor connected in series with said power output to form a resonant circuit and a load impedance connected in parallel with said first capacitor; and

means which function to automatically adjust the frequency of said power supply means, in reponse to changes of the value of said load impedance, to an operating frequency, near but not at the resonant frequency of said output circuit, whereat the voltage transfer function of said output circuit is substantially equal to a constant multiplied by the square root of the equivalent shunt resistance of said output circuit.

4,071,813
TEMPERATURE SENSOR

Robert C. Dobkin, Atherton, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sept. 23, 1974, Ser. No. 508,462
Int. Cl.² G01K 7/00
U.S. Cl. 323—8 8 Claims



8. A two-terminal temperature sensor, comprising

a pair of terminals,

a current source connected between said pair of terminals,

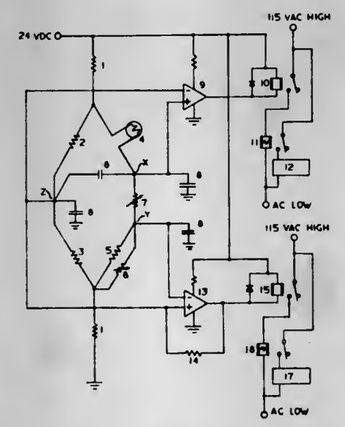
means connected between said terminals for sensing temperature and providing an output proportional to temperature, said means including a pair of transistors and a pair of resistors each connected in series with a respective one of said pair of transistors across said terminals, a differential amplifier having a pair of inputs each connected to the collector-emitter circuit of a respective one of said pair of transistors and providing said output proportional to temperature, a voltage divider connected across said terminals and having a pair of outputs each connected to the base of a respective one of said pair of transistors, and a current source connected to a collector-emitter

a third transistor having its collector and emitter connected to a respective one of said terminals and its base connected to the output of said sensing means, such that the voltage between said terminals is directly proportional to temperature.

4,071,814
DUAL-OUTPUT BRIDGE FOR BIDIRECTIONAL CONTROL

William Baker Voss, 387 N. Kenter Ave., Los Angeles, Calif. 90049

Filed July 6, 1976, Ser. No. 697,341
Int. Cl.² G01R 17/10
U.S. Cl. 323—75 B 5 Claims



1. A method of controlling two oppositely directed, on/off-type effectors (which are electrically powered controlling agents) by a five-arm bridge with two output signals, plus means for converting these signals into switched power for driving the effectors, one signal per effector, said method comprising in detail:

1. a D.C. bridge which has two input terminals, as for a Wheatstone bridge, and means to power same, but which has three instead of two output terminals, two of the said three output terminals being formed by the addition of a fifth arm to a normal Wheatstone bridge, said fifth arm lying between two of the series-connected arms which normally compose one side of a Wheatstone bridge, and said fifth arm being a variable resistor whose resistance is substantially smaller than the four remaining normal arms of the bridge, the two output terminals being thus formed by the said fifth arm generating two separate output signals, the return path for both signals being the third of the said three output terminals and lying on the side of the bridge opposite to the fifth arm, the voltages of the two signals differing slightly from each other but both varying together in response to a resistive sensor which composes one of the four normal arms of the bridge, the resistance of said sensor varying negatively (inversely) with the controllable parameter which it senses, the said two output signals of the bridge defining a deadband (passband), each boundary of which corresponds to a zero voltage of one of the said two signals;

2. two means for detecting zero-crossings of D. C. voltages and switching between dual output states in response, the inputs of said means being connected to said two output signals of the bridge on a one-to-one basis;

3. two means in cascade for amplifying the said dual output states, such amplifications being adequate for actuating appropriate effectors;

4. two oppositely directed on/off type effectors, one of which, when electrically actuated, operates at full power on the aforesaid parameter to decrease that parameter, and the other of which, when electrically actuated, operates at full power on the same parameter to increase that parameter, either resultant change in the said parameter affecting, in turn, the response of the aforesaid sensor to the parameter, the inputs of said effectors being connected on a one-for-one basis to the outputs of said amplifying means in cascade, all connections from the aforesaid bridge to the effectors being in such a manner that when the said parameters remains within the aforesaid deadband defined by the two outputs of the bridge neither effector is actuated but when the parameter, while drifting under external influence, crosses either aforesaid boundary of the deadband, that effector is selectively actuated which drives the parameter back into the deadband, thereby becoming deactuated again.

4,071,815
WELL LOGGING SYSTEM FOR MEASURING REMANENT MAGNETIC FIELDS IN THE EARTH

Joseph Zemanek, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 20, 1976, Ser. No. 724,431
Int. Cl.² G01V 3/18, 3/10, 3/00
U.S. Cl. 324—8 9 Claims

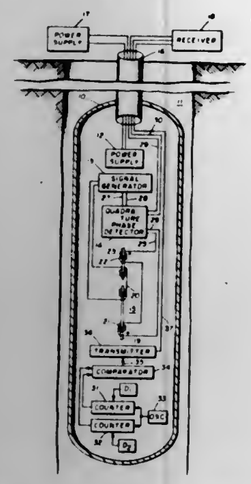
1. A method for determining paleomagnetic reversals between subsurface formations traversed by a borehole, comprising the steps of:

a. measuring the differential in the earth's total magnetic field at two spaced-apart positions within the borehole,

b. measuring the differential in the earth's magnetic susceptibility at each of said two spaced-apart positions within the borehole,

c. subtracting said differentials to provide a measurement of

the change in remanent magnetism between adjacent subsurface formations, and



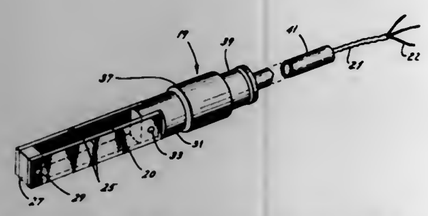
d. recording said change in remanent magnetism in correlation with depth to provide a record of the location of paleomagnetic reversals between subsurface formations.

4,071,816

MONITORING SUSPENSION STABILITY

Eugene P. Weisser, Verona, Pa.; G. Alan Osan, Marlton, N.J., and Edward P. Mailki, Lower Burrell, Pa., assignors to ARCO Polymers, Inc., Philadelphia, Pa.

Division of Ser. No. 630,484, Nov. 10, 1975, Pat. No. 4,007,319.
This application Sept. 24, 1976, Ser. No. 726,372
Int. Cl.² G01N *27/42*
U.S. Cl. 324—30 B **1 Claim**



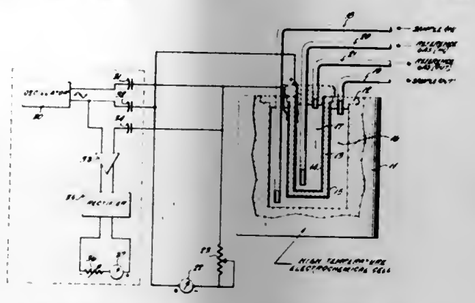
1. A electrical conductivity cell consisting of a first and second stainless steel electrode each having a highly polished flat, rectangular surface and said electrodes being rigidly spaced apart with said rectangular surfaces parallel to each other to form an interelectrode space through which a liquid to be measured containing soft and sticky polymer droplets may pass freely, without allowing polymer to build up on the surfaces of the electrodes, said spacing being kept rigidly uniform by a first non-electrically conducting spacer at the bottom of the electrodes and a second non-electrically conducting spacer at the top of the electrodes, said top spacer being fastened to a pipe coupling and through a reducing bushing to an exit pipe which is long enough to exit any reactor in which the cell is used while the cell plates are immersed into the liquid to be measured; each of said electrodes being connected inside the pipe coupling to an insulated wire; siad wires being carried outside of the reactor inside the exit pipe; and said connections and said pipe coupling being completely embedded by an epoxy resin capable of withstanding temperatures of at least 150° C at up to 150 psig pressure; said cell having no cell housing around the electrodes.

4,071,817

HIGH TEMPERATURE ELECTROCHEMICAL CELL TESTER

George R. Bahl, Springfield, Pa., assignor to Suntech, Inc., St. Davids, Pa.

Filed Mar. 8, 1976, Ser. No. 664,733
Int. Cl.² G01N *27/42*
U.S. Cl. 324—30 R **12 Claims**



1. In an electrochemical cell system having an electrolyte completely separating two chambers with an electrode located on each side of the electrolyte, and which indicates a relationship between the contents of one chamber and the contents of the other chamber by the potential difference created across the two electrodes when the cell is heated to a predetermined high temperature, and has a direct current measuring system for indicating this potential difference, an improvement for detecting the resistance of the combination of the electrodes and electrolyte without removing the electrodes and electrolyte from the electrochemical cell and without interfering with the continuous operation of the cell, said improvement comprising:

a. means for impressing an alternating current input signal across the electrodes; and

b. means, responsive to an output alternating current signal from the electrodes, for determining the magnitude of a parameter of the output alternating current, this magnitude being related to the resistance between the two electrodes, said resistance value indicating the quality of the electrodes and electrolyte.

4,071,818

MAGNETOSTRICTIVE POSITION INDICATOR

Raymond J. Krisst, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 3, 1975, Ser. No. 628,043
Int. Cl.² G01R *33/00*
U.S. Cl. 324—208 **15 Claims**

1. Apparatus for indicating the position of a movable member without establishing contact with such member comprising:

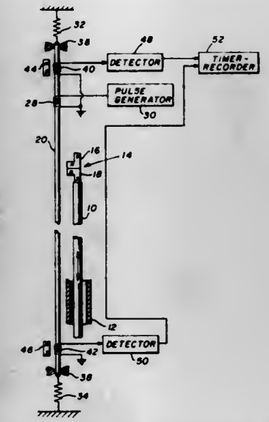
a magnetic field generator mounted on the movable member for movement therewith;

an elongated ferromagnetic member;

means mounting said ferromagnetic member adjacent to and spaced from the movable member, said ferromagnetic member extending parallel to the direction of movement of the movable member whereby the spacing between said field generator and said ferromagnetic member will remain substantially constant during movements of the movable member and the field emanating from said magnetic field generator will induce a localized region of discontinuity in the Young's modulus of elasticity of said ferromagnetic member;

means for inducing a sonic strain pulse in said ferromagnetic member, said sonic strain pulse inducing means being fixed in position with respect to both of said ferromagnetic and movable members, sonic strain pulses from said inducing means traveling along said ferromagnetic member and being at least partly reflected from said region of Young's modulus discontinuity;

first sonic strain pulse detector means fixedly mounted along said ferromagnetic member in proximity to said inducing means, said first detector means providing an output signal commensurate with the arrival at said first detector means of a sonic strain pulse reflected from the region of Young's modulus discontinuity in said ferromagnetic member; and



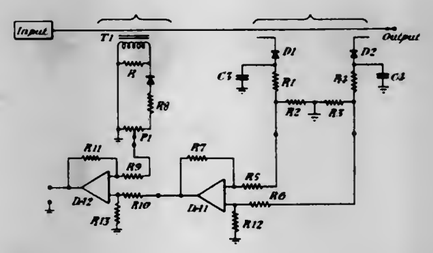
means connected to said first detector means and responsive to signals provided thereby for providing an output signal commensurate with the time required for a sonic strain pulse to travel along said ferromagnetic member from said sonic pulse inducing means to said region of Young's modulus discontinuity and for a reflected pulse to travel to said first detector means, said time being an indication of the position along said ferromagnetic member of said magnetic field generator.

4,071,819

DEVICE FOR SENSING THE REAL PART IN A COMPLEX IMPEDANCE

Charles M. De Santis, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1976, Ser. No. 737,830
Int. Cl.² G01R *27/04*
U.S. Cl. 324—58 B **7 Claims**



1. A device for connection in a transmission line between a high frequency power source and a load for measuring the quantitative value of the real part of a complex impedance of the load comprising:

through-line power measurment means comprising forward and reflected power sensors coupled to said transmission line and first dectector means connected to said sensors to derive two voltages proportional respectively to the forward and reflected power;

a first comparison means connected to said first detector means with said two voltages as inputs, and having an output representing the difference between the forward and reflected power;

separate through-line current sensing means including a standard resistor connected so that radio-frequency current proportional to the line current flows through it, second detector means connected thereto to derive a voltage proportional to the power dissipated in the standard resistor;

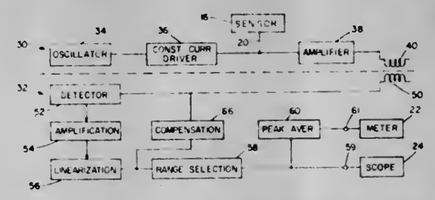
a second comparison means having one input from the second detector means and another input from the output of said first comparison means, so that when its output is a null the real part of the load impedance is equal to a predetermined value depending on the value of said stanard resistor.

4,071,820

MEASUREMENT SYSTEM

Albert J. Mushinsky, Framingham, Mass., assignor to Alton Corporation, Framingham, Mass.

Filed Apr. 5, 1976, Ser. No. 673,742
Int. Cl.² G01R *27/26*
U.S. Cl. 324—61 R **15 Claims**



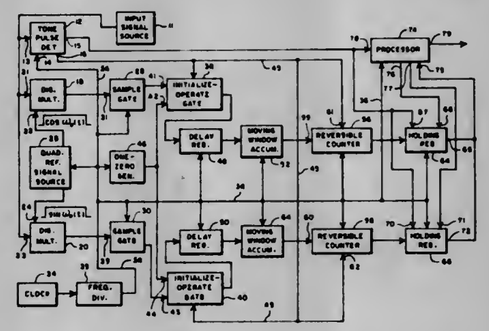
4. The system as claimed in claim 3 wherein said linearization stage includes a DC amplifier that has an input network and a feedback network, said input network including a plurality of resistance elements and a plurality of diodes connected in parallel with corresponding resistance elements and for switching resistance elements out of the input network as a function of the magnitude of said non-linear electrical signal output.

4,071,821

QUADRATURE CORRELATION PHASE DETERMINING APPARATUS

William P. Harthill, and James L. Roberts, both of Seattle, Wash., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 28, 1976, Ser. No. 681,103
Int. Cl.² G01R *25/00*
U.S. Cl. 324—83 R **14 Claims**



1. Phase determining apparatus for measuring the phase of a tone signal of known tone frequency relative to a reference signal of the same frequency, comprising in combination:

input means for supplying the tone signal;

clipping means for hard limiting the tone signal to produce a clipped signal having either of two instantaneous amplitudes;

a reference signal source for generating first and second square wave signals comprising quadrature components of a reference signal having a repetition rate equal to said tone frequency and either of two instantaneous amplitudes substantially equal to those of the clipped signal;

first and second digital multipliers for multiplying the clipped signal and each of the first and second square wave signals to produce first and second product signals respectively, each having a first value when the instantaneous amplitudes of its multiplicand signals are substantially equal and a second value when the instantaneous amplitudes of its multiplicand signals are different;

sampling means for sampling the first and second product signals at a predetermined sampling rate to provide first and second sample trains respectively;

a first shift register having an input terminal connected to receive the first sample train, an output terminal for subsequently supplying a first sample train, and a predetermined number of storage locations through which samples are shifted seriatim at said sampling rate between the input and output terminals;

a first reversible counter having a count control terminal connected to receive the first sample train from said first shift register, and an enabling terminal for receiving a signal to permit counting in response to samples received at the count control terminal, said first reversible counter being operable to count in one sense in response to samples having said first value and operable to count in the opposite sense in response to samples having said second value;

first enabling means operable to supply a signal to the enabling terminal of said first reversible counter only when the values of the samples at the input and output terminals of said first shift register are different, whereby said first reversible counter produces a first count indicative of the magnitude and sense of the difference in numbers of samples having first and second values in said first shift register;

a second shift register having an input terminal connected to receive the second sample train, an output terminal for subsequently supplying the second sample train, and a predetermined number of storage locations through which samples are shifted seriatim at said sampling rate between the input and output terminals;

a second reversible counter having a count control terminal connected to receive the second sample train from said second shift register, and an enabling terminal for receiving a signal to permit counting in response to samples received at the count control terminal, said second reversible counter means being operable to count in one sense in response to samples having said first value and operable to count in the opposite sense in response to samples having said second value;

second enabling means operable to supply a signal to the enabling terminal of said second reversible counter only when the values of the samples at the input and output terminals of said second shift register are different, whereby said second reversible counter produces a second count indicative of the magnitude and sense of the difference in numbers of samples having first and second values in said second shift register;

processing means for receiving counts indicative of the products of a clipped signal and each of quadrature components of a reference signal, and computing therefrom the phase angle between the clipped signal and the reference signal; and

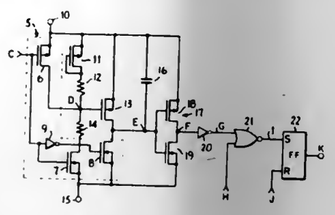
transfer means for transferring the first and second counts from said reversible counters to said computing means, whereby said computing means is operable to compute the phase angle of the tone signal relative to the reference signal.

4,071,822

DIGITAL VOLTAGE DETECTING CIRCUIT FOR A POWER SOURCE

Masaaki Kamiya, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Sept. 16, 1976, Ser. No. 723,947
Claims priority, application Japan, Sept. 16, 1975, 50-111823
Int. Cl.² G01R *19/00, 19/26*
U.S. Cl. 324—111 **6 Claims**



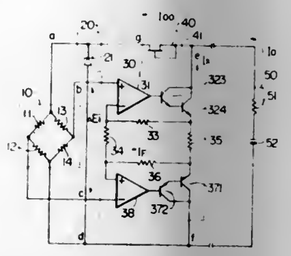
1. A voltage detecting circuit for indicating a decrease in the voltage of a power source from an initial voltage comprising means for converting the voltage of said power source into a corresponding time delay, means providing a reference time corresponding to said initial voltage, means for measuring said time delay and comparing it with said reference time and means for displaying said voltage decrease as a function of the difference between said time delay and said reference time, said converting means comprising a capacitor, means for connecting said capacitor to said power source to be charged thereby, means for discharging said capacitor at a rate dependent on the voltage of said power source, and means for detecting the discharge of said capacitor to a predetermined level, said delay time being the discharge time of said capacitor to said predetermined level after initiation of discharge by said discharging means.

4,071,823

TWO-WIRE TYPE AMPLIFIER

Tsutomu Okayama, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed June 30, 1976, Ser. No. 701,201
Claims priority, application Japan, July 4, 1975, 50-81800
Int. Cl.² G01R *1/30, 27/02*
U.S. Cl. 324—123 R **5 Claims**



1. A two-wire type amplifier comprising:

a measuring circuit, having two output signals, to measure quantities to be measured;

first and second differential amplifiers, each having first and second input terminals;

one of the output signals derived from said measuring circuit being coupled to the first input terminal of said first differential amplifier, with the other output signal being coupled to the first input terminal of said second differential amplifier;

first and second current control means being connected in series and controlled by said first and second differential amplifiers, respectively and

wherein said first and second current control means are connected in series via a common resistor and further comprising feedback means for feeding back the voltage across said common resistor to the respective second input terminals of said first and second differential amplifiers;

receiving means including a receiving resistor and a power source connected in series with said series-connected first and second current control means; and

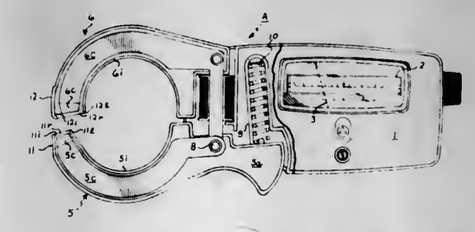
said first and second current control means controlling said power source current.

4,071,824

SHROUDED JAWS FOR HOOK-ON TYPE INSTRUMENTS

Warren N. Kernander, Boxford, and Carl F. Van Bennekom, Lynnfield, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,588
Int. Cl.² G01R *1/20;* H01F *17/06*
U.S. Cl. 324—127 **5 Claims**



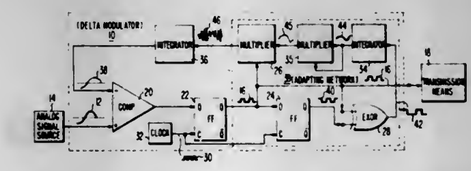
1. A pair of relatively movable, shrouded jaws operably mountable on a hook-on type measuring instrument, said jaws being formed to define a closed magnetically conductive loop for encircling an electrical conductor, mounting means for mounting the jaws in relatively movable relationship on an instrument housing to enable the jaws to be moved from an open, conductor-receiving position to a closed, conductor-encircling position, each of said jaws being substantially completely covered with insulating material except for a shrouded portion at the open end of each jaw, a first insulated, conductor shrouding means extending beyond the end of one of said jaws defining a first cup-shaped recess within which the uninsulated, shrouded portion of said one of said jaws is disposed, and a second insulated, conductor shrouding means extending beyond the end of the other jaw defining a second cup-shaped recess within which the uninsulated, shrouded portion of said other jaw is disposed, said first and second shrouding means being formed to cooperate in nesting relationship thereby to enable the shrouded ends of the jaws to be closed in low reluctance relationship against one another.

4,071,825

ADAPTIVE DELTA MODULATION SYSTEM

William George McGuffin, Willingboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 17, 1976, Ser. No. 687,143
Int. Cl.² H03K *13/22*
U.S. Cl. 325—38 B **16 Claims**



1. In a system of the type including a modulator and demodulator for communicating an analog input signal as a sequence of digital bits, the modulator comprising first means for generating a signal indicative of the difference between said analog input signal and a feedback signal: second means, responsive to said signal from said first means for generating a digital output signal at a predetermined bit rate, said digital output signal being indicative of the polarity of the signal from said first means during the time of occurrence of respective digital bits, said digital output signal being communicated to said demodulator: third means, responsive to said digital output signal, for generating an amplitude varied output signal indicative of said digital output signal, but having amplitude levels in accordance with a time derivative of said analog input signal: fourth means, responsive to said amplitude varied signal, for generating an analog signal indicative of said amplitude varied signal, said signal from said fourth means being applied as said feedback signal to said first means;

the improvement wherein said third means comprises:

fifth means, responsive to said digital output signal, for generating a signal indicative of the absolute value of the derivative of said analog input signal; and

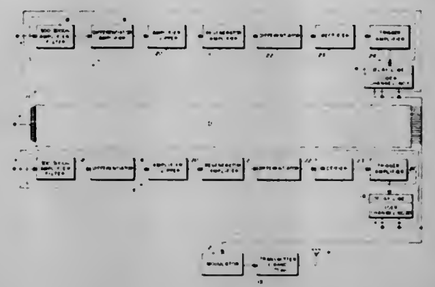
sixth means, responsive to the output of said fifth means and said digital signal, for generating a signal having an amplitude representative of the product of said digital output signal and the signal from said fifth means, said signal from said sixth means being applied to said fourth means.

4,071,826

CLIPPED SPEECH CHANNEL CODED COMMUNICATION SYSTEM

Ralph H. Miller, Jr.; William W. Dyer, both of La Mesa; John A. Waterbury, San Diego; Wayland A. Carlson, San Diego, and Richard O. Eastman, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1961, Ser. No. 106,413
Int. Cl.² H04B *1/00*
U.S. Cl. 325—39 **10 Claims**



1. A clipped speech channel coded communications system comprising at least one transmitter section and at least one receiver section; each transmitter section containing at least one speech code generating means comprising; input means for coupling a signal to said speech code generating means, first differentiator means operatively coupled to the input means for producing crossover points corresponding to the frequencies contained in said signal, clipper means operatively coupled to said first differentiator means for infinitely clipping said waveform, pulse generating means operatively coupled to the clipper means for producing pulses corresponding to the zero crossover points of the input signal, channel coding means operatively coupled to said pulse generating means for producing coded trains of pulses for each pulse received therein in the absence of synchroninzation pulses; and transmitter means operatively coupled to the outputs of said speech code generators for radiating said coded trains of pulses; and receiver section comprising; input means for receiving and detecting trains of pulses; channel decoder means operatively coupled to said input means comprising, delay means for retaining said

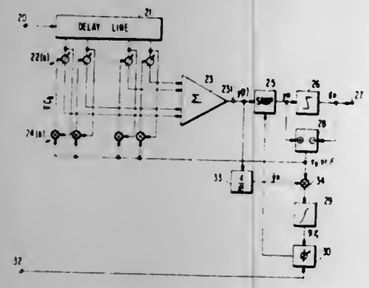
trains of pulses, a number of channel coincidence circuits corresponding to the number of channels operatively coupled to said delay means, each said coincidence circuit producing an output pulse therefrom when an appropriately coded train of pulses is coincident therein; and intelligence restoring means operatively coupled to each of said coincidence circuit means for producing a signal corresponding substantially to said original input signal.

4,071,827

TRANSVERSAL TYPE AUTOMATIC PHASE AND AMPLITUDE EQUALIZER

Shin'ichi Koike; Seijiro Hayashi, and Michio Takayama, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1976, Ser. No. 749,136
Claims priority, application Japan, Dec. 9, 1975, 50-147154
Int. Cl.² H04B *1/12*
U.S. Cl. 325—42 **6 Claims**



1. In a transversal type automatic equalizer for automatically equalizing an input multilevel signal, comprising tapped delay means for receiving said input multilevel signal and producing a plurality of delayed outputs, variable tap weighting means for weighting the delayed outputs appearing at the taps of said delay means, coupling means for algebraically summing the outputs of said tap weighting means, sampling means for sampling the output of said coupling means in response to a sampling control signal, identification means connected to receive the output of said sampling means for providing an identified signal as the output of said automatic equalizer, error means for comparing the input and output signals of said identification means to provide an error signal representative of the difference between said input and output signals, and first multiplication means for multiplying said delayed outputs by said error signal in order to provide said tap control signals to said variable tap weighting means; the improvement wherein said transversal type automatic equalizer further comprises:

differentiating means for differentiating the output of said coupling means;

second multiplication means for receiving said error signal and the output of said differentiating means, said multiplication means having an output signal corresponding to the product of said received signals;

integrating means for integrating the output of said second multiplication means; and

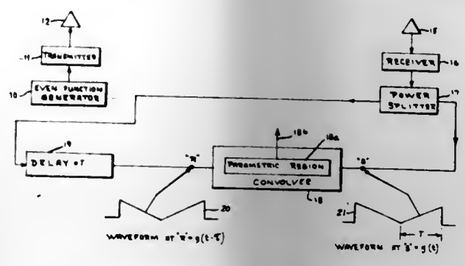
control means for providing said sampling control signal to said sampling means in response to the output of said integrating means.

4,071,828

SELF SYNCHRONIZING CONVOLVER SYSTEM

Morton Setrin, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 18, 1976, Ser. No. 687,581
Int. Cl.² H04B *15/00*
U.S. Cl. 325—65 **1 Claim**



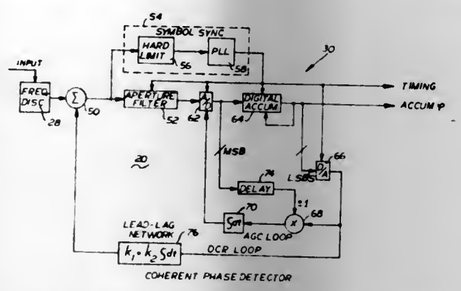
1. A self synchronizing convolver system comprised of a transmitter, a first antenna associated with said transmitter for transmission of radiant energy therefrom, an even function generator providing a modulating signal to said transmitter, a receiver, a second antenna assoicated with said receiver, said second antenna rceiving resultant radiant energy from the transmission, means to power split the output signal from said receiver into first and second portions, a convolver having first and second inputs and a parametric region, delay means having a preselected delay equal to one-half modulating signal length T, said first portion passing through said delay means to said first input of said convolver and said second portion being fed directly to said second input of said convolver, with the output signal being provided by way of said parametric region.

4,071,829

COHERENT PHASE DETECTOR USING A FREQUENCY DISCRIMINATOR

Robert Curtis Davis, Melbourne Beach, and Daniel Dix McRae, W. Melbourne, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Nov. 9, 1976, Ser. No. 740,365
Int. Cl.² H03D *3/02*; H04L *27/14*
U.S. Cl. 329—122 **7 Claims**



1. Apparatus for use in a system for demodulating a frequency encoded signal comprising:

frequency discriminator means responsive to said frequency encoded signal for providing a baseband signal corresponding to the derivative of the phase of said encoded signal; and,

baseband processing means responsive to said baseband signal for providing an error compensated baseband signal, said baseband processing means comprising

means for providing a timing signal related to the timing of said frequency encoded signal,

means for integrating said baseband signal over a discrete timing interval to provide a phase shift signal representing the amount by which the phase of said frequency encoded signal has shifted over said interval,

means for quantizing said phase shift signal into integral and fractional parts, and

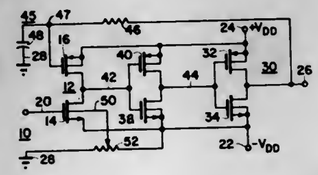
means responsive to said fractional part of said quantized phase shift signal for providing error compensation for said baseband signal whereby said baseband processing means provides an error compensated baseband signal to the remainder of said system for demodulating said frequency encoded signal.

4,071,830

COMPLEMENTARY FIELD EFFECT TRANSISTOR LINEAR AMPLIFIER

Robert Charles Huntington, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed July 3, 1975, Ser. No. 593,073
Int. Cl.² H03F *3/16*
U.S. Cl. 330—277 **7 Claims**



1. A complementary field effect transistor amplifier including an output circuit and an input circuit having a field effect transistor load device and a field effect transistor input device coupled in series comprising feedback circuit means coupled between said output stage and a gate electrode of said field effect transistor load device for biasing said field effect transistor load device to cause a controlled output voltage to be produced by said output circuit, wherein said feedback circuit means includes a low pass filter which acts to feedback an output signal produced at an output of said output stage to said field effect transistor load device for preventing incremental excursions of said output signal from substantially affecting the current produced by said field effect transistor load device.

4,071,831

AMPLIFYING CHARACTERISTICS OF A CAVITY-ENCLOSED NONLINEAR MEDIUM

Hyatt McDonald Gibbs, Warren; Samuel Leverte McCall, Jr., Gillette, and Thirumalai Nallan Chakravarthy Venkatesan, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 563,122, March 28, 1975, Pat. No. 4,012,699. This application Aug. 3, 1976, Ser. No. 711,421
Int. Cl.² H01S *3/10*; G02F *1/28*
U.S. Cl. 330—4.3 **24 Claims**



1. A method of amplifying variations in an optical signal of a given wavelength comprising

introducing light of the given wavelength into a cavity formed by at least two surfaces that reflect light of the given wavelength, and which surfaces are separated at least in part by a positive-temperature nonlinear medium fixing the cavity and medium characteristics such that the absorptive properties of the medium dominate its dispersive properties and such that there is a single valued relationship between the intensities of the incident and transmitted signals which exhibits gain, and

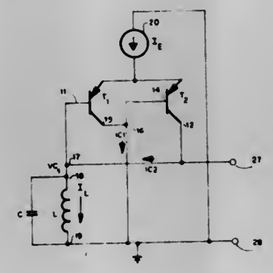
extracting the amplified signal from said cavity.

4,071,832

CURRENT CONTROLLED OSCILLATOR

Robert L. Cloke, Santa Clara, Calif., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 14, 1976, Ser. No. 695,828
Int. Cl.² H03B *5/12*
U.S. Cl. 331—117 R **2 Claims**



1. A transistor oscillator comprising, in combination:

first and second transistors;

a current source connected to supply current to each transistor emitter;

a first circuit including a short circuit conductor connected between the base of said first transistor and the collector of said second transistor;

a second circuit including a short circuit conductor connected between the base of said second transistor and the collector of said first transistor;

a resonance circuit connecting said first and second circuits;

a current return path from one said circuit to the current supply whereby oscillatory signals will be generated in the circuits;

means to regulate the current flow from the source through the transistors to provide current at levels exceeding the saturation of the transistors to vary the frequency range of the oscillator signals; and

means to detect the frequency of oscillation across the resonance circuit.

4,071,833

APPARATUS FOR COUPLING COAXIAL TRANSMISSION LINE TO RECTANGULAR WAVEGUIDE

Harry J. Gould, Cupertino, Calif., assignor to Ford Motor Company, Dearborn, Mich.

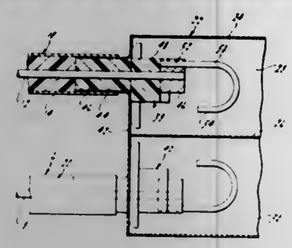
Filed Oct. 15, 1976, Ser. No. 732,688
Int. Cl.² H01P *5/08*
U.S. Cl. 333—33 **6 Claims**

1. In combination with a coaxial transmission line, having an outer conductor and a center conductor, and a rectangular waveguide, having a first axis parallel to the narrow sides of said waveguide and a second axis parallel to the wide sides of said waveguide, said first and second axes being mutually perpendicular and perpendicular to the direction of propagation of microwave energy through said waveguide, an improved apparatus for coupling microwave energy from said coaxial transmission line to said waveguide and vice versa, said improved apparatus comprising:

a. a cover on one end of said waveguide, said cover including a conductive material and having an opening for receiving said center conductor of said coaxial transmission line and having means for conductively connecting said

outer conductor of said coaxial transmission line to said conductive material of said cover;

b. a conductive mass positioned within said waveguide, said conductive mass being spaced from the walls of said waveguide and from said cover, said center conductor of said coaxial transmission line being in electrically conductive relation with said conductive mass; and



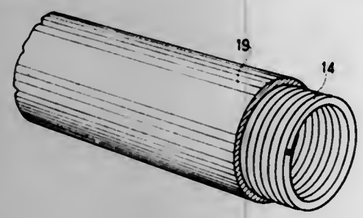
c. a hook-shaped conductive element having first and second ends, said first end being in electrically conductive relation with said conductive mass, said second end terminating within said waveguide at a location spaced from the walls thereof and at a location spaced from said cover, said hook-shaped conductive element having a curvature between its first and second ends that is in a plane that is parallel with said first axis of said waveguide.

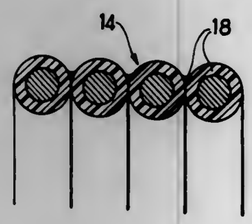
4,071,834

HELICAL WAVE GUIDE

Georges Comte, St. Leu la Foret, France, assignor to Les Cables de Lyon S.A., Lyon Cedex, France

Filed June 7, 1976, Ser. No. 693,928
Claims priority, application France, June 12, 1975, 75 18402
Int. Cl.² H01P *3/13*
U.S. Cl. 333—95 R **1 Claim**





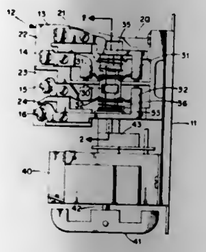
1. A helical wave-guide having a conductor wound in a helix, and an electrically conductive screen surrounding said conductor comprising: a wire coated with a thermoplastic insulator, adjacent turns of the helix being welded together by surface melting of the thermoplastic insulator, the insulation between adjacent turns degenerating predetermined modes and reducing electromagnetic transmission losses, said surface melting of the thermoplastic insulator providing mechanical bonding and electrical insulation, said thermoplastic insulator including a substantially thin layer of polar material of the grafted polyethylene type coated on the electrically conductive wire having a thermoplastic insulating coating selected from the group of polyolefines consisting of polyethylene, Teflon or polypropylene, said electrically conductive screen being formed by a metallic tube coated at its ends on its inside wall with a substantially thin layer of a heat sealing material for ensuring fixing of the helix inside the screen.

4,071,835

RELAY CONTACT CARRIER COATED WITH AN ANTISTATIC MATERIAL

Roland Russo, Chagrin Falls, and Richard Schneider, Mayfield Heights, both of Ohio, assignors to Clark Control, Inc., Cleveland, Ohio

Filed Mar. 26, 1976, Ser. No. 670,837
Int. Cl.² H01H *63/02*
U.S. Cl. 335—133 **5 Claims**



1. An electrical circuit making and breaking device including in combination

a supporting member;

a fixed contact mounted in said supporting member;

a movable contact;

a contact carrier of insulating material having the movable contact mounted thereon, said contact carrier being mounted in said supporting member for movement therein between a first position at which said contacts are open and a second position at which said contacts are closed;

an operating mechanism coupled to said contact carrier for moving said contact carrier within said supporting member between said first and second positions to selectively open and close said contacts; and

a coating of an antistatic material on the surface of said contact carrier whereby a charge of static electricity does not build up on the contact carrier or the movable contact.

4,071,836

CURRENT LIMITING CIRCUIT BREAKER

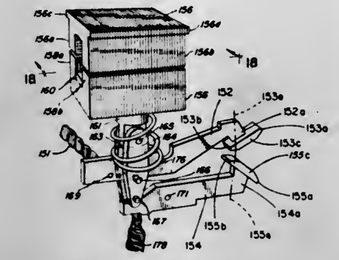
James W. Cook; Joseph M. Khalid, and Clark L. Oster, all of Cedar Rapids, Iowa, assignors to Square D Company, Park Ridge, Ill.

Filed Sept. 7, 1976, Ser. No. 721,012
Int. Cl.² H01H *77/10*
U.S. Cl. 335—195 **3 Claims**

1. For use in a circuit breaker of the type including means responsive to a fault current of one magnitude for separating a first pair of main circuit breaker contacts serially connected to a second pair of contacts with each contact of said second pair carried adjacent one end of a respective contact blade pivotable about a respective pivot axis for pivoting the one end of each contact blade from the one end of the other contact blade to separate said second pair of contacts and create an arc between said second pair of contacts movable from said pivot axis in response to a fault current of greater magnitude than said one magnitude, the improvement comprising:

a first face on each contact of said second pair extending past the opposite side margins of the respective contact blade and spaced intermediate the one end of the respective contact blade and the respective blade pivot axis for engagement with the first face of the other contact of the second pair to extend a circuit through each blade from said first pair of contacts,

and a second planar face on each contact spaced a greater distance from the respective pivot axis than said first face and extending past the opposite side margins and the one



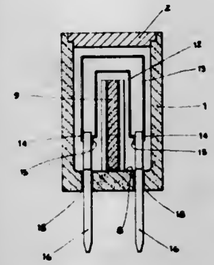
end of the respective blade in a direction transverse to a respective first face and in a direction from the second face on the other contact of said second pair to form an arc path diverging in a direction from said pivot axis between the second faces of said contacts of said second pair in response to the separation of said second pair of contacts.

4,071,837

FUSE CARTRIDGE

Pierluigi Ranzanigo, Brescia, Italy, assignor to Bassani Ticino S.p.A., Milan, Italy

Continuation of Ser. No. 596,082, July 15, 1975, abandoned.
This application Dec. 6, 1976, Ser. No. 747,538
Claims priority, application Italy, July 26, 1974, 25598/74
Int. Cl.² H01H *85/16*
U.S. Cl. 337—268 **4 Claims**



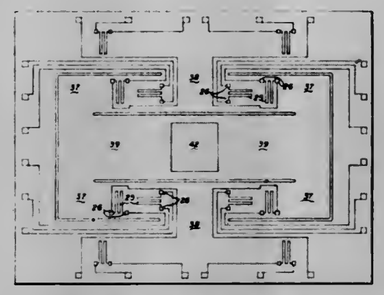
1. Fuse cartridge, comprising a hollow casing of insulated material having an internal chamber filled with quartz sand and being of a parallelpiped form having two transverse walls and two pairs of longitudinal walls normal to said transverse walls, a first of said transverse walls being integral with and a second of said transverse walls being removable from said casing, and one of said transverse wall being provided with holes; electrically conducting pins each having one end extending through a respective one of said holes into said chamber; a partition wall located in said chamber and extending substantially along a longitudinal plane of symmetry of said first pair of said longitudinal walls; and at least two flat fuse strips located in said chamber and each having two opposite ends each electrically connected to said one end of a respective one of said pins, said fuse strips being U-shaped and each further having two portions substantially parallel to said second pair of said longitudinal walls and connected to each other by means of a third portion extending adjacent to said second transverse wall and substantially parallel thereto, said fuse strips being located substantially parallel to one another so that one of said fuse strips is inwardly spaced from and outwardly embraced by the other fuse strip, each of said two portions of said one of said fuse strips being spaced from said partition wall, and each of said two portions of said other fuse strip being spaced from each of said second pair of said longitudinal walls at a constant distance.

4,071,838

SOLID STATE FORCE TRANSDUCER AND METHOD OF MAKING SAME

Barry Block, Los Altos Hills, Calif., assignor to Diax Corporation, Los Altos Hills, Calif.

Filed Feb. 9, 1976, Ser. No. 656,632
Int. Cl.² H01L *10/10*
U.S. Cl. 338—47 **37 Claims**



1. In a method for fabricating a solid state force transducer of the type including a leaf spring structure having a plurality of leg portions angularly separated about an axis of maximum compliance and supported so that said leg portions of the leaf spring structure are physically displaced relative to the support structure in response to the application of a force to said leaf spring structure, and including an output sensor means responsive to the displacement of at least one of said leg portions for deriving an output which is a function of the force applied to the transducer, the step of:

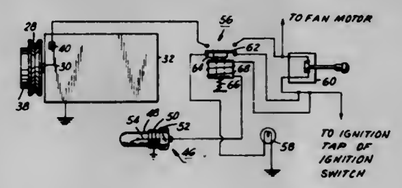
forming said leaf spring structure of a monocrystalline material.

4,071,839

MOTOR VEHICLE AIR CONDITIONER CONTROL AND WARNING SYSTEM

Jesse R. Hollins, 40 Stoner Ave., Great Neck, N.Y. 11021

Filed May 27, 1976, Ser. No. 690,679
Int. Cl.² F01P *5/14*
U.S. Cl. 340—53 **7 Claims**



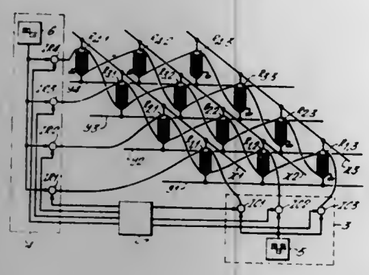
1. A motor vehicle air conditioner control and warning system comprising a liquid cooled internal combustion engine, an ignition switch for turning on and shutting off said engine, said liquid cooled internal combustion engine including a cooling system in which a liquid medium is used to cool the internal combustion engine, a motor vehicle air conditioning system, said motor vehicle air conditioning system including a compressor, a manually operated control switch and an electrically operated clutch for driving said compressor, a two-position electrical switch, said electric clutch of the compressor being

series connected to a first contact of said two-position switch, and a second contact of said two-position switch being connected in circuit to an electric warning light bulb, a thermal sensing means connected to said two-position electrical switch, said thermal sensing means being a heat sensitive switch having a housing, said housing being immersed in said liquid medium, said heat sensitive switch having two states, said heat sensitive switch being normally open in the first state when the temperature of said liquid medium is below a predetermined heat range and in the second state the heat sensitive switch is closed when the temperature of said liquid medium is above a predetermined heat range, said heat sensitive switch when in said first state causing said two-position electrical switch to be in a first position thereby allowing electric current to flow from a battery, through the "on" position of the "on" position of said ignition switch and said manually operated control switch of the air conditioning system to said electrically operated clutch, so that said compressor is driven, the electric circuit to said light bulb being open when said two-position electrical switch is in the first position, said heat sensitive switch when in said second state causing said two-position electrical switch to be in a second position thereby preventing electric current from flowing to said electric clutch of the compressor, but allowing electric current to flow through said light bulb, so that said electric warning light bulb is lit to indicate that said liquid medium in the engine cooling system is overheating.

4,071,840
SWITCHING DEVICE FOR REED RELAYS IN A MATRIX

Emanuel Marie Augustin Jammes, and Jean-Louis Marie Henri Bordier, both of Boulogne, France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 12, 1976, Ser. No. 648,433
Int. Cl.[2] H04Q 9/00
U.S. Cl. 340—166.5 5 Claims

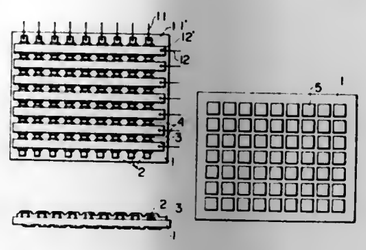


1. A switching matrix comprised of a plurality of crosspoints at the intersection of columns and rows conductors, each of said crosspoints comprising a magnetically latched reed relay having a columns conductor coil and a row conductor coil, each of said relays being switchable to an operated condition with its coils energized to add the strengths of the respective coil fields, and to the release condition with its coils energized subtractively and the coil of greater strength energized in a relay demagnetizing direction, a sequential pulse generator for each said columns conductor and a sequential pulse generator for each said rows conductor, means for selecting one of said columns generators and one of said rows generators to energize one or more coils of the selected relay at the intersection of the selected column and row, said generators operative through a relay release cycle of emitting pulses to energize the selected relay coils subtractively and for reversing the direction of the pulses of current flow in both coils to cause said coils to be energized subtractively once again.

4,071,841
DIELECTRIC MATRIX DEVICE

Akio Kumada, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 21, 1975, Ser. No. 624,338
Claims priority, application Japan, Oct. 21, 1974, 49-120387
Int. Cl.[2] G11C 11/22, 11/42
U.S. Cl. 365—65 27 Claims

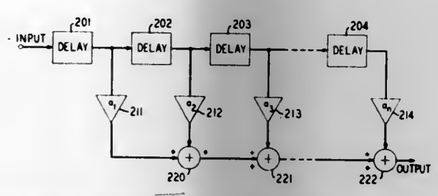


1. A dielectric matrix device comprising:
a. a dielectric material plate,
b. vertical and horizontal electrodes disposed on the same surface of said dielectric plate, said vertical and horizontal electrodes crossing each other at insulated portions thereof, and
c. a plurality of independent electrodes disposed on the opposite surface of said dielectric plate at portions which correspond to both the areas of crossing of the vertical and horizontal electrodes and areas adjacent to said areas of crossing.

4,071,842
APPARATUS FOR ANALOG TO DIGITAL CONVERSION

Stuart Keene Tewksbury, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 608,524, Aug. 28, 1975. This application Jan. 3, 1977, Ser. No. 756,399
Int. Cl.[2] H03K 13/22
U.S. Cl. 340—347 AD 3 Claims



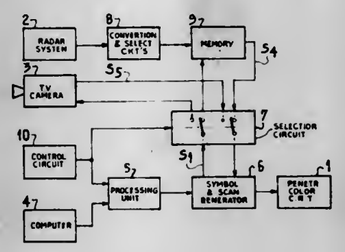
1. An error feedback pulse code modulation encoder for converting an analog input signal to a digital output signal representative thereof, comprising
a first differencing circuit for combining said input signal and an error feedback signal to generate a composite signal,
quantizing means responsive to said first differencing circuit fof generating said digital output signal by sampling said composite signal and converting said samples to digital form,
a second differencing circuit for combining said composite signal and said digital output signal to generate a quantizing error signal, and
means for generating said error feedback signal from said quantizing error signal including
1. a delay line having stages 1 through n for receiving said quantizing error signal, each of said stages having an output tap,
2. n attenuators having attenuation coefficients a_1 through a_n connected to respective ones of said output taps, and
3. means for algebraically summing the outputs of said attenuators to form said error feedback signal,
wherein said attenuation coefficients are selected in accordance with the relationship

$$a_i = \frac{(-1)^{i+1} n!}{(n-i)!\, i!}, \quad i = 1,2 \ldots n.$$

4,071,843
VIDEO COLOR DISPLAY SYSTEM

Jacques Marien, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 3, 1975, Ser. No. 637,148
Claims priority, application France, Dec. 27, 1974, 74 43149
Int. Cl.[2] G01S 7/06, 7/20, 7/22
U.S. Cl. 343—5 CD 6 Claims

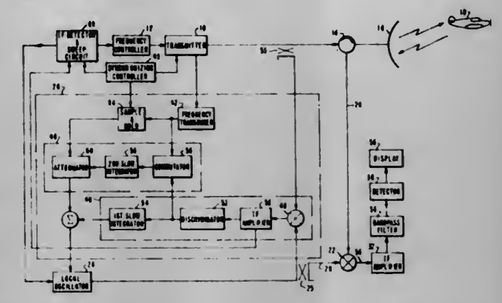


1. A video color display system for displaying on a color cathode-ray tube, a first image provided from raw video conjointly with a second image called synthetic image made of symbols representative of specific data, said system comprising
ancillary radar means for providing said raw video representative of a radar map and processing means for converting the said raw video into X and Y radar video numerical signals with a view to a line-by-line scan and for selecting these signals as a function of predetermined selection parameters;
display means comprising said color cathode-ray tube which is of the penetration type, and a very high voltage supply of the switchable type for supplying a very high voltage to said tube;
memory means for storing separately said selected video signals and comprising k layers each having a capacity of $n_1 \times n_2$ bits to produce a radar image constituting said first image having n_1 lines with n_2 dots per line in the course of a frame scan and to code the said radar signals on k bits for each dot, the said processing means providing at most 2^k separate allotments as a function of the said selection parameters;
vector and alphanumeric symbol generating means for providing symbol video signals with a view to a random scan;
scan generating means for providing the said respective random and line-by-line scans successively; and
shade selection means comprising control means for controlling said very high voltage supply for providing a predetermined color display for the said synthetic image and for displaying the said X and Y video signals in a plurality of separate shades in at least one color, the said shades corresponding respectively to separate store allotments in said memory.

4,071,844
FREQUENCY CONTROL FOR FREQUENCY AGILE PULSE RADAR

Francis W. Hopwood, Severna Park; Lester K. Staley, Towson, and Henry D. Tolj, Lutherville, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 16, 1976, Ser. No. 677,647
Int. Cl.[2] G01S 9/02, 7/28
U.S. Cl. 343—17.2 R 8 Claims

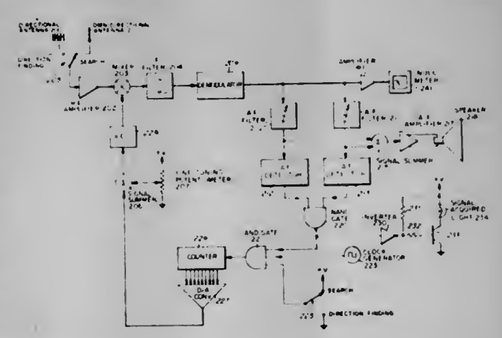


8. A method for frequency modulating an oscillator of a radar set in response to the frequency modulation of the radar transmitter, said method comprising:
transmitting a frequency modulated signal from the transmitter;
mixing the transmitter signal and the oscillator signal to provide an intermediate frequency signal;
controlling the average frequency of the oscillator signal in response to the average frequency of said intermediate frequency signal; and
determining the average value of the commutation of the intermediate frequency signal with respect to the frequency modulation of said transmitter;
modulating the average frequency of said oscillator in response to the frequency modulation of said transmitter and in response to the average value of the commutated intermediate frequency signal.

4,071,845
HARBOR RADIO NAVIGATION SYSTEM

Fritz A. Gross, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

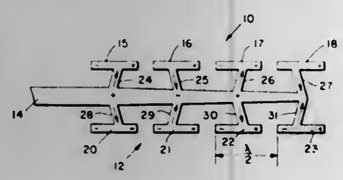
Filed Mar. 31, 1975, Ser. No. 563,873
Int. Cl.[2] G01S 5/02
U.S. Cl. 343—113 R 10 Claims



1. A receiver for use in a radio navigation system comprising in combination:
antenna means;
means for mixing signals received by said antenna means with a local oscillator signal;

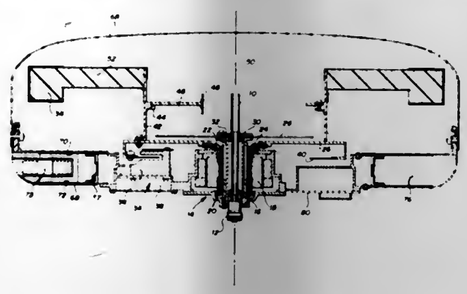
a voltage controlled oscillator for producing said local oscillator signal;
means for demodulating output signals from said mixing means;
means for simultaneously detecting the presence of a plurality of modulation components in received signals at an output of said demodulating means, each of said modulation components being of a different frequency;
a source of clock pulses;
means for gating said clock pulses ON when the presence of said received signals has not been detected and OFF when the presence of said received signals has been detected;
means for producing a cyclical binary count in response to the gated clock pulses;
means for converting the count output of said binary counter to an analog signal, said analog signal forming a control voltage input to said voltage controlled oscillator;
means for indicating the presence of said received signals; and
means for determining the direction to the source of said received signals;
said indicating means and said direction determining means operating independently of the phase of said received signals.

4,071,846
WIRED MICROSTRIP LINEAR ARRAY OF DIPOLES
Henry G. Oltman, Jr., Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 14, 1976, Ser. No. 695,359
Int. Cl.² H01Q 9/38
U.S. Cl. 343—700 MS **8 Claims**



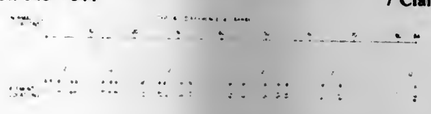
3. A wired microstrip array of dipole elements for radiating a signal of a predetermined frequency, said array of dipole elements comprising a dielectric circuit board having a top side and an underside; a conductive ground plane disposed over said underside of said circuit board; a main microstrip line adapted to propagate said signal of said predetermined frequency therealong disposed on the top side of said circuit board; first and second pluralities of microstrip dipole elements disposed at intervals along first and second parallel lines on opposite sides of said main microstrip dipole elements having a center; a first set of tributary microstrip lines of equal electrical length connected at one wavelength intervals along said main microstrip line to successive alternate ones of said first and second pluralities of said microstrip dipole elements at points offset in a consistent direction from the respective centers thereof; and a second set of tributary microwave lines of said equal electrical length connected along said main microstrip line midway between each line of said first set thereof to successive remaining ones of said first and second pluralities of microstrip dipole elements at points offset in a direction opposite to said consistent direction from the respective centers thereof.

4,071,847
RADIO NAVIGATION ANTENNA SYSTEM
Sidney Pickles, Colusa, Calif., assignor to E-Systems, Inc., Dallas, Tex.
Filed Mar. 10, 1976, Ser. No. 665,619
Int. Cl.² H01Q 3/12
U.S. Cl. 343—761 **16 Claims**



1. An antenna system for radiating energy above the horizon and energized from a radio frequency source, comprising in combination:
a central radiator coupled to the radio frequency source,
a first plurality of spaced, reflector elements radially positioned from said central radiator,
a second plurality of spaced, reflector elements positioned between said central radiator and said first plurality of reflector elements,
a first counterpoise system disposed around said central radiator for upwardly reflecting radiation from said central radiator, and
a second counterpoise system axially displaced from said first counterpoise system for providing added uplift to radiated signals and decreasing the total energy radiated below the horizon, said second counterpoise system comprising
an upper reflecting surface, and
a lower reflecting surface mounted parallel to and electrically interconnected with said upper reflecting surface.

4,071,848
THINNED APERIODIC ANTENNA ARRAYS WITH IMPROVED PEAK SIDELOBE LEVEL CONTROL
David Garth Leeper, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 26, 1976, Ser. No. 745,231
Int. Cl.² H01Q 21/00; H04B 7/00
U.S. Cl. 343—844 **7 Claims**

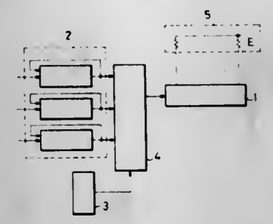


1. A thinned aperiodic antenna array with improved peak sidelobe level control comprising:
a plurality of antenna elements disposed in a linear array at locations having spacings which are both integer multiples of a predetermined distance and members of a set of integers $D = \{d_1, d_2, \ldots, d_k\}$, said set of integers D being determined in accordance with the equation for difference sets as given by

$$d_i - d_j = \alpha \text{ (modulo } v\text{)},$$

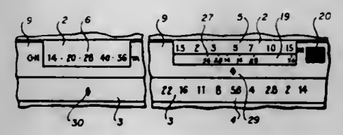
where v is an integer and is greater than k and for an integer $0<\alpha<(v-1)$ said equation has exactly Λ solution pairs in said set of integers D and Λ is an integer and is less than k.

4,071,849
SYSTEM FOR PRINTING IMAGES HAVING A HALF TONE
Hitoshi Koyano; Nobuo Sugaya, and Michio Shiraogawa, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1976, Ser. No. 677,964
Claims priority, application Japan, Apr. 22, 1975, 50-48126
Int. Cl.² G01D 15/10
U.S. Cl. 346—1 **7 Claims**



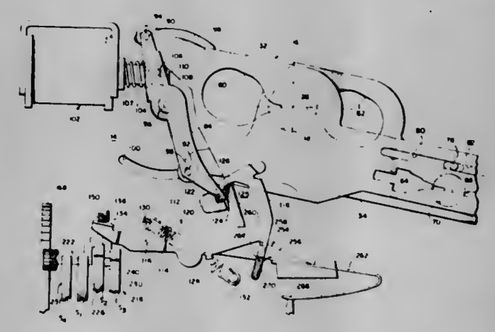
1. A method for printing images on a line by line basis, said images on each line having a plurality of gradation levels, characterized in that input image information representing the gradation levels of each picture element on a line in binary expression is memorized in a buffer memory; that information on drive time corresponding to each picture element information on said line is obtained through a selection gate circuit from an output of said buffer memory and an output of a circuit controlling the drive time of picture element reproduction elements arranged along said line and having a drive time T for producing the images on said line; that the output drive information of said selection gate circuit is memorized in memory elements corresponding one by one to said picture element reproduction elements; that those picture element reproduction elements whose memory elements memorized drive information indicating an ON drive condition are substantially simultaneously driven by their respective memory elements; whereby printed images having a plurality of gradation levels are reproduced on said line by time sharing control of the drive time of said picture element reproduction elements.

4,071,850
CAMERA LENS BARREL SUITABLE FOR FLASH PHOTOGRAPHY
Zenichi Okura, Ichikawa, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 24, 1975, Ser. No. 571,254
Claims priority, application Japan, May 9, 1974, 49-50720
Int. Cl.² G03B 3/00
U.S. Cl. 354—196 **6 Claims**



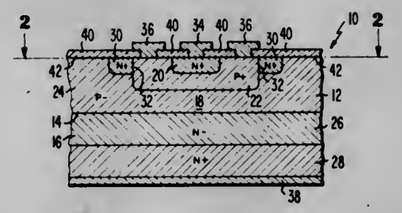
1. In a camera lens barrel suitable for use in flash photography wherein: (a) flash guide numbers are marked either on a distance adjusting ring or a diaphragm value adjusting ring; (b) the distance adjusting ring and the diaphragm value adjusting ring are formed such that the rotation angle of the distance adjusting ring required for increasing the distance gradation value by the $\sqrt{2}$ during flash photography is equal to the rotation angle of the diaphragm value adjusting ring at that time; and, (c) a clutch member including an actuation member is included and formed such that, during flash photography, the clutch member is capable of connecting the distance adjusting ring to the diaphragm value adjusting ring at a relative angular position corresponding to a flash guide number, the improvement comprising depth of field indicating means carried by said actuation member for indicating a depth of field related to the flash guide number corresponding to the relative angular position between the distance adjusting ring and the diaphragm value adjusting ring.

4,071,851
METHOD OF ADJUSTING CAMERA WITH LATCHED SHUTTER BLADE MECHANISM FOR SHIPMENT
Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 17, 1976, Ser. No. 697,058
Int. Cl.² G03B 19/02, 9/08
U.S. Cl. 354—354 **7 Claims**



7. The method of claim 4 wherein the operation of said camera drive means is effected by a motor stationed outside said camera in driving engagement with said camera drive means, the position of said shutter button is monitored by way of a microswitch stationed adjacent the shutter button in a manner whereby the microswitch changes from one select state to another select state in response to shutter button movement from said select position and thereafter changes from said other select state to said one select state in response to shutter button movement back to said select position, and the termination of the operation of the drive means is effected by means of a control circuit which operates to deenergize the motor in response to said microswitch changing from said other select state to said one select state after which the motor is disengaged from driving engagement with the drive means.

4,071,852
TRANSISTOR HAVING IMPROVED JUNCTION BREAKDOWN PROTECTION INTEGRATED THEREIN
Peter Joseph Kannam, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 593,017, July 3, 1975, abandoned. This application Jan. 10, 1977, Ser. No. 758,185
Int. Cl.² H01L 29/90
U.S. Cl. 357—13 **3 Claims**



1. An improved semiconductor device of the type having a collector region of one type conductivity and a base region of

a second type conductivity forming a base-collector PN junction therewith, said base region comprising a first portion having a comparatively low average resistivity and a second portion having a comparatively high average resistivity, an emitter region of said one type conductivity within said first portion, and a doped protective region of said one type conductivity adjacent said base region and forming a second PN junction therewith, said protective region being spaced apart from said collector region, wherein the improvement comprises:

said doped protective region substantially surrounding said first portion and being unconnected directly to any electrode of said device so that it 'floats' with respect to voltage potentials applied across said device; and

a base electrode contacting said first portion of said base region.

4,071,853

SOLID STATE TELEVISION CAMERA

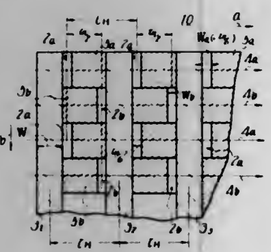
Seisuke Yamanaka, Mitaka, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 25, 1975, Ser. No. 561,922

Claims priority, application Japan, Mar. 29, 1974, 49-35281; July 22, 1974, 49-83900

Int. Cl.² H04N 9/04

U.S. Cl. 358—41 **10 Claims**



1. A solid state camera comprising: A solid state image sensor having a plurality of picture elements arranged in both vertical and horizontal directions, the sensing position of said picture elements in each horizontal line of successive scanning being spaced from the sensing position of picture elements in adjacent horizontal lines of successive scanning by $\tau H/^2$, where τ H is an alignment pitch of said picture elements in the horizontal direction, means for projecting an image on said solid state image sensor, means coupled to the picture elements for reading out the light information stored therein, and means for processing the output from said reading means to produce a resultant video signal.

4,071,854

DEVICE FOR THE STABILIZATION OF FLEXIBLE DISCS AND MORE PARTICULARLY OF VIDEODISCS AND READING APPARATUS ADAPTED TO THIS DEVICE

Paul Bijon; Bernard Fichot, and Lucien Lainez, all of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed May 25, 1976, Ser. No. 689,821

Claims priority, application France, May 30, 1975, 75 16999

Int. Cl.² H04N 5/76; G11B 21/20

U.S. Cl. 358—128 **8 Claims**

1. An apparatus for reproducing information recorded on an annular band of a flexible video disc, comprising:

means for driving said disc at a high velocity about an axis of rotation;

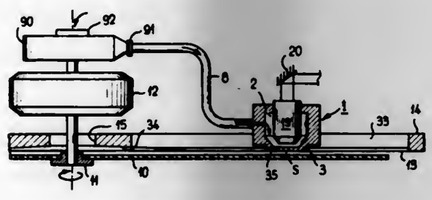
means for mounting said disc on said driving means;

a transducer head for electro-optically reproducing said recorded information having means for optically focussing a beam of coherent light and mounted for displacement along a line perpendicular to said axis of rotation from one end to another of said annular disc band; and

means for accurately positioning a portion of said disc facing said transducer head in relation to said focussing means, said positioning means including:

a fixed plate having a substantially flat lower face extending perpendicular to and substantially symmetrical to said axis of rotation and located at a predetermined distance above said disc mounting means for aerodynamically prestabilizing said disc in rotation to a substantially constant distance in relation to said lower face, said plate having a central inlet opening coaxial with said axis for providing an air cushion between said lower face and the upper face of the disc in rotation and a rectangular, elongated slot perpendicular to the axis of rotation for displacing said transducer head above and substantially in parallel to a radius of said disc in rotation;

pump means for providing a source of fluid under pressure above ambient pressure;



a fluid-tight casing for housing said transducer head connected by flexible pipe means to said pump means and including a lower portion penetrating through said slot and having a width smaller than that of said slot for providing gaps on each side thereof and a bottom face including a substantially flat, rectangular portion facing the upper face of the disc and a substantially centrally located outlet aperture for providing a passage for both said light-beam and said fluid under pressure, said bottom face of said casing being situated below the lower face of said plate at such a distance from the upper face of said disc in rotation that the force exerted by the flow of said fluid through said aperture and between said bottom face and the portionof said disc facing it is in a range where the Bernouilli force of attraction, produced by a relative pressure difference due to the deceleration of the fluid flow between the center and the periphery thereof, is predominant, whereby said facing disc portion is drawn towards said bottom face to a distance where the equilibrium is established between the forces of attraction and repulsion acting thereupon.

4,071,855

ENCODER AND DECODER FOR BANDWIDTH COMPRESSION

Michael E. Wilmer, Portola Valley, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 3, 1976, Ser. No. 663,311

Int. Cl.² H04N 7/12

U.S. Cl. 358—260 **6 Claims**

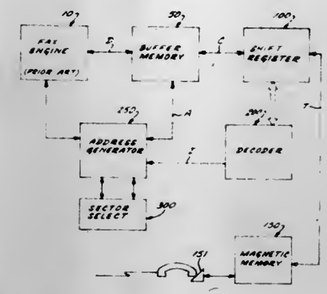
1. A bandwidth compression device adapted for use with a facsimile communication system comprising:

buffer means for storing in line-by-line format facsimile data;

segmenting means connected to said buffer means for selecting line sections in a column alignment from said buffer means;

coding means connected to receive said column of line sectors for producing serial signals including a first leader code when all bits in said column of line sectors are of a first polarity and a second leader code followed by a bit serial stream of said bits in said column of line sectors when any ones of said bits are of a second polarity;

transmission means connected to receive said signal from said coding means for transmission;



expansion means connected to said transmission means for producing a serial stream of bits of said first polarity upon receipt of said first leader code; and

allocating means connected to said expansion means and said buffer means for allocating said serial bits into a preselected array of line sectors in said buffer means.

4,071,856

SERVO-CONTROL SYSTEM FOR SIGNAL RECORDING AND/OR REPRODUCING APPARATUS

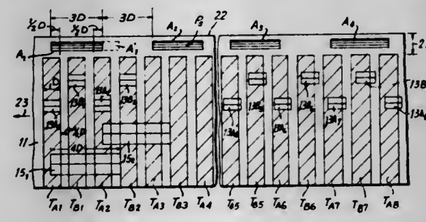
Nobutoshi Kihara, and Minoru Morio, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 25, 1976, Ser. No. 689,829

Claims priority, application Japan, May 26, 1975, 50-62663

Int. Cl.² G11B 15/46

U.S. Cl. 360—73 **16 Claims**



1. In an apparatus for recording and reproducing information signals on a record medium and which includes drive means for advancing the record medium in a predetermined direction during recording and reproducing operations of the apparatus, signal transducing means repeatedly traversing the record medium at a substantial angle to said direction of advancement of the record medium so as to scan successive parallel tracks on the latter, means for applying information signals to said signal transducing means during said recording operation for recording in said successive parallel tracks scanned by said transducing means, and means for deriving reproduced information signals from said signal transducing means when the latter scan said successive parallel tracks during said reproducing operation: a servo-control system for ensuring accurate scanning of said successive parallel tracks by said signal transducing means during said reproducing operation comprising pilot signal recording means operative during said recording operation of the apparatus for recording uniform pilot signals in areas on the record medium that are spaced apart in said direction of advancement and also traversed by said signal transducing means, with each of said areas having an extent in said direction of advancement that corresponds to the extent in said direction of advancement of a respective plurality of said successive parallel tracks being scanned by said signal transducing means during said recording operation, and with each of said areas further being in a predetermined positional relation, in said direction of advancement, to said respective plurality of parallel tracks; means operative during said reproducing operation of the apparatus for deriving a reproduced pilot signal from said signal transducing means during each traversal by the latter of each of said areas on the record medium; means for comparing the reproduced pilot signals derived from said signal transducing means during two different traversals of each one of said areas by said signal transducing means and providing a control signal on the basis of the comparison; and means responsive to said control signal for regulating said advancement of the record medium relative to the repeated traversing thereof by said signal transducing means.

4,071,857

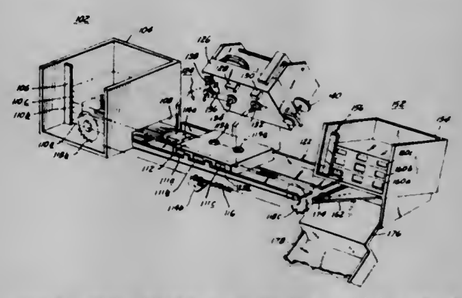
CASSETTE CHANGER APPARATUS

James C. Whitney, Weston; Willy M. Sander, Stamford, and Andre T. Debaudringhien, Bridgeport, all of Conn., assignors to Dictaphone Corporation, Rye, N.Y.

Filed Sept. 10, 1976, Ser. No. 722,144

Int. Cl.² G11B 15/68, 15/24, 23/08

U.S. Cl. 360—92 **20 Claims**



1. Cassette changer apparatus for use in a multiple cassette record and/or playback device, comprising:

an input magazine for storing a stack of cassettes disposed therein one atop the other, each cassette including a housing for magnetic tape and respective apertures through which said tape is accessed for a recording or playback operation;

an output magazine spaced from said input magazine for storing a stack of cassettes disposed therein one atop the other;

a record/playback station disposed intermediate said input and output magazines;

endless conveyor means for conveying a cassette from said input magazine to said record/playback station and then from said record/playback station to said output magazine;

loading means at said output magazine for receiving said cassette conveyed thereto and for loading same into said stack therein;

a record/playback deck at said record/playback station movable between a first position spaced from a cassette conveyed to said record/playback station and a second position in operative relation with respect to said cassette, said record/playback deck including tape drive means for bi-directionally driving said tape housed within said cassette and a magnetic transducer for recording information on and/or reproducing information from said tape; and

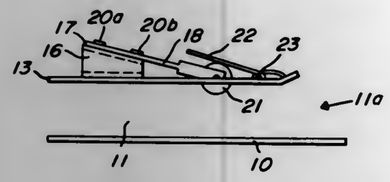
deck drive means for moving said record/playback deck between said first and second positions.

4,071,858

CARTRIDGE EJECTION PREVENTING DEVICE

Kazushige Ejiri, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Mar. 15, 1977, Ser. No. 777,737
Claims priority, application Japan, Apr. 6, 1976, 51-42338[U]
Int. Cl.² G11B 15/00
U.S. Cl. 360—93 10 Claims



1. In an apparatus for recording and/or playing a magentic tape contained in a cartridge and including a cartridge entryway with an insertion end for receiving a cartridge and a retaining plate outside of said cartridge entryway, the combination comprising:

said retaining plate outside of said entryway formed with a hole;

an attachment attached to said retaining plate and having an upper inclined surface;

a sliding member having a front end provided with a roller, means mounting said sliding member on said inclined upper surface of said attachment for sliding movement toward and away from said insertion end, said sliding member mounted so that said roller projects into said cartridge entryway through said hole in said retaining plate to be contacted and moved by a cartridge during insertion in said entryway and the amount of said roller projecting into said cartridge entryway decreases as the cartridge moves said sliding member away from said insertion end; and

a spring means urging said roller downward through said hole and into said entryway;

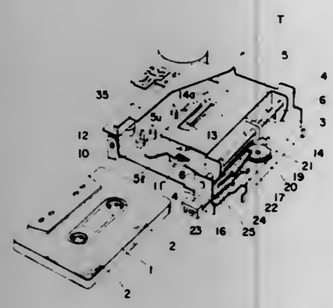
whereby said roller exerts one pressure on a cartridge as the cartridge is inserted and a larger pressure on the cartridge as the cartridge is ejected from said entryway.

4,071,859

TAPE CARTRIDGE POSITIONING AND EJECTION DEVICE

Yasuo Sami, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 13, 1976, Ser. No. 714,233
Claims priority, application Japan, Aug. 19, 1975, 50-115527[U]; Oct. 16, 1975, 50-141311[U]
Int. Cl.² G11B 15/66, 21/22
U.S. Cl. 360—96 6 Claims



1. A tape cartridge positioning and ejection device for use in a magnetic tape recording and reproduction apparatus of a type wherein a tape cartridge loaded along a horizontal passage into the apparatus is selectively moved between a first position for insertion and ejection of the tape cartridge and a second position for recording and reproduction thereof, said tape cartridge positioning and ejection device comprising;

a frame member for receiving the tape cartridge therein pivotally disposed along one side of the horizontal passage for selective movements between said first and second positions,

a rack lever member having a rack and claw means which engages a reel hub opening of the tape cartridge upon insertion of the tape cartridge into said frame member, said rack lever member being moved along said horizontal passage in a first direction by insertion of the tape cartridge against tension of a first spring means which normally urges said rack lever member in a second direction opposite to said first direction,

a pinion gear in mesh with the rack of said rack lever member,

a crank lever member pivotally connected at one end thereof to an eccentric point on said pinion gear, and

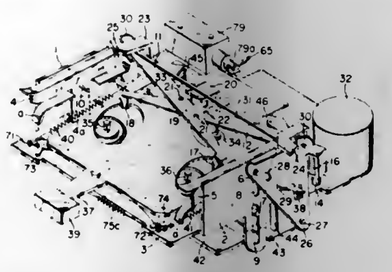
a second spring means having tension larger than that of said first spring means for urging said crank lever member in said second direction, said rack lever member being moved in said first direction by insertion of the tape cartridge into said frame member thereby rotating said pinion gear a predetermined degree in one direction to bring said crank lever member into crank motion through tension of said second spring means, said pinion gear further moving said rack lever member in said first direction in an attracted manner through said crank motion to bring the tape cartridge into a fully inserted position, frame locking means providing associated simultaneous pivotal movement of said frame member to said second position upon said full insertion, cartridge ejection means reduce the tension of said second spring means thereby rotating said pinion gear in the other direction to return said rack lever member in said second direction through the tension of said first spring means, with associated simultaneous pivotal movement of said frame member to said first position for ejection of the tape cartridge.

4,071,860

CASSETTE TAPE RECORDER

Kaoru Watanabe, and Syogo Nakayama, both of Yokohama, Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Filed Mar. 17, 1976, Ser. No. 667,561
Claims priority, application Japan, Mar. 20, 1975, 50-34131; Mar. 20, 1975, 50-38169[U]; Nov. 6, 1975, 50-133816; Nov. 20, 1975, 50-139893
Int. Cl.² G11B 23/04, 15/10, 19/26
U.S. Cl. 360—96 8 Claims



1. A cassette recorder having cassette insertion, record/play-back, fast-forward, rewind, and eject modes of operation, said recorder comprising:

a bottom plate having forward and rearward portions and side plates substantially perpendicular to said bottom plate on each side thereof;

a chassis plate parallel to said bottom plate and movable over said bottom plate in forward and rearward directions, said chassis plate being rotatable with respect to said bottom plate in sliding contact therewith, said chassis plate also having holes therein through which driving capstans and reel spindles may extend, and a knob affixed to the forward portion thereof for selectively initiating said fast-forward, rewind and ejection modes of operation, said chassis plate further having lateral projections extending toward each of said side plates;

a magnetic head mounted on said chassis plate adjacent the rearward portion thereof;

a pair of cassette holding elements disposed between said side plates and movable toward and away from said bottom plate in a direction perpendicular thereto;

first and second plate cams adjacent and parallel to respective ones of said side plates, said cams being coupled for synchronized rotation about an axis perpendicular to said side plates;

means for coupling each of said plate cams to an adjacent one of said cassette holding elements, so that rotation of said cams results in movement of said elements toward and away from said bottom plate in said given direction;

first and second arms arranged in the form of an X, one end of each of said arms being pivotably mounted to said bottom plate adjacent the rearward portion thereof, the free end of each of said arms comprising a cassette detecting projection, the ends of said arms pivoted to said bottom plate having stopping members for engaging said plate cams to lock said cams in a predetermined rotational position when said projections are relatively remote from the rearward portion of said bottom plate, and for releasing said plate cams from said locked stated when said projections are adjacent said rearward portion of said bottom plate, spring means for rotating said arms with respect to said bottom plate to move said projections away from the rearward portion thereof, said projections being pushed toward said rearward portion by a cassette inserted between said holding elements;

spring means for urging said chassis plate toward the forward portion of said bottom plate to cause the projections of said chassis plate to engage said plate camz to rotate said cams to cause said cassette holding elements to move toward said bottom plate when said cams are unlocked by movement of said arm projections toward the rearward portion of said bottom plate, said recorder being simultaneously placed in the record/play-back mode;

means responsive to the movement of said knob toward said bottom plate to place said recorder in the eject mode, said movement of said knob resulting in corresponding movement of said chassis plate and rotation of said cams, said rotation of said cams resulting in (i) movement of said lateral projections and said chassis plate a predetermined distance toward the forward portion of said bottom plate and (ii) movement of said cassette holding elements away from said bottom plate in said given direction, whereby any cassette disposed between said holding elements is ejected;

means responsive to rotation of said knob and chassis plate in one direction for limiting the angle of such rotation by engagement between said lateral projections and said cams and for placing said recorder in a selected one of said fast-forward and rewind modes; and

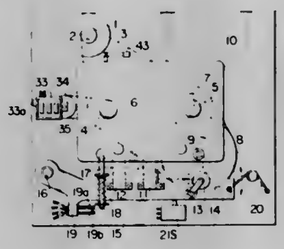
means responsive to rotation of said knob and chassis plate in the other direction for limiting the angle of rotation in said other direction by engagement of said lateral projections with said cams, and for simultaneously placing said recorder in the other of said fast-forward and rewind modes.

4,071,861

MAGNETIC RECORDING AND REPRODUCING SYSTEM

Huminori Hirose, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 23, 1976, Ser. No. 698,919
Claims priority, application Japan, June 24, 1975, 50-78890; Oct. 13, 1975, 50-123557
Int. Cl.² G11B 15/24, 21/22; B65H 17/22
U.S. Cl. 360—96 13 Claims



1. A magnetic recording and reproducing system comprising a capstan, reel shafts, motor means operative when connected to a voltage source, coupling means for transmitting the rotational force of said motor to said capstan and reel shafts, a pinch roller for pressing a magnetic tape to said capstan, an engagement-disengagement drive mechanism responsive to said coupling means for selectively driving said pinch roller into engagement with and disengagement from said capstan, an electromagnetic plunger operative when connected to a voltage source to cause an initial motion of said engagement-disengagement drive mechanism which serves to couple said coupling means to said engagement-disengagement drive mechanism, and operation switch means for connecting said electromagnetic plunger and said motor to a voltage source, said electromagnetic plunger and engagement-disengagement drive mechanism arranged such that a first operation of said electromagnetic plunger serves to couple said engagement-disengagement drive mechanism to said coupling means to drive said pinch roller into engagement with said capstan and a second operation of said electromagnetic plunger serves to couple said engagement-disengagement drive mechanism to said coupling means to disengage said pinch roller from said capstan.

4,071,862

DISC CARTRIDGE

Francis O. Lathrop, Jr., Amherst, N.H.; Edward H. Jacobs, Westboro, Mass.; William E. Wood, Hudson, Mass., and Patrick A. Taylor, Framingham, Mass., assignors to Nashua Corporation, Nashua, N.H.

Filed Mar. 1, 1976, Ser. No. 662,332
Int. Cl.² G11B 17/26, 23/02; B65D 85/38
U.S. Cl. 360—97 15 Claims

1. In a disc cartridge for a magnetic disc, the cartridge comprising

an assembly including

a. a top cover on a first side of said magnetic disc

b. an inside cover on the second side of said magnetic disc, and

c. means securing said inside cover to said top cover; and

a bottom cover releasably securable to said assembly to enclose said inside cover;

the improvement wherein said means securing said inside cover to said top cover comprise a plurality of pairs of

mating hooks and hook anchors, the hook of each pair being integral with one of said top and inside covers and the associated hook anchor being integral with the other of said top and inside covers.

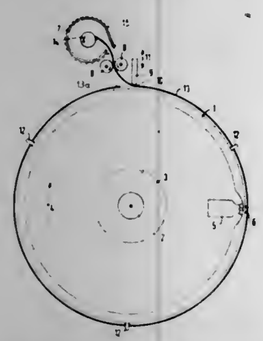


4,071,863

STATIONARY MAGNETIC TAPE TRANSDUCING SYSTEM WITH MEANS FOR CONTROLLING THE AIR BEARING SUPPORT

Mircea Alexandrescu, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 21, 1976, Ser. No. 698,416
Claims priority, application Germany, Oct. 6, 1975, 2544667
Int. Cl.[2] G11B *21/02, 15/64, 15/66*
U.S. Cl. 360—101 **2 Claims**



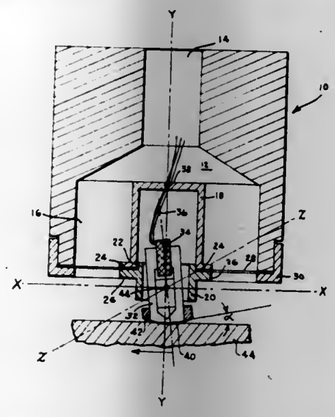
1. A magnetic tape system providing transducing of a stationary length of magnetic tape having a free end and a fixed end including a cylinder having a cylindrical periphery for receiving a length magnetic tape thereabout, and a transducer head mounted for rotary movement about a head rotational axis during transducing operation with respect to a magnetic tape extending about the periphery of said cylinder, said cylinder being rotatably mounted for rotation on an axis corresponding to said rotational axis, a drive motor connected to said cylinder for driving said cylinder at such a rotational speed that an air cushion is formed between the periphery of the cylinder and a magnetic tape extending about said periphery, and tape constraining means adjustably determining the distance between the periphey of the cylinder and a tape extending thereabout, the transducer head being disposed with respect to the periphery of the cylinder to be in operative scanning relation to a magnetic tape as positioned by said tape constraining means, said tape constraining means comprising a guide bar with a tape guide edge adjustable toward and away from the cylinder periphery, drive means for inserting the free end of the magnetic tape between the cylinder periphery and the tape guide edge of said guide bar, whereby the free end of the magnetic tape, upon insertion between the tape guide edge and the cylinder periphery, is drawn about the cylinder periphery by the resulting air flow.

4,071,864

FLEXIBLE RECORDING HEAD MOUNTING ASSEMBLY

Raymond J. Zapala, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 16, 1976, Ser. No. 649,761
Int. Cl.[2] G11B *5/60, 5/48, 17/32;* G11R *21/20*
U.S. Cl. 360—103 **1 Claim**



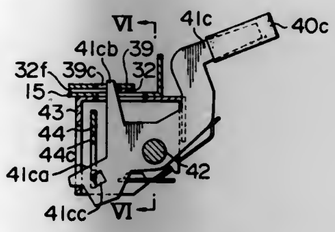
1. A flexible recording head mounting assembly for information recording systems having one moving member positioned in a close spaced relationship comprising: a housing; a cylindrically shaped chamber open at one end and reduced to a passage at the other end, in the housing; a flexible diaphram positioned across the open end of the chamber; a cup shaped means within the chamber extending through the diaphram and secured thereto; a recording head pivotally mounted to said cup-shaped means and a shoe means affixed to the recording head and adjacent an end distally from the pivot mount and having a cylindrical surface whose center line is offset from the recording head whereby the head will be inclined to the moving member and spaced therefrom by a hydrodynamic bearing created by said inclination.

4,071,865

CASSETTE TAPE RECORDER

Seikoh Nakasuna, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed May 27, 1976, Ser. No. 690,588
Claims priority, application Japan, May 30, 1975, 50-64276
Int. Cl.[2] G11B *21/22, 5/54, 15/22*
U.S. Cl. 360—105 **8 Claims**



1. A cassette tape recorder of the kind using a cassette including a housing which has an upper wall, a lower wall, a front wall, a rear wall, and a pair of side walls, and in which a magnetic tape wound around one of a pair of hubs supported

freely rotatably between the upper and lower walls with one end thereof fixed to that hub is guided toward the other hub along a path extending adjacent to a plurality of openings bored in the front wall to be wound around the other hub with the other end thereof fixed to the latter hub, the tape being adapted to be fed at a predetermined take-up speed during recording and reproduction, comprising:

a base;

a supply turntable and a take-up turntable mounted freely rotatably to said base and having a center-to-center distance equal to that of said hubs in said cassette;

means mounted to said base for positioning and maintaining said cassette in a predetermined cassette mounting position such that said cassette is positioned with its front wall directed toward the rear side of said base and said hubs are brought into rotating engagement with said supply and take-up turntables respectively;

a slide member arranged for sliding movement and carrying at least a recording-reproducing head and a pinch roller at positions opposite to the openings in the front wall of said cassette maintained in the predetermined cassette mounting position;

guide means mounted on said base member with respect to guide slots formed in said slide member for guiding said slide member in its movement toward and away from the front side of said base;

spring means for biasing said slide member away from the front side of said base to hold said recording-reproducing head and said pinch roller spaced from said cassette;

a pivot disposed beneath said base on the rear wall side of said cassette;

a play button lever pivoted to said pivot for swinging movement around said pivot, said play button lever including an outwardly protruding portion mounted to a play button and an upwardly extending portion extending upwardly through a slot in said base and a slot formed in said slide member, whereby said upwardly extending portion contacts said slide member and presses said slide member toward the front side of said base to bring the at least one recording-reproducing head and pinch roller into an operative position in response to depression swinging movement of said play button against the biasing force of said spring means; and

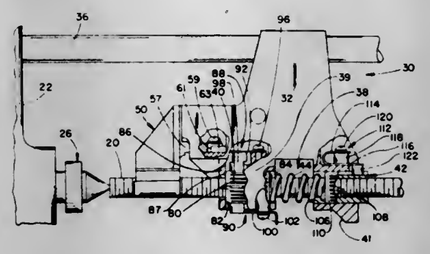
means for feeding said tape at the predetermined take-up speed toward said take-up turntable by operating in interlocking relation with the swinging movement of said play button.

4,071,866

DISC RECORDER DRIVE FOLLOWER ASSEMBLY

Otto R. Butsch, Ann Arbor, Mich., assignor to Sycor, Inc., Ann Arbor, Mich.

Filed Mar. 16, 1977, Ser. No. 778,143
Int. Cl.[2] G11B *21/08;* F16H *55/18*
U.S. Cl. 360—106 **19 Claims**



1. A head carriage for a disc recorder of the type including a frame supporting a lead screw by which said carriage is translated and a guide rod positioned in vertically spaced, parallel relation to the lead screw, said head carriage comprising:

a one-piece body defining a longitudinal bore dimensioned greater than the lead screw and including a stop at one end, said body further defining a glide passage dimensioned to receive the guide rod;

an internally threaded follower held within said bore and threadably engaged by the lead screw, said follower contacting the stop at one end and held against rotation relative to said body;

an internally threaded adjustment member disposed within said bore longitudinally spaced from said follower and threadably engaged by said lead screw;

a spring positioned between said follower and said adjustment follower, biasing said follower and said adjustment member apart to prevent backlash; and

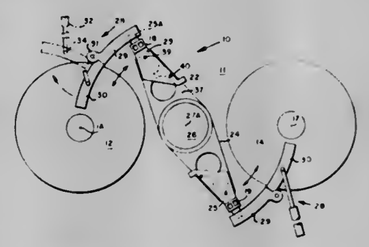
manually shiftable means carried by said body and engaging said adjustment member for normally holding said adjustment member against rotation relative to said carriage on said lead screw and being shiftable for permitting rotation of said adjustment member on said lead screw towards and away from said follower to adjust the spring preload.

4,071,867

APPARATUS FOR ALIGNING THE HEAD-ARM ASSEMBLIES OF A ROTARY ACTUATED DISC DRIVE

Ivan Pejcha, 428 Montclair Drive, Santa Clara, Calif. 95051

Filed Sept. 16, 1974, Ser. No. 506,126
Int. Cl.[2] G11B *5/56, 21/24, 5/54, 21/22*
U.S. Cl. 360—109 **5 Claims**



1. In a disc drive apparatus adapted to transfer data located in concentric tracks on a rotating magnetic disc having a disc surface, the combination of: a recording head interacting with the disc when energized for transferring data therebetween; a support arm on which said head is carried for movement in a planeparallel to said disc surface; said support arm having two sections, actuator means connected to the support arm for moving the arm along an arcuate path in said plane to position the head at any selected track on the disc surface; and adjustment means operatively interconnecting said two sections of the support arm for adjustably displacing said two sections relative to each other in said plane to position the head in spaced relation to the actuator means to set the precise location of the head in said plane over a selected track on the disc in any position of te actuator means.

4,071,868

NARROW TRACK MR HEAD WITH SIDE SHIELDS

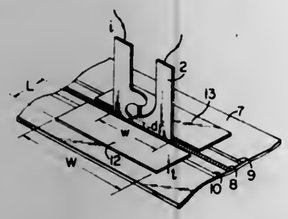
Nobuyuki Kaminaka, Moriguchi; Kenji Kanai, Neyagawa; Norimoto Nouchi, Katano, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 16, 1975, Ser. No. 641,185

Claims priority, application Japan, Dec. 20, 1974, 49-147385; Dec. 20, 1974, 49-147386; Dec. 31, 1974, 50-1687; Dec. 31, 1974, 50-1688; Jan. 9, 1975, 50-5330

Int. Cl.² G11B 5/12, 5/30

U.S. Cl. 360—113 **7 Claims**



1. A magnetic head for use with a record medium having at least one track therein, comprising:

a magnetic circuit element including,

a ferromagnetic material section having a magnetic gap, and

a magnetoresistive effect element section situated in the same plane as said ferromagnetic material section, and

ferromagnetic shielding plates positioned on both sides of said magnetic circuit element, the thickness direction of said magnetic circuit element coinciding with the width direction of a track in said record medium.

4,071,869

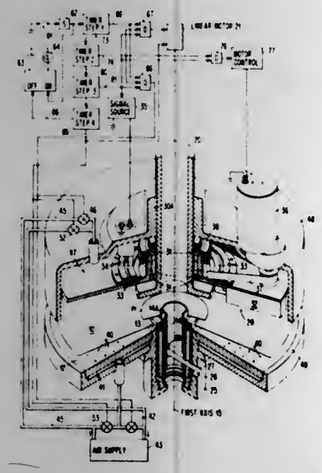
ASSEMBLING FLEXIBLE DISK RECORD STRUCTURES

Louis Bock Felerabend, Boulder, and David Staples Proper, Arvada, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 1, 1976, Ser. No. 691,806

Int. Cl.² G11B 5/82, 5/86

U.S. Cl. 360—135 **11 Claims**



1. Manufacturing apparatus, comprising:

a frame;

a circular platen on said frame and for supporting a flexible magnetic record member;

first means on said frame and being coaxial to said platen for centering said flexible magnetic record member with respect to a first axis;

second means on said frame and being coaxial to said first means and axially movable with respect thereto and for receiving a non-flexible circularly ring shaped member;

a press on said frame and coaxial to said first axis and axially relatively movable therealong between open and closed positions with respect to said circular platen;

actuating means for relatively moving said press against said second means and said platen for permanently adhering said ring member to said record member in a coaxial relationship; and

recording means coaxially disposed to said first axis for recording predetermined circumferentially extending magnetic signals on said record member while stationarily disposed on said platen and after said members are secured to each other.

4,071,870

APPARATUS TO GENERATE MINIMALLY DELAYED INSTRUCTIONS FOR TURBINE VALVES IN THE EVENT OF POWER SYSTEM SHORT CIRCUITS

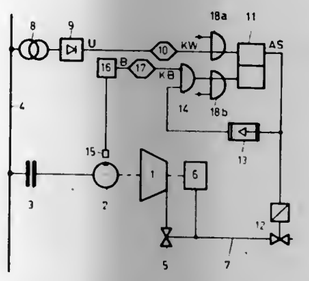
Heinz Bloch, Nussbaumen, and Ernst Wirth, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Mar. 25, 1975, Ser. No. 561,693

Claims priority, application Switzerland, May 31, 1974, 07489/74

Int. Cl.² H02H 7/06

U.S. Cl. 361—21 **5 Claims**



1. The combination with a turbo-set comprising a turbine shaft coupled to an alternating current electrical generator whose output is delivered to a high-voltage power system and wherein valve means are provided for controlling the fluid flow to said turbine of an improved arrangement for effecting a rapid closure of said valve means with minimally delayed closing instructions in the event of a sustained major fault on said power system which comprises;

means producing a first provisional signal upon a predetermined drop in the network voltage and which is passed to said valve means for commencing a closing operation of said valve means,

means producing a second signal having a level indicative of the acceleration of the turbine shaft within two revolutions thereof following the drop in network voltage, and

means responsive upon a failure of said second signal to reach a predetermined level for cancelling out said first signal thereby terminating the closing operation of said valve means.

4,071,871

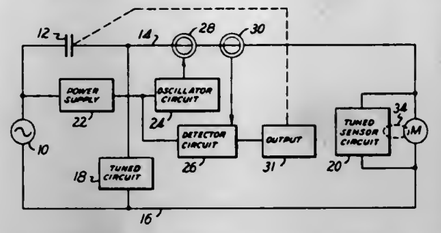
MOTOR PROTECTOR CIRCUIT

Robert C. Kochem, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 29, 1975, Ser. No. 644,794

Int. Cl.² H02H 7/08

U.S. Cl. 361—27 **13 Claims**



1. A circuit for detecting overtemperature conditions in a load, comprising:

first and second AC power supply lines for energizing a load,

tuned circuit means connected across the first and second power lines,

oscillator circuit means for impressing a signal having a selected frequency in said tuned circuit means,

detector circuit means for detecting said signal,

power supply means coupled to said oscillator circuit means and detector circuit means,

thermally responsive switch means having first and second states electrically coupled to the tuned circuit means so that in one state the impedance of the tuned circuit means is at a level precluding resonance therein while in the other state the impedance of the tuned circuit means is at a level causing resonance therein, the thermally responsive switch adapted to be thermally coupled to the load whereby overtemperature conditions in the load will cause the thermally responsive switch to change from one state to the other, and

output means coupled to said detector circuit means providing an output signal when the tuned circuit means is in resonance.

4,071,872

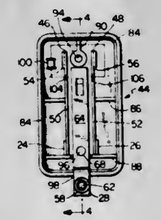
INTERRUPTER

Charles M. Phillips, Jr., 315 Haven St., Clearwater, Fla. 33516

Filed Aug. 12, 1976, Ser. No. 713,844

Int. Cl.² H02H 3/20

U.S. Cl. 361—56 **3 Claims**



1. An interrupter device for interrupting electrical current used by a household electrical appliance comprising:

a housing supporting a plurality of prong means adapted to be inserted into an electrical outlet and a female receptacle adapted to receive the electrical plug connector of an appliance;

a plurality of conductive elements for electrically interconnecting each of said prong means to a corresponding element of said female receptacle wherein one of said conductive elements is rectangular having an L-shaped grounding prong means extending from one end of said conductive element in a first direction and a contact portion extending from the other end of said conductive element in a direction opposite said first direction; and

spark gap means connected between two conductors of said interconnecting conductor means for interrupting current flow to said female receptacle at a predetermined voltage level by creating a path of low resistance between said two interconnecting conductor means.

4,071,873

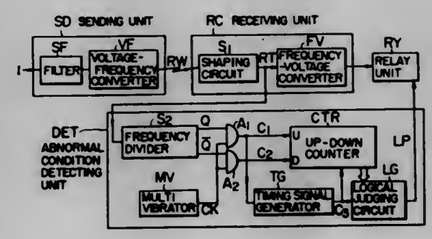
APPARATUS FOR DETECTING ABNORMAL CONDITIONS OF TRANSMITTED SIGNALS

Fumio Andow, Hachioji; Mitsuru Yamaura, Fuchu, and Minoru Kitagawa, Hiroshima, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Chugoku Denryoku Kabushiki Kaisha, Hiroshima, both of, Japan

Filed June 21, 1976, Ser. No. 697,756

Int. Cl.² H02H 3/28

U.S. Cl. 361—64 **18 Claims**



1. In apparatus for detecting an abnormal condition of a transmitted signal of the class wherein a carrier wave frequency modulated by an electric quantity is transmitted to a receiving station and the frequency variation of said carrier wave is detected by an abnormal condition detector installed in said receiving station so as to detect an abnormal condition of the transmitted signal, the improvement wherein said abnormal condition detector comprises means for comparing the length of contiguous or closely adjacent periods of the received carrier wave.

4,071,874

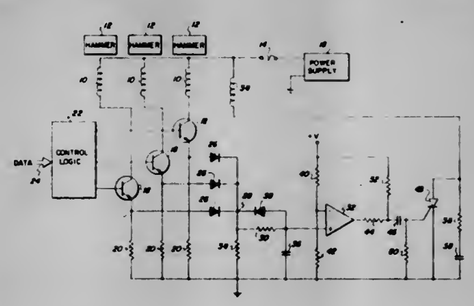
HAMMER PROTECTION CIRCUIT

Fereidoon Matin, Pleasant Hill, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed June 28, 1976, Ser. No. 700,419

Int. Cl.² H02H 3/08

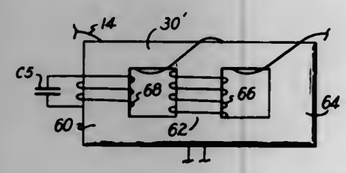
U.S. Cl. 361—94 **9 Claims**



1. A hammer protection circuit for automatically disconnecting a power supply from a hammer actuating coil in order to cut-off current flow through said coil when said current flow is either greater than a predetermined level or present for greater than a predetermined time interval, said circuit comprising:

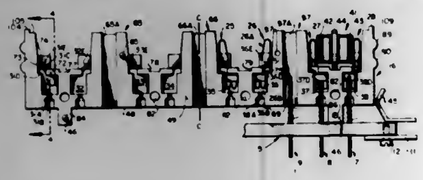
charging means coupled to said coil for charging up to a voltage level proportional to the level and duration of said current flow through said coil;
comparator means coupled to said charging means for comparing said voltage level with a reference voltage and for generating an output signal when said voltage level bears a predetermined relationship toward said reference voltage; and
means coupled to said comparator means and to said power supply and responsive to said output signal for disconnecting said power supply from said coil.

4,071,875
DETECTOR APPARATUS
Robert C. Kochem, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 29, 1975, Ser. No. 644,793
Int. Cl.² H02H 7/08
U.S. Cl. 361—113 **4 Claims**



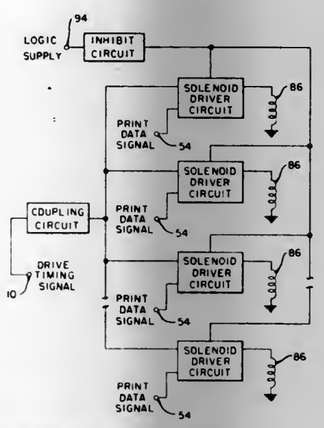
1. Detection apparatus comprising a three legged E-I transformer core, a shunt winding disposed on the first leg, frequency selective means electrically coupled to the shunt winding, signal sensing means inductively coupled to the second leg and a carrier signal line trained through the core forming two turns, one turn disposed between the first and second legs and the second turn disposed between the second and third legs.

4,071,876
PLUGGABLE PROTECTOR HOLDER FOR SURGE ARRESTOR GAS TUBES
Wayne J. Benson, Belmont; Roy B. Torburn, Palo Alto, and Donald G. Tweed, Mountain View, all of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Dec. 17, 1976, Ser. No. 751,637
Int. Cl.² H02H 7/20
U.S. Cl. 361—119 **10 Claims**



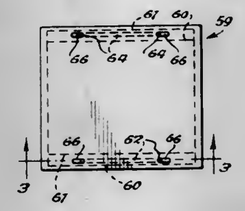
1. A pluggable connector holder receiving cylindrical gas tube surge arrestors having end electrodes and a cylindrical intermediate electrode, the holder being pluggable onto axially aligned and spaced apart pins of a connector for connecting tubes across associated terminals of a telephone repeater unit and associated telephone line cable pairs which are connected together at pins of the connector for protecting the repeater unit from surge voltages such as are induced by lightning onto a cable pair, comprising:
a plurality of electrically conductive spring terminals, each terminal having a first spring contact portion for making electrical connection with an end electrode of a surge arrestor tube and providing a spring type restraining force against the latter, and which is electrically connected through an arm portion to a second spring contact portion formed for receiving and making electrical connection with a pin of the connector; and
an elongated electrically nonconductive housing having a plurality of axially aligned compartments formed therein, each compartment containing the second contact portion of an associated terminal and having an opening through one wall of said housing for passing an associated connector pin therethrough and into electrical contact with said second contact there when said housing is plugged onto pins of the connector, said first contact portions of said terminals protruding beyond another wall of said housing, adjacent pairs of terminals being oriented in said housing with said first contacts thereof for receiving a surge arrestor therebetween, for making electrical contact with the associated end electrodes of the surge arrestor, and for exerting a spring force on the latter to hold it in place.

4,071,877
DRIVE CIRCUIT
John W. Stewart, and Ronald L. Bruckner, both of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio
Filed Oct. 31, 1975, Ser. No. 627,736
Int. Cl.² H01H 47/32
U.S. Cl. 361—152 **17 Claims**



1. An operating circuit comprising:
a plurality of individual solenoid driver circuits for controlling the energization of solenoids;
drive timing input means to which a drive timing signal may be applied;
means for coupling the drive timing input means to each of the plurality of individual solenoid driver circuits, said coupling means including means for limiting the time of energization of the solenoids;
data input means associated with each solenoid driver circuit to which a data signal may be applied; and
inhibit means associated with each solenoid driver circuit and capable of inhibiting the operation of said circuit in response to a predetermined variation in the supply voltage for the coupling means;
whereby an individual solenoid driver circuit to which a data signal is applied may be operated at a time and for a duration determined by a drive timing signal so long as the supply voltage for the coupling means is within acceptable limits.

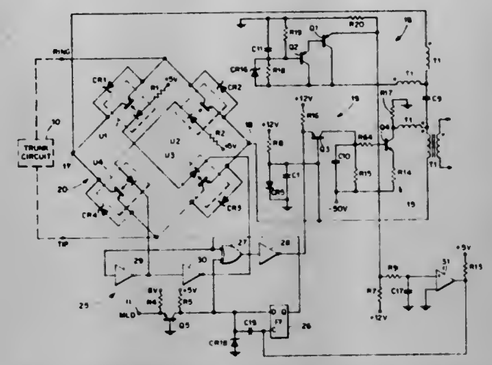
4,071,878
METHOD FOR PRODUCING CAPACITORS AND CERAMIC BODY THEREFORE
James A. Stynes, Lewiston, N.Y., assignor to N L Industries, Inc., New York, N.Y.
Filed Feb. 18, 1975, Ser. No. 550,828
Int. Cl.² H01G 1/147
U.S. Cl. 361—307 **22 Claims**



1. A process for forming a multilayer capacitor which comprises: providing a unitary, sintered ceramic matrix comprising a plurality of superposed thin strata of dense dielectric material, said strata being integrally joined around the peripheries thereof to form a monolithic body, major portions of a plurality of said strata being spaced to provide between said spaced portions thin, void electrode regions adapted to be filled with metal, said matrix having a pair of laterally spaced first holes passing through the top or bottom stratum thereof, and second holes aligned with said first-mentioned holes passing through other of said strata to provide access from the exterior of said matrix to said void electrode regions; securing wire leads in said holes with an end of each wire projecting from said body, providing electrodes in said electrode regions by introducing molten metal into said regions through said holes and around said leads and solidifying the metal therein in electrical contact with said leads, said metal having a melting point lower than the temperature employed for sintering said matrix and lower than the melting point of said leads.

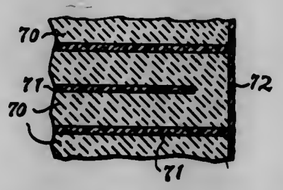
4,071,879
REVERSIBLE CURRENT APPARATUS
Jerry L. Falk, Medway, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed Nov. 19, 1976, Ser. No. 745,802
Int. Cl.² H03K 17/66
U.S. Cl. 361—245 **11 Claims**

1. Apparatus for producing a reversible current including in combination
a pair of output terminals;
current source means for producing a DC current of one polarity;
current reversing means connected to said pair of output terminals and to said current source means, said current reversing means being operable to couple said current source means to said output terminals so as to produce a DC output current of one polarity between said output terminals, and being operable to couple said current source means to said output terminals so as to produce a DC output current of the opposite polarity between said output terminals;
regulating means coupled to said current source means for varying the DC current produced by said current source means; and
control means coupled to said current reversing means, to said current source means, and to said regulating means;



said control means being operable in response to control signals applied thereto to cause said regulating means to vary the current produced by the current source means and subsequently in response to said current source means producing a predetermined output current to cause said current reversing means to reverse the polarity of the DC current between said output terminals.

4,071,880
CERAMIC BODIES WITH END TERMINATION ELECTRODES
Truman C. Rutt, Niagara Falls, N.Y., assignor to N L Industries, Inc., New York, N.Y.
Division of Ser. No. 478,181, June 10, 1974, Pat. No. 3,965,552, which is a division of Ser. No. 274,668, July 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 134,689, April 16, 1971, Pat. No. 3,679,950. This application Feb. 23, 1976, Ser. No. 660,522
The portion of the term of this patent subsequent to June 14, 1994, has been disclaimed.
Int. Cl.² H01G 1/14, 4/12
U.S. Cl. 361—309 **10 Claims**



1. A sintered, unitary, ceramic body comprising: a plurality of strata of a dense insulating or dielectric ceramic composition, a stratum of open-structured ceramic material between said strata and extending to an edge region of said body, and a penetrable barrier on said body over said region.

4,071,881

DIELECTRIC COMPOSITIONS OF MAGNESIUM TITANATE AND DEVICES THEREOF

Rudolph John Bacher, New Castle, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 30, 1976, Ser. No. 672,031
Int. Cl.² C04B *35/00*; H01G *4/20*
U.S. Cl. 361—320 **23 Claims**

1. Compositions of finely divided inorganic powders useful for forming dielectric layers in multilayer electronic structures of conductive and dielectric layers on an alumina substrate; those dielectric layers being capable of producing such multilayer structures having a dielectric constant below 10 and a dissipation factor of 0.6% or less, each at 1 kHz., and a quality factor above about 400 at 1 MHz.; the compositions consisting essentially of, by weight,

a. 65–90% of one or more non-conducting glasses having a softening point greater than 700° C. and a thermal expansion coefficient less than that of alumina, and the balance is

b. 10–35% of crystalline fillers which are, based on the total weight of the composition,

1. 0–25% $MgTiO_3$ and/or

2. 0–35% mixtures of precursor crystalline oxides MgO and TiO_2 capable of forming $MgTiO_3$

provided that where the weight of $MgTiO_3$ in these compositions is less than 10%, the relative proportions of precursor crystalline oxides (2) are such that in the fired dielectric layer(s) in the aforesaid multilayer electronic structure(s) there will be a total of at least 10% $MgTiO_3$, and further provided that the relative proportions of precursor crystalline oxides are such that in the fired dielectric layers there will be no more than 25% $MgTiO_3$.

17. In multilayer electronic structures comprising as sequential layers on a prefired alumina substrate a bottom electrode on an adherent to said substrate, a dielectric layer over and adherent to at least part of said bottom electrode, and a top electrode over and adherent to at least part of said dielectric layer, improved multilayer structures, capable of having a dielectric constant below 10 and a dissipation factor of 0.6% or less, each at 1 kHz., and a quality factor above about 400 at 1 MHz.; wherein said dielectric layer consists essentially of, by weight

a. 65–90% non-conducting glass having a softening point greater than 700° C. and a thermal expansion coefficient less than that of alumina, and the balance is

b. 10–35% of crystalline fillers which are, based on the total weight of the dielectric layer,

1. 10–25% $MgTiO_3$ and

2. 0–25% MgO or TiO_2.

4,071,882

STRUCTURE FOR ELECTRICAL INTERFACE

Robert Henry Rehder, Peterborough, Canada, assignor to Canadian General Electric Co., Ltd., Toronto, Canada

Filed Nov. 24, 1976, Ser. No. 744,893
Claims priority, application Canada, June 16, 1976, 254998
Int. Cl.² H02B *1/20. 5/00*; H02G *5/06, 7/00*
U.S. Cl. 361—333 **9 Claims**

1. An electrical interface device for interfacing at least one overhead electrical distribution line with electrical equipment, said interface device comprising:

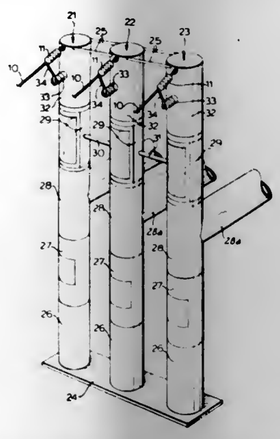
a. at least one generally-cylindrical vertical metal column adapted to be at ground potential,

b. means for supporting said column from its lower extremity in a position adjacent to electrical equipment, with the longitudinal axis of said column approximately vertical;

c. at least one generally vertically-extending conductor located inside said column and insulated therefrom,

d. means extending into said column adjacent the upper end of the column for electrically connecting an overhead distribution line to said conductor at the upper end of said conductor,

e. generally-horizontal conductive means projecting laterally from said conductor through said metal column at a location intermediate the ends of said column for electrically connecting said conductor to electrical equipment, and



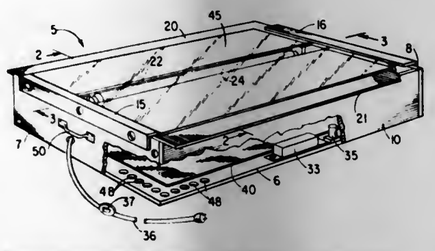
f. a generally horizontally-extending tubular metal enclosure located intermediate the ends of said vertical column and surrounding said horizontal conductive means immediately adjacent said vertical column.

4,071,883

MULTI-PURPOSE LABORATORY LIGHT BOX

Juanita Dennis, 1225 Derby St., Berkeley, Calif. 94702

Filed Sept. 28, 1976, Ser. No. 727,358
Int. Cl.² G09F *13/04*
U.S. Cl. 362—97 **8 Claims**



1. A multi-purpose laboratory light box, comprising:

a box having a bottom panel and side and end panels secured to each other in light-tight manner;

guide means on said end panels in spaced relation with said bottom panel;

a pair of top panels disposed in said guide means and adapted to be moved toward and away from each other to provide an opening therebetween of variable width and location;

a pair of tubular fluorescent lamps respectively mounted within said box on the facing edge portions of said top panels, said lamps being adjacent to and substantially flush with the facing edges of said top panels, and

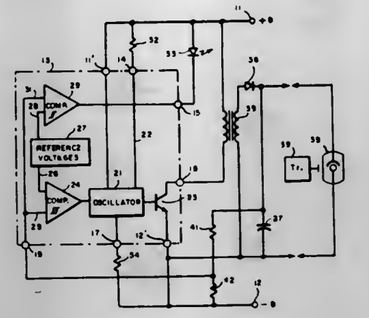
circuit means for energizing said lamps for observation and photography.

4,071,884

INTEGRATED CIRCUIT HIGH VOLTAGE DC CONVERTER

Robert J. Maigret, Warwick, R.I., assignor to Micro Components Corporation, Cranston, R.I.

Filed June 14, 1976, Ser. No. 695,636
Int. Cl.² H02P *13/22*
U.S. Cl. 363—21 **4 Claims**



1. A high voltage DC converter comprising:

a low voltage DC supply;

a rectangular wave oscillator of constant duty cycle comprising a high current silicon transistor connected to said supply and controlled for oscillation or non-oscillation by the condition of a control signal applied thereto;

a two-winding high voltage step-up transformer matched to the duty cycle of said oscillator;

power amplifier means having an input circuit driven by said oscillator and an output circuit connected through the primary winding of said transformer to said supply;

a voltage comparator having switching hysteresis;

a reference voltage source derived from said supply;

means for applying a constant voltage derived from said reference voltage source and a voltage representative of the output voltage from the secondary winding of said transformer to control switching in said voltage comparator to selectively provide a high voltage condition or a low voltage condition at the output of said comparator in response to the relative magnitudes of said applied voltages, and

means for coupling the switching output of said comparator as said control signal to control on-off switching of said oscillator,

said oscillator and said power amplifier are switched to be inactive at substantially low current condition for the high voltage output condition of said comparator,

wherein said oscillator, said power amplifier, said reference voltage source and said comparator comprise a single chip silicon integrated circuit with an oscillator terminal and a power amplifier output terminal and including: frequency controlling circuit means connected to said oscillator terminal; and

a circuit connecting to said primary winding from one terminal of said DC supply to said output terminal.

4,071,885

ELECTRIC ARC WELDING POWER SUPPLY

Dale Louis Bilczo, Parma Heights; Kenneth Anthony Golonka, Richmond Heights; John Arthur Overman, Chagrin Falls, and John Ernest Carroll, Moreland Hills, all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Filed Dec. 5, 1975, Ser. No. 638,165
Int. Cl.² H02M *7/00*
U.S. Cl. 363—64 **35 Claims**

1. In an arc welding power source including: a three phase transformer having a pair of secondaries, each including three windings; a rectifier in series with each winding; the series rectifiers and windings of each secondary being connected in a wye configuration and arranged to have a pair of DC output terminals, said output terminals being connected in parallel and arranged to supply power to external terminals of said power



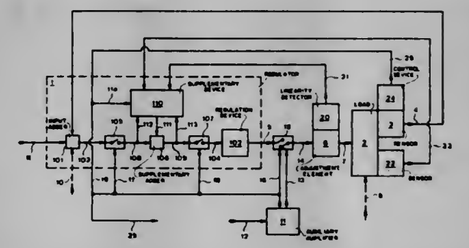
source, the improvement which comprises: independent inductances in series with each secondary and its output terminals, in combination with, said rectifiers having a gate responsive to an input signal to cause the rectifiers to conduct for selected portions of the AC cycle.

4,071,886

SELF-ADJUSTING REGULATION SYSTEM

Walter Eicher, Gockhausen, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Jan. 22, 1976, Ser. No. 651,578
Claims priority, application Switzerland, Feb. 6, 1975, 1467/75
Int. Cl.² G05B *11/36*
U.S. Cl. 364—118 **7 Claims**



1. A self-adjusting regulation system comprising a regulator incorporating an input adder for forming the difference of a feedback magnitude from a load and a command magnitude and for producing an error signal and a regulation device for forming an adjustment magnitude from said error signal, an adjustment element for limiting the value of the error signal received by the load, a linearity detector, said adjustment element controlling said linearity detector, said linearity detector delivering a control signal upon the presence of a non-linear behaviour of the regulation system, a supplementary adder arranged in the regulator between the input adder and the regulation device, said regulation device having an input, said supplementary adder having a first input, a second input and an output, said input adder having an output, the first input of the supplementary adder being connected with the output of the input adder, the output of the supplementary adder being connected with the input of the regulation device, a supplementary device having an output connected with the second input of the supplementary adder, said supplementary device comprising a number N of similar integration stages forming a series, each integration stage comprising an integrator having an input and an auxiliary adder having an output connected with the input of the integrator via a control switch responsive

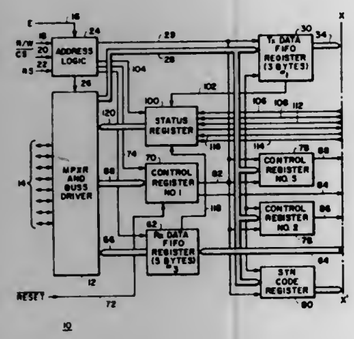
to the control signal, the auxiliary adder having a first input connected via a first multiplier with the first input of the supplementary adder and having a second input connected via a second multiplier with the output of the supplementary adder, the output of the integrator of the last integration stage of the series forming the output of the supplementary device, and for the remaining integration stages the output of the integrator of a predetermined integration stage is connected with a third input of the auxiliary adder of the next following integration stage of the series.

4,071,887

SYNCHRONOUS SERIAL DATA ADAPTOR

Thomas C. Daly, Phoenix, Ariz.; Edward C. Hepworth, Chattanooga, Tenn., and Rodney J. Means, Manassas, Va., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 30, 1975, Ser. No. 627,180
Int. Cl.[2] G06F 3/00; H04J 3/00
U.S. Cl. 364—200 **22 Claims**



10

1. A digital system for synchronous data communication comprising: (a) transmitter means coupled to a first serial data channel for transmitting data; (b) first memory means coupled to said transmitter means, said first memory means having first-in-first-out memories for sequentially buffering data which is to be transmitted by said transmitter means; (c) receiver means coupled to a second serial data channel for receiving data from said second serial data channel; (d) second memory means coupled to said receiver means, said second memory means having first-in-first-out memories for sequentially buffering data received by said receiver means; (e) control means coupled to said transmitter means and to said receiver means for selectively altering the structure of data transmitted on said first serial data channel and of data received on said second serial data channel and for synchronizing data received by said receiver means so as to insure the receipt of the beginning of a message; and (f) a bidirectional interface means coupled to an external bus and coupled to said first memory means, to said second memory means and to said control means for transferring data from said external bus to said first memory means and for transferring data to said external bus from said second memory means.

4,071,888

TELEPHONE MULTILINE AUTOMATIC VOICE ANSWER SYSTEM

Gerald John Owens, Freehold Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

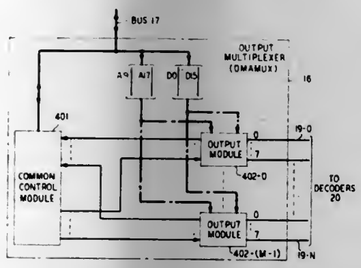
Filed Feb. 16, 1977, Ser. No. 769,166
Int. Cl.[2] G06F 3/04
U.S. Cl. 364—200 **17 Claims**

1. In a multiline telephone inquiry voice answer system of the type including output apparatus for monitoring address lines in a computer system to detect when digital words to be outputted have been loaded from a mass storage unit into word buffers in storage stages of a memory unit separate from the mass storage unit and then generating control signals to initiate and effect reading of those digital words in a prescribed output sequence of read intervals, wherein the improvement comprises:

a plurality of output modules each adapted to supply digital words to a predetermined number of output lines and being assigned on a one-to-one basis with a plurality of storage units in said memory unit, each of said output modules including means responsive to prescribed address signals transmitted on said computer system address lines when transferring digital words from the mass storage unit to word buffers in stages of a storage unit of said memory unit assigned to the output module for generating digital word read initiation signals corresponding to storage stages in said storage unit having loaded word buffers to be outputted in each read interval of said prescribed sequence of read intervals;

means responsive to said digital word initiation signals supplied from said plurality of output modules during each of said read intervals for normally generating a prescribed sequence of read control signals in response to each of said read initiation signals for effecting reading in a prescribed priority sequence digital words from word buffers in storage stages of said storage units corresponding to said output modules generating read initiation signals in each of said read intervals; and

means in each of said output modules responsive to predetermined ones of said control signals in a corresponding sequence generated to effect reading of a digital word from a word buffer in a storage stage of a storage unit assigned to the output module in said priority sequence for enabling the corresponding output module to receive the corresponding digital word, wherein a number of digital words are read in said priority sequence during each read interval in said prescribed sequence of read intervals corresponding to the number of output modules generating said read initiation signals which number is variable from read interval to read interval dependent on the number of output modules that have generated read initiation signals.



4,071,889

CENTRAL PROCESSING APPARATUS FOR GENERATING AND RECEIVING TIME DIVISION MULTIPLEX SIGNALS

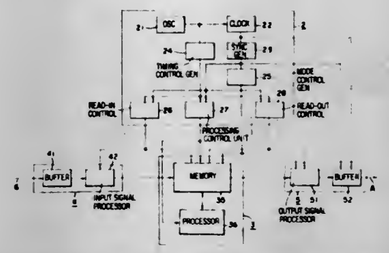
Shizuo Sumida; Kazuo Nii, both of Hiroshima; Osamu Shimizu, Himeji; Atsushi Ueda, Himeji, and Mitsuaki Ishii, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 492,715, July 29, 1974, abandoned.
This application July 22, 1976, Ser. No. 707,512
Claims priority, application Japan, July 28, 1973, 48-85163
Int. Cl.[2] G06F 3/04
U.S. Cl. 364—200 **3 Claims**

1. In a system including a plurality of remote electrical devices, and a multiplex signal transmission line coupled to each of the plurality of devices, a central processing apparatus comprising:

input means coupled to the multiplex signal transmission line for receiving state signals from the plurality of devices in a time division multiplex format representing the states of the plurality of devices;

output means coupled to the multiplex signal transmission line for transmitting logically processed signals to the plurality of devices in a time division multiplex format to control the plurality of devices;



logic processing means coupled to the input means and responsive to the receiving of the state signals for generating the logically processed signals;

a memory coupled to the logic processing means, the input means, and the output means, for storing the state signals received from the plurality of devices and the logically processed signals generated by the logic processing means and for transferring the logically processed signals to the output means; and

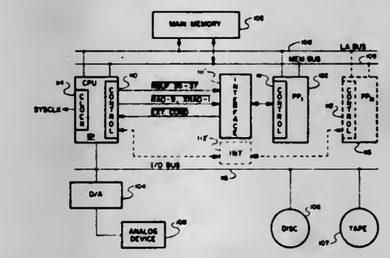
stored program control means coupled to the memory, the logic processing means, the input means, and the output means for controlling the operation thereof.

4,071,890

CPU-SYNCHRONOUS PARALLEL DATA PROCESSOR APPARATUS

Arun K. Pandeya, Framingham, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed Nov. 29, 1976, Ser. No. 745,910
Int. Cl.[2] G06F 9/18, 9/16
U.S. Cl. 364—200 **8 Claims**



1. In an improved binary data processing system including a main memory for storing at least said data in the form of binary words of predetermined bit length; a CPU connected from said main memory for processing said data, said CPU including clock means for providing timing signals for the operation of said system and a system controller for controlling the operation of said system, said system controller including a microprogram control store having a plurality of pages of predetermined word length and CPU interface structure including a modified microprogram control store consisting of extension of said predetermined word length of at least one of said pages, said extension having stored therein a modified microprogram; and said system further including I/O bus means connected from said CPU to outside of said system for transferring said data therebetween, the improvement comprising:

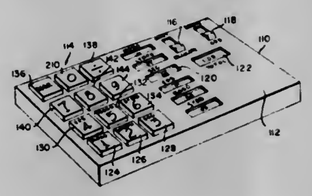
a parallel processor connected between said interface structure and said main memory for processing certain of said binary data simultaneously and synchronously with operation of said CPU, said parallel processor comprising: means for transferring said certain of said data to and from said main memory; register file means for receiving and temporarily storing at least said certain of said data from said transferring means; ALU means connected from said register file means for receiving and arithmetically manipulating inputs from said register file means and for providing a binary output representative of the result of the arithmetical manipulation; first PROM means connected from said ALU means for receiving and performing a plurality of mathematical operations on a like plurality of other binary words, each of said other binary words formed by a respective predetermined group of bits of said binary output, and for conducting results of said operations to said register file means; second PROM means for receiving and performing a second mathematical operation on another predetermined group of bits of said binary output; M0 register means for receiving and temporarily storing said certain of said data from said transferring means; means for combining the outputs of said second PROM means and said M0 register means into a binary address and for addressing said main memory with said address; third PROM means for receiving and performing a third mathematical operation on said another predetermined group of bits; other register means for receiving and temporarily storing output of said third PROM means and for receiving from said transferring means and temporarily storing said binary words of predetermined bit length; said addressing means permitting said main memory to read out to said transferring means, said binary word of predetermined bit length located at said address; multiplier means connected from said other register means for multiplying said third PROM means output with said binary word, said transferring means arranged to receive output of said multiplier means and to transfer said multiplier means output to said address; and decode and control means for decoding said modified microprogram and controlling operation of said parallel processor therewith.

4,071,891

ELECTRONIC CALCULATOR - REGISTER FOR HEMATOLOGY DIFFERENTIALS

George H. Barrows, 1279 Bassett, Louisville, Ky. 40204

Filed Apr. 30, 1976, Ser. No. 682,149
Int. Cl.[2] G06F 15/42; G01N 33/16
U.S. Cl. 364—416 **8 Claims**



1. An electronic calculator-register for hematology differentials comprising:

A. a plurality of counter-calculator means for storing numbers entered therein and performing mathematical computations on said entered numbers in response to instructional commands entered therein,

B. dual purpose keyboard means coded for the first purpose of visibly detecting specific types of blood cells and manually entering said cells in a one-by-one fashion and including a plurality of input elements coded for the second

purpose of introducing numerical data and instructional commands in response to the operation of said input elements,

C. switching network means operatively connected said keyboard entry means and said plurality of counter-calculator means for entering into said counter-calculator means said data and instructional commands introduced by said keyboard means,

D. said switching network means including first means for operatively connecting each of a first selected plurality of said input elements to different ones of a selected plurality of said counter-calculator means, and for entering an interger 1 corresponding to the specific blood cell type visibly detected in one of said counter-calculator means and instructing one of said counter-calculator means to add the entered integer 1 to the numbers stored therein and to store the resultant sum of detected blood cells when the respective said input element is operated,

E. said switching network means including second means for operatively connecting said first selected plurality of input elements to another of said counter-calculator means and for entering an interger 1 in said counter-calculator means and instructing said last mentioned counter-calculator to add the entered integer 1 to the number stored therein and to store the resultant sum when any of said first selected plurality of input elements is operated,

F. said switching network means including third means for operatively connecting each of a second plurality of input elements to each of said first selected plurality of counter-calculator means and for entering a number and instructional commands therein causing each of said counter-calculator means to effectively divide the resultant sum previously stored therein by the second number and store resultant quotient, and

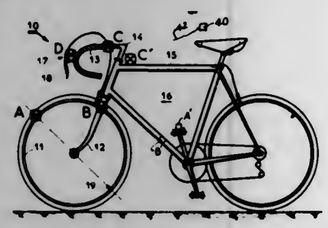
G. display means associated with each of said counter-calculator means for displaying numbers currently stored therein.

4,071,892

BICYCLE AND INFORMATION-PRODUCING ASSEMBLY CARRIED THEREBY

Claude Genzling, 15 Avenue des Cedres, 92410 Ville d'Avray, France

Filed Apr. 20, 1976, Ser. No. 678,488
Claims priority, application France, Apr. 21, 1975, 75 12337
Int. Cl.² G01P *3/42*; G06F *15/02*
U.S. Cl. 364—424 **11 Claims**



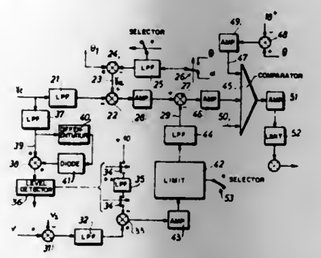
1. The combination of a bicycle and an information-producing assembly carried thereby, comprising a pair of means cooperating with each other for producing electrical revolution signals, said bicycle including a wheel carrying one of said pair of means for rotation with said wheel and a part carrying the other of said pair of means at a location for responding to turning of said one of said pair of means past the other of said pair of means for providing a revolution signal at each revolution of said wheel which carries said one of said pair of means, computer means carried by another part of the bicycle and electrically connected with the other of said pair of means for receiving said revolution signals therefrom, timed signal-producing means for producing timed electrical signals at a given frequency, said timed signal-producing means being electrically connected with said computer means for transmitting said timed signals thereto, said computer means having logic and arithmetic circuits for carrying out operations such as conditioning, calculating, treating, and memorizing, to produce from said revolution signals and timed signals a lasting value of distance traveled and ultimately of time elapsed during travel of the bicycle along a given course, and for also producing at the option of the operator values in connection with part of a course which is traveled by the bicycle, such as distance or time, average speed, maximum speed, and instantaneous speed attained at any given instant, indicating means operatively connected with said computer means for indicating at the selection of the operator time or distance in connection with part of the traveled course, and in a temporary illuminated display any of the above other values, and a source of electrical energy operatively connected with said pair of means, said computer means, and said indicating means for operating the same at least during use of the bicycle.

4,071,893

FLYING METHOD AND SYSTEM USING TOTAL POWER FOR AN AIRCRAFT

Jean-Luc Sicre, Meudon la Foret, France, assignor to Societe Francaise d'Equipements pour la Navigation Aerienne, Velizy-Villacoublay, France

Filed July 6, 1976, Ser. No. 703,006
Int. Cl.² G06G *7/78*; B64C *13/50*
U.S. Cl. 364—427 **22 Claims**



12. A system for applying a flying method using total power, for an aircraft, and comprising the steps of governing the aerodynamic gradient δa by reference to a desired gradient δd, obtaining the desired gradient δd by modulating the total gradient δt by the difference between the aircraft speed B and a reference speed V_2, and displaying an error signal δ representative of the difference between the aerodynamic gradient δa and the desired gradient δd, and wherein a signal representative of the total gradient δt is transmitted to a first input of an adder which receives at a second input a signal corresponding to the difference between the speed V and a reference speed, the adder output being connected to a first input of a subtractor which receives at a second input, a signal corresponding to the aerodynamic graident δa, the subtractor output being transmitted to a comparator which is connected to a member for controlling the pitching tendency bar of the artificial horizon, and the comparator also receiving a signal representative of a variation of stable position and a reference signal.

4,071,894

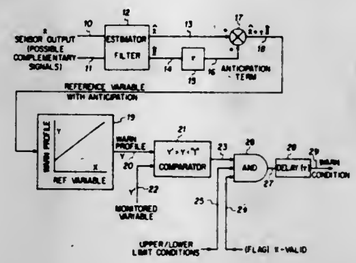
PROFILE WARNING GENERATOR WITH ANTICIPATION OF WARNING CONDITION

Theodore J. Schuldt, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed June 28, 1976, Ser. No. 700,634
Int. Cl.² G06F *15/50*; G08G *5/00*
U.S. Cl. 364—430 **6 Claims**

1. A system for generating an output warning condition signal when a monitored input variable exceeds a reference profile value defined by a predetermined function of an input

reference variable, comprising, signal generation means receiving said reference variable as input thereto and developing from the instant value and rate of change thereof a calculated future value of said reference variable after a time interval τ, said calculated future value being applied to a profile generating means to output said reference profile, comparator means receiving said monitored input variable and said reference



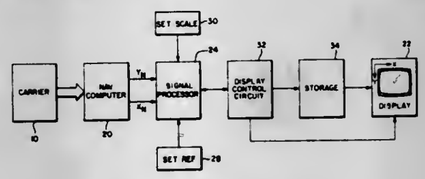
profile value as respective inputs thereto and developing an output signal in response to said monitored input variable exceeding said reference profile value, signal delay means receiving the output from said comparator means and imparting thereto a delay equated to said time interval τ, and the output of said delay means comprising said output warning condition signal.

4,071,895

NAVIGATIONAL DISPLAY SYSTEM

Kenneth E. Wood, and James T. O'Farrell, both of Annapolis, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1976, Ser. No. 713,179
Int. Cl.² G01S *7/04*
U.S. Cl. 364—449 **12 Claims**



1. A navigational display system, comprising:

A. a TV monitor;

B. means for providing first and second coordinate navigation signals indicative of the position of said carrier relative to a navigational reference;

C. means for converting said first navigation signal into a calculated scaled quantity between zero and L, where L is the number of active TV lines to be displayed on the monitor's TV picture;

D. means for converting said second navigation signal into a calculated scaled quantity across a TV line; and

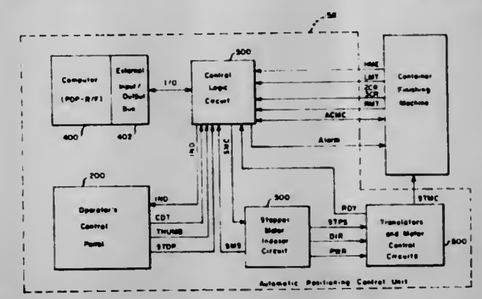
E. means for displaying a mark in said TV picture at the appropriately calculated TV line and distance along that line.

4,071,896

NUMERICAL CONTROL SYSTEM FOR FINISHING MACHINES

David Harrison Boyer, III, Baltimore, and Richard Dale Mitchell, Fallston, both of Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Dec. 17, 1976, Ser. No. 751,895
Int. Cl.² B31B *3/14*
U.S. Cl. 364—471 **19 Claims**



1. A method for producing corrugated paperboard containers of a desired size wherein the container blanks are processed by a container finishing machine having appurtenances which perform feeding, cutting, crushing, printing, folding and joining operations on the container blank, each of the appurtenances having an electrical drive motor connected thereto for individually positioning the appurtenances, the machine having multiple sections relatively movable into closed and open positions, the method comprising the steps of:

a. initially positioning the appurtenances at known positions with the drive motors;

b. supplying to a digital computing means, digital signals specifying dimensions of the container blank and locations on the container blank of operation to be performed on the container blank by each appurtenance for a container of the desired size and shape;

c. generating in response to the digital signals, electrical signals each representing a distance and direction of movement required to position an appurtenance relative to the known position of that appurtanance so as to perform a desired operation on the container blank at the location specified by the digital signals;

d. sensing an operational condition of the container finishing machine including the open and closed conditions of the sections of the container finishing machine;

e. applying the generated electrical signals to the drive motors of the appurtenances in accordance with a predetermined application sequence in response to a sensed closed operational condition of the container finishing machine;

f. indicating successful completion of the application sequence; and

g. subsequent to the indicating step, feeding the container blanks having the dimensions specified by the digital signals through the container finishing machine to produce containers of the desired size and shape.

4,071,897

POWER PLANT SPEED CHANNEL SELECTION SYSTEM

Charles L. Groves, Jr., Willingboro, N.J., and Steven J. Johnson, McCandless Township, Allegheny County, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1976, Ser. No. 713,176
Int. Cl.² F01K *13/02*; H02P *9/04*
U.S. Cl. 364—494 **17 Claims**

1. A system for controlling the operation of a turbine power

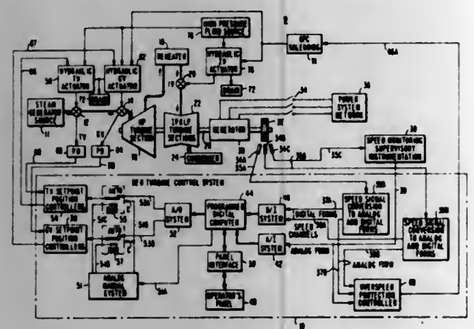
plant in accordance with monitored speed, said system comprising:

speed detection means;

a first conversion means governed by said detection means to generate both a first digital speed signal and a first analog speed signal;

a second conversion means similar to said first conversion means governed by said speed detection means to generate both a second digital speed signal and a second analog speed signal;

a third conversion means governed by said speed detection means to generate a third analog speed signal;



a first turbine controller governed by said first and second digital speed signals and said third analog speed signal to control the operation of the turbine below a predetermined speed level in accordance with a selected one of said first and second digital speed signals; and

a second turbine controller governed by said first, second and third analog speed signals to control the operation of the turbine above a predetermined speed level in accordance with a selected one of said first and second analog speed signals.

4,071,898

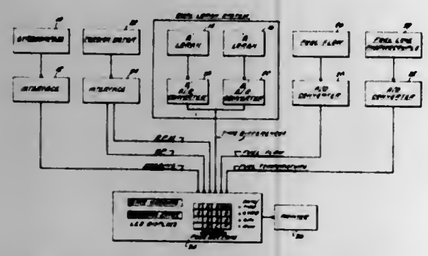
SHIP PERFORMANCE ANALYZER

Eugene Schorsch, Springfield, Pa., and Spurgen Sutherland, Clifton, N.J., assignors to Sun Shipbuilding & Dry Dock Company, Chester, Pa.

Filed June 14, 1976, Ser. No. 696,103

Int. Cl.² G01L *25/00;* G01S *5/02*

U.S. Cl. 364—551 **12 Claims**



1. In a system for enabling the performance of a ship on a test run to be analyzed and including a means for determining the speed of the ship propeller shaft, a means for determining the rotational torque on the ship propeller shaft, and means for receiving successive readings in time of Loran navigational signals, the improvement comprising means responsive to the successive readings in time of the received Loran navigational signals for determining the ship speed regardless of whether or not the ship is traveling substantially perpendicular to Loran lines of hyperbolae, said means for determining the ship speed including:

a. means for storing expected values of a given physical parameter which is dependent upon Loran time difference readings at an assumed geographical location of the test run midpoint;

b. means, responsive to the successive readings in time, for calculating measured values of said given physical parameter for the test run midpoint;

c. means for comparing the expected values of said given physical parameter with the measured values of said given physical parameters to determine if they are not within given error tolerances; and

d. means responsive to a determination that said values are not within said given error tolerances for iteratively correcting the assumed location and then determining new expected values of said given physical parameter for the next assumed location and repeating the comparison and iteration until the given error tolerances are met.

4,071,899

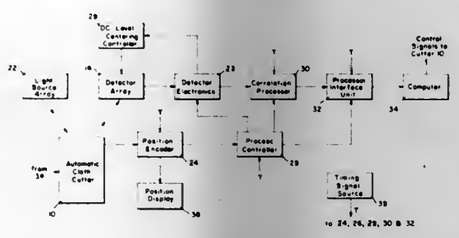
SYSTEM AND METHOD FOR THE MEASUREMENT OF REPETITIVE PATTERNS

Josef K. Holy, Carlsbad, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed July 9, 1976, Ser. No. 704,191

Int. Cl.² G01N *21/32;* G06F *15/34, 15/46*

U.S. Cl. 364—561 **19 Claims**



1. A system for providing signals which are indicative of the spacing between repetitive transverse bar patterns of a plaid material, said system comprising:

sampling means for providing sample signals which are indicative of the relative light reflectivity of said material at given increments along a first path which is substantially parallel to one dimension thereof, said one dimension being approximately transverse to said bars; and

a correlation processor which includes means for selecting a group of consecutive sample signals produced from one segment along said first path, and means for generating correlation signals by correlating said selected group of sample signals with groups of sample signals produced from a plurality of segments along said first path, whereby the resulting correlation signals are indicative of the spacing along said first path between the transverse bar patterns.

19. A method for providing signals which are indicative of the spacing between repetitive transverse bar patterns of a plaid material, said method comprising the steps of:

sampling the relative light reflectivity of said material at given increments along a first path which is substantially parallel to one dimension thereof, said one dimension being approximately transverse to said bars;

selecting a group of consecutive sample signals produced from one segment along said first path, and

generating correlation signals by correlating the selected group of sample signals with groups of sample signals produced from a plurality of segments along said first path, whereby the resulting correlation function signals are indicative of the spacing between the transverse bar patterns.

4,071,900

CONTROL DEVICE FOR AN INVERTED RECTIFIER

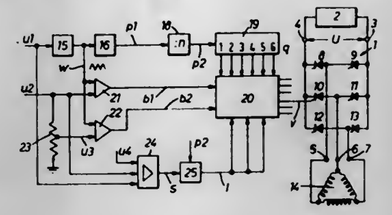
Arne Jensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Dec. 1, 1976, Ser. No. 746,389

Claims priority, application Germany, Dec. 3, 1975, 2554223

Int. Cl.² G06J *1/00;* H02P *5/16*

U.S. Cl. 364—600 **5 Claims**



1. A control device for an inverted rectifier unit having a plurality of switches, comprising a logic unit having a plurality of outputs connected respectively to said rectifier switches, oscillator means having a frequency determined by a first control signal, commutator means between said oscillator and said logic unit for inputting a corresponding plurality of unmodulated zone signals to said logic unit, comparator means connected to said oscillator and controlled by a second control signal for supplying a pulse train to said logic unit having a frequency set by said first signal and spacing determined jointly by said first and second signals, analog computer means for generating a function which corresponds to said pulse train spacing, said computer having a first input for receiving a third signal for adjustably setting a critical spacing corresponding to the amplitude of the output of said oscillator means, said computer having second and third inputs for receiving respectively said first and second control signals for comparison with said third signal.

4,071,901

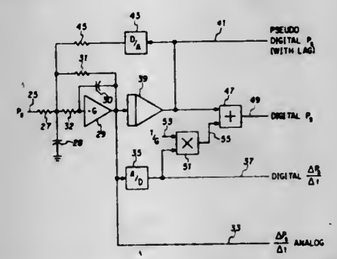
ANALOG-TO-DIGITAL CONVERSION MEANS AND ASSOCIATED LAG COMPENSATED APPARATUS

James L. Brown, Toddville, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 8, 1976, Ser. No. 739,891

Int. Cl.² G06J *1/00;* H03K *13/02*

U.S. Cl. 364—605 **4 Claims**



1. Differentiating apparatus comprising:

an amplifier having a gain of G and having an input and an output;

signal combining means, including first and second inputs, connected to supply output signals to the input of said amplifier;

feedback means connected between the output of said amplifier and the first input of said signal combining means, and comprising, in series, an analog-to-digital integrator, and a digital-to-analog converter;

means for supplying an analog signal to be converted to the second input of said signal combining means;

an analog-to-digital converter connected to the output of said amplifier for providing a digital signal output representative of the rate of change of the signal supplied to the second input of said signal combining means;

means connected to receive digital signals from said analog-to-digital converter for providing an output signal indicative of 1/G times the received signal;

and algebraic combining means, connected to receive the output of said integrator and from said means providing an output signal indicative of 1/G times the received signal to provide an output digitally representative of the signal supplied to the second input of said combining means, whereby said output is compensated for any lag introduced by said integrator.

4,071,902

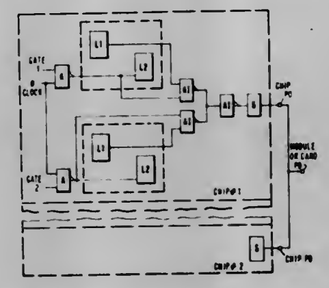
REDUCED OVERHEAD FOR CLOCK TESTING IN A LEVEL SYSTEM SCAN DESIGN (LSSD) SYSTEM

Edward Baxter Eichelberger, Purdy Station, N.Y., and Thomas Walter Williams, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1976, Ser. No. 701,053

Int. Cl.² G06F *7/38*

U.S. Cl. 364—716 **14 Claims**



1. A functional logic unit comprising:

a plurality of latches arranged in groups;

means for generating a plurality of clock signal trains coupled to respective groups of said latches for controlling the latches;

plural networks at least one of which is responsive to a set of unit input signals with each such network providing a set of network signal indications;

means coupling the sets of network signal indications to respective groups of latches such that the indications are latched in the respective groups under the control of the respective clock signal trains;

means coupling the outputs of the respective groups of latches as sets of inputs to all networks except a network coupled to a latch group controlled by the same clock signal train;

means coupling the outputs of the latch groups for providing a logic unit output indication that is a function of said set of unit input signals and said indications in the respective groups of latches;

further means interconnecting said plurality of latches arranged in groups into at least one shift register having a plurality of shift register stages, each of said stages of said shift register comprising a first latch and a second latch; and

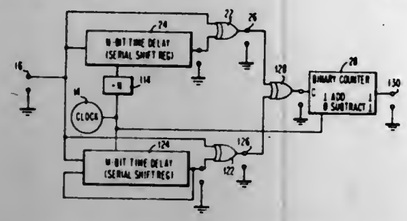
additional circuit means including AND circuit means connected to at least certain of said second latches for test purposes, whereby at least certain of said first and second latches are employed to perform a logical function in said functional logic unit and a test function in testing said unit.

4,071,903

AUTOCORRELATION FUNCTION FACTOR GENERATING METHOD AND CIRCUITRY THEREFOR

Stanley Maurice Head, and Constantine Michael Melas, both of Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1976, Ser. No. 711,760
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—728 6 Claims



1. Autocorrelation function factor generating circuitry comprising;

a source of clocking pulse wave,

a signal modulating circuit arrangement having a modulating electric wave input terminal at which is applied a signal wave for which an autocorrelation function factor is desired, having a carrier wave input terminal at which a clocking pulse wave from said source is applied and having an output terminal at which is presented an output wave comprising a series of binary naughts and units,

a digital multiplying circuit having an input line connected to said output terminal of said modulating circuit, having another input line and having an output line,

a multi-bit digital time delay circuit connected between said output terminal of said modulating circuit and said other input line of said multiplying circuit, and

a binary counting circuit of the up-down type having a counting input line connected to said output line of said multiplying circuit, and having output terminals at which said autocorrelation factor is delivered.

5. Autocorrelation function factor generating circuitry comprising

a source of digital data signal represented by a stream of bivalued data bits,

modulated signal wave input terminals connected to said source,

output terminals at which an electric representation of a binary number autocorrelation function factor is delivered,

an XOR gating circuit having an input line connected to said input terminals, having another input line and having an output line,

a multi-bit digital time delay circuit connected between said input terminals and said other input line of said XOR gating circuit,

another XOR gating circuit having an input line connected to said input terminals, having another input line and having an output line,

another multi-bit digital time delay circuit connected between said output terminals and said other input line of said other XOR gating circuit, and connected for recirculating operation,

a source of timing waves connected to said digital time delay circuits for recirculating the data in said other time delay circuit in synchronism and as fast as the passage of one bit in the first said time delay circuit,

a further XOR gating circuit having input lines individually connected to said output lines of the other XOR gating circuit, and

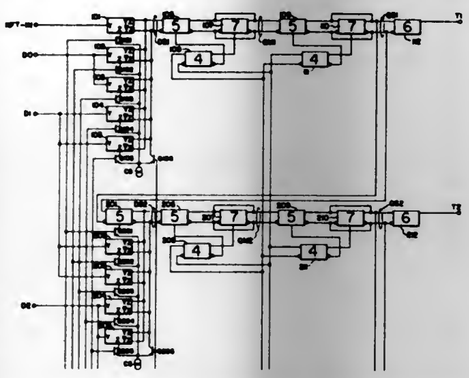
a binary counting circuit of the type wherein one binary unit is added in response to each input binary unit and one binary unit is subtracted in response to each input binary naught and having a counting input line connected to said output line of said further XOR gating circuit, and having output terminals connected to said factor delivering output terminals.

4,071,904

CURRENT MODE MULTIPLE-GENERATING REGISTER

Homer Warner Miller, Peoria, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 3, 1977, Ser. No. 756,465
Int. Cl.[2] G06F *7/52*
U.S. Cl. 364—757 6 Claims



1. An improved current mode muliple-generating register for generating multiples of a first binary number which is input thereto, said register being provided with non-functional test (NFT) capabilities, said register comprising:

a control circuit comprising a first portion responsive to a 3-bit control signal Y1 Y2 Y4 and a second portion responsive to a first control signal NFTR and to a second control signal NFTS;

a clock circuit responsive to a clock signal $ and to a clock-enable signal eS;

a plurality of data stages, each of which is responsive to a respective bit of said first binary number, each of said data stages further comprising

a data selector circuit responsive to said respective bit of said first binary number and further responsive to said control circuit,

a master/slave register, said master/slave register being responsive to said clock circuit and further responsive to said data selector circuit, and

an output buffer circuit responsive to said master/slave register,

whereby said plurality of data stages generate a second binary number which is a multiple of said first binary number in response to said 3-bit control signal.

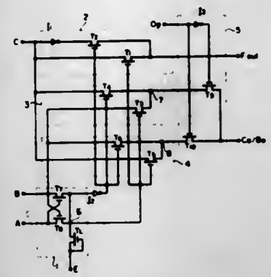
4,071,905

FULL ADDER/SUBTRACTOR CIRCUIT EMPLOYING EXCLUSIVE OR LOGIC

Tetsuji Oguchi, and Hirokazu Kawai, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1976, Ser. No. 736,236
Claims priority, application Japan, Oct. 31, 1975, 50-130534
Int. Cl.[2] G06F *7/50*
U.S. Cl. 364—784 9 Claims

1. A circuit comprising an exclusive logic sum termn generator generating an exclusive logic sum term of a first and second operand signals, a result signal generator receiving a third signal representing one of carry and borrow information and deriving a result signal from one of said third signal and an inverted signal thereof in response to the output of said exclusive logic sum term generator, a carry and borrow signal generator deriving one of said third signal and said first operand signal as a carry signal and the other of said third signal and said first operand signal as a borrow signal both in response to said output of said exclusive logic sum term genera-



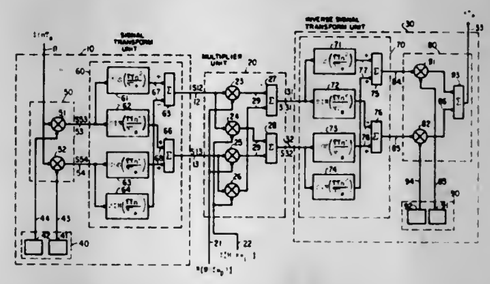
tor, and a selection circuit selecting one of said carry signal and said borrow signal in response to a command signal commanding one of addition and subtraction.

4,071,906

CTD PROGRAMMABLE CONVOLVER

Dennis D. Buss, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 1, 1976, Ser. No. 728,702
Int. Cl.[2] G06G *7/19;* G11C *11/40*
U.S. Cl. 364—819 45 Claims



1. A programmable convolver comprising:

a. signal transform means utilizing charge transfer devices for performing chirp Z transforms without post multiplication, on successive samples of selected segments of electronic input signals; and having inputs for receiving said successive samples, and having a pair of output electrodes for transmitting a pair of electronic signals having magnitudes equal to the real and imaginary components of said modified chirp Z transform of said successive samples,

b. multiplier means having a first pair of inputs coupled to said output electrodes of said signal transform means, and having a second pair of inputs for receiving electronic signals having magnitudes equal to the real and imaginary components of an artibrary complex signal $H(kw_p)$; for producing a pair of product signals, on a pair of output electrodes, having magnitudes equal to the real and imaginary components of the complex product of the signals on said first and second pair of input electrodes, and

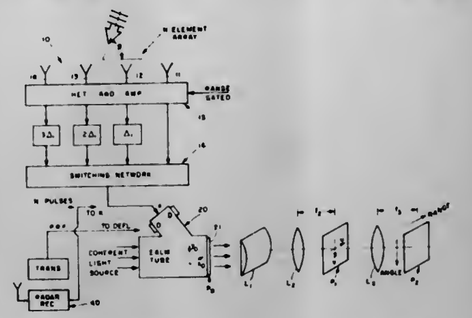
c. inverse signal transform means having inputs coupled to said output electrodes of said multiplier means; and utilizing charge transfer devices to perform inverse chirp Z transforms without pre-multiplication on said pair of product signals; and having output electrodes for transmitting electronic signals with magnitudes equal to said modified inverse chirp Z transform of said product signals.

4,071,907

RADAR SIGNAL PROCESSOR UTILIZING A MULTI-CHANNEL OPTICAL CORRELATOR

David Paul Casasent, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1976, Ser. No. 731,471
Int. Cl.[2] G06G *9/00;* G01S *7/16*
U.S. Cl. 364—822 16 Claims



1. In an electro-optic signal processor for providing target range and azimuth data from radar signals detected by an N element linear phased array, the combination of

an optically readable signal storage device;

means for recording each radar signal so detected as a corresponding transmittance condition on N lines of said signal storage device,

each signal recording being at a horizontal location such that the vertical phase slope across these recordings is indicative of the azimuth angle of the target from which the detected signal originated;

a multi-channel optical correlator having an input, frequency and output plane,

said correlator being of the type wherein the 1-D horizontal Fourier transform is performed between its input and frequency planes and a 2-D Fourier transform between its frequency and output planes;

a multi-channel 1-D matched spatial filter having target azimuth and range reference data stored therein in the form of an interference pattern,

said signal storage device being arranged such that the pattern of transmittance conditions representing the detected radar signal appears at the input plane of said correlator,

said matched filter being positioned such that the interference pattern stored therein appears at the frequency plane of said correlator; and

means for illuminating said input plane with a coherent light beam whereby the correlation peak appearing in the output plane of said correlator has coordinates that are proportional to the range and azimuth angle of said target.

4,071,908

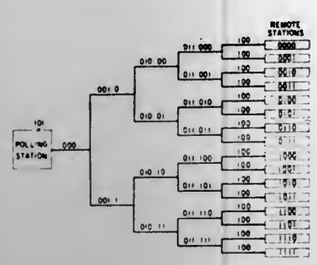
ADAPTIVE POLLING TECHNIQUE

Francis Joseph Brophy, East Windsor, and Jeremiah Francis Hayes, Tinton Falls, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, MurrayHill, N.J.

Filed Mar. 17, 1977, Ser. No. 778,352
Int. Cl.[2] G06F *3/04;* H04Q *5/00*
U.S. Cl. 364—900 13 Claims

1. A polling system including a control station and a plurality of remote stations, the control station including means for transmitting a sequence of polling words to query the remote stations, polling words designating remote station groups of various sizes and means responsive to responses to the group polling words for sending subsequent polling words in the sequence which designate successively smaller group sizes

until individual stations respond, CHARACTERIZED IN THAT



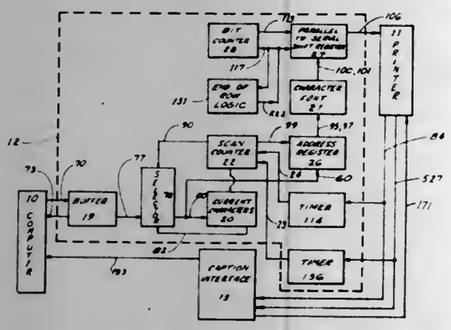
the control station further includes means responsive to the quantity of the responses in a sequence for calculating which one of the various group sizes is to be designated by the initial polling word of a subsequent sequence.

4,071,909

DIGITAL INTERFACE SYSTEM FOR A PRINTER

Stephen I. Geller, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 30, 1976, Ser. No. 728,084
Int. Cl.² G06F 3/12
U.S. Cl. 364—900 **5 Claims**



1. Interface apparatus for use in adapting digitized bits of encoded character representations of message information from a computer to a form suitable for use with a printer that employs a cursor to scan in a raster parallel to a first axis and to move relative to a second axis perpendicular to said first axis to subsequent scans to effect permanent recordation of print characters utilizing a predetermined plurality of scans parallel to said first axis to produce each character on laminar record media comprising:

buffer storage means for receiving the digitized bits of encoded character representations,

current character storage means for retaining bit representations of a plurality of the digitized bits of encoded character representation next to be printed,

memory storage means for storing sets of video signals associated with particular characters in a character font and with particular scans in the aforesaid plurality of scans,

scan counting means that is incremented and reset in response to separate actuating signals from said printer and which provides a current scan count and also provides an advance signal to update the contents of said current character storage means each time a predetermined count is reached,

address means connected to said memory storage means and to said scan counting means and sequentially responsive to the bit representations of the plurality of the digitized bits of encoded character representation currently being processed and to the current scan count to sequentially access sets of video signals from said memory storage means,

shift register means connected to said memory storage means for sequentially passing sets of said video signals to said printer as said sets are accessed out of memory storage means,

a recycling bit counter for providing an actuating signal to said shift register means to effectuate transfer of said video signals to said printer each time a predetermined count of said recycling bit counter is reached,

caption storage means for storing ones of sets of video signals associated with particular characters in a character font dedicated to the production of predetermined caption information,

caption accessing means for accessing ones of said sets of video signals out of said caption storage means in a preselected order determined in accordance with the character sequence required by said predetermined caption information,

caption signal shift register means for receiving each set of video signals from said caption storage means with the signals in each set in a predetermined arrangement therein, and for sequentially passing said sets of video signals of said caption storage means to said printer as they are accessed out of caption storage means,

caption scan counting means incremented in response to a signal from said printer and operative in association with said accessing means to provide a current scan count to sequentially gate portions of said caption storage means, to allow accessing of video signals therefrom,

first axis inhibit means for enabling operation of said accessing means only after the elapse of a first preselected interval of time,

second axis inhibit means for enabling operation of said caption scan counting means only after the elapse of a second preselected interval of time,

caption bit counting means for providing an actuating signal to said caption signal shift register means to effectuate transfer of said video signals of said caption storage means to said printer each time a predetermined count of said caption bit counting means is reached, and

caption bit counter enabling means connected to enable said caption bit counting means in response to a dedicated digitized input signal provided in association with said digitized message information.

4,071,910

TIME-MULTIPLEXED OUTPUT DEVICES IN VIDEO TERMINAL SYSTEMS

Thomas C. Stockebrand, Albuquerque, N. Mex.; Russell C. Doane, Framingham, and Michael D. Morganstern, Wayland, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 516,348, Oct. 21, 1974. This application Nov. 8, 1976, Ser. No. 739,670
Int. Cl.² G06F 3/12, 3/14; G06K 15/00
U.S. Cl. 364—900 **5 Claims**

1. In a video terminal system having at least two display devices, one of said display devices displaying data at a rate approximately two orders of magnitude faster than the other display device, said video terminal system having a microprocessor executing instructions controlling transfers in said system, the process of providing data to each of said display devices comprising the steps of:

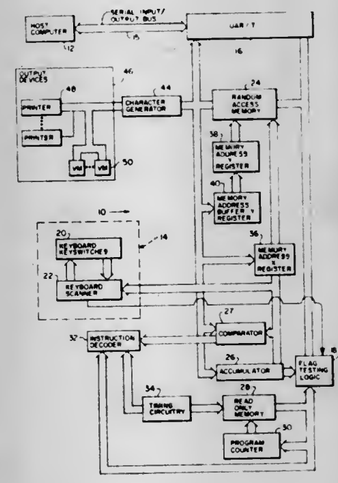
A. Storing, in a first part of memory, data to be displayed on said one display device;

B. counting in an accumulator the scans across said one display device, each display line on said one display device comprising a first predetermined number of scans, each display line being separated by a second predetermined number of scans;

C. sensing by test logic the count in said accumulator to determine when said first predetermined number of scans is occurring;

D. addressing by address logic said first part of memory for data to be displayed by said one display device;

E. transferring during said first predetermined number of scans from said first part of memory through a character generator to said one display device a dot pattern of said addressed data;



E. displaying on said one display device said dot pattern for a display line during said first predetermined number of scans;

G. identifying by a key switch on a keyboard one of said display lines to be displayed on said other display device;

H. storing, in a second part of memory, address information which identifies data in said first part of memory to be displayed by said other display device;

I. addressing by said address information during said second predetermined number of scans said first part of memory for data to be displayed by said other display device;

J. transferring during said second predetermined number of scans said addressed data from said first part of memory through said character generator to said other display device a dot pattern of said addressed data;

K. repeating steps H through J until said display line of data has been displayed on said other display device; and

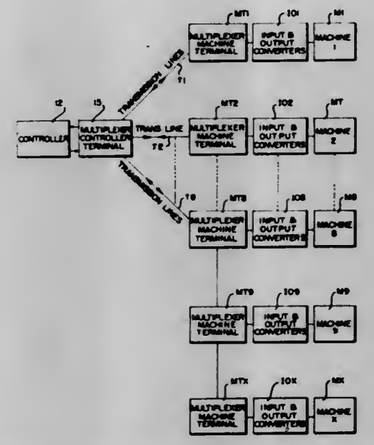
L. terminating steps H through K when said selected line has been displayed by said other display device.

4,071,911

MACHINE CONTROL SYSTEM WITH MACHINE SERIALIZING AND SAFETY CIRCUITS

Richard A. Mazur, Downers Grove, Ill., assignor to Continental Can Co. Inc., New York, N.Y.

Continuation-in-part of Ser. No. 570,405, April 22, 1975, abandoned, and Ser. No. 570,406, April 22, 1975, abandoned. This application Apr. 9, 1976, Ser. No. 675,692
Int. Cl.² G06F 15/46, 15/06, 9/06, 11/00
U.S. Cl. 364—900 **18 Claims**



1. A multiplexing machine control communications system for controlling a plurality of machines from a programmable controller, comprising

a multiplexer controller terminal for receiving condition-defining information signals representing the operational functions of a plurality of independently operable multifunctioning machines and transmitting predetermined command signals to control selected functions of each of said machines,

a programmable controller coupled to said multiplexer controller terminal to provide a source of said predetermined command signals for controlling said machines in response to said condition-defining information signals,

a plurality of multiplexer machine terminals, one coupled to each one of said plurality of independently operable multifunctioning machines to transmit condition-defining information signals responsive to the operational functions of a machine coupled thereto and to receive in response thereto selected ones of said predetermined command signals,

an input and output converter coupled between said multiplexer machine terminal and a machine coupled thereto for coupling said information and command signals therbetween,

respective transmission lines for connecting said multiplexer controller terminal in parallel with each of said multiplexer machine terminals,

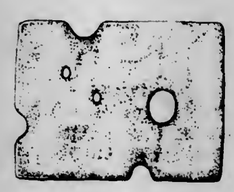
said multiplexer machine terminals operating independently of each other for communication between said multiplexer controller terminal and each of said multiplexer machine terminals, and

safety circuit means for monitoring the transmission of data on said transmission lines and providing inhibit signals for inhibiting data transfer within the system when transmission on said lines is interrupted.

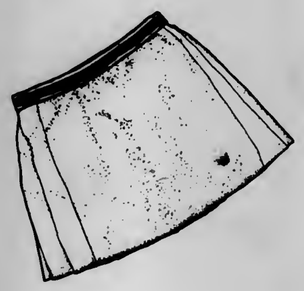
DESIGNS

JANUARY 31, 1978

247,071
CRACKER
Jay R. Neidenberg, Randolph; Dewey L. Warren, Hewitt; Eugene D. Oppedisano, Glen Rock, and Robert R. Thulin, Franklin Lakes, all of N.J., assignors to Nabisco, Inc., East Hanover, N.J.
Filed June 2, 1976, Ser. No. 692,202
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—23



247,072
SKIRT
Peter William Swift Morgan, Keighley, England, assignor to Dunlop Limited, England
Filed Feb. 12, 1976, Ser. No. 657,482
Claims priority, application United Kingdom, Aug. 13, 1975, 972176
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—224

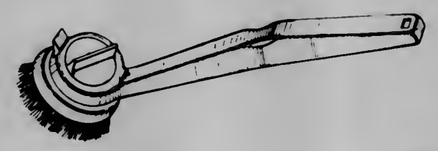


247,073
SHOE
William F. Kane, and Melvin R. Richardson, both of Costa Mesa, Calif., assignors to SneakSlides of California, Costa Mesa, Calif.
Filed May 19, 1976, Ser. No. 687,699
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—308



247,074
PLATFORM TYPE SHOE SOLE
George Henry, 1824-96th Ave., Oakland, Calif. 94603
Filed Aug. 25, 1975, Ser. No. 607,135
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

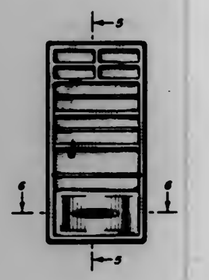
247,075
COMBINED CLEANING IMPLEMENT HANDLE AND INTERCHANGEABLE HEADS THEREFOR
Kurt Krusche, Nanserning 22, Frankfurt am Main, Germany (6000)
Filed Nov. 6, 1975, Ser. No. 629,306
Claims priority, application Germany, May 9, 1975, 73MR8383
Term of patent 14 years
Int. Cl. D4—*01;* D7—*05*
U.S. Cl. D4—12



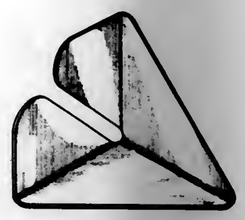
247,076
BRUSH
Mary C. MacCollum, 8908 Pickwick Drive, Indianapolis, Ind. 46260
Filed Aug. 9, 1976, Ser. No. 712,524
Term of patent 7 years
Int. Cl. D4—*02*
U.S. Cl. D4—35



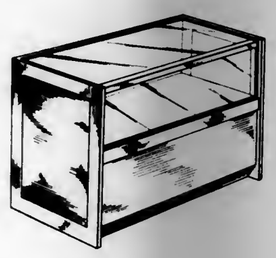
247,077
COMBINED TOWEL CADDY AND TISSUE DISPENSER
George S. Gruber, Hidden Hills, Calif., assignor to Dimensionetix, Inc., North Hollywood, Calif.
Filed Dec. 8, 1976, Ser. No. 748,646
Term of patent 14 years
Int. Cl. D23—*02*; D6—*04*
U.S. Cl. D6—91



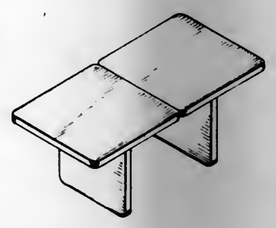
247,078
BOOK SUPPORT
Gerald M. Grusin, 2626 N. Lakeview, Chicago, Ill. 60614
Filed Nov. 2, 1976, Ser. No. 738,028
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—106



247,079
CABINET
Martin Otema, 140 Erskine Avenue, Toronto, Ontario, Canada
Filed Dec. 1, 1975, Ser. No. 636,512
Term of patent 14 years
Int. Cl. D6—*04*; D20—*02*
U.S. Cl. D6—172



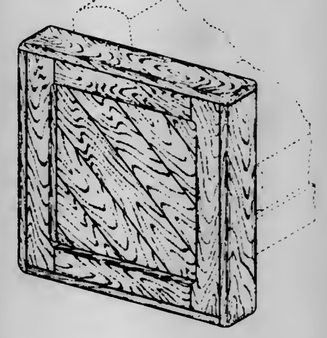
247,080
TABLE
Fuller Robinson, Jalisco, Mexico, assignor to Standard Desk Limited
Division of Ser. No. 448,506, March 6, 1974. This application Mar. 4, 1976, Ser. No. 664,062
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



247,081
MOBILE DISPLAY RACK
Charles L. Davis, Atlanta, Ga., assignor to The Coca-Cola Company
Filed Jan. 30, 1976, Ser. No. 654,149
Term of patent 14 years
Int. Cl. D20—*02*; D12—*02*
U.S. Cl. D6—186



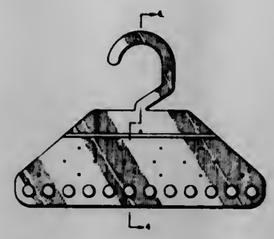
247,082
END STANDARD FOR A FURNITURE SEAT
Dick J. Thompson, Rte. 7, Box 430, Raleigh, N.C. 27612, and Edward P. Boatwright, 5312 Old Trinity Road, Raleigh, N.C. 27607
Filed May 24, 1976, Ser. No. 689,521
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



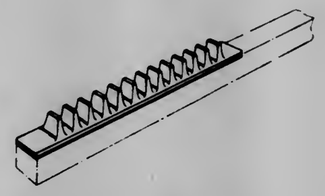
247,083
COMBINED VANITY SKIRT AND TISSUE DISPENSER
George S. Gruber, Hidden Hills, Calif., assignor to Dimensionetix, Inc., North Hollywood, Calif.
Filed Dec. 8, 1976, Ser. No. 748,645
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



247,084
HANGER FOR ORGANIZING JEWELRY
Louis P. De Mascole, 325 Red Chimney Drive, Warwick, R.I. 02886, and Donald C. Tatro, 95 Lloyd Road, Saunderstown, R.I. 02874
Filed June 11, 1976, Ser. No. 695,282
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—247



247,085
HANGER SUPPORT FOR DISPLAY RACKS
David C. F. Stoddard, Atlanta, Ga., assignor to Abrams Fixture Corporation, Atlanta, Ga.
Filed July 15, 1976, Ser. No. 705,360
Term of patent 14 years
Int. Cl. D6—*06*; D20—*02*
U.S. Cl. D6—257



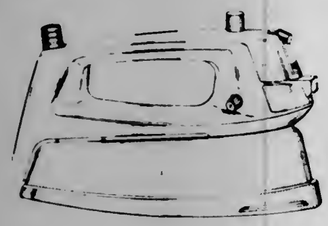
247,086
ARTICLE OF FLATWARE
Milton Gonshorek, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Apr. 25, 1975, Ser. No. 571,685
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



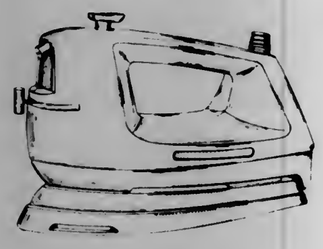
247,087
WASTE RECEPTACLE
Thomas Dickinson, University City, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Filed Oct. 4, 1976, Ser. No. 729,210
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194



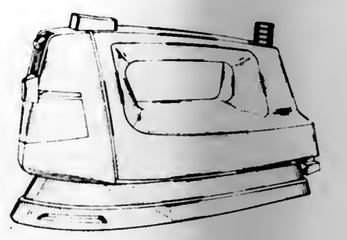
247,088
STEAM IRON
Thomas E. Hanson, Phoenixville, and Daniel A. Martin, Philadelphia, both of Pa., assignors to SCM Corporation, New York, N.Y.
Filed Apr. 19, 1976, Ser. No. 677,997
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—202



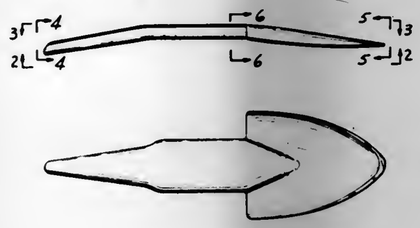
247,089
STEAM IRON
Thomas E. Hanson, Phoenixville, and Daniel A. Martin, Philadelphia, both of Pa., assignors to SCM Corporation, New York, N.Y.
Filed Apr. 19, 1976, Ser. No. 677,998
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—202



247,090
STEAM IRON
Thomas E. Hanson, Phoenixville, and Daniel A. Martin, Philadelphia, both of Pa., assignors to SCM Corporation, New York, N.Y.
Filed Apr. 19, 1976, Ser. No. 677,999
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—202



247,091
GARDENING AND AGRICULTURE HAND TOOL
Alexander E. Sandorf, 4559 Petit Ave., Encino, Calif. 91316
Filed Dec. 31, 1975, Ser. No. 645,684
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—11



247,092
BOTTLE
Bisked U. Evangelista, 1363 Skyhawk Circle, and Eugenio D. Caburian, 1362 Skyhawk Circle, both of Virginia Beach, Va. 23454
Division of Ser. No. 649,572, Jan. 15, 1976. This application Mar. 18, 1977, Ser. No. 779,058
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—66



247,093
BOTTLE
Albert H. Torongo, Yardley, Pa., and Roland Johnson, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed June 27, 1975, Ser. No. 590,905
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—116



247,094
BOTTLE
William James Britt, Greenville, S.C., assignor to Morton-Norwich Products, Inc.
Filed May 28, 1976, Ser. No. 691,182
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—129



247,095
BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc.
Division of Ser. No. 617,352, Sept. 29, 1975, which is a division of Ser. No. 467,079, May 6, 1974. This application May 16, 1977, Ser. No. 797,084
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—157



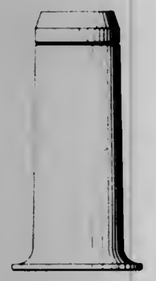
247,096
BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc.
Division of Ser. No. 617,352, Sept. 29, 1975, which is a division of Ser. No. 467,079, May 6, 1974. This application May 16, 1977, Ser. No. 797,085
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—157



247,097
NEEDLE PACKAGE
Lionel Peter Preece, 7 Holt Gardens, Studley, Warwick County, England
Filed Mar. 19, 1976, Ser. No. 668,647
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—172



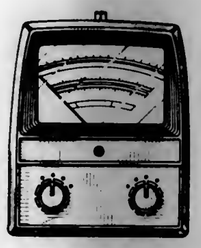
247,098
DISPENSER FOR PULVEROUS AND GRANULAR SUBSTANCES
Rafael Ferrante, Catamarca 27, Quilmes, Pcia. Buenos Aires, Argentina
Filed Jan. 14, 1975, Ser. No. 540,796
Claims priority, application Argentina, July 18, 1974, 25784; Jan. 14, 1975, 27161
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—208



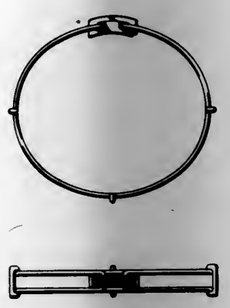
247,099
MOISTURE METER
Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.
Filed Oct. 6, 1975, Ser. No. 620,039
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—56



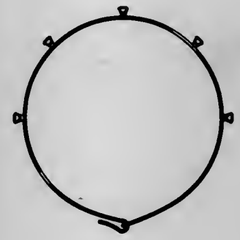
247,100
IGNITION ANALYZER
Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.
Filed Oct. 6, 1975, Ser. No. 620,038
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



247,101
WIRE BRACELET WITH DETACHABLE DIAMOND CLASP
Alfred Joseph Durante, Forest Hills, N.Y., assignor to Cartier, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 557,127, March 10, 1975, abandoned. This application Sept. 15, 1976, Ser. No. 723,631
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—4



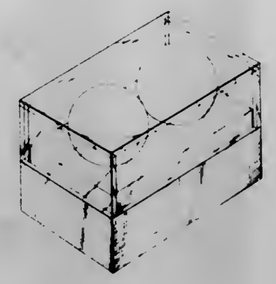
247,102
DIAMOND AND WIRE BRACELET
Alfred Joseph Durante, Forest Hills, N.Y., assignor to Cartier, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 557,125, March 10, 1975, abandoned. This application Sept. 15, 1976, Ser. No. 723,633
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—5



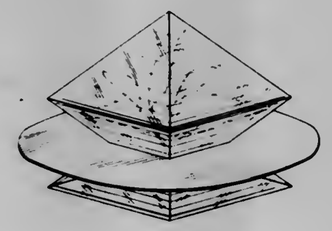
247,103
IDENTIFICATION BRACELET
Elio Loesini, Johnston, R.I., assignor to Raybeth Tool & Die Co., Inc., Providence, R.I.
Filed June 1, 1976, Ser. No. 692,028
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—12



247,104
STATUETTE
Robert P. Novel, 2121 P St., NW., Washington, D.C. 20036
Filed Apr. 14, 1976, Ser. No. 676,681
Term of patent 3½ years
Int. Cl. D11—*02*
U.S. Cl. D11—131



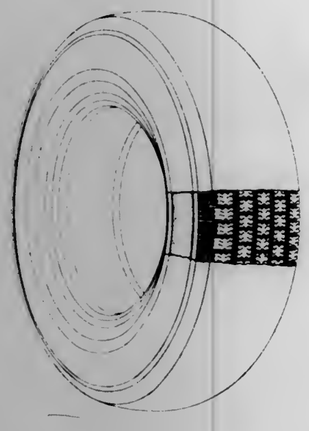
247,105
COMBINED TABLE AND TERRARIUM
Robert L. Kovach, 5765 Brecksville Road, Independence, Ohio 44131
Filed May 7, 1976, Ser. No. 684,378
Term of patent 14 years
Int. Cl. D11—*04*
U.S. Cl. D11—144



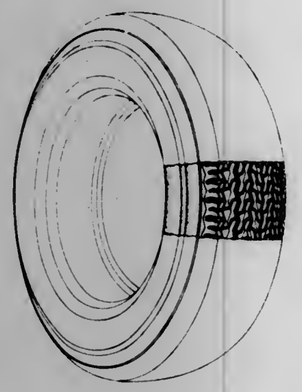
247,106
VASE
Michael A. Tortorete, 1627 Chislett, Pittsburgh, Pa. 15206
Filed Feb. 4, 1977, Ser. No. 765,445
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—147



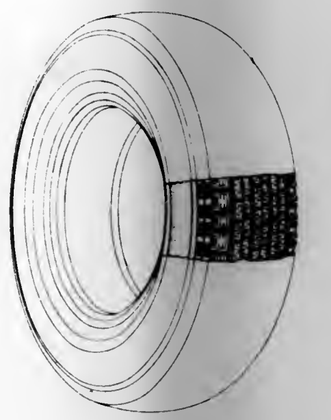
247,107
TIRE
Philippe Jamain, Chatel-Guyon, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Oct. 21, 1976, Ser. No. 734,655
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



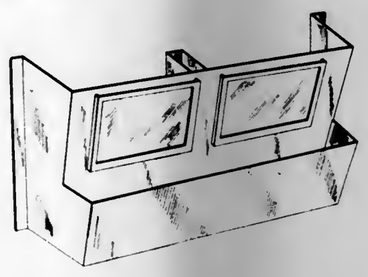
247,108
TIRE
Jean-Claude Peron, Greenville, S.C., assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Jan. 17, 1977, Ser. No. 759,637
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



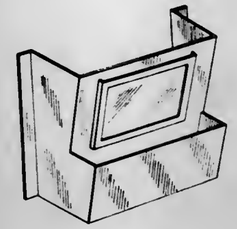
247,109
TIRE
Philippe Jamain, Chatel-Guyon, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Oct. 21, 1976, Ser. No. 734,653
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—148



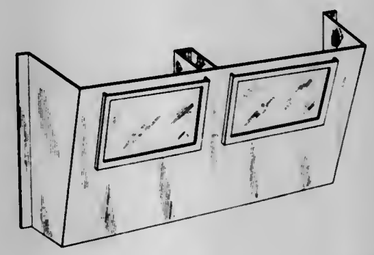
247,110
TRUCK CAB CADDY
Andre J. Olivan, 3970 Bayview Circle, Concord, Calif. 94520
Filed Apr. 28, 1976, Ser. No. 681,149
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



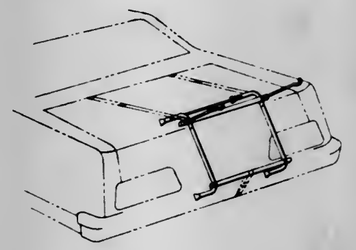
247,111
TRUCK CAB CADDY
Andre J. Olivan, 3970 Bayview Circle, Concord, Calif. 94520
Filed Apr. 28, 1976, Ser. No. 681,150
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



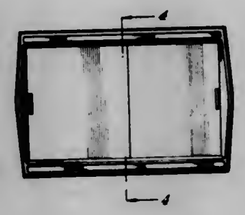
247,112
TRUCK CAB CADDY
Andre J. Olivan, 3970 Bayview Circle, Concord, Calif. 94520
Filed Apr. 28, 1976, Ser. No. 681,151
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



247,113
BICYCLE CARRIER FOR AUTOMOBILES
Raymond J. Federowicz, Columbus; William J. Hess, and Frank C. Ricciardi, Jr., both of Upper Arlington, all of Ohio, assignors to Dorcy Cycles Corporation, Columbus, Ohio
Filed Sept. 7, 1976, Ser. No. 720,795
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—158



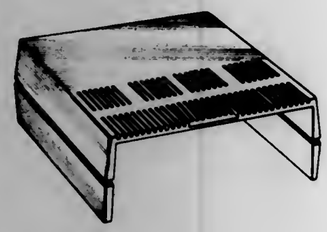
247,114
MODEM-CONTROL ACCESS PANEL
John S. Ebner, Boca Raton; Sheldon Steinman, Miramar, and Frederick W. Haase, Palm Springs North, all of Fla., assignors to Milgo Electronics Corporation, Miami, Fla.
Filed Sept. 15, 1976, Ser. No. 723,460
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—35



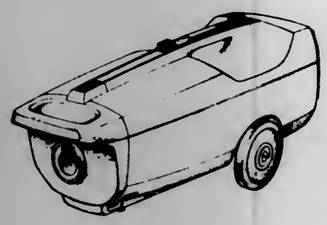
247,115
MICROPHONE MOUNT
Ivan Ray Cox, and Donald Gene Reynolds, both of Speedway, Ind., assignors to Rayden Enterprises, Inc.
Filed Feb. 28, 1977, Ser. No. 772,741
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D14—13



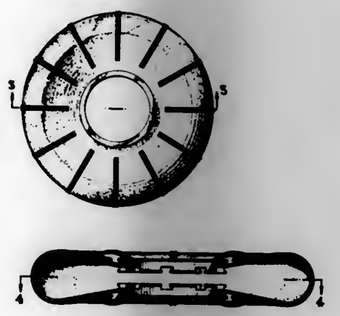
247,116
HOUSING FOR A DATA TERMINAL LOGIC MODULE OR SIMILAR ARTICLE
John Steven Ebner, Boca Raton, and Charles Grimes Sprecher, Pembroke Pines, both of Fla., assignors to Milgo Electronics Corporation, Miami, Fla.
Filed Mar. 2, 1976, Ser. No. 663,135
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—46



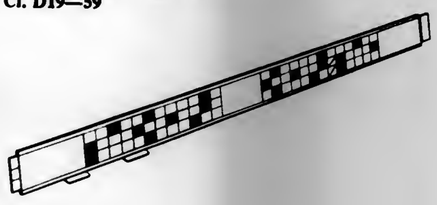
247,117
VACUUM CLEANER
Toshihiko Yoshida, Suita, and Yoshiaki Ueda, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Mar. 17, 1976, Ser. No. 667,802
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—52



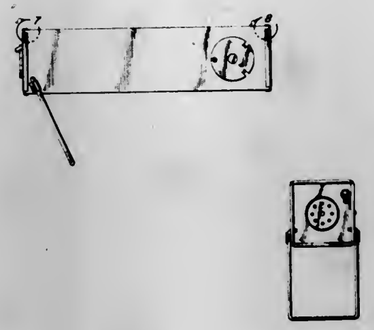
247,118
TIRE RETREADING BLADDER
Kenneth T. MacMillan, 4992 Wesleyan Woods Drive, Macon, Ga. 31204
Filed Aug. 13, 1976, Ser. No. 714,281
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199



247,119
MUSIC TEACHING AID
Folke B. Nilsson, Knivsta, and Bengt Erik Lindahl, Spanga, both of Sweden, assignors to Almqvist & Wiksell Laromedel AB, Stockholm, Sweden
Filed Mar. 31, 1976, Ser. No. 672,494
Claims priority, application Sweden, Oct. 7, 1975, 2012/75
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



247,120
DRYER FOR WELDING RODS
Carl J. Siebert, 344 W. Harvard, Santa Ana, Calif. 92704
Filed May 10, 1976, Ser. No. 684,778
Term of patent 3½ years
Int. Cl. D23—*03*
U.S. Cl. D23—77



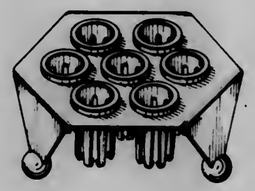
247,121
SMOKING DEVICE
Roger Graham, 931 Selin Road, Silver Spring, Md. 20910
Filed Jan. 16, 1976, Ser. No. 649,668
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03



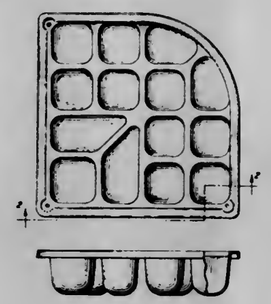
247,122
CIGARETTE LIGHTER
Sadao Yoshinaga, Tokyo, Japan, assignor to Yoshinaga Prince Co., Ltd., Tokyo, Japan
Filed Jan. 6, 1977, Ser. No. 757,385
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



247,123
LIPSTICK TUBE HOLDER
Vladimir Benes, 1512 5th Ave. W., No. 4, Seattle, Wash. 98119
Filed June 28, 1976, Ser. No. 700,099
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—86



247,124
NUTRIENT FEEDING CONTAINER FOR ANIMALS
Robert A. Beecher, 311 3rd Ave. SE., Cascade, Iowa 52033
Filed Oct. 30, 1975, Ser. No. 627,182
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16



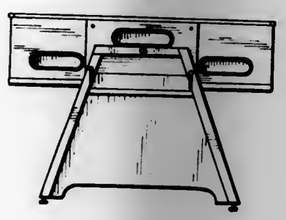
247,125
PUPPET OR SIMILAR ARTICLE
Karl Corbett, 1361 Contra Costa Drive, and Sanford A. Chan, 5838 El Dorado, both of El Cerrito, Calif. 94530
Filed May 11, 1976, Ser. No. 685,296
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



247,126
ANIMAL TOY
Leo C. Whitmer, 3832 NE. Jacksonville Road, Ocala, Fla. 32679
Filed June 1, 1976, Ser. No. 691,231
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



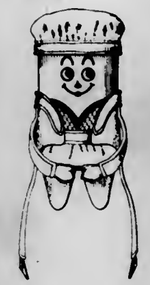
247,127
COMBINED HOCKEY AND POOL GAME TABLE
Miroslav Kavka, 9117 Grant, Brookfield, Ill. 60513
Filed Aug. 23, 1976, Ser. No. 716,932
Term of patent 14 years
Int. Cl. D21—*01*; D6—*177;178;179*
U.S. Cl. D34—3



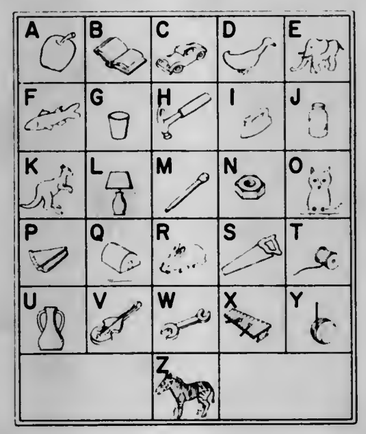
247,128
TOY CLOWN DOLL HAVING TWO FACES
Josephine I. Cantalupo, 515 Gregory Ave., Passaic, N.J. 07055
Filed July 21, 1975, Ser. No. 597,718
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 A



247,129
DOLL
Marjorie K. Fimreite, 2898 Kilburn Ave., and Ruth E. Thomas, 7 Westwood Ave., both of Napa, Calif. 94558
Filed June 10, 1976, Ser. No. 694,657
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



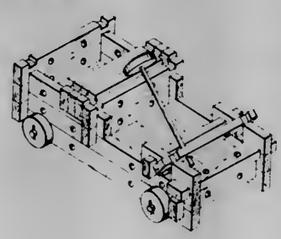
247,130
GAME BOARD
Ann E. Kelley, 6430 Stoney Island Ave., Chicago, Ill. 60637
Filed Dec. 22, 1975, Ser. No. 643,223
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



247,131
NOVELTY TENNIS RACKET HAVING TWO HANDLES
Ted R. Simmoneau, P.O. Box C, Florence, Oreg. 97439
Filed June 1, 1976, Ser. No. 691,340
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



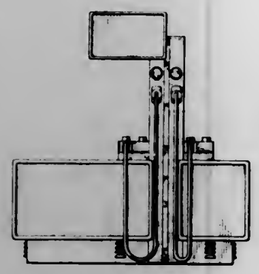
247,132
TOY VEHICLE
Charles H. Gnehm, 2707 68th SE., Mercer Island, Wash. 98040
Filed Oct. 6, 1975, Ser. No. 619,833
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



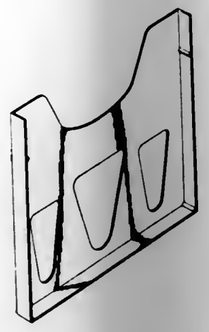
247,133
TOY DIGITAL WATCH
Darin M. Tiep, North Hollywood, Calif., assignor to Carrousel Party Favors, Inc., North Hollywood, Calif.
Filed Nov. 17, 1975, Ser. No. 632,453
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



247,134
GASOLINE PUMP
Hans P. L. Geisler, Hamburg, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Germany
Filed Jan. 23, 1976, Ser. No. 651,743
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D52—2 A



247,135
DISC RECORD STORAGE UNIT TRAY
Michael B. Woodhall, Maidenhead, England, assignor to Cambra Cases Limited, England
Filed Dec. 9, 1975, Ser. No. 639,183
Term of patent 3½ years
Int. Cl. D14—*99*
U.S. Cl. D87—1 D



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF JANUARY, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
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AB Akerlund & Rausing: *See*—
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Abel, Heinz; and Berger, Alfred, to Ciba-Geigy Corporation. Wetting and anti-foaming agents, and process for removing foam from aqueous systems. 4,071,468, Cl. 252-321.000.
Abeles, Benjamin: *See*—
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Moran, George A., Jr.; and Sitton, Willard J., 4,071,041, Cl. 137-246.220.
Acme Chemical Company: *See*—
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Croup, Robert E., 4,071,111, Cl. 181-149.000.
Advanced Technology Center, Inc.: *See*—
Schwemer, Warren C., 4,071,604, Cl. 423-445.000.
Aenishaenslin, Werner; Suter, Fritz; Pfeuti, Ulrich; and Haag, Paul, to Maschinenfabrik Wifag. Sequential rotary printing press web threading means. 4,070,965, Cl. 101-228.000.
Aeroquip Corporation: *See*—
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Aerospace General Co.: *See*—
Magill, Gilbert W., 4,071,206, Cl. 244-17.110.
Afonin, Mikhail Egorovich; Belyanin, Petr Nikolaevich; and Ivanov, Andrei Konstantinovich. Centrifugal separator for treating liquids. 4,071,188, Cl. 233-29.000.
Agarwal, Jagdish Chandra: *See*—
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Gersch, Josef; and Wiedemann, Otto, 4,071,202, Cl. 242-71.100.
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Ewers, Marion H., 4,071,022, Cl. 128-94.000.
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Konishi, Masami; Nakamura, Norihiko; Itou, Takaaki; and Kikuchi, Kazuo, 4,071,585, Cl. 261-36.00A.
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Yamamoto, Kimihiko; and Ishikawa, Hitoshi, 4,070,977, Cl. 112-259.000.
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Soda, Kenji; Tanaka, Hidehiko; Nakazawa, Hidetsugu; and Mitsugi, Koji, 4,071,405, Cl. 195-29.000.
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AKG Akustische u. Kino-Gerate Gesellschaft m.b.H.: *See*—
Fidi, Werner; and Moser, Horst, 4,071,717, Cl. 179-182.00R.
Akiyama, Keiichi, to Aluminum Alloy Refiners Association, a part interest. Process for the manufacture of aluminous cement from aluminum smelting residue. 4,071,373, Cl. 106-104.000.
Aktieselskabet Niro Atomizer: *See*—
Hovmand, Svend; and Liborius, Erik, 4,070,765, Cl. 34-10.000.
Akzona Incorporated: *See*—
Abramitis, Walter W., 4,071,348, Cl. 71-78.000.
Oosterwijk, Hendrik Harm Jannes, 4,071,579, Cl. 260-866.000.
van der Vies, Johannes, 4,071,623, Cl. 424-238.000.
Zengel, Hans; and Bergfeld, Manfred, 4,071,555, Cl. 260-566.00A.
Alban, William R. Fluid flow measuring apparatus. 4,070,910, Cl. 73-239.000.
Albertin, Michel; and Maurice, Louis, to Compagnie Industrielle des Telecommunications Clt-Alcatel S.A. Pumping unit for television tubes. 4,071,058, Cl. 141-65.000.
Alberts, Heinrich; and Bartl, Herbert, to Bayer Aktiengesellschaft. Graft polymers. 4,071,580, Cl. 260-878.00R.
Albright & Wilson Limited: *See*—
Williams, Thomas Alan, 4,071,603, Cl. 423-320.000.
Alcan Research and Development Limited: *See*—
McCubbin, John Gordon, 4,071,072, Cl. 164-89.000.
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Alexander, Clair B.: *See*—
Smith, John L.; and Alexander, Clair B., 4,071,725, Cl. 200-82.00E.
Alexander, Gordon A., to Emhart Industries, Inc. Mortise lock having internal auxiliary spring for lever. 4,071,270, Cl. 292-169.220.
Alexandrescu, Mircea, to Siemens Aktiengesellschaft. Stationary magnetic tape transducing system with means for controlling the air bearing support. 4,071,863, Cl. 360-101.000.
Allegri, Theodore Henry, Sr. Aisle designators. 4,071,302, Cl. 404-12.000.
Allen, Joseph C., to Texaco Inc. Oil displacement fluid containing a solubilizing agent. 4,071,458, Cl. 252-8.55D.
Allied Chemical Corporation: *See*—
Amato, Wayne S.; Bandyopadhyay, Bhaskar; Fitch, Robert Herbert; and Kurtz, Bruce Edward, 4,071,572, Cl. 260-659.00A.
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Mears, Whitney H.; and Orfeo, Sabatino R., 4,071,461, Cl. 252-63.500.
Ratcliffe, Charles T.; and Pap, Geza, 4,071,606, Cl. 423-569.000.
Allis-Chalmers Corporation: *See*—
Ernest, David A., 4,071,259, Cl. 280-95.00R.
Yamane, Isao, 4,071,309, Cl. 432-14.000.
Alps Motorola, Inc.: *See*—
Ejiri, Kazushige, 4,071,858, Cl. 360-93.000.
Altenschopfer, Theodor: *See*—
Schwuger, Milan Johann; Smolka, Heinz; Altenschopfer, Theodor; and Rostek, Manfred, 4,071,377, Cl. 134-29.000.
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Eisenberg, Eli; Altmann, Gideon; Bogokovsky, Bianca; and Lapidot, Mordechai, 4,071,412, Cl. 195-102.000.
Alton Corporation: *See*—
Mushinsky, Albert J., 4,071,820, Cl. 324-61.00R.
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Akiyama, Keiichi, 4,071,373, Cl. 106-104.000.
Aluminum Company of America: *See*—
Foster, Perry A., Jr.; and Jacobs, Stanley C., 4,071,420, Cl. 204-67.000.
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Tetreault, Merritt D., 4,071,198, Cl. 241-73.000.
Amano, Tadashi; Mukaihara, Yoshitaka; and Nakamura, Tadashi, to Koniahiroku Photo Industry Co., Ltd. Transmittance densitometer. 4,071,299, Cl. 356-202.000.
Amato, Wayne S.; Bandyopadhyay, Bhaskar; Fitch, Robert Herbert; and Kurtz, Bruce Edward, to Allied Chemical Corporation. Cyclic ethylene oxyhydrochlorination process with reduced hydrocarbon emissions. 4,071,572, Cl. 260-659.00A.
Amerace Corporation: *See*—
Newnom, Richard S., 4,070,724, Cl. 10-162.00R.
American Can Company: *See*—
Mitchell, Richard Patrick; and Gorshe, Thomas Mathew, 4,070,852, Cl. 53-297.000.
Schlesinger, Sheldon I.; and Cochran, Veronica, 4,071,671, Cl. 526-89.000.
Wiesman, Dale C., 4,071,491, Cl. 260-28.50B.
American Colloid Company: *See*—
Clem, Arthur G., 4,070,839, Cl. 52-448.000.

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Kirby, Jane Parsons; and Borders, Donald Bruce, 4,071,560, Cl. 260-584.00R.
Like, Burton M., 4,071,333, Cl. 51-304.000.
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Amphlett, Robert, to Lucas Industries Limited. Apparatus for use in the manufacture of a wiring harness. 4,071,393, Cl. 156-353.000.
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Andow, Fumio; Yamaura, Mitsuru; and Kitagawa, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha; and Chugoku Denryoku Kabushiki Kaisha. Apparatus for detecting abnormal conditions of transmitted signals. 4,071,873, Cl. 361-64.000.
Andrascheck, Hans-Joachim; Mucke, Rainer; Lorz, Werner; Borchard, Heinz; Buck, Jurgen; Knothe, Herbert; and Rybka, Bruno, to Hoechst Aktiengesellschaft. Plastics foil for the manufacture of audio-visual information carriers. 4,071,490, Cl. 260-23.0XA.
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Aoki, Eiichiro, to Nippon Gakki Seizo Kabushiki Kaisha. Tone generator. 4,070,942, Cl. 84-1.010.
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Supernaw, Irwin R.; Arnold, Dan McCay; and Link, Arthur Jurgen, 4,071,755, Cl. 250-253.000.
Arnold, Franz. Screw spindle. 4,070,921, Cl. 74-459.000.
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Ummen, Arnulf; and Muller, Alexander, 4,070,919, Cl. 74-229.000.
Aronson, Aaron B.: *See*—
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Pernicano, Vincent S.; and Wright, Michael R., 4,071,139, Cl. 206-216.000.
Asahi Fancy Plywood Co., Ltd.: *See*—
Oka, Katsuhiko, 4,071,642, Cl. 427-243.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Okura, Zenichi, 4,071,850, Cl. 354-196.000.
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Takahashi, Masaaki; Iizuka, Akira; and Asano, Kiro, 4,071,553, Cl. 260-514.00J.
Ash, Stephen R.; Wilcox, Philip G.; and Kessler, David P., to Purdue Research Foundation. Portable chemical reactor for use as an artificial kidney. 4,071,444, Cl. 210-22.00A.
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Grimm, Robert A.; Randen, Neil A.; and Demas, Christopher L., 4,071,554, Cl. 260-558.00H.
Ashton, Charles R.: *See*—
Martin, Ronald A.; Ashton, Charles R.; and Watson, Richard D., 4,071,788, Cl. 310-42.000.
Ashton, Harold P.: *See*—
Burrows, Thomas M.; and Ashton, Harold P., 4,071,212, Cl. 248-37.600.
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Misono, Masayoshi; Koyama, Masaharu; and Asida, Tutomu, 4,070,749, Cl. 29-592.00R.
Associated Engineering Limited: *See*—
Atkins, Francis James, 4,071,800, Cl. 313-123.000.
Astorp, Norman E.: *See*—
Kuhns, Garrett D.; Astorp, Norman E.; Mullen, Richard V.; and Thomas, John Ellwood, 4,071,195, Cl. 239-289.000.
Atari, Inc.: *See*—
Bushnell, Nolan K.; and Keenan, Joseph F., 4,071,697, Cl. 179-2.0TV.
Atkins, Francis James, to Associated Engineering Limited. Three electrode arc plasma flame ignition devices. 4,071,800, Cl. 313-123.000.
Atkinson, Gary B.; and Nicks, Larry J., to United States of America, Interior. Preparation and use of high surface area transition metal catalysts. 4,071,473, Cl. 252-462.000.
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Smith, Robert H., 4,071,435, Cl. 208-91.000.
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Herron, Lorne Robert; and Stromnes, Axel, 4,071,095, Cl. 173-152.000.
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Hicklin, Denis Raymond; White, Derek Graham Walter; and Attwood, Brian William, 4,071,651, Cl. 428-284.000.
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Fink, Richard A., 4,071,137, Cl. 198-774.000.

Austin, Forrest L.; and Cornelius, Richard T., to Cornelius Engineering Center, Inc. Combined pump and siphon. 4,070,725, Cl. 417-236.
Austin, Harvey B., Jr., to Globe Ticket Company. Reel for ticket rolls. 4,071,201, Cl. 242-55.200.
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Lines, Lancelot H., 4,070,938, Cl. 83-71.000.
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Bardet, Gerard, 4,070,740, Cl. 29-25.190.
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Barres, Roland, 4,070,828, Cl. 60-274.000.
Avery, Theodore P. Contact lens and method of making same. 4,071,293, Cl. 351-160.000.
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Ferland, Jean-Marie; Laliberte, Real; Lippmann, Wilbur; and Pugsley, Thomas A., 4,071,552, Cl. 260-501.170.
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Fidchunov, Leonid Nikolaevich; Balyk, Stanislav Sergeevich; Silka, Adolf Nikolaevich; Kulakov, Nikolai Konstantinovich; Bakhta:ov, Leonid Fedorovich; Azimov, Alexandr Abramovich; Davydenko, Vladimir Mikhailovich; Balitsky, Nikolai Vasilievich; Likhogub, Evgeny Petrovich; and Dorfman, Gersh Abramovich, 4,071,414, Cl. 201-40.000.
Baar, Walter, to Dr. -Ing. Rudolf Hell GmbH. Matrix engraving by electron beams. 4,071,731, Cl. 219-121.0EB.
Babej, Milos: *See*—
Kuhlein, Klaus; Reuschling, Dieter-Bernd; Babej, Milos; Bartmann, Wilhelm; and Beck, Gerhard, 4,071,530, Cl. 260-326.450.
Bacher, Rudolph John, to Du Pont de Nemours, E. I., and Company. Dielectric compositions of magnesium titanate and devices thereof. 4,071,881, Cl. 361-320.000.
Bade, Volkbert, to Th. Goldschmidt AG. Process for the manufacture of citric acid esters of partial fatty acid glycerides. 4,071,544, Cl. 260-410.700.
Bagcraft Corporation of America: *See*—
Ruda, Raymond J., 4,071,186, Cl. 229-62.000.
Bahel, Vijay Omprakash; and Kuehner, Richard, to Borg-Warner Corporation. Heat pump assisted solar powered absorption system. 4,070,870, Cl. 62-2.000.
Bahl, George R., to Suntech, Inc. High temperature electrochemical cell tester. 4,071,817, Cl. 324-30.00R.
Baierl, Kenneth W., to Flambeau Paper Company. Chemical concentration by sequential activated carbon adsorption and fractionation. 4,071,398, Cl. 162-15.000.
Bailey, John M.; and Robinson, Ronald R., to Caterpillar Tractor Co. Fuel injector with self-centering valve. 4,071,197, Cl. 239-533.110.
Baker, Don R.: *See*—
Arneklev, Duane R.; and Baker, Don R., 4,071,349, Cl. 71-88.000.
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Baker, Thomas M., to Boeing Company, The. Mechanical mixer for controlling aircraft spoilers. 4,071,208, Cl. 244-83.00G.
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Bala, John L., to Packaging Industries, Inc. Web handling apparatus. 4,070,951, Cl. 93-8.00R.
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Baldwin, John J.; and Novello, Frederick C., to Merck & Co., Inc. Di-and tri-substituted 1,2,4-triazoles. 4,071,518, Cl. 260-256.40R.
Balitsky, Nikolai Vasilievich: *See*—
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Pardee, Robert P., 4,071,460, Cl. 252-51.50R.
Ball, Harry, to Olympic Engineering Co. Apparatus for manufacturing non-woven fabric tubular filter. 4,071,394, Cl. 156-465.000.
Bally Manufacturing Corporation: *See*—
Hooker, Donald E., 4,071,246, Cl. 273-143.00R.
Balogh, Andre, to Tork, Inc. Self-contained maintenance-free emergency lighting. 4,071,749, Cl. 362-20.000.
Balogh, Stephen M. Manually operated liquid dispenser. 4,071,172, Cl. 222-321.000.
Balyk, Stanislav Sergeevich: *See*—
Fidchunov, Leonid Nikolaevich; Balyk, Stanislav Sergeevich; Silka, Adolf Nikolaevich; Kulakov, Nikolai Konstantinovich; Bakhtarov, Leonid Fedorovich; Azimov, Alexandr Abramovich; Davydenko, Vladimir Mikhailovich; Balitsky, Nikolai Vasilievich; Likhogub, Evgeny Petrovich; and Dorfman, Gersh Abramovich, 4,071,414, Cl. 201-40.000.
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Bandyopadhyay, Bhaskar: *See*—
Amato, Wayne S.; Bandyopadhyay, Bhaskar; Fitch, Robert Herbert; and Kurtz, Bruce Edward, 4,071,572, Cl. 260-659.00A.
Banitt, Elden H., to Riker Laboratories, Inc. Derivatives of urea. 4,071,524, Cl. 260-293.770.
Banks, Robert L.; and Kenton, Joseph R., to Phillips Petroleum Company. Catalysts for conversion of olefins. 4,071,471, Cl. 252-437.000.
Barch, Herbert W.: *See*—
Bohy, August G.; and Barch, Herbert W., 4,071,341, Cl. 65-11.00W.
Bardet, Gerard, to Automatisme & Technique. Continuous production hot-setting installation. 4,070,740, Cl. 29-25.190.
Barger, Franklin V., Jr.; Knox, Richard M.; and Roberts, Jefery R., to Barger, Franklin V., Jr. Telephone system for audio demonstration and marketing of goods or services. 4,071,698, Cl. 179-2.00R.
Baron, Paul: *See*—
Sedlmayer, Franz; Baron, Paul; and Seifert, Klaus, 4,070,868, Cl. 61-91.000.
Barone, Bruno J.: *See*—
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Barosi, Aldo, to S.A.E.S. Getters S.p.A. Zr_2Ni as a getter metal and nuclear reactor fuel element employing such. 4,071,335, Cl. 55-68.000.
Barres, Roland, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Device and method for recycling hydrocarbon vapors of I.C.E. vehicles. 4,070,828, Cl. 60-274.000.
Barrow, Kevin David; and Mellows, Graham, to Beecham Group Limited. Antibiotics. 4,071,536, Cl. 260-345.80R.
Barrows, George H. Electronic calculator - register for hematology differentials. 4,071,891, Cl. 364-416.000.
Barsellotti, John Anthony, to International Standard Electric Corporation. Line circuit for key telephone systems. 4,071,712, Cl. 179-99.000.
Barth, Jordan B., to Colgate Palmolive Company. Flavored dentifrice. 4,071,615, Cl. 424-52.000.
Bartl, Herbert: *See*—
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Bartmann, Wilhelm: *See*—
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Burdorf, Donald L., 4,071,177, Cl. 226-7.000.
Koester, Eberhard; Wunsch, Gerd; Schoenafinger, Eduard; and Schneehage, Hans Henning, 4,071,610, Cl. 423-634.000.
Kummer, Rudolf; Schwirten, Kurt; Schindler, Hans-Dieter, deceased; Lang nee Schindler, Ute, heir-at-law; and Schindler, Rainer, heir-at-law, 4,071,563, Cl. 260-601.00R.
Rentzea, Costin; Zeeh, Bernd; Koenig, Karl-Heinz; and Pommer, Ernst-Heinrich, 4,071,685, Cl. 548-312.000.
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Ranzanigo, Pierluigi, 4,071,837, Cl. 337-268.000.
Bassignani, Anthony L. Material measuring and dispensing device. 4,071,171, Cl. 222-305.000.
Bassler, Gerd, to Robert Bosch GmbH. Method to secure armature conductors to the commutator strips in dynamo electric machines. 4,071,730, Cl. 219-85.0CM.
Bates, L. Dexter: *See*—
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Batts, John H., to John Thomas Batts, Inc. Articulated article support. 4,071,146, Cl. 211-87.000.
Bauer, Kurt; Molleken, Reiner; and Exner, Fritz, to Haarmann & Reimer Gesellschaft mit beschrankter Haftung. Process for the production of 2-alkoxy-4-alkenyl phenols. 4,071,564, Cl. 260-613.00D.
Bauerkemper, Michael, to Thomas & Betts Corporation. Hand tool for joining objects. 4,070,754, Cl. 29-749.000.
Bausch & Lomb Incorporated: *See*—
Dey, Thomas W., 4,071,748, Cl. 362-19.000.
Baxendale, Philip Noel: *See*—
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Bayer Aktiengesellschaft: *See*—
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Boehmke, Gunther, 4,071,543, Cl. 260-401.000.
Bueb, Michael; Kubitzek, Harry; Langhans, Arthur; Rellensmann, Wolfgang; and Wagner, Wolfram, 4,070,817, Cl. 57-157.0TS.
Gorski, Theodor; Heinen, Adolf; and Mack, Kurt, 4,071,443, Cl. 210-7.000.
Konig, Hans-Bodo; Metzger, Karl Georg; and Schrock, Wilfried, 4,071,683, Cl. 544-28.000.
Meckel, Walter; and Britain, J. W., 4,071,505, Cl. 260-77.5MA.
Rademachers, Jakob, 4,071,480, Cl. 260-2.50F.
Schroeder, Josef; and Schellhammer, Carl-Wolfgang, 4,071,466, Cl. 252-301.220.
Bayerische Motoren Werke Aktiengesellschaft: *See*—
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BBC Brown, Boveri & Company Limited: *See*—
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Beaupre, Donald M.; and Ferris, Harold A., to Farinon Electric of Canada Ltd. Telephone subscriber distribution system. 4,071,711, Cl. 179-41.00A.
Beck, Gerhard: *See*—
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Beckish, John. Golf swing training device. 4,071,251, Cl. 273-186.00R.
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Horrocks, Donald L., 4,071,761, Cl. 250-369.000.
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Beecham Group Limited: *See*—
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Beeley, Micheal G.: *See—*
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Begou, Patrick, to Societe Chimique des Charbonnages. Products with a fluidifying action for mineral pastes and binders. 4,071,493, Cl. 260-42.130.

Behrmann, William C.; and Caulk, Robert H., to Exxon Research & Engineering Co. Process for regenerating fluorosulfuric acid catalyst. 4,071,576, Cl. 260-683.470.

Beiswenger, David W., to General Motors Corporation. Integral air switching diverter valve. 4,070,830, Cl. 60-290.000.

Beitzinger, Kurt: *See—*
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Belkin, Evgeny Grigorievich: *See—*
Zherdev, Anatoly Vasilievich; Yakimenko, Grigory Savvich; Gritsuk, Lev Dmitrievich; Gorbik, Anatoly Stepanovicy; Belkin, Evgeny Grigorievich; Tseluiko, Jury Ivanovich; Gorodetsky, Yakov Izrailievich; Severin, Vasily Fedorovich; and Tolochko, Alexei Ivanovich, 4,071,230, Cl. 266-193.000.

Bell, Oliver A., Jr., to Colt Industries Operating Corporation. Adaptive control system and method for electrical discharge machining. 4,071,729, Cl. 219-69.00C.

Bell Telephone Laboratories, Incorporated: *See—*
Brophy, Francis Joseph; and Hayes, Jeremiah Francis, 4,071,908, Cl. 364-900.000.
DeNigris, Ernest Gerard; and Tutko, Albert John, 4,071,290, Cl. 339-258.00F.
Flanagan, James Loton; and Webber, Susan Anne, 4,071,695, Cl. 179-1.0VL.
Gibbs, Hyatt McDonald; McCall, Samuel Leverte, Jr.; and Venkatesan, Thirumalai Nallan Chakravarthy, 4,071,831, Cl. 330-4.300.
Hart, Terry Jonathan, 4,071,722, Cl. 200-50.00A.
Koontz, Donald Eldridge; and Skurkiss, Peter Kenny, 4,071,417, Cl. 204-38.00B.
Leeper, David Garth, 4,071,848, Cl. 343-844.000.
Owens, Gerald John, 4,071,888, Cl. 364-200.000.
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Benjamin, Benjamin C., to Schmelzer Corporation. Dashpot assembly. 4,071,119, Cl. 188-298.000.

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Bennett, John D., to Suntech, Inc. Apparatus for pulling tools into a wellbore. 4,071,086, Cl. 166-177.000.

Benson, Wayne J.; Torburn, Roy B.; and Tweed, Donald G., to GTE Automatic Electric Laboratories Incorporated. Pluggable protector holder for surge arrestor gas tubes. 4,071,876, Cl. 361-119.000.

Benthake, Heinrich, to WGW Westdeutsche Getriebe und Kupplungswerke GmbH. Multiple pinion concentric drive. 4,070,923, Cl. 74-665.00P.

Bentley, Floyd E., to Texaco Development Corporation. Aromatic polyamines and their preparation. 4,071,558, Cl. 260-570.00D.

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Berger, Christian; Farge, Daniel; Gros, Georges; Messer, Mayer Naoum; and Moutonnier, Claude, to Rhone-Poulenc Industries. Oxathiino- and dithiino-aminoacetic acids. 4,071,531, Cl. 260-327.00P.

Bergfeld, Manfred: *See—*
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Bernstein, Philip; Coffey, James P.; and Davis, Stanley M., to ESB Incorporated. Process for repairing defective battery seals. 4,071,661, Cl. 429-49.000.

Bethea, Tristram Walker; and Futamura, Shingo, to Firestone Tire & Rubber Company, The. Polyurethane-urea elastomers based on propylene oxide-tetrahydrofuran copolymers. 4,071,492, Cl. 260-31.80R.

Bevins, Jesse Althen. Intra-oral filtering device. 4,071,026, Cl. 128-147.000.

BICC Limited: *See—*
Jones, Edward Owen, 4,071,199, Cl. 242-25.00A.

Bijon, Paul; Fichot, Bernard; and Lainez, Lucien, to Thomson-Brandt. Device for the stabilization of flexible discs and more particularly of videodiscs and reading apparatus adapted to this device. 4,071,854, Cl. 358-128.000.

Bilczo, Dale Louis; Golonka, Kenneth Anthony; Overman, John Arthur; and Carroll, John Ernest, to Lincoln Electric Company, The. Electric arc welding power supply. 4,071,885, Cl. 363-64.000.

Bilson, David G.: *See—*
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Bird, Jack Raymond, to United Kingdom of Great Britain and Northern Ireland, The Secretary of Defence, in Her Brittanic Majesty's Government of the. Silicon nitride NGV's and turbine blades. 4,071,372, Cl. 106-73.500.

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Birum, Gail H., to Monsanto Company. Hydroxyphenylthiophosphoranylidene organophosphorus compounds. 4,071,584, Cl. 260-932.000.

Bishton, Norris J., Jr.; Rod, Robert L.; Wagenhals, Bruce; Woltanski, Theodore M.; and Blick, John S., III, to Monogram Industries, Inc. Sewerless recirculating toilet and human waste storage system. 4,070,714, Cl. 4-318.000.

Black Clawson Company, The: *See—*
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Black and Decker Manufacturing Company, The: *See—*
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Blackstone Corporation: *See—*
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Blackwell, John, to Du Pont de Nemours, E. I., and Company. Greenyellow to orange monoazo paper dyes. 4,071,312, Cl. 8-7.000.

Blanc, Max A., to Blanc, Max A.; and Anderson, William B. Snorkel. 4,071,024, Cl. 128-145.00A.

Blanton, William A., Jr.; and Flanders, Robert L., to Chevron Research Company. Process for removing sulphur from a gas. 4,071,436, Cl. 208-120.000.

Blausey, Richard H., Jr., to Libbey-Owens-Ford Company. Glass sheet temperature control apparatus and method. 4,071,344, Cl. 65-29.000.

Bleiindustrie KG Vorm. Jung & Lindig: *See—*
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Blick, John S., III: *See—*
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Bloch, Daniel Richard, to S. C. Johnson & Son, Inc. Starch air freshener gels. 4,071,616, Cl. 424-76.000.

Bloch, Heinz; and Wirth, Ernst, to BBC Brown, Boveri & Company Limited. Apparatus to generate minimally delayed instructions for turbine valves in the event of power system short circuits. 4,071,870, Cl. 361-21.000.

Block, Barry, to Diax Corporation. Solid state force transducer and method of making same. 4,071,838, Cl. 338-47.000.

Boehmke, Gunther, to Bayer Aktiengesellschaft. Process for the preparation of acyltaurides. 4,071,543, Cl. 260-401.000.

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Boessler, Hanns; Quis, Peter; Buechse, Joachim; and Rauch, Hubert, to Rohm GmbH. Powdery copolymer comprising methyl methacrylate and monomer having a basic nitrogen atom. 4,071,653, Cl. 428-332.000.

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Bogosh, Donald. Speedometer-odometer apparatus. 4,070,916, Cl. 73-490.000.

Bohn, Lothar: *See—*
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Bohy, August G.; and Barch, Herbert W., to PPG Industries, Inc. Apparatus for forming glass fibers. 4,071,341, Cl. 65-11.00W.

Boldman, Keith W.: *See—*
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Bollig, Georg; and Streubel, Hans, to Schloemann-Siemag Aktiengesellschaft. Continuous casting roller apron with overhang guide rings. 4,071,073, Cl. 164-448.000.

Bollig, Georg; Streubel, Hans; and Kolakowski, Manfred, to Schloemann-Siemag Aktiengesellschaft. Roller apron for a continuous casting installation. 4,071,074, Cl. 164-448.000.

Bolton, Gerald L.: *See—*
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Bondar, Mikhail Jurievich: *See—*
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Booher, Howard, to Bruce, Robert J.; and Tate, Mark T. Vertical pusher plate for a horizontally discharging semi-trailer. 4,071,153, Cl. 214-82.000.

Booth, Frederick C., to Allied Chemical Corporation. Multiple locking retractor. 4,071,204, Cl. 242-107.40B.

Bopp, Ernst: *See—*
Scherrer, Herbert; Bopp, Ernst; and Cecchetto, Ennio, 4,071,133, Cl. 197-168.000.

Borchard, Heinz: *See—*
Andrascheck, Hans-Joachim; Mucke, Rainer; Lorz, Werner; Borchard, Heinz; Buck, Jurgen; Knothe, Herbert; and Rybka, Bruno, 4,071,490, Cl. 260-23.0XA.

Borders, Donald Bruce: *See—*
Kirby, Jane Parsons; and Borders, Donald Bruce, 4,071,560, Cl. 260-584.00R.

Bordier, Jean-Louis Marie Henri: *See—*
Jammes, Emanuel Marie Augustin; and Bordier, Jean-Louis Marie Henri, 4,071,840, Cl. 340-166.500.

Borg-Warner Corporation: *See—*
Bahel, Vijay Omprakash; and Kuehner, Richard, 4,070,870, Cl. 62-2.000.
Calabretta, Peter Trent, 4,071,306, Cl. 418-82.000.
Hechenbleikner, Ingenuin, 4,071,583, Cl. 260-927.00R.
Mannino, Anthony, Jr., 4,071,360, Cl. 72-329.000.

Bosso, Joseph F.; and Wismer, Marco, to PPG Industries, Inc. Process for electrodeposition of quaternary ammonium salt group-containing resins. 4,071,428, Cl. 204-181.00C.

Bourgeois, Gerard J.; and Sahatjian, Ronald A., to Polaroid Corporation. Polymeric quaternary dye image receiving layers with overcoat. 4,071,366, Cl. 96-73.000.

Bourns, Inc.: *See—*
Morton, William David, Jr., 4,071,233, Cl. 271-8.00R.

Bourrie, Georges E.; and Lensel, Robert Marc, to R. Alkan & Cie. Automatic release and ejection locking mechanism. 4,071,271, Cl. 292-201.000.

Bouvet, Jean-Marie: *See—*
Lombard, Claude Edmond; and Bouvet, Jean-Marie, 4,071,042, Cl. 137-332.000.

Bowmar Instrument Corporation: *See—*
Harden, Phillip L., 4,071,718, Cl. 200-5.00A.

Box Innards, Inc.: *See—*
Peters, Charles Luther, Jr., 4,071,185, Cl. 229-28.00R.

Boyd, Cecil E.; and McGillvray, Bruce K. Pyramid pipe. 4,071,035, Cl. 131-173.000.

Boyer, David Harrison, III; and Mitchell, Richard Dale, to Koppers Company, Inc. Numerical control system for finishing machines. 4,071,896, Cl. 364-471.000.

Brakke, Henry Donald. Cutting apparatus. 4,070,810, Cl. 56-291.000.

Brana, George; and Vijayendran, Bheema Rao, to Pitney-Bowes, Inc. Treated ferromagnetic carrier particles for development powders. 4,071,655, Cl. 428-403.000.

Brandt, Theodore C., to General Electric Company. Check valve construction. 4,071,045, Cl. 137-528.000.

Braun, Werner, to Maxs AG. Coffee filter. 4,070,955, Cl. 99-284.000.

Bredbenner, Ambrose M., Jr., to Interpace Corporation. Battery feed-through penetrator. 4,071,663, Cl. 429-181.000.

Brennan, Thomas E.; Hartmann, Robert H.; and McCoy, Robert M., to General Electric Company. Tieless bracing and method for supporting end turns of a dynamoelectric machine. 4,070,750, Cl. 29-596.000.

Bresler, Semen Khaimovich-Efimovich: *See—*
Peradze, Tamaz Vladimirovich; Fridman, Eidlya Abramovna; Zheleznova, Nina Vsevolodovna; Kolikov, Vsevolod Mikhailovich; Bresler, Semen Khaimovich-Efimovich; Mchedlishvili, Boris Viktorovich; Molodkin, Viktor Mikhailovich; Molodkina, Ljudmila Mikhailovna; and Katushkina, Nina Vasilievna, 4,071,619, Cl. 424-90.000.

Breslow, Jeffrey D., to Marvin Glass & Associates. Card game. 4,071,247, Cl. 273-308.000.

Bretschneider, Hermann; Hueber, Herman Pieter; and Louzil, Friedrich, to U.S. Philips Corporation. Dictation system. 4,071,716, Cl. 179-100.1DR.

Briar, Thomas J.: *See—*
Schaefer, William L.; and Briar, Thomas J., 4,071,342, Cl. 65-11.00R.

Bridgers, Frank H. Air conditioning system. 4,071,080, Cl. 165-59.000.

Brinkmann, Ludwig; and Bohn, Lothar, to Hoechst Aktiengesellschaft. Crystal-clear polyamides from 1,3-bis(aminomethyl)cyclohexane. 4,071,506, Cl. 260-78.00A.

Brinks, William G.: *See—*
Moomey, Henry E., Jr., 4,070,840, Cl. 52-489.000.

Bristol-Myers Company: *See—*
Kim, Choung Um, 4,071,513, Cl. 260-239.00A.

Britain, J. W.: *See—*
Meckel, Walter; and Britain, J. W., 4,071,505, Cl. 260-77.5MA.

British Gas Corporation: *See—*
Eales, David Frank, 4,071,329, Cl. 48-62.00R.

British Steel Corporation: *See—*
Hague, David P.; Malkani, Dalip T.; Middlemiss, Andrew; and Scholey, Stuart, 4,070,739, Cl. 29-18.000.

Brock, Eugene W., to General Motors Corporation. Interior lighting delay circuit. 4,071,805, Cl. 315-84.000.

Brock, Michael: *See—*
Cooke, Brian Alfred; and Brock, Michael, 4,071,379, Cl. 148-6.15Z.

Broks, John Doyle. Road emergency sign. 4,070,775, Cl. 40-492.000.

Brooks, Julius C.: *See—*
Pfeifer, Kenneth D.; and Brooks, Julius C., 4,070,730, Cl. 19-.580.

Brophy, Francis Joseph; and Hayes, Jeremiah Francis, to Bell Telephone Laboratories, Incorporated. Adaptive polling technique. 4,071,908, Cl. 364-900.000.

Brown, David C., to Rodney Hunt Company. Sluice gate assembly with extrudable seal. 4,070,863, Cl. 61-28.000.

Brown International Corporation: *See—*
Bushman, Ronald C.; and Holbrook, Franklin K., 4,070,959, Cl. 99-510.000.

Brown, James L., to Rockwell International Corporation. Analog-to-digital conversion means and associated lag compensated apparatus. 4,071,901, Cl. 364-605.000.

Brown, Joe R.; and Cochran, Chudleigh B., to Brown Oil Tools, Inc., by said Chudleigh B. Cochran Well packer. 4,071,084, Cl. 166-129.000.

Brown, Kenneth Robson; and Kerr, Andrew Guy, to Ferranti Limited. Control of torsional deformation of elongate members. 4,070,800, Cl. 52-1.000.

Brown Oil Tools, Inc.: *See—*
Brown, Joe R.; and Cochran, Chudleigh B. (said Chudleigh B. Cochran assors. to), 4,071,084, Cl. 166-129.000.

Brown, Richard N., to General Electric Company. Coffeemaker with brewing water spreader. 4,070,956, Cl. 99-304.000.

Broyde, Barret; Dellea, Judith Archer; and North, Steven Forrest, to Western Electric Company, Inc. Reclamation processing of vinyl chloride polymer containing materials and products produced thereby. 4,071,479, Cl. 260-2.300.

Bruce, Robert J.: *See—*
Booher, Howard, 4,071,153, Cl. 214-82.000.

Bruck, Abraham: *See—*
Shinitzky, Meir; and Bruck, Abraham, 4,071,770, Cl. 250-461.00B.

Bruckner, Ronald L.: *See—*
Stewart, John W.; and Bruckner, Ronald L., 4,071,877, Cl. 361-152.000.

Brullo, Robert A., to Minnesota Mining and Manufacturing Company. Thermally conductive electrical tape. 4,071,652, Cl. 428-323.000.

Brunnett, Carl J.; Cox, Jerome R., Jr.; Snyder, Donald L.; and Mattson, Rodney A., to Picker Corporation. Tomography system having nonconcurrent, compound axial scanning. 4,071,769, Cl. 250-445.00T.

Brunswick Corporation: *See—*
Frahm, James H., 4,071,002, Cl. 123-99.000.

Bubik, Alfred; Reutter, Siegfried; Schultz, Hans-Joachim; and Stotz, Wolf-Gunter, to Escher Wyss G.m.b.H. Separating system for separating two wires of a double-wire paper-making machine. 4,071,401, Cl. 162-300.000.

Buchi, George, to Hoffmann-La Roche Inc. Synthesis of hydroxycyclopenten-1-ones. 4,071,542, Cl. 260-348.480.

Buck, Jurgen: *See—*
Andrascheck, Hans-Joachim; Mucke, Rainer; Lorz, Werner; Borchard, Heinz; Buck, Jurgen; Knothe, Herbert; and Rybka, Bruno, 4,071,490, Cl. 260-23.0XA.

Bucyrus-Erie Company: *See—*
Hornagold, John T., 4,071,147, Cl. 212-145.000.

Bueb, Michael; Kubitzek, Harry; Langhans, Arthur; Rellensmann, Wolfgang; and Wagner, Wolfram, to Bayer Aktiengesellschaft. Process for texturing synthetic yarns. 4,070,817, Cl. 57-157.0TS.

Buechse, Joachim: *See—*
Boessler, Hanns; Quis, Peter; Buechse, Joachim; and Rauch, Hubert, 4,071,653, Cl. 428-332.000.

Burdorf, Donald L., to BASF Aktiengesellschaft. Self-centering air guide for tape transports. 4,071,177, Cl. 226-7.000.

Burke, James E.; and Grzesiak, Anthony J., to VCA Corporation. Aerosol valve tip and insert assembly. 4,071,196, Cl. 239-492.000.

Burleigh, John E.: *See—*
Uraneck, Carl A.; Burleigh, John E.; and Solomon, Paul W., 4,071,679, Cl. 526-338.000.

Burnett, Ronald H., to Corcom, Inc. Transient generator. 4,071,780, Cl. 307-262.000.

Burnett, Roy. Communication-recorder system. 4,071,710, Cl. 179-37.000.

Burroughs Corporation: *See—*
Collins, Joseph Martin, 4,070,761, Cl. 33-172.00F.

Burrows, Thomas M.; and Ashton, Harold P., to Imperial Knife Associated Companies, Inc. Implement rack. 4,071,212, Cl. 248-37.600.

Busch, Glen D. Crosstie adzing and boring machine. 4,071,060, Cl. 144-3.00H.

Bushman, Ronald C.; and Holbrook, Franklin K., to Brown International Corporation. Apparatus for extracting oil from the rind of whole citrus fruit. 4,070,959, Cl. 99-510.000.

Bushnell, Nolan K.; and Keenan, Joseph F., to Atari, Inc. Interactive video/telephone transmission system. 4,071,697, Cl. 179-2.0TV.

Buss, Dennis D., to Texas Instruments Incorporated. CTD programmable convolver. 4,071,906, Cl. 364-819.000.

Butsch, Otto R., to Sycor, Inc. Disc recorder drive follower assembly. 4,071,866, Cl. 360-106.000.

Butterfield, James L.; and Wright, George C., to Morton-Norwich Products, Inc. Method of alleviating hypertension. 4,071,632, Cl. 424-263.000.

Cailey, Ronald J., to Glass Master Corporation. Duct forming machine. 4,070,954, Cl. 93-36.900.

Calabretta, Peter Trent, to Borg-Warner Corporation. Rotary vane compressor with relief means for vane slots. 4,071,306, Cl. 418-82.000.

Calcagno, Benedetto: *See—*
Piccolo, Luigi; Calcagno, Benedetto; Ghirga, Marcello; and Paolinelli, Antonio, 4,071,347, Cl. 71-31.000.

Callahan, Bernard E.; and Christianson, Edward A., to Vapor Corporation. Slip-slide detector system for railway car wheels. 4,071,282, Cl. 303-106.000.

Cama, Lovji D.: *See—*
Christensen, Burton G.; and Cama, Lovji D., 4,071,529, Cl. 260-306.70C.

Camilleri, Thomas M. Lifts for ball elevator. 4,071,240, Cl. 273-49.000.

Camprubi, Amselmo Bolea, to Ingenieria Aplicada, S.A. Lance driving mechanism for shuttleless looms. 4,071,056, Cl. 139-449.000.

Canada Square Management Ltd.: *See—*
Moog, Gerhard W.; and Cooper, Kenneth R., 4,071,077, Cl. 165-18.000.

Canaday, William. Shower curtain fastener. 4,070,735, Cl. 24-73.0VA.

Canadian General Electric Co., Ltd.: *See—*
Rehder, Robert Henry, 4,071,882, Cl. 361-333.000.

Canevari, Louis T.: *See—*
Macari, Leonard J.; and Canevari, Louis T., 4,071,104, Cl. 177-229.000.

Canon Kabushiki Kaisha: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,071,295, Cl. 355-3.0SH.
Marushima, Giichi; Tanaka, Hiroshi; Tosaka, Umi; Takahashi, Shinkichi; and Komiya, Takao, 4,071,361, Cl. 96-1.400.

Canright, Bruce W. Meat smoking and merchandise display case. 4,070,958, Cl. 99-468.000.

Caprioli, Bruno, to Forkardt, Gefitec. Chucking device for a machine tool. 4,070,935, Cl. 82-40.00R.

Carl, Jack C., to McGard, Inc. Vehicle hood lock. 4,070,880, Cl. 70-240.000.

Carlson, Cleo D. Apparatus for protecting a water faucet or the like from freezing temperatures. 4,071,043, Cl. 137-375.000.

Carlson, Robert G.; and Harrison, Robert W., to General Electric Company. Impact resistant blade. 4,071,184, Cl. 228-159.000.

Carlson, Wayland A.: *See—*
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,705, Cl. 179-15.0BA.
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,826, Cl. 325-39.000.

Carlsson, Lars Ake Ingemar; and Mulder, Jan Louis. Peptides having a high adrenocorticotropic effect and a method of producing the same. 4,071,510, Cl. 260-112.50R.

Caroff, Yves Robert, to Facom. Device for fixing vehicle wheels on a wheel-balancing machine. 4,070,915, Cl. 73-487.000.

Carpenter, Neil L.; and Goodman, Clark. Leaching methods and apparatus. 4,071,278, Cl. 299-5.000.

Carpenter, William R., to Medallion Instruments, Inc. Speed compensating Pitot tube apparatus. 4,070,909, Cl. 73-182.000.

Carroll, John Ernest: *See—*
Bilczo, Dale Louis; Golonka, Kenneth Anthony; Overman, John Arthur; and Carroll, John Ernest. 4,071,885, Cl. 363-64.000.

Carter, Clyde Thomas, to AMP Incorporated. Impact extraction tool. 4,070,755, Cl. 29-764.000.

Carts, Stanley L., Jr., to United States of America, Army. Aiming-/sighting device. 4,070,763, Cl. 33-241.000.

Casad, Burton M., to Continental Oil Company. Determination of residual oil in a subterranean formation. 4,071,756, Cl. 250-260.000.

Casasent, David Paul, to United States of America, Navy. Radar signal processor utilizing a multi-channel optical correlator. 4,071,907, Cl. 364-822.000.

Cassidy, Paul G. Negative friction pile and isolating casing. 4,070,867, Cl. 61-53.000.

Catalucci, Enrico, to Lonza, Ltd. Process for the production of aminocyanoacetic acid ethyl ester. 4,071,550, Cl. 260-465.400.

Caterpillar Tractor Co.: *See—*
Bailey, John M.; and Robinson, Ronald R., 4,071,197, Cl. 239-533.110.
Crabb, Elmer Ray, 4,071,129, Cl. 292-246.000.
Easterling, Gene B., 4,071,090, Cl. 172-788.000.
Junck, John A.; Dezelan, Joseph A.; Larson, Donald J.; and White, Robert W., 4,071,106, Cl. 180-44.00F.
Kraina, Jack H., 4,071,009, Cl. 123-198.00E.
Leighty, Conard E., 4,071,107, Cl. 180-69.00R.
McDaniel, John H.; Sinnard, Harry W.; and Thomas, Robert W., 4,070,940, Cl. 83-464.000.
Miller, Robert H., 4,071,010, Cl. 123-198.00F.
Morris, Carlisle S., 4,071,091, Cl. 172-797.000.
Stedman, Robert N., 4,071,277, Cl. 298-22.00P.

Cates, H. Alton. Directional control poppet valve. 4,071,046, Cl. 137-596.150.

Caulk, Robert H.: *See—*
Behrmann, William C.; and Caulk, Robert H., 4,071,576, Cl. 260-683.470.

Cecchetto, Ennio: *See—*
Scherrer, Herbert; Bopp, Ernst; and Cecchetto, Ennio, 4,071,133, Cl. 197-168.000.

Cecil, Nelson Lothair, to Royal Development Company, Inc. Recliner chairs. 4,071,276, Cl. 297-85.000.

Celanese Corporation: *See—*
Stackman, Robert W.; and Conciatori, Anthony B., 4,071,499, Cl. 260-47.00C.
Thomas, Norman W.; Berardinelli, Frank M.; and Edelman, Robert, 4,071,503, Cl. 260-75.00N.

Centralny Osrodek Badawczo-Rozwojowy Naszyn Wlokienniczych: *See—*
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,070,812, Cl. 57-58.890.

Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag": *See—*
Jedo, Antoni; Jachna, Waclaw; and Szczesny, Adolf, 4,071,440, Cl. 209-44.000.

Cerola, Joseph J.: *See—*
Jenn, Louis J.; and Cerola, Joseph J., 4,071,738, Cl. 219-400.000.
Jenn, Louis J.; and Cerola, Joseph J., 4,071,739, Cl. 219-400.000.

Chalmers, John H., Jr.: *See—*
Zimmerman, Sheldon B.; and Chalmers, John H., Jr., 4,071,631, Cl. 424-263.000.

Champion International Corporation: *See—*
Gaylord, Norman G., 4,071,494, Cl. 260-42.140.
Vincent, David N.; and Chang, Cheng Hsiung, 4,071,469, Cl. 252-364.000.

Chang, Cheng Hsiung: *See—*
Vincent, David N.; and Chang, Cheng Hsiung, 4,071,469, Cl. 252-364.000.

Chang, David R.; and Grisik, John J., to General Electric Company. Method of applying a metallic coating with improved resistance to high temperature to environmental conditions. 4,071,638, Cl. 427-192.000.

Chao, Eric En-Kuang: *See—*
Cheng, Kuang Lu; and Chao, Eric En-Kuang, 4,071,427, Cl. 204-195.00M.

Chapman, James. Basketball goal assembly. 4,071,238, Cl. 273-1.50R.

Charbonnages de France: *See—*
Chauvin, Raymond; and Guillon, Pierre M. M., 4,071,304, Cl. 427-185.000.

Charles Churchill Limited: *See—*
Sladdin, Stuart Rodney; and Thorneycroft, Malcolm, 4,070,934, Cl. 82-2.00R.

Charles Richards Fasteners Limited: *See—*
Goldby, Richard Charles, 4,071,067, Cl. 151-22.000.

Charlton, Thomas L.; Redden, Robert F.; Hirsch, Horst E.; and Liang, Shou C., to Cominco Ltd. Process for concentrating and recovering gallium. 4,071,422, Cl. 204-105.00R.

Charransol, Pierre; Hauri, Jacques; and Fontana, Serge, to Thomson-CSF. Time division exchange and a method for the reconfiguration of this exchange. 4,071,702, Cl. 179-15.0AT.

Chateau, Guy. Analytical tape medium. 4,071,315, Cl. 23-230.00B.

Chaudhuri, Partha S., to Westvaco Corporation. Automatically controlled machine for making double-faced polyboard. 4,071,392, Cl. 156-351.000.

Chauvin, Raymond; and Guillon, Pierre M. M., to Charbonnages de France. Separation of products in granular form. 4,071,304, Cl. 427-185.000.

Chemed Corporation: *See—*
Holdt, Donald, 4,070,992, Cl. 122-382.000.
Paul, Stewart N., 4,071,450, Cl. 210-53.000.

Chemplex Company: *See—*
Hwang, Yu-Tang, 4,071,673, Cl. 526-123.000.

Chen, Nai Yuen, to Mobil Oil Corporation. Pre-engine converter. 4,070,993, Cl. 123-3.000.

Cheng, Kuang Lu; and Chao, Eric En-Kuang, to University of Missouri, Curators of the. Arsenite electrode. 4,071,427, Cl. 204-195.00M.

Cheskis, Harvey P.; Shapiro, Stanley; and Crane, Jacob, to Olin Corporation. Copper base alloys. 4,071,359, Cl. 75-160.000.

Chevron Research Company: *See—*
Blanton, William A., Jr.; and Flanders, Robert L., 4,071,436, Cl. 208-120.000.
Graves, Thomas M.; and Koundakjian, Theodore H., 4,071,617, Cl. 424-78.000.
Marquis, David M., 4,071,540, Cl. 260-346.760.
Parker, Phillip H., 4,071,486, Cl. 260-18.00N.

Chicago Pneumatic Tool Company: *See—*
Wallace, William K., 4,071,092, Cl. 173-12.000.

Chielens, Alain; and Henin, Jean-Pierre, to Fives-Cail Babcock. Internally cooled roller. 4,071,081, Cl. 165-82.000.

Chilson, Richard E. Continuously leaching an ore column. 4,071,611, Cl. 423-658.500.

Cholat-Serpoud, Gerard: *See—*
Legrand, Maurice Francois; and Cholat-Serpoud, Gerard, 4,071,264, Cl. 280-610.000.

Chore-Time Equipment Inc.: *See—*
Swartzendruber, Ray E., 4,070,990, Cl. 119-53.000.

Christensen, Burton G.; and Cama, Lovji D., to Merck & Co., Inc. Derivatives of 6-aminopenicillanic acid. 4,071,529, Cl. 260-306.70C.

Christenson, James Gordon; and Muccino, Richard R., to Hoffmann-La Roche Inc. Tritiated O-benzoylecgonine. 4,071,522, Cl. 260-292.000.

Christiana Metals Corporation: *See—*
Walraven, Thomas A.; Thomas, John G.; and Hall, James B., 4,071,182, Cl. 228-110.000.

Christianson, Edward A.: *See—*
Callahan, Bernard E.; and Christianson, Edward A., 4,071,282, Cl. 303-106.000.

Christy, Marcia E.: *See—*
Engelhardt, Edward L.; and Christy, Marcia E., 4,071,570, Cl. 260-649.00F.

Chrysler United Kingdom Limited: *See—*
Wyman, Howard John, 4,070,922, Cl. 74-573.00R.

Chugoku Denryoku Kabushiki Kaisha: *See—*
Andow, Fumio; Yamaura, Mitsuru; and Kitagawa, Minoru, 4,071,873, Cl. 361-64.000.

Chung, Daniel A., to Goodyear Tire & Rubber Company, The. Solid polyurethane tire and wheel assembly. 4,071,279, Cl. 301-63.0PW.

Ciba-Geigy Corporation: *See—*
Abel, Heinz; and Berger, Alfred, 4,071,468, Cl. 252-321.000.
Dexter, Martin; and Steinberg, David Herbert, 4,071,497, Cl. 260-45.85B.
Seltzer, Raymond; and Gordon, David A., 4,071,477, Cl. 260-2.00N.

Ciborowski, Stanislaw; Szczypinski, Zbigniew; Balcerzak, Kazimierz; Jaworski, Andrzej; Kasznia, Andrzej; Krzysztoforski, Andrzej; Kurowski, Stanislaw; Redzi, Jan; and Szparski, Jozef, to Zaklady Azotowe im. F. Dzierzinskiego. Method of prevention of disturbances and/or effects of disturbances in the reaction system of oxidation of hydrocarbons in a liquid phase under pressure with gases containing oxygen. 4,071,561, Cl. 260-586.00P.

Cincinnati Milacron Inc.: *See—*
Funke, Manfred Maximilian, 4,071,015, Cl. 125-11.0AT.

Claassen, Volkert: *See—*
van Dijk, Jan; Claassen, Volkert; and Zwagemakers, Johannes Maria Antonius, 4,071,686, Cl. 560-35.000.

Clark Control, Inc.: *See—*
Russo, Roland; and Schneider, Richard, 4,071,835, Cl. 335-133.000.

Clark Equipment Company: *See—*
Hand, Gene F., 4,070,858, Cl. 60-422.000.

Clark, William Frederick; Baxendale, Philip Noel; and Peters, Michael Noel. Process of photoetching a metal comb. 4,071,364, Cl. 96-36.000.

Claude Neon Industries Limited: *See—*
Gilmour, Ralph M., 4,070,779, Cl. 40-575.000.

Clem, Arthur G., to American Colloid Company. Moisture impervious panel. 4,070,839, Cl. 52-448.000.

Cleveland Metal Abrasive, Inc.: *See—*
Dunkerley, Fred J.; Gaudino, Albert J.; and Vilyus, Robert P., 4,071,381, Cl. 148-36.000.

Cleveland Vibrator Company, The: *See—*
Crewse, John L., 4,070,947, Cl. 91-39.000.

Cline, Harvey E.: *See—*
Anthony, Thomas R.; and Cline, Harvey E., 4,071,378, Cl. 148-1.500.

Cloke, Robert L., to Sperry Rand Corporation. Current controlled oscillator. 4,071,832, Cl. 331-117.00R.

Coats & Clarke, Inc.: *See—*
Einhorn, Ruediger, 4,071,216, Cl. 248-290.000.

Cochin, Yves: *See—*
Reverend, Roger; and Cochin, Yves, 4,070,835, Cl. 52-235.000.

Cochran, Chudleigh B.: *See—*
Brown, Joe R.; and Cochran, Chudleigh B., 4,071,084, Cl. 166-129.000.

Cochran, Veronica: *See—*
Schlesinger, Sheldon I.; and Cochran, Veronica, 4,071,671, Cl. 526-89.000.

Codorniu, Francisco Lorente, to Nordiska Maskinfilt Aktiebolaget. Double-layer forming fabric. 4,071,050, Cl. 139-383.00R.

Cody, David L., to Symons Corporation. Multi-purpose concrete formwork structural member with novel facilities for extending the effective length thereof. 4,070,845, Cl. 52-632.000.

Coffey, James P.: *See—*
Bernstein, Philip; Coffey, James P.; and Davis, Stanley M., 4,071,661, Cl. 429-49.000.

Cogan, Richard M., to General Electric Company. Fabrication method and fabricated article. 4,071,183, Cl. 228-173.00A.

Cohen, Chous; and Sillion, Bernard, to Institut Francais du Petrole. Alkyl-guanidino-heterocyclic compounds, their manufacture and use as additives for fuels and lubricants. 4,071,459, Cl. 252-50.000.

Cohen, Noal; Rosenberger, Michael; and Saucy, Gabriel, to Hoffman-La Roche, Inc. Steroid total synthesis process utilizing a cyanoalkyl A-ring precursor. 4,071,537, Cl. 260-345.90S.

Colgate Palmolive Company: *See—*
Barth, Jordan B., 4,071,615, Cl. 424-52.000.
Grimm, John Edward, III, 4,071,614, Cl. 424-49.000.

Collier, John R.; and Pilette, Yvan P., to Du Pont de Nemours, E. I., and Company. Channeled photosensitive element. 4,071,367, Cl. 96-79.000.

Collins, Joseph Martin, to Burroughs Corporation. Printing press with inventory control. 4,070,761, Cl. 33-172.00F.

Collins, William Joseph: *See—*
Ernster, Peter Jacob; Collins, William Joseph; and Schaefer, George Henry, 4,071,789, Cl. 310-50.000.

Colt Industries Operating Corporation: *See—*
Bell, Oliver A., Jr., 4,071,729, Cl. 219-69.00C.

Columbus McKinnon Corporation: *See—*
Schreyer, Kenneth D.; and Rohosy, Soma M., 4,070,823, Cl. 59-93.000.

Combustion Engineering, Inc.: *See—*
Krisst, Raymond J., 4,071,818, Cl. 324-208.000.
Palmer, David Nelson; and Heikoff, Stanley, 4,071,639, Cl. 427-156.000.

Cominco Ltd.: *See—*
Charlton, Thomas L.; Redden, Robert F.; Hirsch, Horst E.; and Liang, Shou C., 4,071,422, Cl. 204-105.00R.

Commercial Shearing, Inc.: *See—*
Juvrud, Ingvald O., 4,070,866, Cl. 61-45.00R.

Commissariat a l'Energie Atomique: *See—*
de Cachard, Maurice; Moracchioli, Robert; and Marie, Gerard, 4,070,871, Cl. 62-116.000.
Guidez, Joel; Lecouvreur, Paul; and Roumailhac, Jean, 4,071,303, Cl. 415-112.000.

Commonwealth of Australia, The: *See—*
Kossoff, George, 4,070,905, Cl. 73-614.000.
Lines, Lancelot H., 4,070,938, Cl. 83-71.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Guise, Geoffrey Bruce, 4,071,313, Cl. 8-127.600.

Compagnie Francaise de Raffinage: *See—*
Engelhard, Philippe; Weisang, Joseph Edouard; and Paris, Guy, 4,071,437, Cl. 208-137.000.

Compagnie Generale des Etablissements Michelin: *See—*
Lejeune, Daniel, 4,071,724, Cl. 200-61.250.

Compagnie Honeywell Bull: *See—*
Edon, Guy, 4,070,966, Cl. 101-269.000.

Compagnie Industrielle des Telecommunications Clt-Alcatel S.A.: *See—*
Albertin, Michel; and Maurice, Louis, 4,071,058, Cl. 141-65.000.

Comte, Georges, to Les Cables de Lyon S.A. Helical wave guide. 4,071,834, Cl. 333-95.00R.

Conciatori, Anthony B.: *See—*
Stackman, Robert W.; and Conciatori, Anthony B., 4,071,499, Cl. 260-47.00C.

Congoleum Corporation: *See—*
Frisch, Rudolf, 4,071,592, Cl. 264-54.000.

Continental Can Co. Inc.: *See—*
Mazur, Richard A., 4,071,911, Cl. 364-900.000.

Continental Oil Company: *See—*
Casad, Burton M., 4,071,756, Cl. 250-260.000.
Leach, Bruce E.; and Starks, Charles M., 4,071,566, Cl. 260-621.00D.
Oertle, Donald H., 4,071,011, Cl. 137-317.000.

Contraves AG: *See—*
Eicher, Walter, 4,071,886, Cl. 364-118.000.

Cook, Alan Frederick, to Hoffmann-La Roche Inc. 5'-Deoxy-5-fluoropyrimidine nucleosides. 4,071,680, Cl. 536-23.000.

Cook, James W.; Khalid, Joseph M.; and Oster, Clark L., to Square D Company. Current limiting circuit breaker. 4,071,836, Cl. 335-195.000.

Cooke, Brian Alfred; and Brock, Michael, to Imperial Chemical Industries Limited. Phosphating method. 4,071,379, Cl. 148-6.15Z.

Cooke, Gordon R. Fluid fill or bleed apparatus. 4,071,012, Cl. 137-321.000.

Cooper, Glenn Dale; and Floryan, Daniel Edwin, to General Electric Company. Process for recovery of catalyst from polymerization of polyphenylene ethers. 4,071,500, Cl. 260-47.0ET.

Cooper Industries, Inc.: *See—*
Krubski, George, 4,071,144, Cl. 211-13.000.

Cooper, Kenneth R.: *See—*
Moog, Gerhard W.; and Cooper, Kenneth R., 4,071,077, Cl. 165-18.000.

Coors Container Company: *See—*
Gombas, Laszlo Attila, 4,070,888, Cl. 72-91.000.
Myers, James Lewis, 4,071,192, Cl. 239-3.000.

Copal Company Limited: *See—*
Arai, Kiyoyuki, 4,070,822, Cl. 58-38.00R.

Copes-Vulcan, Inc.: *See—*
Seger, Fritz O., 4,071,586, Cl. 261-62.000.

Copp, Robert M. Machine for use with moving webs. 4,071,178, Cl. 226-39.000.

Corcom, Inc.: *See—*
Burnett, Ronald H., 4,071,780, Cl. 307-262.000.

Cornelius, Richard T.: *See—*
Austin, Forrest L.; and Cornelius, Richard T., 4,070,725, Cl. 417-236.

Cornelius Engineering Center, Inc.: *See—*
Austin, Forrest L.; and Cornelius, Richard T., 4,070,725, Cl. 417-236.

Corning Glass Works: *See—*
Messing, Ralph A.; and Yaverbaum, Sidney, 4,071,409, Cl. 195-63.000.

Cortes Garcia, Jose de Jesus. Large foot balls or soccer balls. 4,071,241, Cl. 273-55.00B.

Couch, Terry Lee: *See—*
Stein, Robert George; and Couch, Terry Lee, 4,071,533, Cl. 260-332.500.

County of Santa Clara, State of California: *See—*
Kinkead, Jordan A.; Pott, James T.; Sherman, Roger M.; and Sullivan, Eugene F., 4,071,152, Cl. 214-75.00R.

Courbot, Pierre; and Meyer, Yves, to Societe Anonyme D.B.A. Automatic adjusting device for a drum brake. 4,071,123, Cl. 188-331.000.

Covic, John; and McBride, Thomas R., to Ohio-Nuclear, Inc. Shutters for X-ray scanners. 4,071,771, Cl. 250-505.000.

Cox, Denis Charles, to Black and Decker Manufacturing Company, The. Field subassembly for electric motors. 4,071,793, Cl. 310-71.000.

Cox, Jerome R., Jr.: *See—*
Brunnett, Carl J.; Cox, Jerome R., Jr.; Snyder, Donald L.; and Mattson, Rodney A., 4,071,769, Cl. 250-445.00T.

Crabb, Elmer Ray, to Caterpillar Tractor Co. Door hold-back apparatus. 4,071,129, Cl. 292-246.000.

Crane, Jacob: *See—*
Cheskis, Harvey P.; Shapiro, Stanley; and Crane, Jacob, 4,071,359, Cl. 75-160.000.

Creusot-Loire: *See—*
Droin, Rene Henri, 4,071,083, Cl. 165-173.000.

Crewse, John L., to Cleveland Vibrator Company, The. Springless impactor. 4,070,947, Cl. 91-39.000.

Crouch, Donald Wayne; and Nelson, Robert Wayne, to General Electric Company. Vacuum-type circuit interrupter with means for protecting its bellows against mechanical damage. 4,071,727, Cl. 200-144.00B.

Croup, Robert E., to Acoustic Fiber Sound Systems, Inc. Weatherproof loudspeaker assembly and method of making same. 4,071,111, Cl. 181-149.000.

Cruea, Ronald D.: *See—*
Sternby, Arthur J.; and Cruea, Ronald D., 4,071,193, Cl. 239-11.000.

Crumpton, Charles H. Loom picker. 4,071,049, Cl. 139-159.000.

CTS Corporation: *See—*
Robinson, James H., 4,070,752, Cl. 29-630.00B.

Cunningham, Ernest Ray, to Grip-Pak, Inc. Assembly machine for interconnected carrier devices. 4,070,850, Cl. 53-48.000.

Curtiss-Wright Corporation: *See—*
Loyd, Robert W., Jr., 4,070,995, Cl. 123-8.110.

Cyphelly, Ivan Jaroslav. Hydraulic apparatus including rotary valve. 4,070,950, Cl. 91-487.000.

Czerepinski, Ralph G.: *See—*
Garrett, Walter L.; and Czerepinski, Ralph G., 4,071,485, Cl. 260-17.00R.

Daicel, Ltd.: *See—*
Katayama, Sakae; Kanada, Sadaoki; Kamata, Michitake; Sakaguchi, Yasuhiro; and Kojima, Katsumi, 4,071,445, Cl. 210-23.00H.

Daigle, Donald J.: *See—*
Pepperman, Armand B., Jr.; Daigle, Donald J.; and Vail, Sidney L., 4,071,501, Cl. 260-67.00R.

Daimler-Benz Aktiengesellschaft: *See—*
Hack, Albert; and Faix, Heinz, 4,071,273, Cl. 296-28.00R.
von Koch, Arwed, 4,070,928, Cl. 74-863.000.

Daiwa Kogyo Co., Ltd.: *See—*
Susai, Sadao, 4,071,641, Cl. 427-234.000.

Dalton, Edgar Terry: *See—*
James, Arthur M.; and Dalton, Edgar Terry, 4,070,836, Cl. 52-245.000.

Dalton, Sally Elizabeth; Gingell, William George; Jenkins, David Conwil; King, Leslie George; Lee, Glyn Evan; and Thompson, Garth Molesdale, to May & Baker Limited. Certain thiazolidine and tetrahydrothiazine compounds. 4,071,528, Cl. 260-306.70T.

Dalton, Thomas B.; Pyatt, Theodore Wayne; and Oosterhouse, Michael Jay, to Westran Corporation. Pivotal and detachable truck body system. 4,071,274, Cl. 296-35.00A.

Daly, Thomas C.; Hepworth, Edward C.; and Means, Rodney J., to Motorola, Inc. Synchronous serial data adaptor. 4,071,887, Cl. 364-200.000.

Danescu, Septimius. Adjustable wall structure. 4,070,808, Cl. 52-122.000.

Danfoss A/S: *See—*
Jensen, Arne, 4,071,900, Cl. 364-600.000.

Daniel, Peter, to Inventio AG. Automatic adjustment apparatus for a friction brake. 4,071,121, Cl. 188-196.00P.

Darby, William L.; Monz, Robert H.; and Molis, Stephen J., to General Electric Company. Cooling arrangement for rotor end turns of reverse flow cooled dynamoelectric machines. 4,071,790, Cl. 310-59.000.

Dart, Edward Charles; and Nemcek, Josef, to Imperial Chemical Industries Limited. Photopolymerizable composition. 4,071,424, Cl. 204-159.150.

Data General Corporation: *See—*
Pandeya, Arun K., 4,071,890, Cl. 364-200.000.

Datwyler, Walter F., Jr.: *See—*
Thuren, John B.; Datwyler, Walter F., Jr.; and Phipps, Jack R., 4,071,013, Cl. 123-32.0SP.

Dauberger, George R., to Midland-Ross Corporation. Clamp back spacer for conduit. 4,071,213, Cl. 248-74.00R.

Davidson, Jerry R.; and Friedli, Hans R., to Dow Chemical Company, The. Method and composition for inhibiting the corrosion of metals. 4,071,470, Cl. 252-389.00R.

Davies, Ben, to Dresser Industries, Inc. Magnesite-chrome refractory. 4,071,370, Cl. 106-59.000.

Davis, Dalton M., to Pyramid Enterprises, Inc. Vehicle wheel apparatus. 4,071,280, Cl. 301-65.000.

Davis, Merton Louis, to Du Pont de Nemours, E. I., and Company. Process for making high shrinkage acrylic fibers. 4,071,596, Cl. 264-168.000.

Davis, Robert Curtis; and McRae, Daniel Dix, to Harris Corporation. Coherent phase detector using a frequency discriminator. 4,071,829, Cl. 329-122.000.

Davis, Samuel H. Shrouded pipe wall casting for use with split-clamp couplings. 4,071,267, Cl. 285-64.000.

Davis, Stanley M.: *See—*
Bernstein, Philip; Coffey, James P.; and Davis, Stanley M., 4,071,661, Cl. 429-49.000.

Davydenko, Vladimir Mikhailovich: *See—*
Fidchunov, Leonid Nikolaevich; Balyk, Stanislav Sergeevich; Silka, Adolf Nikolaevich; Kulakov, Nikolai Konstantinovich; Bakhtarov, Leonid Fedorovich; Azimov, Alexandr Abramovich; Davydenko, Vladimir Mikhailovich; Balitsky, Nikolai Vasilievich; Likhogub, Evgeny Petrovich; and Dorfman, Gersh Abramovich, 4,071,414, Cl. 201-40.000.

Debaudringhien, Andre T.: *See—*
Whitney, James C.; Sander, Willy M.; and Debaudringhien, Andre T., 4,071,857, Cl. 360-92.000.

de Cachard, Maurice; Moracchioli, Robert; and Marie, Gerard, to Commissariat a l'Energie Atomique. Method of cold production and devices for the practical application of said method. 4,070,871, Cl. 62-116.000.

DeCaro, Charles J., to Textron Inc. Linear pull setting tool. 4,070,889, Cl. 72-114.000.

Deguchi, Osamu, to NTN Toyo Bearing Co. Ltd. Apparatus for piling apertured articles in stacks for storage. 4,071,149, Cl. 214-6.00P.

del Castillo, Juan M. Optical metronome. 4,070,944, Cl. 84-484.000.

Delles, Judith Archer: *See—*
Broyde, Barret; Delles, Judith Archer; and North, Steven Forrest, 4,071,479, Cl. 260-2.300.

Demarest, Vincent. Fences and noise barriers. 4,071,223, Cl. 256-1.000.

Demas, Christopher L.: *See—*
Grimm, Robert A.; Randen, Neil A.; and Demas, Christopher L., 4,071,554, Cl. 260-558.00H.

DeNigris, Ernest Gerard; and Tutko, Albert John, to Bell Telephone Laboratories, Incorporated; and Western Electric Company, Inc. Unitary fuse clip having a wire wrap terminal. 4,071,290, Cl. 339-258.00F.

Denka Chemical Corporation: *See—*
Kerr, Ralph O.; and Barone, Bruno J., 4,071,539, Cl. 260-346.750.

Dennis, Juanita. Multi-purpose laboratory light box. 4,071,883, Cl. 362-97.000.

De Santis, Charles M., to United States of America, Army. Device for sensing the real part in a complex impedance. 4,071,819, Cl. 324-58.00B.

Design & Manufacturing Corporation: *See—*
Sandvik, Roger H.; and Huebscher, Richard G., 4,070,946, Cl. 91-25.000.
Sobecks, Ronald S., 4,070,859, Cl. 60-530.000.

Dexter, Martin; and Steinberg, David Herbert, to Ciba-Geigy Corporation. Hindered hydroxyphenylalkanoates of thioether isopropanols and stabilized compositions. 4,071,497, Cl. 260-45.85B.

Dey, Arabinda N., to P. R. Mallory & Co. Inc. Electrolyte salt additive. 4,071,664, Cl. 429-194.000.

Dey, Thomas W., to Bausch & Lomb Incorporated. Lighting panel with controlled distribution of polarized light. 4,071,748, Cl. 362-19.000.

Dezelan, Joseph A.: *See—*
Junck, John A.; Dezelan, Joseph A.; Larson, Donald J.; and White, Robert W., 4,071,106, Cl. 180-44.00F.

Diax Corporation: *See—*
Block, Barry, 4,071,838, Cl. 338-47.000.

Dictaphone Corporation: *See—*
Whitney, James C.; Sander, Willy M.; and Debaudringhien, Andre T., 4,071,857, Cl. 360-92.000.

Diggs, Richard E. Dissociation of water into hydrogen and oxygen using solar energy. 4,071,608, Cl. 423-579.000.

DiGiacomo, Philip A. Method of forming walls for pools, waterfalls and the like. 4,070,849, Cl. 52-742.000.

Digital Equipment Corporation: *See—*
Stockebrand, Thomas C.; Doane, Russell C.; and Morganstern, Michael D., 4,071,910, Cl. 364-900.000.

Dill, J. D. Franklin. Wheel toy. 4,070,791, Cl. 46-220.000.

Dillon, Michael Francis, to Flowers, Inc. Plant propagating and shipping device and method. 4,070,793, Cl. 47-67.000.

Diluiso, Arthur A.; and Post Machinery Company, Inc. Apparatus for packing flat articles. 4,070,960, Cl. 100-49.000.

Dines, Jack E., to Jet Research Center, Inc. Shaped charge well perforating apparatus. 4,071,096, Cl. 175-4.600.

Di Sciascio, Nicola; and Vinci, Michele, to Nuovo Pignone S.p.A. Isolation valve affording an absolute tightness towards the exterior and between the seat and the shutting member. 4,071,221, Cl. 251-228.000.

Discount, Bernard. Sulky. 4,071,257, Cl. 280-63.000.

Dittrich, Wolfhart; Heuer, Helmut; Kamm, W. F. G.; Kipp, Thorwald; Luhr, Gerhard; and Poggemeier, Erich, to Eisenwerk Weserhutte AG. Process for punching holes and slots in structural timber. 4,071,637, Cl. 427-12.000.

Dively, Charles R.; and Peterson, R. Kenneth, to Ingersoll-Rand Company. Cutter mounting extension apparatus. 4,071,098, Cl. 175-53.000.

Djuric, Svetislav V., to Genrad Inc. Method of making an electret acoustic transducer. 4,070,741, Cl. 29-25.420.

D'Luhy, Emil A., to Moore Business Forms, Inc. Stubless multi-part assembly. 4,071,142, Cl. 206-629.000.

Dmitrievich, Loschilin Evghenii: *See—*
Santucci, Nicola; Aleksandrovic, Zabotin Aleksandr; Dmitrievich, Loschilin Evghenii; Lvovich, Galperin Aleksandr; and Archakovich, Onikov Eduard, 4,071,053, Cl. 139-436.000.
Santucci, Nicola; Aleksandrovic, Zabotin Aleksandr; Dmitrievich, Loschilin Evghenii; Lvovich, Galperin Aleksandr; Archakovich, Onikov Eduard; Aleksandrovich, Sakharov Boris; and Alekseevich, Borodin Valerian, 4,071,054, Cl. 139-436.000.

Doane, Russell C.: *See—*
Stockebrand, Thomas C.; Doane, Russell C.; and Morganstern, Michael D., 4,071,910, Cl. 364-900.000.

Dobbert, Gerd, to International Standard Electric Corporation. Supply circuit for a television receiver. 4,071,810, Cl. 315-400.000.

Dobbing, Peter Philip; and Kendall, Peter William, to International Research & Development Company Limited. Brush gear for electrical machinery. 4,071,795, Cl. 310-219.000.

Dobkin, Robert C., to National Semiconductor Corporation. Temperature sensor. 4,071,813, Cl. 323-8.000.

Dr. -Ing. Rudolf Hell GmbH: *See—*
Baar, Walter, 4,071,731, Cl. 219-121.0EB.

Dr. Johannes Heidenhain GmbH: *See—*
Nelle, Gunther, 4,070,759, Cl. 33-125.00C.

Doerner, William Allen; and Van Buskirk, Oral R., to Du Pont de Nemours, E. I., and Company. Cascaded two-fluid rotary closed Rankine cycle engine. 4,070,862, Cl. 60-655.000.

Dolfini, Joseph Edward; Slusarchyk, William A.; and Koster, William Henry, to E. R. Squibb & Sons, Inc. 7-α substituted imino 7-β substituted thio cephalosporin derivatives. 4,071,682, Cl. 544-21.000.

Domazer, Hans-Gunter; and Eggert, Horst, to Th. Goldschmidt AG. Vacuum revolving cylindrical furnace. 4,071,229, Cl. 266-173.000.

Donaldson, John Gleason: *See—*
Phillips, Paul Millard; and Donaldson, John Gleason, 4,071,658, Cl. 428-555.000.

Donnelly Mirrors, Inc.: *See—*
Kamerling, Marc A., 4,071,736, Cl. 219-219.000.

Dorer, Casper John, Jr., to Lubrizol Corporation, The. Salts of Mannich bases and derivatives thereof. 4,071,327, Cl. 44-66.000.

Dorfman, Claire. Motorized rolling pin. 4,070,742, Cl. 29-110.500.

Dorfman, Gersh Abramovich: *See—*
Fidchunov, Leonid Nikolaevich; Balyk, Stanislav Sergeevich; Silka, Adolf Nikolaevich; Kulakov, Nikolai Konstantinovich; Bakhtarov, Leonid Fedorovich; Azimov, Alexandr Abramovich; Davydenko, Vladimir Mikhailovich; Balitsky, Nikolai Vasilievich; Likhogub, Evgeny Petrovich; and Dorfman, Gersh Abramovich, 4,071,414, Cl. 201-40.000.

Dotzer, Richard; Hauschildt, Hans-Georg; Todt, Enno, deceased; by Todt, Susanne, heir; by Todt, Ruth Katharina, heir; and Todt, Ernst Josef, heir, to Siemens Aktiengesellschaft. Method for the preparation of additives in organo-aluminum electrolyte media. 4,071,526, Cl. 260-299.000.

Dow Chemical Company, The: *See—*
Davidson, Jerry R.; and Friedli, Hans R., 4,071,470, Cl. 252-389.00R.
Garner, Joseph L., 4,071,666, Cl. 526-1.000.
Garrett, Walter L.; and Czerepinski, Ralph G., 4,071,485, Cl. 260-17.00R.
Goralski, Christian T., 4,071,547, Cl. 260-456.00R.
Gross, James R., 4,071,650, Cl. 428-260.000.
Jankowiak, Erwin M., 4,071,400, Cl. 162-169.000.
Morgan, Charles W., 4,070,719, Cl. 5-355.000.
Muench, Terry G., 4,071,521, Cl. 260-290.0HL.
Pearce, Roscoe L., 4,071,602, Cl. 423-243.000.
Schuster, Albert J., Jr.; and Martin, John, 4,071,684, Cl. 544-182.000.
Sinke, Gerard C., 4,071,328, Cl. 44-1.00R.
Steinhauer, Alfred F., 4,071,463, Cl. 252-103.000.

Dow Corning Corporation: *See—*
Falender, James R.; Mettler, Claudia M.; and Saam, John C., 4,071,577, Cl. 260-827.000.
Frye, Cecil L.; and Klosowski, Jerome M., 4,071,498, Cl. 260-46.50G.
Plueddemann, Edwin P., 4,071,546, Cl. 260-448.20N.

Drdlik, Frank J. Contact lens applicator. 4,071,272, Cl. 294-1.0CA.

Dresser Industries, Inc.: *See—*
Davies, Ben, 4,071,370, Cl. 106-59.000.

Droin, Rene Henri, to Creusot-Loire. Tubular exchanger. 4,071,083, Cl. 165-173.000.

Drummond, James E.: *See—*
Kolb, Alan C.; and Drummond, James E., 4,071,334, Cl. 55-2.000.

Dufour, Claude. Soluble salts containing sulphur. 4,071,517, Cl. 260-253.000.

Duncan, Angus Dougal, to Pilkington Brothers Limited. Apparatus for cutting or scoring sheet material. 4,070,936, Cl. 83-12.000.

Dunham, James M. Fish receiving hopper. 4,070,786, Cl. 43-55.000.

Dunkerley, Fred J.; Gaudino, Albert J.; and Vilyus, Robert P., to Cleveland Metal Abrasive, Inc. Steel abrasive materials. 4,071,381, Cl. 148-36.000.

Dunlop Limited: *See—*
Lees, Geoffrey; and Katekhda, Izzed-Din, 4,070,903, Cl. 73-38.000.

Dunn, John P. Electrostatic metering device. 4,071,169, Cl. 222-76.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bacher, Rudolph John, 4,071,881, Cl. 361-320.000.
Blackwell, John, 4,071,312, Cl. 8-7.000.
Collier, John R.; and Pilette, Yvan P., 4,071,367, Cl. 96-79.000.
Davis, Merton Louis, 4,071,596, Cl. 264-168.000.
Doerner, William Allen; and Van Buskirk, Oral R., 4,070,862, Cl. 60-655.000.
Garth, Bruce Hollis, 4,071,665, Cl. 429-197.000.

Dupuis, Jean Marcel, to Northern Telecom Limited. Apparatus for preforming wire leads and alignment for bonding. 4,071,180, Cl. 228-1.00R.

Durden, John Apling, Jr., to Union Carbide Corporation. 2-Oximinotetrahydro-1,4-thiazin-5-one compounds and pesticidal carbamate derivatives. 4,071,627, Cl. 424-246.000.

Dyer, William W.: *See—*
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,705, Cl. 179-15.0BA.
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,826, Cl. 325-39.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Stark, Ernst-Joachim; Vanhaiden, Peter; and Klinkenberg, Herbert, 4,071,495, Cl. 260-42.180.

E. R. Squibb & Sons, Inc.: *See—*
Dolfini, Joseph Edward; Slusarchyk, William A.; and Koster, William Henry, 4,071,682, Cl. 544-21.000.

E-Systems, Inc.: *See—*
Pickles, Sidney, 4,071,847, Cl. 343-761.000.

Eales, David Frank, to British Gas Corporation. Coal gasification plant. 4,071,329, Cl. 48-62.00R.

Earle, Ronald A., to Aircraft Inspections. Tool for resetting aircraft spark plug gap. 4,070,898, Cl. 72-409.000.

Early, Judson Horace: *See—*
Off, Joseph W. A.; and Early, Judson Horace, 4,070,937, Cl. 83-27.000.

Easterling, Gene B., to Caterpillar Tractor Co. Motorgrader implement mounting arrangement. 4,071,090, Cl. 172-788.000.

Eastman, Richard O.: *See—*
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,705, Cl. 179-15.0BA.
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,826, Cl. 325-39.000.

Eastwood, Barry John: *See—*
Pratt, George Christopher; Eastwood, Barry John; Michael, Anthony Dennis; and Heath, Leonard, 4,071,643, Cl. 427-292.000.

Eckert, Terry T.; and McDonough, Edward C., to United States of America, Navy. Means for cooling exhaust nozzle sidewalls. 4,071,194, Cl. 239-127.300.

Economics Laboratory, Inc.: *See—*
Kuhns, Garrett D.; Astorp, Norman E.; Mullen, Richard V.; and Thomas, John Ellwood, 4,071,195, Cl. 239-289.000.

Economides & Goldberg: *See—*
Economides, Leander, 4,071,082, Cl. 165-101.000.

Economides, Leander, to Economides & Goldberg. Conversion of a dual duct, dual temperature air conditioning system to a single temperature system. 4,071,082, Cl. 165-101.000.

Edelman, Robert: *See—*
Thomas, Norman W.; Berardinelli, Frank M.; and Edelman, Robert, 4,071,503, Cl. 260-75.00N.

Edmonds, James T., Jr., to Phillips Petroleum Company. Arylene sulfide polymer purification. 4,071,509, Cl. 260-79.000.

Edney, Willie C. Dual purpose home medical bed. 4,070,720, Cl. 5-62.000.

Edon, Guy, to Compagnie Honeywell Bull. Apparatus for marking documents. 4,070,966, Cl. 101-269.000.

Edwards, Walter William. Thumb trigger and automatic safety. 4,070,783, Cl. 42-69.00R.

Efdyn Corporation: *See—*
Schupner, Willard J., 4,071,122, Cl. 188-285.000.

Eggers, George H., to General Atomic Company. Method of making ZrH fuel element. 4,071,587, Cl. 264-.500.

Eggert, Horst: *See—*
Domazer, Hans-Gunter; and Eggert, Horst, 4,071,229, Cl. 266-173.000.

Ehrmann, Karl: *See—*
Kalippke, Harald; Gerber, Richard; and Ehrmann, Karl, 4,071,792, Cl. 310-70.00R.

Eichelberger, Edward Baxter; and Williams, Thomas Walter, to International Business Machines Corporation. Reduced overhead for clock testing in a level system scan design (LSSD) system. 4,071,902, Cl. 364-716.000.

Eicher, Walter, to Contraves AG. Self-adjusting regulation system. 4,071,886, Cl. 364-118.000.

Eigenmann, Ludwig. Method and devices for road surface marking. 4,071,384, Cl. 156-71.000.

Einhorn, Ruediger, to Coats & Clarke, Inc. Wall bracket assembly. 4,071,216, Cl. 248-290.000.

Eisai Co., Ltd.: *See—*
Yoshizawa, Masayuki, 4,071,410, Cl. 195-66.00R.

Eisenberg, Eli; Altmann, Gideon; Bogokovsky, Bianca; and Lapidot, Mordechai, to State of Israel and Isorad Isotope and Radiation Enterprise, Ltd., The. Ready made sterilized culture media and process of preparation. 4,071,412, Cl. 195-102.000.

Eisenwerk Weserhutte AG: *See—*
Dittrich, Wolfhart; Heuer, Helmut; Kamm, W. F. G.; Kipp, Thorwald; Luhr, Gerhard; and Poggemeier, Erich, 4,071,637, Cl. 427-12.000.

Ejiri, Kazushige, to Alps Motorola, Inc. Cartridge ejection preventing device. 4,071,858, Cl. 360-93.000.

Eke, Anna: *See—*
Kalman, Erika; Haklik, Lajos; Eke, Anna; and Kovacs, Pal, 4,071,766, Cl. 250-443.000.

Ekstedt, Edward E.: *See—*
Stenger, Richard E.; Ekstedt, Edward E.; Richey, John M.; and Seto, Stanford P., 4,070,826, Cl. 60-39.660.

Electro-Voice, Incorporated: *See—*
Keele, D. Broadus, Jr., 4,071,112, Cl. 181-187.000.

Elitex - Zavody textilniho strojirenstvi generalni reditelstvi: *See—*
Zouhar, Drahomir; Holas, Antonin; and Musil, Ivan, 4,070,874, Cl. 66-177.000.

Elographics, Incorporated: *See—*
Talmage, John E.; and Bates, L. Dexter, 4,071,689, Cl. 178-18.000.

Elscint, Ltd.: *See—*
Shinitzky, Meir; and Bruck, Abraham, 4,071,770, Cl. 250-461.00B.

Elze, Karl H. Spring loaded cam lock. 4,070,844, Cl. 52-584.000.

Emain, Jean. Polishing wheels. 4,070,798, Cl. 51-361.000.

Emerson, Reginald Stanley, to Leslie Hartridge Limited. Fuel delivery meter. 4,070,907, Cl. 73-119.00A.

Emhart Industries, Inc.: *See—*
Alexander, Gordon A., 4,071,270, Cl. 292-169.220.

EMI Limited: *See—*
LeMay, Christopher Archibald Gordon, 4,071,760, Cl. 250-363.00S.

Emmons, William D.; Nyi, Kayson; and Sperry, Peter R., to Rohm and Haas Company. Coating compositions from dicyclopentenyl acrylate and/or methacrylate. 4,071,489, Cl. 260-22.0CB.

Energy Absorption Systems, Inc.: *See—*
Walker, Grant W., 4,071,599, Cl. 264-311.000.

Energy Development Associates: *See—*
Hart, Thomas G., 4,071,660, Cl. 429-15.000.

Engdahl, Jean: *See—*
Zumsteg, Alphonse Ernst; Engdahl, Jean; and Huguenin, Raymond, 4,071,797, Cl. 310-361.000.

Engelbrecht, Hans, to Shimoda, Sadao. Heat-storage unit and system. 4,071,079, Cl. 165-48.000.
Engelhard, Philippe; Weisang, Joseph Edouard; and Paris, Guy, to Compagnie Francaise de Raffinage. Catalysts for the hydrotreatment of hydrocarbons and a process for the preparation and utilization thereof. 4,071,437, Cl. 208-137.000.
Engelhardt, Edward L.; and Christy, Marcia E., to Merck & Co., Inc. Arylperfluoroalkanes. 4,071,570, Cl. 260-649.00F.
Engels, Mathijs Maria Johannes, to Maatschappij van Berkel's Patent N.V. Weighing apparatus. 4,070,900, Cl. 73-1.00B.
Envall, Lennart Olof Gunnemar: *See*—
Wilton, Inga Elna Maria; Envall, Lennart Olof Gunnemar; Sundstroem, Kurt Lage; and Moran, David Patrick Joseph, 4,071,634, Cl. 426-604.000.
Ermel, Heinrich; Fruth, Franz; Fryda, Georg; Lang, Peter; Rau, Fritz; and Vossnacke, Jurgen, to AGFA-Gevaert, AG. Electrostatic-copier cleaning device. 4,071,296, Cl. 355-15.000.
Ernest, David A., to Allis-Chalmers Corporation. Vehicle wheel suspension system. 4,071,259, Cl. 280-95.00R.
Ernst Leitz GmbH: *See*—
Leitz, Ludwig; Heitmann, Knut; Schneider, Eckart; and Schaefer, Klaus Dieter, 4,071,297, Cl. 356-4.000.
Leitz, Ludwig; Heitmann, Knut; and Schmidt, Horst, 4,071,772, Cl. 250-558.000.
Ernster, Peter Jacob; Collins, William Joseph; and Schaefer, George Henry, to Oster Corporation. Multi-purpose kitchen appliance. 4,071,789, Cl. 310-50.000.
Errington, Paul Anthony, to Morgan Refractories Limited. Refractory insulation. 4,071,311, Cl. 432-234.000.
ESB Incorporated: *See*—
Bernstein, Philip; Coffey, James P.; and Davis, Stanley M., 4,071,661, Cl. 429-49.000.
Escher Wyss G.m.b.H.: *See*—
Bubik, Alfred; Reutter, Siegfried; Schultz, Hans-Joachim; and Stotz, Wolf-Gunter, 4,071,401, Cl. 162-300.000.
Essex Group, Inc.: *See*—
Szudarek, Robert G., 4,071,289, Cl. 339-17.00F.
Estreicher, Isabelle E.; and Price, James B., to Motorola, Inc. Silicon metallographic etch. 4,071,397, Cl. 156-662.000.
Euracom S.A.: *See*—
Apellaniz, Ramon, 4,071,157, Cl. 215-252.000.
Evans, Bryce B., to Aeroquip Corporation. Filter unit having a constant rate purging cycle. 4,071,337, Cl. 55-212.000.
Evans, George S.; and Skwirut, Henry, to Westinghouse Electric Corporation. Method of implanting an amalgamative metal in a fluorescent lamp during manufacture. 4,071,288, Cl. 316-19.000.
Evans, Joseph H.; and Wolfe, Richard B., to Raychem Corporation. Method for covering an article with a recoverable sleeve. 4,070,746, Cl. 29-450.000.
Evans, William Price; and Naik, Appayya Raghunath, to Lever Brothers Company. Detergent composition. 4,071,523, Cl. 260-293.760.
Ewers, Marion H., to Air Rotor Development Company, Inc. Orthopedic arm sling. 4,071,022, Cl. 128-94.000.
Exner, Fritz: *See*—
Bauer, Kurt; Molleken, Reiner; and Exner, Fritz, 4,071,564, Cl. 260-613.00D.
Exxon Research & Engineering Co.: *See*—
Behrmann, William C.; and Caulk, Robert H., 4,071,576, Cl. 260-683.470.
Ezoe, Mitsuhiko, to Nissan Motor Co., Ltd. Power steering control with damping action against rapid change in vehicle speed. 4,071,109, Cl. 180-143.000.
Fachbach, Heinz: *See*—
Skatsche, Othmar; Thien, Gerhard; and Fachbach, Heinz, 4,071,008, Cl. 123-198.00E.
Facom: *See*—
Caroff, Yves Robert, 4,070,915, Cl. 73-487.000.
Faix, Heinz: *See*—
Hack, Albert; and Faix, Heinz, 4,071,273, Cl. 296-28.00R.
Falconer, David G., to Stanford Research Institute. Laser Raman/-fluorescent device for analyzing airborne particles. 4,071,298, Cl. 356-73.000.
Falender, James R.; Mettler, Claudia M.; and Saam, John C., to Dow Corning Corporation. Toughened mercaptosiloxane modified emulsion polymerized vinylic polymers. 4,071,577, Cl. 260-827.000.
Falk, Jerry L., to GTE Sylvania Incorporated. Reversible current apparatus. 4,071,879, Cl. 361-245.000.
Farber, Gerald, to United States of America, Energy. Vibratory high pressure coal feeder having a helical ramp. 4,071,151, Cl. 214-35.00R.
Farge, Daniel: *See*—
Berger, Christian; Farge, Daniel; Gros, Georges; Messer, Mayer Naoum; and Moutonnier, Claude, 4,071,531, Cl. 260-327.00P.
Farinon Electric of Canada Ltd.: *See*—
Beaupre, Donald M.; and Ferris, Harold A., 4,071,711, Cl. 179-41.00A.
Farrington, Grant M.; Harris, J. Donald; and Foessel, Alfred H., to General Refractories Company. Process for making a pitch impregnated, cold molded refractory article. 4,071,593, Cl. 264-62.000.
Fas-Line Sales and Rentals, Inc.: *See*—
Sneed, Robert C.; and Young, Joseph C., 4,071,203, Cl. 242-86.600.
Faulkner, Alfred H. Electronic organ keying system. 4,070,943, Cl. 84-1.010.
Fehrer, Ernst. Machine for spinning textile fibers. 4,070,811, Cl. 57-50.000.
Feierabend, Louis Bock; and Proper, David Staples, to International Business Machines Corporation. Assembling flexible disk record structures. 4,071,869, Cl. 360-135.000.
Feldberg, Murray: *See*—
O'Rourke, James; and Feldberg, Murray, 4,070,961, Cl. 100-185.000.
Ferdinand Aufschlager KG.: *See*—
Ingerle, Kurt; and Meister, Karl, 4,071,087, Cl. 166-278.000.
Ferguson, Thomas W. Demountable practice device attachable to the strings of a stringed racquet. 4,071,239, Cl. 273-29.00A.
Ferland, Jean-Marie; Laliberte, Real; Lippmann, Wilbur; and Pugsley, Thomas A., to Ayerst McKenna and Harrison Ltd. Aryloxy aminobutanols, their preparation and use thereof. 4,071,552, Cl. 260-501.170.
Ferranti Limited: *See*—
Brown, Kenneth Robson; and Kerr, Andrew Guy, 4,070,800, Cl. 52-1.000.
Ferris, Harold A.: *See*—
Beaupre, Donald M.; and Ferris, Harold A., 4,071,711, Cl. 179-41.00A.
Fey, Maurice G.; Wolf, Charles B.; Martin, Paul E.; and Harvey, Francis J., II, to Westinghouse Electric Corporation. Process for production of magnetite spheres with an arc heater. 4,071,588, Cl. 264-15.000.
Fichot, Bernard: *See*—
Bijon, Paul; Fichot, Bernard; and Lainez, Lucien, 4,071,854, Cl. 358-128.000.
Fidchunov, Leonid Nikolaevich; Balyk, Stanislav Sergeevich; Silka, Adolf Nikolaevich; Kulakov, Nikolai Konstantinovich; Bakhtarov, Leonid Fedorovich; Azimov, Alexandr Abramovich; Davydenko, Vladimir Mikhailovich; Balitsky, Nikolai Vasilievich; Likhogub, Evgeny Petrovich; and Dorfman, Gersh Abramovich. Method of smokeless charging of coke ovens with coal charge and coal-charging machine for effecting same. 4,071,414, Cl. 201-40.000.
Fidi, Werner; and Moser, Horst, to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H. Headphone earpiece. 4,071,717, Cl. 179-182.00R.
Fink, Lee. Stilt structure. 4,071,243, Cl. 272-70.100.
Fink, Richard A., to Auburn Foundry, Inc. Walking beam conveyor apparatus and method of operating the same. 4,071,137, Cl. 198-774.000.
Firestone Tire & Rubber Company, The: *See*—
Bethea, Tristram Walker; and Futamura, Shingo, 4,071,492, Cl. 260-31.80R.
Fischer, Artur. Method and arrangement for orienting objects on support structures. 4,070,842, Cl. 52-508.000.
Fischer, Herbert: *See*—
Hiller, Heinz; and Fischer, Herbert, 4,071,607, Cl. 423-574.00R.
Fitch, Robert Herbert: *See*—
Amato, Wayne S.; Bandyopadhyay, Bhaskar; Fitch, Robert Herbert; and Kurtz, Bruce Edward, 4,071,572, Cl. 260-659.00A.
Fives-Cail Babcock: *See*—
Chielens, Alain; and Henin, Jean-Pierre, 4,071,081, Cl. 165-82.000.
Ghestem, Gerard, 4,071,310, Cl. 432-106.000.
Flambeau Paper Company: *See*—
Baierl, Kenneth W., 4,071,398, Cl. 162-15.000.
Flanagan, James Loton; and Webber, Susan Anne, to Bell Telephone Laboratories, Incorporated. Speech signal equalizer. 4,071,695, Cl. 179-1.0VL.
Flanders, Robert L.: *See*—
Blanton, William A., Jr.; and Flanders, Robert L., 4,071,436, Cl. 208-120.000.
Flashner, Michael; and Tanenbaum, Stuart W., to Research Corporation. Neuraminidase. 4,071,408, Cl. 195-62.000.
Fleischer, Donald Whiting, to Veeder Industries, Inc. Rotary electromagnetic indicator system. 4,071,742, Cl. 235-92.0FL.
Fleissner, Hans, to Vepa Aktiengesellschaft. Apparatus for the continuous steaming of textile material of man-made fiber material. 4,070,877, Cl. 68-5.00D.
Florko, Nicholas, Jr. Lug wrench. 4,070,931, Cl. 81-177.00B.
Floryan, Daniel Edwin: *See*—
Cooper, Glenn Dale; and Floryan, Daniel Edwin, 4,071,500, Cl. 260-47.0ET.
Flowers, Inc.: *See*—
Dillon, Michael Francis, 4,070,793, Cl. 47-67.000.
Foessel, Alfred H.: *See*—
Farrington, Grant M.; Harris, J. Donald; and Foessel, Alfred H., 4,071,593, Cl. 264-62.000.
Folsom, Harold A.; and Bilson, David G., to Jervis B. Webb Company. Carrier propelling mechanism for power and free conveyors. 4,070,972, Cl. 104-172.00S.
Fontana, Serge: *See*—
Charransol, Pierre; Hauri, Jacques; and Fontana, Serge, 4,071,702, Cl. 179-15.0AT.
Foote Mineral Company: *See*—
Staggers, John O., 4,071,355, Cl. 75-30.000.
Ford, Edward B., Jr. Thermostatic vent control. 4,071,190, Cl. 236-93.00A.
Ford, George Alan, to Walker-Neer Mfg. Co., Inc. Stabilizer for single or dual tube drilling. 4,071,101, Cl. 175-325.000.
Ford Motor Company: *See*—
Gould, Harry J., 4,071,833, Cl. 333-33.000.
Milberg, Morton E.; and Miller, Wayne M., 4,071,371, Cl. 106-65.000.
Mocarski, Stanislaw, 4,071,354, Cl. 75-.50R.
Ford, Peter W.: *See*—
Frattarola, Joseph R.; and Ford, Peter W., 4,071,741, Cl. 235-436.000.

Forkardt, Gefitec: *See*—
Caprioli, Bruno, 4,070,935, Cl. 82-40.00R.
Forschungsinstitute Bergof GmbH: *See*—
Strathmann, Heinrich, 4,071,590, Cl. 264-45.100.
Foster, Perry A., Jr.; and Jacobs, Stanley C., to Aluminum Company of America. Electrolytic production of metal. 4,071,420, Cl. 204-67.000.
Frahm, James H., to Brunswick Corporation. Throttle and ignition advance linkage for an internal combustion engine. 4,071,002, Cl. 123-99.000.
Frank, Dudley B.: *See*—
Garabedian, Arthur, 4,070,994, Cl. 123-8.070.
Franz Buttner AG.: *See*—
Scherrer, Herbert; Bopp, Ernst; and Cecchetto, Ennio, 4,071,133, Cl. 197-168.000.
Frattarola, Joseph R.; and Ford, Peter W., to UMC Industries, Inc. Card validator. 4,071,741, Cl. 235-436.000.
Frayer, James Albert: *See*—
Yanik, Stephen Joseph; and Frayer, James Albert, 4,071,439, Cl. 208-216.000.
Freda, George B., to Uniroyal, Inc. Gelled gasoline. 4,071,326, Cl. 44-7.00E.
Freda, George B., to Uniroyal, Inc. Latex composition. 4,071,488, Cl. 260-23.70A.
Freisler, Erhard: *See*—
Haltmeier, Paul; Freisler, Erhard; and Rohr, Willy, 4,071,055, Cl. 139-448.000.
French Co., The: *See*—
Wood, Norman E., 4,071,451, Cl. 210-79.000.
Fridman, Eidlya Abramovna: *See*—
Peradze, Tamaz Vladimirovich; Fridman, Eidlya Abramovna; Zheleznova, Nina Vsevolodovna; Kolikov, Vsevolod Mikhailovich; Bresler, Semen Khaimovich-Efimovich; Mchedlishvili, Boris Viktorovich; Molodkin, Viktor Mikhailovich; Molodkina, Ljudmila Mikhailovna; and Katushkina, Nina Vasilievna, 4,071,619, Cl. 424-90.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
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Sedlmayer, Franz; Baron, Paul; and Seifert, Klaus, 4,070,868, Cl. 61-91.000.
Fried. Krupp Huttenwerke Ag: *See*—
Grube, Manfred; Gorski, Wilhelm; and Koch, Heinz, 4,070,884, Cl. 72-39.000.
Friederichs, Karl-Heinz: *See*—
Jess, Hans Jurgen; and Friederichs, Karl-Heinz, 4,070,723, Cl. 10-90.000.
Friedli, Hans R.: *See*—
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Friedrich Uhde GmbH: *See*—
Weyer, Horst; Muhlhaus, Ludwig; and Oberschachtsiek, Gerhard, 4,071,612, Cl. 423-659.000.
Friese, Gunther, to Swiss Aluminium Ltd. Device for discharging particulate materials. 4,071,452, Cl. 210-189.000.
Frisch, Rudolf, to Congoleum Corporation. Methods of salvaging improperly processed resinous. 4,071,592, Cl. 264-54.000.
Fruth, Franz: *See*—
Ermel, Heinrich; Fruth, Franz; Fryda, Georg; Lang, Peter; Rau, Fritz; and Vossnacke, Jurgen, 4,071,296, Cl. 355-15.000.
Frutiger, Peter, to Anstalt Europaische Handelsgesellschaft. Method and apparatus for synchronizing a receiver end-key generator with a transmitter end-key generator. 4,071,693, Cl. 178-69.100.
Fryda, Georg: *See*—
Ermel, Heinrich; Fruth, Franz; Fryda, Georg; Lang, Peter; Rau, Fritz; and Vossnacke, Jurgen, 4,071,296, Cl. 355-15.000.
Frye, Cecil L.; and Klosowski, Jerome M., to Dow Corning Corporation. Method of chain extending organosiloxanes. 4,071,498, Cl. 260-46.50G.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Matsuno, Isao, 4,070,999, Cl. 123-32.00B.
Fuji Photo Film Co., Ltd.: *See*—
Ogawa, Hiroshi; Ishii, Kazuhide; Nakamura, Matsuaki; Tamai, Yasuo; and Akashi, Goro, 4,071,654, Cl. 428-336.000.
Takenaka, Haruo; Okiyama, Toshiaki; and Kawamata, Toshio, 4,071,362, Cl. 96-1.400.
Fuji Photo Optical Co., Ltd.: *See*—
Suzuki, Masane; Kanaya, Motonori; and Matsuoka, Takeshi, 4,071,291, Cl. 350-3.500.
Fuji, Saburo: *See*—
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Fujimoto, Sakae, to Ricoh Company, Ltd. Sheet detector in sheet feed station. 4,071,232, Cl. 271-8.00R.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kamiya, Takashi; Teraji, Tsutomu Toyonaka; Hashimoto, Masashi; Oku, Teruo Kyoto; Nakaguti, Osamu; Saito, Yoshihisa; and Nakamura, Hitoshi, 4,071,527, Cl. 260-306.500.
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Fukushima, Masami: *See*—
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Fulenwider, John E.; and Gonsalves, John, to GTE Laboratories Incorporated. Transducer for converting acoustic energy directly into optical energy. 4,071,753, Cl. 250-227.000.
Fulop, Miklos; and Rakar, Geza, to Koolaj es Foldgazbanyaszati Ipari Kutato Laboratorium. Process and apparatus for supersonic drilling in underground rocky strata. 4,071,097, Cl. 175-56.000.
Funke, Manfred Maximilian, to Cincinnati Milacron Inc. Wheel dressing device. 4,071,015, Cl. 125-11.0AT.
Futamura, Shingo: *See*—
Bethea, Tristram Walker; and Futamura, Shingo, 4,071,492, Cl. 260-31.80R.
Gabhart, Terry L.: *See*—
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Galimov, Anas Galimovich: *See*—
Kilin, Viktor Evdokimovich; Galimov, Anas Galimovich; Yankovsky, Oleg Alexandrovich; Klushin, Nikolai Alexandrovich; and Maslakov, Petr Avramovich, 4,071,094, Cl. 173-139.000.
Gallacci, Joe, to Raymond Lee Organization, Inc., The, a part interest. Mechanical back scratcher. 4,071,021, Cl. 128-52.000.
Ganzel, David K. Large animal convalescent unit. 4,070,989, Cl. 119-27.000.
Garabedian, Arthur, to Frank, Dudley B. Modification for selectively operating a fraction of multiple rotors of a rotary engine. 4,070,994, Cl. 123-8.070.
Garcia, Frank. Multi-story lift device. 4,071,115, Cl. 187-2.000.
Gardner-Denver Company: *See*—
Jameson, James J., 4,071,125, Cl. 192-3.300.
Garner, Joseph L., to Dow Chemical Company, The. Electroconductive resins and intermediates and electroconductive coated paper. 4,071,666, Cl. 526-1.000.
Garrett, Isabel: *See*—
Strongin, Ned; and Garrett, Isabel, 4,070,790, Cl. 46-172.000.
Garrett, Walter L.; and Czerepinski, Ralph G., to Dow Chemical Company, The. Fountain solutions and fountain concentrates for lithographic printing comprising aqueous solutions of polyacrylamide based polymers, and blends of polyacrylamide and polyacrylic acid. 4,071,485, Cl. 260-17.00R.
Garth, Bruce Hollis, to Du Pont de Nemours, E. I., and Company. High energy density battery with dioxolane based electrolyte. 4,071,665, Cl. 429-197.000.
Gartung, Clifford W. Supportive accessory units for modular wall panels. 4,070,803, Cl. 52-36.000.
Gaskins, Justin: *See*—
Steinke, James Marion; and Gaskins, Justin, 4,071,132, Cl. 197-168.000.
Gaudino, Albert J.: *See*—
Dunkerley, Fred J.; Gaudino, Albert J.; and Vilyus, Robert P., 4,071,381, Cl. 148-36.000.
Gaylord, Norman G., to Champion International Corporation. Compatibilization of hydroxyl-containing fillers and thermoplastic polymers. 4,071,494, Cl. 260-42.140.
Gebr. Pfeiffer AG: *See*—
Schauer, Siegfried, 4,071,441, Cl. 209-144.000.
Geller, Stephen I., to Xerox Corporation. Digital interface system for a printer. 4,071,909, Cl. 364-900.000.
General Atomic Company: *See*—
Eggers, George H., 4,071,587, Cl. 264-.500.
Russell, John L., Jr.; and Potthoff, Robert Edward, 4,071,017, Cl. 126-271.000.
General Binding Corporation: *See*—
Staats, Henry N.; and Wiermanski, Jerome J., 4,070,774, Cl. 40-2.200.
General Cable Corporation: *See*—
Thompson, Walter F.; and Redo, Dennis M., 4,071,150, Cl. 214-16.40R.
General Electric Company: *See*—
Anthony, Thomas R.; and Cline, Harvey E., 4,071,378, Cl. 148-1.500.
Armor, Anthony F.; and Stanwick, Casmer P., 4,071,791, Cl. 310-59.000.
Brandt, Theodore C., 4,071,045, Cl. 137-528.000.
Brennan, Thomas E.; Hartmann, Robert H.; and McCoy, Robert M., 4,070,750, Cl. 29-596.000.
Brown, Richard N., 4,070,956, Cl. 99-304.000.
Carlson, Robert G.; and Harrison, Robert W., 4,071,184, Cl. 228-159.000.
Chang, David R.; and Grisik, John J., 4,071,638, Cl. 427-192.000.
Cogan, Richard M., 4,071,183, Cl. 228-173.00A.
Cooper, Glenn Dale; and Floryan, Daniel Edwin, 4,071,500, Cl. 260-47.0ET.
Crouch, Donald Wayne; and Nelson, Robert Wayne, 4,071,727, Cl. 200-144.00B.
Darby, William L.; Monz, Robert H.; and Molis, Stephen J., 4,071,790, Cl. 310-59.000.
Gowdy, Harold W., 4,070,773, Cl. 38-77.830.
Herman, Charles J., 4,070,728, Cl. 16-134.000.
Kernander, Warren N.; and Van Bennekom, Carl F., 4,071,824, Cl. 324-127.000.
Lange, Kai; Wiesen, Ernest J.; and Woronowicz, Eric M., 4,071,762, Cl. 250-369.000.
Pury, Thomas; Konle, Robert L.; and Sivertsen, Marvin L., 4,071,767, Cl. 250-444.000.
Stenger, Richard E.; Ekstedt, Edward E.; Richey, John M.; and Seto, Stanford P., 4,070,826, Cl. 60-39.660.
Vanfleet, Charles R.; and Ruehr, William C., 4,070,827, Cl. 60-204.000.

Walker, Loren H., 4,071,812, Cl. 363-80.000.
Wright, John H., 4,071,316, Cl. 23-230.00B.

General Electric Company Silicone Products Department: *See—*
Grenoble, Maurice E.; and Goossens, John C., 4,071,644, Cl. 427-302.000.

General Latex and Chemical Corporation: *See—*
Hopkins, Henry S., Jr.; and Vargo, Donald L., 4,071,482, Cl. 260-2.5AJ.

General Mills Chemicals, Inc.: *See—*
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General Mills, Inc.: *See—*
Lindl, Willibald M.; Klande, James R.; and VanHulle, Glenn J., 4,071,635, Cl. 426-264.000.

General Motors Corporation: *See—*
Beiswenger, David W., 4,070,830, Cl. 60-290.000.
Brock, Eugene W., 4,071,805, Cl. 315-84.000.
Martin, Ronald A.; Ashton, Charles R.; and Watson, Richard D., 4,071,788, Cl. 310-42.000.
Polak, James C., 4,070,927, Cl. 74-765.000.
Schlatter, James C.; and Taylor, Kathleen C., 4,071,600, Cl. 423-213.700.
Schoen, Roy C., 4,071,794, Cl. 310-154.000.
Van House, Robert M., 4,071,283, Cl. 303-114.000.
Winchell, Frank J., 4,071,261, Cl. 280-220.000.

General Refractories Company: *See—*
Farrington, Grant M.; Harris, J. Donald; and Foessel, Alfred H., 4,071,593, Cl. 264-62.000.

Genrad Inc.: *See—*
Djuric, Svetislav V., 4,070,741, Cl. 29-25.420.

Genzling, Claude. Bicycle and information-producing assembly carried thereby. 4,071,892, Cl. 364-424.000.

Gerber, Richard: *See—*
Kalippke, Harald; Gerber, Richard; and Ehrmann, Karl, 4,071,792, Cl. 310-70.00R.

Gersch, Josef; and Wiedemann, Otto, to AGFA-Gevaert, AG. Roll film cassette. 4,071,202, Cl. 242-71.100.

Ghestem, Gerard, to Fives-Cail Babcock. Installation for the manufacture of cement. 4,071,310, Cl. 432-106.000.

Ghirga, Marcello: *See—*
Piccolo, Luigi; Calcagno, Benedetto; Ghirga, Marcello; and Paolinelli, Antonio, 4,071,347, Cl. 71-31.000.

Gibbs, Geraldine L. Plant water trough. 4,070,794, Cl. 47-79.000.

Gibbs, Hyatt McDonald; McCall, Samuel Leverte, Jr.; and Venkatesan, Thirumalai Nallan Chakravarthy, to Bell Telephone Laboratories, Incorporated. Amplifying characteristics of a cavity-enclosed nonlinear medium. 4,071,831, Cl. 330-4.300.

Gifford, Phillip H., II, to Phillips Petroleum Company. Recovery of oil from tar sands. 4,071,434, Cl. 208-11.0LE.

Gilbert, Herbert Allan. Traffic safety control module system. 4,071,224, Cl. 256-64.000.

Gilbu, Agnar, to Owens-Corning Fiberglas Corporation. Cylindrical underground storage tank having particularly shaped end caps. 4,071,161, Cl. 220-18.000.

Gillespie, David M. Fluidically driven turntable. 4,071,252, Cl. 274-39.00R.

Gilmour, Ralph M., to Claude Neon Industries Limited. Display sign. 4,070,779, Cl. 40-575.000.

Gingell, William George: *See—*
Dalton, Sally Elizabeth; Gingell, William George; Jenkins, David Conwil; King, Leslie George; Lee, Glyn Evan; and Thompson, Garth Molesdale, 4,071,528, Cl. 260-306.70T.

Gisser, Henry; and Portnoy, Seymour, to United States of America, Army. Random copolymers of methyl methacrylate and N-octadecyl methacrylate. 4,071,678, Cl. 526-328.000.

Gittleman, Jonathan Isaac: *See—*
Pinch, Harry Louis; Abeles, Benjamin; and Gittleman, Jonathan Isaac, 4,071,426, Cl. 204-192.00F.

Glacier Metal Company Limited, The: *See—*
Pratt, George Christopher; Eastwood, Barry John; Michael, Anthony Dennis; and Heath, Leonard, 4,071,643, Cl. 427-292.000.

Glass Master Corporation: *See—*
Cailey, Ronald J., 4,070,954, Cl. 93-36.900.

Glaverbel-Mecaniver: *See—*
Jacquemin, Francis; Terneau, Robert; and Voiturier, Jean-Pierre, 4,071,649, Cl. 428-215.000.

Globe Ticket Company: *See—*
Austin, Harvey B., Jr., 4,071,201, Cl. 242-55.200.

Gobel, Volker, to Krafft Gobel KG Textilmaschinenbau. Felting apparatus. 4,070,738, Cl. 28-137.000.

Gogulski, Paul. Mobile automated shopping system. 4,071,740, Cl. 235-431.000.

Goldammer, Georg; and Beitzinger, Kurt, to SKF Kugellagerfabriken GmbH. Apparatus for arresting the rotor in an open-end spinning machine. 4,070,814, Cl. 57-89.000.

Goldby, Richard Charles, to Charles Richards Fasteners Limited. Self-locking screw threads. 4,071,067, Cl. 151-22.000.

Goldfarb, Adolph E.; and Benkoe, Erwin. Doll head having two randomly selected movements. 4,071,249, Cl. 273-161.000.

Golonka, Kenneth Anthony: *See—*
Bilczo, Dale Louis; Golonka, Kenneth Anthony; Overman, John Arthur; and Carroll, John Ernest, 4,071,885, Cl. 363-64.000.

Gombas, Laszlo Attila, to Coors Container Company. Apparatus and methods for simultaneously necking and flanging a can body member. 4,070,888, Cl. 72-91.000.

Gomberg, Edward N., to Synair. Hybrid solid filled pneumatic tire. 4,071,386, Cl. 156-113.000.

Gonsalves, John: *See—*
Fulenwider, John E.; and Gonsalves, John, 4,071,753, Cl. 250-227.000.

Goodenough, David J., to United States of America, Health, Education and Welfare. X-ray apparatus with rotationally symmetric Gaussian-like focal spot. 4,071,768, Cl. 250-444.000.

Goodman, Clark: *See—*
Carpenter, Neil L.; and Goodman, Clark, 4,071,278, Cl. 299-5.000.

Goodyear Tire & Rubber Company, The: *See—*
Chung, Daniel A., 4,071,279, Cl. 301-63.0PW.
Hollingshead, William S., 4,071,565, Cl. 260-619.00R.
Korver, Gailerd L., 4,071,504, Cl. 260-75.0EP.
McMullen, Philip B., 4,071,647, Cl. 428-102.000.
Neumeister, Alvin W., 4,070,939, Cl. 83-368.000.
Olsen, Richard J., 4,071,068, Cl. 152-176.000.
Tazuma, James J.; and Zadra, Mario D., 4,071,669, Cl. 526-47.300.

Goof, Sven Karl Lennart. Fluid pressure controlled valve assembly. 4,071,039, Cl. 137-87.000.

Goossens, John C.: *See—*
Grenoble, Maurice E.; and Goossens, John C., 4,071,644, Cl. 427-302.000.

Goralski, Christian T., to Dow Chemical Company, The. 3-Bromo-2,2-bis(bromomethyl)propyl bromomethanesulfonate. 4,071,547, Cl. 260-456.00R.

Gorbik, Anatoly Stepanovicy: *See—*
Zherdev, Anatoly Vasilievich; Yakimenko, Grigory Savvich; Gritsuk, Lev Dmitrievich; Gorbik, Anatoly Stepanovicy; Belkin, Evgeny Grigorievich; Tseluiko, Jury Ivanovich; Gorodetsky, Yakov Izrailievich; Severin, Vasily Fedorovich; and Tolochko, Alexei Ivanovich, 4,071,230, Cl. 266-193.000.

Gordon, David A.: *See—*
Seltzer, Raymond; and Gordon, David A., 4,071,477, Cl. 260-2.00N.

Gorodetsky, Yakov Izrailievich: *See—*
Zherdev, Anatoly Vasilievich; Yakimenko, Grigory Savvich; Gritsuk, Lev Dmitrievich; Gorbik, Anatoly Stepanovicy; Belkin, Evgeny Grigorievich; Tseluiko, Jury Ivanovich; Gorodetsky, Yakov Izrailievich; Severin, Vasily Fedorovich; and Tolochko, Alexei Ivanovich, 4,071,230, Cl. 266-193.000.

Gorshe, Thomas Mathew: *See—*
Mitchell, Richard Patrick; and Gorshe, Thomas Mathew, 4,070,852, Cl. 53-297.000.

Gorski, Theodor; Heinen, Adolf; and Mack, Kurt, to Bayer Aktiengesellschaft. Regulating oxygen input in treatment of effluent. 4,071,443, Cl. 210-7.000.

Gorski, Wilhelm: *See—*
Grube, Manfred; Gorski, Wilhelm; and Koch, Heinz, 4,070,884, Cl. 72-39.000.

Goto, Kenji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Stratified combustion engine with prechamber. 4,071,001, Cl. 123-75.00B.

Gould, Harry J., to Ford Motor Company. Apparatus for coupling coaxial transmission line to rectangular waveguide. 4,071,833, Cl. 333-33.000.

Gould Inc.: *See—*
Lautner, Max E.; and West, Bernard J., 4,071,787, Cl. 310-42.000.

Gourdier, Jean-Francois: *See—*
Senes, Michel; Le Goff, Yannick; and Gourdier, Jean-Francois, 4,071,472, Cl. 252-455.00R.

Gowdy, Harold W., to General Electric Company. Steam iron water valve structure. 4,070,773, Cl. 38-77.830.

Graat, Johannes W., to Smit Nijmegen B.V. Apparatus for producing an inert gas. 4,071,322, Cl. 23-262.000.

Grable, Donovan B.; and Laney, Bill C. Well head sealing system. 4,071,085, Cl. 166-84.000.

Graf, Alban; and Guanella, Gustav, to Patelhold Patentverwertungs- & Elektro-Holding AG. Process and apparatus for improving the utilization of transmisson channels through thinning out sections of the signal band. 4,071,707, Cl. 179-15.55R.

Grafe, Peter: *See—*
Werner, Gerhard; Grafe, Peter; Sattelmeyer, Richard; and Schmelzer, Heinz, 4,071,676, Cl. 526-283.000.

Granberg, Elof; and Olsen, Emil Adolph, to Granberg Industries. Log sawing attachment for a chain saw. 4,070,757, Cl. 30-371.000.

Granberg Industries: *See—*
Granberg, Elof; and Olsen, Emil Adolph, 4,070,757, Cl. 30-371.000.

Grapha-Holding AG: *See—*
Schick, Gunther, 4,071,234, Cl. 271-11.000.

Graves, Thomas M.; and Koundakjian, Theodore H., to Chevron Research Company. Aqueous flowable concentrates of particulate water-insoluble pesticides. 4,071,617, Cl. 424-78.000.

Graves, Thomas W.; and Seiler, Ronald, to Bandag Incorporated. Tire belt removal. 4,071,071, Cl. 157-13.000.

Gray, Gorman D., to Lifetime Carbide Co. Method and product for attaching cutting tips to cutting tools. 4,071,141, Cl. 206-372.000.

Greatbatch, Wilson: *See—*
Mead, Ralph T.; Greatbatch, Wilson; and Rudolph, Frank W., 4,071,662, Cl. 429-178.000.

Green, Harold A.: *See—*
Petrocci, Alfonso N.; Merianos, John J.; and Green, Harold A., 4,071,628, Cl. 424-249.000.

Green, Michael J.; and Shue, Ho-Jane, to Schering Corporation. 7α-Halogeno-3,20-dioxo-1,4-pregnadienes, methods for their manufacture, their use as anti-inflammatory agents, and pharmaceutical formulations useful therefor. 4,071,626, Cl. 424-241.000.

Green, Norman W.: *See—*
Knell, Everett W.; and Green, Norman W., 4,071,432, Cl. 208-8.000.

Greene, Sanford I., to Micro Pneumatic Logic Inc. Fluid switch. 4,071,047, Cl. 137-625.180.

Greenhalgh, Peter Frederick: *See—*
Hildon, Anthony MacDonald; and Greenhalgh, Peter Frederick, 4,071,541, Cl. 260-348.250.

Gregory, Peter J. Restraining device. 4,071,023, Cl. 128-133.000.

Greit, Henry A.: *See—*
Nawracaj, Edward P.; and Greit, Henry A., 4,071,033, Cl. 128-420.00A.

Grenoble, Maurice E.; and Goossens, John C., to General Electric Company Silicone Products Department. Method for rendering flexible sheet material non-adherent. 4,071,644, Cl. 427-302.000.

Gress, Wolfgang: *See—*
Linden, Heinz; Gress, Wolfgang; and Offermann, Wilhelm, 4,071,487, Cl. 260-22.0TN.

Greve, Reinhard Cornelis; and van Luijk, Cornelis Pieter, to U.S. Philips Corporation. Crosspoint switch comprising bistable crosspoints. 4,071,728, Cl. 200-175.000.

Griesshammer, Rudolf; Kirschner, Helmut; and Lechner, Gunther, to Wacker-Chemitronic Gesellshaft fur Elektronic Grundstoffe mbH. Nitrogen-free anionic and non-ionic surfactants in a process for producing a haze-free semiconduct. 4,070,797, Cl. 51-326.000.

Griffin, Horace D., Jr. Trailer hitch apparatus with locking means. 4,071,262, Cl. 280-479.00A.

Griffiths, David H., to PPG Industries, Inc. Method of forming glass fibers. 4,071,339, Cl. 65-3.00R.

Grimm, John Edward, III, to Colgate Palmolive Company. Dentifrice containing encapsulated flavoring. 4,071,614, Cl. 424-49.000.

Grimm, Robert A.; Randen, Neil A.; and Demas, Christopher L., to Ashland Oil, Inc. Method for the preparation of N,N-dialkyl hydrazides. 4,071,554, Cl. 260-558.00H.

Grip-Pak, Inc.: *See—*
Cunningham, Ernest Ray, 4,070,850, Cl. 53-48.000.

Gripsin Industries, Inc.: *See—*
Minton, Abraham, 4,071,374, Cl. 106-189.000.

Grisik, John J.: *See—*
Chang, David R.; and Grisik, John J., 4,071,638, Cl. 427-192.000.

Gritsuk, Lev Dmitrievich: *See—*
Zherdev, Anatoly Vasilievich; Yakimenko, Grigory Savvich; Gritsuk, Lev Dmitrievich; Gorbik, Anatoly Stepanovicy; Belkin, Evgeny Grigorievich; Tseluiko, Jury Ivanovich; Gorodetsky, Yakov Izrailievich; Severin, Vasily Fedorovich; and Tolochko, Alexei Ivanovich, 4,071,230, Cl. 266-193.000.

Gros, Georges: *See—*
Berger, Christian; Farge, Daniel; Gros, Georges; Messer, Mayer Naoum; and Moutonnier, Claude, 4,071,531, Cl. 260-327.00P.

Grosch, Gottlieb W. Concrete well casing with cable hooks embedded therein. 4,070,832, Cl. 52-125.000.

Gross, Fritz A., to Raytheon Company. Harbor radio navigation system. 4,071,845, Cl. 343-113.00R.

Gross, James R., to Dow Chemical Company, The. Films and absorbent articles made from copolymers having a copolymerized crosslinker. 4,071,650, Cl. 428-260.000.

Gross, William G.; Long, Henry A., Jr.; and Yamshak, John R., to Armstrong Cork Company. Edge coating apparatus. 4,070,987, Cl. 118-257.000.

Groves, Charles L., Jr.; and Johnson, Steven J., to Westinghouse Electric Corporation. Power plant speed channel selection system. 4,071,897, Cl. 364-494.000.

Grow, Harlow B. Compression ignition control pressure heat engine. 4,070,998, Cl. 123-26.000.

Grube, Manfred; Gorski, Wilhelm; and Koch, Heinz, to Fried. Krupp Huttenwerke Ag. Process and device for de-scaling elongated metallic bars during continuous forming. 4,070,884, Cl. 72-39.000.

Grunwell, Joyce F.; and Petrow, Vladimir, to Richardson-Merrell Inc. Androst-4-en-19-ones for the enhancement of libido. 4,071,624, Cl. 424-238.000.

Grunwell, Joyce F.; and Petrow, Vladimir, to Richardson-Merrell Inc. 19-Oxygenated-5α-androstanes for the enhancement of libido. 4,071,625, Cl. 424-238.000.

Grzesiak, Anthony J.: *See—*
Burke, James E.; and Grzesiak, Anthony J., 4,071,196, Cl. 239-492.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Benson, Wayne J.; Torburn, Roy B.; and Tweed, Donald G., 4,071,876, Cl. 361-119.000.
Lee, David Quon; and Rovnyak, Richard Michael, 4,071,709, Cl. 179-18.0HB.

GTE Laboratories Incorporated: *See—*
Fulenwider, John E.; and Gonsalves, John, 4,071,753, Cl. 250-227.000.

GTE Sylvania Incorporated: *See—*
Falk, Jerry L., 4,071,879, Cl. 361-245.000.
Phillips, Paul Millard; and Donaldson, John Gleason, 4,071,658, Cl. 428-555.000.

Guanella, Gustav: *See—*
Graf, Alban; and Guanella, Gustav, 4,071,707, Cl. 179-15.55R.

Guarino, John P.; and McCarty, William H., to Mobil Oil Corporation. Radiation curable coating. 4,071,425, Cl. 204-159.240.

Guidez, Joel; Lecouvreur, Paul; and Roumailhac, Jean, to Commissariat a l'Energie Atomique. Rotary machine having a suspended shaft. 4,071,303, Cl. 415-112.000.

Guillon, Pierre M. M.: *See—*
Chauvin, Raymond; and Guillon, Pierre M. M., 4,071,304, Cl. 427-185.000.

Guinn, David C.; Haggard, Archie K.; and Thomas, John P. Mooring system for floating drilling vessels. 4,070,981, Cl. 114-293.000.

Guinn, David C.; Haggard, Archie K.; and Thomas, John P. Pivotal and releasable rat hole assembly. 4,071,145, Cl. 211-60.00S.

Guise, Geoffrey Bruce, to Commonwealth Scientific and Industrial Research Organization. Polyurea polycarbamoyl sulphonates. 4,071,313, Cl. 8-127.600.

Gulf Research & Development Company: *See—*
Yanik, Stephen Joseph; and Frayer, James Albert, 4,071,439, Cl. 208-216.000.

Gunzel, Rudolph M., Jr.; and Radecki, Tony, to Meiko, Inc. Portable motor driven dusting apparatus. 4,071,170, Cl. 222-193.000.

Gurkov, Konstantin Stepanovich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Tupitsyn, Konstantin Konstantinovich; Gurkov, Konstantin Stepanovich; Klimashko, Vladimir Vasilievich; Rozhkov, Leonid Georgievich; Bondar, Mikhail Jurievich; and Smolyanitsky, Boris Nikolaevich, 4,070,948, Cl. 91-234.000.

Gusev, Alexandr Mikhailovich: *See—*
Kholmogorov, Mikhail Vladimirovich; Katkov, Jury Vasilievich; and Gusev, Alexandr Mikhailovich, 4,070,892, Cl. 72-195.000.

Gutehoffnungshutte Sterkrade A. G.: *See—*
Heinen, Manfred; and Kotzur, Joachim, 4,071,253, Cl. 277-3.000.

Gyro Enterprises (Rotates) Pty. Limited: *See—*
McDonald, William J., 4,070,901, Cl. 73-2.000.

Haag, Paul: *See—*
Aenishaenslin, Werner; Suter, Fritz; Pfeuti, Ulrich; and Haag, Paul, 4,070,965, Cl. 101-228.000.

Haarmann & Reimer Gesellschaft mit beschrankter Haftung: *See—*
Bauer, Kurt; Molleken, Reiner; and Exner, Fritz, 4,071,564, Cl. 260-613.00D.

Haberstroh, Gunter; and Heistermann, Lothar, to Bleiindustrie KG Vorm. Jung & Lindig. Method of manufacturing laminated panels or foils of lead and plastics, especially acrylic acid polyethylene copolymers, and laminated panels or foils obtained thereby. 4,071,391, Cl. 156-325.000.

Hack, Albert; and Faix, Heinz, to Daimler-Benz Aktiengesellschaft. Water discharge, especially for hollow spaces in motor vehicle structures. 4,071,273, Cl. 296-28.00R.

Hafke, Carl; and Kohlen, Rudolf, to Metallgesellschaft Aktiengesellschaft. Process of gasifying solid fuels, particularly coal. 4,071,332, Cl. 48-202.000.

Hagenuk Vormals Neufeldt & Kuhnke GmbH: *See—*
Jess, Hans Jurgen; and Friederichs, Karl-Heinz, 4,070,723, Cl. 10-90.000.

Haggar Company: *See—*
Off, Joseph W. A.; and Early, Judson Horace, 4,070,937, Cl. 83-27.000.

Haggard, Archie K.: *See—*
Guinn, David C.; Haggard, Archie K.; and Thomas, John P., 4,070,981, Cl. 114-293.000.
Guinn, David C.; Haggard, Archie K.; and Thomas, John P., 4,071,145, Cl. 211-60.00S.

Hagin, Faust. Slack adjuster for cam brakes. 4,071,120, Cl. 188-79.50K.

Hague, David P.; Malkani, Dalip T.; Middlemiss, Andrew; and Scholey, Stuart, to British Steel Corporation. Manufacture of metal strip. 4,070,739, Cl. 29-18.000.

Hague International: *See—*
La Haye, Paul G.; and Anderson, Ralph E., 4,070,841, Cl. 52-506.000.

Hajek, Ralph S.: *See—*
Moreno, Emil F.; Hajek, Ralph S.; and Marquardt, Julius F., 4,070,924, Cl. 74-710.500.

Haklik, Lajos: *See—*
Kalman, Erika; Haklik, Lajos; Eke, Anna; and Kovacs, Pal, 4,071,766, Cl. 250-443.000.

Halbich, Frank. One piece container particularly adapted for calculators. 4,071,065, Cl. 150-52.00R.

Hall, B. C. Programmable time varying control system and method. 4,071,745, Cl. 364-104.000.

Hall, James B.: *See—*
Walraven, Thomas A.; Thomas, John G.; and Hall, James B., 4,071,182, Cl. 228-110.000.

Hall, John B.: *See—*
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,034, Cl. 131-17.00R.
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,535, Cl. 260-345.100.

Hall, Leo M., to University of Alabama, The Board of Trustees of the. Novel maltase enzyme produced by a new yeast strain. 4,071,407, Cl. 195-62.000.

Halliburton Company: *See—*
McLaughlin, Homer Charles, 4,070,865, Cl. 61-36.00C.

Halling, Horace P.; and Sadoff, Bernard J., Jr., to Pressure Science Incorporated. Pressure compensated slide joint. 4,071,268, Cl. 285-95.000.

Halling, Horace P.; and Sadoff, Bernard J., Jr., to Pressure Science Incorporated. Flexible piping joint. 4,071,269, Cl. 285-165.000.

Halperin, Levi Ytzhak; Zioni, Dov; and Bennet, David, to Shaare Zedek Hospital. Load cancelling device for conveyance systems. 4,071,116, Cl. 187-29.00R.

Haltmeier, Paul; Freisler, Erhard; and Rohr, Willy, to Ruti Machinery Works Ltd. Inserting carrier for looms with removal of a filling yarn from stationary bobbins. 4,071,055, Cl. 139-448.000.
Hamada, Masa: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Takamatsu, Akira; and Oki, Toshikazu, 4,071,411, Cl. 195-80.00R.
Hamel, Edmund, to Ofa AG. Method of making a core yarn. 4,070,818, Cl. 57-160.000.
Hammond, Thomas J., to Xerox Corporation. Sodium vapor lamp with emission aperture. 4,071,798, Cl. 313-18.000.
Hammond, Thomas J.; and Lama, William L., to Xerox Corporation. Sodium vapor lamp with emission aperture. 4,071,799, Cl. 313-44.000.
Hancock, Loren. Bracing apparatus. 4,070,833, Cl. 52-148.000.
Hand, Gene F., to Clark Equipment Company. Brake and steering system. 4,070,858, Cl. 60-422.000.
Hankin, Ralph L., to Tube Machinery Corporation. Roll former for tube mill. 4,070,887, Cl. 72-52.000.
Hansel, William B., to Suntech, Inc. Programmable manual actuator. 4,071,059, Cl. 141-206.000.
Hanson, Charles M., to United States of America, Army. Automotive accessory engine. 4,070,860, Cl. 60-616.000.
Hanson, Donald O., to Phillips Petroleum Company. Recovery of oil from tar sands. 4,071,433, Cl. 208-11.0LE.
Hanton, Daniel, to Saint-Gobain Industries. Manufacture of phenolic foam. 4,071,481, Cl. 260-2.50F.
Harada, Ietsuya, to Nissan Motor Co., Ltd. Exhaust gas recirculating system. 4,071,006, Cl. 123-119.00A.
Harden, Phillip L., to Bowmar Instrument Corporation. Flat keyboard assembly having cover type membrane with protrusions to align switch components. 4,071,718, Cl. 200-5.00A.
Harnischfeger Corporation: *See—*
Wieschel, John E., 4,071,205, Cl. 242-117.000.
Harris Corporation: *See—*
Davis, Robert Curtis; and McRae, Daniel Dix, 4,071,829, Cl. 329-122.000.
Harris, J. Donald: *See—*
Farrington, Grant M.; Harris, J. Donald; and Foessel, Alfred H., 4,071,593, Cl. 264-62.000.
Harrison, Robert W.: *See—*
Carlson, Robert G.; and Harrison, Robert W., 4,071,184, Cl. 228-159.000.
Hart, John Evans, to Lockheed Corporation. Vehicle control system incorporating a compensator to stabilize the inherent dynamics thereof. 4,071,209, Cl. 244-83.00D.
Hart, Leroy D.: *See—*
Pearson, Alan; and Hart, Leroy D., 4,071,594, Cl. 264-63.000.
Hart, Samuel A.; and Hart, William E. Pincer bucket. 4,071,155, Cl. 214-147.00G.
Hart, Terry Jonathan, to Bell Telephone Laboratories, Incorporated. Latch and switch interlock safety structure. 4,071,722, Cl. 200-50.00A.
Hart, Thomas G., to Energy Development Associates. Electrode for a zinc-chloride battery and batteries containing the same. 4,071,660, Cl. 429-15.000.
Hart, William E.: *See—*
Hart, Samuel A.; and Hart, William E., 4,071,155, Cl. 214-147.00G.
Harthill, William P.; and Roberts, James L., to Honeywell Inc. Quadrature correlation phase determining apparatus. 4,071,821, Cl. 324-83.00R.
Hartmann, Robert H.: *See—*
Brennan, Thomas E.; Hartmann, Robert H.; and McCoy, Robert M., 4,070,750, Cl. 29-596.000.
Hartz, Lewis C., Jr., to United States of America, Army. Washer aligning and placing tool. 4,070,744, Cl. 29-241.000.
Harvey, Francis J., II: *See—*
Fey, Maurice G.; Wolf, Charles B.; Martin, Paul E.; and Harvey, Francis J., II, 4,071,588, Cl. 264-15.000.
Harvey, Robin J., to Hughes Aircraft Company. Crossed-field switch device and method for off-switching. 4,071,801, Cl. 313-154.000.
Hashimoto, Masashi: *See—*
Kamiya, Takashi; Teraji, Tsutomu Toyonaka; Hashimoto, Masashi; Oku, Teruo Kyoto; Nakaguti, Osamu; Saito, Yoshihisa; and Nakamura, Hitoshi, 4,071,527, Cl. 260-306.500.
Hassall, Cedric Herbert; Johnson, William Henry; Krohn, Antonin; Smithen, Carey Ernest, and Thomas, William Anthony, to Hoffmann-La Roche Inc. Substituted phenyl ketones. 4,071,525, Cl. 260-295.0AM.
Hatakeyama, Nobuo: *See—*
Aoki, Katsumichi; Shimizu, Susumu; Satake, Keigo; Yamazaki, Shiro; and Hatakeyama, Nobuo, 4,071,633, Cl. 424-324.000.
Hattori, Hiroyuki: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,071,295, Cl. 355-3.0SH.
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Hauri, Jacques: *See—*
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Dotzer, Richard; Hauschildt, Hans-Georg; Todt, Enno, deceased; Todt, Susanne, heir; Todt, Ruth Katharina, heir; and Todt, Ernst Josef, heir, 4,071,526, Cl. 260-299.000.
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Haver, Eitel Fritz, 4,071,455, Cl. 210-497.100.
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Takahashi, Zyuro; and Hayashi, Chozo, 4,071,413, Cl. 195-103.50R.
Hayashi, Eiichi; Takita, Kiyoshi; Sugiyama, Hironari; and Nezu, Yukio, to Kumiai Chemical Industry Co., Ltd. Process for producing l-ascorbic acid-2-sulfate. 4,071,534, Cl. 260-343.700.
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Koike, Shin'ichi; Hayashi, Seijiro; and Takayama, Michio, 4,071,827, Cl. 325-42.000.
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Hayashi, Yoshimasa: *See—*
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Hayes, Jeremiah Francis: *See—*
Brophy, Francis Joseph; and Hayes, Jeremiah Francis, 4,071,908, Cl. 364-900.000.
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Peters, Mark A., 4,071,357, Cl. 75-103.000.
Head, Stanley Maurice; and Melas, Constantine Michael, to International Business Machines Corporation. Autocorrelation function factor generating method and circuitry therefor. 4,071,903, Cl. 364-728.000.
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Zehe, Alfred, 4,070,968, Cl. 101-408.000.
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Heikoff, Stanley: *See—*
Palmer, David Nelson; and Heikoff, Stanley, 4,071,639, Cl. 427-156.000.
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Gorski, Theodor; Heinen, Adolf; and Mack, Kurt, 4,071,443, Cl. 210-7.000.
Heinen, Manfred; and Kotzur, Joachim, to Gutehoffnungshutte Sterkrade A. G. Gas-sealed shaft packing. 4,071,253, Cl. 277-3.000.
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Haberstroh, Gunter; and Heistermann, Lothar, 4,071,391, Cl. 156-325.000.
Heitmann, Knut: *See—*
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Heitner, Raymond J., to Wysong & Miles Company. Press brake with improved ram leveling adjustment. 4,070,896, Cl. 72-389.000.
Helmer, Jack R., to Minnesota Mining and Manufacturing Company. Method for strengthening lithographic printing plate images. 4,070,969, Cl. 101-465.000.
Henderson, Thomas D., to Solar Energy For The Family Inc. Solar energy collecting apparatus. 4,071,016, Cl. 126-270.000.
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Schwuger, Milan Johann; Smolka, Heinz; Altenschopfer, Theodor; and Rostek, Manfred, 4,071,377, Cl. 134-29.000.
Hensel, Wilber M., Jr., to Sun Oil Company. Method and apparatus for stabilizing borehole cores. 4,071,099, Cl. 175-59.000.
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Daly, Thomas C.; Hepworth, Edward C.; and Means, Rodney J., 4,071,887, Cl. 364-200.000.
Herbert, Chester L. Double crankshaft valved two cycle engine. 4,071,000, Cl. 123-51.0BD.
Herbster, Terry N.: *See—*
Kaplan, Murray L.; Herbster, Terry N.; and Holden, Alan F., 4,071,708, Cl. 179-16.00E.
Herman, Charles J., to General Electric Company. Vertically adjustable door hinge assembly. 4,070,728, Cl. 16-134.000.
Herrmann, Eric Peter, to RCA Corporation. Four-quadrant multiplier. 4,071,777, Cl. 307-229.000.
Herron, Lorne Robert; and Stromnes, Axel, to Atlas Copco Aktiebolag. Methods of and apparatus for winning reef. 4,071,095, Cl. 173-152.000.
Herubel, Jean Frederic, to Schlumberger & Cie. Textile fibre control system in a drawing device. 4,070,732, Cl. 19-236.000.
Hesse, Ruth Lee: *See—*
Kohnke, Ole Bjorn, 4,071,025, Cl. 128-145.700.
Heuer, Helmut: *See—*
Dittrich, Wolfhart; Heuer, Helmut; Kamm, W. F. G.; Kipp, Thorwald; Luhr, Gerhard; and Poggemeier, Erich, 4,071,637, Cl. 427-12.000.
Hewes, Charles Robert, to Texas Instruments Incorporated. Charge coupled differential amplifier for transversal filter. 4,071,775, Cl. 307-221.00D.
Hicklin, Denis Raymond; White, Derek Graham Walter; and Attwood, Brian William, to Karl Kroyer St. Anne's Limited. Treatment of fibrous material. 4,071,651, Cl. 428-284.000.
High, Carl E. Puzzle apparatus. 4,071,248, Cl. 273-155.000.
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Hildon, Anthony MacDonald; and Greenhalgh, Peter Frederick, to Interox Chemicals Limited. Epoxidation. 4,071,541, Cl. 260-348.250.
Hiller, Heinz; and Fischer, Herbert, to Metallgesellschaft Aktiengesellschaft. Process for producing sulfur. 4,071,607, Cl. 423-574.00R.
Hinke, Jerald Dietrich: *See—*
Reinhardt, Jack; Moehle, Kenneth Albert; and Hinke, Jerald Dietrich, 4,070,914, Cl. 74-475.000.
Hinkle, Richard E., to American Hydrotherm Corporation. Process and apparatus for the cyclic heating and cooling of processing equipment. 4,071,075, Cl. 165-2.000.
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Kobayashi, Seizo; Hirayama, Toshiharu; Kamiya, Takeshi; Kezuka, Seiju; and Takeuchi, Hidesuke, 4,071,591, Cl. 264-45.300.
Hirose, Huminori, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing system. 4,071,861, Cl. 360-96.000.
Hirsch, Horst E.: *See—*
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Hitachi, Ltd.: *See—*
Aoki, Masataka, 4,071,404, Cl. 176-87.000.
Kawanami, Mitsuru; Ohhinata, Ichiro; and Okuhara, Shinzi, 4,071,779, Cl. 307-255.000.
Kumada, Akio, 4,071,841, Cl. 365-65.000.
Misono, Masayoshi; Koyama, Masaharu; and Asida, Tutomu, 4,070,749, Cl. 29-592.00R.
Miyakawa, Seii; Kobayashi, Takashi; Kishi, Masaya; and Ogiro, Kenji, 4,070,743, Cl. 29-227.000.
Nakagomi, Yoshiyuki, 4,071,778, Cl. 307-229.000.
Nakasuna, Seikoh, 4,071,865, Cl. 360-105.000.
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Andrascheck, Hans-Joachim; Mucke, Rainer; Lorz, Werner; Borchard, Heinz; Buck, Jurgen; Knothe, Herbert; and Rybka, Bruno, 4,071,490, Cl. 260-23.0XA.
Brinkmann, Ludwig; and Bohn, Lothar, 4,071,506, Cl. 260-78.00A.
Kuhlein, Klaus; Reuschling, Dieter-Bernd; Babej, Milos; Bartmann, Wilhelm; and Beck, Gerhard, 4,071,530, Cl. 260-326.450.
Werner, Gerhard; Grafe, Peter; Sattelmeyer, Richard; and Schmelzer, Heinz, 4,071,676, Cl. 526-283.000.
Hoffman-La Roche, Inc.: *See—*
Cohen, Noal; Rosenberger, Michael; and Saucy, Gabriel, 4,071,537, Cl. 260-345.90S.
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Buchi, George, 4,071,542, Cl. 260-348.480.
Christenson, James Gordon; and Muccino, Richard R., 4,071,522, Cl. 260-292.000.
Cook, Alan Frederick, 4,071,680, Cl. 536-23.000.
Hassall, Cedric Herbert; Johnson, William Henry; Krohn, Antonin; Smithen, Carey Ernest; and Thomas, William Anthony, 4,071,525, Cl. 260-295.0AM.
Olson, Gary Lee, 4,071,538, Cl. 260-345.90R.
Hogendobler, Richard Shure; and Murray, Robert Maclay, to AMP Incorporated. Method of making a coaxial connector. 4,070,751, Cl. 29-628.000.
Holas, Antonin: *See—*
Zouhar, Drahomir; Holas, Antonin; and Musil, Ivan, 4,070,874, Cl. 66-177.000.
Holbrook, Franklin K.: *See—*
Bushman, Ronald C.; and Holbrook, Franklin K., 4,070,959, Cl. 99-510.000.
Holden, Alan F.: *See—*
Kaplan, Murray L.; Herbster, Terry N.; and Holden, Alan F., 4,071,708, Cl. 179-16.00E.
Holdt, Donald, to Chemed Corporation. Boiler blow down controller. 4,070,992, Cl. 122-382.000.
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Holl, Richard A., 4,071,225, Cl. 366-114.000.
Holl, Richard A., to Holl Research Corporation. Apparatus and processes for the treatment of materials by ultrasonic longitudinal pressure oscillations. 4,071,225, Cl. 366-114.000.
Hollingshead, William S., to Goodyear Tire & Rubber Company, The. Butylated, α-methyl styrenated phenolic antioxidants. 4,071,565, Cl. 260-619.00R.
Hollins, Jesse R. Motor vehicle air conditioner control and warning system. 4,071,839, Cl. 340-53.000.
Hollis, Ernest E., to Sanders Associates, Inc. Digital radar target generator. 4,070,769, Cl. 35-10.400.
Holloway, Arthur John: *See—*
Latham, Raymond John; and Holloway, Arthur John, 4,071,589, Cl. 264-22.000.
Holman, Robert L., to Xerox Corporation. Diffusion crucible and slab member with common metal component in the vapor phase. 4,071,323, Cl. 23-273.00R.
Holman, Robert L., to Xerox Corporation. Controlled atmosphere process for altering the nonstoichiometry of crystalline members. 4,071,396, Cl. 156-612.000.

Holy, Josef K., to Hughes Aircraft Company. System and method for the measurement of repetitive patterns. 4,071,899, Cl. 364-561.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Yoshida, Kazuyoshi, 4,070,925, Cl. 74-720.000.
Yoshimura, Toshimitsu; and Matsuda, Minoru, 4,070,829, Cl. 60-290.000.
Honda, Kazuo: *See—*
Kikumoto, Ryoji; Tobe, Akihiro; Tonomura, Shinji; Ikoma, Hidenobu; and Honda, Kazuo, 4,071,559, Cl. 260-570.700.
Honeywell Inc.: *See—*
Harthill, William P.; and Roberts, James L., 4,071,821, Cl. 324-83.00R.
Honeywell Information Systems Inc.: *See—*
Miller, Homer Warner, 4,071,904, Cl. 364-757.000.
Hoogasian, Harold B. Apparatus for exercising manual coordination. 4,071,237, Cl. 273-1.00R.
Hooker Chemicals & Plastics Corporation: *See—*
Takahashi, Akio, 4,071,582, Cl. 260-878.00R.
Hooker, Donald E., to Bally Manufacturing Corporation. Magnetic reel reading device. 4,071,246, Cl. 273-143.00R.
Hoover Ball and Bearing Co.: *See—*
Kitchen, John P.; Gabhart, Terry L.; and Lanham, Joseph S., 4,070,717, Cl. 5-176.00R.
Hopkins, Henry S., Jr.; and Vargo, Donald L., to General Latex and Chemical Corporation. Reduced-friability, highly cross-linked, flame-resistant, polyurethane foams. 4,071,482, Cl. 260-2.5AJ.
Hopwood, Francis W.; Staley, Lester K.; and Tolj, Henry D., to Westinghouse Electric Corporation. Frequency control for frequency agile pulse radar. 4,071,844, Cl. 343-17.20R.
Horan, Paul F., to VCA Corporation. Cover enclosing flat sided button for actuation prevention. 4,071,173, Cl. 222-321.000.
Hornagold, John T., to Bucyrus-Erie Company. Mounting for an outrigger cylinder on a crane. 4,071,147, Cl. 212-145.000.
Horrocks, Donald L., to Beckman Instruments, Inc. Method for determining random coincidence count rate in a scintillation counter utilizing the coincidence technique. 4,071,761, Cl. 250-369.000.
Horsburgh and Scott Company, The: *See—*
LeBlanc, Wayne J., 4,070,920, Cl. 74-446.000.
Houdaille Industries, Inc.: *See—*
Rutz, Leon E., 4,070,831, Cl. 60-371.000.
Hovmand, Svend; and Liborius, Erik, to Aktieselskabet Niro Atomizer. Process and apparatus for converting a solution or suspension into a dried particulate, granulate product. 4,070,765, Cl. 34-10.000.
Howell, Samuel Garry: *See—*
Miller, Robert W.; and Howell, Samuel Garry, 4,071,656, Cl. 428-626.000.
Howells, George A.: *See—*
Weir, Donald A.; Usher, Eric S.; and Howells, George A., 4,071,692, Cl. 178-68.000.
Hruza, Denis E., Sr.: *See—*
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,034, Cl. 131-17.00R.
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,535, Cl. 260-345.100.
Hubbard, S. Eugene, to Kawneer Company, Inc. Sloped curtain wall structure. 4,070,806, Cl. 52-95.000.
Hueber, Herman Pieter: *See—*
Bretschneider, Hermann; Hueber, Herman Pieter; and Louzil, Friedrich, 4,071,716, Cl. 179-100.1DR.
Huebscher, Richard G.: *See—*
Sandvik, Roger H.; and Huebscher, Richard G., 4,070,946, Cl. 91-25.000.
Huffman, Charles E.; McGuire, Robert J.; and Waddill, John W., to Rockwell International Corporation. Testing apparatus. 4,071,700, Cl. 179-15.0BF.
Huggett, Ralph, to TBA Industrial Products Limited. Yarn manufacturing. 4,070,816, Cl. 57-153.000.
Hughes Aircraft Company: *See—*
Harvey, Robin J., 4,071,801, Cl. 313-154.000.
Holy, Josef K., 4,071,899, Cl. 364-561.000.
Oltman, Henry G., Jr., 4,071,846, Cl. 343-700.0MS.
Somogyi, Bela, 4,070,821, Cl. 58-23.0BA.
Huguenin, Raymond: *See—*
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Humphrey, Frederick Harold. Typing error correction device. 4,071,134, Cl. 197-181.000.
Hunt, Harold R.: *See—*
Kraus, Gerard; and Hunt, Harold R., 4,071,496, Cl. 260-42.360.
Hunter, William Ward, Jr., to Abbott Laboratories. Stabilized alcohol solution of reducing salt formulations for use in preparing radioisotope labeled scanning agents: liver scanning technetium-99m colloid and method of preparation. 4,071,613, Cl. 424-1.000.
Huntington, Robert Charles, to Motorola, Inc. Complementary field effect transistor linear amplifier. 4,071,830, Cl. 330-277.000.
Hutter, Charles G., III; and Hutter, Peter S., to Physical Systems, In- Air exhausted mixing bowl. 4,071,338, Cl. 55-385.00C.
Hutter, Peter S.: *See—*
Hutter, Charles G., III; and Hutter, Peter S., 4,071,338, Cl. 55-385.00C.
Hutton, Charles M., to Armco Steel Corporation. Tie plate fastener system. 4,071,191, Cl. 238-338.000.
Hwang, Yu-Tang, to Chemplex Company. Catalyst and method. 4,071,673, Cl. 526-123.000.

Hydril Company: *See—*
Mott, James D., 4,071,088, Cl. 166-321.000.

I. P. U. Limited: *See—*
McDonald, Bridget M. A., 4,071,227, Cl. 266-51.000.

Ianetta, Henry Robert. Attachments for golf bags. 4,071,062, Cl. 150-1.50B.

Ibec Industries, Inc.: *See—*
Smith, John L.; and Alexander, Clair B., 4,071,725, Cl. 200-82.00E.

Ichinose, Yoshinobu. Fluorescent lamp lighting device. 4,071,807, Cl. 315-219.000.

Ideal Industries Inc.: *See—*
Oprins, John A. E., 4,070,930, Cl. 81-9.50B.

Ignasiak, Stanley F., to Sperry Rand Corporation. Penetration phosphors for display devices. 4,071,640, Cl. 427-215.000.

Iida, Akio, to Kabushiki Kaisha Komatsu Seisakusho. Steering system for articulated vehicles. 4,071,108, Cl. 180-139.000.

Iida, Toshihide: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,071,295, Cl. 355-3.0SH.

Iijima, Eiji; Watanabe, Hiroshi; and Hayashi, Shizuo, to Kao Soap Co., Ltd. Transparent highly viscous liquid shampoo composition. 4,071,475, Cl. 252-545.000.

Iino, Tsuyoshi, to Kitazawa Shoji Kabushiki Kaisha. Ball valve. 4,071,220, Cl. 251-174.000.

Iizuka, Akira: *See—*
Takahashi, Masaaki; Iizuka, Akira; and Asano, Kiro, 4,071,553, Cl. 260-514.00J.

Ikeda, Sakuji; and Soga, Kazuo, to Tokyo Institute of Technology. Process of preparing polyesters having carbonyl group and ether linkage in the principal chain thereof. 4,071,667, Cl. 526-11.100.

Ikoma, Hidenobu: *See—*
Kikumoto, Ryoji; Tobe, Akihiro; Tonomura, Shinji; Ikoma, Hidenobu; and Honda, Kazuo, 4,071,559, Cl. 260-570.700.

Illinois Tool Works Inc.: *See—*
Anderson, Bruce W., 4,071,696, Cl. 179-1.0PC.
Madland, Robert Christen, 4,071,719, Cl. 200-5.00B.

IMC Chemical Group, Inc.: *See—*
Wehrmeister, Herbert Louis, 4,071,520, Cl. 260-287.00K.

Imperial Chemical Industries Limited: *See—*
Cooke, Brian Alfred; and Brock, Michael, 4,071,379, Cl. 148-6.15Z.
Dart, Edward Charles; and Nemcek, Josef, 4,071,424, Cl. 204-159.150.
Latham, Raymond John; and Holloway, Arthur John, 4,071,589, Cl. 264-22.000.

Imperial Knife Associated Companies, Inc.: *See—*
Burrows, Thomas M.; and Ashton, Harold P., 4,071,212, Cl. 248-37.600.

Indian Head Inc.: *See—*
Robinson, Richard L.; and Volgyesy, Ivan L., 4,071,159, Cl. 220-3.200.

Industrial Industries, Inc.: *See—*
King, Roy R., 4,071,019, Cl. 126-299.00E.

Industriewerk Schaeffler OHG: *See—*
Linz, Leonhard, 4,070,897, Cl. 72-345.000.

Inertia Switch Limited: *See—*
Jackman, Peter Ronald, 4,071,723, Cl. 200-61.45R.

Ingeniera Aplicada, S.A. (INAPSA): *See—*
Nunez Fuentes, Cayetano, 4,070,918, Cl. 74-70.000.

Ingenieria Aplicada, S.A.: *See—*
Camprubi, Amselmo Bolea, 4,071,056, Cl. 139-449.000.

Ingerle, Kurt; and Meister, Karl, to Ferdinand Aufschlager KG. Well construction. 4,071,087, Cl. 166-278.000.

Ingersoll-Rand Company: *See—*
Dively, Charles R.; and Peterson, R. Kenneth, 4,071,098, Cl. 175-53.000.

Inoue, Tuyosi; Kimura, Masao; and Matuda, Humikazu, to Nippon Paint Co., Ltd. Process for treatment of waste water exhausted from water-wash spray booth using water-soluble paint. 4,071,449, Cl. 210-53.000.

Institut Francais du Petrole: *See—*
Cohen, Choua; and Sillion, Bernard, 4,071,459, Cl. 252-50.000.

International Business Machines Corporation: *See—*
Eichelberger, Edward Baxter; and Williams, Thomas Walter, 4,071,902, Cl. 364-716.000.
Feierabend, Louis Bock; and Proper, David Staples, 4,071,869, Cl. 360-135.000.
Head, Stanley Maurice; and Melas, Constantine Michael, 4,071,903, Cl. 364-728.000.
Knepper, Ronald William, 4,071,783, Cl. 307-270.000.
Sherk, Thomas Albert, 4,071,287, Cl. 316-19.000.

International Flavors & Fragrances Inc.: *See—*
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,034, Cl. 131-17.00R.
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,535, Cl. 260-345.100.

International Harvester Company: *See—*
Moreno, Emil F.; Hajek, Ralph S.; and Marquardt, Julius F., 4,070,924, Cl. 74-710.500.

International Laser Systems, Inc.: *See—*
Manning, Richard J., 4,071,752, Cl. 250-213.0VT.

International Nickel Company, Inc., The: *See—*
Sutton, William H., 4,071,416, Cl. 204-38.00R.

International Research & Development Company Limited: *See—*
Dobbing, Peter Philip; and Kendall, Peter William, 4,071,795, Cl. 310-219.000.

International Standard Electric Corporation: *See—*
Barsellotti, John Anthony, 4,071,712, Cl. 179-99.000.
Dobbert, Gerd, 4,071,810, Cl. 315-400.000.
Jammes, Emanuel Marie Augustin; and Bordier, Jean-Louis Marie Henri, 4,071,840, Cl. 340-166.500.
Weir, Donald A.; Usher, Eric S.; and Howells, George A., 4,071,692, Cl. 178-68.000.

International Telephone and Telegraph Corporation: *See—*
Jovic, Nicola Ljotic; and Rinker, Steven Allen, 4,071,699, Cl. 179-5.500.

International Video Corporation: *See—*
Vidovic, Nikola, 4,071,782, Cl. 307-268.000.

Interox Chemicals Limited: *See—*
Hildon, Anthony MacDonald; and Greenhalgh, Peter Frederick, 4,071,541, Cl. 260-348.250.

Interpace Corporation: *See—*
Bredbenner, Ambrose M., Jr., 4,071,663, Cl. 429-181.000.

Intraco, Inc.: *See—*
Jones, Robert D., 4,071,136, Cl. 198-735.000.

Inventio AG: *See—*
Daniel, Peter, 4,071,121, Cl. 188-196.00P.

Irissou, Pierre-Regis Marie: *See—*
Weiss, Jean Michel; and Irissou, Pierre-Regis Marie, 4,071,809, Cl. 315-312.000.

Irwin, Arlyle Floyd. Model helicopter throttle governor/collective pitch control apparatus. 4,071,811, Cl. 318-16.000.

Ise, Katsuhiro; Kuramoto, Yoshio; and Yamazaki, Yasuo, to Minolta Camera Kabushiki Kaisha. Focussing plate. 4,071,292, Cl. 350-128.000.

Isham, Robert Haynes, II, to RCA Corporation. Sawtooth voltage generator for constant amplitude sawtooth waveform from varying frequency control signal. 4,071,776, Cl. 307-228.000.

Ishibe, Shuhei; Okumichi, Toshiharu; Ishihara, Yasushi; and Naka, Hisayoshi, to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha. Process for preparing stable aqueous dispersions of rosin-base material. 4,071,375, Cl. 106-238.000.

Ishihara, Yasushi: *See—*
Ishibe, Shuhei; Okumichi, Toshiharu; Ishihara, Yasushi; and Naka, Hisayoshi, 4,071,375, Cl. 106-238.000.

Ishii, Kazuhide: *See—*
Ogawa, Hiroshi; Ishii, Kazuhide; Nakamura, Matsuaki; Tamai, Yasuo; and Akashi, Goro, 4,071,654, Cl. 428-336.000.

Ishii, Mitsuaki: *See—*
Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, 4,071,889, Cl. 364-200.000.

Ishikawa, Hitoshi: *See—*
Yamamoto, Kimihiko; and Ishikawa, Hitoshi, 4,070,977, Cl. 112-259.000.

Ishikawa, Riichi; and Takase, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Passenger transportation apparatus. 4,071,135, Cl. 198-324.000.

Itou, Takaaki: *See—*
Konishi, Masami; Nakamura, Norihiko; Itou, Takaaki; and Kikuchi, Kazuo, 4,071,585, Cl. 261-36.00A.

Ivanov, Andrei Konstantinovich: *See—*
Afonin, Mikhail Egorovich; Belyanin, Petr Nikolaevich; and Ivanov, Andrei Konstantinovich, 4,071,188, Cl. 233-29.000.

Ives, Frank Elmer. Cylinder-making apparatus and method. 4,071,389, Cl. 156-175.000.

J. M. Voith GmbH: *See—*
Schmeisser, Walter; and Talasz, Johann, 4,071,128, Cl. 192-133.000.

Jablkiewicz, Jerzy: *See—*
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,070,812, Cl. 57-58.890.

Jachna, Waclaw: *See—*
Jedo, Antoni; Jachna, Waclaw; and Szczesny, Adolf, 4,071,440, Cl. 209-44.000.

Jackman, Peter Ronald, to Inertia Switch Limited. Plunger-release shock responsive control apparatus having adjustable seat for sensor mass. 4,071,723, Cl. 200-61.45R.

Jacob Schlaepfer & Co. A.G.: *See—*
Schlaepfer, Robert J., 4,071,387, Cl. 156-148.000.

Jacobs, Edward H.: *See—*
Lathrop, Francis O., Jr.; Jacobs, Edward H.; Wood, William E.; and Taylor, Patrick A., 4,071,862, Cl. 360-97.000.

Jacobs, James D. Holder for elongate tobacco product. 4,071,036, Cl. 131-187.000.

Jacobs, Stanley C.: *See—*
Foster, Perry A., Jr.; and Jacobs, Stanley C., 4,071,420, Cl. 204-67.000.

Jacquemin, Francis; Terneau, Robert; and Voiturier, Jean-Pierre, to Glaverbel-Mecaniver. Fireproof glasswork. 4,071,649, Cl. 428-215.000.

James, Arthur M.; and Dalton, Edgar Terry, to James, Arthur M. Bearing member. 4,070,836, Cl. 52-245.000.

James, Barrie Sydney, to W. Canning & Company, Ltd. Electrodeposition of zinc and additives therefor. 4,071,418, Cl. 204-55.00R.

James, Barrie Sydney, to W. Canning & Company, Ltd. Electrodeposition of zinc and additive therefore. 4,071,419, Cl. 204-55.00R.

Jameson, James J., to Gardner-Denver Company. Power transmission with torque converter lockup clutch. 4,071,125, Cl. 192-3.300.

Jameson, Robert W. Floor-pressure hold anchor. 4,070,834, Cl. 52-166.000.

Jammes, Emanuel Marie Augustin; and Bordier, Jean-Louis Marie Henri, to International Standard Electric Corporation. Switching device for reed relays in a matrix. 4,071,840, Cl. 340-166.500.

Jankowiak, Erwin M., to Dow Chemical Company, The. Method for controlling soil erosion. 4,071,400, Cl. 162-169.000.

Jansen, Josephus Johannes Maria, to Koninklijke Textielfabrieken M. Jansen de Wit B.V. Start up course for sock welt. 4,070,873, Cl. 66-172.00R.

Jarvis, Kenneth. Adjustable irrigation dam. 4,070,864, Cl. 61-29.000.

Jaworski, Andrzej: *See—*
Ciborowski, Stanislaw; Szczypinski, Zbigniew; Balcerzak, Kazimierz; Jaworski, Andrzej; Kasznia, Andrzej; Krzysztoforski, Andrzej; Kurowski, Stanislaw; Redzi, Jan; and Szparski, Jozef, 4,071,561, Cl. 260-586.00P.

Jean Walterscheid GmbH: *See—*
Kunze, Dieter, 4,071,263, Cl. 280-508.000.
von Allworden, Wilhelm, 4,071,105, Cl. 180-14.00R.

Jeannotte, Richard W. Extensible handle for a tool headpiece. 4,070,932, Cl. 81-177.00A.

Jedo, Antoni; Jachna, Waclaw; and Szczesny, Adolf, to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag". Method and apparatus of stratification with tangential feed. 4,071,440, Cl. 209-44.000.

Jedryka, Tadeusz: *See—*
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,070,812, Cl. 57-58.890.

Jenkins, David Conwil: *See—*
Dalton, Sally Elizabeth; Gingell, William George; Jenkins, David Conwil; King, Leslie George; Lee, Glyn Evan; and Thompson, Garth Molesdale, 4,071,528, Cl. 260-306.70T.

Jenn Air Corporation: *See—*
Jenn, Louis J.; and Cerola, Joseph J., 4,071,738, Cl. 219-400.000.
Jenn, Louis J.; and Cerola, Joseph J., 4,071,739, Cl. 219-400.000.

Jenn, Louis J.; and Cerola, Joseph J., to Jenn Air Corporation. Ventilated range with convertible radiant convection oven. 4,071,738, Cl. 219-400.000.

Jenn, Louis J.; and Cerola, Joseph J., to Jenn Air Corporation. Convertible radiant convection oven. 4,071,739, Cl. 219-400.000.

Jensen, Arne, to Danfoss A/S. Control device for an inverted rectifier. 4,071,900, Cl. 364-600.000.

Jervis B. Webb Company: *See—*
Folsom, Harold A.; and Bilson, David G., 4,070,972, Cl. 104-172.00S.

Jess, Hans Jurgen; and Friederichs, Karl-Heinz, to Hagenuk Vormals Neufeldt & Kuhnke GmbH. Method and arrangement for controlling the feeding of rods to a work tool in automatic screw machines and the like. 4,070,723, Cl. 10-90.000.

Jet Research Center, Inc.: *See—*
Dines, Jack E., 4,071,096, Cl. 175-4.600.

Joannou, Constantinos Joannou. Device for graphic communication. 4,071,690, Cl. 178-18.000.

Joffre, Robert L. Devices for cleaning, dusting, mopping or applying fluids to floors. 4,070,726, Cl. 15-231.000.

Johannesen, Donald Dixon, to Bendix Corporation, The. Variable adjuster for disc brake. 4,071,118, Cl. 188-71.900.

John Thomas Batts, Inc.: *See—*
Batts, John H., 4,071,146, Cl. 211-87.000.

Johnson, Bruce K., to Polaroid Corporation. Method of adjusting camera with latched shutter blade mechanism for shipment. 4,071,851, Cl. 354-354.000.

Johnson, Edwin Samuel; and Seely, John Hunter, to Abbott Laboratories. Treatment of a mammary or DMBA inducible tumor. 4,071,622, Cl. 424-177.000.

Johnson, Marvin M.; and Nowack, Gerhard P., to Phillips Petroleum Company. Process for producing methane from carbon monoxide and steam. 4,071,331, Cl. 48-197.00R.

Johnson, Steven J.: *See—*
Groves, Charles L., Jr.; and Johnson, Steven J., 4,071,897, Cl. 364-494.000.

Johnson, William Henry: *See—*
Hassall, Cedric Herbert; Johnson, William Henry; Krohn, Antonin; Smithen, Carey Ernest; and Thomas, William Anthony, 4,071,525, Cl. 260-295.0AM.

Jones, Edward Owen, to BICC Limited. Apparatus for winding wire or other elongate material. 4,071,199, Cl. 242-25.00A.

Jones, John R., to Lubeco, Inc. Mold release composition. 4,071,368, Cl. 106-38.280.

Jones, Ralph E. Air monitoring valve for combustion engines. 4,071,044, Cl. 137-479.000.

Jones, Raymond Henry: *See—*
Mathison, Ian William; Solomons, William Ebenezer; and Jones, Raymond Henry, 4,071,562, Cl. 260-600.00R.

Jones, Robert D., to Intraco, Inc. Cable control apparatus. 4,071,136, Cl. 198-735.000.

Jones, Robert N., to Xerox Corporation. Method of making composite xerographic photoreceptor with injecting contact layer for a photoconductive layer. 4,071,363, Cl. 96-1.50R.

Jonishi, Katsunori: *See—*
Nishikubo, Michio; Miura, Sei; Toyoda, Toshiaki; Jonishi, Katsunori; and Yoneta, Kouichi, 4,070,893, Cl. 72-234.000.

Jovic, Nicola Ljotic; and Rinker, Steven Allen, to International Telephone and Telegraph Corporation. Apparatus providing for the remote display of calling numbers in a telephone system. 4,071,699, Cl. 179-5.500.

Junck, John A.; Dezelan, Joseph A.; Larson, Donald J.; and White, Robert W., to Caterpillar Tractor Co. Auxiliary hydrostatic wheel drive. 4,071,106, Cl. 180-44.00F.

Jung, Johann; Kiehs, Karl; Zeeh, Bernd; and Theobald, Hans, to VASE Aktiengesellschaft. Salts of phosphonic acids. 4,071,551, Cl. 260-501.150.

Juvrud, Ingvald O., to Commercial Shearing, Inc. Tunnel liners and methods of making the same. 4,070,866, Cl. 61-45.00R.

K-Tron Corporation: *See—*
Van Ostenbridge, Ron; and Sturgeon, Michael E., 4,071,102, Cl. 177-165.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kamiya, Masaaki, 4,071,822, Cl. 324-111.000.
Yamashita, Shiro, 4,071,786, Cl. 310-361.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Iida, Akio, 4,071,108, Cl. 180-139.000.
Kawakatsu, Ichiro, 4,071,358, Cl. 75-154.000.
Motomura, Mitsuteru; Kojima, Chiaki; Ohta, Hiroshi; and Nemoto, Akira, 4,070,772, Cl. 37-117.500.

Kahn, Joe E., to Acme Chemical Company. Aqueous coating composition. 4,071,645, Cl. 427-340.000.

Kajima Corporation: *See—*
Sato, Kuniaki, 4,070,837, Cl. 52-297.000.

Kakizaki, Fusayoshi: *See—*
Takemoto, Tadashi; Kakizaki, Fusayoshi; and Ariyoshi, Yasuo, 4,071,511, Cl. 260-112.50R.

Kalippke, Harald; Gerber, Richard; and Ehrmann, Karl, to Robert Bosch GmbH. Engine ignition timing signal generator having a reduced number of permanent magnets. 4,071,792, Cl. 310-70.00R.

Kalman, Erika; Haklik, Lajos; Eke, Anna; and Kovacs, Pal, to MTA Kozponti Kemiai Kutato Intezet. Micro-chamber for electron optical examinations particularly for the electron microscopic examination of biological objects. 4,071,766, Cl. 250-443.000.

Kamata, Michitake: *See—*
Katayama, Sakae; Kanada, Sadaoki; Kamata, Michitake; Sakaguchi, Yasuhiro; and Kojima, Katsumi, 4,071,445, Cl. 210-23.00H.

Kamerling, Marc A., to Donnelly Mirrors, Inc. Defrosting mirror. 4,071,736, Cl. 219-219.000.

Kaminaka, Nobuyuki; Kanai, Kenji; Nouchi, Norimoto; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. Narrow track MR head with side shields. 4,071,868, Cl. 360-113.000.

Kamiya, Masaaki, to Kabushiki Kaisha Daini Seikosha. Digital voltage detecting circuit for a power source. 4,071,822, Cl. 324-111.000.

Kamiya, Takashi; Teraji, Tautomu Toyonaka; Hashimoto, Masashi; Oku, Teruo Kyoto; Nakaguti, Osamu; Saito, Yoshihisa; and Nakamura, Hitoshi, to Fujisawa Pharmaceutical Co., Ltd. Certain benzothiazole compounds. 4,071,527, Cl. 260-306.500.

Kamiya, Takeshi: *See—*
Kobayashi, Seizo; Hirayama, Toshiharu; Kamiya, Takeshi; Kezuka, Seiju; and Takeuchi, Hidesuke, 4,071,591, Cl. 264-45.300.

Kamm, W. F. G.: *See—*
Dittrich, Wolfhart; Heuer, Helmut; Kamm, W. F. G.; Kipp, Thorwald; Luhr, Gerhard; and Poggemeier, Erich, 4,071,637, Cl. 427-12.000.

Kamphuis, Gerrit George, to Stork Friesland B.V. Method and apparatus for preparing a so-called non-caking powder. 4,070,766, Cl. 34-12.000.

Kamyr, Inc.: *See—*
Prough, James R., 4,071,399, Cl. 162-16.000.

Kanada, Sadaoki: *See—*
Katayama, Sakae; Kanada, Sadaoki; Kamata, Michitake; Sakaguchi, Yasuhiro; and Kojima, Katsumi, 4,071,445, Cl. 210-23.00H.

Kanai, Kenji: *See—*
Kaminaka, Nobuyuki; Kanai, Kenji; Nouchi, Norimoto; and Nomura, Noboru, 4,071,868, Cl. 360-113.000.

Kanaya, Motonori: *See—*
Suzuki, Masane; Kanaya, Motonori; and Matsuoka, Takeshi, 4,071,291, Cl. 350-3.500.

Kanda, Hiroshi, to Nisshin Oil Mills, Ltd., The. Process for producing xanthomonas polysaccharide on a soybean whey medium. 4,071,406, Cl. 195-31.00P.

Kannam, Peter Joseph, to RCA Corporation. Transistor having improved junction breakdown protection integrated therein. 4,071,852, Cl. 357-13.000.

Kanou, Kazuyoshi. Device for automatic door closing. 4,070,727, Cl. 16-72.000.

Kao Soap Co., Ltd.: *See—*
Iijima, Eiji; Watanabe, Hiroshi; and Hayashi, Shizuo, 4,071,475, Cl. 252-545.000.
Matsunaga, Kinjiro; Nakagawa, Yunosuke; and Arai, Haruhiko, 4,071,462, Cl. 252-99.000.

Kaplan, Murray L.; Herbster, Terry N.; and Holden, Alan F., to Telesciences, Inc. Dial pulse detector. 4,071,708, Cl. 179-16.00E.

Kappas, Chris S. Outboard motor and weed guard therefor. 4,070,984, Cl. 115-42.000.

Karabedian, James A., to Owens-Illinois, Inc. Container with improved heat-shrunk cellular sleeve. 4,071,597, Cl. 264-230.000.

Karl Kroyer St. Anne's Limited: *See—*
Hicklin, Denis Raymond; White, Derek Graham Walter; and Attwood, Brian William, 4,071,651, Cl. 428-284.000.

Karpati, Egon: *See—*
Tuba, Zoltan; Marsai, Maria; Biro, Katalin; Szporny, Laszlo; Karpati, Egon; and Szeberenyi, Szabolcs, 4,071,515, Cl. 260-239.500.

Kashiwa, Norio, to Mitsui Petrochemical Industries Ltd. Process for polymerizing or copolymerizing olefins. 4,071,672, Cl. 526-122.000.

Kashiwa, Norio; Fuji, Saburo; and Tanaka, Masahide, to Mitsui Petrochemical Industries Ltd. Process for polymerization or copolymerization of olefin and catalyst compositions used therefor. 4,071,674, Cl. 526-125.000.

Kastner, Sid. Displaceable building unit for off-the-wall games. 4,070,805, Cl. 52-86.000.

Kasznia, Andrzej: *See*—
Ciborowski, Stanislaw; Szczypinski, Zbigniew; Balcerzak, Kazimierz; Jaworski, Andrzej; Kasznia, Andrzej; Krzysztoforski, Andrzej; Kurowski, Stanislaw; Redzi, Jan; and Szparski, Jozef, 4,071,561, Cl. 260-586.00P.

Katayama Chemical Works Co., Ltd.: *See*—
Katayama, Sakae; Kanada, Sadaoki; Kamata, Michitake; Sakaguchi, Yasuhiro; and Kojima, Katsumi, 4,071,445, Cl. 210-23.00H.

Katayama, Sakae; Kanada, Sadaoki; Kamata, Michitake; Sakaguchi, Yasuhiro; and Kojima, Katsumi, to Daicel, Ltd.; and Katayama Chemical Works Co., Ltd. Method and apparatus for treating waste water on ships. 4,071,445, Cl. 210-23.00H.

Katekhda, Izzed-Din: *See*—
Lees, Geoffrey; and Katekhda, Izzed-Din, 4,070,903, Cl. 73-38.000.

Katkov, Jury Vasilievich: *See*—
Kholmogorov, Mikhail Vladimirovich; Katkov, Jury Vasilievich; and Gusev, Alexandr Mikhailovich, 4,070,892, Cl. 72-195.000.

Kato, Nobuo: *See*—
Korekawa, Takashi; Kato, Nobuo; and Yamaoka, Mikio, 4,070,957, Cl. 99-455.000.

Kato, Yutaka; Ouchi, Teruo; and Koshiishi, Kiyozo, to Olympus Optical Company, Ltd. Automatic blood serum applicator apparatus for cataphoretic use. 4,070,986, Cl. 118-7.000.

Katushkina, Nina Vasilievna: *See*—
Peradze, Tamaz Vladimirovich; Fridman, Eidlya Abramovna; Zheleznova, Nina Vsevolodovna; Kolikov, Vsevolod Mikhailovich; Bresler, Semen Khaimovich-Efimovich; Mchedlishvili, Boris Viktorovich; Molodkin, Viktor Mikhailovich; Molodkina, Ljudmila Mikhailovna; and Katushkina, Nina Vasilievna, 4,071,619, Cl. 424-90.000.

Kaufman, Howard N.: *See*—
Raimondi, Albert A.; Kaufman, Howard N.; and Wood, Norman J., 4,071,254, Cl. 277-3.000.

Kawai, Hirokazu: *See*—
Oguchi, Tetsuji; and Kawai, Hirokazu, 4,071,905, Cl. 364-784.000.

Kawai, Syuji: *See*—
Yamamoto, Kohzo; Kawai, Syuji; and Ohmori, Akio, 4,071,454, Cl. 210-321.00A.

Kawakami, Hiroshi: *See*—
Sawachika, Yasumasa; and Kawakami, Hiroshi, 4,071,484, Cl. 260-2.5AT.

Kawakatsu, Ichiro, to Kabushiki Kaisha Komatsu Seisakusho. Heat resisting copper base brazing filler metal. 4,071,358, Cl. 75-154.000.

Kawakatsu, Satoshi: *See*—
Usagawa, Yasushi; Yamashita, Kiyoshi; Nakatani, Mamoru; Masuda, Kosaku; and Kawakatsu, Satoshi, 4,071,365, Cl. 96-56.500.

Kawamata, Toshio: *See*—
Takenaka, Haruo; Okiyama, Toshiaki; and Kawamata, Toshio, 4,071,362, Cl. 96-1.400.

Kawanami, Mitsuru; Ohhinata, Ichiro; and Okuhara, Shinzi, to Hitachi, Ltd. Semiconductor switch. 4,071,779, Cl. 307-255.000.

Kawneer Company, Inc.: *See*—
Hubbard, S. Eugene, 4,070,806, Cl. 52-95.000.

Kayalioglu, Inanc, to Northern Telecom Limited. Pulse duration correction circuit. 4,071,781, Cl. 307-265.000.

Keele, D. Broadus, Jr., to Electro-Voice, Incorporated. Horn loudspeaker. 4,071,112, Cl. 181-187.000.

Keenan, Joseph F.: *See*—
Bushnell, Nolan K.; and Keenan, Joseph F., 4,071,697, Cl. 179-2.0TV.

Keg-Tainer, Inc.: *See*—
Vick, Carl J., 4,071,160, Cl. 220-5.00R.

Keigler, John Edward: *See*—
Muhlfelder, Ludwig; Keigler, John Edward; and Stewart, Brian, 4,071,211, Cl. 244-165.000.

Keller, Albert G.: *See*—
Schlau, Floyd E.; Morrison, Howard J.; and Keller, Albert G., 4,070,967, Cl. 101-301.000.

Kellner, Jackson M., to Smith International, Inc. Stabilizer. 4,071,285, Cl. 308-4.00A.

Kelly, Alcuin. Vertical clock. 4,070,819, Cl. 58-2.000.

Kelly, Brian M. Apparatus for dispersing agglomerates. 4,071,167, Cl. 366-172.000.

Kendall, Peter William: *See*—
Dobbing, Peter Philip; and Kendall, Peter William, 4,071,795, Cl. 310-219.000.

Kendrick, Robert H. Board game. 4,071,245, Cl. 273-243.0GA.

Kennecott Copper Corporation: *See*—
Marshall, David W.; and Agarwal, Jagdish Chandra, 4,071,737, Cl. 219-345.000.

Kenton, Joseph R.: *See*—
Banks, Robert L.; and Kenton, Joseph R., 4,071,471, Cl. 252-437.000.

Kernander, Warren N.; and Van Bennekom, Carl F., to General Electric Company. Shrouded jaws for hook-on type instruments. 4,071,824, Cl. 324-127.000.

Kerr, Andrew Guy: *See*—
Brown, Kenneth Robson; and Kerr, Andrew Guy, 4,070,800, Cl. 52-1.000.

Kerr, Ralph O.; and Barone, Bruno J., to Denka Chemical Corporation. Process for preparing maleic anhydride from C_4 hydrocarbons. 4,071,539, Cl. 260-346.750.

Kessler, David P.: *See*—
Ash, Stephen R.; Wilcox, Philip G.; and Kessler, David P., 4,071,444, Cl. 210-22.00A.

Kewanee Industries: *See*—
Petrocci, Alfonso N.; Merianos, John J.; and Green, Harold A., 4,071,628, Cl. 424-249.000.

Kezuka, Seiju: *See*—
Kobayashi, Seizo; Hirayama, Toshiharu; Kamiya, Takeshi; Kezuka, Seiju; and Takeuchi, Hidesuke, 4,071,591, Cl. 264-45.300.

Khalid, Joseph M.: *See*—
Cook, James W.; Khalid, Joseph M.; and Oster, Clark L., 4,071,836, Cl. 335-195.000.

Kholmogorov, Mikhail Vladimirovich; Katkov, Jury Vasilievich; and Gusev, Alexandr Mikhailovich. Arrangement for metal working by rolling. 4,070,892, Cl. 72-195.000.

Kiehs, Karl: *See*—
Jung, Johann; Kiehs, Karl; Zeeh, Bernd; and Theobald, Hans, 4,071,551, Cl. 260-501.150.

Kihara, Nobutoshi; and Morio, Minoru, to Sony Corporation. Servo-control system for signal recording and/or reproducing apparatus. 4,071,856, Cl. 360-73.000.

Kikuchi, Kazuo: *See*—
Konishi, Masami; Nakamura, Norihiko; Itou, Takaaki; and Kikuchi, Kazuo, 4,071,585, Cl. 261-36.00A.

Kikumoto, Ryoji; Tobe, Akihiro; Tonomura, Shinji; Ikoma, Hidenobu; and Honda, Kazuo, to Mitsubishi Chemical Industries Limited. Pharmaceutically active 2-omega-aminoalkoxydiphenyls. 4,071,559, Cl. 260-570.700.

Kikumoto, Ryoji: *See*—
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,071,621, Cl. 424-177.000.

Kilin, Viktor Evdokimovich; Galimov, Anas Galimovich; Yankovsky, Oleg Alexandrovich; Klushin, Nikolai Alexandrovich; and Maslakov, Petr Avramovich. Portable pneumatic percussive tool. 4,071,094, Cl. 173-139.000.

Kim, Choung Um, to Bristol-Myers Company. Substituted azetidinone aldehydes. 4,071,513, Cl. 260-239.00A.

Kimmell, Steven Donald, to Mattel, Inc. Truck for skateboard or the like. 4,071,256, Cl. 280-11.280.

Kimura, Masao: *See*—
Inoue, Tuyosi; Kimura, Masao; and Matuda, Humikazu, 4,071,449, Cl. 210-53.000.

King, Leslie George: *See*—
Dalton, Sally Elizabeth; Gingell, William George; Jenkins, David Conwil; King, Leslie George; Lee, Glyn Evan; and Thompson, Garth Molesdale, 4,071,528, Cl. 260-306.70T.

King, Roy R., to Industrial Industries, Inc. Grease extractor. 4,071,019, Cl. 126-299.00E.

Kinkead, Jordan A.; Pott, James T.; Sherman, Roger M.; and Sullivan, Eugene F., to County of Santa Clara, State of California. Wheelchair lift for public transportation vehicle. 4,071,152, Cl. 214-75.00R.

Kipp, Thorwald: *See*—
Dittrich, Wolfhart; Heuer, Helmut; Kamm, W. F. G.; Kipp, Thorwald; Luhr, Gerhard; and Poggemeier, Erich, 4,071,637, Cl. 427-12.000.

Kirby, Jane Parsons; and Borders, Donald Bruce, to American Cyanamid Company. Diaminoalditols useful in the preparation of antibacterial antibiotics AM31α, AM31β, and AM31γ. 4,071,560, Cl. 260-584.00R.

Kirschner, Helmut: *See*—
Griesshammer, Rudolf; Kirschner, Helmut; and Lechner, Gunther, 4,070,797, Cl. 51-326.000.

Kishi, Masaya: *See*—
Miyakawa, Seii; Kobayashi, Takashi; Kishi, Masaya; and Ogiro, Kenji, 4,070,743, Cl. 29-227.000.

Kishimoto, Yoshio, to Matsushita Electric Industrial Co., Ltd. Secondary-electron multiplier dynode. 4,071,474, Cl. 252-500.000.

Kitagawa, Minoru: *See*—
Andow, Fumio; Yamaura, Mitsuru; and Kitagawa, Minoru, 4,071,873, Cl. 361-64.000.

Kitazawa Shoji Kabushiki Kaisha: *See*—
Iino, Tsuyoshi, 4,071,220, Cl. 251-174.000.

Kitazume, Shoji: *See*—
Morikawa, Hiroyuki; and Kitazume, Shoji, 4,071,575, Cl. 260-677.00R.

Kitchen, John P.; Gabhart, Terry L.; and Lanham, Joseph S., to Hoover Ball and Bearing Co. Bed frame. 4,070,717, Cl. 5-176.00R.

Kiwala, Jacob: *See*—
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,034, Cl. 131-17.00R.
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,535, Cl. 260-345.100.

Klande, James R.: *See*—
Lindl, Willibald M.; Klande, James R.; and VanHulle, Glenn J., 4,071,635, Cl. 426-264.000.

Klimashko, Vladimir Vasilievich: *See*—
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Tupitsyn, Konstantin Konstantinovich; Gurkov, Konstantin Stepanovich; Klimashko, Vladimir Vasilievich; Rozhkov, Leonid Georgievich; Bondar, Mikhail Jurievich; and Smolyanitsky, Boris Nikolaevich, 4,070,948, Cl. 91-234.000.

Klinkenberg, Herbert: *See*—
Stark, Ernst-Joachim; Vanhaiden, Peter; and Klinkenberg, Herbert, 4,071,495, Cl. 260-42.180.

Klosowski, Jerome M.: *See*—
Frye, Cecil L.; and Klosowski, Jerome M., 4,071,498, Cl. 260-46.50G.

Klushin, Nikolai Alexandrovich: *See*—
Kilin, Viktor Evdokimovich; Galimov, Anas Galimovich; Yankovsky, Oleg Alexandrovich; Klushin, Nikolai Alexandrovich; and Maslakov, Petr Avramovich, 4,071,094, Cl. 173-139.000.

Knell, Everett W.; and Green, Norman W., to Occidental Petroleum Corporation. Staged heating by oxidation of carbonaceous material. 4,071,432, Cl. 208-8.000.

Knepper, Ronald William, to International Business Machines Corporation. Enhancement/depletion mode field effect transistor driver. 4,071,783, Cl. 307-270.000.

Knobel, Max. Attachment for air gauging apparatus. 4,070,902, Cl. 73-37.500.

Knothe, Herbert: *See*—
Andrascheck, Hans-Joachim; Mucke, Rainer; Lorz, Werner; Borchard, Heinz; Buck, Jurgen; Knothe, Herbert; and Rybka, Bruno, 4,071,490, Cl. 260-23.0XA.

Knox, Richard M.: *See*—
Barger, Franklin V., Jr.; Knox, Richard M.; and Roberts, Jefery R., 4,071,698, Cl. 179-2.00R.

Kobayashi, Seizo; Hirayama, Toshiharu; Kamiya, Takeshi; Kezuka, Seiju; and Takeuchi, Hidesuke, to Nippon Petrochemicals Co. Ltd. Method of manufacturing foamed thermoplastic resin profiles. 4,071,591, Cl. 264-45.300.

Kobayashi, Takashi: *See*—
Miyakawa, Seii; Kobayashi, Takashi; Kishi, Masaya; and Ogiro, Kenji, 4,070,743, Cl. 29-227.000.

Koblizek, Pavel: *See*—
Vasek, Vitezslav; Koblizek, Pavel; and Prazak, Karel, 4,071,052, Cl. 139-436.000.

Koch, Heinz: *See*—
Grube, Manfred; Gorski, Wilhelm; and Koch, Heinz, 4,070,884, Cl. 72-39.000.

Kochem, Robert C., to Texas Instruments Incorporated. Motor protector circuit. 4,071,871, Cl. 361-27.000.

Kochem, Robert C., to Texas Instruments Incorporated. Detector apparatus. 4,071,875, Cl. 361-113.000.

Koenig, Karl-Heinz: *See*—
Rentzea, Costin; Zeeh, Bernd; Koenig, Karl-Heinz; and Pommer, Ernst-Heinrich, 4,071,685, Cl. 548-312.000.

Koester, Eberhard; Wunsch, Gerd; Schoenafinger, Eduard; and Schneehage, Hans Henning, to BASF Aktiengesellschaft. Manufacture of gamma-iron(III) oxide. 4,071,610, Cl. 423-634.000.

Kofler, Roland: *See*—
Kunz, Helmut; and Kofler, Roland, 4,070,883, Cl. 72-14.000.

Kohkoku Chemical Industry Co., Ltd.: *See*—
Sawachika, Yasumasa; and Kawakami, Hiroshi, 4,071,484, Cl. 260-2.5AT.

Kohlen, Rudolf: *See*—
Hafke, Carl; and Kohlen, Rudolf, 4,071,332, Cl. 48-202.000.

Kohnke, Ole Bjorn, to Hesse, Ruth Lee. Lung-venting apparatus. 4,071,025, Cl. 128-145.700.

Koike, Shin'ichi; Hayashi, Seijiro; and Takayama, Michio, to Nippon Electric Co., Ltd. Transversal type automatic phase and amplitude equalizer. 4,071,827, Cl. 325-42.000.

Koinuma, Tokuju; Yamamiya, Hideki; and Tashiro, Norio, to Tokyo Shibaura Electric Co., Ltd. Magnetron device having magnetic means for generating a uniform interaction field. 4,071,804, Cl. 315-39.710.

Kojima, Chiaki: *See*—
Motomura, Mitsuteru; Kojima, Chiaki; Ohta, Hiroshi; and Nemoto, Akira, 4,070,772, Cl. 37-117.500.

Kojima, Katsumi: *See*—
Katayama, Sakae; Kanada, Sadaoki; Kamata, Michitake; Sakaguchi, Yasuhiro; and Kojima, Katsumi, 4,071,445, Cl. 210-23.00H.

Kok, Pieter Willem, to North American Philips Corporation. Pneumoencephalography chair. 4,071,231, Cl. 269-325.000.

Kolakowski, Manfred: *See*—
Bollig, Georg; Streubel, Hans; and Kolakowski, Manfred, 4,071,074, Cl. 164-448.000.

Kolb, Alan C.; and Drummond, James E., to Maxwell Laboratories, Inc. Method and apparatus for precipitating particles from a gaseous effluent. 4,071,334, Cl. 55-2.000.

Kolechko, Alexei Afanasievich: *See*—
Zarechensky, Anatoly Vasilievich; Kolechko, Alexei Afanasievich; Manov, Vladimir Mikhailovich; Korjukova, Alla Grigorievna; Savran, Vasily Grigorievich; and Serenko, Alexandr Nikitich, 4,071,734, Cl. 219-146.310.

Kolikov, Vsevolod Mikhailovich: *See*—
Peradze, Tamaz Vladimirovich; Fridman, Eidlya Abramovna; Zheleznova, Nina Vsevolodovna; Kolikov, Vsevolod Mikhailovich; Bresler, Semen Khaimovich-Efimovich; Mchedlishvili, Boris Viktorovich; Molodkin, Viktor Mikhailovich; Molodkina, Ljudmila Mikhailovna; and Katushkina, Nina Vasilievna, 4,071,619, Cl. 424-90.000.

Komarek, Karl R.; and Komarek, Richard K., to Lost River Mining Corporation Limited. Method of forming fluorite briquettes. 4,071,595, Cl. 264-66.000.

Komarek, Richard K.: *See*—
Komarek, Karl R.; and Komarek, Richard K., 4,071,595, Cl. 264-66.000.

Komiya, Takao: *See*—
Marushima, Giichi; Tanaka, Hiroshi; Tosaka, Umi; Takahashi, Shinkichi; and Komiya, Takao, 4,071,361, Cl. 96-1.400.

Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, to Canon Kabushiki Kaisha. Copying apparatus for sheet originals and thicker originals. 4,071,295, Cl. 355-3.0SH.

Kongelka, Robert Michael, to RCA Corporation. Releasable mounting system. 4,071,217, Cl. 248-309.00R.

Konig, Hans-Bodo; Metzger, Karl Georg; and Schrock, Wilfried, to Bayer Aktiengesellschaft. Oxoimidazolidinylthiocarbonyl derivatives of ceph-3-em-4-carboxylic acids. 4,071,683, Cl. 544-28.000.

Koninklijke Textielfabrieken M. Jansen de Wit B.V.: *See*—
Jansen, Josephus Johannes Maria, 4,070,873, Cl. 66-172.00R.

Konishi, Masami; Nakamura, Norihiko; Itou, Takaaki; and Kikuchi, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Company, Limited. Variable venturi type carburetor. 4,071,585, Cl. 261-36.00A.

Konishiroku Photo Industry Co., Ltd.: *See*—
Amano, Tadashi; Mukaihara, Yoshitaka; and Nakamura, Tadashi, 4,071,299, Cl. 356-202.000.

Konle, Robert L.: *See*—
Pury, Thomas; Konle, Robert L.; and Sivertsen, Marvin L., 4,071,767, Cl. 250-444.000.

Konobe, Takeo; Onoda, Tetsuo; and Ono, Koichi, to Research Foundation for Microbial Diseases of Osaka University. Process for preparing virus disease live vaccines. 4,071,618, Cl. 424-89.000.

Koolaj es Foldgazbanyaszati Ipari Kutato Laboratorium: *See*—
Fulop, Miklos; and Rakar, Geza, 4,071,097, Cl. 175-56.000.

Koontz, Donald Eldridge; and Skurkiss, Peter Kenny, to Bell Telephone Laboratories, Incorporated. Process for decreasing the porosity of gold. 4,071,417, Cl. 204-38.00B.

Koppers Company, Inc.: *See*—
Boyer, David Harrison, III; and Mitchell, Richard Dale, 4,071,896, Cl. 364-471.000.

Korbin, Martin. Device for the quantitative determination of impurities, especially bacteria, on flat surfaces. 4,071,320, Cl. 23-259.000.

Korekawa, Takashi; Kato, Nobuo; and Yamaoka, Mikio, to Matsushita Electric Industrial Co., Ltd. Ice cream machine. 4,070,957, Cl. 99-455.000.

Korjukova, Alla Grigorievna: *See*—
Zarechensky, Anatoly Vasilievich; Kolechko, Alexei Afanasievich; Manov, Vladimir Mikhailovich; Korjukova, Alla Grigorievna; Savran, Vasily Grigorievich; and Serenko, Alexandr Nikitich, 4,071,734, Cl. 219-146.310.

Korver, Gailerd L., to Goodyear Tire & Rubber Company, The. Process for producing low carboxyl polyester fibers and other articles. 4,071,504, Cl. 260-75.0EP.

Koshiishi, Kiyozo: *See*—
Kato, Yutaka; Ouchi, Teruo; and Koshiishi, Kiyozo, 4,070,986, Cl. 118-7.000.

Koslowski, Gunter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Diaphragm filtration system. 4,071,453, Cl. 210-232.000.

Kossoff, George, to Commonwealth of Australia, The. Ultrasonic beam scanning. 4,070,905, Cl. 73-614.000.

Koster, William Henry: *See*—
Dolfini, Joseph Edward; Slusarchyk, William A.; and Koster, William Henry, 4,071,682, Cl. 544-21.000.

Kostylev, Alexandr Dmitrievich: *See*—
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Tupitsyn, Konstantin Konstantinovich; Gurkov, Konstantin Stepanovich; Klimashko, Vladimir Vasilievich; Rozhkov, Leonid Georgievich; Bondar, Mikhail Jurievich; and Smolyanitsky, Boris Nikolaevich, 4,070,948, Cl. 91-234.000.

Kotzur, Joachim: *See*—
Heinen, Manfred; and Kotzur, Joachim, 4,071,253, Cl. 277-3.000.

Koundakjian, Theodore H.: *See*—
Graves, Thomas M.; and Koundakjian, Theodore H., 4,071,617, Cl. 424-78.000.

Kovacs, Pal: *See*—
Kalman, Erika; Haklik, Lajos; Eke, Anna; and Kovacs, Pal, 4,071,766, Cl. 250-443.000.

Koyama, Masaharu: *See*—
Misono, Masayoshi; Koyama, Masaharu; and Asida, Tutomu, 4,070,749, Cl. 29-592.00R.

Koyano, Hitoshi; Sugaya, Nobuo; and Shirasogawa, Michio, to Oki Electric Industry Co., Ltd. System for printing images having a half tone. 4,071,849, Cl. 346-1.000.

Krafft Gobel KG Textilmaschinenbau: *See*—
Gobel, Volker, 4,070,738, Cl. 28-137.000.

Kraina, Jack H., to Caterpillar Tractor Co. Combined noise suppressing and air flow guide enclosure for engines. 4,071,009, Cl. 123-198.00E.

Krajci, Gary Edward; and Marrella, John Joseph, to Motorola, Inc. Binary coded cam selector switch having split housing and dent structure. 4,071,720, Cl. 200-6.00B.

Kramer, Heinrich: *See*—
Schneppendahl, Richard; Kramer, Heinrich; and Pepping, Franz, 4,071,750, Cl. 362-217.000.

Kraus, Gerard; and Hunt, Harold R., to Phillips Petroleum Company. Carbon black for low-hysteresis rubber compositions. 4,071,496, Cl. 260-42.360.

Krautkramer-Branson, Incorporated: *See—*
Niklas, Ludwig; and Walker, Philip A., 4,070,917, Cl. 73-598.000.

Kriest, Raymond J., to Combustion Engineering, Inc. Magnetostrictive position indicator. 4,071,818, Cl. 324-208.000.

Krohn, Antonin: *See—*
Hassall, Cedric Herbert; Johnson, William Henry; Krohn, Antonin; Smithen, Carey Ernest; and Thomas, William Anthony, 4,071,525, Cl. 260-295.0AM.

Kronogard, Sven-Olof, to United Turbine AB & Co. Gas turbine power plant. 4,070,825, Cl. 60-39.51R.

Krubski, George, to Cooper Industries, Inc. Display for knives. 4,071,144, Cl. 211-13.000.

Krude, Werner, to Uni-Cardan AG. Universal joint. 4,070,872, Cl. 64-21.000.

Krzysztoforski, Andrzej: *See—*
Ciborowski, Stanislaw; Szczypinski, Zbigniew; Balcerzak, Kazimierz; Jaworski, Andrzej; Kasznia, Andrzej; Krzysztoforski, Andrzej; Kurowski, Stanislaw; Redzi, Jan; and Szparski, Jozef, 4,071,561, Cl. 260-586.00P.

Kubitzek, Harry: *See—*
Bueb, Michael; Kubitzek, Harry; Langhans, Arthur; Rellensmann, Wolfgang; and Wagner, Wolfram, 4,070,817, Cl. 57-157.0TS.

Kuehner, Richard: *See—*
Bahel, Vijay Omprakash; and Kuehner, Richard, 4,070,870, Cl. 62-2.000.

Kuhlein, Klaus; Reuschling, Dieter-Bernd; Babej, Milos; Bartmann, Wilhelm; and Beck, Gerhard, to Hoechst Aktiengesellschaft. Pyrrolidones and process for preparing them. 4,071,530, Cl. 260-326.450.

Kuhn, Johannes, to V.G.S. G.m.b.H. Clip for assembling screens, panels or bulkhead sections. 4,070,838, Cl. 52-400.000.

Kuhns, Garrett D.; Astorp, Norman E.; Mullen, Richard V.; and Thomas, John Ellwood, to Economics Laboratory, Inc. Spray and foam producing nozzle apparatus. 4,071,195, Cl. 239-289.000.

Kulakov, Nikolai Konstantinovich: *See—*
Fidchunov, Leonid Nikolaevich; Balyk, Stanislav Sergeevich; Silka, Adolf Nikolaevich; Kulakov, Nikolai Konstantinovich; Bakhtarov, Leonid Fedorovich; Azimov, Alexandr Abramovich; Davydenko, Vladimir Mikhailovich; Balitsky, Nikolai Vasilievich; Likhogub, Evgeny Petrovich; and Dorfman, Gersh Abramovich, 4,071,414, Cl. 201-40.000.

Kumada, Akio, to Hitachi, Ltd. Dielectric matrix device. 4,071,841, Cl. 365-65.000.

Kumano, Hiroshi: *See—*
Nishino, Atsushi; Sonetake, Kazunori; and Kumano, Hiroshi, 4,071,636, Cl. 427-2.000.

Kumiai Chemical Industry Co., Ltd.: *See—*
Hayashi, Eiichi; Takita, Kiyoshi; Sugiyama, Hironari; and Nezu, Yukio, 4,071,534, Cl. 260-343.700.

Kummer, Rudolf; Schwirten, Kurt; Schindler, Hans-Dieter, deceased (by Schindler, Maria Elisabeth, heir-at-law); by Lang nee Schindler, Ute, heir-at-law; and by Schindler, Rainer, heir-at-law, to BASF Aktiengesellschaft. Manufacture of pent-4-en-1-al. 4,071,563, Cl. 260-601.00R.

Kunin, Robert, to Rohm and Haas Company. Method for regeneration of weak acid cation exchange resin. 4,071,446, Cl. 210-32.000.

Kunz, Helmut; and Kofler, Roland, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. System and assembly for measuring the movement of strip and hot strip mill. 4,070,883, Cl. 72-14.000.

Kunze, Dieter, to Jean Walterscheid GmbH. Coupling hook for a three-point connection on a tractor. 4,071,263, Cl. 280-508.000.

Kuramoto, Yoshio: *See—*
Ise, Katsuhiro; Kuramoto, Yoshio; and Yamazaki, Yasuo, 4,071,292, Cl. 350-128.000.

Kuraray Co., Ltd.: *See—*
Yamamoto, Kohzo; Kawai, Syuji; and Ohmori, Akio, 4,071,454, Cl. 210-321.00A.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Aoki, Katsumichi; Shimizu, Susumu; Satake, Keigo; Yamazaki, Shiro; and Hatakeyama, Nobuo, 4,071,633, Cl. 424-324.000.
Takahashi, Masaaki; Iizuka, Akira; and Asano, Kiro, 4,071,553, Cl. 260-514.00J.
Yoshida, Masafumi; and Obara, Hiroshi, 4,071,785, Cl. 310-331.000.

Kuris, Arthur. Ultrasonic inlaid article. 4,071,385, Cl. 156-73.100.

Kurosaki, Mutsuo, to Nifco Inc. Screw grommet. 4,070,945, Cl. 85-80.000.

Kurowski, Stanislaw: *See—*
Ciborowski, Stanislaw; Szczypinski, Zbigniew; Balcerzak, Kazimierz; Jaworski, Andrzej; Kasznia, Andrzej; Krzysztoforski, Andrzej; Kurowski, Stanislaw; Redzi, Jan; and Szparski, Jozef, 4,071,561, Cl. 260-586.00P.

Kurtz, Bruce Edward: *See—*
Amato, Wayne S.; Bandyopadhyay, Bhaskar; Fitch, Robert Herbert; and Kurtz, Bruce Edward, 4,071,572, Cl. 260-659.00A.

Kurz, Fredrik Wilhelm; and Rudmark, Hans. Method of manufacturing porous ceramic products by reacting flue gas dust and filter dust with clays or the like, such as expanded clay. 4,071,369, Cl. 106-40.00R.

Kuse, Matsuo: *See—*
Murata, Tomoji; Nakamura, Yoshihiro; Shibazaki, Kenji; and Kuse, Matsuo, 4,071,721, Cl. 200-38.00B.

Kusters, Eduard: *See—*
Kutz, Johannes, 4,070,875, Cl. 68-3.0SS.

Kutz, Johannes, to Kusters, Eduard. Apparatus for treating of synthetic textile webs. 4,070,875, Cl. 68-3.0SS.

Labatt Breweries of Canada Limited: *See—*
Marino, Otto M., 4,070,854, Cl. 53-381.00A.

Laboratoire Theranol: *See—*
Prugnaud, Robert Louis, 4,071,314, Cl. 23-230.00B.

LaFleur, Arthur E. Valve bag. 4,071,187, Cl. 229-62.500.

LaFreda, John T. Dispenser for ice cream or the like. 4,071,308, Cl. 425-284.000.

La Haye, Paul G.; and Anderson, Ralph E., to Hague International. Insulated wall means and method. 4,070,841, Cl. 52-506.000.

Lainez, Lucien: *See—*
Bijon, Paul; Fichot, Bernard; and Lainez, Lucien, 4,071,854, Cl. 358-128.000.

Laliberte, Real: *See—*
Ferland, Jean-Marie; Laliberte, Real; Lippmann, Wilbur; and Pugsley, Thomas A., 4,071,552, Cl. 260-501.170.

Lam, Charles Tak Wai, to Miles Laboratories, Inc. Test composition and device for determining peroxidatively active substances and process for preparing same. 4,071,317, Cl. 23-253.0TP.

Lam, Charles Tak Wai, to Miles Laboratories, Inc. Test composition and device for determining peroxidatively active substances. 4,071,318, Cl. 23-253.0TP.

Lam, Charles Tak Wai, to Miles Laboratories, Inc. Test composition and device for determining peroxidatively active substances. 4,071,321, Cl. 23-253.0TP.

Lama, William L.: *See—*
Hammond, Thomas J.; and Lama, William L., 4,071,799, Cl. 313-44.000.

Lambrecht, Richard Arthur, to Union Carbide Corporation. Anode and cathode lead wire assembly for solid electrolytic capacitors. 4,070,747, Cl. 29-570.000.

Land, Walter Henry. Fastening device. 4,070,736, Cl. 24-153.000.

Laney, Bill C.: *See—*
Grable, Donovan B.; and Laney, Bill C., 4,071,085, Cl. 166-84.000.

Lang nee Schindler, Ute, heir-at-law: *See—*
Kummer, Rudolf; Schwirten, Kurt; Schindler, Hans-Dieter, deceased; Lang nee Schindler, Ute, heir-at-law; and Schindler, Rainer, heir-at-law, 4,071,563, Cl. 260-601.00R.

Lang, Peter: *See—*
Ermel, Heinrich; Fruth, Franz; Fryda, Georg; Lang, Peter; Rau, Fritz; and Vossnacke, Jurgen, 4,071,296, Cl. 355-15.000.

Lange, Kai; Wiesen, Ernest J.; and Woronowicz, Eric M., to General Electric Company. Scintillation camera with improved output means. 4,071,762, Cl. 250-369.000.

Langhans, Arthur: *See—*
Bueb, Michael; Kubitzek, Harry; Langhans, Arthur; Rellensmann, Wolfgang; and Wagner, Wolfram, 4,070,817, Cl. 57-157.0TS.

Lanham, Joseph S.: *See—*
Kitchen, John P.; Gabhart, Terry L.; and Lanham, Joseph S., 4,070,717, Cl. 5-176.00R.

Lapidot, Mordechai: *See—*
Eisenberg, Eli; Altmann, Gideon; Bogokovsky, Bianca; and Lapidot, Mordechai, 4,071,412, Cl. 195-102.000.

Larson, Donald J.: *See—*
Junck, John A.; Dezelan, Joseph A.; Larson, Donald J.; and White, Robert W., 4,071,106, Cl. 180-44.00F.

Lasher, Edward A., to Whittaker Corporation. One-coat polyester-based coating and method of making same. 4,071,578, Cl. 260-850.000.

Latham, Raymond John; and Holloway, Arthur John, to Imperial Chemical Industries Limited. Quenching of polymeric film. 4,071,589, Cl. 264-22.000.

Lathrop, Francis O., Jr.; Jacobs, Edward H.; Wood, William E.; and Taylor, Patrick A., to Nashua Corporation. Disc cartridge. 4,071,862, Cl. 360-97.000.

Laurin, Dean G.: *See—*
Wagenknecht, John H.; and Laurin, Dean G., 4,071,429, Cl. 204-231.000.

Lautner, Max E.; and West, Bernard J., to Gould Inc. Welded stator for electric motors. 4,071,787, Cl. 310-42.000.

Leach, Bruce E.; and Starks, Charles M., to Continental Oil Company. Preparation of cresols and xylenols from tetramethylphenols and pentamethylphenol. 4,071,566, Cl. 260-621.00D.

LeBlanc, Wayne J., to Horsburgh and Scott Company, The. Composite gear having carburized teeth and method of making same. 4,070,920, Cl. 74-446.000.

Lechner, Gunther: *See—*
Griesshammer, Rudolf; Kirschner, Helmut; and Lechner, Gunther, 4,070,797, Cl. 51-326.000.

Lecouvreur, Paul: *See—*
Guidez, Joel; Lecouvreur, Paul; and Roumailhac, Jean, 4,071,303, Cl. 415-112.000.

Lee, David Quon; and Rovnyak, Richard Michael, to GTE Automatic Electric Laboratories Incorporated. Line conditioning and transfer circuit. 4,071,709, Cl. 179-18.0HB.

Lee, Glyn Evan: *See—*
Dalton, Sally Elizabeth; Gingell, William George; Jenkins, David Conwil; King, Leslie George; Lee, Glyn Evan; and Thompson, Garth Molesdale, 4,071,528, Cl. 260-306.70T.

Leeper, David Garth, to Bell Telephone Laboratories, Incorporated. Thinned aperiodic antenna arrays with improved peak sidelobe level control. 4,071,848, Cl. 343-844.000.

Lees, Geoffrey; and Katekhda, Izzed-Din, to Dunlop Limited. Outflow meter for measuring surface drainage characteristics. 4,070,903, Cl. 73-38.000.

Legat, Wilhelm H.; Taft, Keith G.; and Tiefert, Karl H., to Raytheon Company. Integrated circuit structure having semiconductor resistance regions. 4,070,748, Cl. 29-577.00C.

Leggiere, Robert; and Saggese, Michael Frank. Simulated shingle arrangement. 4,070,843, Cl. 52-521.000.

Legille, Edouard; and Mahr, Rene N., to S.A. des Anciens Etablissements Paul Wurth. Blast furnace charging method and apparatus. 4,071,166, Cl. 222-1.000.

Le Goff, Yannick: *See—*
Senes, Michel; Le Goff, Yannick; and Gourdier, Jean-Francois, 4,071,472, Cl. 252-455.00R.

Legrand, Maurice Francois; and Cholat-Serpoud, Gerard, to Skis Rossignol S.A. Club Rossignol S.A. Ski and method of making same. 4,071,264, Cl. 280-610.000.

Leighty, Conard E., to Caterpillar Tractor Co. Engine side guard mounting. 4,071,107, Cl. 180-69.00R.

Leijonhufvud, Gosta Karl Knutsson; and Thyselius, Per-Olof, to Telefonaktiebolaget L M Ericsson. Method of and apparatus for addressing a buffer memory in a transit exchange for synchronous data signals. 4,071,701, Cl. 179-15.0AT.

Leitz, Ludwig; Heitmann, Knut; Schneider, Eckart; and Schaefer, Klaus Dieter, to Ernst Leitz GmbH. Method and apparatus for photoelectrically determining the position of at least one image focus plane. 4,071,297, Cl. 356-4.000.

Leitz, Ludwig; Heitmann, Knut; and Schmidt, Horst, to Ernst Leitz GmbH. Apparatus for measurement of mechanical aberrations affecting stereoscopic image analysis. 4,071,772, Cl. 250-558.000.

Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin. Tire pressure variation detector. 4,071,724, Cl. 200-61.250.

LeMay, Christopher Archibald Gordon, to EMI Limited. Radiography apparatus with photocell drift compensating means. 4,071,760, Cl. 250-363.00S.

Lensel, Robert Marc: *See—*
Bourrie, Georges E.; and Lensel, Robert Marc, 4,071,271, Cl. 292-201.000.

Leopoldi, Norbert. Paper dispenser having a frictional discharge assistant. 4,071,165, Cl. 221-259.000.

Les Cables de Lyon S.A.: *See—*
Comte, Georges, 4,071,834, Cl. 333-95.00R.

Leslie Hartridge Limited: *See—*
Emerson, Reginald Stanley, 4,070,907, Cl. 73-119.00A.

Levenson, Ellene S. Folding doll house. 4,070,789, Cl. 46-12.000.

Lever Brothers Company: *See—*
Evans, William Price; and Naik, Appayya Raghunath, 4,071,523, Cl. 260-293.760.
McGee, Thomas; and Roberts, David William, 4,071,456, Cl. 252-8.700.
Wilton, Inga Elna Maria; Envall, Lennart Olof Gunnemar; Sundstroem, Kurt Lage; and Moran, David Patrick Joseph, 4,071,634, Cl. 426-604.000.

Lewinter, Barbara: *See—*
Lewinter, Orest; and Lewinter, Barbara, 4,070,820, Cl. 58-21.130.

Lewinter, Orest; and Lewinter, Barbara. Double kitchen timer. 4,070,820, Cl. 58-21.130.

Liang, Shou C.: *See—*
Charlton, Thomas L.; Redden, Robert F.; Hirsch, Horst E.; and Liang, Shou C., 4,071,422, Cl. 204-105.00R.

Libbey-Owens-Ford Company: *See—*
Blausey, Richard H., Jr., 4,071,344, Cl. 65-29.000.

Liborius, Erik: *See—*
Hovmand, Svend; and Liborius, Erik, 4,070,765, Cl. 34-10.000.

Lichti, Reiner, to Siemens Aktiengesellschaft. Arrangement for recording characters composed of matrix-like rastered character elements. 4,071,130, Cl. 197-1.00R.

Liebert, Richard B., to North American Philips Corporation. Electrophoretic image display having an improved switching time. 4,071,430, Cl. 204-299.00R.

Lifetime Carbide Co.: *See—*
Gray, Gorman D., 4,071,141, Cl. 206-372.000.

Like, Burton M., to American Cyanamid Company. Abrasive scouring block (and support therefor). 4,071,333, Cl. 51-304.000.

Likhogub, Evgeny Petrovich: *See—*
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Bilczo, Dale Louis; Golonka, Kenneth Anthony; Overman, John Arthur; and Carroll, John Ernest, 4,071,885, Cl. 363-64.000.

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Lingl, Hans, 4,070,985, Cl. 118-6.000.

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Lingle, Cleo M. Fastening bar assembly for frameless insulating panels. 4,070,848, Cl. 52-707.000.

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Supernaw, Irwin R.; Arnold, Dan McCay; and Link, Arthur Jurgen, 4,071,755, Cl. 250-253.000.

Linner, Hans Rolf Ingemar, to AB Akerlund & Rausing. Carton storage, feeding and opening apparatus. 4,070,952, Cl. 93-53.00R.

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Ferland, Jean-Marie; Laliberte, Real; Lippmann, Wilbur; and Pugsley, Thomas A., 4,071,552, Cl. 260-501.170.

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Skatsche, Othmar; Thien, Gerhard; and Fachbach, Heinz, 4,071,008, Cl. 123-198.00E.

List, William P., to Westinghouse Electric Corporation. Self-triggering circuit for gas-filled laser. 4,071,806, Cl. 315-150.000.

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Liu, Clark Wen-Hai. Automatic insertion machine for inserting radial lead electronic components. 4,070,753, Cl. 29-741.000.

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Luhr, Gerhard: *See—*
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Lund, Roy F. Constant force motor. 4,070,855, Cl. 60-407.000.

Lussier, Jean Louis. Swinging door system. 4,070,795, Cl. 49-141.000.

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Maigret, Robert J., to Micro Components Corporation. Integrated circuit high voltage DC converter. 4,071,884, Cl. 363-21.000.
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Makin, Ronay Denton, to Thomas French and Sons (Electrical) Limited. Braided tape including carrier means. 4,070,911, Cl. 73-343.00R.
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Mannino, Anthony, Jr., to Borg-Warner Corporation. Method of forming a friction disc member. 4,071,360, Cl. 72-329.000.
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Marquis, David M., to Chevron Research Company. Anhydride separation process. 4,071,540, Cl. 260-346.760.
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Marshall, James A., Sr. Easy cab entry and exit. 4,071,260, Cl. 280-166.000.
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Martin, Michael. Apparatus for recovering paint spills. 4,071,163, Cl. 220-69.000.
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Fey, Maurice G.; Wolf, Charles B.; Martin, Paul E.; and Harvey, Francis J., II, 4,071,588, Cl. 264-15.000.
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Schlau, Floyd E.; Morrison, Howard J.; and Keller, Albert G., 4,070,967, Cl. 101-301.000.
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Masters, Ian M.; Bolton, Gerald L.; and Sefton, Verner B., to Sherritt Gordon Mines Limited. Process for the recovery of zinc. 4,071,421, Cl. 204-96.000.
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Mathison, Ian William; Solomons, William Ebenezer; and Jones, Raymond Henry, to Marion Laboratories, Inc. 4,5-Dialkoxy-6 or 7-indanaldehydes. 4,071,562, Cl. 260-600.00R.
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Mazur, Richard A., to Continental Can Co. Inc. Machine control system with machine serializing and safety circuits. 4,071,911, Cl. 364-900.000.
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McCubbin, John Gordon, to Alcan Research and Development Limited. Method of direct chill casting of aluminum alloys. 4,071,072, Cl. 164-89.000.
McDaniel, John H.; Sinnard, Harry W.; and Thomas, Robert W., to Caterpillar Tractor Co. Machine tool with protective light curtain and work stock holding mechanism. 4,070,940, Cl. 83-464.000.
McDonald, Bridget M. A., to I. P. U. Limited. Small movable hot deseamer. 4,071,227, Cl. 266-51.000.
McDonald, William J., to Gyro Enterprises (Rotates) Pty. Limited. Speedometer and ratio testing apparatus. 4,070,901, Cl. 73-2.000.
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McElroy, Arthur H. Apparatus for creating segmented polyethylene pipe turns. 4,071,395, Cl. 156-499.000.
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McMullen, Philip B., to Goodyear Tire & Rubber Company, The. Rubber goods. 4,071,647, Cl. 428-102.000.
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Meador, Lawrence Dean. Method for flushing the uterus of a sow. 4,071,027, Cl. 128-231.000.
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Meckel, Walter; and Britain, J. W., to Mobay Chemical Corporation; and Bayer Aktiengesellschaft. Molecular weight control of polyurethane elastomers. 4,071,505, Cl. 260-77.5MA.
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Christensen, Burton G.; and Cama, Lovji D., 4,071,529, Cl. 260-306.70C.
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Micro Pneumatic Logic Inc.: *See—*
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Miller, Robert H., to Caterpillar Tractor Co. Engine start-up system and method. 4,071,010, Cl. 123-198.00F.
Miller, Robert W.; and Howell, Samuel Garry, to ARCO Polymers, Inc. Plated polypropylene composition. 4,071,656, Cl. 428-626.000.
Miller, Wayne M.: *See—*
Milberg, Morton E.; and Miller, Wayne M., 4,071,371, Cl. 106-65.000.
Milstein, Donald; and Stein, Thomas R., to Mobil Oil Corporation. Conversion of Fischer-Tropsch heavy product to high quality jet fuel. 4,071,574, Cl. 260-676.00R.
Minnesota Mining and Manufacturing Company: *See—*
Brullo, Robert A., 4,071,652, Cl. 428-323.000.
Helmer, Jack R., 4,070,969, Cl. 101-465.000.
Pfeiffer, G. William, 4,071,694, Cl. 179-1.0ST.
Minolta Camera Kabushiki Kaisha: *See—*
Ise, Katsuhiro; Kuramoto, Yoshio; and Yamazaki, Yasuo, 4,071,292, Cl. 350-128.000.
Murata, Tomoji; Nakamura, Yoshihiro; Shibazaki, Kenji; and Kuse, Matsuo, 4,071,721, Cl. 200-38.00B.
Minton, Abraham, to Gripsin Industries, Inc. Friction cosmetic gel. 4,071,374, Cl. 106-189.000.
Misono, Masayoshi; Koyama, Masaharu; and Asida, Tutomu, to Hitachi, Ltd. Method of manufacturing liquid crystal display devices. 4,070,749, Cl. 29-592.00R.
Mitchell, Richard Dale: *See—*
Boyer, David Harrison, III; and Mitchell, Richard Dale, 4,071,896, Cl. 364-471.000.
Mitchell, Richard Patrick; and Gorshe, Thomas Mathew, to American Can Company. Method and apparatus for cold lidding containers with elastomeric film. 4,070,852, Cl. 53-297.000.
Mitsubishi Chemical Industries Limited: *See—*
Kikumoto, Ryoji; Tobe, Akihiro; Tonomura, Shinji; Ikoma, Hidenobu; and Honda, Kazuo, 4,071,559, Cl. 260-570.700.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,071,621, Cl. 424-177.000.
Onoda, Takeru; and Tomita, Shimpei, 4,071,568, Cl. 260-615.00R.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Ishikawa, Riichi; and Takase, Toshio, 4,071,135, Cl. 198-324.000.
Satoh, Tsuyoshi, 4,071,714, Cl. 179-82.000.
Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, 4,071,889, Cl. 364-200.000.
Mitsubishi Paper Mills, Ltd.: *See—*
Usagawa, Yasushi; Yamashita, Kiyoshi; Nakatani, Mamoru; Masuda, Kosaku; and Kawakatsu, Satoshi, 4,071,365, Cl. 96-56.500.
Mitsubishi Petrochemical Company Limited: *See—*
Morikawa, Hiroyuki; and Kitazume, Shoji, 4,071,575, Cl. 260-677.00R.
Mitsugi, Koji: *See—*
Soda, Kenji; Tanaka, Hidehiko; Nakazawa, Hidetsugu; and Mitsugi, Koji, 4,071,405, Cl. 195-29.000.
Mitsuhashi, Yoshio. Tabletop directory casing with means for ready access to desired entries. 4,070,776, Cl. 40-381.000.
Mitsui Mining & Smelting Co., Ltd.: *See—*
Tokunaga, Hiroshi; Tatehana, Yoshikazu; and Umekawa, Akira, 4,071,228, Cl. 266-162.000.
Mitsui Petrochemical Industries Ltd.: *See—*
Kashiwa, Norio, 4,071,672, Cl. 526-122.000.

Kashiwa, Norio; Fuji, Saburo; and Tanaka, Masahide, 4,071,674, Cl. 526-125.000.
Mitsui, Tatsuro: *See—*
Nakagawa, Ryuichi; Yoshimatsu, Shiro; Ueda, Takuya; Fukuzawa, Akira; Ozaki, Tsuyoshi; Sato, Akira; and Mitsui, Tatsuro, 4,071,687, Cl. 13-10.000.
Mitsui Toatsu Chemicals, Incorporated: *See—*
Ozaki, Shoichiro; and Mori, Haruki, 4,071,519, Cl. 260-256.40C.
Watanabe, Hiroo; Toyoshima, Kunihiko; Noutomi, Masaru; and Yamakawa, Kouichi, 4,071,448, Cl. 210-50.000.
Miura, Sei: *See—*
Nishikubo, Michio; Miura, Sei; Toyoda, Toshiaki; Jonishi, Katsunori; and Yoneta, Kouichi, 4,070,893, Cl. 72-234.000.
Miyakawa, Seii; Kobayashi, Takashi; Kishi, Masaya; and Ogiro, Kenji, to Hitachi, Ltd. Apparatus for mounting tension coil spring onto article. 4,070,743, Cl. 29-227.000.
Miyamatsu, Yasunori; Yasumuro, Hisakazu; Miyata, Kenichi; Shimizu, Takashi; and Matsuoka, Kikuo, to Toyo Seikan Kaisha Limited. Apparatus for simultaneously deforming and coating. 4,070,885, Cl. 72-46.000.
Miyamoto, Koichi: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,071,295, Cl. 355-3.0SH.
Miyata, Kenichi: *See—*
Miyamatsu, Yasunori; Yasumuro, Hisakazu; Miyata, Kenichi; Shimizu, Takashi; and Matsuoka, Kikuo, 4,070,885, Cl. 72-46.000.
Mobay Chemical Corporation: *See—*
Meckel, Walter; and Britain, J. W., 4,071,505, Cl. 260-77.5MA.
Mobil Oil Corporation: *See—*
Chen, Nai Yuen, 4,070,993, Cl. 123-3.000.
Guarino, John P.; and McCarty, William H., 4,071,425, Cl. 204-159.240.
Milstein, Donald; and Stein, Thomas R., 4,071,574, Cl. 260-676.00R.
Owen, Hartley; and Venuto, Paul B., 4,071,573, Cl. 260-668.00R.
Zemanek, Joseph, Jr., 4,071,815, Cl. 324-8.000.
Mocarski, Stanislaw, to Ford Motor Company. Master alloy for powders. 4,071,354, Cl. 75-.50R.
Moed, Johannes A. R., to TRW, Inc. Service generator checking apparatus. 4,071,704, Cl. 179-15.0BF.
Moehle, Kenneth Albert: *See—*
Reinhardt, Jack; Moehle, Kenneth Albert; and Hinke, Jerald Dietrich, 4,070,914, Cl. 74-475.000.
Molia, Stephen J.: *See—*
Darby, William L.; Monz, Robert H.; and Molis, Stephen J., 4,071,790, Cl. 310-59.000.
Molleken, Reiner: *See—*
Bauer, Kurt; Molleken, Reiner; and Exner, Fritz, 4,071,564, Cl. 260-613.00D.
Molodkin, Viktor Mikhailovich: *See—*
Peradze, Tamaz Vladimirovich; Fridman, Eidlya Abramovna; Zheleznova, Nina Vsevolodovna; Kolikov, Vsevolod Mikhailovich; Bresler, Semen Khaimovich-Efimovich; Mchedlishvili, Boris Viktorovich; Molodkin, Viktor Mikhailovich; Molodkina, Ljudmila Mikhailovna; and Katushkina, Nina Vasilievna, 4,071,619, Cl. 424-90.000.
Molodkina, Ljudmila Mikhailovna: *See—*
Peradze, Tamaz Vladimirovich; Fridman, Eidlya Abramovna; Zheleznova, Nina Vsevolodovna; Kolikov, Vsevolod Mikhailovich; Bresler, Semen Khaimovich-Efimovich; Mchedlishvili, Boris Viktorovich; Molodkin, Viktor Mikhailovich; Molodkina, Ljudmila Mikhailovna; and Katushkina, Nina Vasilievna, 4,071,619, Cl. 424-90.000.
Monogram Industries, Inc.: *See—*
Bishton, Norris J., Jr.; Rod, Robert L.; Wagenhals, Bruce; Woltanski, Theodore M.; and Blick, John S., III, 4,070,714, Cl. 4-318.000.
Monsanto Company: *See—*
Birum, Gail H., 4,071,584, Cl. 260-932.000.
Wagenknecht, John H.; and Laurin, Dean G., 4,071,429, Cl. 204-231.000.
Wilson, Glenn R., 4,071,549, Cl. 260-465.80R.
Monz, Robert H.: *See—*
Darby, William L.; Monz, Robert H.; and Molis, Stephen J., 4,071,790, Cl. 310-59.000.
Moog, Gerhard W.; and Cooper, Kenneth R., to Canada Square Management Ltd. Heating system for building. 4,071,077, Cl. 165-18.000.
Mooney, Henry E., Jr., to Shuster, James C.; and Brinks, William G., part interest to each. Suspended ceiling construction. 4,070,840, Cl. 52-489.000.
Moore Business Forms, Inc.: *See—*
D'Luhy, Emil A., 4,071,142, Cl. 206-629.000.
Williams, Rodney E., 4,071,646, Cl. 427-358.000.
Moracchioli, Robert: *See—*
de Cachard, Maurice; Moracchioli, Robert; and Marie, Gerard, 4,070,871, Cl. 62-116.000.
Moran, David Patrick Joseph: *See—*
Wilton, Inga Elna Maria; Envall, Lennart Olof Gunnemar; Sundstroem, Kurt Lage; and Moran, David Patrick Joseph, 4,071,634, Cl. 426-604.000.
Moran, George A., Jr.; and Sitton, Willard J., to ACF Industries, Incorporated. Ball valve seat ring construction. 4,071,041, Cl. 137-246.220.
Moreno, Emil F.; Hajek, Ralph S.; and Marquardt, Julius F., to International Harvester Company. Automatic control of lockable differentials. 4,070,924, Cl. 74-710.500.
Morey, Booker W., to Occidental Petroleum Corporation. Method and apparatus for recovery of aluminum from solid waste. 4,071,442, Cl. 209-212.000.
Morgan, Charles W., to Dow Chemical Company, The. Cushioning element. 4,070,719, Cl. 5-355.000.
Morgan Construction Company: *See—*
Salter, Lowell S., Jr., 4,071,255, Cl. 277-57.000.
Morgan, Jerome. Mechanized display device. 4,070,973, Cl. 108-20.000.
Morgan Refractories Limited: *See—*
Errington, Paul Anthony, 4,071,311, Cl. 432-234.000.
Morganstern, Michael D.: *See—*
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Mori, Haruki: *See—*
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Moriarty, Lawrence James, to North Electric Company. Water-proof air-pressure equalizing valve. 4,071,040, Cl. 137-199.000.
Morikawa, Hiroyuki; and Kitazume, Shoji, to Mitsubishi Petrochemical Company Limited. Process for producing 2,6-dimethyl-1,3,6-octatriene. 4,071,575, Cl. 260-677.00R.
Morio, Minoru: *See—*
Kihara, Nobutoshi; and Morio, Minoru, 4,071,856, Cl. 360-73.000.
Morris, Carlisle S., to Caterpillar Tractor Co. Motor grader with detachable link for reduced blade angle operation. 4,071,091, Cl. 172-797.000.
Morrison, Howard J.: *See—*
Schlau, Floyd E.; Morrison, Howard J.; and Keller, Albert G., 4,070,967, Cl. 101-301.000.
Morton-Norwich Products, Inc.: *See—*
Butterfield, James L.; and Wright, George C., 4,071,632, Cl. 424-263.000.
Morton, William David, Jr., to Bourns, Inc. Document hold-down device. 4,071,233, Cl. 271-8.00R.
Moser, Horst: *See—*
Fidi, Werner; and Moser, Horst, 4,071,717, Cl. 179-182.00R.
Moser, Rabin, to Xerox Corporation. Externally heated low-power roll fuser. 4,071,735, Cl. 219-216.000.
Motomura, Mitsuteru; Kojima, Chiaki; Ohta, Hiroshi; and Nemoto, Akira, to Kabushiki Kaisha Komatsu Seisakusho. Ground excavating apparatus. 4,070,772, Cl. 37-117.500.
Motorola, Inc.: *See—*
Daly, Thomas C.; Hepworth, Edward C.; and Means, Rodney J., 4,071,887, Cl. 364-200.000.
Estreicher, Isabelle E.; and Price, James B., 4,071,397, Cl. 156-662.000.
Huntington, Robert Charles, 4,071,830, Cl. 330-277.000.
Krajci, Gary Edward; and Marrella, John Joseph, 4,071,720, Cl. 200-6.00B.
Maeder, Heinz Bernhard; and Schriber, Gene Arnold, 4,071,784, Cl. 307-279.000.
Mott, James D., to Hydril Company. Retrievable safety valve. 4,071,088, Cl. 166-321.000.
Mountford, George S., to A-T-O Inc. Adjustable drop nipple. 4,071,266, Cl. 285-14.000.
Moutonnier, Claude: *See—*
Berger, Christian; Farge, Daniel; Gros, Georges; Messer, Mayer Naoum; and Moutonnier, Claude, 4,071,531, Cl. 260-327.00P.
Moyer, John W. Slide storing apparatus. 4,071,286, Cl. 312-330.00R.
MTA Kozponti Kemiai Kutato Intezet: *See—*
Kalman, Erika; Haklik, Lajos; Eke, Anna; and Kovacs, Pal, 4,071,766, Cl. 250-443.000.
Muccino, Richard R.: *See—*
Christenson, James Gordon; and Muccino, Richard R., 4,071,522, Cl. 260-292.000.
Mucke, Rainer: *See—*
Andrascheck, Hans-Joachim; Mucke, Rainer; Lorz, Werner; Borchard, Heinz; Buck, Jurgen; Knothe, Herbert; and Rybka, Bruno, 4,071,490, Cl. 260-23.0XA.
Muench, Terry G., to Dow Chemical Company, The. Process for making 2,6-difluoro pyridine. 4,071,521, Cl. 260-290.0HL.
Muhlfelder, Ludwig; Keigler, John Edward; and Stewart, Brian, to RCA Corporation. Momentum biased active three-axis satellite attitude control system. 4,071,211, Cl. 244-165.000.
Muhlhaus, Ludwig: *See—*
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Mukaihara, Yoshitaka: *See—*
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Mukunashi, Hiroaki: *See—*
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Kuhns, Garrett D.; Astorp, Norman E.; Mullen, Richard V.; and Thomas, John Ellwood, 4,071,195, Cl. 239-289.000.
Muller, Alexander: *See—*
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Mullins, David Lee: *See—*
Litteral, Carl James; and Mullins, David Lee, 4,071,483, Cl. 260-2.5AH.

Multi-Pak Corporation: *See—*
O'Rourke, James; and Feldberg, Murray, 4,070,961, Cl. 100-185.000.
Murata, Tomoji; Nakamura, Yoshihiro; Shibazaki, Kenji; and Kuse, Matsuo, to Minolta Camera Kabushiki Kaisha. Sequential controller. 4,071,721, Cl. 200-38.00B.
Murray, Robert Maclay: *See—*
Hogendobler, Richard Shure; and Murray, Robert Maclay, 4,070,751, Cl. 29-628.000.
Mushinsky, Albert J., to Alton Corporation. Measurement system. 4,071,820, Cl. 324-61.00R.
Musil, Ivan: *See—*
Zouhar, Drahomir; Holas, Antonin; and Musil, Ivan, 4,070,874, Cl. 66-177.000.
Mutke, H. Guido. Arrangement for the transportation of persons in a recumbent position in particular in aircraft. 4,071,210, Cl. 244-118.00P.
Mutoh Industry Ltd.: *See—*
Watanabe, Yoshinori, 4,070,758, Cl. 33-76.00R.
Myers, James Lewis, to Coors Container Company. Tribo-electro-gas-dynamic powder charging apparatus. 4,071,192, Cl. 239-3.000.
N L Industries, Inc.: *See—*
Rutt, Truman C., 4,071,880, Cl. 361-309.000.
Stynes, James A., 4,071,878, Cl. 361-307.000.
Nagase, Toshiro, to Tokico Ltd. Method for filling gas into sealed cylinder device. 4,071,057, Cl. 141-4.000.
Nagata, Seiichi; Tanaka, Tsuneo; and Fukai, Masakazu, to Matsushita Electric Industrial Co., Ltd. Process for fabrication of dielectric optical waveguide devices. 4,071,383, Cl. 148-175.000.
Naik, Appayya Raghunath: *See—*
Evans, William Price; and Naik, Appayya Raghunath, 4,071,523, Cl. 260-293.760.
Naka, Hisayoshi: *See—*
Ishibe, Shuhei; Okumichi, Toshiharu; Ishihara, Yasushi; and Naka, Hisayoshi, 4,071,375, Cl. 106-238.000.
Nakagaki, Kunihiro: *See—*
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Nakagawa, Ryuichi; Yoshimatsu, Shiro; Ueda, Takuya; Fukuzawa, Akira; Ozaki, Tsuyoshi; Sato, Akira; and Mitsui, Tatsuro, to National Research Institute for Metals. Electric arc furnace for continuous melting of directly reduced iron or directly reduced iron ore. 4,071,687, Cl. 13-10.000.
Nakagawa, Yunosuke: *See—*
Matsunaga, Kinjiro; Nakagawa, Yunosuke; and Arai, Haruhiko, 4,071,462, Cl. 252-99.000.
Nakagomi, Yoshiyuki, to Hitachi, Ltd. Analog operation circuit using a multi-collector lateral transistor. 4,071,778, Cl. 307-229.000.
Nakaguti, Osamu: *See—*
Kamiya, Takashi; Teraji, Tsutomu Toyonaka; Hashimoto, Masashi; Oku, Teruo Kyoto; Nakaguti, Osamu; Saito, Yoshihisa; and Nakamura, Hitoshi, 4,071,527, Cl. 260-306.500.
Nakai, Masanori: *See—*
Tokumaru, Yukuya; and Nakai, Masanori, 4,071,774, Cl. 307-215.000.
Nakajima, Yasuo; and Hayashi, Yoshimasa, to Nissan Motor Co., I td. Internal combustion engine equipped with improved exhaust gas recirculation system. 4,071,005, Cl. 123-119.00A.
Nakamura, Hitoshi: *See—*
Kamiya, Takashi; Teraji, Tsutomu Toyonaka; Hashimoto, Masashi; Oku, Teruo Kyoto; Nakaguti, Osamu; Saito, Yoshihisa; and Nakamura, Hitoshi, 4,071,527, Cl. 260-306.500.
Nakamura, Matsuaki: *See—*
Ogawa, Hiroshi; Ishii, Kazuhide; Nakamura, Matsuaki; Tamai, Yasuo; and Akashi, Goro, 4,071,654, Cl. 428-336.000.
Nakamura, Norihiko: *See—*
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Nakamura, Tadashi: *See—*
Amano, Tadashi; Mukaihara, Yoshitaka; and Nakamura, Tadashi, 4,071,299, Cl. 356-202.000.
Nakamura, Yoshihiro: *See—*
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Nakao, Hideo: *See—*
Yanagisawa, Hiroaki; Ando, Akiko; Fukushima, Masami; and Nakao, Hideo, 4,071,681, Cl. 542-420.000.
Nakasuna, Seikoh, to Hitachi, Ltd. Cassette tape recorder. 4,071,865, Cl. 360-105.000.
Nakatani, Mamoru: *See—*
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Nakayama, Syogo: *See—*
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Soda, Kenji; Tanaka, Hidehiko; Nakazawa, Hidetsugu; and Mitsugi, Koji, 4,071,405, Cl. 195-29.000.
Namae, Takao, to Nihon Denshi Kabushiki Kaisha. Scanning electron device. 4,071,759, Cl. 250-310.000.
Nashua Corporation: *See—*
Lathrop, Francis O., Jr.; Jacobs, Edward H.; Wood, William E.; and Taylor, Patrick A., 4,071,862, Cl. 360-97.000.
National Distillers and Chemical Corporation: *See—*
Platz, Gerald M.; and Walkup, Norris W., 4,071,325, Cl. 23-290.000.
National Geographic Society: *See—*
Schaeffer, Merle J., 4,071,066, Cl. 150-52.00J.
National Research Institute for Metals: *See—*
Nakagawa, Ryuichi; Yoshimatsu, Shiro; Ueda, Takuya; Fukuzawa, Akira; Ozaki, Tsuyoshi; Sato, Akira; and Mitsui, Tatsuro, 4,071,687, Cl. 13-10.000.
National Semiconductor Corporation: *See—*
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Nawracaj, Edward P.; and Greit, Henry A. Electrotherapeutic device with modulated dual signals. 4,071,033, Cl. 128-420.00A.
NCR Corporation: *See—*
Stewart, John W.; and Bruckner, Ronald L., 4,071,877, Cl. 361-152.000.
Ned Strongin Associates, Inc.: *See—*
Strongin, Ned; and Garrett, Isabel, 4,070,790, Cl. 46-172.000.
Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Inc. Textured multifilament yarn. 4,070,815, Cl. 57-140.00J.
Nelle, Gunther, to Dr. Johannes Heidenhain GmbH. Sealed incremental measuring device having an articulated fastening means for mounting the housing. 4,070,759, Cl. 33-125.00C.
Nelson, Robert Wayne: *See—*
Crouch, Donald Wayne; and Nelson, Robert Wayne, 4,071,727, Cl. 200-144.00B.
Nemcek, Josef: *See—*
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Nemoto, Akira: *See—*
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Neumeister, Alvin W., to Goodyear Tire & Rubber Company, The. Edge control for calender covering industrial belting. 4,070,939, Cl. 83-368.000.
New Jersey Zinc Company, The: *See—*
Robinson, Victor S., 4,071,609, Cl. 423-622.000.
Newell, Stanley Ernest, to Boeing Company, The. Anemometer compensator linearizer. 4,070,908, Cl. 73-170.00R.
Newnom, Richard S., to Amerace Corporation. Apparatus for making self-locking internally threaded fasteners with ring-like locking elements. 4,070,724, Cl. 10-162.00R.
Nezu, Yukio: *See—*
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Nichols, Roy A.; and Anderson, Francis L. Self-pasting toothbrush. 4,071,300, Cl. 401-175.000.
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Atkinson, Gary B.; and Nicks, Larry J., 4,071,473, Cl. 252-462.000.
Nicou, Oliver; and Lumbroso, Roger, to Socomaten. Installation for the treatment of metals pickling solutions. 4,071,431, Cl. 204-301.000.
Nifco Inc.: *See—*
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Nihon Denshi Kabushiki Kaisha: *See—*
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Nii, Kazuo: *See—*
Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, 4,071,889, Cl. 364-200.000.
Niklas, Ludwig; and Walker, Philip A., to Krautkramer-Branson, Incorporated. Ultrasonic pulse-echo thickness and velocity measuring method. 4,070,917, Cl. 73-598.000.
Nippert Company, The: *See—*
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Nippert, Russell A., to Nippert Company, The. Double insulated commutator. 4,071,796, Cl. 310-236.000.
Nippon Electric Co., Ltd.: *See—*
Koike, Shin'ichi; Hayashi, Seijiro; and Takayama, Michio, 4,071,827, Cl. 325-42.000.
Oguchi, Tetsuji; and Kawai, Hirokazu, 4,071,905, Cl. 364-784.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Oil Co., Ltd.: *See—*
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Nippon Paint Co., Ltd.: *See—*
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Nippon Steel Corporation: *See—*
Nishikubo, Michio; Miura, Sei; Toyoda, Toshiaki; Jonishi, Katsunori; and Yoneta, Kouichi, 4,070,893, Cl. 72-234.000.
Yamamoto, Satomi; and Yoshii, Masataka, 4,071,356, Cl. 75-59.000.
Nishikubo, Michio; Miura, Sei; Toyoda, Toshiaki; Jonishi, Katsunori; and Yoneta, Kouichi, to Nippon Steel Corporation. Finish rolling method for production of round cross-sectional shape materials. 4,070,893, Cl. 72-234.000.
Nishino, Atsushi; Sonetake, Kazunori; and Kumano, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Method of producing sheet-formed bactericidal article. 4,071,636, Cl. 427-2.000.
Nissan Motor Co., Ltd.: *See—*
Aono, Shigeo, 4,071,003, Cl. 123-119.00A.
Ezoe, Mitsuhiko, 4,071,109, Cl. 180-143.000.
Harada, Ietsuya, 4,071,006, Cl. 123-119.00A.

Nakajima, Yasuo; and Hayashi, Yoshimasa, 4,071,005, Cl. 123-119.00A.
Sakaki, Yoshihiro, 4,071,076, Cl. 165-9.000.
Nisshin Oil Mills, Ltd., The: *See—*
Kanda, Hiroshi, 4,071,406, Cl. 195-31.00P.
Nomura, Noboru: *See—*
Kaminaka, Nobuyuki; Kanai, Kenji; Nouchi, Norimoto; and Nomura, Noboru, 4,071,868, Cl. 360-113.000.
Nordgren, Robert, to General Mills Chemicals, Inc. Self-complexing galactomannan gums. 4,071,467, Cl. 252-316.000.
Nordiska Maskinfilt Aktiebolaget: *See—*
Codorniu, Francisco Lorente, 4,071,050, Cl. 139-383.00R.
North American Philips Corporation: *See—*
Kok, Pieter Willem, 4,071,231, Cl. 269-325.000.
Liebert, Richard B., 4,071,430, Cl. 204-299.00R.
North Electric Company: *See—*
Moriarty, Lawrence James, 4,071,040, Cl. 137-199.000.
North, Steven Forrest: *See—*
Broyde, Barret; Delles, Judith Archer; and North, Steven Forrest, 4,071,479, Cl. 260-2.300.
Northern Telecom Limited: *See—*
Dupuis, Jean Marcel, 4,071,180, Cl. 228-1.00R.
Kayalioglu, Inanc, 4,071,781, Cl. 307-265.000.
Sencer, Mevhibe Gulay, 4,071,713, Cl. 179-81.00A.
Norton Company: *See—*
Scott, John J., 4,070,796, Cl. 51-309.00R.
Nouchi, Norimoto: *See—*
Kaminaka, Nobuyuki; Kanai, Kenji; Nouchi, Norimoto; and Nomura, Noboru, 4,071,868, Cl. 360-113.000.
Noutomi, Masaru: *See—*
Watanabe, Hiroo; Toyoshima, Kunihiko; Noutomi, Masaru; and Yamakawa, Kouichi, 4,071,448, Cl. 210-50.000.
Nova-Lux-Gesellschaft Brandenburg & Co.: *See—*
Schneppendahl, Richard; Kramer, Heinrich; and Pepping, Franz, 4,071,750, Cl. 362-217.000.
Novello, Frederick C.: *See—*
Baldwin, John J.; and Novello, Frederick C., 4,071,518, Cl. 260-256.40R.
Nowack, Gerhard P.: *See—*
Johnson, Marvin M.; and Nowack, Gerhard P., 4,071,331, Cl. 48-197.00R.
NTN Toyo Bearing Co. Ltd.: *See—*
Deguchi, Osamu, 4,071,149, Cl. 214-6.00P.
Nugent, Edward L., to Becton, Dickinson and Company. Contaminant detector. 4,071,319, Cl. 23-254.00R.
Nunez Fuentes, Cayetano, to Ingeniera Aplicada, S.A. (INAPSA). Gripper holder bands driving mechanism for shuttleless looms. 4,070,918, Cl. 74-70.000.
Nuovo Pignone S.p.A.: *See—*
Di Sciascio, Nicola; and Vinci, Michele, 4,071,221, Cl. 251-228.000.
Santucci, Nicola; Aleksandrovic, Zabotin Aleksandr; Dmitrievich, Loschilin Evghenii; Lvovich, Galperin Aleksandr; and Archakovich, Onikov Eduard, 4,071,053, Cl. 139-436.000.
Santucci, Nicola; Aleksandrovic, Zabotin Aleksandr; Dmitrievich, Loschilin Evghenii; Lvovich, Galperin Aleksandr; Archakovich, Onikov Eduard; Aleksandrovich, Sakharov Boris; and Alekseevich, Borodin Valerian, 4,071,054, Cl. 139-436.000.
Nyi, Kayson: *See—*
Emmons, William D.; Nyi, Kayson; and Sperry, Peter R., 4,071,489, Cl. 260-22.0CB.
Nyssen, Adrianus Marinus. Spiral pipe forming machine with device for aligning spiralling rolls. 4,070,886, Cl. 72-49.000.
Oakes, George W. Rodent trap. 4,070,787, Cl. 43-94.000.
Obara, Hiroshi: *See—*
Yoshida, Masafumi; and Obara, Hiroshi, 4,071,785, Cl. 310-331.000.
Oberschachtsiek, Gerhard: *See—*
Weyer, Horst; Muhlhaus, Ludwig; and Oberschachtsiek, Gerhard, 4,071,612, Cl. 423-659.000.
O'Blasny, Richard H., to Vacsol Corporation. Method of reclaiming waste oil by distillation and extraction. 4,071,438, Cl. 208-180.000.
Occidental Petroleum Corporation: *See—*
Knell, Everett W.; and Green, Norman W., 4,071,432, Cl. 208-8.000.
Morey, Booker W., 4,071,442, Cl. 209-212.000.
Odom, James Thomas, to A. B. Chance Company. Spring-biased take-up clamp assembly for mobile home tie-down straps. 4,070,802, Cl. 52-23.000.
Oertle, Donald H., to Continental Oil Company. Port closure apparatus for differentially pressured vessels. 4,071,011, Cl. 137-317.000.
Ofa AG: *See—*
Hamel, Edmund, 4,070,818, Cl. 57-160.000.
O'Farrell, James T.: *See—*
Wood, Kenneth E.; and O'Farrell, James T., 4,071,895, Cl. 364-449.000.
Off, Joseph W. A.; and Early, Judson Horace, to Haggar Company. Belt loop trimming apparatus. 4,070,937, Cl. 83-27.000.
Offermann, Wilhelm: *See—*
Linden, Heinz; Gress, Wolfgang; and Offermann, Wilhelm, 4,071,487, Cl. 260-22.0TN.
Ogawa, Hiroshi; Ishii, Kazuhide; Nakamura, Matsuaki; Tamai, Yasuo; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording member. 4,071,654, Cl. 428-336.000.
Ogiro, Kenji: *See—*
Miyakawa, Seii; Kobayashi, Takashi; Kishi, Masaya; and Ogiro, Kenji, 4,070,743, Cl. 29-227.000.
Oguchi, Tetsuji; and Kawai, Hirokazu, to Nippon Electric Co., Ltd. Full adder/subtractor circuit employing exclusive OR logic. 4,071,905, Cl. 364-784.000.
Ohhinata, Ichiro: *See—*
Kawanami, Mitsuru; Ohhinata, Ichiro; and Okuhara, Shinzi, 4,071,779, Cl. 307-255.000.
Ohio-Nuclear, Inc.: *See—*
Covic, John; and McBride, Thomas R., 4,071,771, Cl. 250-505.000.
Ohkubo, Kazuo: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,071,621, Cl. 424-177.000.
Ohmori, Akio: *See—*
Yamamoto, Kohzo; Kawai, Syuji; and Ohmori, Akio, 4,071,454, Cl. 210-321.00A.
Ohta, Hiroshi: *See—*
Motomura, Mitsuteru; Kojima, Chiaki; Ohta, Hiroshi; and Nemoto, Akira, 4,070,772, Cl. 37-117.500.
Oka, Katsuhiko, to Asahi Fancy Plywood Co., Ltd. Method of reinforcing porous materials. 4,071,642, Cl. 427-243.000.
Okamoto, Nobukazu, to Toa Nenryo Kogyo Kabushiki Kaisha. Lubricating oil additive, process for the synthesis thereof and lubricating oil additive composition. 4,071,548, Cl. 260-462.00R.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, to Mitsubishi Chemical Industries Limited; and Okamoto, Shosuke. N^2-alkoxynaphthalenesulfonyl-L-argininamides and the pharmaceutically acceptable salts thereof. 4,071,621, Cl. 424-177.000.
Okayama, Tsutomu, to Hitachi, Ltd. Two-wire type amplifier. 4,071,823, Cl. 324-123.00R.
Oki Electric Industry Co., Ltd.: *See—*
Koyano, Hitoshi; Sugaya, Nobuo; and Shiraogawa, Michio, 4,071,849, Cl. 346-1.000.
Oki, Toshikazu: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Takamatsu, Akira; and Oki, Toshikazu, 4,071,411, Cl. 195-80.00R.
Okiyama, Toshiaki: *See—*
Takenaka, Haruo; Okiyama, Toshiaki; and Kawamata, Toshio, 4,071,362, Cl. 96-1.400.
Oku, Teruo Kyoto: *See—*
Kamiya, Takashi; Teraji, Tsutomu Toyonaka; Hashimoto, Masashi; Oku, Teruo Kyoto; Nakaguti, Osamu; Saito, Yoshihisa; and Nakamura, Hitoshi, 4,071,527, Cl. 260-306.500.
Okuhara, Shinzi: *See—*
Kawanami, Mitsuru; Ohhinata, Ichiro; and Okuhara, Shinzi, 4,071,779, Cl. 307-255.000.
Okumichi, Toshiharu: *See—*
Ishibe, Shuhei; Okumichi, Toshiharu; Ishihara, Yasushi; and Naka, Hisayoshi, 4,071,375, Cl. 106-238.000.
Okura, Zenichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera lens barrel suitable for flash photography. 4,071,850, Cl. 354-196.000.
Olin Corporation: *See—*
Cheskis, Harvey P.; Shapiro, Stanley; and Crane, Jacob, 4,071,359, Cl. 75-160.000.
Wojtowicz, John A., 4,071,605, Cl. 423-462.000.
Olsen, Emil Adolph: *See—*
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Olsen, Richard J., to Goodyear Tire & Rubber Company, The. Removable track belt with removable keeper bar. 4,071,068, Cl. 152-176.000.
Olson, Gary Lee, to Hoffmann-La Roche Inc. Pyran aldehydes. 4,071,538, Cl. 260-345.90R.
Oltman, Henry G., Jr., to Hughes Aircraft Company. Wired microstrip linear array of dipoles. 4,071,846, Cl. 343-700.0MS.
Olympic Engineering Co.: *See—*
Ball, Harry, 4,071,394, Cl. 156-465.000.
Olympus Optical Company, Ltd.: *See—*
Kato, Yutaka; Ouchi, Teruo; and Koshiishi, Kiyozo, 4,070,986, Cl. 118-7.000.
O'Neal, Larry. Flexible dock seal. 4,070,801, Cl. 52-2.000.
Ono, Koichi: *See—*
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Ono Pharmaceutical Co., Ltd.: *See—*
Takahashi, Zyuro; and Hayashi, Chozo, 4,071,413, Cl. 195-103.50R.
Onoda, Takeru; and Tomita, Shimpei, to Mitsubishi Chemical Industries Limited. Process for producing glycol monoether. 4,071,568, Cl. 260-615.00R.
Onoda, Tetsuo: *See—*
Konobe, Takeo; Onoda, Tetsuo; and Ono, Koichi, 4,071,618, Cl. 424-89.000.
Oosterhouse, Michael Jay: *See—*
Dalton, Thomas B.; Pyatt, Theodore Wayne; and Oosterhouse, Michael Jay, 4,071,274, Cl. 296-35.00A.
Oosterwijk, Hendrik Harm Jannes, to Akzona Incorporated. Novel peresters suitable for initiating the polymerization or copolymerization of ethylenically unsaturated compounds. 4,071,579, Cl. 260-866.000.
Ootsu, Fumio. Transducer for conversion of tidal current energy. 4,071,305, Cl. 417-334.000.
Oprean, George. Swimmer's drag suit. 4,071,236, Cl. 272-116.000.
Oprins, John A. E., to Ideal Industries Inc. Wire stripper. 4,070,930, Cl. 81-9.50B.
Orfeo, Sabatino R.: *See—*
Mears, Whitney H.; and Orfeo, Sabatino R., 4,071,461, Cl. 252-63.500.

Oriani, Gianni: *See—*
Ancillotti, Francesco; Oriani, Gianni; and Pescarollo, Ermanno, 4,071,567, Cl. 260-614.00A.
O'Rourke, James; and Feldberg, Murray, to Multi-Pak Corporation. Waste diverter apparatus for a waste disposal system. 4,070,961, Cl. 100-185.000.
Osan, G. Alan: *See—*
Weisser, Eugene P.; Osan, G. Alan; and Mailki, Edward P., 4,071,816, Cl. 324-30.00B.
Osipovsky, Lev Fedorovich: *See—*
Zubarev, Anatoly Ivanovich; Osipovsky, Lev Fedorovich; and Shipov, Stanislav Valeryanovich, 4,071,093, Cl. 173-105.000.
Oster, Clark L.: *See—*
Cook, James W.; Khalid, Joseph M.; and Oster, Clark L., 4,071,836, Cl. 335-195.000.
Oster Corporation: *See—*
Ernster, Peter Jacob; Collins, William Joseph; and Schaefer, George Henry, 4,071,789, Cl. 310-50.000.
Ostergaard, Neil A. Electro-static fuel mixture system. 4,071,004, Cl. 123-119.00E.
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, to Centralny Osrodek Badawczo-Rozwojowy Naszyn Wlokienniczych. Equipment for pneumatic manufacture of yarn. 4,070,812, Cl. 57-58.890.
Otis, Roger W.; and Otis, Stephen H. Floating dry storage facility for small boats. 4,070,979, Cl. 114-263.000.
Otis, Stephen H.: *See—*
Otis, Roger W.; and Otis, Stephen H., 4,070,979, Cl. 114-263.000.
Ouchi, Teruo: *See—*
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Overman, John Arthur: *See—*
Bilczo, Dale Louis; Golonka, Kenneth Anthony; Overman, John Arthur; and Carroll, John Ernest, 4,071,885, Cl. 363-64.000.
Owen, Hartley; and Venuto, Paul B., to Mobil Oil Corporation. Prolonging zeolite catalyst life in methanol conversion to gasoline by disposing of exothermic reaction heat. 4,071,573, Cl. 260-668.00R.
Owens-Corning Fiberglas Corporation: *See—*
Gilbu, Agnar, 4,071,161, Cl. 220-18.000.
Pfeifer, Kenneth D.; and Brooks, Julius C., 4,070,730, Cl. 19-.580.
Roberson, Cletis L., 4,070,731, Cl. 19-159.00R.
Owens, Gerald John, to Bell Telephone Laboratories, Incorporated. Telephone multiline automatic voice answer system. 4,071,888, Cl. 364-200.000.
Owens-Illinois, Inc.: *See—*
Karabedian, James A., 4,071,597, Cl. 264-230.000.
Oy Tampella AB: *See—*
Salmi, Pekka M., 4,070,949, Cl. 91-276.000.
Ozaki, Shoichiro; and Mori, Haruki, to Mitsui Toatsu Chemicals, Incorporated. 1-Carbamoyl-5-fluorouracil derivatives. 4,071,519, Cl. 260-256.40C.
Ozaki, Tsuyoshi: *See—*
Nakagawa, Ryuichi; Yoshimatsu, Shiro; Ueda, Takuya; Fukuzawa, Akira; Ozaki, Tsuyoshi; Sato, Akira; and Mitsui, Tatsuro, 4,071,687, Cl. 13-10.000.
P. R. Mallory & Co. Inc.: *See—*
Dey, Arabinda N., 4,071,664, Cl. 429-194.000.
Scott, Charles E., 4,071,773, Cl. 307-141.000.
Paap, Hans J.: *See—*
Arnold, Dan M.; and Paap, Hans J., 4,071,757, Cl. 250-265.000.
Pace, Incorporated: *See—*
Litt, Kenneth Curtis, 4,070,856, Cl. 60-407.000.
Pacesetter Systems Inc.: *See—*
Schulman, Joseph H., 4,071,032, Cl. 128-419.00P.
Pacholski, Jan: *See—*
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,070,812, Cl. 57-58.890.
Pacific Scientific Company: *See—*
Yang, Elmer Chensheng, 4,071,117, Cl. 188-1.00B.
Package Machinery Company: *See—*
Schoppee, Lawrence W., 4,070,851, Cl. 53-228.000.
Packaging Industries, Inc.: *See—*
Bala, John L., 4,070,951, Cl. 93-8.00R.
Padden, William R. Hydronic heating and cooling system. 4,071,078, Cl. 165-27.000.
Paden, Ernest D.; Antolik, James E.; and Boldman, Keith W. Locking means for baling wire. 4,070,734, Cl. 24-28.000.
Pallos, Ferenc M., to Stauffer Chemical Company. Formamidine insecticidal compounds. 4,071,556, Cl. 260-564.0RF.
Palmer, David Nelson; and Heikoff, Stanley, to Combustion Engineering, Inc. Coating material and method. 4,071,639, Cl. 427-156.000.
Pandeya, Arun K., to Data General Corporation. CPU-Synchronous parallel data processor apparatus. 4,071,890, Cl. 364-200.000.
Pantanella, Anthony C. Drawer illuminating device. 4,071,747, Cl. 362-127.000.
Paolinelli, Antonio: *See—*
Piccolo, Luigi; Calcagno, Benedetto; Ghirga, Marcello; and Paolinelli, Antonio, 4,071,347, Cl. 71-31.000.
Pap, Geza: *See—*
Ratcliffe, Charles T.; and Pap, Geza, 4,071,606, Cl. 423-569.000.
Pardee, Robert P., to Ball Brothers Research Corporation. Lubricants comprising dialkanolamine derivatives. 4,071,460, Cl. 252-51.50R.
Paris, Guy: *See—*
Engelhard, Philippe; Weisang, Joseph Edouard; and Paris, Guy, 4,071,437, Cl. 208-137.000.
Parker, Alfred B.: *See—*
Scragg, Robert L.; and Parker, Alfred B., 4,070,861, Cl. 60-641.000.
Parker, Phillip H., to Chevron Research Company. Epoxide thermal stabilization additive for polypyrrolidone. 4,071,486, Cl. 260-18.00N.
Patelhold Patentverwertungs- & Elektro-Holding AG: *See—*
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Patterson, John A., to Texaco Inc. Detergent builders and composition containing the same. 4,071,476, Cl. 252-557.000.
Paul, Stewart N., to Chemed Corporation. Precipitation of iron related color bodies. 4,071,450, Cl. 210-53.000.
Payne, Philip Wallace. Underwater voice communicator. 4,071,110, Cl. 181-127.000.
Pearce, Roscoe L., to Dow Chemical Company, The. Selective separation of sulfur oxides from carbon dioxide in an effluent gas stream. 4,071,602, Cl. 423-243.000.
Pearson, Alan; and Hart, Leroy D., to Aluminum Company of America. Production of continuous ceramic fibers. 4,071,594, Cl. 264-63.000.
Pecka, Richard D.; and Templin, Raymond J. Can mounting clip. 4,071,218, Cl. 248-221.400.
Pedersen, John A., to Wheelabrator-Frye Inc. Reinforced finger seal for shot blast cabinets and the like. 4,070,799, Cl. 51-426.000.
Peerless Machine & Tool Corporation: *See—*
Meadors, William R., 4,071,598, Cl. 264-295.000.
Pejcha, Ivan. Apparatus for aligning the head-arm assemblies of a rotary actuated disc drive. 4,071,867, Cl. 360-109.000.
Pelligrino, Paul A.: *See—*
Schneider, Raymond C.; and Pelligrino, Paul A., 4,070,926, Cl. 74-730.000.
Pelser, Eric W. Support structure. 4,071,113, Cl. 182-181.000.
Pepper, William, Jr., to Peptek, Inc. Human-machine interface apparatus. 4,071,691, Cl. 178-19.000.
Pepperman, Armand B., Jr.; Daigle, Donald J.; and Vail, Sidney L., to United States of America, Agriculture. Water soluble adduct of hydroxymethyl phosphorous compound and ammonia or amine compound and method of preparation. 4,071,501, Cl. 260-67.00R.
Pepping, Franz: *See—*
Schneppendahl, Richard; Kramer, Heinrich; and Pepping, Franz, 4,071,750, Cl. 362-217.000.
Peptek, Inc.: *See—*
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Peradze, Tamaz Vladimirovich; Fridman, Eidlya Abramovna; Zheleznova, Nina Vsevolodovna; Kolikov, Vsevolod Mikhailovich; Bresler, Semen Khaimovich-Efimovich; Mchedlishvili, Boris Viktorovich; Molodkin, Viktor Mikhailovich; Molodkina, Ljudmila Mikhailovna; and Katushkina, Nina Vasilievna. Method of producing vaccines. 4,071,619, Cl. 424-90.000.
Perkins, Charles H., to Robertshaw Controls Company. Solar heat collector system, parts therefor and methods. 4,071,018, Cl. 126-271.000.
Perkins, George C. Radio frequency cautery instrument and control unit therefor. 4,071,028, Cl. 128-303.140.
Pernicano, Vincent S.; and Wright, Michael R., to Art-On Designs, Inc. Packaged shirt with record album stiffener. 4,071,139, Cl. 206-216.000.
Pescarollo, Ermanno: *See—*
Ancillotti, Francesco; Oriani, Gianni; and Pescarollo, Ermanno, 4,071,567, Cl. 260-614.00A.
Peschmann, Kristian, to U.S. Philips Corporation. Electroradiographic device. 4,071,763, Cl. 250-374.000.
Peters, Charles Luther, Jr., to Box Innards, Inc. Structure for locking partitions in open position. 4,071,185, Cl. 229-28.00R.
Peters, Mark A., to Hazen Research, Inc. Process for recovering zinc from steel-making flue dust. 4,071,357, Cl. 75-103.000.
Peters, Michael Noel: *See—*
Clark, William Frederick; Baxendale, Philip Noel; and Peters, Michael Noel, 4,071,364, Cl. 96-36.000.
Peterson, Charles R. Adjustable bed mechanism for a casket. 4,070,737, Cl. 27-12.000.
Peterson, R. Kenneth: *See—*
Dively, Charles R.; and Peterson, R. Kenneth, 4,071,098, Cl. 175-53.000.
Peterson, Robert A. Refuse compactors. 4,070,962, Cl. 100-209.000.
Petrocci, Alfonso N.; Merianos, John J.; and Green, Harold A., to Kewanee Industries. Synergistic antimicrobial mixtures. 4,071,628, Cl. 424-249.000.
Petrolite Corporation: *See—*
Quinlan, Patrick M., 4,071,464, Cl. 252-180.000.
Quinlan, Patrick M., 4,071,746, Cl. 252-392.000.
Petrow, Vladimir: *See—*
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Grunwell, Joyce F.; and Petrow, Vladimir, 4,071,625, Cl. 424-238.000.
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Pevrick Engineering Company, Inc.: *See—*
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Pfeifer, Kenneth D.; and Brooks, Julius C., to Owens-Corning Fiberglas Corporation. Production of chopped fibers. 4,070,730, Cl. 19-.580.
Pfeiffer, G. William, to Minnesota Mining and Manufacturing Company. Stethoscope. 4,071,694, Cl. 179-1.0ST.
Pfeuti, Ulrich: *See—*
Aenishaenslin, Werner; Suter, Fritz; Pfeuti, Ulrich; and Haag, Paul, 4,070,965, Cl. 101-228.000.
Phillips, Charles M., Jr. Interrupter. 4,071,872, Cl. 361-56.000.

Phillips, Paul Millard; and Donaldson, John Gleason, to GTE Sylvania Incorporated. Glass for metal seal. 4,071,658, Cl. 428-555.000.

Phillips Petroleum Company: *See—*
- Banks, Robert L.; and Kenton, Joseph R., 4,071,471, Cl. 252-437.000.
- Edmonds, James T., Jr., 4,071,509, Cl. 260-79.000.
- Gifford, Phillip H., II, 4,071,434, Cl. 208-11.0LE.
- Hanson, Donald O., 4,071,433, Cl. 208-11.0LE.
- Johnson, Marvin M.; and Nowack, Gerhard P., 4,071,331, Cl. 48-197.00R.
- Kraus, Gerard; and Hunt, Harold R., 4,071,496, Cl. 260-42.360.
- Meister, John J., 4,071,457, Cl. 252-8.55D.
- Richards, Frank P.; and Taylor, Raymond C., 4,070,953, Cl. 93-39.10R.
- Roof, Lewis B., 4,070,913, Cl. 73-422.0GC.
- Uraneck, Carl A.; Burleigh, John E.; and Solomon, Paul W., 4,071,679, Cl. 526-338.000.

Phipps, Jack R.: *See—*
- Thuren, John B.; Datwyler, Walter F., Jr.; and Phipps, Jack R., 4,071,013, Cl. 123-32.0SP.

Physical Systems, Inc.: *See—*
- Hutter, Charles G., III; and Hutter, Peter S., 4,071,338, Cl. 55-385.00C.

Piasecki Aircraft Corporation: *See—*
- Piasecki, Frank N.; and Meyers, Donald N., 4,071,207, Cl. 244-23.00D.

Piasecki, Frank N.; and Meyers, Donald N., to Piasecki Aircraft Corporation. Vertical take-off aircraft. 4,071,207, Cl. 244-23.00D.

Piccolo, Luigi; Calcagno, Benedetto; Ghirga, Marcello; and Paolinelli, Antonio, to Societa' Italiana Resine S.I.R. S.p.A. Novel composition for use in agriculture as soil improvers and fertilizers and process for their production. 4,071,347, Cl. 71-31.000.

Picker Corporation: *See—*
- Brunnett, Carl J.; Cox, Jerome R., Jr.; Snyder, Donald L.; and Mattson, Rodney A., 4,071,769, Cl. 250-445.00T.

Pickles, Sidney, to E-Systems, Inc. Radio navigation antenna system. 4,071,847, Cl. 343-761.000.

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- Collier, John R.; and Pilette, Yvan P., 4,071,367, Cl. 96-79.000.

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- Duncan, Angus Dougal, 4,070,936, Cl. 83-12.000.

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Pishioneri, Philip J. Holder for welding electrode. 4,071,733, Cl. 219-141.000.

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- Brana, George; and Vijayendran, Bheema Rao, 4,071,655, Cl. 428-403.000.
- Macari, Leonard J.; and Canevari, Louis T., 4,071,104, Cl. 177-229.000.

Pitt, Harold M., to Stauffer Chemical Company. Use of free radical initiators in thiolcarbamate preparation. 4,071,423, Cl. 204-158.00R.

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- Steckler, Robert, 4,071,508, Cl. 260-79.3MU.

Platz, Gerald M.; and Walkup, Norris W., to National Distillers and Chemical Corporation. Ethylene polymerization reactor. 4,071,325, Cl. 23-290.000.

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Plueddemann, Edwin P., to Dow Corning Corporation. Silicon-containing chelating composition and method therefor. 4,071,546, Cl. 260-448.20N.

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- Dittrich, Wolfhart; Heuer, Helmut; Kamm, W. F. G.; Kipp, Thorwald; Luhr, Gerhard; and Poggemeier, Erich, 4,071,637, Cl. 427-12.000.

Polak, James C., to General Motors Corporation. Planetary gearing arrangement for a transmission. 4,070,927, Cl. 74-765.000.

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- Bourgeois, Gerard J.; and Sahatjian, Ronald A., 4,071,366, Cl. 96-73.000.
- Johnson, Bruce K., 4,071,851, Cl. 354-354.000.
- Scibilia, Peter A., 4,071,294, Cl. 352-72.000.

Pollock, Eugene J. Loop integration control system. 4,071,744, Cl. 364-105.000.

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Porro, Luigi. Apparatus for making chips of thermoplastic material. 4,071,307, Cl. 425-72.00R.

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- Gisser, Henry; and Portnoy, Seymour, 4,071,678, Cl. 526-328.000.

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- Diluiso, Arthur A.; and Post Machinery Company, Inc., 4,070,960, Cl. 100-49.000.

Potomac Applied Mechanics, Inc.: *See—*
- Stubbings, James Henry, 4,070,890, Cl. 72-129.000.

Pott, James T.: *See—*
- Kinkead, Jordan A.; Pott, James T.; Sherman, Roger M.; and Sullivan, Eugene F., 4,071,152, Cl. 214-75.00R.

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- Russell, John L., Jr.; and Potthoff, Robert Edward, 4,071,017, Cl. 126-271.000.

PPG Industries, Inc.: *See—*
- Bohy, August G.; and Barch, Herbert W., 4,071,341, Cl. 65-11.00W.
- Bosso, Joseph F.; and Wismer, Marco, 4,071,428, Cl. 204-181.00C.
- Griffiths, David H., 4,071,339, Cl. 65-3.00R.
- Melle, Carl A., 4,071,340, Cl. 65-11.00R.
- Schaefer, William L.; and Briar, Thomas J., 4,071,342, Cl. 65-11.00R.

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- Schimmelman, Arthur H., 4,070,745, Cl. 29-268.000.

Pressure Science Incorporated: *See—*
- Halling, Horace P.; and Sadoff, Bernard J., Jr., 4,071,268, Cl. 285-95.000.
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Price, Donald L. Electrical power supply method and system for open pit mining equipment. 4,071,124, Cl. 191-12.00R.

Price, James B.: *See—*
- Estreicher, Isabelle E.; and Price, James B., 4,071,397, Cl. 156-662.000.

Pritchard, Roger D. Corner gussett. 4,071,301, Cl. 403-231.000.

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- Strassel, Albert, 4,071,390, Cl. 156-239.000.

Proper, David Staples: *See—*
- Feierabend, Louis Bock; and Proper, David Staples, 4,071,869, Cl. 360-135.000.

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Prugnaud, Robert Louis, to Laboratoire Theranol. Processes, reagents and means for early diagnosis of pregnancy. 4,071,314, Cl. 23-230.00B.

Pugliese, Peter, to Xienta, Inc. Apparatus and methods for performing in-vivo measurements of enzyme activity. 4,071,020, Cl. 128-2.00A.

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Purdue Research Foundation: *See—*
- Ash, Stephen R.; Wilcox, Philip G.; and Kessler, David P., 4,071,444, Cl. 210-22.00A.

Pury, Thomas; Konle, Robert L.; and Sivertsen, Marvin L., to General Electric Company. Palpator for x-ray spot film device. 4,071,767, Cl. 250-444.000.

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- Dalton, Thomas B.; Pyatt, Theodore Wayne; and Oosterhouse, Michael Jay, 4,071,274, Cl. 296-35.00A.

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Queen's University at Kingston: *See—*
- Wolfe, Saul, 4,071,512, Cl. 260-239.00A.

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- Lynch, Jerome G.; and Quigley, William A., 4,071,688, Cl. 174-138.00R.

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- Boessler, Hanns; Quis, Peter; Buechse, Joachim; and Rauch, Hubert, 4,071,653, Cl. 428-332.000.

Qureshi, Faiz Mohammad. Slide rule cursor. 4,071,189, Cl. 235-70.00B.

R. Alkan & Cie.: *See—*
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Radecki, Tony: *See—*
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Rademachers, Jakob, to Bayer Aktiengesellschaft. Hardener for production solid foams or compact structure from aqueous solutions. 4,071,480, Cl. 260-2.50F.

Raimondi, Albert A.; Kaufman, Howard N.; and Wood, Norman J., to Westinghouse Electric Corporation. Static sealing mechanism for a compressor. 4,071,254, Cl. 277-3.000.

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Ramirez, Ernest R., to Swift & Company. Dewatering of wastewater treatment wastes. 4,071,447, Cl. 210-44.000.

Randall, Hubert E. Reversible outboard motor with exhaust gas discharge control. 4,070,983, Cl. 115-17.000.

Randen, Neil A.: *See—*
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Rank Organisation Limited, The: *See—*
- Siddall, Graham John, 4,070,762, Cl. 33-174.00Q.

Ranzanigo, Pierluigi, to Bassani Ticino S.p.A. Fuse cartridge. 4,071,837, Cl. 337-268.000.

Raspet, Jernej; and Zagar, Marjan, to Slovenske zelezarne Tovarna Verig s.p.o. Snow chain for tires of motor vehicles for quick mounting. 4,071,069, Cl. 152-213.00A.

Ratcliffe, Charles T.; and Pap, Geza, to Allied Chemical Corporation. Sulfur dioxide with coal. 4,071,606, Cl. 423-569.000.

Rattner, Richard G. Package and display device. 4,071,140, Cl. 206-295.000.

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- Ermel, Heinrich; Fruth, Franz; Fryda, Georg; Lang, Peter; Rau, Fritz; and Vossnacke, Jurgen, 4,071,296, Cl. 355-15.000.

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Raymond Lee Organization: *See—*
- Seager, Reuben, 4,071,219, Cl. 248-534.000.

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- Gallacci, Joe, 4,071,021, Cl. 128-52.000.
- Yakiwchuk, John, 4,070,771, Cl. 37-53.000.

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- Legat, Wilhelm H.; Taft, Keith G.; and Tiefert, Karl H., 4,070,748, Cl. 29-577.00C.

RCA Corporation: *See—*
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- Isham, Robert Haynes, II, 4,071,776, Cl. 307-228.000.
- Kannam, Peter Joseph, 4,071,852, Cl. 357-13.000.
- Kongelka, Robert Michael, 4,071,217, Cl. 248-309.00R.
- McGuffin, William George, 4,071,825, Cl. 325-38.00B.
- Muhlfelder, Ludwig; Keigler, John Edward; and Stewart, Brian, 4,071,211, Cl. 244-165.000.
- Pinch, Harry Louis; Abeles, Benjamin; and Gittleman, Jonathan Isaac, 4,071,426, Cl. 204-192.00F.
- Warren, Charles Stewart, 4,071,706, Cl. 179-15.0AL.

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Red Wing Shoe Company, Inc.: *See—*
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- Thompson, Walter F.; and Redo, Dennis M., 4,071,150, Cl. 214-16.40R.

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- Ciborowski, Stanislaw; Szczypinski, Zbigniew; Balcerzak, Kazimierz; Jaworski, Andrzej; Kasznia, Andrzej; Krzysztoforski, Andrzej; Kurowski, Stanislaw; Redzi, Jan; and Szparski, Jozef, 4,071,561, Cl. 260-586.00P.

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- Lombard, Claude Edmond; and Bouvet, Jean-Marie, 4,071,042, Cl. 137-332.000.

Rehder, Robert Henry, to Canadian General Electric Co., Ltd. Structure for electrical interface. 4,071,882, Cl. 361-333.000.

Reid, Luther James. Chemical reactor. 4,071,324, Cl. 23-288.00K.

Reidy, Robert A. Holder for paint cans and the like. 4,071,214, Cl. 248-211.000.

Reinhardt, Jack; Moehle, Kenneth Albert; and Hinke, Jerald Dietrich. Hydraulic clutch-controlled transmission gear detent system. 4,070,914, Cl. 74-475.000.

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Rentzea, Costin; Zeeh, Bernd; Koenig, Karl-Heinz; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. 1-Alkylcarbamoyl-3-(3,5-dichlorophenyl)-hydantoins. 4,071,685, Cl. 548-312.000.

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- Konobe, Takeo; Onoda, Tetsuo; and Ono, Koichi, 4,071,618, Cl. 424-89.000.

Retzlaff, Reynold R. Bracket connection for backhoe and skip loader. 4,071,154, Cl. 214-145.00A.

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- Bubik, Alfred; Reutter, Siegfried; Schultz, Hans-Joachim; and Stotz, Wolf-Gunter, 4,071,401, Cl. 162-300.000.

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Ribbecke, Lawrence F.; and Shu, Chi Chen, to Sapolin Paints, Inc. Water dispersible alkyd paint composition. 4,071,514, Cl. 260-22M.

Richan, Max R. Ore separating method and apparatus. 4,071,143, Cl. 209-444.000.

Richard, Pierre D.; and Tessier, Claude R., to Societe des Telephones Picart Lebas. Push-button switch for a multifrequency dialling telephone set. 4,071,715, Cl. 179-90.00K.

Richards, Frank P.; and Taylor, Raymond C., to Phillips Petroleum Company. Method for producing a container. 4,070,953, Cl. 93-39.10R.

Richards, Marvin David. Suspension game. 4,071,244, Cl. 273-275.000.

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- Grunwell, Joyce F.; and Petrow, Vladimir, 4,071,625, Cl. 424-238.000.

Richcreek, Harry G. Prawn trap. 4,070,788, Cl. 43-100.000.

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Richmond, James W.; and Rhodes, Earl H., Jr., to Stryker Corporation. Angle handpiece. 4,071,029, Cl. 128-305.000.

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- Jovic, Nicola Ljotic; and Rinker, Steven Allen, 4,071,699, Cl. 179-5.500.

Riopelle, Joseph A., to Midland-Ross Corporation. Method for case hardening powdered metal parts. 4,071,382, Cl. 148-126.000.

Risher, Francis E. Tool sharpening apparatus. 4,070,929, Cl. 76-82.000.

Roberson, Cletis L., to Owens-Corning Fiberglas Corporation. Method of and apparatus for packaging a linear fibrous element. 4,070,731, Cl. 19-159.00R.

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- Kalippke, Harald; Gerber, Richard; and Ehrmann, Karl, 4,071,792, Cl. 310-70.00R.

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Robertshaw Controls Company: *See—*
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Robinson, Dale D. Failsafe fluid control valve. 4,071,038, Cl. 137-59.000.

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Robinson, Richard L.; and Volgyesy, Ivan L., to Indian Head Inc. Electrical junction and switch boxes. 4,071,159, Cl. 220-3.200.

Robinson, Ronald R.: *See—*
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Robinson, Victor S., to New Jersey Zinc Company, The. Method for preparing particulate zinc oxide shapes of high surface area and improved strength. 4,071,609, Cl. 423-622.000.

Rockwell International Corporation: *See—*
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- Huffman, Charles E.; McGuire, Robert J.; and Waddill, John W., 4,071,700, Cl. 179-15.0BF.
- Schuldt, Theodore J., 4,071,894, Cl. 364-430.000.

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- Kunin, Robert, 4,071,446, Cl. 210-32.000.

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Russell, Frank B., to Swift & Company. Non-releasable hand grip for package or loop handle of a bag. 4,071,063, Cl. 150-12.000.
Russell, John L., Jr.; and Potthoff, Robert Edward, to General Atomic Company. Tensioned reflector support system. 4,071,017, Cl. 126-271.000.
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Schmidt, Gunther, 4,071,346, Cl. 65-351.000.
Werner, Alfons; Roth, Mario; Siemonsen, Hans-Peter; and Winandi, Johann, 4,071,345, Cl. 65-273.000.
Saito, Yoshihisa: *See—*
Kamiya, Takashi; Teraji, Tsutomu Toyonaka; Hashimoto, Masashi; Oku, Teruo Kyoto; Nakaguti, Osamu; Saito, Yoshihisa; and Nakamura, Hitoshi, 4,071,527, Cl. 260-306.500.
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Sakaki, Yoshihiro, to Nissan Motor Co., Ltd. Sealing member for a rotary heat-accumulator type heat exchanger for a gas turbine engine. 4,071,076, Cl. 165-9.000.
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Salmi, Pekka M., to Oy Tampella AB. Hydraulic striking apparatus. 4,070,949, Cl. 91-276.000.
Salter, Lowell S., Jr., to Morgan Construction Company. Flexible seal element with reinforced drain labyrinth. 4,071,255, Cl. 277-57.000.
Sami, Yasuo, to Sanyo Electric Co., Ltd. Tape cartridge positioning and ejection device. 4,071,859, Cl. 360-96.000.
Sander, Willy M.: *See—*
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Sanders Associates, Inc.: *See—*
Holl's, Ernest E., 4,070,769, Cl. 35-10.400.
Sanders, Duane, to Thermoguard Insulation Company. Open top plastic bag sealer. 4,070,853, Cl. 53-373.000.
Sandoz, Inc.: *See—*
Mattner, Paul G.; and Smith, Joseph A., 4,071,557, Cl. 260-570.0AB.
Schwarz, Hans J., 4,071,516, Cl. 260-251.0QB.
Sandoz Ltd.: *See—*
Wiskott, Erik; and Troxler, Franz, 4,071,630, Cl. 424-256.000.
Sandvik, Roger H.; and Huebscher, Richard G., to Design & Manufacturing Corporation. Fluid actuator. 4,070,946, Cl. 91-25.000.
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Yanagisawa, Hiroaki; Ando, Akiko; Fukushima, Masami; and Nakao, Hideo, 4,071,681, Cl. 542-420.000.
Santala, Teuvo J., to Texas Instruments Incorporated. Solar absorption surface panel. 4,071,659, Cl. 428-677.000.
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Sato, Kuniaki, to Kajima Corporation. Hollow steel column base member and welding thereof. 4,070,837, Cl. 52-297.000.
Satoh, Tsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Signal transmission system. 4,071,714, Cl. 179-82.000.
Satt, Henry; and Neuberg, Dave. Foldable playpen. 4,070,716, Cl. 5-99.00C.
Sattelmeyer, Richard: *See—*
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Saucy, Gabriel: *See—*
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Sauer, Gerd, to Saint-Gobain Industries. Windows bearing an inscription. 4,070,781, Cl. 40-219.000.
Saul, Franz J. Packing container or receptacle. 4,071,064, Cl. 150-48.000.
Savran, Vasily Grigorievich: *See—*
Zarechensky, Anatoly Vasilievich; Kolechko, Alexei Afanasievich; Manov, Vladimir Mikhailovich; Korjukova, Alla Grigorievna; Savran, Vasily Grigorievich; and Serenko, Alexandr Nikitich, 4,071,734, Cl. 219-146.310.
Sawachika, Yasumasa; and Kawakami, Hiroshi, to Kohkoku Chemical Industry Co., Ltd. Process for preparing flexible flame retarding polyurethane foams. 4,071,484, Cl. 260-2.5AT.
Scamaton, William Bertram, to Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, The. Electro-explosive igniters. 4,070,970, Cl. 102-28.00R.
Schaefer, George Henry: *See—*
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Schaefer, Klaus Dieter: *See—*
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Schaefer, William L.; and Briar, Thomas J., to PPG Industries, Inc. Apparatus for forming glass fibers. 4,071,342, Cl. 65-11.00R.
Schaeffer, Merle J., to National Geographic Society. Underwater camera casing. 4,071,066, Cl. 150-52.00T.
Schaffter, Craig, to TRW, Inc. Time slot interchanger. 4,071,703, Cl. 179-15.0AQ.
Schauer, Siegfried, to Gebr. Pfeiffer AG. Bypass separator. 4,071,441, Cl. 209-144.000.
Scheinberg, Israel Herbert. Preparation and method of use of enzyme effective for conversion and detection of carbon monoxide. 4,071,037, Cl. 131-266.000.
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Schera, Enos L., Jr. Motion operated power apparatus. 4,071,114, Cl. 185-30.000.
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Scherrer, Herbert; Bopp, Ernst; and Cecchetto, Ennio, to Franz Buttner AG. Cassette for dye impregnated ribbon. 4,071,133, Cl. 197-168.000.
Schick, Gunther, to Grapha-Holding AG. High performance sheet-feeder mechanism. 4,071,234, Cl. 271-11.000.
Schimmelman, Arthur H., to Precision Dynamics Corporation. Crimping tool. 4,070,745, Cl. 29-268.000.
Schindler, Hans-Dieter, deceased: *See—*
Kummer, Rudolf; Schwirten, Kurt; Schindler, Hans-Dieter, deceased; Lang nee Schindler, Ute, heir-at-law; and Schindler, Rainer, heir-at-law, 4,071,563, Cl. 260-601.00R.
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Kummer, Rudolf; Schwirten, Kurt; Schindler, Hans-Dieter, deceased; Lang nee Schindler, Ute, heir-at-law; and Schindler, Rainer, heir-at-law, 4,071,563, Cl. 260-601.00R.
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Kummer, Rudolf; Schwirten, Kurt; Schindler, Hans-Dieter, deceased; Lang nee Schindler, Ute, heir-at-law; and Schindler, Rainer, heir-at-law, 4,071,563, Cl. 260-601.00R.
Schlaepfer, Robert J., to Jacob Schlaepfer & Co. A.G. Decoration of sheet materials. 4,071,387, Cl. 156-148.000.
Schlatter, James C.; and Taylor, Kathleen C., to General Motors Corporation. Process for improved 3-way emission control. 4,071,600, Cl. 423-213.700.
Schlau, Floyd E.; Morrison, Howard J.; and Keller, Albert G., to Marvin Glass & Associates. Stamp design kit. 4,070,967, Cl. 101-301.000.
Schlesinger, Sheldon I.; and Cochran, Veronica, to American Can Company. Copolymer of glycidyl methacrylate and allyl glycidyl ether. 4,071,671, Cl. 526-89.000.
Schloemann-Siemag Aktiengesellschaft: *See—*
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Bollig, Georg; Streubel, Hans; and Kolakowski, Manfred, 4,071,074, Cl. 164-448.000.
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Schmeisser, Walter; and Talasz, Johann, to J. M. Voith GmbH. Apparatus for shielding moving parts in fluid-operated machines. 4,071,128, Cl. 192-133.000.
Schmelzer Corporation: *See—*
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Schmelzer, Heinz: *See—*
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Schmidt, Gunther, to Saint-Gobain Industries. Apparatus for thermal tempering sheets of glass. 4,071,346, Cl. 65-351.000.
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Schmidt, Oskar. Molded vehicular tire with internal reinforcing webs. 4,071,070, Cl. 152-333.000.
Schmiesing, Gregory. Feed bunk structure. 4,070,991, Cl. 119-58.000.
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Schneppendahl, Richard; Kramer, Heinrich; and Pepping, Franz, to Nova-Lux-Gesellschaft Brandenburg & Co. Light diffuser and lamp incorporating the same. 4,071,750, Cl. 362-217.000.
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Schoeller International GmbH & Co. KG: *See—*
Steinlein, Rudolf F.; and Schoeller, Christina, 4,071,162, Cl. 220-21.000.
Schoen, Lowhardt A. A., to Stamicarbon, N.V. Preparation of lactone polyesters. 4,071,507, Cl. 260-78.30R.
Schoen, Roy C., to General Motors Corporation. DC motor with permanent magnet retaining structure. 4,071,794, Cl. 310-154.000.
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Scholey, Stuart: *See—*
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Schoppee, Lawrence W., to Package Machinery Company. Gum stick wrapping machine. 4,070,851, Cl. 53-228.000.
Schorsch, Eugene; and Sutherland, Spurgen, to Sun Shipbuilding & Dry Dock Company. Ship performance analyzer. 4,071,898, Cl. 364-551.000.
Schott, Marcel: *See—*
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Schreyer, Kenneth D.; and Rohosy, Soma M., to Columbus McKinnon Corporation. Chain hook. 4,070,823, Cl. 59-93.000.
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Schroeder, Josef; and Schellhammer, Carl-Wolfgang, to Bayer Aktiengesellschaft. Optical brighteners. 4,071,466, Cl. 252-301.220.
Schuldt, Theodore J., to Rockwell International Corporation. Profile warning generator with anticipation of warning condition. 4,071,894, Cl. 364-430.000.
Schulman, Joseph H., to Pacesetter Systems Inc. Implantable living tissue stimulators. 4,071,032, Cl. 128-419.00P.
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Schupner, Willard J., to Efdyn Corporation. Adjustable shock absorber. 4,071,122, Cl. 188-285.000.
Schuster, Albert J., Jr.; and Martin, John, to Dow Chemical Company, The. Process for producing 3-substituted 1,2,4-triazines. 4,071,684, Cl. 544-182.000.
Schwarz, Hans J., to Sandoz, Inc. 4-(Acyloxyphenyl)-quinazolin-2(1H)-ones. 4,071,516, Cl. 260-251.0QB.
Schwemer, Warren C., to Advanced Technology Center, Inc. Method of producing homogeneous carbon and graphite bodies. 4,071,604, Cl. 423-445.000.
Schwirten, Kurt: *See—*
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Schwuger, Milan Johann; Smolka, Heinz; Altenschopfer, Theodor; and Rostek, Manfred, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Method of mechanical dishwashing and compositions. 4,071,377, Cl. 134-29.000.
Scibilia, Peter A., to Polaroid Corporation. Photographic apparatus including improved aperture plate. 4,071,294, Cl. 352-72.000.
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Scott, Charles E., to P. R. Mallory & Co. Inc. Patch cord timer. 4,071,773, Cl. 307-141.000.
Scott, John J., to Norton Company. Method of producing abrasive grits. 4,070,796, Cl. 51-309.00R.
Scragg, Robert L.; and Parker, Alfred B., to Solar Reactor Corporation. Solar reactor combustion chamber. 4,070,861, Cl. 60-641.000.
Seager, Reuben, to Raymond Lee Organization. Fishing rod support device. 4,071,219, Cl. 248-534.000.
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Sederquist, Richard A., to United Technologies Corporation. Steam reforming process and apparatus therefor. 4,071,330, Cl. 48-94.000.
Sedlmayer, Franz; Baron, Paul; and Seifert, Klaus, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Off-shore drilling platform and method of mounting. 4,070,868, Cl. 61-91.000.
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Seltzer, Raymond; and Gordon, David A., to Ciba-Geigy Corporation. Hydantoin diglycidyl compounds. 4,071,477, Cl. 260-2.00N.
Sencer, Mevhibe Gulay, to Northern Telecom Limited. Telephone speech network. 4,071,713, Cl. 179-81.00A.
Senes, Michel; Le Goff, Yannick; and Gourdier, Jean-Francois, to Societe Chimique de la Grande Paroisse, Azote et Produits Chi-

miques. Catalyst for the purification of effluent gases containing oxides of nitrogen as impurity. 4,071,472, Cl. 252-455.00R.
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Shields, Walter A. Apparatus for holding hypodermic needles straight and placing sheaths thereon. 4,070,756, Cl. 29-809.000.
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Shimono, Junichi. Pushbutton operated door locks. 4,070,881, Cl. 70-315.000.
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Shinitzky, Meir; and Bruck, Abraham, to Elscint, Ltd. Method for evaluating perinatal lung maturity. 4,071,770, Cl. 250-461.00B.
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Shutt, George T. Method for treating oxidized steel surfaces. 4,071,380, Cl. 148-6.15R.
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Siddall, Graham John, to Rank Organisation Limited, The. Measuring apparatus. 4,070,762, Cl. 33-174.00Q.
Siegmund, Walter P., to American Optical Corporation. Method of making intraocular lenses. 4,071,343, Cl. 65-23.000.
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Sinke, Gerard C., to Dow Chemical Company, The. Method of removing sulfur from coal. 4,071,328, Cl. 44-1.00R.
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Goldammer, Georg; and Beitzinger, Kurt, 4,070,814, Cl. 57-89.000.
Skis Rossignol S.A. Club Rossignol S.A.: *See—*
Legrand, Maurice Francois; and Cholat-Serpoud, Gerard, 4,071,264, Cl. 280-610.000.
Sklar, Stanley, to American Home Products Corporation. Stabilization of oxygen sensitive dose forms. 4,071,620, Cl. 424-175.000.
Skurkiss, Peter Kenny: *See—*
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Sladdin, Stuart Rodney; and Thorneycroft, Malcolm, to Charles Churchill Limited. Machine tools. 4,070,934, Cl. 82-2.00R.
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Raspet, Jernej; and Zagar, Marjan, 4,071,069, Cl. 152-213.00A.
Slusarchyk, William A.: *See—*
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Graat, Johannes W., 4,071,322, Cl. 23-262.000.
Smith, Arthur C. Starting apparatus for rodeo events. 4,070,988, Cl. 119-15.50A.
Smith International, Inc.: *See—*
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Smith, Jackson A. Crimping device. 4,070,894, Cl. 72-292.000.
Smith, John L.; and Alexander, Clair B., to Ibec Industries, Inc. Proximity switch for fluid cylinders. 4,071,725, Cl. 200-82.00E.
Smith, Joseph A.: *See—*
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Smith, Lewis S.: *See—*
Vanzo, Edward; and Smith, Lewis S., 4,071,670, Cl. 526-88.000.
Smith, Raymond E., Jr. Aerial lift. 4,070,807, Cl. 52-109.000.
Smith, Robert H., to Atlantic Richfield Company. Denitrogenation of syncrude. 4,071,435, Cl. 208-91.000.
Smithen, Carey Ernest: *See—*
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Schwuger, Milan Johann; Smolka, Heinz; Altenschopfer, Theodor; and Rostek, Manfred, 4,071,377, Cl. 134-29.000.
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Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Tupitsyn, Konstantin Konstantinovich; Gurkov, Konstantin Stepanovich; Klimashko, Vladimir Vasilievich; Rozhkov, Leonid Georgievich; Bondar, Mikhail Jurievich; and Smolyanitsky, Boris Nikolaevich, 4,070,948, Cl. 91-234.000.

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Ancillotti, Francesco; Oriani, Gianni; and Pescarollo, Ermanno, 4,071,567, Cl. 260-614.00A.
Sneed, Robert C.; and Young, Joseph C., to Fas-Line Sales and Rentals, Inc. Laying of flexible pipe. 4,071,203, Cl. 242-86.600.
Snyder, Donald L.: *See—*
Brunnett, Carl J.; Cox, Jerome R., Jr.; Snyder, Donald L.; and Mattson, Rodney A., 4,071,769, Cl. 250-445.00T.
Sobecks, Ronald S., to Design & Manufacturing Corporation. Thermal fluid displacement actuator. 4,070,859, Cl. 60-530.000.
Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Piccolo, Luigi; Calcagno, Benedetto; Ghirga, Marcello; and Paolinelli, Antonio, 4,071,347, Cl. 71-31.000.
Societe Anonyme D.B.A.: *See—*
Courbot, Pierre; and Meyer, Yves, 4,071,123, Cl. 188-331.000.
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Societe Anonyme des Usines Chausson: *See—*
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Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See—*
Senes, Michel; Le Goff, Yannick; and Gourdier, Jean-Francois, 4,071,472, Cl. 252-455.00R.
Societe Chimique des Charbonnages: *See—*
Begou, Patrick, 4,071,493, Cl. 260-42.130.
Societe des Telephones Picart Lebas: *See—*
Richard, Pierre D.; and Tessier, Claude R., 4,071,715, Cl. 179-90.00K.
Societe Francaise d'Equipements pour la Navigation Aerienne: *See—*
Sicre, Jean-Luc, 4,071,893, Cl. 364-427.000.
Societe Lorraine de Laminage Continu: *See—*
Rault, Daniel Raymond, 4,071,657, Cl. 428-646.000.
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Zumsteg, Alphonse Ernst; Engdahl, Jean; and Huguenin, Raymond, 4,071,797, Cl. 310-361.000.
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Soda, Kenji; Tanaka, Hidehiko; Nakazawa, Hidetsugu; and Mitsugi, Koji, to Ajinomoto Co., Inc. Method of producing sulfur containing L-amino acids. 4,071,405, Cl. 195-29.000.
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Soeda, Yuji: *See—*
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Soga, Kazuo: *See—*
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Sohlberg, Pentti Aimo Johannes. Supporting framework for a shelter shed. 4,070,846, Cl. 52-641.000.
Solar Energy For The Family Inc.: *See—*
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Solar Reactor Corporation: *See—*
Scragg, Robert L.; and Parker, Alfred B., 4,070,861, Cl. 60-641.000.
Solomon, Paul W.: *See—*
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Solomons, William Ebenezer: *See—*
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Somogyi, Bela, to Hughes Aircraft Company. Electric watch battery contact spring. 4,070,821, Cl. 58-23.0BA.
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Yamanaka, Seisuke, 4,071,853, Cl. 358-41.000.
Soulat, Rene, to Sodia S.A. Automatic sugar cane harvesting machine. 4,070,809, Cl. 56-13.900.
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Ignasiak, Stanley F., 4,071,640, Cl. 427-215.000.
Spitz, Melvin P. Box spring retainer. 4,070,718, Cl. 5-207.000.
Square D Company: *See—*
Cook, James W.; Khalid, Joseph M.; and Oster, Clark L., 4,071,836, Cl. 335-195.000.
Staats, Henry N.; and Wiermanski, Jerome J., to General Binding Corporation. Identification card pouch. 4,070,774, Cl. 40-2.200.
Stackman, Robert W.; and Conciatori, Anthony B., to Celanese Corporation. High temperature polyester resins from 4,4'-bis(p-hydroxyphenoxy)diphenyl ether and terephthalic acid. 4,071,499, Cl. 260-47.00C.
Stacy, Hugh E., Jr. Disc trench filler for a no-till planter. 4,070,974, Cl. 111-85.000.
Staggers, John O., to Foote Mineral Company. Recovery of vanadium from pig iron. 4,071,355, Cl. 75-30.000.
Staley, Lester K.: *See—*
Hopwood, Francis W.; Staley, Lester K.; and Tolj, Henry D., 4,071,844, Cl. 343-17.20R.
Stamicarbon, N.V.: *See—*
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Stanwick, Casmer P.: *See—*
Armor, Anthony F.; and Stanwick, Casmer P., 4,071,791, Cl. 310-59.000.
Stark, Ernst-Joachim; Vanhaiden, Peter; and Klinkenberg, Herbert, to Dynamit Nobel Aktiengesellschaft. Reinforced polyvinylidene fluoride molding compositions. 4,071,495, Cl. 260-42.180.
Starks, Charles M.: *See—*
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Stasko, William. Safety attachment for invalid lift and transport apparatus. 4,070,721, Cl. 5-89.000.
State of Israel and Isorad Isotope and Radiation Enterprise, Ltd., The: *See—*
Eisenberg, Eli; Altmann, Gideon; Bogokovsky, Bianca; and Lapidot, Mordechai, 4,071,412, Cl. 195-102.000.
Stauffer Chemical Company: *See—*
Arneklev, Duane R.; and Baker, Don R., 4,071,349, Cl. 71-88.000.
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Mihailovski, Alexander, 4,071,545, Cl. 260-429.700.
Pallos, Ferenc M., 4,071,556, Cl. 260-564.0RF.
Pitt, Harold M., 4,071,423, Cl. 204-158.00R.
Yu, Arthur J.; and Anderson, Donald F., 4,071,675, Cl. 526-193.000.
Steckler, Robert, to Plastomedical Sciences, Inc. Anionic hydrogels based on hydroxyalkyl acrylates and methacrylates. 4,071,508, Cl. 260-79.3MU.
Stedman, Robert N., to Caterpillar Tractor Co. Forward dumping truck construction. 4,071,277, Cl. 298-22.00P.
Steiger, Anton, to Sulzer Brothers Limited. Reciprocating internal combustion engine for the combustion of finely divided solid fuel. 4,070,996, Cl. 123-23.000.
Steiger, Anton, to Sulzer Brothers Limited. Reciprocating internal combustion engine using powdered solid fuel. 4,070,997, Cl. 123-23.000.
Stein, Robert George; and Couch, Terry Lee, to Abbott Laboratories. Phosphoramidates and thiophosphoramidates as pesticides. 4,071,533, Cl. 260-332.500.
Stein, Thomas R.: *See—*
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Steinbichler, Alfred, to Max-Planck-Gesellschaft zur Forderung der Wissenschafter e.V. Multiple test X-ray goniometer. 4,071,758, Cl. 250-277.0CH.
Steinhauer, Alfred F., to Dow Chemical Company, The. Stable cleaning agents of hypochlorite bleach and detergent. 4,071,463, Cl. 252-103.000.
Steinke, James Marion; and Gaskins, Justin, to TRW, Inc. Endless inked ribbon cartridge. 4,071,132, Cl. 197-168.000.
Steinlein, Rudolf F.; and Schoeller, Christina, to Schoeller International GmbH & Co. KG. Bottle pack crate and bottle pack therefor. 4,071,162, Cl. 220-21.000.
Stenger, Richard E.; Ekstedt, Edward E.; Richey, John M.; and Seto, Stanford P., to General Electric Company. Low pressure fuel injection system. 4,070,826, Cl. 60-39.660.
Sternby, Arthur J.; and Cruea, Ronald D., to Black Clawson Company, The. Method of and apparatus for flow spreading. 4,071,193, Cl. 239-11.000.
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Stewart, John W.; and Bruckner, Ronald L., to NCR Corporation. Drive circuit. 4,071,877, Cl. 361-152.000.
Stockebrand, Thomas C.; Doane, Russell C.; and Morganstern, Michael D., to Digital Equipment Corporation. Time-multiplexed output devices in video terminal systems. 4,071,910, Cl. 364-900.000.
Stockum, Glenn Francis, to Arbrook, Inc. Medical glove and method. 4,070,713, Cl. 2-168.000.
Stone, Barry N. Electric toilet tissue dispenser. 4,071,200, Cl. 242-55.200.
Stone, Milton, to Pettibone Corporation. Level control system for a rotary cone-type feed hopper. 4,071,168, Cl. 222-56.000.
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Stotz, Wolf-Gunter: *See—*
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Strassel, Albert, to Produits Chimiques Ugine Kuhlmann. Method of coating flexible substrates with polyurethane-polyurea elastomers and products produced thereby. 4,071,390, Cl. 156-239.000.
Strathmann, Heinrich, to Forschungsinstitute Bergof GmbH. Composite asymmetrical membranes. 4,071,590, Cl. 264-45.100.
Strauss, Edgar, to Ruti Machinery Works Ltd. Undulated shed loom with filling-thread clamping device. 4,071,051, Cl. 139-436.000.
Stretten, Ivan J. Coil-end pealer and debender. 4,070,891, Cl. 72-183.000.

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Bollig, Georg; Streubel, Hans; and Kolakowski, Manfred, 4,071,074, Cl. 164-448.000.
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Strongin, Ned; and Garrett, Isabel, to Ned Strongin Associates, Inc. Doll with releasably-attached hair pieces. 4,070,790, Cl. 46-172.000.
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Richmond, James W.; and Rhodes, Earl H., Jr., 4,071,029, Cl. 128-305.000.
Stubbings, James Henry, to Potomac Applied Mechanics, Inc. Method and apparatus for cutting sheet metal wrappers or the like. 4,070,890, Cl. 72-129.000.
Studebaker, Alden Henry. Engine efficiency. 4,070,971, Cl. 123-198.00F.
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Stynes, James A., to N L Industries, Inc. Method for producing capacitors and ceramic body therefore. 4,071,878, Cl. 361-307.000.
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Sugiyama, Hiroshige; and Yasuda, Hiroshi, to Toyo Boseki Kabushiki Kaisha. Polyester fiber having anti-pilling property and its production. 4,071,502, Cl. 260-75.00T.
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Steiger, Anton, 4,070,997, Cl. 123-23.000.
Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, to Mitsubishi Denki Kabushiki Kaisha. Central processing apparatus for generating and receiving time division multiplex signals. 4,071,889, Cl. 364-200.000.
Sumitomo Chemical Company, Limited: *See—*
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Sun Oil Company: *See—*
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Sundstroem, Kurt Lage: *See—*
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Bennett, John D., 4,071,086, Cl. 166-177.000.
Hansel, William B., 4,071,059, Cl. 141-206.000.
Supernaw, Irwin R.; Arnold, Dan McCay; and Link, Arthur Jurgen, to Texaco Inc. Method for in situ evaluation of the source rock potential of earth formations. 4,071,755, Cl. 250-253.000.
Supran, Lyle David. Electrically conductive tennis ball. 4,071,242, Cl. 273-61.00R.
Susai, Sadao, to Daiwa Kogyo Co., Ltd. Method for protective coating the inside of surfaces of metal tubes by vapor deposition. 4,071,641, Cl. 427-234.000.
Suter, Fritz: *See—*
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Sutherland, Johnny L. Hunting blind boat cover. 4,070,722, Cl. 9-5.000.
Sutherland, Spurgen: *See—*
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Sutton, William H., to International Nickel Company, Inc., The. Treatment of chromium-containing iron alloys. 4,071,416, Cl. 204-38.00R.
Suzuki, Hiroichi. Method of working for bending metal material and thereby obtained friction core plate of friction clutch. 4,071,127, Cl. 192-107.00R.
Suzuki, Masane; Kanaya, Motonori; and Matsuoka, Takeshi, to Fuji Photo Optical Co., Ltd. Holographic method for forming color holograms. 4,071,291, Cl. 350-3.500.
Swartzendruber, Ray E., to Chore-Time Equipment Inc. Feeder pan assembly. 4,070,990, Cl. 119-53.000.
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Takahashi, Akio, to Hooker Chemicals & Plastics Corporation. Method of polymerizing vinyl halide with olefin polymers and copolymers and compositions thereof. 4,071,582, Cl. 260-878.00R.
Takahashi, Masaaki; Iizuka, Akira; and Asano, Kiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for the production of trans-4-aminomethyl cyclohexane-1-carboxylic acid. 4,071,553, Cl. 260-514.00J.
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Takahashi, Zyuro; and Hayashi, Chozo, to Ono Pharmaceutical Co., Ltd. Method for determining free fatty acids in blood serum using fatty acid activating enzymes. 4,071,413, Cl. 195-103.50R.
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Takemoto, Tadashi; Kakizaki, Fusayoshi; and Ariyoshi, Yasuo, to Ajinomoto Co., Inc. Method of removing formyl groups from N-formyl-amino acid and N-formyl-peptide esters having free carboxyl groups. 4,071,511, Cl. 260-112.50R.
Takenaka, Haruo; Okiyama, Toshiaki; and Kawamata, Toshio, to Fuji Photo Film Co., Ltd. Electrophotographic copying film. 4,071,362, Cl. 96-1.400.
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Talmage, John E.; and Bates, L. Dexter, to Elographics, Incorporated. Lucent electrographic sensor for determining planar coordinates. 4,071,689, Cl. 178-18.000.
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Tanaka, Jinkichi; and Watanabe, Itaru, to Nippon Kokan Kabushiki Kaisha. Method of large current gas shielded arc welding. 4,071,732, Cl. 219-137.00R.
Tanaka, Masahide: *See—*
Kashiwa, Norio; Fuji, Saburo; and Tanaka, Masahide, 4,071,674, Cl. 526-125.000.
Tanaka, Tsuneo: *See—*
Nagata, Seiichi; Tanaka, Tsuneo; and Fukai, Masakazu, 4,071,383, Cl. 148-175.000.
Tanenbaum, Stuart W.: *See—*
Flashner, Michael; and Tanenbaum, Stuart W., 4,071,408, Cl. 195-62.000.
Tashiro, Norio: *See—*
Koinuma, Tokuju; Yamamiya, Hideki; and Tashiro, Norio, 4,071,804, Cl. 315-39.710.
Tate, Mark T.: *See—*
Booher, Howard, 4,071,153, Cl. 214-82.000.
Tatehana, Yoshikazu: *See—*
Tokunaga, Hiroshi; Tatehana, Yoshikazu; and Umekawa, Akira, 4,071,228, Cl. 266-162.000.
Taylor, Kathleen C.: *See—*
Schlatter, James C.; and Taylor, Kathleen C., 4,071,600, Cl. 423-213.700.
Taylor, Patrick A.: *See—*
Lathrop, Francis O., Jr.; Jacobs, Edward H.; Wood, William E.; and Taylor, Patrick A., 4,071,862, Cl. 360-97.000.
Taylor, Raymond C.: *See—*
Richards, Frank P.; and Taylor, Raymond C., 4,070,953, Cl. 93-39.10R.
Tazuma, James J.; and Zadra, Mario D., to Goodyear Tire & Rubber Company, The. Metal salts of modified anhydride resin. 4,071,669, Cl. 526-47.300.
TBA Industrial Products Limited: *See—*
Huggett, Ralph, 4,070,816, Cl. 57-153.000.
Teijin Chemicals, Ltd.: *See—*
Watase, Hideo, 4,071,048, Cl. 138-145.000.
Teldix G.m.b.H.: *See—*
Quandt, Gerhard; Ries, Werner; and Richter, Joachim, 4,070,813, Cl. 57-58.890.
Telefonaktiebolaget L M Ericsson: *See—*
Leijonhufvud, Gosta Karl Knutsson; and Thyselius, Per-Olof, 4,071,701, Cl. 179-15.0AT.
Telesciences, Inc.: *See—*
Kaplan, Murray L.; Herbster, Terry N.; and Holden, Alan F., 4,071,708, Cl. 179-16.00E.
Templin, Raymond J.: *See—*
Pecka, Richard D.; and Templin, Raymond J., 4,071,218, Cl. 248-221.400.
Teraji, Tsutomu Toyonaka: *See—*
Kamiya, Takashi; Teraji, Tsutomu Toyonaka; Hashimoto, Masashi; Oku, Teruo Kyoto; Nakaguti, Osamu; Saito, Yoshihisa; and Nakamura, Hitoshi, 4,071,527, Cl. 260-306.500.
Terneau, Robert: *See—*
Jacquemin, Francis; Terneau, Robert; and Voiturier, Jean-Pierre, 4,071,649, Cl. 428-215.000.
Tessier, Claude R.: *See—*
Richard, Pierre D.; and Tessier, Claude R., 4,071,715, Cl. 179-90.00K.
Tetreault, Merritt D., to Amacoil Machinery, Inc. Apparatus for granulating material. 4,071,198, Cl. 241-73.000.
Tewksbury, Stuart Keene, to Bell Telephone Laboratories, Incorporated. Apparatus for analog to digital conversion. 4,071,842, Cl. 340-347.0AD.
Texaco Development Corporation: *See—*
Bentley, Floyd E., 4,071,558, Cl. 260-570.00D.
Texaco Inc.: *See—*
Allen, Joseph C., 4,071,458, Cl. 252-8.55D.
Arnold, Dan M.; and Paap, Hans J., 4,071,757, Cl. 250-265.000.
Patterson, John A., 4,071,476, Cl. 252-557.000.
Supernaw, Irwin R.; Arnold, Dan McCay; and Link, Arthur Jurgen, 4,071,755, Cl. 250-253.000.
Texas Instruments Incorporated: *See—*
Buss, Dennis D., 4,071,906, Cl. 364-819.000.
Hewes, Charles Robert, 4,071,775, Cl. 307-221.00D.
Kochem, Robert C., 4,071,871, Cl. 361-27.000.
Kochem, Robert C., 4,071,875, Cl. 361-113.000.
Santala, Teuvo J., 4,071,659, Cl. 428-677.000.
Textron Inc.: *See—*
DeCaro, Charles J., 4,070,889, Cl. 72-114.000.
Tezuka, Tohru: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,071,621, Cl. 424-177.000.
Th. Goldschmidt AG: *See—*
Bade, Volkbert, 4,071,544, Cl. 260-410.700.
Domazer, Hans-Gunter; and Eggert, Horst, 4,071,229, Cl. 266-173.000.
Theobald, Hans: *See—*
Jung, Johann; Kiehs, Karl; Zeeh, Bernd; and Theobald, Hans, 4,071,551, Cl. 260-501.150.
Thermoguard Insulation Company: *See—*
Sanders, Duane, 4,070,853, Cl. 53-373.000.
Thien, Gerhard: *See—*
Skatsche, Othmar; Thien, Gerhard; and Fachbach, Heinz, 4,071,008, Cl. 123-198.00E.
Thomas & Betts Corporation: *See—*
Bauerkemper, Michael, 4,070,754, Cl. 29-749.000.
Thomas French and Sons (Electrical) Limited: *See—*
Makin, Ronay Denton, 4,070,911, Cl. 73-343.00R.
Thomas, John Ellwood: *See—*
Kuhns, Garrett D.; Astorp, Norman E.; Mullen, Richard V.; and Thomas, John Ellwood, 4,071,195, Cl. 239-289.000.
Thomas, John G.: *See—*
Walraven, Thomas A.; Thomas, John G.; and Hall, James B., 4,071,182, Cl. 228-110.000.
Thomas, John P.: *See—*
Guinn, David C.; Haggard, Archie K.; and Thomas, John P., 4,070,981, Cl. 114-293.000.
Guinn, David C.; Haggard, Archie K.; and Thomas, John P., 4,071,145, Cl. 211-60.00S.
Thomas, Norman W.; Berardinelli, Frank M.; and Edelman, Robert, to Celanese Corporation. Polycarbodiimide modification of polyesters for extrusion applications. 4,071,503, Cl. 260-75.00N.
Thomas, Robert W.: *See—*
McDaniel, John H.; Sinnard, Harry W.; and Thomas, Robert W., 4,070,940, Cl. 83-464.000.
Thomas, William Anthony: *See—*
Hassall, Cedric Herbert; Johnson, William Henry; Krohn, Antonin; Smithen, Carey Ernest; and Thomas, William Anthony, 4,071,525, Cl. 260-295.0AM.
Thompson, Douglas: *See—*
Thompson, Richard D.; Thompson, Douglas; and Beeley, Micheal G., 4,070,876, Cl. 68-3.00R.
Thompson, Garth Molesdale: *See—*
Dalton, Sally Elizabeth; Gingell, William George; Jenkins, David Conwil; King, Leslie George; Lee, Glyn Evan; and Thompson, Garth Molesdale, 4,071,528, Cl. 260-306.70T.
Thompson, Philip W. Lightweight-type detachable lock. 4,070,879, Cl. 70-20.000.
Thompson, Richard D.; Thompson, Douglas; and Beeley, Micheal G., to McGraw-Edison Company. Apparatus for vapor phase treating garments. 4,070,876, Cl. 68-3.00R.
Thompson, Walter F.; and Redo, Dennis M., to General Cable Corporation. Conductor supply system for communication cable making apparatus. 4,071,150, Cl. 214-16.40R.
Thomson-Brandt: *See—*
Bijon, Paul; Fichot, Bernard; and Lainez, Lucien, 4,071,854, Cl. 358-128.000.
Thomson-CSF: *See—*
Charransol, Pierre; Hauri, Jacques; and Fontana, Serge, 4,071,702, Cl. 179-15.0AT.
Marien, Jacques, 4,071,843, Cl. 343-5.0CD.
Thorneycroft, Malcolm: *See—*
Sladdin, Stuart Rodney; and Thorneycroft, Malcolm, 4,070,934, Cl. 82-2.00R.
Thuren, John B.; Datwyler, Walter F., Jr.; and Phipps, Jack R., to Bendix Corporation, The. Fuel control apparatus for dual chamber stratified charge engine systems. 4,071,013, Cl. 123-32.0SP.
Thurlow, Norman C., II, to Westinghouse Electric Corporation. Gamma and alpha compensated fission chamber. 4,071,764, Cl. 250-390.000.
Thyselius, Per-Olof: *See—*
Leijonhufvud, Gosta Karl Knutsson; and Thyselius, Per-Olof, 4,071,701, Cl. 179-15.0AT.
Tibbs, Lilburn E. Automatic pneumatic connector for air brakes and the like. 4,071,148, Cl. 213-76.000.
Tiefert, Karl H.: *See—*
Legat, Wilhelm H.; Taft, Keith G.; and Tiefert, Karl H., 4,070,748, Cl. 29-577.00C.
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Tupitsyn, Konstantin Konstantinovich; Gurkov, Konstantin Stepanovich; Klimashko, Vladimir Vasilievich; Rozhkov, Leonid Georgievich; Bondar, Mikhail Jurievich; and Smolyanitsky, Boris Nikolaevich. Pneumatic impact devices. 4,070,948, Cl. 91-234.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Okamoto, Nobukazu, 4,071,548, Cl. 260-462.00R.
Tobe, Akihiro: *See—*
Kikumoto, Ryoji; Tobe, Akihiro; Tonomura, Shinji; Ikoma, Hidenobu; and Honda, Kazuo, 4,071,559, Cl. 260-570.700.
Todt, Enno, deceased: *See—*
Dotzer, Richard; Hauschildt, Hans-Georg; Todt, Enno, deceased; Todt, Susanne, heir; Todt, Ruth Katharina, heir; and Todt, Ernst Josef, heir, 4,071,526, Cl. 260-299.000.
Todt, Ernst Josef, heir: *See—*
Dotzer, Richard; Hauschildt, Hans-Georg; Todt, Enno, deceased; Todt, Susanne, heir; Todt, Ruth Katharina, heir; and Todt, Ernst Josef, heir, 4,071,526, Cl. 260-299.000.
Todt, Ruth Katharina, heir: *See—*
Dotzer, Richard; Hauschildt, Hans-Georg; Todt, Enno, deceased; Todt, Susanne, heir; Todt, Ruth Katharina, heir; and Todt, Ernst Josef, heir, 4,071,526, Cl. 260-299.000.
Todt, Susanne, heir: *See—*
Dotzer, Richard; Hauschildt, Hans-Georg; Todt, Enno, deceased; Todt, Susanne, heir; Todt, Ruth Katharina, heir; and Todt, Ernst Josef, heir, 4,071,526, Cl. 260-299.000.
Tokico Ltd.: *See—*
Nagase, Toshiro, 4,071,057, Cl. 141-4.000.
Yamada, Masami; and Soeda, Yuji, 4,070,895, Cl. 72-334.000.
Tokumaru, Yukuya; and Nakai, Masanori, to Tokyo Shibaura Electric Co., Ltd. Integrated injection logic with both fan in and fan out Schottky diodes, serially connected between stages. 4,071,774, Cl. 307-215.000.
Tokunaga, Hiroshi; Tatehana, Yoshikazu; and Umekawa, Akira, to

Mitsui Mining & Smelting Co., Ltd. Method of recovering valuable metals from zinc bearing materials and blast furnace relevant thereto. 4,071,228, Cl. 266-162.000.

Tokyo Institute of Technology: *See—*
Ikeda, Sakuji; and Soga, Kazuo, 4,071,667, Cl. 526-11.100.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Andow, Fumio; Yamaura, Mitsuru; and Kitagawa, Minoru, 4,071,873, Cl. 361-64.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Koinuma, Tokuju; Yamamiya, Hideki; and Tashiro, Norio, 4,071,804, Cl. 315-39.710.
Takanashi, Yukio; Sato, Fumiyuki; and Shinpo, Masanori, 4,071,803, Cl. 313-409.000.
Tokumaru, Yukuya; and Nakai, Masanori, 4,071,774, Cl. 307-215.000.

Tolj, Henry D.: *See—*
Hopwood, Francis W.; Staley, Lester K.; and Tolj, Henry D., 4,071,844, Cl. 343-17.20R.

Tolochko, Alexei Ivanovich: *See—*
Zherdev, Anatoly Vasilievich; Yakimenko, Grigory Savvich; Gritsuk, Lev Dmitrievich; Gorbik, Anatoly Stepanovicy; Belkin, Evgeny Grigorievich; Tseluiko, Jury Ivanovich; Gorodetsky, Yakov Izrailievich; Severin, Vasily Fedorovich; and Tolochko, Alexei Ivanovich, 4,071,230, Cl. 266-193.000.

Tomiita, Kazuo: *See—*
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Tomita, Shimpei: *See—*
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Tomoyuki, Nogami, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fluid pressure control device for crossed piping brake system. 4,071,281, Cl. 303-24.00A.

Tonomura, Shinji: *See—*
Kikumoto, Ryoji; Tobe, Akihiro; Tonomura, Shinji; Ikoma, Hidenobu; and Honda, Kazuo, 4,071,559, Cl. 260-570.700.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuno; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,071,621, Cl. 424-177.000.

Toray Industries, Inc.: *See—*
Negishi, Takao; and Tomiita, Kazuo, 4,070,815, Cl. 57-140.00J.

Torburn, Roy B.: *See—*
Benson, Wayne J.; Torburn, Roy B.; and Tweed, Donald G., 4,071,876, Cl. 361-119.000.

Tork, Inc.: *See—*
Balogh, Andre, 4,071,749, Cl. 362-20.000.

Tosaka, Umi: *See—*
Marushima, Giichi; Tanaka, Hiroshi; Tosaka, Umi; Takahashi, Shinkichi; and Komiya, Takao, 4,071,361, Cl. 96-1.400.

Towmotor Corporation: *See—*
Wible, John E., 4,070,857, Cl. 60-422.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Sugiyama, Hiroshige; and Yasuda, Hiroshi, 4,071,502, Cl. 260-75.00T.

Toyo Seikan Kaisha Limited: *See—*
Miyamatsu, Yasunori; Yasumuro, Hisakazu; Miyata, Kenichi; Shimizu, Takashi; and Matsuoka, Kikuo, 4,070,885, Cl. 72-46.000.

Toyoda, Toshiaki: *See—*
Nishikubo, Michio; Miura, Sei; Toyoda, Toshiaki; Jonishi, Katsunori; and Yoneta, Kouichi, 4,070,893, Cl. 72-234.000.

Toyoshima, Kunihiko: *See—*
Watanabe, Hiroo; Toyoshima, Kunihiko; Noutomi, Masaru; and Yamakawa, Kouichi, 4,071,448, Cl. 210-50.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Goto, Kenji, 4,071,001, Cl. 123-75.00B.
Konishi, Masami; Nakamura, Norihiko; Itou, Takaaki; and Kikuchi, Kazuo, 4,071,585, Cl. 261-36.00A.
Tomoyuki, Nogami, 4,071,281, Cl. 303-24.00A.

Traut, Earl W. Integrated flow turbine engine. 4,070,824, Cl. 60-39.430.

Trayvou S.A.: *See—*
Rouban, Basile, 4,071,103, Cl. 177-188.000.

Trotter, George H. Arrow positioning device. 4,071,014, Cl. 124-41.00A.

Troxler, Franz: *See—*
Wiskott, Erik; and Troxler, Franz, 4,071,630, Cl. 424-256.000.

TRW, Inc.: *See—*
Moed, Johannes A. R., 4,071,704, Cl. 179-15.0BF.
Schaffter, Craig, 4,071,703, Cl. 179-15.0AQ.
Steinke, James Marion; and Gaskins, Justin, 4,071,132, Cl. 197-168.000.

Tsao, Utah, to Lummus Company, The. Control of molten salt oxidation in production of chlorinated hydrocarbons. 4,071,571, Cl. 260-654.00R.

Tseluiko, Jury Ivanovich: *See—*
Zherdev, Anatoly Vasilievich; Yakimenko, Grigory Savvich; Gritsuk, Lev Dmitrievich; Gorbik, Anatoly Stepanovicy; Belkin, Evgeny Grigorievich; Tseluiko, Jury Ivanovich; Gorodetsky, Yakov Izrailievich; Severin, Vasily Fedorovich; and Tolochko, Alexei Ivanovich, 4,071,230, Cl. 266-193.000.

Tuba, Zoltan; Marsai, Maria; Biro, Katalin; Szporny, Laszlo; Karpati, Egon; and Szeberenyi, Szabolcs, to Richter Gedeon Vegyeszeti Gyar Rt. Triamino-androstanes and a process for the preparation of the said compounds. 4,071,515, Cl. 260-239.500.

Tube Machinery Corporation: *See—*
Hankin, Ralph L., 4,070,887, Cl. 72-52.000.

Tums, Valdis M.; and Maxwell, Thomas J., to Union Carbide Corporation. Closure for shirred casing sticks. 4,070,729, Cl. 17-34.000.

Tupitsyn, Konstantin Konstantinovich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexandr Dmitrievich; Tupitsyn, Konstantin Konstantinovich; Gurkov, Konstantin Stepanovich; Klimashko, Vladimir Vasilievich; Rozhkov, Leonid Georgievich; Bondar, Mikhail Jurievich; and Smolyanitsky, Boris Nikolaevich, 4,070,948, Cl. 91-234.000.

Turek, Clarence W.; Aronson, Aaron B.; and Wittlock, Dale C., to Signode Corporation. Electronic control system. 4,071,131, Cl. 197-6.400.

Turkowski, Lukasz: *See—*
Ostrowski, Jerzy; Sierputowski, Piotr; Turkowski, Lukasz; Jablkiewicz, Jerzy; Pacholski, Jan; and Jedryka, Tadeusz, 4,070,812, Cl. 57-58.890.

Tutko, Albert John: *See—*
DeNigris, Ernest Gerard; and Tutko, Albert John, 4,071,290, Cl. 339-258.00F.

Tuzee, John. Car top ski and ski-gear carrier. 4,071,176, Cl. 224-42.10E.

Tweed, Donald G.: *See—*
Benson, Wayne J.; Torburn, Roy B.; and Tweed, Donald G., 4,071,876, Cl. 361-119.000.

Twin Disc, Incorporated: *See—*
Schneider, Raymond C.; and Pelligrino, Paul A., 4,070,926, Cl. 74-730.000.

Tyler, Lawson John: *See—*
Rupert, Gerald B.; and Tyler, Lawson John, 4,070,906, Cl. 73-88.00E.

Ueda, Atsushi: *See—*
Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, 4,071,889, Cl. 364-200.000.

Ueda, Takuya: *See—*
Nakagawa, Ryuichi; Yoshimatsu, Shiro; Ueda, Takuya; Fukuzawa, Akira; Ozaki, Tsuyoshi; Sato, Akira; and Mitsui, Tatsuro, 4,071,687, Cl. 13-10.000.

UMC Industries, Inc.: *See—*
Frattarola, Joseph R.; and Ford, Peter W., 4,071,741, Cl. 235-436.000.

Umekawa, Akira: *See—*
Tokunaga, Hiroshi; Tatehana, Yoshikazu; and Umekawa, Akira, 4,071,228, Cl. 266-162.000.

Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Takamatsu, Akira; and Oki, Toshikazu, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Antitumor antibiotics aclacinomycins A and B [RD-9187A]. 4,071,411, Cl. 195-80.00R.

Umezawa, Kazumi: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,071,295, Cl. 355-3.0SH.

Ummen, Arnulf; and Muller, Alexander, to Arntz-Optibelt-KG. Belt drive system. 4,070,919, Cl. 74-229.000.

Uni-Cardan AG: *See—*
Krude, Werner, 4,070,872, Cl. 64-21.000.

Union Carbide Corporation: *See—*
Durden, John Apling, Jr., 4,071,627, Cl. 424-246.000.
Lambrecht, Richard Arthur, 4,070,747, Cl. 29-570.000.
Litteral, Carl James; and Mullins, David Lee, 4,071,483, Cl. 260-2.5AH.
Tums, Valdis M.; and Maxwell, Thomas J., 4,070,729, Cl. 17-34.000.

Uniroyal, Inc.: *See—*
Freda, George B., 4,071,326, Cl. 44-7.00E.
Freda, George B., 4,071,488, Cl. 260-23.70A.

United Kingdom of Great Britain and Northern Ireland, The Secretary of Defence, in Her Brittanic Majesty's Government of the: *See—*
Bird, Jack Raymond, 4,071,372, Cl. 106-73.500.

U.S. Blind Stitch Machine Corporation: *See—*
Russell, Richard, 4,070,975, Cl. 112-135.000.

United States of America
Agriculture: *See—*
Pepperman, Armand B., Jr.; Daigle, Donald J.; and Vail, Sidney L., 4,071,501, Cl. 260-67.00R.
Air Force: *See—*
Setrin, Morton, 4,071,828, Cl. 325-65.000.
Zapala, Raymond J., 4,071,864, Cl. 360-103.000.
Army: *See—*
Carts, Stanley L., Jr., 4,070,763, Cl. 33-241.000.
De Santis, Charles M., 4,071,819, Cl. 324-58.00B.
Gisser, Henry; and Portnoy, Seymour, 4,071,678, Cl. 526-328.000.
Hanson, Charles M., 4,070,860, Cl. 60-616.000.
Hartz, Lewis C., Jr., 4,070,744, Cl. 29-241.000.
Energy: *See—*
Farber, Gerald, 4,071,151, Cl. 214-35.00R.
Upton, Richard G., 4,071,743, Cl. 235-92.0CV.
Health, Education and Welfare: *See—*
Goodenough, David J., 4,071,768, Cl. 250-444.000.
Interior: *See—*
Atkinson, Gary B.; and Nicks, Larry J., 4,071,473, Cl. 252-462.000.
Rupert, Gerald B.; and Tyler, Lawson John, 4,070,906, Cl. 73-88.00E.
Navy: *See—*
Casasent, David Paul, 4,071,907, Cl. 364-822.000.
Eckert, Terry T.; and McDonough, Edward C., 4,071,194, Cl. 239-127.300.
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,705, Cl. 179-15.0BA.

Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,826, Cl. 325-39.000.

U.S. Philips Corporation: *See—*
Bretschneider, Hermann; Hueber, Herman Pieter; and Louzil, Friedrich, 4,071,716, Cl. 179-100.1DR.
Greve, Reinhard Cornelis; and van Luijk, Cornelis Pieter, 4,071,728, Cl. 200-175.000.
Peschmann, Kristian, 4,071,763, Cl. 250-374.000.
van Dijk, Jan; Claassen, Volkert; and Zwagemakers, Johannes Maria Antonius, 4,071,686, Cl. 560-35.000.
van Oostrum, Karel Jan; and van Gorkom, Gerardus Gegorius Petrus, 4,071,765, Cl. 250-397.000.

United Technologies Corporation: *See—*
Sederquist, Richard A., 4,071,330, Cl. 48-94.000.

United Turbine AB & Co.: *See—*
Kronogard, Sven-Olof, 4,070,825, Cl. 60-39.51R.

University of Alabama, The Board of Trustees of the: *See—*
Hall, Leo M., 4,071,407, Cl. 195-62.000.

University of Missouri, Curators of the: *See—*
Cheng, Kuang Lu; and Chao, Eric En-Kuang, 4,071,427, Cl. 204-195.00M.

UOP Inc.: *See—*
Lynch, Jerome G.; and Quigley, William A., 4,071,688, Cl. 174-138.00R.

Upton, Richard G., to United States of America, Energy. Digital scale converter. 4,071,743, Cl. 235-92.0CV.

Uraneck, Carl A.; Burleigh, John E.; and Solomon, Paul W., to Phillips Petroleum Company. Emulsion polymerized copolymers of 2,4-pentadien-1-ol. 4,071,679, Cl. 526-338.000.

Usagawa, Yasushi; Yamashita, Kiyoshi; Nakatani, Mamoru; Masuda, Kosaku; and Kawakatsu, Satoshi, to Mitsubishi Paper Mills, Ltd. Silver halide emulsion containing two-equivalent yellow dye-forming coupler. 4,071,365, Cl. 96-56.500.

Usher, Eric S.: *See—*
Weir, Donald A.; Usher, Eric S.; and Howells, George A., 4,071,692, Cl. 178-68.000.

Usui, Kuniharu; Shimba, Hiroshi; Nakagaki, Kunihiro; and Mukunashi, Hiroaki, to Sumitomo Electric Industries, Ltd.; and Usui, Kuniharu. Impulse heat joining of wrapping tapes for wire cables. 4,071,388, Cl. 156-157.000.

v. d. Marwitz, Hans-Gunther, to Bayerische Motoren Werke Aktiengesellschaft. Clear window for protective helmets. 4,070,712, Cl. 2-10.000.

V.G.S. G.m.b.H.: *See—*
Kuhn, Johannes, 4,070,838, Cl. 52-400.000.

Vacsol Corporation: *See—*
O'Blasny, Richard H., 4,071,438, Cl. 208-180.000.

Vail, Sidney L.: *See—*
Pepperman, Armand B., Jr.; Daigle, Donald J.; and Vail, Sidney L., 4,071,501, Cl. 260-67.00R.

Valls, Conrado. Machine for continuously processing textile fabrics. 4,070,878, Cl. 68-22.00R.

Van Bennekom, Carl F.: *See—*
Kernander, Warren N.; and Van Bennekom, Carl F., 4,071,824, Cl. 324-127.000.

Van Buskirk, Oral R.: *See—*
Doerner, William Allen; and Van Buskirk, Oral R., 4,070,862, Cl. 60-655.000.

VanderLans, Gerald G. Pipeline joint tester. 4,070,904, Cl. 73-40.50R.

van der Lely, Cornelis. Buildings erected from three or more box-shaped sections, and methods of fabricating such buildings. 4,070,804, Cl. 52-64.000.

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van der Vies, Johannes, to Akzona Incorporated. Pharmaceutical preparation adapted for oral administration. 4,071,623, Cl. 424-238.000.

van Dijk, Jan; Claassen, Volkert; and Zwagemakers, Johannes Maria Antonius, to U.S. Philips Corporation. Novel benzylidene aminooxyalkyl carboxylic acids and carboxylic acid derivatives. 4,071,686, Cl. 560-35.000.

Vanfleet, Charles R.; and Ruehr, William C., to General Electric Company. Method and apparatus for limiting ingestion of debris into the inlet of a gas turbine engine. 4,070,827, Cl. 60-204.000.

van Gorkom, Gerardus Gegorius Petrus: *See—*
van Oostrum, Karel Jan; and van Gorkom, Gerardus Gegorius Petrus, 4,071,765, Cl. 250-397.000.

Vanhaiden, Peter: *See—*
Stark, Ernst-Joachim; Vanhaiden, Peter; and Klinkenberg, Herbert, 4,071,495, Cl. 260-42.180.

Van House, Robert M., to General Motors Corporation. Master and slave break boosters for front and rear wheel brakes with wheel lock control. 4,071,283, Cl. 303-114.000.

VanHulle, Glenn J.: *See—*
Lindl, Willibald M.; Klande, James R.; and VanHulle, Glenn J., 4,071,635, Cl. 426-264.000.

van Luijk, Cornelis Pieter: *See—*
Greve, Reinhard Cornelis; and van Luijk, Cornelis Pieter, 4,071,728, Cl. 200-175.000.

van Oostrum, Karel Jan; and van Gorkom, Gerardus Gegorius Petrus, to U.S. Philips Corporation. Electron microscope. 4,071,765, Cl. 250-397.000.

Van Ostenbridge, Ron; and Sturgeon, Michael E., to K-Tron Corporation. Auto zero circuit. 4,071,102, Cl. 177-165.000.

Vanzo, Edward; and Smith, Lewis S., to Xerox Corporation. Method of sizing monomer droplets for suspension polymerization to form small particles. 4,071,670, Cl. 526-88.000.

Vapor Corporation: *See—*
Callahan, Bernard E.; and Christianson, Edward A., 4,071,282, Cl. 303-106.000.

Vargo, Donald L.: *See—*
Hopkins, Henry S., Jr.; and Vargo, Donald L., 4,071,482, Cl. 260-2.5AJ.

Vasallo, Sergio A. Desk ornament. 4,070,782, Cl. 40-323.000.

VASE Aktiengesellschaft: *See—*
Jung, Johann; Kiehs, Karl; Zeeh, Bernd; and Theobald, Hans, 4,071,551, Cl. 260-501.150.

Vasek, Vitezslav; Koblizek, Pavel; and Prazak, Karel, to Vyzkumny ustav bavlnarsky. Rotary reed having facilities for adjustably separating groups of leno warp threads. 4,071,052, Cl. 139-436.000.

VCA Corporation: *See—*
Burke, James E.; and Grzesiak, Anthony J., 4,071,196, Cl. 239-492.000.
Horan, Paul F., 4,071,173, Cl. 222-321.000.

Veeder Industries, Inc.: *See—*
Fleischer, Donald Whiting, 4,071,742, Cl. 235-92.0FL.

Vello, Francesco, to Red Wing Shoe Company, Inc. Insole for rock climbing shoe. 4,070,770, Cl. 36-43.000.

Venalainen, Teuvo Olavi. Metal deforming apparatus for purposes such as automobile repairs. 4,070,899, Cl. 72-457.000.

Venkatesan, Thirumalai Nallan Chakravarthy: *See—*
Gibbs, Hyatt McDonald; McCall, Samuel Leverte, Jr.; and Venkatesan, Thirumalai Nallan Chakravarthy, 4,071,831, Cl. 330-4.300.

Venuto, Paul B.: *See—*
Owen, Hartley; and Venuto, Paul B., 4,071,573, Cl. 260-668.00R.

Vepa Aktiengesellschaft: *See—*
Fleissner, Hans, 4,070,877, Cl. 68-5.00D.

Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Kunz, Helmut; and Kofler, Roland, 4,070,883, Cl. 72-14.000.

Vertegaal, Jacobus Gerardus, to Stork Amsterdam B.V. Thin flexible metal squeegee blade for rotary screen printer. 4,070,964, Cl. 101-120.000.

Vick, Carl J., to Keg-Tainer, Inc. Insulated beer keg container. 4,071,160, Cl. 220-5.00R.

Vidovic, Nikola, to International Video Corporation. Phaseless equalizer. 4,071,782, Cl. 307-268.000.

Vijayendran, Bheema Rao: *See—*
Brana, George; and Vijayendran, Bheema Rao, 4,071,655, Cl. 428-403.000.

Vilyus, Robert P.: *See—*
Dunkerley, Fred J.; Gaudino, Albert J.; and Vilyus, Robert P., 4,071,381, Cl. 148-36.000.

Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, to International Flavors & Fragrances Inc. 2-Alkyl-4-phenyl-dihydropyrans and processes for augmenting the organoleptic properties of tobacco using one or more of said pyrans. 4,071,034, Cl. 131-17.00R.

Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, to International Flavors & Fragrances Inc. 2-Alkyl-4-phenyl-dihydropyrans and processes for augmenting the organoleptic properties of foodstuffs and tobacco using one or more of said pyrans. 4,071,535, Cl. 260-345.100.

Vincent, David N.; and Chang, Cheng Hsiung, to Champion International Corporation. Solvent composition for use in carbonless copy systems. 4,071,469, Cl. 252-364.000.

Vinci, Michele: *See—*
Di Sciascio, Nicola; and Vinci, Michele, 4,071,221, Cl. 251-228.000.

Virgilio, Del P. Floating apparatus for weeding and dredging waterways. 4,070,978, Cl. 114-26.000.

Vock, Manfred Hugo: *See—*
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,034, Cl. 131-17.00R.
Vinals, Joaquin Francisco; Kiwala, Jacob; Hruza, Denis E., Sr.; Hall, John B.; and Vock, Manfred Hugo, 4,071,535, Cl. 260-345.100.

Vodoklys, Frank M., to Westinghouse Electric Corporation. Deep-red emitting phosphor. 4,071,465, Cl. 252-301.40F.

Voiturier, Jean-Pierre: *See—*
Jacquemin, Francis; Terneau, Robert; and Voiturier, Jean-Pierre, 4,071,649, Cl. 428-215.000.

Volgyesy, Ivan L.: *See—*
Robinson, Richard L.; and Volgyesy, Ivan L., 4,071,159, Cl. 220-3.200.

von Allworden, Wilhelm, to Jean Walterscheid GmbH. Coupling device for a power transmission shaft. 4,071,105, Cl. 180-14.00R.

von Koch, Arwed, to Daimler-Benz Aktiengesellschaft. Control valve for the working pressure of an automatic change-speed gear. 4,070,928, Cl. 74-863.000.

Voss, William Baker. Dual-output bridge for bidirectional control. 4,071,814, Cl. 323-75.00B.

Vossnacke, Jurgen: *See—*
Ermel, Heinrich; Fruth, Franz; Fryda, Georg; Lang, Peter; Rau, Fritz; and Vossnacke, Jurgen, 4,071,296, Cl. 355-15.000.

Vroome, Ray L. Golf practice drive analyzer. 4,071,250, Cl. 273-185.00C.

Vuyovich, John M. Game device for launching and pushing a rolling wheel. 4,070,792, Cl. 46-220.000.

Vyzkumny ustav bavlnarsky: *See—*
Vasek, Vitezslav; Koblizek, Pavel; and Prazak, Karel, 4,071,052, Cl. 139-436.000.

W. Canning & Company, Ltd.: *See—*
James, Barrie Sydney, 4,071,418, Cl. 204-55.00R.
James, Barrie Sydney, 4,071,419, Cl. 204-55.00R.

Wacker-Chemitronic Gesellshaft fur Elektronic Grundstoffe mbH: *See—*
Griesshammer, Rudolf; Kirschner, Helmut; and Lechner, Gunther, 4,070,797, Cl. 51-326.000.

Waddill, John W.: *See—*
Huffman, Charles E.; McGuire, Robert J.; and Waddill, John W., 4,071,700, Cl. 179-15.0BF.

Wade, Elman E., to Westinghouse Electric Corporation. Nuclear reactor apparatus. 4,071,402, Cl. 176-27.000.

Wagenhals, Bruce: *See—*
Bishton, Norris J., Jr.; Rod, Robert L.; Wagenhals, Bruce; Woltanski, Theodore M.; and Blick, John S., III, 4,070,714, Cl. 4-318.000.

Wagenknecht, John H.; and Laurin, Dean G., to Monsanto Company. Electrolytic flow-cell apparatus and process for effecting sequential electrochemical reaction. 4,071,429, Cl. 204-231.000.

Wagner, Arthur F.: *See—*
Shen, Tsung-Ying; and Wagner, Arthur F., 4,071,478, Cl. 260-2.00R.

Wagner, Wolfram: *See—*
Bueb, Michael; Kubitzek, Harry; Langhans, Arthur; Rellensmann, Wolfgang; and Wagner, Wolfram, 4,070,817, Cl. 57-157.0TS.

Wagnon, Van C. Anti-rattle bicycle beverage container holder. 4,071,175, Cl. 224-36.000.

Waksberg, Armand, to RCA Limited. Automatic optical bias control for light modulators. 4,071,751, Cl. 250-201.000.

Walker, Grant W., to Energy Absorption Systems, Inc. Tubular member and process of forming a tubular member. 4,071,599, Cl. 264-311.000.

Walker, Loren H., to General Electric Company. AC Inverter with constant power output. 4,071,812, Cl. 363-80.000.

Walker-Neer Mfg Co., Inc.: *See—*
Ford, George Alan, 4,071,101, Cl. 175-325.000.

Walker, Philip A.: *See—*
Niklas, Ludwig; and Walker, Philip A., 4,070,917, Cl. 73-598.000.

Walkup, Norris W.: *See—*
Platz, Gerald M.; and Walkup, Norris W., 4,071,325, Cl. 23-290.000.

Wallace, Mabel D. Mobile under-bed storage container. 4,071,258, Cl. 280-79.200.

Wallace, Thomas J. Threaded mechanical joint wall sleeve. 4,071,265, Cl. 285-158.000.

Wallace, William K., to Chicago Pneumatic Tool Company. Pneumatic screwdriver with torque responsive shut-off. 4,071,092, Cl. 173-12.000.

Walraven, Thomas A.; Thomas, John G.; and Hall, James B., to Christiana Metals Corporation. Method of making container with easy open top. 4,071,182, Cl. 228-110.000.

Warren, Charles Stewart, to RCA Corporation. Data packets distribution loop. 4,071,706, Cl. 179-15.0AL.

Watanabe, Hiroo; Toyoshima, Kunihiko; Noutomi, Masaru; and Yamakawa, Kouichi, to Mitsui Toatsu Chemicals, Incorporated. Method for treatment of cyanide-containing waste water. 4,071,448, Cl. 210-50.000.

Watanabe, Hiroshi: *See—*
Iijima, Eiji; Watanabe, Hiroshi; and Hayashi, Shizuo, 4,071,475, Cl. 252-545.000.

Watanabe, Itaru: *See—*
Tanaka, Jinkichi; and Watanabe, Itaru, 4,071,732, Cl. 219-137.00R.

Watanabe, Kaoru; and Nakayama, Syogo, to Matsushita Electrical Industrial Co., Ltd. Cassette tape recorder. 4,071,860, Cl. 360-96.000.

Watanabe, Yoshinori, to Mutoh Industry Ltd. Straightedge supporting device for rail type drawing instrument. 4,070,758, Cl. 33-76.00R.

Watase, Hideo, to Teijin Chemicals, Ltd. Coated hollow metal tubes and process for producing coated hollow metal tubes processed by bending, pressing or punching. 4,071,048, Cl. 138-145.000.

Waterbury, John A.: *See—*
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,705, Cl. 179-15.0BA.
Miller, Ralph H., Jr.; Dyer, William W.; Waterbury, John A.; Carlson, Wayland A.; and Eastman, Richard O., 4,071,826, Cl. 325-39.000.

Watson, Richard D.: *See—*
Martin, Ronald A.; Ashton, Charles R.; and Watson, Richard D., 4,071,788, Cl. 310-42.000.

Weaver, John H., to Anadex, Inc. Impact line printer. 4,070,963, Cl. 101-93.290.

Webber, Susan Anne: *See—*
Flanagan, James Loton; and Webber, Susan Anne, 4,071,695, Cl. 179-1.0VL.

Wehrmeister, Herbert Louis, to IMC Chemical Group, Inc. Method for preparing carbostyril derivatives. 4,071,520, Cl. 260-287.00K.

Weiner Geratebau - Stahlmobel, Firma: *See—*
Weiner, Rudolf, 4,071,174, Cl. 224-29.00M.

Weiner, Rudolf, to Weiner Geratebau - Stahlmobel, Firma. Map holder for automotive vehicle. 4,071,174, Cl. 224-29.00M.

Weir, Donald A.; Usher, Eric S.; and Howells, George A., to International Standard Electric Corporation. Data transmission systems. 4,071,692, Cl. 178-68.000.

Weisang, Joseph Edouard: *See—*
Engelhard, Philippe; Weisang, Joseph Edouard; and Paris, Guy, 4,071,437, Cl. 208-137.000.

Weiss, Jean Michel; and Irissou, Pierre-Regis Marie. Apparatus for synthesizing of colors. 4,071,809, Cl. 315-312.000.

Weisser, Eugene P.; Osan, G. Alan; and Mailki, Edward P., to ARCO Polymers, Inc. Monitoring suspension stability. 4,071,816, Cl. 324-30.00B.

Welkowsky, Murray Samuel, to Xonics, Inc. Electron radiograph receptor. 4,071,648, Cl. 428-212.000.

Werda, Konrad, to Lucas Electrical Company, Limited. Electrical switch having actuator light transmissive region, intermediate lens and light source. 4,071,726, Cl. 200-311.000.

Werner, Alfons; Roth, Mario; Siemonsen, Hans-Peter; and Winandi, Johann, to Saint-Gobain Industries. Apparatus for press bending window glass. 4,071,345, Cl. 65-273.000.

Werner, Gerhard; Grafe, Peter; Sattelmeyer, Richard; and Schmelzer, Heinz, to Hoechst Aktiengesellschaft. Hydrocarbon resins. 4,071,676, Cl. 526-283.000.

West, Bernard J.: *See—*
Lautner, Max E.; and West, Bernard J., 4,071,787, Cl. 310-42.000.

West Company, The: *See—*
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Western Electric Company, Inc.: *See—*
Broyde, Barret; Delles, Judith Archer; and North, Steven Forrest, 4,071,479, Cl. 260-2.300.
DeNigris, Ernest Gerard; and Tutko, Albert John, 4,071,290, Cl. 339-258.00F.

Westinghouse Electric Corporation: *See—*
Andrews, Harry N.; and Roman, Walter G., 4,071,403, Cl. 176-50.000.
Evans, George S.; and Skwirut, Henry, 4,071,288, Cl. 316-19.000.
Fey, Maurice G.; Wolf, Charles B.; Martin, Paul E.; and Harvey, Francis J., II, 4,071,588, Cl. 264-15.000.
Groves, Charles L., Jr.; and Johnson, Steven J., 4,071,897, Cl. 364-494.000.
Hopwood, Francis W.; Staley, Lester K.; and Tolj, Henry D., 4,071,844, Cl. 343-17.20R.
List, William F., 4,071,806, Cl. 315-150.000.
Raimondi, Albert A.; Kaufman, Howard N.; and Wood, Norman J., 4,071,254, Cl. 277-3.000.
Thurlow, Norman C., II, 4,071,764, Cl. 250-390.000.
Vodoklys, Frank M., 4,071,465, Cl. 252-301.40F.
Wade, Elman E., 4,071,402, Cl. 176-27.000.
Wood, Kenneth E.; and O'Farrell, James T., 4,071,895, Cl. 364-449.000.
Yamasaki, George K., 4,071,802, Cl. 313-209.000.

Westran Corporation: *See—*
Dalton, Thomas B.; Pyatt, Theodore Wayne; and Oosterhouse, Michael Jay, 4,071,274, Cl. 296-35.00A.

Westvaco Corporation: *See—*
Chaudhuri, Partha S., 4,071,392, Cl. 156-351.000.

Weyer, Horst; Muhlhaus, Ludwig; and Oberschachtsiek, Gerhard, to Friedrich Uhde GmbH. Process for the incineration of contaminated salt-bearing solutions. 4,071,612, Cl. 423-659.000.

WGW Westdeutsche Getriebe und Kupplungswerke GmbH: *See—*
Benthake, Heinrich, 4,070,923, Cl. 74-665.00P.

Wheelabrator-Frye Inc.: *See—*
Pedersen, John A., 4,070,799, Cl. 51-426.000.

White, Derek Graham Walter: *See—*
Hicklin, Denis Raymond; White, Derek Graham Walter; and Attwood, Brian William, 4,071,651, Cl. 428-284.000.

White, Robert W.: *See—*
Junck, John A.; Dezelan, Joseph A.; Larson, Donald J.; and White, Robert W., 4,071,106, Cl. 180-44.00F.

Whitney, James C.; Sander, Willy M.; and Debaudringhien, Andre T., to Dictaphone Corporation. Cassette changer apparatus. 4,071,857, Cl. 360-92.000.

Whittaker Corporation: *See—*
Lasher, Edward A., 4,071,578, Cl. 260-850.000.

Wible, John E., to Towmotor Corporation. Hydraulic priority circuit. 4,070,857, Cl. 60-422.000.

Wibom, Gustaf Hakan Oscar. Method of making holes of selected external configuration in preferably rock or ground formation, and a drilling machine for carrying out the method. 4,071,100, Cl. 175-69.000.

Wiedemann, Otto: *See—*
Gersch, Josef; and Wiedemann, Otto, 4,071,202, Cl. 242-71.100.

Wiermanski, Jerome J.: *See—*
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Wieschel, John E., to Harnischfeger Corporation. Spooling drum including stepped flanges. 4,071,205, Cl. 242-117.000.

Wiesen, Ernest J.: *See—*
Lange, Kai; Wiesen, Ernest J.; and Woronowicz, Eric M., 4,071,762, Cl. 250-369.000.

Wiesman, Dale C., to American Can Company. Adhesive formulation containing isobutylene rubber. 4,071,491, Cl. 260-28.50B.

Wilcox, Philip G.: *See—*
Ash, Stephen R.; Wilcox, Philip G.; and Kessler, David P., 4,071,444, Cl. 210-22.00A.

Williams, Kenneth Anthony. Method of grouting offshore structure. 4,070,869, Cl. 61-100.000.

Williams, Rodney E., to Moore Business Forms, Inc. High solids content active clay coating formulations and methods for producing and applying the same. 4,071,646, Cl. 427-358.000.

Williams, Thomas Alan, to Albright & Wilson Limited. Process for preparing phosphoric acid. 4,071,603, Cl. 423-320.000.

Williams, Thomas Walter: *See—*
Eichelberger, Edward Baxter; and Williams, Thomas Walter, 4,071,902, Cl. 364-716.000.

Willyard, James C. Cylinder-driven marine propulsion system. 4,070,982, Cl. 115-16.000.

Wilmer, Michael E., to Xerox Corporation. Encoder and decoder for bandwidth compression. 4,071,855, Cl. 358-260.000.

Wilson, Glenn R., to Monsanto Company. Process for the preparation of bis-(beta-cyanoethyl) alkyl phosphine from tris-cyanoethyl phosphine. 4,071,549, Cl. 260-465.80R.

Wilson Greatbatch Ltd.: *See—*
Mead, Ralph T.; Greatbatch, Wilson; and Rudolph, Frank W., 4,071,662, Cl. 429-178.000.

Wilton, Inga Elna Maria; Envall, Lennart Olof Gunnemar; Sundstroem, Kurt Lage; and Moran, David Patrick Joseph, to Lever Brothers Company. Proteinaceous low fat spread. 4,071,634, Cl. 426-604.000.

Winandi, Johann: *See—*
Werner, Alfons; Roth, Mario; Siemonsen, Hans-Peter; and Winandi, Johann, 4,071,345, Cl. 65-273.000.

Winchell, Frank J., to General Motors Corporation. Lock bar for cambering vehicle. 4,071,261, Cl. 280-220.000.

Wirth, Ernst: *See—*
Bloch, Heinz; and Wirth, Ernst, 4,071,870, Cl. 361-21.000.

Wiskott, Erik; and Troxler, Franz, to Sandoz Ltd. 1-Substituted-amino-3-(4-furo[3,2-c]pyridinyloxy)-2-propanols. 4,071,630, Cl. 424-256.000.

Wismer, Marco: *See—*
Bosso, Joseph F.; and Wismer, Marco, 4,071,428, Cl. 204-181.00C.

Wittlock, Dale C.: *See—*
Turek, Clarence W.; Aronson, Aaron B.; and Wittlock, Dale C., 4,071,131, Cl. 197-6.400.

Wojtowicz, John A., to Olin Corporation. Process for the production of dibasic magnesium hypochlorite. 4,071,605, Cl. 423-462.000.

Wolf, Charles B.: *See—*
Fey, Maurice G.; Wolf, Charles B.; Martin, Paul E.; and Harvey, Francis J., II, 4,071,588, Cl. 264-15.000.

Wolfe, Richard B.: *See—*
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Wolfe, Saul, to Queen's University at Kingston. Preparation of 1-oxapenicillins and intermediates therefor. 4,071,512, Cl. 260-239.00A.

Woltanski, Theodore M.: *See—*
Bishton, Norris J., Jr.; Rod, Robert L.; Wagenhals, Bruce; Woltanski, Theodore M.; and Blick, John S., III, 4,070,714, Cl. 4-318.000.

Wong, Jack Yea. Method of electroplating aluminum and its alloys. 4,071,415, Cl. 204-14.00N.

Wood, Donald W., to Argus Chemical Corporation. Polymerization of ethylenically unsaturated monomers employing alpha-halo substituted diacyl peroxides. 4,071,677, Cl. 526-231.000.

Wood, Kenneth E.; and O'Farrell, James T., to Westinghouse Electric Corporation. Navigational display system. 4,071,895, Cl. 364-449.000.

Wood, Norman E., to French Co., The. Liquid filtration system. 4,071,451, Cl. 210-79.000.

Wood, Norman J.: *See—*
Raimondi, Albert A.; Kaufman, Howard N.; and Wood, Norman J., 4,071,254, Cl. 277-3.000.

Wood, William E.: *See—*
Lathrop, Francis O., Jr.; Jacobs, Edward H.; Wood, William E.; and Taylor, Patrick A., 4,071,862, Cl. 360-97.000.

Woodward, Cyril H. T. Apparatus and method for aerating, vibrating and aligning sheets of paper and the like. 4,070,767, Cl. 34-33.000.

Woronowicz, Eric M.: *See—*
Lange, Kai; Wiesen, Ernest J.; and Woronowicz, Eric M., 4,071,762, Cl. 250-369.000.

Wright, George C.: *See—*
Butterfield, James L.; and Wright, George C., 4,071,632, Cl. 424-263.000.

Wright, Herbert J. Cotton bale cover. 4,071,138, Cl. 206-83.500.

Wright, Howard Stanley. Lifting platform. 4,071,222, Cl. 254-8.00C.

Wright, John H., to General Electric Company. Silicone composition for analyzing blood samples. 4,071,316, Cl. 23-230.00B.

Wright, Michael R.: *See—*
Pernicano, Vincent S.; and Wright, Michael R., 4,071,139, Cl. 206-216.000.

Wunsch, Gerd: *See—*
Koester, Eberhard; Wunsch, Gerd; Schoenafinger, Eduard; and Schneehage, Hans Henning, 4,071,610, Cl. 423-634.000.

Wyman, Howard John, to Chrysler United Kingdom Limited. Rotor balancing devices. 4,070,922, Cl. 74-573.00R.

Wysong & Miles Company: *See—*
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Xerox Corporation: *See—*
Geller, Stephen I., 4,071,909, Cl. 364-900.000.
Hammond, Thomas J., 4,071,798, Cl. 313-18.000.
Hammond, Thomas J.; and Lama, William L., 4,071,799, Cl. 313-44.000.
Holman, Robert L., 4,071,323, Cl. 23-273.00R.
Holman, Robert L., 4,071,396, Cl. 156-612.000.
Jones, Robert N., 4,071,363, Cl. 96-1.50R.
Matin, Fereidoon, 4,071,874, Cl. 361-94.000.
Moser, Rabin, 4,071,735, Cl. 219-216.000.
Roulund, Poul B., 4,071,754, Cl. 250-227.000.
Vanzo, Edward; and Smith, Lewis S., 4,071,670, Cl. 526-88.000.
Wilmer, Michael E., 4,071,855, Cl. 358-260.000.

Xienta, Inc.: *See—*
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Xonics, Inc.: *See—*
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Yakimenko, Grigory Savvich: *See—*
Zherdev, Anatoly Vasilievich; Yakimenko, Grigory Savvich; Gritsuk, Lev Dmitrievich; Gorbik, Anatoly Stepanovicy; Belkin, Evgeny Grigorievich; Tseluiko, Jury Ivanovich; Gorodetsky, Yakov Izrailievich; Severin, Vasily Fedorovich; and Tolochko, Alexei Ivanovich, 4,071,230, Cl. 266-193.000.

Yakiwchuk, John, to Raymond Lee Organization, Inc., The, a part interest. Portable snow blower. 4,070,771, Cl. 37-53.000.

Yamada, Masami; and Soeda, Yuji, to Tokico Ltd. Method for manufacturing bottom valve seat. 4,070,895, Cl. 72-334.000.

Yamahara, Takeshi; Takano, Tetsuo; Tamura, Mitsuhisa; and Yoshihara, Hiroshi, to Sumitomo Chemical Company, Limited. Process for producing phenols. 4,071,569, Cl. 260-621.00C.

Yamakawa, Kouichi: *See—*
Watanabe, Hiroo; Toyoshima, Kunihiko; Noutomi, Masaru; and Yamakawa, Kouichi, 4,071,448, Cl. 210-50.000.

Yamamiya, Hideki: *See—*
Koinuma, Tokuju; Yamamiya, Hideki; and Tashiro, Norio, 4,071,804, Cl. 315-39.710.

Yamamoto, Kimihiko; and Ishikawa, Hitoshi, to Aisin Seiki Kabusihki Kaisha. Sewing machine. 4,070,977, Cl. 112-259.000.

Yamamoto, Kohzo; Kawai, Syuji; and Ohmori, Akio, to Kuraray Co., Ltd. Hollow polyvinyl alcohol fibers. 4,071,454, Cl. 210-321.00A.

Yamamoto, Satomi; and Yoshii, Masataka, to Nippon Steel Corporation. Method for refining a molten steel in vacuum. 4,071,356, Cl. 75-59.000.

Yamanaka, Seisuke, to Sony Corporation. Solid state television camera. 4,071,853, Cl. 358-41.000.

Yamane, Isao, to Allis-Chalmers Corporation. Method and apparatus for making cement with preheater, kiln and heat exchanger for heating combustion air. 4,071,309, Cl. 432-14.000.

Yamaoka, Mikio: *See—*
Korekawa, Takashi; Kato, Nobuo; and Yamaoka, Mikio, 4,070,957, Cl. 99-455.000.

Yamasaki, George K., to Westinghouse Electric Corporation. Hollow-cathode spectral light source with means to prevent high voltage arcing. 4,071,802, Cl. 313-209.000.

Yamashita, Kiyoshi: *See—*
Usagawa, Yasushi; Yamashita, Kiyoshi; Nakatani, Mamoru; Masuda, Kosaku; and Kawakatsu, Satoshi, 4,071,365, Cl. 96-56.500.

Yamashita, Shiro, to Kabushiki Kaisha Daini Seikosha. Thickness-shear crystal vibrator. 4,071,786, Cl. 310-361.000.

Yamaura, Mitsuru: *See—*
Andow, Fumio; Yamaura, Mitsuru; and Kitagawa, Minoru, 4,071,873, Cl. 361-64.000.

Yamazaki, Shiro: *See—*
Aoki, Katsumichi; Shimizu, Susumu; Satake, Keigo; Yamazaki, Shiro; and Hatakeyama, Nobuo, 4,071,633, Cl. 424-324.000.

Yamazaki, Yasuo: *See—*
Ise, Katsuhiro; Kuramoto, Yoshio; and Yamazaki, Yasuo, 4,071,292, Cl. 350-128.000.

Yamine, Anthony S. Gas and vapor separator. 4,071,336, Cl. 55-203.000.

Yamshak, John R.: *See—*
Gross, William G.; Long, Henry A., Jr.; and Yamshak, John R., 4,070,987, Cl. 118-257.000.

Yanagisawa, Hiroaki; Ando, Akiko; Fukushima, Masami; and Nakao, Hideo, to Sankyo Company Limited. Process for preparing beta-lactam antibiotic substances. 4,071,681, Cl. 542-420.000.

Yang, Elmer Chensheng, to Pacific Scientific Company. Mechanical shock arrestor. 4,071,117, Cl. 188-1.00B.

Yanik, Stephen Joseph; and Frayer, James Albert, to Gulf Research & Development Company. Hydrodesulfurization shutdown method. 4,071,439, Cl. 208-216.000.

Yankovsky, Oleg Alexandrovich: *See—*
Kilin, Viktor Evdokimovich; Galimov, Anas Galimovich; Yankovsky, Oleg Alexandrovich; Klushin, Nikolai Alexandrovich; and Maslakov, Petr Avramovich, 4,071,094, Cl. 173-139.000.

Yasuda, Hiroshi: *See—*
Sugiyama, Hiroshige; and Yasuda, Hiroshi, 4,071,502, Cl. 260-75.00T.

Yasumuro, Hisakazu: *See—*
Miyamatsu, Yasunori; Yasumuro, Hisakazu; Miyata, Kenichi; Shimizu, Takashi; and Matsuoka, Kikuo, 4,070,885, Cl. 72-46.000.

Yaverbaum, Sidney: *See—*
Messing, Ralph A.; and Yaverbaum, Sidney, 4,071,409, Cl. 195-63.000.

Yokogawa, Seiji; and Takenaka, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. Electric fishing float. 4,070,784, Cl. 43-17.500.

Yokoyama, Nobuo, to Nippon Oil Co., Ltd. Process for preparing modified polyolefin waxes. 4,071,581, Cl. 260-878.00R.

Yoneta, Kouichi: *See—*
Nishikubo, Michio; Miura, Sei; Toyoda, Toshiaki; Jonishi, Katsunori; and Yoneta, Kouichi, 4,070,893, Cl. 72-234.000.

Yoshida, Kazuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission for motorcycles. 4,070,925, Cl. 74-720.000.

Yoshida, Masafumi; and Obara, Hiroshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Laminated piezoelectric matrix switch. 4,071,785, Cl. 310-331.000.

Yoshihara, Hiroshi: *See*—
Yamahara, Takeshi; Takano, Tetsuo; Tamura, Mitsuhisa; and Yoshihara, Hiroshi, 4,071,569, Cl. 260-621.00C.
Yoshii, Masataka: *See*—
Yamamoto, Satomi; and Yoshii, Masataka, 4,071,356, Cl. 75-59.000.
Yoshimatsu, Shiro: *See*—
Nakagawa, Ryuichi; Yoshimatsu, Shiro; Ueda, Takuya; Fukuzawa, Akira; Ozaki, Tsuyoshi; Sato, Akira; and Mitsui, Tatsuro, 4,071,687, Cl. 13-10.000.
Yoshimura, Toshimitsu; and Matsuda, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for controlling secondary air for cleaning exhaust gases. 4,070,829, Cl. 60-290.000.
Yoshizawa, Masayuki, to Eisai Co., Ltd. Process for preparation of pancreatic elastase. 4,071,410, Cl. 195-66.00R.
Young, Joseph C.: *See*—
Sneed, Robert C.; and Young, Joseph C., 4,071,203, Cl. 242-86.600.
Yu, Arthur J.; and Anderson, Donald F., to Stauffer Chemical Company. Emulsion polymerization of vinyl chloride using mixed emulsifier system in a single step in the absence of seed formation. 4,071,675, Cl. 526-193.000.
Zadra, Mario D.: *See*—
Tazuma, James J.; and Zadra, Mario D., 4,071,669, Cl. 526-47.300.
Zagar, Marjan: *See*—
Raspet, Jernej; and Zagar, Marjan, 4,071,069, Cl. 152-213.00A.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Takamatsu, Akira; and Oki, Toshikazu, 4,071,411, Cl. 195-80.00R.
Zaklady Azotowe im. F. Dzierzinskiego: *See*—
Ciborowski, Stanislaw; Szczypinski, Zbigniew; Balcerzak, Kazimierz; Jaworski, Andrzej; Kasznia, Andrzej; Krzysztoforski, Andrzej; Kurowski, Stanislaw; Redzi, Jan; and Szparski, Jozef, 4,071,561, Cl. 260-586.00P.
Zapala, Raymond J., to United States of America, Air Force. Flexible recording head mounting assembly. 4,071,864, Cl. 360-103.000.
Zarechensky, Anatoly Vasilievich; Kolechko, Alexei Afanasievich; Manov, Vladimir Mikhailovich; Korjukova, Alla Grigorievna; Savran, Vasily Grigorievich; and Serenko, Alexandr Nikitich. Powder electrode strip for surfacing with wear-resistant alloy. 4,071,734, Cl. 219-146.310.
Zeeh, Bernd: *See*—
Jung, Johann; Kiehs, Karl; Zeeh, Bernd; and Theobald, Hans, 4,071,551, Cl. 260-501.150.
Rentzea, Costin; Zeeh, Bernd; Koenig, Karl-Heinz; and Pommer, Ernst-Heinrich, 4,071,685, Cl. 548-312.000.
Zehe, Alfred, to Heidelberger Druckmaschinen Aktiengesellschaft. Gripper for printing machines. 4,070,968, Cl. 101-408.000.
Zemanek, Joseph, Jr., to Mobil Oil Corporation. Well logging system for measuring remanent magnetic fields in the earth. 4,071,815, Cl. 324-8.000.
Zengel, Hans; and Bergfeld, Manfred, to Akzona Incorporated. Benzene-1,3,5-tris-acetoxime and the process for making phloroglucinol therewith. 4,071,555, Cl. 260-566.00A.
Zent, Lawson J. Adjustable resistance exercising apparatus. 4,071,235, Cl. 272-73.000.
Zentmyer, John Hobart. Method and circuit for operating an electrical flash-tube. 4,071,808, Cl. 315-241.00R.
Zheleznova, Nina Vsevolodovna: *See*—
Peradze, Tamaz Vladimirovich; Fridman, Eidlya Abramovna; Zheleznova, Nina Vsevolodovna; Kolikov, Vsevolod Mikhailovich; Bresler, Semen Khaimovich-Efimovich; Mchedlishvili, Boris Viktorovich; Molodkin, Viktor Mikhailovich; Molodkina, Ljudmila Mikhailovna; and Katushkina, Nina Vasilievna, 4,071,619, Cl. 424-90.000.
Zherdev, Anatoly Vasilievich; Yakimenko, Grigory Savvich; Gritsuk, Lev Dmitrievich; Gorbik, Anatoly Stepanovicy; Belkin, Evgeny Grigorievich; Tseluiko, Jury Ivanovich; Gorodetsky, Yakov Izrailievich; Severin, Vasily Fedorovich; and Tolochko, Alexei Ivanovich. Contrivance for the protection of the walls of a shaft furnace from the heat effect of metallurgical process. 4,071,230, Cl. 266-193.000.
Zimmerman, Sheldon B.; and Chalmers, John H., Jr., to Merck & Co., Inc. Antibiotic A21A. 4,071,631, Cl. 424-263.000.
Zioni, Dov: *See*—
Halperin, Levi Ytzhak; Zioni, Dov; and Bennet, David, 4,071,116, Cl. 187-29.00R.
Zouhar, Drahomir; Holas, Antonin; and Musil, Ivan, to Elitex - Zavody textilniho strojirenstvi generalni reditelstvi. One piece pantyhose and method of manufacturing same. 4,070,874, Cl. 66-177.000.
Zubarev, Anatoly Ivanovich; Osipovsky, Lev Fedorovich; and Shipov, Stanislav Valeryanovich. Air percussion boring machine. 4,071,093, Cl. 173-105.000.
Zuckerman, Irving. Information locating system and method. 4,070,768, Cl. 35-8.00R.
Zumsteg, Alphonse Ernst; Engdahl, Jean; and Huguenin, Raymond, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Quartz piezo-electric element vibrating in a coupled mode. 4,071,797, Cl. 310-361.000.
Zwagemakers, Johannes Maria Antonius: *See*—
van Dijk, Jan; Claassen, Volkert; and Zwagemakers, Johannes Maria Antonius, 4,071,686, Cl. 560-35.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF JANUARY, 1978

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ampex Corporation: *See*—
Heaslett, Alastair M., Re. 29,529, Cl. 330-107.000.
Bowman, Edward W., deceased (by Bowman, Muriel B., co-executor), to E. W. Bowman, Incorporated. Jet fired zonal lehr for applying treating medium inside and outside of glass containers simultaneously. Re. 29,528, Cl. 65-119.000.
Bowman, Muriel B., co-executor: *See*—
Bowman, Edward W., deceased, Re. 29,528, Cl. 65-119.000.
Duo Fast Corporation: *See*—
Ramspeck, Howard B.; and Obergfell, Allen R., Re. 29,527, Cl. 227-8.000.
E. W. Bowman, Incorporated: *See*—
Bowman, Edward W., deceased, Re. 29,528, Cl. 65-119.000.
Heaslett, Alastair M., to Ampex Corporation. Equalization circuit. Re. 29,529, Cl. 330-107.000.
Hill, Bernhard: *See*—
Krumme, Jens-Peter; and Hill, Bernhard, Re. 29,530, Cl. 365-122.000.
Jeter, John D. Directional drilling apparatus. Re. 29,526, Cl. 175-73.000.
Krumme, Jens-Peter; and Hill, Bernhard, to U.S. Philips Corporation. Magneto-optical information storage device using photoconductive control element. Re. 29,530, Cl. 365-122.000.
Obergfell, Allen R.: *See*—
Ramspeck, Howard B.; and Obergfell, Allen R., Re. 29,527, Cl. 227-8.000.
Ramspeck, Howard B.; and Obergfell, Allen R., to Duo Fast Corporation. Safety for fastener driving tool. Re. 29,527, Cl. 227-8.000.
U.S. Philips Corporation: *See*—
Krumme, Jens-Peter; and Hill, Bernhard, Re. 29,530, Cl. 365-122.000.

LIST OF PLANT PATENTEES

Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 4,202, 1-31-78, Cl. 68.000.
Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 4,203, 1-31-78, Cl. 68.000.
Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 4,204, 1-31-78, Cl. 68.000.
Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 4,205, 1-31-78, Cl. 68.000.
Mikkelsens, Inc.: *See*—
Mikkelsen, James C., 4,202, Cl. 68.000.
Mikkelsen, James C., 4,203, Cl. 68.000.
Mikkelsen, James C., 4,204, Cl. 68.000.
Mikkelsen, James C., 4,205, Cl. 68.000.

LIST OF DESIGN PATENTEES

Abrams Fixture Corporation: *See*—
Stoddard, David C. F., 247,085, Cl. D6-257.000.
Almqvist & Wiksell Laromedel AB: *See*—
Nilsson, Folke B.; and Lindahl, Bengt Erik, 247,119, Cl. D19-59.000.
Beecher, Robert A. Nutrient feeding container for animals. 247,124, 1-31-78, Cl. D30-16.000.
Benes, Vladimir. Lipstick tube holder. 247,123, 1-31-78, Cl. D28-86.000.
Boatwright, Edward P.: *See*—
Thompson, Dick J.; and Boatwright, Edward P., 247,082, Cl. D6-192.000.
Britt, William James, to Morton-Norwich Products, Inc. Bottle. 247,094, 1-31-78, Cl. D9-129.000.
Caburian, Eugenio D.: *See*—
Evangelista, Bisked U.; and Caburian, Eugenio D., 247,092, Cl. D9-66.000.
Cambra Cases Limited: *See*—
Woodhall, Michael B., 247,135, Cl. D87-1.00D.
Cantalupo, Josephine I. Toy clown doll having two faces. 247,128, 1-31-78, Cl. D34-4.00A.
Carrousel Party Favors, Inc.: *See*—
Tiep, Darin M., 247,133, Cl. D34-15.00R.
Cartier, Inc.: *See*—
Durante, Alfred Joseph, 247,101, Cl. D11-4.000.
Durante, Alfred Joseph, 247,102, Cl. D11-5.000.
Chan, Sanford A.: *See*—
Corbett, Karl; and Chan, Sanford A., 247,125, Cl. D34-2.00R.
Coca-Cola Company, The: *See*—
Davis, Charles L., 247,081, Cl. D6-186.000.
Compagnie Generale des Etablissements Michelin: *See*—
Jamain, Philippe, 247,107, Cl. D12-146.000.
Jamain, Philippe, 247,109, Cl. D12-148.000.
Peron, Jean-Claude, 247,108, Cl. D12-147.000.
Contico International, Inc.: *See*—
Dickinson, Thomas, 247,087, Cl. D7-194.000.
Corbett, Karl; and Chan, Sanford A. Puppet or similar article. 247,125, 1-31-78, Cl. D34-2.00R.
Cox, Ivan Ray; and Reynolds, Donald Gene, to Rayden Enterprises, Inc. Microphone mount. 247,115, 1-31-78, Cl. D14-13.000.
Davis, Charles L., to Coca-Cola Company, The. Mobile display rack. 247,081, 1-31-78, Cl. D6-186.000.
De Mascole, Louis P.; and Tatro, Donald C. Hanger for organizing jewelry. 247,084, 1-31-78, Cl. D6-247.000.
Deutsche Texaco Aktiengesellschaft: *See*—
Geisler, Hans P. L., 247,134, Cl. D52-2.00A.
Dickinson, Thomas, to Contico International, Inc. Waste receptacle. 247,087, 1-31-78, Cl. D7-194.000.
Dimensionetix, Inc.: *See*—
Gruber, George S., 247,077, Cl. D6-91.000.
Gruber, George S., 247,083, Cl. D6-192.000.
Dorcy Cycles Corporation: *See*—
Federowicz, Raymond J.; Hess, William J.; and Ricciardi, Frank C., Jr., 247,113, Cl. D12-158.000.
Dunlop Limited: *See*—
Morgan, Peter William Swift, 247,072, Cl. D2-224.000.
Durante, Alfred Joseph, to Cartier, Inc. Wire bracelet with detachable diamond clasp. 247,101, 1-31-78, Cl. D11-4.000.
Durante, Alfred Joseph, to Cartier, Inc. Diamond and wire bracelet. 247,102, 1-31-78, Cl. D11-5.000.
Ebner, John S.; Steinman, Sheldon; and Haase, Frederick W., to Milgo Electronics Corporation. Modem-control access panel. 247,114, 1-31-78, Cl. D13-35.000.
Ebner, John Steven; and Sprecher, Charles Grimes, to Milgo Electronics Corporation. Housing for a data terminal logic module or similar article. 247,116, 1-31-78, Cl. D14-46.000.
Evangelista, Bisked U.; and Caburian, Eugenio D. Bottle. 247,092, 1-31-78, Cl. D9-66.000.
Federowicz, Raymond J.; Hess, William J.; and Ricciardi, Frank C., Jr., to Dorcy Cycles Corporation. Bicycle carrier for automobiles. 247,113, 1-31-78, Cl. D12-158.000.
Ferrante, Rafael. Dispenser for pulverous and granular substances. 247,098, 1-31-78, Cl. D9-208.000.
Fimreite, Marjorie K.; and Thomas, Ruth E. Doll. 247,129, 1-31-78, Cl. D34-4.00R.
Geisler, Hans P. L., to Deutsche Texaco Aktiengesellschaft. Gasoline pump. 247,134, 1-31-78, Cl. D52-2.00A.
Gnehm, Charles H. Toy vehicle. 247,132, 1-31-78, Cl. D34-15.0AJ.

Gonshorek, Milton, to International Silver Company. Article of flatware. 247,086, 1-31-78, Cl. D7-137.000.
Graham, Roger. Smoking device. 247,121, 1-31-78, Cl. D27-03.000.
Gruber, George S., to Dimensionetix, Inc. Combined towel caddy and tissue dispenser. 247,077, 1-31-78, Cl. D6-91.000.
Gruber, George S., to Dimensionetix, Inc. Combined vanity skirt and tissue dispenser. 247,083, 1-31-78, Cl. D6-192.000.
Grusin, Gerald M. Book support. 247,078, 1-31-78, Cl. D6-106.000.
Haase, Frederick W.: *See*—
Ebner, John S.; Steinman, Sheldon; and Haase, Frederick W., 247,114, Cl. D13-35.000.
Hanson, Thomas E.; and Martin, Daniel A., to SCM Corporation. Steam iron. 247,088, 1-31-78, Cl. D7-202.000.
Hanson, Thomas E.; and Martin, Daniel A., to SCM Corporation. Steam iron. 247,089, 1-31-78, Cl. D7-202.000.
Hanson, Thomas E.; and Martin, Daniel A., to SCM Corporation. Steam iron. 247,090, 1-31-78, Cl. D7-202.000.
Henry, George. Platform type shoe sole. 247,074, 1-31-78, Cl. D2-322.000.
Hess, William J.: *See*—
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International Silver Company: *See*—
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Jamain, Philippe, to Compagnie Generale des Etablissements Michelin. Tire. 247,109, 1-31-78, Cl. D12-148.000.
Johnson, Roland: *See*—
Torongo, Albert H.; and Johnson, Roland, 247,093, Cl. D9-116.000.
Kane, William F.; and Richardson, Melvin R., to SneakSlides of California. Design for a shoe. 247,073, 1-31-78, Cl. D2-308.000.
Kavka, Miroslav. Combined hockey and pool game table. 247,127, 1-31-78, Cl. D34-3.000.
Kelley, Ann E. Game board. 247,130, 1-31-78, Cl. D34-5.0SS.
Kovach, Robert L. Combined table and terrarium. 247,105, 1-31-78, Cl. D11-144.000.
Krusche, Kurt. Combined cleaning implement handle and interchangeable heads therefor. 247,075, 1-31-78, Cl. D4-12.000.
Lindahl, Bengt Erik: *See*—
Nilsson, Folke B.; and Lindahl, Bengt Erik, 247,119, Cl. D19-59.000.
Lossini, Elio, to Raybeth Tool & Die Co., Inc. Identification bracelet. 247,103, 1-31-78, Cl. D11-12.000.
MacCollum, Mary C. Brush. 247,076, 1-31-78, Cl. D4-35.000.
MacMillan, Kenneth T. Tire retreading bladder. 247,118, 1-31-78, Cl. D15-199.000.
Martin, Daniel A.: *See*—
Hanson, Thomas E.; and Martin, Daniel A., 247,088, Cl. D7-202.000.
Hanson, Thomas E.; and Martin, Daniel A., 247,089, Cl. D7-202.000.
Hanson, Thomas E.; and Martin, Daniel A., 247,090, Cl. D7-202.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
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Ebner, John S.; Steinman, Sheldon; and Haase, Frederick W., 247,114, Cl. D13-35.000.
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Morgan, Peter William Swift, to Dunlop Limited. Skirt. 247,072, 1-31-78, Cl. D2-224.000.
Morton-Norwich Products, Inc.: *See*—
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Nabisco, Inc.: *See*—
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Neidenberg, Jay R.; Warren, Dewey L.; Oppedisano, Eugene D.; and Thulin, Robert R., to Nabisco, Inc. Cracker. 247,071, 1-31-78, Cl. D1-23.000.
Nilsson, Folke B.; and Lindahl, Bengt Erik, to Almqvist & Wiksell Laromedel AB. Music teaching aid. 247,119, 1-31-78, Cl. D19-59.000.
Novel, Robert P. Statuette. 247,104, 1-31-78, Cl. D11-131.000.
Olivan, Andre J. Truck cab caddy. 247,110, 1-31-78, Cl. D12-155.000.
Olivan, Andre J. Truck cab caddy. 247,111, 1-31-78, Cl. D12-155.000.
Olivan, Andre J. Truck cab caddy. 247,112, 1-31-78, Cl. D12-155.000.
Oppedisano, Eugene D.: *See*—
Neidenberg, Jay R.; Warren, Dewey L.; Oppedisano, Eugene D.; and Thulin, Robert R., 247,071, Cl. D1-23.000.
Otema, Martin. Cabinet. 247,079, 1-31-78, Cl. D6-172.000.
Owens-Illinois, Inc.: *See*—
Weckman, Richard L., 247,095, Cl. D9-157.000.
Weckman, Richard L., 247,096, Cl. D9-157.000.
Peron, Jean-Claude, to Compagnie Generale des Etablissements Michelin. Tire. 247,108, 1-31-78, Cl. D12-147.000.
Preece, Lionel Peter. Needle package. 247,097, 1-31-78, Cl. D9-172.000.
Procter & Gamble Company, The: *See*—
Torongo, Albert H.; and Johnson, Roland, 247,093, Cl. D9-116.000.
Raybeth Tool & Die Co., Inc.: *See*—
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Rayden Enterprises, Inc.: *See*—
Cox, Ivan Ray; and Reynolds, Donald Gene, 247,115, Cl. D14-13.000.
Reynolds, Donald Gene: *See*—
Cox, Ivan Ray; and Reynolds, Donald Gene, 247,115, Cl. D14-13.000.
Ricciardi, Frank C., Jr.: *See*—
Federowicz, Raymond J.; Hess, William J.; and Ricciardi, Frank C., Jr., 247,113, Cl. D12-158.000.
Richardson, Melvin R.: *See*—
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Rite Autotronics Corporation: *See*—
Schwartz, Edwin L., 247,099, Cl. D10-56.000.
Schwartz, Edwin L., 247,100, Cl. D10-78.000.
Robinson, Fuller, to Standard Desk Limited. Table. 247,080, 1-31-78, Cl. D6-177.000.
Sandorf, Alexander E. Gardening and agriculture hand tool. 247,091, 1-31-78, Cl. D8-11.000.
Schwartz, Edwin L., to Rite Autotronics Corporation. Moisture meter. 247,099, 1-31-78, Cl. D10-56.000.
Schwartz, Edwin L., to Rite Autotronics Corporation. Ignition analyzer. 247,100, 1-31-78, Cl. D10-78.000.
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Hanson, Thomas E.; and Martin, Daniel A., 247,089, Cl. D7-202.000.
Hanson, Thomas E.; and Martin, Daniel A., 247,090, Cl. D7-202.000.
Siebert, Carl J. Dryer for welding rods. 247,120, 1-31-78, Cl. D23-77.000.
Simmoneau, Ted R. Novelty tennis racket having two handles. 247,131, 1-31-78, Cl. D34-5.0ST.
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Neidenberg, Jay R.; Warren, Dewey L.; Oppedisano, Eugene D.; and Thulin, Robert R., 247,071, Cl. D1-23.000.
Tiep, Darin M., to Carrousel Party Favors, Inc. Toy digital watch. 247,133, 1-31-78, Cl. D34-15.00R.
Torongo, Albert H.; and Johnson, Roland, to Procter & Gamble Company, The. Bottle. 247,093, 1-31-78, Cl. D9-116.000.
Tortorete, Michael A. Vase. 247,106, 1-31-78, Cl. D11-147.000.
Ueda, Yoshiaki: *See*—
Yoshida, Toshihiko; and Ueda, Yoshiaki, 247,117, Cl. D15-52.000.
Warren, Dewey L.: *See*—
Neidenberg, Jay R.; Warren, Dewey L.; Oppedisano, Eugene D.; and Thulin, Robert R., 247,071, Cl. D1-23.000.
Weckman, Richard L., to Owens-Illinois, Inc. Bottle. 247,095, 1-31-78, Cl. D9-157.000.
Weckman, Richard L., to Owens-Illinois, Inc. Bottle. 247,096, 1-31-78, Cl. D9-157.000.
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Woodhall, Michael B., to Cambra Cases Limited. Disc record storage unit tray. 247,135, 1-31-78, Cl. D87-1.00D.
Yoshida, Toshihiko; and Ueda, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Vacuum cleaner. 247,117, 1-31-78, Cl. D15-52.000.
Yoshinaga Prince Co., Ltd.: *See*—
Yoshinaga, Sadao, 247,122, Cl. D27-42.000.
Yoshinaga, Sadao, to Yoshinaga Prince Co., Ltd. Cigarette lighter. 247,122, 1-31-78, Cl. D27-42.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 31, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
10 4,070,712
168 4,070,713

CLASS 4
318 4,070,714

CLASS 5
2 R 4,070,715
62 4,070,720
89 4,070,721
99 C 4,070,716
176 R 4,070,717
207 4,070,718
355 4,070,719

CLASS 8
7 4,071,312
127.6 4,071,313

CLASS 9
5 4,070,722

CLASS 10
90 4,070,723
162 R 4,070,724

CLASS 12
86.7 4,070,725

CLASS 13
10 4,071,687

CLASS 15
231 4,070,726

CLASS 16
72 4,070,727
134 4,070,728

CLASS 17
34 4,070,729

CLASS 19
.58 4,070,730
159 R 4,070,731
236 4,070,732

CLASS 23
230 B 4,071,314
4,071,315
4,071,316
253 TP 4,071,317
4,071,318
4,071,321
254 R 4,071,319
259 4,071,320
262 4,071,322
273 R 4,071,323
288 K 4,071,324
290 4,071,325

CLASS 24
27 4,070,733
28 4,070,734
73 VA 4,070,735
153 4,070,736

CLASS 27
12 4,070,737

CLASS 28
137 4,070,738

CLASS 29
18 4,070,739
25.19 4,070,740
25.42 4,070,741
110.5 4,070,742
227 4,070,743
241 4,070,744
268 4,070,745
450 4,070,746
570 4,070,747
577 C 4,070,748
592 R 4,070,749
596 4,070,750
628 4,070,751
630 B 4,070,752
741 4,070,753
749 4,070,754
764 4,070,755
809 4,070,756

CLASS 30
371 4,070,757

CLASS 33
76 R 4,070,758
125 C 4,070,759
166 4,070,760
172 F 4,070,761
174 Q 4,070,762
241 4,070,763
342 4,070,764

CLASS 34
10 4,070,765
12 4,070,766
33 4,070,767

CLASS 35
8 R 4,070,768
10.4 4,070,769

CLASS 36
43 4,070,770

CLASS 37
53 4,070,771
117.5 4,070,772

CLASS 38
77.83 4,070,773

CLASS 40
2.2 4,070,774
124.1 4,070,778
152 4,070,780
219 4,070,781
323 4,070,782
381 4,070,776
406 4,070,777
492 4,070,775
575 4,070,779

CLASS 42
69 R 4,070,783

CLASS 43
17.5 4,070,784
24 4,070,785
55 4,070,786
94 4,070,787
100 4,070,788

CLASS 44
1 R 4,071,328
7 E 4,071,326
66 4,071,327

CLASS 46
12 4,070,789
172 4,070,790
220 4,070,791
4,070,792

CLASS 47
67 4,070,793
79 4,070,794

CLASS 48
62 R 4,071,329
94 4,071,330
197 R 4,071,331
202 4,071,332

CLASS 49
141 4,070,795

CLASS 51
304 4,071,333
309 R 4,070,796
326 4,070,797
361 4,070,798
426 4,070,799

CLASS 52
1 4,070,800
2 4,070,801
23 4,070,802
36 4,070,803
64 4,070,804
86 4,070,805
95 4,070,806
109 4,070,807
122 4,070,808
125 4,070,832
148 4,070,833
166 4,070,834
235 4,070,835
245 4,070,836
297 4,070,837
400 4,070,838
448 4,070,839
489 4,070,840
506 4,070,841
508 4,070,842
521 4,070,843
584 4,070,844
632 4,070,845
641 4,070,846
650 4,070,847
707 4,070,848
742 4,070,849

CLASS 53
48 4,070,850
228 4,070,851
297 4,070,852
373 4,070,853
381 A 4,070,854

CLASS 55
2 4,071,334
68 4,071,335
203 4,071,336
212 4,071,337
385 C 4,071,338

CLASS 56
13.9 4,070,809
291 4,070,810

CLASS 57
50 4,070,811
58.89 4,070,812
4,070,813
89 4,070,814
140 J 4,070,815
153 4,070,816
157 TS 4,070,817
160 4,070,818

CLASS 58
2 4,070,819
21.13 4,070,820
23 BA 4,070,821
38 R 4,070,822

CLASS 59
93 4,070,823

CLASS 60
39.43 4,070,824
39.51 R 4,070,825
39.66 4,070,826
204 4,070,827
274 4,070,828
290 4,070,829
4,070,830
371 4,070,831
407 4,070,855
4,070,856
422 4,070,857
4,070,858
530 4,070,859
616 4,070,860
641 4,070,861
655 4,070,862

CLASS 61
28 4,070,863
29 4,070,864
36 C 4,070,865
45 R 4,070,866
53 4,070,867
91 4,070,868
100 4,070,869

CLASS 62
2 4,070,870
116 4,070,871

CLASS 64
21 4,070,872

CLASS 65
3 R 4,071,339
11 R 4,071,340
4,071,342
11 W 4,071,341
23 4,071,343
29 4,071,344
119 Re.29,528
273 4,071,345
351 4,071,346

CLASS 66
172 R 4,070,873
177 4,070,874

CLASS 68
3 R 4,070,876
3 SS 4,070,875
5 D 4,070,877
22 R 4,070,878

CLASS 70
20 4,070,879
240 4,070,880
315 4,070,881
427 4,070,882

CLASS 71
31 4,071,347
78 4,071,348
88 4,071,349
100 4,071,350
4,071,351
4,071,352
4,071,353

CLASS 72
14 4,070,883
39 4,070,884
46 4,070,885
49 4,070,886
52 4,070,887
91 4,070,888
114 4,070,889
129 4,070,890
183 4,070,891
195 4,070,892
234 4,070,893
292 4,070,894
329 4,071,360
334 4,070,895
345 4,070,897
389 4,070,896
409 4,070,898
457 4,070,899

CLASS 73
1 B 4,070,900
2 4,070,901
37.5 4,070,902
38 4,070,903
40.5 R 4,070,904
88 E 4,070,906
119 A 4,070,907
170 R 4,070,908
182 4,070,909
239 4,070,910
343 R 4,070,911
356 4,070,912
422 GC 4,070,913
487 4,070,915
490 4,070,916
598 4,070,917
614 4,070,905

CLASS 74
70 4,070,918
229 4,070,919
446 4,070,920
459 4,070,921
475 4,070,914
573 R 4,070,922
665 P 4,070,923
710.5 4,070,924
720 4,070,925
730 4,070,926
765 4,070,927
863 4,070,928

CLASS 75
.5 R 4,071,354
30 4,071,355
59 4,071,356
103 4,071,357
154 4,071,358
160 4,071,359

CLASS 76
82 4,070,929

CLASS 81
9.5 B 4,070,930
177 A 4,070,932
177 B 4,070,931
180 B 4,070,933

CLASS 82
2 R 4,070,934
40 R 4,070,935

CLASS 83
12 4,070,936
27 4,070,937
71 4,070,938
368 4,070,939
464 4,070,940
478 4,070,941

CLASS 84
1.01 4,070,942
4,070,943
484 4,070,944

CLASS 85
80 4,070,945

CLASS 91
25 4,070,946
39 4,070,947
234 4,070,948
276 4,070,949
487 4,070,950

CLASS 93
8 R 4,070,951
36.9 4,070,954
39.1 R 4,070,953
53 R 4,070,952

CLASS 96
1.4 4,071,361
4,071,362
1.5 R 4,071,363
36 4,071,364
56.5 4,071,365
73 4,071,366
79 4,071,367

CLASS 99
284 4,070,955
304 4,070,956
455 4,070,957
468 4,070,958
510 4,070,959

CLASS 100
49 4,070,960
185 4,070,961
209 4,070,962

CLASS 101
93.29 4,070,963
120 4,070,964
228 4,070,965
269 4,070,966
301 4,070,967
408 4,070,968
465 4,070,969

CLASS 102
28 R 4,070,970

CLASS 104
172 S 4,070,972

CLASS 106
38.28 4,071,368
40 R 4,071,369
59 4,071,370
65 4,071,371
73.5 4,071,372
104 4,071,373
189 4,071,374
238 4,071,375

CLASS 108
20 4,070,973

CLASS 111
85 4,070,974

CLASS 112
135 4,070,975
241 4,070,976
259 4,070,977

CLASS 114
26 4,070,978
263 4,070,979
4,070,980
293 4,070,981

CLASS 115
16 4,070,982
17 4,070,983
42 4,070,984

CLASS 118
6 4,070,985
7 4,070,986
257 4,070,987

CLASS 119
15.5 A 4,070,988
27 4,070,989
53 4,070,990
58 4,070,991

CLASS 122
382 4,070,992

CLASS 123
3 4,070,993
8.07 4,070,994
8.11 4,070,995
23 4,070,996
4,070,997
26 4,070,998
32 B 4,070,999
32 SP 4,071,013
51 BD 4,071,000
75 B 4,071,001
99 4,071,002
119 A 4,071,003
4,071,005
4,071,006
119 E 4,071,004
146.5 B 4,071,007
198 E 4,071,008
4,071,009
198 F 4,070,971
4,071,010

CLASS 124
41 A 4,071,014

CLASS 125
11 AT 4,071,015

CLASS 126
270 4,071,016
271 4,071,017
4,071,018
299 E 4,071,019

CLASS 128
2 A 4,071,020
52 4,071,021
94 4,071,022
133 4,071,023
145 A 4,071,024
145.7 4,071,025
147 4,071,026
231 4,071,027
303.14 4,071,028
305 4,071,029
310 4,071,030
402 4,071,031
419 P 4,071,032
420 A 4,071,033

CLASS 131
17 R 4,071,034
173 4,071,035
187 4,071,036
266 4,071,037

CLASS 134
1 4,071,376
29 4,071,377

CLASS 137
59 4,071,038
87 4,071,039
199 4,071,040
246.22 4,071,041
317 4,071,011
321 4,071,012

332 4,071,042
375 4,071,043
479 4,071,044
528 4,071,045
596.15 4,071,046
625.18 4,071,047

CLASS 138

145 4,071,048

CLASS 139

159 4,071,049
383 R 4,071,050
436 4,071,051
4,071,052
4,071,053
4,071,054
448 4,071,055
449 4,071,056

CLASS 141

4 4,071,057
65 4,071,058
206 4,071,059

CLASS 144

3 H 4,071,060
314 R 4,071,061

CLASS 148

1.5 4,071,378
6.15 R 4,071,380
6.15 Z 4,071,379
36 4,071,381
126 4,071,382
175 4,071,383

CLASS 150

1.5 B 4,071,062
12 4,071,063
48 4,071,064
52 J 4,071,066
52 R 4,071,065

CLASS 151

22 4,071,067

CLASS 152

176 4,071,068
213 A 4,071,069
333 4,071,070

CLASS 156

71 4,071,384
73.1 4,071,385
113 4,071,386
148 4,071,387
157 4,071,388
175 4,071,389
239 4,071,390
325 4,071,391
351 4,071,392
353 4,071,393
465 4,071,394
499 4,071,395
612 4,071,396
662 4,071,397

CLASS 157

13 4,071,071

CLASS 162

15 4,071,398
16 4,071,399
169 4,071,400
300 4,071,401

CLASS 164

89 4,071,072
448 4,071,073
4,071,074

CLASS 165

2 4,071,075
9 4,071,076
18 4,071,077
27 4,071,078
48 4,071,079
59 4,071,080
82 4,071,081
101 4,071,082
173 4,071,083

CLASS 166

84 4,071,085
129 4,071,084
177 4,071,086
278 4,071,087
321 4,071,088

CLASS 172

59 4,071,089
788 4,071,090
797 4,071,091

CLASS 173

12 4,071,092
105 4,071,093
139 4,071,094
152 4,071,095

CLASS 174

138 R 4,071,688

CLASS 175

4.6 4,071,096
53 4,071,098
56 4,071,097
59 4,071,099
69 4,071,100
73 Re.29,526
325 4,071,101

CLASS 176

27 4,071,402
50 4,071,403
87 4,071,404

CLASS 177

165 4,071,102
188 4,071,103
229 4,071,104

CLASS 178

18 4,071,[illegible]
4,071,[illegible]
19 4,071,691
68 4,071,692
69.1 4,071,693

CLASS 179

1 PC 4,071,696
1 ST 4,071,694
1 VL 4,071,695
2 R 4,071,698
2 TV 4,071,697
5.5 4,071,699
15 AL 4,071,706
15 AQ 4,071,703
15 AT 4,071,701
4,071,702
15 BA 4,071,705
15 BF 4,071,700
4,071,704
15.55 R 4,071,707
16 E 4,071,708
18 HB 4,071,709
37 4,071,710
41 A 4,071,711
81 A 4,071,713
82 4,071,714
90 K 4,071,715
99 4,071,712
100.1 DR 4,071,716
182 R 4,071,717

CLASS 180

14 R 4,071,105
44 F 4,071,106
69 R 4,071,107
139 4,071,108
143 4,071,109

CLASS 181

127 4,071,110
149 4,071,111
187 4,071,112

CLASS 182

181 4,071,113

CLASS 185

30 4,071,114

CLASS 187

2 4,071,115
29 R 4,071,116

CLASS 188

1 B 4,071,117
71.9 4,071,118
79.5 K 4,071,120
196 P 4,071,121
285 4,071,122
298 4,071,119
331 4,071,123

CLASS 191

12 R 4,071,124

CLASS 192

3.3 4,071,125
87.12 4,071,126
107 R 4,071,127
133 4,071,128

CLASS 195

29 4,071,405
31 P 4,071,406
62 4,071,407
4,071,408
63 4,071,409
66 R 4,071,410
80 R 4,071,411
102 4,071,412
103.5 R 4,071,413

CLASS 197

1 R 4,071,130
6.4 4,071,131
168 4,071,132
4,071,133
181 4,071,134

CLASS 198

324 4,071,135
735 4,071,136
774 4,071,137

CLASS 200

5 A 4,071,718
5 B 4,071,719
6 B 4,071,720
38 B 4,071,721
50 A 4,071,722
61.25 4,071,724
61.45 R 4,071,723
82 E 4,071,725
144 B 4,071,727
175 4,071,728
[illegible] 4,071,726

CLASS 201

40 4,071,414

CLASS 204

14 N 4,071,415
38 B 4,071,417
38 R 4,071,416
55 R 4,071,418
4,071,419
67 4,071,420
96 4,071,421
105 R 4,071,422
158 R 4,071,423
159.15 4,071,424
159.24 4,071,425
181 C 4,071,428
192 F 4,071,426
195 M 4,071,427
231 4,071,429
299 R 4,071,430
301 4,071,431

CLASS 206

83.5 4,071,138
216 4,071,139
295 4,071,140
372 4,071,141
629 4,071,142

CLASS 208

8 4,071,432
11 LE 4,071,433
4,071,434
91 4,071,435
120 4,071,436
137 4,071,437
180 4,071,438
216 4,071,439

CLASS 209

44 4,071,440
144 4,071,441
212 4,071,442
444 4,071,143

CLASS 210

7 4,071,443
22 A 4,071,444
23 H 4,071,445
32 4,071,446
44 4,071,447
50 4,071,448
53 4,071,449
4,071,450
79 4,071,451
189 4,071,452
232 4,071,453
321 A 4,071,454
497.1 4,071,455

CLASS 211

13 4,071,144
60 S 4,071,145
87 4,071,146

CLASS 212

145 4,071,147

CLASS 213

76 4,071,148

CLASS 214

6 P 4,071,149
16.4 R 4,071,150
35 R 4,071,151
75 R 4,071,152
82 4,071,153
145 A 4,071,154
147 G 4,071,155

CLASS 215

224 4,071,156
252 4,071,157

CLASS 219

69 C 4,071,729
85 CM 4,071,730
121 EB 4,071,731
137 R 4,071,732
141 4,071,733
146.31 4,071,734
216 4,071,735
219 4,071,736
345 4,071,737
400 4,071,738
4,071,739

CLASS 220

3.2 4,071,158
4,071,159
5 R 4,071,160
18 4,071,161
21 4,071,162
69 4,071,163
224 4,071,164

CLASS 221

259 4,071,165

CLASS 222

1 4,071,166
56 4,071,168
76 4,071,169
193 4,071,170
305 4,071,171
321 4,071,172
4,071,173

CLASS 224

29 M 4,071,174
36 4,071,175
42.1 E 4,071,176

CLASS 226

7 4,071,177
39 4,071,178

CLASS 227

8 Re.29,527

CLASS 228

1 A 4,071,179
1 R 4,071,180
43 4,071,181
110 4,071,182
159 4,071,184
173 A 4,071,183

CLASS 229

28 R 4,071,185
62 4,071,186
62.5 4,071,187

CLASS 233

29 4,071,188

CLASS 235

70 B 4,071,189
92 CV 4,071,743
92 FL 4,071,742
431 4,071,740
436 4,071,741

CLASS 236

93 A 4,071,190

CLASS 238

338 4,071,191

CLASS 239

3 4,071,192
11 4,071,193
127.3 4,071,194
289 4,071,195
492 4,071,196
533.11 4,071,197

CLASS 241

73 4,071,198

CLASS 242

25 A 4,071,199
55.2 4,071,200
4,071,201
71.1 4,071,202
86.6 4,071,203
107.4 B 4,071,204
117 4,071,205

CLASS 244

17.11 4,071,206
23 D 4,071,207
83 D 4,071,209
83 G 4,071,208
118 P 4,071,210
165 4,071,211

CLASS 248

37.6 4,071,212
74 R 4,071,213
211 4,071,214
221.4 4,071,218
251 4,071,215
290 4,071,216
309 R 4,071,217
534 4,071,219

CLASS 250

201 4,071,751
213 VT 4,071,752
227 4,071,753
4,071,754
253 4,071,755
260 4,071,756
265 4,071,757
277 CH 4,071,758
310 4,071,759
363 S 4,071,760
369 4,071,761
4,071,762
374 4,071,763
390 4,071,764
397 4,071,765
443 4,071,766
444 4,071,767
4,071,768
445 T 4,071,769
461 B 4,071,770
505 4,071,771
558 4,071,772

CLASS 251

174 4,071,220
228 4,071,221

CLASS 252

8.55 D 4,071,457
4,071,458
8.7 4,071,456
50 4,071,459
51.5 R 4,071,460
63.5 4,071,461
99 4,071,462
103 4,071,463
180 4,071,464
301.22 4,071,466
301.4 F 4,071,465
316 4,071,467
321 4,071,468
364 4,071,469
389 R 4,071,470
392 4,071,746
437 4,071,471
455 R 4,071,472
462 4,071,473
500 4,071,474
545 4,071,475
557 4,071,476

CLASS 254

8 C 4,071,222

CLASS 256

1 4,071,223
64 4,071,224

CLASS 260

2 N 4,071,477
2 R 4,071,478
2.3 4,071,479
2.5 AH 4,071,483
2.5 AJ 4,071,482
2.5 AT 4,071,484
2.5 F 4,071,480
4,071,481
17 R 4,071,485
18 N 4,071,486
22 CB 4,071,489
22 M 4,071,514
22 TN 4,071,487
23 XA 4,071,490
23.7 A 4,071,488
28.5 B 4,071,491
31.8 R 4,071,492
42.13 4,071,493
42.14 4,071,494
42.18 4,071,495
42.36 4,071,496
45.85 B 4,071,497
46.5 G 4,071,498
47 C 4,071,499
47 ET 4,071,500
67 R 4,071,501
75 EP 4,071,504
75 N 4,071,503
75 T 4,071,502
77.5 MA 4,071,505
78 A 4,071,506
78.3 R 4,071,507
79 4,071,509
79.3 MU 4,071,508
112.5 R 4,071,510
4,071,511
239 A 4,071,512
4,071,513
239.5 4,071,515
251 QB 4,071,516
253 4,071,517
256.4 C 4,071,519
256.4 R 4,071,518
287 K 4,071,520
290 HL 4,071,521
292 4,071,522
293.76 4,071,523
293.77 4,071,524
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2 :	4,071,488		4,071,177		4,071,864		4,071,872		4,071,447		4,071,740
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5 :	4,070,775		4,071,256	8 :	4,070,888		4,070,737		4,071,747		4,071,268
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	4,070,898		4,071,578		4,071,655		4,071,033		4,071,739		4,070,978
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	4,070,980		4,071,677		4,071,850		4,071,107		4,071,136		4,071,294
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	4,071,000		4,071,703	10 :	4,070,862		4,071,131		4,071,836		4,071,640
	4,071,012		4,071,704		4,071,276		4,071,165		4,071,901		4,071,659
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	4,070,891		4,071,288		4,071,216		4,070,876		4,070,742		4,070,981
	4,070,909		4,071,290		4,071,236		4,070,910		4,070,751		4,071,019
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	4,071,112		4,071,425		4,071,267		4,070,947		4,070,956		4,071,084
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	4,071,139		4,071,465		4,071,316		4,070,991		4,070,987		4,071,088
	4,071,146		4,071,478		4,071,323		4,071,015		4,071,018		4,071,096
	4,071,167		4,071,494		4,071,363		4,071,016		4,071,020		4,071,099
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	4,071,336		4,071,538		4,071,409		4,071,193		4,071,215		4,071,435
	4,071,337		4,071,571		4,071,451		4,071,194		4,071,217		4,071,458
	4,071,371		4,071,574		4,071,461		4,071,279		4,071,219		4,071,470
	4,071,400		4,071,606		4,071,476		4,071,283		4,071,224		4,071,539
	4,071,463		4,071,615		4,071,477		4,071,301		4,071,254		4,071,558
	4,071,485		4,071,626		4,071,497		4,071,325		4,071,293		4,071,602
	4,071,498		4,071,628		4,071,500		4,071,326		4,071,300		4,071,604
	4,071,546		4,071,631		4,071,513		4,071,327		4,071,306		4,071,650
	4,071,547		4,071,668		4,071,514		4,071,344		4,071,312		4,071,700
	4,071,577		4,071,671		4,071,557		4,071,367		4,071,324		4,071,745
	4,071,600		4,071,680		4,071,560		4,071,382		4,071,339		4,071,754
	4,071,660		4,071,682		4,071,572		4,071,482		4,071,340		4,071,755
	4,071,666		4,071,695		4,071,573		4,071,483		4,071,341		4,071,757
	4,071,684		4,071,708		4,071,582		4,071,492		4,071,342		4,071,775
	4,071,736		4,071,722		4,071,597		4,071,504		4,071,355		4,071,815
	4,071,866		4,071,776		4,071,609		4,071,554		4,071,370		4,071,906
27 :	4,070,725		4,071,777		4,071,614		4,071,565		4,071,381	49 :	4,071,143
	4,070,783		4,071,819		4,071,632		4,071,613		4,071,402	51 :	4,070,763
	4,070,831		4,071,825		4,071,644		4,071,624		4,071,403		4,070,860
	4,071,195		4,071,831		4,071,646		4,071,625		4,071,420		4,071,190
	4,071,467		4,071,842		4,071,662		4,071,638		4,071,428		4,071,262
	4,071,524		4,071,848		4,071,663		4,071,656		4,071,439		4,071,392
	4,071,635		4,071,852		4,071,670		4,071,669		4,071,446	53 :	4,070,853
	4,071,652		4,071,888		4,071,735		4,071,725		4,071,489		4,070,908
	4,071,694		4,071,897		4,071,748		4,071,769		4,071,518		4,071,098
28 :	4,071,258		4,071,908		4,071,749		4,071,771		4,071,570		4,071,189
29 :	4,070,787	35 :	4,071,080		4,071,764		4,071,794		4,071,586		4,071,208
	4,070,802		4,071,744		4,071,783		4,071,796		4,071,588		4,071,239
	4,070,906		4,071,910		4,071,787		4,071,835		4,071,592		4,071,389
	4,070,953	36 :	4,070,716		4,071,790		4,071,885		4,071,593		4,071,821
	4,071,380		4,070,750		4,071,791	40 :	4,070,865		4,071,620	54 :	4,071,627
	4,071,427		4,070,756		4,071,798		4,070,913		4,071,658	55 :	4,070,764
	4,071,429		4,070,760		4,071,799		4,070,979		4,071,661		4,070,852
	4,071,464		4,070,761		4,071,802		4,070,989		4,071,678		4,070,914
	4,071,584		4,070,768		4,071,812		4,071,011		4,071,727		4,070,962
	4,071,594		4,070,790		4,071,828		4,071,013		4,071,733		4,070,969
	4,071,608		4,070,820		4,071,839		4,071,028		4,071,816		4,070,984
	4,071,746		4,070,823		4,071,878		4,071,035		4,071,817		4,071,002
30 :	4,070,932		4,070,830		4,071,880		4,071,331		4,071,898		4,071,004
	4,071,349		4,070,843		4,071,902		4,071,395		4,071,907		4,071,147
	4,071,350		4,070,880	37 :	4,070,720		4,071,433	44 :	4,071,178		4,071,205
	4,071,351		4,070,882		4,070,773		4,071,434		4,071,212		4,071,251
	4,071,352		4,070,931		4,070,896		4,071,457		4,071,884		4,071,398
	4,071,353		4,070,951		4,071,275		4,071,471	45 :	4,070,747		4,071,491
31 :	4,070,832		4,070,975		4,071,729		4,071,496		4,071,049		4,071,533
	4,071,265		4,071,037	38 :	4,070,810		4,071,509		4,071,138		4,071,616
32 :	4,070,844		4,071,038		4,071,266		4,071,566		4,071,596		4,071,645
	4,071,473	39 :	4,070,726		4,071,679	47 :	4,070,848		4,071,767		
33 :	4,071,862		4,071,075		4,070,731		4,071,756		4,071,562		4,071,789
34 :	4,070,767		4,071,082		4,070,734		4,070,801	41 :	4,070,836		4,071,689
	4,070,961		4,071,092		4,070,993					56 :	4,070,833

DESIGN PATENTS

6 :	247,073		247,112		247,126	19 :	247,124		247,096		247,106
	247,074		247,120	13 :	247,081	24 :	247,121		247,105	44 :	247,084
	247,077		247,125		247,085	29 :	247,087		247,113		247,103
	247,083		247,129		247,118	34 :	247,071	41 :	247,131	45 :	247,094
	247,091		247,133	17 :	247,078		247,128	42 :	247,088		247,108
	247,099	9 :	247,086		247,127	36	247,101		247,089	51 :	247,092
	247,100	11 :	247,104		247,130		247,102		247,090	53 :	247,123
	247,110	12 :	247,114	18 :	247,076	37 :	247,082		247,093		247,132
	247,111		247,116		247,115	39 :	247,095				

PLANT PATENTS

39 :	4,202		4,203		4,204	4,205	

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